AECOM

Final Engineering Design Report

Cowlitz Food and Fuel Site
101 Mulford Road
Toledo, Washington

Cleanup Site ID No. 1166
Facility Site ID No. 7025

Chevron Environmental Management Company

Project reference: Cowlitz Food and Fuel Site
Project number: 60743836

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Quality information

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Acronyms and Abbreviations

1994 DCAP	Draft Cleanup Action Plan
1999 CAP	updated Corrective Action Plan
2006 DCAP	revised Draft Cleanup Action Plan
2012 FS Report	Feasibility Study Report
°F	degree Fahrenheit
>	greater than
µg/L	microgram per liter
Agency Review FS Report	Revised Agency Review Draft Feasibility Study Report
AO	Agreed Order No. DE21413
APN	Assessor Parcel Number
AECOM	AECOM Technical Services, Inc.
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
CEMC	Chevron Environmental Management Company
CFR	Code of Federal Regulations
COC	contaminant of concern
cPAH	carcinogenic polycyclic aromatic hydrocarbons
CSWGP	Construction Stormwater General Permit
CUL	cleanup level
DCAP	Draft Cleanup Action Plan
DO	dissolved oxygen
EDR	Engineering Design Report
FS	Feasibility Study
DRO	diesel-range organics
Ecology	Washington State Department of Ecology
FS	feasibility study
GRO	gasoline-range organics
HASP	Health and Safety Plan
HRO	heavy-oil-range organics
IRA Work Plan	Interim Remedial Action Work Plan
LNAPL	light nonaqueous phase liquid

mg/kg	milligram per kilogram
mg/L	milligram per liter
MNA	monitored natural attenuation
MTCA	Model Toxics Control Act
NAA Groundwater Report	Natural Attenuation Assessment for Groundwater
NPDES	National Pollutant Discharge Elimination System
ORC®	Oxygen Release Compound
OSHA	Occupational Safety and Health Administration
PLP	potentially liable party
RCW	Revised Code of Washington
Revised FS Report	Revised Feasibility Study Report
RI	remedial investigation
SECOR	SECOR International Incorporated
SGC	silica gel cleanup
site	Cowlitz Food and Fuel Site, located at 101 Mulford Road, Toledo, Washington
SSA Report	Draft – Supplemental Site Assessment Summary Report
TDPI	Texaco Downstream Properties, Inc.
Texaco	Texaco Inc.
UIC	underground injection control
USEPA	United States Environmental Protection Agency
USGS	U.S. Geological Survey
UST	underground storage tank
WAC	Washington Administrative Code
Work Plan	Soil Sampling and Natural Attenuation Assessment Work Plan

Executive Summary

On behalf of Chevron Environmental Management Company (CEMC), AECOM Technical Services, Inc. (AECOM) prepared this Revised Final Engineering Design Report (EDR) for the Cowlitz Food and Fuel Site, located at 101 Mulford Road, Toledo, Washington (site). This EDR was prepared pursuant to Agreed Order No. DE21413 (AO; Ecology 2024) between Texaco Inc. (Texaco[1]), Exit 59 Food and Fuel LLC, Candid Travel Center Land LLC (collectively "Property Owner"), and the Washington State Department of Ecology (Ecology), effective May 29, 2024. This EDR meets the requirements of the Model Toxics Control Act (MTCA) administered by Ecology under Chapter 173-340-400 of the Washington Administrative Code (WAC) and the AO. The 2024 AO replaced previous Agreed Order No. DE5236, effective March 1, 2010 (Ecology 2010).

An active gasoline service station has occupied the site since 1955. Soil and groundwater impacts have resulted from releases from underground storage tanks (USTs) and ancillary piping and fuel distribution systems. Contaminants of concern (COCs) identified in site soil include gasoline-range organics (GRO), diesel-range organics (DRO), and heavy-oil-range organics (HRO); benzene, toluene, ethylbenzene, and xylenes (BTEX); lead; and carcinogenic polycyclic aromatic hydrocarbons (cPAHs). COCs identified in site groundwater include GRO, DRO, BTEX, and lead. MTCA Method A cleanup levels (CULs) were established for contaminants present in soil and groundwater. Soil CULs are based on protection of human health from direct contact with soil and protection of ecological receptors. Groundwater CULs are based on the highest beneficial use and reasonable maximum exposure under both current and future land use at the site.

This EDR describes specific activities and engineering design requirements for implementing Alternative 4: Monitored Natural Attenuation, Institutional Controls, and Future Property-Wide Excavation in Conjunction with Service Station Upgrades or Redevelopment. Alternative 4 was selected as the remedial action in the Revised Feasibility Study Report (Arcadis 2021). The remedial action consists of excavation and off-site disposal of approximately 4,185 cubic yards of petroleum-impacted soil in accessible portions of the site to a maximum depth of approximately 12 feet below ground surface (bgs). The remedial action also includes:

- Placement of Oxygen Release Compound (ORC®) or approved equivalent within the saturated portion of the excavation to accelerate the in-situ aerobic bioremediation of residual hydrocarbon impacts in saturated soil and groundwater
- Monitored natural attenuation (MNA)
- Institutional controls.

The remedial action will be conducted by CEMC's contractor and will be coordinated with the Property Owner and the Property Owner's contractor during UST removal and replacement work. It is currently anticipated that the remedial excavation will be performed in late third quarter or early fourth quarter 2025 and directly after the removal of the USTs by the Property Owner's contractor. This schedule is subject to receiving approvals from Ecology and the availability of subcontractors and suppliers. The excavation and ORC® (or approved equivalent) placement components of the remedy are estimated to take approximately 3 to 4 weeks to complete. MNA and institutional controls will remain ongoing until cleanup goals are achieved or as otherwise approved by Ecology.

[1] CEMC conducts environmental investigations and remedial work on behalf of its affiliates, including Texaco.

1. Introduction

On behalf of Chevron Environmental Management Company (CEMC), AECOM Technical Services, Inc. (AECOM) prepared this *Final Engineering Design Report* (EDR) for the Cowlitz Food and Fuel Site, located at 101 Mulford Road, Toledo, Washington (site; Figure 1). This EDR describes specific activities and engineering design requirements for implementing the remedial action for petroleum hydrocarbons in soil and groundwater at the site. This EDR was prepared to satisfy the requirements of Washington Administrative Code (WAC) 173-340-400(4)(a) and Agreed Order No. DE21413 (AO; Ecology 2024) between Texaco Inc.[2] (Texaco), Exit 59 Food and Fuel LLC, Candid Travel Center Land LLC (collectively, "Property Owner"), and the Washington State Department of Ecology (Ecology), effective May 29, 2024. The 2024 AO replaced previous AO No. DE5236, effective March 1, 2010 (Ecology 2010).

The site is listed on Ecology's Site Information System and Hazardous Sites List as Cowlitz Food and Fuel (also known as Cowlitz BP or Former Texaco Service Station No. 211556), under Cleanup Site ID No. 1166 and Facility Site ID No. 7025.

1.1 Project Description

The remedial action selected in the *Revised Feasibility Study Report* ([FS], Arcadis 2021) is Alternative 4: *Monitored Natural Attenuation (MNA), Institutional Controls, and Future Property-Wide Excavation in Conjunction with Service Station Upgrades or Redevelopment*. Soil confirmation monitoring and pre-excavation baseline groundwater monitoring will be conducted as part of this project. Future soil and groundwater characterization downgradient of the active service station property will be addressed under separate cover and is not a part of this EDR. The remedial excavation and ORC® (or approved equivalent) backfill amendment placement and restoration will be coordinated with the removal of the underground storage tanks (USTs) at the site by the Property Owner. Work activities to be performed by CEMC's contractor and the Property Owner's contractor are summarized below.

1.2 Contractor Scope of Work – CEMC

Work activities to be performed by CEMC's contractor are as follows:

- Prepare this EDR, associated Construction Plans and Specifications, and an Inadvertent Discovery Plan.
- Coordinate with Ecology to obtain approval to implement the remedial action and with Lewis County to address its requirements, if any.
- Coordinate remedial action schedule with the Property Owner, their UST removal contractor, and neighboring restaurant (Mrs. Beesley's Burgers), which will have its drive-thru window remain operational during the work.
- Decommission wells B-3 and B-4 within the footprint of the excavation.
- Obtain Construction Stormwater General Permit (CSWGP) from Ecology for the remedial excavation work.
- Provide an onsite cultural resource monitor who meets the U.S. Department of Interior's guidelines for UST removal by the Property Owner and for the subsequent remedial excavation.
- Mobilize to the site and set up fencing and temporary erosion and sediment control measures. Fencing installed by the UST removal contractor will be removed once that work is complete, and new fencing will be installed for the larger excavation area.
- Conduct 811 utility notification and complete a private utility locate.
- Remove and appropriately dispose of portions of the asphalt pavement within the excavation footprint that are not removed by the UST removal contractor as part of the UST removal work.

[2] CEMC conducts environmental investigations and remedial work on behalf of its affiliates, including Texaco.

- Excavate, load out, and transport soil to an approved and appropriately licensed disposal facility according to this EDR and associated construction plans and specifications. The current anticipated disposal facility is Waste Management, located in Hillsboro, Oregon.
- Collect soil confirmation samples (excavation sidewall and bottom samples) as described in this EDR.
- Add ORC® (or approved equivalent) amendment to the backfill. The amendment will be mixed into the backfill from approximately 9 to 12 feet below ground surface (bgs).
- Reinstall groundwater monitoring wells that were decommissioned prior to remedial excavation.
- Resurface with new asphalt 4-inches thick (two 2-inch layers) over 8-inches crushed surfaced top course.
- Reinstall the sign and power to the light pole and air/water station removed by the UST removal contractor after backfilling is complete, including new electrical conduit and wiring to replace the conduit and wiring removed for the remedial excavation.
- Prepare a completion report for submittal to Ecology.

1.3 Contractor Scope of Work – Property Owner

The following work activities will be performed by the Property Owner's contractor:

- Install temporary fencing as necessary to complete the UST removal.
- Remove concrete and asphalt pavement as required to remove the canopies, dispensers, and USTs.
- Remove the canopies, fuel dispensers, and USTs.
- Remove the Shell sign in the south portion of the site and temporarily store the sign onsite for subsequent replacement by CEMC's contractor after the remedial excavation is complete. Existing electrical cable and conduit specifications, as well as concrete footer specifications are to be documented before removal.
- Dispose of soil and construction debris associated with the canopy, dispenser, and UST removal.
- Collect soil samples at the bottom and sidewalls of the excavation for UST removal, and below the dispensers and product lines as would ordinarily be required for this work (note: CEMC's contractor will collect all other soil and/or groundwater samples associated with the remedial excavation, as described in this EDR).
- Remove plastic fence on north and east sides of the service station building.
- Disconnect air/water station and pole-mounted light next to the air/water station. Existing electrical cable and conduit specifications are to be documented before removal.

Assuming that the remedial excavation is conducted directly after the UST removal, CEMC's contractor will be responsible for all backfill replacement and for resurfacing the entire impacted area with new asphalt.

If the remedial excavation cannot be performed directly after the UST removal work due to scheduling delays, equipment availability, permitting, etc., the UST removal will be deferred until such time that the remedial excavation can be performed in coordination with the Property Owner and subject to Ecology approval.

1.4 Regulatory Framework

The selected remedial actions described in the DCAP (Arcadis 2023b) will be performed in accordance with Washington's hazardous waste cleanup law, the Model Toxics Control Act (MTCA; Chapter 70.105D Revised Code of Washington [RCW]), and its implementing cleanup regulations (Chapter 173-340 WAC); and will be consistent with the requirements in the AO (Ecology 2024). All actions associated with the remedial actions will be performed in accordance with all applicable federal, state, and local requirements. AECOM is currently working with Lewis County to obtain a fill and grade permit and right-of-way permit for the work.

1.5 Who Will Own, Operate, and Maintain the Remedy

CEMC will perform the work identified in this EDR, excluding that work specified in Section 1.3 (Contractor Scope of Work – Property Owner), on behalf of its affiliate Texaco. However, the subject potentially liable parties (PLPs), remain strictly, jointly, and severally liable for the performance of any and all obligations under the AO (Ecology 2024).

1.6 Remedial Action Contacts and Information

AECOM, CEMC's consultant, will be the Engineer of Record for the remedial design for implementing the remedy in accordance with this EDR and the attached construction plans and specifications once approved by Ecology. Site and project contact information are summarized below.

Ecology Site Manager:	Steve Teel, LHG
	Toxics Cleanup Program
	Southwest Regional Office
	P.O. Box 47775
	Olympia, WA 98504
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1.7 Purpose of the Engineering Design Report

The purpose of this EDR is to satisfy the requirements of WAC 173-340-400(4)(a) and the requirements established under the AO (Ecology 2024). This EDR documents engineering concepts and criteria used during the design of the remedial action and provides sufficient information to develop and review construction plans and specifications. Specific information required by WAC 173-340-400(4)(a) and included in this EDR is presented in Table 1.

The final plans and specifications for the remedial excavation and ORC® (or approved equivalent) placement are provided in Appendix A. The final plans and specifications have been stamped by a Professional Engineer and issued for construction.

2. Background

This section summarizes general information about the site, the current and historical site uses, and previous investigations completed at the site, per WAC 173-340-400(4)(a)(ii). This section was included in the DCAP (Arcadis 2023b) and is repeated in this EDR, with minor edits, for completeness.

2.1 Site Description

The site is located east of Interstate 5, off the Vader-Ryderwood exit, near the intersection of Cowlitz Ridge Road and Mulford Road, in Lewis County, Washington (Figure 1). The site comprises three land parcels (Figure 2). An operating Shell gasoline service station with mini-mart and a restaurant (Mrs. Beesley's Burgers) are located on the two parcels north of Mulford Road (Lewis County Assessor Parcel Numbers [APNs] 012429003001 and 012429004000, currently owned by Candid Travel Center Land LLC). This portion of the site has been referred to as the "active station" in previous reports. The third parcel (APN 012429005001, currently owned by Mr. Charles Vineyard), which is located south of Mulford Road, was formerly the location of another gasoline service station (referred to as the "inactive station"). The inactive station portion of the site was generally vacant from approximately 1994 to 2016. A drive-thru food and espresso stand (Good Stuff) has been operating on this portion of the site since approximately 2016. This property is also occupied by Genesis Buildings, a business that sells storage sheds.

The presence of petroleum contamination was previously confirmed at both the active and inactive portions of the site. The two locations were combined into the site (as defined in this EDR) by Ecology, in part due to their previously common property ownership. The remedial excavation described in this EDR is located entirely on the parcel north of Mulford Road (APN 012429003001).

2.2 Site History

The properties comprising the site were originally purchased by Mr. Frank Vineyard (deceased) as a single tax lot, which was originally used for farming. In 1955, the original lot was subdivided and several of the subdivided lots were leased.

2.2.1 Active Station Operating History

The active station property was initially leased to a predecessor of Texaco in 1955. Texaco constructed a service station building and installed the original USTs and piping. A leak in a product delivery line was repaired by Texaco in April 1977. It is estimated that this leak resulted in a loss of approximately 2,296 gallons of gasoline.

The ownership interests in the improvements passed to Olson Brothers Garage, Inc. in 1980 and then to West Coast Oil Company in 1985. Ron and Sheri Smith purchased the active station property improvements from West Coast Oil in 1986. In March 1990, four USTs and associated piping were removed and replaced with new fiberglass tanks and piping. During this process, petroleum-contaminated soil was discovered and reported to Ecology.

In 2004, the active station improvements were sold to Tri-Tex Oil Company, located in Castle Rock, Washington.

The active station property and improvements were sold to the Property Owner in or around 2020.

2.2.2 Inactive Station Operating History

The inactive station property was originally leased to General Petroleum Corporation in May 1955. In 1978, the property was leased by Olson Brothers Garage, Inc. and was occupied until 1984 by a Mobil service station and a small restaurant. After 1984, the station ceased operation and the aboveground infrastructure was subsequently demolished. In 1994, this property was used as a sales lot for manufactured homes (SAIC 2012b) The property was vacant from the mid-1990s to approximately 2016 A drive-thru food and espresso stand (Good Stuff) has operated on this property since approximately 2016. This area is also being used for the sale of portable sheds. The remedial excavation described in this EDR will be located entirely on the active station property to the north of Mulford Road.

2.2.3 Site Regulatory History and Environmental Investigations

A chronological summary of regulatory developments, environmental investigations, and interim actions at the site is provided below. The chronology is divided into periods that the various environmental consultants worked at the site. Date ranges are approximate.

2.2.3.1 1990 through 1993 (Kaldveer Associates, Cowlitz Clean Sweep)

The presence of petroleum contamination at the site was documented during UST upgrades performed at the active station in March 1990. Soil samples collected during this time contained GRO concentrations up to 6,300 milligrams per kilogram (mg/kg). Approximately 1,000 cubic yards of petroleum-contaminated soil were excavated from the UST basin and treated onsite via aeration (Cowlitz Clean Sweep 1990).

During February 1991, four groundwater monitoring wells (B-1, B-2, B-3, and B-4) were installed at the active station. Soil samples collected from the borings did not contain petroleum constituents at concentrations exceeding MTCA Method A cleanup levels (CULs); however, groundwater samples from the wells did contain GRO and benzene, toluene, ethylbenzene, and toluene (BTEX) at concentrations exceeding MTCA Method A CULs (SECOR International Incorporated [SECOR] 1999).

In April 1991, Ecology issued Enforcement Order No. DE 91-S123 to Mr. Frank Vineyard. The Enforcement Order required that a remedial investigation (RI) and FS be performed for both the active and inactive station properties, and that the USTs at the inactive station property be removed as part of the RI/FS work activities.

Removal of the inactive station USTs was performed in January 1992 (SAIC 2012b). Two 6,000-gallon gasoline USTs and one 300-gallon used-oil UST were removed. Soil samples collected during the tank removal activities indicated the presence of GRO and diesel-range organics (DRO) at concentrations exceeding MTCA Method A CULs. Approximately 300 cubic yards of petroleum-contaminated soil were removed from the UST excavation and stockpiled on the property.

RI field activities were performed at the site in February and March 1992. Five soil borings were advanced, and nine groundwater monitoring wells (MW-101 through MW-109) were installed to assess the extent of soil impacts at the active station and groundwater impacts throughout the site. None of the soil samples contained petroleum constituents at concentrations exceeding MTCA Method A CULs; however, groundwater samples indicated the presence of GRO and BTEX near both the active and inactive station portions of the site (SECOR 1999).

The original RI/FS Report (Kaldveer Associates Geoscience Consultants 1993) was prepared in 1993 and a Draft Cleanup Action Plan (1994 DCAP) was prepared and released for public comment in May 1994. The selected cleanup alternative identified in the 1994 DCAP consisted of excavating remaining contaminated soil for treatment onsite using bioremediation, followed by groundwater remediation by a pump and treat system that would reinject treated groundwater through two infiltration trenches. However, this cleanup action was never implemented due to alleged unauthorized actions on the inactive station property and a request by Mr. Vineyard that additional PLPs be named by Ecology.

2.2.3.2 1994 through 2003 (SECOR)

In October 1994, a Texaco affiliate and Ron and Sheri Smith were named as PLPs. At the request of the PLPs, Ecology allowed additional RI activities to be performed, and a re-evaluation of the selected cleanup approach presented in the 1994 CAP. This work was performed pursuant to AO Nos. DES361, DES362, and DES368 (Ecology 1995a, 1995b, 1995c), which were issued by Ecology in May 1995.

In August 1995, a supplemental investigation was performed by SECOR to further assess the extent of petroleum impacts at the site. The supplemental investigation included the collection of 21 groundwater grab samples, installation of 10 additional groundwater monitoring wells (MW-110 through MW-119), and subsequent monitoring and sampling of all newly installed and existing wells. The conclusions of the supplemental investigation were that the groundwater plume was not as extensive as previously believed, and that groundwater impacts were primarily confined to the areas around the former UST basins at the active and inactive station locations. Furthermore, the groundwater plume did not appear to be migrating or increasing in size (SECOR 1995).

Following completion of the supplemental investigation, additional investigation was performed to assist in the evaluation of a new cleanup approach for the site. This included vapor extraction pilot testing, which was performed in August 1996 (SECOR 1996) and intrinsic bioremediation sampling, which was part of the 1996 groundwater

monitoring and sampling program at the site (SECOR 1997). Results of the vapor extraction pilot testing indicated relatively low volatile hydrocarbon removal rates (8 to 18 pounds per day at startup) and suggested additional pilot testing to facilitate design of a full-scale remediation system. Results of the intrinsic bioremediation sampling suggested that intrinsic biodegradation of petroleum hydrocarbons appeared to be occurring at the site, and that the groundwater contaminant plume appeared to be in a relatively steady state, where hydrocarbons provided by the source dispersed and coalesced into a plume that was then degraded.

In August 1999, an updated Corrective Action Plan (1999 CAP; SECOR 1999) was submitted for the site. The 1999 CAP identified enhanced in-situ biodegradation as the selected cleanup remedy for petroleum-contaminated soil and groundwater at the site (SECOR 1999). In May 2001, Ecology issued AO Nos. DE00TCPSR-297, DE00TCPSR-298, and DE00TCPSR-299 (Ecology 2001a, 2001b, 2001c) to implement the 1999 CAP.

In June 2001, a Cleanup Work Plan (SECOR 2001) for the site was submitted, which included introducing oxygen to groundwater by placing ORC® into soil borings, installing a product recovery canister into monitoring well MW-111, and continuing groundwater monitoring. Soil boring installation for ORC® placement was performed in July 2001. Although 50 borings were originally proposed, only 37 borings were completed due to difficult drilling conditions (SAIC 2012b). The ORC® borings were generally placed near or immediately upgradient of monitoring wells B-3, B-4, MW-101, MW-110, MW-111, and MW-115.

2.2.3.3 2004 through 2009 (SAIC)

In May 2004, SAIC submitted the ORC® Evaluation Report and Groundwater Monitoring (SAIC 2004a) summarizing an evaluation of groundwater data that was performed to assess the effectiveness of the 2001 ORC® application. The evaluation concluded that water-quality improvements had begun prior to the ORC® application, and that the ORC® application did not appear to have been effective, except perhaps very locally. The ORC® Evaluation Report and Groundwater Monitoring further indicated that other remedial strategies were being considered to aid in further reductions of hydrocarbon concentrations at the site

In November and December 2004, an additional investigation was performed to further delineate the extent of soil impacts at the site. One soil boring (SB-1) was completed at the inactive station near MW-101, and seven soil borings (SB-2 through SB-8) were completed at the active station near MW-111. On the inactive station property, SB-1 was installed to collect additional soil data within the area of the former UST basin. On the active station property, borings SB-2 though SB-8 were completed to develop a greater understanding of the soil contaminant distribution near MW-111, which routinely contained petroleum light nonaqueous phase liquid (LNAPL) at that time. Results of this investigation suggested that impacts from the active station did not appear to have migrated onto the inactive station portion of the site (SAIC 2004b).

In December 2004, SAIC submitted a letter report (Identification of Possible Remedial Actions and Summary of Recent Soil Sampling; SAIC 2004b), which presented preliminary results of the November and December 2004 soil sampling activities and discussed possible remedial alternatives to achieve the cleanup objectives for the site. SAIC (2004b) concluded that excavation followed by natural attenuation would have the highest likelihood of success and provide the shortest remedial timeframe. SAIC (2004b) further specified that a new CAP would be completed for the site.

In 2006, at the request of Ecology, a revised Draft Cleanup Action Plan (2006 DCAP; SAIC 2006) was prepared for the site and submitted to Ecology for review. The 2006 DCAP identified the following cleanup actions, which were selected by Ecology and CEMC, for the site:

- *Active station*. Institutional controls and surface paving for containment of contaminated soil, MNA of soil and groundwater, and long-term monitoring.
- *Inactive station*. Excavation, MNA of groundwater, and long-term monitoring.

Comments on the 2006 DCAP (SAIC 2006) were provided by Ecology in a letter dated November 2, 2006 (Ecology 2006). Among the comments, Ecology indicated that an alternative evaluation for the active station property would not be complete without considering two additional options:

1. Complete excavation of contaminated soil
2. Hot-spot excavation and removal.

However, the 2006 DCAP (SAIC 2006) was never finalized because on December 29, 2006, Ecology provided notice to SAIC and the PLPs that preparation of the final Corrective Action Plan should be delayed until a new AO could be prepared for the site.

AO No. DE5236 (Ecology 2010) became effective on March 1, 2010, and fully superseded and replaced AO Nos. DE00TCPSR-297, DE00TCPSR-298, and DE00TCPSR-299 (Ecology, 2010a, 2010b, 2010c). AO No. DE5236 required that the PLPs perform the following:

1. Prepare a new FS for the site
2. Continue performing groundwater monitoring at the site
3. Prepare a DCAP according to the requirements of WAC-173-340-380
4. Prepare an Interim Action Work Plan and conduct an interim action consisting of the removal of residual contaminated soil associated with the former diesel UST at the active station and the USTs at the inactive station.

SAIC submitted an Interim Remedial Action Work Plan (IRA Work Plan; SAIC 2010) for the site, which was approved by Ecology on August 17, 2010. In accordance with the approved IRA Work Plan, SAIC completed the proposed active station diesel UST excavation (Excavation 1) and inactive station excavation (Excavation 2) in October 2010. Confirmation soil sample results indicated that each of the excavations were successful in removing soils containing petroleum contaminants at concentrations greater than CULs in the vadose zone; however, excavation bottom samples indicated that petroleum contamination greater than CULs remained in the saturated zone at the base of each excavation. Approximately 700 pounds of ORC® were placed in the bottom of Excavation 1, and approximately 1,300 pounds of ORC® were placed in the bottom of Excavation 2, to enhance natural attenuation of the inaccessible petroleum contamination that was left in place. Additional details regarding implementation of the interim action were presented in the Final – Interim Remedial Action Report (SAIC 2011a), dated April 14, 2011.

SAIC submitted a Draft Feasibility Study (SAIC 2011b) to Ecology on February 8, 2011. The Draft FS identified MNA as the proposed cleanup action for the site. Ecology provided comments on the Draft FS in a letter dated April 15, 2011 (Ecology 2011), which requested additional details regarding the alternatives proposed and a re-evaluation of the scoring used to rank the alternatives. Ecology also disagreed with the conclusions presented in the Draft FS regarding the elimination of a soil and/or groundwater to vapor exposure pathway.

In response to Ecology's comments on the Draft FS (Ecology 2011; SAIC 2011b), SAIC prepared a work plan (SAIC 2011c) to perform supplemental assessment at the site, which was approved by Ecology on September 7, 2011. Field activities were performed in October 2011, which included installation of four shallow soil-vapor sampling probes (SVSP-1 through SVSP-4), and installation and sampling of one new monitoring well (MW-120). The soil vapor sampling probes were installed on the active station portion of the site to evaluate the potential of a vapor intrusion risk to the service station building and/or Mrs. Beesley's Burgers. Monitoring well MW-120 was installed on the inactive station property to replace MW-101, to evaluate groundwater conditions near Excavation 2. Soil vapor samples were collected from the probes in December 2011. Results of the soil vapor sampling indicated that benzene was present at one of the four sample locations (SVSP-2) at a concentration exceeding Ecology's then-current draft soil-gas screening level. Subsequent modelling of the sampling results predicted that current conditions at the site would not result in indoor air conditions that would create an unacceptable health risk based on an adult worker exposure scenario, but that further vapor intrusion assessment may be warranted if site use changed in the future.

Soil sample results from installation of monitoring well MW-120, and subsequent groundwater sample results from this well, did not detect the presence of petroleum contamination at this location. Additional details regarding these assessment activities were presented in the Draft – Supplemental Site Assessment Summary Report (SSA Report; SAIC 2012a), which was approved by Ecology in a letter dated September 4, 2012.

Following submittal of the SSA Report, SAIC prepared a revised Feasibility Study Report (2012 FS Report; SAIC 2012b), which was submitted to Ecology on October 31, 2012. The 2012 FS Report identified Alternative 2 (partial excavation, MNA, and institutional controls) or Alternative 4 (MNA, institutional controls, and future property-wide excavation in conjunction with service station upgrades or redevelopment) as the preferred cleanup action for the site. Ecology provided comments on the 2012 FS Report in a letter dated February 25, 2013 (Ecology 2013a). Based

on their evaluation of the cleanup alternatives presented, Ecology identified Alternative 3 (partial excavation, air sparge/soil vapor extraction, MNA, and institutional controls) as the preferred remedial alternative.

In response to Ecology's comments on the 2012 FS Report (Ecology 2013a; SAIC 2012b), CEMC requested a meeting with Ecology to further discuss the evaluation of cleanup alternatives. Representatives from Ecology, CEMC, and SAIC met to discuss a path forward strategy for the site on May 22, 2013. The CEMC/SAIC project team suggested that the costs of Alternative 3 were disproportionate to the benefit offered, and that this aggressive remedial action was not warranted due to the limited extent of contamination remaining at the site and the low risk for exposure to human or ecological receptors. Ecology indicated that insufficient data were available to confirm CEMC's position regarding the site but agreed to delay completion of the FS to conduct further assessment of the site, specifically collection of current soil sample data and performance of an assessment to evaluate natural attenuation processes presumed to be occurring in groundwater.

On July 30, 2013, SAIC submitted the Soil Sampling and Natural Attenuation Assessment Work Plan (Work Plan; SAIC 2013) to complete soil sampling and natural attenuation assessment activities at the site. The objectives of the assessment were to evaluate current petroleum hydrocarbon concentrations in soil on the active station portion of the site and underlying the 2010 interim remedial action excavation areas, and to evaluate natural attenuation processes in groundwater that were believed to be responsible for ongoing reductions in dissolved-phase petroleum contamination on the active station property. Following receipt of Ecology's comments on the Work Plan, provided in a letter dated August 21, 2013, SAIC submitted a final Work Plan on September 25, 2013. The Work Plan was conditionally approved by Ecology in a letter dated October 2, 2013 (Ecology 2013b).

Field activities associated with the soil sampling portion of the Work Plan were completed by Leidos in November 2013, and the results were presented in the Soil Sampling Assessment Summary Report (Leidos 2014), dated March 28, 2014. Based on the results of the soil sampling assessment, Leidos concluded that the lateral and vertical extents of impacted soil at the site may be decreasing in response to ongoing natural attenuation. However, results of the soil sampling activities also confirmed the presence of shallow soil contamination at the site that was not consistent with a UST release. Based on these data, as well as observations of petroleum sheens in rainwater at the site, Leidos concluded that shallow soil contamination at the site was likely the result of past and ongoing surface releases that have occurred in association with operation of the active service station. In the areas of the former 2010 interim remedial action excavations, confirmation soil sampling results found evidence of GRO at concentrations greater than MTCA Method A CULs in both samples collected at 10.5 feet bgs in Excavation 1. GRO was also detected in the sample collected at 10 feet bgs from the area of Excavation 2; however, at a concentration less than the Method A CUL.

2.2.3.4 2015 through 2019 (Leidos)

On October 29, 2015, Leidos submitted the Natural Attenuation Assessment for Groundwater (NAA Groundwater Report; Leidos 2015) to Ecology presenting the results of natural attenuation assessment activities for groundwater performed for the site. The NAA Groundwater Report included an evaluation of all available historical groundwater sampling results for the site, as well as an evaluation of geochemical indicator data collected from 11 monitoring wells during quarterly sampling performed from September 2013 through August 2015. Based on this evaluation, Leidos concluded that conditions at the site were appropriate to consider use of natural attenuation as a cleanup alternative for petroleum-contaminated groundwater at the site, and that due to a lack of complete exposure pathways from impacted groundwater to human or ecological receptors, there would be little if any benefit realized from a more active cleanup strategy. However, the conclusions drawn by the natural attenuation assessment assumed that land use at the site would remain unchanged during the estimated restoration timeframe presented in the NAA Groundwater Report (approximately 33 years). Leidos further stated that future land use changes at the site would have the potential to create complete exposure pathways or opportunities for cost-effective remedial actions that could be implemented during property redevelopment or service station upgrades.

Ecology accepted the NAA Groundwater Report (Leidos 2015) as the Draft Final version (pending eventual public comment) in a letter dated March 1, 2017. The letter also stated that by accepting the NAA Groundwater Report, Ecology was concluding completion of the additional assessment work by CEMC in June 2013. Therefore, preparation and submittal of a Revised Draft Feasibility Study Report by CEMC to Ecology was the next step required under the terms of the AO (Ecology 2010) for the site.

On April 28, 2017, Leidos submitted the Revised Agency Review Draft Feasibility Study Report (Agency Review FS Report; Leidos 2017) for Ecology's review. The Agency Review FS Report included an evaluation of available

historical groundwater sampling results collected from the 11 monitoring wells during quarterly sampling performed from September 2013 through August 2015, as well as additional assessment work performed during this period. Based on the evaluation, Leidos concluded that conditions at the site were appropriate to consider use of natural attenuation as a cleanup alternative for petroleum-contaminated groundwater (Leidos 2017).

2.2.3.5 2019 through 2024 (Arcadis)

On April 3, 2019, Ecology, CEMC, Arcadis, Leidos, and the property owner at that time (Mr. Charles Vineyard) met to discuss the current site status and the path forward. As discussed during this meeting, routine semi-annual groundwater monitoring and sampling activities were continued as planned. The active station property and improvements were sold to the Property Owner in 2020.

On August 20, 2020, Ecology provided comments on the draft FS (Leidos 2017). A revised draft FS was submitted on November 16, 2020, and following Ecology comments the Revised Feasibility Study Report (Revised FS Report; Arcadis 2021) was submitted on September 2, 2021. Ecology approved the Revised FS Report and the selection of Alternative 4, which includes excavation in conjunction with station upgrade work, institutional controls, and MNA. In a letter dated November 18, 2021 (Ecology 2021), Ecology accepted the Revised FS Report as the public review draft version and requested a DCAP within 30 days. The initial DCAP was submitted to Ecology on December 17, 2021 and following Ecology comments, a public review version was submitted on December 28, 2023. Ecology held a public comment period from March 28 to April 29, 2024 for the draft AO DE 21413, the Revised FS Report, and the DCAP. Ecology issued the updated AO (AO DE 21413, Ecology 2024) to implement the CAP at the site, effective May 29, 2024.

During the November 2022 groundwater monitoring event, LNAPL was observed in B-4, and concentrations of GRO and BTEX significantly increased to levels above proposed cleanup standards in MW-111 and B-3. Subsequent forensic hydrocarbon analysis indicated the increase was from a new release of premium grade gasoline (Arcadis 2023a). Since November 2022, LNAPL has been observed in B-4, MW-110, and MW-111 (Arcadis 2024a).

2.3 Physical Site Characteristics

2.3.1 Topography, Climate, Seismic, and Critical Area Designations

The site is generally flat and located at an elevation of approximately 100 feet above sea level. Average temperatures in Toledo, Washington range from an average high of approximately 80 degrees Fahrenheit (°F) in August to an average low of approximately 33°F in January (U.S. Climate Data 2024). Average precipitation ranges from approximately 0.75 inch in July to approximately 6.65 inches in December. Climate statistics obtained from internet sources for Toledo, WA are presented in Table 2-1, below.

Table 2-1. Climate Data for Toledo, Washington

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °F	62	72	80	89	93	97	102	104	100	96	71	62	104
Mean daily maximum (°F)	45.3	50.8	55.5	60.4	67	72.4	78	78.8	74.1	62.9	51.1	44.9	61.8
Mean daily minimum (°F)	33.2	34.1	36.3	39	43.7	48.2	50.4	50	47	41.1	37.7	34.2	41.2
Record low (°F)	0	3	12	23	26	31	21	21	25	16	3	-2	-2
Average precipitation (inches)	6.93	5.04	4.8	3.16	2.29	2	0.74	1.43	2.31	3.73	6.33	6.91	45.7
Average snowfall (inches)	1.9	0.4	0.8	0	0	0	0	0	0	0	0.5	0.8	4.4
Average precipitation days	20	17	19	15	12	10	5	7	10	14	19	21	169

Note:
1. Source: Western Regional Climate Center, Toledo, WA (458500). Retrieved November 15, 2015.

According to Lewis County, Washington information, the site is not located within a FEMA 100-year or 500-year floodplain and is not located within a volcanic hazard area (e.g., lahars). Lewis County records indicate that the site is

within an area of liquefaction susceptibility, as well as a critical recharge area (Lewis County, 2024). The site is located within a Seismic Design Category D2 pursuant to Washington State Department of Natural Resource information (DNR, 2007).

2.3.2 Site Geology

Geologic interpretations of the site vicinity developed by the U.S. Geological Survey (USGS) indicate that Quaternary alluvial deposits of silt, sand, and gravel associated with the Cowlitz River are characteristic of the area. The alluvial deposits are bounded by outwash deposits of sand and gravel interbedded with silt and clay associated with the Fraser glaciation of the Cascade Mountains. Shallow groundwater within these deposits generally discharges into the Cowlitz River (SECOR 1999).

Data collected during site investigation and interim actions has been consistent with the USGS interpretation of the regional geology. Generally, the site exhibits the characteristics of gravelly alluvial material with interbedded layers of sand and silt. Site data collected during drilling activities, and during the interim action excavations, indicated that the site is underlain by sandy gravel and gravelly sand with cobbles, with varying percentages of silt. This upper stratum varies in thickness from approximately 10 feet to at least 18.5 feet and serves as a shallow aquifer near the site. A clay layer of undetermined thickness has been identified beneath the sand and gravels in many of the soil borings completed at the site, and it is believed to act as a confining bed to the overlying shallow aquifer.

2.3.3 Site Hydrogeology

Depth to water measurements collected at the site indicate the water table is approximately 7 to 8 feet bgs, with an approximate 2-foot seasonal fluctuation across the site.

Groundwater has been observed to flow in the southeast direction, toward the Cowlitz River. A river terrace, 15 feet lower than the site elevation, is located approximately 500 feet southeast of the site. Shallow groundwater has been observed discharging through springs and seeps along the bank above this terrace. A groundwater potentiometric map, based on groundwater elevation data collected during the May 2024 groundwater monitoring event, is shown on Figure 3.

2.4 Nature and Extent of Contamination

The nature and extent of contamination at the site and areas requiring cleanup as required in WAC 173-340-400(4)(a)(v) are discussed below. The currently known soil impacts at the site are shown on Figure 4. The most recent (May 2024) extent of groundwater impacts and LNAPL is shown on Figure 5.

Existing hydrocarbon impacts at the site can be attributed to two discrete source areas. On the active station portion of the site, soil and groundwater impacts have resulted from known releases from the gasoline USTs and ancillary piping and fuel distribution systems located in the southern portion of that area of the site. An additional source area is also associated with the former location of a diesel fuel UST that was located east of the active station. The former diesel fuel UST source area was the focus of Excavation 1, which was performed as part of the 2010 interim action at the site (Figure 4).

Formerly, a third discrete source area for petroleum hydrocarbon contamination in soil and groundwater was present near the former UST basin on the inactive station portion of the site. This source area was the focus of Excavation 2, which was also performed as part of the 2010 interim remedial action. Confirmation soil sample results from the 2010 interim remedial action, November 2013 soil sampling assessment, and groundwater sample results for monitoring well MW-120 indicate that petroleum hydrocarbon impacts are no longer present in this area at concentrations greater than MTCA Method A CULs.

2.4.1 Contaminants of Concern

The MTCA defines a contaminant as “any hazardous substance that does not occur naturally or occurs at greater than natural background levels.” Contaminants of concern (COCs) include those hazardous substances that are known to be present at a site, or which are suspected to be present based on information regarding the nature of a known release or past operations at a site. Sample data from previous environmental investigations and interim remedial actions have confirmed the presence of the COCs listed in Table 2-2, below, at the site.

Table 2-2. Contaminants of Concern for Cleanup Action

Contaminants of Concern	Soil	Groundwater
GRO	X	X
DRO	X	X
HRO	X	X
Benzene	X	X
Toluene	X	X
Ethylbenzene	X	X
Xylenes (total)	X	X
Lead	X	X

In the DCAP, cPAHs were identified as a COC in soil, but not in groundwater. A total of 48 soil samples were analyzed for cPAHs at the site and all samples were below the CUL of 0.1 mg/kg for benzo(a)pyrene total toxicity using Toxicity Equivalency Factors provided in Table 708-2 of WAC 173-340-900 (Table 2). The average benzo(a)pyrene total toxicity for all 48 samples was 0.003 mg/kg which is well below the CUL, and the highest benzo(a)pyrene total toxicity value was 0.017 mg/kg, also below the CUL. Based on these data, cPAHs are not considered a COC for the purpose of this cleanup action and no soil samples are proposed to be analyzed for cPAHs as part of excavation soil confirmation testing.

2.4.2 Soil

In the southern portion of the active station area, GRO and BTEX have been detected in soil at concentrations greater than MTCA Method A CULs. Soil impacts in this area have generally been found at depths of 2 to 15 feet bgs and are most predominant at and several feet below the groundwater table (e.g., approximately 6 to 11 feet bgs). Horizontal delineation of the extent of soil impacts in this area has been somewhat limited by the active station infrastructure (i.e., USTs, pump islands, and piping) and the proximity of this area to Mulford and Cowlitz Ridge Roads. However, soil data from borings installed adjacent to Mulford Road (i.e., SB-18, SB-20, and SB-21) indicate that soil impacts likely extend beneath the roadway.

In the eastern portion of the active station area, soil contamination related to the former diesel UST that was in this area was partially addressed by the interim remedial action excavation performed in October 2010. Within the vadose zone, soil impacts greater than CULs were removed by excavation (COCs in all sidewall samples were non-detect or less than MTCA Method A CULs). However, samples collected in 2013 from boring locations within the boundary of Excavation 1 (SB-12 and SB-13) contained GRO at concentrations greater than the CUL.

On the inactive station portion of the site, previous soil impacts related to the former service station UST basin appear to have been addressed by the interim remedial action excavation that was performed in this area in October 2010. Results for soil samples collected in 2013 from soil boring SB-11 were below the applicable CULs for all COCs at the site. Historical soil analytical data are presented in Table 2. Figure 4 shows the approximate areal extent of petroleum-contaminated soil that is believed to be remaining at the site, and the relevant data used for horizontal delineation. Cross-sections showing the estimated vertical and horizontal extents of petroleum-contaminated soil on the active station property are shown on Figures 6 and 7.

Based on these data, a rough (i.e., order of magnitude) approximation of the amount of petroleum-contaminated soil remaining in the southern portion of the active station property was developed by assuming that within the estimated area of contaminant impact (approximately 13,500 square feet), contaminated soil would be present from 5 to 15 feet bgs. The resulting volume of petroleum-contaminated soil is estimated to be approximately 5,000 cubic yards.

2.4.3 Groundwater

Groundwater monitoring has been conducted semi-annually since 2018. The groundwater flow direction has continued to be primarily toward the southeast. Historical groundwater monitoring data from 1991 through 2023 are presented in Table 3.

Concentrations of GRO and BTEX significantly increased to levels greater than CULs in both wells beginning in November 2022 and LNAPL appeared in B-4 in January 2023 (Arcadis 2023a). Detailed hydrocarbon analysis

indicated that the increase was from a new release of premium-grade gasoline. Since November 2022, LNAPL has been observed in B-4, MW-110, and MW-111 (Arcadis 2024a).

Prior to the new release identified in January 2023, long-term groundwater sample results indicated that groundwater conditions throughout much of the site were within drinking water quality standards (Leidos 2015). Remaining dissolved-phase petroleum impacts exceeding CULs were limited to a small area of the site located immediately downgradient of the active station UST basin and pump islands, which includes the areas of monitoring wells B-3, B-4, and MW-111 (see Figure 2). Within this area, results of the natural attenuation assessment indicated that the dissolved-phase plume was shrinking, likely because of microbial degradation that is occurring in this residual secondary source area.

In monitoring wells B-3, B-4, and MW-111, GRO and DRO have been detected at concentrations greater than the CULs, and HRO is occasionally detected at concentrations greater than the CUL. Benzene was below the CUL in B-3 from 2012 to May 2022 and in B-4 from 2008 to May 2022. In B-2, the concentration of DRO during the May 2021 event exceeded the CUL; DRO had been primarily non-detect in this well for the previous several years. The DRO concentration following silica gel cleanup was significantly less, and was less than the CUL, indicating that the reported DRO was at least partially due to the presence of polar metabolites. DRO in groundwater has been non-detect in B-2 from November 2021 to present (April 2025).

During the most recent monitoring event (April 2025), measurable LNAPL was observed in B-4 (0.11 feet). Since January 2023, LNAPL thicknesses in B-4 have remained relatively stable.

2.4.4 Areas Requiring Cleanup

Areas with COCs greater than CULs require remediation to meet cleanup goals. The area selected for soil removal is provided in Appendix A, Drawing C-1. Other areas of the site where excavation will not be conducted, including areas that cannot be excavated due to sloping or setback requirements, will be addressed through enhanced aerobic biodegradation from ORC® (or approved equivalent) application within the saturated zone of the excavation, and by MNA and institutional controls.

3. Cleanup Requirements

This section discusses objectives of the cleanup action, cleanup standards, and applicable requirements.

3.1 Cleanup Action Objectives

The cleanup action objectives are to meet Ecology's threshold requirements and other requirements for an MTCA-compliant cleanup action pursuant to WAC 173-340-360(2). Specific objectives are as follows:

1. Protect human health and the environment.
2. Comply with cleanup standard (WAC 173-340-700 through 173-340-760).
3. Comply with applicable state and federal laws (WAC 173-340-710).
4. Provide for compliance monitoring (WAC 173-340-410 and 173-340-720).

Additionally, the selected cleanup action approved by Ecology in the DCAP (Arcadis 2023b) meets these other objectives:

1. Uses permanent solutions to the maximum extent practicable (e.g., excavation and offsite disposal).
2. Provides for a reasonable restoration timeframe (e.g., excavation should provide immediate results and ORC® or approved equivalent should accelerate remediation of areas downgradient of the excavation)
3. Consider public concerns. A public notice was provided under the State Environmental Policy Act (SEPA), seeking public comment on the proposed cleanup action remedies; the affected Tribes were also consulted by Ecology.

3.2 Cleanup Standards

The cleanup standards consist of CULs and points of compliance (POCs). The CUL is the level a particular hazardous substance at which it does not threaten human health or the environment. POCs designate the location onsite where the CUL must be met. The cleanup standards for soil and groundwater, as selected in the DCAP (Arcadis 2023b), are identified in Table 3-1, below, per WAC 173-340-400(4)(a)(i).

Table 3-1. Cleanup Standards

Contaminant	Soil: 0 to 6 feet bgs (mg/kg)	Soil: >6 feet bgs (mg/kg)	Groundwater (µg/L)
GRO	30	30	800
DRO	460	2,000	500
HRO	2,000	2,000	500
Benzene	0.03	0.03	5
Toluene	7	7	1,000
Ethylbenzene	6	6	700
Xylenes (all isomers)	9	9	1,000
Lead	220	220	15

Notes:
> = greater than
µg/L = microgram per liter

3.3 Applicable State and Federal Laws

All actions associated with this cleanup action must be performed in accordance with all applicable federal, state, and local requirements, including requirements to obtain necessary permits, except as provided in RCW 70.105D.090, which allows an exemption from the procedural requirements of state and local permits. Federal, state, or local requirements that are applicable and currently known are summarized below.

3.3.1 Federal Requirements

Federal requirements are as follows:

- Resource Conservation and Recovery Act (RCRA)
- Occupational Safety and Health Administration (OSHA; 29 Code of Federal Regulations [CFR] 1910)
- Rules for Transport of Hazardous Waste (49 CRF 107, 49 CFR 171, 40 CFR 263)
- Safe Drinking Water Act, including underground injection control (UIC; e.g., 40 CFR 144, 145, 146, and 147)
- Clean Air Act
- Clean Water Act

3.3.2 State Requirements

State requirements are as follows

- MTCA (WAC 173-340)
- Dangerous Waste Regulations (WAC 173-303)
- State Environmental Policy Act (RCW-43.21C)
- Environmental Checklist (WAC 197-11-960)
- Minimum Standards for Construction and Maintenance of Wells (WAC 173-160)
- State Clean Air Act (RCW 70.94)
- Washington Industrial Safety and Health Act Regulations (WAC 296-62)
- Water Pollution Control Act (RCW 90.48)

- Water Quality Standards for Groundwater of the State of Washington (WAC 173-200)
- UIC (WAC 173-218) and non-endangerment standard (WAC 173-218-080)
- Maximum environmental noise levels (WAC 173-60)
- State Dig Law (RCW 19.122).

3.3.3 Local Requirements

The cleanup action will need to meet the substantive requirements of the following Lewis County standards and best management practices:

- Fill and grade
- Application to Perform Work on County Right-of-Way
- Call Before You Dig
- Stormwater Management Regulations (Chapter 15.45, Lewis County Code)

3.3.4 Permits and Approvals

AECOM is working with Lewis County to satisfy the grading and right-of-way permitting requirements. In addition, the substantive requirements of the above-listed laws and applicable requirements will be met. For example, construction stormwater best management practices will be followed, visual dust monitoring will be performed, and mitigation measures will be employed, if necessary, to ensure no appreciable visible dust leaves the site boundary. A CSWGP pursuant to the AO, Exhibit D and the Cleanup Action Plan, Section 4, is required under the National Pollutant Discharge Elimination System (NPDES). A stormwater pollution prevention plan (SWPPP) has also been prepared for the project following the guidelines of the template provided by Ecology and is included as Appendix B. Additionally, the following agencies will be notified prior to mobilization.

- Lewis County and the City of Toledo Public Works Departments will be contacted a minimum of 3 weeks prior to mobilization to inform them of the remedial excavation work and anticipated schedule.

4. Excavation and Amendment Design, and Plans and Specifications

This section provides information regarding the remedial excavation, soil confirmation sampling, and ORC® (or approved equivalent) amendment placement. Construction plans and specifications are provided in Appendix A. The remedial action will be performed in accordance with a site-specific Health and Safety Plan (HASP). A copy of the HASP is provided in Appendix C. Site workers who may be potentially exposed to site contaminants will be required to comply with OSHA 1910.120 requirements for Hazardous Waste Operations and Emergency Response requirements. Intrusive work (including UST removal and remedial excavation) will be monitored by a cultural resource monitor who meets the U.S. Department of Interior's guidelines. An inadvertent discovery plan (IDP), outlining the procedures to follow in the event of a discovery of cultural resources or human remains, is provided in Appendix D.

4.1.1 Excavation

The approximate limits of the remedial excavation are provided in Appendix A, Drawing C-1. Soil will be excavated to the target depth of approximately 12 feet bgs using conventional excavation equipment. The excavation sidewalls will be sloped at a minimum 1.5 to 1 horizontal distance to vertical rise to comply with sloping and benching requirements for Type C soils pursuant to OSHA 29 CFR1926 Part P. Excavated soil will be temporarily stockpiled in designated areas for inspection by the onsite cultural resource monitor prior to loadout, transportation, and offsite disposal. Stormwater pollution prevention measures are provided in Appendix A, Drawing G-5.

4.1.2 Soil Confirmation Sampling

During excavation, the soil types on the sidewalls and bottom of the excavation will be photographed and mapped. Sidewall samples (three samples per sidewall location) will be collected every 20 feet horizontally along the sidewalls. Sidewall samples will be collected at the following locations at each 20-foot interval: (1) near bottom of sidewall, (2) just above the groundwater table, and (3) approximately halfway between groundwater table and the pre-excavation ground surface. One saturated soil bottom sample will be collected at the bottom of the excavation for every 400 square feet of exposed bottom (i.e., each 20- x 20-foot bottom area should have at least one soil sample). Sample locations may be modified at the discretion of the field team leader based on visual or soil screening results with a photoionization detector (PID). A conceptual soil confirmation sampling plan showing the approximate location and quantity of samples is provided in Appendix A, Drawing C-2. The conceptual sampling plan shows a total of 70 soil confirmation samples (54 sidewall samples from 18 locations) and 16 excavation bottom samples. The actual number and location of samples collected may differ from the conceptual sampling plan based on field conditions.

No personnel will be allowed within the excavation for health and safety reasons. Soil samples will be collected from the excavator bucket. Care will be taken to ensure that the sample from the bucket is not in contact with the sides of the bucket. When collecting sidewall samples, care will be taken to ensure soils form higher up in the excavation do not fall into the bucket where the sample is collected. Soil for bottom samples or other samples collected beneath the water table may need to be stockpiled and allowed to drain before sample collection.

All soil samples collected will be packaged and shipped to a state-certified laboratory under chain-of-custody protocol for analysis of the following constituents:

- GRO by Northwest Method TPH-Gx
- DRO and HRO by Northwest Method TPH-Dx
- BTEX by United States Environmental Protection Agency (USEPA) Method 8260D
- Total lead by USEPA Method 6020B

As discussed in Section 2.4.1, sampling and analysis for cPAHs is not proposed because all prior cPAH soil analytical results were below the applicable CUL. A Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) are included in Appendix E.

4.1.3 Backfill Amendment Application

Approximately 6,000 pounds of ORC®-Advanced (or approved equivalent) will be applied to the approximately 11,500-square-foot excavation (design mix: 0.15 weight percent of the saturated soil mass removed). The amendment will be mixed in a portable tank and sprayed into the bottom of the excavation as a liquid slurry. The spray application will allow for a more uniform application of the amendment compared to placing it in the excavation with a backhoe bucket, as well as minimize loss of the media by wind. The amendment dosage assumes that removing the contaminated soil will significantly reduce petroleum hydrocarbon concentrations in groundwater (ideally less than 15 milligrams per liter [mg/L]). The goal of the application is to significantly reduce groundwater concentrations and to shrink or eliminate the groundwater plume in this area. The dosage is based on recommendations from the amendment manufacturer and is designed to reduce dissolved-phase petroleum hydrocarbons to non-detect. This assumes that any residual LNAPL is removed from the excavation.

5. Other Cleanup Action Components

The following summarizes the other remedy components associated with the Ecology-approved clean-up action (Ecology 2024).

5.1 Monitored Natural Attenuation

MNA is a component of the cleanup action to address residual COCs after implementation of the remedial excavation and amendment application. Natural attenuation refers to a variety of physical, chemical, and biological processes that, under suitable conditions, act without human intervention to reduce mass, toxicity, mobility, and/or volume of hazardous substances in the environment. These in-situ processes include natural biodegradation, dispersion, dilution by recharge, sorption, and volatilization; and chemical and biological stabilization, transformation, or destruction of hazardous substances (Ecology 2005).

Groundwater sampling and analysis will be conducted prior to conducting the remedial excavation on all site wells, except those containing measurable amounts of LNAPL, to establish baseline conditions. Ten wells will be gauged and/or sampled (B-1, B-2, B-3, B-4, MW-09, MW-110, MW-111, MW-112, MW-113, and MW-114 [Figure 2]).

The samples will be submitted to an Ecology-accredited laboratory under standard chain-of custody protocol and analyzed for the following COCs:

- GRO by Northwest Method TPH-Gx
- DRO and HRO by Northwest Method TPH-Dx
- BTEX by USEPA Method 8260D
- Dissolved lead by USEPA Method 6020B.

Samples with DRO and HRO concentrations greater than 500 µg/L will also be tested using silica gel cleanup (SGC). SGC and non-SGC analytical results will be assessed using Ecology guidance (Ecology 2023). The baseline groundwater samples will also be tested/analyzed for the following inorganic parameters to further assess natural attenuation conditions:

- Dissolved oxygen (DO) using field instrument (flow-through cell and DO probe)
- Oxidation-reduction potential (flow-through cell and field instrument)
- pH (flow-through cell and field instrument)
- Dissolved iron using USEPA Method 6020B
- Dissolved manganese using USEPA Method 6020B
- Nitrate as (N) using USEPA Method 9056A
- Sulfate using USEPA Method 9056A
- Methane, ethane, and ethene using RSK Method 175.

The post-remediation long-term groundwater monitoring plan, including the replacement of wells B-3 and B-4, will be provided to Ecology under separate cover and will be informed by additional off-property characterization downgradient of the site.

5.2 Institutional Controls

Institutional controls will be put in place to limit or prohibit activities that may interfere with the integrity of the remedy or result in potential exposure to hazardous substances. Institutional controls will include an Environmental Covenant prohibiting the extraction of impacted groundwater for purposes other than remediation without Ecology's approval, installing a protective asphalt cover over remaining COC-impacted soil, and restricting future activities and uses of the site as agreed by the Property Owner and Texaco. Procedures and associated paperwork necessary to obtain an Environmental Covenant for implementation following completion of the remedial excavation are provided in Appendix F. The Environmental Covenant will be consistent with WAC 173-340-440, RCW 64.70 (Uniform Environmental

Covenants Act), and any policies or procedures specified by Ecology (e.g., Procedure 440A: Establishing Environmental Covenants under the Model Toxics Control Act). It is currently assumed that Ecology will draft the Environmental Covenant and consult with the local land use planning authority pursuant to Option 1 (Preferred Option) of Toxics Cleanup Program Procedure 440.A. As conditions change (e.g., the footprint of impacted groundwater exceeding applicable CULs decreases or is eliminated), the Environmental Covenant may be amended over time if approved by Ecology.

6. Schedule

The goal is to perform the remedial excavation in late summer 2025. The schedule for implementing the remedial action will be further developed in coordination with the Property Owner, CEMC, and Ecology. The implementation schedule will depend on the timing of Ecology's approval (and concurrence from Lewis County and the City of Toledo), the Property Owner's construction schedule for station upgrades, the timing of the UST removal, and availability of contractors and supplies.

Pending Lewis County approval of the required permits for the station upgrade work, it is currently anticipated that the Property Owner will install the new USTs beginning in late July or early August and that the UST removal will be conducted after the new tanks and fuel islands are installed (not concurrent with installing the new tanks and fuel dispensers). The remedial excavation work may take place while the Property Owner is installing the new USTs unless there are logistical or safety issues that cannot be resolved.

7. References

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Tables

Table 1- Engineering Design Report Requirements
Draft Engineering Design Report
Cowlitz Food and Fuel Site
101 Mulford Road, Toledo, Washington
Agreed Order No. DE21413

WAC 173-340-400 4(a) Requirement	Section
(i) Goals of the cleanup action including specific cleanup or performance requirements;	3.1, 3.2, 3.3
(ii) General information on the facility including a summary of information in the remedial investigation/feasibility study updated as necessary to reflect the current conditions;	2.1, 2.2
(iii) Identification of who will own, operate, and maintain the cleanup action during and following construction;	1.5, 1.6
(iv) Facility maps showing existing site conditions and proposed location of the cleanup action;	Figures 4, 6, and 7. Appendix A.
(v) Characteristics, quantity, and location of materials to be treated or otherwise managed, including groundwater containing hazardous substances;	Table 2 and 3. Figures 4, 5 and 6. Appendix A.
(vi) A schedule for final design and construction;	6.1
(vii) A description and conceptual plan of the actions, treatment units, facilities, and processes required to implement the cleanup action including flow diagrams;	1.1, 1.2, 1.3, 4.1.1, 4.1.2, 4.1.3
(viii) Engineering justification for design and operation parameters, including:	1.1, 4.1.3, Appendix D
(A) Design criteria, assumptions and calculations for all components of the cleanup action;	Appendix A
(B) Expected treatment, destruction, immobilization, or containment efficiencies and documentation on how that degree of effectiveness is determined; and	4
(C) Demonstration that the cleanup action will achieve compliance with cleanup requirements by citing pilot or treatability test data, results from similar operations, or scientific evidence from the literature;	4
(ix) Design features for control of hazardous materials spills and accidental discharges (for example, containment structures, leak detection devices, run-on and runoff controls);	Appendix A
(x) Design features to assure long-term safety of workers and local residences (for example, hazardous substances monitoring devices, pressure valves, bypass systems, safety cutoffs);	NA
(xi) A discussion of methods for management or disposal of any treatment residual and other waste materials containing hazardous substances generated as a result of the cleanup action;	1.2
(xii) Facility specific characteristics that may affect design, construction, or operation of the selected cleanup action, including:	1.1, 1.2, 1.3, Appendix A
(A) Relationship of the proposed cleanup action to existing facility operations;	1.1, 1.2, 1.3
(B) Probability of flooding, probability of seismic activity, temperature extremes, local planning and development issues; and	2.3.1
(C) Soil characteristics and groundwater system characteristics;	2.3.2, 2.3.3, 2.4, Figures 3, 4, and 5
(xiii) A general description of construction testing that will be used to demonstrate adequate quality control;	4.1.2
(xiv) A general description of compliance monitoring that will be performed during and after construction to meet the requirements of WAC 173-340-410;	4.1.2, 5.1.1
(xv) A general description of construction procedures proposed to assure that the safety and health requirements of WAC 173- 340-810 are met;	4.1.1, 4.1.2, 4.1.3, Appendix B
(xvi) Any information not provided in the remedial investigation/feasibility study needed to fulfill the applicable requirements of the State Environmental Policy Act (Chapter 43.21C RCW);	NA
(xvii) Any additional information needed to address the applicable state, federal and local requirements including the substantive requirements for any exempted permits; and property access issues which need to be resolved to implement the cleanup action;	3.3
(xviii) For sites requiring financial assurance and where not already incorporated into the order or decree or other previously submitted document, preliminary cost calculations and financial information describing the basis for the amount and form of financial assurance and, a draft financial assurance document;	NA
(xix) For sites using institutional controls as part of the cleanup action and where not already incorporated into the order or decree or other previously submitted documents, copies of draft restrictive covenants and/or other draft documents establishing these institutional controls; and	5.1.2, Appendix E
(xx) Other information as required by the Washington State Department of Ecology.	NA

Acronyms and Abbreviations:
NA = Not Applicable
RCW = Revised Code of Washington
WAC = Washington Administrative Code

Table 2- Summary of Historical Soil Analytical Data
Draft Engineering Design Report
Cowlitz Food and Fuel Site
101 Mulford Road, Toledo Washington
Agreed Order No. DE21413

AECOM

SAMPLE ID	DEPTH (ft.)	DATE SAMPLED	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-HRO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-Benzene (mg/kg)	Total Xylenes (mg/kg)	Benzo(a) anthracene[1] (mg/kg)	Benzo(a) pyrene[1] (mg/kg)	Benzo(b) fluoranthene[1] (mg/kg)	Benzo(k) fluoranthene[1] (mg/kg)	Chrysene[1] (mg/kg)	Dibenz(a,h) anthracene[1] (mg/kg)	Indeno (1,2,3-cd) pyrene[1] (mg/kg)	Total Toxicity of Benzo(a) pyrene[2] (mg/kg)	Total Lead (mg/kg)
B-201-80	UNK	pre 2004	<1.0	--	--	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	--	--	--	--
B-202-80	UNK	pre 2004	<1.0	--	--	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	--	--	--	--
B-203-65	UNK	pre 2004	<1.0	--	--	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	--	--	--	--
B-204-75	UNK	pre 2004	**55**	--	--	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	--	--	--	--
B-204-125	UNK	pre 2004	14	--	--	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	--	--	--	--
SB-2	8	12/1/2004	<1.0	<3	<10	<0.005	<0.005	<0.005	<0.02	--	--	--	--	--	--	--	--	--
SB-3-4	4	12/1/2004	**260**	62	37	<0.02	<0.02	0.1	0.3	--	--	--	--	--	--	--	--	8.76
SB-3-10	10	12/1/2004	**840**	34	14	**2.4**	0.7	4.9	**9.7**	--	--	--	--	--	--	--	--	5.50
SB-3-13	13	12/1/2004	**200**	--	--	<0.08	<0.1	0.4	0.9	--	--	--	--	--	--	--	--	3.05
SB-4-5	5	12/1/2004	**140**	63	75	**0.03**	<0.02	0.07	<0.2	--	--	--	--	--	--	--	--	21.10
SB-4-9	9	12/1/2004	**2500**	130	<100	**9.1**	2.9	**7.5**	<8	--	--	--	--	--	--	--	--	5.90
SB-4-12	12	12/1/2004	**250**	--	--	<0.2	<0.2	0.6	0.8	--	--	--	--	--	--	--	--	2.93
SB-4-17.5	17.5	12/1/2004	7	<3.0	21	<0.005	<0.005	0.01	<0.02	--	--	--	--	--	--	--	--	8.09
SB-5-8	8	12/2/2004	3.4	--	--	<0.005	<0.005	0.006	<0.02	--	--	--	--	--	--	--	--	4.94
SB-5-13	13	12/2/2004	**170**	3.4	<10	**0.6**	<0.2	0.7	0.8	--	--	--	--	--	--	--	--	4.13
SB-5-15	15	12/2/2004	20	--	--	**0.03**	<0.005	0.1	0.1	--	--	--	--	--	--	--	--	4.89
SB-6-9	9	12/2/2004	**410**	--	--	**2.6**	0.8	3.4	4.5	--	--	--	--	--	--	--	--	6.82
SB-6-11	11	12/2/2004	**810**	--	--	**3.2**	0.8	4.7	6.3	--	--	--	--	--	--	--	--	3.40
SB-7-4	4	12/2/2004	8	<3.0	<10	0.02	<0.005	0.02	<0.02	--	--	--	--	--	--	--	--	4.89
D-120204-1	4	12/2/2004	7.6	<3.0	<10	0.02	<0.02	0.01	<0.02	--	--	--	--	--	--	--	--	4.76
SB-7-7.5	8	12/2/2004	**750**	--	--	**1.1**	<0.4	3.1	3	--	--	--	--	--	--	--	--	5.05
SB-7-12	12	12/2/2004	27	<3.0	<10	0.07	<0.02	0.05	0.1	--	--	--	--	--	--	--	--	2.77
SB-7-15	15	12/2/2004	**130**	--	--	**0.6**	<0.2	0.4	0.7	--	--	--	--	--	--	--	--	3.02
D-120204-2	15	12/2/2004	**210**	--	--	**0.5**	<0.08	0.6	1	--	--	--	--	--	--	--	--	2.45
SB-8-4	4	12/2/2004	6.9	<3.0	<10	<0.005	<0.005	0.008	<0.02	--	--	--	--	--	--	--	--	4.91
SB-8-4 Matrix Spike	4	12/2/2004	3.5	<3.0	<10	<0.005	<0.005	<0.005	<0.02	--	--	--	--	--	--	--	--	7.02
SB-8-4 Matrix Dup	4	12/2/2004	8.9	<3.0	<10	<0.005	<0.005	0.01	0.02	--	--	--	--	--	--	--	--	7.45
SB-8-8	8	12/2/2004	**2500**	130	<20	**6.3**	<4	**6.1**	**11**	--	--	--	--	--	--	--	--	6.52
SB-8-13	13	12/2/2004	11	<3.0	14	**0.1**	0.01	0.01	0.04	--	--	--	--	--	--	--	--	7.87
EX1-10-5	5	10/6/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-11-5	5	10/6/2010	16	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-12-3	3	10/6/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-13-3	3	10/6/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-14-9.5	9.5	10/6/2010	<10	140	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-15-5	5	10/6/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-16-3	3	10/6/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-23-5	5	10/6/2010	22	160	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-24-3	3	10/6/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-25-9.5	9.5	10/6/2010	28	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-26-5	5	10/6/2010	24	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-27-3	5	10/6/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-28-9.5	9.5	10/7/2010	12	<50	<100	<0.02	<0.05	<0.05	<0.15	0.001	<0.00084	0.0016	<0.00084	0.0026	<0.00084	<0.00084	0.001	7.91

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EX1-29-9.5	9.5	10/7/2010	25	<50	<100	<0.02	<0.05	<0.05	<0.15	0.00091	0.0011	0.0017	<0.00081	0.0014	<0.00081	0.00088	0.002	11.4
EX1-31-5	5	10/7/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-32-3	3	10/7/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-35-5	5	10/7/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-36-3	3	10/7/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-37-6	6	10/7/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-38-9	9	10/7/2010	22	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-39-3	3	10/7/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-40-10	10	10/7/2010	20	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-41-5	5	10/7/2010	10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-42-3	3	10/7/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-49-9	9	10/8/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-50-9	9	10/8/2010	19	120	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-52-9.5	9.5	10/8/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-52-9.5 Dup	9.5	10/8/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-53-10	10	10/11/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-53-10 Dup	10	10/11/2010	<10	--	--	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-54-10	10	10/11/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-54-10 Dup	10	10/11/2010	--	<50	<100	--	--	--	<0.15	--	--	--	--	--	--	--	--	--
EX1-56-10	10	10/12/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-56-10 Dup	10	10/12/2010	<10	--	--	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-57-10	10	10/12/2010	26	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-57-10 Dup	10	10/12/2010	--	<50	<100	--	--	--	--	--	--	--	--	--	--	--	--	--
EX1-58-10	10	10/12/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-59-5	5	10/12/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-60-10	10	10/12/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-61-12	12	10/12/2010	**260**	105	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-62-12	12	10/12/2010	**50**	<50	<100	<0.02	<0.05	<0.05	<0.15	0.00089	0.0011	0.0014	0.00089	0.0034	0.00089	0.00089	0.002	9.5
EX1-63-12	12	10/12/2010	**750**	<50	<100	<0.02	<0.05	<0.05	<0.15	0.00074	0.00074	0.00074	0.00074	0.0016	0.00074	0.00074	0.001	6.16
EX1-64-12	12	10/12/2010	**71**	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX1-65-12	12	10/12/2010	**65**	65	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-1-8.5	8.5	10/13/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-2-8.5	8.5	10/14/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-3-5	5	10/14/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-4-3	3	10/14/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-5-8.5	8.5	10/14/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-5-8.5 Dup	8.5	10/14/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-6-5	5	10/14/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-7-3	3	10/14/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-8-8.5	8.5	10/14/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-9-5	5	10/14/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-10-3	3	10/14/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--

Table 2- Summary of Historical Soil Analytical Data
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Cowlitz Food and Fuel Site
101 Mulford Road, Toledo Washington
Agreed Order No. DE21413

AECOM

SAMPLE ID	DEPTH (ft.)	DATE SAMPLED	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-HRO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-Benzene (mg/kg)	Total Xylenes (mg/kg)	Benzo(a) anthracene[1] (mg/kg)	Benzo(a) pyrene[1] (mg/kg)	Benzo(b) fluoranthene[1] (mg/kg)	Benzo(k) fluoranthene[1] (mg/kg)	Chrysene[1] (mg/kg)	Dibenz(a,h) anthracene[1] (mg/kg)	Indeno (1,2,3-cd) pyrene[1] (mg/kg)	Total Toxicity of Benzo(a) pyrene[2] (mg/kg)	Total Lead (mg/kg)
EX2-11-8.5	8.5	10/14/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-12-5	5	10/14/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-13-3	3	10/14/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-13-3 Dup	3	10/14/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-15-3	3	10/18/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-15-3 Dup	3	10/18/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-16-5	5	10/18/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-17-8.5	8.5	10/18/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-18-3	3	10/18/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-19-5	5	10/18/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-20-8.5	8.5	10/18/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-21-3	3	10/18/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-22-5	5	10/18/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-23-3	3	10/18/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-24-5	5	10/18/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-25-8.5	8.5	10/18/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-26-8.5	8.5	10/19/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-27-3	3	10/19/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-28-5	5	10/19/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-29-8.5	8.5	10/19/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-30-3	3	10/19/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-30-3 Dup	3	10/19/2010	--	<50	<100	--	--	--	--	--	--	--	--	--	--	--	--	--
EX2-31-5	5	10/19/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-32-8.5	8.5	10/19/2010	<10	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-33-10.5	10.5	10/20/2010	29	<50	<100	<0.02	0.06	<0.05	0.18	--	--	--	--	--	--	--	--	--
EX2-34-10.5	10.5	10/20/2010	29	<50	<100	<0.02	<0.05	<0.05	0.11	--	--	--	--	--	--	--	--	--
EX2-35-10.5	10.5	10/20/2010	**980**	<50	<100	<0.02	0.08	1.1	4.4	--	--	--	--	--	--	--	--	--
EX2-36-10.5	10.5	10/20/2010	22	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-37-10.5	10.5	10/20/2010	22	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
EX2-37-10.5 Dup	10.5	10/20/2010	27	<50	<100	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--
SB-9-4	4	11/4/2013	5	<3.7	<12	<0.0065	<0.0065	0.0072	<0.019	<0.00082	<0.00082	<0.00082	<0.00082	<0.00041	<0.00082	<0.00082	0.001	8.8
SB-9-9	9	11/8/2013	**2400**	52	<11	**0.56**	4.5	<2.7	5	0.0053	0.002	0.002	0.00082	0.005	<0.00073	<0.00073	0.003	4.63
SB-9-11	11	11/8/2013	<0.9	<3.3	<11	<0.0046	<0.0046	<0.0046	<0.014	<0.00074	<0.00074	<0.00074	<0.00074	<0.00037	<0.00074	<0.00074	0.001	3.4
DUP-3-110813	11	11/8/2013	<0.9	<3.2	<11	<0.0043	0.0051	<0.0043	<0.013	<0.00072	<0.00072	<0.00072	<0.00072	<0.00036	<0.00072	<0.00072	0.001	2.64
SB-10-2	2	11/4/2013	2.5	<3.9	<13	<0.0075	0.013	0.023	0.11	<0.00085	<0.00085	<0.00085	<0.00085	0.0013	<0.00085	<0.00085	0.001	7.57
SB-10-6	6	11/6/2013	**1800**	96	<12	**<0.27**	0.35	1	1.9	0.007	0.0037	0.0036	0.0019	0.008	<0.00082	<0.00082	0.005	10.7
SB-10-9	9	11/7/2013	**5900**	160	<11	**0.65**	4.2	**7.5**	**15**	0.012	0.0046	0.0041	0.0014	0.011	<0.00075	0.0012	0.007	7.13
SB-10-13	13	11/7/2013	<1	<3.3	<11	<0.0048	<0.0048	<0.0048	<0.15	<0.00073	<0.00073	<0.00073	<0.00073	0.0008	<0.00073	<0.00073	0.001	2.53
SB-11-10	10	11/6/2013	19	<3.3	<11	<0.0048	0.0049	0.024	0.046	0.00075	<0.00073	0.0017	0.00097	0.0024	<0.00073	<0.00073	0.001	5.79
SB-11-12.5	12.5	11/6/2013	<1	<3.3	<11	<0.0048	<0.0048	<0.0048	<0.014	<0.00073	<0.00073	<0.00073	<0.00073	<0.00037	<0.00073	<0.00073	0.001	6.79
SB-12-9.5	9.5	11/6/2013	1.5	<3.3	15	<0.0055	<0.0055	<0.0055	<0.016	0.0015	0.0021	0.0032	0.0011	0.0026	<0.00074	0.0011	0.003	6.34
SB-12-10.5	10.5	11/6/2013	**1600**	**2500**	<110	**<0.19**	2.2	<1.5	3.4	<0.0072	<0.0072	<0.0072	<0.0072	0.017	<0.0072	<0.0072	0.011	11

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SAMPLE ID	DEPTH (ft.)	DATE SAMPLED	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-HRO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-Benzene (mg/kg)	Total Xylenes (mg/kg)	Benzo(a) anthracene[1] (mg/kg)	Benzo(a) pyrene[1] (mg/kg)	Benzo(b) fluoranthene[1] (mg/kg)	Benzo(k) fluoranthene[1] (mg/kg)	Chrysene[1] (mg/kg)	Dibenz(a,h) anthracene[1] (mg/kg)	Indeno (1,2,3-cd) pyrene[1] (mg/kg)	Total Toxicity of Benzo(a) pyrene[2] (mg/kg)	Total Lead (mg/kg)
SB-12-12	12	11/6/2013	2.6	<3.3	<11	<0.0046	<0.0046	<0.0046	<0.014	<0.00073	<0.00073	<0.00073	<0.00073	<0.00037	<0.00073	<0.00073	0.001	5.7
SB-12-13.5	13.5	11/6/2013	<1.0	<3.3	<11	<0.0051	0.017	<0.0051	<0.015	<0.00073	<0.00073	<0.00073	<0.00073	<0.00036	<0.00073	<0.00073	0.001	7.21
SB-13-10.5	10.5	11/7/2013	150	82	14	0.085	0.32	0.17	0.88	<0.00074	<0.00074	0.0011	<0.00074	0.0014	<0.00074	<0.00074	0.001	7.34
SB-13-12.5	12.5	11/7/2013	>1.0	<3.4	<11	<0.0052	<0.0052	<0.0052	<0.015	<0.00075	<0.00075	<0.00075	<0.00075	<0.00037	<0.00075	<0.00075	0.001	6.78
SB-14-7	7	11/5/2013	<1.1	<3.5	<12	<0.0056	<0.0056	<0.0056	<0.017	0.0039	0.0055	0.0098	0.0042	0.018	0.0027	0.0017	0.008	8.67
SB-14-9.5	9.5	11/7/2013	**4500**	190	<11	**1.7**	**8.2**	<5.3	**9.7**	0.027	0.012	0.011	0.0037	0.026	0.0011	0.0022	0.017	7.24
DUP-1-110713	9.5	11/7/2013	**2200**	150	<11	**<0.45**	<2.6	1.6	4.2	0.014	0.006	0.0053	0.0021	0.013	<0.00073	0.0012	0.008	6.21
SB-14-12.5	12.5	11/7/2013	28	<3.3	<11	0.013	0.032	0.054	0.059	<0.00074	<0.00074	<0.00074	<0.00074	<0.00037	<0.00074	<0.00074	0.001	3.6
SB-14-14	14	11/7/2013	4.1	<3.2	<11	<0.0053	0.0065	0.0059	<0.016	<0.00072	<0.00072	<0.00072	<0.00072	<0.00036	<0.00072	<0.00072	0.001	1.85
SB-15-2	2	11/5/2013	**74**	36	83	**0.032**	0.086	0.22	0.65	<0.00092	0.00093	0.0019	<0.00092	0.0034	<0.00092	<0.00092	0.002	11.5
SB-15-6	6	11/6/2013	**3300**	160	<11	**<0.57**	1.4	3.8	5.7	0.015	0.0079	0.0074	0.0037	0.016	0.00079	0.0013	0.011	12.5
SB-15-9	9	11/7/2013	**1100**	69	<11	**0.38**	1.4	**6.8**	7.2	0.0051	0.0021	0.0021	0.00081	0.0048	<0.00071	<0.00071	0.003	4.24
SB-15-13	13	11/7/2013	3.6	<3.4	<11	<0.0048	<0.0048	0.041	<0.014	<0.00076	<0.00076	<0.00076	<0.00076	<0.00038	<0.00076	<0.00076	0.001	1.78
SB-16-2	2	11/6/2013	**210**	7.2	<14	**<0.036**	<0.15	0.15	0.24	<0.00091	<0.00091	<0.00091	<0.00091	<0.00045	<0.00091	<0.00091	0.001	11.4
SB-16-6	6	11/6/2013	**77**	4.1	<11	<0.0055	0.034	0.012	0.096	0.0029	0.0018	0.0016	0.00081	0.0025	<0.00073	<0.00073	0.003	13.4
SB-16-8	8	11/7/2013	**540**	17	12	**<0.040**	0.17	0.42	0.67	0.007	0.0029	0.0024	0.00093	0.0055	<0.00074	<0.00074	0.004	5.05
SB-16-10	10	11/7/2013	**99**	<3.4	12	**0.054**	0.097	0.22	0.2	<0.00075	<0.00075	0.0018	<0.00075	0.0011	<0.00075	<0.00075	0.001	6.84
SB-17-2	2	11/6/2013	**2800**	62	33	**<0.36**	1.1	**7.9**	**65**	0.0018	<0.00086	0.002	<0.00086	0.0026	<0.00086	<0.00086	0.002	19.3
SB-17-8	8	11/8/2013	**1300**	25	<11	**1.4**	1.7	**10**	**20**	0.0027	0.0011	0.0013	<0.00074	0.0032	<0.00074	<0.0074	0.002	3.64
SB-17-11	11	11/8/2013	<0.9	<3.3	<11	<0.0046	<0.0046	<0.0046	<0.014	<0.00075	<0.00075	<0.00075	<0.00075	<0.00037	<0.00075	<0.000075	0.001	2.67
SB-18-8	8	11/7/2013	**580**	<3.4	<11	**0.43**	1.2	1.4	0.84	<0.00074	<0.00074	<0.00074	<0.00074	0.00055	<0.00074	<0.00074	0.001	4.55
DUP-2-110713	8	11/7/2013	**620**	7.8	<11	**0.46**	1.3	1.5	0.92	<0.00074	<0.00074	<0.00074	<0.00074	0.00044	<0.00074	<0.00074	0.001	4.09
SB-18-12	12	11/7/2013	<1	<3.5	<12	<0.0050	<0.0050	<0.0050	<0.015	<0.00077	<0.00077	<0.00077	<0.00077	<0.00038	<0.00077	<0.00077	0.001	3
SB-19-9	9	11/8/2013	5.7	<3.2	<11	<0.0048	0.014	0.014	0.042	<0.00072	<0.0072	<0.00072	<0.00072	0.00062	<0.00072	<0.00072	0.008	3.55
SB-19-11	11	11/8/2013	<1	<3.2	<11	<0.0050	<0.0050	<0.0050	<0.015	<0.00072	<0.00072	<0.00072	<0.00072	<0.00036	<0.00072	<0.00072	0.001	2.97
SB-20-2	2	11/8/2013	5.6	19	16	<0.0068	0.0068	<0.0091	<0.020	<0.00087	<0.00087	<0.00087	<0.00087	0.00098	<0.00087	<0.00087	0.001	5.29
SB-20-10	10	11/8/2013	**730**	65	<11	**0.26**	0.96	2.1	1.1	0.0054	0.0023	0.0021	0.00072	0.005	<0.00071	<0.00071	0.003	5.8
SB-20-12	12	11/8/2013	2.1	<3.3	<11	<0.0048	<0.0048	0.0077	<0.014	<0.00073	<0.00073	<0.00073	<0.00073	<0.00036	<0.00073	<0.00073	0.001	6.07
SB-20-14	14	11/8/2013	<1.0	<3.4	<11	<0.0050	<0.0050	<0.0050	<0.015	<0.00075	<0.00075	<0.00075	<0.00075	<0.00037	<0.00075	<0.00075	0.001	3.94
SB-21-6	6	11/8/2013	<1.6	<3.7	<12	<0.0082	<0.0082	<0.0082	<0.025	<0.00082	<0.00082	<0.00082	<0.00082	<0.00041	<0.00082	<0.00082	0.001	3.83

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SAMPLE ID	DEPTH (ft.)	DATE SAMPLED	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-HRO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-Benzene (mg/kg)	Total Xylenes (mg/kg)	Benzo(a) anthracene[1] (mg/kg)	Benzo(a) pyrene[1] (mg/kg)	Benzo(b) fluoranthene[1] (mg/kg)	Benzo(k) fluoranthene[1] (mg/kg)	Chrysene[1] (mg/kg)	Dibenz(a,h) anthracene[1] (mg/kg)	Indeno (1,2,3-cd) pyrene[1] (mg/kg)	Total Toxicity of Benzo(a) pyrene[2] (mg/kg)	Total Lead (mg/kg)
SB-21-9	9	11/8/2013	**61**	3.3	<11	**<0.020**	<0.069	0.049	0.12	<0.00072	<0.00072	<0.00072	<0.00072	0.00061	<0.00072	<0.00072	0.001	4.42
SB-21-12	12	11/8/2013	<1.2	<3.3	<11	<0.0059	<0.0059	<0.0059	<0.018	<0.00073	<0.00073	<0.00073	<0.00073	<0.00037	<0.00073	<0.00073	0.001	4.62
Proposed Site Cleanup Standards			**30**	**460[3]/2000[4]**	**2000**	**0.03**	**7**	**6**	**9**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**0.1**	**250**

ABBREVIATIONS:
DRO = Diesel Range Organics
HRO = Oil Range Organics
GRO = Gasoline Range Organics
B = Benzene
T = Toluene
E = Ethylbenzene X = Xylenes
T. LEAD = Total Lead
-- = Not Analyzed
CULs = Cleanup levels
Dup = Duplicate
Ecology = Washington State Department of Ecology
EPA = United States Environmental Protection Agency
mg/kg = Milligrams per kilogram
MTCA = Model Toxics Control Act
UNK = Unknown

NOTES:
1 Carcinogenic polycyclic aromatic hydrocarbons (cPAHs).
2 Total toxicity of benzo(a)pyrene calculated using Toxicity Equivalency Factors provided in Table 708-2 of WAC 173-340-900. In cases where the analytical result was less than the reporting limit, the reporting limit value was used as the concentration to calculate total toxicity.
3 Proposed Cleanup Standard for TPH-DRO in soil from ground surface to 6 feet below ground surface.
4 Proposed Cleanup Standard for TPH-DRO in soil from 6 to 15 feet below ground surface.
Results in bold indicate analyte reported in concentration exceeding proposed site cleanup standards.

ANALYTICAL METHODS:
Gasoline Range Organics Analyzed by Ecology Method NWTPH-Gx.
Diesel Range Organics Analyzed by Ecology Method NWTPH-Dx with silica-gel cleanup. Heavy Oils Analyzed by Ecology Method NWTPH-Dx with silica-gel cleanup.
Benzene, Toluene, Ethylbenzene, and Total Xylenes Analyzed by EPA Method 8021B (2004 and older) and EPA Method 8260B (2010)
cPAHs analyzed by EPA Method 8270C SIM. Total Lead analyzed by EPA Method 6020.

Table 3- Summary of Groundwater Monitoring Data
Draft Engineering Design Report
Cowlitz Food and Fuel Site
101 Mulford Road, Toledo Washington
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AECOM

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-103	02/14/1991	107.81	8.08	--	99.73	--	--	--	--	--	--	--	--	--	--	--
MW-103	02/18/1992	107.81	8.08	--	99.73	--	--	--	--	--	--	--	--	--	--	--
MW-103	03/09/1992	107.81	7.8	--	100.01	--	--	--	--	<50	--	--	--	--	--	--
MW-103	03/13/1992	107.81	8.08	--	99.73	<50	--	<250	--	<250	--	--	--	--	--	--
MW-103	04/21/1992	107.81	7.78	--	100.03	<50	--	--	--	--	--	--	--	--	--	--
MW-103	03/03/1994	107.81	--	--	--	<50	--	<250	--	<250	<13	--	--	--	--	--
MW-103	06/13/1995	107.81	8.55	--	99.26	<50	--	<250	--	<250	--	--	--	--	--	<3.0
MW-103	08/22/1995	107.81	--	--	--	<50	--	<250	--	<250	--	--	--	--	--	<2.0
MW-103	08/23/1995	107.81	8.91	--	98.9	<50	--	<250	--	<250	--	--	--	--	--	<2.0
MW-103	11/28/1995	107.81	7.3	--	100.51	<50	--	<250	--	<250	--	--	--	--	--	<2.0
MW-103	03/12/1996	107.81	8.03	--	99.78	<50	--	<250	--	<250	--	--	--	--	--	<2.0
MW-103	06/26/1996	107.81	8.67	--	99.14	<50	--	<250	--	<250	--	--	--	--	--	<2.0
MW-103	10/09/1996	107.81	8.82	--	98.99	<50	--	<250	--	<250	--	--	--	--	--	<2.0
MW-103	02/12/1997	107.81	7.81	--	100	<50	--	<250	--	<250	--	--	--	--	--	<2.0
MW-103	04/22/1997	107.81	7.42	--	100.39	<50	--	<250	--	<250	--	--	--	--	--	<2.0
MW-103	08/05/1997	107.81	8.83	--	98.98	257	--	257	--	110	--	--	--	--	--	<2.0
MW-103	11/11/1997	107.81	9.01	--	98.8	<50	--	<250	--	<250	--	--	--	--	--	<2.0
MW-103	02/11/1998	107.81	8.03	--	99.78	<50	--	<250	--	<250	--	--	--	--	--	<2.0
MW-103	05/28/1998	107.81	8.17	--	99.64	<50	--	<250	--	<250	--	--	--	--	--	2.84
MW-103	08/20/1998	107.81	9.21	--	98.6	<50	--	<250	--	<250	--	--	--	--	--	<1.0
MW-103	11/19/1998	107.81	9.03	--	98.78	<50	--	<250	--	<250	--	--	--	--	--	<1.0
MW-103	03/11/1999	107.81	7.51	--	100.3	<50	--	<250	--	<250	--	--	--	--	--	<1.0
MW-103	05/25/1999	107.81	8.51	--	99.3	<50	--	<250	--	<250	--	--	--	--	--	--
MW-103	08/17/1999	107.81	8.93	--	98.88	<50	--	<250	--	<250	--	--	--	--	--	<1.0
MW-103	11/19/1999	107.81	7.18	--	100.63	<80	--	<250	--	<250	--	--	--	--	--	<1.0
MW-103	03/09/2000	107.81	7.48	--	100.33	<80	--	<250	--	<250	--	--	--	--	--	<1.0
MW-103	06/13/2000	107.81	8.29	--	99.52	<80	--	<250	--	<250	--	--	--	--	--	<1.0
MW-103	09/26/2000	107.81	9.05	--	98.76	--	--	<250	--	<250	--	--	--	--	--	<1.0
MW-103	12/13/2000	107.81	8.65	--	99.16	--	--	<250	--	<250	--	--	--	--	--	<1.0
MW-103	02/28/2001	107.81	8.34	--	99.47	89	--	<250	--	<250	--	--	--	--	--	<1.0
MW-103	05/02/2001	107.81	8.12	--	99.69	214	--	<250	--	<250	--	--	--	--	--	<1.0
MW-103	12/30/2003	107.81	7.32	0	100.49	<110	--	<50	--	<85	<0.5	<0.5	<0.5	<1.5	--	<1.2
MW-103	07/20/2004	107.81	9.09	0	98.72	<50.0	--	<250	--	<500	<0.500	<0.500	<0.500	<1.00	--	--
MW-103	10/07/2004	107.81	8.66	0	99.15	--	--	<160	--	<50	--	--	--	--	--	--
MW-103	01/27/2005	107.81	7.95	0	99.86	<48	--	<83	--	<83	--	--	--	--	--	--
MW-103	04/12/2005	107.81	7.65	0	100.16	<48	--	<78	--	<78	--	--	--	--	--	--
MW-103	07/18/2005	107.81	8.76	0	99.05	<48	--	<79	--	<79	--	--	--	--	--	--
MW-103	10/21/2005	107.81	8.87	0	98.94	<48	--	<79	--	<79	--	--	--	--	--	--
MW-103	08/12/2010	107.81	8.9	0	98.91	<50	--	30	--	120	<0.5	<0.5	<0.5	<0.5	<0.5	0.11
MW-103	11/3-4/2010	107.81	7.69	0	100.12	<50	--	<29	--	91	<0.5	<0.5	<0.5	<0.5	<0.5	0.17
MW-103	2/3-4/2011	107.81	7.99	0	99.82	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.22
MW-103	05/24/2011	107.81	8.25	0	99.56	<50	--	30	--	340	<0.5	<0.5	<0.5	<0.5	<0.5	0.13
MW-103	11/7-9/2011	107.81	8.9	0	98.91	<50	--	<29	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.12
MW-103	2/6-8/2012	107.81	7.8	0	100.01	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080

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101 Mulford Road, Toledo Washington
Agreed Order No. DE21413

AECOM

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-103	5/2-4/2012	107.81	8.05	0	99.76	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.083
MW-103	8/1-3/2012	107.81	8.95	0	98.86	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.088
MW-103	11/26-28/2012	107.81	7.36	0	100.45	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.047
MW-103	2/4-6/2013	107.81	7.85	0	99.96	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.087
MW-103	5/6-8/2013	107.81	8.6	0	99.21	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.13
MW-103	9/9-13/2013	107.81	8.55	0	99.26	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.11
MW-103	11/18-21/2013	107.81	7.62	0	100.19	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.21
MW-103	2/4-11/2014	107.81	8.36	0	99.45	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.11
MW-103	6/12-14/2014	107.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-103	8/18-21/2014	107.81	6.81	0	101	62	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.18
MW-103	11/19-20/2014	107.81	8.41	0	99.4	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
MW-103	2/17-20/2015	107.81	7.83	0	99.98	<50	<29	<29	<69	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
MW-103	5/11-15/2015	107.81	8.77	0	99.04	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.12
MW-103	8/10-11/2015	107.81	9.35	0	98.46	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.13
MW-103	11/16-18/2015	107.81	6.67	0	101.14	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0
MW-103	5/13-14/2016	107.81	8.6	0	99.21	--	--	--	--	--	--	--	--	--	--	--
MW-103	11/14/2016	107.81	7.83	0	99.98	--	--	--	--	--	--	--	--	--	--	--
MW-103	05/14/2017	107.81	7.87	0	99.94	--	--	--	--	--	--	--	--	--	--	--
MW-103	11/11-12/2017	107.81	7.93	0	99.88	--	--	--	--	--	--	--	--	--	--	--
MW-103	05/11/2018	107.81	8.56	0	99.25	--	--	--	--	--	--	--	--	--	--	--
MW-103	11/11-12/2018	107.81	8.91	0	98.9	--	--	--	--	--	--	--	--	--	--	--
MW-103	04/27/2019	107.81	8.29	0	99.52	--	--	--	--	--	--	--	--	--	--	--
MW-103	11/03/2019	107.81	8.55	0	99.26	--	--	--	--	--	--	--	--	--	--	--
MW-103	43770	107.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-109	03/13/1992	107.35	7.72	0	99.63	<50	--	--	--	--	--	--	--	--	--	--
MW-109	04/21/1992	107.35	7.42	0	99.93	--	--	--	--	--	--	--	--	--	--	--
MW-109	03/03/1994	107.35	--	--	--	**4,900**	--	**900**	--	**1,500**	--	--	--	--	--	--
MW-109	08/22/1995	107.35	8.57	0	98.78	<50	--	**2,900**	--	**2,400**	--	--	--	--	--	--
MW-109	11/28/1995	107.35	5.87	0	101.48	72	--	480	--	**1,900**	--	--	--	--	--	<2.0
MW-109	03/12/1996	107.35	7.16	0	100.19	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-109	06/26/1996	107.35	8.24	0	99.11	<50	--	**554**	--	**<750**	--	--	--	--	--	<2.0
MW-109	10/09/1996	107.35	8.54	0	98.81	<50	--	405	--	**<750**	--	--	--	--	--	<2.0
MW-109	02/12/1997	107.35	5.82	0	101.53	<50	--	393	--	**1,290**	--	--	--	--	--	<2.0
MW-109	04/22/1997	107.35	7.1	0	100.25	<50	--	356	--	**1,270**	--	--	--	--	--	<2.0
MW-109	08/05/1997	107.35	8.81	0	98.54	<50	--	**560**	--	**1,690**	--	--	--	--	--	<2.0
MW-109	11/11/1997	107.35	7.57	0	99.78	<50	--	269	--	**780**	--	--	--	--	--	<2.0
MW-109	02/11/1998	107.35	6.2	0	101.15	<50	--	387	--	**1,700**	--	--	--	--	--	<2.0
MW-109	05/28/1998	107.35	7.62	0	99.73	<50	--	332	--	**920**	--	--	--	--	--	2.25
MW-109	08/20/1998	107.35	9	0	98.35	<50	--	**520**	--	**1,450**	--	--	--	--	--	<1.0
MW-109	11/19/1998	107.35	8.21	0	99.14	<50	--	409	--	**1,130**	--	--	--	--	--	<1.3
MW-109	03/11/1999	107.35	6.94	0	100.41	<80	--	**539**	--	**2,000**	--	--	--	--	--	<1.0
MW-109	05/25/1999	107.35	8.13	0	99.22	<80	--	**916**	--	--	--	--	--	--	--	--
MW-109	08/17/1999	107.35	8.66	0	98.69	<80	--	**1,520**	--	**7,770**	--	--	--	--	--	<1.0

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AECOM

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-109	11/19/1999	107.35	6.65	0	100.7	<80	--	<250	--	--	--	--	--	--	--	<1.0
MW-109	03/09/2000	107.35	5.67	0	101.68	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-109	06/13/2000	107.35	6.65	0	100.7	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-109	09/26/2000	107.35	8.36	0	98.99	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-109	12/13/2000	107.35	7.72	0	99.63	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-109	02/28/2001	107.35	7.44	0	99.91	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-109	05/02/2001	107.35	9.5	0	97.85	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-109	10/30/2002	107.35	8.69	0	98.66	<80	--	<250	--	<500	<0.500	<0.500	<0.500	<1.0	--	6.44
MW-109	10/31/2003	107.35	7.63	0	99.72	<50	--	<250	--	<500	<0.500	<0.500	<0.500	<1.0	--	<1.0
MW-109	12/31/2003	107.35	6.42	0	100.93	**2,300**	--	<50	--	440	<0.5	<0.5	<0.5	<1.5	--	<1.2
MW-109	10/06/2004	107.35	7.71	0	99.64	<50	--	<81	--	110	--	--	--	--	--	--
MW-109	10/24/2005	107.35	7.93	0	99.42	<48	--	<81	--	<100	--	--	--	--	--	--
MW-109	09/05/2007	107.35	8.45	0	98.9	91	--	<79	--	240	--	--	--	--	--	0.15
MW-109	5/27-28/2008	107.35	7.86	0	99.49	<50	--	<79	--	<98	<0.5	0.6	<0.5	<0.5	<0.5	<0.050
MW-109	8/27-29/2008	107.35	7.92	0	99.43	<50	--	<79	--	<99	<5	<5	<5	<5	<5	<0.050
MW-109	11/17-19/2008	107.35	6.6	0	100.75	<50	--	35	--	110	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-109	2/16-18/2009	107.35	7.59	0	99.76	<50	--	53	--	130	<0.5	<0.5	<0.5	<0.5	<0.5	0.093
MW-109	5/4-6/2009	107.35	7.09	0	100.26	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-109	8/19-21/2009	107.35	8.35	0	99	<50	--	49	--	290	<0.5	<0.5	<0.5	<0.5	<0.5	0.15
MW-109	11/18-20/2009	107.35	5.74	0	101.61	<50	--	98	--	340	<0.5	<0.5	<0.5	<0.5	<0.5	0.15
MW-109	2/8-10/2010	107.35	7.04	0	100.31	<50	--	31	--	<72	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-109	5/12-13/2010	107.35	7.41	0	99.94	<50	--	60	--	270	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-109	08/11/2010	107.35	8.9	0	98.45	<50	--	34	--	300	<0.5	<0.5	<0.5	<0.5	<0.5	0.1
MW-109	11/3-4/2010	107.35	6.37	0	100.98	<50	--	65	--	430	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
MW-109	2/3-4/2011	107.35	7.12	0	100.23	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
MW-109	05/23/2011	107.35	7.26	0	100.09	<50	--	47	--	**520**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
MW-109	8/23-24/11	107.35	8.35	0	99	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.12
MW-109	11/7-9/2011	107.35	8	0	99.35	84	--	<300	--	**890**	<0.5	<0.5	0.6	<0.5	<0.5	0.19
MW-109	2/6-8/2012	107.35	6.85	0	100.5	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-109	5/2-4/2012	107.35	6.9	0	100.45	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-109	8/1-3/2012	107.35	8.13	0	99.22	<50	--	<30	--	<71	<0.5	<0.5	<0.5	<0.5	<0.5	<0.034
MW-109	11/26-28/2012	107.35	6.42	0	100.93	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.047
MW-109	2/4-6/2013	107.35	6.95	0	100.4	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.073
MW-109	5/6-8/2013	107.35	7.35	0	100	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.073
MW-109	9/9-13/2013	107.35	7.34	0	100.01	<50	<31	<31	<72	<72	<0.5	<0.5	<0.5	<0.5	<0.5	0.62
MW-109	11/18-22/2013	107.35	8.12	0	99.23	<50	68	<29	170	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085
MW-109	2/4-11/2014	107.35	7.33	0	100.02	<50	<30	<30	<70	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.2
MW-109	6/12-14/2014	107.35	7.31	0	100.04	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	--
MW-109	8/18-21/14	107.35	9.93	0	97.42	--	--	--	--	--	--	--	--	--	--	--
MW-109	11/19-20/2014	107.35	7.38	0	99.97	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
MW-109	2/17-20/2015	107.35	6.91	0	100.44	<50	<30	<30	<69	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
MW-109	5/11-15/2015	107.35	7.29	0	100.06	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.12
MW-109	8/10-11/2015	107.35	8.62	0	98.73	<50	130	<29	**640**	210	<0.5	<0.5	<0.5	<0.5	<0.5	**136**
MW-109	11/16-18/2015	107.35	5.34	0	102.01	<50	36	<28	97	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.0028

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101 Mulford Road, Toledo Washington
Agreed Order No. DE21413

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-109	5/13-14/2016	107.35	7.76	0	99.59	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	--	<0.13
MW-109	11/14/2016	107.35	6.4	0	100.95	<50	77	<28	65	<65	<0.5	<0.5	<0.5	<0.5	--	0.55
MW-109	05/14/2017	107.35	6.7	0	100.65	<50	45	<28	260	<66	<0.5	<0.5	<0.5	<0.5	--	<0.090
MW-109	11/11-12/2017	107.35	6.61	0	100.74	<50	<30	<30	<70	<70	<0.5	<0.5	<0.5	<0.5	--	0.4
MW-109	05/11/2018	107.35	7.38	0	99.97	<50	<28	31	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.11
MW-109	11/11-12/2018	107.35	7.47	0	99.88	<19	40	<28	260	96	<0.2	<0.2	<0.4	<1	--	<1.1
MW-109	04/27/2019	107.35	7.28	0	100.07	<19	97	<30	<67	<67	<0.2	<0.2	<0.4	<1	--	<1.1
MW-109	11/03/2019	107.35	7.49	0	99.86	<19	41 J	<30	95 J	<68	<0.2	<0.2	<0.4	<1	--	**29.4**
MW-109	05/06/2020	107.35	7.5	0	99.85	51.3 B J	<200	<200	<250	<250	<1.00	<1.00	<1.00	<3.00	--	<5.00
MW-109	11/7/2020	107.35	6.62	0	100.73	--	--	--	--	--	--	--	--	--	--	--
MW-109	05/24/2021	107.35	7.94	0	99.41	35.0 BJ	<200	<200	<250	<250	<1.00	<1.00	<1.00	<3.00	--	<6.00
MW-109	11/29/2021	107.35	6.6	0	100.75	--	--	--	--	--	--	--	--	--	--	--
MW-109	05/23/2022	107.35	7.05	0	100.3	--	--	--	--	--	--	--	--	--	--	--
MW-109	11/29/2022	107.35	7.19	0	100.16	--	--	--	--	--	--	--	--	--	--	--
MW-109	01/20/2023	107.35	6.35	0	101	--	--	--	--	--	--	--	--	--	--	--
MW-109	05/15/2023	107.35	7.01	0	100.34	--	--	--	--	--	--	--	--	--	--	--
MW-109	11/29/2023	107.35	8.52	0	98.83	--	--	--	--	--	--	--	--	--	--	--
MW-109	05/02/2024	107.35	7.44	0	99.91	--	--	--	--	--	--	--	--	--	--	--
MW-110	08/22/1995	108.89	9.62	0	99.27	**11,000**	--	400	--	**<750**	--	--	--	--	--	--
MW-110	11/28/1995	108.89	8.08	0	100.81	**6,000**	--	**540**	--	**<750**	--	--	--	--	--	14
MW-110	03/12/1996	108.89	8.74	0	100.15	**3,600**	--	340	--	**<750**	--	--	--	--	--	14
MW-110	06/26/1996	108.89	9.41	0	99.48	**2,750**	--	274	--	**<750**	--	--	--	--	--	8.14
MW-110	10/09/1996	108.89	9.67	0	99.22	**1,160**	--	<250	--	**<750**	--	--	--	--	--	5.96
MW-110	02/12/1997	108.89	8.42	0	100.47	**1,830**	--	393	--	**<750**	--	--	--	--	--	11.7
MW-110	04/22/1997	108.89	8.18	0	100.71	**1,950**	--	371	--	**<750**	--	--	--	--	--	7.27
MW-110	08/05/1997	108.89	9.8	0	99.09	**1,480**	--	282	--	**<750**	--	--	--	--	--	3.16
MW-110	11/11/1997	108.89	8.57	0	100.32	**2,330**	--	**659**	--	**<750**	--	--	--	--	--	**22.9**
MW-110	02/11/1998	108.89	8.54	0	100.35	**2,040**	--	390	--	**<750**	--	--	--	--	--	**15.3**
MW-110	05/28/1998	108.89	8.69	0	100.2	**1,350**	--	324	--	**<750**	--	--	--	--	--	**15.5**
MW-110	08/20/1998	108.89	10.91	0	97.98	**812**	--	<250	--	**<750**	--	--	--	--	--	1.55
MW-110	11/19/1998	108.89	9.51	0	99.38	637	--	258	--	**<750**	--	--	--	--	--	7.27
MW-110	03/11/1999	108.89	8.09	0	100.8	**2,350**	--	486	--	<500	--	--	--	--	--	11
MW-110	05/25/1999	108.89	9.28	0	99.61	**2,950**	--	<250	--	--	--	--	--	--	--	--
MW-110	08/17/1999	108.89	9.81	0	99.08	749	--	<250	--	<500	--	--	--	--	--	2.2
MW-110	11/19/1999	108.89	7.77	0	101.12	**2,030**	--	453	--	--	--	--	--	--	--	**32.4**
MW-110	03/09/2000	108.89	8.15	0	100.74	**3,780**	--	<250	--	<500	--	--	--	--	--	9.59
MW-110	06/13/2000	108.89	8.81	0	100.08	**2,330**	--	<250	--	<500	--	--	--	--	--	5.45
MW-110	09/26/2000	108.89	9.98	0	98.91	--	--	<250	--	<500	--	--	--	--	--	2.83
MW-110	12/13/2000	108.89	9.37	0	99.52	**1,340**	--	<250	--	<500	--	--	--	--	--	4.15
MW-110	02/28/2001	108.89	9.07	0	99.82	**1,800**	--	<250	--	<500	--	--	--	--	--	6.32
MW-110	05/02/2001	108.89	8.62	0	100.27	**905**	--	<250	--	<500	--	--	--	--	--	4.23
MW-110	10/30/2002	108.89	10.28	0	98.61	**3,880**	--	<250	--	<500	<2.50	<2.50	22.5	108	--	6.36
MW-110	01/23/2003	108.89	8.74	0	100.15	**1,190**	--	<250	--	<500	0.902	0.585	9.83	13.9	--	**26.5**

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MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-110	04/18/2003	108.89	8.4	0	100.49	499	--	<250	--	<500	1.94	<0.500	0.799	1.65	--	**16.8**
MW-110	07/11/2003	108.89	9.99	0	98.9	586	--	<250	--	<500	1.76	<0.500	1.08	1.11	--	2.115
MW-110	10/31/2003	108.89	9.25	0	99.64	184	--	<250	--	<500	0.529	<0.500	<0.500	<1.0	--	<1.0
MW-110	12/31/2003	108.89	7.94	0	100.95	<99	--	**1,800**	--	410	**<10**	<2.0	23	25	--	**17.3**
MW-110	05/03/2004	108.89	9.56	0	99.33	454	--	<250	--	<500	1.8	<0.500	<0.500	<1.0	--	3.865
MW-110	07/20/2004	108.89	10.03	0	98.86	308	--	<250	--	<500	0.893	<0.500	<0.500	<1.0	--	<1.0
MW-110	10/06/2004	108.89	9.38	0	99.51	160	--	<79	--	<99	--	--	--	--	--	--
MW-110	01/27/2005	108.89	8.65	0	100.24	150	--	<81	--	<100	--	--	--	--	--	--
MW-110	04/12/2005	108.89	8.22	0	100.67	290	--	370	--	<100	--	--	--	--	--	--
MW-110	07/18/2005	108.89	9.5	0	99.39	100	--	<79	--	<99	--	--	--	--	--	--
MW-110-DUP	07/18/2005	108.89	9.5	0	99.39	100	--	<79	--	<99	--	--	--	--	--	--
MW-110	10/20/2005	108.89	9.62	0	99.27	110	--	82	--	100	--	--	--	--	--	--
MW-110	09/04/2007	108.89	10.08	0	98.81	290	--	<150	--	220	--	--	--	--	--	5
MW-110	5/27-28/2008	108.89	9.52	0	99.37	210	--	<76	--	<96	<0.5	<0.5	9	0.7	<0.5	9.1
MW-110	8/27-29/2008	108.89	9.6	0	99.29	240	--	120	--	<100	<5	<5	<5	<5	<5	1.5
MW-110	11/17-19/2008	108.89	8.17	0	100.72	150	--	410	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	**34.1**
MW-110	2/16-18/2009	108.89	9.23	0	99.66	<50	--	58	--	170	<0.5	<0.5	<0.5	<0.5	<0.5	**27.7**
MW-110	5/4-6/2009	108.89	8.6	0	100.29	96	--	380	--	**670**	<0.5	<0.5	<0.5	<0.5	<0.5	5.4
MW-110	8/19-21/2009	108.89	9.98	0	98.91	69	--	<30	--	76	<0.5	<0.5	<0.5	<0.5	<0.5	0.63
MW-110	11/18-20/2009	108.89	6.97	0	101.92	670	--	200	--	<67	<0.5	<0.5	2	<0.5	<0.5	5
MW-110	2/8-10/2010	108.89	8.64	0	100.25	<50	--	51	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	12.5
MW-110	5/12-13/2010	108.89	9.08	0	99.81	<50	--	39	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	4.2
MW-110	08/11/2010	108.89	9.75	0	99.14	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.4
MW-110	11/3-4/2010	108.89	8.15	0	100.74	<50	--	49	--	98	<0.5	<0.5	<0.5	<0.5	<0.5	2.5
MW-110	2/3-4/2011	108.89	8.77	0	100.12	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.72
MW-110	05/24/2011	108.89	8.9	0	99.99	<50	--	<29	--	180	<0.5	<0.5	<0.5	<0.5	<0.5	0.43
MW-110	8/23-24/11	108.89	9.96	0	98.93	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.62
MW-110	11/7-9/2011	108.89	9.3	0	99.59	95	--	<31	--	<72	<0.5	<0.5	<0.5	<0.5	<0.5	0.22
MW-110	2/6-8/2012	108.89	8.4	0	100.49	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.22
MW-110	5/2-4/2012	108.89	8.4	0	100.49	<50	--	<31	--	<72	<0.5	<0.5	<0.5	<0.5	<0.5	0.23
MW-110	8/1-3/2012	108.89	8.46	0	100.43	<50	--	50	--	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.093
MW-110	11/26-28/2012	108.89	7.95	0	100.94	<50	--	<29	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.3
MW-110	2/4-6/2013	108.89	8.38	0	100.51	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.073
MW-110	5/6-8/2013	108.89	9.52	0	99.37	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.23
MW-110	9/9-13/2013	108.89	9.03	0	99.86	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.39
MW-110	11/18-21/2013	108.89	8.22	0	100.67	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.33
MW-110	2/4-11/2014	108.89	8.98	0	99.91	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.16
MW-110	6/12-14/2014	108.89	9.5	0	99.39	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.22
MW-110	8/18-21/14	108.89	8.53	0	100.36	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.1
MW-110	11/19-20/2014	108.89	9.08	0	99.81	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.94
MW-110	2/17-20/2015	108.89	8.39	0	100.5	<50	<30	<30	<70	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
MW-110	5/11-15/2015	108.89	9.51	0	99.38	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.46
MW-110	8/10-11/2015	108.89	10.23	0	98.66	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.88
MW-110	11/16-18/2015	108.89	6.54	0	102.35	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0

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MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-110	5/13-14/2016	108.89	9.04	0	99.85	--	--	--	--	--	--	--	--	--	--	--
MW-110	11/14/2016	108.89	8.21	0	100.68	--	--	--	--	--	--	--	--	--	--	--
MW-110	05/14/2017	108.89	8.4	0	100.49	--	--	--	--	--	--	--	--	--	--	--
MW-110	11/11-12/2017	108.89	8.44	0	100.45	--	--	--	--	--	--	--	--	--	--	--
MW-110	05/11/2018	108.89	9.12	0	99.77	--	--	--	--	--	--	--	--	--	--	--
MW-110	11/11-12/2018	108.89	9.3	0	99.59	--	--	--	--	--	--	--	--	--	--	--
MW-110	04/27/2019	108.89	8.93	0	99.96	--	--	--	--	--	--	--	--	--	--	--
MW-110	11/03/2019	108.89	9.15	0	99.74	--	--	--	--	--	--	--	--	--	--	--
MW-110	05/05/2020	108.89	9.15	0	99.74	--	--	--	--	--	--	--	--	--	--	--
MW-110	11/7/2020	108.89	8.27	0	100.62	--	--	--	--	--	--	--	--	--	--	--
MW-110	05/24/2021	108.89	9.61	0	99.28	--	--	--	--	--	--	--	--	--	--	--
MW-110	11/29/2021	108.89	8.19	0	100.7	--	--	--	--	--	--	--	--	--	--	--
MW-110	05/23/2022	108.89	8.67	0	100.22	--	--	--	--	--	--	--	--	--	--	--
MW-110	11/29/2022	108.89	8.79	0	100.1	--	--	--	--	--	--	--	--	--	--	--
MW-110	01/20/2023	108.89	7.96	0	100.93	--	--	--	--	--	--	--	--	--	--	--
MW-110	05/15/2023	108.89	9	0	99.89	--	--	--	--	--	--	--	--	--	--	--
MW-110	11/29/2023	108.89	10.19	0	98.7	--	--	--	--	--	--	--	--	--	--	--
MW-110	05/02/2024	108.89	9.13	0	99.76	--	--	--	--	--	--	--	--	--	--	--
MW-111	08/22/1995	107.12	7.86	0	99.26	**33,000**	--	360	--	**<750**	--	--	--	--	--	--
MW-111	11/28/1995	107.12	6.14	0	100.98	**17,000**	--	**640**	--	**<750**	--	--	--	--	--	10
MW-111	03/12/1996	107.12	6.84	0	100.28	**11,000**	--	290	--	**<750**	--	--	--	--	--	7.6
MW-111	06/26/1996	107.12	7.55	0	99.57	**7,690**	--	479	--	**<750**	--	--	--	--	--	4.8
MW-111	10/09/1996	107.12	7.81	0	99.31	**3,560**	--	256	--	**<750**	--	--	--	--	--	4.7
MW-111	02/12/1997	107.12	6.52	0	100.6	**17,200**	--	**631**	--	**<750**	--	--	--	--	--	8.7
MW-111	04/22/1997	107.12	6.31	0	100.81	**13,800**	--	**920**	--	**<750**	--	--	--	--	--	5.3
MW-111	08/05/1997	107.12	7.9	0	99.22	**4,290**	--	444	--	**<750**	--	--	--	--	--	3.5
MW-111	11/11/1997	107.12	6.7	0	100.42	**14,300**	--	**770**	--	**<750**	--	--	--	--	--	12.4
MW-111	02/11/1998	107.12	6.65	0	100.47	**13,600**	--	**587**	--	**<750**	--	--	--	--	--	8.3
MW-111	05/28/1998	107.12	6.89	0	100.23	**11,200**	--	**526**	--	**<750**	--	--	--	--	--	**16.6**
MW-111	08/20/1998	107.12	9.08	0	98.04	**5,950**	--	**637**	--	**<750**	--	--	--	--	--	1.7
MW-111	11/19/1998	107.12	7.6	0	99.52	**10,500,000**	--	**3,890**	--	**<750**	--	--	--	--	--	2.2
MW-111	01/22/1999	107.12	5.36	0	101.76	**19,000**	--	--	--	--	--	--	--	--	--	--
MW-111	03/11/1999	107.12	6.19	0	100.93	**6,910**	--	**611**	--	<500	--	--	--	--	--	6.3
MW-111	05/25/1999	107.12	7.43	0	99.69	**8,500**	--	388	--	--	--	--	--	--	--	4.2
MW-111	08/17/1999	107.12	7.98	0	99.14	**17,600**	--	**547**	--	<500	--	--	--	--	--	3
MW-111	11/19/1999	107.12	5.87	0	101.25	**27,900**	--	**547**	--	--	--	--	--	--	--	14.4
MW-111	03/09/2000	107.12	6.27	0	100.85	**20,800**	--	**12,400**	--	**646**	--	--	--	--	--	11.8
MW-111	06/13/2000	107.12	6.91	0	100.21	**29,600**	--	**7,670**	--	<500	--	--	--	--	--	12.8
MW-111	09/26/2000	107.12	8.37	0	98.75	--	--	--	--	--	--	--	--	--	--	--
MW-111	12/13/2000	107.12	7.65	0	99.47	**23,100**	--	**13,800**	--	<500	--	--	--	--	--	4.1
MW-111	02/28/2001	107.12	7.26	0	99.86	**16,400**	--	**3,740**	--	<500	--	--	--	--	--	5.6
MW-111	05/02/2001	107.12	6.89	0	100.23	**17,700**	--	**7,530**	--	<500	--	--	--	--	--	10.7
MW-111	10/30/2002	107.12	8.7	**0.28**	98.64	--	--	--	--	--	--	--	--	--	--	--

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Draft Engineering Design Report
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101 Mulford Road, Toledo Washington
Agreed Order No. DE21413

AECOM

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-111	01/23/2003	107.12	6.99	**0.04**	100.16	--	--	--	--	--	--	--	--	--	--	--
MW-111	04/18/2003	107.12	6.89	**0.06**	100.28	--	--	--	--	--	--	--	--	--	--	--
MW-111	07/11/2003	107.12	8.25	**0.07**	98.93	--	--	--	--	--	--	--	--	--	--	--
MW-111	10/31/2003	107.12	7.48	**0.03**	99.66	--	--	--	--	--	--	--	--	--	--	--
MW-111	12/31/2003	107.12	6.4	0	100.72	300	--	**50,000**	--	**2,800**	**8.3**	6.5	**1,100**	**3,300**	--	**15.2**
MW-111	05/03/2004	107.12	7.79	**0.03**	99.35	--	--	--	--	--	--	--	--	--	--	--
MW-111	07/20/2004	107.12	8.16	**0.06**	99.01	--	--	--	--	--	--	--	--	--	--	--
MW-111	10/06/2004	107.12	7.54	0	99.58	**5,700**	--	240	--	<100	--	--	--	--	--	--
MW-111	01/27/2005	107.12	6.79	0	100.33	**8,800**	--	310	--	<98	--	--	--	--	--	--
MW-111-DUP	01/27/2005	107.12	6.79	0	100.33	**9,100**	--	310	--	<98	--	--	--	--	--	--
MW-111	04/12/2005	107.12	6.32	0	100.8	**10,000**	--	**820**	--	<100	--	--	--	--	--	--
MW-111-DUP	04/12/2005	107.12	6.32	0	100.8	**10,000**	--	**850**	--	<110	--	--	--	--	--	--
MW-111	07/18/2005	107.12	7.75	0	99.37	**6,300**	--	460	--	<96	--	--	--	--	--	--
MW-111	10/20/2005	107.12	7.84	0	99.28	--	--	--	--	--	--	--	--	--	--	--
MW-111	09/04/2007	107.12	8.26	0	98.86	**6,800**	--	**1,100**	--	<220	--	--	--	--	--	2.8
MW-111	09/04/2007	107.12	--	--	--	<50	--	<81	--	<100	--	--	--	--	--	<0.047
MW-111	5/27-28/2008	107.12	7.64	0	99.48	--	--	--	--	--	--	--	--	--	--	--
MW-111	8/27-29/2008	107.12	7.71	0	99.41	--	--	--	--	--	--	--	--	--	--	--
MW-111	11/17-19/2008	107.12	6.27	0	100.85	**18,000**	--	**2,300**	--	**<1,400**	3	<1	300	220	<1	**36.8**
MW-111	2/16-18/2009	107.12	7.36	0	99.76	**20,000**	--	350	--	74	4	2	190	110	<1	8.5
MW-111	5/4-6/2009	107.12	6.62	0	100.5	**13,000**	--	**1,200**	--	<70	**8**	2	220	120	<0.5	**20.1**
MW-111	8/19-21/2009	107.12	8.12	0	99	**11,000**	--	**780**	--	<70	4	0.6	180	130	<0.5	5.3
MW-111	11/18-20/2009	107.12	5.42	0	101.7	**4,700**	--	400	--	<68	5	0.7	53	21	<0.5	6.3
MW-111	2/08-10/2010	107.12	6.79	0	100.33	**19,000**	--	**2,700**	--	<140	**16**	1	270	110	<0.5	**18.8**
MW-111	5/11-13/2010	107.12	7.25	0	99.87	**21,000**	--	**3,400**	--	380	**10**	1	300	110	<1	**22.6**
MW-111	08/11/2010	107.12	7.92	0	99.2	**9,200**	--	**1,300**	--	**<700**	4	<1	220	55	<1	**20.2**
MW-111	11/3-4/2010	107.12	6.12	0	101	**7,000**	--	**1,700**	--	**640**	4	<1	160	68	<1	**29.5**
MW-111	2/3-4/2011	107.12	6.91	0	100.21	**14,000**	--	**2,800**	--	<340	**10**	0.9	250	72	<0.5	**19.9**
MW-111	05/24/2011	107.12	7.03	0	100.09	**2,700**	--	500	--	130	<0.5	<0.5	65	15	<0.5	2.8
MW-111	8/23-24/11	107.12	9.16	0	97.96	**6,900**	--	**1,600**	--	<69	3	<0.5	130	11	<0.5	12.2
MW-111	11/7-9/2011	107.12	7.85	0	99.27	**20,000**	--	**4,700**	--	**<730**	1	<1	140	26	<1	**45.8**
MW-111	2/6-8/2012	107.12	6.55	0	100.57	**5,100**	--	**690**	--	110	5	<0.5	140	<0.5	<0.5	**22.1**
MW-111	5/2-4/2012	107.12	6.5	0	100.62	**4,400**	--	420	--	<68	5	0.7	170	23	<0.5	8.9
MW-111	8/1-3/2012	107.12	7.93	0	99.19	**6,900**	--	**620**	--	140	0.6	<0.5	<0.5	12	<0.5	**22.9**
MW-111	11/26-28/2012	107.12	6.07	0	101.05	**5,200**	--	**15,000**	--	**<3,500**	4	<0.5	140	32	<0.5	**36.1**
MW-111	2/4-6/2013	107.12	6.53	0	100.59	**7,500**	--	**2,300**	--	**710**	<3	<3	120	24	<0.5	**17.8**
MW-111	5/6-8/2013	107.12	7.46	0	99.66	**5,500**	--	300	--	<67	2	<0.5	100	13	<0.5	**16.6**
MW-111	9/9-13/2013	107.12	7.15	0	99.97	**5,500**	**3,600**	330	89	<66	1	<0.5	110	39	<0.5	**59.4**
MW-111	11/18-22/2013	107.12	6.42	0	100.7	**3,300**	**1,000**	370	<66	<66	0.9	<0.5	77	13	<0.5	**17.8**
MW-111	2/4-11/2014	107.12	7.11	0	100.01	**4,800**	**1,000**	410	<68	<68	1	<0.5	75	7	<0.5	**27.3**
MW-111	6/12-14/2014	107.12	7.7	0	99.42	**4,200**	**1,200**	380	83	<67	2	<0.5	130	14	<0.5	**16.1**
MW-111	8/18-21/14	107.12	8.07	0	99.05	**4,700**	**1,400**	310	100	<67	1	<0.5	49	1	<0.5	1.09
MW-111	11/19-20/2014	107.12	6.47	0	100.65	**6,000**	**1,800**	430	320	<69	2	<0.5	120	11	<0.5	**45.3**
MW-111	2/17-20/2015	107.12	6.57	0	100.55	**3,600**	**730**	230	180	<68	1	<0.5	44	3	<0.5	14.3

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MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-111	5/11-15/2015	107.12	9.02	0	98.1	**4,400**	**1,000**	320	<66	<66	1	<0.5	71	5	<0.5	0.0202
MW-111	8/10-11/2015	107.12	8.43	0	98.69	**4,500**	**2,700**	470	93	<67	<3	<3	31	6	<3	12.5
MW-111	11/16-18/2015	107.12	4.59	0	102.53	**1,900**	450	150	270	<67	<0.5	<0.5	9	1	<0.5	0.0078
MW-111	5/13-14/2016	107.12	8.95	0	98.17	**4,200**	**1,200**	350	**1,600**	**680**	<0.5	<0.5	19	2	--	7.8
MW-111	11/14/2016	107.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-111	05/14/2017	107.12	6.37	0	100.75	**9,200**	**1,200**	490	**1,400**	**630**	1	<0.5	46	3	--	10.3
MW-111	11/11-12/2017	107.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-111	05/11/2018	107.12	7.57	0	99.55	**6,600**	**1,400**	440	**970**	400	**14**	2	45	3	<0.5	13.8
MW-111	11/11-12/2018	107.12	7.31	0	99.81	**4,000**	**3,300**	300	320	<68	3	0.6	33	3	--	**92.8**
MW-111	04/27/2019	107.12	7.11	0	100.01	**5,800**	**1,800**	**900**	**1,900**	**1,100**	3	0.6 J	29	2 J	--	**17.8**
MW-111	11/03/2019	107.12	7.31	0	99.81	**4,500**	**2,100**	250	**970**	400	1	0.3 J	20	2 J	--	**49.4**
MW-111	05/06/2020	107.12	7.6	0	99.52	37.8 B J	**1,530**	**739**	**1,670**	**1,050**	0.824 J	0.394 J	14	1.53 J	--	10.2
MW-111	11/7/2020	107.12	6.45	0	100.67	511	**1,300**	144 B J	**2,980**	494 B	<1.00	1.15	0.415 J	<3.00	--	1.84 J
MW-111	05/24/2021	107.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-111	11/29/2021	107.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-111	05/23/2022	107.12	7.85	0	99.27	628	**738**	75.5 J	**840**	<250	0.131 J	<1.00	0.775 J	<3.00	--	4.82 J
MW-111-DUP	05/23/2022	--	--	--	--	654	**640**	<200	380	<250	0.182 J	<1.00	0.764 J	<3.00	--	3.72 J
MW-111	11/29/2022	--	--	--	--	--	**--**	--	--	--	--	--	--	--	--	--
MW-111	01/20/2023	107.12	6.15	0	100.97	**62,600**	**3,010**	**676**	**1,710**	<250	**2,610**	**17,300**	**1,070**	**5,650**	--	10.7
MW-111	05/15/2023	107.12	7.2	0	99.92	**4,890**	80.7 J	80.7 J	121 J	121 J	**81.3 J**	**1,070**	89.2 J	583 J	--	2.16 B
MW-111	11/29/2023	107.12	7.21	0	99.91	**19,500**	**1,740**	**573**	**687**	158 J	**<250**	289	56.1 J	**4,640**	--	2.15
MW-111	05/02/2024	107.12	7.31	**0.05**	99.85	--	--	--	--	--	--	--	--	--	--	--
MW-112	08/22/1995	107.58	8.42	0	99.16	480	--	<250	--	**<750**	--	--	--	--	--	--
MW-112	11/28/1995	107.58	6.73	0	100.85	150	--	<250	--	**<750**	--	--	--	--	--	5.8
MW-112	03/12/1996	107.58	7.43	0	100.15	250	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-112	06/26/1996	107.58	8.12	0	99.46	63.8	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-112	10/09/1996	107.58	8.36	0	99.22	93.1	--	<250	--	**<750**	--	--	--	--	--	2.62
MW-112	02/12/1997	107.58	7.11	0	100.47	**1,250**	--	322	--	**<750**	--	--	--	--	--	2.99
MW-112	04/22/1997	107.58	6.85	0	100.73	323	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-112	08/05/1997	107.58	8.45	0	99.13	124	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-112	11/11/1997	107.58	7.26	0	100.32	112	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-112	02/11/1998	107.58	7.25	0	100.33	658	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-112	05/28/1998	107.58	7.46	0	100.12	713	--	315	--	**<750**	--	--	--	--	--	10.4
MW-112	08/20/1998	107.58	9.64	0	97.94	<50	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-112	11/19/1998	107.58	8.2	0	99.38	367	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-112	03/11/1999	107.58	6.79	0	100.79	**1,370**	--	<250	--	<500	--	--	--	--	--	1.42
MW-112	05/25/1999	107.58	7.97	0	99.61	<80	--	<250	--	--	--	--	--	--	--	--
MW-112	08/17/1999	107.58	8.51	0	99.07	106	--	<250	--	<500	--	--	--	--	--	<1.6
MW-112	11/19/1999	107.58	6.46	0	101.12	<80	--	<250	--	--	--	--	--	--	--	<1.0
MW-112	03/09/2000	107.58	6.85	0	100.73	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-112	06/13/2000	107.58	7.48	0	100.1	**824**	--	<250	--	<500	--	--	--	--	--	2.14
MW-112	09/26/2000	107.58	8.66	0	98.92	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-112	12/13/2000	107.58	8.07	0	99.51	<80	--	<250	--	<500	--	--	--	--	--	<1.0

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MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-112	02/28/2001	107.58	7.77	0	99.81	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-112	05/02/2001	107.58	7.31	0	100.27	710	--	<250	--	<500	--	--	--	--	--	1.44
MW-112	10/30/2002	107.58	8.95	0	98.63	95.7	--	<250	--	<500	<0.500	<0.500	<0.500	<1.00	--	2.63
MW-112	01/23/2003	107.58	7.39	0	100.19	178	--	<250	--	<500	<0.500	<0.500	0.73	<1.00	--	<1.0
MW-112	04/18/2003	107.58	7.28	0	100.3	93.4	--	<250	--	<500	<0.500	<0.500	<0.500	<1.00	--	<1.0
MW-112	07/11/2003	107.58	8.68	0	98.9	<50.0	--	--	--	--	<0.500	<0.500	<0.500	<1.00	--	<1.0
MW-112	10/31/2003	107.58	8.04	0	99.54	<50.0	--	<250	--	<500	<0.500	<0.500	<0.500	<1.00	--	<1.0
MW-112	12/30/2003	107.58	6.62	0	100.96	<97	--	<50	--	<77	<0.5	<0.5	<0.5	<1.5	--	<1.2
MW-112	05/03/2004	107.58	8.22	0	99.36	<50.0	--	<250	--	<500	<0.500	<0.500	<0.500	<1.00	--	<1.0
MW-112	07/20/2004	107.58	8.69	0	98.89	<50.0	--	<250	--	<500	<0.500	<0.500	<0.500	<1.00	--	--
MW-112	10/07/2004	107.58	8.06	0	99.52	<50	--	<82	--	<100	--	--	--	--	--	--
MW-112	07/18/2005	107.58	8.26	0	99.32	<48	--	<77	--	<96	--	--	--	--	--	--
MW-112	10/21/2005	107.58	8.25	0	99.33	48	--	<82	--	<100	--	--	--	--	--	--
MW-112	09/05/2007	107.58	8.79	0	98.79	<50	--	<79	--	<99	--	--	--	--	--	0.52
MW-112	5/27-28/2008	107.58	8.22	0	99.36	<50	--	<80	--	<100	<0.5	<0.5	<0.5	<0.5	<0.5	0.24
MW-112	8/27-29/2008	107.58	8.26	0	99.32	<50	--	<79	--	<99	<0.5	<0.5	<0.5	<0.5	<0.5	0.92
MW-112	11/17-19/2008	107.58	6.87	0	100.71	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.057
MW-112	2/16-18/2009	107.58	7.92	0	99.66	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.51
MW-112	5/4-06/2009	107.58	7.26	0	100.32	380	--	120	--	<69	2	<0.5	<0.5	<0.5	<0.5	2.1
MW-112	8/19-21/2009	107.58	8.67	0	98.91	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.27
MW-112	11/18-20/2009	107.58	5.58	0	102	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.36
MW-112	2/8-10/2010	107.58	7.35	0	100.23	<50	--	<29	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.46
MW-112	5/12-13/2010	107.58	7.77	0	99.81	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.58
MW-112	08/12/2010	107.58	8.45	0	99.13	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.29
MW-112	11/3-4/2010	107.58	6.85	0	100.73	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.19
MW-112	2/3-4/2011	107.58	8.21	0	99.37	<50	--	49	--	89	<0.5	<0.5	<0.5	<0.5	<0.5	0.56
MW-112	05/24/2011	107.58	7.58	0	100	<50	--	<29	--	270	<0.5	<0.5	<0.5	<0.5	<0.5	0.49
MW-112	8/23-24/11	107.58	8.52	0	99.06	72	--	**860**	--	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-112	11/7-9/2011	107.58	8.35	0	99.23	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.24
MW-112	2/6-8/2012	107.58	7.1	0	100.48	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.22
MW-112	5/2-4/2012	107.58	7.2	0	100.38	68	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	1.5
MW-112	8/1-3/2012	107.58	8.45	0	99.13	<50	--	<31	--	<72	<0.5	<0.5	<0.5	<0.5	<0.5	0.39
MW-112	11/26-28/2012	107.58	6.67	0	100.91	<50	--	<30	--	<71	<0.5	<0.5	<0.5	<0.5	<0.5	0.14
MW-112	2/4-6/2013	107.58	7.22	0	100.36	50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.64
MW-112	5/6-8/2013	107.58	8	0	99.58	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.47
MW-112	9/9-13/2013	107.58	7.71	0	99.87	<50	32	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.85
MW-112	11/18-22/2013	107.58	6.76	0	100.82	68	33	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.58
MW-112	2/4-11/2014	107.58	7.67	0	99.91	<50	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.38
MW-112	8/18-21/14	107.58	8.63	0	98.95	<50	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.36
MW-112	11/19-20/2014	107.58	7.71	0	99.87	<50	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.13
MW-112	2/17-20/2015	107.58	7.33	0	100.25	<50	<30	<30	<69	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.083
MW-112	5/11-15/2015	107.58	8.19	0	99.39	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.46
MW-112	8/10-11/2015	107.58	8.9	0	98.68	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.2
MW-112	11/16-18/2015	107.58	5.65	0	101.93	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.0014

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Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-112	5/13-14/2016	107.58	8.18	0	99.4	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	--	<0.13
MW-112	11/14/2016	107.58	6.9	0	100.68	<50	--	56	--	<70	<0.5	<0.5	<0.5	<0.5	--	0.33
MW-112	05/14/2017	107.58	7.05	0	100.53	150	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	--	0.56
MW-112	11/11-12/2017	107.58	6.99	0	100.59	95	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	--	0.27
MW-112	05/11/2018	107.58	7.82	0	99.76	<50	--	59	--	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.2
MW-112	11/11-12/2018	107.58	7.81	0	99.77	<19	--	<28	--	<66	<0.2	<0.2	<0.4	<1	--	<1.1
MW-112	04/27/2019	107.58	7.62	0	99.96	38 J	--	130	--	98 J	<0.2	<0.2	<0.4	<1	--	<1.1
MW-112	11/03/2019	107.58	7.82	0	99.76	38 J	--	60 J	--	<68	<0.2	<0.2	<0.4	<1	--	0.25 J
MW-112	05/06/2020	107.58	7.83	0	99.75	42.6 B J	<200	--	<250	--	<1.00	<1.00	<1.00	<3.00	--	<5.00
MW-112	11/7/2020	107.58	6.94	0	100.64	183 B	<200	<200	131 J	<250	<1.00	<1.00	<1.00	<3.00	--	<5.00
MW-112	05/24/2021	107.58	8.21	0	99.37	61.1 BJ	72.0 J	72.0 J	<250	<250	<1.00	<1.00	<1.00	<3.00	--	<6.00
MW-112	11/29/2021	107.58	6.83	0	100.75	<100	<200	--	<250	--	<1.00	<1.00	<1.00	<3.00	--	<6.00
MW-112	05/23/2022	107.58	7.33	0	100.25	107 B	132 J	132 J	<250	<250	<1.00	<1.00	<1.00	<3.00	--	<6.00
MW-112	11/29/2022	107.58	7.47	0	100.11	**3,470**	<200	--	<250	--	**33**	734	31.9	140	--	<2.00
MW-112	01/20/2023	107.58	6.58	0	101	94.9 B J	<200	--	<250	--	**17.5**	<1.00	0.264 J	0.269 J		<2.00
MW-112	05/15/2023	107.58	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-112	11/29/2023	107.58	7.58	0	100	**1,620**	149 J	149 J	130 J	130 J	**265**	8.75	100	106	--	<2.00
MW-112	05/02/2024	107.58	7.76	0	99.82	**3,550**	261	--	190 J	--	**842**	48	280	627	--	<2.00
MW-113	08/22/1995	108.44	9.26	0	99.18	**3,100**	--	320	--	**<750**	--	--	--	--	--	--
MW-113	11/28/1995	108.44	7.55	0	100.89	180	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-113	03/12/1996	108.44	8.26	0	100.18	750	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-113	06/26/1996	108.44	8.95	0	99.49	**809**	--	<250	--	**<750**	--	--	--	--	--	2.43
MW-113	10/09/1996	108.44	9.21	0	99.23	494	--	<250	--	**<750**	--	--	--	--	--	2.95
MW-113	02/12/1997	108.44	7.93	0	100.51	**1,600**	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-113	04/22/1997	108.44	7.71	0	100.73	748	--	291	--	**<750**	--	--	--	--	--	<2.0
MW-113	08/05/1997	108.44	9.37	0	99.07	**876**	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-113	11/11/1997	108.44	8.04	0	100.4	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-113	02/11/1998	108.44	8.02	0	100.42	76.1	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-113	05/28/1998	108.44	8.31	0	100.13	116	--	<250	--	**<750**	--	--	--	--	--	6.26
MW-113	08/20/1998	108.44	10.48	0	97.96	235	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-113	11/19/1998	108.44	9.02	0	99.42	<50	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-113	03/11/1999	108.44	7.59	0	100.85	162	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-113	05/25/1999	108.44	8.83	0	99.61	321	--	<250	--	--	--	--	--	--	--	--
MW-113	08/17/1999	108.44	9.34	0	99.1	265	--	<250	--	<500	--	--	--	--	--	1.2
MW-113	11/19/1999	108.44	7.27	0	101.17	<80	--	<250	--	--	--	--	--	--	--	<1.0
MW-113	03/09/2000	108.44	7.66	0	100.78	96.7	--	<250	--	<500	--	--	--	--	--	<1.0
MW-113	06/13/2000	108.44	8.29	0	100.15	154	--	<250	--	<500	--	--	--	--	--	<1.0
MW-113	09/26/2000	108.44	9.51	0	98.93	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-113	12/13/2000	108.44	8.91	0	99.53	<80	--	<250	--	**588**	--	--	--	--	--	<1.0
MW-113	02/28/2001	108.44	8.6	0	99.84	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-113	05/02/2001	108.44	8.14	0	100.3	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-113	10/30/2002	108.44	9.85	0	98.59	<80	--	<250	--	<500	<0.500	<0.500	<0.500	<1.0	--	1.55
MW-113	01/23/2003	108.44	8.29	0	100.15	<80	--	<250	--	<500	<0.500	<0.500	<0.500	<1.0	--	<1.0

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AECOM

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-113	04/18/2003	108.44	8.09	0	100.35	<50	--	<250	--	<500	<0.500	<0.500	<0.500	<1.0	--	<1.0
MW-113	07/11/2003	108.44	9.51	0	98.93	<50	--	<250	--	<500	<0.500	<0.500	<0.500	<1.0	--	<1.0
MW-113	10/31/2003	108.44	8.8	0	99.64	<50	--	<250	--	<500	<0.500	<0.500	<0.500	<1.0	--	<1.0
MW-113	12/31/2003	108.44	7.44	0	101	<97	--	<50	--	<77	<0.5	<0.5	<0.5	<1.5	--	<1.2
MW-113	05/03/2004	108.44	9.14	0	99.3	<50	--	<250	--	<500	<0.500	<0.500	<0.500	<1.0	--	<1.0
MW-113	07/20/2004	108.44	9.58	0	98.86	<50	--	<250	--	<500	<0.500	<0.500	<0.500	<1.0	--	--
MW-113	10/06/2004	108.44	8.92	DRY	--	--	--	--	--	--	--	--	--	--	--	--
MW-113	01/27/2005	108.44	8.15	0	100.29	<48	--	<84	--	<110	--	--	--	--	--	--
MW-113	04/12/2005	108.44	7.76	0	100.68	<48	--	<88	--	<110	--	--	--	--	--	--
MW-113	07/18/2005	108.44	9.11	0	99.33	<48	--	<79	--	<98	--	--	--	--	--	--
MW-113	10/26/2005	108.44	9.1	0	99.34	<48	--	<82	--	<100	--	--	--	--	--	--
MW-113	09/05/2007	108.44	9.59	0	98.85	<50	--	<82	--	<100	--	--	--	--	--	0.32
MW-113-DUP	09/05/2007	108.44	9.59	0	98.85	<50	--	<82	--	<100	--	--	--	--	--	0.32
MW-113	5/27-28/2008	108.44	9.02	0	99.42	<50	--	<82	--	<100	<0.5	<0.5	<0.5	<0.5	<0.5	0.16
MW-113	8/27-29/2008	108.44	9.1	0	99.34	<50	--	<81	--	<100	<0.5	<0.5	<0.5	<0.5	<0.5	0.19
MW-113	11/17-19/2008	108.44	7.68	0	100.76	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-113	2/16-18/2009	108.44	8.75	0	99.69	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.087
MW-113	5/4-6/2009	108.44	8.28	0	100.16	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-113	8/19-21/2009	108.44	9.5	0	98.94	<50	--	<31	--	<71	<0.5	<0.5	<0.5	<0.5	<0.5	0.14
MW-113	11/18-20/2009	108.44	6.39	0	102.05	<50	--	<29	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.16
MW-113	2/8-10/2010	108.44	8.15	0	100.29	<50	--	<29	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-113	5/12-13/2010	108.44	8.6	0	99.84	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.093
MW-113	08/12/2010	108.44	9.29	0	99.15	<50	--	<29	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.077
MW-113	11/3-4/2010	108.44	7.65	0	100.79	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
MW-113	2/3-4/2011	108.44	8.26	0	100.18	<50	--	<30	--	<71	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
MW-113	05/24/2011	108.44	8.42	0	100.02	<50	--	<30	--	330	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
MW-113	8/23-24/11	108.44	9.32	0	99.12	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.096
MW-113	11/7-9/2011	108.44	9.2	0	99.24	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.12
MW-113	2/6-8/2012	108.44	7.95	0	100.49	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-113	5/2-4/2012	108.44	8	0	100.44	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-113	8/1-3/2012	108.44	9.3	0	99.14	<50	--	<31	--	<72	<0.5	<0.5	<0.5	<0.5	<0.5	0.048
MW-113	11/26-28/2012	108.44	7.49	0	100.95	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.047
MW-113	2/4-6/2013	108.44	8.06	0	100.38	<50	--	30	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.073
MW-113	5/6-8/2013	108.44	8.83	0	99.61	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.073
MW-113	9/9-13/2013	108.44	8.56	0	99.88	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.12
MW-113	11/18-21/2013	108.44	7.74	0	100.7	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.11
MW-113	2/4-11/2014	108.44	6.56	0	101.88	<50	<29	<29	<69	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085
MW-113	6/12-14/2014	108.44	8.79	0	99.65	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085
MW-113	8/18-21/14	108.44	9.39	0	99.05	<50	<30	<30	<71	<71	<0.5	<0.5	<0.5	<0.5	<0.5	0.35
MW-113	11/19-20/2014	108.44	8.59	0	99.85	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
MW-113	2/17-20/2015	108.44	8.01	0	100.43	<50	<30	<30	<70	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
MW-113	5/11-15/2015	108.44	9.08	0	99.36	75	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
MW-113	8/10-11/2015	108.44	9.28	0	99.16	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.13
MW-113	11/16-18/2015	108.44	5.99	0	102.45	<50	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.00019

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MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-113	5/13-14/2016	108.44	8.95	0	99.49	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	--	<0.13
MW-113	11/14/2016	108.44	7.73	0	100.71	<50	--	57	--	<66	<0.5	<0.5	<0.5	<0.5	--	<0.090
MW-113	05/14/2017	108.44	7.88	0	100.56	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	--	<0.090
MW-113	11/11-12/2017	108.44	7.81	0	100.63	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	--	<0.11
MW-113	05/11/2018	108.44	8.65	0	99.79	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.11
MW-113	11/11-12/2018	108.44	8.68	0	99.76	<19	--	<28	--	<65	<0.2	<0.2	<0.4	<1	--	<1.1
MW-113	04/27/2019	108.44	8.11	0	100.33	<19	--	81 J	--	130 J	<0.2	<0.2	<0.4	<1	--	<1.1
MW-113	11/03/2019	108.44	8.65	0	99.79	<19	--	100	--	<66	<0.2	<0.2	<0.4	<1	--	0.25 J
MW-113	05/06/2020	108.44	8.67	0	99.77	<100	<200	--	<250	--	<1.00	<1.00	<1.00	<3.00	--	<5.00
MW-113	11/7/2020	108.44	7.77	0	100.67	44.4 B J	<200	<200	<250	<250	<1.00	<1.00	<1.00	<3.00	--	0.888 J
MW-113	05/24/2021	108.44	9.11	0	99.33	<100	<200	<200	<250	<250	<1.00	<1.00	<1.00	<3.00	--	<6.00
MW-113	11/29/2021	108.44	7.7	0	100.74	<100	<200	--	<250	--	<1.00	<1.00	<1.00	<3.00	--	<6.00
MW-113	05/23/2022	108.44	8.2	0	100.24	<100	<200	<200	<250	<250	<1.00	<1.00	<1.00	<3.00	--	<6.00
MW-113	11/29/2022	108.44	8.28	0	100.16	64.7 B J	<200	--	<250	--	<1.00	<1.00	<1.00	<3.00	--	<2.00
MW-113	01/20/2023	108.44	7.49	0	100.95	78.8 B J	<200	--	<250	--	<1.00	0.319 J	<1.00	1.39 J		<2.00
MW-113	05/15/2023	108.44	8.52	0	99.92	<100	<200	<200	<250	<250	<1.00	<1.00	<1.00	0.209 J	--	<2.00
MW-113	11/29/2023	108.44	8.44	0	100	<100	<200	<200	105 J	105 J	<1.00	<1.00	<1.00	<3.00	--	<2.00
MW-113	05/02/2024	108.44	8.63	0	99.81	335 B	<200	--	140 J	--	**21.5**	3.28	0.554 J	65.4	--	<2.00
MW-114	08/22/1995	106.89	7.47	0	99.42	<50	--	<250	--	**<750**	--	--	--	--	--	--
MW-114	11/28/1995	106.89	5.83	0	101.06	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-114	03/12/1996	106.89	6.39	0	100.5	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-114	06/26/1996	106.89	7.11	0	99.78	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-114	10/09/1996	106.89	7.42	0	99.47	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-114	02/12/1997	106.89	5.47	0	101.42	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-114	04/22/1997	106.89	14.3	0	92.59	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-114	08/05/1997	106.89	7.65	0	99.24	<50	--	<250	--	**1,410**	--	--	--	--	--	<2.0
MW-114	11/11/1997	106.89	6.45	0	100.44	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-114	02/11/1998	106.89	6.23	0	100.66	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-114	05/28/1998	106.89	6.44	0	100.45	<50	--	<250	--	**<750**	--	--	--	--	--	5.91
MW-114	08/20/1998	106.89	8.75	0	98.14	<50	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-114	11/19/1998	106.89	7.05	0	99.84	<50	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-114	03/11/1999	106.89	5.9	0	100.99	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-114	05/25/1999	106.89	7.1	0	99.79	<80	--	<250	--	--	--	--	--	--	--	--
MW-114	08/17/1999	106.89	7.59	0	99.3	<80	--	<250	--	**607**	--	--	--	--	--	<1.0
MW-114	11/19/1999	106.89	5.59	0	101.3	<80	--	<250	--	--	--	--	--	--	--	<1.0
MW-114	03/09/2000	106.89	5.98	0	100.91	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-114	06/13/2000	106.89	6.04	0	100.85	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-114	09/26/2000	106.89	7.81	0	99.08	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-114	12/13/2000	106.89	7.06	0	99.83	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-114	02/28/2001	106.89	6.79	0	100.1	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-114	05/02/2001	106.89	8.84	0	98.05	<80	--	<250	--	**1,880**	--	--	--	--	--	<1.0
MW-114	10/30/2002	106.89	8.32	0	98.57	115	--	<250	--	**1,090**	<0.500	<0.500	1.17	5.18	--	1.01
MW-114	10/31/2003	106.89	6.61	0	100.28	<50.0	--	<250	--	<500	<0.500	<0.500	<0.500	<1.0	--	<1.0

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AECOM

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-114	12/30/2003	106.89	5.81	0	101.08	**3,600**	--	<50	--	480	<0.5	<0.5	<0.5	<1.5	--	<1.2
MW-114	10/06/2004	106.89	6.98	0	99.91	<50	--	<76	--	<95	--	--	--	--	--	--
MW-114	10/24/2005	106.89	7.28	0	99.61	<48	--	<79	--	<99	--	--	--	--	--	--
MW-114	09/05/2007	106.89	7.87	0	99.02	<50	--	94	--	**810**	--	--	--	--	--	0.38
MW-114	5/27-28/2008	106.89	7.19	0	99.7	<50	--	**<1,600**	--	**15,000**	<0.5	<0.5	<0.5	<0.5	<0.5	0.14
MW-114	8/27-29/2008	106.89	7.3	0	99.59	<50	--	270	--	**2,200**	<0.5	<0.5	<0.5	<0.5	<0.5	0.25
MW-114	11/17-19/2008	106.89	6.01	0	100.88	<50	--	330	--	**4,600**	<0.5	<0.5	<0.5	<0.5	<0.5	0.13
MW-114	2/16-18/2009	106.89	6.91	0	99.98	<50	--	210	--	**1,900**	<0.5	<0.5	<0.5	<0.5	<0.5	0.22
MW-114	5/4-6/2009	106.89	6.42	0	100.47	<50	--	180	--	**1,400**	<0.5	<0.5	<0.5	<0.5	<0.5	0.43
MW-114	8/19-21/2009	106.89	7.78	0	99.11	<50	--	<30	--	<71	<0.5	<0.5	<0.5	<0.5	<0.5	0.79
MW-114	11/18-20/2009	106.89	5.1	0	101.79	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.34
MW-114	2/8-10/2010	106.89	6.38	0	100.51	<50	--	110	--	**790**	<0.5	<0.5	<0.5	<0.5	<0.5	0.19
MW-114	5/12-13/2010	106.89	6.71	0	100.18	<50	--	<30	--	80	<0.5	<0.5	<0.5	<0.5	<0.5	0.23
MW-114	08/11/2010	106.89	7.45	0	99.44	<50	--	<29	--	220	<0.5	<0.5	<0.5	<0.5	<0.5	0.15
MW-114	11/3-4/2010	106.89	5.88	0	101.01	<50	--	<29	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.24
MW-114	2/3-4/2011	106.89	6.48	0	100.41	<50	--	60	--	460	<0.5	<0.5	<0.5	<0.5	<0.5	0.1
MW-114	05/23/2011	106.89	6.55	0	100.34	<50	--	55	--	380	<0.5	<0.5	<0.5	<0.5	<0.5	0.36
MW-114	8/23-24/11	106.89	7.7	0	99.19	<50	--	130	--	**1,500**	<0.5	<0.5	<0.5	<0.5	<0.5	0.41
MW-114	11/7-9/2011	106.89	7.35	0	99.54	<50	--	120	--	**950**	<0.5	<0.5	<0.5	<0.5	<0.5	0.19
MW-114	2/6-8/2012	106.89	6.25	0	100.64	<50	--	<29	--	180	<0.5	<0.5	<0.5	<0.5	<0.5	0.088
MW-114	5/2-4/2012	106.89	5.95	0	100.94	<50	--	<30	--	140	<0.5	<0.5	<0.5	<0.5	<0.5	0.72
MW-114	8/1-3/2012	106.89	7.5	0	99.39	<50	--	140	--	**910**	<0.5	<0.5	<0.5	<0.5	<0.5	0.084
MW-114	11/26-28/2012	106.89	5.88	0	101.01	<50	--	<31	--	<72	<0.5	<0.5	<0.5	<0.5	<0.5	0.19
MW-114	2/4-6/2013	106.89	6.27	0	100.62	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.13
MW-114	5/6-8/2013	106.89	6.97	0	99.92	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.2
MW-114	9/9-13/2013	106.89	6.96	0	99.93	<50	60	<29	260	<67	<0.5	<0.5	<0.5	<0.5	<0.5	2.3
MW-114	11/18-22/2013	106.89	8.36	0	98.53	<50	99	200	340	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.1
MW-114	2/4-11/2014	106.89	6.56	0	100.33	<50	<29	<29	71	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.12
MW-114	6/12-14/2014	106.89	6.96	0	99.93	<50	94	38	**820**	340	<0.5	<0.5	<0.5	<0.5	<0.5	0.18
MW-114	8/18-21/14	106.89	7.57	0	99.32	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.1
MW-114	11/19-20/2014	106.89	6.75	0	100.14	<50	<28	<28	140	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.2
MW-114	2/17-20/2015	106.89	6.31	0	100.58	<50	<30	<30	<69	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
MW-114	5/11-15/2015	106.89	6.89	0	100	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.55
MW-114	8/10-11/2015	106.89	8.03	0	98.86	<50	130	<29	**570**	170	<0.5	<0.5	<0.5	<0.5	<0.5	**39.2**
MW-114	11/16-18/2015	106.89	4.54	0	102.35	<50	49	<29	280	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.0145
MW-114	5/13-14/2016	106.89	7.97	0	98.92	<50	67	35	490	260	<0.5	<0.5	<0.5	<0.5	--	<0.13
MW-114	11/14/2016	106.89	5.4	0	101.49	<50	220	36	**790**	280	<0.5	<0.5	<0.5	<0.5	--	2.5
MW-114	05/14/2017	106.89	5.93	0	100.96	<50	42	38	<67	280	<0.5	<0.5	<0.5	<0.5	--	8.3
MW-114	11/11-12/2017	106.89	5.82	0	101.07	<50	61	<28	320	<66	<0.5	<0.5	<0.5	<0.5	--	0.45
MW-114	05/11/2018	106.89	6.7	0	100.19	<50	29	<28	230	98	<0.5	<0.5	<0.5	<0.5	<0.5	0.4
MW-114	04/27/2019	106.89	6.6	0	100.29	<19	99	<29	300	<66	<0.2	<0.2	<0.4	<1	--	5
MW-114	11/03/2019	106.89	6.8	0	100.09	<19	110	<30	**670**	310	<0.2	<0.2	<0.4	<1	--	0.21 J
MW-114	05/06/2020	106.89	6.77	0	100.12	38.2 B J	<200	--	<250	--	<1.00	<1.00	<1.00	<3.00	--	<5.00
MW-114	11/7/2020	106.89	5.95	0	100.94	--	--	--	--	--	--	--	--	--	--	--

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AECOM

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-114	05/24/2021	106.89	7.26	0	99.63	<100	<200	<200	83.9 J	83.9 J	<1.00	<1.00	<1.00	<3.00	--	<6.00
MW-114	11/29/2021	106.89	5.96	0	100.93	<100	<200	--	<250	--	<1.00	<1.00	<1.00	<3.00	--	<6.00
MW-114 DUP	11/29/2021	--	--	--	--	<100	<200	--	<250	--	<1.00	<1.00	<1.00	<3.00	--	<6.00
MW-114	05/23/2022	106.89	6.39	0	100.5	--	--	--	--	--	--	--	--	--	--	--
MW-114	11/29/2022	106.89	6.49	0	100.4	--	--	--	--	--	--	--	--	--	--	--
MW-114	01/20/2023	106.89	5.74	0	101.15	--	--	--	--	--	--	--	--	--	--	--
MW-114	05/15/2023	106.89	6.29	0	100.6	--	--	--	--	--	--	--	--	--	--	--
MW-114	11/29/2023	106.89	8.27	0	98.62	--	--	--	--	--	--	--	--	--	--	--
MW-114	05/02/2024	106.89	6.55	0	100.34	--	--	--	--	--	--	--	--	--	--	--
MW-115	08/22/1995	107.94	8.79	0	99.15	**1,800**	--	<250	--	**<750**	--	--	--	--	--	--
MW-115	11/28/1995	107.94	7.05	0	100.89	460	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-115	03/12/1996	107.94	7.76	0	100.18	630	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-115	06/26/1996	107.94	8.45	0	99.49	706	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-115	10/09/1996	107.94	8.71	0	99.23	722	--	<250	--	**<750**	--	--	--	--	--	2.54
MW-115	02/12/1997	107.94	7.48	0	100.46	58	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-115	04/22/1997	107.94	7.25	0	100.69	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-115	08/05/1997	107.94	8.77	0	99.17	611	--	<250	--	**<750**	--	--	--	--	--	2
MW-115	11/11/1997	107.94	7.71	0	100.23	57	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-115	02/11/1998	107.94	7.72	0	100.22	89.5	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-115	05/28/1998	107.94	7.92	0	100.02	<50	--	<250	--	**<750**	--	--	--	--	--	8.08
MW-115	08/20/1998	107.94	9.18	0	98.76	155	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-115	11/19/1998	107.94	8.58	0	99.36	<50	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-115	03/11/1999	107.94	7.12	0	100.82	<80	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-115	05/25/1999	107.94	8.33	0	99.61	<80	--	<250	--	--	--	--	--	--	--	--
MW-115	08/17/1999	107.94	8.87	0	99.07	163	--	<250	--	<500	--	--	--	--	--	1.4
MW-115	11/19/1999	107.94	6.82	0	101.12	<80	--	<250	--	--	--	--	--	--	--	<1.0
MW-115	03/09/2000	107.94	7.2	0	100.74	103	--	<250	--	<500	--	--	--	--	--	<1.0
MW-115	06/13/2000	107.94	7.82	0	100.12	<80	--	--	--	--	--	--	--	--	--	<1.0
MW-115	09/26/2000	107.94	9.02	0	98.92	--	--	<250	--	<500	--	--	--	--	--	1.02
MW-115	12/13/2000	107.94	8.43	0	99.51	313	--	<250	--	<500	--	--	--	--	--	<1.0
MW-115	02/28/2001	107.94	8.13	0	99.81	177	--	<250	--	<500	--	--	--	--	--	<1.0
MW-115	05/02/2001	107.94	10.37	0	97.57	162	--	<250	--	<500	--	--	--	--	--	<1.0
MW-115	10/30/2002	107.94	9.33	0	98.61	175	--	<250	--	<500	<0.500	<0.500	<0.500	<1.0	--	4.36
MW-115	10/31/2003	107.94	8.3	0	99.64	78.9	--	<250	--	<500	<0.500	<0.500	<0.500	<1.0	--	<1.0
MW-115	12/31/2003	107.94	6.98	0	100.96	<99	--	<50	--	<79	<0.5	<0.5	<0.5	<1.5	--	<1.2
MW-115	10/06/2004	107.94	8.43	0	99.51	<50	--	<160	--	<200	--	--	--	--	--	--
MW-115	10/21/2005	107.94	8.67	0	99.27	<48	--	<81	--	<100	--	--	--	--	--	--
MW-115-DUP	10/21/2005	107.94	8.67	0	99.27	<48	--	<82	--	<100	--	--	--	--	--	--
MW-115	09/05/2007	107.94	9.11	0	98.83	<50	--	<76	--	<95	--	--	--	--	--	0.37
MW-115	8/27-29/2008	107.94	8.63	0	99.31	<50	--	<82	--	<100	<0.5	<0.5	<0.5	<0.5	<0.5	0.35
MW-115	11/17-19/2008	107.94	7.25	0	100.69	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.097
MW-115	2/16-18/2009	107.94	8.31	0	99.63	<50	--	<31	--	<71	<0.5	<0.5	<0.5	<0.5	<0.5	0.17
MW-115	5/4-6/2009	107.94	7.66	0	100.28	<50	--	42	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.36

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MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-115	8/19-21/2009	107.94	9.04	0	98.9	<50	--	320	--	**2,700**	<0.5	<0.5	<0.5	<0.5	<0.5	0.64
MW-115	10/19/2009	107.94	8.7	0	99.24	--	--	<29	--	<68	--	--	--	--	--	--
MW-115	11/18-20/2009	107.94	5.85	0	102.09	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.92
MW-115	2/8-10/2010	107.94	7.69	0	100.25	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.17
MW-115	5/12-13/2010	107.94	8.14	0	99.8	<50	--	30	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.2
MW-115	08/12/2010	107.94	8.81	0	99.13	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.92
MW-115	11/3-4/2010	107.94	7.07	0	100.87	70	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.83
MW-115	2/3-4/2011	107.94	7.81	0	100.13	<50	--	33	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.11
MW-115	05/24/2011	107.94	7.95	0	99.99	<50	--	42	--	220	<0.5	<0.5	<0.5	<0.5	<0.5	0.53
MW-115	8/23-24/11	107.94	9.05	0	98.89	73	--	68	--	74	<0.5	<0.5	<0.5	<0.5	<0.5	1.2
MW-115	11/7-9/2011	107.94	8.7	0	99.24	<50	--	<29	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
MW-115	2/6-8/2012	107.94	7.55	0	100.39	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-115	5/2-4/2012	107.94	7.55	0	100.39	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-115	8/1-3/2012	107.94	8.82	0	99.12	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.63
MW-115	11/26-28/2012	107.94	7.04	0	100.9	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.052
MW-115	2/4-6/2013	107.94	7.58	0	100.36	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.073
MW-115	5/6-8/2013	107.94	8.34	0	99.6	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.41
MW-115	9/9-13/2013	107.94	8.09	0	99.85	<50	31	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.89
MW-115	11/18-21/2013	107.94	7.45	0	100.49	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.45
MW-115	2/4-11/2014	107.94	8.05	0	99.89	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.43
MW-115	8/18-21/14	107.94	8.88	0	99.06	66	36	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.82
MW-115	11/19-20/2014	107.94	8.07	0	99.87	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.28
MW-115	2/17-20/2015	107.94	7.57	0	100.37	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
MW-115	5/11-15/2015	107.94	8.33	0	99.61	<50	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
MW-115	8/10-11/2015	107.94	9.28	0	98.66	<50	33	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.71
MW-115	11/16-18/2015	107.94	6.53	0	101.41	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0
MW-115	5/13-14/2016	107.94	8.48	0	99.46											
MW-115	11/14/2016	107.94	7.35	0	100.59	--	--	--	--	--	--	--	--	--	--	--
MW-115	05/14/2017	107.94	7.44	0	100.5	--	--	--	--	--	--	--	--	--	--	--
MW-115	11/11-12/2017	107.94	7.37	0	100.57											
MW-115	05/11/2018	107.94	8.2	0	99.74	--	--	--	--	--	--	--	--	--	--	--
MW-115	11/11-12/2018	107.94	8.31	0	99.63											
MW-115	04/27/2019	107.94	7.49	0	100.45	--	--	--	--	--	--	--	--	--	--	--
MW-115	11/03/2019	107.94	8.2	0	99.74	--	--	--	--	--	--	--	--	--	--	--
MW-115	Nov-19	107.94	--	--	--											
MW-116	08/22/1995	107.56	8.82	0	98.74	<50	--	<250	--	**<750**	--	--	--	--	--	--
MW-116	03/12/1996	107.56	8.08	0	99.48	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-116	10/09/1996	107.56	8.69	0	98.87	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-116	02/12/1997	107.56	7.86	0	99.7	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-116	04/22/1997	107.56	7.65	0	99.91	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-116	08/05/1997	107.56	8.71	0	98.85	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-116	11/11/1997	107.56	8.07	0	99.49	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-116	02/11/1998	107.56	8.06	0	99.5	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0

Table 3- Summary of Groundwater Monitoring Data
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101 Mulford Road, Toledo Washington
Agreed Order No. DE21413

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-116	05/28/1998	107.56	8.25	0	99.31	<50	--	<250	--	**<750**	--	--	--	--	--	4.66
MW-116	08/20/1998	107.56	9.05	0	98.51	<50	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-116	11/19/1998	107.56	9.16	0	98.4	<50	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-116	03/11/1999	107.56	7.64	0	99.92	<80	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-116	05/25/1999	107.56	8.4	0	99.16	<80	--	<250	--	--	--	--	--	--	--	--
MW-116	08/17/1999	107.56	8.78	0	98.78	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-116	11/19/1999	107.56	7.6	0	99.96	<80	--	<250	--	--	--	--	--	--	--	<1.0
MW-116	03/09/2000	107.56	7.7	0	99.86	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-116	06/13/2000	107.56	8.37	0	99.19	<80	--	--	--	--	--	--	--	--	--	<1.0
MW-116	09/26/2000	107.56	8.88	0	98.68	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-116	12/13/2000	107.56	8.52	0	99.04	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-116	02/28/2001	107.56	8.25	0	99.31	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-116	05/02/2001	107.56	10.84	0	96.72	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-116	12/30/2003	107.56	7.54	0	100.02	<99	--	<50	--	<79	<0.5	<0.5	<0.5	<1.5	--	<1.2
MW-116	07/20/2004	107.56	8.92	0	98.64	<50	--	<284	--	**<568**	<0.500	<0.500	<0.500	<1.00	--	--
MW-116	10/07/2004	107.56	7.54	0	100.02	<50	--	<75	--	<94	--	--	--	--	--	--
MW-116	10/20/2005	107.56	8.73	0	98.83	<48	--	<81	--	<100	--	--	--	--	--	--
MW-116	09/06/2007	107.56	9	0	98.56	<50	--	<76	--	<95	--	--	--	--	--	0.15
MW-116	8/27-29/2008	107.56	8.68	0	98.88	<50	--	89	--	<100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-116	11/17-19/2008	107.56	7.93	0	99.63	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-116	2/16-18/2009	107.56	8.45	0	99.11	<50	--	**590**	--	350	<0.5	<0.5	<0.5	<0.5	<0.5	0.11
MW-116	5/4-6/2009	107.56	8.2	0	99.36	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-116	8/19-21/2009	107.56	8.91	0	98.65	<50	--	34	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-116	11/18-20/2009	107.56	6.85	0	100.71	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.11
MW-116	2/8-10/2010	107.56	8.07	0	99.49	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.1
MW-116	08/12/2010	107.56	8.78	0	98.78	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.15
MW-116	11/3-4/2010	107.56	8.04	0	99.52	<50	--	<29	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
MW-116	2/3-4/2011	107.56	8.16	0	99.4	<50	--	<29	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
MW-116	05/24/2011	107.56	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-116	8/23-24/11	107.56	9	0	98.56	<50	--	<31	--	<71	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-116	11/7-9/2011	107.56	8.75	0	98.81	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-116	2/6-8/2012	107.56	8.05	0	99.51	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-116	5/2-4/2012	107.56	8.1	0	99.46	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-116	8/1-3/2012	107.56	8.8	0	98.76	<50	--	<30	--	<71	<0.5	<0.5	<0.5	<0.5	<0.5	<0.034
MW-116	11/26-28/2012	107.56	7.84	0	99.72	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.047
MW-116	2/4-6/2013	107.56	8.04	0	99.52	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.073
MW-116	5/6-8/2013	107.56	8.51	0	99.05	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.073
MW-116	9/9-13/2013	107.56	8.61	0	98.95	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085
MW-116	11/18-21/2013	107.56	8.15	0	99.41	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.1
MW-116	2/4-11/2014	107.56	8.28	0	99.28	<50	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085
MW-116	8/18-21/14	107.56	8.83	0	98.73	68	38	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.78
MW-116	11/19-20/2014	107.56	8.38	0	99.18	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
MW-116	2/17-20/2015	107.56	8.08	0	99.48	<50	<30	<30	<69	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.17
MW-116	5/11-15/2015	107.56	8.71	0	98.85	<50	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082

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101 Mulford Road, Toledo Washington
Agreed Order No. DE21413

AECOM

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-116	8/10-11/2015	107.56	9.17	0	98.39	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.42
MW-116	11/16-18/2015	107.56	7.37	0	100.19	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.0062
MW-116	5/13-14/2016	107.56	8.59	0	98.97	WELL REMOVED FROM SAMPLING PROGRAM - MONITORING ONLY										
MW-116	11/14/2016	107.56	8.06	0	99.5	--	--	--	--	--	--	--	--	--	--	--
MW-116	05/14/2017	107.56	8.07	0	99.49	--	--	--	--	--	--	--	--	--	--	--
MW-116	11/11-12/2017	107.56	8.14	0	99.42	WELL REMOVED FROM SAMPLING PROGRAM - MONITORING ONLY										
MW-116	05/11/2018	107.56	8.43	0	99.13	--	--	--	--	--	--	--	--	--	--	--
MW-116	11/11-12/2018	107.56	9.04	0	98.52	WELL REMOVED FROM SAMPLING PROGRAM - MONITORING ONLY										
MW-116	04/27/2019	107.56	8.3	0	99.26	--	--	--	--	--	--	--	--	--	--	--
MW-116	11/03/2019	107.56	8.48	0	99.08	--	--	--	--	--	--	--	--	--	--	--
MW-116	Nov-19	107.56	--	--	--	WELL ABANDONED										
MW-117	08/22/1995	106.57	7.45	0	99.12	<50	--	<250	--	**<750**	--	--	--	--	--	--
MW-117	11/28/1995	106.57	5.45	0	101.12	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-117	03/12/1996	106.57	6.32	0	100.25	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-117	06/26/1996	106.57	7.18	0	99.39	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-117	10/09/1996	106.57	7.42	0	99.15	<50	--	<250	--	**<750**	--	--	--	--	--	7.1
MW-117	02/12/1997	106.57	5.93	0	100.64	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-117	04/22/1997	106.57	5.78	0	100.79	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-117	08/05/1997	106.57	7.58	0	98.99	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-117	11/11/1997	106.57	6.21	0	100.36	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-117	02/11/1998	106.57	6.21	0	100.36	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-117	05/28/1998	106.57	6.44	0	100.13	<50	--	<250	--	**<750**	--	--	--	--	--	2.68
MW-117	08/20/1998	106.57	7.9	0	98.67	<50	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-117	11/19/1998	106.57	7.18	0	99.39	<50	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-117	03/11/1999	106.57	5.51	0	101.06	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-117	05/25/1999	106.57	7	0	99.57	<80	--	<250	--	--	--	--	--	--	--	--
MW-117	08/17/1999	106.57	7.56	0	99.01	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-117	11/19/1999	106.57	5.11	0	101.46	<80	--	<250	--	--	--	--	--	--	--	<1.0
MW-117	03/09/2000	106.57	5.65	0	100.92	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-117	06/13/2000	106.57	6.25	0	100.32	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-117	09/26/2000	106.57	7.7	0	98.87	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-117	12/13/2000	106.57	7.11	0	99.46	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-117	02/28/2001	106.57	6.78	0	99.79	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-117	05/02/2001	106.57	8.9	0	97.67	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-117	12/30/2003	106.57	5.46	0	101.11	<100	--	<50	--	<80	<0.5	<0.5	<0.5	<1.5	--	<1.2
MW-117	10/06/2004	106.57	7.07	0	99.5	<50	--	<79	--	<98	--	--	--	--	--	--
MW-117	10/21/2005	106.57	7.33	0	99.24	<48	--	<81	--	<100	--	--	--	--	--	--
MW-117	09/05/2007	106.57	7.92	0	98.65	<50	--	<82	--	<100	--	--	--	--	--	0.22
MW-117	5/27-28/2008	106.57	7.42	0	99.15	<50	--	<80	--	<100	<0.5	<0.5	<0.5	<0.5	<0.5	0.056
MW-117	8/27-29/2008	106.57	7.38	0	99.19	<50	--	<82	--	<100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-117	11/17-19/2008	106.57	5.9	0	100.67	<50	--	55	--	<72	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-117	2/16-18/2009	106.57	7.06	0	99.51	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.095
MW-117	5/4-6/2009	106.57	6.51	0	100.06	<50	--	38	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050

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MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-117	8/19-21/2009	106.57	7.82	0	98.75	<50	--	40	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.073
MW-117	11/18-20/2009	106.57	3.85	0	102.72	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-117	2/8-10/2010	106.57	6.43	0	100.14	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-117	5/12-13/2010	106.57	6.96	0	99.61	<50	--	36	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-117	08/12/2010	106.57	7.68	0	98.89	<50	--	<29	--	210	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
MW-117	11/3-4/2010	106.57	5.97	0	100.6	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
MW-117	2/3-4/2011	106.57	6.5	0	100.07	<50	--	<31	--	<72	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
MW-117	05/24/2011	106.57	6.77	0	99.8	<50	--	<30	--	150	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
MW-117	8/23-24/11	106.57	7.85	0	98.72	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.15
MW-117	11/7-9/2011	106.57	7.55	0	99.02	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-117	2/6-8/2012	106.57	6.2	0	100.37	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-117	5/2-4/2012	106.57	6	0	100.57	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-117	8/1-3/2012	106.57	7.66	0	98.91	<50	--	<32	--	<75	<0.5	<0.5	<0.5	<0.5	<0.5	<0.034
MW-117	11/26-28/2012	106.57	5.6	0	100.97	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.047
MW-117	2/4-6/2013	106.57	6.29	0	100.28	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.073
MW-117	5/6-8/2013	106.57	7.18	0	99.39	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.073
MW-117	9/9-13/2013	106.57	8.11	0	98.46	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085
MW-117	11/18-21/2013	106.57	5.99	0	100.58	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085
MW-117	2/4-11/2014	106.57	6.85	0	99.72	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085
MW-117	6/12-14/2014	106.57	7.11	0	99.46	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085
MW-117	8/18-21/14	106.57	7.71	0	98.86	<50	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.37
MW-117	11/19-20/2014	106.57	6.91	0	99.66	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
MW-117	2/17-20/2015	106.57	6.26	0	100.31	<50	<29	<29	<69	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
MW-117	5/11-15/2015	106.57	6.91	0	99.66	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
MW-117	8/10-11/2015	106.57	8.1	0	98.47	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	1.1
MW-117	11/16-18/2015	106.57	3.89	0	102.68	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.0021
MW-117	5/13-14/2016	106.57	7.38	0	99.19	WELL REMOVED FROM SAMPLING PROGRAM - MONITORING ONLY										
MW-117	11/14/2016	106.57	5.6	0	100.97	--	--	--	--	--	--	--	--	--	--	--
MW-117	05/14/2017	106.57	6.1	0	100.47	--	--	--	--	--	--	--	--	--	--	--
MW-117	11/11-12/2017	106.57	6.16	0	100.41	WELL REMOVED FROM SAMPLING PROGRAM - MONITORING ONLY										
MW-117	05/11/2018	106.57	7.04	0	99.53	--	--	--	--	--	--	--	--	--	--	--
MW-117	11/11-12/2018	106.57	6.58	0	99.99	WELL REMOVED FROM SAMPLING PROGRAM - MONITORING ONLY										
MW-117	04/27/2019	106.57	6.82	0	99.75	--	--	--	--	--	--	--	--	--	--	--
MW-117	11/03/2019	106.57	7.09	0	99.48	--	--	--	--	--	--	--	--	--	--	--
MW-117	Nov-19	106.57	--	--	--	WELL ABANDONED										
MW-118	08/22/1995	106.72	7.87	0	98.85	<50	--	470	--	**<750**	--	--	--	--	--	--
MW-118	11/28/1995	106.72	5.76	0	100.96	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-118	03/12/1996	106.72	6.67	0	100.05	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-118	06/26/1996	106.72	7.51	0	99.21	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-118	10/09/1996	106.72	7.78	0	98.94	50.1	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-118	02/12/1997	106.72	6.35	0	100.37	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-118	04/22/1997	106.72	5.98	0	100.74	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-118	08/05/1997	106.72	7.85	0	98.87	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0

Table 3- Summary of Groundwater Monitoring Data
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101 Mulford Road, Toledo Washington
Agreed Order No. DE21413

AECOM

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-118	11/11/1997	106.72	6.52	0	100.2	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-118	02/11/1998	106.72	6.56	0	100.16	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-118	05/28/1998	106.72	6.85	0	99.87	<50	--	<250	--	**<750**	--	--	--	--	--	2.84
MW-118	08/20/1998	106.72	7.26	0	99.46	<50	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-118	11/19/1998	106.72	7.7	0	99.02	<50	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-118	03/11/1999	106.72	5.81	0	100.91	<80	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-118	05/25/1999	106.72	7.39	0	99.33	<80	--	<250	--	--	--	--	--	--	--	--
MW-118	08/17/1999	106.72	7.95	0	98.77	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-118	11/19/1999	106.72	5.53	0	101.19	<80	--	<250	--	--	--	--	--	--	--	<1.0
MW-118	03/09/2000	106.72	5.99	0	100.73	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-118	06/13/2000	106.72	7.08	0	99.64	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-118	09/26/2000	106.72	8.07	0	98.65	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-118	12/13/2000	106.72	7.53	0	99.19	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-118	02/28/2001	106.72	7.17	0	99.55	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-118	05/02/2001	106.72	6.81	0	99.91	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-118	12/30/2003	106.72	5.71	0	101.01	<500	--	<50	--	<400	<0.5	<0.5	<0.5	<1.5	--	<1.2
MW-118	07/20/2004	106.72	8.14	0	98.58	<50	--	<250	--	<500	<0.500	<0.500	<0.500	<1.00	--	--
MW-118	10/07/2004	106.72	7.55	0	99.17	<50	--	<76	--	<96	--	--	--	--	--	--
MW-118-DUP	10/07/2004	106.72	7.55	0	99.17	<50	--	<80	--	160	--	--	--	--	--	--
MW-118	10/20/2005	106.72	7.78	0	98.94	<48	--	<83	--	<100	--	--	--	--	--	--
MW-118	09/05/2007	106.72	8.2	0	98.52	<50	--	**980**	--	**710**	--	--	--	--	--	0.13
MW-118	8/27-29/2008	106.72	7.64	0	99.08	<50	--	260	--	230	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-118	11/17-19/2008	106.72	6.2	0	100.52	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-118	2/16-18/2009	106.72	7.29	0	99.43	<50	--	<29	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.068
MW-118	5/4-6/2009	106.72	6.7	0	100.02	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-118	8/19-21/2009	106.72	8.04	0	98.68	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.23
MW-118	11/18-20/2009	106.72	4.45	0	102.27	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-118	2/8-10/2010	106.72	6.65	0	100.07	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-118	5/12-13/2010	106.72	7.21	0	99.51	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-118	08/12/2010	106.72	7.9	0	98.82	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
MW-118	11/3-4/2010	106.72	6.39	0	100.33	<50	--	<29	--	160	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
MW-118	2/3-4/2011	106.72	6.77	0	99.95	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
MW-118	8/23-24/11	106.72	8.15	0	98.57	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-118	11/7-9/2011	106.72	7.8	0	98.92	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-118	2/6-8/2012	106.72	6.5	0	100.22	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-118	5/2-4/2012	106.72	5.85	0	100.87	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-118	8/1-3/2012	106.72	7.87	0	98.85	<50	--	97	--	230	<0.5	<0.5	<0.5	<0.5	<0.5	0.042
MW-118	11/26-28/2012	106.72	5.84	0	100.88	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.047
MW-118	2/4-6/2013	106.72	6.57	0	100.15	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.073
MW-118	5/6-8/2013	106.72	7.47	0	99.25	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.073
MW-118	9/9-13/2013	106.72	7.28	0	99.44	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085
MW-118	11/18-21/2013	106.72	6.57	0	100.15	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.15
MW-118	2/4-11/2014	106.72	7.02	0	99.7	<50	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085
MW-118	8/18-21/14	106.72	7.92	0	98.8	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.41

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Agreed Order No. DE21413

AECOM

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-118	11/19-20/2014	106.72	7.15	0	99.57	<50	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
MW-118	2/17-20/2015	106.72	6.54	0	100.18	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.083
MW-118	5/11-15/2015	106.72	8.93	0	97.79	<50	69	75	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.17
MW-118	8/10-11/2015	106.72	8.27	0	98.45	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.13
MW-118	11/16-18/2015	106.72	4.69	0	102.03	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.00067
MW-118	5/13-14/2016	106.72	7.61	0	99.11	WELL REMOVED FROM SAMPLING PROGRAM - MONITORING ONLY										
MW-118	11/14/2016	106.72	6.36	0	100.36	--	--	--	--	--	--	--	--	--	--	--
MW-118	05/14/2017	106.72	6.5	0	100.22	--	--	--	--	--	--	--	--	--	--	--
MW-118	11/11-12/2017	106.72	6.52	0	100.2	WELL REMOVED FROM SAMPLING PROGRAM - MONITORING ONLY										
MW-118	05/11/2018	106.72	7.31	0	99.41	--	--	--	--	--	--	--	--	--	--	--
MW-118	11/11-12/2018	106.72	7.34	0	99.38	WELL REMOVED FROM SAMPLING PROGRAM - MONITORING ONLY										
MW-118	04/27/2019	106.72	7.05	0	99.67	--	--	--	--	--	--	--	--	--	--	--
MW-118	11/03/2019	106.72	7.66	0	99.06	--	--	--	--	--	--	--	--	--	--	--
MW-118	Nov-19	106.72	--	--	--	WELL ABANDONED										
MW-119	08/22/1995	108.35	9.22	0	99.13	<50	--	<250	--	**<750**	--	--	--	--	--	--
MW-119	11/28/1995	108.35	7.54	0	100.81	100	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-119	03/12/1996	108.35	8.21	0	100.14	240	--	<250	--	**<750**	--	--	--	--	--	2.2
MW-119	06/26/1996	108.35	8.91	0	99.44	174	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-119	10/09/1996	108.35	9.14	0	99.21	78	--	<250	--	**<750**	--	--	--	--	--	2.16
MW-119	02/12/1997	108.35	7.84	0	100.51	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-119	04/22/1997	108.35	7.67	0	100.68	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-119	08/05/1997	108.35	9.15	0	99.2	53.6	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-119	11/11/1997	108.35	8.02	0	100.33	<50	--	264	--	**<750**	--	--	--	--	--	<2.0
MW-119	02/11/1998	108.35	8.02	0	100.33	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-119	05/28/1998	108.35	8.2	0	100.15	102	--	<250	--	**<750**	--	--	--	--	--	3.33
MW-119	08/20/1998	108.35	10.4	0	97.95	<50	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-119	11/19/1998	108.35	8.98	0	99.37	78.5	--	<250	--	**<750**	--	--	--	--	--	1.82
MW-119	03/11/1999	108.35	7.61	0	100.74	<80	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-119	05/25/1999	108.35	8.77	0	99.58	<80	--	<250	--	--	--	--	--	--	--	--
MW-119	08/17/1999	108.35	9.29	0	99.06	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-119	11/19/1999	108.35	7.25	0	101.1	<80	--	<250	--	--	--	--	--	--	--	<1.0
MW-119	03/09/2000	108.35	7.63	0	100.72	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-119	06/13/2000	108.35	8.28	0	100.07	413	--	<250	--	<500	--	--	--	--	--	2.64
MW-119	09/26/2000	108.35	9.44	0	98.91	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-119	12/13/2000	108.35	8.86	0	99.49	--	--	<250	--	<500	--	--	--	--	--	1.79
MW-119	02/28/2001	108.35	8.56	0	99.79	227	--	<250	--	<500	--	--	--	--	--	2.64
MW-119	05/02/2001	108.35	8.1	0	100.25	104	--	<250	--	<500	--	--	--	--	--	1.56
MW-119	10/30/2002	108.35	9.76	0	98.59	<80	--	<250	--	<500	<0.500	<0.500	<0.500	<1.00	--	4.2
MW-119	10/31/2003	108.35	8.62	0	99.73	<50	--	<250	--	<500	<0.500	<0.500	<0.500	<1.00	--	1.315
MW-119	12/30/2003	108.35	7.4	0	100.95	<96	--	<50	--	<77	<0.5	<0.5	<0.5	<1.5	--	<1.2
MW-119	10/07/2004	108.35	8.85	0	99.5	<50	--	<79	--	<98	--	--	--	--	--	--
MW-119	10/20/2005	108.35	9.08	0	99.27	<48	--	<80	--	<100	--	--	--	--	--	--
MW-119	09/05/2007	108.35	9.53	0	98.82	<50	--	**<800**	--	**<1,000**	--	--	--	--	--	0.57

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Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-119	8/27-29/2008	108.35	9.05	0	99.3	<50	--	<79	--	<99	<0.5	<0.5	<0.5	<0.5	<0.5	0.52
MW-119	11/17-19/2008	108.35	7.65	0	100.7	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.29
MW-119	2/16-18/2009	108.35	8.7	0	99.65	<50	--	45	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.44
MW-119	5/4-6/2009	108.35	8.06	0	100.29	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.74
MW-119	8/19-21/2009	108.35	9.45	0	98.9	<50	--	36	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.25
MW-119	11/18-20/2009	108.35	6.41	0	101.94	150	--	32	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	1
MW-119	2/8-10/2010	108.35	8.11	0	100.24	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.33
MW-119	5/12-13/2010	108.35	8.56	0	99.79	<50	--	<29	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.69
MW-119	08/12/2010	108.35	9.22	0	99.13	<50	--	<30	--	70	<0.5	<0.5	<0.5	<0.5	<0.5	0.36
MW-119	11/3-4/2010	108.35	7.52	0	100.83	<50	--	38	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	1.3
MW-119	2/3-4/2011	108.35	8.22	0	100.13	<50	--	30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.3
MW-119	05/24/2011	108.35	8.37	0	99.98	<50	--	<30	--	210	<0.5	<0.5	<0.5	<0.5	<0.5	0.49
MW-119	11/7-9/2011	108.35	9.1	0	99.25	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.34
MW-119	2/6-8/2012	108.35	7.9	0	100.45	<50	--	<29	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-119	5/2-4/2012	108.35	8	0	100.35	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.26
MW-119	8/1-3/2012	108.35	9.23	0	99.12	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.27
MW-119	11/26-28/2012	108.35	7.43	0	100.92	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.1
MW-119	2/4-6/2013	108.35	7.99	0	100.36	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.099
MW-119	5/6-8/2013	108.35	8.76	0	99.59	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.15
MW-119	9/9-13/2013	108.35	8.51	0	99.84	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.26
MW-119	11/18-21/2013	108.35	7.67	0	100.68	<50	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.8
MW-119	2/4-11/2014	108.35	8.47	0	99.88	<50	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.16
MW-119	8/18-21/14	108.35	9.23	0	99.12	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.17
MW-119	11/19-20/2014	108.35	8.5	0	99.85	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.14
MW-119	2/17-20/2015	108.35	7.97	0	100.38	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.18
MW-119	5/11-15/2015	108.35	8.96	0	99.39	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.24
MW-119	8/10-11/2015	108.35	9.7	0	98.65	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.13
MW-119	11/16-18/2015	108.35	6.43	0	101.92	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.0041
MW-119	5/13-14/2016	108.35	8.39	0	99.96	WELL REMOVED FROM SAMPLING PROGRAM - MONITORING ONLY										
MW-119	11/14/2016	108.35	7.7	0	100.65	--	--	--	--	--	--	--	--	--	--	--
MW-119	05/14/2017	108.35	7.85	0	100.5	--	--	--	--	--	--	--	--	--	--	--
MW-119	11/11-12/2017	108.35	7.92	0	100.43	WELL REMOVED FROM SAMPLING PROGRAM - MONITORING ONLY										
MW-119	05/11/2018	108.35	8.6	0	99.75	--	--	--	--	--	--	--	--	--	--	--
MW-119	11/11-12/2018	108.35	8.62	0	99.73	WELL REMOVED FROM SAMPLING PROGRAM - MONITORING ONLY										
MW-119	11/7-9/2011	108.35	8	0	99.11	740	--	220	--	160	<0.5	<0.5	<0.5	<0.5	<0.5	1.8
MW-119	2/6-8/2012	108.35	6.8	0	101.55	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-119	5/2-4/2012	108.35	6.2	0	102.15	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
MW-119	8/1-3/2012	108.35	8.11	0	99	<50	--	59	--	75	<0.5	<0.5	<0.5	<0.5	<0.5	0.29
MW-119	11/26-28/2012	108.35	6.21	0	102.14	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.047
MW-119	2/4-6/2013	108.35	6.84	0	101.51	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.073
MW-119	5/6-8/2013	108.35	7.64	0	100.71	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.073
MW-119	9/9-13/2013	108.35	7.36	0	99.75	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.15
MW-119	11/18-21/2013	108.35	6.61	0	100.5	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.088
MW-119	2/4-11/2014	108.35	7.32	0	101.03	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085

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101 Mulford Road, Toledo Washington
Agreed Order No. DE21413

AECOM

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-119	6/12-14/2014	108.35	7.7	0	100.65	<50	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
MW-119	8/18-21/14	108.35	8.13	0	98.98	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.32
MW-119	11/19-20/2014	108.35	7.37	0	100.98	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
MW-119	04/27/2019	108.35	8.39	0	99.96	--	--	--	--	--	--	--	--	--	--	--
MW-119	11/03/2019	108.35	8.34	0	100.01	--	--	--	--	--	--	--	--	--	--	--
MW-119	Nov-19	108.35	--	--	--	WELL ABANDONED										
MW-120	2/17-20/2015	107.11	6.83	0	100.28	<50	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.22
MW-120	5/11-15/2015	107.11	7.71	0	99.4	<50	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.1
MW-120	8/10-11/2015	107.11	8.53	0	98.58	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.13
MW-120	11/16-18/2015	107.11	4.94	0	102.17	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.0019
MW-120	5/13-14/2016	107.11	7.81	0	99.3	WELL REMOVED FROM SAMPLING PROGRAM - MONITORING ONLY										
MW-120	11/14/2016	107.11	6.47	0	100.64	--	--	--	--	--	--	--	--	--	--	--
MW-120	05/14/2017	107.11	6.67	0	100.44	--	--	--	--	--	--	--	--	--	--	--
MW-120	11/11-12/2017	107.11	6.69	0	100.42	WELL REMOVED FROM SAMPLING PROGRAM - MONITORING ONLY										
MW-120	05/11/2018	107.11	7.49	0	99.62	--	--	--	--	--	--	--	--	--	--	--
MW-120	11/11-12/2018	107.11	7.46	0	99.65	WELL REMOVED FROM SAMPLING PROGRAM - MONITORING ONLY										
MW-120	04/27/2019	107.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-120	11/03/2019	107.11	7.5	0	99.61	--	--	--	--	--	--	--	--	--	--	--
MW-120	Nov-19	107.11	--	--	--	WELL ABANDONED										
B-1	02/14/1991	107.74	--	--	--	**5,100**	--	<250	--	--	--	--	--	--	--	--
B-1	02/14/1992	107.74	6.9	0	100.84	--	--	--	--	--	--	--	--	--	--	--
B-1	02/18/1992	107.74	6.72	0	101.02	--	--	--	--	--	--	--	--	--	--	--
B-1	03/13/1992	107.74	6.93	0	100.81	<50	--	--	--	--	--	--	--	--	--	--
B-1	04/21/1992	107.74	6.66	0	101.08	--	--	--	--	--	--	--	--	--	--	--
B-1	08/22/1995	107.74	8.03	0	99.71	<50	--	<250	--	**<750**	--	--	--	--	--	--
B-1	11/28/1995	107.74	6.13	0	101.61	<50	--	<250	--	**<750**	--	--	--	--	--	<2
B-1	03/11/1996	107.74	6.99	0	100.75	<50	--	<250	--	**<750**	--	--	--	--	--	7.5
B-1	06/26/1996	107.74	7.73	0	100.01	<50	--	<250	--	**<750**	--	--	--	--	--	<2
B-1	10/09/1996	107.74	8.05	0	99.69	<50	--	<250	--	**<750**	--	--	--	--	--	<2
B-1	02/12/1997	107.74	6.46	0	101.28	<50	--	<250	--	**<750**	--	--	--	--	--	<2
B-1	04/22/1997	107.74	6.25	0	101.49	<50	--	<250	--	**<750**	--	--	--	--	--	<2
B-1	08/05/1997	107.74	8.2	0	99.54	<50	--	<250	--	**<750**	--	--	--	--	--	<2
B-1	11/11/1997	107.74	6.84	0	100.9	<50	--	300	--	**<750**	--	--	--	--	--	<2
B-1	02/11/1998	107.74	6.7	0	101.04	<50	--	<250	--	**<750**	--	--	--	--	--	<2
B-1	05/28/1998	107.74	6.85	0	100.89	<50	--	<250	--	**<750**	--	--	--	--	--	<1
B-1	08/20/1998	107.74	9.42	0	98.32	<50	--	<250	--	**<750**	--	--	--	--	--	<1
B-1	11/19/1998	107.74	7.43	0	100.31	<50	--	<250	--	**<750**	--	--	--	--	--	<1
B-1	03/11/1999	107.74	6.34	0	101.4	<80	--	<250	--	**<750**	--	--	--	--	--	<1
B-1	05/25/1999	107.74	7.6	0	100.14	<80	--	**<1,450**	--	--	--	--	--	--	--	--
B-1	08/17/1999	107.74	8.28	0	99.46	<80	--	<250	--	<500	--	--	--	--	--	<1
B-1	11/19/1999	107.74	5.9	0	101.84	<80	--	<250	--	--	--	--	--	--	--	<1
B-1	03/09/2000	107.74	6.38	0	101.36	<80	--	<250	--	<500	--	--	--	--	--	<1

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Agreed Order No. DE21413

AECOM

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
B-1	06/12/2000	107.74	6.26	0	101.48	<80	--	<250	--	<500	--	--	--	--	--	<1
B-1	09/26/2000	107.74	8.51	0	99.23	--	--	<250	--	<500	--	--	--	--	--	<1
B-1	12/13/2000	107.74	7.69	0	100.05	--	--	<250	--	<500	--	--	--	--	--	<1
B-1	02/28/2001	107.74	7.37	0	100.37	<80	--	<250	--	<500	--	--	--	--	--	<1
B-1	05/02/2001	107.74	6.69	0	101.05	109	--	<250	--	<500	--	--	--	--	--	<1
B-1	12/30/2003	107.74	6.11	0	101.63	<98	--	<50	--	<78	<0.5	<0.5	<0.5	<1.5	--	<1.2
B-1	10/06/2004	107.74	8.87	0	98.87	<50	--	81	--	100	--	--	--	--	--	--
B-1	10/24/2005	107.74	7.96	0	99.78	<48	--	<81	--	<100	--	--	--	--	--	--
B-1	09/05/2007	107.74	8.6	0	99.14	<50	--	<80	--	<100	--	--	--	--	--	0.13
B-1	5/27-28/2008	107.74	7.85	0	99.89	<50	--	<75	--	<94	<0.5	0.6	<0.5	<0.5	<0.5	<0.050
B-1	8/27-29/2008	107.74	8	0	99.74	<50	--	<82	--	<100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
B-1	11/17-19/2008	107.74	6.39	0	101.35	<50	--	83	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
B-1	2/16-18/2009	107.74	7.55	0	100.19	<50	--	300	--	**2,000**	<0.5	<0.5	<0.5	<0.5	<0.5	0.098
B-1	5/4-6/2009	107.74	6.47	0	101.27	<50	--	39	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
B-1	8/19-21/2009	107.74	8.54	0	99.2	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
B-1	11/18-20/2009	107.74	5.35	0	102.39	66	--	60	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.22
B-1	2/8-10/2010	107.74	6.89	0	100.85	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
B-1	5/12-13/2010	107.74	7.34	0	100.4	<50	--	70	--	82	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
B-1	08/11/2010	107.74	8.16	0	99.58	<50	--	<30	--	83	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
B-1	11/3-4/2010	107.74	6.02	0	101.72	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
B-1	2/3-4/2011	107.74	7.03	0	100.71	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
B-1	05/24/2011	107.74	7.1	0	100.64	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
B-1	8/23-24/11	107.74	8.46	0	99.28	<50	--	<30	--	<71	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
B-1	11/7-9/2011	107.74	8.1	0	99.64	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
B-1	2/6-8/2012	107.74	6.75	0	100.99	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.11
B-1	5/2-4/2012	107.74	6.45	0	101.29	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
B-1	8/1-3/2012	107.74	8.23	0	99.51	<50	--	<30	--	<71	<0.5	<0.5	<0.5	<0.5	<0.5	<0.034
B-1	11/26-28/2012	107.74	6.29	0	101.45	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.047
B-1	2/4-6/2013	107.74	6.81	0	100.93	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.073
B-1	5/6-8/2013	107.74	8.66	0	99.08	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.073
B-1	9/9-13/2013	107.74	7.18	0	100.56	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085
B-1	11/18-22/2013	107.74	6.64	0	101.1	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085
B-1	2/4-11/2014	107.74	7.25	0	100.49	<50	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085
B-1	6/12-14/2014	107.74	7.87	0	99.87	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085
B-1	8/18-21/14	107.74	8.4	0	99.34	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
B-1	11/19-20/2014	107.74	7.43	0	100.31	<50	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
B-1	2/17-20/2015	107.74	6.79	0	100.95	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
B-1	5/11-15/2015	107.74	8.77	0	98.97	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
B-1	8/10-11/2015	107.74	8.8	0	98.94	<50	89	<28	74	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.13
B-1	11/16-18/2015	107.74	4.69	0	103.05	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	0.00063
B-1	5/13-14/2016	107.74	7.8	0	99.94	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	--	<0.13
B-1	11/14/2016	107.74	6.15	0	101.59	<50	--	51	--	<67	<0.5	<0.5	<0.5	<0.5	--	<0.090
B-1	05/14/2017	107.74	6.51	0	101.23	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	--	<0.090
B-1	11/11-12/2017	107.74	7.42	0	100.32	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	--	<0.11

Table 3- Summary of Groundwater Monitoring Data
Draft Engineering Design Report
Cowlitz Food and Fuel Site
101 Mulford Road, Toledo Washington
Agreed Order No. DE21413

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
B-1	05/11/2018	107.74	7.31	0	100.43	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.11
B-1	11/11-12/2018	107.74	7.48	0	100.26	<19	--	30	--	<67	<0.2	<0.2	<0.4	<1	--	<1.1
B-1	04/27/2019	107.74	7.23	0	100.51	<19	--	32 J	--	<66	<0.2	<0.2	<0.4	<1	--	<1.1
B-1	11/03/2019	107.74	7.45	0	100.29	<19	--	<29	--	<66	<0.2	<0.2	<0.4	<1	--	0.30 J
B-1	05/06/2020	107.74	7.46	0	100.28	32.9 B J	<200	--	--	<250	<1.00	<1.00	<1.00	<3.00	--	<5.00
B-1	11/7/2020	107.74	6.6	0	101.14	--	--	--	--	--	--	--	--	--	--	--
B-1	05/24/2021	107.74	7.92	0	99.82	462 B	137 J	137 J	<250	<250	<1.00	<1.00	<1.00	<3.00	--	<6.00
B-1 DUP	05/24/2021	108.99	--	--	--	<100	<200	<200	<250	<250	<1.00	<1.00	<1.00	<3.00	--	<6.00
B-1	11/29/2021	107.74	6.52	0	101.22	--	--	--	--	--	--	--	--	--	--	--
B-1	05/23/2022	107.74	6.98	0	100.76	--	--	--	--	--	--	--	--	--	--	--
B-1	11/29/2022	107.74	7.17	0	100.57	--	--	--	--	--	--	--	--	--	--	--
B-1	01/20/2023	107.74	6.35	0	101.39	--	--	--	--	--	--	--	--	--	--	--
B-1	05/15/2023	107.74	6.22	0	101.52	--	--	--	--	--	--	--	--	--	--	--
B-1	11/29/2023	107.74	8.66	0	99.08	--	--	--	--	--	--	--	--	--	--	--
B-1	05/02/2024	107.74	7.22	0	100.52	--	--	--	--	--	--	--	--	--	--	--
B-2	02/14/1991	108.99	--	--	--	180	--	<250	--	--	--	--	--	--	--	--
B-2	02/14/1992	108.99	8.08	0	100.91	--	--	--	--	--	--	--	--	--	--	--
B-2	02/18/1992	108.99	7.97	0	101.02	--	--	--	--	--	--	--	--	--	--	--
B-2	03/09/1992	108.99	7.88	0	101.11	--	--	--	--	--	--	--	--	--	--	--
B-2	03/13/1992	108.99	8.12	0	100.87	--	--	--	--	--	--	--	--	--	--	--
B-2	04/21/1992	108.99	7.82	0	101.17	--	--	--	--	--	--	--	--	--	--	--
B-2	08/22/1995	108.99	9.3	0	99.69	<50	--	<250	--	**<750**	--	--	--	--	--	--
B-2	11/27/1995	108.99	7.33	0	101.66	<50	--	<250	--	**<750**	--	--	--	--	--	<2
B-2	03/12/1996	108.99	8.2	0	100.79	<50	--	<250	--	**<750**	--	--	--	--	--	<2
B-2	06/27/1996	108.99	8.95	0	100.04	<50	--	<250	--	**<750**	--	--	--	--	--	<2
B-2	10/10/1996	108.99	9.28	0	99.71	<50	--	<250	--	**<750**	--	--	--	--	--	<2
B-2	02/12/1997	108.99	7.73	0	101.26	<50	--	<250	--	**<750**	--	--	--	--	--	<2
B-2	04/22/1997	108.99	7.41	0	101.58	<50	--	<250	--	**<750**	--	--	--	--	--	2
B-2	08/05/1997	108.99	9.4	0	99.59	<50	--	<250	--	**<750**	--	--	--	--	--	<2
B-2	11/11/1997	108.99	8	0	100.99	<50	--	<250	--	**<750**	--	--	--	--	--	<2
B-2	02/11/1998	108.99	7.9	0	101.09	<50	--	<250	--	**<750**	--	--	--	--	--	<2
B-2	05/28/1998	108.99	8.03	0	100.96	<50	--	<250	--	**<750**	--	--	--	--	--	<1
B-2	08/20/1998	108.99	10.64	0	98.35	<50	--	<250	--	**<750**	--	--	--	--	--	<1
B-2	11/19/1998	108.99	8.67	0	100.32	<50	--	<250	--	**<750**	--	--	--	--	--	<1
B-2	03/11/1999	108.99	7.56	0	101.43	<80	--	<250	--	<500	--	--	--	--	--	<1
B-2	05/25/1999	108.99	8.82	0	100.17	<80	--	<250	--	**<1,600**	--	--	--	--	--	--
B-2	08/17/1999	108.99	9.51	0	99.48	<80	--	<250	--	<500	--	--	--	--	--	<1
B-2	11/19/1999	108.99	7.08	0	101.91	<80	--	<250	--	<500	--	--	--	--	--	<1
B-2	03/09/2000	108.99	7.59	0	101.4	<80	--	<250	--	<500	--	--	--	--	--	<1
B-2	06/12/2000	108.99	8	0	100.99	<80	--	<250	--	<500	--	--	--	--	--	<1
B-2	09/26/2000	108.99	9.74	0	99.25	--	--	<250	--	<500	--	--	--	--	--	<1
B-2	12/13/2000	108.99	8.91	0	100.08	--	--	<250	--	<500	--	--	--	--	--	<1
B-2	02/28/2001	108.99	8.59	0	100.4	<80	--	<250	--	<500	--	--	--	--	--	<1

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AECOM

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
B-2	05/02/2001	108.99	7.89	0	101.1	<80	--	<250	--	<500	--	--	--	--	--	<1
B-2	12/30/2003	108.99	7.36	0	101.63	--	--	<50	--	--	<0.5	<0.5	<0.5	<1.5	--	<1.2
B-2	10/06/2004	108.99	7.65	0	101.34	<50	--	<79	--	<99	--	--	--	--	--	--
B-2	07/18/2005	108.99	9.2	0	99.79	<48	--	<77	--	<96	--	--	--	--	--	--
B-2	10/21/2005	108.99	9.17	0	99.82	<48	--	<82	--	<100	--	--	--	--	--	--
B-2	09/05/2007	108.99	9.83	0	99.16	<50	--	<81	--	<100	--	--	--	--	--	0.1
B-2	8/27-29/2008	108.99	9.28	0	99.71	<50	--	<80	--	<100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
B-2	11/17-19/2008	108.99	7.57	0	101.42	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
B-2	2/16-18/2009	108.99	8.77	0	100.22	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.07
B-2	5/4-6/2009	108.99	7.69	0	101.3	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
B-2	8/19-21/2009	108.99	9.75	0	99.24	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
B-2	11/18-20/2009	108.99	6.46	0	102.53	<50	--	94	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.15
B-2	2/8-10/2010	108.99	8.1	0	100.89	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
B-2	5/12-13/2010	108.99	8.55	0	100.44	<50	--	<29	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
B-2	08/11/2010	108.99	9.38	0	99.61	<50	--	<29	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
B-2	11/3-4/2010	108.99	7.2	0	101.79	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
B-2	2/3-4/2011	108.99	8.25	0	100.74	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
B-2	05/24/2011	108.99	8.33	0	100.66	<50	--	<30	--	140	<0.5	<0.5	<0.5	<0.5	<0.5	<0.052
B-2	8/23-24/11	108.99	9.7	0	99.29	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.26
B-2	11/7-9/2011	108.99	9.3	0	99.69	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
B-2	2/6-8/2012	108.99	7.95	0	101.04	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.1
B-2	5/2-4/2012	108.99	7.4	0	101.59	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.080
B-2	8/1-3/2012	108.99	8.2	0	100.79	<50	--	<31	--	<72	<0.5	<0.5	<0.5	<0.5	<0.5	<0.034
B-2	11/26-28/2012	108.99	7.47	0	101.52	<50	--	<37	--	<86	<0.5	<0.5	<0.5	<0.5	<0.5	<0.047
B-2	2/4-6/2013	108.99	8.04	0	100.95	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.073
B-2	5/6-8/2013	108.99	8.89	0	100.1	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.073
B-2	9/9-13/2013	108.99	8.41	0	100.58	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085
B-2	11/18-22/2013	108.99	7.77	0	101.22	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085
B-2	2/4-11/2014	108.99	8.47	0	100.52	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085
B-2	6/12-14/2014	108.99	8.91	0	100.08	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.085
B-2	8/18-21/14	108.99	9.53	0	99.46	<50	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
B-2	11/19-20/2014	108.99	8.54	0	100.45	<50	<29	<29	<68	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
B-2	2/17-20/2015	108.99	7.93	0	101.06	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
B-2	5/11-15/2015	108.99	8.91	0	100.08	<50	<28	<28	<66	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.082
B-2	8/10-11/2015	108.99	10.01	0	98.98	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	1.2
B-2	11/16-18/2015	108.99	5.75	0	103.24	<50	<29	<29	<67	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.0006
B-2	5/13-14/2016	108.99	9.02	0	99.97	<50	--	37	--	<67	<0.5	<0.5	<0.5	<0.5	--	<0.13
B-2	11/14/2016	108.99	7.47	0	101.52	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	--	<0.090
B-2	05/14/2017	108.99	7.72	0	101.27	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	--	<0.090
B-2	11/11-12/2017	108.99	6.41	0	102.58	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	--	<0.11
B-2	05/11/2018	108.99	8.47	0	100.52	<50	--	<28	--	<66	<0.5	<0.5	<0.5	<0.5	<0.5	<0.11
B-2	11/11-12/2018	108.99	8.63	0	100.36	<19	--	<29	--	<67	<0.2	<0.2	<0.4	<1	--	<1.1
B-2	04/27/2019	108.99	8.43	0	100.56	<19	--	31 J	--	<66	<0.2	<0.2	<0.4	<1	--	<1.1
B-2	11/03/2019	108.99	8.66	0	100.33	<19	--	67 J	--	<66	<0.2	<0.2	<0.4	<1	--	1.2

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MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
B-2	05/06/2020	108.99	8.67	0	100.32	32.6 B J	<200	--	--	<250	<1.00	<1.00	<1.00	<3.00	--	<5.00
B-2	11/7/2020	108.99	7.59	0	101.4	--	--	--	--	--	--	--	--	--	--	--
B-2	05/24/2021	108.46	9.17	0	99.29	258 B	**657**	92.0 J	147 J	<250	<1.00	<1.00	5.4	0.243 J	--	<6.00
B-2	11/29/2021	108.99	7.71	0	101.28	<100	<200	--	<250	--	<1.00	<1.00	<1.00	<3.00	--	<6.00
B-2	05/23/2022	108.99	8.18	0	100.81	<100	<200	<200	<250	<250	<1.00	<1.00	<1.00	<3.00	--	<6.00
B-2	11/29/2022	108.99	8.06	0	100.93	57.7 B J	<200	--	<250	--	<1.00	<1.00	<1.00	<3.00	--	5.18
B-2	01/20/2023	108.99	7.49	0	101.5	37.9 B J	<200	--	<250	--	<1.00	<1.00	<1.00	<3.00		<2.00
B-2	05/15/2023	108.99	8.5	0	100.49	<100	<200	<200	<250	<250	<1.00	<1.00	<1.00	0.232 J	--	0.901 B J
B-2-DUP	05/15/2023	--	--	--	--	<100	<200	<200	<250	<250	<1.00	<1.00	<1.00	<3.00	--	<2.00
B-2	11/29/2023	108.99	8.46	0	100.53	<100	<200	<200	106 J	106 J	<1.00	<1.00	<1.00	<3.00	--	<2.00
B-2-DUP	11/29/2023	--	--	--	--	<100	82.0 J	82.0 J	188 J	188 J	<1.00	<1.00	<1.00	<3.00	--	2.5
B-2	05/02/2024	108.99	8.56	0	100.43	33.1 B J	<200	--	147 J	--	<1.00	<1.00	<1.00	<3.00	--	<2.00
B-2-DUP	05/02/2024	--	--	--	--	34.5 B J	<200	--	175 J	--	<1.00	<1.00	<1.00	<3.00	--	<2.00
B-3	02/14/1991	108.46	--	--	--	**98,000**	--	<250	--	--	--	--	--	--	--	--
B-3	02/14/1992	108.46	7.82	0	100.64	--	--	--	--	--	--	--	--	--	--	--
B-3	02/18/1992	108.46	7.82	0	100.64	--	--	--	--	--	--	--	--	--	--	--
B-3	03/09/1992	108.46	7.55	0	100.91	--	--	--	--	--	--	--	--	--	--	--
B-3	03/13/1992	108.46	7.82	0	100.64	**28,000**	--	**31,000**	--	--	--	--	--	--	--	--
B-3	04/21/1992	108.46	7.5	0	100.96	--	--	--	--	--	--	--	--	--	--	--
B-3	03/03/1994	108.46	--	--	--	**43,000**	--	**3,940**	--	**<750**	--	--	--	--	--	--
B-3	08/23/1995	108.46	8.93	0	99.53	**46,000**	--	**2,600**	--	**<750**	--	--	--	--	--	--
B-3	11/28/1995	108.46	7.12	0	101.34	**63,000**	--	**1,500**	--	**<750**	--	--	--	--	--	--
B-3	03/12/1996	108.46	7.85	0	100.61	**42,000**	--	**900**	--	**<750**	--	--	--	--	--	--
B-3	06/27/1996	108.46	8.67	0	99.79	**37,900**	--	**1,510**	--	**1,080**	--	--	--	--	--	--
B-3	10/10/1996	108.46	8.97	0	99.49	**16,200**	--	**729**	--	**<750**	--	--	--	--	--	--
B-3	02/12/1997	108.46	7.55	0	100.91	**35,200**	--	**4,060**	--	**986**	--	--	--	--	--	--
B-3	04/22/1997	108.46	7.3	0	101.16	**31,900**	--	**3,980**	--	**767**	--	--	--	--	--	--
B-3	08/02/1997	108.46	9.05	0	99.41	**20,400**	--	**3,370**	--	**1,270**	--	--	--	--	--	--
B-3	11/11/1997	108.46	6.76	0	101.7	**28,400**	--	**3,230**	--	**777**	--	--	--	--	--	--
B-3	02/11/1998	108.46	7.54	0	100.92	**28,400**	--	**3,240**	--	**1,460**	--	--	--	--	--	--
B-3	05/28/1998	108.46	7.76	0	100.7	**34,600**	--	**3,360**	--	**<750**	--	--	--	--	**29.5**	--
B-3	08/20/1998	108.46	10.3	0	98.16	**32,900**	--	**2,150**	--	**<750**	--	--	--	--	<1.89	--
B-3	11/19/1998	108.46	8.39	0	100.07	**23,800**	--	**6,650**	--	**<3,750**	--	--	--	--	--	--
B-3	03/11/1999	108.46	7.15	0	101.31	**17,000**	--	**2,920**	--	**<5,000**	--	--	--	--	--	--
B-3	05/25/1999	108.46	8.5	0	99.96	**30,500**	--	**1,850**	--	--	--	--	--	--	--	--
B-3	08/17/1999	108.46	9.15	0	99.31	**29,600**	--	**2,570**	--	**711**	--	--	--	--	--	--
B-3	11/19/1999	108.46	6.76	0	101.7	**30,700**	--	**7,880**	--	--	--	--	--	--	--	--
B-3	03/09/2000	108.46	7.24	0	101.22	**10,400**	--	<250	--	<500	--	--	--	--	--	--
B-3	06/13/2000	108.46	8.15	0	100.31	**23,000**	--	<250	--	<500	--	--	--	--	--	--
B-3	09/26/2000	108.46	9.35	0	99.11	--	--	<250	--	<500	--	--	--	--	--	--
B-3	12/13/2000	108.46	8.58	0	99.88	**21,600**	--	<250	--	<500	--	--	--	--	--	--
B-3	02/28/2001	108.46	8.28	0	100.18	**25,700**	--	<250	--	<500	--	--	--	--	--	--
B-3	05/02/2001	108.46	7.79	0	100.67	**17,200**	--	<250	--	<500	--	--	--	--	--	--

Table 3- Summary of Groundwater Monitoring Data
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101 Mulford Road, Toledo Washington
Agreed Order No. DE21413

AECOM

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
B-3	12/30/2003	108.46	7.04	0	101.42	**<980**	--	**14,000**	--	**3,800**	<5.0	1.9	130	61	--	**17.3**
B-3	07/20/2004	108.46	9.31	0	99.15	**13,200**	--	**1,220**	--	<500	**12.5**	<10.0	**874**	204	--	**24.6**
B-3	10/06/2004	108.46	8.68	0	99.78	**13,000**	--	**1,200**	--	<500	--	--	--	--	--	--
B-3	01/27/2005	108.46	7.7	0	100.76	**6,200**	--	**1,100**	--	<190	--	--	--	--	--	--
B-3	04/12/2005	108.46	7.21	0	101.25	**5,300**	--	**1,200**	--	<100	--	--	--	--	--	--
B-3	07/18/2005	108.46	8.83	0	99.63	**6,400**	--	**1,200**	--	<97	--	--	--	--	--	--
B-3	10/21/2005	108.46	8.85	0	99.61	**8,900**	--	**2,400**	--	**<510**	--	--	--	--	--	--
B-3	09/04/2007	108.46	9.41	0	99.05	**10,000**	--	**1,500**	--	<200	--	--	--	--	--	--
B-3	5/27-28/2008	108.46	8.73	0	99.73	**3,700**	--	**2,400**	--	**<540**	2	2	98	3	<0.5	**20.2**
B-3	8/27-29/2008	108.46	8.85	0	99.61	**10,000**	--	**2,400**	--	<98	5	2	230	17	<0.5	**21.5**
B-3	11/17-19/2008	108.46	7.13	0	101.33	**7,100**	--	**1,700**	--	**<690**	<0.5	<0.5	57	2	<0.5	**20**
B-3	2/16-18/2009	108.46	8.4	0	100.06	**8,800**	--	**1,900**	--	<340	**180**	130	130	21	<0.5	**19.5**
B-3	5/4-6/2009	108.46	7.65	0	100.81	**5,800**	--	**2,400**	--	<340	**68**	15	120	7	<0.5	13.1
B-3	8/19-21/2009	108.46	9.33	0	99.13	**5,900**	--	**2,900**	--	<360	**39**	10	170	16	<0.5	**19**
B-3	11/18-20/2009	108.46	6.35	0	102.11	**2,500**	--	**2,200**	--	<340	1	<0.5	12	1	<0.5	**16.5**
B-3	2/8-10/2010	108.46	7.73	0	100.73	**6,200**	--	**1,700**	--	140	2	<0.5	25	1	<0.5	9.9
B-3	5/12-13/2010	108.46	8.18	0	100.28	**8,200**	--	**1,200**	--	<68	2	<0.5	47	2	<0.5	10.3
B-3	08/11/2010	108.46	9	0	99.46	**5,900**	--	**2,700**	--	<340	**7**	1	270	20	<0.5	**19.3**
B-3	11/3-4/2010	108.46	6.96	0	101.5	**3,100**	--	**2,500**	--	<350	0.6	<0.5	24	1	<0.5	13.3
B-3	2/3-4/2011	108.46	6.7	0	101.76	**4,900**	--	**1,400**	--	<340	0.8	<0.5	53	2	<0.5	10.2
B-3	05/24/2011	108.46	7.96	0	100.5	**1,800**	--	**1,200**	--	300	1	<0.5	76	3	<0.5	14
B-3	8/23-24/11	108.46	9.24	0	99.22	**3,700**	--	**960**	--	<72	**8**	2	160	8	<0.5	11.7
B-3	11/7-9/2011	108.46	8.95	0	99.51	**5,800**	--	**1,500**	--	460	**7**	2	180	6	<0.5	12.3
B-3	2/6-8/2012	108.46	7.4	0	101.06	<50	--	<31	--	<71	<0.5	<0.5	<0.5	<0.5	<0.5	4.4
B-3	5/2-4/2012	108.46	7.5	0	100.96	**1,300**	--	53	--	<72	<0.5	<0.5	19	<0.5	0.7	3.9
B-3	8/1-3/2012	108.46	8.24	0	100.22	600	--	460	--	110	0.6	<0.5	1	<0.5	<0.5	8
B-3	11/26-28/2012	108.46	6.98	0	101.48	500	--	73	--	<68	<0.5	<0.5	0.8	<0.5	<0.5	7.4
B-3	2/4-6/2013	108.46	6.33	0	102.13	120	--	45	--	<66	<0.5	<0.5	<0.5	<0.5	<0.5	5.6
B-3	5/6-8/2013	108.46	8.5	0	99.96	**2,600**	--	150	--	<67	<0.5	<0.5	73	3	<0.5	8.9
B-3	9/9-13/2013	108.46	8.09	0	100.37	**1,700**	**2,700**	160	72	<66	0.6	<0.5	37	0.9	<0.5	**16**
B-3	11/18-22/2013	108.46	6.45	0	102.01	190	**1,600**	42	180	<67	<0.5	<0.5	<0.5	<0.5	<0.5	11.2
B-3	2/4-11/2014	108.46	8.1	0	100.36	480	**730**	36	<67	<67	<0.5	<0.5	2	<0.5	<0.5	7.4
B-3	6/12-14/2014	108.46	8.69	0	99.77	260	**780**	100	100	<66	<0.5	<0.5	1	<0.5	<0.5	8.3
B-3	8/18-21/14	108.46	9.23	0	99.23	**1,000**	**1,000**	180	170	<68	<0.5	<0.5	9	0.7	<0.5	8.9
B-3	11/19-20/2014	108.46	8.17	0	100.29	**900**	**1,400**	130	160	<67	<0.5	<0.5	7	<0.5	<0.5	13.4
B-3	2/17-20/2015	108.46	6.36	0	102.1	650	490	150	180	<66	<0.5	<0.5	<0.5	<0.5	<0.5	2.9
B-3	5/11-15/2015	108.46	8.16	0	100.3	**1,400**	**690**	120	<66	<66	<0.5	<0.5	33	0.9	<0.5	0.0081
B-3	8/10-11/2015	108.46	9.59	0	98.87	660	**2,000**	130	**550**	<67	<0.5	<0.5	5	0.5	<0.5	9.5
B-3	11/16-18/2015	108.46	5.58	0	102.88	**880**	**1,200**	57	180	<67	<0.5	<0.5	2	<0.5	<0.5	0.0185
B-3	5/13-14/2016	108.46	8.64	0	99.82	400	**650**	38	220	<67	<0.5	<0.5	1	<0.5	--	5.1
B-3	11/14/2016	108.46	7.45	0	101.01	560	380	<29	<67	<67	<0.5	<0.5	1	<0.5	--	10.6
B-3	05/14/2017	108.46	7.44	0	101.02	230	92	<28	<66	<66	<0.5	<0.5	1	<0.5	--	2.3
B-3	11/11-12/2017	108.46	7.47	0	100.99	**860**	270	32	<67	<67	3	<0.5	2	<0.5	--	11.4
B-3	05/11/2018	108.46	8.14	0	100.32	**900**	82	33	68	<67	<0.5	<0.5	5	<0.5	<0.5	0.76

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Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
B-3	11/11-12/2018	108.46	8.24	0	100.22	**2,100**	**2,800**	180	370	<66	0.9	0.3	5	<1	--	11.1
B-3	04/27/2019	108.46	8.02	0	100.44	<19	--	160	--	<66	<0.2	<0.2	<0.4	<1	--	3.4
B-3	11/03/2019	108.46	8.25	0	100.21	**1,500**	**1,400**	90 J	84 J	<67	0.2 J	0.3 J	8	<1	--	8.2
B-3	05/06/2020	108.46	8.35	0	100.11	92.3 B J	273	79.5 J	--	104 J	<1.00	<1.00	<1.00	<3.00	--	<5.00
B-3	11/7/2020	108.46	7.51	0	100.95	**807**	**1,280**	122 B J	386	<250	0.240 J	<1.00	1.52	0.315 J	--	5.89
B-3	05/24/2021	108.46	8.85	0	98.83	**<100**	**83.0 J**	83.0 J	<250	<250	<1.00	<1.00	<1.00	<3.00	--	<6.00
B-3	11/29/2021	108.46	7.31	0	101.15	<100	176 J	--	<250	--	<1.00	<1.00	<1.00	<3.00	--	5.52
B-3	05/23/2022	108.46	7.79	0	100.67	56.4 B J	171 J	171 J	<250	<250	<1.00	<1.00	<1.00	<3.00	--	3.21 J
B-3	11/29/2022	108.46	8.12	0	100.34	**219,000**	**6,640**	378	211 J	<250	**6,770**	**48,300**	**3,280**	**20,400**	--	14.5
B-3	01/20/2023	108.46	7.05	0	101.41	**130,000**	**3,520**	--	<250	--	**2,230**	**28,800**	**3,010**	**19,000**		9.24 B
B-3	05/15/2023	108.46	8.22	0	100.24	**91,400**	**2,430**	**590**	204 J	<250	**2,420**	**28,100**	**2,530**	**15,200**	--	7.65 B
B-3	11/29/2023	108.46	7.87	0	100.59	**99,500**	**5,100**	**968**	**706**	<500	**1,670**	**23,500**	**2,230**	**15,400**	--	<2.00
B-3	05/02/2024	108.46	8.27	0	100.19	**64,700**	**2,210**	--	292	--	**1,740**	**14,000**	**1,870**	**10,200**	--	9.03
B-4	02/14/1991	107.68	--	--	--	**33,000**	--	<250	--	--	--	--	--	--	--	--
B-4	02/14/1992	107.68	6.82	0	100.86	--	--	--	--	--	--	--	--	--	--	--
B-4	02/18/1992	107.68	5.94	0	101.74	--	--	--	--	--	--	--	--	--	--	--
B-4	03/09/1992	107.68	6.62	0	101.06	--	--	--	--	--	--	--	--	--	--	--
B-4	03/13/1992	107.68	6.88	0	100.8	**21,000**	--	--	--	--	--	--	--	--	--	--
B-4	04/21/1992	107.68	6.57	0	101.11	--	--	--	--	--	--	--	--	--	--	--
B-4	03/03/1994	107.68	--	--	--	**15,800**	--	**1,040**	--	**1,250**	--	--	--	--	--	--
B-4	08/22/1995	107.68	7.92	0	99.76	**22,000**	--	**840**	--	**820**	--	--	--	--	--	--
B-4	11/28/1995	107.68	6.11	0	101.57	**22,000**	--	**1,900**	--	**990**	--	--	--	--	--	3.1
B-4	03/12/1996	107.68	6.85	0	100.83	**11,000**	--	**3,200**	--	**2,500**	--	--	--	--	--	4.7
B-4	06/26/1996	107.68	7.58	0	100.1	**16,100**	--	**757**	--	**<750**	--	--	--	--	--	2.83
B-4	10/09/1996	107.68	7.9	0	99.78	**10,200**	--	**543**	--	**<750**	--	--	--	--	--	4.13
B-4	02/12/1997	107.68	6.01	0	101.67	**12,200**	--	**4,710**	--	**4,830**	--	--	--	--	--	2.82
B-4	04/22/1997	107.68	10.1	0	97.58	**15,500**	--	**5,840**	--	**1,191**	--	--	--	--	--	4.18
B-4	08/05/1997	107.68	8.37	0	99.31	**15,800**	--	**2,560**	--	**3,160**	--	--	--	--	--	6.26
B-4	11/11/1997	107.68	7.67	0	100.01	**31,100**	--	**2,080**	--	**1,040**	--	--	--	--	--	4.75
B-4	02/11/1998	107.68	6.45	0	101.23	**3,750**	--	**1,340**	--	**1,630**	--	--	--	--	--	<2.0
B-4	05/28/1998	107.68	7.25	0	100.43	**2,510**	--	**3,180**	--	**1,250**	--	--	--	--	--	4.69
B-4	08/20/1998	107.68	9.12	0	98.56	**7,240**	--	**1,460**	--	**1,240**	--	--	--	--	--	1.17
B-4	11/19/1998	107.68	7.22	0	100.46	**1,880**	--	**2,470**	--	**3,750**	--	--	--	--	--	<1.0
B-4	03/11/1999	107.68	5.41	0	102.27	**11,900**	--	**1,130**	--	**585**	--	--	--	--	--	3.54
B-4	05/25/1999	107.68	7.45	0	100.23	**5,380**	**--**	**<1,450**	--	--	--	--	--	--	--	--
B-4	08/17/1999	107.68	8.06	0	99.62	**2,700**	--	**670**	--	**868**	--	--	--	--	--	2.3
B-4	11/19/1999	107.68	5.75	0	101.93	**11,400**	--	**1,700**	--	--	--	--	--	--	--	**17.5**
B-4	03/09/2000	107.68	6.34	0	101.34	**105,000**	--	**<1,250**	--	**2,830**	--	--	--	--	--	10.9
B-4	06/13/2000	107.68	6.8	0	100.88	**8,810**	--	<250	--	**943**	--	--	--	--	--	6.92
B-4	09/26/2000	107.68	8.31	0	99.37	--	--	<250	--	0.565	--	--	--	--	--	5
B-4	12/13/2000	107.68	7.54	0	100.14	--	--	**1,250**	--	<500	--	--	--	--	--	5.98
B-4	02/28/2001	107.68	7.24	0	100.44	**12,100**	--	<250	--	<500	--	--	--	--	--	5.34
B-4	05/02/2001	107.68	6.59	0	101.09	**12,300**	--	**15,700**	--	**757**	--	--	--	--	--	5.75

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MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
B-4	12/30/2003	107.68	6.07	0	101.61	**1,700**	--	**17,000**	--	**2,000**	**<10**	<5.0	310	370	--	7.5
B-4	07/20/2004	107.68	8.23	0	99.45	**4,660**	--	<250	--	<500	**15.1**	1.3	42.3	10.1	--	--
B-4	10/06/2004	107.68	7.45	0	100.23	**2,300**	--	390	--	180	--	--	--	--	--	--
B-4	01/27/2005	107.68	6.72	0	100.96	**2,800**	--	200	--	<195	--	--	--	--	--	--
B-4	04/12/2005	107.68	6.62	0	101.06	**2,600**	--	340	--	<100	--	--	--	--	--	--
B-4	07/18/2005	107.68	6.62	0	101.06	**1,600**	--	**560**	--	**<1,100**	--	--	--	--	--	--
B-4	10/21/2005	107.68	7.81	0	99.87	**1,800**	--	190	--	260	--	--	--	--	--	--
B-4	09/04/2007	107.68	8.4	0	99.28	**3,200**	--	310	--	<100	--	--	--	--	--	1.8
B-4-DUP	09/04/2007	107.68	8.4	0	99.28	**3,300**	--	340	--	140	--	--	--	--	--	1.7
B-4	5/27-28/2008	107.68	7.52	0	100.16	**1,800**	--	310	--	330	3	3	25	7	<0.5	2.9
B-4	8/27-29/2008	107.68	7.88	0	99.8	**3,100**	--	330	--	**1,100**	1	0.9	22	4	<0.5	1.6
B-4	11/17-19/2008	107.68	6.26	0	101.42	**3,500**	--	**700**	--	**2,600**	1	0.7	27	3	<0.5	2.3
B-4	2/16-18/2009	107.68	7.4	0	100.28	**2,000**	--	440	--	480	0.6	<0.5	11	2	<0.5	2
B-4	5/4-6/2009	107.68	6.46	0	101.22	**2,100**	--	**590**	--	**1,300**	<0.5	<0.5	20	2	<0.5	1.6
B-4	8/19-21/2009	107.68	8.35	0	99.33	**910**	--	**590**	--	**810**	1	<0.5	5	1	<0.5	1.2
B-4	11/18-20/2009	107.68	5.3	0	102.38	**5,700**	--	490	--	450	3	0.7	36	3	<0.5	5.2
B-4	2/8-10/2010	107.68	6.78	0	100.9	350	--	400	--	**1,400**	<0.5	<0.5	4	<0.5	<0.5	0.46
B-4	5/12-13/2010	107.68	7.23	0	100.45	360	--	**940**	--	**7,100**	<0.5	<0.5	1	<0.5	<0.5	0.15
B-4	08/11/2010	107.68	8	0	99.68	170	--	**600**	--	**2,000**	<0.5	<0.5	1	<0.5	<0.5	0.26
B-4	11/3-4/2010	107.68	6.19	0	101.49	530	--	400	--	**1,500**	<0.5	<0.5	4	0.7	<0.5	1
B-4	2/3-4/2011	107.68	7.15	0	100.53	**2,200**	--	**1,400**	--	**4,700**	0.9	0.7	11	1	<0.5	2.9
B-4	05/24/2011	107.68	7.22	0	100.46	**840**	--	300	--	**680**	<0.5	<0.5	0.8	<0.5	<0.5	1.2
B-4	8/23-24/11	107.68	8.5	0	99.18	**1,400**	--	230	--	<68	<0.5	<0.5	1	0.6	<0.5	1.4
B-4	11/7-9/2011	107.68	8.15	0	99.53	**950**	--	120	--	360	<0.5	<0.5	1	0.5	<0.5	0.57
B-4	2/6-8/2012	107.68	6.8	0	100.88	320	--	64	--	120	<0.5	<0.5	2	<0.5	<0.5	1.6
B-4	5/2-4/2012	107.68	6.75	0	100.93	580	--	110	--	72	<0.5	<0.05	2	<0.5	<0.5	1.7
B-4	8/1-3/2012	107.68	8.26	0	99.42	510	--	100	--	190	<0.5	<0.5	<0.5	<0.5	<0.5	0.83
B-4	11/26-28/2012	107.68	6.34	0	101.34	**1,200**	--	320	--	210	<0.5	<0.5	8	0.7	<0.5	3
B-4	2/4-6/2013	107.68	6.95	0	100.73	**1,600**	--	150	--	<69	<0.5	<0.5	4	<0.5	<0.5	2.5
B-4	5/6-8/2013	107.68	7.53	0	100.15	**2,400**	--	140	--	<67	<0.5	<0.5	4	0.5	<0.5	2.4
B-4	9/9-13/2013	107.68	7.3	0	100.38	**1,200**	250	130	110	<66	<0.5	<0.5	3	0.5	<0.5	1.6
B-4	11/18-22/2013	107.68	6.76	0	100.92	**1,200**	150	120	<67	<67	<0.5	<0.5	3	<0.5	<0.5	1.9
B-4	2/4-11/2014	107.68	7.36	0	100.32	**1,800**	170	140	<68	<68	<0.5	<0.5	3	<0.5	<0.5	2.4
B-4	6/12-14/2014	107.68	7.94	0	99.74	**1,200**	260	120	73	<67	<0.5	<0.5	1	<0.5	<0.5	1.8
B-4	8/18-21/14	107.68	8.43	0	99.25	**1,800**	300	140	88	<67	<0.5	<0.5	1	0.5	<0.5	1.4
B-4	11/19-20/2014	107.68	6.77	0	100.91	**1,300**	270	120	<66	<66	<0.5	<0.5	2	<0.5	<0.5	2.4
B-4	2/17-20/2015	107.68	6.93	0	100.75	550	290	95	470	240	<0.5	<0.5	<0.5	<0.5	<0.5	0.73
B-4	5/11-15/2015	107.68	7.91	0	99.77	**940**	210	130	<66	<66	<0.5	<0.5	1	<0.5	<0.5	0.0016
B-4	8/10-11/2015	107.68	8.94	0	98.74	600	500	66	340	<66	<0.5	<0.5	<0.5	0.6	<0.5	0.89
B-4	11/16-18/2015	107.68	4.73	0	102.95	**2,000**	**750**	130	**740**	270	<0.5	<0.5	4	<0.5	<0.5	0.0171
B-4	5/13-14/2016	107.68	7.84	0	99.84	**2,100**	390	120	**550**	300	<0.5	<0.5	0.9	<0.5	--	0.81
B-4	11/14/2016	107.68	6.3	0	101.38	**1,200**	**1,000**	400	**1,000**	**610**	<0.5	<0.5	<0.5	<0.5	--	1
B-4	05/14/2017	107.68	6.65	0	101.03	**2,000**	**1,200**	**520**	**2,500**	**1,100**	<0.5	<0.5	<0.5	<0.5	--	12.8
B-4	11/11-12/2017	107.68	6.57	0	101.11	**3,600**	**650**	180	**700**	260	4	<0.5	1	<0.5	--	0.97

Table 3- Summary of Groundwater Monitoring Data
Draft Engineering Design Report
Cowlitz Food and Fuel Site
101 Mulford Road, Toledo Washington
Agreed Order No. DE21413

AECOM

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
B-4	05/11/2018	107.68	7.39	0	100.29	**3,600**	**650**	180	**700**	260	4	<0.5	1	<0.5	--	0.97
B-4	11/11-12/2018	107.68	7.52	0	100.16	**1,600**	230	110	330	150	<0.2	<0.2	<0.4	<1	--	1.8
B-4	04/27/2019	107.68	7.31	0	100.37	940	--	90 J	--	<68	<0.2	<0.2	<0.4	<1	--	6.9
B-4	11/03/2019	107.68	7.51	0	100.17	**1,500**	290	120	410	270	<0.2	<0.2	0.4 J	<1	--	**36.3**
B-4	05/06/2020	107.68	7.54	0	100.14	**1,800**	230	115 J	--	106 J	<1.00	<1.00	<1.00	<3.00	--	9.59
B-4	11/7/2020	107.68	6.63	0	101.05	**1,360**	**1,490**	157 B J	**507**	<250	<1.00	<1.00	<1.00	<3.00	--	0.857 J
B-4	05/24/2021	107.68	7.89	0	99.79	<100	<200	<200	<250	<250	<1.00	<1.00	<1.00	<3.00	--	<6.00
B-4	11/29/2021	107.68	6.52	0	101.16	723	122 J	--	<250	--	<1.00	<1.00	<1.00	<3.00	--	<6.00
B-4	05/23/2022	107.68	7.07	0	100.61	**1,100**	231	84.6 J	<250	<250	<1.00	<1.00	<1.00	<3.00	--	<6.00
B-4	11/29/2022	107.68	7.64	0	100.04	**112,000**	**1,400**	305	<250	<250	**3,050**	**19,600 E**	**1,450**	**8,750**	--	3.18
B-4	01/20/2023	107.68	6.51	**0.2**	101.17	--	--	--	--	--	--	--	--	--	--	--
B-4	05/15/2023	107.68	6.38	**0.06**	101.35	--	--	--	--	--	--	--	--	--	--	--
B-4	11/29/2023	107.68	9.08	**0.1**	98.68	--	--	--	--	--	--	--	--	--	--	--
B-4	05/02/2024	107.68	7.54	**0.16**	100.27	--	--	--	--	--	--	--	--	--	--	--
MW-101	02/14/1992	99.51	6.94	--	92.57	**45,000**	--	**33,000**	--	--	--	--	--	--	--	--
MW-101	02/18/1992	99.51	6.88	--	92.63	--	--	--	--	--	--	--	--	--	--	--
MW-101	03/09/1992	99.51	6.76	--	92.75	--	--	--	--	--	--	--	--	--	--	--
MW-101	03/13/1992	99.51	7.02	--	92.49	--	--	--	--	--	--	--	--	--	--	--
MW-101	04/21/1992	99.51	7.73	--	91.78	--	--	--	--	--	--	--	--	--	--	--
MW-101	03/03/1994	99.51	--	--	--	**73,000**	--	**1,730**	--	**<750**	--	--	--	--	--	--
MW-101	08/22/1995	99.51	7.9	--	91.61	**12,000**	--	**1,300**	--	**<750**	--	--	--	--	--	--
MW-101	11/28/1995	99.51	6.12	--	93.39	**49,000**	--	**1,400**	--	**<750**	--	--	--	--	--	**24**
MW-101	03/12/1996	99.51	6.86	--	92.65	**43,000**	--	**760**	--	**<750**	--	--	--	--	--	9.3
MW-101	06/26/1996	99.51	7.59	--	91.92	**22,000**	--	**656**	--	**<750**	--	--	--	--	--	8.22
MW-101	10/09/1996	99.51	7.85	--	91.66	**5,800**	--	309	--	**<750**	--	--	--	--	--	4.24
MW-101	02/12/1997	99.51	6.55	--	92.96	**33,900**	--	**1,090**	--	**<750**	--	--	--	--	--	7.04
MW-101	04/22/1997	99.51	6.31	--	93.2	**21,500**	--	**1,870**	--	**977**	--	--	--	--	--	7.41
MW-101	11/11/1997	99.51	6.76	--	92.75	**23,400**	--	**952**	--	**<750**	--	--	--	--	--	11.3
MW-101	02/11/1998	99.51	6.78	--	92.73	**28,400**	--	**793**	--	**<750**	--	--	--	--	--	6.51
MW-101	05/28/1998	99.51	6.91	--	92.6	**11,900**	--	**798**	--	**<750**	--	--	--	--	--	4.71
MW-101	08/20/1998	99.51	8.3	--	91.21	**4,400**	--	414	--	**<750**	--	--	--	--	--	1.6
MW-101	11/19/1998	99.51	7.69	--	91.82	**5,820**	--	**714**	--	**<750**	--	--	--	--	--	1.7
MW-101	03/11/1999	99.51	6.17	--	93.34	**38,500**	--	**1,200**	--	<500	--	--	--	--	--	6.82
MW-101	05/25/1999	99.51	7.47	--	92.04	**18,000**	--	**1,450**	--	--	--	--	--	--	--	--
MW-101	08/17/1999	99.51	7.99	--	91.52	**2,940**	--	**810**	--	**750**	--	--	--	--	--	2.9
MW-101	11/19/1999	99.51	5.84	--	93.67	**16,300**	--	**1,010**	--	--	--	--	--	--	--	**15.4**
MW-101	03/09/2000	99.51	6.25	--	93.26	**15,800**	--	<250	--	<500	--	--	--	--	--	13
MW-101	06/13/2000	99.51	6.98	--	92.53	**4,870**	--	<250	--	<500	--	--	--	--	--	4.3
MW-101	09/26/2000	99.51	8.15	--	91.36	<500	--	--	--	<250	--	--	--	--	--	1.88
MW-101	12/13/2000	99.51	7.65	--	91.86	<500	--	**988**	--	442	--	--	--	--	--	1.13
MW-101	02/28/2001	99.51	7.25	--	92.26	**2,710**	--	<250	--	<500	--	--	--	--	--	2.45
MW-101	05/02/2001	99.51	9.55	--	89.96	**2,280**	--	<250	--	<500	--	--	--	--	--	2.6
MW-101	12/30/2003	99.54	6.04	0	93.5	<96	--	**13,000**	--	**890**	<5.0	0.6	260	290	--	**27.9**

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Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-101	07/20/2004	99.54	8.18	0	91.36	**1,040**	--	<250	--	<500	3.01	<0.500	0.822	1.21	--	<1.0
MW-101	10/06/2004	99.51	7.54	0	91.97	<260	--	<81	--	<100	--	--	--	--	--	--
MW-101	01/27/2005	99.51	6.78	0	92.73	**2,900**	--	190	--	<100	--	--	--	--	--	--
MW-101	04/12/2005	99.51	6.32	0	93.19	**1,700**	--	160	--	<100	--	--	--	--	--	--
MW-101	07/18/2005	99.51	7.78	0	91.73	240	--	93	--	<99	--	--	--	--	--	--
MW-101	10/21/2005	99.51	7.75	0	91.76	470	--	110	--	<100	--	--	--	--	--	--
MW-101	09/05/2007	99.51	8.22	0	91.29	200	--	110	--	140	--	--	--	--	--	1.2
MW-101	5/27-28/2008	99.51	7.71	0	91.8	410	--	<80	--	<99	<0.5	<0.5	0.5	<0.5	<0.5	1.2
MW-101	8/27-29/2008	99.51	7.75	0	91.76	450	--	<79	--	<99	<0.5	<0.5	<0.5	<0.5	<0.5	0.39
MW-101	11/17-19/2008	99.51	6.33	0	93.18	520	--	74	--	<68	<0.5	<0.5	1	<0.5	<0.5	1.1
MW-101	2/16-18/2009	99.51	7.43	0	92.08	590	--	68	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.96
MW-101	5/4-6/2009	99.51	6.93	0	92.58	370	--	66	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.39
MW-101	8/19-21/2009	99.51	8.16	0	91.35	510	--	65	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.22
MW-101	11/18-20/2009	99.51	4.97	0	94.54	84	--	42	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	1
MW-101	2/8-10/2010	99.51	6.82	0	92.69	**970**	--	130	--	190	<0.5	<0.5	1	<0.5	<0.5	2.1
MW-101	5/12-13/2010	99.51	7.32	0	92.19	470	--	64	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.65
MW-101	08/12/2010	99.51	7.96	0	91.55	370	--	52	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.24
MW-101	NOT PART OF MONITORING/SAMPLING PROGRAM															
MW-102	02/14/1992	--	6.94	0	--	--	--	--	--	--	--	--	--	--	--	--
MW-102	02/18/1992	--	6.88	0	--	--	--	--	--	--	--	--	--	--	--	--
MW-102	03/09/1992	--	6.76	0	--	--	--	--	--	--	--	--	--	--	--	--
MW-102	03/13/1992	--	7.02	0	--	150	--	--	--	--	--	--	--	--	--	--
MW-102	04/21/1992	--	7.72	0	--	--	--	--	--	--	--	--	--	--	--	--
MW-102	NOT PART OF MONITORING/SAMPLING PROGRAM															
MW-104	02/14/1992	100.45	8.86	0	91.59	--	--	--	--	--	--	--	--	--	--	--
MW-104	02/18/1992	100.45	8.84	0	91.61	--	--	--	--	--	--	--	--	--	--	--
MW-104	03/09/1992	100.45	8.73	0	91.72	--	--	--	--	--	--	--	--	--	--	--
MW-104	03/13/1992	100.45	8.84	0	91.61	<50	--	--	--	--	--	--	--	--	--	--
MW-104	04/21/1992	100.45	8.72	0	91.73	--	--	--	--	--	--	--	--	--	--	--
MW-104	08/22/1995	100.45	9.3	0	91.15	<50	--	<250	--	**<750**	--	--	--	--	--	--
MW-104	11/27/1995	100.45	8.39	0	92.06	--	--	--	--	--	--	--	--	--	--	--
MW-104	03/12/1996	100.45	8.78	0	91.67	--	--	--	--	--	--	--	--	--	--	--
MW-104	06/27/1996	100.45	9	0	91.45	--	--	--	--	--	--	--	--	--	--	--
MW-104	10/10/1996	100.45	9.18	0	91.27	--	--	--	--	--	--	--	--	--	--	--
MW-104	02/12/1997	100.45	8.65	0	91.8	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-104	04/22/1997	100.45	8.5	0	91.95	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-104	08/05/1997	100.45	9.2	0	91.25	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-104	11/11/1997	100.45	8.81	0	91.64	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-104	02/11/1998	100.45	8.83	0	91.62	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-104	05/28/1998	100.45	8.97	0	91.48	<50	--	<250	--	**<750**	--	--	--	--	--	9.54
MW-104	08/20/1998	100.45	9.51	0	90.94	<50	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-104	11/19/1998	100.45	9.82	0	90.63	<50	--	<250	--	**<750**	--	--	--	--	--	<1.0

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Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-104	03/11/1999	100.45	8.48	0	91.97	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-104	05/25/1999	100.45	8.96	0	91.49	<80	--	<250	--	--	--	--	--	--	--	--
MW-104	08/17/1999	100.45	9.24	0	91.21	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-104	11/19/1999	100.45	8.4	0	92.05	<80	--	<250	--	--	--	--	--	--	--	1
MW-104	03/09/2000	100.45	8.49	0	91.96	<80	--	<250	--	<50	--	--	--	--	--	<1.0
MW-104	06/13/2000	100.45	8.89	0	91.56	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-104	09/26/2000	100.45	9.32	0	91.13	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-104	12/13/2000	100.45	9.09	0	91.36	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-104	02/28/2001	100.45	8.89	0	91.56	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-104	05/02/2001	100.45	8.79	0	91.66	103	--	<250	--	<500	--	--	--	--	--	<1.0
MW-104	10/31/2003	100.44	9.15	0	91.29	<50	--	<250	--	<500	<0.500	<0.500	<0.500	<1.00	--	<1.0
MW-104	12/30/2003	100.44	8.39	0	92.05	<96	--	<50	--	<77	<0.5	<0.5	<0.5	<1.5	--	<1.2
MW-104	10/07/2004	100.45	9.09	0	91.36	<50	--	<83	--	<100	--	--	--	--	--	--
MW-104	10/20/2005	100.45	9.19	0	91.26	<48	--	<82	--	<100	--	--	--	--	--	--
MW-104	09/06/2007	100.45	9.42	0	91.03	<50	--	<79	--	<98	--	--	--	--	--	0.087
MW-104	8/27-29/2008	100.45	9.23	0	91.22	<50	--	<79	--	<99	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-104	11/17-19/2008	100.46	8.75	0	91.71	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-104	2/16-18/2009	100.46	9.01	0	91.45	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.1
MW-104	5/4-6/2009	100.46	8.88	0	91.58	<50	--	38	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-104	8/19-21/2009	100.46	9.32	0	91.14	<50	--	<29	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	0.057
MW-104	11/18-20/2009	100.46	8.08	0	92.38	98	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.11
MW-104	2/8-10/2010	100.46	8.76	0	91.7	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.053
MW-104	MONITORING WELL DECOMMISSIONED/SAMPLING DISCONTINUED															
MW-105	02/14/1992	96.14	3.36	0	92.78	--	--	--	--	--	--	--	--	--	--	--
MW-105	02/18/1992	96.14	3.34	0	92.8	--	--	--	--	--	--	--	--	--	--	--
MW-105	03/09/1992	96.14	3.25	0	92.89	--	--	--	--	--	--	--	--	--	--	--
MW-105	03/13/1992	96.14	3.6	0	92.54	<50	--	--	--	--	--	--	--	--	--	--
MW-105	04/21/1992	96.14	3.4	0	92.74	--	--	--	--	--	--	--	--	--	--	--
MW-105	08/22/1995	96.14	5.08	0	91.06	<50	--	<250	--	**900**	--	--	--	--	--	--
MW-105	11/28/1995	96.14	2.53	0	93.61	--	--	--	--	--	--	--	--	--	--	--
MW-105	03/12/1996	96.14	3.37	0	92.77	--	--	--	--	--	--	--	--	--	--	--
MW-105	06/26/1996	96.14	4.74	0	91.4	--	--	--	--	--	--	--	--	--	--	--
MW-105	10/09/1996	96.14	4.93	0	91.21	--	--	--	--	--	--	--	--	--	--	--
MW-105	02/12/1997	96.14	3.19	0	92.95	<50	--	<250	--	**<750**	--	--	--	--	--	2
MW-105	04/22/1997	96.14	3.08	0	93.06	<50	--	<250	--	**<750**	--	--	--	--	--	2
MW-105	08/05/1997	96.14	4.85	0	91.29	<50	--	<250	--	**<750**	--	--	--	--	--	2
MW-105	11/11/1997	96.14	3.11	0	93.03	<50	--	<250	--	**<750**	--	--	--	--	--	2
MW-105	02/11/1998	96.14	3.24	0	92.9	<50	--	<250	--	**<750**	--	--	--	--	--	2
MW-105	05/28/1998	96.14	3.91	0	92.23	<50	--	<250	--	**<750**	--	--	--	--	--	6.62
MW-105	08/20/1998	96.14	5.28	0	90.86	<50	--	<250	--	**<750**	--	--	--	--	--	<1.00
MW-105	11/19/1998	96.14	5.37	0	90.77	<50	--	<250	--	**<750**	--	--	--	--	--	<1.00
MW-105	03/11/1999	96.14	2.43	0	93.71	<80	--	<250	--	<500	--	--	--	--	--	<1.00
MW-105	05/25/1999	96.14	4.29	0	91.85	<80	--	<250	--	--	--	--	--	--	--	--

Table 3- Summary of Groundwater Monitoring Data
Draft Engineering Design Report
Cowlitz Food and Fuel Site
101 Mulford Road, Toledo Washington
Agreed Order No. DE21413

AECOM

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-105	08/17/1999	96.14	5.06	0	91.08	<80	--	<250	--	<500	--	--	--	--	--	<1.00
MW-105	11/19/1999	96.14	3.08	0	93.06	<80	--	<250	--	--	--	--	--	--	--	<1.00
MW-105	03/09/2000	96.14	2.75	0	93.39	<80	--	<250	--	<500	--	--	--	--	--	<1.00
MW-105	06/13/2000	96.14	4.45	0	91.69	<80	--	<250	--	<500	--	--	--	--	--	<1.00
MW-105	09/26/2000	96.14	5.2	0	90.94	--	--	<250	--	<500	--	--	--	--	--	<1.00
MW-105	12/13/2000	96.14	4.67	0	91.47	--	--	<250	--	<500	--	--	--	--	--	1.37
MW-105	02/28/2001	96.14	3.92	0	92.22	<80	--	<250	--	<500	--	--	--	--	--	<1.00
MW-105	05/02/2001	96.14	3.53	0	92.61	87	--	<250	--	**<750**	--	--	--	--	--	<1.00
MW-105	12/31/2003	96.15	2.45	0	93.7	<500	--	<50	--	<400	<0.5	<0.5	<0.5	<1.5	--	<1.2
MW-105	05/03/2004	96.15	--	--	--	--	--		--	--	--	--	--	--	--	--
MW-105	07/20/2004	96.15	--	--	--	--	--		--	--	--	--	--	--	--	--
MW-105	10/07/2004	96.14	4.71	0	91.43	<50	--	<160	--	<200	--	--	--	--	--	--
MW-105	10/20/2005	96.14	5.16	0	90.98	<48	--	<82	--	<100	--	--	--	--	--	--
MW-105	09/06/2007	96.14	5.34	0	90.8	<50	--	<100	--	<81	--	--	--	--	--	0.47
MW-105	5/27-28/2008	96.14	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-105	8/27-29/2008	96.14	5.16	0	90.98	<50	--	<81	--	<100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-105	11/17-19/2008	96.14	3.75	0	92.39	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-105	2/16-18/2009	96.14	6.15	0	89.99	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.57
MW-105	5/4-6/2009	96.14	3.68	0	92.46	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-105	8/19-21/2009	96.14	5.25	0	90.89	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.064
MW-105	11/18-20/2009	96.14	1.56	0	94.58	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.053
MW-105	2/8-10/2010	96.14	3.37	0	92.77	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.078
MW-105	MONITORING WELL DECOMMISSIONED/SAMPLING DISCONTINUED															
MW-106	02/14/1992	99.71	8.18	0	91.53	--	--	--	--	--	--	--	--	--	--	--
MW-106	02/18/1992	99.71	8.2	0	91.51	--	--	--	--	--	--	--	--	--	--	--
MW-106	03/09/1992	99.71	8.04	0	91.67	--	--	--	--	--	--	--	--	--	--	--
MW-106	03/13/1992	99.71	8.18	0	91.53	<50	--	--	--	--	--	--	--	--	--	--
MW-106	04/21/1992	99.71	8.02	0	91.69	--	--	--	--	--	--	--	--	--	--	--
MW-106	08/22/1995	99.71	8.79	0	90.92	<50	--	<250	--	**<750**	--	--	--	--	--	--
MW-106	11/28/1995	99.71	7.63	0	92.08	--	--	--	--	--	--	--	--	--	--	--
MW-106	03/12/1996	99.71	8.04	0	91.67	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-106	06/26/1996	99.71	8.61	0	91.1	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-106	10/09/1996	99.71	8.65	0	91.06	<50	--	<250	--	**<750**	--	--	--	--	--	2.16
MW-106	02/12/1997	99.71	7.95	0	91.76	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-106	04/22/1997	99.71	7.73	0	91.98	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-106	08/05/1997	99.71	8.68	0	91.03	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-106	11/11/1997	99.71	8.07	0	91.64	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-106	02/11/1998	99.71	8.12	0	91.59	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-106	05/28/1998	99.71	8.35	0	91.36	<50	--	<250	--	**<750**	--	--	--	--	--	4.53
MW-106	08/20/1998	99.71	8.96	0	90.75	<50	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-106	11/19/1998	99.71	9.37	0	90.34	<50	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-106	03/11/1999	99.71	7.7	0	92.01	<80	--	<250	--	<50	--	--	--	--	--	1.1
MW-106	05/25/1999	99.71	8.32	0	91.39	<80	--	<250	--	--	--	--	--	--	--	--

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AECOM

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-106	08/17/1999	99.71	8.7	0	91.01	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-106	11/19/1999	99.71	7.88	0	91.83	<80	--	<250	--	--	--	--	--	--	--	<1.0
MW-106	03/09/2000	99.71	7.74	0	91.97	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-106	06/13/2000	99.71	8.39	0	91.32	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-106	09/26/2000	99.71	8.79	0	90.92	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-106	12/13/2000	99.71	8.51	0	91.2	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-106	02/28/2001	99.71	8.18	0	91.53	<80	--	<250	--	<500	--	--	--	--	--	<2.0
MW-106	05/02/2001	99.71	8.17	0	91.54	88	--	<250	--	<500	--	--	--	--	--	<1.0
MW-106	10/30/2002	99.73	8.98	0	90.75	<80	--	<250	--	<500	<0.500	<0.500	<0.500	<1.00	--	<1.0
MW-106	01/23/2003	99.73	--	--	--	--	--		--	--	--	--	--	--	--	--
MW-106	04/18/2003	99.73	--	--	--	--	--		--	--	--	--	--	--	--	--
MW-106	07/11/2003	99.73	--	--	--	--	--		--	--	--	--	--	--	--	--
MW-106	10/31/2003	99.73	8.52	0	91.21	<50	--	<250	--	<500	<0.500	<0.500	<0.500	<1.00	--	<1.0
MW-106	12/31/2003	99.73	7.54	0	92.19	<98	--	<50	--	<78	<0.5	<0.5	<0.5	<1.5	--	<1.2
MW-106	05/03/2004	99.73	--	--	--	--	--		--	--	--	--	--	--	--	--
MW-106	07/20/2004	99.73	--	--	--	--	--		--	--	--	--	--	--	--	--
MW-106	10/07/2004	99.71	8.5	0	91.21	<50	--	<78	--	<97	--	--	--	--	--	--
MW-106	10/20/2005	99.71	8.7	0	91.01	<48	--	<82	--	<100	--	--	--	--	--	--
MW-106	09/06/2007	99.71	8.88	0	90.83	<50	--	<80	--	<100	--	--	--	--	--	0.13
MW-106	5/27-28/2008	99.71	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-106	8/27-29/2008	99.71	8.72	0	90.99	<50	--	<79	--	<99	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-106	11/17-19/2008	99.71	8.18	0	91.53	<50	--	30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-106	2/16-18/2009	99.71	8.4	0	91.31	<50	--	<29	--	<67	<0.5	<0.5	<0.5	<0.5	<0.5	0.072
MW-106	5/4-6/2009	99.71	8.3	0	91.41	<50	--	<29	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-106	8/19-21/2009	99.71	8.65	0	91.06	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-106	11/18-20/2009	99.71	7.4	0	92.31	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	0.11
MW-106	2/8-10/2010	99.71	8.05	0	91.66	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-106	MONITORING WELL DECOMMISSIONED/SAMPLING DISCONTINUED															
MW-107	02/14/1992	100	8.5	0	91.5	--	--	--	--	--	--	--	--	--	--	--
MW-107	02/18/1992	100	8.5	0	91.5	--	--	--	--	--	--	--	--	--	--	--
MW-107	03/09/1992	100	8.36	0	91.64	--	--	--	--	--	--	--	--	--	--	--
MW-107	03/13/1992	100	8.52	0	91.48	<50	--	--	--	--	--	--	--	--	--	--
MW-107	04/21/1992	100	8.36	0	91.64	--	--	--	--	--	--	--	--	--	--	--
MW-107	08/22/1995	100	9.06	0	90.94	<50	--	<250	--	**<750**	--	--	--	--	--	--
MW-107	11/28/1995	100	8	0	92	--	--	--	--	--	--	--	--	--	--	--
MW-107	03/12/1996	100	8.36	0	91.64	--	--	--	--	--	--	--	--	--	--	--
MW-107	06/26/1996	100	8.89	0	91.11	--	--	--	--	--	--	--	--	--	--	--
MW-107	10/09/1996	100	8.94	0	91.06	--	--	--	--	--	--	--	--	--	--	--
MW-107	02/12/1997	100	8.25	0	91.75	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-107	04/22/1997	100	8.05	0	91.95	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-107	08/05/1997	100	8.95	0	91.05	<50	--	<250	--	**<809**	--	--	--	--	--	<2.0
MW-107	11/11/1997	100	8.37	0	91.63	<50	--	<250	--	**750**	--	--	--	--	--	<2.0
MW-107	02/11/1998	100	8.44	0	91.56	<50	--	351	--	**750**	--	--	--	--	--	<2.0

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Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-107	05/28/1998	100	8.73	0	91.27	<50	--	<250	--	**754**	--	--	--	--	--	--
MW-107	08/20/1998	100	9.24	0	90.76	<50	--	<250	--	**750**	--	--	--	--	--	1
MW-107	11/19/1998	100	9.65	0	90.35	<50	--	<250	--	**750**	--	--	--	--	--	<1.0
MW-107	03/11/1999	100	8.08	0	91.92	<80	--	**539**	--	**750**	--	--	--	--	--	<1.0
MW-107	05/25/1999	100	8.82	0	91.18	<80	--	<250	--	<500	--	--	--	--	--	--
MW-107	08/17/1999	100	8.1	0	91.9	<80	--	<250	--	--	--	--	--	--	--	<1.0
MW-107	11/19/1999	100	8.21	0	91.79	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-107	03/09/2000	100	8.08	0	91.92	<80	--	<250	--	--	--	--	--	--	--	<1.0
MW-107	06/13/2000	100	8.88	0	91.12	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-107	09/26/2000	100	9.07	0	90.93	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-107	12/13/2000	100	8.78	0	91.22	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-107	02/28/2001	100	8.63	0	91.37	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-107	05/02/2001	100	8.63	0	91.37	88	--	<250	--	<500	--	--	--	--	--	<1.0
MW-107	10/30/2002	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-107	01/23/2003	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-107	04/18/2003	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-107	07/11/2003	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-107	10/31/2003	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-107	12/31/2003	100	7.92	0	92.08	150	--	<50	--	85	<0.5	<0.5	<0.5	<1.5	--	<1.2
MW-107	05/03/2004	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-107	07/20/2004	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-107	10/07/2004	100	8.78	0	91.22	<50	--	<80	--	<100	--	--	--	--	--	--
MW-107	10/20/2005	100	8.97	0	91.03	<48	--	<81	--	<100	--	--	--	--	--	--
MW-107	09/06/2007	100	9.18	0	90.82	<50	--	<78	--	<98	--	--	--	--	--	0.07
MW-107	5/27-28/2008	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-107	8/27-29/2008	100	8.98	0	91.02	<50	--	<79	--	<99	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-107	11/17-19/2008	100	8.46	0	91.54	<50	--	38	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-107	2/16-18/2009	100	8.62	0	91.38	<50	--	35	--	70	<0.5	<0.5	<0.5	<0.5	<0.5	0.068
MW-107	5/4-6/2009	100	8.95	0	91.05	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-107	8/19-21/2009	100	9.11	0	90.89	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	0.27
MW-107	11/18-20/2009	100	7.77	0	92.23	<50	--	99	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-107	2/8-10/2010	100	8.25	0	91.75	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-107	MONITORING WELL DECOMMISSIONED/SAMPLING DISCONTINUED															
MW-108	02/14/1992	99.79	8.1	0	91.69	--	--	--	--	--	--	--	--	--	--	--
MW-108	02/18/1992	99.79	8.62	0	91.17	--	--	--	--	--	--	--	--	--	--	--
MW-108	03/09/1992	99.79	8.49	0	91.3	--	--	--	--	--	--	--	--	--	--	--
MW-108	03/13/1992	99.79	8.63	0	91.16	<50	--	--	--	--	--	--	--	--	--	--
MW-108	04/21/1992	99.79	8.47	0	91.32	--	--	--	--	--	--	--	--	--	--	--
MW-108	08/22/1995	99.79	9.04	0	90.75	<50	--	<250	--	**<750**	--	--	--	--	--	--
MW-108	11/28/1995	99.79	7.98	0	91.81	--	--	--	--	--	--	--	--	--	--	--
MW-108	03/12/1996	99.79	8.5	0	91.29	--	--	--	--	--	--	--	--	--	--	--
MW-108	06/26/1996	99.79	8.86	0	90.93	--	--	--	--	--	--	--	--	--	--	--
MW-108	10/09/1996	99.79	8.91	0	90.88	--	--	--	--	--	--	--	--	--	--	--

Table 3- Summary of Groundwater Monitoring Data
Draft Engineering Design Report
Cowlitz Food and Fuel Site
101 Mulford Road, Toledo Washington
Agreed Order No. DE21413

AECOM

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-108	02/12/1997	MMISSIONED/SAMPLING DISCONTINUED														
MW-108	04/22/1997	99.79	8.08	0	91.71	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-108	08/05/1997	99.79	8.94	0	90.85	<50	--	<250	--	**825**	--	--	--	--	--	<2.0
MW-108	11/11/1997	99.79	8.53	0	91.26	<50	--	<250	--	**<750**	--	--	--	--	--	<2.0
MW-108	02/11/1998	99.79	8.59	0	91.2	<50	--	<250	--	**873**	--	--	--	--	--	<2.0
MW-108	05/28/1998	99.79	8.72	0	91.07	<50	--	<250	--	**<750**	--	--	--	--	--	4.27
MW-108	08/20/1998	99.79	9.2	0	90.59	<50	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-108	11/19/1998	99.79	9.6	0	90.19	<50	--	<250	--	**<750**	--	--	--	--	--	<1.0
MW-108	03/11/1999	99.79	8.16	0	91.63	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-108	05/25/1999	99.79	8.69	0	91.1	<80	--	<250	--	--	--	--	--	--	--	--
MW-108	08/17/1999	99.79	8.96	0	90.83	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-108	11/19/1999	99.79	8.08	0	91.71	<80	--	<250	--	--	--	--	--	--	--	<1.0
MW-108	03/09/2000	99.79	8.16	0	91.63	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-108	06/13/2000	99.79	8.69	0	91.1	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-108	09/26/2000	99.79	9.04	0	90.75	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-108	12/13/2000	99.79	8.81	0	90.98	--	--	<250	--	<500	--	--	--	--	--	<1.0
MW-108	02/28/2001	99.79	8.6	0	91.19	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-108	05/02/2001	99.79	8.53	0	91.26	<80	--	<250	--	<500	--	--	--	--	--	<1.0
MW-108	10/30/2002	99.79	9.24	0	90.55	<80	--	<250	--	<500	<0.500	<0.500	<0.500	<1.0	--	<1.0
MW-108	01/23/2003	99.79	--	--	--	--	--		--	--	--	--	--	--	--	--
MW-108	04/18/2003	99.79	--	--	--	--	--		--	--	--	--	--	--	--	--
MW-108	07/11/2003	99.79	--	--	--	--	--		--	--	--	--	--	--	--	--
MW-108	10/31/2003	99.79	8.82	0	90.97	<50.0	--	<250	--	<500	<0.500	<0.500	<0.500	<1.0	--	<1.0
MW-108	12/31/2003	99.79	7.95	0	91.84	<97	--	<50	--	<77	<0.5	<0.5	<0.5	<1.5	--	<1.2
MW-108	05/03/2004	99.79	--	--	--	--	--		--	--	--	--	--	--	--	--
MW-108	07/20/2004	99.79	--	--	--	--	--		--	--	--	--	--	--	--	--
MW-108	10/07/2004	99.79	8.8	0	90.99	<50	--	<80	--	<100	--	--	--	--	--	--
MW-108	10/20/2005	99.79	8.89	0	90.9	<48	--	<81	--	<100	--	--	--	--	--	--
MW-108	10/20/2005 (D)	99.79	8.89	0	90.9	<48	--	<81	--	<100	--	--	--	--	--	--
MW-108	09/06/2007	99.79	9.15	0	90.64	<50	--	<80	--	<100	--	--	--	--	--	0.12
MW-108	5/27-28/2008	99.79	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-108	8/27-29/2008	99.79	9	0	90.79	<50	--	<78	--	<98	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-108	11/17-19/2008	99.79	8.48	0	91.31	<50	--	<30	--	<70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-108	2/16-18/2009	99.79	8.74	0	91.05	<50	--	**1,100**	--	230	<0.5	<0.5	<0.5	<0.5	<0.5	0.07
MW-108	5/4-6/2009	99.79	8.62	0	91.17	<50	--	<29	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050

Table 3- Summary of Groundwater Monitoring Data
Draft Engineering Design Report
Cowlitz Food and Fuel Site
101 Mulford Road, Toledo Washington
Agreed Order No. DE21413

Well	Date	TOC	DTW	LNAPL	GWE	TPH-GRO	TPH-DRO	TPH-DRO w/Si gel	TPH-HRO	TPH-HRO w/Si gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Dissolved Lead
MTCA Method A CULs						**800/1,000**	**500**	**500**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**15**
MW-108	8/19-21/2009	99.79	9.07	0	90.72	<50	--	<30	--	<69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-108	11/18-20/2009	99.79	7.64	0	92.15	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-108	2/8-10/2010	99.79	8.5	0	91.29	<50	--	<29	--	<68	<0.5	<0.5	<0.5	<0.5	<0.5	<0.050
MW-108	MONITORING WELL DECOMMISSIONED/SAMPLING DISCONTINUED															

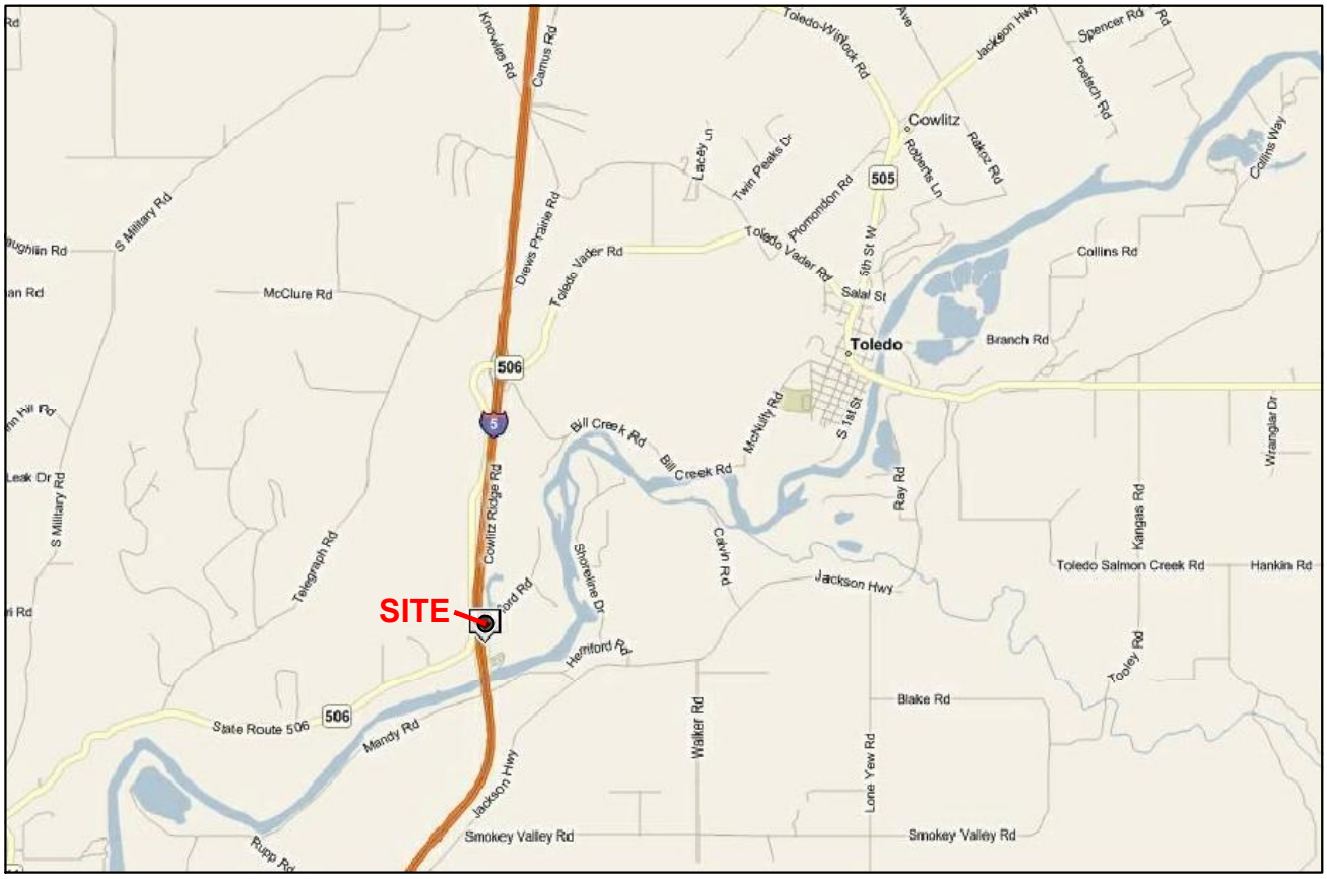
Notes:
800/1,000 = GRO MTCA Method A CUL with benzene present is 800 µg/L and without is 1,000 µg/L
BOLD and highlighted values exceed their respective MTCA Method A cleanup level
Prior to 2Q2023 lab results were reported to MDL, BOLD values were non-detect do not exceed the laboratory method detection limit (MDL), but the MDL exceeds the MTCA Method A cleanup level
From 2Q2023, BOLD are non-detects values, laboratory RDL (Reported Detection Limit) greater than the MTCA Method A CUL; LNAPL thickness greater than 0.00 ft
Results reported in micrograms per liter (µg/L)
If LNAPL is present, GW Elevation is corrected according to the following formula (TOC elevation - DTW) + (0.8 x LNAPL thickness)

Abbreviations:
-- = Not applicable, not available, or not analyzed
CUL = Cleanup Level
DTW = Depth to water in feet below TOC
DUP = Blind duplicate sample results
GWE = Groundwater elevation in feet relative to NAVD88
LFP = Low flow (purge) sample
MTCA = Model Toxics Control Act Cleanup
NAPL = Non-aqueous phase liquid thickness in feet
QA = Quality Assurance
TOC = Top of Casing in feet above North American Vertical Datum of 1988 (NAVD 88)

Laboratory Qualifiers:
< = Not detected at or above the laboratory Reporting Limit (RL) or Limit of Quantification (LOQ)
B = The same analyte is found in the associated blank.
E = The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J = Estimated value; result is greater than the laboratory Method Detection Limit (MDL) but less than the RL or LOQ.

Analytical Methods:
Samples analyzed by USEPA Method 8260
BTEX = benzene, toluene, ethylbenzene, and total xylenes
MTBE = Methyl tertiary butyl ether
TPH-GRO = Total Petroleum Hydrocarbons as Gasoline Range Organics analyzed by NWTPH-Gx
Samples analyzed by NWTPH-Dx
TPH-DRO = Total Petroleum Hydrocarbon as Diesel Range Organics
TPH-HRO = Total Petroleum Hydrocarbons as Heavy Oil Range Organics
Dissolved Lead analyzed by USEPA 6010D
Dissolved Lead analyzed by USEPA 6020B in 4Q 2023

Figures

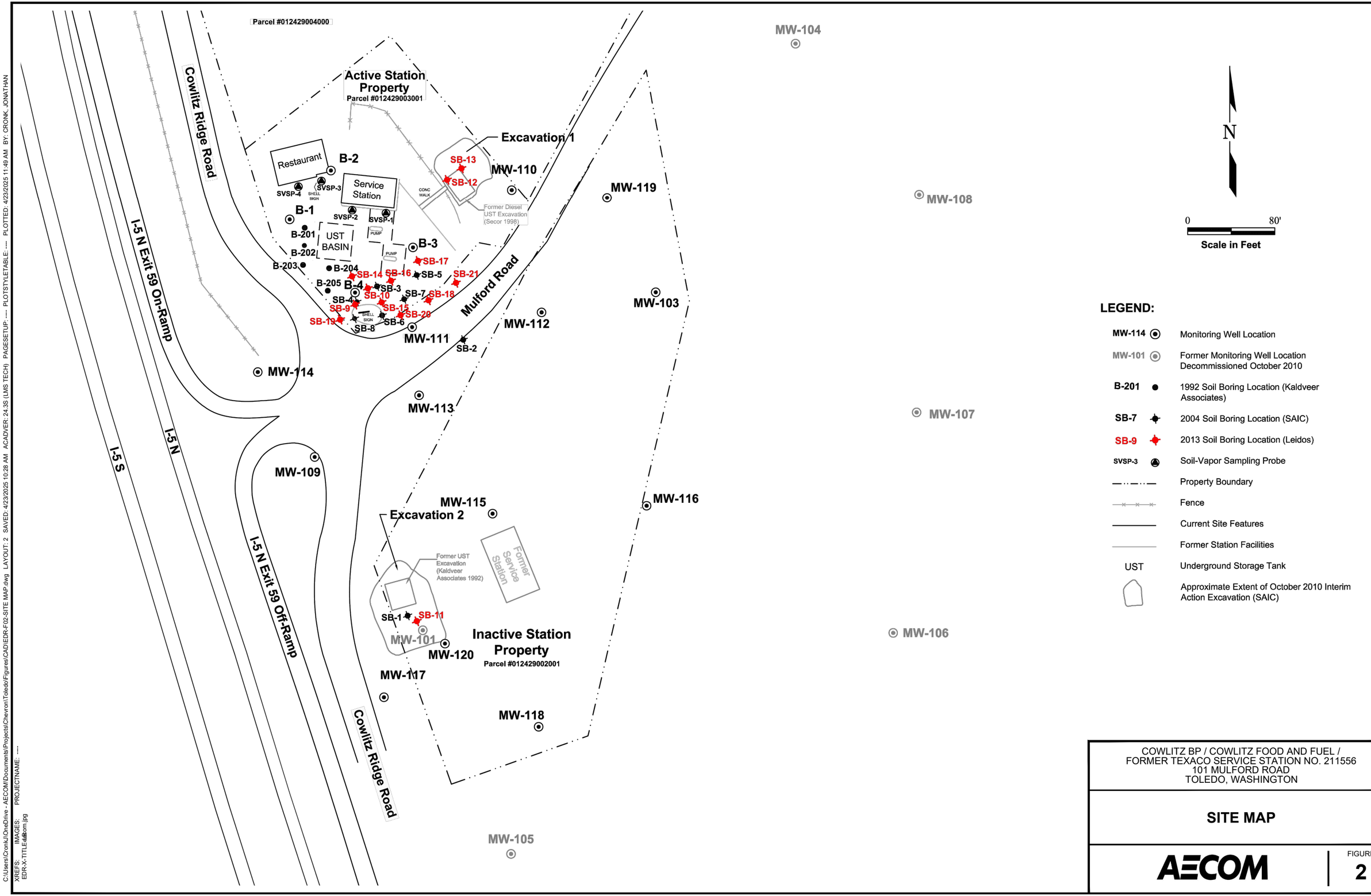


CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COWLITZ FOOD AND FUEL SITE
101 MULFORD ROAD, TOLEDO, WASHINGTON
ENGINEERING DESIGN REPORT

VICINITY MAP

AECOM

FIGURE
1



COWLITZ BP / COWLITZ FOOD AND FUEL /
FORMER TEXACO SERVICE STATION NO. 211556
101 MULFORD ROAD
TOLEDO, WASHINGTON

SITE MAP

AECOM

FIGURE 2

FORMER DISPENSER ISLAND/
PRODUCT LINE EXCAVATION

FORMER DIESEL
UST EXCAVATION
(SECOR 1998)

COWLITZ RIDGE ROAD

RESTAURANT

B-2
(100.43)

SVSP-4

SVSP-3

SHELL
SIGN

SERVICE
STATION

CONC. WALK

MW-110
(99.76)

B-1
(100.52)

SVSP-2

SVSP-1

PUMP

UST BASIN

B-3
(100.19)

100.50

100.20

99.90

MW-119

B-4
(100.27)*
[0.16]

MULFORD ROAD

SHELL
SIGN

MW-112
(99.82)

MW-111
(99.85)*
[0.05]

0.004
FT/FT

MW-103

I-5 N EXIT 59 ON-RAMP

MW-114
(100.34)

MW-113
(99.81)

I-5 N

MW-109
(99.91)

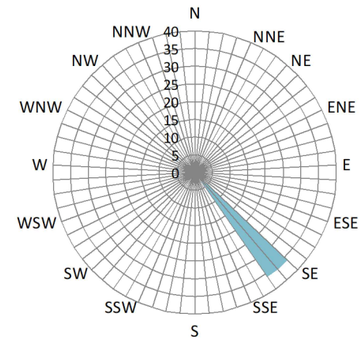
MW-115

MW-116

LEGEND:

- LEWIS COUNTY PARCEL No. 012429003001 BOUNDARY
- LEWIS COUNTY PARCEL No. 012429002001 BOUNDARY
- FENCE
- MW-119 — GROUNDWATER MONITORING WELL
- MW-119 — ABANDONED MONITORING WELL
- SVSP-2 ▲ — SOIL VAPOR SAMPLING PROBES
- UST — UNDERGROUND STORAGE TANK
- 100.50 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- (100.52) — GROUNDWATER ELEVATION (FEET)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- 0.004 FT/FT — APPROXIMATE HYDRAULIC GRADIENT (FEET/FOOT)
- [0.16] — LIGHT NON-AQUEOUS PHASE LIQUID PRESENT
- * — WELL NOT USED FOR CONTOURING

N



0 40' 80'

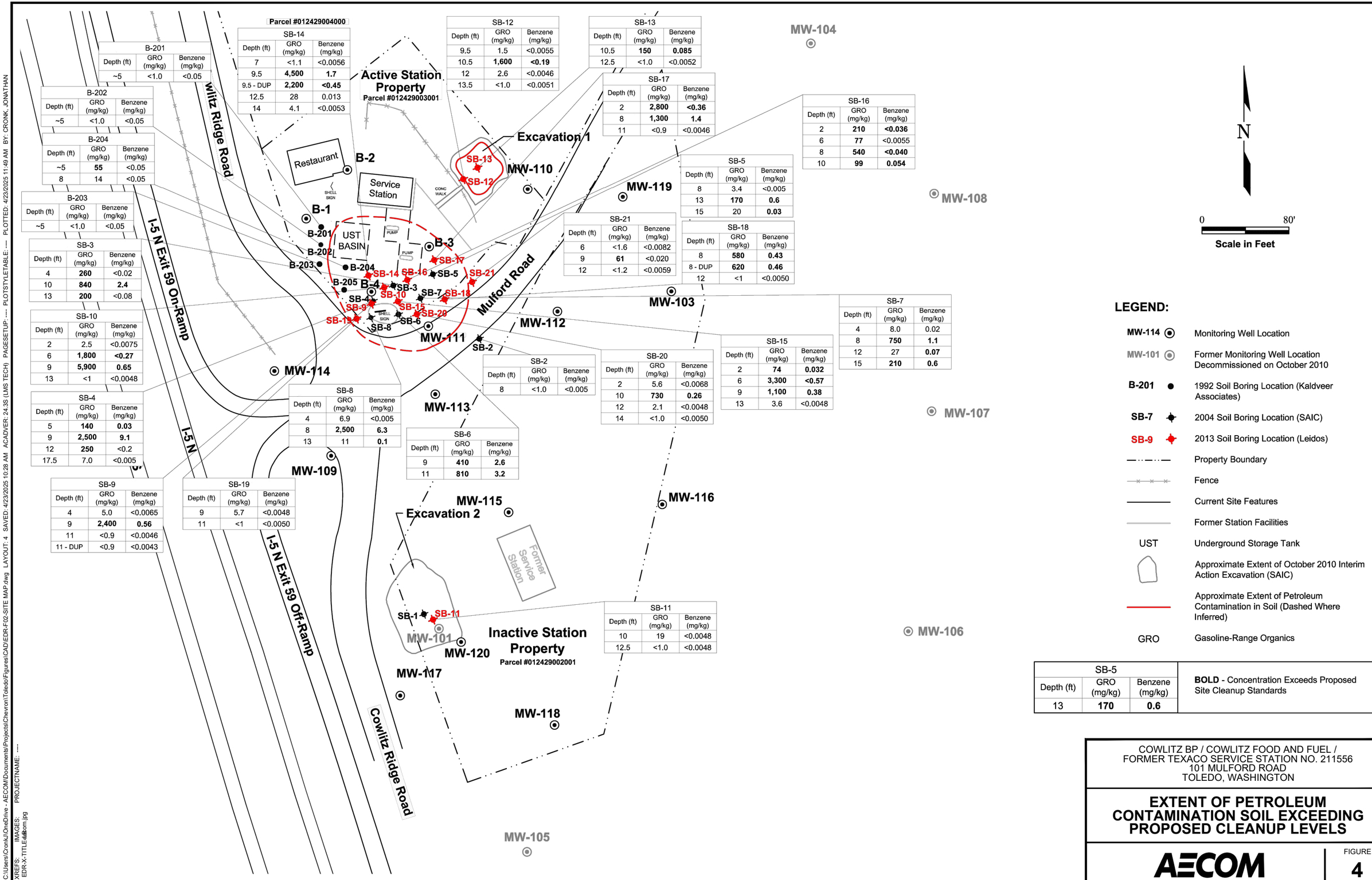
APPROXIMATE SCALE : 1 in. = 40 ft.

COWLITZ BP / COWLITZ FOOD AND FUEL /
FORMER TEXACO SERVICE STATION NO. 211556
101 MULFORD ROAD
TOLEDO, WASHINGTON

GROUNDWATER ELEVATION CONTOUR MAP
MAY 2, 2024

AECOM

FIGURE
3



B-201		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
~5	<1.0	<0.05

B-202		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
~5	<1.0	<0.05

B-204		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
~5	**55**	<0.05
8	14	<0.05

B-203		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
~5	<1.0	<0.05

SB-3		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
4	**260**	<0.02
10	**840**	**2.4**
13	**200**	<0.08

SB-10		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
2	2.5	<0.0075
6	**1,800**	**<0.27**
9	**5,900**	**0.65**
13	<1	<0.0048

SB-4		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
5	**140**	**0.03**
9	**2,500**	**9.1**
12	**250**	<0.2
17.5	7.0	<0.005

SB-9		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
4	5.0	<0.0065
9	**2,400**	**0.56**
11	<0.9	<0.0046
11 - DUP	<0.9	<0.0043

SB-14		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
7	<1.1	<0.0056
9.5	**4,500**	**1.7**
9.5 - DUP	**2,200**	**<0.45**
12.5	28	0.013
14	4.1	<0.0053

SB-19		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
9	5.7	<0.0048
11	<1	<0.0050

SB-8		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
4	6.9	<0.005
8	**2,500**	**6.3**
13	11	**0.1**

SB-6		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
9	**410**	**2.6**
11	**810**	**3.2**

SB-12		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
9.5	1.5	<0.0055
10.5	**1,600**	**<0.19**
12	2.6	<0.0046
13.5	<1.0	<0.0051

SB-2		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
8	<1.0	<0.005

SB-13		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
10.5	**150**	**0.085**
12.5	<1.0	<0.0052

SB-17		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
2	**2,800**	**<0.36**
8	**1,300**	**1.4**
11	<0.9	<0.0046

SB-21		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
6	<1.6	<0.0082
9	**61**	<0.020
12	<1.2	<0.0059

SB-20		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
2	5.6	<0.0068
10	**730**	**0.26**
12	2.1	<0.0048
14	<1.0	<0.0050

SB-11		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
10	19	<0.0048
12.5	<1.0	<0.0048

SB-5		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
8	3.4	<0.005
13	**170**	**0.6**
15	20	**0.03**

SB-18		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
8	**580**	**0.43**
8 - DUP	**620**	**0.46**
12	<1	<0.0050

SB-15		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
2	**74**	**0.032**
6	**3,300**	**<0.57**
9	**1,100**	**0.38**
13	3.6	<0.0048

SB-16		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
2	**210**	**<0.036**
6	**77**	<0.0055
8	**540**	**<0.040**
10	**99**	**0.054**

SB-7		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
4	8.0	0.02
8	**750**	**1.1**
12	27	**0.07**
15	**210**	**0.6**

0 80'

Scale in Feet

LEGEND:

- **MW-114** — Monitoring Well Location
- **MW-101** — Former Monitoring Well Location Decommissioned on October 2010
- **B-201** — 1992 Soil Boring Location (Kaldveer Associates)
- **SB-7** — 2004 Soil Boring Location (SAIC)
- **SB-9** — 2013 Soil Boring Location (Leidos)
- Property Boundary
- Fence
- Current Site Features
- Former Station Facilities
- UST — Underground Storage Tank
- Approximate Extent of October 2010 Interim Action Excavation (SAIC)
- Approximate Extent of Petroleum Contamination in Soil (Dashed Where Inferred)
- GRO — Gasoline-Range Organics

SB-5		
Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)
13	**170**	**0.6**

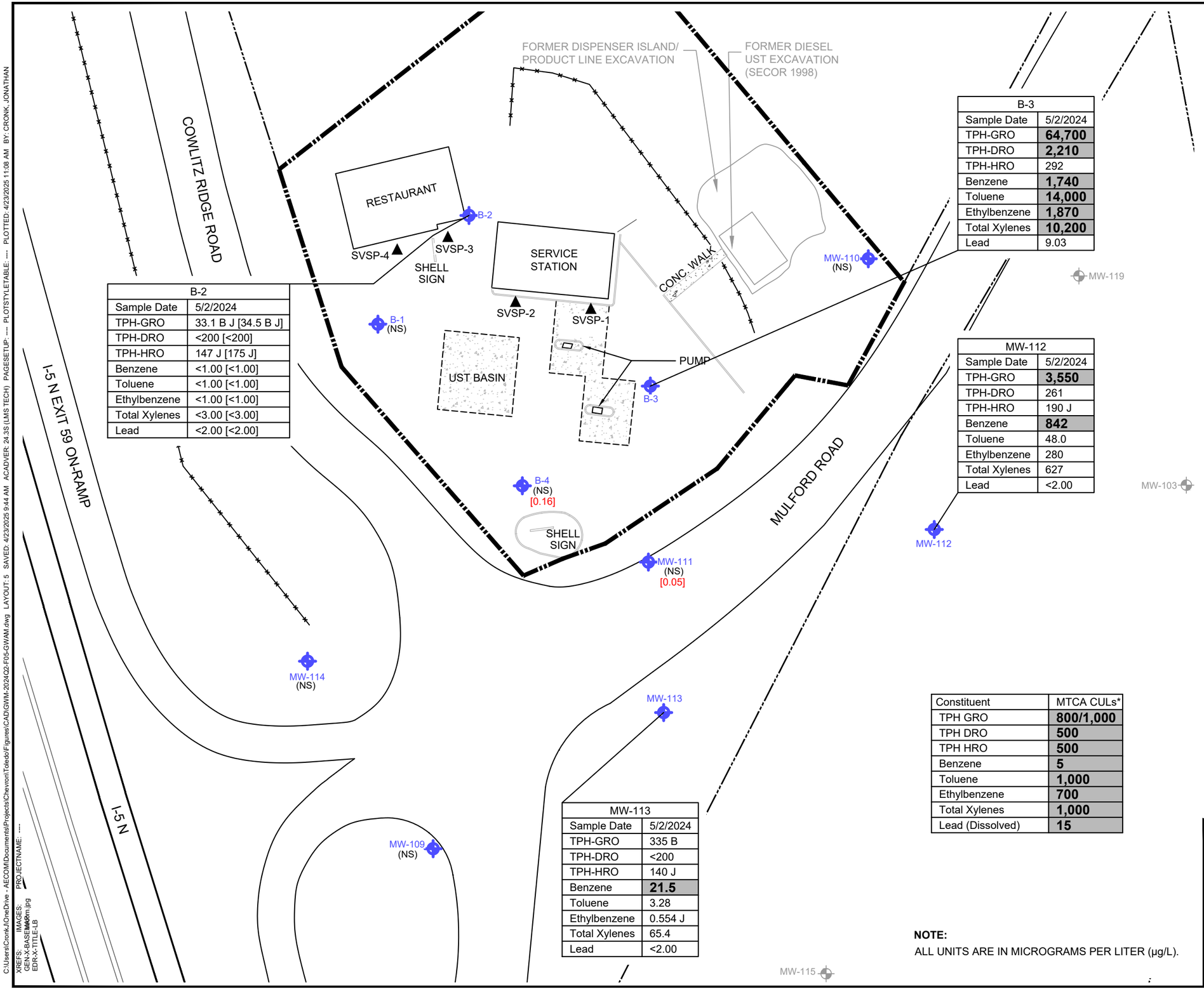
BOLD - Concentration Exceeds Proposed Site Cleanup Standards

COWLITZ BP / COWLITZ FOOD AND FUEL /
FORMER TEXACO SERVICE STATION NO. 211556
101 MULFORD ROAD
TOLEDO, WASHINGTON

EXTENT OF PETROLEUM CONTAMINATION SOIL EXCEEDING PROPOSED CLEANUP LEVELS

AECOM

FIGURE 4



B-2	
Sample Date	5/2/2024
TPH-GRO	33.1 B J [34.5 B J]
TPH-DRO	<200 [<200]
TPH-HRO	147 J [175 J]
Benzene	<1.00 [<1.00]
Toluene	<1.00 [<1.00]
Ethylbenzene	<1.00 [<1.00]
Total Xylenes	<3.00 [<3.00]
Lead	<2.00 [<2.00]

B-3	
Sample Date	5/2/2024
TPH-GRO	**64,700**
TPH-DRO	**2,210**
TPH-HRO	292
Benzene	**1,740**
Toluene	**14,000**
Ethylbenzene	**1,870**
Total Xylenes	**10,200**
Lead	9.03

MW-112	
Sample Date	5/2/2024
TPH-GRO	**3,550**
TPH-DRO	261
TPH-HRO	190 J
Benzene	**842**
Toluene	48.0
Ethylbenzene	280
Total Xylenes	627
Lead	<2.00

MW-113	
Sample Date	5/2/2024
TPH-GRO	335 B
TPH-DRO	<200
TPH-HRO	140 J
Benzene	**21.5**
Toluene	3.28
Ethylbenzene	0.554 J
Total Xylenes	65.4
Lead	<2.00

Constituent	MTCA CULs*
TPH GRO	**800/1,000**
TPH DRO	**500**
TPH HRO	**500**
Benzene	**5**
Toluene	**1,000**
Ethylbenzene	**700**
Total Xylenes	**1,000**
Lead (Dissolved)	**15**

NOTE:
ALL UNITS ARE IN MICROGRAMS PER LITER (µg/L).

LEGEND:

- LEWIS COUNTY PARCEL No. 012429003001 BOUNDARY
- LEWIS COUNTY PARCEL No. 012429002001 BOUNDARY
- FENCE
- MW-119 — GROUNDWATER MONITORING WELL
- MW-108 — ABANDONED MONITORING WELL
- SVSP-2 — SOIL VAPOR SAMPLING PROBES
- UST — UNDERGROUND STORAGE TANK
- TPH-GRO — TOTAL PETROLEUM HYDROCARBONS, GASOLINE RANGE ORGANICS
- TPH-DRO — TOTAL PETROLEUM HYDROCARBONS, DIESEL RANGE ORGANICS
- TPH-HRO — TOTAL PETROLEUM HYDROCARBON, HEAVY OIL RANGE ORGANICS
- (NS) — NOT SAMPLED
- [ ] — DUPLICATE SAMPLE RESULT
- -- — NOT ANALYZED
- **BOLD** — ANALYTE CONCENTRATION EXCEEDS MODEL TOXICS CONTROL ACT (MTCA) METHOD A CLEANUP LEVELS
- **BOLD** — BOLD ARE NON-DETECT VALUES GREATER THAN THE MTCA METHOD A CUL
- < — NOT DETECTED AT OR ABOVE THE LABORATORY REPORTING LIMIT (RL)
- * — ECOLOGY MODEL TOXICS CONTROL ACT (MTCA) METHOD A CLEANUP LEVELS (CULS) FOR GROUNDWATER WAC CHAPTER 173-340-900. TABLE 720-1
- 800/1,000 — GRO MTCA METHOD A CUL WITH B PRESENT IS 800 µg/L AND WITHOUT IS 1,000 µg/L
- B — THE SAME ANALYTE IS FOUND IN THE ASSOCITED BLANK
- J — ESTIMATED VALUE BETWEEN RL AND METHOD DETECTION LIMIT
- [0.16] — LIGHT NON-AQUEOUS PHASE LIQUID PRESENT

N

0 40' 80'

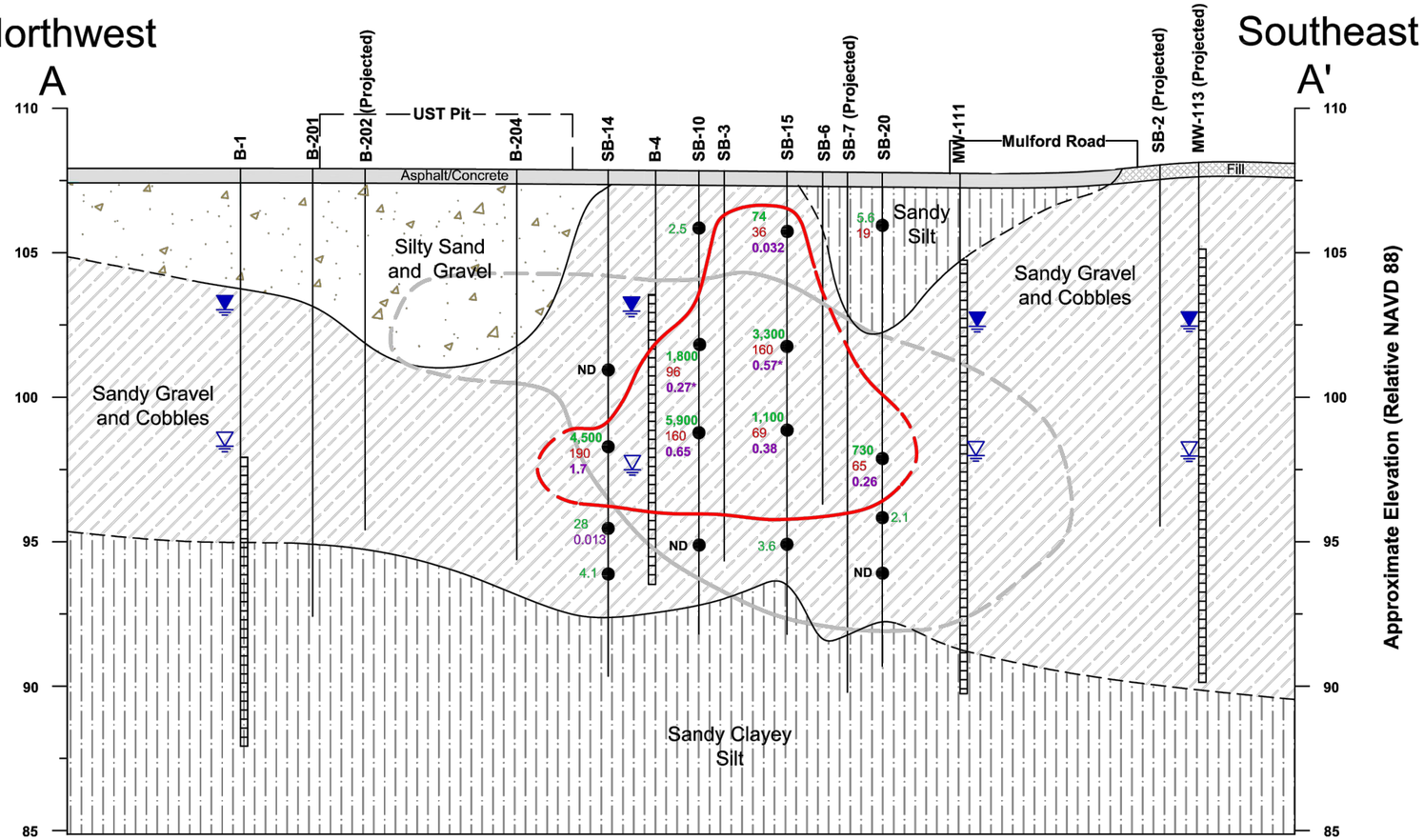
APPROXIMATE SCALE : 1 in. = 40 ft.

COWLITZ BP / COWLITZ FOOD AND FUEL /
FORMER TEXACO SERVICE STATION NO. 211556
101 MULFORD ROAD
TOLEDO, WASHINGTON

GROUNDWATER ANALYTICAL MAP MAY 2, 2024

AECOM

FIGURE 5



LEGEND:

- Boring
- Screened interval
- Estimated extent of soil contamination exceeding proposed Site cleanup standards, based on November 2013 soil sampling results (dashed where inferred)
- Estimated extent of soil contamination exceeding proposed Site cleanup standards, based on pre-2005 soil sampling results (dashed where inferred)
- Highest recorded groundwater elevation
- Lowest recorded groundwater elevation
- Soil analytical sample location
- 3,300 — Gasoline-range hydrocarbon concentration in milligrams per kilogram (mg/kg)
- 160 — Diesel-range hydrocarbon concentration in mg/kg
- 0.38 — Benzene concentration in mg/kg
- ND — No analytes were detected at or above laboratory detection limits
- **0.38** — Bold indicates analyte concentration exceeding the proposed Site cleanup standard
- 0.27* — Analyte not detected at or above indicated laboratory detection limit; however, the detection limit exceeded the proposed Site cleanup standard
- Contact line between soil types

SOIL/ROCK CLASSIFICATION LEGEND:

- Concrete or Asphalt
- Brown, fine to coarse Sand and Gravel with some cobbles and silt
- Brown to gray, medium to coarse sandy Gravel and Cobbles
- Brown to greenish gray, fine sandy, clayey Silt

0 15 30 60

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 5'

COWLITZ BP / COWLITZ FOOD AND FUEL /
FORMER TEXACO SERVICE STATION NO. 211556
101 MULFORD ROAD
TOLEDO, WASHINGTON

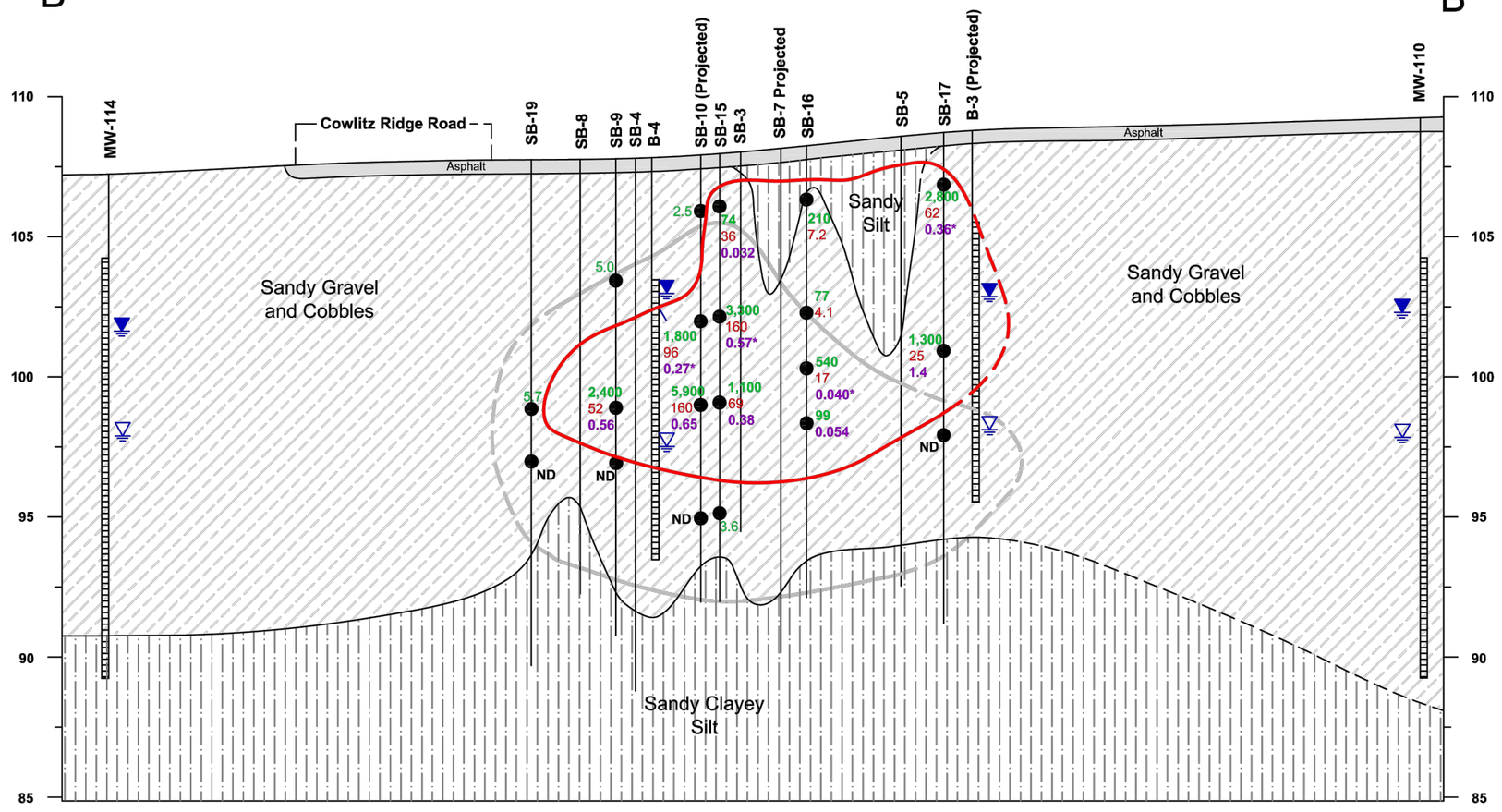
GEOLOGIC CROSS-SECTION A-A'

AECOM

FIGURE 6

West
B

East
B'



Approximate Elevation (Relative NAVD 88)

LEGEND:

- Boring
- Screened interval
- Estimated extent of soil contamination exceeding proposed Site cleanup standards, based on November 2013 soil sampling results (dashed where inferred)
- Estimated extent of soil contamination exceeding proposed Site cleanup standards, based on pre-2005 soil sampling results (dashed where inferred)
- Highest recorded groundwater elevation
- Lowest recorded groundwater elevation
- Soil analytical sample location
- 3,300 — Gasoline-range hydrocarbon concentration in milligrams per kilogram (mg/kg)
- 160 — Diesel-range hydrocarbon concentration in mg/kg
- 0.38 — Benzene concentration in mg/kg
- ND — No analytes were detected at or above laboratory detection limits
- **0.38** — Bold indicates analyte concentration exceeding the proposed Site cleanup standard
- 0.27* — Analyte not detected at or above indicated laboratory detection limit; however, the detection limit exceeded the proposed Site cleanup standard
- Contact line between soil types

SOIL/ROCK CLASSIFICATION LEGEND:

- Concrete or Asphalt
- Brown, fine to coarse Sand and Gravel with some cobbles and silt
- Brown to gray, medium to coarse sandy Gravel and Cobbles
- Brown to greenish gray, fine sandy, clayey Silt

0 15 30 60

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 5'

COWLITZ BP / COWLITZ FOOD AND FUEL /
FORMER TEXACO SERVICE STATION NO. 211556
101 MULFORD ROAD
TOLEDO, WASHINGTON

GEOLOGIC CROSS-SECTION B-B'

AECOM

FIGURE
7

Appendix A Construction Plans and Specifications

DESIGN DRAWINGS

COWLITZ FOOD AND FUEL SITE
CSID NO: 7025
REMEDIAL EXCAVATION
PLANS AND SPECIFICATIONS

FINAL

REFERENCE: BING MAPS

LOCATION MAP

0 1000' 2000'

SERVICE STATION NO. 211556
101 MULFORD ROAD
TOLEDO, WASHINGTON

DATE ISSUED
MAY 2025

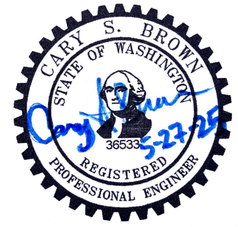
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY

AECOM

KEY CONTACTS:

ENGINEER:
AECOM
1111 3RD AVENUE
SUITE 1600
SEATTLE, WASHINGTON 98101
TELEPHONE: 206.550.5713
CONTACT: CARY BROWN, P.E.

CEMC'S EXCAVATION CONTRACTOR:
HOLT SERVICES (CLEARCREEK)



INDEX TO DRAWINGS

GENERAL SCOPE OF WORK NOTES:

1. AECOM IS REFERRED TO AS "ENGINEER". CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY IS REFERRED TO AS "OWNER". CANDID TRAVEL CENTER LAND LLC IS REFERRED TO AS "PROPERTY OWNER". CEMC'S EXCAVATION CONTRACTOR IS HOLT SERVICES (CLEARCREEK).
2. AECOM SHALL CONTRACT A UTILITY LOCATION AND IDENTIFICATION SERVICE PROVIDER TO PERFORM A PRIVATE UTILITY LOCATION SURVEY OF THE ENTIRE WORK AREA PRIOR TO THE START OF INTRUSIVE WORK. A REPRESENTATIVE OF THE CONTRACTOR WHO IS FAMILIAR WITH THE SCOPE OF WORK SHALL BE PRESENT ONSITE TO SUPERVISE DURING THE PRIVATE UTILITY LOCATION SURVEY. DETAILS OF THE UTILITY SURVEY SHALL BE PROVIDED TO AND REVIEWED WITH THE ENGINEER PRIOR TO THE START OF CONSTRUCTION TO DETERMINE WHETHER ANY ADJUSTMENTS TO THE EXCAVATION EXTENTS WILL BE NECESSARY.
3. WELLS B-3 AND B-4 SHALL BE REMOVED VIA FULL OVEREXCAVATION DURING SOIL REMOVAL ACTIVITIES.
4. CONTRACTOR SHALL VERIFY THAT THE FOLLOWING ITEMS HAVE BEEN REMOVED BY PROPERTY OWNER PRIOR TO PERFORMING REMEDIAL EXCAVATION:
   - 4.1. SHELL SIGN
     - 4.1.1. EXISTING ELECTRICAL CABLE SPECIFICATIONS, CONDUIT SPECIFICATIONS, AND CONCRETE FOOTER SPECIFICATIONS ARE TO BE DOCUMENTED BEFORE/DURING REMOVAL.
     - 4.1.2. THE DIMENSIONS OF THE PLANTER AREA AND DEPTH OF THE CURB LOCATED AT THE BASE OF THE SHELL SIGN IS TO BE DOCUMENTED BEFORE REMOVAL.
   - 4.2. POWER AND WATER TO AIR AND WATER STATION
   - 4.3. POWER TO THE LIGHT BY AIR AND WATER STATION
     - 4.3.1. EXISTING ELECTRICAL CABLE AND CONDUIT SPECIFICATIONS ARE TO BE DOCUMENTED BEFORE REMOVAL.
   - 4.4. FUEL DISPENSER CANOPIES
   - 4.5. FUEL DISPENSERS
   - 4.6. UNDERGROUND STORAGE TANKS
   - 4.7. PRODUCT PIPING AND VENT LINES
   - 4.8. CONCRETE SURFACES ASSOCIATED WITH THE ABOVE-LISTED ITEMS
5. PRIOR TO CONDUCTING ANY EXCAVATION WORK, THE PROPERTY OWNER OR THEIR DESIGNEE SHALL ENSURE THAT POWER IS SECURED TO THE AIR/WATER STATION, THE LIGHT NEAR THE AIR WATER STATION, AND THE SHELL SIGN LOCATED AT THE SOUTH PORTION OF THE SITE BY LOCK OUT TAG OUT OR OTHER MEASURES APPROVED BY THE ENGINEER.
6. THE SERVICE STATION BUILDING SHALL BE CLOSED TO EMPLOYEES AND THE PUBLIC DURING THE REMEDIAL EXCAVATION UNTIL BACKFILL IS COMPLETE AND APPROVED BY THE ENGINEER.
7. THE CONTRACTOR SHALL CONTACT THE ENGINEER AS NECESSARY TO CLARIFY THE INFORMATION ON THESE DRAWINGS. IF DISCREPANCIES BETWEEN THE DRAWINGS, THESE NOTES, OR FIELD CONDITIONS OCCUR, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK.
8. THE CONTRACTOR SHALL MAINTAIN AN ACCURATE SET OF REDLINE AS-BUILT DRAWINGS DURING REMEDIAL SOIL EXCAVATION AND SHALL PROVIDE A SET OF REPRODUCIBLE DRAWINGS TO THE ENGINEER AND THE OWNER AFTER COMPLETION OF THE WORK.
9. SOIL CONFIRMATIONAL SAMPLES SHALL BE COLLECTED BY THE ENGINEER'S REPRESENTATIVE IN ACCORDANCE WITH WASHINGTON STATE DEPARTMENT OF ECOLOGY'S GUIDANCE FOR REMEDIATION OF PETROLEUM SITES, PUBLICATION No. 10-09-057, REVISED JUNE 2016 AND ENGINEERING DESIGN REPORT APPROVED BY ECOLOGY. AT LEAST ONE MULTI-DEPTH SOIL SAMPLE SHALL BE COLLECTED EVERY 20 FEET HORIZONTALLY ALONG THE SIDEWALLS OR AT LEAST ONE MULTI-DEPTH SAMPLE SHALL BE COLLECTED FROM EACH SIDEWALL, WHICHEVER IS GREATER. AT LEAST ONE BOTTOM SAMPLE SHALL BE COLLECTED FOR EVERY 400 SQUARE FEET OF EXPOSED BOTTOM.

ARCHAEOLOGICAL MONITORING NOTES:

1. ALL INTRUSIVE WORK SHALL BE MONITORED BY A QUALIFIED ARCHAEOLOGIST/CULTURAL RESOURCE MONITOR THAT MEETS THE SECRETARY OF INTERIOR'S STANDARDS AND GUIDELINES AND IN ACCORDANCE WITH A PROJECT-SPECIFIC INADVERTENT DISCOVERY PLAN.
2. A CULTURAL RESOURCE MONITORING REPORT SHALL BE PREPARED AFTER THE COMPLETION OF REMEDIAL EXCAVATION ACTIVITIES. TO AVOID VANDALISM AND TO RESTRICT INFORMATION ABOUT LOCATIONS OF ARCHAEOLOGICAL SITES, THE CULTURAL RESOURCE MONITORING REPORT IS CONFIDENTIAL PURSUANT TO SECTION 304 OF THE NATIONAL HISTORIC PRESERVATION ACT, SECTION 9 OF THE ARCHAEOLOGICAL RESOURCES PROTECTION ACT, AND WASHINGTON STATE LAWS RCW 27.53.070 AND RCW 42.56.300.

EROSION AND SEDIMENT CONTROL NOTES:

1. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH 2019 STORM WATER MANAGEMENT FOR WESTERN WASHINGTON.
2. INSTALLATION AND MAINTENANCE OF EROSION CONTROL MEASURES ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PREVENTION OF SIGNIFICANT EROSION AND SILTATION ENTERING STORM DRAIN SYSTEMS, NATURAL DRAINAGE COURSES AND/OR INTRUDING UPON ADJACENT ROADWAYS AND PROPERTIES.
3. CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL BEST MANAGEMENT PRACTICES (BMPS) AS NEEDED UNTIL PROJECT IS COMPLETED.

UTILITY NOTES:

1. THE CONTRACTOR MUST NOTIFY THE 811 - "CALL BEFORE YOU DIG" AGENCY A MINIMUM OF 48 HOURS PRIOR TO COMMENCING EARTHWORK.
2. THE CONTRACTOR SHALL OBTAIN A THIRD-PARTY UTILITY CLEARANCE PRIOR TO START OF REMEDIAL SOIL EXCAVATION.
3. UNKNOWN SUBSURFACE STRUCTURES AND UTILITIES ENCOUNTERED DURING THE WORK SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION IMMEDIATELY AND WORK SHALL NOT PROCEED IN THESE AREAS WITHOUT THE ENGINEER'S APPROVAL.
4. DAMAGE TO UTILITIES OR STRUCTURES SHALL BE REPORTED TO THE ENGINEER AS SOON AS POSSIBLE. REPAIRS SHALL BE COMPLETED IN A TIMELY MANNER BY THE CONTRACTOR AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE AFFECTED UTILITY AGENCY OR AS OTHERWISE DIRECTED BY THE OWNER OR ENGINEER.
5. CONTRACTOR SHALL SUBCONTRACT A UTILITY LOCATION AND IDENTIFICATION SERVICE PROVIDER TO PERFORM A PRIVATE UTILITY LOCATION SURVEY OF THE ENTIRE WORK AREA PRIOR TO THE START OF INTRUSIVE WORK. A REPRESENTATIVE OF THE CONTRACTOR WHO IS FAMILIAR WITH THE SCOPE OF WORK SHALL BE PRESENT ON SITE TO SUPERVISE DURING THE PRIVATE UTILITY LOCATION SURVEY. DETAILS OF THE UTILITY SURVEY SHALL BE PROVIDED TO THE ENGINEER PRIOR TO THE START OF CONSTRUCTION TO DETERMINE IF THERE ARE ANY ADJUSTMENTS NECESSARY TO THE EXCAVATION PLAN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ANY MARKS INDICATING BURIED INFRASTRUCTURE. IF MARKS FADE OR IF THERE ARE QUESTIONS ABOUT THE LOCATIONS OF BURIED INFRASTRUCTURE, THE CONTRACTOR SHALL PERFORM AN ADDITIONAL PRIVATE UTILITY SURVEY.

EARTHWORK NOTES:

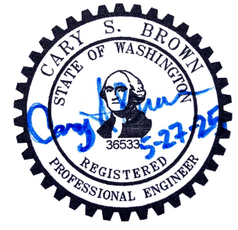
1. ALL EXCAVATED SOILS SHALL BE DISPOSED AT AN APPROPRIATELY LICENSED FACILITY APPROVED BY CEMC.
2. ALL EXCAVATIONS SHALL BE PERFORMED IN COMPLIANCE WITH OSHA SAFETY REQUIREMENTS.
3. OPEN EXCAVATIONS SHALL BE CLEARLY MARKED WITH CONSTRUCTION TAPE OR SURROUNDED BY TEMPORARY CHAIN LINK FENCE AFTER WORK HOURS.
4. EXCAVATION DEPTH WILL BE MEASURED TO THE NEAREST 0.1 FEET. NO PERSONNEL WILL BE ALLOWED WITHIN THE EXCAVATION FOR HEALTH AND SAFETY REASONS.
5. EXCAVATED SOIL SHALL BE INSPECTED BY A CULTURAL RESOURCE MONITOR PRIOR TO LOADOUT.
6. EARTHWORK PERFORMED IN THE RIGHT OF WAY WILL BE PERFORMED IN ACCORDANCE WITH LEWIS COUNTY CODE 12.60, STANDARD DETAIL DRAWING 3-2.
7. IMPACTED SOIL THAT IS SATURATED WILL BE PLACED IN A SEPARATE STOCKPILE OUTSIDE OF THE EXCAVATION AREA ON 10-MIL PLASTIC SHEETING AND SLOPED TOWARD A TEMPORARY LINED SUMP SO THAT ACCUMULATED WATER CAN BE COLLECTED FOR DISPOSAL. THE SATURATED SOIL WILL BE ALLOWED TIME TO DRAIN INTO THE TEMPORARY SUMP SUMP BEFORE BEING LOADED INTO TRUCKS AND TRANSPORTED OFF-SITE. THE ABOVE REQUIREMENT IS CONSISTENT WITH THE METHODS USED DURING THE 2010 INTERIM ACTION (SAIC, 2010).
   - 7.1. BACKFILL MATERIAL SHALL MEET THE FOLLOWING REQUIREMENTS
     - 7.1.1. FILL SHALL CONSIST OF SOIL FREE OF LUMPS AND ROCKS GREATER THAN 6 INCHES AND FREE OF LOAM, ORGANIC MATTER, CLAY, DEBRIS, WASTE, FROZEN MATERIALS, OTHER DELETERIOUS MATTER, AND FINE UNIFORM SANDS THAT MAY BE DIFFICULT TO COMPACT. SNOW, ICE, AND FROZEN SOIL WILL NOT BE PERMITTED.
     - 7.1.2. FILL SHALL CONSIST OF WSDOT COMMON BORROW PER WASHINGTON DEPARTMENT OF TRANSPORTATION (WSDOT) STANDARD SPECIFICATION SECTION 9.03,14.(3) UNLESS OTHERWISE APPROVED BY THE ENGINEER.
     - 7.1.3. PRIOR TO IMPORT MATERIALS ARRIVING ON SITE, CONTRACTOR SHALL PROVIDE SPECIFICATIONS AND BORROW MATERIAL SOURCE TO ENGINEER AND DOCUMENTATION THAT THE SOIL IF FREE OF CONTAMINATION ABOVE MTCA CLEANUP LEVELS.
     - 7.1.4. CONTRACTOR SHALL STOCKPILE CLEAN IMPORTED BACKFILL IN A LOCATION APPROVED BY THE ENGINEER AND PROPERTY OWNER, UNLESS DIRECT PLACEMENT IS APPROVED BY THE ENGINEER.
   - 7.2. PLACEMENT
     - 7.2.1. PLACE BRIDGING LAYER FROM BASE OF EXCAVATION TO TOP OF GROUND WATER TABLE IN 12-INCH MAXIMUM LIFTS AND COMPACT WITH EXCAVATOR BUCKET.
     - 7.2.2. A 16 OZ NON-WOVEN GEOTEXTILE SHALL BE PLACED ABOVE THE BRIDGING LAYER.
     - 7.2.3. INSTALL A MINIMUM OF 8 INCHES OF CRUSHED SURFACE TOP COURSE (CSTC) CONFORMING TO WSDOT SPECIFICATION 9.03.9(3) BELOW ASPHALT. CSTC SHALL BE COMPACTED TO MINIMUM 95-PERCENT OF MAXIMUM DRY DENSITY (ASTM D1557) AND VERIFIED WITH THE NUCLEAR METHOD (ASTM D2922).
8. RESTORE AREA WITH MINIMUM 4-INCHES HOT ASPHALT AND SEAL COAT.

DEWATERING NOTES:

1. THE EXCAVATION WILL BE DEWATERED USING AN PNEUMATIC DOUBLE DIAPHRAGM PUMP OR APPROVED EQUAL FROM TEMPORARY SUMP(S) WITHIN THE EXCAVATION FOOTPRINT. WATER WILL BE PLACED IN AN ON-SITE HOLDING TANK (E.G., FRAC TANK) FOR SETTLING PRIOR TO ONSITE TREATMENT OR DISPOSAL.

KEY DEFINITIONS:

1. PROPERTY OWNER = CANDID TRAVEL CENTER LAND LLC
2. PROPERTY OWNER'S CONTRACTOR = UST REMOVAL CONTRACTOR
3. CEMC's EXCAVATION CONTRACTOR = EXCAVATION CONTRACTOR



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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: CARY S. BROWN		
Professional Engineer's No.: 36533		
State: WA	Date Signed: 05/27/2025	Project Mgr.: JG
Designed by: JC	Drawn by: RM	Checked by: CB & JG

FINAL

AECOM

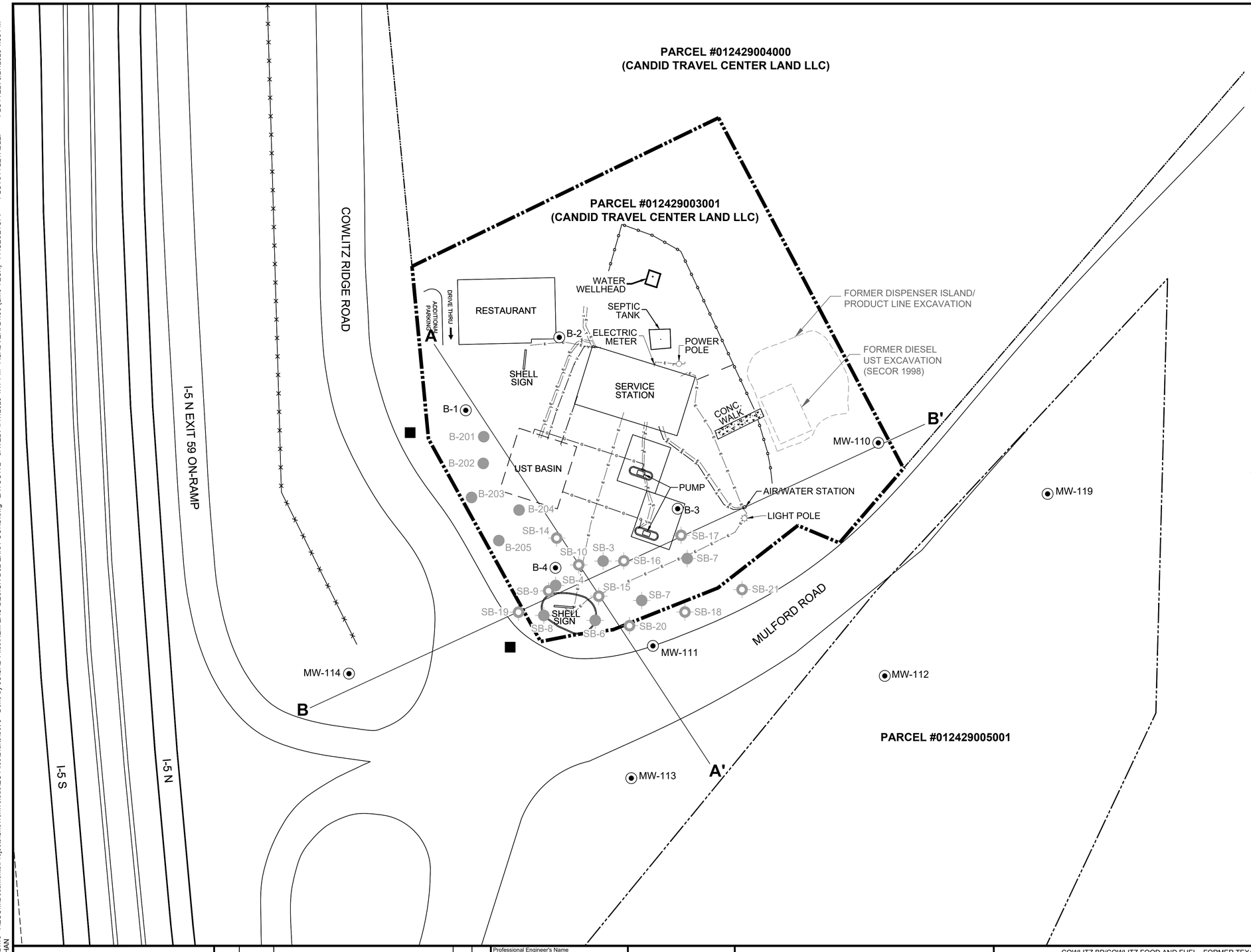
COWLITZ BP/COWLITZ FOOD AND FUEL - FORMER TEXACO SERVICE STATION NO. 211556
101 MULFORD ROAD, TOLEDO, WASHINGTON
REMEDIAL EXCAVATION PLANS AND SPECIFICATIONS

GENERAL NOTES

AECOM Project No.: 60743810
Date: MAY 2025

AECOM
1111 3RD AVENUE
SUITE 1600
SEATTLE, WASHINGTON 98101
TEL. 206.438.2700

G-1



LEGEND:

- SITE PROPERTY BOUNDARY (APPROXIMATE)
- ADJACENT PROPERTY BOUNDARY (APPROXIMATE)
- EXISTING CHAINLINK FENCE
- EXISTING WOOD FENCE
- EXISTING UNDERGROUND STORAGE TANK (UST)
- FORMER EXCAVATION
- MW-110 — GROUNDWATER MONITORING WELL
- B-205 — 1992 SOIL BORING LOCATION (KALDVEER ASSOCIATES)
- SB-7 — 2004 SOIL BORING LOCATION (SAIC)
- SB-9 — 2013 SOIL BORING LOCATION (LEIDOS)
- CATCH BASIN
- AIR LINE
- ELECTRIC LINE
- FUEL/GAS/OIL LINE
- FUEL VENT LINE
- TELECOMMUNICATIONS LINE
- UNKNOWN UTILITY LINE
- A — A' CROSS SECTION LOCATION

CARY S. BROWN
STATE OF WASHINGTON
36533
REGISTERED
PROFESSIONAL ENGINEER
5-27-25

NOTES:

1. UTILITIES SURVEYED JUNE 20, 2024 BY 811 GPRS.
2. ALL OTHER FEATURES AND LOCATIONS ARE APPROXIMATE.

25' 0 25' 50'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING:

USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: CARY S. BROWN		
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COWLITZ BP/COWLITZ FOOD AND FUEL - FORMER TEXACO SERVICE STATION NO. 211556
101 MULFORD ROAD, TOLEDO, WASHINGTON
REMEDIAL EXCAVATION PLANS AND SPECIFICATIONS

EXISTING CONDITIONS

AECOM Project No.: 60743810
Date: MAY 2025

AECOM
1111 3RD AVENUE
SUITE 1600
SEATTLE, WASHINGTON 98101
TEL. 206.438.2700

G-2

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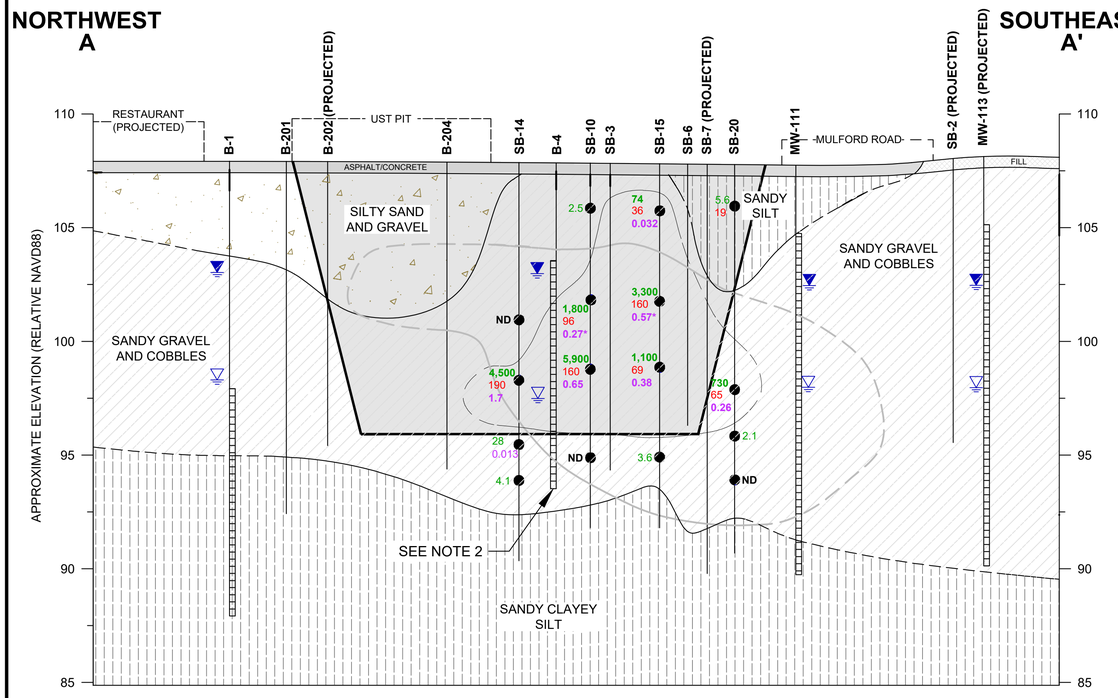
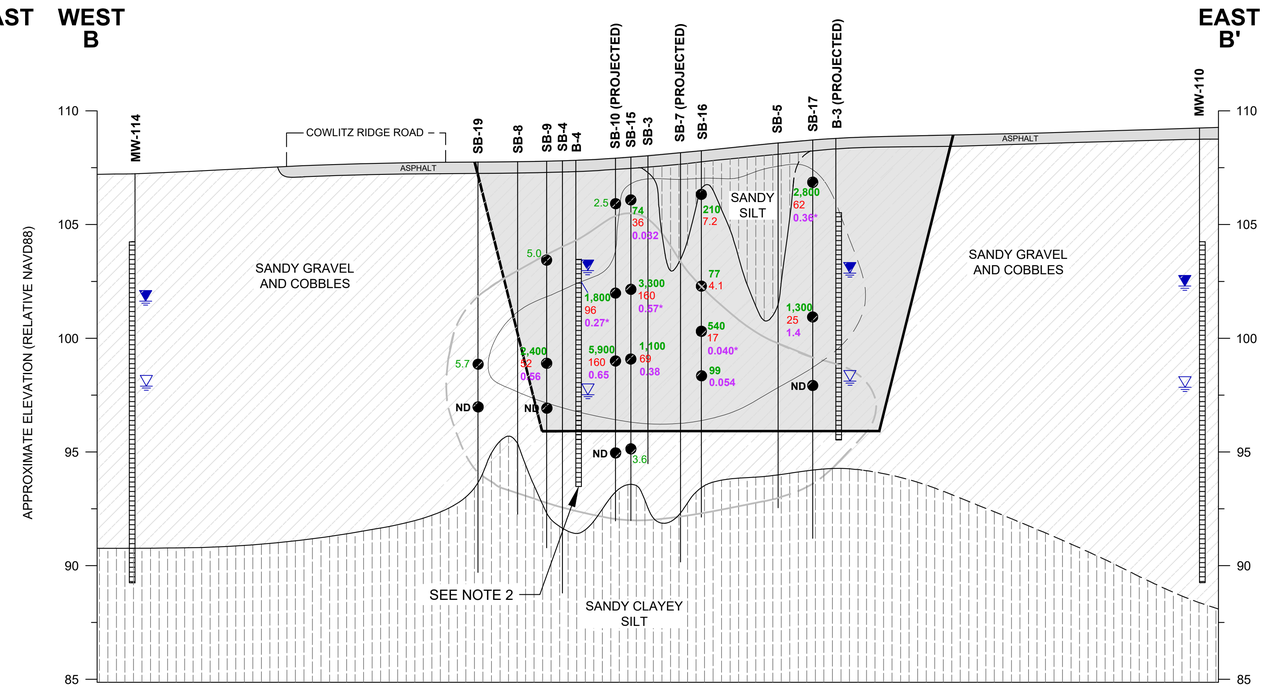
BY: CRONK, JONATHAN





LEGEND:

- BORING
- SCREENED INTERVAL
- ESTIMATED EXTENT OF SOIL CONTAMINATION EXCEEDING PROPOSED SITE CLEANUP STANDARDS, BASED ON NOVEMBER 2013 SOIL SAMPLING RESULTS (DASHED WHERE INFERRED)
- ESTIMATED EXTENT OF SOIL CONTAMINATION EXCEEDING PROPOSED SITE CLEANUP STANDARDS, BASED ON PRE-2005 SOIL SAMPLING RESULTS (DASHED WHERE INFERRED)
- HIGHEST RECORDED GROUNDWATER ELEVATION
- LOWEST RECORDED GROUNDWATER ELEVATION
- SOIL ANALYTICAL SAMPLE LOCATION

3,300	GASOLINE RANGE HYDROCARBON CONCENTRATION IN MILLIGRAMS PER KILOGRAM (mg/kg)
160	DIESEL RANGE HYDROCARBON CONCENTRATION IN mg/kg
0.38	BENZENE CONCENTRATION IN mg/kg
ND	NO ANALYTES WERE DETECTED AT OR ABOVE LABORATORY DETECTION LIMITS
0.38	BOLD INDICATES ANALYTE CONCENTRATION EXCEEDS THE PROPOSED SITE CLEANUP STANDARD
0.27*	ANALYTE NOT DETECTED AT OR ABOVE INDICATED LABORATORY DETECTION LIMIT; HOWEVER, THE DETECTION LIMIT EXCEEDED THE PROPOSED SITE CLEANUP STANDARD
	ESTIMATED EXTENT OF PROPERTY EXCAVATION

SOIL/ROCK CLASSIFICATION LEGEND

- CONCRETE OR ASPHALT
- BROWN, FINE TO COARSE SAND AND GRAVEL WITH SOME COBBLES AND SILT
- BROWN TO GRAY, MEDIUM TO COARSE SANDY GRAVEL AND COBBLES
- BROWN TO GREENISH GRAY, FINE SANDY, CLAYEY SILT
- CONTACT LINE BETWEEN SOIL TYPES

CARY S. BROWN
STATE OF WASHINGTON
36533
5-27-25
REGISTERED
PROFESSIONAL ENGINEER

NOTE:

1. CROSS SECTIONS PROVIDED BY LEIDOS, DATED 4/28/2017.
2. WELL B-3 (NOT SHOWN) AND B-4 TO BE ABANDONED BY OVEREXCAVATION AND REMOVING ALL WELL MATERIALS.
3. DEPICTED SLOPES ARE 1.5H:1V OR SHALLOWER.
4. NO WATER, WASTEWATER, OR NATURAL GAS IS SUSPECTED TO BE IN EITHER MULFORD ROAD OR COWLITZ RIDGE ROAD.

20' 0 20' 40'
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 6x

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: CARY S. BROWN		
Professional Engineer's No.: 36533		
State: WA	Date Signed: 05/27/2025	Project Mgr.: JG
Designed by: JC	Drawn by: RM	Checked by: CB & JG

FINAL

AECOM

COWLITZ BP/COWLITZ FOOD AND FUEL - FORMER TEXACO SERVICE STATION NO. 211556
101 MULFORD ROAD, TOLEDO, WASHINGTON
REMEDIAL EXCAVATION PLANS AND SPECIFICATIONS

CROSS SECTIONS

AECOM Project No.: 60743810
Date: MAY 2025

AECOM
1111 3RD AVENUE
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SEATTLE, WASHINGTON 98101
TEL. 206.438.2700

G-3

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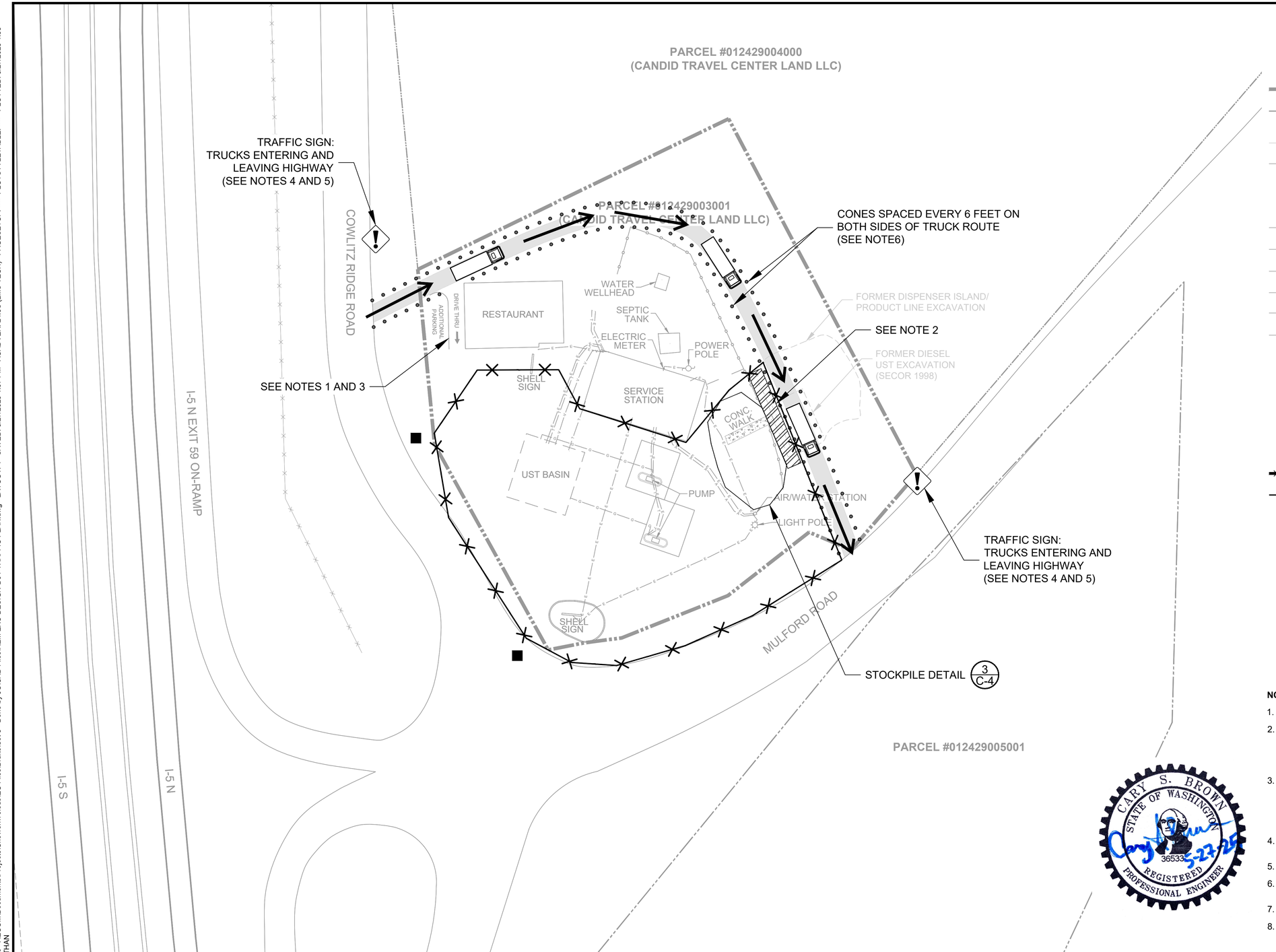

LEGEND:

- SITE PROPERTY BOUNDARY (APPROXIMATE)
- ADJACENT PROPERTY BOUNDARY (APPROXIMATE)
- EXISTING CHAINLINK FENCE
- EXISTING WOOD FENCE
- EXISTING UNDERGROUND STORAGE TANK (UST)
- FORMER EXCAVATION
- AIR LINE
- ELECTRIC LINE
- FUEL/GAS/OIL LINE
- FUEL VENT LINE
- TELECOMMUNICATIONS LINE
- UNKNOWN UTILITY LINE
- DIRECTION OF TRAFFIC FOR SITE ACTIVITIES
- TRUCK ROUTE
- TRUCK LOAD OUT AREA
- CONES SPACED 6 FEET
- TRAFFIC SIGN: TRUCKS ENTERING AND LEAVING HIGHWAY
- CONSTRUCTION FENCING
- PROPOSED STOCKPILE AREA
- CATCH BASIN

NOTES:

1. CONTRACTOR SHALL MAINTAIN ACCESS TO RESTAURANT DRIVE THRU.
2. TRUCK LOAD OUT AREA SHALL INCLUDE BEST MANAGEMENT PRACTICES TO PREVENT TRACKOUT OF SEDIMENT FROM VEHICLE TRAFFIC, SUCH AS ROCK PADS, TIRE CLEANING RUMBLE STRIPS, STREET SWEEPING, OR A TRUCK WHEEL WASH STATION. LOCATION TO BE DETERMINED BY CONTRACTOR'S CESCL WITH ENGINEER'S APPROVAL.
3. CONTRACTOR TO ADD "OPEN FOR BUSINESS" SIGNS BY RESTAURANT IN CONSPICUOUS LOCATIONS. PARKING ON THE WEST SIDE OF RESTAURANT NEAR DRIVE THRU SHALL REMAIN OPEN DURING RESTAURANT. PARKING ON THE SOUTH SIDE OF THE RESTAURANT SHALL BE CLOSED AS DETERMINED BY CONSTRUCTION CONTRACTOR TO MAINTAIN A SAFE WORK ZONE.
4. ALL SIGNS SHALL CONFORM TO MUTCD REQUIREMENTS AND SHALL BE MINIMUM 48" x 48" UNLESS OTHERWISE SPECIFIED.
5. SIGN SPACING MAY BE FIT TO ACCOMODATE ROADWAY CONDITIONS.
6. CHANNELIZATION DEVICES SHALL BE 42-INCH HIGH, 18-INCH DIAMETER REFLECTIVE BARRELS OR APPROVED EQUAL.
7. ALL FEATURES AND LOCATIONS ARE APPROXIMATE.
8. NO WATER, WASTEWATER, OR NATURAL GAS IS SUSPECTED TO BE IN EITHER MULFORD ROAD OR COWLITZ RIDGE ROAD.

CARY S. BROWN
STATE OF WASHINGTON
36533
REGISTERED
PROFESSIONAL ENGINEER
5-27-25

25' 0 25' 50'
HORIZONTAL SCALE: 1" = 25'

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: **CARY S. BROWN**
Professional Engineer's No.: 36533

State	Date Signed	Project Mgr.
WA	05/27/2025	JG
Designed by	Drawn by	Checked by
JC	RM	CB & JG

FINAL

AECOM

COWLITZ BP/COWLITZ FOOD AND FUEL - FORMER TEXACO SERVICE STATION NO. 211556
101 MULFORD ROAD, TOLEDO, WASHINGTON
REMEDIAL EXCAVATION PLANS AND SPECIFICATIONS

TRUCK SITE HAUL ROUTE AND LOADING AREA

AECOM Project No.: 60743810
Date: MAY 2025

AECOM
1111 3RD AVENUE
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SEATTLE, WASHINGTON 98101
TEL. 206.438.2700

G-4

PARCEL #012429004000
(CANDID TRAVEL CENTER LAND LLC)

PARCEL #012429003001
(CANDID TRAVEL CENTER LAND LLC)

COWLITZ RIDGE ROAD

I-5 N EXIT 59 ON-RAMP

I-5 S

I-5 N

RESTAURANT

DRIVE THRU

ADDITIONAL PARKING

WATER WELLHEAD

SEPTIC TANK

ELECTRIC METER

POWER POLE

B-1

B-2

SHELL SIGN

SERVICE STATION

CONC. WALK

UST BASIN

PUMP

AIR/WATER STATION

LIGHT POLE

B-3

B-4

SHELL SIGN

FORMER DISPENSER ISLAND/ PRODUCT LINE EXCAVATION

FORMER DIESEL UST EXCAVATION (SECOR 1998)

FEATURES TO BE REMOVED PRIOR TO EXCAVATION (SEE NOTE 1)

FEATURES TO BE REMOVED PRIOR TO EXCAVATION (SEE NOTE 1)

TO BE ABANDONED BY CEMC'S EXCAVATION CONTRACTOR

STOCKPILE DETAIL 3/C-4

SIGN TO BE REINSTALLED BY CEMC'S EXCAVATION CONTRACTOR

1/C-4 STRAW WATTLE DETAIL

MULFORD ROAD

MW-110

MW-111

MW-112

MW-113

MW-114

MW-119

PARCEL #012429005001

LEGEND:

- SITE PROPERTY BOUNDARY (APPROXIMATE)
- ADJACENT PROPERTY BOUNDARY (APPROXIMATE)
- EXISTING CHAINLINK FENCE
- EXISTING WOOD FENCE
- EXISTING UNDERGROUND STORAGE TANK (UST)
- FORMER EXCAVATION
- MW-110 — GROUNDWATER MONITORING WELL TO BE PROTECTED
- B-3 — GROUNDWATER MONITORING WELL TO BE ABANDONED PRIOR TO EXCAVATION
- CATCH BASIN
- AIR LINE
- ELECTRIC LINE
- FUEL/GAS/OIL LINE
- FUEL VENT LINE
- TELECOMMUNICATIONS LINE
- UNKNOWN UTILITY LINE
- CONSTRUCTION FENCING
- PROPOSED STOCKPILE
- STRAW WATTLE
- FEATURES TO BE REMOVED PRIOR TO EXCAVATION (SEE NOTE 1)

CARY S. BROWN
STATE OF WASHINGTON
36533
5-27-25
REGISTERED
PROFESSIONAL ENGINEER

NOTES:

1. UST REMOVAL CONTRACTOR TO SECURE POWER TO AIR/WATER STATION, POLE-MOUNTED LIGHT NEAR AIR/WATER STATION, AND SHELL SIGN.
2. UTILITIES SURVEYED JUNE 20, 2024 BY 811 GPRS.
3. ALL OTHER FEATURES AND LOCATIONS ARE APPROXIMATE.
4. STAW WATTLES TO BE INSTALLED ALONG THE PROPERTY BOUNDARY WITH COWLITZ RIDGE ROAD AND MULFORD ROAD.
5. CATCH BASIN INSERTS TO BE INSTALLED AT BOTH CATCH BASINS.
6. REMOVE REMAINING ASPHALT ABOVE THE EXCAVATION AREA SHOWN ON C-1

25' 0 25' 50'
HORIZONTAL SCALE: 1" = 25'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: CARY S. BROWN		
Professional Engineer's No.: 36533		
State: WA	Date Signed: 05/27/2025	Project Mgr.: JG
Designed by: JC	Drawn by: RM	Checked by: CB & JG

FINAL

AECOM

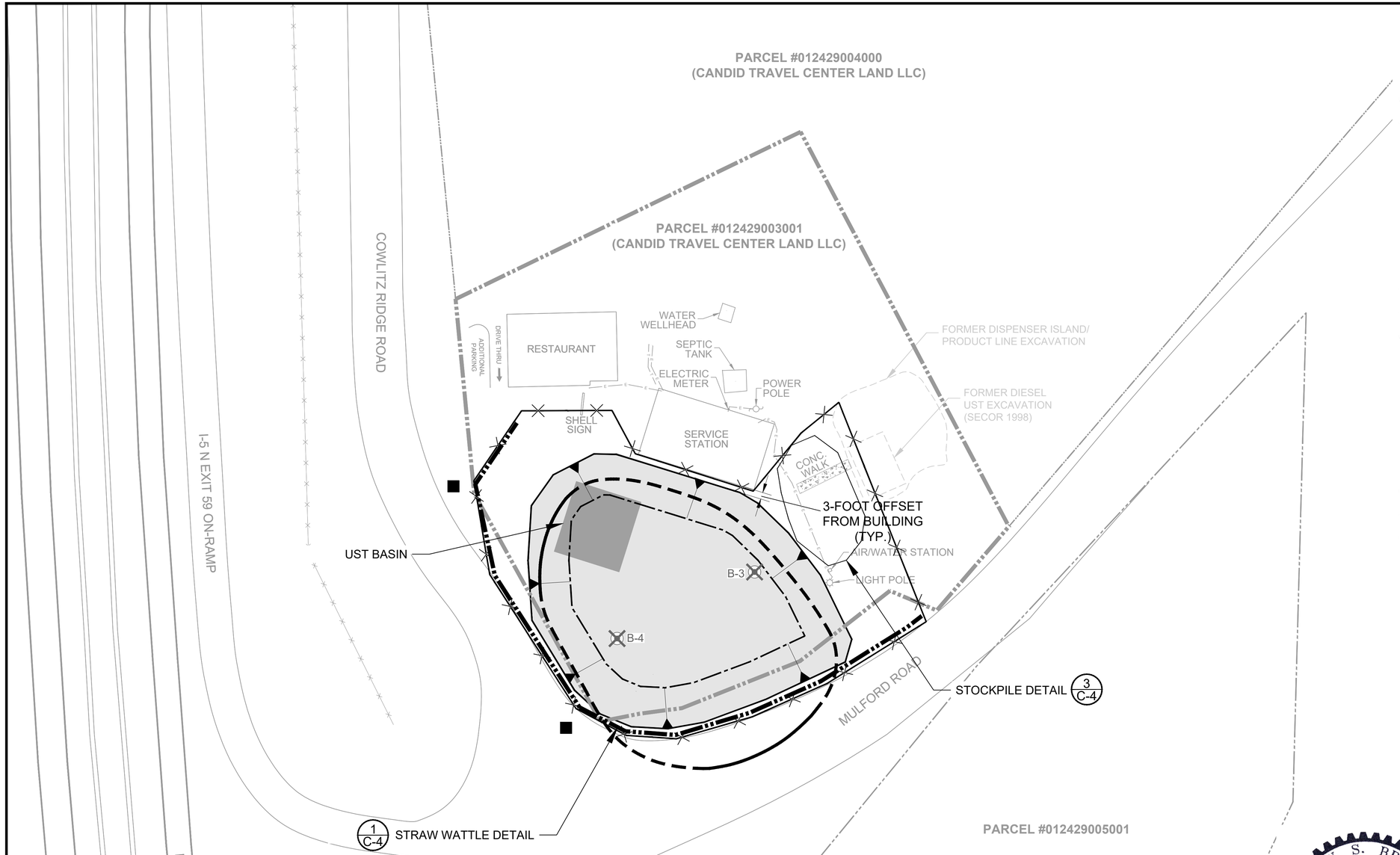
COWLITZ BP/COWLITZ FOOD AND FUEL - FORMER TEXACO SERVICE STATION NO. 211556
101 MULFORD ROAD, TOLEDO, WASHINGTON
REMEDIAL EXCAVATION PLANS AND SPECIFICATIONS

SITE PREPARATION AND SWPP PLAN

AECOM Project No.: 60743810
Date: MAY 2025

AECOM
1111 3RD AVENUE
SUITE 1600
SEATTLE, WASHINGTON 98101
TEL. 206.438.2700

G-5



LEGEND:

- SITE PROPERTY BOUNDARY (APPROXIMATE)
- ADJACENT PROPERTY BOUNDARY (APPROXIMATE)
- EXISTING CHAINLINK FENCE
- EXISTING UNDERGROUND STORAGE TANK (UST)
- FORMER EXCAVATION
- B-3 GROUNDWATER MONITORING WELL TO BE ABANDONED PRIOR TO EXCAVATION (SEE NOTE 1)
- CATCH BASIN
- ELECTRIC LINE
- TELECOMMUNICATIONS LINE
- APPROXIMATE EXTENT OF PETROLEUM CONTAMINATION IN SOIL (DASHED WHERE INFERRED)
- ESTIMATED EXTENT OF PROPERTY EXCAVATION
  TOTAL EXCAVATION AREA: ~12,490 SQ FT
  EXCAVATION VOLUME: ~4,185 CU YD
- ESTIMATED TARGETED EXCAVATION DEPTH OF 12 FEET BELOW GROUND SURFACE
  BOTTOM OF EXCAVATION AREA: ~6,075 SQ FT
- 1.5H:1V SLOPE
- CONSTRUCTION FENCING
- PROPOSED STOCKPILE
- STRAW WATTLE

CARY S. BROWN
STATE OF WASHINGTON
36533
REGISTERED
PROFESSIONAL ENGINEER
5-27-25

NOTES:

1. CONTRACTOR TO EXCAVATE FULL DEPTH OF WELL B3 AND B-4.
2. UTILITIES SURVEYED JUNE 20, 2024 BY 811 GPRS.
3. ALL OTHER FEATURES AND LOCATIONS ARE APPROXIMATE.

25' 0 25' 50'
HORIZONTAL SCALE: 1" = 25'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: CARY S. BROWN		
Professional Engineer's No.: 36533		
State: WA	Date Signed: 05/27/2025	Project Mgr.: JG
Designed by: JC	Drawn by: RM	Checked by: CB & JG

FINAL

AECOM

COWLITZ BP/COWLITZ FOOD AND FUEL - FORMER TEXACO SERVICE STATION NO. 211556
101 MULFORD ROAD, TOLEDO, WASHINGTON
REMEDIAL EXCAVATION PLANS AND SPECIFICATIONS

EXCAVATION PLAN

AECOM Project No.: 60743810
Date: MAY 2025

AECOM
1111 3RD AVENUE
SUITE 1600
SEATTLE, WASHINGTON 98101
TEL. 206.438.2700

C-1

PARCEL #012429004000
(CANDID TRAVEL CENTER LAND LLC)

PARCEL #012429003001
(CANDID TRAVEL CENTER LAND LLC)

PARCEL #012429005001

COWLITZ RIDGE ROAD

I-5 N EXIT 59 ON-RAMP

I-5 S

I-5 N

RESTAURANT

DRIVE THRU

ADDITIONAL PARKING

WATER WELLHEAD

SEPTIC TANK

ELECTRIC METER

POWER POLE

SHELL SIGN

SERVICE STATION

CONC. WALK

FORMER DISPENSER ISLAND/ PRODUCT LINE EXCAVATION

FORMER DIESEL UST EXCAVATION (SECOR 1998)

SEE DETAIL THIS SHEET

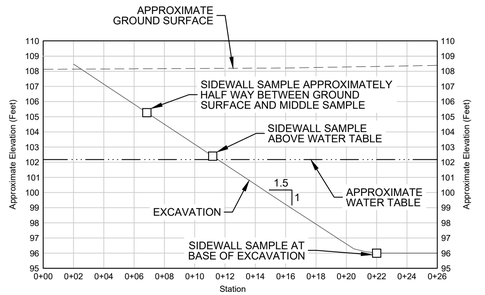
UST BASIN

EXSW-01
EXSW-02
EXSW-03
EXSW-04
EXSW-05
EXSW-06
EXSW-07
EXSW-08
EXSW-09
EXSW-10
EXSW-11
EXSW-12
EXSW-13
EXSW-14
EXSW-15
EXSW-16
EXSW-17
EXSW-18

EXBOT-01
EXBOT-02
EXBOT-03
EXBOT-04
EXBOT-05
EXBOT-06
EXBOT-07
EXBOT-08
EXBOT-09
EXBOT-10
EXBOT-11
EXBOT-12
EXBOT-13
EXBOT-14
EXBOT-15
EXBOT-16

LEGEND:

- SITE PROPERTY BOUNDARY (APPROXIMATE)
- ADJACENT PROPERTY BOUNDARY (APPROXIMATE)
- EXISTING CHAINLINK FENCE
- EXISTING UNDERGROUND STORAGE TANK (UST)
- FORMER EXCAVATION
- ELECTRIC LINE
- FUEL VENT LINE
- TELECOMMUNICATIONS LINE
- ESTIMATED EXTENT OF PROPERTY EXCAVATION
- ESTIMATED TARGETED EXCAVATION DEPTH OF 12 FEET BELOW GROUND SURFACE
- EXSW-01 EXCAVATION SIDEWALL SAMPLE (54 SIDEWALL SAMPLES FROM 18 LOCATIONS PLANNED)
- EXBOT-01 EXCAVATION BOTTOM SAMPLE (16 FLOOR SAMPLES FROM 16 LOCATIONS PLANNED)



TYPICAL EXCAVATION SIDEWALL SAMPLE

0' 5' 10'
SCALE: 1" = 5'

CARY S. BROWN
STATE OF WASHINGTON
36533
REGISTERED
PROFESSIONAL ENGINEER
5-27-25

NOTES:

1. UTILITIES SURVEYED JUNE 20, 2024 BY 811 GPRS.
2. ALL OTHER FEATURES AND LOCATIONS ARE APPROXIMATE.
3. UST REMOVAL CONTRACTOR TO COMPLETE SAMPLING ASSOCIATED WITH UST REMOVAL, PUMP ISLANDS, AND OTHER SITE PREPARATION WORK IDENTIFIED ON SHEET 5.

   ALL OTHER SAMPLES WITHIN EXCAVATION LIMITS WILL BE TAKEN BY THE ENGINEER WITH SUPPORT FROM CEMC'S EXCAVATION CONTRACTOR.

25' 0 25' 50'
HORIZONTAL SCALE: 1" = 25'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING:

USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: CARY S. BROWN		
Professional Engineer's No.: 36533		
State: WA	Date Signed: 05/27/2025	Project Mgr.: JG
Designed by: JC	Drawn by: RM	Checked by: CB & JG

FINAL

AECOM

COWLITZ BP/COWLITZ FOOD AND FUEL - FORMER TEXACO SERVICE STATION NO. 211556
101 MULFORD ROAD, TOLEDO, WASHINGTON
REMEDIAL EXCAVATION PLANS AND SPECIFICATIONS

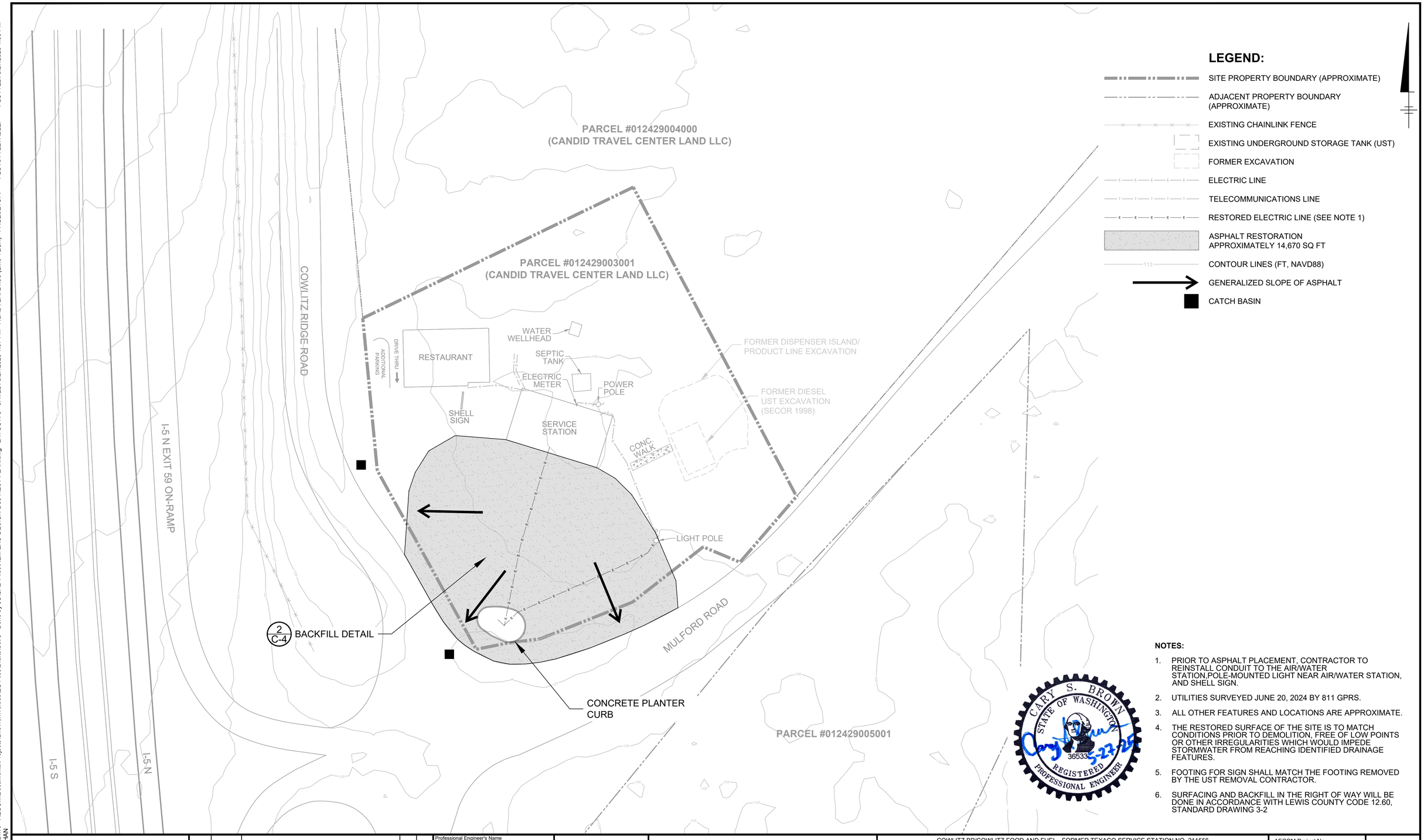
CONCEPTUAL SOIL CONFIRMATIONAL SAMPLING PLAN

AECOM Project No.: 60743810

Date: MAY 2025

AECOM
1111 3RD AVENUE
SUITE 1600
SEATTLE, WASHINGTON 98101
TEL. 206.438.2700

C-2



LEGEND:

- SITE PROPERTY BOUNDARY (APPROXIMATE)
- ADJACENT PROPERTY BOUNDARY (APPROXIMATE)
- EXISTING CHAINLINK FENCE
- EXISTING UNDERGROUND STORAGE TANK (UST)
- FORMER EXCAVATION
- ELECTRIC LINE
- TELECOMMUNICATIONS LINE
- RESTORED ELECTRIC LINE (SEE NOTE 1)
- ASPHALT RESTORATION APPROXIMATELY 14,670 SQ FT
- CONTOUR LINES (FT, NAVD88)
- GENERALIZED SLOPE OF ASPHALT
- CATCH BASIN

CARY S. BROWN
STATE OF WASHINGTON
36533
REGISTERED PROFESSIONAL ENGINEER
5-27-25

NOTES:

1. PRIOR TO ASPHALT PLACEMENT, CONTRACTOR TO REINSTALL CONDUIT TO THE AIR/WATER STATION,POLE-MOUNTED LIGHT NEAR AIR/WATER STATION, AND SHELL SIGN.
2. UTILITIES SURVEYED JUNE 20, 2024 BY 811 GPRS.
3. ALL OTHER FEATURES AND LOCATIONS ARE APPROXIMATE.
4. THE RESTORED SURFACE OF THE SITE IS TO MATCH CONDITIONS PRIOR TO DEMOLITION, FREE OF LOW POINTS OR OTHER IRREGULARITIES WHICH WOULD IMPEDE STORMWATER FROM REACHING IDENTIFIED DRAINAGE FEATURES.
5. FOOTING FOR SIGN SHALL MATCH THE FOOTING REMOVED BY THE UST REMOVAL CONTRACTOR.
6. SURFACING AND BACKFILL IN THE RIGHT OF WAY WILL BE DONE IN ACCORDANCE WITH LEWIS COUNTY CODE 12.60, STANDARD DRAWING 3-2

25' 0 25' 50'
HORIZONTAL SCALE: 1" = 25'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name		
CARY S. BROWN		
Professional Engineer's No.		
36533		
State	Date Signed	Project Mgr.
WA	05/27/2025	JG
Designed by	Drawn by	Checked by
JC	RM	CB & JG

FINAL

AECOM

COWLITZ BP/COWLITZ FOOD AND FUEL - FORMER TEXACO SERVICE STATION NO. 211556
101 MULFORD ROAD, TOLEDO, WASHINGTON
REMEDIAL EXCAVATION PLANS AND SPECIFICATIONS

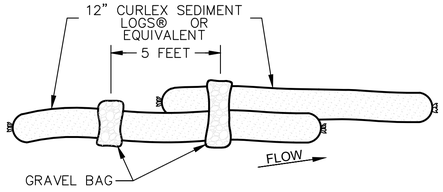
RESTORATION PLAN

AECOM Project No.
60743810

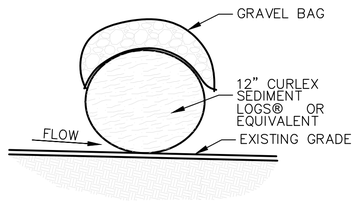
Date
MAY 2025

AECOM
1111 3RD AVENUE
SUITE 1600
SEATTLE, WASHINGTON 98101
TEL. 206.438.2700

C-3



PROFILE



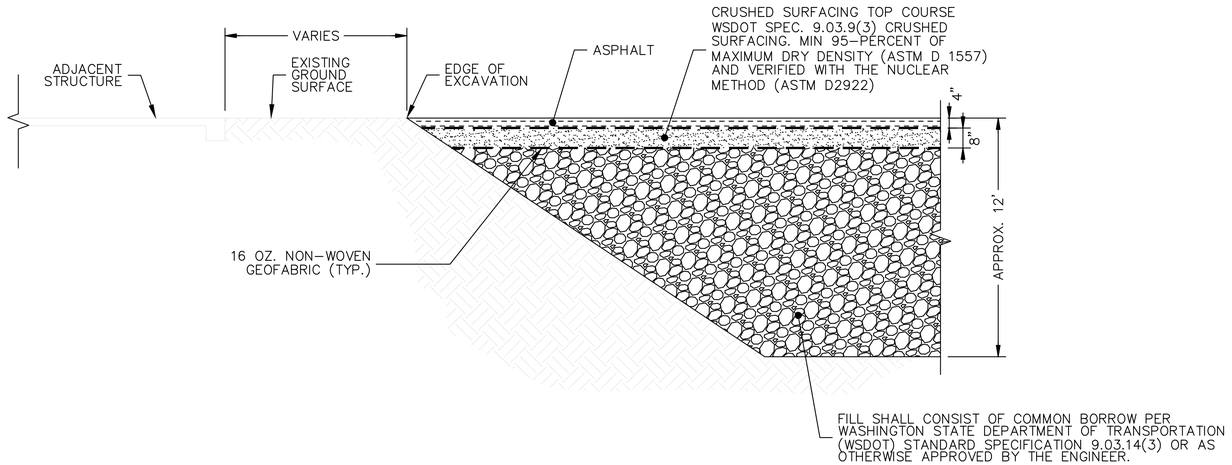
CROSS SECTION

NOTES:

1. STRAW WATTLE OVERLAP SHALL BE PLACED TO MINIMIZE FLOW THROUGH THE JOINTS.
2. STRAW WATTLE JOINTS SHALL HAVE A MINIMUM 1-FOOT OVERLAP. GRAVEL BAG SHALL BE PLACED ON THE OVERLAP TO SECURE BOTH WATTLES TOGETHER IN PLACE.
3. USE GRAVEL BAGS EVERY 5 FEET TO WEIGH DOWN THE STRAW WATTLE.

1 STRAW WATTLE

G-5, C-1 SCALE: NOT TO SCALE

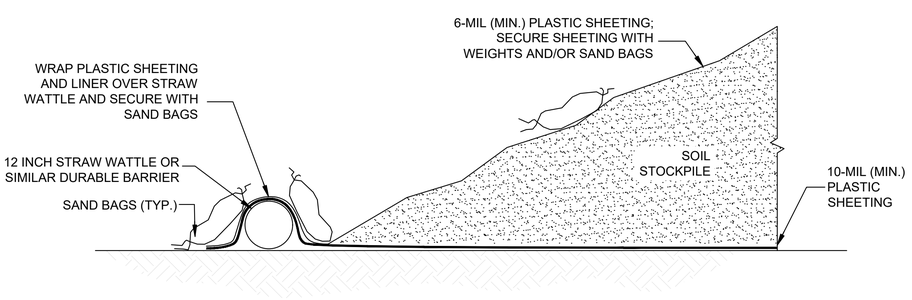


NOTES:

1. CONTRACTOR TO SUBMIT SPECIFICATIONS AND BORROW SOURCE LOCATION INFORMATION FOR THE PROPOSED BACKFILL TO ENGINEER AT LEAST 10 DAYS PRIOR TO MOBILIZATION.
2. MIX ORC-ADVANCED AND WATER IN ABOVE GROUND TANK AND SPRAY EVENLY INTO BOTTOM OF EXCAVATION AT APPLICATION RATE OF APPROXIMATELY 0.15 WEIGHT PERCENT ORC OF BACKFILL WEIGHT. CONTACT ENGINEER PRIOR TO ORC APPLICATION TO CONFIRM DOSAGE AND APPLICATION RATE BASED ON VENDOR RECOMMENDATIONS.
3. SEE EARTHWORK NOTES ON SHEET 1 OF PLANS AND SPECIFICATIONS.
4. SURFACING AND BACKFILL IN THE RIGHT OF WAY WILL BE DONE IN ACCORDANCE WITH LEWIS COUNTY CODE 12.60, STANDARD DRAWING 3-2

2 BACKFILL DETAIL

C-3 SCALE: NOT TO SCALE



NOTES:

1. CONSTRUCT ON EXISTING GRADE OVER AN AREA SIZED FOR THE AMOUNT OF MATERIAL TO BE STAGED. ENSURE AREA TO BE LINED IS FREE OF DEBRIS, STONES AND SHARP OBJECTS.
2. PLACE 10 MIL-PLASTIC SHEETING AND LINER OVER THE EXISTING SURFACE AND ANCHOR INTO STRAW WATTLE.
3. AREA SHALL BE SLOPED TO DRAIN TO A LOW POINT SUCH THAT ANY ACCUMULATED WATER CAN BE COLLECTED.
4. WHEN CONSTRUCTION IS COMPLETE, REMOVE ALL MATERIAL ABOVE THE LINER AND DISPOSE OF IT WITH EXCAVATED MATERIALS. REMOVE THE LINER AND DISPOSE OF IT WITH THE COVER MATERIAL.
5. CONTRACTOR MAY SUBMIT ALTERNATE CONTAINMENT AREA OPTIONS FOR ENGINEER APPROVAL.
6. NO TEMPORARY STOCKPILES SHALL BE PLACED WITHIN 2 FEET FROM EDGE OF EXCAVATION.
7. STOCKPILES SHALL BE COVERED WITH PLASTIC SHEETING OVERNIGHT OR WHEN NOT IN ACTIVE USE.

3 STOCKPILE DETAIL (AS NEEDED)

G-4, G-5, C-1 SCALE: NOT TO SCALE

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: CARY S. BROWN		
Professional Engineer's No.: 36533		
State: WA	Date Signed: 05/27/2025	Project Mgr.: JG
Designed by: JC	Drawn by: RM	Checked by: CB & JG

FINAL

AECOM

COWLITZ BP/COWLITZ FOOD AND FUEL - FORMER TEXACO SERVICE STATION NO. 211556
101 MULFORD ROAD, TOLEDO, WASHINGTON
REMEDIAL EXCAVATION PLANS AND SPECIFICATIONS

MISCELLANEOUS DETAILS

AECOM Project No.: 60743810
Date: MAY 2025

AECOM
1111 3RD AVENUE
SUITE 1600
SEATTLE, WASHINGTON 98101
TEL. 206.438.2700

C-4

Appendix B Stormwater Pollution Prevention Plan

Construction Stormwater General Permit (CSWGP)

Stormwater Pollution Prevention Plan (SWPPP)

for

Cowlitz Food and Fuel

Prepared for:

State of Washington Department of Ecology

Southwest Regional Office

Permittee / Owner	Developer	Operator / Contractor
Chevron Environmental Management Company	Austin Bragg	AECOM Technical Services, Inc.

101 Mulford Road, Toledo, Washington 98591

Certified Erosion and Sediment Control Lead (CESCL)/Inspector

Name	Organization	Contact Phone Number
TBD	AECOM Technical Services, Inc.	TBD

SWPPP Prepared By

Name	Organization	Contact Phone Number
Jamalyn Green	AECOM Technical Services, Inc.	206-550-5713

SWPPP Preparation Date

04 / 18 / 2025

Project Construction Dates

Activity / Phase	Start Date	End Date
Excavation	Summer 2025	Fall 2025

List of Acronyms and Abbreviations

Acronym / Abbreviation	Explanation
303(d)	Section of the Clean Water Act pertaining to Impaired Waterbodies
BFO	Bellingham Field Office of the Department of Ecology
BMP(s)	Best Management Practice(s)
CESCL	Certified Erosion and Sediment Control Lead
CO_2	Carbon Dioxide
CRO	Central Regional Office of the Department of Ecology
CSWGP	Construction Stormwater General Permit
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved Oxygen
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
ERO	Eastern Regional Office of the Department of Ecology
ERTS	Environmental Report Tracking System
ESC	Erosion and Sediment Control
GULD	General Use Level Designation
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric Turbidity Units
NWRO	Northwest Regional Office of the Department of Ecology
pH	Power of Hydrogen
RCW	Revised Code of Washington
SPCC	Spill Prevention, Control, and Countermeasure
su	Standard Units
SWMMEW	Stormwater Management Manual for Eastern Washington
SWMMWW	Stormwater Management Manual for Western Washington
SWPPP	Stormwater Pollution Prevention Plan
TESC	Temporary Erosion and Sediment Control
SWRO	Southwest Regional Office of the Department of Ecology
TMDL	Total Maximum Daily Load
VFO	Vancouver Field Office of the Department of Ecology
WAC	Washington Administrative Code
WSDOT	Washington Department of Transportation
WWHM	Western Washington Hydrology Model

Project Information (1.0)

Project/Site Name: Cowlitz Food and Fuel Site
Street/Location: 101 Mulford Road
City: Toledo State: WA Zip code: 98591
Subdivision: Freeway Commercial
Receiving waterbody: Cowlitz Basin (River Drainage Basin)

Existing Conditions (1.1)

Total acreage (including support activities such as off-site equipment staging yards, material storage areas, borrow areas).

Total acreage: 0.44

Disturbed acreage: 0.31

Existing structures: The site comprises three land parcels: An operating Shell gasoline service station with mini-mart and a restaurant (Mrs. Beesley's Burgers) are located on the two parcels north of Mulford Road (Lewis County Assessor Parcel Numbers [APNs] 012429003001 and 012429004000, currently owned by Candid Travel Center Land LLC). The third parcel (APN 012429005001, currently owned by Mr. Charles Vineyard), which is located south of Mulford Road, was formerly the location of another gasoline service station.

Landscape topography: The site is generally flat and located at an elevation of approximately 100 feet above sea level.

Drainage patterns: Groundwater has been observed to flow in the southeast direction, toward the Cowlitz River. A river terrace, 15 feet lower than the site elevation, is located approximately 500 feet southeast of the site. Shallow groundwater has been observed discharging through springs and seeps along the bank above this terrace.

Existing Vegetation: Vegetation at the site is limited. Majority of the site is paved or gravel. Small portion of grass located behind the station building and restaurant.

Critical Areas (wetlands, streams, high erosion risk, steep or difficult to stabilize slopes): "Very Severe" erosion hazard area (shown in brown on the image below) located approximately 500 feet NE, E, and SE of the property on adjacent parcel (012429005002, located at 120 Mulford Rd). This area located on the inner bank of the Cowlitz River.

List of known impairments for 303(d) listed or Total Maximum Daily Load (TMDL) for the receiving waterbody:

Water will not be discharged into the Cowlitz River.

Table 1 includes a list of suspected and/or known contaminants in soil associated with the construction activity.

Table 1 – Summary of Site Pollutant Constituents

Constituent (Pollutant)	Location (see site plan)	Depth (ft bgs)	Concentration (mg/kg)
TPH-GRO	SB-9 SB-10 SB-12 SB-13 SB-14 SB-15 SB-16 SB-17 SB-18 SB-20 SB-21	9 6, 9 10.5 10.5 9.5 2, 6, 9 2, 6, 8, 10 2, 8 8 10 9	2400 1800, 5900 1600 150 4500 74, 3300, 1100 210, 77, 540, 99 2800, 1300 580 730 61
TPH-DRO	SB-12	10.5	2500
TPH-HRO	--	--	Not Detected
Benzene	SB-9 SB-10 SB-12 SB-13 SB-14 SB-15 SB-16 SB-17 SB-18	9 6, 9 10.5 10.5 9.5 2,6,9 2, 8, 10 2, 8 8	0.56 0.65, <0.27 <0.19 0.085 1.7 0.032, <0.57, 0.38 <0.036, <0.040, 0.054 <0.36, 1.4 0.43

	SB-20 SB-21	10 9	0.26 <0.020
Toluene	SB-14	9.5	8.2
Ethylbenzene	SB-10 SB-15 SB-17	9 9 2,8	7.5 6.8 7.9, 10
Xylenes (total)	SB-10 SB-14 SB-17	9 9.5 2,8	15 65 20
Lead	--	--	Not Detected
cPAHs	--	--	Not Detected

Proposed Construction Activities (1.2)

Description of site development (example: subdivision):
Station upgrades and redevelopment (commercial). Site is being redeveloped into a truck stop.

Description of construction activities (example: site preparation, demolition, excavation):
Excavation (UST removal, impacted soil removal)

Description of site drainage including flow from and onto adjacent properties. Must be consistent with Site Map in Appendix A:
Groundwater flows SE toward the Cowlitz River.

Description of final stabilization (example: extent of revegetation, paving, landscaping):
Following the excavation, the area will be paved with asphalt.

Contaminated Site Information:
Proposed activities regarding contaminated soils or groundwater (example: on-site treatment system, authorized sanitary sewer discharge):

Excavate, load out, and transport soil to an approved and appropriately licensed disposal facility. The current anticipated disposal facility is Waste Management, located in Hillsboro, Oregon. Groundwater collected during dewatering activities will be hauled offsite for proper disposal or treated on-site for permitted sanitary sewer discharge.

Construction Stormwater Best Management Practices (BMPs) (2.0)

The SWPPP is a living document reflecting current conditions and changes throughout the life of the project. These changes may be informal (i.e. hand-written notes and deletions). Update the SWPPP when the CESCL has noted a deficiency in BMPs or deviation from original design.

The 12 Elements (2.1)

Element 1: Preserve Vegetation / Mark Clearing Limits (2.1.1)

List and describe BMPs: BMP C101: Preserving Natural Vegetation

Fencing will be installed for the UST removal and for the larger excavation. Any areas of natural vegetation or native topsoil will be marked off with caution tape and will not be disturbed during the work. Excavation limits and work area shall be clearly marked with construction tape or surrounded by temporary chain link fence after work hours.

Installation Schedules: Fencing will be installed by the UST removal contractor (AES) prior to the removal of the USTs. Fencing installed by the UST removal contractor will be removed once that work is complete, and new fencing will be installed for the larger excavation area.

Inspection and Maintenance plan: Fencing will be inspected daily. Needed repairs will take place before the start of work.

Responsible Staff: AECOM Technical Services, Inc.

Element 2: Establish Construction Access (2.1.2)

List and describe BMPs: BMP C105: Stabilized Construction Access, BMP C106: Dry Decontamination Procedures

Vehicles will be limited to one route (route is away from the excavated soil, on stable, undisturbed soil) to minimize dust generation. Truck site haul route and loading area has been established and reviewed by an engineer. Truck load out area shall include best management practices to prevent trackout of sediment from vehicle traffic, such as rock pads, tire cleaning rumble strips, street sweeping, or other dry decontamination procedures.

Installation Schedules: Truck site haul route and loading areas will be set up following the removal of the USTs. After the excavation is complete, and all removed soil and groundwater has been hauled off-site, the truck site haul route and loading area will be disassembled.

Inspection and Maintenance plan: Visual dust monitoring will be performed continuously, and mitigation measures will be employed, if necessary, to ensure no appreciable visible dust leaves the site boundary. Truck site haul route and loading areas will be inspected daily by AECOM.

Responsible Staff: AECOM Technical Services, Inc.

Element 3: Control Flow Rates (2.1.3)

Will you construct stormwater retention and/or detention facilities?
Yes No

Will you use permanent infiltration ponds or other low impact development (example: rain gardens, bio-retention, porous pavement) to control flow during construction?
Yes No

List and describe BMPs: BMP C235: Wattles, BMP C233: Silt Fence

All water generated during the project will be contained onsite (no generated wastewater will leave the site), however, flow rate control will be in place to protect properties and waterways downstream of the project. All water will be directed toward a sump and collected for disposal. Silt fences and wattles will be implemented to prevent coarse sediment from transporting offsite and direct the flow of water.

Installation Schedules: Wattles and silt fence will be set up prior to breaking ground for the larger excavation.

Inspection and Maintenance plan: Daily during construction work.

Responsible Staff: AECOM Technical Services, Inc.

Element 4: Install Sediment Controls (2.1.4)

List and describe BMPs: BMP C235: Wattles

Excavated soil will be temporarily stored on plastic sheeting and transported off-site. Wattles will surround the stockpiled soil and minimize sediment discharges from the site. If sediment controls are ineffective and turbid water is observed discharging from the site, work will be stopped.

Installation Schedules: Prior to excavation stockpile area will be set up.

Inspection and Maintenance plan: Daily during construction work. Stockpiles will remain covered over the weekend and checked depending on weather.

Responsible Staff: AECOM Technical Services, Inc.

Element 5: Stabilize Soils (2.1.5)

West of the Cascade Mountains Crest

Season	Dates	Number of Days Soils Can be Left Exposed
During the Dry Season	May 1 – September 30	7 days
During the Wet Season	October 1 – April 30	2 days

Soils must be stabilized at the end of the shift before a holiday or weekend if needed based on the weather forecast.

Anticipated project dates:

Start date: August 4, 2025

End date: September 30, 2025

Will you construct during the wet season?
Yes No

List and describe BMPs: BMP C123: Plastic Covering

Excavated soil will be temporarily stockpiled in designated areas for inspection by the onsite cultural resource monitor prior to loadout, transportation, and offsite disposal. Impacted soil that is saturated will be placed in a separate stockpile outside of the excavation area on a 10-MIL plastic sheeting and sloped toward a temporary lined sump so that accumulated water can be collected for disposal. Saturated soil will be allowed time to drain into the sump before being loaded into trucks and transported offsite. To minimize the amount of soil exposed during the duration of the project, stockpiles shall be covered with plastic sheeting overnight or when not in active use. Disturbance of steep slopes is not anticipated due to the site's flat topography.

Installation Schedules: Fencing will be installed by the UST removal contractor (AES) prior to the removal of the USTs. Fencing installed by the UST removal contractor will be removed once that work is complete, and new fencing will be installed for the larger excavation area.

Inspection and Maintenance plan: Daily during construction work. Stockpiles will remain covered over the weekend and checked depending on weather.

Responsible Staff: AECOM Technical Services, Inc.

Element 6: Protect Slopes (2.1.6)

Will steep slopes be present at the site during construction?
Yes No

List and describe BMPs: Steep slopes are not present at the site and thus no erosion mitigation will not be implemented.

Installation Schedules: N/A

Inspection and Maintenance plan: N/A

Responsible Staff: N/A

Element 7: Protect Drain Inlets (2.1.7)

List and describe BMPs: BMP C220: Inlet Protection

There are no drains in the immediate work area; the closest drain is in the street. Saturated soil will be placed in a separate stockpile outside of the excavation zone, away from storm drain inlets. This stockpile will be sloped toward a temporary sump pump and allowed time to drain before being loaded into trucks and transported offsite. Accumulated water will be collected for disposal. Filter socks will be placed in drains as a precautionary measure.

Installation Schedules: Filter socks will be placed in inlets prior to the start of the larger excavation.

Inspection and Maintenance plan: Daily during construction work. Filter socks will be replaced as needed.

Responsible Staff: AECOM Technical Services, Inc.

Element 8: Stabilize Channels and Outlets (2.1.8)

Provide stabilization, including armoring material, adequate to prevent erosion of outlets, adjacent stream banks, slopes, and downstream reaches, will be installed at the outlets of all conveyance systems.

List and describe BMPs: Water will not be discharging from the site. All water will be collected in a frac tank and hauled offsite for disposal or on-site treatment and permitted discharge to sanitary sewer.

Installation Schedules: N/A

Inspection and Maintenance plan: N/A

Responsible Staff: N/A

Element 9: Control Pollutants (2.1.9)

The following pollutants are anticipated to be present on-site:

Table 2 – Pollutants

Pollutant (and source, if applicable)
TPH-GRO
TPH-DRO
TPH-HRO
Benzene
Toluene
Ethylbenzene
Xylenes (all isomers)
Lead

List and describe BMPs: BMP C153: Material Delivery, Storage, and Containment

Excavated soils and collected groundwater will be loaded out and transported to an approved and appropriately licensed disposal facility. Groundwater may also be treated on-site for permitted discharge to sanitary sewer. Prior to removal from the site, excavated soils will be placed on 10-MIL plastic sheeting and covered. Collected groundwater will be contained in a sump prior to removal from the site. The stockpile perimeter(s) will be lined with straw wattles to prevent any discharge. Excavation equipment will be stored inside the work area, behind the fence to protect from vandalism.

Installation Schedules: Stockpile area will be set up prior to intrusive activities.

Inspection and Maintenance plan: Daily during construction work. Stockpiles will remain covered over the weekend and checked depending on weather.

Responsible Staff: AECOM Technical Services, Inc.

Will maintenance, fueling, and/or repair of heavy equipment and vehicles occur on-site?
Yes No

Will wheel wash or tire bath system BMPs be used during construction?
Yes No

If yes, provide disposal methods for wastewater generated by BMPs.

Water from dewatering activities will be placed in frac tank(s) for subsequent off-site disposal or on-site treatment and permitted sanitary sewer discharge. Impacted soil that is saturated will be placed in a separate stockpile outside of the excavation area on 10-mil plastic sheeting and sloped toward a temporary lined sump so that accumulated water can be collected for disposal. Water collected from the sump will be stored in the onsite frac tank pending offsite disposal or on-site treatment and permitted sanitary sewer discharge.

Will pH-modifying sources be present on-site?

Yes No If yes, check the source(s).

Table 3 – pH-Modifying Sources

X	None
	Bulk cement
	Cement kiln dust
	Fly ash
	Other cementitious materials
	New concrete washing or curing waters
	Waste streams generated from concrete grinding and sawing
	Exposed aggregate processes
	Dewatering concrete vaults
	Concrete pumping and mixer washout waters
	Recycled concrete
	Other (i.e. calcium lignosulfate) [please describe]

List and describe BMPs: pH modifying sources will not be applicable to the site

Installation Schedules: N/A

Inspection and Maintenance plan: N/A

Responsible Staff: N/A

Concrete trucks must not be washed out onto the ground, or into storm drains, open ditches, streets, or streams. Excess concrete must not be dumped on-site, except in designated concrete washout areas with appropriate BMPs installed.

Element 10: Control Dewatering (2.1.10)

Water will be pumped into a tank and transported offsite for disposal or treated on-site for permitted sanitary sewer discharge.

Table 4 – Dewatering BMPs

	Infiltration
X	Transport off-site in a vehicle (vacuum truck for legal disposal)
	Ecology-approved on-site chemical treatment or other suitable treatment technologies
X	Sanitary or combined sewer discharge with local sewer district approval (last resort)
	Use of sedimentation bag with discharge to ditch or swale (small volumes of localized dewatering)

Element 11: Maintain BMPs (2.1.11)

All temporary and permanent Erosion and Sediment Control (ESC) BMPs shall be maintained and repaired as needed to ensure continued performance of their intended function.

Maintenance and repair shall be conducted in accordance with each particular BMP specification (see *Volume II of the SWMMWW or Chapter 7 of the SWMMEW*).

Visual monitoring of all BMPs installed at the site will be conducted at least once every calendar week and within 24 hours of any stormwater or non-stormwater discharge from the site. If the site becomes inactive and is temporarily stabilized, the inspection frequency may be reduced to once every calendar month.

All temporary ESC BMPs shall be removed within 30 days after final site stabilization is achieved or after the temporary BMPs are no longer needed.

Trapped sediment shall be stabilized on-site or removed. Disturbed soil resulting from removal of either BMPs or vegetation shall be permanently stabilized.

Additionally, protection must be provided for all BMPs installed for the permanent control of stormwater from sediment and compaction. BMPs that are to remain in place following completion of construction shall be examined and restored to full operating condition. If sediment enters these BMPs during construction, the sediment shall be removed and the facility shall be returned to conditions specified in the construction documents.

Element 12: Manage the Project (2.1.12)

The project will be managed based on the following principles:

- Projects will be phased to the maximum extent practicable and seasonal work limitations will be taken into account.
- Inspection and monitoring:
    - Inspection, maintenance and repair of all BMPs will occur as needed to ensure performance of their intended function.
    - Site inspections and monitoring will be conducted in accordance with Special Condition S4 of the CSWGP. Sampling locations are indicated on the Site Map. Sampling station(s) are located in accordance with applicable requirements of the CSWGP.
- Maintain an updated SWPPP.
    - The SWPPP will be updated, maintained, and implemented in accordance with Special Conditions S3, S4, and S9 of the CSWGP.

As site work progresses the SWPPP will be modified routinely to reflect changing site conditions. The SWPPP will be reviewed monthly to ensure the content is current.

Table 5 – Management

X	Design the project to fit the existing topography, soils, and drainage patterns
	Emphasize erosion control rather than sediment control
X	Minimize the extent and duration of the area exposed
	Keep runoff velocities low
X	Retain sediment on-site
X	Thoroughly monitor site and maintain all ESC measures
X	Schedule major earthwork during the dry season
	Other (please describe)

Element 13: Protect Low Impact Development (LID) BMPs (2.1.13)

Bioretention and Rain Garden facilities will not be impacted by the activities. Impermeable pavement will be removed as a part of the excavation activities and thus will not require cleaning.

Pollution Prevention Team (3.0)

Table 7 – Team Information

Title	Name(s)	Phone Number
Certified Erosion and Sediment Control Lead (CESCL)	TBD	TBD
Resident Engineer	TBD	TBD
Emergency Ecology Contact	TBD	TBD
Emergency Permittee/ Owner Contact	TBD	TBD
Non-Emergency Owner Contact	TBD	TBD
Monitoring Personnel	TBD	TBD
Ecology Regional Office	Southwest Regional Office	360-407-6300

Monitoring and Sampling Requirements (4.0)

Monitoring includes visual inspection, sampling for water quality parameters of concern, and documentation of the inspection and sampling findings in a site log book. A site log book will be maintained for all on-site construction activities and will include:

- A record of the implementation of the SWPPP and other permit requirements
- Site inspections
- Stormwater sampling data

File a blank form under Appendix D.

The site log book must be maintained on-site within reasonable access to the site and be made available upon request to Ecology or the local jurisdiction.

Numeric effluent limits may be required for certain discharges to 303(d) listed waterbodies. See CSWGP Special Condition S8 and Section 5 of this template.

Complete the following paragraph for sites that discharge to impaired waterbodies for fine sediment, turbidity, phosphorus, or pH:

Site Inspection (4.1)

Site inspections will be conducted at least once every calendar week and within 24 hours following any discharge from the site. For sites that are temporarily stabilized and inactive, the required frequency is reduced to once per calendar month.

The discharge point(s) are indicated on the Site Map (see Appendix A) and in accordance with the applicable requirements of the CSWGP.

Stormwater Quality Sampling (4.2)

Turbidity Sampling (4.2.1)

Requirements include calibrated turbidity meter or transparency tube to sample site discharges for compliance with the CSWGP. Sampling will be conducted at all discharge points at least once per calendar week.

Method for sampling turbidity:

Table 8 – Turbidity Sampling Method

	Turbidity Meter/Turbidimeter (required for disturbances 5 acres or greater in size)
X	Transparency Tube (option for disturbances less than 1 acre and up to 5 acres in size)

The benchmark for turbidity value is 25 nephelometric turbidity units (NTU) and a transparency less than 33 centimeters.

If the discharge's turbidity is 26 to 249 NTU **or** the transparency is less than 33 cm but equal to or greater than 6 cm, the following steps will be conducted:

1. Review the SWPPP for compliance with Special Condition S9. Make appropriate revisions within 7 days of the date the discharge exceeded the benchmark.
2. Immediately begin the process to fully implement and maintain appropriate source control and/or treatment BMPs as soon as possible. Address the problems within 10 days of the date the discharge exceeded the benchmark. If installation of necessary treatment BMPs is not feasible within 10 days, Ecology may approve additional time when the Permittee requests an extension within the initial 10-day response period.
3. Document BMP implementation and maintenance in the site log book.

If the turbidity exceeds 250 NTU **or** the transparency is 6 cm or less at any time, the following steps will be conducted:

1. Telephone or submit an electronic report to the applicable Ecology Region's Environmental Report Tracking System (ERTS) within 24 hours. https://www.ecology.wa.gov/About-us/Get-involved/Report-an-environmental-issue
    - Central Region (Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima): (509) 575-2490
    - Eastern Region (Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman): (509) 329-3400
    - Northwest Region (King, Kitsap, Island, San Juan, Skagit, Snohomish, Whatcom): (425) 649-7000
    - Southwest Region (Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, Wahkiakum,): (360) 407-6300
2. Immediately begin the process to fully implement and maintain appropriate source control and/or treatment BMPs as soon as possible. Address the problems within 10 days of the date the discharge exceeded the benchmark. If installation of necessary treatment BMPs is not feasible within 10 days, Ecology may approve additional time when the Permittee requests an extension within the initial 10-day response period
3. Document BMP implementation and maintenance in the site log book.
4. Continue to sample discharges daily until one of the following is true:
    - Turbidity is 25 NTU (or lower).
    - Transparency is 33 cm (or greater).
    - Compliance with the water quality limit for turbidity is achieved.
        - 1 - 5 NTU over background turbidity, if background is less than 50 NTU
        - 1% - 10% over background turbidity, if background is 50 NTU or greater
    - The discharge stops or is eliminated.

pH Sampling (4.2.2)

pH monitoring is required for “Significant concrete work” (i.e. greater than 1000 cubic yards poured concrete or recycled concrete over the life of the project). The use of engineered soils (soil amendments including but not limited to Portland cement-treated base [CTB], cement kiln dust [CKD] or fly ash) also requires pH monitoring.

For significant concrete work, pH sampling will start the first day concrete is poured and continue until it is cured, typically three (3) weeks after the last pour.

For engineered soils and recycled concrete, pH sampling begins when engineered soils or recycled concrete are first exposed to precipitation and continues until the area is fully stabilized.

If the measured pH is 8.5 or greater, the following measures will be taken:

1. Prevent high pH water from entering storm sewer systems or surface water.
2. Adjust or neutralize the high pH water to the range of 6.5 to 8.5 su using appropriate technology such as carbon dioxide (CO_2) sparging (liquid or dry ice).
3. Written approval will be obtained from Ecology prior to the use of chemical treatment other than CO_2 sparging or dry ice.

Method for sampling pH:

Table 8 – pH Sampling Method

	pH meter
	pH test kit
	Wide range pH indicator paper
X	pH monitoring not required.

Discharges to 303(d) or Total Maximum Daily Load (TMDL) Waterbodies (5.0)

303(d) Listed Waterbodies (5.1)

Is the receiving water 303(d) (Category 5) listed for turbidity, fine sediment, phosphorus, or pH?

Yes No

List the impairment(s):

The receiving waterbody, Cowlitz River, is impaired for: PCBs and methyl mercury. All stormwater and dewatering discharges from the site are subject to an **effluent limit** of 8.5 su for pH and/or 25 NTU for turbidity.

List and describe BMPs: BMP C153: Material Delivery, Storage, and Containment

Water generated from excavation activities will be collected and transported offsite.

TMDL Waterbodies (5.2)

Waste Load Allocation for CWSGP discharges:

Waste will not be discharged from the site.

Discharges to TMDL receiving waterbodies will meet in-stream water quality criteria at the point of discharge.

The Construction Stormwater General Permit Proposed New Discharge to an Impaired Water Body form is included in Appendix F.

Reporting and Record Keeping (6.0)

Record Keeping (6.1)

Site Log Book (6.1.1)

A site log book will be maintained for all on-site construction activities and will include:

- A record of the implementation of the SWPPP and other permit requirements
- Site inspections
- Sample logs

Records Retention (6.1.2)

Records will be retained during the life of the project and for a minimum of three (3) years following the termination of permit coverage in accordance with Special Condition S5.C of the CSWGP.

Permit documentation to be retained on-site:

- CSWGP
- Permit Coverage Letter
- SWPPP
- Site Log Book

Permit documentation will be provided within 14 days of receipt of a written request from Ecology. A copy of the SWPPP or access to the SWPPP will be provided to the public when requested in writing in accordance with Special Condition S5.G.2.b of the CSWGP.

Updating the SWPPP (6.1.3)

The SWPPP will be modified if:

- Found ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the site.
- There is a change in design, construction, operation, or maintenance at the construction site that has, or could have, a significant effect on the discharge of pollutants to waters of the State.

The SWPPP will be modified within seven (7) days if inspection(s) or investigation(s) determine additional or modified BMPs are necessary for compliance. An updated timeline for BMP implementation will be prepared.

Reporting (6.2)

Discharge Monitoring Reports (6.2.1)

Cumulative soil disturbance is less than one (1) acre; therefore, Discharge Monitoring Reports (DMRs) will not be submitted to Ecology because water quality sampling is not being conducted at the site.

DMRs will be reported online through Ecology's WQWebDMR System if required by the CSWGP.

https://www.ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Water-quality-permits-guidance/WQWebPortal-guidance

Notification of Noncompliance (6.2.2)

If any of the terms and conditions of the permit is not met, and the resulting noncompliance may cause a threat to human health or the environment, the following actions will be taken:

1. Ecology will be notified within 24-hours of the failure to comply by calling the applicable Regional office ERTS phone number (Regional office numbers listed below).
2. Immediate action will be taken to prevent the discharge/pollution or otherwise stop or correct the noncompliance. If applicable, sampling and analysis of any noncompliance will be repeated immediately and the results submitted to Ecology within five (5) days of becoming aware of the violation.
3. A detailed written report describing the noncompliance will be submitted to Ecology within five (5) days, unless requested earlier by Ecology.

Anytime turbidity sampling indicates turbidity is 250 NTUs or greater, or water transparency is 6 cm or less, the Ecology Regional office will be notified by phone within 24 hours of analysis as required by Special Condition S5.A of the CSWGP.

- Central Region at (509) 575-2490 for Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, or Yakima County
- Eastern Region at (509) 329-3400 for Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, or Whitman County
- Northwest Region at (425) 649-7000 for Island, King, Kitsap, San Juan, Skagit, Snohomish, or Whatcom County
- Southwest Region at (360) 407-6300 for Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, or Wahkiakum

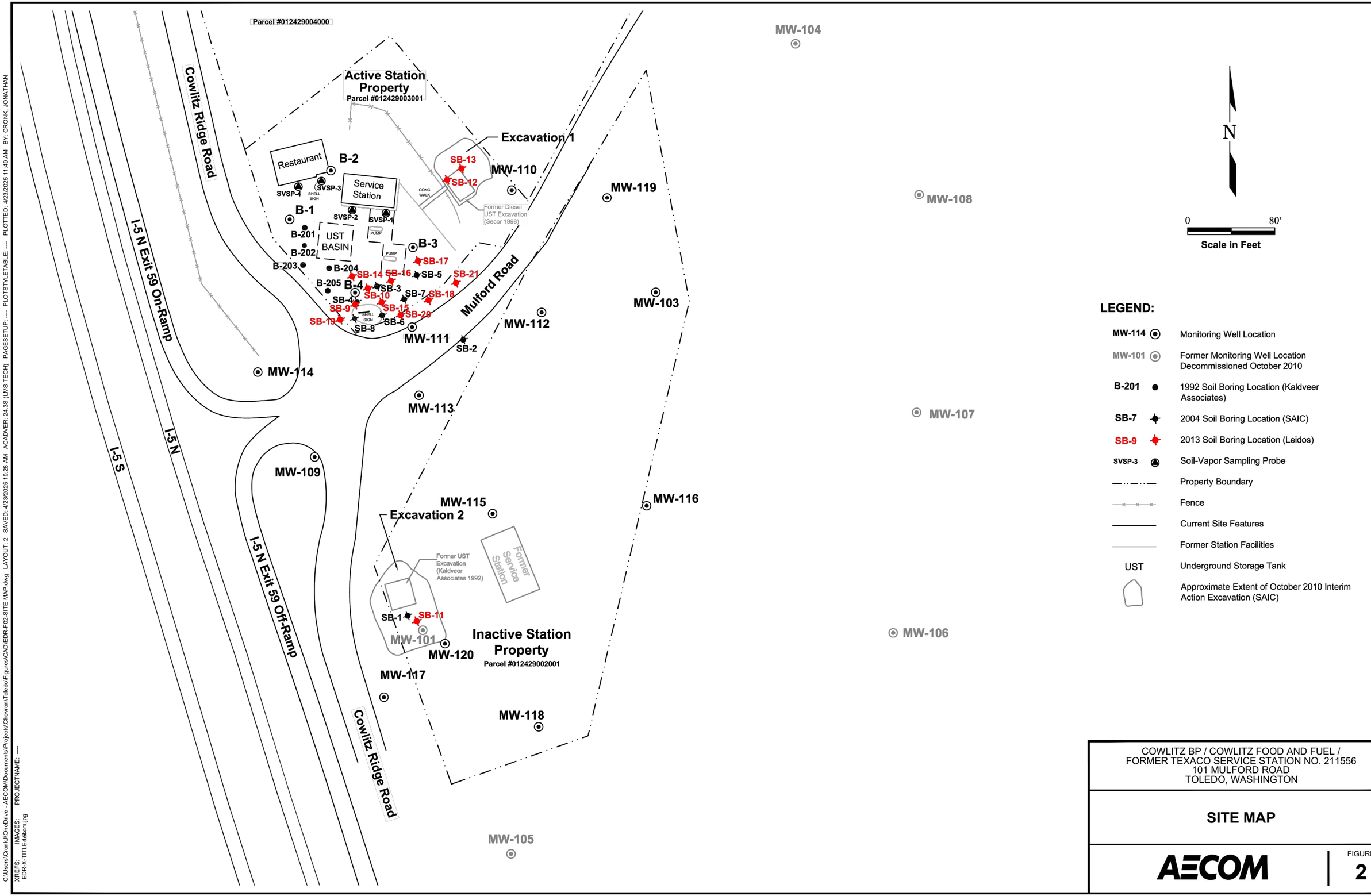
Include the following information:

1. Your name and / Phone number
2. Permit number
3. City / County of project
4. Sample results
5. Date / Time of call
6. Date / Time of sample
7. Project name

In accordance with Special Condition S4.D.5.b of the CSWGP, the Ecology Regional office will be notified if chemical treatment other than CO_2 sparging is planned for adjustment of high pH water.

Appendix/Glossary

A. Site Map
B. BMP Detail
C. Site Inspection Form
D. Construction Stormwater General Permit (CSWGP)



COWLITZ BP / COWLITZ FOOD AND FUEL /
FORMER TEXACO SERVICE STATION NO. 211556
101 MULFORD ROAD
TOLEDO, WASHINGTON

SITE MAP

AECOM

FIGURE 2

Table II-4.1: Construction Stormwater BMPs by SWPPP Element (continued)

Construction Stormwater BMP	Construction SWPPP Element #												
	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13
II-2.2 Element 2: Establish Construction Access II-2.3 Element 3: Control Flow Rates II-2.4 Element 4: Install Sediment Controls II-2.5 Element 5: Stabilize Soils II-2.6 Element 6: Protect Slopes II-2.7 Element 7: Protect Storm Drain Inlets II-2.8 Element 8: Stabilize Channels and Outlets II-2.9 Element 9: Control Pollutants II-2.10 Element 10: Control Dewatering II-2.11 Element 11: Maintain BMPs II-2.12 Element 12: Manage the Project II-2.13 Element 13: Protect Infiltration BMPs													

II-4.2 Construction Source Control BMPs

BMP C101: Preserving Natural Vegetation

Purpose

The purpose of preserving natural (or existing) vegetation is to reduce erosion wherever practicable. Limiting site disturbance is the single most effective method for reducing erosion. For example, conifers can hold up to about 50% of all rain that falls during a storm. Up to 20% to 30% of this rain may never reach the ground but is taken up by the tree or evaporates. Another benefit is that the rain held in the tree can be released slowly to the ground after the storm.

Conditions of Use

Natural vegetation should be preserved on steep slopes, near perennial and intermittent watercourses or swales, and on building sites in wooded areas.

- As required by the local jurisdiction.
- Phase construction to preserve natural vegetation on the project site for as long as possible during the construction period.

Design and Installation Specifications

Natural vegetation can be preserved in natural clumps or as individual trees, shrubs and vines.

The preservation of individual plants is more difficult because heavy equipment is generally used to remove unwanted vegetation. The points to remember when attempting to save individual plants are:

- Is the plant worth saving? Consider the location, species, size, age, vigor, and the work involved. Local jurisdictions may also have ordinances to save natural vegetation and trees.
- Fence or clearly mark areas around trees that are to be saved. It is preferable to keep ground disturbance away from the trees at least as far out as the dripline.

Plants need protection from three kinds of injuries:

- *Construction Equipment* - This injury can be above or below the ground level. Damage results from scarring, cutting of roots, and compaction of the soil. Placing a fenced buffer zone around plants to be saved prior to construction can prevent construction equipment injuries.
- *Grade Changes* - Changing the natural ground level will alter grades, which affects the plant's ability to obtain the necessary air, water, and minerals. Minor fills usually do not cause problems although sensitivity between species does vary and should be checked. Trees can typically tolerate fill of 6 inches or less. For shrubs and other plants, the fill should be less.

  When there are major changes in grade, it may become necessary to supply air to the roots of plants. This can be done by placing a layer of gravel and a tile system over the roots before the fill is made. The tile system should be laid out on the original grade leading from a drywell around the tree trunk. The system should then be covered with small stones to allow air to circulate over the root area.

  Lowering the natural ground level can seriously damage trees and shrubs. The highest percentage of the plant roots are in the upper 12 inches of the soil and cuts of only 2 to 3 inches can cause serious injury. To protect the roots it may be necessary to terrace the immediate area around the plants to be saved. If roots are exposed, construction of retaining walls may be needed to keep the soil in place. Plants can also be preserved by leaving them on an undisturbed, gently sloping mound. To increase the chances for survival, it is best to limit grade changes and other soil disturbances to areas outside the dripline of the plant.
- *Excavations* - Protect trees and other plants when excavating for drainfields and power, water, and/or sewer lines. Where possible, the trenches should be routed around trees and large shrubs. When this is not possible, it is best to tunnel under them. This can be done with hand tools or with power augers. If it is not possible to route the trench around plants to be saved, then the following should be observed:
  - Cut as few roots as possible. When you have to cut, cut clean. Paint cut root ends with a wood dressing like asphalt base paint if roots will be exposed for more than 24 hours.
  - Backfill the trench as soon as possible.
  - Tunnel beneath root systems as close to the center of the main trunk to preserve most of the important feeder roots.

Some problems that can be encountered are:

- Maple, Dogwood, Red alder, Western hemlock, Western red cedar, and Douglas fir do not readily adjust to changes in environment and special care should be taken to protect these trees.
- The windthrow hazard of Pacific silver fir and madrona is high, while that of Western hemlock is moderate. The danger of windthrow increases where dense stands have been thinned. Other species (unless they are on shallow, wet soils less than 20 inches deep) have a low windthrow hazard.
- Cottonwoods, maples, and willows have water-seeking roots. These can cause trouble in sewer lines and infiltration fields. On the other hand, they thrive in high moisture conditions that other trees would not.
- Thinning operations in pure or mixed stands of grand fir, Pacific silver fir, noble fir, Sitka spruce, western red cedar, western hemlock, Pacific dogwood, and red alder can cause serious disease problems. Disease can become established through damaged limbs, trunks, roots, and freshly cut stumps. Diseased and weakened trees are also susceptible to insect attack.

Maintenance Standards

Inspect flagged and/or fenced areas regularly to make sure flagging or fencing has not been removed or damaged. If the flagging or fencing has been damaged or visibility reduced, it shall be repaired or replaced immediately and visibility restored.

If tree roots have been exposed or injured, “prune” cleanly with an appropriate pruning saw or loppers directly above the damaged roots and recover with native soils. Treatment of sap flowing trees (e.g. fir, hemlock, pine, soft maples) is not advised as sap forms a natural healing barrier.

BMP C102: Buffer Zones

Purpose

Creation of an undisturbed area or strip of natural vegetation or an established suitable planting that will provide a living filter to reduce soil erosion and stormwater runoff velocities.

Conditions of Use

Buffer zones are used along streams, wetlands and other bodies of water that need protection from erosion and sedimentation. Contractors can use vegetative buffer zone BMPs to protect natural swales and they can incorporate them into the natural landscaping of an area.

Do not use critical area buffer zones as sediment treatment areas. These areas shall remain completely undisturbed. The local permitting authority may expand the buffer widths temporarily to allow the use of the expanded area for removal of sediment.

The types of buffer zones can change the level of protection required as shown below:

- Designated Critical Area Buffers - buffers that protect Critical Areas, as defined by the Washington State Growth Management Act, and are established and managed by the local

Conditions of Use

To establish clearing limits, plastic, fabric, or metal fence may be used:

- At the boundary of sensitive areas, their buffers, and other areas required to be left uncleared.
- As necessary to control vehicle access to and on the site.

Design and Installation Specifications

High-visibility plastic fence shall be composed of a high-density polyethylene (HDPE) material and shall be at least four feet in height. Posts for the fencing shall be steel or wood and placed every 6 feet on center (maximum) or as needed to ensure rigidity. The fencing shall be fastened to the post every six inches with a polyethylene tie. On long continuous lengths of fencing, a tension wire or rope shall be used as a top stringer to prevent sagging between posts. The fence color shall be high-visibility orange. The fence tensile strength shall be 360 lbs/ft using the ASTM D4595 testing method.

If appropriate, install fabric silt fence in accordance with BMP C233: Silt Fence to act as high-visibility fence. Silt fence shall be at least 3 feet high and must be highly visible to meet the requirements of this BMP.

Metal fences shall be designed and installed according to the manufacturer's specifications.

Metal fences shall be at least 3 feet high and must be highly visible.

Fences shall not be wired or stapled to trees.

Maintenance Standards

If the fence has been damaged or visibility reduced, it shall be repaired or replaced immediately and visibility restored.

BMP C105: Stabilized Construction Access

Purpose

Stabilized construction accesses are established to reduce the amount of sediment transported onto paved roads outside the project site by vehicles or equipment. This is done by constructing a stabilized pad of quarry spalls at entrances and exits for project sites.

Conditions of Use

Construction accesses shall be stabilized wherever traffic will be entering or leaving a construction site if paved roads or other paved areas are within 1,000 feet of the site.

For residential subdivision construction sites, provide a stabilized construction access for each residence, rather than only at the main subdivision entrance. Stabilized surfaces shall be of sufficient length/width to provide vehicle access/parking, based on lot size and configuration.

On large commercial, highway, and road projects, the designer should include enough extra materials in the contract to allow for additional stabilized accesses not shown in the initial Construction SWPPP. It is difficult to determine exactly where access to these projects will take place; additional materials will enable the contractor to install them where needed.

Design and Installation Specifications

- See Figure II-4.1: Stabilized Construction Access for details. Note: the 100' minimum length of the access shall be reduced to the maximum practicable size when the size or configuration of the site does not allow the full length (100').
- Construct stabilized construction accesses with a 12-inch thick pad of 4-inch to 8-inch quarry spalls, a 4-inch course of asphalt treated base (ATB), or use existing pavement. Do not use crushed concrete, cement, or calcium chloride for construction access stabilization because these products raise pH levels in stormwater and concrete discharge to waters of the State is prohibited.
- A separation geotextile shall be placed under the spalls to prevent fine sediment from pumping up into the rock pad. The geotextile shall meet the standards listed in Table II-4.2: Stabilized Construction Access Geotextile Standards.

Table II-4.2: Stabilized Construction Access Geotextile Standards

Geotextile Property	Required Value
Grab Tensile Strength (ASTM D4751)	200 psi min.
Grab Tensile Elongation (ASTM D4632)	30% max.
Mullen Burst Strength (ASTM D3786-80a)	400 psi min.
AOS (ASTM D4751)	No. 20 to No. 45 (U.S. standard sieve size)

- Consider early installation of the first lift of asphalt in areas that will be paved; this can be used as a stabilized access. Also consider the installation of excess concrete as a stabilized access. During large concrete pours, excess concrete is often available for this purpose.
- Fencing (see BMP C103: High-Visibility Fence) shall be installed as necessary to restrict traffic to the construction access.
- Whenever possible, the access shall be constructed on a firm, compacted subgrade. This can substantially increase the effectiveness of the pad and reduce the need for maintenance.
- Construction accesses should avoid crossing existing sidewalks and back of walk drains if at all possible. If a construction access must cross a sidewalk or back of walk drain, the full length of the sidewalk and back of walk drain must be covered and protected from sediment leaving the site.

Alternative Material Specification

WSDOT has raised safety concerns about the quarry spall rock specified above. WSDOT observes that the 4-inch to 8-inch rock sizes can become trapped between dually truck tires, and then released off-site at highway speeds. WSDOT has chosen to use a modified specification for the rock while continuously verifying that the stabilized construction access remains effective. To remain effective, the BMP must prevent sediment from migrating off site. To date, there has been no performance testing to verify operation of this new specification. Local jurisdictions may use the alternative specification, but must perform increased off-site inspection if they use, or allow others to use, it.

Stabilized construction accesses may use material that meets the requirements of WSDOT's *Standard Specifications for Road, Bridge, and Municipal Construction* Section 9-03.9(1) (WSDOT, 2016) for ballast except for the following special requirements.

The grading and quality requirements are listed in Table II-4.3: Stabilized Construction Access Alternative Material Requirements.

Table II-4.3: Stabilized Construction Access Alternative Material Requirements

Sieve Size	Percent Passing
2½″	99 to 100
2″	65 to 100
¾″	40 to 80
No. 4	5 max.
No. 100	0 to 2
% Fracture	75 min.

Notes:

1. All percentages are by weight.
2. The sand equivalent value and dust ratio requirements do not apply.
3. The fracture requirement shall be at least one fractured face and will apply the combined aggregate retained on the No. 4 sieve in accordance with FOP for AASHTO T 335.

Maintenance Standards

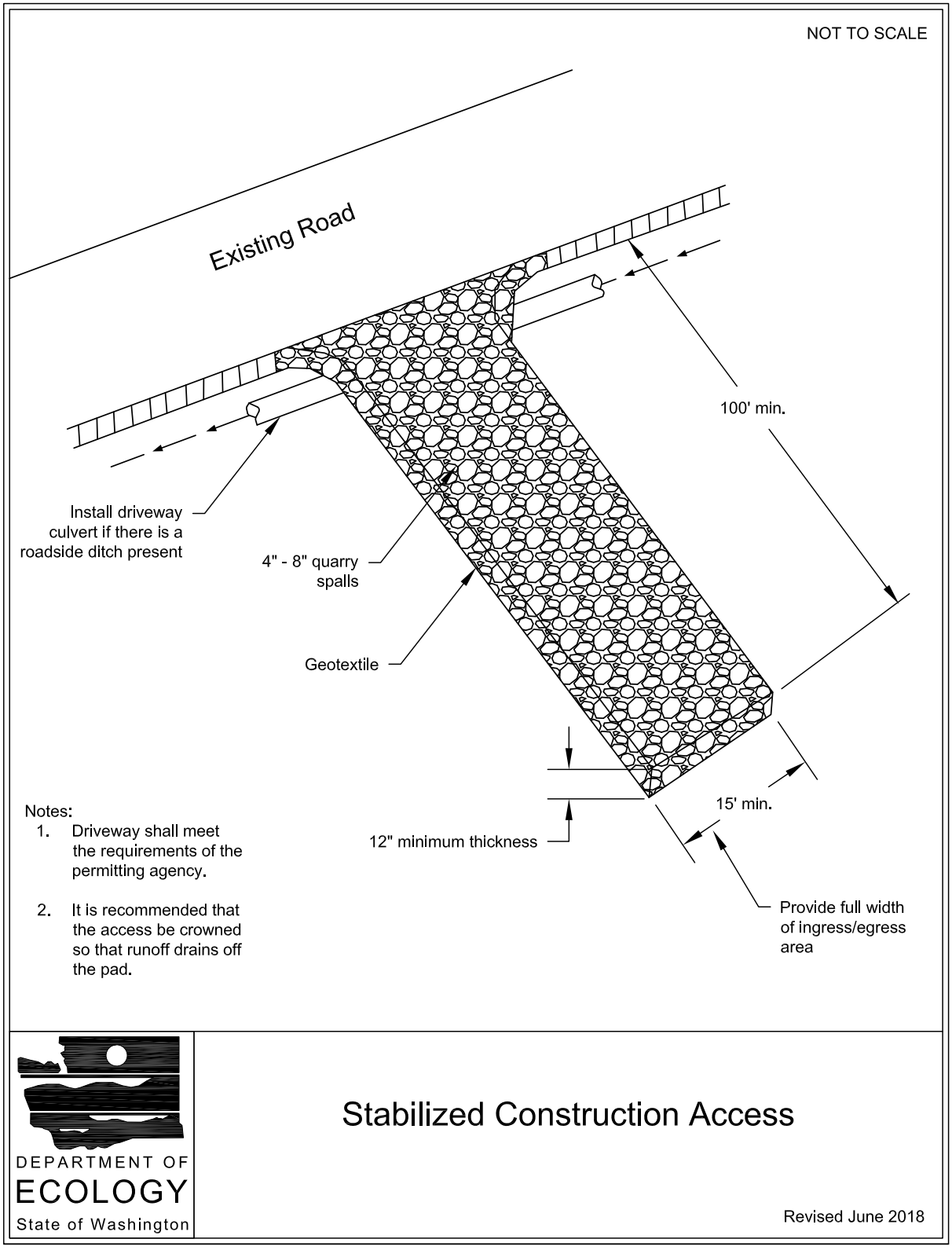
Quarry spalls shall be added if the pad is no longer in accordance with the specifications.

- If the access is not preventing sediment from being tracked onto pavement, then alternative measures to keep the streets free of sediment shall be used. This may include replacement/cleaning of the existing quarry spalls, street sweeping, an increase in the dimensions

of the access, or the installation of BMP C106: Wheel Wash.

- Any sediment that is tracked onto pavement shall be removed by shoveling or street sweeping. The sediment collected by sweeping shall be removed or stabilized on site. The pavement shall not be cleaned by washing down the street, except when sweeping is ineffective and there is a threat to public safety. If it is necessary to wash the streets, the construction of a small sump to contain the wash water shall be considered. The sediment would then be washed into the sump where it can be controlled.
- Perform street sweeping by hand or with a high efficiency sweeper. Do not use a non-high efficiency mechanical sweeper because this creates dust and throws soils into storm systems or conveyance ditches.
- Any quarry spalls that are loosened from the pad, which end up on the roadway shall be removed immediately.
- If vehicles are entering or exiting the site at points other than the construction access(es), BMP C103: High-Visibility Fence shall be installed to control traffic.
- Upon project completion and site stabilization, all construction accesses intended as permanent access for maintenance shall be permanently stabilized.

Figure II-4.1: Stabilized Construction Access



BMP C123: Plastic Covering

Purpose

Plastic covering provides immediate, short-term erosion protection to slopes and disturbed areas.

Conditions of Use

Plastic covering may be used on disturbed areas that require cover measures for less than 30 days, except as stated below.

- Plastic is particularly useful for protecting cut and fill slopes and stockpiles. However, the relatively rapid breakdown of most polyethylene sheeting makes it unsuitable for applications greater than six months.
- Due to rapid runoff caused by plastic covering, do not use this method upslope of areas that might be adversely impacted by concentrated runoff. Such areas include steep and/or unstable slopes.
- Plastic sheeting may result in increased runoff volumes and velocities, requiring additional on-site measures to counteract the increases. Creating a trough with wattles or other material can convey clean water away from these areas.
- To prevent undercutting, trench and backfill rolled plastic covering products.
- Although the plastic material is inexpensive to purchase, the cost of installation, maintenance, removal, and disposal add to the total costs of this BMP.
- Whenever plastic is used to protect slopes, install water collection measures at the base of the slope. These measures include plastic-covered berms, channels, and pipes used to convey clean rainwater away from bare soil and disturbed areas. Do not mix clean runoff from a plastic covered slope with dirty runoff from a project.
- Other uses for plastic include:
    - Temporary ditch liner.
    - Pond liner in temporary sediment pond.
    - Liner for bermed temporary fuel storage area if plastic is not reactive to the type of fuel being stored.
    - Emergency slope protection during heavy rains.
    - Temporary drainpipe (“elephant trunk”) used to direct water.

Design and Installation Specifications

- Plastic slope cover must be installed as follows:
    1. Run plastic up and down the slope, not across the slope.
    2. Plastic may be installed perpendicular to a slope if the slope length is less than 10 feet.
    3. Provide a minimum of 8-inch overlap at the seams.
    4. On long or wide slopes, or slopes subject to wind, tape all seams.
    5. Place plastic into a small (12-inch wide by 6-inch deep) slot trench at the top of the slope and backfill with soil to keep water from flowing underneath.
    6. Place sand filled burlap or geotextile bags every 3 to 6 feet along seams and tie them together with twine to hold them in place.
    7. Inspect plastic for rips, tears, and open seams regularly and repair immediately. This prevents high velocity runoff from contacting bare soil, which causes extreme erosion.
    8. Sandbags may be lowered into place tied to ropes. However, all sandbags must be staked in place.
- Plastic sheeting shall have a minimum thickness of 6 mil.
- If erosion at the toe of a slope is likely, a gravel berm, riprap, or other suitable protection shall be installed at the toe of the slope in order to reduce the velocity of runoff.

Maintenance Standards

- Torn sheets must be replaced and open seams repaired.
- Completely remove and replace the plastic if it begins to deteriorate due to ultraviolet radiation.
- Completely remove plastic when no longer needed.
- Dispose of old tires used to weight down plastic sheeting appropriately.

Approved as Functionally Equivalent

Ecology has approved products as able to meet the requirements of this BMP. The products did not pass through the Technology Assessment Protocol – Ecology (TAPE) process. Local jurisdictions may choose not to accept these products, or may require additional testing prior to consideration for local use. Products that Ecology has approved as functionally equivalent are available for review on Ecology's website at:

https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Emerging-stormwater-treatment-technologies

Conditions of Use

Use at construction sites with delivery and storage of the following materials:

- Petroleum products such as fuel, oil and grease
- Soil stabilizers and binders (e.g., polyacrylamide)
- Fertilizers, pesticides, and herbicides
- Detergents
- Asphalt and concrete compounds
- Hazardous chemicals such as acids, lime, adhesives, paints, solvents, and curing compounds
- Any other material that may be detrimental if released to the environment

Design and Installation Specifications

- The temporary storage area should be located away from vehicular traffic, near the construction entrance(s), and away from waterways or storm drains.
- Safety Data Sheets (SDS) should be supplied for all materials stored. Chemicals should be kept in their original labeled containers.
- Hazardous material storage on-site should be minimized.
- Hazardous materials should be handled as infrequently as possible.
- During the wet weather season (October 1 – April 30), consider storing materials in a covered area.
- Materials should be stored in secondary containments, such as an earthen dike, horse trough, or even a children's wading pool for non-reactive materials such as detergents, oil, grease, and paints. Small amounts of material may be secondarily contained in "bus boy" trays or concrete mixing trays.
- Do not store chemicals, drums, or bagged materials directly on the ground. Place these items on a pallet and, when possible, within secondary containment.
- If drums must be kept uncovered, store them at a slight angle to reduce ponding of rainwater on the lids to reduce corrosion. Domed plastic covers are inexpensive and snap to the top of drums, preventing water from collecting.
- Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, or 302 shall be stored in approved containers and drums and shall not be overfilled. Containers and drums shall be stored in temporary secondary containment facilities.
- Temporary secondary containment facilities shall provide for a spill containment volume able to contain 10% of the total enclosed container volume of all containers, or 110% of the capacity of the largest container within its boundary, whichever is greater.

- Secondary containment facilities shall be impervious to the materials stored therein for a minimum contact time of 72 hours.
- Sufficient separation should be provided between stored containers to allow for spill cleanup and emergency response access.
- During the wet weather season (Oct 1 – April 30), each secondary containment facility shall be covered during non-working days.
- Secondary containment facilities shall be covered at all times, except when in active use.
- Keep material storage areas clean, organized, and equipped with an ample supply of appropriate spill clean-up material (spill kit).
- The spill kit should include, at a minimum:
    - 1 - Water resistant nylon bag
    - 3 - Oil absorbent socks 3”x 4’
    - 2 - Oil absorbent socks 3”x 10’
    - 12 - Oil absorbent pads 17”x19”
    - 1 - Pair splash resistant goggles
    - 3 - Pairs nitrile gloves
    - 10 - Disposable bags with ties
    - Instructions

Maintenance Standards

- Secondary containment facilities shall be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills shall be collected and placed into drums. These liquids shall be handled as hazardous waste unless testing determines them to be non-hazardous.
- Re-stock spill kit materials as needed.

BMP C154: Concrete Washout Area

Purpose

Prevent or reduce the discharge of pollutants from concrete waste to stormwater by conducting washout off-site, or performing on-site washout in a designated area.

Conditions of Use

Concrete washout areas are implemented on construction projects where:

- For a 5 to 10 fps discharge velocity at the outlet, use 24-inch to 48-inch riprap. Minimum thickness is 2 feet.
- For outlets at the base of steep slope pipes (pipe slope greater than 10 percent), use an engineered energy dissipator.
- Filter fabric or erosion control blankets should always be used under riprap to prevent scour and channel erosion. See BMP C122: Nets and Blankets.

- Bank stabilization, bioengineering, and habitat features may be required for disturbed areas. This work may require a Hydraulic Project Approval (HPA) from the Washington State Department of Fish and Wildlife. See I-2.14 Hydraulic Project Approvals.

Maintenance Standards

- Inspect and repair as needed.
- Add rock as needed to maintain the intended function.
- Clean energy dissipator if sediment builds up.

BMP C220: Inlet Protection

Purpose

Inlet protection prevents coarse sediment from entering drainage systems prior to permanent stabilization of the disturbed area.

Conditions of Use

Use inlet protection at inlets that are operational before permanent stabilization of the disturbed areas that contribute runoff to the inlet. Provide protection for all storm drain inlets downslope and within 500 feet of a disturbed or construction area, unless those inlets are preceded by a sediment trapping BMP.

Also consider inlet protection for lawn and yard drains on new home construction. These small and numerous drains coupled with lack of gutters can add significant amounts of sediment into the roof drain system. If possible, delay installing lawn and yard drains until just before landscaping, or cap these drains to prevent sediment from entering the system until completion of landscaping. Provide 18-inches of sod around each finished lawn and yard drain.

Table II-4.11: Storm Drain Inlet Protection lists several options for inlet protection. All of the methods for inlet protection tend to plug and require a high frequency of maintenance. Limit contributing drainage areas for an individual inlet to one acre or less. If possible, provide emergency overflows with additional end-of-pipe treatment where stormwater ponding would cause a hazard.

Table II-4.11: Storm Drain Inlet Protection

Type of Inlet Protection	Emergency Overflow	Applicable for Paved / Earthen Surfaces	Conditions of Use
Drop Inlet Protection			
Excavated drop inlet protection	Yes, temporary flooding may occur	Earthen	Applicable for heavy flows. Easy to maintain. Large area requirement: 30'x30'/acre
Block and gravel drop inlet protection	Yes	Paved or Earthen	Applicable for heavy concentrated flows. Will not pond.
Gravel and wire drop inlet protection	No	Paved or Earthen	Applicable for heavy concentrated flows. Will pond. Can withstand traffic.
Catch basin filters	Yes	Paved or Earthen	Frequent maintenance required.
Curb Inlet Protection			
Curb inlet protection with wooden weir	Small capacity overflow	Paved	Used for sturdy, more compact installation.
Block and gravel curb inlet protection	Yes	Paved	Sturdy, but limited filtration.
Culvert Inlet Protection			
Culvert inlet sediment trap	N/A	N/A	18 month expected life.

Design and Installation Specifications

Excavated Drop Inlet Protection

Excavated drop inlet protection consists of an excavated impoundment around the storm drain inlet. Sediment settles out of the stormwater prior to entering the storm drain. Design and installation specifications for excavated drop inlet protection include:

- Provide a depth of 1 to 2 feet as measured from the crest of the inlet structure.
- Side slopes of excavation should be no steeper than 2H:1V.
- Minimum volume of excavation is 35 cubic yards.
- Shape the excavation to fit the site, with the longest dimension oriented toward the longest inflow area.
- Install provisions for draining to prevent standing water.
- Clear the area of all debris.

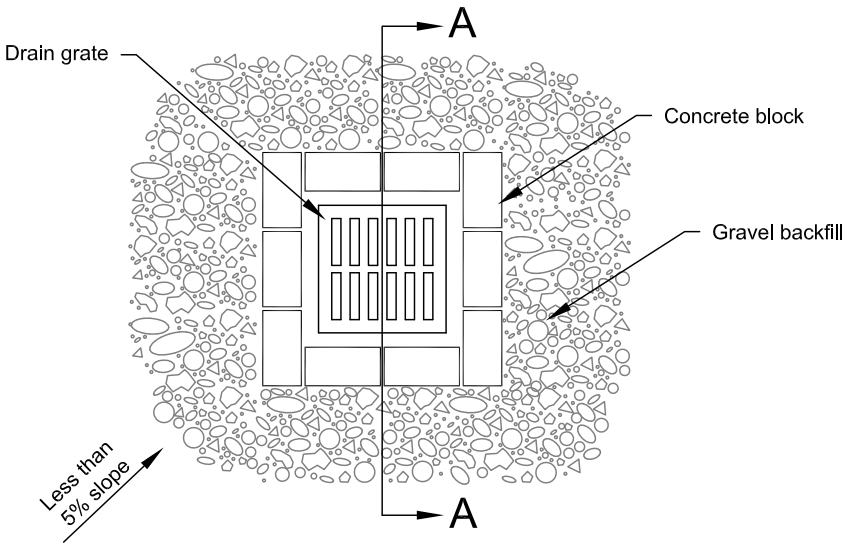
- Grade the approach to the inlet uniformly.
- Drill weep holes into the side of the inlet.
- Protect weep holes with screen wire and washed aggregate.
- Seal weep holes when removing structure and stabilizing area.
- Build a temporary dike, if necessary, to the down slope side of the structure to prevent bypass flow.

Block and Gravel Filter

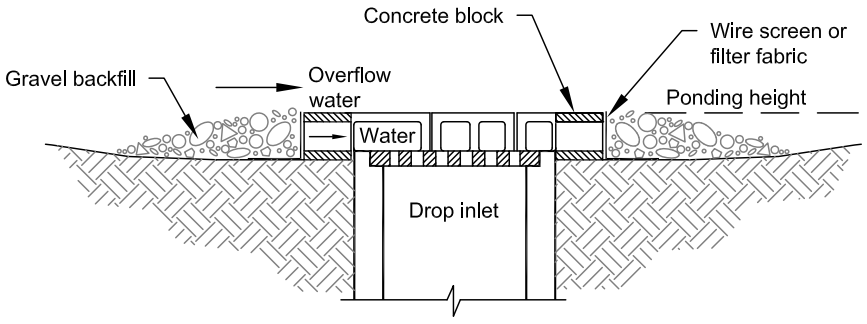
A block and gravel filter is a barrier formed around the inlet with standard concrete blocks and gravel. See Figure II-4.17: Block and Gravel Filter. Design and installation specifications for block and gravel filters include:

- Provide a height of 1 to 2 feet above the inlet.
- Recess the first row of blocks 2-inches into the ground for stability.
- Support subsequent courses by placing a pressure treated wood (2x4) through the block opening.
- Do not use mortar.
- Lay some blocks in the bottom row on their side to allow for dewatering the pool.
- Place hardware cloth or comparable wire mesh with 0.5-inch openings over all block openings.
- Place gravel to just below the top of blocks on slopes of 2H:1V or flatter.
- An alternative design is a gravel berm surrounding the inlet, as follows:
    - Provide a slope of 3H:1V on the upstream side of the berm.
    - Provide a slope of 2H:1V on the downstream side of the berm.
    - Provide a 1-foot wide level rock area between the gravel berm and the inlet.
    - Use rocks 3 inches in diameter or larger on the upstream slope of the berm.
    - Use gravel 0.5 to 0.75 inch at a minimum thickness of 1-foot on the downstream slope of the berm.

Figure II-4.17: Block and Gravel Filter



Plan View



Section A-A

Notes:

1. Drop inlet sediment barriers are to be used for small, nearly level drainage areas. (less than 5%)
2. Excavate a basin of sufficient size adjacent to the drop inlet.
3. The top of the structure (ponding height) must be well below the ground elevation downslope to prevent runoff from bypassing the inlet. A temporary dike may be necessary on the downslope side of the structure.

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Block and Gravel Filter

Revised June 2016

Gravel and Wire Mesh Filter

Gravel and wire mesh filters are gravel barriers placed over the top of the inlet. This method does not provide an overflow. Design and installation specifications for gravel and wire mesh filters include:

- Use a hardware cloth or comparable wire mesh with 0.5 inch openings.
    - Place wire mesh over the drop inlet so that the wire extends a minimum of 1-foot beyond each side of the inlet structure.
    - Overlap the strips if more than one strip of mesh is necessary.
- Place coarse aggregate over the wire mesh.
    - Provide at least a 12-inch depth of aggregate over the entire inlet opening and extend at least 18-inches on all sides.

Catch Basin Filters

Catch basin filters are designed by manufacturers for construction sites. The limited sediment storage capacity increases the amount of inspection and maintenance required, which may be daily for heavy sediment loads. To reduce maintenance requirements, combine a catch basin filter with another type of inlet protection. This type of inlet protection provides flow bypass without overflow and therefore may be a better method for inlets located along active rights-of-way. Design and installation specifications for catch basin filters include:

- Provides 5 cubic feet of storage.
- Requires dewatering provisions.
- Provides a high-flow bypass that will not clog under normal use at a construction site.
- Insert the catch basin filter in the catch basin just below the grating.

Curb Inlet Protection with Wooden Weir

Curb inlet protection with wooden weir is an option that consists of a barrier formed around a curb inlet with a wooden frame and gravel. Design and installation specifications for curb inlet protection with wooden weirs include:

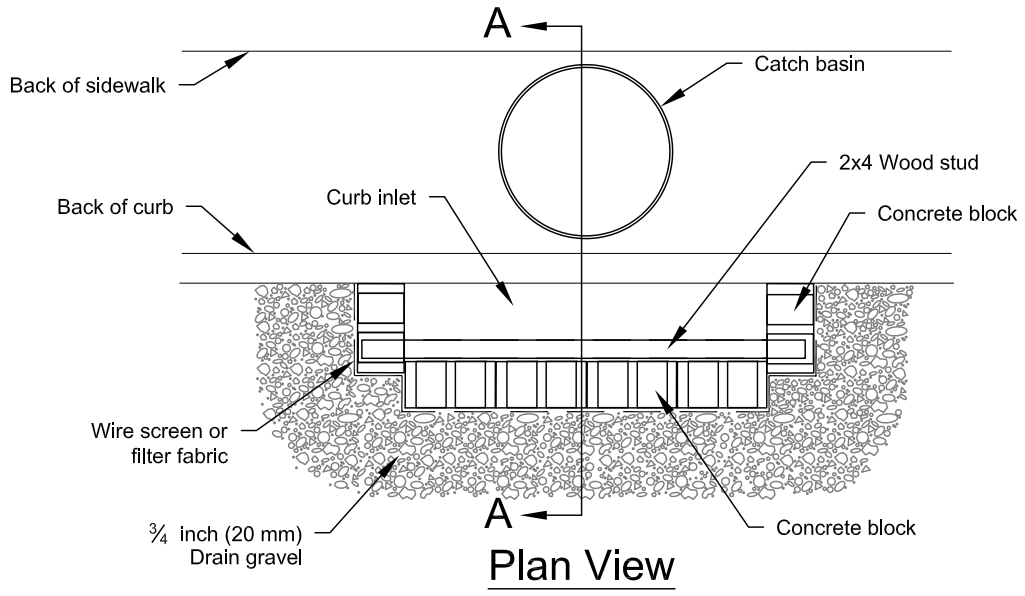
- Use wire mesh with 0.5 inch openings.
- Use extra strength filter cloth.
- Construct a frame.
- Attach the wire and filter fabric to the frame.
- Pile coarse washed aggregate against the wire and fabric.
- Place weight on the frame anchors.

Block and Gravel Curb Inlet Protection

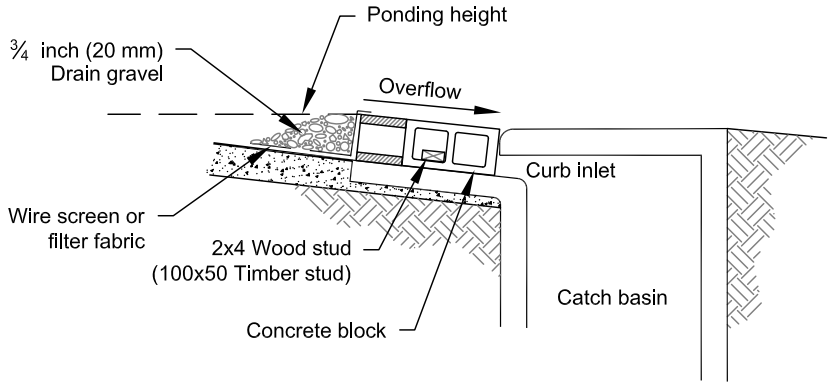
Block and gravel curb inlet protection is a barrier formed around a curb inlet with concrete blocks and gravel. See Figure II-4.18: Block and Gravel Curb Inlet Protection. Design and installation specifications for block and gravel curb inlet protection include:

- Use wire mesh with 0.5 inch openings.
- Place two concrete blocks on their sides abutting the curb at either side of the inlet opening. These are spacer blocks.
- Place a 2x4 stud through the outer holes of each spacer block to align the front blocks.
- Place blocks on their sides across the front of the inlet and abutting the spacer blocks.
- Place wire mesh over the outside vertical face.
- Pile coarse aggregate against the wire to the top of the barrier.

Figure II-4.18: Block and Gravel Curb Inlet Protection



Plan View



Section A-A

Notes:

1. Use block and gravel type sediment barrier when curb inlet is located in gently sloping street segment, where water can pond and allow sediment to separate from runoff.
2. Barrier shall allow for overflow from severe storm event.
3. Inspect barriers and remove sediment after each storm event. Sediment and gravel must be removed from the traveled way immediately.

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Block and Gravel Curb Inlet Protection

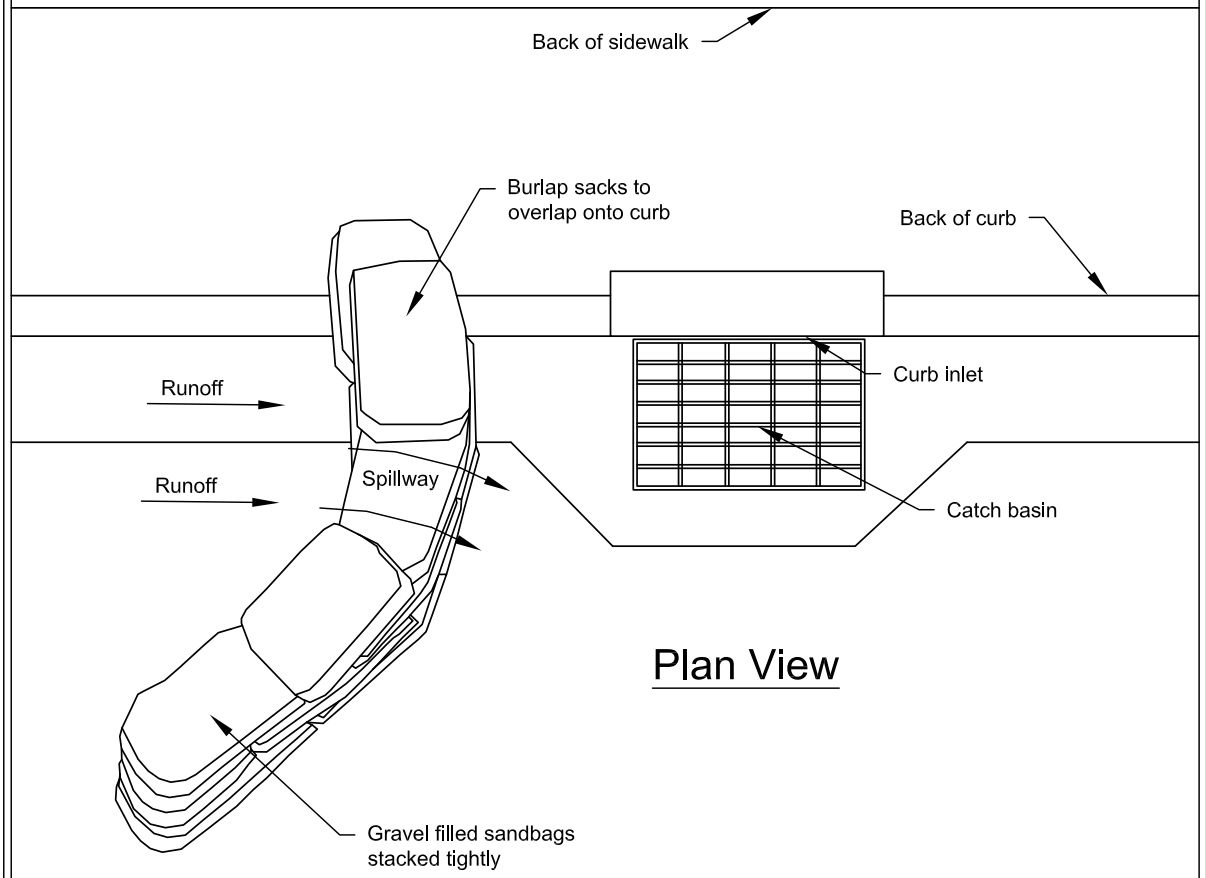
Revised June 2016

Curb and Gutter Sediment Barrier

A curb and gutter sediment barrier is a sandbag or rock berm (riprap and aggregate) 3 feet high and 3 feet wide in a horseshoe shape. See Figure II-4.19: Curb and Gutter Barrier. Design and installation specifications for curb and gutter sediment barriers include:

- Construct a horseshoe shaped berm, faced with coarse aggregate if using riprap, 3 feet high and 3 feet wide, at least 2 feet from the inlet.
- Construct a horseshoe shaped sedimentation trap on the upstream side of the berm. Size the trap to sediment trap standards for protecting a culvert inlet.

Figure II-4.19: Curb and Gutter Barrier



Notes:

1. Place curb type sediment barriers on gently sloping street segments, where water can pond and allow sediment to separate from runoff.
2. Sandbags of either burlap or woven 'geotextile' fabric, are filled with gravel, layered and packed tightly.
3. Leave a one sandbag gap in the top row to provide a spillway for overflow.
4. Inspect barriers and remove sediment after each storm event. Sediment and gravel must be removed from the traveled way immediately.

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State of Washington

Curb and Gutter Barrier

Revised June 2016

Maintenance Standards

- Inspect all forms of inlet protection frequently, especially after storm events. Clean and replace clogged catch basin filters. For rock and gravel filters, pull away the rocks from the inlet and clean or replace. An alternative approach would be to use the clogged rock as fill and put fresh rock around the inlet.
- Do not wash sediment into storm drains while cleaning. Spread all excavated material evenly over the surrounding land area or stockpile and stabilize as appropriate.

Approved as Functionally Equivalent

Ecology has approved products as able to meet the requirements of this BMP. The products did not pass through the Technology Assessment Protocol – Ecology (TAPE) process. Local jurisdictions may choose not to accept these products, or may require additional testing prior to consideration for local use. Products that Ecology has approved as functionally equivalent are available for review on Ecology's website at:

https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Emerging-stormwater-treatment-technologies

BMP C231: Brush Barrier

Purpose

The purpose of brush barriers is to reduce the transport of coarse sediment from a construction site by providing a temporary physical barrier to sediment and reducing the runoff velocities of overland flow.

Conditions of Use

- Brush barriers may be used downslope of disturbed areas that are less than one-quarter acre.
- Brush barriers are not intended to treat concentrated flows, nor are they intended to treat substantial amounts of overland flow. Any concentrated flows must be directed to a sediment trapping BMP. The only circumstance in which overland flow can be treated solely by a brush barrier, rather than by a sediment trapping BMP, is when the area draining to the barrier is small.
- Brush barriers should only be installed on contours.

Design and Installation Specifications

- Height: 2 feet (minimum) to 5 feet (maximum).
- Width: 5 feet at base (minimum) to 15 feet (maximum).

BMP C233: Silt Fence

Purpose

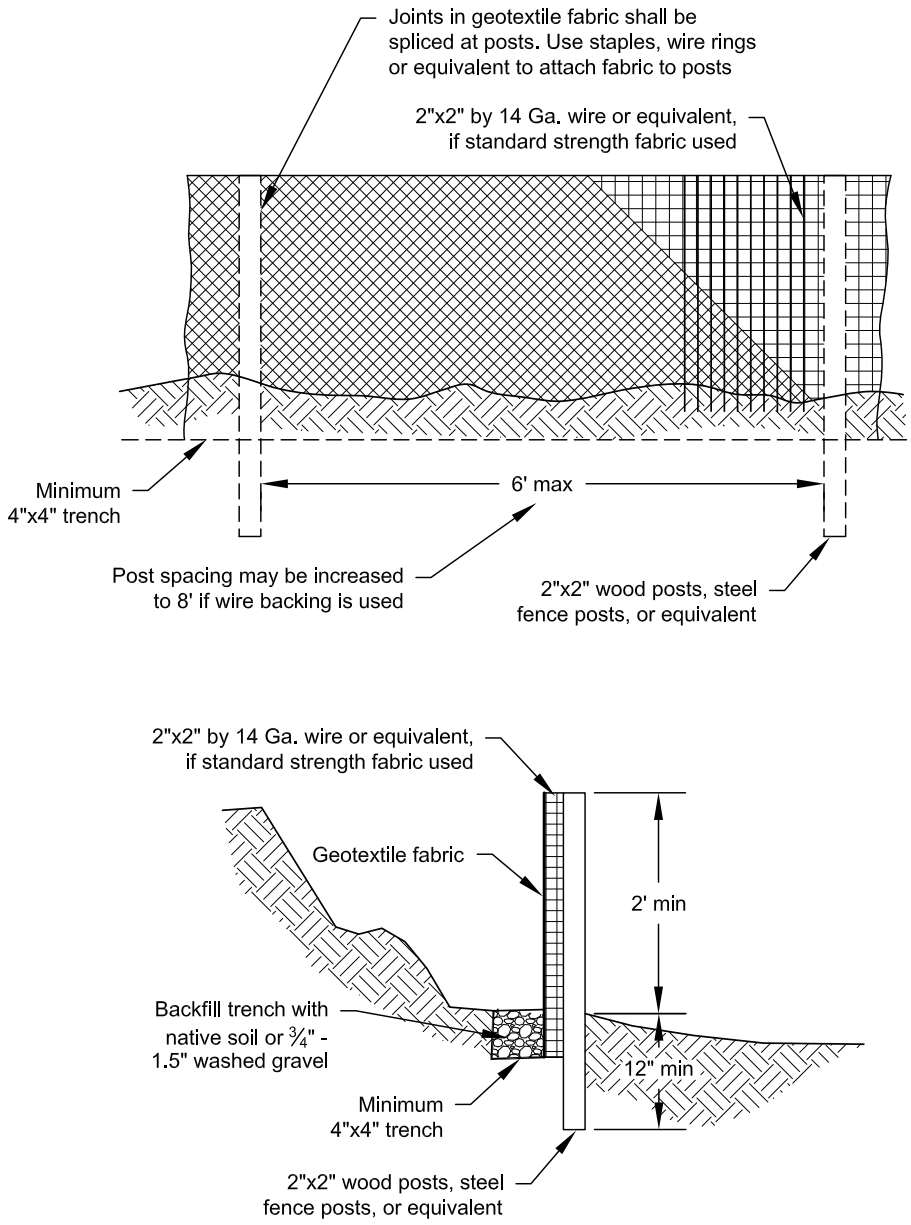
Silt fence reduces the transport of coarse sediment from a construction site by providing a temporary physical barrier to sediment and reducing the runoff velocities of overland flow.

Conditions of Use

Silt fence may be used downslope of all disturbed areas.

- Silt fence shall prevent sediment carried by runoff from going beneath, through, or over the top of the silt fence, but shall allow the water to pass through the fence.
- Silt fence is not intended to treat concentrated flows, nor is it intended to treat substantial amounts of overland flow. Convey any concentrated flows through the drainage system to a sediment trapping BMP.
- Do not construct silt fences in streams or use in V-shaped ditches. Silt fences do not provide an adequate method of silt control for anything deeper than sheet or overland flow.

Figure II-4.22: Silt Fence



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State of Washington

Silt Fence

Revised July 2017

Design and Installation Specifications

- Use in combination with other construction stormwater BMPs.
- Maximum slope steepness (perpendicular to the silt fence line) 1H:1V.
- Maximum sheet or overland flow path length to the silt fence of 100 feet.
- Do not allow flows greater than 0.5 cfs.
- Use geotextile fabric that meets the following standards. All geotextile properties listed below are minimum average roll values (i.e. the test result for any sampled roll in a lot shall meet or exceed the values shown in Table II-4.12: Geotextile Fabric Standards for Silt Fence):

Table II-4.12: Geotextile Fabric Standards for Silt Fence

Geotextile Property	Minimum Average Roll Value
Polymeric Mesh AOS (ASTM D4751)	0.60 mm maximum for slit film woven (#30 sieve). 0.30 mm maximum for all other geotextile types (#50 sieve). 0.15 mm minimum for all fabric types (#100 sieve).
Water Permittivity (ASTM D4491)	0.02 sec^{-1} minimum
Grab Tensile Strength (ASTM D4632)	180 lbs minimum for extra strength fabric. 100 lbs minimum for standard strength fabric.
Grab Tensile Strength (ASTM D4632)	30% maximum
Ultraviolet Resistance (ASTM D4355)	70% minimum

- Support standard strength geotextiles with wire mesh, chicken wire, 2-inch x 2-inch wire, safety fence, or jute mesh to increase the strength of the geotextile. Silt fence materials are available that have synthetic mesh backing attached.
- Silt fence material shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0°F to 120°F.
- 100% biodegradable silt fence is available that is strong, long lasting, and can be left in place after the project is completed, if permitted by the local jurisdiction.
- Refer to Figure II-4.22: Silt Fence for standard silt fence details. Include the following Standard Notes for silt fence on construction plans and specifications:

    1. The Contractor shall install and maintain temporary silt fences at the locations shown in the Plans.

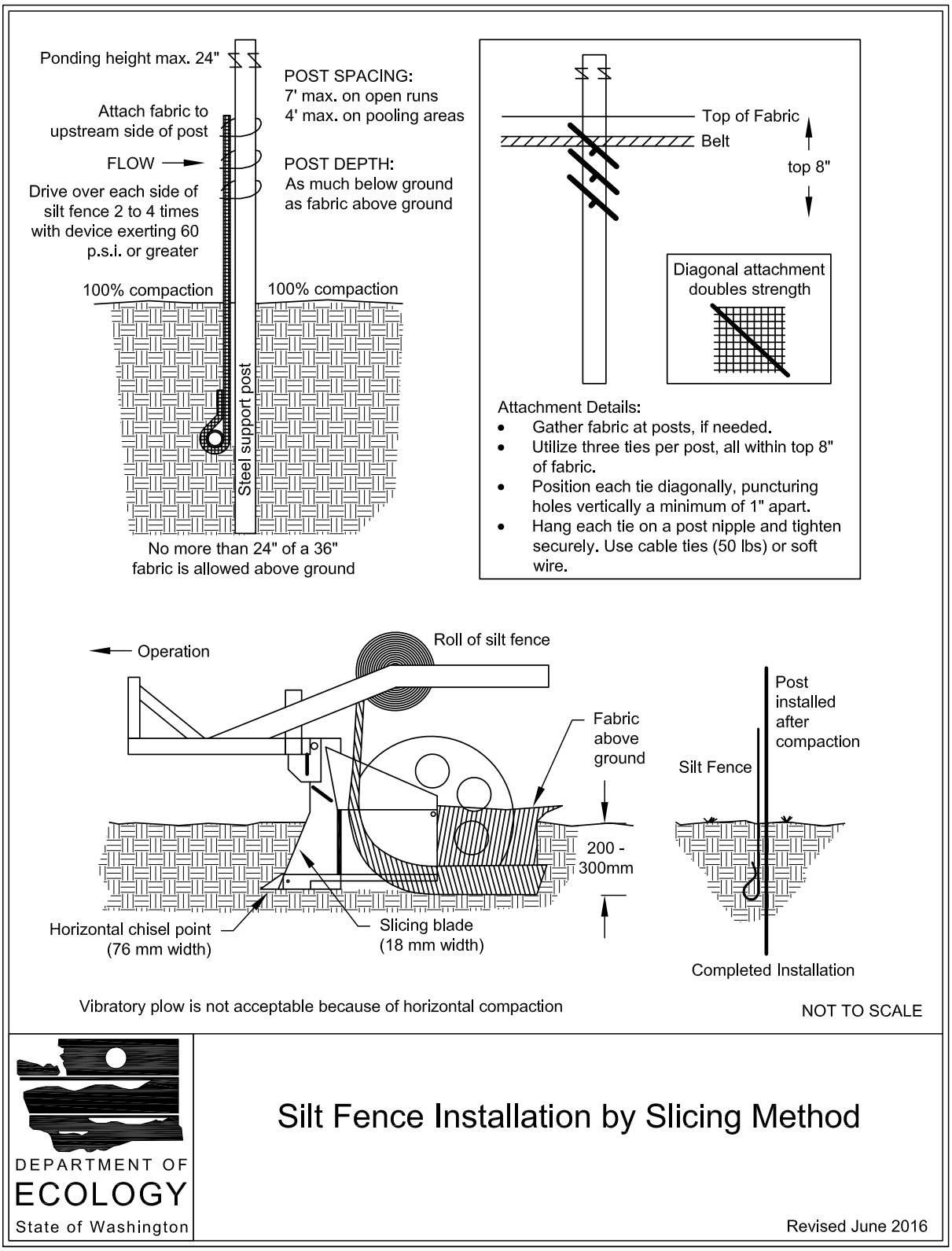
2. Construct silt fences in areas of clearing, grading, or drainage prior to starting those activities.
3. The silt fence shall have a 2-foot min. and a 2.5-feet max. height above the original ground surface.
4. The geotextile fabric shall be sewn together at the point of manufacture to form fabric lengths as required. Locate all sewn seams at support posts. Alternatively, two sections of silt fence can be overlapped, provided that the overlap is long enough and that the adjacent silt fence sections are close enough together to prevent silt laden water from escaping through the fence at the overlap.
5. Attach the geotextile fabric on the up-slope side of the posts and secure with staples, wire, or in accordance with the manufacturer's recommendations. Attach the geotextile fabric to the posts in a manner that reduces the potential for tearing.
6. Support the geotextile fabric with wire or plastic mesh, dependent on the properties of the geotextile selected for use. If wire or plastic mesh is used, fasten the mesh securely to the up-slope side of the posts with the geotextile fabric up-slope of the mesh.
7. Mesh support, if used, shall consist of steel wire with a maximum mesh spacing of 2-inches, or a prefabricated polymeric mesh. The strength of the wire or polymeric mesh shall be equivalent to or greater than 180 lbs grab tensile strength. The polymeric mesh must be as resistant to the same level of ultraviolet radiation as the geotextile fabric it supports.
8. Bury the bottom of the geotextile fabric 4-inches min. below the ground surface. Backfill and tamp soil in place over the buried portion of the geotextile fabric, so that no flow can pass beneath the silt fence and scouring cannot occur. When wire or polymeric back-up support mesh is used, the wire or polymeric mesh shall extend into the ground 3-inches min.
9. Drive or place the silt fence posts into the ground 18-inches min. A 12–inch min. depth is allowed if topsoil or other soft subgrade soil is not present and 18-inches cannot be reached. Increase fence post min. depths by 6 inches if the fence is located on slopes of 3H:1V or steeper and the slope is perpendicular to the fence. If required post depths cannot be obtained, the posts shall be adequately secured by bracing or guying to prevent overturning of the fence due to sediment loading.
10. Use wood, steel or equivalent posts. The spacing of the support posts shall be a maximum of 6 feet. Posts shall consist of one of the following:
    - Wood with minimum dimensions of 2 inches by 2 inches by 3 feet. Wood shall be free of defects such as knots, splits, or gouges.
    - No. 6 steel rebar or larger.
    - ASTM A 120 steel pipe with a minimum diameter of 1-inch.
    - U, T, L, or C shape steel posts with a minimum weight of 1.35 lbs./ft.

- Other steel posts having equivalent strength and bending resistance to the post sizes listed above.

11. Locate silt fences on contour as much as possible, except at the ends of the fence, where the fence shall be turned uphill such that the silt fence captures the runoff water and prevents water from flowing around the end of the fence.
12. If the fence must cross contours, with the exception of the ends of the fence, place check dams perpendicular to the back of the fence to minimize concentrated flow and erosion. The slope of the fence line where contours must be crossed shall not be steeper than 3H:1V.
    - Check dams shall be approximately 1 foot deep at the back of the fence. Check dams shall be continued perpendicular to the fence at the same elevation until the top of the check dam intercepts the ground surface behind the fence.
    - Check dams shall consist of crushed surfacing base course, gravel backfill for walls, or shoulder ballast. Check dams shall be located every 10 feet along the fence where the fence must cross contours.

- Refer to Figure II-4.23: Silt Fence Installation by Slicing Method for slicing method details. The following are specifications for silt fence installation using the slicing method:
    1. The base of both end posts must be at least 2 to 4 inches above the top of the geotextile fabric on the middle posts for ditch checks to drain properly. Use a hand level or string level, if necessary, to mark base points before installation.
    2. Install posts 3 to 4 feet apart in critical retention areas and 6 to 7 feet apart in standard applications.
    3. Install posts 24 inches deep on the downstream side of the silt fence, and as close as possible to the geotextile fabric, enabling posts to support the geotextile fabric from upstream water pressure.
    4. Install posts with the nipples facing away from the geotextile fabric.
    5. Attach the geotextile fabric to each post with three ties, all spaced within the top 8 inches of the fabric. Attach each tie diagonally 45 degrees through the fabric, with each puncture at least 1-inch vertically apart. Each tie should be positioned to hang on a post nipple when tightening to prevent sagging.
    6. Wrap approximately 6 inches of the geotextile fabric around the end posts and secure with 3 ties.
    7. No more than 24 inches of a 36 inch geotextile fabric is allowed above ground level.
    8. Compact the soil immediately next to the geotextile fabric with the front wheel of the tractor, skid steer, or roller exerting at least 60 pounds per square inch. Compact the upstream side first and then each side twice for a total of four trips. Check and correct the silt fence installation for any deviation before compaction. Use a flat-bladed shovel to tuck the fabric deeper into the ground if necessary.

Figure II-4.23: Silt Fence Installation by Slicing Method



Maintenance Standards

- Repair any damage immediately.
- Intercept and convey all evident concentrated flows uphill of the silt fence to a sediment trapping BMP.
- Check the uphill side of the silt fence for signs of the fence clogging and acting as a barrier to flow and then causing channelization of flows parallel to the fence. If this occurs, replace the fence and remove the trapped sediment.
- Remove sediment deposits when the deposit reaches approximately one-third the height of the silt fence, or install a second silt fence.
- Replace geotextile fabric that has deteriorated due to ultraviolet breakdown.

BMP C234: Vegetated Strip

Purpose

Vegetated strips reduce the transport of coarse sediment from a construction site by providing a physical barrier to sediment and reducing the runoff velocities of overland flow.

Conditions of Use

- Vegetated strips may be used downslope of all disturbed areas.
- Vegetated strips are not intended to treat concentrated flows, nor are they intended to treat substantial amounts of overland flow. Any concentrated flows must be conveyed through the drainage system to BMP C241: Sediment Pond (Temporary) or other sediment trapping BMP. The only circumstance in which overland flow can be treated solely by a vegetated strip, rather than by a sediment trapping BMP, is when the following criteria are met (see Table II-4.13: Contributing Drainage Area for Vegetated Strips):

Table II-4.13: Contributing Drainage Area for Vegetated Strips

Average Contributing Area Slope	Average Contributing Area Percent Slope	Maximum Contributing Area Flowpath Length
1.5H : 1V or flatter	67% or flatter	100 feet
2H : 1V or flatter	50% or flatter	115 feet
4H : 1V or flatter	25% or flatter	150 feet
6H : 1V or flatter	16.7% or flatter	200 feet
10H : 1V or flatter	10% or flatter	250 feet

Design and Installation Specifications

- The vegetated strip shall consist of a continuous strip of dense vegetation with topsoil for a minimum length of 25 feet along the flow path. Grass-covered, landscaped areas are generally not adequate because the volume of sediment overwhelms the grass. Ideally, vegetated strips shall consist of undisturbed native growth with a well-developed soil that allows for infiltration of runoff.
- The slope within the vegetated strip shall not exceed 4H:1V.
- The uphill boundary of the vegetated strip shall be delineated with clearing limits.

Maintenance Standards

- Any areas damaged by erosion or construction activity shall be seeded immediately and protected by mulch.
- If more than 5 feet of the original vegetated strip width has had vegetation removed or is being eroded, sod must be installed.
- If there are indications that concentrated flows are traveling across the vegetated strip, stormwater runoff controls must be installed to reduce the flows entering the vegetated strip, or additional perimeter protection must be installed.

BMP C235: Wattles

Purpose

Wattles are temporary erosion and sediment control barriers consisting of straw, compost, or other material that is wrapped in netting made of natural plant fiber or similar encasing material. They reduce the velocity and can spread the flow of rill and sheet runoff, and can capture and retain sediment.

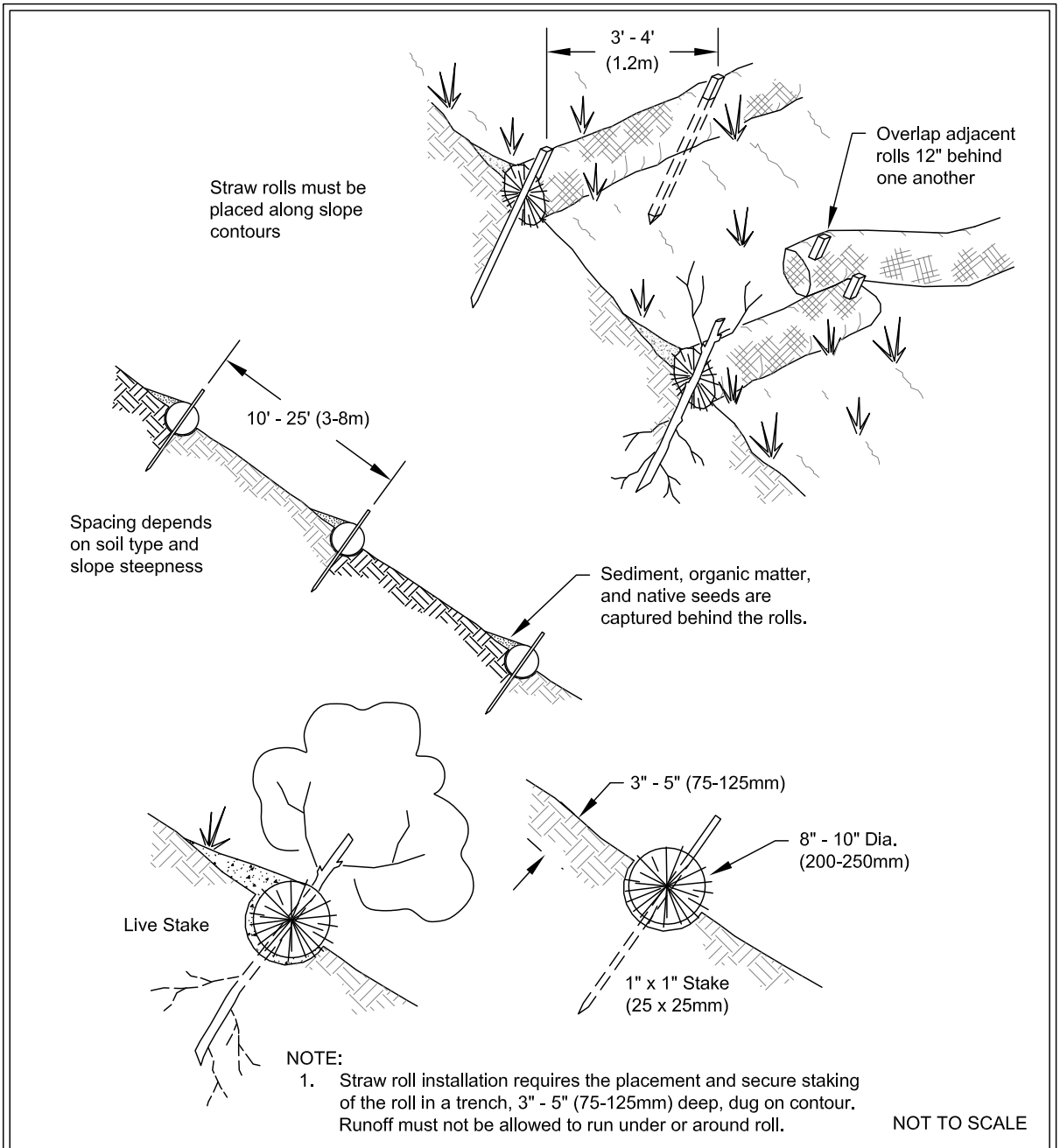
Conditions of Use

- Use wattles:
    - In disturbed areas that require immediate erosion protection.
    - On exposed soils during the period of short construction delays, or over winter months.
    - On slopes requiring stabilization until permanent vegetation can be established.
- The material used dictates the effectiveness period of the wattle. Generally, wattles are effective for one to two seasons.
- Prevent rilling beneath wattles by entrenching and overlapping wattles to prevent water from passing between them.

Design Criteria

- Wattles shall consist of cylinders of plant material such as weed-free straw, coir, wood chips, excelsior, or wood fiber or shavings encased within netting made of natural plant fibers unaltered by synthetic materials.
- See Figure II-4.24: Wattles for typical construction details.
- Wattles are typically 8 to 10 inches in diameter and 25 to 30 feet in length.
- Install wattles perpendicular to the flow direction and parallel to the slope contour.
- Place wattles in shallow trenches, staked along the contour of disturbed or newly constructed slopes. Dig narrow trenches across the slope (on contour) to a depth of 3 to 5 inches on clay soils and soils with gradual slopes. On loose soils, steep slopes, and areas with high rainfall, the trenches should be dug to a depth of 5 to 7 inches, or 1/2 to 2/3 of the thickness of the wattle.
- Start building trenches and installing wattles from the base of the slope and work up. Spread excavated material evenly along the uphill slope and compact it using hand tamping or other methods.
- Construct trenches at intervals of 10 to 25 feet depending on the steepness of the slope, soil type, and rainfall. The steeper the slope the closer together the trenches.
- Install the wattles snugly into the trenches and overlap the ends of adjacent wattles 12 inches behind one another.
- Install stakes at each end of the wattle, and at 4 foot centers along entire length of wattle.
- If required, install pilot holes for the stakes using a straight bar to drive holes through the wattle and into the soil.
- Wooden stakes should be approximately 0.75 x 0.75 x 24 inches minimum. Willow cuttings or 3/8 inch rebar can also be used for stakes.
- Stakes should be driven through the middle of the wattle, leaving 2 to 3 inches of the stake protruding above the wattle.

Figure II-4.24: Wattles



Maintenance Standards

- Wattles may require maintenance to ensure they are in contact with soil and thoroughly entrenched, especially after significant rainfall on steep sandy soils.
- Inspect the slope after significant storms and repair any areas where wattles are not tightly abutted or water has scoured beneath the wattles.

Approved as Functionally Equivalent

Ecology has approved products as able to meet the requirements of this BMP. The products did not pass through the Technology Assessment Protocol – Ecology (TAPE) process. Local jurisdictions may choose not to accept these products, or may require additional testing prior to consideration for local use. Products that Ecology has approved as functionally equivalent are available for review on Ecology's website at:

https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Emerging-stormwater-treatment-technologies

BMP C236: Vegetative Filtration

Purpose

Vegetative filtration as a BMP is used in conjunction with detention storage in the form of portable tanks or BMP C241: Sediment Pond (Temporary), BMP C206: Level Spreader, and a pumping system with surface intake. Vegetative filtration improves turbidity levels of stormwater discharges by filtering runoff through existing vegetation where undisturbed forest floor duff layer or established lawn with thatch layer are present. Vegetative filtration can also be used to infiltrate dewatering waste from foundations, vaults, and trenches as long as runoff does not occur.

Conditions of Use

- For every 5 acres of disturbed soil, use 1 acre of grass field, farm pasture, or wooded area. Reduce or increase this area depending on project size, groundwater table height, and other site conditions.
- Wetlands shall not be used for vegetative filtration.
- Do not use this BMP in areas with a high groundwater table, or in areas that will have a high seasonal groundwater table during the use of this BMP.
- This BMP may be less effective on soils that prevent the infiltration of the water, such as hard till.
- Using other effective source control measures throughout a construction site will prevent the generation of additional highly turbid water and may reduce the time period or area need for this BMP.
- Stop distributing water into the vegetated filtration area if standing water or erosion results.

Construction Stormwater Site Inspection Form

Project Name _____ Permit # _____ Inspection Date _____ Time _____

Name of Certified Erosion Sediment Control Lead (CESCL) or qualified inspector if *less than one acre*
Print Name: _____

Approximate rainfall amount since the last inspection (in inches): _____

Approximate rainfall amount in the last 24 hours (in inches): _____

Current Weather Clear ☐ Cloudy ☐ Mist ☐ Rain ☐ Wind ☐ Fog ☐

A. Type of inspection: Weekly ☐ Post Storm Event ☐ Other ☐

B. Phase of Active Construction (*check all that apply*):

Pre Construction/installation of erosion/sediment controls	☐	Clearing/Demo/Grading	☐	Infrastructure/storm/roads	☐
Concrete pours	☐	Vertical Construction/buildings	☐	Utilities	☐
Offsite improvements	☐	Site temporary stabilized	☐	Final stabilization	☐

C. Questions:

1. Were all areas of construction and discharge points inspected? Yes ___ No ___
2. Did you observe the presence of suspended sediment, turbidity, discoloration, or oil sheen Yes ___ No ___
3. Was a water quality sample taken during inspection? (*refer to permit conditions S4 & S5*) Yes ___ No ___
4. Was there a turbid discharge 250 NTU or greater, or Transparency 6 cm or less?* Yes ___ No ___
5. If yes to #4 was it reported to Ecology? Yes ___ No ___
6. Is pH sampling required? pH range required is 6.5 to 8.5. Yes ___ No ___

If answering yes to a discharge, describe the event. Include when, where, and why it happened; what action was taken, and when.

_____

_____

_____

_____

*If answering yes to # 4 record NTU/Transparency with continual sampling daily until turbidity is 25 NTU or less/ transparency is 33 cm or greater.

Sampling Results: Date: _____

Parameter	Method (circle one)	Result			Other/Note
		NTU	cm	pH	
Turbidity	tube, meter, laboratory				
pH	Paper, kit, meter				

Construction Stormwater Site Inspection Form

D. Check the observed status of all items. Provide "Action Required "details and dates.

Element #	Inspection	BMPs Inspected			BMP needs maintenance	BMP failed	Action required (describe in section F)
		yes	no	n/a			
1 Clearing Limits	Before beginning land disturbing activities are all clearing limits, natural resource areas (streams, wetlands, buffers, trees) protected with barriers or similar BMPs? (high visibility recommended)						
2 Construction Access	Construction access is stabilized with quarry spalls or equivalent BMP to prevent sediment from being tracked onto roads?						
	Sediment tracked onto the road way was cleaned thoroughly at the end of the day or more frequent as necessary.						
3 Control Flow Rates	Are flow control measures installed to control stormwater volumes and velocity during construction and do they protect downstream properties and waterways from erosion?						
	If permanent infiltration ponds are used for flow control during construction, are they protected from siltation?						
4 Sediment Controls	All perimeter sediment controls (e.g. silt fence, wattles, compost socks, berms, etc.) installed, and maintained in accordance with the Stormwater Pollution Prevention Plan (SWPPP).						
	Sediment control BMPs (sediment ponds, traps, filters etc.) have been constructed and functional as the first step of grading.						
	Stormwater runoff from disturbed areas is directed to sediment removal BMP.						
5 Stabilize Soils	Have exposed un-worked soils been stabilized with effective BMP to prevent erosion and sediment deposition?						

Construction Stormwater Site Inspection Form

Element #	Inspection	BMPs Inspected			BMP needs maintenance	BMP failed	Action required (describe in section F)
		yes	no	n/a			
5 Stabilize Soils Cont.	Are stockpiles stabilized from erosion, protected with sediment trapping measures and located away from drain inlet, waterways, and drainage channels?						
	Have soils been stabilized at the end of the shift, before a holiday or weekend if needed based on the weather forecast?						
6 Protect Slopes	Has stormwater and ground water been diverted away from slopes and disturbed areas with interceptor dikes, pipes and or swales?						
	Is off-site storm water managed separately from stormwater generated on the site?						
	Is excavated material placed on uphill side of trenches consistent with safety and space considerations?						
	Have check dams been placed at regular intervals within constructed channels that are cut down a slope?						
7 Drain Inlets	Storm drain inlets made operable during construction are protected.						
	Are existing storm drains within the influence of the project protected?						
8 Stabilize Channel and Outlets	Have all on-site conveyance channels been designed, constructed and stabilized to prevent erosion from expected peak flows?						
	Is stabilization, including armoring material, adequate to prevent erosion of outlets, adjacent stream banks, slopes and downstream conveyance systems?						
9 Control Pollutants	Are waste materials and demolition debris handled and disposed of to prevent contamination of stormwater?						
	Has cover been provided for all chemicals, liquid products, petroleum products, and other material?						
	Has secondary containment been provided capable of containing 110% of the volume?						
	Were contaminated surfaces cleaned immediately after a spill incident?						
	Were BMPs used to prevent contamination of stormwater by a pH modifying sources?						

Construction Stormwater Site Inspection Form

Element #	Inspection	BMPs Inspected			BMP needs maintenance	BMP failed	Action required (describe in section F)
		yes	no	n/a			
9 Cont.	Wheel wash wastewater is handled and disposed of properly.						
10 Control Dewatering	Concrete washout in designated areas. No washout or excess concrete on the ground.						
	Dewatering has been done to an approved source and in compliance with the SWPPP.						
	Were there any clean non turbid dewatering discharges?						
11 Maintain BMP	Are all temporary and permanent erosion and sediment control BMPs maintained to perform as intended?						
12 Manage the Project	Has the project been phased to the maximum degree practicable?						
	Has regular inspection, monitoring and maintenance been performed as required by the permit?						
	Has the SWPPP been updated, implemented and records maintained?						
13 Protect LID	Is all Bioretention and Rain Garden Facilities protected from sedimentation with appropriate BMPs?						
	Is the Bioretention and Rain Garden protected against over compaction of construction equipment and foot traffic to retain its infiltration capabilities?						
	Permeable pavements are clean and free of sediment and sediment laden-water runoff. Muddy construction equipment has not been on the base material or pavement.						
	Have soiled permeable pavements been cleaned of sediments and pass infiltration test as required by stormwater manual methodology?						
	Heavy equipment has been kept off existing soils under LID facilities to retain infiltration rate.						

E. Check all areas that have been inspected. ✔

All in place BMPs ☐ All disturbed soils ☐ All concrete wash out area ☐ All material storage areas ☐
All discharge locations ☐ All equipment storage areas ☐ All construction entrances/exits ☐

F. Elements checked "Action Required" (section D) describe corrective action to be taken. List the element number; be specific on location and work needed. Document, initial, and date when the corrective action has been completed and inspected.

Element #	Description and Location	Action Required	Completion Date	Initials

Attach additional page if needed

Sign the following certification:

"I certify that this report is true, accurate, and complete, to the best of my knowledge and belief"

Inspected by: (print) _____ (Signature) _____ Date: _____

Title/Qualification of Inspector: _____

Issuance Date: November 18, 2020
Effective Date: January 1, 2021
Expiration Date: December 31, 2025

CONSTRUCTION STORMWATER GENERAL PERMIT

National Pollutant Discharge Elimination System (NPDES) and State Waste Discharge General Permit for Stormwater Discharges Associated with Construction Activity

State of Washington
Department of Ecology
Olympia, Washington 98504

In compliance with the provisions of
Chapter 90.48 Revised Code of Washington
(State of Washington Water Pollution Control Act)
and
Title 33 United States Code, Section 1251 et seq.
The Federal Water Pollution Control Act (The Clean Water Act)

Until this permit expires, is modified, or revoked, Permittees that have properly obtained coverage under this general permit are authorized to discharge in accordance with the special and general conditions that follow.

Vincent McGowan, P.E.
Water Quality Program Manager
Washington State Department of Ecology

TABLE OF CONTENTS

LIST OF TABLES

SUMMARY OF PERMIT REPORT SUBMITTALS

Refer to the Special and General Conditions within this permit for additional submittal requirements. Appendix A provides a list of definitions. Appendix B provides a list of acronyms.

Table 1 Summary of Required Submittals

Permit Section	Submittal	Frequency	First Submittal Date
S5.A and S8	High Turbidity/Transparency Phone Reporting	As Necessary	Within 24 hours
S5.B	Discharge Monitoring Report	Monthly*	Within 15 days following the end of each month
S5.F and S8	Noncompliance Notification – Telephone Notification	As necessary	Within 24 hours
S5.F	Noncompliance Notification – Written Report	As necessary	Within 5 Days of non-compliance
S9.D	Request for Chemical Treatment Form	As necessary	Written approval from Ecology is required prior to using chemical treatment (with the exception of dry ice, CO_2 or food grade vinegar to adjust pH)
G2	Notice of Change in Authorization	As necessary	
G6	Permit Application for Substantive Changes to the Discharge	As necessary	
G8	Application for Permit Renewal	1/permit cycle	No later than 180 days before expiration
S2.A	Notice of Permit Transfer	As necessary	
G19	Notice of Planned Changes	As necessary	
G21	Reporting Anticipated Non-compliance	As necessary	

NOTE: *Permittees must submit electronic Discharge Monitoring Reports (DMRs) to the Washington State Department of Ecology monthly, regardless of site discharge, for the full duration of permit coverage. Refer to Section S5.B of this General Permit for more specific information regarding DMRs.

Table 2 Summary of Required On-site Documentation

Document Title	Permit Conditions
Permit Coverage Letter	See Conditions S2, S5
Construction Stormwater General Permit (CSWGP)	See Conditions S2, S5
Site Log Book	See Conditions S4, S5
Stormwater Pollution Prevention Plan (SWPPP)	See Conditions S5, S9
Site Map	See Conditions S5, S9

SPECIAL CONDITIONS

S1. PERMIT COVERAGE

A. Permit Area

This Construction Stormwater General Permit (CSWGP) covers all areas of Washington State, except for federal operators and Indian Country as specified in Special Condition S1.E.3 and 4.

B. Operators Required to Seek Coverage Under this General Permit

1. Operators of the following construction activities are required to seek coverage under this CSWGP:

    a. Clearing, grading and/or excavation that results in the disturbance of one or more acres (including off-site disturbance acreage related to construction-support activity as authorized in S1.C.2) and discharges stormwater to surface waters of the State; and clearing, grading and/or excavation on sites smaller than one acre that are part of a larger common plan of development or sale, if the common plan of development or sale will ultimately disturb one acre or more and discharge stormwater to surface waters of the State.

        i. This category includes forest practices (including, but not limited to, class IV conversions) that are part of a construction activity that will result in the disturbance of one or more acres, and discharge to surface waters of the State (that is, forest practices that prepare a site for construction activities); and

    b. Any size construction activity discharging stormwater to waters of the State that the Washington State Department of Ecology (Ecology):

        i. Determines to be a significant contributor of pollutants to waters of the State of Washington.

        ii. Reasonably expects to cause a violation of any water quality standard.

2. Operators of the following activities are not required to seek coverage under this CSWGP (unless specifically required under Special Condition S1.B.1.b, above):

    a. Construction activities that discharge all stormwater and non-stormwater to groundwater, sanitary sewer, or combined sewer, and have no point source discharge to either surface water or a storm sewer system that drains to surface waters of the State.

    b. Construction activities covered under an Erosivity Waiver (Special Condition S1.F).

    c. Routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

C. Authorized Discharges

1. ***Stormwater Associated with Construction Activity.*** Subject to compliance with the terms and conditions of this permit, Permittees are authorized to discharge stormwater associated with construction activity to surface waters of the State or to a storm sewer system that drains to surface waters of the State. (Note that "surface waters of the

State" may exist on a construction site as well as off site; for example, a creek running through a site.)

2. ***Stormwater Associated with Construction Support Activity.*** This permit also authorizes stormwater discharge from support activities related to the permitted construction site (for example, an on-site portable rock crusher, off-site equipment staging yards, material storage areas, borrow areas, etc.) provided:

    a. The support activity relates directly to the permitted construction site that is required to have an NPDES permit; and

    b. The support activity is not a commercial operation serving multiple unrelated construction projects, and does not operate beyond the completion of the construction activity; and

    c. Appropriate controls and measures are identified in the Stormwater Pollution Prevention Plan (SWPPP) for the discharges from the support activity areas.

3. ***Non-Stormwater Discharges.*** The categories and sources of non-stormwater discharges identified below are authorized conditionally, provided the discharge is consistent with the terms and conditions of this permit:

    a. Discharges from fire-fighting activities.

    b. Fire hydrant system flushing.

    c. Potable water, including uncontaminated water line flushing.

    d. Hydrostatic test water.

    e. Uncontaminated air conditioning or compressor condensate.

    f. Uncontaminated groundwater or spring water.

    g. Uncontaminated excavation dewatering water (in accordance with S9.D.10).

    h. Uncontaminated discharges from foundation or footing drains.

    i. Uncontaminated or potable water used to control dust. Permittees must minimize the amount of dust control water used.

    j. Routine external building wash down that does not use detergents.

    k. Landscape irrigation water.

The SWPPP must adequately address all authorized non-stormwater discharges, except for discharges from fire-fighting activities, and must comply with Special Condition S3. At a minimum, discharges from potable water (including water line flushing), fire hydrant system flushing, and pipeline hydrostatic test water must undergo the following: dechlorination to a concentration of 0.1 parts per million (ppm) or less, and pH adjustment to within 6.5 – 8.5 standard units (su), if necessary.

D. Prohibited Discharges

The following discharges to waters of the State, including groundwater, are prohibited:

1. Concrete wastewater

2. Wastewater from washout and clean-up of stucco, paint, form release oils, curing compounds and other construction materials.

3. Process wastewater as defined by 40 Code of Federal Regulations (CFR) 122.2 (See Appendix A of this permit).

4. Slurry materials and waste from shaft drilling, including process wastewater from shaft drilling for construction of building, road, and bridge foundations unless managed according to Special Condition S9.D.9.j.

5. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance.

6. Soaps or solvents used in vehicle and equipment washing.

7. Wheel wash wastewater, unless managed according to Special Condition S9.D.9.

8. Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, unless managed according to Special Condition S9.D.10.

E. Limits on Coverage

Ecology may require any discharger to apply for and obtain coverage under an individual permit or another more specific general permit. Such alternative coverage will be required when Ecology determines that this CSWGP does not provide adequate assurance that water quality will be protected, or there is a reasonable potential for the project to cause or contribute to a violation of water quality standards.

The following stormwater discharges are not covered by this permit:

1. Post-construction stormwater discharges that originate from the site after completion of construction activities and the site has undergone final stabilization.

2. Non-point source silvicultural activities such as nursery operations, site preparation, reforestation and subsequent cultural treatment, thinning, prescribed burning, pest and fire control, harvesting operations, surface drainage, or road construction and maintenance, from which there is natural runoff as excluded in 40 CFR Subpart 122.

3. Stormwater from any federal operator.

4. Stormwater from facilities located on ***Indian Country*** as defined in 18 U.S.C.§1151, except portions of the Puyallup Reservation as noted below.

   Indian Country includes:

   a. All land within any Indian Reservation notwithstanding the issuance of any patent, and, including rights-of-way running through the reservation. This includes all federal, tribal, and Indian and non-Indian privately owned land within the reservation.

   b. All off-reservation Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same.

   c. All off-reservation federal trust lands held for Native American Tribes.

Puyallup Exception: Following the *Puyallup Tribes of Indians Land Settlement Act of 1989*, 25 U.S.C. §1773; the permit does apply to land within the Puyallup Reservation except for discharges to surface water on land held in trust by the federal government.

5. Stormwater from any site covered under an existing NPDES individual permit in which stormwater management and/or treatment requirements are included for all stormwater discharges associated with construction activity.

6. Stormwater from a site where an applicable Total Maximum Daily Load (TMDL) requirement specifically precludes or prohibits discharges from construction activity.

F. Erosivity Waiver

Construction site operators may qualify for an Erosivity Waiver from the CSWGP if the following conditions are met:

1. The site will result in the disturbance of fewer than five (5) acres and the site is not a portion of a common plan of development or sale that will disturb five (5) acres or greater.

2. Calculation of Erosivity "R" Factor and Regional Timeframe:

    a. The project's calculated rainfall erosivity factor ("R" Factor) must be less than five (5) during the period of construction activity, (See the CSWGP homepage http://www.ecy.wa.gov/programs/wq/stormwater/construction/index.html for a link to the EPA's calculator and step by step instructions on computing the "R" Factor in the *EPA Erosivity Waiver Fact Sheet*). The period of construction activity starts when the land is first disturbed and ends with final stabilization. In addition:

    b. The entire period of construction activity must fall within the following timeframes:

        i. For sites west of the Cascades Crest: June 15 – September 15.

        ii. For sites east of the Cascades Crest, excluding the Central Basin: June 15 – October 15.

        iii. For sites east of the Cascades Crest, within the Central Basin: no timeframe restrictions apply. The Central Basin is defined as the portions of Eastern Washington with mean annual precipitation of less than 12 inches. For a map of the Central Basin (Average Annual Precipitation Region 2), refer to: http://www.ecy.wa.gov/programs/wq/stormwater/construction/resourcesguidance.html.

3. Construction site operators must submit a complete Erosivity Waiver certification form at least one week before disturbing the land. Certification must include statements that the operator will:

    a. Comply with applicable local stormwater requirements; and

    b. Implement appropriate erosion and sediment control BMPs to prevent violations of water quality standards.

4. This waiver is not available for facilities declared significant contributors of pollutants as defined in Special Condition S1.B.1.b or for any size construction activity that could

reasonably expect to cause a violation of any water quality standard as defined in Special Condition S1.B.1.b.ii.

5. This waiver does not apply to construction activities which include non-stormwater discharges listed in Special Condition S1.C.3.

6. If construction activity extends beyond the certified waiver period for any reason, the operator must either:

    a. Recalculate the rainfall erosivity "R" factor using the original start date and a new projected ending date and, if the "R" factor is still under 5 *and* the entire project falls within the applicable regional timeframe in Special Condition S1.F.2.b, complete and submit an amended waiver certification form before the original waiver expires; *or*

    b. Submit a complete permit application to Ecology in accordance with Special Condition S2.A and B before the end of the certified waiver period.

S2. APPLICATION REQUIREMENTS

A. Permit Application Forms

1. *Notice of Intent Form*

a. Operators of new or previously unpermitted construction activities must submit a complete and accurate permit application (Notice of Intent, or NOI) to Ecology.

b. Operators must apply using the electronic application form (NOI) available on Ecology's website (http://ecy.wa.gov/programs/wq/stormwater/construction/index.html). Permittees unable to submit electronically (for example, those who do not have an internet connection) must contact Ecology to request a waiver and obtain instructions on how to obtain a paper NOI.

> Department of Ecology
> Water Quality Program - Construction Stormwater
> PO Box 47696
> Olympia, Washington 98504-7696

c. The operator must submit the NOI at least 60 days before discharging stormwater from construction activities and must submit it prior to the date of the first public notice (See Special Condition S2.B, below, for details). The 30-day public comment period begins on the publication date of the second public notice. Unless Ecology responds to the complete application in writing, coverage under the general permit will automatically commence on the 31st day following receipt by Ecology of a *completed* NOI, or the issuance date of this permit, whichever is later; unless Ecology specifies a later date in writing as required by WAC173-226-200(2). See S8.B for Limits on Coverage for New Discharges to TMDL or 303(d)-Listed Waters.

d. If an applicant intends to use a Best Management Practice (BMP) selected on the basis of Special Condition S9.C.4 ("demonstrably equivalent" BMPs), the applicant must notify Ecology of its selection as part of the NOI. In the event the applicant selects BMPs after submission of the NOI, the applicant must provide notice of the

selection of an equivalent BMP to Ecology at least 60 days before intended use of the equivalent BMP.

e. Applicants must notify Ecology if they are aware of contaminated soils and/or groundwater associated with the construction activity. Provide detailed information with the NOI (as known and readily available) on the nature and extent of the contamination (concentrations, locations, and depth), as well as pollution prevention and/or treatment BMPs proposed to control the discharge of soil and/or groundwater contaminants in stormwater. Examples of such detail may include, but are not limited to:

   i. List or table of all known contaminants with laboratory test results showing concentration and depth,

   ii. Map with sample locations,

   iii. Related portions of the Stormwater Pollution Prevention Plan (SWPPP) that address the management of contaminated and potentially contaminated construction stormwater and dewatering water,

   iv. Dewatering plan and/or dewatering contingency plan.

2. ***Transfer of Coverage Form***

The Permittee can transfer current coverage under this permit to one or more new operators, including operators of sites within a Common Plan of Development, provided:

   i. The Permittee submits a complete Transfer of Coverage Form to Ecology, signed by the current and new discharger and containing a specific date for transfer of permit responsibility, coverage and liability (including any Administrative Orders associated with the permit); and

   ii. Ecology does not notify the current discharger and new discharger of intent to revoke coverage under the general permit. If this notice is not given, the transfer is effective on the date specified in the written agreement.

When a current discharger (Permittee) transfers a portion of a permitted site, the current discharger must also indicate the remaining permitted acreage after the transfer. Transfers do not require public notice.

3. ***Modification of Coverage Form***

Permittees must notify Ecology regarding any changes to the information provided on the NOI by submitting an Update/Modification of Permit Coverage form in accordance with General Conditions G6 and G19. Examples of such changes include, but are not limited to:

   i. Changes to the Permittee's mailing address,

   ii. Changes to the on-site contact person information, and

   iii. Changes to the area/acreage affected by construction activity.

B. Public Notice

For new or previously unpermitted construction activities, the applicant must publish a public notice at least one time each week for two consecutive weeks, at least 7 days apart, in a newspaper with general circulation in the county where the construction is to take place. The notice must be run after the NOI has been submitted and must contain:

1. A statement that "*The applicant is seeking coverage under the Washington State Department of Ecology's Construction Stormwater NPDES and State Waste Discharge General Permit*."
2. The name, address, and location of the construction site.
3. The name and address of the applicant.
4. The type of construction activity that will result in a discharge (for example, residential construction, commercial construction, etc.), and the total number of acres to be disturbed over the lifetime of the project.
5. The name of the receiving water(s) (that is, the surface water(s) to which the site will discharge), or, if the discharge is through a storm sewer system, the name of the operator of the system and the receiving water(s) the system discharges to.
6. The statement: *Any persons desiring to present their views to the Washington State Department of Ecology regarding this application, or interested in Ecology's action on this application, may notify Ecology in writing no later than 30 days of the last date of publication of this notice. Ecology reviews public comments and considers whether discharges from this project would cause a measurable change in receiving water quality, and, if so, whether the project is necessary and in the overriding public interest according to Tier II antidegradation requirements under WAC 173-201A-320. Comments can be submitted to: Department of Ecology, PO Box 47696, Olympia, Washington 98504-7696 Attn: Water Quality Program, Construction Stormwater*.

S3. COMPLIANCE WITH STANDARDS

A. Discharges must not cause or contribute to a violation of surface water quality standards (Chapter 173-201A WAC), groundwater quality standards (Chapter 173-200 WAC), sediment management standards (Chapter 173-204 WAC), and human health-based criteria in the Federal water quality criteria applicable to Washington. (40 CFR Part 131.45) Discharges that are not in compliance with these standards are prohibited.

B. Prior to the discharge of stormwater and non-stormwater to waters of the State, the Permittee must apply All Known, Available, and Reasonable methods of prevention, control, and Treatment (AKART). This includes the preparation and implementation of an adequate SWPPP, with all appropriate BMPs installed and maintained in accordance with the SWPPP and the terms and conditions of this permit.

C. Ecology presumes that a Permittee complies with water quality standards unless discharge monitoring data or other site-specific information demonstrates that a discharge causes or contributes to a violation of water quality standards, when the Permittee complies with the following conditions. The Permittee must fully:

1. Comply with all permit conditions, including; planning, sampling, monitoring, reporting, and recordkeeping conditions.

2. Implement stormwater BMPs contained in stormwater management manuals published or approved by Ecology, or BMPs that are demonstrably equivalent to BMPs contained in stormwater management manuals published or approved by Ecology, including the proper selection, implementation, and maintenance of all applicable and appropriate BMPs for on-site pollution control. (For purposes of this section, the stormwater manuals listed in Appendix 10 of the *Phase I Municipal Stormwater Permit* are approved by Ecology.)

D. Where construction sites also discharge to groundwater, the groundwater discharges must also meet the terms and conditions of this CSWGP. Permittees who discharge to groundwater through an injection well must also comply with any applicable requirements of the Underground Injection Control (UIC) regulations, Chapter 173-218 WAC.

S4. MONITORING REQUIREMENTS, BENCHMARKS, AND REPORTING TRIGGERS

A. Site Log Book

The Permittee must maintain a site log book that contains a record of the implementation of the SWPPP and other permit requirements, including the installation and maintenance of BMPs, site inspections, and stormwater monitoring.

B. Site Inspections

Construction sites one (1) acre or larger that discharge stormwater to surface waters of the State must have site inspections conducted by a Certified Erosion and Sediment Control Lead (CESCL). Sites less than one (1) acre may have a person without CESCL certification conduct inspections. (See Special Conditions S4.B.3 and B.4, below, for detailed requirements of the Permittee's CESCL.)

Site inspections must include all areas disturbed by construction activities, all BMPs, and all stormwater discharge points under the Permittee's operational control.

1. The Permittee must have staff knowledgeable in the principles and practices of erosion and sediment control. The CESCL (sites one acre or more) or inspector (sites less than one acre) must have the skills to assess the:

    a. Site conditions and construction activities that could impact the quality of stormwater; and

    b. Effectiveness of erosion and sediment control measures used to control the quality of stormwater discharges. The SWPPP must identify the CESCL or inspector, who must be present on site or on-call at all times. The CESCL (sites one (1) acre or more) must obtain this certification through an approved erosion and sediment control training program that meets the minimum training standards established by Ecology. (See BMP C160 in the manual, referred to in Special Condition S9.C.1 and 2.)

2. The CESCL or inspector must examine stormwater visually for the presence of suspended sediment, turbidity, discoloration, and oil sheen. BMP effectiveness must be evaluated to

determine if it is necessary to install, maintain, or repair BMPs to improve the quality of stormwater discharges.

Based on the results of the inspection, the Permittee must correct the problems identified, by:

a. Reviewing the SWPPP for compliance with Special Condition S9 and making appropriate revisions within 7 days of the inspection.

b. Immediately beginning the process of fully implementing and maintaining appropriate source control and/or treatment BMPs, within 10 days of the inspection. If installation of necessary treatment BMPs is not feasible within 10 days, Ecology may approve additional time when an extension is requested by a Permittee within the initial 10-day response period.

c. Documenting BMP implementation and maintenance in the site log book.

3. The CESCL or inspector must inspect all areas disturbed by construction activities, all BMPs, and all stormwater discharge points at least once every calendar week and within 24 hours of any discharge from the site. (For purposes of this condition, individual discharge events that last more than one (1) day do not require daily inspections. For example, if a stormwater pond discharges continuously over the course of a week, only one (1) inspection is required that week.) Inspection frequency may be reduced to once every calendar month for inactive sites that are temporarily stabilized.

4. The Permittee must summarize the results of each inspection in an inspection report or checklist and enter the report/checklist into, or attach it to, the site log book. At a minimum, each inspection report or checklist must include:

   a. Inspection date and time.

   b. Weather information.

   c. The general conditions during inspection.

   d. The approximate amount of precipitation since the last inspection.

   e. The approximate amount of precipitation within the last 24 hours.

   f. A summary or list of all implemented BMPs, including observations of all erosion/sediment control structures or practices.

   g. A description of:

      i. BMPs inspected (including location).

      ii. BMPs that need maintenance and why.

      iii. BMPs that failed to operate as designed or intended, and

      iv. Where additional or different BMPs are needed, and why.

   h. A description of stormwater discharged from the site. The Permittee must note the presence of suspended sediment, turbidity, discoloration, and oil sheen, as applicable.

i. Any water quality monitoring performed during inspection.

j. General comments and notes, including a brief description of any BMP repairs, maintenance, or installations made following the inspection.

k. An implementation schedule for the remedial actions that the Permittee plans to take if the site inspection indicates that the site is out of compliance. The remedial actions taken must meet the requirements of the SWPPP and the permit.

l. A summary report of the inspection.

m. The name, title, and signature of the person conducting the site inspection, a phone number or other reliable method to reach this person, and the following statement: *I certify that this report is true, accurate, and complete to the best of my knowledge and belief.*

Table 3 Summary of Primary Monitoring Requirements

Size of Soil Disturbance[1]	Weekly Site Inspections	Weekly Sampling w/ Turbidity Meter	Weekly Sampling w/ Transparency Tube	Weekly pH Sampling[2]	CESCL Required for Inspections?
Sites that disturb less than 1 acre, but are part of a larger Common Plan of Development	Required	Not Required	Not Required	Not Required	No
Sites that disturb 1 acre or more, but fewer than 5 acres	Required	Sampling Required – either method[3]		Required	Yes
Sites that disturb 5 acres or more	Required	Required	Not Required[4]	Required	Yes

[1] Soil disturbance is calculated by adding together all areas that will be affected by construction activity. Construction activity means clearing, grading, excavation, and any other activity that disturbs the surface of the land, including ingress/egress from the site.

[2] If construction activity results in the disturbance of 1 acre or more, and involves significant concrete work (1,000 cubic yards of concrete or recycled concrete placed or poured over the life of a project) or the use of engineered soils (soil amendments including but not limited to Portland cement-treated base [CTB], cement kiln dust [CKD], or fly ash), and stormwater from the affected area drains to surface waters of the State or to a storm sewer stormwater collection system that drains to other surface waters of the State, the Permittee must conduct pH sampling in accordance with Special Condition S4.D.

[3] Sites with one or more acres, but fewer than 5 acres of soil disturbance, must conduct turbidity or transparency sampling in accordance with Special Condition S4.C.4.a or b.

[4] Sites equal to or greater than 5 acres of soil disturbance must conduct turbidity sampling using a turbidity meter in accordance with Special Condition S4.C.4.a.

C. Turbidity/Transparency Sampling Requirements

1. Sampling Methods

    a. If construction activity involves the disturbance of five (5) acres or more, the Permittee must conduct turbidity sampling per Special Condition S4.C.4.a, below.

    b. If construction activity involves one (1) acre or more but fewer than five (5) acres of soil disturbance, the Permittee must conduct either transparency sampling *or* turbidity sampling per Special Condition S4.C.4.a or b, below.

2. Sampling Frequency

    a. The Permittee must sample all discharge points at least once every calendar week when stormwater (or authorized non-stormwater) discharges from the site or enters any on-site surface waters of the state (for example, a creek running through a site); sampling is not required on sites that disturb less than an acre.

    b. Samples must be representative of the flow and characteristics of the discharge.

    c. Sampling is not required when there is no discharge during a calendar week.

    d. Sampling is not required outside of normal working hours or during unsafe conditions.

    e. If the Permittee is unable to sample during a monitoring period, the Permittee must include a brief explanation in the monthly Discharge Monitoring Report (DMR).

    f. Sampling is not required before construction activity begins.

    g. The Permittee may reduce the sampling frequency for temporarily stabilized, inactive sites to once every calendar month.

3. Sampling Locations

    a. Sampling is required at all points where stormwater associated with construction activity (or authorized non-stormwater) is discharged off site, including where it enters any on-site surface waters of the state (for example, a creek running through a site).

    b. The Permittee may discontinue sampling at discharge points that drain areas of the project that are fully stabilized to prevent erosion.

    c. The Permittee must identify all sampling point(s) in the SWPPP and on the site map and clearly mark these points in the field with a flag, tape, stake or other visible marker.

    d. Sampling is not required for discharge that is sent directly to sanitary or combined sewer systems.

    e. The Permittee may discontinue sampling at discharge points in areas of the project where the Permittee no longer has operational control of the construction activity.

4. Sampling and Analysis Methods

   a. The Permittee performs turbidity analysis with a calibrated turbidity meter (turbidimeter) either on site or at an accredited lab. The Permittee must record the results in the site log book in nephelometric turbidity units (NTUs).

   b. The Permittee performs transparency analysis on site with a 1¾ inch diameter, 60 centimeter (cm)-long transparency tube. The Permittee will record the results in the site log book in centimeters (cm).

Table 4 Monitoring and Reporting Requirements

Parameter	Unit	Analytical Method	Sampling Frequency	Benchmark Value
Turbidity	NTU	SM2130	Weekly, if discharging	25 NTUs
Transparency	Cm	Manufacturer instructions, or Ecology guidance	Weekly, if discharging	33 cm

5. Turbidity/Transparency Benchmark Values and Reporting Triggers

   The benchmark value for turbidity is 25 NTUs. The benchmark value for transparency is 33 centimeters (cm). Note: Benchmark values do not apply to discharges to segments of water bodies on Washington State's 303(d) list (Category 5) for turbidity, fine sediment, or phosphorus; these discharges are subject to a numeric effluent limit for turbidity. Refer to Special Condition S8 for more information and follow S5.F – Noncompliance Notification for reporting requirements applicable to discharges which exceed the numeric effluent limit for turbidity.

   a. Turbidity 26 – 249 NTUs, or Transparency 32 – 7 cm:

      If the discharge turbidity is 26 to 249 NTUs; or if discharge transparency is 32 to 7 cm, the Permittee must:

      i. Immediately begin the process to fully implement and maintain appropriate source control and/or treatment BMPs, and no later than 10 days of the date the discharge exceeded the benchmark. If installation of necessary treatment BMPs is not feasible within 10 days, Ecology may approve additional time when the Permittee requests an extension within the initial 10-day response period.

      ii. Review the SWPPP for compliance with Special Condition S9 and make appropriate revisions within 7 days of the date the discharge exceeded the benchmark.

      iii. Document BMP implementation and maintenance in the site log book.

   b. Turbidity 250 NTUs or greater, or Transparency 6 cm or less:

      If a discharge point's turbidity is 250 NTUs or greater, or if discharge transparency is less than or equal to 6 cm, the Permittee must complete the reporting and adaptive

management process described below. For discharges which are subject to a numeric effluent limit for turbidity, see S5.F – Noncompliance Notification.

i. Within 24 hours, telephone or submit an electronic report to the applicable Ecology Region's Environmental Report Tracking System (ERTS) number (or through Ecology's Water Quality Permitting Portal [WQWebPortal] – Permit Submittals when the form is available), in accordance with Special Condition S5.A.

- **Central Region** (Okanogan, Chelan, Douglas, Kittitas, Yakima, Klickitat, Benton): (509) 575-2490
- **Eastern Region** (Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman): (509) 329-3400
- **Northwest Region** (Kitsap, Snohomish, Island, King, San Juan, Skagit, Whatcom): (425) 649-7000
- **Southwest Region** (Grays Harbor, Lewis, Mason, Thurston, Pierce, Clark, Cowlitz, Skamania, Wahkiakum, Clallam, Jefferson, Pacific): (360) 407-6300

These numbers and a link to the ERTS reporting page are also listed at the following website: http://www.ecy.wa.gov/programs/wq/stormwater/construction/index.html.

ii. Immediately begin the process to fully implement and maintain appropriate source control and/or treatment BMPs as soon as possible, addressing the problems within 10 days of the date the discharge exceeded the benchmark. If installation of necessary treatment BMPs is not feasible within 10 days, Ecology may approve additional time when the Permittee requests an extension within the initial 10-day response period.

iii. Sample discharges daily until:

a) Turbidity is 25 NTUs (or lower); or

b) Transparency is 33 cm (or greater); or

c) The Permittee has demonstrated compliance with the water quality standard for turbidity:

1) No more than 5 NTUs over background turbidity, if background is less than 50 NTUs, or

2) No more than 10% over background turbidity, if background is 50 NTUs or greater; or

*Note: background turbidity in the receiving water must be measured immediately upstream (upgradient) or outside of the area of influence of the discharge.

d) The discharge stops or is eliminated.

iv. Review the SWPPP for compliance with Special Condition S9 and make appropriate revisions within seven (7) days of the date the discharge exceeded the benchmark.

v. Document BMP implementation and maintenance in the site log book.

Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with permit benchmarks.

D. pH Sampling Requirements – Significant Concrete Work or Engineered Soils

If construction activity results in the disturbance of 1 acre or more, *and* involves significant concrete work (significant concrete work means greater than 1000 cubic yards placed or poured concrete or recycled concrete used over the life of a project) or the use of engineered soils (soil amendments including but not limited to Portland cement-treated base [CTB], cement kiln dust [CKD], or fly ash), and stormwater from the affected area drains to surface waters of the State or to a storm sewer system that drains to surface waters of the State, the Permittee must conduct pH sampling as set forth below. Note: In addition, discharges to segments of water bodies on Washington State's 303(d) list (Category 5) for high pH are subject to a numeric effluent limit for pH; refer to Special Condition S8.

1. The Permittee must perform pH analysis on site with a calibrated pH meter, pH test kit, or wide range pH indicator paper. The Permittee must record pH sampling results in the site log book.

2. During the applicable pH monitoring period defined below, the Permittee must obtain a representative sample of stormwater and conduct pH analysis at least once per week.

    a. For sites with significant concrete work, the Permittee must begin the pH sampling period when the concrete is first placed or poured and exposed to precipitation, and continue weekly throughout and after the concrete placement, pour and curing period, until stormwater pH is in the range of 6.5 to 8.5 (su).

    b. For sites with recycled concrete where monitoring is required, the Permittee must begin the weekly pH sampling period when the recycled concrete is first exposed to precipitation and must continue until the recycled concrete is fully stabilized with the stormwater pH in the range of 6.5 to 8.5 (su).

    c. For sites with engineered soils, the Permittee must begin the pH sampling period when the soil amendments are first exposed to precipitation and must continue until the area of engineered soils is fully stabilized.

3. The Permittee must sample pH in the sediment trap/pond(s) or other locations that receive stormwater runoff from the area of significant concrete work or engineered soils before the stormwater discharges to surface waters.

4. The benchmark value for pH is 8.5 standard units. Anytime sampling indicates that pH is 8.5 or greater, the Permittee must either:

    a. Prevent the high pH water (8.5 or above) from entering storm sewer systems or surface waters of the state; *or*

    b. If necessary, adjust or neutralize the high pH water until it is in the range of pH 6.5 to 8.5 (su) using an appropriate treatment BMP such as carbon dioxide (CO_2) sparging, dry ice or food grade vinegar. The Permittee must obtain written approval from Ecology before using any form of chemical treatment other than CO_2 sparging, dry ice or food grade vinegar.

S5. REPORTING AND RECORDKEEPING REQUIREMENTS

A. High Turbidity Reporting

Anytime sampling performed in accordance with Special Condition S4.C indicates turbidity has reached the 250 NTUs or more (or transparency less than or equal to 6 cm), high turbidity reporting level, the Permittee must notify Ecology within 24 hours of analysis either by calling the applicable Ecology Region's Environmental Report Tracking System (ERTS) number by phone or by submitting an electronic ERTS report (through Ecology's Water Quality Permitting Portal (WQWebPortal) – Permit Submittals when the form is available). See the CSWGP website for links to ERTS and the WQWebPortal. (http://www.ecy.wa.gov/programs/wq/stormwater/construction/index.html) Also, see phone numbers in Special Condition S4.C.5.b.i.

B. Discharge Monitoring Reports (DMRs)

Permittees required to conduct water quality sampling in accordance with Special Conditions S4.C (Turbidity/Transparency), S4.D (pH), S8 (303[d]/TMDL sampling), and/or G12 (Additional Sampling) must submit the results to Ecology.

Permittees must submit monitoring data using Ecology's WQWebDMR web application accessed through Ecology's Water Quality Permitting Portal.

Permittees unable to submit electronically (for example, those who do not have an internet connection) must contact Ecology to request a waiver and obtain instructions on how to obtain a paper copy DMR at:

Department of Ecology
Water Quality Program - Construction Stormwater
PO Box 47696
Olympia, WA 98504-7696

Permittees who obtain a waiver not to use WQWebDMR must use the forms provided to them by Ecology; submittals must be mailed to the address above. Permittees must submit DMR forms to be received by Ecology within 15 days following the end of each month.

If there was no discharge during a given monitoring period, all Permittees must submit a DMR as required with "no discharge" entered in place of the monitoring results. DMRs are required for the full duration of permit coverage (from the first full month following the effective date of permit coverage up until Ecology has approved termination of the coverage). For more information, contact Ecology staff using information provided at the following website: www.ecy.wa.gov/programs/wq/permits/paris/contacts.html.

C. Records Retention

The Permittee must retain records of all monitoring information (site log book, sampling results, inspection reports/checklists, etc.), Stormwater Pollution Prevention Plan, copy of the permit coverage letter (including Transfer of Coverage documentation) and any other documentation of compliance with permit requirements for the entire life of the construction project and for a minimum of five (5) years following the termination of permit coverage. Such information must include all calibration and maintenance records, and records of all data used to complete the application for this permit. This period of retention must be extended during

the course of any unresolved litigation regarding the discharge of pollutants by the Permittee or when requested by Ecology.

D. Recording Results

For each measurement or sample taken, the Permittee must record the following information:

1. Date, place, method, and time of sampling or measurement.
2. The first and last name of the individual who performed the sampling or measurement.
3. The date(s) the analyses were performed.
4. The first and last name of the individual who performed the analyses.
5. The analytical techniques or methods used.
6. The results of all analyses.

E. Additional Monitoring by the Permittee

If the Permittee samples or monitors any pollutant more frequently than required by this permit using test procedures specified by Special Condition S4 of this permit, the sampling results for this monitoring must be included in the calculation and reporting of the data submitted in the Permittee's DMR.

F. Noncompliance Notification

In the event the Permittee is unable to comply with any part of the terms and conditions of this permit, and the resulting noncompliance may cause a threat to human health or the environment (such as but not limited to spills or fuels or other materials, catastrophic pond or slope failure, and discharges that violate water quality standards), or exceed numeric effluent limitations (see S8 – Discharges to 303(d) or TMDL Waterbodies), the Permittee must, upon becoming aware of the circumstance:

1. Notify Ecology within 24 hours of the failure to comply by calling the applicable Regional office ERTS phone number (refer to Special Condition S4.C.5.b.i, or go to https://ecology.wa.gov/About-us/Get-involved/Report-an-environmental-issue to find contact information for the regional offices.)
2. Immediately take action to prevent the discharge/pollution, or otherwise stop or correct the noncompliance, and, if applicable, repeat sampling and analysis of any noncompliance immediately and submit the results to Ecology within five (5) days of becoming aware of the violation (See S5.F.3, below, for details on submitting results in a report).
3. Submit a detailed written report to Ecology within five (5) days of the time the Permittee becomes aware of the circumstances, unless requested earlier by Ecology. The report must be submitted using Ecology's Water Quality Permitting Portal (WQWebPortal) – Permit Submittals, unless a waiver from electronic reporting has been granted according to S5.B. The report must contain a description of the noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

The Permittee must report any unanticipated bypass and/or upset that exceeds any effluent limit in the permit in accordance with the 24-hour reporting requirement contained in 40 C.F.R. 122.41(l)(6).

Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or the resulting liability for failure to comply. Upon request of the Permittee, Ecology may waive the requirement for a written report on a case-by-case basis, if the immediate notification is received by Ecology within 24 hours.

G. Access to Plans and Records

1. The Permittee must retain the following permit documentation (plans and records) on site, or within reasonable access to the site, for use by the operator or for on-site review by Ecology or the local jurisdiction:

    a. General Permit

    b. Permit Coverage Letter

    c. Stormwater Pollution Prevention Plan (SWPPP)

    d. Site Log Book

    e. Erosivity Waiver (if applicable)

2. The Permittee must address written requests for plans and records listed above (Special Condition S5.G.1) as follows:

    a. The Permittee must provide a copy of plans and records to Ecology within 14 days of receipt of a written request from Ecology.

    b. The Permittee must provide a copy of plans and records to the public when requested in writing. Upon receiving a written request from the public for the Permittee's plans and records, the Permittee must either:

        i. Provide a copy of the plans and records to the requester within 14 days of a receipt of the written request; *or*

        ii. Notify the requester within 10 days of receipt of the written request of the location and times within normal business hours when the plans and records may be viewed; and provide access to the plans and records within 14 days of receipt of the written request; *or*

            Within 14 days of receipt of the written request, the Permittee may submit a copy of the plans and records to Ecology for viewing and/or copying by the requester at an Ecology office, or a mutually agreed location. If plans and records are viewed and/or copied at a location other than at an Ecology office, the Permittee will provide reasonable access to copying services for which a reasonable fee may be charged. The Permittee must notify the requester within 10 days of receipt of the request where the plans and records may be viewed and/or copied.

S6. PERMIT FEES

The Permittee must pay permit fees assessed by Ecology. Fees for stormwater discharges covered under this permit are established by Chapter 173-224 WAC. Ecology continues to assess permit fees until the permit is terminated in accordance with Special Condition S10 or revoked in accordance with General Condition G5.

S7. SOLID AND LIQUID WASTE DISPOSAL

The Permittee must handle and dispose of solid and liquid wastes generated by construction activity, such as demolition debris, construction materials, contaminated materials, and waste materials from maintenance activities, including liquids and solids from cleaning catch basins and other stormwater facilities, in accordance with:

A. Special Condition S3, Compliance with Standards.

B. WAC 173-216-110.

C. Other applicable regulations.

S8. DISCHARGES TO 303(d) OR TMDL WATERBODIES

A. Sampling and Numeric Effluent Limits For Certain Discharges to 303(d)-Listed Water Bodies

1. Permittees who discharge to segments of water bodies listed as impaired by the State of Washington under Section 303(d) of the Clean Water Act for turbidity, fine sediment, high pH, or phosphorus, must conduct water quality sampling according to the requirements of this section, and Special Conditions S4.C.2.b-f and S4.C.3.b-d, and must comply with the applicable numeric effluent limitations in S8.C and S8.D.

2. All references and requirements associated with Section 303(d) of the Clean Water Act mean the most current listing by Ecology of impaired waters (Category 5) that exists on January 1, 2021, or the date when the operator's complete permit application is received by Ecology, whichever is later.

B. Limits on Coverage for New Discharges to TMDL or 303(d)-Listed Waters

Construction sites that discharge to a TMDL or 303(d)-listed waterbody are not eligible for coverage under this permit *unless* the operator:

1. Prevents exposing stormwater to pollutants for which the waterbody is impaired, and retains documentation in the SWPPP that details procedures taken to prevent exposure on site; *or*

2. Documents that the pollutants for which the waterbody is impaired are not present at the site, and retains documentation of this finding within the SWPPP; *or*

3. Provides Ecology with data indicating the discharge is not expected to cause or contribute to an exceedance of a water quality standard, and retains such data on site with the SWPPP. The operator must provide data and other technical information to Ecology that sufficiently demonstrate:

    a. For discharges to waters without an EPA-approved or -established TMDL, that the discharge of the pollutant for which the water is impaired will meet in-stream water quality criteria at the point of discharge to the waterbody; *or*

    b. For discharges to waters with an EPA-approved or -established TMDL, that there is sufficient remaining wasteload allocation in the TMDL to allow construction stormwater discharge and that existing dischargers to the waterbody are subject to compliance schedules designed to bring the waterbody into attainment with water quality standards.

    Operators of construction sites are eligible for coverage under this permit only after Ecology makes an affirmative determination that the *discharge will not cause or contribute to the existing impairment or exceed the TMDL.*

C. Sampling and Numeric Effluent Limits for Discharges to Water Bodies on the 303(d) List for Turbidity, Fine Sediment, or Phosphorus

1. Permittees who discharge to segments of water bodies on the 303(d) list (Category 5) for turbidity, fine sediment, or phosphorus must conduct turbidity sampling in accordance with Special Condition S4.C.2 and comply with either of the numeric effluent limits noted in Table 5 below.

2. As an alternative to the 25 NTUs effluent limit noted in Table 5 below (applied at the point where stormwater [or authorized non-stormwater] is discharged off-site), Permittees may choose to comply with the surface water quality standard for turbidity. The standard is: no more than 5 NTUs over background turbidity when the background turbidity is 50 NTUs or less, or no more than a 10% increase in turbidity when the background turbidity is more than 50 NTUs. In order to use the water quality standard requirement, the sampling must take place at the following locations:

    a. Background turbidity in the 303(d)-listed receiving water immediately upstream (upgradient) or outside the area of influence of the discharge.

    b. Turbidity at the point of discharge into the 303(d)-listed receiving water, inside the area of influence of the discharge**.**

3. Discharges that exceed the numeric effluent limit for turbidity constitute a violation of this permit.

4. Permittees whose discharges exceed the numeric effluent limit must sample discharges daily until the violation is corrected and comply with the non-compliance notification requirements in Special Condition S5.F.

Table 5 Turbidity, Fine Sediment & Phosphorus Sampling and Limits for 303(d)-Listed Waters

Parameter identified in 303(d) listing	Parameter Sampled	Unit	Analytical Method	Sampling Frequency	Numeric Effluent Limit[1]
• Turbidity • Fine Sediment • Phosphorus	Turbidity	NTU	SM2130	Weekly, if discharging	25 NTUs, at the point where stormwater is discharged from the site; ***OR*** In compliance with the surface water quality standard for turbidity (S8.C.2.a)

[1] Permittees subject to a numeric effluent limit for turbidity may, at their discretion, choose either numeric effluent limitation based on site-specific considerations including, but not limited to, safety, access and convenience.

D. Discharges to Water Bodies on the 303(d) List for High pH

1. Permittees who discharge to segments of water bodies on the 303(d) list (Category 5) for high pH must conduct pH sampling in accordance with the table below, and comply with the numeric effluent limit of pH 6.5 to 8.5 su (Table 6).

Table 6 pH Sampling and Limits for 303(d)-Listed Waters

Parameter identified in 303(d) listing	Parameter Sampled/Units	Analytical Method	Sampling Frequency	Numeric Effluent Limit
High pH	pH /Standard Units	pH meter	Weekly, if discharging	In the range of 6.5 – 8.5 su

2. At the Permittee's discretion, compliance with the limit shall be assessed at one of the following locations:

   a. Directly in the 303(d)-listed waterbody segment, inside the immediate area of influence of the discharge; *or*

   b. Alternatively, the Permittee may measure pH at the point where the discharge leaves the construction site, rather than in the receiving water.

3. Discharges that exceed the numeric effluent limit for pH (outside the range of 6.5 – 8.5 su) constitute a violation of this permit.

4. Permittees whose discharges exceed the numeric effluent limit must sample discharges daily until the violation is corrected and comply with the non-compliance notification requirements in Special Condition S5.F.

E. Sampling and Limits for Sites Discharging to Waters Covered by a TMDL or another Pollution Control Plan

1. Discharges to a waterbody that is subject to a Total Maximum Daily Load (TMDL) for turbidity, fine sediment, high pH, or phosphorus must be consistent with the TMDL. Refer to http://www.ecy.wa.gov/programs/wq/tmdl/TMDLsbyWria/TMDLbyWria.html for more information on TMDLs.

    a. Where an applicable TMDL sets specific waste load allocations or requirements for discharges covered by this permit, discharges must be consistent with any specific waste load allocations or requirements established by the applicable TMDL.

        i. The Permittee must sample discharges weekly, unless otherwise specified by the TMDL, to evaluate compliance with the specific waste load allocations or requirements.

        ii. Analytical methods used to meet the monitoring requirements must conform to the latest revision of the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* contained in 40 CFR Part 136.

        iii. Turbidity and pH methods need not be accredited or registered unless conducted at a laboratory which must otherwise be accredited or registered.

    b. Where an applicable TMDL has established a general waste load allocation for construction stormwater discharges, but has not identified specific requirements, compliance with Special Conditions S4 (Monitoring) and S9 (SWPPPs) will constitute compliance with the approved TMDL.

    c. Where an applicable TMDL has not specified a waste load allocation for construction stormwater discharges, but has not excluded these discharges, compliance with Special Conditions S4 (Monitoring) and S9 (SWPPPs) will constitute compliance with the approved TMDL.

    d. Where an applicable TMDL specifically precludes or prohibits discharges from construction activity, the operator is not eligible for coverage under this permit.

S9. STORMWATER POLLUTION PREVENTION PLAN

The Permittee must prepare and properly implement an adequate Stormwater Pollution Prevention Plan (SWPPP) for construction activity in accordance with the requirements of this permit beginning with initial soil disturbance and until final stabilization.

A. The Permittee's SWPPP must meet the following objectives:

1. To identify best management practices (BMPs) which prevent erosion and sedimentation, and to reduce, eliminate or prevent stormwater contamination and water pollution from construction activity.

2. To prevent violations of surface water quality, groundwater quality, or sediment management standards.

3. To control peak volumetric flow rates and velocities of stormwater discharges.

B. General Requirements

1. The SWPPP must include a narrative and drawings. All BMPs must be clearly referenced in the narrative and marked on the drawings. The SWPPP narrative must include documentation to explain and justify the pollution prevention decisions made for the project. Documentation must include:

    a. Information about existing site conditions (topography, drainage, soils, vegetation, etc.).

    b. Potential erosion problem areas.

    c. The 13 elements of a SWPPP in Special Condition S9.D.1-13, including BMPs used to address each element.

    d. Construction phasing/sequence and general BMP implementation schedule.

    e. The actions to be taken if BMP performance goals are not achieved—for example, a contingency plan for additional treatment and/or storage of stormwater that would violate the water quality standards if discharged.

    f. Engineering calculations for ponds, treatment systems, and any other designed structures. When a treatment system requires engineering calculations, these calculations must be included in the SWPPP. Engineering calculations do not need to be included in the SWPPP for treatment systems that do not require such calculations.

2. The Permittee must modify the SWPPP if, during inspections or investigations conducted by the owner/operator, or the applicable local or state regulatory authority, it is determined that the SWPPP is, or would be, ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the site. The Permittee must then:

    a. Review the SWPPP for compliance with Special Condition S9 and make appropriate revisions within 7 days of the inspection or investigation.

    b. Immediately begin the process to fully implement and maintain appropriate source control and/or treatment BMPs as soon as possible, addressing the problems no later than 10 days from the inspection or investigation. If installation of necessary treatment BMPs is not feasible within 10 days, Ecology may approve additional time when an extension is requested by a Permittee within the initial 10-day response period.

    c. Document BMP implementation and maintenance in the site log book.

    The Permittee must modify the SWPPP whenever there is a change in design, construction, operation, or maintenance at the construction site that has, or could have, a significant effect on the discharge of pollutants to waters of the State.

C. Stormwater Best Management Practices (BMPs)

BMPs must be consistent with:

1. *Stormwater Management Manual for Western Washington* (most current approved edition at the time this permit was issued), for sites west of the crest of the Cascade Mountains; *or*

2. *Stormwater Management Manual for Eastern Washington* (most current approved edition at the time this permit was issued), for sites east of the crest of the Cascade Mountains; *or*

3. Revisions to the manuals listed in Special Condition S9.C.1 & 2, or other stormwater management guidance documents or manuals which provide an equivalent level of pollution prevention, that are approved by Ecology and incorporated into this permit in accordance with the permit modification requirements of WAC 173-226-230; *or*

4. Documentation in the SWPPP that the BMPs selected provide an equivalent level of pollution prevention, compared to the applicable stormwater management manuals, including:

    a. The technical basis for the selection of all stormwater BMPs (scientific, technical studies, and/or modeling) that support the performance claims for the BMPs being selected.

    b. An assessment of how the selected BMP will satisfy AKART requirements and the applicable federal technology-based treatment requirements under 40 CFR part 125.3.

D. SWPPP – Narrative Contents and Requirements

The Permittee must include each of the 13 elements below in Special Condition S9.D.1-13 in the narrative of the SWPPP and implement them unless site conditions render the element unnecessary and the exemption from that element is clearly justified in the SWPPP.

1. Preserve Vegetation/Mark Clearing Limits

    a. Before beginning land-disturbing activities, including clearing and grading, clearly mark all clearing limits, sensitive areas and their buffers, and trees that are to be preserved within the construction area.

    b. Retain the duff layer, native topsoil, and natural vegetation in an undisturbed state to the maximum degree practicable.

2. Establish Construction Access

    a. Limit construction vehicle access and exit to one route, if possible.

    b. Stabilize access points with a pad of quarry spalls, crushed rock, or other equivalent BMPs, to minimize tracking sediment onto roads.

    c. Locate wheel wash or tire baths on site, if the stabilized construction entrance is not effective in preventing tracking sediment onto roads.

    d. If sediment is tracked off site, clean the affected roadway thoroughly at the end of each day, or more frequently as necessary (for example, during wet weather). Remove sediment from roads by shoveling, sweeping, or pickup and transport of the sediment to a controlled sediment disposal area.

    e. Conduct street washing only after sediment removal in accordance with Special Condition S9.D.2.d.

    f. Control street wash wastewater by pumping back on site or otherwise preventing it from discharging into systems tributary to waters of the State.

3. Control Flow Rates

    a. Protect properties and waterways downstream of construction sites from erosion and the associated discharge of turbid waters due to increases in the velocity and peak volumetric flow rate of stormwater runoff from the project site, as required by local plan approval authority.

    b. Where necessary to comply with Special Condition S9.D.3.a, construct stormwater infiltration or detention BMPs as one of the first steps in grading. Assure that detention BMPs function properly before constructing site improvements (for example, impervious surfaces).

    c. If permanent infiltration ponds are used for flow control during construction, protect these facilities from sedimentation during the construction phase.

4. Install Sediment Controls

    The Permittee must design, install and maintain effective erosion controls and sediment controls to minimize the discharge of pollutants. At a minimum, the Permittee must:

    a. Construct sediment control BMPs (sediment ponds, traps, filters, infiltration facilities, etc.) as one of the first steps in grading. These BMPs must be functional before other land disturbing activities take place.

    b. Minimize sediment discharges from the site. The design, installation and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity and duration of precipitation, the nature of resulting stormwater runoff, and soil characteristics, including the range of soil particle sizes expected to be present on the site.

    c. Direct stormwater runoff from disturbed areas through a sediment pond or other appropriate sediment removal BMP, before the runoff leaves a construction site or before discharge to an infiltration facility. Runoff from fully stabilized areas may be discharged without a sediment removal BMP, but must meet the flow control performance standard of Special Condition S9.D.3.a.

    d. Locate BMPs intended to trap sediment on site in a manner to avoid interference with the movement of juvenile salmonids attempting to enter off-channel areas or drainages.

    e. Provide and maintain natural buffers around surface waters, direct stormwater to vegetated areas to increase sediment removal and maximize stormwater infiltration, unless infeasible.

    f. Where feasible, design outlet structures that withdraw impounded stormwater from the surface to avoid discharging sediment that is still suspended lower in the water column.

5. Stabilize Soils

    a. The Permittee must stabilize exposed and unworked soils by application of effective BMPs that prevent erosion. Applicable BMPs include, but are not limited to: temporary and permanent seeding, sodding, mulching, plastic covering, erosion

control fabrics and matting, soil application of polyacrylamide (PAM), the early application of gravel base on areas to be paved, and dust control.

b. The Permittee must control stormwater volume and velocity within the site to minimize soil erosion.

c. The Permittee must control stormwater discharges, including both peak flow rates and total stormwater volume, to minimize erosion at outlets and to minimize downstream channel and stream bank erosion.

d. Depending on the geographic location of the project, the Permittee must not allow soils to remain exposed and unworked for more than the time periods set forth below to prevent erosion.

West of the Cascade Mountains Crest
During the dry season (May 1 - September 30): 7 days
During the wet season (October 1 - April 30): 2 days

East of the Cascade Mountains Crest, except for Central Basin*
During the dry season (July 1 - September 30): 10 days
During the wet season (October 1 - June 30): 5 days

The Central Basin*, East of the Cascade Mountains Crest
During the dry Season (July 1 - September 30): 30 days
During the wet season (October 1 - June 30): 15 days

***Note: The Central Basin** is defined as the portions of Eastern Washington with mean annual precipitation of less than 12 inches.

e. The Permittee must stabilize soils at the end of the shift before a holiday or weekend if needed based on the weather forecast.

f. The Permittee must stabilize soil stockpiles from erosion, protected with sediment trapping measures, and where possible, be located away from storm drain inlets, waterways, and drainage channels.

g. The Permittee must minimize the amount of soil exposed during construction activity.

h. The Permittee must minimize the disturbance of steep slopes.

i. The Permittee must minimize soil compaction and, unless infeasible, preserve topsoil.

6. Protect Slopes

a. The Permittee must design and construct cut-and-fill slopes in a manner to minimize erosion. Applicable practices include, but are not limited to, reducing continuous length of slope with terracing and diversions, reducing slope steepness, and roughening slope surfaces (for example, track walking).

b. The Permittee must divert off-site stormwater (run-on) or groundwater away from slopes and disturbed areas with interceptor dikes, pipes, and/or swales. Off-site stormwater should be managed separately from stormwater generated on the site.

c. At the top of slopes, collect drainage in pipe slope drains or protected channels to prevent erosion.

i. West of the Cascade Mountains Crest: Temporary pipe slope drains must handle the peak 10-minute flow rate from a Type 1A, 10-year, 24-hour frequency storm for the developed condition. Alternatively, the 10-year, 1-hour flow rate predicted by an approved continuous runoff model, increased by a factor of 1.6, may be used. The hydrologic analysis must use the existing land cover condition for predicting flow rates from tributary areas outside the project limits. For tributary areas on the project site, the analysis must use the temporary or permanent project land cover condition, whichever will produce the highest flow rates. If using the Western Washington Hydrology Model (WWHM) to predict flows, bare soil areas should be modeled as "landscaped area."

ii. East of the Cascade Mountains Crest: Temporary pipe slope drains must handle the expected peak flow rate from a 6-month, 3-hour storm for the developed condition, referred to as the short duration storm.

d. Place excavated material on the uphill side of trenches, consistent with safety and space considerations.

e. Place check dams at regular intervals within constructed channels that are cut down a slope.

7. Protect Drain Inlets

a. Protect all storm drain inlets made operable during construction so that stormwater runoff does not enter the conveyance system without first being filtered or treated to remove sediment.

b. Clean or remove and replace inlet protection devices when sediment has filled one-third of the available storage (unless a different standard is specified by the product manufacturer).

8. Stabilize Channels and Outlets

a. Design, construct and stabilize all on-site conveyance channels to prevent erosion from the following expected peak flows:

i. West of the Cascade Mountains Crest: Channels must handle the peak 10-minute flow rate from a Type 1A, 10-year, 24-hour frequency storm for the developed condition. Alternatively, the 10-year, 1-hour flow rate indicated by an approved continuous runoff model, increased by a factor of 1.6, may be used. The hydrologic analysis must use the existing land cover condition for predicting flow rates from tributary areas outside the project limits. For tributary areas on the project site, the analysis must use the temporary or permanent project land cover condition, whichever will produce the highest flow rates. If using the WWHM to predict flows, bare soil areas should be modeled as "landscaped area."

ii. East of the Cascade Mountains Crest: Channels must handle the expected peak flow rate from a 6-month, 3-hour storm for the developed condition, referred to as the short duration storm.

b. Provide stabilization, including armoring material, adequate to prevent erosion of outlets, adjacent stream banks, slopes, and downstream reaches at the outlets of all conveyance systems.

9. Control Pollutants

Design, install, implement and maintain effective pollution prevention measures to minimize the discharge of pollutants. The Permittee must:

a. Handle and dispose of all pollutants, including waste materials and demolition debris that occur on site in a manner that does not cause contamination of stormwater.

b. Provide cover, containment, and protection from vandalism for all chemicals, liquid products, petroleum products, and other materials that have the potential to pose a threat to human health or the environment. Minimize storage of hazardous materials on-site. Safety Data Sheets (SDS) should be supplied for all materials stored. Chemicals should be kept in their original labeled containers. On-site fueling tanks must include secondary containment. Secondary containment means placing tanks or containers within an impervious structure capable of containing 110% of the volume of the largest tank within the containment structure. Double-walled tanks do not require additional secondary containment.

c. Conduct maintenance, fueling, and repair of heavy equipment and vehicles using spill prevention and control measures. Clean contaminated surfaces immediately following any spill incident.

d. Discharge wheel wash or tire bath wastewater to a separate on-site treatment system that prevents discharge to surface water, such as closed-loop recirculation or upland land application, or to the sanitary sewer with local sewer district approval.

e. Apply fertilizers and pesticides in a manner and at application rates that will not result in loss of chemical to stormwater runoff. Follow manufacturers' label requirements for application rates and procedures.

f. Use BMPs to prevent contamination of stormwater runoff by pH-modifying sources. The sources for this contamination include, but are not limited to: bulk cement, cement kiln dust, fly ash, new concrete washing and curing waters, recycled concrete stockpiles, waste streams generated from concrete grinding and sawing, exposed aggregate processes, dewatering concrete vaults, concrete pumping and mixer washout waters. (Also refer to the definition for "concrete wastewater" in Appendix A – Definitions.)

g. Adjust the pH of stormwater or authorized non-stormwater if necessary to prevent an exceedance of groundwater and/or surface water quality standards.

h. Assure that washout of concrete trucks is performed off-site or in designated concrete washout areas only. Do not wash out concrete truck drums onto the ground, or into storm drains, open ditches, streets, or streams. Washout of small concrete handling equipment may be disposed of in a formed area awaiting concrete where it will not contaminate surface or groundwater. Do not dump excess concrete on site, except in designated concrete washout areas. Concrete spillage or concrete discharge directly to groundwater or surface waters of the State is

prohibited. At no time shall concrete be washed off into the footprint of an area where an infiltration BMP will be installed.

i. Obtain written approval from Ecology before using any chemical treatment, with the exception of CO_2, dry ice or food grade vinegar, to adjust pH.

j. Uncontaminated water from water-only based shaft drilling for construction of building, road, and bridge foundations may be infiltrated provided the wastewater is managed in a way that prohibits discharge to surface waters. Prior to infiltration, water from water-only based shaft drilling that comes into contact with curing concrete must be neutralized until pH is in the range of 6.5 to 8.5 (su).

10. Control Dewatering

a. Permittees must discharge foundation, vault, and trench dewatering water, which have characteristics similar to stormwater runoff at the site, in conjunction with BMPs to reduce sedimentation before discharge to a sediment trap or sediment pond.

b. Permittees may discharge clean, non-turbid dewatering water, such as well-point groundwater, to systems tributary to, or directly into surface waters of the State, as specified in Special Condition S9.D.8, provided the dewatering flow does not cause erosion or flooding of receiving waters. Do not route clean dewatering water through stormwater sediment ponds. Note that "surface waters of the State" may exist on a construction site as well as off site; for example, a creek running through a site.

c. Other dewatering treatment or disposal options may include:

i. Infiltration

ii. Transport off site in a vehicle, such as a vacuum flush truck, for legal disposal in a manner that does not pollute state waters.

iii. Ecology-approved on-site chemical treatment or other suitable treatment technologies (See S9.D.9.i, regarding chemical treatment written approval).

iv. Sanitary or combined sewer discharge with local sewer district approval, if there is no other option.

v. Use of a sedimentation bag with discharge to a ditch or swale for small volumes of localized dewatering.

d. Permittees must handle highly turbid or contaminated dewatering water separately from stormwater.

11. Maintain BMPs

a. Permittees must maintain and repair all temporary and permanent erosion and sediment control BMPs as needed to assure continued performance of their intended function in accordance with BMP specifications.

b. Permittees must remove all temporary erosion and sediment control BMPs within 30 days after achieving final site stabilization or after the temporary BMPs are no longer needed.

12. Manage the Project

    a. Phase development projects to the maximum degree practicable and take into account seasonal work limitations.

    b. Inspect, maintain and repair all BMPs as needed to assure continued performance of their intended function. Conduct site inspections and monitoring in accordance with Special Condition S4.

    c. Maintain, update, and implement the SWPPP in accordance with Special Conditions S3, S4, and S9.

13. Protect Low Impact Development (LID) BMPs

    The primary purpose of on-site LID Stormwater Management is to reduce the disruption of the natural site hydrology through infiltration. LID BMPs are permanent facilities.

    a. Permittees must protect all LID BMPs (including, but not limited to, Bioretention and Rain Garden facilities) from sedimentation through installation and maintenance of erosion and sediment control BMPs on portions of the site that drain into the Bioretention and/or Rain Garden facilities. Restore the BMPs to their fully functioning condition if they accumulate sediment during construction. Restoring the facility must include removal of sediment and any sediment-laden bioretention/ rain garden soils, and replacing the removed soils with soils meeting the design specification.

    b. Permittees must maintain the infiltration capabilities of LID BMPs by protecting against compaction by construction equipment and foot traffic. Protect completed lawn and landscaped areas from compaction due to construction equipment.

    c. Permittees must control erosion and avoid introducing sediment from surrounding land uses onto permeable pavements. Do not allow muddy construction equipment on the base material or pavement. Do not allow sediment-laden runoff onto permeable pavements or base materials.

    d. Permittees must clean permeable pavements fouled with sediments or no longer passing an initial infiltration test using local stormwater manual methodology or the manufacturer's procedures.

    e. Permittees must keep all heavy equipment off existing soils under LID BMPs that have been excavated to final grade to retain the infiltration rate of the soils.

E. SWPPP – Map Contents and Requirements

The Permittee's SWPPP must also include a vicinity map or general location map (for example, a USGS quadrangle map, a portion of a county or city map, or other appropriate map) with enough detail to identify the location of the construction site and receiving waters within one mile of the site.

The SWPPP must also include a legible site map (or maps) showing the entire construction site. The following features must be identified, unless not applicable due to site conditions.

1. The direction of north, property lines, and existing structures and roads.

2. Cut and fill slopes indicating the top and bottom of slope catch lines.

3. Approximate slopes, contours, and direction of stormwater flow before and after major grading activities.

4. Areas of soil disturbance and areas that will not be disturbed.

5. Locations of structural and nonstructural controls (BMPs) identified in the SWPPP.

6. Locations of off-site material, stockpiles, waste storage, borrow areas, and vehicle/equipment storage areas.

7. Locations of all surface water bodies, including wetlands.

8. Locations where stormwater or non-stormwater discharges off-site and/or to a surface waterbody, including wetlands.

9. Location of water quality sampling station(s), if sampling is required by state or local permitting authority.

10. Areas where final stabilization has been accomplished and no further construction-phase permit requirements apply.

11. Location or proposed location of LID facilities.

S10. NOTICE OF TERMINATION

Partial terminations of permit coverage are not authorized.

A. The site is eligible for termination of coverage when it has met any of the following conditions:

1. The site has undergone final stabilization, the Permittee has removed all temporary BMPs (except biodegradable BMPs clearly manufactured with the intention for the material to be left in place and not interfere with maintenance or land use), and all stormwater discharges associated with construction activity have been eliminated; *or*

2. All portions of the site that have not undergone final stabilization per Special Condition S10.A.1 have been sold and/or transferred (per Special Condition S2.A), and the Permittee no longer has operational control of the construction activity; *or*

3. For residential construction only, the Permittee has completed temporary stabilization and the homeowners have taken possession of the residences.

B. When the site is eligible for termination, the Permittee must submit a complete and accurate Notice of Termination (NOT) form, signed in accordance with General Condition G2, to:

Department of Ecology
Water Quality Program - Construction Stormwater
PO Box 47696
Olympia, WA 98504-7696

When an electronic termination form is available, the Permittee may choose to submit a complete and accurate Notice of Termination (NOT) form through the Water Quality Permitting Portal rather than mailing a hardcopy as noted above.

The termination is effective on the 31st calendar day following the date Ecology receives a complete NOT form, unless Ecology notifies the Permittee that termination request is denied because the Permittee has not met the eligibility requirements in Special Condition S10.A.

Permittees are required to comply with all conditions and effluent limitations in the permit until the permit has been terminated.

Permittees transferring the property to a new property owner or operator/Permittee are required to complete and submit the Notice of Transfer form to Ecology, but are not required to submit a Notice of Termination form for this type of transaction.

GENERAL CONDITIONS

G1. DISCHARGE VIOLATIONS

All discharges and activities authorized by this general permit must be consistent with the terms and conditions of this general permit. Any discharge of any pollutant more frequent than or at a level in excess of that identified and authorized by the general permit must constitute a violation of the terms and conditions of this permit.

G2. SIGNATORY REQUIREMENTS

A. All permit applications must bear a certification of correctness to be signed:

1. In the case of corporations, by a responsible corporate officer.
2. In the case of a partnership, by a general partner of a partnership.
3. In the case of sole proprietorship, by the proprietor.
4. In the case of a municipal, state, or other public facility, by either a principal executive officer or ranking elected official.

B. All reports required by this permit and other information requested by Ecology (including NOIs, NOTs, and Transfer of Coverage forms) must be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

1. The authorization is made in writing by a person described above and submitted to Ecology.
2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters.

C. Changes to authorization. If an authorization under paragraph G2.B.2 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph G2.B.2 above must be submitted to Ecology prior to or together with any reports, information, or applications to be signed by an authorized representative.

D. Certification. Any person signing a document under this section must make the following certification:

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

G3. RIGHT OF INSPECTION AND ENTRY

The Permittee must allow an authorized representative of Ecology, upon the presentation of credentials and such other documents as may be required by law:

A. To enter upon the premises where a discharge is located or where any records are kept under the terms and conditions of this permit.

B. To have access to and copy, at reasonable times and at reasonable cost, any records required to be kept under the terms and conditions of this permit.

C. To inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, methods, or operations regulated or required under this permit.

D. To sample or monitor, at reasonable times, any substances or parameters at any location for purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act.

G4. GENERAL PERMIT MODIFICATION AND REVOCATION

This permit may be modified, revoked and reissued, or terminated in accordance with the provisions of Chapter 173-226 WAC. Grounds for modification, revocation and reissuance, or termination include, but are not limited to, the following:

A. When a change occurs in the technology or practices for control or abatement of pollutants applicable to the category of dischargers covered under this permit.

B. When effluent limitation guidelines or standards are promulgated pursuant to the CWA or Chapter 90.48 RCW, for the category of dischargers covered under this permit.

C. When a water quality management plan containing requirements applicable to the category of dischargers covered under this permit is approved, or

D. When information is obtained that indicates cumulative effects on the environment from dischargers covered under this permit are unacceptable.

G5. REVOCATION OF COVERAGE UNDER THE PERMIT

Pursuant to Chapter 43.21B RCW and Chapter 173-226 WAC, the Director may terminate coverage for any discharger under this permit for cause. Cases where coverage may be terminated include, but are not limited to, the following:

A. Violation of any term or condition of this permit.

B. Obtaining coverage under this permit by misrepresentation or failure to disclose fully all relevant facts.

C. A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge.

D. Failure or refusal of the Permittee to allow entry as required in RCW 90.48.090.

E. A determination that the permitted activity endangers human health or the environment, or contributes to water quality standards violations.

F. Nonpayment of permit fees or penalties assessed pursuant to RCW 90.48.465 and Chapter 173-224 WAC.

G. Failure of the Permittee to satisfy the public notice requirements of WAC 173-226-130(5), when applicable.

The Director may require any discharger under this permit to apply for and obtain coverage under an individual permit or another more specific general permit. Permittees who have their coverage revoked for cause according to WAC 173-226-240 may request temporary coverage under this permit during the time an individual permit is being developed, provided the request is made within ninety (90) days from the time of revocation and is submitted along with a complete individual permit application form.

G6. REPORTING A CAUSE FOR MODIFICATION

The Permittee must submit a new application, or a supplement to the previous application, whenever a material change to the construction activity or in the quantity or type of discharge is anticipated which is not specifically authorized by this permit. This application must be submitted at least sixty (60) days prior to any proposed changes. Filing a request for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not relieve the Permittee of the duty to comply with the existing permit until it is modified or reissued.

G7. COMPLIANCE WITH OTHER LAWS AND STATUTES

Nothing in this permit will be construed as excusing the Permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations.

G8. DUTY TO REAPPLY

The Permittee must apply for permit renewal at least 180 days prior to the specified expiration date of this permit. The Permittee must reapply using the electronic application form (NOI) available on Ecology's website. Permittees unable to submit electronically (for example, those who do not have an internet connection) must contact Ecology to request a waiver and obtain instructions on how to obtain a paper NOI.

Department of Ecology
Water Quality Program - Construction Stormwater
PO Box 47696
Olympia, WA 98504-7696

G9. REMOVED SUBSTANCE

The Permittee must not re-suspend or reintroduce collected screenings, grit, solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of stormwater to the final effluent stream for discharge to state waters.

G10. DUTY TO PROVIDE INFORMATION

The Permittee must submit to Ecology, within a reasonable time, all information that Ecology may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The Permittee must also submit to Ecology, upon request, copies of records required to be kept by this permit [40 CFR 122.41(h)].

G11. OTHER REQUIREMENTS OF 40 CFR

All other requirements of 40 CFR 122.41 and 122.42 are incorporated in this permit by reference.

G12. ADDITIONAL MONITORING

Ecology may establish specific monitoring requirements in addition to those contained in this permit by administrative order or permit modification.

G13. PENALTIES FOR VIOLATING PERMIT CONDITIONS

Any person who is found guilty of willfully violating the terms and conditions of this permit shall be deemed guilty of a crime, and upon conviction thereof shall be punished by a fine of up to ten thousand dollars ($10,000) and costs of prosecution, or by imprisonment at the discretion of the court. Each day upon which a willful violation occurs may be deemed a separate and additional violation.

Any person who violates the terms and conditions of a waste discharge permit shall incur, in addition to any other penalty as provided by law, a civil penalty in the amount of up to ten thousand dollars ($10,000) for every such violation. Each and every such violation shall be a separate and distinct offense, and in case of a continuing violation, every day's continuance shall be deemed to be a separate and distinct violation.

G14. UPSET

Definition – "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of the following paragraph are met.

A Permittee who wishes to establish the affirmative defense of upset must demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that: 1) an upset occurred and that the Permittee can identify the cause(s) of the upset; 2) the permitted facility was being properly operated at the time of the upset; 3) the Permittee submitted notice of the upset as required in Special Condition S5.F, and; 4) the Permittee complied with any remedial measures required under this permit.

In any enforcement proceeding, the Permittee seeking to establish the occurrence of an upset has the burden of proof.

G15. PROPERTY RIGHTS

This permit does not convey any property rights of any sort, or any exclusive privilege.

G16. DUTY TO COMPLY

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

G17. TOXIC POLLUTANTS

The Permittee must comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if this permit has not yet been modified to incorporate the requirement.

G18. PENALTIES FOR TAMPERING

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than two years per violation, or by both. If a conviction of a person is for a violation committed after a first conviction of such person under this condition, punishment shall be a fine of not more than $20,000 per day of violation, or imprisonment of not more than four (4) years, or both.

G19. REPORTING PLANNED CHANGES

The Permittee must, as soon as possible, give notice to Ecology of planned physical alterations, modifications or additions to the permitted construction activity. The Permittee should be aware that, depending on the nature and size of the changes to the original permit, a new public notice and other permit process requirements may be required. Changes in activities that require reporting to Ecology include those that will result in:

A. The permitted facility being determined to be a new source pursuant to 40 CFR 122.29(b).

B. A significant change in the nature or an increase in quantity of pollutants discharged, including but not limited to: a 20% or greater increase in acreage disturbed by construction activity.

C. A change in or addition of surface water(s) receiving stormwater or non-stormwater from the construction activity.

D. A change in the construction plans and/or activity that affects the Permittee's monitoring requirements in Special Condition S4.

Following such notice, permit coverage may be modified, or revoked and reissued pursuant to 40 CFR 122.62(a) to specify and limit any pollutants not previously limited. Until such modification is effective, any new or increased discharge in excess of permit limits or not specifically authorized by this permit constitutes a violation.

G20. REPORTING OTHER INFORMATION

Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to Ecology, it must promptly submit such facts or information.

G21. REPORTING ANTICIPATED NON-COMPLIANCE

The Permittee must give advance notice to Ecology by submission of a new application or supplement thereto at least forty-five (45) days prior to commencement of such discharges, of any facility expansions, production increases, or other planned changes, such as process modifications, in the permitted facility or activity which may result in noncompliance with permit limits or conditions. Any maintenance of facilities, which might necessitate unavoidable interruption of

operation and degradation of effluent quality, must be scheduled during non-critical water quality periods and carried out in a manner approved by Ecology.

G22. REQUESTS TO BE EXCLUDED FROM COVERAGE UNDER THE PERMIT

Any discharger authorized by this permit may request to be excluded from coverage under the general permit by applying for an individual permit. The discharger must submit to the Director an application as described in WAC 173-220-040 or WAC 173-216-070, whichever is applicable, with reasons supporting the request. These reasons will fully document how an individual permit will apply to the applicant in a way that the general permit cannot. Ecology may make specific requests for information to support the request. The Director will either issue an individual permit or deny the request with a statement explaining the reason for the denial. When an individual permit is issued to a discharger otherwise subject to the construction stormwater general permit, the applicability of the construction stormwater general permit to that Permittee is automatically terminated on the effective date of the individual permit.

G23. APPEALS

A. The terms and conditions of this general permit, as they apply to the appropriate class of dischargers, are subject to appeal by any person within 30 days of issuance of this general permit, in accordance with Chapter 43.21B RCW, and Chapter 173-226 WAC.

B. The terms and conditions of this general permit, as they apply to an individual discharger, are appealable in accordance with Chapter 43.21B RCW within 30 days of the effective date of coverage of that discharger. Consideration of an appeal of general permit coverage of an individual discharger is limited to the general permit's applicability or nonapplicability to that individual discharger.

C. The appeal of general permit coverage of an individual discharger does not affect any other dischargers covered under this general permit. If the terms and conditions of this general permit are found to be inapplicable to any individual discharger(s), the matter shall be remanded to Ecology for consideration of issuance of an individual permit or permits.

G24. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit, or application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

G25. BYPASS PROHIBITED

A. Bypass Procedures

Bypass, which is the intentional diversion of waste streams from any portion of a treatment facility, is prohibited for stormwater events below the design criteria for stormwater management. Ecology may take enforcement action against a Permittee for bypass unless one of the following circumstances (1, 2, 3 or 4) is applicable.

1. Bypass of stormwater is consistent with the design criteria and part of an approved management practice in the applicable stormwater management manual.

2. Bypass for essential maintenance without the potential to cause violation of permit limits or conditions.

Bypass is authorized if it is for essential maintenance and does not have the potential to cause violations of limitations or other conditions of this permit, or adversely impact public health.

3. Bypass of stormwater is unavoidable, unanticipated, and results in noncompliance of this permit.

   This bypass is permitted only if:

   a. Bypass is unavoidable to prevent loss of life, personal injury, or severe property damage. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass.

   b. There are no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, maintenance during normal periods of equipment downtime (but not if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance), or transport of untreated wastes to another treatment facility.

   c. Ecology is properly notified of the bypass as required in Special Condition S5.F of this permit.

4. A planned action that would cause bypass of stormwater and has the potential to result in noncompliance of this permit during a storm event.

   The Permittee must notify Ecology at least thirty (30) days before the planned date of bypass. The notice must contain:

   a. A description of the bypass and its cause

   b. An analysis of all known alternatives which would eliminate, reduce, or mitigate the need for bypassing.

   c. A cost-effectiveness analysis of alternatives including comparative resource damage assessment.

   d. The minimum and maximum duration of bypass under each alternative.

   e. A recommendation as to the preferred alternative for conducting the bypass.

   f. The projected date of bypass initiation.

   g. A statement of compliance with SEPA.

   h. A request for modification of water quality standards as provided for in WAC 173-201A-110, if an exceedance of any water quality standard is anticipated.

   i. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass.

5. For probable construction bypasses, the need to bypass is to be identified as early in the planning process as possible. The analysis required above must be considered during

preparation of the Stormwater Pollution Prevention Plan (SWPPP) and must be included to the extent practical. In cases where the probable need to bypass is determined early, continued analysis is necessary up to and including the construction period in an effort to minimize or eliminate the bypass.

Ecology will consider the following before issuing an administrative order for this type bypass:

a. If the bypass is necessary to perform construction or maintenance-related activities essential to meet the requirements of this permit.

b. If there are feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment down time, or transport of untreated wastes to another treatment facility.

c. If the bypass is planned and scheduled to minimize adverse effects on the public and the environment.

After consideration of the above and the adverse effects of the proposed bypass and any other relevant factors, Ecology will approve, conditionally approve, or deny the request. The public must be notified and given an opportunity to comment on bypass incidents of significant duration, to the extent feasible. Approval of a request to bypass will be by administrative order issued by Ecology under RCW 90.48.120.

B. Duty to Mitigate

The Permittee is required to take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

APPENDIX A – DEFINITIONS

AKART is an acronym for "**A**ll **K**nown, **A**vailable, and **R**easonable methods of prevention, control, and **T**reatment." AKART represents the most current methodology that can be reasonably required for preventing, controlling, or abating the pollutants and controlling pollution associated with a discharge.

Applicable TMDL means a TMDL for turbidity, fine sediment, high pH, or phosphorus, which was completed and approved by EPA before January 1, 2021, or before the date the operator's complete permit application is received by Ecology, whichever is later. TMDLs completed after a complete permit application is received by Ecology become applicable to the Permittee only if they are imposed through an administrative order by Ecology, or through a modification of permit coverage.

Applicant means an *operator* seeking coverage under this permit.

Benchmark means a pollutant concentration used as a permit threshold, below which a pollutant is considered unlikely to cause a water quality violation, and above which it may. When pollutant concentrations exceed benchmarks, corrective action requirements take effect. Benchmark values are not water quality standards and are not numeric effluent limitations; they are indicator values.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control stormwater associated with construction activity, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Buffer means an area designated by a local jurisdiction that is contiguous to and intended to protect a sensitive area.

Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

Calendar Day A period of 24 consecutive hours starting at 12:00 midnight and ending the following 12:00 midnight.

Calendar Week (same as **Week**) means a period of seven consecutive days starting at 12:01 a.m. (0:01 hours) on Sunday.

Certified Erosion and Sediment Control Lead (CESCL) means a person who has current certification through an approved erosion and sediment control training program that meets the minimum training standards established by Ecology (See BMP C160 in the SWMM).

Chemical Treatment means the addition of chemicals to stormwater and/or authorized non-stormwater prior to filtration and discharge to surface waters.

Clean Water Act (CWA) means the Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, and 97-117; USC 1251 et seq.

Combined Sewer means a sewer which has been designed to serve as a sanitary sewer and a storm sewer, and into which inflow is allowed by local ordinance.

Common Plan of Development or Sale means a site where multiple separate and distinct construction activities may be taking place at different times on different schedules and/or by different contractors, but still under a single plan. Examples include: 1) phased projects and projects with multiple filings or lots, even if the separate phases or filings/lots will be constructed under separate contract or by separate owners (e.g., a development where lots are sold to separate builders); 2) a development plan that may be phased over multiple years, but is still under a consistent plan for long-term development; 3) projects in a contiguous area that may be unrelated but still under the same contract, such as construction of a building extension and a new parking lot at the same facility; and 4) linear projects such as roads, pipelines, or utilities. If the project is part of a common plan of development or sale, the disturbed area of the entire plan must be used in determining permit requirements.

Composite Sample means a mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increases while maintaining a constant time interval between the aliquots.

Concrete Wastewater means any water used in the production, pouring and/or clean-up of concrete or concrete products, and any water used to cut, grind, wash, or otherwise modify concrete or concrete products. Examples include water used for or resulting from concrete truck/mixer/pumper/tool/chute rinsing or washing, concrete saw cutting and surfacing (sawing, coring, grinding, roughening, hydro-demolition, bridge and road surfacing). When stormwater comingles with concrete wastewater, the resulting water is considered concrete wastewater and must be managed to prevent discharge to waters of the State, including groundwater.

Construction Activity means land disturbing operations including clearing, grading or excavation which disturbs the surface of the land (including off-site disturbance acreage related to construction-support activity). Such activities may include road construction, construction of residential houses, office buildings, or industrial buildings, site preparation, soil compaction, movement and stockpiling of topsoils, and demolition activity.

Construction Support Activity means off-site acreage that will be disturbed as a direct result of the construction project and will discharge stormwater. For example, off-site equipment staging yards, material storage areas, borrow areas, and parking areas.

Contaminant means any hazardous substance that does not occur naturally or occurs at greater than natural background levels. See definition of “hazardous substance” and WAC 173-340-200.

Contaminated soil means soil which contains contaminants, pollutants, or hazardous substances that do not occur naturally or occur at levels greater than natural background.

Contaminated groundwater means groundwater which contains contaminants, pollutants, or hazardous substances that do not occur naturally or occur at levels greater than natural background.

Demonstrably Equivalent means that the technical basis for the selection of all stormwater BMPs is documented within a SWPPP, including:

1. The method and reasons for choosing the stormwater BMPs selected.
2. The pollutant removal performance expected from the BMPs selected.

3. The technical basis supporting the performance claims for the BMPs selected, including any available data concerning field performance of the BMPs selected.
4. An assessment of how the selected BMPs will comply with state water quality standards.
5. An assessment of how the selected BMPs will satisfy both applicable federal technology-based treatment requirements and state requirements to use all known, available, and reasonable methods of prevention, control, and treatment (AKART).

Department means the Washington State Department of Ecology.

Detention means the temporary storage of stormwater to improve quality and/or to reduce the mass flow rate of discharge.

Dewatering means the act of pumping groundwater or stormwater away from an active construction site.

Director means the Director of the Washington State Department of Ecology or his/her authorized representative.

Discharger means an owner or operator of any facility or activity subject to regulation under Chapter 90.48 RCW or the Federal Clean Water Act.

Domestic Wastewater means water carrying human wastes, including kitchen, bath, and laundry wastes from residences, buildings, industrial establishments, or other places, together with such groundwater infiltration or surface waters as may be present.

Ecology means the Washington State Department of Ecology.

Engineered Soils means the use of soil amendments including, but not limited, to Portland cement treated base (CTB), cement kiln dust (CKD), or fly ash to achieve certain desirable soil characteristics.

Equivalent BMPs means operational, source control, treatment, or innovative BMPs which result in equal or better quality of stormwater discharge to surface water or to groundwater than BMPs selected from the SWMM.

Erosion means the wearing away of the land surface by running water, wind, ice, or other geological agents, including such processes as gravitational creep.

Erosion and Sediment Control BMPs means BMPs intended to prevent erosion and sedimentation, such as preserving natural vegetation, seeding, mulching and matting, plastic covering, filter fences, sediment traps, and ponds. Erosion and sediment control BMPs are synonymous with stabilization and structural BMPs.

Federal Operator is an entity that meets the definition of "Operator" in this permit and is either any department, agency or instrumentality of the executive, legislative, and judicial branches of the Federal government of the United States, or another entity, such as a private contractor, performing construction activity for any such department, agency, or instrumentality.

Final Stabilization (same as **fully stabilized** or **full stabilization**) means the completion of all soil disturbing activities at the site and the establishment of permanent vegetative cover, or equivalent permanent stabilization measures (such as pavement, riprap, gabions, or geotextiles) which will prevent erosion. See the applicable Stormwater Management Manual for more information on vegetative cover expectations and equivalent permanent stabilization measures.

Groundwater means water in a saturated zone or stratum beneath the land surface or a surface waterbody.

Hazardous Substance means any dangerous or extremely hazardous waste as defined in RCW 70.105.010 (5) and (6), or any dangerous or extremely dangerous waste as designated by rule under chapter 70.105 RCW; any hazardous sub-stance as defined in RCW 70.105.010(14) or any hazardous substance as defined by rule under chapter 70.105 RCW; any substance that, on the effective date of this section, is a hazardous substance under section 101(14) of the federal cleanup law, 42U.S.C., Sec. 9601(14); petroleum or petroleum products; and any substance or category of substances, including solid waste decomposition products, determined by the director by rule to present a threat to human health or the environment if released into the environment. The term hazardous substance does not include any of the following when contained in an underground storage tank from which there is not a release: crude oil or any fraction thereof or petroleum, if the tank is in compliance with all applicable federal, state, and local law.

Injection Well means a well that is used for the subsurface emplacement of fluids. (See **Well**.)

Jurisdiction means a political unit such as a city, town or county; incorporated for local self-government.

National Pollutant Discharge Elimination System (NPDES) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring, and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318, and 405 of the Federal Clean Water Act, for the discharge of pollutants to surface waters of the State from point sources. These permits are referred to as NPDES permits and, in Washington State, are administered by the Washington State Department of Ecology.

Notice of Intent (NOI) means the application for, or a request for coverage under this general permit pursuant to WAC 173-226-200.

Notice of Termination (NOT) means a request for termination of coverage under this general permit as specified by Special Condition S10 of this permit.

Operator means any party associated with a construction project that meets either of the following two criteria:

- The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or
- The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with a SWPPP for the site or other permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the SWPPP or comply with other permit conditions).

Permittee means individual or entity that receives notice of coverage under this general permit.

pH means a liquid's measure of acidity or alkalinity. A pH of 7 is defined as neutral. Large variations above or below this value are considered harmful to most aquatic life.

pH Monitoring Period means the time period in which the pH of stormwater runoff from a site must be tested a minimum of once every seven days to determine if stormwater pH is between 6.5 and 8.5.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, and container from which pollutants are or may be discharged to surface waters of the State. This term does not include return flows from irrigated agriculture. (See the Fact Sheet for further explanation)

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, domestic sewage sludge (biosolids), munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste. This term does not include sewage from vessels within the meaning of section 312 of the CWA, nor does it include dredged or fill material discharged in accordance with a permit issued under section 404 of the CWA.

Pollution means contamination or other alteration of the physical, chemical, or biological properties of waters of the State; including change in temperature, taste, color, turbidity, or odor of the waters; or such discharge of any liquid, gaseous, solid, radioactive or other substance into any waters of the State as will or is likely to create a nuisance or render such waters harmful, detrimental or injurious to the public health, safety or welfare; or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses; or to livestock, wild animals, birds, fish or other aquatic life.

Process Wastewater means any non-stormwater which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product. If stormwater commingles with process wastewater, the commingled water is considered process wastewater.

Receiving Water means the waterbody at the point of discharge. If the discharge is to a storm sewer system, either surface or subsurface, the receiving water is the waterbody to which the storm system discharges. Systems designed primarily for other purposes such as for groundwater drainage, redirecting stream natural flows, or for conveyance of irrigation water/return flows that coincidentally convey stormwater are considered the receiving water.

Representative means a stormwater or wastewater sample which represents the flow and characteristics of the discharge. Representative samples may be a grab sample, a time-proportionate *composite sample*, or a flow proportionate sample. Ecology's Construction Stormwater Monitoring Manual provides guidance on representative sampling.

Responsible Corporate Officer for the purpose of signatory authority means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Sanitary Sewer means a sewer which is designed to convey domestic wastewater.

Sediment means the fragmented material that originates from the weathering and erosion of rocks or unconsolidated deposits, and is transported by, suspended in, or deposited by water.

Sedimentation means the depositing or formation of sediment.

Sensitive Area means a waterbody, wetland, stream, aquifer recharge area, or channel migration zone.

SEPA (State Environmental Policy Act) means the Washington State Law, RCW 43.21C.020, intended to prevent or eliminate damage to the environment.

Significant Amount means an amount of a pollutant in a discharge that is amenable to available and reasonable methods of prevention or treatment; or an amount of a pollutant that has a reasonable potential to cause a violation of surface or groundwater quality or sediment management standards.

Significant Concrete Work means greater than 1000 cubic yards placed or poured concrete or recycled concrete used over the life of a project.

Significant Contributor of Pollutants means a facility determined by Ecology to be a contributor of a significant amount(s) of a pollutant(s) to waters of the State of Washington.

Site means the land or water area where any "facility or activity" is physically located or conducted.

Source Control BMPs means physical, structural or mechanical devices or facilities that are intended to prevent pollutants from entering stormwater. A few examples of source control BMPs are erosion control practices, maintenance of stormwater facilities, constructing roofs over storage and working areas, and directing wash water and similar discharges to the sanitary sewer or a dead end sump.

Stabilization means the application of appropriate BMPs to prevent the erosion of soils, such as, temporary and permanent seeding, vegetative covers, mulching and matting, plastic covering and sodding. See also the definition of Erosion and Sediment Control BMPs.

Storm Drain means any drain which drains directly into a *storm sewer system*, usually found along roadways or in parking lots.

Storm Sewer System means a means a conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains designed or used for collecting or conveying stormwater. This does not include systems which are part of *a combined sewer* or Publicly Owned Treatment Works (POTW), as defined at 40 CFR 122.2.

Stormwater means that portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a stormwater drainage system into a defined surface waterbody, or a constructed infiltration facility.

Stormwater Management Manual (SWMM) or **Manual** means the technical Manual published by Ecology for use by local governments that contain descriptions of and design criteria for BMPs to prevent, control, or treat pollutants in stormwater.

Stormwater Pollution Prevention Plan (SWPPP) means a documented plan to implement measures to identify, prevent, and control the contamination of point source discharges of stormwater.

Surface Waters of the State includes lakes, rivers, ponds, streams, inland waters, salt waters, and all other surface waters and water courses within the jurisdiction of the state of Washington.

Temporary Stabilization means the exposed ground surface has been covered with appropriate materials to provide temporary stabilization of the surface from water or wind erosion. Materials include, but are not limited to, mulch, riprap, erosion control mats or blankets and temporary cover crops. Seeding alone is not considered stabilization. Temporary stabilization is not a substitute for the more permanent “final stabilization.”

Total Maximum Daily Load (TMDL) means a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet state water quality standards. Percentages of the total maximum daily load are allocated to the various pollutant sources. A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The TMDL calculations must include a "margin of safety" to ensure that the waterbody can be protected in case there are unforeseen events or unknown sources of the pollutant. The calculation must also account for seasonable variation in water quality.

Transfer of Coverage (TOC) means a request for transfer of coverage under this general permit as specified by Special Condition S2.A of this permit.

Treatment BMPs means BMPs that are intended to remove pollutants from stormwater. A few examples of treatment BMPs are detention ponds, oil/water separators, biofiltration, and constructed wetlands.

Transparency means a measurement of water clarity in centimeters (cm), using a 60 cm transparency tube. The transparency tube is used to estimate the relative clarity or transparency of water by noting the depth at which a black and white Secchi disc becomes visible when water is released from a value in the bottom of the tube. A transparency tube is sometimes referred to as a “turbidity tube.”

Turbidity means the clarity of water expressed as nephelometric turbidity units (NTUs) and measured with a calibrated turbidimeter.

Uncontaminated means free from any contaminant. See definition of “contaminant” and WAC 173-340-200.

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

Waste Load Allocation (WLA) means the portion of a receiving water’s loading capacity that is allocated to one of its existing or future point sources of pollution. WLAs constitute a type of water quality based effluent limitation (40 CFR 130.2[h]).

Water-Only Based Shaft Drilling is a shaft drilling process that uses water only and no additives are involved in the drilling of shafts for construction of building, road, or bridge foundations.

Water Quality means the chemical, physical, and biological characteristics of water, usually with respect to its suitability for a particular purpose.

Waters of the State includes those waters as defined as "waters of the United States" in 40 CFR Subpart 122.2 within the geographic boundaries of Washington State and "waters of the State" as defined in Chapter 90.48 RCW, which include lakes, rivers, ponds, streams, inland waters, underground waters, salt

waters, and all other surface waters and water courses within the jurisdiction of the state of Washington.

Well means a bored, drilled or driven shaft, or dug hole whose depth is greater than the largest surface dimension. (See **Injection Well**.)

Wheel Wash Wastewater means any water used in, or resulting from the operation of, a tire bath or wheel wash (BMP C106: Wheel Wash), or other structure or practice that uses water to physically remove mud and debris from vehicles leaving a construction site and prevent track-out onto roads. When stormwater comingles with wheel wash wastewater, the resulting water is considered wheel wash wastewater and must be managed according to Special Condition S9.D.9.

APPENDIX B – ACRONYMS

AKART	All Known, Available, and Reasonable Methods of Prevention, Control, and Treatment
BMP	Best Management Practice
CESCL	Certified Erosion and Sediment Control Lead
CFR	Code of Federal Regulations
CKD	Cement Kiln Dust
cm	Centimeters
CPD	Common Plan of Development
CTB	Cement-Treated Base
CWA	Clean Water Act
DMR	Discharge Monitoring Report
EPA	Environmental Protection Agency
ERTS	Environmental Report Tracking System
ESC	Erosion and Sediment Control
FR	Federal Register
LID	Low Impact Development
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric Turbidity Unit
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
SWMM	Stormwater Management Manual
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
UIC	Underground Injection Control
USC	United States Code
USEPA	United States Environmental Protection Agency
WAC	Washington Administrative Code
WQ	Water Quality
WWHM	Western Washington Hydrology Model

Appendix C Health and Safety Plan

Universal Health & Safety Plan

Cowlitz Food and Fuel / No. 211556

101 Mulford Road
Toledo, Washington
United States

Prepared For:

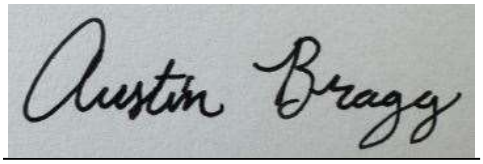
Client Name:	Chevron Environmental Management Company
Client Address:	6001 Bollinger Canyon Road, San Ramon, CA 94583
Project #:	60743836

Prepared By:

AECOM
1111 3rd Ave, Suite1600
Seattle, WA 98101

Preparer:

Name: Austin Bragg
Title: Environmental Scientist II
Date Prepared: February 11, 2025



Signature

Reviewer *(Office SHER; Area/Regional SHEM, or Business Line SHEM)*

Name: Kelly Dwyer
Title: Manager, Safety, Health, & Environment
Date Reviewed: April 18, 2025

Signature

Approver: *(Project Manager, Project Director, or BL Lead)*

Name: Jamalyn Green
Title: Project Manager
Date Approved: April 18, 2025

Signature

Expiration:	**April 18, 2026**	Valid for one (1) year maximum or until the scope of work, subcontractor(s), methods and/or equipment change.

Table of Contents

Attachments

1. HASP Summary Contact Information

SH&E Incident Reporting	**SH&E Incident Hotline: 1-800-348-5046** TOLL-FREE | 24 HOURS PER DAY | 7 DAYS PER WEEK | Immediately report all incidents including any potential work-related injuries, illnesses, discomfort/pain, property damage, security issues, regulatory inspections, and environmental impacts/spills.

	Nearest Resource	Name and Address	Hours of Operation	Phone #
Medical Treatment Resources	**Clinic**	**Concentra Medical Center** 3928 Pacific Avenue SE, Lacey, WA 98503	M-F 8am-5pm	360-455-1350
	Hospital	**PeaceHealth St. John Medical Center** 1615 Delaware St, Longview, WA 98632	24/7	360-414-2000
	First Aid Providers	Austin Bragg – AECOM		760-408-4488
	Nurse	**1-512-419-5016** – 24 HOURS PER DAY | 7 DAYS PER WEEK The hotline Operator will transfer injured/ill EE to nurse. If the transfer fails or EE's condition worsens following initial consultation, call direct.		
	Site Emergency Response	**911 (Or enter site specific appropriate number when applicable)**		

	Level	Title	Name	Phone #
Key Personnel	**Project Level**	**Project Manager (PM):**	Jamalyn Green	206-550-5713
		Site Supervisor (SS):	Austin Bragg	760-408-4488
		Site Safety Officer (SSO):	Austin Bragg	760-408-4488
		Client Contact Person:	James Kiernan	510-606-0156
		Account SH&E Manager:	Kelly Dwyer	281-520-6434
		Regional SH&E Director:	Galen Cooter	805-452-3523

	List ALL Short-Service Employees (<6 Months with AECOM or in Current Area/Job Description):			
	SSE's Name	SSE's Phone Number	Mentor's Name	Mentor's Phone #
SSEs	N/A			

Other Important Numbers	**Poison Control**	American Association of Poison Control Centers	800-222-1222
	D&A Testing	AECOM Occupational Nurse **AECOM D&A Program Administrator**	512-419-5016
	INFOR TRAC	AECOM Account Number: 74984	800-535-5053
	HOLMAN	AECOM Fleet Management	800-227-2273

Contractual Requirements for Safety, Health, and the Environment

☒ I have reviewed the AECOM Contract with our client and described our contractual duties for SH&E Below.

Jamalyn Green	Jamalyn Green	April 18, 2025
Project Manager Name	Project Manager Signature	Date

☒ AECOM is responsible for our own safety and that of our subcontractors.

☐ AECOM will be on-site with a General Contractor or other party who is responsible for their own safety. AECOM must comply with their safety plan in addition to our own plan; AECOM remains responsible for our safety and that of our subcontractors.

☐ AECOM has some level of safety responsibility for a General Contractor or other party (includes responsibility for reporting safety hazards, reviewing site controls etc.; describe below).

☐ Other/Additional Details: N/A

2. Introduction

This written Health and Safety Plan (HASP) is designed to identify, evaluate, and control safety and health hazards, and to outline emergency response actions for AECOM-managed activities. This HASP must be kept on site during work activities and made available to all workers including subcontractors and other site occupants for informational purposes. AECOM subcontractors are expected to independently characterize, assess, and control site hazards created by their specific scope of work.

This section of the HASP summarizes important AECOM SH&E Procedures that apply to all DCS Americas jobs. See **Attachment A** for the project Task Hazard Assessment (THA) forms and **Attachment B** for a list of applicable field SH&E Procedures. These field SH&E procedures must be readily available to the field employees (i.e. PDF, electronically, etc.).

2.1 Applicable References

This HASP conforms to the regulatory requirements and guidelines established in the following documents:

- Federal Occupational Safety and Health Administration (OSHA) Code of Federal Regulation Title 29, Part 1910 (29 CFR Part 1910), Safety and Health Regulations for General Industry and 29 CFR 1926, Safety and Health Regulations for Construction.
- Title 8 of the California Code of Regulations (8 CCR), with special attention to Section 5192 Hazardous Waste Operations and Emergency Response, and Section 3202, Injury Illness Prevention Program and to Sub Chapter 4, Sections 1500 - 1938 Construction Safety Orders.
- National Institute for Occupational Safety and Health/Occupational Safety and Hazards Administration/U.S. Coast Guard/U.S. Environmental Protection Agency, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, Publication No. 85-115, 1985.
- The requirements in this HASP also conform to AECOM's Safety for Life Program requirements as specified in the AECOM Global Safety, Health, and Environment (SH&E) System Management Manual.

3. Verbal Incident Notifications

NOTE! In the event of a life-threatening emergency, call 911 FIRST. A life-threatening emergency can include:

- Loss of consciousness
- Head or spinal cord injury
- Cardiac arrest
- Seizures
- Severe allergic reaction
- Broken bones
- Uncontrolled loss of blood
- Abdominal trauma
- Heat Stroke
- Difficulty breathing

3.1 Incidents

Once immediate actions have been taken, if safe to do so, notifications (verbal) must be completed immediately and the involved employee, site supervisor or site safety officer must call the **AECOM Incident Reporting Hotline** at **1-800-348-5046**. Notifications serve to engage additional resources in the management of the emergency and initiate additional processes such as medical case management, spill response, incident investigation, etc. Reporting initiates the formal documentation process and supports the development of key learnings to prevent a reoccurrence. No employee is authorized to report incidents to regulatory agencies. Only Senior members of the Health & Safety team are authorized to conduct regulatory reporting (i.e. Vice President).

Any incident for which assistance by SHE is required, including any injury – *even if no first aid is required* – must be immediately communicated to their manager or supervisor and the Incident Hotline at 1-800-348-5046. All incidents are also to be reported to IndustrySafe within 4 hours for significant incidents, or 24 hours for all other incidents.

Significant Incident:

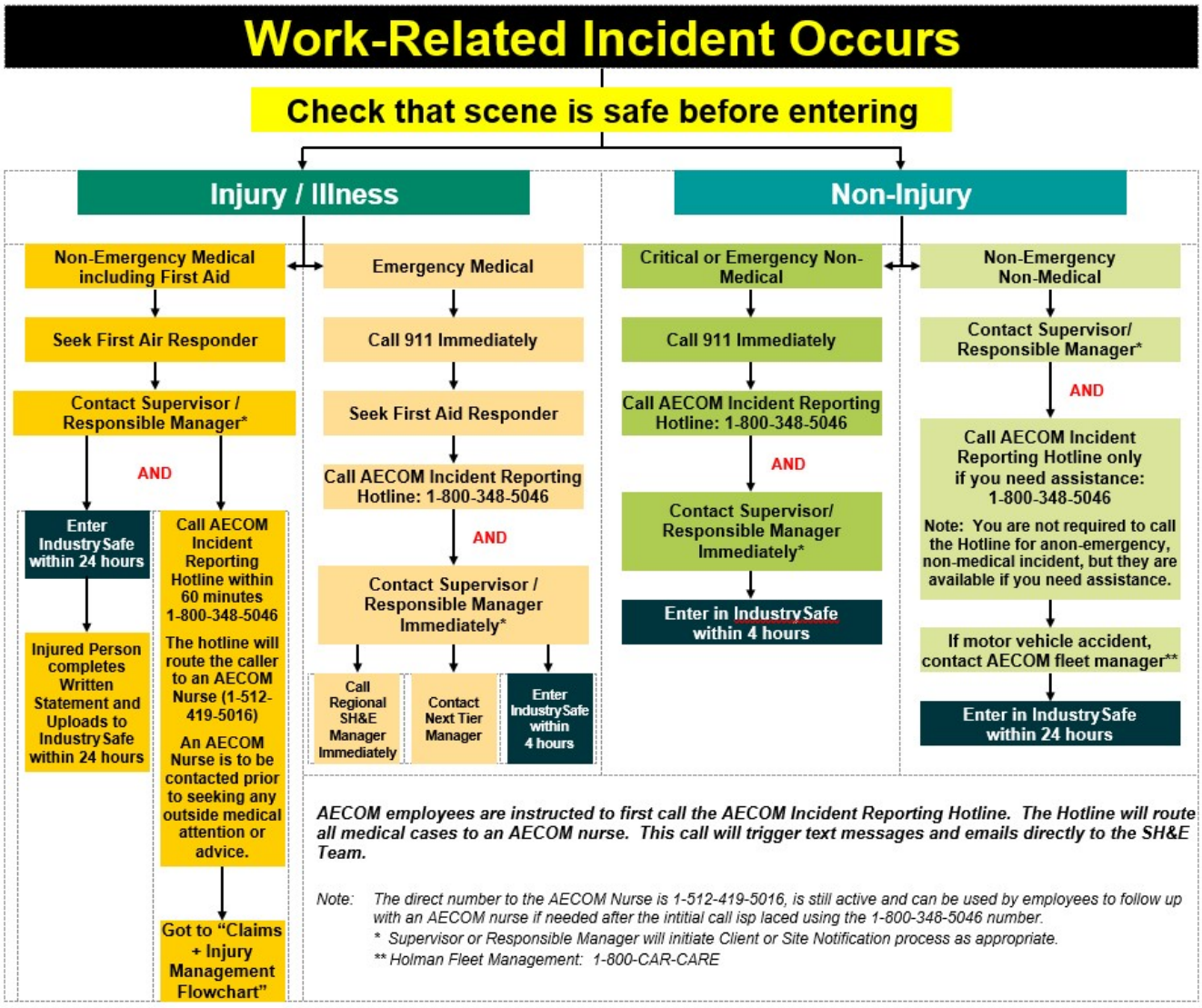
- Fatality;
- Amputation;
- Hospitalization for treatment for more than 24 hours (admission);
- Any single event resulting in more than one employee requiring medical treatment or being away from work more than 3 days;
- Any SHE-related Consent Agreement/Order/Lawsuit or enforcement action seeking more than $10,000 or alleging criminal activity;
- Any spill or release of a hazardous material that is reportable to a regulatory agency;
- Any Notices of Violation resulting from not operating within a regulatory agency permit/license or consent;
- Any incident resulting in property damage expected to exceed $10,000 United States (US) dollars;
- Any security-related incident that could have caused significant harm to an AECOM employee; and/or
- Any Near Miss that may have resulted in any of the above, but because of “luck” did not happen.

All Other Incidents:

- Any injury or illness to an AECOM employee or subcontractor, even if it does not require medical attention, including work-related injuries/illnesses that have become significantly aggravated by the work environment;
- An injury to a member of the public, or clients, occurring on an AECOM-controlled work site;
- Re-occurring conditions such as back pain or cumulative trauma disorders (e.g., carpal tunnel syndrome);
- Fire, explosion, or flash that is not an intended result of a planned event (e.g., remediation process, laboratory procedure);
- Any incident involving company-owned, rented, or leased vehicles (including personal vehicles used for company business); and/or

- Any failure to comply with the requirements of a regulatory permit issued to AECOM.

Table 3-1: Incident Notification & Reporting Flow Chart



3.2 AECOM Internal Notifications

For any incident or near miss, the involved employee must notify their site supervisor or site safety office. The site supervisor or site safety officer must notify their Project Manager. Depending on the severity of the incident, the Project Manager may need to notify the following individuals:

- Regional, area, business line, practice group or account SH&E manager.
- Program Manager or Client Account Manager
- Senior Leaders

3.3 Client Specific Notifications

Project Manager and or Client Account Manager complete client specific notifications of incidents in accordance with client's incident notification requirements. See client contact information in the Key Personnel table at the bottom of the **Section 1** on Page 1.

4. Emergency Response Plan

AECOM requires that all projects, plan for reasonably foreseeable emergencies. Prior to the start of site mobilization, all AECOM personnel shall review the site-specific information regarding evacuations, muster points, communication, emergency equipment and its location, and other site-specific emergency procedures.

Subcontractors will not use AECOM Hotline # and may use a different clinic based on their own Emergency Protocols. They will provide their own Project Emergency Plan to AECOM for review and acceptance. Any alterations to this plan must be communicated to all parties. Both AECOM and the subcontractor shall perform mock drills periodically in accordance with the length of the project.

4.1 Directions and Maps to Nearest Medical Treatment Resources

See following pages for directions and maps.

NEAREST HOSPITAL

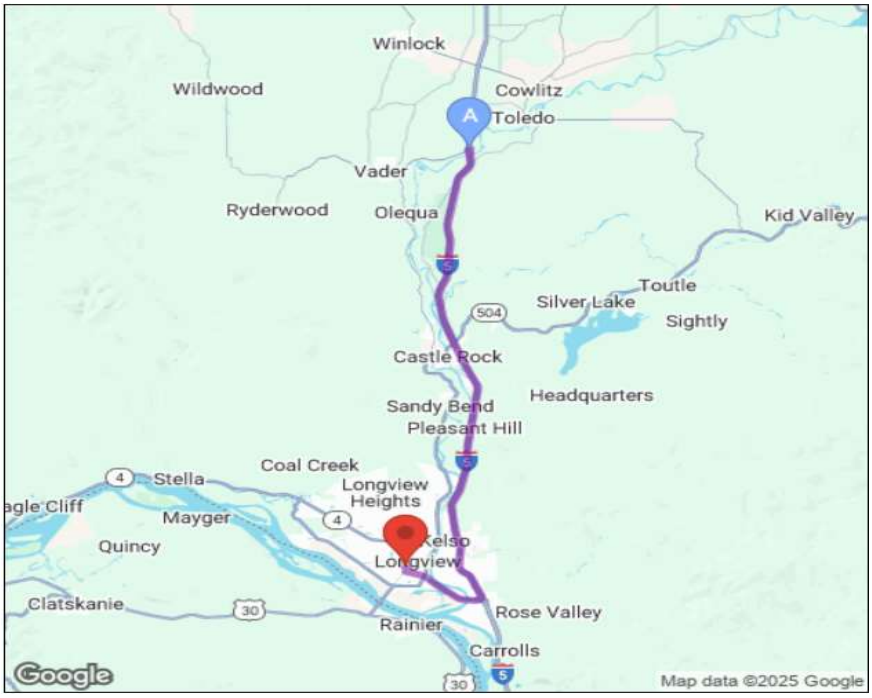
PeaceHealth St. John Medical Center **360-414-2000**

Address:	1615 Delaware St Longview, WA, 98632		
Hours of Operation:	24 hours		
Travel Time:	27 minutes	**Travel Distance:**	26.6 miles

DRIVING DIRECTIONS TO HOSPITAL

1. Head **southeast** toward **Mulford Rd**
2. Turn **right** onto **Mulford Rd**
3. Turn **left** onto **Cowlitz Loop Rd**
4. Turn **right** onto **WA-506 E**
5. Turn **right** to merge onto **I-5 S** toward **Portland**
6. Take exit **36** for **WA-432**
7. Continue onto **Exit 36B** (signs for **Longview**)
8. Merge onto **WA-432 W**
9. Continue onto **Tennant Way**
10. Turn **right** onto **15th Ave**
11. Turn **left** onto **Douglas St,** Turn **right.**
12. Turn **left.** Destination will be on the **right.**

ROUTE MAP TO HOSPITAL



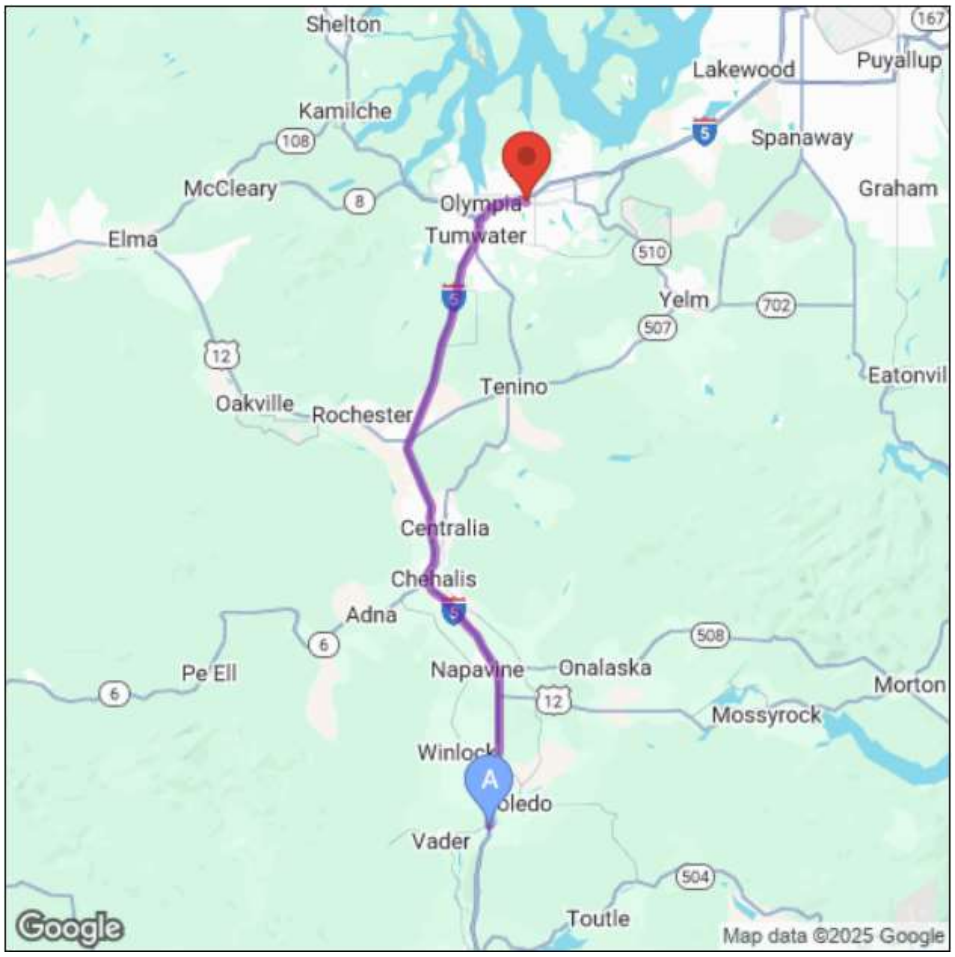
NEAREST OCCUPATIONAL CLINIC

Concentra Medical Center			**360-455-1350**
Address:	3928 Pacific Avenue SE, Lacey, WA 98503		
Hours of Operation:	8am-5pm, Monday-Friday		
Travel Time:	46 minutes	**Travel Distance:**	48.7 miles

DRIVING DIRECTIONS TO OCCUPATIONAL CLINIC

13. Head **southeast** toward **Mulford Rd**
14. Turn **right** onto **Mulford Rd**
15. Merge onto **I-5 N** via the ramp to **Seattle**
16. Take exit **107** for **Pacific Ave**
17. Merge onto **Pacific Ave SE**
18. Destination will be on the **left.**

ROUTE MAP TO OCCUPATIONAL CLINIC



4.2 Emergency Planning

AECOM requires that all projects plan for reasonably foreseeable emergencies (see Emergency Response Planning Procedure S3AM-010-PR). Prior to the start of site operations, all personnel shall review Table 8-1 for site-specific information regarding evacuations, muster points, communication, and other site-specific emergency procedures.

Table 4-1: Method(s) of Alerting Personnel of an Emergency

☒ **Cell Phone**	☐ Hand Signal	☐ Radio (Channel No. _____)		☐ Satellite Phone
☐ **Host Facility Alarm** (specify):		[Insert Description]	=	[Insert Meaning]
		[Insert Description]	=	[Insert Meaning]
		[Insert Description]	=	[Insert Meaning]
		[Insert Description]	=	[Insert Meaning]

Table 4-2: Muster Locations and Evacuation Route(s)

Muster Location Type	Location Description
Primary:	■ Northwest of active work area, outside of Mrs. Beesley's Burgers
Alternate:	● South of active work area, along Cowlitz Loop Rd
Shelter-In-Place:	♦ Inside nearby restaurant (Mrs. Beesley's Burgers)
Muster Locations and Evacuation Route Map	

Table 4-2: Muster Locations and Evacuation Route(s)

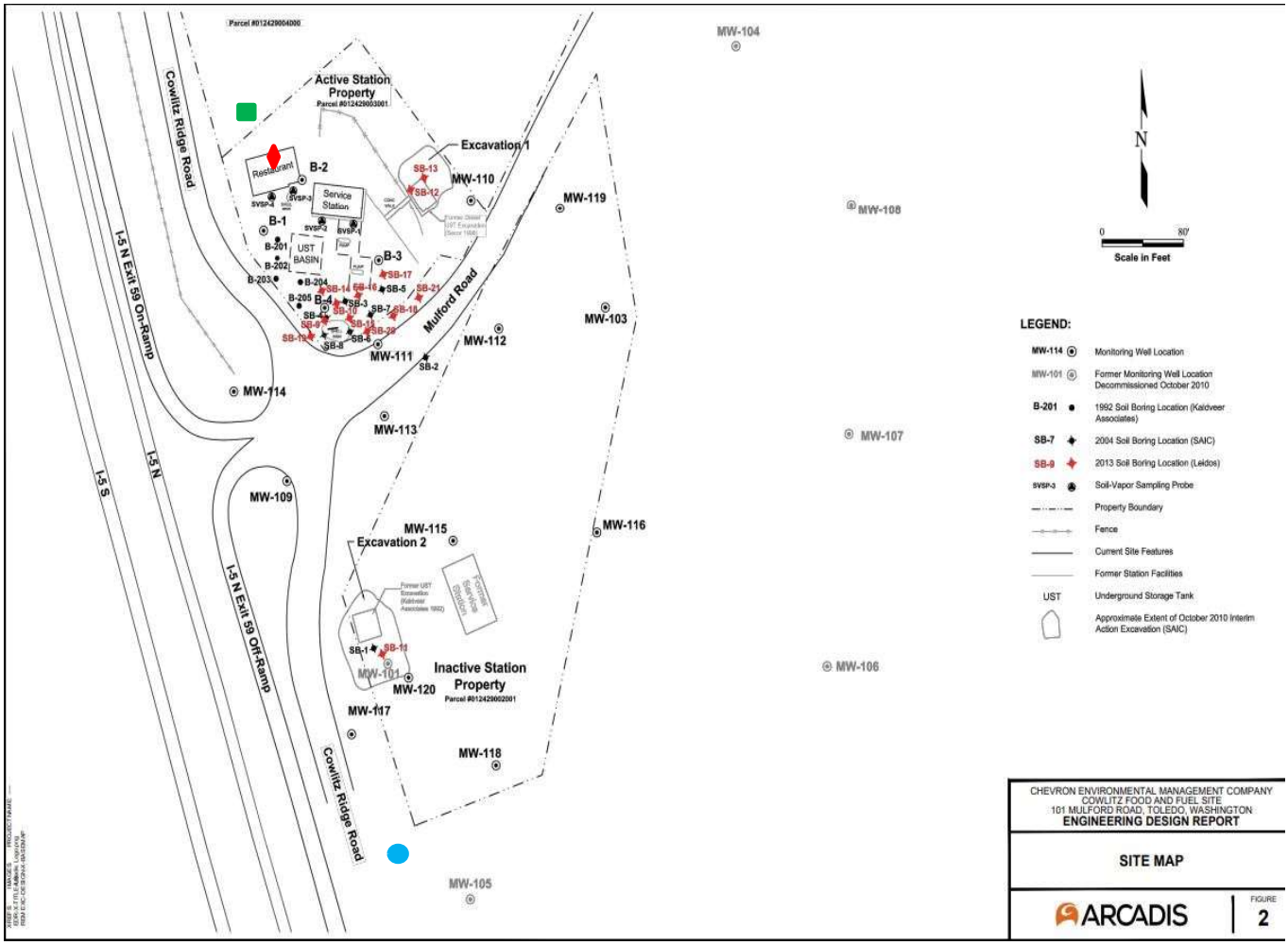


Table 4-3: Site Emergency Equipment and Its Location

ITEM(S)	ITEM DESCRIPTION	LOCATION(S)
First Aid Kit(s)	■ ANSI Z308.1 Class A, Type III; Qty=1 ■ ANSI Z308.1 Class B, Type III; Qty=1	■ AECOM Field Vehicle
Automated External Defibrillator(s) (AEDs)	■ Standard AED	■ n/a
Fire Extinguisher(s)	■ 2A:10: B:C (5 lb. ABC) ■ 4A:80B:C (10 lb. ABC) ■ 4A:80B:C (10 lb. ABC) ■ 8A:120b:C: (20 lb. ABC)	■ AECOM Field Vehicle(s) ■ Drill Rig/Geoprobe ■ Heavy Equipment Cabins(s) ■ Hot Work Area(s)
Spill Kit(s)	■ N/A	■ N/A

Table 4-3: Site Emergency Equipment and Its Location

ITEM(S)	ITEM DESCRIPTION	LOCATION(S)
Satellite Phone(s)	■ N/A	■ N/A
Rescue Equipment	■ N/A	■ N/A
Wildlife Deterrent(s)	■ N/A	■ N/A
Emergency Shelter(s)	■ N/A	■ N/A
Emergency Ration(s)	■ N/A	■ N/A
Personal Locating Device(s)	■ N/A	■ N/A
Cold/Heat Stress Aids	■ Climate-Controlled Environment ■ Other (specify)	■ Field Vehicle(s) ■ Location

4.3 Potential Emergency Scenarios

This section covers emergency scenarios that could reasonably occur on the site or during work.

4.3.1 Evacuation

- If a situation requires an evacuation or emergency muster/assembly, the pre-determined alarm will be initiated.
- All personnel (e.g., workers, contractors, visitors) of the area requiring evacuation or muster/assembly will immediately assemble at the designated Muster Point, Assembly Point or Shelter-in-Place as determined by the alarm or communication.
- The Site Supervisor, Site Safety Officer, or designate will take action to account for all personnel, including visitors (i.e., head count, roll call).
- The Site Supervisor, Site Safety Officer, or designate shall ensure the appropriate emergency response is activated.
- Should it be determined that an individual is still within the hazard zone, establish whether a rescue can be safely attempted. Follow the 'Emergency Rescue Procedure' if properly trained and a rescue attempt will not put another individual in jeopardy.
- Personnel shall await further instruction from the Site Supervisor, Site Safety Officer, or designate (e.g., all clear and re-entry or further evacuation)

4.3.2 Medical Emergency

1. Stop the work activity.
2. Assess the cause of the injury to avoid injury to yourself (i.e. live wires, gases, hazardous materials).
3. Do not move the casualty unless they remain in danger.
4. First Aid Provider will designate an individual to call for medical assistance (e.g., ambulance, site medic).
5. First Aid Provider will designate an individual to retrieve the first aid kit and blankets.
6. Request assistance from other First Aid Providers as necessary. Administer first aid:
    a) Assess responsiveness: ask permission.
    b) Send for medical help.
    c) Place casualty/victim face up.
    d) Check Airway, Breathing and Circulation ABC's
    e) Control severe bleeding.
7. If CPR is deemed necessary:
    a) Begin chest compressions at a rate of at least 100 compressions per minute.
    b) CPR shall be continued until:

i. until an AED is applied,
ii. casualty begins to respond,
iii. another first aid provider takes over,
iv. medical help takes over, or
v. physically unable to continue.

8. If the casualty begins to breathe on their own, place them in the recovery position, monitor and treat for shock as appropriate.
9. Individual in communication with the designated medical assistance shall attempt to answer any questions, stay on the line until information is verified and follow instruction.
10. Arrange for medical transport as needed. A designated individual should be positioned to direct medical transport to the casualty.
11. Personnel shall await further instruction from the Site Supervisor, Site Safety Officer, or designate (e.g., resume activity).

4.3.3 Lightning/Weather-Related Emergencies

Be Aware: Check the weather forecast before participating in outdoor activities. If the forecast calls for thunderstorms, postpone your trip or activity, or make sure adequate safe shelter is readily available. Many applications available for smart phones and devices have lightning alert capabilities or display lightning strikes on radar maps; download one for your smart phone and enable location services to receive alerts.

Go Indoors: Remember the phrase, "**When thunder roars, go indoors"**. If you see lightning and cannot count to 30 before hearing thunder, the lightning is too close for comfort. Find a safe, enclosed shelter when you hear thunder. Safe shelters include homes, offices, shopping centers, and hard-top vehicles with the windows rolled up.

Crouch Close to the Ground and Separate: If you are caught in an open area, crouch down in a ball-like position (**feet and knees together**) with your head tucked and hands over your ears so that you are down low with minimal contact with the ground. **Do NOT lie down**. Lightning causes electric currents along the top of the ground that can be deadly over 100 feet away. Crouching down is the best combination of being low and touching the ground as little as possible.

Separate: If you are in a group during a thunderstorm, separate from each other. This separation will reduce the number of injuries if lightning strikes the ground.

If a person is struck by lightning:

- Call 911 or other Emergency Services Contact.
- Assess the scene to ensure that continuing risk to rescuers does not exist if lightning strikes. For other electrical-related emergencies (non-lightning), ensure the source of electricity has been de-energized.
- Check to see if the victim is breathing and proceed with CPR if victim is not breathing.

4.3.4 Vehicle Incidents

All vehicles should be rented through Navan Travel (accessible via Ecosystem) to ensure that AECOM insurance is included in the rental rate. All other insurances should be declined. AECOM has negotiated contracts with Enterprise and National which are preferred vendors. If Enterprise or National are not available, Avis or Budget shall be used.

In the event of a vehicle incident (including collisions as well as mechanical difficulties such as breakdowns and flat tires) the following response is recommended. For breakdowns and flat tires, contact an emergency provider. For rental vehicles, contact the rental company. To the extent possible, AECOM personnel should not change flat tires or perform similar repairs.

If a collision has occurred, assess the situation, and move all occupants (except the injured) out of further harm's way. If safe to do so, remove the car from the traveled way. Call 911 if necessary and report the incident to the Incident Hotline at 1-**800-348-5046** as soon as practical. If in an AECOM leased vehicle, contact our fleet manager, *Holman*, at 1-800-227-2273.If appropriate, wait for police to arrive. Provide insurance information to other drivers if necessary or requested, and collect the same

(AECOM's rental vehicle insurance policy for Enterprise or Avis can be found on the DCS Americas United States or Canada travel pages). If possible, obtain names and phone numbers of witnesses. Take photographs of the scene. DO NOT ADMIT LIABILITY, AGREE TO PAY FOR DAMAGE, OR SIGN A DOCUMENT RELATED TO AN INCIDENT EXCEPT AS REQUIRED BY LAW.

For personal vehicles used on AECOM business, contact an emergency provider.

4.3.5 Fire

AECOM employees are not expected to attempt to put out fires. Stop work; notify all AECOM personnel, move upwind and contact 911 and/or emergency response at the site. If employees have been properly trained in the operation of a fire extinguisher, they may attempt to put out a small fire, if the following conditions are met:

- The fire must be small (i.e., smaller than a trash can) and in its early stages.
- The employee must have an escape route.
- The employee must be trained and know they have the right type of extinguisher.
- The employee must be safe from toxic gases.
- There must be no hazardous conditions that could quickly accelerate the fire (e.g., presence of chemicals and/or combustibles, especially dry grass, etc.).
- Above all, if in doubt, the employee must not attempt to fight the fire.

4.3.6 Other

The following additional emergency scenarios could potentially occur based on the site and/or planned scope of work:

☐ Avalanche	☐ Emergency Rescue	☒ Severe Winter Storm	☐ Tornado
☐ Bear Attacks / Charges	☐ Explosion	☒ Spill or Release	☒ Wildfire
☒ Earthquake	☐ Floods/Heavy Rain	☐ No Other Credible Scenarios	
☐ Electrical Live Line Contact	☐ Gas Leak		

SEVERE WINTER STORMS

Winter Storm Watch Issued

1. Monitor television, radio or other sources identified as reliable (i.e. social media, websites) for information, updates, and road closures.
2. Determine if ongoing task(s) can be safely completed well before the storm projected to reach the site. Allow time to safely return to office, hotel, or home.
3. Contact the AECOM Project Manager before starting a new task.

Winter Storm Warning Issued

1. Monitor television, radio or other sources identified as reliable (i.e. social media, websites) for information, updates, and road closures.
2. Determine if ongoing task(s) can be safely completed well before the storm projected to reach the site. Allow time to safely return to office, hotel, or home.

3. Return to office, hotel, or home
4. If conditions deteriorate to the point of closure, ensure that workers know road conditions and that remaining on site or at a nearby hotel may be the best decision.

EARTHQUAKE

If inside – DUCK, COVER, AND HOLD:

1. Take cover under a desk or table or sit or stand against an inside wall (not inside a doorway, unless you know it is strongly supported and load bearing).
2. Hold tightly to the desk or table until the shaking stops.
3. Move away from windows or objects that may fall and utilize suitable material to shield head and face if available.
4. Do not run outside during the shaking.
5. After the shaking has stopped, evacuate the building if structural damage is apparent (per local guidance; use stairs, not elevator).
6. Avoid use of the telephone. Replace telephone handsets shaken off the hook.
7. Do not create an ignition source due to possible gas leaks.

If outside:

1. Do not enter any building.
2. Move clear of buildings, falling glass, utility poles, wires, and large trees.
3. Get on the ground — DUCK, COVER, HOLD.
4. After the shaking stops, watch for falling glass, electrical wires, poles, and other debris.

If driving:

1. Drive away from overpasses and underpasses.
2. Stop in a safe place.
3. Set the parking brake.
4. Stay in the vehicle. If wires fall onto the vehicle, stay inside until rescued.

After the event:

1. Be prepared for aftershocks and fires.
2. Personnel shall obtain or wait for instructions from the Site Supervisor, Site Safety Officer, or designate or Emergency Services personnel (i.e. all clear and re-entry or further evacuation).

SPILL / LEAK / RELEASE OF HAZARDOUS MATERIALS

1. Identify the product and assess the risk of injury, fire, or explosion.
2. If there is insufficient information on the product or inadequate PPE, move upwind if possible and leave the area immediately (initiate personnel evacuation if required).
3. Isolate the area and deny access to any unauthorized personnel.
4. Only if safe to do so, take measures to stop and control the spill / leak / release
5. Eliminate all ignition sources, if required (no smoking, flares, sparks / flames, engines running).
6. As applicable, designate an individual to notify the Site Supervisor, Site Safety Officer, or designee will complete the appropriate incident notifications., or Foreman and SH&E representative.
7. Consult the product SDS for accidental release / handling procedures.
8. If it is not possible to stop / control the release, call the appropriate onsite or offsite emergency services.
9. Tend to any injured personnel (follow Medical Emergency steps).
10. Personnel shall await further instruction from the Site Supervisor, Site Safety Officer, or designate (e.g., further evacuation or resume activity).

WILDFIRE

1. Alert others in the area of the fire.
2. Sound the alarm & summon emergency assistance.

3. Personnel shall evacuate to the muster point if it is safe to do so.
4. If personnel are trained in the use of firefighting equipment they may attempt to extinguish and/or prevent spread of the fire.
5. The Site Supervisor, Site Safety Officer, or designate will take action to account for all personnel, including visitors (i.e. head count, roll call).
6. A designated individual should be positioned to direct the fire crews to the fire location.
7. Personnel shall await instruction from the Site Supervisor, Site Safety Officer, or designate (i.e. all clear and re-entry or further evacuation).

4.4 Fitness for Duty and Illness Reporting

AECOM employees should always live our life-preserving principle of “Fitness for Duty”, which requires employees to stay home from work when they are sick, as they are not “Fit for Duty” when ill, whether with the flu, Coronavirus, or other illness, especially contagious illnesses.

5. Site Description

The Site is located east of Interstate 5, off the Vader-Ryderwood exit, near the intersection of Cowlitz Ridge Road and Mulford Road, in Lewis County, Washington. The Site comprises three land parcels. An operating Shell gasoline service station with mini-mart and a restaurant (Mrs. Beesley's Burgers) are located on the two parcels north of Mulford Road (Lewis County Assessor Parcel Numbers [APNs] 012429003001 and 012429004000, currently owned by Candid Travel Center Land LLC). This portion of the Site has been referred to as the "active station" in previous reports.

The third parcel (APN 012429005001, currently owned by Mr. Charles Vineyard), which is located south of Mulford Road, was formerly the location of another gasoline service station (referred to as the "inactive station"). The inactive station portion of the Site was generally vacant since approximately 1994 to 2016. A drive-thru food and espresso stand (Good Stuff) has been operating on this portion of the site since approximately 2016. This property is also occupied by Genesis Buildings, a business that sells storage sheds.

5.1 Site Background/History

The Site was originally part of a single tax lot that was purchased in 1947 by Mr. Frank Vineyard (former property owner, now deceased) and used for farming. In 1955, the lot was subdivided and leased. The two parcels north of Mulford Road were leased to Texaco in 1955. Texaco constructed a service station building and installed four underground storage tanks (USTs) and associated piping. In 1980, Texaco passed lease and ownership interests to Olson Brothers Garage, Inc.; lease and ownership interests were passed to West Coast Oil Company in 1985. In 1986, Robert and Sherry Smith purchased the service station from West Coast Oil Company. The Smiths operated the service station until 2004, when it was purchased by Tri-Tex Oil Company. Tri-Tex currently operates the Cowlitz Shell gasoline service station north of Mulford Road. The parcel south of Mulford Road was originally leased to General Petroleum Corporation. In 1978, a new lease was assigned to Olson Brothers Garage, Inc., who operated a Mobil service station and a small restaurant on the property until 1984. In 1992, two 6,000-gallon and one 300-gallon USTs were removed. Sometime around 1994, the parcel south of Mulford Road was utilized as a sales lot for prefabricated homes. The property is currently vacant.

5.2 Client and/or Third-Party Operations at Site

Currently, the Site is composed of a restaurant, a Shell service station, a historical landmark, and Genesis Buildings. There is potential for light foot traffic and cars passing by. Gas station operations will be taking place on and around the site.

5.3 Scope of Work

The scope of work consists of groundwater sampling activities that may include one or more of the following work processes:

- AECOM - Observe subcontractor as they perform private utility locate
- GPRS – Conduct private utility locate
- AECOM - Observe underground storage tank (UST) removal by property owner contractor
- ClearCreek Contractors Inc – Conduct remedial excavation and UST removal per environmental design report
- Blaine Tech - Semi-annual post-remedial groundwater monitoring and reporting

Additional tasks may also be performed as necessary in support of groundwater sampling activities:

- Mobilization/Demobilization: This includes limited pre- and post-task activities. These activities include driving to and from the site; morning tailgate, site walks; and post-work activities, such as end of day discussions, uploading files, daily field reports and general housekeeping.
- Equipment Decontamination: AECOM and subcontractor personnel will perform decontamination of equipment used to perform work within controlled work areas.

- Investigative-Derived Waste (IDW) Management: IDW will be collected and categorized as non-hazardous or hazardous. Potentially hazardous IDW (purge water, and decontamination fluids will be tested and disposed of within 90 calendar days of completing the field activities. Potentially hazardous IDW will be staged on-site, and then delivered or picked up to be transported to an IDW storage facility for processing. Non-hazardous IDW (normal trash) will be disposed of in a timely fashion during fieldwork.

A Task Hazard Assessment (THA) for each operation being performed by AECOM and each operation performed by an AECOM subcontractor working under the AECOM HASP must be included in **Attachment A**, while those performed by the managed subcontractors should be prepared by the subcontractor.

Table 5-1: Task List

Task Name	Permit(s) Required		Primary Task Performed By		
			AECOM	SUB	Third-Party
Driving To and From the Site	☐ Yes	☒ No	☒	☒	☐
Site Walk	☐ Yes	☒ No	☒	☒	☐
Groundwater Sampling	☐ Yes	☒ No	☐	☒	☐
IDW Management	☒ Yes	☐ No	☐	☒	☐
Loading/Unloading Vehicle	☐ Yes	☒ No	☐	☒	☐
Utility Locate	☐ Yes	☒ No	☐	☒	☐
Excavation/UST Removal	☒ Yes	☐ No	☐	☒	☐
Excavation Oversight	☐ Yes	☒ No	☒	☐	☐
Utility Clearance Oversight	☐ Yes	☒ No	☒	☐	☐

5.4 Key Dates

Project Start Date:	January 27, 2025
Field Work Start Date:	TBD
Project Completion Date:	January 27, 2026

5.5 Physical and Biological Hazards

Physical and biological hazards are hazards that threaten the physical safety of an individual; contact with the hazard typically results in an incident or injury. The following table summarizes the physical and biological hazards present at the site and the associated procedures that address protection and prevention of harm.

- **If a there is a potential of physical or biological hazard when performing a specific task, it must be addressed in the THA.**

Some tasks are considered High Potential (HiPo) Hazard Activities as identified in S3AM-209-PR1, Risk Assessment, based on the factors contributing to the severity and probability of credible outcomes resulting from ineffective mitigation of their hazards and are designated with "**HH**" in the table below. High potential hazard activities typically require additional documents such as a Safe Work Permit (S3AM-218-FM1), activity-specific permit, site specific plans, task/equipment-specific training, pre-use inspections, a competent person, etc.

All checked procedures MUST be included in **Attachment B** for implementation and reference. The following hazards and their site-specific description are anticipated based on the scope of work and project site:

Table 5-2: Anticipated Activities, Situations and Physical & Biological Hazards

Activity / Situation / Physical or Biological Hazard		Applicable SH&E Procedure(s)	Related Activity-Specific Permit or Plan (Typically Required)
☐ **Abrasive Blasting**		S3AM-335-PR1	n/a
☐ **Aircraft Charters**	HH	S3AM-318-PR1	n/a
☐ **All-Terrain/Utility-Terrain Vehicles**	HH	S3AM-319-PR1	n/a
☐ **Asbestos**	HH	S3AM-109-PR1	S3AM-109-ATT1, FM1, & FM2
☐ **Blasting and Explosives**	HH	S3AM-336-PR1	S3AM-218-FM1
☐ **Bloodborne Pathogens**		S3AM-111-PR1	n/a
☐ **Cofferdams**		S3AM-344-PR1	n/a
☒ **Cold Stress**		S3AM-112-PR1	n/a
☐ **Commercial Motor Vehicles**		S3AM-320-PR1	n/a
☐ **Compressed Air Systems & Testing**		S3AM-337-PR1	n/a
☐ **Compressed Gases**		S3AM-114-PR1	n/a
☒ **Concrete Work**	HH	S3AM-338-PR1	n/a
☐ **Confined Spaces**	HH	S3AM-301-PR1	S3AM-301-FM1 S3AM-301-FM2
☐ **Corrosive Reactive Materials**		S3AM-125-PR1	n/a
☐ **Cranes and Lifting Devices**	HH	S3AM-310-PR1	S3AM-218-FM1 S3AM-310-FM2 S3AM-310-FM3
☐ **Demolition**		S3AM-339-PR1	n/a
☐ **Diving (scientific and commercial)**	HH	S3AM-334-PR1	Dive Plan
☐ **Drilling, Boring & Direct Push Probing**	HH	S3AM-321-PR1	n/a
☒ **Driving**		S3AM-005-PR1	S3AM-005-FM1
☐ **Electrical Work / Assured Equipment Grounding**	HH	S3AM-302-PR1	S3AM-302-FM1
☐ **Electrofishing**		S4[DCS]AM-301-PR1	S3AM-218-FM1
☒ **Excavation**	HH	S3AM-303-PR1	S3AM-303-FM2
☐ **Fall Protection**	HH	S3AM-304-PR1	S3AM-218-FM1
☐ **Flammable and Combustible Liquids**		S3AM-126-PR1	n/a
☐ **Gauge Source Radiation**		S3AM-122-PR1	S3AM-122-FM4 S3AM-122-FM5
☒ **Hand and Power Tools (drill, chainsaw, grinder, power saw, pressure washer, etc.)**	HH	S3AM-305-PR1	n/a
☒ **Hand Hazards**		S3AM-317-PR1	n/a
☒ **Hazardous Waste Operations**	HH	S3AM-117-PR1	n/a
☒ **Heat Stress**		S3AM-113-PR1	S4DCS-AM-113-FM1
☒ **Heavy Equipment**	HH	S3AM-309-PR1	S3AM-218-FM1
☐ **High Altitude**		S3AM-124-PR1	n/a
☐ **Highway and Road Work**	HH	S3AM-306-PR1	Traffic Control Plan S3AM-306-FM1
☐ **Hoists Elevators and Conveyors**	HH	S3AM-343-PR1	S3AM-218-FM1
☐ **Hot Work**	HH	S3AM-332-PR1	S3AM-332-FM1
☐ **Ladders**	HH	S3AM-312-PR1	S3AM-218-FM1
☐ **Lockout Tagout**	HH	S3AM-325-PR1	S3AM-325-FM1 S3AM-325-FM4
☐ **Machine Guarding**		S3AM-326-PR1	n/a
☒ **Manual Lifting**		S3AM-014-PR1	n/a
☐ **Marine Safety and Vessel Operations**	HH	S3AM-333-PR1	S3AM-333-ATT4
☐ **Material Storage**		S3AM-316-PR1	n/a
☐ **Mine Site Activities**		S3AM-341-PR1	n/a

Table 5-2: Anticipated Activities, Situations and Physical & Biological Hazards

Activity / Situation / Physical or Biological Hazard		Applicable SH&E Procedure(s)	Related Activity-Specific Permit or Plan (Typically Required)
☐ **Mining Operations**	HH	S3AM-345-PR1	n/a
☐ **Mobile Elevating Work Platforms**	HH	S3AM-323-PR1	S3AM-218-FM1
☐ **Newly Hired or Transferred Employees**	HH	S3AM-015-PR1	n/a
☒ **Non Ionizing Radiation**		S3AM-121-PR1	n/a
☒ **Overhead Lines and Obstructions**	HH	S3AM-322-PR1	S3AM-218-FM1
☐ **Powder-Actuated Tools**		S3AM-327-PR1	n/a
☐ **Powered Industrial Trucks**		S3AM-324-PR1	n/a
☐ **Process Safety Management**		S3AM-328-PR1	n/a
☐ **Radiation**	HH	S3AM-120-PR1	S3AM-120-FM1 S3AM-120-FM2 S3AM-120-FM3
☐ **Railroad Safety**	HH	S3AM-329-PR1	n/a
☐ **Respiratory Protection**	HH	S3AM-123-PR1	Respiratory Protection Plan
☐ **Scaffolding**	HH	S3AM-311-PR1	S3AM-218-FM1
☐ **Signs, Signals, and Barricades**		S3AM-346-PR1	n/a
☐ **Steel Erection**		S3AM-340-PR1	n/a
☐ **Temp. Floors, Stairs, Railings, Toe-boards**		S3AM-342-PR1	n/a
☒ **Underground Utilities**	HH	S3AM-331-PR1	S3AM-331-FM1
☐ **Underground Work**	HH	S3AM-330-PR1	S3AM-330-FM1
☐ **Unmanned Aircraft Systems**		S3AM-347-PR1	S3AM-347-FM1
☐ **Unexploded Ordnance (UXO) and Munitions Response** Involve the Munitions Response Program Safety Manager (Mac Reed) in this planning	HH		
☒ **Wildlife, Plants, and Insects**		S3AM-313-PR1	n/a
☒ **Working Alone**	HH	S3AM-314-PR1	Lone Worker Management Plan (Section 5.6)
☐ **Working On and Near Water**	HH	S3AM-315-PR1	n/a

Note: **HH –** High-Hazard Activity or Situation

5.5.1 Competent Persons

A competent person is an employee who, through education, training, and experience, has knowledge of applicable regulatory requirements, is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. AECOM's Competent Person Designation Procedure, S3AM-202-PR1, explains the roles, responsibilities and procedures of naming a competent person.

Table 5-3: Competent Person Log

☒ Scope of Work requires one or more competent persons (see table below)
☐ None, Scope of Work does not require competent persons(s).

	Activity / Area of Competency	Name of Person (Affiliation) Note: Subcontractors may provide this person
☒	**Hearing Protection**	■ Austin Bragg – AECOM
☒	**Heavy Equipment**	■ Rob Honsberger - (ClearCreek Contractors Inc)
☒	**Trench & Excavations**	■ Rob Honsberger - (ClearCreek Contractors Inc)

5.6 Chemical & Airborne Hazards/ Constituents of Concern

Airborne and chemical hazards are types of occupational hazards caused by workplace exposures. Exposure to airborne materials and chemicals in the workplace can cause acute or long-term detrimental health effects. Potential exposure to these hazards on AECOM projects can come from several sources including materials brought on site to perform work, constituents of concern found in environmental media under investigation, and simultaneous operations being performed at the site by the property owner/third parties.

Based on information obtained from historical investigations and other sources, the chemicals in the table below are known or suspected to be present at the site.

Table 5-4: Summary of Hazardous Properties of Chemical and Airborne Hazards

***Notes: PEL** = Permissible Exposure Limit | **TLV** = Threshold Limit Value | **IP** = Ionization Potential | **eV** = Electron Volt*

Chemical Name	Media	Primary Routes of Exposure	PEL	TLV	IP (eV)
Metals					
Lead	☐ Soil ☒ Groundwater ☐ Vapor ☐ N/A	Dermal	0.05 mg/m^3	0.05 mg/m^3	n/a
Other Common Site COCs					
Benzene	☒ Soil ☒ Groundwater ☐ Vapor ☐ N/A	Inhalation	1 ppm	0.5 ppm	9.25
Diesel fuel (TPH-DRO)	☒ Soil ☒ Groundwater ☐ Vapor ☐ N/A	Inhalation	n/a	15 ppm	n/a
Dust	☒ Soil ☒ Groundwater ☐ Vapor ☐ N/A	Inhalation	15 mg/m^3	10 mg/m^3	n/a
Ethylbenzene	☒ Soil ☒ Groundwater ☐ Vapor ☐ N/A	Inhalation	100 ppm	20 ppm	8.77
Gasoline (TPH-GRO)	☒ Soil ☒ Groundwater ☐ Vapor ☐ N/A	Inhalation	n/a	300 ppm	n/a
Oils (TPH-LRO)	☒ Soil ☒ Groundwater ☐ Vapor ☐ N/A	Inhalation	5 mg/m$^{3\,b}$	5 mg/m$^{3\,b}$	n/a
Toluene	☒ Soil ☒ Groundwater ☐ Vapor ☐ N/A	Inhalation	200 ppm	20 ppm	8.82
Xylene	☒ Soil ☒ Groundwater ☐ Vapor ☐ N/A	Inhalation	100 ppm	100 ppm	8.45, 8.56

5.7 Decontamination

All possible and necessary steps shall be taken to reduce or minimize contact with chemicals and contaminated/impacted materials while performing field activities. Decontamination steps are outlined in the Hazardous Waste Operations procedure S3AM-117-PR1. All decontaminated equipment shall be visually inspected for contamination prior to leaving the Contaminant Reduction Zone (CRZ).

Table 5-5: Decontamination Procedures & Equipment

Procedure	Equipment Needed
Wash/scrub PPE	Soft-bristle scrub brushes or long-handled brushes; buckets of water with decontamination solution
Rinse PPE	Hoses or buckets of water for rinsing; large plastic wash tubs (as needed)
Dry PPE	Paper or cloth towels

Table 5-6: Equipment Decontamination Procedures

Type Equipment	Decontamination Solution	Procedure
Large equipment (augers, etc.)	Alconox, simple green, or similar detergents	High pressure washer (usually part of decontamination trailer); use scrub brushes to remove remaining visible contamination
Small equipment (hand tools, etc.)	Alconox, simple green, or similar detergents	Remove majority of visible gross contamination in EZ; wash equipment in decontamination solution with a scrub brush; rinse equipment; visually inspect for remaining contamination

6. Air Monitoring

Potential exposure to chemical hazards from sources including materials brought on site to perform work, constituents of concern found in environmental media under investigation, and/or simultaneous operations being performed at the site by the property owner/third parties are reasonably anticipated to have the potential to result in vapors, fumes, aerosols, mists, and/or airborne particulates/dusts at or near permissible exposure limits. Therefore, air monitoring that will be implemented is described below.

6.1 Real Time Exposure Measurements/Equipment

Monitoring shall be performed within the work area on site to detect the presence and relative levels of toxic substances. The data collected throughout monitoring shall be used to determine the appropriate levels of PPE. Monitoring shall be conducted as specified in the work permit and THA as work is performed. All instrumentation needs to be rated intrinsically safe to prevent fire or explosion.

Table 6-1: Air Monitoring Instrumentation Needed

	Instrument	Manufacturer/Model	Substances Detected
☒	**Photo Ionization Detector (PID)**	■ RAE Systems mini-RAE ■ Photovac Microtip ■ Hnu Model Hnu (min. 10.6 eV bulb)	■ Petroleum hydrocarbons ■ Organic Solvents
☐	**Multi or 4 Gas Detectors**	■ RAE Systems Multi-RAE	■ Lower Explosive Limit ■ Oxygen ■ Carbon Monoxide ■ Hydrogen Sulfide
☐	**Combustible Gas Indicator (CGI)** *May be combined with individual or multi-gas detectors.*		■ Explosivity
☐	**Particulate Monitor**	■ MIE Model PDM-3 mini-RAM	■ Aerosols, mist, dust, and fumes
☐	**Personal Monitoring/ Badges**	■ N/A	■ N/A

6.2 Monitoring Procedures

The monitoring procedures shown below are general guidelines for sampling activities. In general, readings are considered actionable if sustained readings are observed for 5 minutes or more or if intermittent peaks are seen more than 1 time the action level. A reading more than action level outlined below will require additional ventilation (natural or mechanical) for 30 minutes, followed by re-monitoring.

Table 6-2: Monitoring Procedures and Action Levels

	Parameter	Zone Location and Monitoring Interval	Action Level	Response Activity
☒	**Volatile Organic Compounds (VOCs) and Volatile Hydrocarbons** (total by PID)	Breathing zone, continuously during tasks where exposure to VOCs and volatile hydrocarbons is possible	< 5 ppm	■ Continue monitoring, may continue work in required PPE
			5- 25 ppm (sustained for 5 minutes)	■ **STOP WORK** and notify PM. Investigate the cause of elevated VOC measurements and identify measures to reduce

Table 6-2: Monitoring Procedures and Action Levels

	Parameter	Zone Location and Monitoring Interval	Action Level	Response Activity
				concentrations (cover impacted soils, ventilation, etc.). Work activities shall only continue once levels have decreased to or below 5 units above background. If levels continue above 5 units, only individuals who are medically qualified to wear respiratory protection are permitted to continue work activities with Project Manager approval. Don Level C PPE (organic vapor respirator cartridges), continue monitoring, and initiate continuous air monitoring for benzene.
			> 25 ppm (sustained for 5 minutes)	■ Cease work, exit, and contact the Site Safety Officer, Site Supervisor, and Project Manager.
☐	**Benzene** (by PID with benzene-specific separation tube)	Breathing zone, continuously where indicated by VOC readings	> 0.25 ppm	■ Cease work, exit the area, and contact the Site Safety Officer, Site Supervisor, and Project Manager.
☐	**Hydrogen Sulfide** (multi-gas detector or individual H_2S meter)	Breathing zone, continuously during tasks where exposure to hydrogen sulfide is possible	< 5 ppm	■ Continue work activities. Contact the Site Safety Officer to investigate the potential for contributing factors.
			> 5 ppm	■ Cease work, exit the area or confined space, and contact the Site Safety Officer, Site Supervisor and Project Manager.
☐	**Combustible Gas** (multi-gas meter or individual combustible gas indicator, CGI)	Breathing zone or in the immediate work area continuously during tasks where explosive atmospheres are possible	> 5% of LEL	■ Cease work, exit, and contact the Site Safety Officer, Site Supervisor, and Project Manager.
☐	**Oxygen (O_2)** (multi-gas detector or individual O_2 meter)	Breathing zone, continuously during tasks were oxygen enriched or deficient atmospheres are possible	< 19.5 % O_2	■ Cease work deficient atmosphere), exit the area or confined space, and contact the Site Safety Officer, Site Supervisor, and Project Manager.
			> 23.5 % O_2	■ Cease work enriched atmosphere), exit the area or confined space, and contact the Site Safety Officer, Site Supervisor, and Project Manager.
☐	**Carbon Monoxide (CO)** (multi-gas detector or individual CO meter)	Breathing zone, continuously during tasks where exposure to CO is possible	< 10 ppm	■ Continue work in Level D and continue monitoring
			> 10 ppm	■ Cease work, exit the area or confined space, and contact the Site Safety Officer, Site Supervisor, and Project Manager.
☒	**Dust not otherwise classified** (total by aerosol monitor)	Breathing zone every 30 minutes during field activities where exposure to excessive dusts are possible	< 5 mg/m^3	■ Continue work in Level D and continue monitoring
			> 5 mg/m^3	■ Upgrade to Level C (P100 respirator cartridges), implement dust suppression measures; contact the Site Safety Officer & Site Supervisor.

Table 6-2: Monitoring Procedures and Action Levels

	Parameter	Zone Location and Monitoring Interval	Action Level	Response Activity
			> 10 mg/m^3	■ Cease activities, implement more effective dust suppression measures; contact the Site Safety Officer & Site Supervisor.
☐	**Dust not otherwise classified** (total by aerosol monitor)	Edge of Exclusion Zone, every 30 minutes during excavation activities	< 5 mg/m^3	■ Continue work in required PPE, monitor air, and implement engineering controls
			> 5 mg/m^3	■ Cease activities and contact the Site Safety Officer & Site Supervisor.
☐	**Other:** N/A			■ Continue monitoring ■ Continue work in the required PPE
				■ **STOP WORK** and exit the work area or confined space ■ Contact the Site Safety Officer, Site Supervisor, and Project Manager
☒	**Facility Chemical Release**	Breathing zone within designated areas/buildings or site-wide, as appropriate for the facility/site	Chemical Release Detected	1. **STOP WORK** and immediately leave the area/building 2. Report to the designated muster location 3. Contact the Site Safety Officer, Site Supervisor and Project Manager 4. Wait for All-Clear to return to work area

7. Subcontractor Selection

7.1 Subcontractor Pre-Qualification

Ensure all subcontractors including lower tier subcontractors are prequalified to perform work for AECOM. Coupa is the preferred method for pre-qualifying subcontractors. If a subcontractor is conditionally approved, ensure the subcontractor meets all conditions of approval. If a subcontractor requires a variance, complete the Subcontractor Variance form, S3AM-213-FM2.

Subcontractor 1:	**ClearCreek Contractors Inc, A Division of Holt**

Scope of Work:

ASSIGNED TASK(S)	HIGH RISK TASK	CONTRACTOR SITE SUPERVISOR
■ Excavation ■ UST Removal	■ Yes	Rob Honsberger; (206) 549-4080

Required Subcontractor Documents:
PM must verify that the following documents are in-place for each subcontractor; check to verify.

Select One:	
☐ Subcontractor's Project/Site-specific Health and Safety Plan **OR** ☒ Subcontractor will work under AECOM's Health and Safety Plan and field personnel will sign the AECOM HASP Acknowledge Form	■ Copy of task specific THAs/JHAs and inspection/tailgate forms
	☐ Competent Person Documentation
	☐ Copy of their business license and training certificates (task specific)
	☐ Copy of their Corporate Safety Management Manual
	☐ Copy of the signed contract

Prequalification Status

Supplier Status		Action(s)
☒ Approved		None, skip to next subcontractor
☐ Conditionally Approved		List condition(s) of approval below and describe how condition(s) will be met.
☐ Pending Approval		Subcontractor is **NOT** approved for use

Safety Conditions of Approval that Apply to Subcontractor *(check all that apply)*

☐	AECOM PM will prepare and obtain AECOM SH&E approval of a variance to use this subcontractor. AECOM PM will ensure the control measures listed in the variance are implemented.
☒	Subcontractor will work under the AECOM HASP. AECOM PM will verify that the AECOM HASP covers the subcontractor's scope of work. Subcontractor's field personnel will review the AECOM HASP and sign the HASP Acknowledgement Form (Section19).
☐	Subcontractor has prepared a Site-Specific HASP for their activities that has been reviewed and accepted by AECOM SH&E.
☒	AECOM Site Supervisor and/or Site Safety Officer will supervise the subcontractor's field activities at the Site.
☐	Other:

Subcontractor 2:	**Blaine Tech Services**

Scope of Work:

ASSIGNED TASK(S)	HIGH RISK TASK	CONTRACTOR SITE SUPERVISOR
■ Groundwater Gauging and Sampling	■ No	Lee Bures; (206) 348-8985

Required Subcontractor Documents:
PM must verify that the following documents are in-place for each subcontractor; check to verify.

Select One:	
☐ Subcontractor's Project/Site-specific Health and Safety Plan **OR** ☒ Subcontractor will work under AECOM's Health and Safety Plan and field personnel will sign the AECOM HASP Acknowledge Form	■ Copy of task specific THAs/JHAs and inspection/tailgate forms ☐ Competent Person Documentation ☐ Copy of their business license and training certificates (task specific) ☐ Copy of their Corporate Safety Management Manual ☐ Copy of the signed contract

Prequalification Status

Supplier Status		Action(s)
☒ Approved		None, skip to next subcontractor
☒ Conditionally Approved		List condition(s) of approval below and describe how condition(s) will be met.
☐ Pending Approval		Subcontractor is **NOT** approved for use

Safety Conditions of Approval that Apply to Subcontractor *(check all that apply)*

☒	AECOM PM will prepare and obtain AECOM SH&E approval of a variance to use this subcontractor. AECOM PM will ensure the control measures listed in the variance are implemented.
☒	Subcontractor will work under the AECOM HASP. AECOM PM will verify that the AECOM HASP covers the subcontractor's scope of work. Subcontractor's field personnel will review the AECOM HASP and sign the HASP Acknowledgement Form (Section19).
☐	Subcontractor has prepared a Site-Specific HASP for their activities that has been reviewed and accepted by AECOM SH&E.
☒	AECOM Site Supervisor and/or Site Safety Officer will supervise the subcontractor's field activities at the Site.
☐	Other: ☐

Subcontractor 3:	**Ground Penetrating Radar Systems, LLC**

Scope of Work:

ASSIGNED TASK(S)	HIGH RISK TASK	CONTRACTOR SITE SUPERVISOR
■ Private Utility Locate	■ No	Jackson Turner; (818) 813-3614

Required Subcontractor Documents:
PM must verify that the following documents are in-place for each subcontractor; check to verify.

Select One:	
☐ Subcontractor's Project/Site-specific Health and Safety Plan **OR** ☒ Subcontractor will work under AECOM's Health and Safety Plan and field personnel will sign the AECOM HASP Acknowledge Form	■ Copy of task specific THAs/JHAs and inspection/tailgate forms
	☐ Competent Person Documentation
	☐ Copy of their business license and training certificates (task specific)
	☐ Copy of their Corporate Safety Management Manual
	☐ Copy of the signed contract

Prequalification Status

Supplier Status		Action(s)
☒ Approved		None, skip to next subcontractor
☐ Conditionally Approved		List condition(s) of approval below and describe how condition(s) will be met.
☐ Pending Approval		Subcontractor is **NOT** approved for use

Safety Conditions of Approval that Apply to Subcontractor *(check all that apply)*

☐	AECOM PM will prepare and obtain AECOM SH&E approval of a variance to use this subcontractor. AECOM PM will ensure the control measures listed in the variance are implemented.
☒	Subcontractor will work under the AECOM HASP. AECOM PM will verify that the AECOM HASP covers the subcontractor's scope of work. Subcontractor's field personnel will review the AECOM HASP and sign the HASP Acknowledgement Form (Section19).
☐	Subcontractor has prepared a Site-Specific HASP for their activities that has been reviewed and accepted by AECOM SH&E.
☒	AECOM Site Supervisor and/or Site Safety Officer will supervise the subcontractor's field activities at the Site.
☐	Other:

8. Training and Documentation

All personnel at this site must be qualified and experienced in the tasks they are assigned. SH&E Training Procedure S3AM-003-PR1 establishes the general training requirements for AECOM employees.

8.1 Site-Specific Training Requirements

The following training is applicable to the site and/or scope of work:

Table 8-1: Site Specific Training Requirements

	Training	Applies to
☒	**ERP/HASP and Site Orientation**	All Employees and Subcontractors
☒	**Vehicle/Driver Safety & Defensive Driving**	All Employees who drive on behalf of AECOM
☒	**Field Safety**	Employees visiting the field that does not require HAZWOPER
☒	**Speak Up/Listen Up (SULU)**	All AECOM field employees and supervisors
☒	**First Aid / CPR**	Designated employees or employees performing high risk activities and medical attention is more than 4 minutes away
☐	**Respiratory Protection & Fit Test**	Employees needing to wear respirators
☒	**OSHA 10-Hr. Construction Safety (or CSTS 2020 in Canada)**	All employees working on jobsites with construction type hazards
☒	**OSHA 30-Hr. Construction Safety**	All employees supervising/overseeing jobsites with construction type hazards
☒	**HAZWOPER 40-Hour and 8-Hr. Annual Refresher**	On HAZWOPER sites, in EZ, exposed to hazardous contamination
☒	**HAZWOPER Supervisor**	Employees managing others in HAZWOPER activities or at HAZWOPER Sites
☐	**Hazardous Materials Shipping (U.S.)**	Employee responsible for shipping HZM/HZW/DG and/or signing manifests
☒	**Hazardous Materials Communication**	When hazardous or toxic chemicals are being used on site.
☐	**Transportation of Dangerous Goods (CAN)**	Employees responsible for shipping/transporting regulated hazardous materials that exceed regulatory requirements
☐	**Under Bridge Inspection Unit (UBIU) AECOM University module**	Employees working in a UBIU
☐	**Local and/or Client Requirements:**	N/A
☐	**Other:**	N/A

9. Site Control

9.1 Site Work Zones

Site layout and site control need to be coordinated to achieve a productive work environment and efficient work process while minimizing exposure of employees and the public to hazards associated with the work. Consider the following items when planning the site layout and controls. Check the description of the site controls **already** in place:

Table 9-1: Site Controls Already in Place

- ☐ Work area is within a facility/property with secure and restricted access provided by client or third party
- ☐ Work area is enclosed within a facility/property, but access is not restricted via locks, guards, or gates
- ☐ Work area is on a property that is open, but access by the public is unlikely
- ☒ Work area is on a property that is open and access by the public is likely
- ☐ Work area is in a roadway or right of way of a roadway (Traffic Control/Protection Plan required S3AM-306-PR1)
- ☒ Work area is in a parking lot or driveway
- ☐ Work area is on or near railroad, including right of way, active lines and crossings
- ☐ Other:

Consider the following items when planning the site layout and controls:

- "Line of Fire" hazards- overhead utilities, falling/ tipping equipment, release of energy/ pressure, flying debris
- Noise, dust, odor suppression
- Contamination containment and decontamination area layout
- Traffic control for site vehicles/ equipment (public traffic control requires Traffic Control Plan)
- Restricted access for areas requiring special training, skills, or certifications
- Restriction of work near railroads
- Presence or creation of excavations
- Loading/unloading areas
- Portable restrooms
- Dumpsters and bins
- Equipment lay down
- Heavy equipment parking
- Overnight safety and security needs

The following additional site controls will be implemented in work area(s) to protect the public and AECOM work team:

Table 9-2: Additional Site Controls to be Implemented

Control Item	Description of Type and Application
☒ **Fence**	Temporary fencing will be used on the perimeter of the job site.
☐ **Locks**	N/A
☐ **Barricades**	N/A

☒ **Cones**	Traffic cones will be present on Blaine Technical Services trucks and placed around the vehicle during sampling activities.
☒ **Tape**	Caution tape should be placed around the vehicle and work area during sampling activities.
☐ **Hole Covers**	N/A
☐ **Other:**	N/A

9.2 Simultaneous Operations

Simultaneous and neighboring operations, including activities performed by the general public, our clients, and other workers or contractors working near our employees, often present a need for added co-ordination and communication to address hazards that are presented by multiple operations.

Table 9-3: Simultaneous Operations Within the Site

☐ Yes, see table below for details ☒ None, not applicable

Activity	Company	Contact Person (Activity Lead)	Contact's Phone Number	Addressed in THA(s)	
Gas Station	Shell	Shamsher Singh	360-274-8511	☐ Yes	☒ No
				☐ Yes	☐ No
				☐ Yes	☐ No

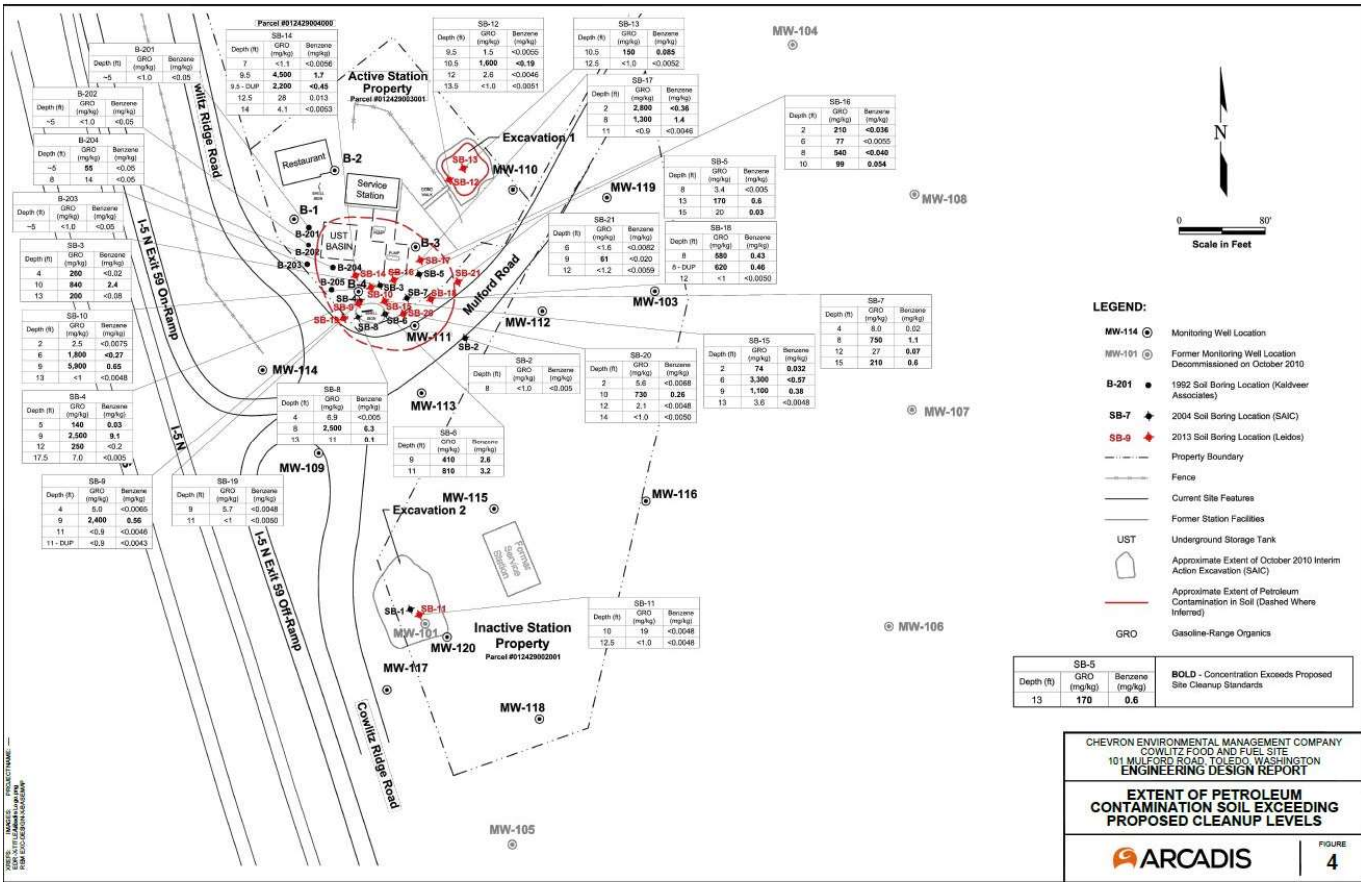
Table 9-4: Simultaneous Operations on Neighboring Sites

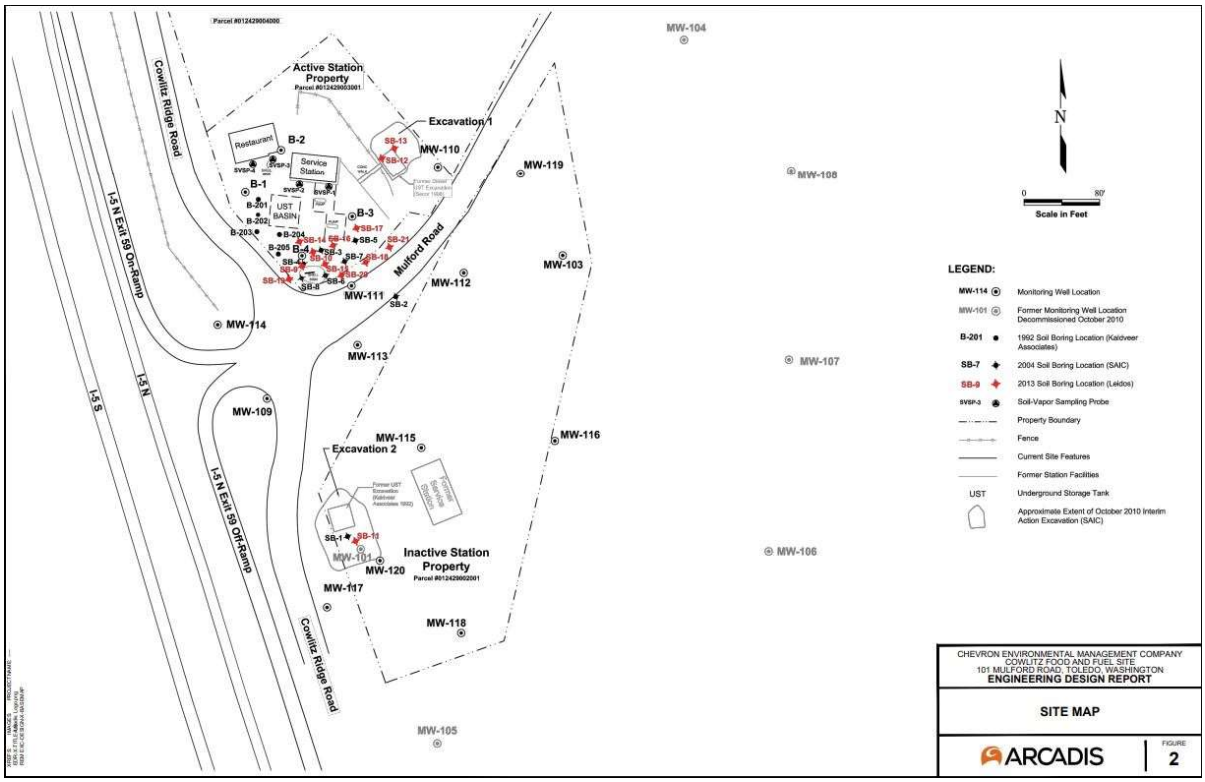
☐ Yes, see table below for details ☐ None, not applicable

Activity	Company	Contact Person (Activity Lead)	Contact's Phone Number	Addressed in THA(s)	
				☐ Yes	☐ No
				☐ Yes	☐ No
				☐ Yes	☐ No

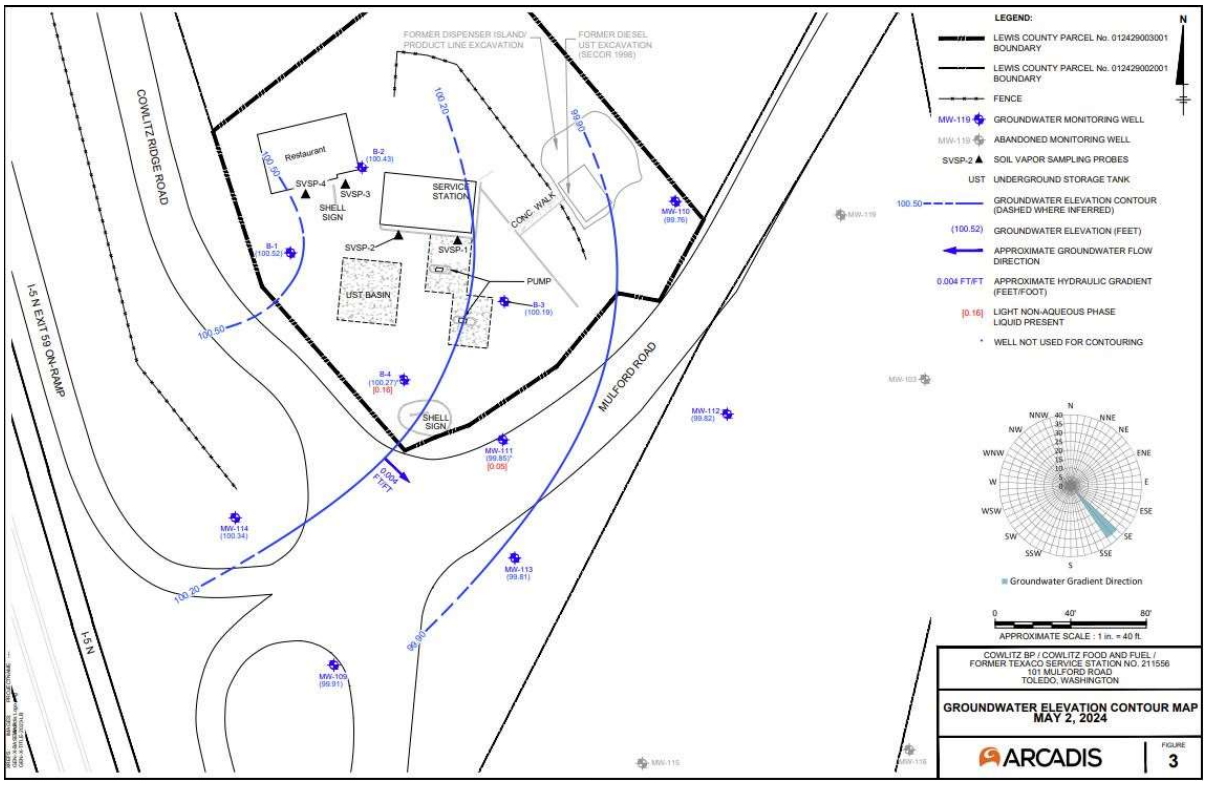
9.3 Site Control Maps/Diagrams

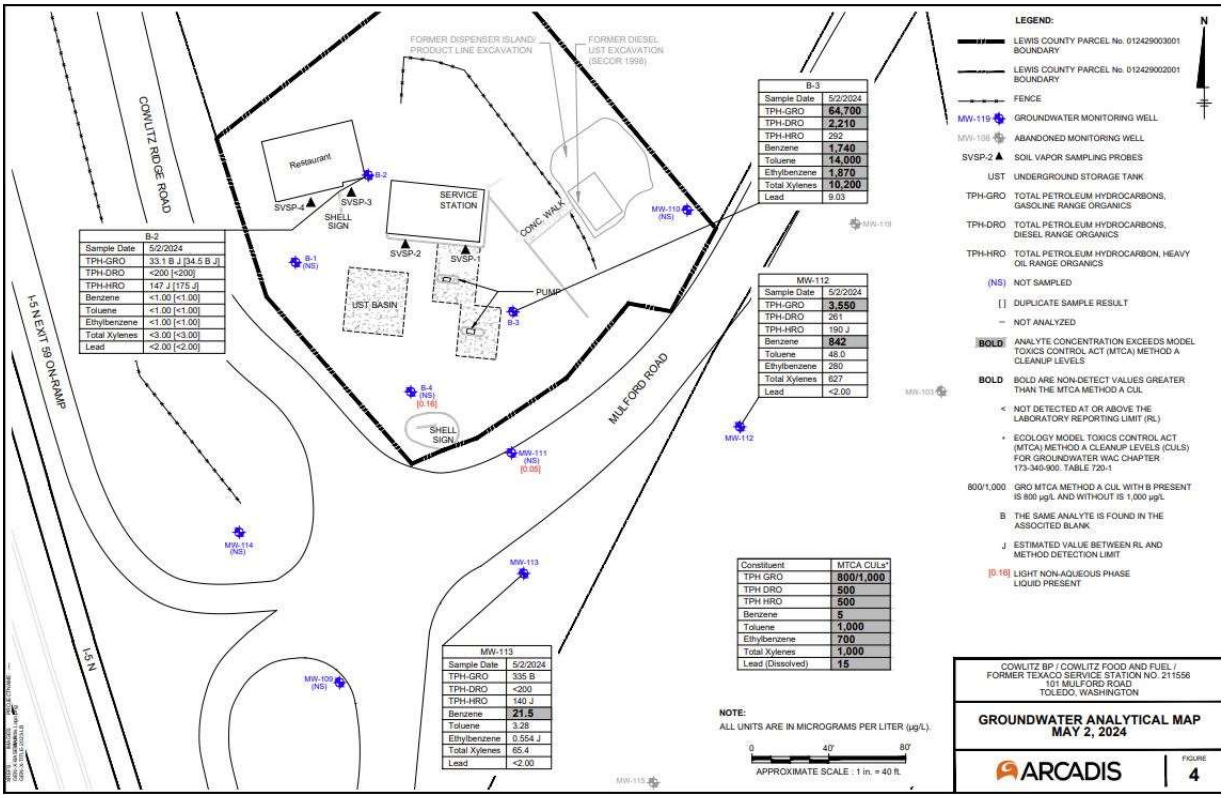
Work Area Layout



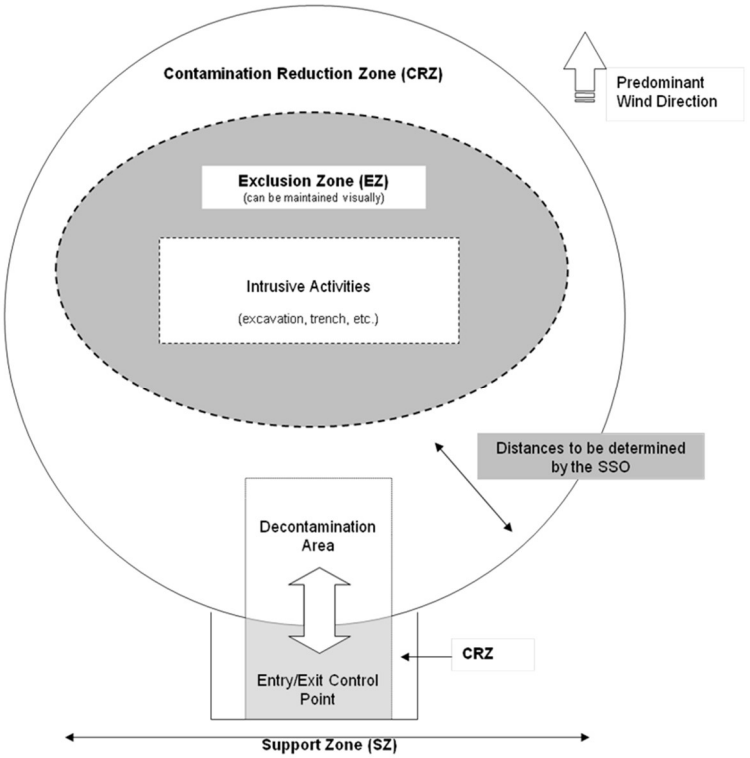


Example Groundwater Sampling Area Layouts

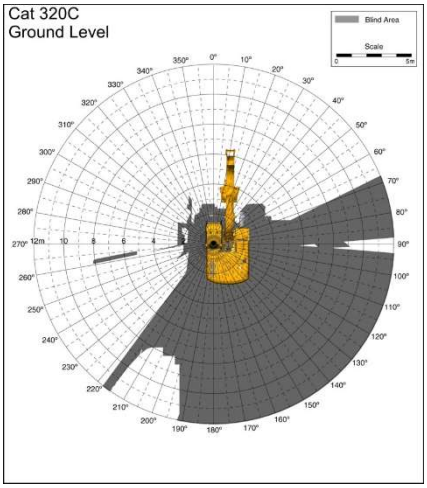
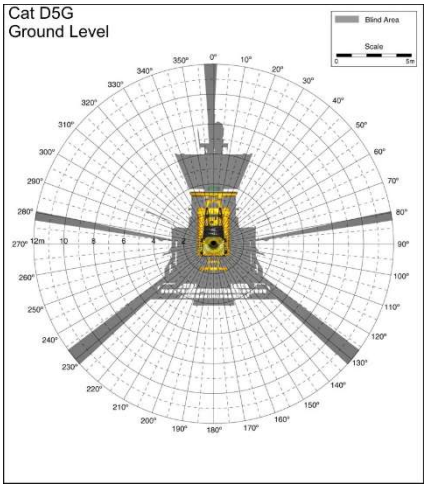
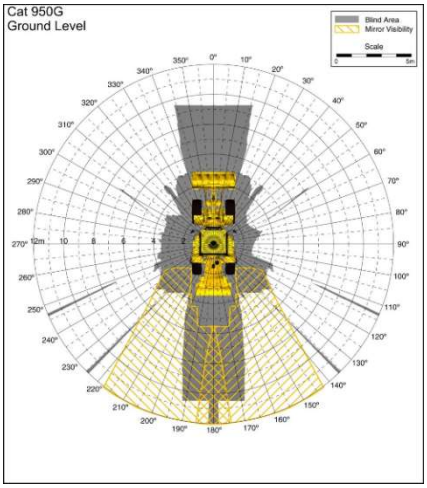

FORMER DISPENSER ISLAND/ PRODUCT LINE EXCAVATION
FORMER DIESEL UST EXCAVATION (SECOR 1998)
COWLITZ RIDGE ROAD
I-5 N EXIT 59 ON-RAMP
I-5 N
MULFORD ROAD
Restaurant
SERVICE STATION
SHELL SIGN
CONC. WALK
UST BASIN
PUMP
SVSP-1
SVSP-2
SVSP-3
SVSP-4
B-1 (100.52)
B-2 (100.43)
B-3 (100.19)
B-4 (100.27) [0.16]
MW-109 (99.91)
MW-110 (99.76)
MW-111 (99.85) [0.05]
MW-112 (99.82)
MW-113 (99.81)
MW-114 (100.34)
100.20
100.50
99.80
0.004 FT/FT
LEGEND:
LEWIS COUNTY PARCEL No. 012429003001 BOUNDARY
LEWIS COUNTY PARCEL No. 012429002001 BOUNDARY
FENCE
MW-119 GROUNDWATER MONITORING WELL
MW-119 ABANDONED MONITORING WELL
SVSP-2 SOIL VAPOR SAMPLING PROBES
UST UNDERGROUND STORAGE TANK
100.50 GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
(100.52) GROUNDWATER ELEVATION (FEET)
APPROXIMATE GROUNDWATER FLOW DIRECTION
0.004 FT/FT APPROXIMATE HYDRAULIC GRADIENT (FEET/FOOT)
[0.16] LIGHT NON-AQUEOUS PHASE LIQUID PRESENT
* WELL NOT USED FOR CONTOURING
N
NNW NNE NW NE WNW ENE W E WSW ESE SW SE SSW SSE S
Groundwater Gradient Direction
0 40' 80'
APPROXIMATE SCALE : 1 in. = 40 ft.
COWLITZ BP / COWLITZ FOOD AND FUEL / FORMER TEXACO SERVICE STATION NO. 211556
101 MULFORD ROAD
TOLEDO, WASHINGTON
GROUNDWATER ELEVATION CONTOUR MAP
MAY 2, 2024
ARCADIS
FIGURE 3


FORMER DISPENSER ISLAND/ PRODUCT LINE EXCAVATION
FORMER DIESEL UST EXCAVATION (SECOR 1998)
COWLITZ RIDGE ROAD
I-5 N EXIT 59 ON-RAMP
I-5 N
MULFORD ROAD
Restaurant
SERVICE STATION
SHELL SIGN
CONC. WALK
UST BASIN
PUMP
SVSP-1
SVSP-2
SVSP-3
SVSP-4
B-1 (NS)
B-2
B-3
B-4 (NS) [0.16]
MW-109 (NS)
MW-110 (NS)
MW-111 (NS) [0.05]
MW-112
MW-113
MW-114 (NS)
B-2
Sample Date 5/2/2024
TPH-GRO 33.1 B J [34.5 B J]
TPH-DRO <200 [<200]
TPH-HRO 147 J [175 J]
Benzene <1.00 [<1.00]
Toluene <1.00 [<1.00]
Ethylbenzene <1.00 [<1.00]
Total Xylenes <3.00 [<3.00]
Lead <2.00 [<2.00]
B-3
Sample Date 5/2/2024
TPH-GRO 64,700
TPH-DRO 2,210
TPH-HRO 292
Benzene 1,740
Toluene 14,000
Ethylbenzene 1,870
Total Xylenes 10,200
Lead 9.03
MW-112
Sample Date 5/2/2024
TPH-GRO 3,550
TPH-DRO 261
TPH-HRO 190 J
Benzene 842
Toluene 48.0
Ethylbenzene 280
Total Xylenes 627
Lead <2.00
MW-113
Sample Date 5/2/2024
TPH-GRO 335 B
TPH-DRO <200
TPH-HRO 140 J
Benzene 21.5
Toluene 3.28
Ethylbenzene 0.554 J
Total Xylenes 65.4
Lead <2.00
Constituent MTCA CULs*
TPH GRO 800/1,000
TPH DRO 500
TPH HRO 500
Benzene 5
Toluene 1,000
Ethylbenzene 700
Total Xylenes 1,000
Lead (Dissolved) 15
NOTE:
ALL UNITS ARE IN MICROGRAMS PER LITER (µg/L).
0 40' 80'
APPROXIMATE SCALE : 1 in. = 40 ft.
LEGEND:
LEWIS COUNTY PARCEL No. 012429003001 BOUNDARY
LEWIS COUNTY PARCEL No. 012429002001 BOUNDARY
FENCE
MW-119 GROUNDWATER MONITORING WELL
MW-108 ABANDONED MONITORING WELL
SVSP-2 SOIL VAPOR SAMPLING PROBES
UST UNDERGROUND STORAGE TANK
TPH-GRO TOTAL PETROLEUM HYDROCARBONS, GASOLINE RANGE ORGANICS
TPH-DRO TOTAL PETROLEUM HYDROCARBONS, DIESEL RANGE ORGANICS
TPH-HRO TOTAL PETROLEUM HYDROCARBON, HEAVY OIL RANGE ORGANICS
(NS) NOT SAMPLED
[ ] DUPLICATE SAMPLE RESULT
– NOT ANALYZED
BOLD ANALYTE CONCENTRATION EXCEEDS MODEL TOXICS CONTROL ACT (MTCA) METHOD A CLEANUP LEVELS
BOLD BOLD ARE NON-DETECT VALUES GREATER THAN THE MTCA METHOD A CUL
< NOT DETECTED AT OR ABOVE THE LABORATORY REPORTING LIMIT (RL)
* ECOLOGY MODEL TOXICS CONTROL ACT (MTCA) METHOD A CLEANUP LEVELS (CULS) FOR GROUNDWATER WAC CHAPTER 173-340-900, TABLE 720-1
800/1,000 GRO MTCA METHOD A CUL WITH B PRESENT IS 800 µg/L AND WITHOUT IS 1,000 µg/L
B THE SAME ANALYTE IS FOUND IN THE ASSOCITED BLANK
J ESTIMATED VALUE BETWEEN RL AND METHOD DETECTION LIMIT
[0.16] LIGHT NON-AQUEOUS PHASE LIQUID PRESENT
N
COWLITZ BP / COWLITZ FOOD AND FUEL / FORMER TEXACO SERVICE STATION NO. 211556
101 MULFORD ROAD
TOLEDO, WASHINGTON
GROUNDWATER ANALYTICAL MAP
MAY 2, 2024
ARCADIS
FIGURE 4

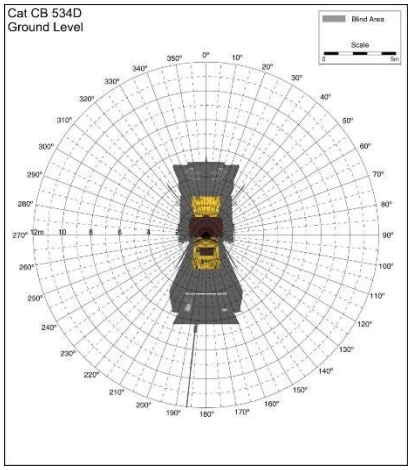
Example Exclusion Zone Layout



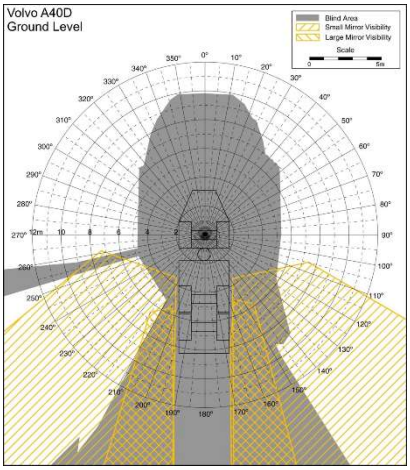
Example Heavy Equipment Blind Spots and Swing Radius / Exclusion Zones

Excavator	Bulldozer	Front-End Loader
		
|--39.4 ft/12m --|	|--39.4 ft/12m--|	|--39.4 ft/12m--|
Smooth Drum Roller	**Haul Truck (Articulated)**	**Haul Truck (Non-Articulated)**

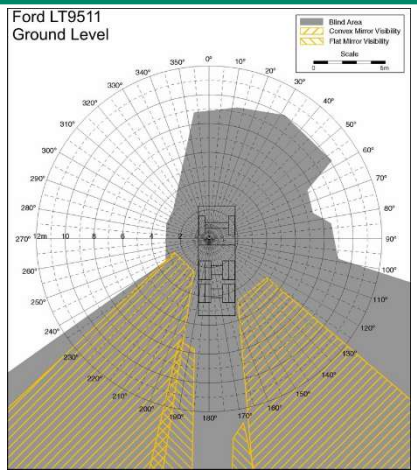
Example Heavy Equipment Blind Spots and Swing Radius / Exclusion Zones



|--39.4 ft/12m --|



|--39.4 ft/12m--|



|--39.4 ft/12m--|

Note: The above maps are provided as examples only – Blind spots and swing radius vary by equipment type, make, and model.

9.4 Situational Awareness – Personal Security

The ability to observe, identify, process, and understand critical elements of information within changing environments. If you see something, say something. Know what is going on around you, anticipate what might happen next. Have a plan of what you will do next, including where you are going, alternate routes and a plan of action. Evaluate what is happening around you as you move through daily activities, noting if something looks out of place or unusual. Be aware of barriers that may change your critical thinking such as distractions, being in a hurry, fatigue, focus lock and past experiences. Listen to your instinct – if something doesn't look or feel right, do something about it. All employees need to review the Situational Awareness Guidance for Employees. In event of a Security Issue please contact **Global Security & Resilience at GSR@aecom.com.**

9.5 Lone Worker

AECOM discourages employees from working alone (i.e., where AECOM personnel are out of visual and audio range of others) when performing field tasks (see Working Alone SHE Procedure S3AM-314-PR1). If lone work is to be performed, a communications/check-in plan must be developed and implemented using the table below.

Table 9-5: Lone Worker Management Plan

Justification:	This is a ten monitoring well sampling site, to be completed semi-annually. Groundwater sampling can be safely completed by one person. This site work is completed on empty open properties with businesses nearby, these are not residential properties, and work is being completed during the daylight hours.	
Lone Worker:	Lee Bures	
Check-In Requirement:	On arrival to Site, on departure from Site.	
Check-In Contact:	Austin Bragg | M: 760-408-4488	
Hazard Summary:	Slips/Trips/Falls; Wildlife/Plants/Insects; Driving	
Response Plan:	Check-In Missed:	15 minutes. Text and call them again.
	1st Contact Attempt Fails:	15 minutes. Check-In Contact will wait 5 minutes and then call the Lone Worker again, if the response fails, contact Blaine Tech project coordinator who may know where the employee may be (i.e., hotel, home, office)
	2nd Contact Attempt Fails:	5 minutes. Continue attempts to contact Lone Worker. After attempts have been made, notify the lone workers Manager or Supervisor, If the dispatched responder cannot locate the field employee appropriate public emergency contacts shall be made.(i.e. police).

10. Personal Protective Equipment

The use of Personal Protective Equipment (PPE) forms the final barrier of protection between the employee and the hazard and applies to all employees at the work site, including Subcontractors, visitors and client or customer representatives. For additional information on PPE, please review the Personal Protective Equipment, S3AM-208-PR1.

The minimum PPE required on an AECOM project is as follows:

- Hard Hat or Helmet
- Safety Glasses with side shields
- High Visibility Safety Vest
- Shirt with sleeves that cover the shoulders.
- Long Pants
- Safety-toe Boots
- Gloves (on person) – Required to be worn if handling materials, equipment, etc.

Specific PPE shall also be specified in Task Hazard Analyses (THAs) such as glove type (i.e. material, level of protection, etc.). Where possible, hazards will be eliminated or controlled to reduce the risk associated with a specific task.

These controls include:

- Elimination of the hazard
- Isolation of the hazard
- Engineering Controls
- Administrative Controls

With the exception of prescription safety eyewear and safety toed boots (there may be allowances for the purchase of these items), AECOM will make available all required PPE for its employees. All employees will receive training in the use, care, maintenance, and storage of the PPE issued to them.

All personal protective equipment will meet the requirements of local, state, federal, client and AECOM SH&E regulations and procedures. Where site-specific PPE requirements exist, all AECOM employees, subcontractors, and visitors, who work on the Project, will follow those requirements.

- PPE will **not** be modified or changed.
- All PPE that is damaged or in need of service or repair will be removed from service immediately.
- All PPE that has been removed from service will be tagged “OUT OF SERVICE” and will not be returned until repaired and inspected by a qualified person. Defective PPE must be removed from site to prevent it from being used.

11. SH&E Technology

At AECOM, we encourage the use of new technology to eliminate or reduce the risk our employees are exposed to. Mark the technology you will be using in this project (if any):

Table 11-1: SH&E Technology Being Used on Site/Project

- ☐ **Wearable Technology/Smart PPEs** (e.g. clothes, helmets, glasses, harness)
- ☐ **Site Sensors** (e.g. Movement, angle, noise, carbon monoxide, Dust)
- ☐ **Fatigue Monitoring**
- ☑ **Phone/Tablet Applications** or software: Teams and Outlook applications.
- ☐ **Connected Worksites** (i.e., connection between employees or project elements to be successful)
- ☐ **Drones**
- ☐ **Virtual Reality (VR) or Augmented Reality (AR)**
- ☐ **GPS** – Location devices:
- ☐ **Radio Frequency Identification** (RFID)
- ☐ **Other:**
- ☐ **None of these:** We will not use any technology in this project to reduce hazards

Find available tools and/or share the tools you will be using in the AECOM Technology Toolbox or let us know what would be interesting to assess by **clicking here** or explore in the NSC Technology site for new available safety technology.

12. Safety, Health, and Environment Program

12.1 AECOM SH&E Policy

AECOM's Safety, Health and Environment Policy, which establishes the framework to attain best-in-class Safety, Health and Environmental (SH&E) performance in the interest of benefitting AECOM's employees and stakeholder in the global marketplace, is available on AECOM's Ecosystem (intranet).

12.2 Safety for Life

"Safety for Life" is a comprehensive integrated AECOM Safety Management System that drives our employees toward AECOM's commitment to achieving zero work-related injuries and/or illnesses; preventing damage to property and the environment; and maintaining an environmentally friendly and sustainable workplace. Our Safety for Life program is supported by nine Life Preserving Principles that apply to all AECOM activities.

12.3 Life Preserving Principles

AECOM has adopted these "Life-Preserving Principles" to help demonstrate the commitment of our Safety for Life program. We firmly believe these "Life-Preserving Principles" will enable AECOM to achieve its goal of zero employee injuries, property damage and an environmentally friendly and sustainable workplace. The nine Life-Preserving Principles (S2-001-ATT1), along with their descriptions, can be found on AECOM's Ecosystem (intranet).

Commitment:
Managers will lead on safety, continuously demonstrating commitment to the highest standards.

Participation:
All employees are encouraged to engage in helping to control the risks we face.

Budgeting and Staffing for Safety:
The costs of managing SH&E are budgeted into every project. Our safety staff are fully trained to provide expert guidance.

Pre-planning:
We assess risks and produce detailed plans to control them during design, planning, and execution of work.

Contractor Management:
We carefully select and collaborate with all our partners to create a safe working environment.

Recognition and Rewards:
Employees are rewarded for safety excellence, and we share best practices.

Orientation and Training:
Our employees will be provided with effective safety training in order to identify and mitigate hazards in the workplace to prevent injuries to themselves and others who may be affected by their actions.

Incident Investigation:
We investigate recordable incidents and serious near misses to understand the causes and take action to prevent recurrence.

Fit for Duty:
All staff come to work each day fit and well, so they do not pose a hazard to themselves or others.

12.4 Fitness for Duty

One of AECOM's nine Life-Preserving Principles is Fitness for Duty (see Fitness for Duty procedure (S3AM-008-PR1). Fitness for Duty means that individuals are in a state (physical, mental, and emotional) that enables them to perform assignments competently and in a manner that does not threaten the health and safety of themselves or others. On certain projects or for specific tasks, fit for duty certifications may be requested of medical providers by SH&E Managers or Human Resources (HR). Employees should ensure they are fit for duty prior to leaving home and unimpaired by substances or fatigue, and if necessary, contact your supervisor rather than attempting to report to work in unfit condition. Supervisors must observe their employees

and work with the employee, SH&E staff, and HR to address deficiencies. AECOM will **NOT** tolerate retaliation against any employee for filing a complaint or concern regarding their fitness for duty or participating in any way in an investigation.

12.5 Proactive Health

AECOM is committed to promoting proactive health activities in addition to the planning for prevention of safety and environmental incidents. Proactive health activities will be completed on an on-going basis at AECOM on a corporate-wide basis (i.e., the wellness program associated with employee benefits), at offices, and at this project site. Management will be actively involved in providing and encouraging opportunities for health and wellness education and improvement. Health initiatives and education will be discussed periodically during office-based meetings as the safety moment or during the daily tailgate meeting as a toolbox talk. Topics may be related to, but are not limited to, the following:

- ✓ Heart health
- ✓ Stress management
- ✓ Smoking cessation
- ✓ Diabetes prevention
- ✓ Diet
- ✓ Exercise benefits

Topics and educational materials can be located on the AECOM Wellness page, National Institutes of Health website, Centers for Disease Control and Prevention website, and other reputable sources online.

In addition, the field team will be encouraged to participate in a daily stretch and flex routine (a standardized way to avoid soft tissue damage from work activities) to the best of their abilities, given their own personal limits. It is particularly beneficial to warm and loosen muscles before repetitive work, manual handling of loads, and when working in cold temperatures or with static postures. The Stretch and Flex manual and poster (**Attachment C**) serve as guidance for the leader to follow.

12.6 Fatigue

One aspect of fit for duty is fatigue management. AECOM has developed procedures that limit work periods or requires additional rest under certain circumstances, including during long-distance travel or when working at high altitudes. These procedures also set limits on extended work periods of 14 hours per day or 60 hours per week. A fatigue management plan is required if longer working hours are necessary (see Fatigue Management Procedure S3AM-009-PR1).

12.7 Driving and Vehicle Safety

The proper operation of vehicles is critical to protecting the safety of AECOM employees and subcontractors. Drivers face numerous hazards while operating vehicles. Some of the hazards include collision with another vehicle, collision with a fixed object, vehicle break down or failure, or falling asleep or becoming otherwise incapacitated while driving. All employees will adhere to Driving procedure S3AM-005-PR, which includes the following key practices:

1. **Authorized Drivers**
   Managers must authorize drivers following evaluation of driver criteria to drive and maintain an AECOM-owned, leased or rented vehicle, a client or customer-owned vehicle, or a personal vehicle operated in the course of conducting AECOM business.

2. **Electronic Devices Prohibited**
   AECOM prohibits use of all portable electronic devices while operating a motor vehicle/ equipment, which includes being stopped at a traffic light or stop sign. Electronic devices include, but are not limited to, all mobile phones, two-way radios, pagers, iPods, MP3s, GPS, DVD players, tablets laptops, and other portable electronic devices that can cause driver distraction. Hands-free device use is **NOT** allowed.

   - GPS units and devices used for navigation may only be used if factory installed or secured to the vehicle with a bracket that allows the driver to view the image without having to take their eyes off the road. Electronic devices shall be setup for operation prior to commencing driving activities and shall NOT be changed by the driver while driving.

3. **Vehicle Inspections**
   The driver shall conduct pre-trip vehicle inspections prior to each trip. A vehicle inspection checklist, S3AM-005-FM2, can be used to guide and document the inspection process. Vehicle inspection is to include a 360-degree walk around and visual inspection under the vehicle for leaks and obstructions prior to moving the vehicle.

4. **Training**
   All drivers shall complete defensive driver training. Additional training (i.e., hands-on defensive driver training) may apply for medium and high-risk drivers; see Driving procedure S3AM-005-PR and SHE Training procedure S3AM-003-PR for more details.

5. **Journey Management Plan**
   Drivers who undertake trips in excess of 250 miles (400 kilometers) one way, drive in remote or hazardous areas, or when otherwise deemed necessary, shall develop and document a Journey Management Plan using S3AM-005-FM1 or equivalent.

6. **Secure Loads**
   Cargo is only to be carried within the passenger compartment of a vehicle when segregated and restrained to prevent objects from becoming distractions, obstructions, or projectiles to occupants should emergency vehicle maneuvers be required (e.g., harsh braking or crash). All goods transported on flatbed trucks or in pickup beds must be securely fastened to prevent them from becoming hazards. All applicable laws and regulations regarding securing of loads must be met. It is prudent to check the load after a few miles to ensure that load has not shifted or loosened prior to completing the remainder of the trip.

12.8 Fatigue and Driving Safety

The effect of fatigue is both physiological and psychological and can severely impair a driver's judgement. Fatigue can cause lapses in concentration which could prove fatal. Fatigue is not just a problem for drivers on long trips, as drivers can also suffer from fatigue on short trips.

- ✓ After strenuous fieldwork, consider overnight accommodation or vehicle sharing for staff who are not acclimatized to the type of work.
- ✓ Microsleep can occur with a limited warning, and may be linked to several factors, for example:
  - Microsleep is most likely to occur during times when the circadian rhythm dictates the body should be asleep, such as at dawn, late at night, or in the mid-afternoon (e.g., 1 and 4 am and 1 and 4 pm.).
  - Potential to feel drowsy after a meal.
  - Driving long distances (considered potentially monotonous) even with sufficient sleep.
  - Prolonged sitting and warm ambient temperature may also increase the feeling of sleepiness.
- ✓ If safe to do so, consider undertaking actions to disrupt the microsleep event while identifying a safe place to stop, e.g., open a vehicle window, listen to upbeat music/change music source, or ask the passenger (if present) to engage in conversation.
- ✓ Ensure field staff are familiar with the signs of fatigue and mitigation factors.

The most common visible signs of microsleep include the following:

- Eyelid drooping
- Eyelid closure
- Head nodding
- Brief periods of snoring
- Wandering thoughts

If any of the above become apparent, immediately pull over to a safe location and contact your PM or SH&E representative.

12.9 Hand Safety

The hands are exposed to hazards more than any body part. SH&E Hand Safety Procedure S3AM-317-PR describes requirements and best practices including these notable practices:

- **All personnel shall have gloves in their immediate possession 100%** of the time when in a shop or on a work site. Gloves that address the hazard shall be worn when employees work with or near any materials or equipment that present the potential for hand injury due to sharp edges, corrosives, flammable and irritating materials, extreme temperatures, splinters, etc. Use the Gloves Needs Assessment (S3AM-317-FM1) to help determine the appropriate glove for the hazard(s).
- **Fixed open-blade knives are prohibited** from use during the course of AECOM work. Examples of fixed open-blade knives include pocket-knives, multi-tools, hunting knives, and standard utility knives. For more information about cutting tools, see S3AM-317-ATT1 Safe Alternative Tools.

12.10 Substance Abuse

Drug and alcohol abuse pose a serious threat to the health and safety of employees, clients, and the general public as well as the security of our job sites, equipment, and facilities. AECOM is committed to the elimination of illegal drug use and alcohol abuse in its workplace and regards any misuse of drugs or alcohol by employees to be unacceptable. AECOM Substance Abuse Prevention Procedure (S3AM-019-PR1) prohibits the use, possession, presence in the body, manufacture, concealment, transportation, promotion or sale of the following items or substances on company premises. Company premises refer to all property, offices, facilities, land, buildings, structures, fixtures, installations, aircraft, automobiles, vessels, trucks and all other vehicles and equipment - whether owned, leased, or used.

- Illegal drugs (or their metabolites), designer and synthetic drugs, mood- or mind-altering substances, and drug use related paraphernalia unless authorized for administering currently prescribed medication;
- Controlled substances that are not used in accordance with physician instructions or non-prescribed controlled substances; and
- Alcoholic beverages while at work or while on any customer- or AECOM-controlled property.

This policy does not prohibit lawful use and possession of current medication prescribed in the employee's name or over-the-counter medications. Employees must consult with their health care provider about any prescribed medication's effect on their ability to perform work safely and disclose any restrictions to their supervisor.

Although some states may pass laws legalizing medical or recreational marijuana use, the use, sale, distribution, and possession of marijuana are violations of federal law and AECOM policy and will subject an employee to disciplinary action up to and including termination in accordance with controlling law. In Canada, where medical and recreational marijuana use is legal, employees must still follow Federal and Provincial laws, and AECOM policy with regards to use and possession. Employees found to be in contravention of legal requirements or AECOM policy will be subject to disciplinary action up to and including termination.

12.11 Rewards and Recognition

One of AECOM's Life Preserving Principles is Recognition and Rewards for proactive safety, health, and environmentally focused behaviors. All projects are expected to participate in the rewards and recognition programs available on the Corporate and DCS Americas SH&E ecosystem pages. Large, long term projects are encouraged to establish a project specific rewards and recognition program which incorporates project specific goals and activities (template available S3AM-020-FM1). ***All rewards and recognition programs must emphasize the 9 Life Preserving Principles and proactive SH&E activities NOT solely the achievement of lagging metrics ("injury/incident-free" hours, etc.) as those may discourage incident reporting.***

12.12 Stop Work Authority

AECOM empowers and expects all employees to exercise their Stop Work Authority (see Stop Work Authority Procedure (S3AM-002-PR1) if an incident appears imminent, or when hazardous behaviors or conditions are observed. A stop work request can be informal if the situation can be easily corrected or may require shutting down operations if revised procedures are necessary to mitigate the hazard. If an AECOM employee observes an imminently hazardous situation on a site controlled by others (i.e., a client-managed contractor), the employee can always stop work for themselves by removing themselves from the situation. Employees also may attempt to stop work to avoid allowing the contractor to come to harm by immediately notifying the contractor foreman or site engineer, or if necessary, the client or party managing the contractor.

No employee should object to the issuance of a stop-work request, nor can any disciplinary action be levied against the employee. All employees must agree that the situation has been mitigated before resuming work. No employee will be disciplined for refusing to work if they feel it is unsafe.

13. Roles and Responsibilities

13.1 AECOM Project Manager

The AECOM Project Manager (PM) may delegate responsibilities to an AECOM Deputy PM or AECOM Task Manager (TM) with equivalent competencies. The AECOM PM is responsible to:

- Understand the scope, performance standards, objectives, and applicable AECOM and bp requirements and expectations,
- Ensure the workforce, including subcontractors, is aware of the project scope and objectives, and the associated performance standards, requirements, and expectations,
- Verify that the full scope of work has been risk assessed with Task Hazard Assessment (THA) prepared, reviewed, and approved for each task,
- Authorize the start of all work tasks/activities within area of responsibility,
- Assign competent Crew Leaders, Permit Issuers/Approvers, and Persons in Charge as appropriate for the project scope of work,
- Be knowledgeable of and participate, where needed, in permit development and verification of the necessary work permits, and
- Verify that work activities are consistent with the policies and procedures.

13.2 AECOM Site Supervisor

The Site Supervisor has the overall responsibility and authority to direct work operations at the job site according to the provided work plans and HASP. The Project Manager may act as the Site Supervisor while on site. The Site Supervisor's responsibilities include:

- Verify the personnel, equipment/machinery and instruments anticipated to mobilize to site.
- Communicate project roles and responsibilities.
- Discuss planned activities for the day and any potential simultaneous operations (SIMOPs).
- Establish staging and work areas for planned activities.
- Confirm crews have reviewed and updated, as necessary, task hazard assessments prior to beginning the task.
- Coordinate and document project activities.
- Monitor for deviations and changes in scope, personnel, methods, materials, equipment/machinery, instrumentation, and site conditions.
- Notify the AECOM project manager of changes and coordinate change management.
- Escort or delegate the escorting of site visitors.
- Serve as AECOM's point of contact with the host facility and person-in-charge for simultaneous operations (SIMOPs).
- Delegate stop work authority to all project employees and report all unsafe acts/behaviors and conditions, near misses and incidents to the AECOM project manager.
- Lead by example – walk the talk.

13.3 AECOM Site Safety Officer

The Site Safety Officer supports the Site Supervisor in providing a safe work environment. Not all sites will have a designated Site Safety Officer; the decision should be made by the Project Manager and SH&E Manager taking into consideration the complexity and risks of the scope of work. The Site Supervisor may act as the Site Safety Officer on sites without one. The Site Safety Officer's responsibilities include:

- Conduct the site safety orientation for the entire field team, including subcontractors, and site visitors.
- Lead the tailgate safety meeting.
- Discuss hazards present at the site and/or within environmental media and their control measures.
- Communicate air monitoring methods and action levels.
- Explain emergency response and reporting procedures, including emergency contacts and muster and shelter-in-place locations.
- Establish exclusion and contamination reduction zones, as needed.
- Verify SWP/HASP, THA and safety requirements and expectations are being met.
- Confirm hazard control measures are in-place and effective.
- Perform housekeeping and site inspections to ensure a safe working environment.
- Engage outside safety, health & environment resources, as needed, to allow for the safe performance of the work.
- Assist in incident investigations and identification and implementation of corrective actions.
- Lead by example – walk the talk.

13.4 AECOM SH&E Manager

Responsibilities of the SH&E manager is to:

- Promote the AECOM Safety for Life Program and our Nine Life Preserving Principles.
- Understand the application of SH&E regulatory requirements relevant to SH&E in the company's operations and be aware of changes in regulations which may affect the company.
- Be formally trained, licensed, or certified where the regulations require.
- Assist with the budgeting and staffing process to ensure project teams have the knowledge and resources needed to perform their work safely.
- Be aware of all incidents, near misses, observations, unsafe acts, and unsafe conditions that are reported and participate in the investigation process where required.
- Verify incidents are reported to regulatory bodies in accordance with local legislation.
- Review investigation findings to confirm identified corrective actions are appropriate and subsequently implemented.
- Review and accept site-specific SH&E Plans and Task Hazard Analyses (THAs).
- Assist in the preparation of risk assessments.
- Assist in the review of SH&E training needs.
- Verify necessary training as required by AECOM policies and procedures and/or the regulations.
- Assist in the setting of SH&E expectations at project level and review them periodically.
- Perform project SH&E audits on a periodic basis.
- Monitor the corrective actions taken, where audits identify non-conformance or opportunities for improvement, for confirmation of their completion and effectiveness.
- Lead by example, walk the talk.

13.5 AECOM Workforce

The workforce members play an important role in safety. Each workforce member shall:

- Comply with the host facility, client, and AECOM requirements for their assigned tasks and the site.
- Have the appropriate training/competencies to complete their assigned task(s) safely and efficiently.
- Participate in risk reviews and/or THAs and provide input to ensure that the full scope of work, associated hazard, and their control measures have been adequately addressed to allow for the work to proceed safely and efficiently.
- Conduct appropriate work area and equipment inspections prior to work activities.
- Assist in identification of work process deficiencies and recommend possible improvements if applicable.
- Remain focused and aware of surroundings while on the jobsite to changes that may impact ability to perform job task or affect the safety of other team members.
- Understand the Emergency Response Plan (ERP) and be able to respond as it directs per the assigned role.
- Stop work, intervene (Speak Up, Listen Up), and report all observed unsafe work activities, unsafe site conditions, and any incidents with or without (near miss) consequences.
- Upon request, participate in incident investigations and/or re-enactments.

13.6 Visitors

Authorized visitors (e.g., client representatives, regulators, AECOM management staff, etc.) requiring entry to any work location on the site will be briefed by the Project Manager, Site Supervisor, or Site Safety Officer on the hazards present at that location. Visitors will be escorted at all times at the work location and will be responsible for compliance with their employer's health and safety policies. In addition, this HASP specifies the minimum acceptable qualifications, training and PPE that are required for entry to any controlled work area; visitors must comply with these requirements at all times.

If the site visitor requires entry to any exclusion zone (EZ), but does not comply with the above requirements, the visitor will be denied access to the EZ. If the visitor disregards instructions to remain outside the EZ, work activities will be immediately suspended, and the situation reported and documented.

Unauthorized visitors, and visitors not meeting the specified qualifications, will **NOT** be permitted within established controlled work areas. If unauthorized visitors and/or visitors not meeting the specified qualifications enter a controlled work area and/or EZ, work activities will be immediately suspended, and the situation reported and documented.

14. Subcontractor Management

14.1 AECOM Roles/Responsibilities for Sub Management

When managing an AECOM Subcontractor of any tier, AECOM management and supervision will follow the requirements in S3AM-213-PR1 and are responsible for the following:

- Direct all activities of the facility, site, or project location.
- Ensure appropriate training and experience of AECOM personnel responsible for overseeing subcontractor work.
- Verify subcontractors have the appropriate trained and competent personnel to perform their activities in a safe, healthful, and environmentally responsible manner.
- Pre-qualification of Subcontractor – Prior to performing work on an AECOM project, management and supervision must verify the Subcontractor has been pre-qualified. AECOM's preferred method of prequalification in Coupa, but there are other ways to prequalify a subcontractor.
- Ensure all subcontractor employees attend the AECOM daily tailgate safety meeting.
- If you have any questions about subcontractor pre-qualification, reach out to an AECOM SH&E professional.

14.2 Subcontractor Roles/Responsibilities for Safety

Subcontractors must provide AECOM with a designated Subcontractor Safety Representative (SSR). Their responsibilities are as follows:

- Direct employees' means and methods of work and how to work safely.
- Be knowledgeable of and understand the safety requirements of the subcontractor's activities.
- Staff the project with employees that are trained and knowledgeable of the tasks they will be performing.
- Have the ability to recognize hazards and the authority to take prompt corrective actions.
- Implement the subcontractor safety program.
- Serve as the direct contact with AECOM regarding resolution of SH&E issues.
- Immediately report all work-related injuries/illnesses/incidents, environmental incidents, and regulatory inspections/violations to AECOM according to AECOM procedures and/or client requirements.

14.3 Subcontractor HASP/THAs

If the subcontractor's scope of work includes hazards that are not covered by the AECOM Health and Safety Plan (HASP), the subcontractor will need to provide AECOM with their site-specific HASP and task-specific Task Hazard Analyses (THAs). All subcontractor procedures must at a minimum comply with client and AECOM requirements to ensure that hazards associated with the performance of their work activities are properly controlled. Copies of any required safety documentation for a subcontractor's work activities will be provided to AECOM for review prior mobilization to the site.

15. Training and Documentation

The following sections describe the standard practices or programs that AECOM will establish to prepare employees to perform work safely and consistent with AECOM policy and Procedures. For additional information on SH&E Training, review the Safety, Health and Environment Training, S3AM-003-PR1.

15.1 HASP/Site Safety Orientation

The Project Manager shall conduct a project/site-specific HASP orientation prior to the start of field operations, with support as needed by the SH&E Manager, Site Safety Officer, or Site Supervisor. This meeting will involve representatives from all organizations with a direct contractual relationship with AECOM on the job site. Minimum items to be covered are listed in **Attachment D**. Participants will then sign the HASP Personnel Acknowledgement register at the end of the HASP.

15.2 Worker Training and Qualifications

All personnel at this site must be qualified and experienced in the tasks they are assigned. SH&E Training Procedure S3AM-003-PR1 establishes the general training requirements for AECOM employees.

See **Section 8.1** of this HASP for site-specific required safety training and documentation.

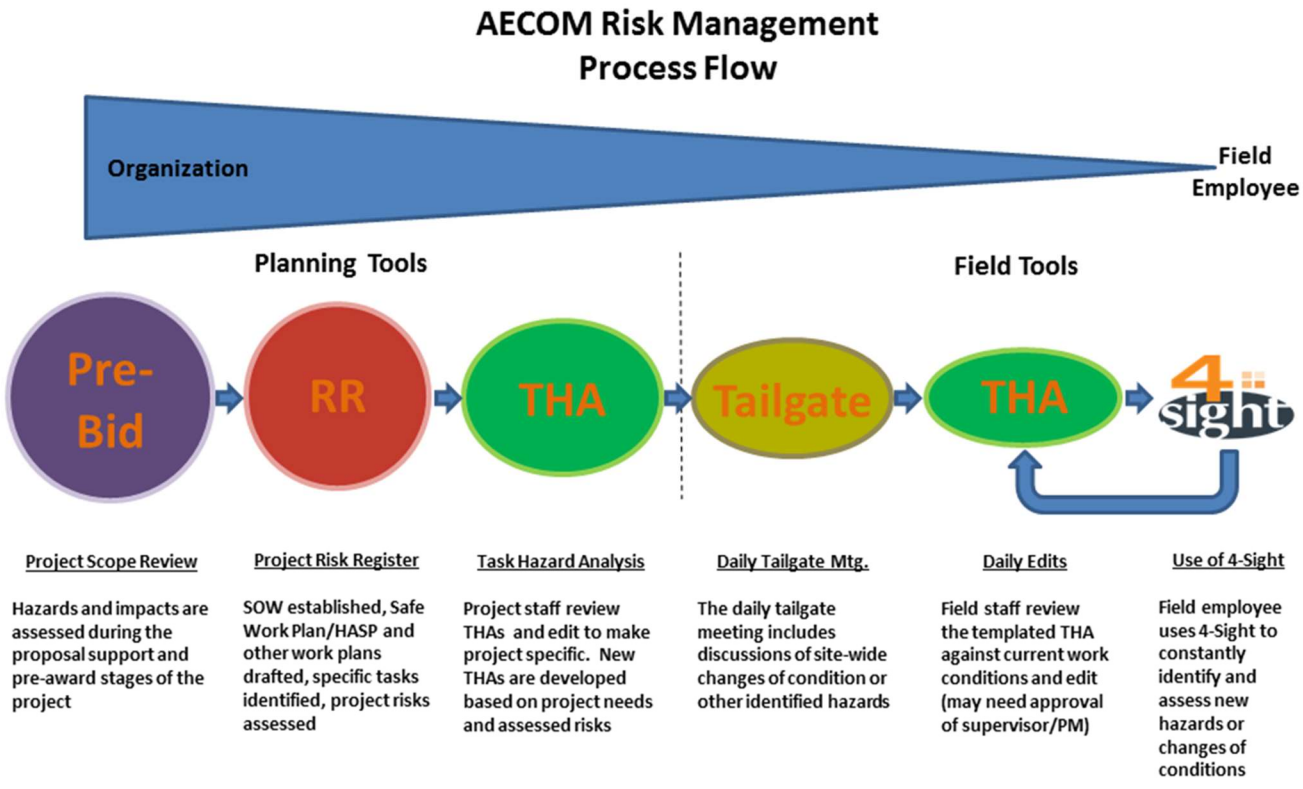
15.3 Competent Person(s)

A competent person is an employee who, through education, training, and experience, has knowledge of applicable regulatory requirements, is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

AECOM's Competent Person Designation Procedure, S3AM-202-PR1, explains the roles, responsibilities and procedures of naming a competent person. Review Error! Reference source not found. of this HASP for a list of site-specific competent person(s) required for this scope of work.

16. Hazard Assessment and Control

AECOM has adopted an approach to hazard assessment and control that incorporates both qualitative and quantitative methods to identify hazards and the degree to which they may impact employees and AECOM operations. See S3AM-209-PR1, Risk Assessment and Management, for details regarding AECOM's process. This approach is illustrated below and described in the following section.



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16.1 SH&E Procedures

All AECOM SH&E procedures, in their controlled copy version, are available on the internal SH&E Policy and Procedures ecosystem page. Programmatic procedures referenced in this document (for example SH&E Training) do no need to be printed for inclusion in this HASP. The applicable field procedures checklist is in the Physical Hazards section below and procedures are included in **Attachment B**.

16.2 Task Hazard Assessments and Daily Tailgate Meetings

THA forms (a blank version is located in S3AM-209-PR1) shall be prepared for each task to be performed as part of the scope of work. This includes driving to the site, parking, and walking as well as the hazards, associated risk, and appropriate controls for all other work activities. The DCS Americas Templated THA Library may also be used to find previously approved THAs, though these should be modified to be project and site-specific. The preparer shall have one THA form for each task in the Scope of Work found in this work plan (**Attachment A**) and shall also include blank copies.

In the field, all employees and visitors shall review the daily THAs and conduct and attend the daily tailgate meeting. When employees arrive on site, conditions may be different than originally planned or additional job steps may be required. The THA requires workers to update or 'dirty up' the THA in the 'On-Site Edits' rows to assess the risks presented by the changed condition(s) and requires the worker to describe steps to reduce the risk. If the hazard(s) cannot be successfully mitigated, the work will **NOT** proceed.

A Site Safety Officer (SSO) or field supervisor shall conduct a daily tailgate meeting to review the specific requirements of this HASP prior to the commencement of daily project activities. Attendance at the daily tailgate meeting is mandatory for all employees and subcontractors at the site covered by this HASP. Simultaneous operations are encouraged to attend each other's tailgate meetings or at the very least the supervisors shall discuss the coordination of activities and associated hazards of each other's tasks. The tailgate meeting must be documented by the field Supervisor or SSO, using the New Daily Tailgate Meeting App. Use the appropriate QR code to download the App and/or go to the Daily Tailgate Meeting App Ecosystem page for details, guides, training sessions and/or other information:

iOS

Android

As an alternative you can also use or the Daily Tailgate Meeting form (S3AM-209-FM5), a blank copy of which is included in **Attachment A**.

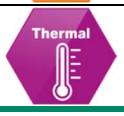
16.3 Hazard Categories

THAs should include consideration of the following hazard categories when identifying hazards and task specific controls:

Table 16-1: AECOM Hazard Categories

Category	Definition
	A biological hazard is any living organism that could cause irritation, allergic reaction, bites, stings, illness, infection, or other injury.
	A chemical hazard is any chemical substance that could potentially cause harm to humans, equipment, or the environment either through contact, ingestion, absorption, inhalation, or reaction.
	Electrical hazards are present whenever there is potential for contact with an electric charge.

Table 16-1: AECOM Hazard Categories

Category	Definition
	Gravitational force can cause tools, equipment, materials, and people to fall either to the same level or from heights to the earth or a lower surface.
	A mechanical hazard when there is energy within the components of a mechanical system within an otherwise stationary piece of equipment/machinery.
	Objects or substances that can move or are moving not due to gravity create a motion hazard. Motion hazards also include body motions and positioning such as bending, stretching, kneeling, etc.
	Noise hazards are sounds that may prevent effective communication or cause hearing loss.
	Any physical matter such as gases, liquids, and springs that is compressed or under a vacuum creates a pressure hazard.
	Radiation hazards include both ionizing and non-ionizing energy emitted from radioactive elements or sources.
	Thermal hazards can cause injury or damage due to their temperature.

16.4 4-Sight

When preparing hazard assessments and throughout the day workers should use 4-Sight. This is a mental process through which workers ask themselves (and each other) four questions designed to effectively assess hazards. Using these questions during each task, especially those without established THAs, will help workers identify hazards and condition changes so that they can control them or stop work to seek assistance.

- **What am I about to do?**
- **What could go wrong?**
- **What could be done to make it safer?**
- **What have I done to communicate the hazard?**

16.5 Speak Up/Listen Up

All AECOM employees have a responsibility to help create the environment where the expectation is Safety for Life. Speak Up/Listen Up (SULU) is a technique to steward jobsite safety by utilizing 4-Sight as a basis for safety feedback conversations. SULU has two main parts:

- **Speak Up** where employees use three simple steps when providing feedback to others about unsafe acts:
  - Ask to discuss their hazard assessment or 4-Sight for the task;
  - Get a commitment from the employee to apply the hazard controls and perform the task according to the accepted procedures; and

  - Follow up to ensure the employee is working safely.

- **Listen Up** where employees use two simple steps when responding to safety feedback:
  - Listen – Focus on the message, not the messenger; and
  - Commit to performing the task the safer way.

SULU conversations should happen consistently throughout the workday to create clear expectations of how work should be performed. All employees should recognize safe work behaviors in order to reinforce them and keep them going. An occasional correction is much more effective when employees are frequently encouraged and positively recognized for their safe actions. Managers and supervisors should be having SULU conversations during site visits and ensure peer to peer and site supervisor to crew SULU conversations are being held.

17. SH&E Event Reporting & Investigation

17.1 Incidents and Near Misses

All incidents and near misses (i.e., incidents without consequences), regardless of type and perceived severity, must be reported in accordance with the Incident Reporting, Notifications and Investigation, S3AM-004-PR1 and entered into **IndustrySafe** (AECOM's SH&E Database) within the timeframes listed below:

Table 17-1: Incident Reporting Timeframes

Incident Type	IndustrySafe Reporting Timeframe
Significant Incident, including any injury to an AECOM employee or Subcontractor	Within **4 hours**
All Other Incidents	Within **24 Hours**

17.2 Investigation

All incidents and near misses will be investigated and documented to determine the contributing and root causes. The investigation will verify the need for corrective actions and identify opportunities for Lessons Learned and continuous improvement. For more information in incident investigations, please review the Incident reporting, Notifications and Investigation procedure, S3AM-004-PR1.

As soon as it is safe to do so after an incident occurs, the following information will be gathered:

- An incident timeline;
- Witness statements;
- Photos of the incident;
- Police reports, if applicable;
- Any additional information that will assist in the investigation; and
- Copies of daily safety documentation and/or field notes.

Note: Only the basic facts, who, what, when, where and how, are needed to complete the initial IndustrySafe report. SH&E Managers will assist you in updating the report as additional information becomes available.

17.3 Audits & Inspections

The AECOM audit and inspection process establishes the protocol for the assessment the Safety, Health and Environment (SH&E) program and its application, as well as the process to identify and monitor corrective actions. The goal is to minimize risk and enhance operational SH&E performance. For more information on audits and inspections, please review the Compliance Assurance procedure, S3AM-216-PR1.

17.3.1 Project Manager Self-Assessment

AECOM Project Managers will perform quarterly SH&E site audits using the DCSA Project Manager Self-Assessment form available in IndustrySafe.

17.3.2 Senior Management Activities (SMAs)

AECOM Senior Managers will perform Senior Management Activity inspections on the projects under their area of responsibility. These SMAs will be entered into Lifeguard.

17.3.3 Project Safety Reviews (PSRs)

AECOM SH&E Managers will perform periodic Project Safety Reviews on projects in their area of responsibility. These PSRs will be entered into IndustrySafe.

17.3.4 Site Safety Inspections (OSHA Type)

AECOM Project Managers and SH&E Managers will perform periodic site safety inspections (OSHA type) on projects in their area of responsibility as required. These site safety inspections will be entered into IndustrySafe.

17.3.5 External Regulatory Inspections

If a regulatory inspector shows up on site, AECOM will follow the requirements in our Regulatory Inspections procedure S3AM-211-PR1.

17.4 Safety Observations

All safety observations must be entered into **IndustrySafe™** **or** **Lifeguard™** (AECOM's SH&E Databases).

17.5 SH&E Database Access

Incidents, near misses, and audits/inspections must be entered into **IndustrySafe™**, which is one of AECOM's SH&E Databases. Safety observations may also be entered into **IndustrySafe™** at the AECOM Project Manager's discretion. **IndustrySafe™** can be accessed via the SH&E Page on Ecosystem when you are in the office or connected to the AECOM network via VPN. IndustrySafe may also be accessed from your smartphone/device, if equipped with a QR Code Reader App, using the QR Code to the right.

Safety observations may also be entered into **Lifeguard™**, which is one of AECOM's SH&E Databases, at the AECOM Project Manager's discretion. **Lifeguard™** can be accessed via the SH&E Page on Ecosystem when you are in the office or connected to the AECOM network via VPN. **Lifeguard™** may also be accessed from your smartphone/device, if equipped with a QR Code Reader App, using the QR Code to the right.

Incidents, Near Misses, Audits/Inspections and Safety Observations

17.6 Reporting Assistance

If your field schedule, access to internet, and/or limited cellular phone coverage have the potential to impact timely incident, near miss, and/or safety observation reporting, please contact your AECOM Project Manager and/or SH&E Manager for assistance.

18. Environmental Management

18.1 Scope

AECOM implements policies and procedures to reduce risk of land and/or water pollution and other environmental concerns during the life of the project. The AECOM Project Manager will ensure compliance with all local, state, federal and client environmental laws and/or regulations. For additional information on Environmental Management, please review the Environmental Compliance procedure, S3AM-204-PR1.

18.2 Roles and Responsibilities

All AECOM staff through the leadership of the AECOM Project Manager are responsible for reducing or eliminating environmental impacts by AECOM personnel. The site supervisor and/or the site safety officer will be immediately notified of any spills, leaks, or other impacts to the ground and/or water, or other environmental emergencies, after emergency respondents have been called, if necessary. The Project Manager will be responsible for making any further notifications as required.

18.3 Staffing and Awareness

AECOM staff will receive relevant awareness training to ensure proper knowledge and training when performing activities with the potential to impact the environment, as well as the requirement of this plan for proper preparedness and response.

18.4 Pollution Prevention

Pollution/impact to the environment could be caused by the following sources:

- Air emissions
- Wastewater
- Hazardous materials
- Solid waste
- Hydrocarbons
- Storm water and sediment/erosion

AECOM will employ prevention and control measures to prevent impacts to the environment. In addition, a spill kit consisting of sorbent socks, pads, shovels, and personal protective equipment (PPE) will be maintained on site by AECOM and each subcontractor. Solid waste will be collected, segregated (recyclable, non-flammable, and flammable) and removed on a regular basis.

19. Project Closeout

Completing a project requires procedures to close out Project Contractual and Administrative activities. The closeout process ensures all documentation is finalized and any Contractual Obligations are met. The Project is ready for close-out once it has been accepted by the end user organization. Project close-out is complete after all physical, regulatory, contractual, and financial close-out activities are complete.

19.1 Health and Safety File

The Health and Safety File will normally include:

- Brief description of the work carried out.
- Residual hazards which remain and how they have been dealt with (e.g. surveys, or information on asbestos, contaminated land, water bearing strata, buried services etc.).
- Key structural principles incorporated in the design (e.g. bracing) safe working loads etc.
- Any hazards associated with the materials used.
- Nature, location, and markings of significant services including underground cables, gas supplies, firefighting etc.
- Information and ‘as built’ drawings including safe access to and from confined spaces etc.
- Daily Tailgate Meeting Forms
- Lessons Learned

20. Personal Acknowledgement

By signing below, the undersigned acknowledges that he/she has reviewed the AECOM Health and Safety Plan for the

Cowlitz Food and Fuel / No. 211556

101 Mulford Road
Toledo, Washington

United States

site. The undersigned also acknowledges that he/she has been instructed in the contents of this document and understands the information pertaining to the specified work and will comply with the provisions contained therein. The employee understands that they are **NOT** to perform any work that they have not been adequately trained for and that they are to stop work if it is unsafe to proceed. Finally, the employee understands to notify the Site Supervisor and the **Incident Hotline at 800-348-5046** for any incident, ***including ANY injury even if no first aid or medical treatment is required.***

Print Name Clearly	Signature	Organization	Date

20.1 Disclaimer

This HASP, and each of its provisions, is applicable only to, and for use only by, AECOM, its affiliates, and its subcontractors. Any use of this Plan by other parties, including, without limitation, third-party contractors on industrial sites or projects where AECOM is providing engineering, construction management, or similar services, without the express written permission of AECOM, will be at that party's sole risk, and AECOM Corporation shall have no responsibility. The existence and use of this Plan by AECOM shall not be deemed an admission or evidence of any acceptance of any safety responsibility by AECOM for other parties unless such responsibility is expressly assumed in writing by AECOM in a specific project contract.

AECOM

Attachment A

THA Forms, and Tailgate Safety Meeting Form

Attachment A: THA Forms, and Tailgate Safety Meeting Form

Task Hazard Assessment Instructions:

Each unique task or work group should have their own THAs. If workers have a THA for their task(s) in hand, they should simply review it and document the site-specific edits in the appropriate section. If workers do ***not*** have a THA for all tasks to be performed, a THA must be obtained or drafted *prior to starting work* on that task. Use additional pages as needed.

- Identify the basic steps of the task that must be performed in order and their associated hazards. Identify controls or barriers to mitigate each identified hazard.
- Clearly identify any **STOP WORK** triggers.
- Document stop work and change management if conditions/ scope changes.
- Use 4-Sight to identify and mitigate site-specific hazards throughout the day. Modify the THA as needed. Contact site supervisors or the PM for any significant scope changes or changes of expected conditions.
- All THAs shall be 3 pages (maximum) or less (preferred). If they are longer, the task is too broad.
- All hazards will use standardized nomenclature (Hazard Wheel), should be specific, detail how someone could be hurt and what the outcome could be.
- All actions to mitigate hazards must be specific, clearly aligned with its respective hazard and not generic. Avoid words such as "*proper", "correct*", or "*appropriate*"). Use specifics and numerical values (i.e., wear disposable nitrile gloves, stand back 6 feet/1.8 meters, take a 10-minute break every hour).
- PPE cannot be the only line of defense - PPE is always the last line of defense, so think through what other controls (engineering, administrative, etc.) could mitigate hazards.

Discuss as Applicable and Modify THA as Needed

Check ☑ if reviewed or mark N/A

- ☐ *Biological / Chemical / Electrical Hazards*
- ☐ *Decontamination Procedures*
- ☐ *Ergonomics – Lifting, Body Position*
- ☐ *Lock Out / Tag Out*
- ☐ *Short Service Employees – visual identifier and mentor / oversight assignment*
- ☐ *Simultaneous / Neighboring Operations*
- ☐ *Slip / Trip / Fall Hazards*
- ☐ *Specialized PPE Needs*
- ☐ *Traffic Control*
- ☐ *Waste Management / Decontamination*
- ☐ *Weather Hazards / Heat Stress / Cold Stress*
- ☐ *Work Permit Requirements:* N/A
- ☐ *Other:*
  N/A

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
5 – Frequent	25	20	15	10	5
4 – Probable	20	16	12	8	4
3 – Occasional	15	12	9	6	3
2 – Remote	10	8	6	4	2
1 - Improbable	5	4	3	2	1

Risk Rating (Probability x Severity)	Risk Acceptance Authority
1 to 4 (Low)	Risk is tolerable, manage at local level
5 to 9 (Medium)	Risk requires approval by Operations Lead/Supervisor & Safety Manager
10 to 25 (High)	Risk requires the approval of the Operations Manager & Safety Director

Severity – Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
Critical	Permanent impairment, Long term injury/illness	>$250K to $1M USD	Onsite impact requiring remediation	Media intervention
Major	Lost/Restricted Work	> $10K to $250K USD	Release at/above reportable limit	Owner intervention
Moderate	Medical Treatment	> $1K to $10K USD	Release below reportable limit	Community or local attention
Minor	First Aid	</=$1K USD	Small chemical release contained onsite	Individual complaint

Probability		
Frequent	Expected to occur during task/activity	9/10
Probable	Likely to occur during task/activity	1/10
Occasional	May occur during the task/activity	1/100
Remote	Unlikely to occur during task/activity	1/1,000
Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Using the Matrix:

1. Identify basic steps of the task and associated hazards.
2. Calculate the initial risk rating.
3. Identify control measure to eliminate or reduce the hazard's risk and calculate the residual risk rating.
4. If the risk rating (after controls are implemented) cannot be reduced to 4 or lower, additional approvals are needed before the activity can begin.

Task Hazard Assessment

AECOM Imagine it. Delivered.

Task Name:	Site Walk – General Site Visit	**Control #:**	01-01-10-06

Project Name:		**Client:**		**Date:**	
Permits Required? (list):		**Work Location:**			

This THA must be fully reviewed with all staff members. All job steps, hazards, work practices, and PPE are clearly understood and have been implemented. All necessary revisions have been written on the THA.

Required PPE:	☒ Hard Hat ☒ Safety Glasses ☒ HiVis Vest ☒ Safety Toe Boots ☒ Gloves: leather ☒ Hearing Protection ☐ Other: PPE for expected weather conditions
Tools & Equipment:	camera notebook/pen

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!

Job Steps *List all steps required to perform a task in the sequence they are performed*	**Potential Hazards** *How could you be hurt? What would the injury be?*	**Risk** *(initial)*	**Critical Actions To Mitigate Hazards** *List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact.* ***Identify any 'Stop Work' triggers.***	**Risk** *(final)*
1. Plan the site walk	1a. Personal injury from not having proper PPE	4	1a. Determine what the basic PPE requirements are in advance and have available or know that they will be available to you to borrow once on site.	4
	1b. Vehicle getting stuck or damaged due to terrain/site conditions	4	1b. Determine what type of vehicle is needed for site conditions (4-wheel drive, truck or car).	4
	1c. Heat/cold stress, insect bites, sunburn from inadequate materials/supplies	4	1c. Determine what materials and supplies you must bring versus what is available on site such as insect spray, sunscreen, drinking water, food, etc.	4
	1d. Lack of site escort if needed	4	1d. Prearrange trip in advance where possible, determine who will be meeting you on site and when.	4
	1e. Inclement weather	6	1e. Plan for the anticipated weather conditions. Check the predicted weather for the worksite prior to departing. Reschedule site visit if severe weather such as lightning storms, sleet/ice storms, blizzards, etc., are predicted.	2
On-Site Edits:				
2. Arriving at site	2a. Getting stuck or sustaining slip/trip/fall injuries from parking in inappropriate areas	6	2a. Know where you are supposed to park prior to arrival or check in at site. Park in an area with firm, level surface, and with a good surface (avoiding wet/muddy conditions, poor walking surfaces, etc) available when you exit the vehicle.	2

Task Hazard Assessment

AECOM Imagine it. Delivered.

Task Name:	Error! Reference source not found. **Site Visit**	**Control #:**	Error! Reference source not found.

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!				
Job Steps *List all steps required to perform a task in the sequence they are performed*	**Potential Hazards** *How could you be hurt? What would the injury be?*	**Risk** *(initial)*	**Critical Actions To Mitigate Hazards** *List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact.* ***Identify any 'Stop Work' triggers.***	**Risk** *(final)*
	2b. Injuries from being struck due to 3rd party or client operations	**10**	2b. Park that you do not subject yourself or your vehicle to site hazards such as construction vehicle traffic, forklifts or other equipment, passing motorists, etc, ,	2
On-Site Edits:				
3. Walking Site/Observing Work	3a. Biological hazards	4	3a. There are many different types of biological hazards that can be encountered on a work site. These include ticks, spiders, mosquitoes, chiggers, poisonous or other noxious plants, alligators, bears, small mammals, bird droppings, small mammals, snakes, etc. Do not attempt to pick up, handle, or otherwise handle stray or wild animals such as dogs, cats, raccoons, squirrels, etc., no matter how tame they may appear.	2
	3b. Slips/trips/falls	4	3b. Be aware of walking surfaces at all times, wear footwear with good tread and ankle support, use handrails where available, avoid walking in muddy or wet areas when possible, identify and mark or have removed any obstructions that may be present in predicted walking paths.	2
	3c. Crossing roads, bridges, etc	6	3c. Keep to pathways appropriate for pedestrian traffic – sidewalks, walkways with handrails, etc. If no sidewalk is present, stay off the side of the shoulder, behind guardrails where possible, etc. Walk facing traffic. Never take photographs while walking to reduce risk of inadvertently wandering into traffic.	3
On-Site Edits:				
4. Leaving the site	4a. Transporting biological hazards into vehicle	4	4a. Inspect self for ticks before entering vehicle. If it possible that clothing and personal items such as jackets, backpacks, lunch bags, and so on have been exposed to poisonous plant oils or may harbor ticks or other insects, bag such items until they can be appropriately treated.	2
	4b. Hitting object when leaving causing vehicle or property damage	6	4b. Before moving the vehicle, perform a 360° walk around of the vehicle to verify that no changes have been made that may impact exit.	4
On-Site Edits:				

Task Hazard Assessment

AECOM Imagine it. Delivered.

Task Name:	Error! Reference source not found. **Site Visit**	**Control #:**	Error! Reference source not found.

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!				
Job Steps *List all steps required to perform a task in the sequence they are performed*	**Potential Hazards** *How could you be hurt? What would the injury be?*	**Risk** *(initial)*	**Critical Actions To Mitigate Hazards** *List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact.* ***Identify any 'Stop Work' triggers.***	**Risk** *(final)*
5.	5a.		5a.	
On-Site Edits:				
6.	6a.		6a.	
On-Site Edits:				
7.	7a.		7a.	
On-Site Edits:				

Additional Notes:

Task Hazard Assessment

AECOM Imagine it. Delivered.

Task Name:	Error! Reference source not found. **Site Visit**	Control #:	Error! Reference source not found.

All Employees:

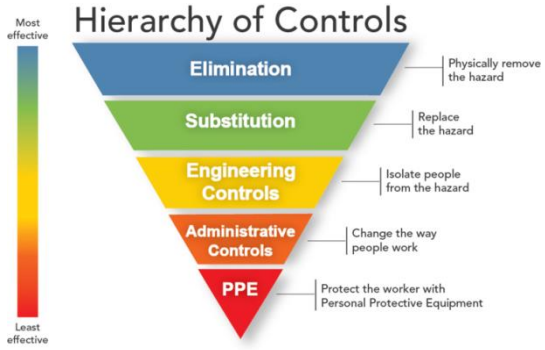
STOP WORK if uncertain about safety or if a hazard or additional precaution is not recorded on the THA.

Be alert, recognize and communicate any changes in scope, personnel or conditions at the worksite to the supervisor.

Use **4-Sight**, AECOM's last minute risk assessment process continuously throughout the day by asking yourself and your co-workers to assess your task, hazards, and mitigations. Amend the THA when needed.

- ***What am I about to do?***
- ***What can go wrong?***
- ***What can be done to make it safer?***
- ***What have I done to communicate the hazards?***

For a more thorough identification of hazards, ask "What else could go wrong?" using the Hazard Categories



- ***Most hazards need more than one control***
- ***What should you do? Stack your controls***
- ***PPE can NEVER be your only means of protection***

Worker Sign On	
I participated in the on-site review and fully understand the content of this Task Hazard Assessment.	
Printed Name	**Signature**
1. Supervisor:	
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Visitor Acknowledgement
Visitors review task hazards and acknowledge understanding
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Submit a new THA for addition to the DCSA THA Library or send THA improvement suggestions to DCSA.THA.Library@AECOM.com
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Task Hazard Assessment

AECOM Imagine it. Delivered.

Task Name:	Load and Unload Vehicle	**Control #:**	01-01-12-04

Project Name:		**Client:**		**Date:**	
Permits Required? (list):		**Work Location:**			

This THA must be fully reviewed with all staff members. All job steps, hazards, work practices, and PPE are clearly understood and have been implemented. All necessary revisions have been written on the THA.

Required PPE:	☐ Hard Hat ☒ Safety Glasses ☒ HiVis Vest ☒ Safety Toe Boots ☒ Gloves: High vis mechanix style gloves ☐ Hearing Protection ☐ Other:
Tools & Equipment:	Hand truck or dolly

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!

Job Steps *List all steps required to perform a task in the sequence they are performed*	**Potential Hazards** *How could you be hurt? What would the injury be?*	**Risk** *(initial)*	**Critical Actions To Mitigate Hazards** *List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact.* ***Identify any 'Stop Work' triggers.***	**Risk** *(final)*
1. Load & Unload Vehicle	1a. Sprains/strains/ overexertion	8	1a. To minimize the risk: • Use dollies, carts, come-alongs, or rollers whenever possible rather than the employee physically moving materials. • Use proper lifting techniques by bending and lifting with legs and not back, and do not over extend or twist. Do not lift over 49 lbs. without assistance. Seek assistance when needed and know your lifting limit • Minimize distance needed to move materials and stage loading and unloading areas as close as possible.	4
	1b. Pinch points between load and vehicle or between load items	10	1b. Know where your hands and other people's hands are at all times. Wear high vis gloves as a reminder. Avoid placing fingers under load while positioning. Use caution with tailgates and vehicle doors, especially under windy conditions.	4
	1c. Slips/trips/falls	10	1c. Inspect and clear walking path prior to beginning loading. Do not stack loads that impair visibility.	4
	1d. Nicks and cuts from equipment edges	6	1d. Inspect materials and equipment for rough edges and burrs. Wear cut resistant gloves.	4
On-Site Edits:				

Task Hazard Analysis

AECOM Imagine it. Delivered.

Task Name:	Load and Unload Vehicle	Control #:	Error! Reference source not found.

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!

Job Steps *List all steps required to perform a task in the sequence they are performed*	Potential Hazards *How could you be hurt? What would the injury be?*	Risk *(initial)*	Critical Actions To Mitigate Hazards *List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact.* ***Identify any 'Stop Work' triggers.***	Risk *(final)*
2. Secure & cover exposed loads	2a. Line of fire hazards from straps/bungee cords	15	2a. Do not throw straps toward other personnel. Using extreme caution when stretching the bungee cord over a load. ALWAYS use safety glasses when handling bungee cords. Securing hook ends carefully and never extend the cord beyond its capacity of length or load. Keep your face and other parts away from the cord's rebound path just in case of failure or recoil.	4
	2b. Load shift in transit	10	2b. Use straps or bungee cords to properly secure load. Use a bulkhead to prevent heavy loads from shifting upon sudden stops.	4
	2c. Theft of tools & equipment	8	2c. Place any likely theft items out of sight and lock vehicle when leaving it. Do not leave vehicle unattended for longer than necessary. If at all possible, avoid leaving packed vehicles in public parking areas overnight, unload if possible. Park in well lighted areas.	4
On-Site Edits:				
3.	3a.		3a.	
On-Site Edits				
4.	4a.		4a.	

Task Hazard Analysis

AECOM Imagine it. Delivered.

Task Name:	Load and Unload Vehicle	Control #:	Error! Reference source not found.

Additional Notes:

Task Hazard Analysis

AECOM Imagine it. Delivered.

Task Name:	Load and Unload Vehicle	Control #:	Error! Reference source not found.

All Employees:

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Use **4-Sight**, AECOM's last minute risk assessment process continuously throughout the day by asking yourself and your co-workers to assess your task, hazards, and mitigations. Amend the THA when needed.

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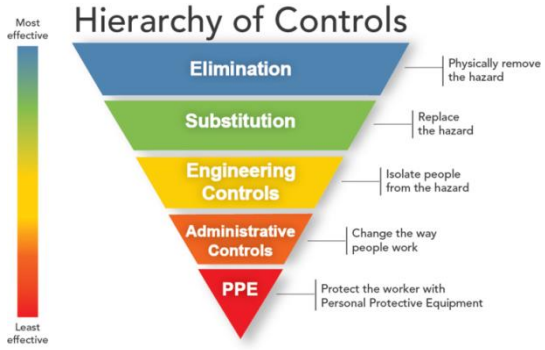

- ***Most hazards need more than one control***
- ***What should you do? Stack your controls***
- ***PPE can NEVER be your only means of protection***

Worker Sign On	
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Visitors review task hazards and acknowledge understanding
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Task Hazard Assessment

AECOM Imagine it. Delivered.

Task Name:	Investigation Derived Waste Management	**Control #:**	01-01-14-02

Project Name:		**Client:**		**Date:**	
Permits Required? (list):		**Work Location:**			

This THA must be fully reviewed with all staff members. All job steps, hazards, work practices, and PPE are clearly understood and have been implemented. All necessary revisions have been written on the THA.

Required PPE:	☒ Hard Hat ☒ Safety Glasses ☐ HiVis Vest ☒ Safety Toe Boots ☒ Gloves: Leather or work gloves with Nitrile undergloves	☐ Hearing Protection	☒ Other: Tyvek as needed to protect skin and clothing	
Tools & Equipment:	Socket set	55-gallon open top drum	Emergency eyewash and rinse water	Spill kit Photoionization detector with 11.7 eV lamp

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!

Job Steps *List all steps required to perform a task in the sequence they are performed*	**Potential Hazards** *How could you be hurt? What would the injury be?*	**Risk** *(initial)*	**Critical Actions To Mitigate Hazards** *List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact.* ***Identify any 'Stop Work' triggers.***	**Risk** *(final)*
1. Secure work area from traffic	1a. Struck by traffic	**10**	1a. Establish work area so that each site vehicle used for activity are in close proximity of each other; this would prevent unnecessary trips outside of work zone and into potential traffic area. Establish barricaded area using cones and barricade tape. Wear required highly visible clothing.	**4**
On-Site Edits:				
2. Prepare work area	2a. Trips & falls 2b. Tools and emergency equipment not present	6 8	2a. Clear any trip/fall hazards from work area. Scan ground prior to moving or walking 2b. Obtain tools and emergency equipment and stage adjacent to work area	4 4
On-Site Edits:				
3. Remove drum lid	3a. Pinch points at drum ring 3b. Sharp edges on drum ring or rim	6 7	3a. Use socket set to loosen drum ring, avoid placing fingers in to pinch points. Make sure cut-resistant gloves fit properly (not too big so fingertips get caught) 3b. Evaluate rim and ring for sharp edges, avoid handling as much as possible. Wear cut resistant gloves	4 4

Task Hazard Analysis

AECOM Imagine it. Delivered.

Task Name:	Error! Reference source not found. **Investigation Derived Waste Management**	**Control #:**	Error! Reference source not found.

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!			
Job Steps *List all steps required to perform a task in the sequence they are performed*	**Potential Hazards** *How could you be hurt? What would the injury be?*	**Risk** *(initial)*	**Critical Actions To Mitigate Hazards** *List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact.* ***Identify any 'Stop Work' triggers.***	**Risk** *(final)*
On-Site Edits:				
4. Load soil into drums	4a. Exertion/sprains/strains	8	4a. Exertion/sprains/strains • Use proper lifting techniques; this consists of bending your knees and lifting with your back straight. • Shovel loads heavier than 50 lbs or awkward to handle use a mechanical loading device or ask for help. • Grasp shovel handle properly: Position one hand at base of shovel handle and your other hand near the top of the handle. • Rotate task with others if needed and take breaks.	7
	4b. Exposure to contaminants	6	4b. Exposure • Set up upwind of drum. • Wear PPE (e.g., eye protection-goggles, long pants, Nitrile exam gloves, Nitrile over-gloves (11-mil), long wrist) Tyvek coveralls, shirt with sleeves, steel-toed shoes with boot covers, half-face air purifying respirator fitted with an organic vapor, acid, HEPA filter combination cartridge). • Perform air monitoring as per HASP. **STOP WORK** if action level is exceeded.	4
	4c. Slips/trips/falls	6	4c. Be alert for uneven and slippery terrain. Keep tools and equipment away from walking paths.	4
	4d. Sharp edges on drum rim	6	4d. Inspect rim for sharp and rough edges, avoid leaning into drum or placing hands onto rim edge Wear cut-resistant gloves	2
On-Site Edits:				
5. Replacing drum ring	5a. Pinch points	7	5a. Use socket set to tighten drum ring, avoid placing fingers in to pinch points. Make sure gloves fit properly (not too big so fingertips get caught)	5
On-Site Edits:				

Task Hazard Analysis

AECOM Imagine it. Delivered.

Task Name:	Error! Reference source not found. **Investigation Derived Waste Management**	**Control #:**	Error! Reference source not found.

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!				
Job Steps *List all steps required to perform a task in the sequence they are performed*	**Potential Hazards** *How could you be hurt? What would the injury be?*	**Risk** *(initial)*	**Critical Actions To Mitigate Hazards** *List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact.* ***Identify any 'Stop Work' triggers.***	**Risk** *(final)*
6. Moving/relocating drums	6a. Exertion	**15**	6a. Exertion • If drums must be moved utilize a drum dolly. • DO NOT ATTEMPT TO "WALK" or "ROCK" DRUMS TO MOVE THEM. • Drums can become unstable and easily tip-over causing possible damage and personal injury as well as releasing the material contained.	4
	6b. Trips and Falls	**6**	6b. See 2a above	5
On-Site Edits:				
7.	7a.		7a.	
On-Site Edits:				

Additional Notes:

Task Hazard Analysis

AECOM Imagine it. Delivered.

Task Name:	Error! Reference source not found. **Investigation Derived Waste Management**	Control #:	Error! Reference source not found.

All Employees:

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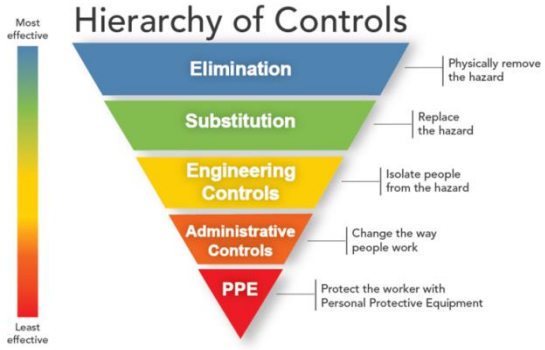

- ***Most hazards need more than one control***
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Worker Sign On	
I participated in the on-site review and fully understand the content of this Task Hazard Assessment.	
Printed Name	**Signature**
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Visitor Acknowledgement
Visitors review task hazards and acknowledge understanding
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Task Hazard Assessment

AECOM Imagine it. Delivered.

Task Name:	Groundwater Sampling – Low Flow	**Control #:**	01-01-05-12

Project Name:		**Client:**		**Date:**	
Permits Required? (list):		**Work Location:**			

This THA must be fully reviewed with all staff members. All job steps, hazards, work practices, and PPE are clearly understood and have been implemented. All necessary revisions have been written on the THA.

Required PPE:	☒ Hard Hat ☒ Safety Glasses ☒ HiVis Vest ☒ Safety Toe Boots ☒ Gloves: Leather, nitrile, cut resistant ☐ Hearing Protection ☐ Other:
Tools & Equipment:	Hand tools YSI Pump

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!

Job Steps *List all steps required to perform a task in the sequence they are performed*	**Potential Hazards** *How could you be hurt? What would the injury be?*	**Risk** *(initial)*	**Critical Actions To Mitigate Hazards** *List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact.* ***Identify any 'Stop Work' triggers.***	**Risk** *(final)*
1. Visually clear proposed sampling locations	1a. Exposure to biological hazards: insects, poisonous plants and animals. Injuries could include anaphylactic shock, allergic reactions, rabies.	6	1a. Identify and avoid hazardous plants and animals on site. Look for signs (spider webs, droppings, etc.). Wear cut resistant gloves, insect repellant, use a broom or a rake to move vegetation, not your hand or foot, move slowly	4
	1b. Slip/trips, falls due to uneven terrain resulting in broken bones or torn ligaments.	6	1b. Identify, mark and avoid slip, trip and fall hazards (holes, obstructions protruding from ground, or debris). Contact PM immediately and do not proceed if any conditions are observed that cannot be controlled to make well sampling in the area safe.	4
	1c. Struck by vehicle resulting in severe trauma or death	**10**	1c. Visually inspect roadway for moving equipment if walking and set up vehicle as a barrier if driving. Set up exclusion zone around each well. Don reflective vest.	4
On-Site Edits:				
2. Open well casing/flush-mount covers and well plug lock.	2a. Cuts/lacerations/crushing, bruises	6	2a. Avoid touching sharp material/edges. Wear cut resistant ANSI 2 gloves. Keep face, hands, fingers, and feet clear when opening and closing well cover. Inspect ground before kneeling. Don knee pads.	2
	2b. Back strain from improper lifting	4	2b. Stretch before working. DO NOT use awkward positioning. Keep back straight. Take regular rest/stretch breaks. Change position regularly.	2
	2c. Vapor exposure resulting in inhalation hazards or illness	4	2c. Stand upwind from the well opening to avoid vapor exposure. Loosen well cap slowly, keeping control if pressure is released due to vapors. Keep face out of line-of-fire.	2

Task Hazard Analysis

AECOM Imagine it. Delivered.

Task Name:	Error! Reference source not found.	**Control #:**	Error! Reference source not found.

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!				
Job Steps *List all steps required to perform a task in the sequence they are performed*	**Potential Hazards** *How could you be hurt? What would the injury be?*	**Risk** *(initial)*	**Critical Actions To Mitigate Hazards** *List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact.* ***Identify any 'Stop Work' triggers.***	**Risk** *(final)*
	2d. Biologic hazards; insects, poisonous plants, and animals	6	2d. Slowly lift the well cover away from person and look for insects underneath the well. Use long handle tool to remove or kill any insects (i.e. screwdriver).	4
On-Site Edits:				
3. Installing tubing in well and setting up equipment.	3a. Cuts/lacerations/crushing, bruises	6	3a. Avoid touching sharp material/edges. Keep face, hands, fingers feet clear when cutting tubing and setting up equipment. Wear cut resistant ANSI 2 gloves with disposable nitrile over gloves	2
On-Site Edits:				
4. Removing tubing from well	4a. Exposure to chemical hazards in groundwater resulting in inhalation hazard or illness	4	4a. Stay upwind to avoid vapor exposure	2
	4b. Cuts/lacerations/bruises to knee (flush mount)	4	4b. Don knee pads and inspect ground before kneeling down and take frequent breaks to stand and stretch	2
On-Site Edits:				
5. Closing well casings/flush mount covers	5a. Cuts/ lacerations/crushing, bruises	4	5a. Avoid touching sharp material/edges. Wear cut resistant ANSI 2 gloves. Keep face, hands, fingers feet clear when closing well cover. Don knee pads and inspect ground before kneeling down.	2
	5b. Back strain from heavy/awkward material handling	4	5b. Keep back straight. Take regular rest/stretch breaks. Change position regularly.	
On-Site Edits:				

Task Hazard Analysis

AECOM Imagine it. Delivered.

Task Name:	Error! Reference source not found.	**Control #:**	Error! Reference source not found.

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!				
Job Steps *List all steps required to perform a task in the sequence they are performed*	**Potential Hazards** *How could you be hurt? What would the injury be?*	**Risk** *(initial)*	**Critical Actions To Mitigate Hazards** *List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact.* ***Identify any 'Stop Work' triggers.***	**Risk** *(final)*
6. Gather sampling equipment and tools, place in work vehicle	6a. Cuts/lacerations/crushing/bruises from gathering or dropping equipment 6b. Aches and strains from improper lifting	3 4	6a. Maintain a secure grip on equipment and only carry manageable amount of equipment when demobilizing. 6b. Bend and lift with legs. Keep back straight. Take regular rest/stretch breaks. Change position regularly. Team lift is required for items over 50 lbs (or awkward items)	2 2
On-Site Edits:				
7.	7a.		7a.	
On-Site Edits:				

Additional Notes:

Task Hazard Analysis

AECOM Imagine it. Delivered.

Task Name:	Error! Reference source not found.	Control #:	Error! Reference source not found.

All Employees:

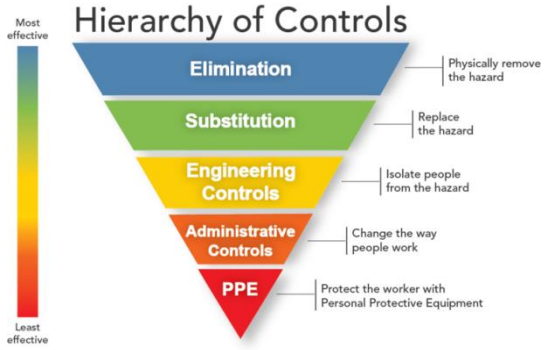
STOP WORK if uncertain about safety or if a hazard or additional precaution is not recorded on the THA.

Be alert, recognize and communicate any changes in scope, personnel or conditions at the worksite to the supervisor.

Use **4-Sight**, AECOM's last minute risk assessment process continuously throughout the day by asking yourself and your co-workers to assess your task, hazards, and mitigations. Amend the THA when needed.

- ***What am I about to do?***
- ***What can go wrong?***
- ***What can be done to make it safer?***
- ***What have I done to communicate the hazards?***

For a more thorough identification of hazards, ask "What else could go wrong?" using the Hazard Categories



- ***Most hazards need more than one control***
- ***What should you do? Stack your controls***
- ***PPE can NEVER be your only means of protection***

Worker Sign On	
I participated in the on-site review and fully understand the content of this Task Hazard Assessment.	
Printed Name	**Signature**
1. Supervisor:	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

Visitor Acknowledgement
Visitors review task hazards and acknowledge understanding
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Submit a new THA for addition to the DCSA THA Library or send THA improvement suggestions to DCSA.THA.Library@AECOM.com
Include a copy of the new THA or a photo of the THA modifications as appropriate.

Task Hazard Assessment

AECOM Imagine it. Delivered.

Task Name:	Driving to and From Site	**Control #:**	01-01-12-02

Project Name:		**Client:**		**Date:**	
Permits Required? (list):		**Work Location:**			

This THA must be fully reviewed with all staff members. All job steps, hazards, work practices, and PPE are clearly understood and have been implemented. All necessary revisions have been written on the THA.

Required PPE:	☐ Hard Hat ☐ Safety Glasses ☐ HiVis Vest ☐ Safety Toe Boots ☐ Gloves: Leather / Nitrile ☐ Hearing Protection ☐ Other:
Tools & Equipment:	Emergency kit Communication device (cell phone) Navigation system

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!

Job Steps *List all steps required to perform a task in the sequence they are performed*	**Potential Hazards** *How could you be hurt? What would the injury be?*	**Risk** *(initial)*	**Critical Actions To Mitigate Hazards** *List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact.* ***Identify any 'Stop Work' triggers.***	**Risk** *(final)*
1. Trip Planning	1a. Unauthorized driving	9	1a. You must be an AECOM authorized driver to drive for AECOM business purposes. Consult the requirements of S3AM-005-PR1. Authorized Drivers shall maintain a current driver's license with full privileges applicable to the vehicle to be operated. Develop a Journey Management Plan if applicable.	4
	1b. Inclement weather	6	1b. Evaluate weather conditions prior to beginning the travel to determine if travel should proceed. Verify your vehicle is equipped to travel in poor weather. Have supplies on hand in the event that you become stranded, including a communication device to call for help.	4
	1c. Getting Lost	6	1c. Review route in advance and program GPS prior to leaving	3
	1d. Inadequate vehicle for the site/trip	7	1d. Understand what type of vehicle is necessary to transport tools & equipment to the site. Know site conditions before departure and obtain proper vehicle, 4-Wheel drive if necessary	4
	1e. Vehicle malfunction	8	1e. Inspect vehicle prior to leaving. Verify that maintenance records are current.	4
On-Site Edits:				
2. Driving	2a. Fatigue	**15**	2a. Start trip well rested & take breaks when needed. Share driving responsibilities where possible. **STOP DRIVING AND PULL OVER** in a safe place if you begin nodding off or showing other signs of fatigue.	4

Task Hazard Analysis

AECOM Imagine it. Delivered.

Task Name:	Driving to and From Site	Control #:	Error! Reference source not found.

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!

Job Steps *List all steps required to perform a task in the sequence they are performed*	Potential Hazards *How could you be hurt? What would the injury be?*	Risk *(initial)*	Critical Actions To Mitigate Hazards *List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact.* ***Identify any 'Stop Work' triggers.***	Risk *(final)*
	2b. Risky driving practices	15	2b. Practice defensive driving techniques and avoid bad driving habits • Allow for adequate time to make the trip • Do not speed or attempt to multi-task • Do not use cell phone or text or attempt to program GPS while driving	4
On-Site Edits:				
3. Stops/breaks during transit	3a. Theft of equipment/materials	6	3a. Place any likely theft items out of sight and lock vehicle when leaving it. Do not leave vehicle unattended for longer than necessary. If at all possible, avoid leaving packed vehicles in public parking areas overnight, unload if possible. Park in well lighted areas.	4
	3b. Personal security risk	10	3b. Be alert and aware of surroundings when making stops. Stop at areas which are well lit and have security if possible.	3
On-Site Edits:				
4.	4a.		4a.	
On-Site Edits:				

Additional Notes:

Task Hazard Assessment

AECOM Imagine it. Delivered.

All Employees:

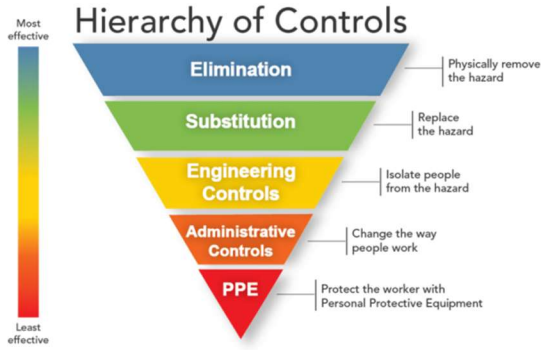
STOP WORK if uncertain about safety or if a hazard or additional precaution is not recorded on the THA.

Be alert, recognize and communicate any changes in scope, personnel or conditions at the worksite to the supervisor.

Use **4-Sight**, AECOM's last minute risk assessment process continuously throughout the day by asking yourself and your co-workers to assess your task, hazards, and mitigations. Amend the THA when needed.

- ***What am I about to do?***
- ***What can go wrong?***
- ***What can be done to make it safer?***
- ***What have I done to communicate the hazards?***

For a more thorough identification of hazards, ask "What else could go wrong?" using the Hazard Categories



- ***Most hazards need more than one control***
- ***What should you do? Stack your controls***
- ***PPE can NEVER be your only means of protection***

Worker Sign On	
I participated in the on-site review and fully understand the content of this Task Hazard Assessment.	
Printed Name	**Signature**
1. Supervisor:	
2.	
3.	
4.	
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10.	

Visitor Acknowledgement
Visitors review task hazards and acknowledge understanding
1.
2.
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Submit a new THA for addition to the DCSA THA Library or send THA improvement suggestions to DCSA.THA.Library@AECOM.com
Include a copy of the new THA or a photo of the THA modifications as appropriate.

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics**. This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: **Phone Number:**	
AECOM SH&E Rep. Name: **Phone Number:**	
Meeting Leader:	

Date:	**Project Name/Location:**	**Project Number:**
Today's Scope of Work:		

Muster Point Location:	**First Aid Kit Location:**	**Fire Extinguisher Location:**	**Spill Kit Location:**

1. Required Topics

- ☐ Fitness for Duty requirements, all sign in / sign out
- ☐ Required training (incl. task specific) completed and current
- ☐ SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, hazards, controls, procedures, requirements, etc.)
- ☐ Pre-Job Hazard Assessments (JHA/JSAs) available and understood
- ☐ Task Hazard Assessments (THAs) are to be completed for each task immediately prior to conducting
- ☐ STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- ☐ Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- ☐ Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- ☐ Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- ☐ Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- ☐ Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- ☐ Required checklists/records available, understood (describe):
- ☐ Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

☑ ■ **Check ☑ as reviewed or mark ■ as not applicable**

- ☐ ☐ Biological/ Chemical / Electrical Hazards
- ☐ ☐ Ergonomics - Lifting, Body Position
- ☐ ☐ Lock Out/ Tag Out
- ☐ ☐ Short Service Employees - visual identifier and mentor/ oversight assignment
- ☐ ☐ Simultaneous/ Neighbouring Operations
- ☐ ☐ Slip/ Trip/ Fall Hazards
- ☐ ☐ Specialized PPE Needs
- ☐ ☐ Traffic Control
- ☐ ☐ Waste Management/ Decontamination
- ☐ ☐ Weather Hazards / Heat Stress / Cold Stress
- ☐ ☐ Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- ☐ ☐ Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- ☐ ☐ Other Topics (describe/attach):
- ☐ ☐ Client specific requirements (describe):

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	**Signature**	**Date** **Time** **(at end of day / shift)**

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

Attachment B

Applicable AECOM SHE Procedures

Attachment B: Applicable AECOM SHE Procedures

	Hazard/ Activity (Note: Text in this column links to procedure)	Applicable Procedure		Hazard / Activity (Note: Text in this column links to procedure)	Applicable Procedure
☐	Abrasive Blasting	S3AM-335-PR1	☐	Highway and Road Work	S3AM-306-PR1
☐	Aerial Work Platforms	S3AM-323-PR1	☐	Hoists Elevators and Conveyors	S3AM-343-PR1
☐	All-Terrain Vehicles	S3AM-319-PR1	☐	Hot Work	S3AM-332-PR1
☐	Blasting and Explosives	S3AM-336-PR1	☐	Ladders	S3AM-312-PR1
☐	Bloodborne Pathogens	S3AM-111-PR1	☐	Lockout Tagout	S3AM-325-PR1
☐	Cofferdams	S3AM-344-PR1	☐	Machine Guarding Safe Work Practice	S3AM-326-PR1
☒	Cold Stress	S3AM-112-PR1	☐	Marine Safety and Vessel Operations	S3AM-333-PR1
☐	Compressed Air Systems & Testing	S3AM-337-PR1	☐	Material Storage	S3AM-316-PR1
☐	Compressed Gases	S3AM-114-PR1	☐	Mine Site Activities	S3AM-341-PR1
☒	Concrete Work	S3AM-338-PR1	☐	Mining Operations	S3AM-345-PR1
☐	Confined Spaces	S3AM-301-PR1	☒	Non Ionizing Radiation	S3AM-121-PR1
☐	Corrosive Reactive Materials	S3AM-125-PR1	☒	Overhead Lines	S3AM-322-PR1
☐	Cranes and Lifting Devices	S3AM-310-PR1	☐	Powder-Actuated Tools	S3AM-327-PR1
☐	Demolition	S3AM-339-PR1	☐	Powered Industrial Trucks	S3AM-324-PR1
☐	Diving (scientific and commercial)	S3AM-334-PR1	☐	Radiation	S3AM-120-PR1
☐	Drilling, Boring & Direct Push Probing	S3AM-321-PR1	☐	Railroad Safety	S3AM-329-PR1
☐	Electrical Safety	S3AM-302-PR1	☐	Respiratory Protection	S3AM-123-PR1
☒	Excavation	S3AM-303-PR1	☐	Scaffolding	S3AM-311-PR1
☐	Fall Protection	S3AM-304-PR1	☐	Steel Erection	S3AM-340-PR1
☐	Flammable and Combustible Liquids	S3AM-126-PR1	☐	Temp. Floors, Stairs, Railings, Toe-boards	S3AM-342-PR1
☐	Gauge Source Radiation	S3AM-122-PR1	☒	Underground Utilities	S3AM-331-PR1
☒	Hand and Power Tools	S3AM-305-PR1	☐	Underground Work	S3AM-330-PR1
☒	Hazardous Waste Operations	S3AM-117-PR1	☒	Wildlife, Plants and Insects	S3AM-313-PR1
☒	Heat Stress	S3AM-113-PR1	☒	Working Alone	S3AM-314-PR1
☒	Heavy Equipment	S3AM-309-PR1	☐	Working On and Near Water	S3AM-315-PR1
☐	High Altitude	S3AM-124-PR1			

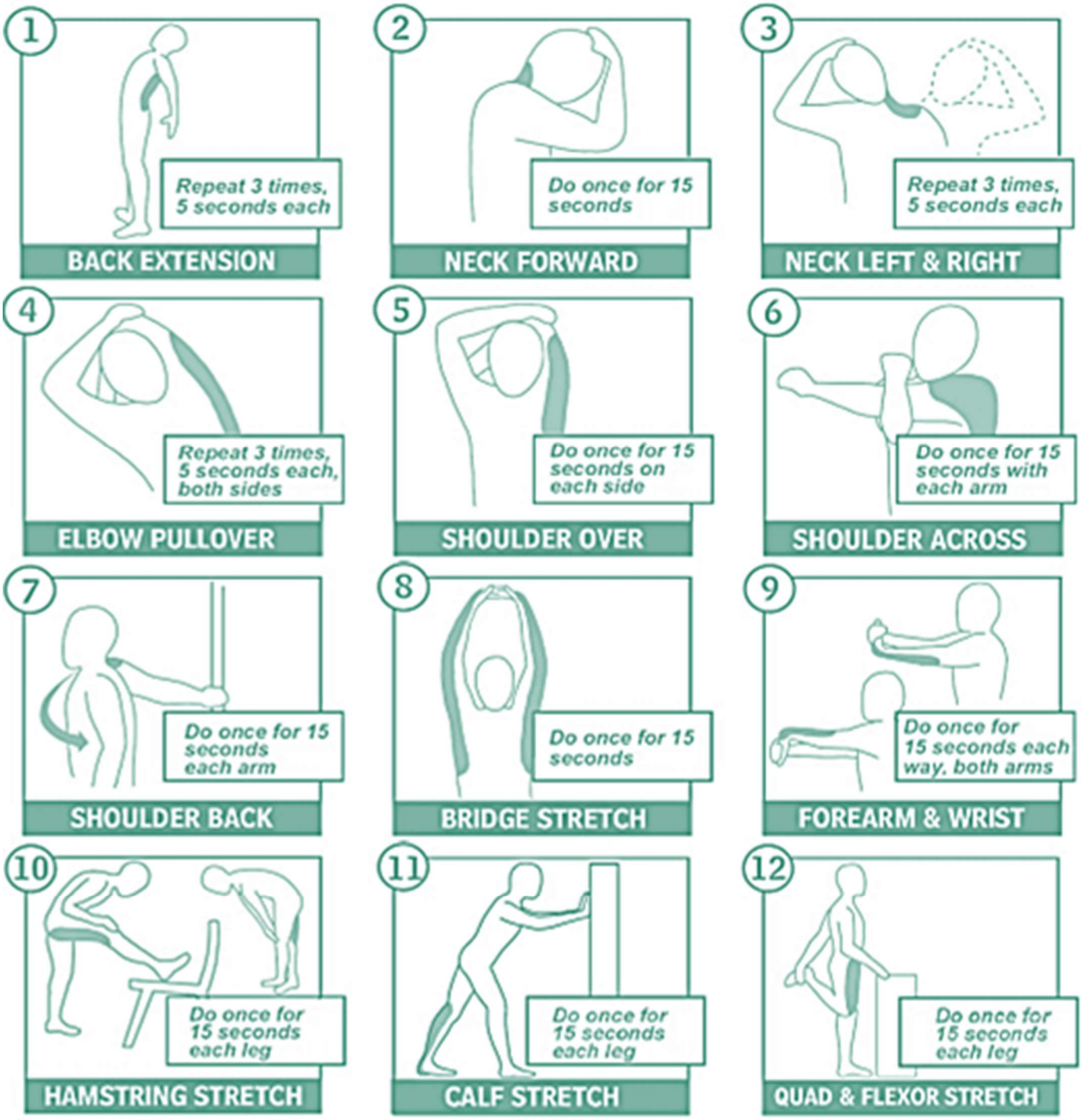
AECOM

Attachment C

Stretch/Flex Poster

Attachment C: Stretch/Flex Poster

Examples of Stretches



AECOM

Attachment D

Site Safety Orientation

Attachment D: Site Safety Orientation

AECOM will conduct a site safety briefing for a person's initial visit to the site. The briefing will be conducted:

- Prior to the start of work;
- For any new AECOM or subconsultant personnel;
- For Site Visitors; and
- At each mobilization, or whenever there is a change in task or significant change in task location.

All personnel working on the project who have received the site briefing (including the SWP review) will sign the Personal Acknowledgement located in **Section 20**. Visitors may receive a shortened version to address the hazards specific to their visit.

The following topics, at minimum, will be discussed during the site safety briefing:

- Contents of this HASP;
- The Emergency Response Plan (Section 4);
- Contractor SHE Management expectations;
- Injury management, including notification and hospital and occupational clinic locations;
- The AECOM 4-Sight program;
- Stop Work authority;
- The THAs (**Attachment A**) for the activities that will be performed on a given job;
- Types of hazards at the site and means for minimizing exposure to them;
- Instructions for new operations to be conducted, and safe work practices;
- PPE that must be used;
- Lone worker check-in procedures;
- Emergency evacuation routes, muster points, and tornado/storm shelters; and
- Location and use of emergency equipment.
- **These briefings must be documented and maintained in the project files.**

AECOM

Attachment E

Work Plan/Client and Host Facility SH&E Requirements

Attachment E: Work Plan/Client and Host Facility SH&E Requirements

There is no Work Plan / Client and/or Host Facility SH&E requirements for this plan.

AECOM

Attachment F

Project Hazardous Materials Communication Plan

Attachment F-1: Project Hazardous Materials Communication Plan

Materials to be brought or encountered onsite will have a Safety Data Sheet (SDS) maintained in an accessible location for workers to review. Applicable SDSs are presented in **Attachment F-2**. Materials to be brought or encountered onsite will include:

- Alconox.
- Hydrochloric Acid.
- Petroleum Hydrocarbons.

As part of the Site Safety Officer (SSO) daily activities, an inventory of hazardous materials will be prepared with the quantities expected to be on site. The inventory will be updated if any additional materials are brought on site and as frequently as necessary to reflect accurate quantities. This chemical inventory list will be readily available for review (usually kept with the SDSs).

Unless each container has appropriate labeling, all chemical containers will be labeled with the following information:

- Product name and identity of the hazardous chemical(s).
- Appropriate hazard warnings.
- Name and address of the chemical manufacturer, importer, or other responsible party.

Labels on incoming containers of hazardous materials will not be removed or defaced. Labels are also required when a hazardous substance is transferred from a primary container to a secondary container. Labels on secondary containers must indicate the product name or the names of the hazardous substances contained therein as well as related physical and health hazards and their associated target organs. Labels may incorporate words, pictures, symbols, or combinations thereof to ensure the appropriate information is provided to the end user.

Examples of acceptable labeling systems include the National Fire Protection Association Diamond, the Hazardous Materials Identification System, the Chemical Hazard Identification and Training system, or similar.

Employee requirements for reviewing SDSs for specific safety and health protection procedures are presented below.

- AHAs will incorporate information contained in the SDSs.
- SDS information will be followed in the use and disposal of material and selection of hazard control and emergency response measures.
- The SSO will obtain an SDS for each chemical before it is used. SDSs will generally be received by the person ordering the product. SDSs for products frequently used should be kept on file because additional copies may not be included in repeat shipments.
- The SSO will review each SDS when it is received to evaluate whether the information is complete and to determine whether existing protective measures are adequate.
- The SSO will maintain a collection of all applicable and relevant SDSs in an area that is accessible to all employees at all times. An electronic database is an acceptable method of maintaining the SDSs.
- The SSO will replace SDSs when updated sheets are received and will communicate any significant changes to those who work with the chemical.
- SDSs are required for all hazardous materials brought on site by project personnel.

General household products to be used for their specific purpose, food, drugs, and cosmetics brought into the workplace for employee use and consumption are all exempt, as are supplies in the first-aid kit, such as isopropyl alcohol and antibacterial wipes.

Employees bringing hazardous materials on to a site or project must submit SDSs to the SSO. The SSO may restrict the use of certain hazardous materials on a site or project due to occupational health risk, hazardous physical properties of the material, or potential employee sensitivity to odor or irritating properties of the material.

Other personnel working in the same area shall be provided with the following information on chemicals used by or provided to AECOM personnel:

- Names of hazardous chemicals to which they may be exposed while on the jobsite.
- Precautions the employees may take to lessen the possibility of exposure by usage of appropriate protective measures, such as ventilation or isolation of the work. In some cases, as an administrative control measure, a task may be delayed to a time when a minimal number of employees are present in the area.
- Location of SDSs.

As discussed in Section 5.1 of the HASP, employees will be trained initially and periodically when use of hazardous or toxic agents is altered or modified to accommodate changing on-site work procedures. Training shall cover the following topics:

- Requirements and use of the hazard communications program on the project.
- The location of all hazardous or toxic agents at the project.
- Identification and recognition of hazardous or toxic agents on the project.
- Physical and health hazards of the hazardous or toxic agents pertinent to project activities.
- Protective measures employees can implement when working with project-specific hazardous or toxic agents.

Provide training to all employees who have the potential to be exposed to hazardous materials: a) at the time of the initial task assignment, b) whenever new chemicals are introduced into the workplace, and c) more frequently where required by site-specific conditions or client-specific requirements. This training will include the following:

- Applicable regulatory requirements.
- Location of the program, inventory, and SDS.
- Site-specific chemicals used and their hazards (chemical, physical, and health), including the general characteristics of the chemicals and signs and symptoms of exposure.
- How to detect the presence or release of chemicals including the location, types, and usage of any portable and fixed monitoring or detection equipment and their associated alarms, where applicable.
- Safe work practices (S3AM-001-PR1) and methods employees can take to protect themselves from chemical hazards (metals or explosives constituents in soil).
- How to read an SDS.
- Site- or project-specific information on hazard warnings and labels in use at the location, if applicable.
- Site-specific evacuation and rescue procedures in the event of chemical release, including the location of staging areas and personnel accounting procedures.

The following documentation will be maintained in the project file:

- Chemical inventory list;
- SDSs; and
- Training records.

Attachment F-2: Safety Data Sheets

1. IDENTIFICATION

Product Identifier	Diesel Fuel
Synonyms:	Diesel Fuel, Motor Vehicle Diesel Fuel, Dyed Diesel, * DieselOne®, * DieselOne® w/Platinum Plus DFX, Low Sulfur Diesel (LSD), Ultra Low Sulfur Diesel (ULSD)
Intended use of the product:	Fuel
Contact:	Global Companies LLC Water Mill Center 800 South St. Waltham, MA 02454-9161 www.globalp.com
Contact Information:	EMERGENCY TELEPHONE NUMBER (24 hrs): CHEMTREC (800) 424-9300 COMPANY CONTACT (business hours): 800-542-0778

2. HAZARD IDENTIFICATION

According to OSHA 29 CFR 1910.1200 HCS

Classification of the Substance or Mixture

Classification (GHS-US):

Flam. Liquid	Category 3	H226
Skin Corrosion/Irritation	Category 2	H315
Aspiration Hazard	Category 1	H304
STOT SE	Category 3	H336
Carcinogenicity	Category 2	H350
Aquatic Chronic	Category 2	H411
Serious Eye Damage/ Irritation	Category 2B	H319

Labeling Elements

Signal Word (GHS-US):	**Danger**
Hazard Statements (GHS-US):	H226 – Flammable liquid and vapor. H315 – Causes Skin irritation. H304 – May be fatal if swallowed and enters airways. H336 – May cause drowsiness or dizziness. H350 – May cause cancer. H411 – Toxic to aquatic life with long lasting effects. H319 – May cause eye damage/irritation.
Precautionary Statements (GHS-US):	P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P233 - Keep container tightly closed. P240 – Ground/bond container and receiving equipment.

P241 – Use explosion-proof electrical/ventilating/lighting equipment pursuant to applicable electrical code.
P242 – Use only non-sparking tools.
P243 – Take precautionary measures against static discharge.
P261 – Avoid breathing dust/fume/gas/mist/vapors/spray.
P264 – Wash skin thoroughly after handling.
P271 – Use only outdoors or in a well-ventilated area.
P273 – Avoid release to the environment.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P303+361+353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse with water/shower.
P308+311 - If exposed or concerned: Get medical advice/attention.
P301+310 - If swallowed: Immediately call a poison center/doctor/…
P331 - Do NOT induce vomiting.
P370+P378 – In case of fire use firefighting foam or other appropriate media for Class B fires to extinguish.
P403+235 - Store in a well-ventilated place. Keep cool.
P405 - Store locked up.
P501 – Dispose of contents/container in accordance with local/regional/national/international regulation.

Other information:

NFPA 704
Health: 1
Fire: 2
Reactivity: 0

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Composition Information
Mixture

Name	Product Identifier (CAS#)	% (w/w)	Classification
Diesel Fuel	68476-34-6	100	Flam Liq. 3, H226; Skin Irrit. 2, H315; Aspiration 1, H304; STOT SE 3, H336; Carc.2. H350; Aquatic chronic 2, H411
Naphthalene	91-20-3	<0.1	Carc. 2, H351; Acute Tox. 4, H302; Aquatic Acute 1, H400; Aquatic Chronic 1, H410

Additional Formulation Information:
Diesel Fuel consists of C9+ hydrocarbons resulting from distillation of crude oil.

Low Sulfur Diesel Fuel typically contains less than 500 ppm of sulfur

Ultra Low Sulfur Diesel Fuel typically contains less than 15 ppm of sulfur

4. FIRST AID MEASURES

Route	Measures
Inhalation	Remove person to fresh air. If person is not breathing, ensure an open airway and provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

Route	Measures
Ingestion	Aspiration Hazard: DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Ingestion may cause gastrointestinal disturbances including irritation, nausea, vomiting, and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory failure, and death.
Eye Contact	In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention. In case of contact lenses, remove immediately.
Skin Contact	Remove contaminated clothing and shoes. Wash contaminated areas thoroughly with soap and water or waterless hand cleanser. Obtain medical attention if irritation or redness develops. Thermal burns require immediate medical attention depending on the severity and of the area of the body burned.

Most Important Symptoms
Contact with eyes and face may cause irritation. Long-term exposure may cause dermatitis (itching, irritation, pain and swelling).

Inhalation may cause irritation and significant or long term exposure could cause respiratory insufficiency and pulmonary edema.

Ingestion may cause aspiration, gastrointestinal disturbance, and CNS effects.

Immediate Medical Attention and Special Treatment
For contact with skin or eyes, immediately wash or flush contaminated eyes with gently flowing water. If possible, irrigate each eye continuously with 0.9% saline (NS). If ingested, rinse mouth. Do NOT induce vomiting, as this may cause chemical pneumonia (fluid in the lungs).

If inhaled, administer oxygen or establish a patent airway if breathing is labored. Suction if necessary. Monitor closely, anticipate seizures. Consider orotracheal or nostracheal intubation of airway control if patient is unconscious or is in severe respiratory distress.

Discard any clothing or shoes contaminated as they may be flammable.

5. FIRE-FIGHTING MEASURES

Extinguishing Media
Foam, carbon dioxide, dry chemical are most suitable

SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, C02, water spray, firefighting foam, or Halon. Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other firefighting equipment.

LARGE FIRES: Foam, carbon dioxide, dry chemical. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

Specific Hazards / Products of Combustion
Moderate fire hazard when exposed to heat or flame with a very low flash point. Product is flammable and easily ignited when exposed to heat, spark, open flame or other source of ignition. Flowing product may be ignited by self-generated static electricity. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

Combustion may produce smoke, carbon monoxide and other products of incomplete combustion.

Special Precautions and Protective Equipment for Firefighters
Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied firefighting foam.

Fighting Equipment/Instructions
Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH- approved pressure-demand self-contained breathing apparatus with full face piece and protective clothing.

Refer to Section 9 for fire properties of this chemical including flash point, auto ignition temperature, and explosive limits.

6. ACCIDENTAL RELEASE MEASURES

ACTIVATE FACILITY SPCC, SPILL CONTINGENCY or EMERGENCY PLAN.

Personal Precautions
Due to high vapor density, flammable / toxic vapors may be present in low lying areas, dikes, pits, drains, or trenches. Vapors may accumulate in low lying areas and reach ignitable concentrations. Ventilate the area. Use of non-sparking tools and intrinsically safe equipment is recommended. Potential for flammable atmosphere should be monitored using a combustible gas indicator positioned downwind of the spill area. Refer to Sections 2 and 7 for further hazard warnings and handling instructions.

Use appropriate personal protective equipment to prevent eye/skin contact and absorption. Use NIOSH approved respiratory protection, if warranted, to prevent exposures above permissible limits. Refer to Section 8. Contaminated clothing should not be near sources of ignition.

Emergency Measures
As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Consider wind direction. Secure all ignition sources (flame, spark, hot work, hot metal, etc.) from area. Evaluate the direction of product travel, diking sewers, etc. to confirm spill areas. Do not touch or walk-through spilled material. For large spills, isolate initial action distance downwind 1,000 ft. (300 m).

Environmental Precautions
Stop the spill to prevent environmental release if it can be done safely. Product is toxic to aquatic life. Take action to isolate environmental receptors including drains, storm sewers and natural water bodies. Keep on impervious surface if at all possible. Use water sparingly to prevent product from spreading. Foam and absorbents may be used to reduce / prevent airborne release.

Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Follow federal, state or local requirements for reporting environmental release where necessary. Refer to Section 15 for further information.

Containment and Clean-Up Methods
Carefully contain and stop the source of the spill, if safe to do so. Protect bodies of water by diking absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of firefighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Take up with dry earth, sand or other non-combustible, inert oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container with clean, non-sparking tools for reclamation or disposal. Response and cleanup crews must be properly trained and must utilize proper protective equipment. Refer to Section 8 for appropriate protective equipment.

7. HANDLING AND STORAGE

USE ONLY AS A FUEL.
DO NOT SIPHON BY MOUTH.

Handling Precautions
Handle as a flammable liquid. Keep away from heat, sparks, and open flame. No smoking. Electrical equipment should be approved for classified area. Bond and ground containers during product transfer pursuant to NFPA 70 and API RP 2003 to reduce the possibility of static-initiated fire or explosion. Follow precautions to prevent static initiated fire.

Use good personal hygiene practices. Use only with protective equipment specified in Section 8. Avoid repeated and/or prolonged skin exposure. Use only outdoors or in well ventilated areas. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this

product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves. Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure.

Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product) - see API RP 2003, "Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents."

Storage

Large quantities of diesel fuel are stored in tanks or portable containers at an ambient storage temperature. Separate from incompatible chemicals (Refer to Section 10) by distance or secondary containment. Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers that are clearly labeled. Label all secondary containers that this material is transferred into with the chemical name and associated hazard(s). Empty product containers or vessels may contain flammable vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Storage tanks should have a venting system. If stored in small containers, the area should be well ventilated, away from ignition sources and protected from potential damage or vehicular traffic. Post “No Smoking” signs in product storage areas. This storage area should comply with NFPA 30 “Flammable and Combustible Liquid Code” or applicable building code. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 “Cleaning Mobile Tanks in Flammable and Combustible Liquid Service” and API RP 2015 “Safe Entry and Cleaning of Petroleum Storage Tanks”.

Incompatibles

Keep away from strong oxidizers, ignition sources and heat.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure Limits

Component	CAS #	List	Value
Diesel Fuel	68476-34-6	ACGIH TLV-TWA	100 mg/m3*
Naphthalene	91-20-3	ACGIH TLV-TWA OSHA PEL ACGIH STEL	10 ppm 10 ppm 15 ppm

*Critical effects; Skin; A3; CNS impairment.

Engineering Controls

Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces. Intrinsically safe equipment and non-sparking tools shall be used in circumstances where concentrations may exceed lower flammable limits. Grounding and bonding shall be used to prevent accumulation and discharge of static electricity. Emergency shower and eyewash should be provided in proximity to handling areas in the event of exposure to decontaminate.

Personal Protective Equipment

Exposure	Equipment
Eye / Face	Wear appropriate chemical protective glasses or goggles or face shields to prevent skin and eye contact especially caused from splashing.
Skin	Wear appropriate personal protective clothing to prevent skin contact. Gloves constructed of nitrile, neoprene or PVC are recommended when handling this material. Chemical protective clothing such as of E.I. DuPont TyChem®, Saranex® or equivalent recommended based on degree of exposure. Note: The resistance of specific material may vary from product to product as well as with degree of exposure.

Exposure	Equipment
Respiratory	A NIOSH/MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection and limitations. Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.
Thermal	Product is stored at ambient temperature. No thermal protection is required except for emergency operations involving actual or potential for fire. Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

9. PHYSICAL AND CHEMICAL PROPERTIES

Property	Value	
Appearance	Clear or straw-colored liquid. May be dyed red for distribution.	
Odor	Mild characteristic petroleum distillate odor.	
Odor Threshold	<1 ppm	
pH	Not available	
Melting Point	-22 to -0.4 ˚F (-30 to -18 ˚C)	
Boiling Point Range	320 to 690 ˚F (160 to 366 ˚C)	
Flash Point	> 125.6 ˚F (52 ˚C) PMCC	
Evaporation Rate	Slow, varies with conditions	
Flammability	Flammable liquid (OSHA defined)	
Flammable Limits	0.6 % - 6.5%	
Vapor Pressure	0.009 psia @ 70 ˚F	
Vapor Density	> 1	(air=1)
Specific Gravity	0.83-0.86 @ 60 ˚F (16 ˚C)	(water=1)
Solubility	Insoluble in water; miscible with other petroleum solvents.	
Partition Coefficient (N-octanol/water)	Log Kow range of 3.3 to >.6.0	
Autoignition Temperature	494 ˚F (257 ˚C)	
Decomposition Temperature	When heated it emits acrid smoke and irritating vapors.	
Viscosity	<3 cSt	
Percent Volatiles	100	

10. STABILITY AND REACTIVITY

Stability
This is a stable material that is flammable liquid (OSHA/GHS hazard category 3). Stable during transport.

Reactivity
Material is not self-reacting. Flammable concentrations may be present in air. Compound can react with oxidizing materials.

Possibility of Hazardous Reactions
Hazardous polymerization will not occur.

Incompatibility
Keep away from strong oxidizers such as nitric and sulfuric acids.

Conditions to Avoid
Avoid high temperatures, open flames, sparks, static electricity, welding, smoking and other ignition sources.

Hazardous Decomposition Products
Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

11. TOXICOLOGICAL INFORMATION

Acute Toxicity:
Acute Toxicity (Inhalation LC50)
Diesel Fuel (68476-34-6)
LC50 Inhalation Rat >6 mg/l/4h

Acute Toxicity (Dermal LD50)
Diesel Fuel (68476-34-6)
LD50 Dermal Rabbit >5000 mg/kg

Acute Toxicity (Oral LD50)
Diesel Fuel (68476-34-6)
LD50 Oral Rabbit >5000 mg/kg

Skin Corrosion/Irritation: Prolonged and repeated contact may cause skin irritation leading to dermatitis. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are exposed repeatedly.

Serious Eye Damage/Irritation: Causes serious eye irritation.

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: OSHA: NO, IARC: Group 3, NTP: NO, ACGIH: NOIC:A3, NIOSH: NO

IARC: Group 3 – Not classifiable as to their carcinogenicity to humans ACGIH: A3 – Confirmed animal carcinogen with unknown relevance to humans

Studies have shown that similar products produce skin tumors in laboratory animals following repeated applications without washing or removal. The significance of this finding to human exposure has not been determined. Other studies with active skin carcinogens have shown that washing the animal's skin with soap and water between applications reduced tumor formation.

IARC classifies whole diesel fuel exhaust particulates (byproduct of combustion of this material) carcinogenic to humans (Group 1) and NIOSH regards diesel fuel exhaust particulate as a potential occupational carcinogen.

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Specific Target Organ Toxicity (Single Exposure): Inhalation exposure may cause drowsiness or dizziness by inhalation exposure.

Aspiration Hazard: The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

Potential Health Effects: Vapor irritating to skin, eyes, nose, and throat. Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

WARNING: The burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of

combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

12. ECOLOGICAL INFORMATION

Toxicity:
This material is expected to be toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

Data for Component: Diesel Fuel (68476-34-6)

Material is toxic to aquatic organisms based on an acute basis (LC50/EC50 >1 but ≤ 10 mg/L in the most sensitive species tested).

Material is a long-term aquatic hazard based on a chronic basis (LC50/EC50 >1 but ≤ 10 mg/L in the most sensitive species tested).

Persistence and Degradation: This material is not expected to be readily biodegradable.

Bioaccumulative Potential: Not available

Mobility in Soil: Not available

Other Adverse Effects: None known

Other Information: Avoid release to the environment.

13. DISPOSAL CONSIDERATIONS

Consult federal, state and local waste regulations to determine appropriate disposal options. May be considered a hazardous waste if disposed. Direct solid waste (landfill) or incineration at a solid waste facility is not permissible. Do not discharge to sanitary or storm sewer. Personnel handling waste containers should follow precautions provided in this document.

Shipping containers must be DOT authorized packages. Follow licensure and regulations for transport of hazardous material and hazardous waste as applicable.

14. TRANSPORT INFORMATION

US DOT

UN Identification Number	NA 1993
Proper Shipping Name	Diesel fuel
Hazard Class and Packing Group	3, PGIII
Shipping Label	Flammable liquid
Placard / Bulk Package	Flammable liquid, 1993
Emergency Response Guidebook Guide Number	128

This product may be re-classified as a “Combustible Liquid” meeting the definition in 49 CFR 173.120 unless transported by vessel or aircraft.
Specific placard requirements must be met for shipments of this product as a Combustible Liquid by rail (See 49 CFR 172.332).
Non-bulk packages (<= 119 gal) of Combustible Liquids in package sizes less than the product reportable quantity are not regulated as hazardous materials if the material does not meet any other hazard class.

IATA Information

UN Identification Number	UN 1202
Proper Shipping Name	Diesel fuel
Hazard Class and Packing Group	3, PGIII
ICAO Label	3
Packing Instructions Cargo	310
Max Quantity Per Package Cargo	220L
Packing Instructions Passenger	309Y
Max Quantity per Package Passenger	60L

ICAO

UN Identification Number	UN 1202
Shipping Name / Description	Diesel fuel
Hazard Class and Packing Group	3, PG III
IMDG Label	3

IMDG

UN Identification Number	UN 1202
Shipping Name / Description	Diesel fuel
Hazard Class and Packing Group	3, PGIII
IMDG Label	3
EmS Number	F-E-S-E
Marine Pollutant	Yes

15. REGULATORY INFORMATION

U.S. Federal, State, and Local Regulatory Information
Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/or local reporting requirements. This product and/or its constituents may also be subject to other federal, state, or local regulations; consult those regulations applicable to your facility/operation.

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning And Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	Yes
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Clean Water Act (Oil Spills)
Any spill or release of this product to “navigable waters” (Essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802) or, if not practical, the U.S. Coast Guard with follow up to the National Response Center, as required by U.S. Federal Law. Also contact appropriate state and local regulatory agencies as required.

CERCLA Section 103 and SARA Section 304 (Release to the Environment)
The CERCLA definition of hazardous substances contains a “petroleum exclusion” clause which exempts this material. This product does not contain any chemicals subject to the reporting requirements of CERCLA Section 103 or SARA 304.

SARA Section 313- Supplier Notification
This product does not contain any chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372.

EPA Notification (Oil Spills)
If the there is a discharge of more than 1,000-gallons of oil into or upon navigable waters of the United States, or if it is the second spill event of 42 gallons or more of oil into water within a twelve (12) month period, a written report must be submitted to the Regional Administrator of the EPA within sixty days of the event.

Pennsylvania Right to Know Hazardous Substance list:
The following product components are cited in the Pennsylvania Special Hazardous Substance List, and are present at levels which require reporting.

Component	CAS	Amount
Diesel Fuel	68476-34-6	100%

New Jersey Right to Know Hazardous Substance list:
The following product components are cited in the New Jersey Right to Know Hazardous Substance List, and are present at levels which require reporting.

Component	CAS	Amount
Diesel Fuel	68476-34-6	100%

California Proposition 65 WARNING: This product contains chemicals known to the State of California to cause Cancer or Reproductive Toxicity.

Component	CAS	Amount
Naphthalene	91-20-3	<0.1%

U.S. Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30.

CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

Canadian Regulatory Information (WHMIS)
Class B3 – Combustible Liquid
Class D2A – Materials causing other toxic effects. (Very Toxic)

16. OTHER INFORMATION

Version	5
Issue Date	June 26, 2019
Prior Issue Date	May 20, 2016

Description of Revisions
Update viscosity information in Section 9. Update transportation information in Section 14 to clarify US DOT re-classification option as a Combustible Liquid.

Abbreviations

˚F	Degrees Fahrenheit (temperature)
<	Less than
=	Equal to
>	Greater than
AP	Approximately
C	Centigrade (temperature)
kg	Kilogram
L	Liter
mg	Milligrams
mL	Milliliter
mm^2	Square millimeters
mmHg	Millimeters of mercury (pressure)
N/A	Not applicable
N/D	Not determined
ppm	Parts per million
sec	Second
ug	Micrograms

Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
AIHA	American Industrial Hygiene Association
AL	Action Level
ANSI	American National Standards Institute
API	American Petroleum Institute
CAS	Chemical Abstract Service
CERCLA	Comprehensive Emergency Response, Compensation, and Liability Act
DOT	U.S. Department of Transportation
EC50	Ecological concentration 50%
EPA	U.S. Environmental Protection Agency
ERPG	Emergency Response Planning Guideline
GHS	Global Harmonized System

HMIS	Hazardous Materials Information System
IARC	International Agency for Research On Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
Koc	Soil Organic Carbon
LC50	Lethal concentration 50%
LD50	Lethal dose 50%
MSHA	Mine Safety and Health Administration
NFPA	National Fire Protection Association
NIOSH	National Institute of Occupational Safety and Health
NOIC	Notice of Intended Change
NTP	National Toxicology Program
OPA	Oil Pollution Act of 1990
OSHA	U.S. Occupational Safety & Health Administration
PEL	Permissible Exposure Limit (OSHA)
RCRA	Resource Conservation and Recovery Act Reauthorization Act of 1986 Title III
REL	Recommended Exposure Limit (NIOSH)
RVP	Reid Vapor Pressure
SARA	Superfund Amendments and
SCBA	Self Contained Breathing Apparatus
SPCC	Spill Prevention, Control, and Countermeasures
STEL	Short Term Exposure Limit (generally 15 minutes)
TLV	Threshold Limit Value (ACGIH)
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average (8 hr.)
UN	United Nations
UNECE	United Nations Economic Commission for Europe
WEEL	Workplace Environmental Exposure Level (AIHA)
WHMIS	Canadian Workplace Hazardous Materials Information System

Disclaimer of Expressed and Implied Warranties

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.

** End of Safety Data Sheet **

Oxygen Release Compound (ORC®)
MATERIAL SAFETY DATA SHEET (MSDS)

Last Revised: **March 27, 2013**

Section 1 - Material Identification

Supplier:

REGENESIS
1011 Calle Sombra
San Clemente, CA 92673
Phone: **949.366.8000**
Fax: **949.366.8090**
E-mail: **info@regenesis.com**

Chemical Description:	**A mixture of Magnesium Peroxide (MgO_2), Magnesium Oxide (MgO), and Magnesium Hydroxide [$Mg(OH)_2$]**
Chemical Family:	**Inorganic Chemical**
Trade Name:	**Oxygen Release Compound (ORC®)**
Product Use:	**Used to remediate contaminated soil and groundwater (environmental applications)**

Section 2 – Chemical Identification

CAS#	Chemical
14452-57-4	**Magnesium Peroxide (MgO_2)**
1309-48-4	**Magnesium Oxide (MgO)**
1309-42-8	**Magnesium Hydroxide [$Mg(OH)_2$]**
7758-11-4	**Dipotassium Phosphate (HK_2O_4P)**
7778-77-0	**Monopotassium Phosphate (H_2KO_4P)**
Assay:	**25-35% Magnesium Peroxide (MgO_2)**

Section 3 - Physical Data	
Melting Point:	**Not Determined (ND)**
Boiling Point:	**ND**
Flash Point:	**Not Applicable (NA)**
Self-Ignition Temperature:	**NA**
Thermal Decomposition:	**Spontaneous Combustion possible at ≈ 150°C**
Density:	**0.6 – 0.8 g/cc**
Solubility:	**Reacts with Water**
pH:	**Approximately 10 in saturated solution**
Appearance:	**White Powder**
Odor:	**None**
Vapor Pressure:	**None**
Hazardous Decomposition Products:	**Not Known**
Hazardous Reactions:	**Hazardous Polymerization will not occur**
Further Information:	**Non-combustible, but will support combustion**

Section 4 – Reactivity Data	
Stability:	**Product is stable unless heated above 150 °C. Magnesium Peroxide reacts with water to slowly release oxygen. Reaction by product is Magnesium Hydroxide**
Conditions to Avoid:	**Heat above 150 °C. Open Flames.**
Incompatibility:	**Strong Acids. Strong Chemical Agents.**
Hazardous Polymerization:	**None known.**

Section 5 - Regulations

Permissible Exposure Limits in Air	**Not Established. Should be treated as a nuisance dust.**

Section 6 – Protective Measures, Storage and Handling

Technical Protective Measures

Storage:	**Keep in tightly closed container. Keep away from combustible material.**
Handling:	**Use only in well ventilated areas.**

Personal Protective Equipment (PPE)

Respiratory Protection:	**Recommended (HEPA Filters)**
Hand Protection:	**Wear suitable gloves.**
Eye Protection:	**Use chemical safety goggles.**
Other:	**NA**
Industrial Hygiene:	**Avoid contact with skin and eyes**
Protection Against Fire & Explosion:	**NA**
Disposal:	**Dispose via sanitary landfill per state/local authority**
Further Information:	**Not flammable, but may intensify a fire**
After Spillage/Leakage/Gas Leakage:	**Collect in suitable containers. Wash remainder with copious quantities of water.**
Extinguishing Media:	**NA**
Suitable:	**Carbon Dioxide, dry chemicals, foam**
Further Information:	**Self contained breathing apparatus or approved gas mask should be worn due to small particle size. Use extinguishing media appropriate for surrounding fire.**
First Aid:	**After contact with skin, wash immediately with plenty of water and soap. In case of contact with eyes, rinse immediately with plenty of water and seek medical attention.**

Section 7 – Information on Toxicology

Toxicity Data:	**Not Available**

Section 8 – Information on Ecology

Water Pollution Hazard Raging (WGK):	**0**

Section 9 – Further Information

After the reaction of magnesium peroxide with water to form oxygen, the resulting material, magnesium hydroxide, is mildly basic. The amounts of magnesium oxide (magnesia) and magnesium hydroxide in the initial product have an effect similar to lime, but with lower alkalinity.

The information contained in this document is the best available to the supplier at the time of writing, but is provided without warranty of any kind. Some possible hazards have been determined by analogy to similar classes of material. The items in this document are subject to change and clarification as more information become available.

SAFETY DATA SHEET

Creation Date 24-Aug-2009 **Revision Date** 13-Oct-2023 **Revision Number** 8

1. Identification

Product Name **Hydrochloric acid**

Cat No. : **A481-212; A481-212LC; S71942SC; S71943; S71943ND; S80036; S80038; SA49**

CAS No 7647-01-0
Synonyms Muriatic acid; Hydrogen chloride; HCl (Technical/Certified ACS Plus/Optima/NF/FCC)

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Corrosive to metals	Category 1
Skin Corrosion/Irritation	Category 1 B
Serious Eye Damage/Eye Irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	

Label Elements

Signal Word
Danger

Hazard Statements
May be corrosive to metals

Causes severe skin burns and eye damage
May cause respiratory irritation

Precautionary Statements
Prevention
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Use only outdoors or in a well-ventilated area
Keep only in original container
Response
Immediately call a POISON CENTER or doctor/physician
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Ingestion
IF SWALLOWED: Rinse mouth. DO NOT induce vomiting
Spills
Absorb spillage to prevent material damage
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Store in corrosive resistant polypropylene container with a resistant inliner
Store in a dry place
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identified

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Water	7732-18-5	62-65
Hydrochloric acid	7647-01-0	35-38

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation Remove to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a

	pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.
Ingestion	Do NOT induce vomiting. Call a physician or poison control center immediately.
Most important symptoms and effects	Causes burns by all exposure routes. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.
Unsuitable Extinguishing Media	No information available
Flash Point	No information available
Method -	No information available
Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Corrosive material. Causes burns by all exposure routes. Thermal decomposition can lead to release of irritating gases and vapors.

Hazardous Combustion Products
Hydrogen chloride gas.
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
3	0	0	N/A

6. Accidental release measures

Personal Precautions	Use personal protective equipment as required. Ensure adequate ventilation. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Do not get in eyes, on skin, or on clothing.
Environmental Precautions	Should not be released into the environment. See Section 12 for additional Ecological Information.
Methods for Containment and Clean Up	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling	Wear personal protective equipment/face protection. Do not breathe mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not ingest. If swallowed then seek immediate medical assistance.
Storage.	Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area. Incompatible Materials. Metals. Strong oxidizing agents. Bases. sodium hypochlorite. Amines. Fluorine. Cyanides. Alkaline.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH	Mexico OEL (TWA)
Hydrochloric acid	Ceiling: 2 ppm	Ceiling: 5 ppm Ceiling: 7 mg/m³ (Vacated) Ceiling: 5 ppm (Vacated) Ceiling: 7 mg/m³	IDLH: 50 ppm Ceiling: 5 ppm Ceiling: 7 mg/m³	Ceiling: 2 ppm

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Recommended Filter type: Particulates filter conforming to EN 143. or. Acid gases filter: Type E, Yellow.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	pungent
Odor Threshold	No information available
pH	< 1
Melting Point/Range	-35 °C / -31 °F
Boiling Point/Range	57 °C / 135 °F @ 760 mmHg
Flash Point	No information available
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	125 mbar @ 20 °C
Vapor Density	1.27
Specific Gravity	1.18
Solubility	Soluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	1.8 mPa.s @ 15°C
Molecular Formula	HCl

Molecular Weight 55.55

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products. Excess heat.

Incompatible Materials Metals, Strong oxidizing agents, Bases, sodium hypochlorite, Amines, Fluorine, Cyanides, Alkaline

Hazardous Decomposition Products Hydrogen chloride gas

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions Contact with metals may evolve flammable hydrogen gas.

11. Toxicological information

Acute Toxicity

Product Information
Oral LD50 Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.
Dermal LD50 Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.
Vapor LC50 Based on ATE data, the classification criteria are not met. ATE > 20 mg/l.

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Water	-	-	-
Hydrochloric acid	238 - 277 mg/kg (Rat)	> 5010 mg/kg (Rabbit)	1.68 mg/L (Rat) 1 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Causes burns by all exposure routes

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Water	7732-18-5	Not listed	Not listed	Not listed	Not listed	Not listed
Hydrochloric acid	7647-01-0	Not listed	Not listed	Not listed	Not listed	Not listed

IARC (International Agency for Research on Cancer)

IARC (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Do not empty into drains. Large amounts will affect pH and harm aquatic organisms.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Hydrochloric acid	-	282 mg/L LC50 96 h Gambusia affinis mg/L LC50 48 h Leucscus idus	-	56mg/L EC50 72h Daphnia

Persistence and Degradability Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No UN1789
Proper Shipping Name HYDROCHLORIC ACID
Hazard Class 8
Packing Group II

TDG

UN-No UN1789
Proper Shipping Name HYDROCHLORIC ACID
Hazard Class 8
Packing Group II

IATA

UN-No UN1789
Proper Shipping Name Hydrochloric acid
Hazard Class 8
Packing Group II

IMDG/IMO

UN-No UN1789
Proper Shipping Name Hydrochloric acid
Hazard Class 8
Packing Group II

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Water	7732-18-5	X	ACTIVE	-
Hydrochloric acid	7647-01-0	X	ACTIVE	-

Legend:
TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT) Not applicable

TSCA 12(b) - Notices of Export Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Water	7732-18-5	X	-	231-791-2	X	X		X	X	KE-35400
Hydrochloric acid	7647-01-0	X	-	231-595-7	X	X	X	X	X	KE-20189

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313

Component	CAS No	Weight %	SARA 313 - Threshold Values %
Hydrochloric acid	7647-01-0	35-38	1.0

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Hydrochloric acid	X	5000 lb	-	-

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Hydrochloric acid	X		-

OSHA - Occupational Safety and Health Administration Not applicable

Component	Specifically Regulated Chemicals	Highly Hazardous Chemicals
Hydrochloric acid	-	TQ: 5000 lb

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Hydrochloric acid	5000 lb	5000 lb

California Proposition 65 This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Water	-	-	X	-	-
Hydrochloric acid	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ):	Y
DOT Marine Pollutant	N
DOT Severe Marine Pollutant	N

U.S. Department of Homeland Security This product contains the following DHS chemicals:
Legend - STQs = Screening Threshold Quantities, APA = A placarded amount

Component	DHS Chemical Facility Anti-Terrorism Standard
Hydrochloric acid	Release STQs - 15000lb (concentration >=37%) Release STQs - 5000lb (anhydrous) Theft STQs - 500lb (anhydrous)

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Water	7732-18-5	-	-	-
Hydrochloric acid	7647-01-0	-	Use restricted. See item 75. (see link for restriction details)	-

REACH links
https://echa.europa.eu/substances-restricted-under-reach

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Water	7732-18-5	Listed	Not applicable	Not applicable	Not applicable
Hydrochloric acid	7647-01-0	Listed	Not applicable	Not applicable	Not applicable

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?
Not applicable

Other International Regulations

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Water	7732-18-5	Not applicable	Not applicable	Not applicable	Not applicable
Hydrochloric acid	7647-01-0	25 tonne	250 tonne	Not applicable	Annex I - Y34

16. Other information

Prepared By Regulatory Affairs

Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date	24-Aug-2009
Revision Date	13-Oct-2023
Print Date	13-Oct-2023
Revision Summary	SDS sections updated. 2. 3. 11.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

Safety Data Sheet

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Trade Name: Alconox®

1 Identification of the substance/mixture and of the supplier

1.1 GHS Product identifier

Trade Name: Alconox®
Product number: 1101, 1103, 1104, 1104-1, 1112, 1112-1, 1125, 1150

1.2 Application of the substance / the mixture: Cleaning material/Detergent

1.2.1 Recommended dilution ratio: 1 – 2% in water

1.3 Details of the supplier of the Safety Data Sheet

Manufacturer:
Alconox Inc.
30 Glenn St
White Plains, NY 10603
(914) 948-4040

Supplier:

Emergency telephone number:
ChemTel Inc
North America: 1-888-255-3924
International: +1 813-248-0573

2 Hazards identification

2.1 Classification of the substance or mixture:

In compliance with EC regulation No. 1272, 29CFR1910/1200 and GHS requirements.

Hazard-determining components of labeling:
Tetrasodium Pyrophosphate
Sodium tripolyphosphate
Sodium Alkylbenzene Sulfonate

2.2 Label elements:

Eye damage, category 1.

Skin irritation, category 2.

Product at recommended dilution:
Eye irritation, category 2B

Hazard pictograms:

Signal word: Danger

Hazard statements:
H315 Causes skin irritation.
H318 Causes serious eye damage.

Precautionary statements:
P264 Wash skin thoroughly after handling.

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P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P501 Dispose of contents and container as instructed in Section 13.

Hazardous Elements at Use Dilution:

Hazard Pictograms:

Signal Word: Warning
Hazard Statements:
H320 Causes eye irritation

Precautionary statements:
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P501 Dispose of contents and container as instructed in Section 13

Additional information: None.

Hazard description
Hazards Not Otherwise Classified (HNOC): May cause surfaces to become slippery if wet. Use caution in areas of foot traffic if on floors.

Information concerning particular hazards for humans and environment:
The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

Classification system:
The classification is according to EC regulation No. 1272, 29CFR1910/1200 and GHS Requirements, and extended by company and literature data. The classification is in accordance with the latest editions of international substances lists and is supplemented by information from technical literature and by information provided by the company.

3 Composition/information on ingredients

3.1 Chemical characterization: Not determined or not available.

3.2 Description: None
3.3 Hazardous components (percentages by weight)

Identification	Chemical Name	Classification	Wt. %
CAS number: 7758-29-4	Sodium tripolyphosphate	Skin Irrit. 2; H315 Eye Irrit. 2; H319	12-28
CAS number: 68081-81-2 or 68411-30-3	Sodium Alkylbenzene Sulfonate	Acute Tox. 4; H303 Skin Irrit. 2; H315 Eye Dam. 1; H318	8-22
CAS number: 7722-88-5	Tetrasodium Pyrophosphate	Skin Irrit. 2; H315 Eye Irrit. 2; H319	2-16

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Hazardous components at use dilution (percentages by weight):

Identification	Chemical Name	Classification	Wt. %
CAS number: 7758-29-4	Sodium tripolyphosphate	Eye Irrit. 2; H319	0.12 - 0.28
CAS number: 68081-81-2 or 68411-30-3	Sodium Alkylbenzene Sulfonate	Eye Irrit. 2; H319	0.08 – 0.22
CAS number: 7722-88-5	Tetrasodium Pyrophosphate	Eye Irrit. 2; H319	0.02 – 0.16

3.4 Additional Information: None.

4 First aid measures

4.1 Description of first aid measures

General information: None.

After inhalation:

Maintain an unobstructed airway.
Loosen clothing as necessary and position individual in a comfortable position.

After skin contact:

Wash affected area with soap and water.
Seek medical attention if symptoms develop or persist.

After eye contact:

Rinse/flush exposed eye(s) gently using water for 15-20 minutes.
Remove contact lens(es) if able to do so during rinsing.
Seek medical attention if irritation persists or if concerned.

After swallowing:

Rinse mouth thoroughly.
Seek medical attention if irritation, discomfort, or vomiting persists.

4.2 Most important symptoms and effects, both acute and delayed

None

4.3 Indication of any immediate medical attention and special treatment needed:

No additional information.

First aid measure at recommended dilution:

General information: None.

After inhalation:

Maintain an unobstructed airway.
Loosen clothing as necessary and position individual in a comfortable position.

After skin contact:

Wash affected area with soap and water.

After eye contact:

Rinse/flush exposed eye(s) gently using water for 15-20 minutes.
Remove contact lens(es) if able to do so during rinsing.

After swallowing:

Rinse mouth thoroughly. Seek medical attention if irritation, discomfort, or vomiting develops.

5 Firefighting measures

Safety Data Sheet

5.1 Extinguishing media

Suitable extinguishing agents:

Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition.

For safety reasons unsuitable extinguishing agents: None

5.2 Special hazards arising from the substance or mixture:

Thermal decomposition can lead to release of irritating gases and vapors.

5.3 Advice for firefighters

Protective equipment:

Wear protective eye wear, gloves and clothing.
Refer to Section 8.

5.4 Additional information:

Avoid inhaling gases, fumes, dust, mist, vapor and aerosols.
Avoid contact with skin, eyes and clothing.

6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation.
Ensure air handling systems are operational.

6.2 Environmental precautions:

Should not be released into the environment.
Prevent from reaching drains, sewer or waterway.

6.3 Methods and material for containment and cleaning up:

Wear protective eye wear, gloves and clothing.

6.4 Reference to other sections: None

7 Handling and storage

7.1 Precautions for safe handling:

No expected hazards under normal use condition.

Avoid breathing mist or vapor if aerosolized.
Do not eat, drink, smoke or use personal products when handling chemical substances.

7.2 Conditions for safe storage, including any incompatibilities:

Store in a cool, well-ventilated area.

7.3 Specific end use(s):

No additional information.

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8 Exposure controls/personal protection

8.1 Control parameters:

a) 7722-88-5, Tetrasodium Pyrophosphate, ACGIH TWA 10 mg/m3
b) 7758-29-4, Sodium Tripolyphosphate, ACGIH TWA 10 mg/m3
c) Dusts, non-specific OEL, Irish Code of Practice
   (i) Total inhalable 10 mg/m3 (8hr)
   (ii) Respirable 4 mg/m3 (8hr)
   (iii) Tetrasodium Pyrophosphate, OSHA TWA 5 mg/m3, (8hr)

8.2 Exposure controls

Appropriate engineering controls:

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling.

Respiratory protection:

Not needed under normal use conditions.

Protection of skin:

Select glove material impermeable and resistant to the substance.

Eye protection:

Safety goggles or glasses, or appropriate eye protection. Recommended to comply with ANSI Z87.1 and/or EN 166.

General hygienic measures:

Wash hands before breaks and at the end of work.
Avoid contact with skin, eyes and clothing.

Exposure Control and Personal Protective Equipment at recommended dilution:

Under normal use and operational conditions, no special personal protective equipment or engineering controls will be necessary. Handle with care.

9 Physical and chemical properties

Appearance (physical state, color):	White and cream colored flakes - powder	**Explosion limit lower**: **Explosion limit upper**:	Not determined or notavailable. Not determined or notavailable.
Odor:	Not determined or not available.	**Vapor pressure at 20°C**:	Not determined or notavailable.
Odor threshold:	Not determined or not available.	**Vapor density**:	Not determined or notavailable.
pH-value:	9.5 (1% aqueous solution)	**Relative density**:	Not determined or notavailable.

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Melting/Freezing point:	Not determined or not available.	**Solubilities**:	Not determined or notavailable.
Boiling point/Boiling range:	Not determined or not available.	**Partition coefficient (n-octanol/water)**:	Not determined or notavailable.
Flash point (closed cup):	Not determined or not available.	**Auto/Self-ignition temperature**:	Not determined or notavailable.
Evaporation rate:	Not determined or not available.	**Decomposition temperature**:	Not determined or notavailable.

Flammability (solid, gaseous):	Not determined or not available.	**Viscosity**:	a. Kinematic: Not determined or not available. b. Dynamic: Not determined or not available.
Density at 20°C:	Not determined or not available.		

10 Stability and reactivity

10.1 Reactivity: Not determined or not available.
10.2 Chemical stability: Not determined or not available.
10.3 Possibility hazardous reactions: Not determined or not available.
10.4 Conditions to avoid: Not determined or not available.
10.5 Incompatible materials: Not determined or not available.
10.6 Hazardous decomposition products: Not determined or not available.

11 Toxicological information

11.1 Information on toxicological effects:

Acute Toxicity:

Oral:

: LD50 > 5000 mg/kg oral rat - Product.

Chronic Toxicity: No additional information.

Skin corrosion/irritation:

Sodium Alkylbenzene Sulfonate: Causes skin irritation.

Serious eye damage/irritation:

Sodium Alkylbenzene Sulfonate: Causes serious eye damage.

Tetrasodium Pyrophosphate: Risk of serious damage to eyes.

Product information at recommended dilution:

Eye irritation may occur upon direct contact with eyes. No specific hazards for skin contact, inhalation, or chronic exposure are expected within normal use parameters.

Respiratory or skin sensitization: No additional information.

Carcinogenicity: No additional information.

IARC (International Agency for Research on Cancer): None of the ingredients are listed.

NTP (National Toxicology Program): None of the ingredients are listed.

Germ cell mutagenicity: No additional information.

Reproductive toxicity: No additional information.

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STOT-single and repeated exposure: No additional information.

Additional toxicological information: No additional information.

12 Ecological information

12.1 Toxicity:

Sodium Alkylbenzene Sulfonate: Fish, LC50 1.67 mg/l, 96 hours.
Sodium Alkylbenzene Sulfonate: Aquatic invertebrates, EC50 Daphnia 2.9 mg/l, 48 hours.
Sodium Alkylbenzene Sulfonate: Aquatic Plants, EC50 Algae 29 mg/l, 96 hours.
Tetrasodium Pyrophosphate: Fish, LC50 - other fish - 1,380 mg/l - 96 h.
Tetrasodium Pyrophosphate: Aquatic invertebrates, EC50 - Daphnia magna (Water flea) - 391 mg/l - 48 h.

12.2 Persistence and degradability: No additional information.

12.3 Bioaccumulative potential: No additional information.

12.4 Mobility in soil: No additional information.

General notes: No additional information.

12.5 Results of PBT and vPvB assessment:

PBT: No additional information.

vPvB: No additional information.

12.6 Other adverse effects: No additional information.

13 Disposal considerations

13.1 Waste treatment methods (consult local, regional and national authorities for proper disposal)

Relevant Information:

It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities. (US 40CFR262.11).

14 Transport information

14.1 UN Number: ADR, ADN, DOT, IMDG, IATA	None
14.2 UN Proper shipping name: ADR, ADN, DOT, IMDG, IATA	None
14.3 Transport hazard classes: ADR, ADN, DOT, IMDG, IATA	**Class:** None **Label:** None **LTD. QTY:** None

US DOT

Limited Quantity Exception: None

Bulk:
RQ (if applicable): None
Proper shipping Name: None
Hazard Class: None
Packing Group: None
Marine Pollutant (if applicable): No additional information.

Non Bulk:
RQ (if applicable): None
Proper shipping Name: None
Hazard Class: None
Packing Group: None
Marine Pollutant (if applicable): No additional information.

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	Comments: None	**Comments:** None
14.4	**Packing group:** ADR, ADN, DOT, IMDG, IATA	None
14.5	**Environmental hazards**:	None
14.6	**Special precautions for user:**	None
	Danger code (Kemler):	None
	EMS number:	None
	Segregation groups:	None

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

14.8 Transport/Additional information:

Transport category:	None
Tunnel restriction code:	None
UN "Model Regulation":	None

15 Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture.

North American

SARA

Section 313 (specific toxic chemical listings): None of the ingredients are listed.
Section 302 (extremely hazardous substances): None of the ingredients are listed.

CERCLA (Comprehensive Environmental Response, Clean up and Liability Act) Reportable

Spill Quantity: None of the ingredients are listed.

TSCA (Toxic Substances Control Act):

Inventory: All ingredients are listed as active.
Rules and Orders: Not applicable.

Proposition 65 (California):

Chemicals known to cause cancer: None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for females: None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for males: None of the ingredients are listed.

Chemicals known to cause developmental toxicity: None of the ingredients are listed.

Canadian

Canadian Domestic Substances List (DSL):
All ingredients are listed.

EU

REACH Article 57 (SVHC): None of the ingredients are listed.

Germany MAK: Not classified.
EC 648/2004 – This is an industrial detergent. Contains >30% phosphate, 15-30% anionic surfactant, <5% EDTA salts
EC 551/2009 – This is not a laundry or dishwasher detergent
EC 907/2006 – Contains no enzymes, optical brighteners, perfumes, allergenic fragrances, or preservative agents

Asia Pacific

Australia

Australian Inventory of Chemical Substances (AICS): All ingredients are listed.

China

Inventory of Existing Chemical Substances in China (IECSC): All ingredients are listed.

Japan

Inventory of Existing and New Chemical Substances (ENCS): All ingredients are listed.

Korea

Existing Chemicals List (ECL): All ingredients are listed.

New Zealand

New Zealand Inventory of Chemicals (NZOIC): All ingredients are listed.

Philippines

Philippine Inventory of Chemicals and Chemical Substances (PICCS): All ingredients are listed.

Taiwan

Taiwan Chemical Substance Inventory (TSCI): All ingredients are listed.

16 Other information

Abbreviations and Acronyms: None

Summary of Phrases

Hazard statements:
H315 Causes skin irritation.
H318 Causes serious eye damage.

NFPA: 1-0-0
HMIS: 1-0-0

At recommended dilution:
NFPA: 1-0-0
HMIS: 1-0-0

Precautionary statements:
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P501 Dispose of contents and container as instructed in Section 13.

Manufacturer Statement:

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Appendix D Inadvertent Discovery Plan

INADVERTENT DISCOVERY PLAN

PLAN AND PROCEDURES FOR THE DISCOVERY OF CULTURAL RESOURCES AND HUMAN SKELETAL REMAINS

To request ADA accommodation, including materials in a format for the visually impaired, call Ecology at 360-407-6000 or visit https://ecology.wa.gov/accessibility. People with impaired hearing may call Washington Relay Service at 711. People with a speech disability may call TTY at 877-833-6341.

Site Name(s): Cowlitz BP/Cowlitz Food and Fuel/Former Texaco Service Station No. 211556

Location: 101 Mulford Rd, Toledo, WA

Project Lead/Organization: Ada Hamilton/Arcadis

County: Lewis

If this Inadvertent Discovery Plan (IDP) is for multiple (batched) projects, ensure the location information covers all project areas.

1. INTRODUCTION

The IDP outlines procedures to perform in the event of a discovery of archaeological materials or human remains, in accordance with applicable state and federal laws. An IDP is required, as part of Agency Terms and Conditions for all grants and loans, for any project that creates disturbance above or below the ground. An IDP is not a substitute for a formal cultural resource review (Executive 21-02 or Section 106).

Once completed, **the IDP shall always be kept at the project site** during all project activities. All staff, contractors, and volunteers shall be familiar with its contents and know where to find it.

2. CULTURAL RESOURCE DISCOVERIES

A cultural resource discovery could be prehistoric or historic artifacts. Examples include (see images for further examples):

- An accumulation of shell, burned rocks, or other food related materials.
- Bones, intact or in small pieces.
- An area of charcoal or very dark stained soil with artifacts.
- Stone tools or waste flakes (for example, an arrowhead or stone chips).
- Modified or stripped trees, often cedar or aspen, or other modified natural features, such as rock drawings.
- Agricultural or logging materials that appear older than 50 years. These could include equipment, fencing, canals, spillways, chutes, derelict sawmills, tools, and many other items.
- Clusters of tin cans or bottles, or other debris that appear older than 50 years.

- Old munitions casings. ***Always assume these are live and never touch or move***.
- Buried railroad tracks, decking, foundations, or other industrial materials.
- Remnants of homesteading. These could include bricks, nails, household items, toys, food containers, and other items associated with homes or farming sites.

The above list does not cover every possible cultural resource. When in doubt, assume the material is a cultural resource.

3. ON-SITE RESPONSIBILITIES

If any employee, contractor, or subcontractor believes that they have uncovered cultural resources or human remains at any point in the project, take the following steps to ***Stop-Protect-Notify***. **If you suspect that the discovery includes human remains, also follow Sections 5 and 6.**

STEP A: Stop Work.

All work must stop immediately in the vicinity of the discovery.

STEP B: Protect the Discovery.

Leave the discovery and the surrounding area untouched and create a clear, identifiable, and wide boundary (30 feet or larger) with temporary fencing, flagging, stakes, or other clear markings. Provide protection and ensure integrity of the discovery until cleared by the Department of Archaeological and Historical Preservation (DAHP) or a licensed, professional archaeologist.

Do not permit vehicles, equipment, or unauthorized personnel to traverse the discovery site. Do not allow work to resume within the boundary until the requirements of this IDP are met.

STEP C: Notify Project Archaeologist (if applicable).

If the project has an archaeologist, notify that person. If there is a monitoring plan in place, the archaeologist will follow the outlined procedure.

STEP D: Notify Project and Washington Department of Ecology (Ecology) contacts.

Project Lead Contacts

Primary Contact		Alternate Contact	
Name:	Jeremy Wilson	Name:	Rebecca Hao
Organization:	Arcadis	Organization:	Arcadis
Phone:	503-220-8201	Phone:	425-463-5170
Email:	Jeremy.Wilson@arcadis.com	Email:	Rebecca.Hao@arcadis.com

Ecology Contacts (completed by Ecology Project Manager)

Ecology Project Manager	Alternate or Cultural Resource Contact
Name:	Name:
Program:	Program:
Phone:	Phone:
Email:	Email:

STEP E: Ecology will notify DAHP.

Once notified, the Ecology Cultural Resource Contact or the Ecology Project Manager will contact DAHP to report and confirm the discovery. To avoid delay, the Project Lead/Organization will contact DAHP if they are not able to reach Ecology.

DAHP will provide the steps to assist with identification. DAHP, Ecology, and Tribal representatives may coordinate a site visit following any necessary safety protocols. DAHP may also inform the Project Lead/Organization and Ecology of additional steps to further protect the site.

Do not continue work until DAHP has issued an approval for work to proceed in the area of, or near, the discovery.

DAHP Contacts:

Name: Rob Whitlam, PhD
Title: State Archaeologist
Cell: 360-890-2615
Email: Rob.Whitlam@dahp.wa.gov
Main Office: 360-586-3065

Human Remains/Bones:

Name: Guy Tasa, PhD
Title: State Anthropologist
Cell: 360-790-1633 (24/7)
Email: Guy.Tasa@dahp.wa.gov

4. TRIBAL CONTACTS

In the event cultural resources are discovered, the following tribes will be contacted. See Section 10 for Additional Resources.

Tribe: Squaxin Island Tribe
Name: Shaun Dinubilo
Title: Archeologist, Cultural Resources
Phone: 360-432-3998
Email: sdinubilo@squaxin.us

Tribe: Confederated Tribes and Bands of the Yakama Nation
Name: Casey Barney
Title: Cultural Resources Program Manager
Phone: 509-865-5121
Email: Casey_Barney@yakama.com

Tribe: Nisqually Indian Tribe
Name: Brad Beach
Title: TPHO
Phone: 360-456-5221, Ext. 2180
Email: Beach.Brad@nisqually-nsn.gov

Tribe: Cowlitz Indian Tribe
Name: James Gordon
Title: TPHO
Phone: 360-577-5680, Ext. 2222
Email: JGordon@cowlitz.org

Tribe: Confederated Tribes of the Chehalis Reservation
Name: Dan Penn
Title: TPHO
Phone: 360-709-1747
Email: dpenn@chehalistribe.org

Please provide contact information for additional tribes within your project area, if needed, in Section 11.

5. FURTHER CONTACTS (if applicable)

If the discovery is confirmed by DAHP as a cultural or archaeological resource, or as human remains, and there is a partnering federal or state agency, Ecology or the Project Lead/Organization will ensure the partnering agency is immediately notified.

Federal Agency:
Agency:
Name:
Title:
Phone:
Email:

State Agency:
Agency:
Name:
Title:
Phone:
Email:

6. SPECIAL PROCEDURES FOR THE DISCOVERY OF HUMAN SKELETAL REMAINS

Any human skeletal remains, regardless of antiquity or ethnic origin, will at all times be treated with dignity and respect. Follow the steps under ***Stop-Protect-Notify.*** For specific instructions on how to handle a human remains discovery, see: *RCW 68.50.645: Skeletal human remains—Duty to notify—Ground disturbing activities—Coroner determination—Definitions*.

Suggestion: If you are unsure whether the discovery is human bone or not, contact Guy Tasa with DAHP, for identification and next steps. Do not pick up the discovery.

Guy Tasa, PhD State Physical Anthropologist
Guy.Tasa@dahp.wa.gov
(360) 790-1633 (Cell/Office)

For discoveries that are confirmed or suspected human remains, follow these steps:

1. Notify law enforcement and the Medical Examiner/Coroner using the contacts below. **Do not call 911** unless it is the only number available to you.

   Enter contact information below (required):

   1. Local Medical Examiner or Coroner name and phone: Lewis County Coroner, Warren McCloed 360-740-1376

2. Local Law Enforcement main name and phone: Toledo Police Department 360-846-6041
3. Local Non-Emergency phone number (911 if without a non-emergency number): 360-740-1105

2. The Medical Examiner/Coroner (with assistance of law enforcement personnel) will determine if the remains are human or if the discovery site constitutes a crime scene and will notify DAHP.
3. **DO NOT speak with the media, allow photography or disturbance of the remains, or release any information about the discovery on social media.**
4. If the remains are determined to be non-forensic, cover the remains with a tarp or other materials (not soil or rocks) for temporary protection and to shield them from being photographed by others or disturbed.

Further activities:

- Per RCW 27.44.055, RCW 68.50, and RCW 68.60, DAHP will have jurisdiction over non-forensic human remains. Ecology staff will participate in consultation. The Project Lead/Organization may also participate in consultation.
- Documentation of human skeletal remains and funerary objects will be agreed upon through the consultation process described in RCW 27.44.055, RCW 68.50, and RCW 68.60.
- When consultation and documentation activities are complete, work in the discovery area may resume as described in Section 8.

If the project occurs on federal lands (such as a national forest or park or a military reservation) the provisions of the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) apply and the responsible federal agency will follow its provisions. Note that state highways that cross federal lands are on an easement and are not owned by the state.

If the project occurs on non-federal lands, the Project Lead/Organization will comply with applicable state and federal laws, and the above protocol.

7. DOCUMENTATION OF ARCHAEOLOGICAL MATERIALS

Archaeological resources discovered during construction are protected by state law RCW 27.53 and assumed eligible for inclusion in the National Register of Historic Places under Criterion D until a formal Determination of Eligibility is made.

The Project Lead/Organization must ensure that proper documentation and field assessments are made of all discovered cultural resources in cooperation with all parties: the federal agencies (if any), DAHP, Ecology, affected tribes, and the archaeologist.

An archaeologist will record all prehistoric and historic cultural material discovered during project construction on a standard DAHP archaeological site or isolate inventory form. They will photograph site overviews, features, and artifacts and prepare stratigraphic profiles and soil/sediment descriptions for minimal subsurface exposures.

They will document discovery locations on scaled site plans and site location maps.

Cultural features, horizons, and artifacts detected in buried sediments may require the archaeologist to conduct further evaluation using hand-dug test units. They will excavate units in a controlled fashion to expose features, collect samples from undisturbed contexts, or to interpret complex stratigraphy. They may also use a test unit or trench excavation to determine if an intact occupation surface is present. They will only use test units when necessary to gather information on the nature, extent, and integrity of subsurface cultural deposits to evaluate the site's significance. They will conduct excavations using standard archaeological techniques to precisely document the location of cultural deposits, artifacts, and features.

The archaeologist will record spatial information, depth of excavation levels, natural and cultural stratigraphy, presence or absence of cultural material, and depth to sterile soil, regolith, or bedrock for each unit on a standard form. They will complete test excavation unit level forms, which will include plan maps for each excavation level and artifact counts and material types, number, and vertical provenience (depth below surface and stratum association where applicable) for all recovered artifacts. They will draw a stratigraphic profile for at least one wall of each test excavation unit.

The archaeologist will screen sediments excavated for purposes of cultural resources investigation through 1/8-inch mesh, unless soil conditions warrant 1/4-inch mesh.

The archaeologist will analyze, catalogue, and temporarily curate all prehistoric and historic artifacts collected from the surface and from probes and excavation units. The ultimate disposition of cultural materials will be determined in consultation with the federal agencies (if any), DAHP, Ecology, and the affected tribe(s).

Within 90 days of concluding fieldwork, the archaeologist will provide a technical report describing any and all monitoring and resultant archaeological excavations to the Project Lead/Organization, who will forward the report to Ecology, the federal agencies (if any), DAHP, and the affected tribe(s) for review and comment.

If assessment activities expose human remains (burials, isolated teeth, or bones), the archaeologist and Project Lead/Organization will follow the process described in **Section 6**.

8. PROCEEDING WITH WORK

The Project Lead/Organization shall work with the archaeologist, DAHP, and affected tribe(s) to determine the appropriate discovery boundary and where work can continue.

Work may continue at the discovery location only after the process outlined in this plan is followed and the Project Lead/Organization, DAHP, any affected tribe(s), Ecology, and the federal agencies (if any) determine that compliance with state and federal laws is complete.

9. ORGANIZATION RESPONSIBILITY

The Project Lead/Organization is responsible for ensuring:

- This IDP has complete and accurate information.

- This IDP is immediately available to all field staff at the site and available by request to any party.
- This IDP is implemented to address any discovery at the site.
- That all field staff, contractors, and volunteers are instructed on how to implement this IDP.

10. ADDITIONAL RESOURCES

Informative Video

Ecology recommends that all project staff, contractors, and volunteers view this informative video explaining the value of IDP protocol and what to do in the event of a discovery. The target audience is anyone working on the project who could unexpectedly find cultural resources or human remains while excavating or digging. The video is also posted on DAHP's inadvertent discovery language website.

Ecology's IDP Video (https://www.youtube.com/watch?v=ioX-4cXfbDY)

Informational Resources

DAHP (https://dahp.wa.gov)

Washington State Archeology (DAHP 2003)
(https://dahp.wa.gov/sites/default/files/Field%20Guide%20to%20WA%20Arch_0.pdf)

Association of Washington Archaeologists (https://www.archaeologyinwashington.com)

Potentially Interested Tribes

Tribal Contacts: Interactive Map of Tribes by Area
(https://dahp.wa.gov/archaeology/tribal-consultation-information)

Tribal Contacts - WSDOT Tribal Contact Website
(https://wsdot.wa.gov/tribal/TribalContacts.htm)

11. ADDITIONAL INFORMATION

The following includes special inadvertent discovery language provided at the request of the Cowlitz Indian Tribe:

In the event any archaeological or historic materials are encountered during project activity, work in the immediate area (initially allowing for a 100' buffer; this number may vary by circumstance) must stop and the following actions taken:

1. Implement reasonable measures to protect the discovery site, including any appropriate stabilization or covering; and
2. Take reasonable steps to ensure the confidentiality of the discovery site; and,
3. Take reasonable steps to restrict access to the site of discovery.

The project proponent will notify the concerned Tribes and all appropriate county, state, and federal agencies, including the Department of Archaeology and Historic Preservation. The agencies and Tribe(s) will discuss possible measures to remove or avoid cultural material, and will reach an agreement with the project proponent regarding actions to be taken and disposition of material.

If human remains are uncovered, appropriate law enforcement agencies shall be notified first, and the above steps followed. If the remains are determined to be Native, consultation with the affected Tribes will take place in order to mitigate the final disposition of said remains.

See the Revised Code of Washington, Chapter 27.53, "Archaeological Sites and Resources," for applicable state laws and statutes. See also Washington State Executive Order 21-02, "Archaeological and Cultural Resources." Additional state and federal law(s) may also apply.

It is strongly encouraged copies of inadvertent discovery language/plan are retained on-site while project activity is underway.

Contact information:

James Gordon – Tribal Historic Preservation Officer Cowlitz Indian Tribe

PO Box 2547
Longview, WA 98632
Cellular: 360-957-3004 jgordon@cowlitz.org

Implement the IDP if you see…

Chipped stone artifacts.

Examples are:

- Glass-like material.
- Angular material.
- “Unusual” material or shape for the area.
- Regularity of flaking.
- Variability of size.

Stone artifacts from Oregon.

Stone artifacts from Washington.

Biface-knife, scraper, or pre-form found in NE Washington. Thought to be a well knapped object of great antiquity. Courtesy of Methow Salmon Rec. Foundation.

Implement the IDP if you see…

Ground stone artifacts.

Examples are:

- Unusual or unnatural shapes or unusual stone.
- Striations or scratching.
- Etching, perforations, or pecking.
- Regularity in modifications.
- Variability of size, function, or complexity.

Above: Fishing Weight - credit CRITFC Treaty Fishing Rights website.

Artifacts from unknown locations (left and right images).

Implement the IDP if you see…

Bone or shell artifacts, tools, or beads.

Examples are:

- Smooth or carved materials.
- Unusual shape.
- Pointed as if used as a tool.
- Wedge shaped like a “shoehorn”.
- Variability of size.
- Beads from shell (dentalium) or tusk.

Upper Left:*Bone Awls from Oregon.*

Upper Center: *Bone Wedge from California.*

Upper Right: *Plateau dentalium choker and bracelet, from Nez Perce National Historical Park, 19th century, made using Antalis pretiosa shells Credit: Nez Perce - Nez Perce National Historical Park, NEPE 8762, Public Domain.*

Above: *Tooth Pendants.*

Right: Bone Pendants. Both from Oregon and Washington.

Implement the IDP if you see…

Culturally modified trees, fiber, or wood artifacts.

Examples are:

- Trees with bark stripped or peeled, carvings, axe cuts, de-limbing, wood removal, and other human modifications.
- Fiber or wood artifacts in a wet environment.
- Variability of size, function, and complexity.

Left and Below: *Culturally modified tree and an old carving on an aspen (Courtesy of DAHP). These are examples of above ground cultural resources.*

Right, Top to Bottom: *Artifacts from Mud Bay, Olympia: Toy war club, two strand cedar rope, wet basketry*.

Implement the IDP if you see…

Strange, different, or interesting looking dirt, rocks, or shells.

Human activities leave traces in the ground that may or may not have artifacts associated with them. Examples are:

- "Unusual" accumulations of rock (especially fire-cracked rock).
- "Unusual" shaped accumulations of rock (such as a shape similar to a fire ring).
- Charcoal or charcoal-stained soils, burnt-looking soils, or soil that has a "layer cake" appearance.
- Accumulations of shell, bones, or artifacts. Shells may be crushed.
- Look for the "unusual" or out of place (for example, rock piles in areas with otherwise few rocks).

Shell Midden pocket in modern fill discovered in sewer trench.

Underground oven. Courtesy of DAHP.

Shell Midden with fire cracked rock.

Hearth excavated near Hamilton, WA.

Implement the IDP if you see…

Historic period artifacts (historic archaeology considered older than 50 years).

Examples are:

- Agricultural or logging equipment. May include equipment, fencing, canals, spillways, chutes, derelict sawmills, tools, etc.
- Domestic items including square or wire nails, amethyst colored glass, or painted stoneware.

Left: Top to Bottom: *Willow pattern serving bowl and slip joint pocket knife discovered during Seattle Smith Cove shantytown (45-KI-1200) excavation.*

Right: *Collections of historic artifacts discovered during excavations in eastern Washington cities.*

Implement the IDP if you see…

Historic period artifacts (historic archaeology considered older than 50 years).

Examples are:

- Railway tokens, coins, and buttons.
- Spectacles, toys, clothing, and personal items.
- Items helping to understand a culture or identity.
- Food containers and dishware.

Right, from Top to Bottom: *Coins, token, spectacles and Montgomery Ward pitchfork toy discovered during Seattle Smith Cove shantytown (45-KI-1200) excavation.*

Main Image: *Dishes, bottles, work boot found at the North Shore Japanese bath house (ofuro) site, Courtesy Bob Muckle, Archaeologist, Capilano University, B.C. This is an example of an above ground resource.*

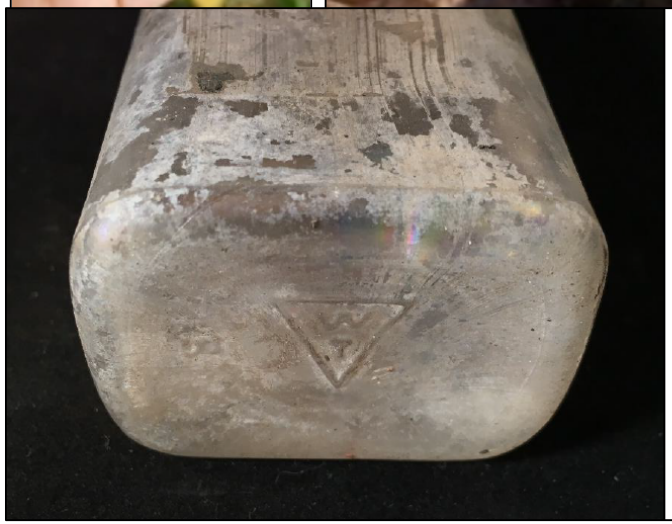
Implement the IDP if you see…

- Old munition casings – if you see ammunition of any type – ***always assume they are live and never touch or move!***
- Tin cans or glass bottles with an older manufacturer's technique – maker's mark, distinct colors such as turquoise, or an older method of opening the container.

Far Left: *.303 British cartridge found by a WCC planting crew on Skagit River.* ***Don't ever touch something like this!***

Left: *Maker's mark on bottom of old bottle.*

Right: *Old beer can found in Oregon. ACME was owned by Olympia Brewery. Courtesy of Heather Simmons.*



Logo employed by Whithall Tatum & Co. between 1924 to 1938 (Lockhart et al. 2016).

Can opening dates, courtesy of W.M. Schroeder.

Implement the IDP if you see…

Historic foundations or buried structures.

Examples are:

- Foundations.
- Railroad and trolley tracks.
- Remnants of structures.

Counter Clockwise, Left to Right: *Historic structure 45KI924, in WSDOT right of way for SR99 tunnel. Remnants of Smith Cove shantytown (45-KI-1200) discovered during Ecology CSO excavation, City of Spokane historic trolley tracks (above ground historic resources) uncovered during stormwater project, intact foundation of historic home that survived the Great Ellensburg Fire of July 4, 1889, uncovered beneath parking lot in Ellensburg.*

Implement the IDP if you see…

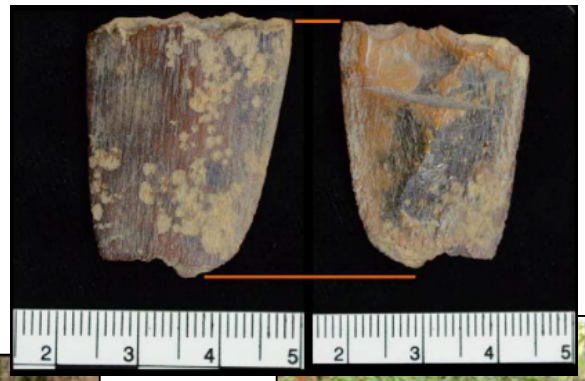
Potential human remains.

Examples are:

- Grave headstones that appear to be older than 50 years.
- Bones or bone tools--intact or in small pieces. It can be difficult to differentiate animal from human so they must be identified by an expert.
- These are all examples of animal bones and are not human.

Center: *Bone wedge tool, courtesy of Smith Cove Shantytown excavation (45KI1200).*

Other images (Top Right, Bottom Left, and Bottom) Center: Courtesy of DAHP.



Directly Above: *This is a real discovery at an Ecology sewer project site.*

What would you do if you found these items at a site? Who would be the first person you would call?

Hint: *Read the plan!*

Appendix E Sampling & Analysis Plan / Quality Assurance Project Plan

AECOM

Sampling and Analysis Plan and Quality Assurance Project Plan

Cowlitz Food and Fuel Site
101 Mulford Road
Toledo, Washington

Cleanup Site ID: 1166
Facility Site ID: 7025

Chevron Environmental Management Company

Project reference: Cowlitz Food and Fuel Site
Project number: 60743836

May 27, 2025

Delivering a better world

Quality information

Verified by

Lucy Panteleeff
Chemist IV

Approved by

Jamalyn Green
Project Manager

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Table of Contents

Tables

Attachments

1. Introduction

On behalf of Chevron Environmental Management Company (CEMC), AECOM Technical Services, Inc. (AECOM) prepared this Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) for the Cowlitz Food and Fuel Site, located at 101 Mulford Road in Toledo, Washington (Site). This SAP/QAPP is an appendix to the Engineering Design Report (EDR), which is being prepared pursuant to the terms of Agreed Order No. DE21413, effective May 29, 2024, issued by the Washington State Department of Ecology (Ecology [2024]).

1.1 Purpose and Objectives

The purpose of this SAP/QAPP is to outline the specific procedures for the sampling and monitoring activities described in the EDR and to identify the quality assurance requirements for the sampling and laboratory analysis in compliance with Model Toxics Control Act (MTCA) regulations for sampling and analysis plans (WAC 173-340-820).

1.2 Document Organization

This SAP/QAPP is organized into the following sections:

- Section 1 – Introduction. Describes the scope and purpose of this document.
- Section 2 – Field Sampling Plan (FSP). Describes the sampling methodology for the field sampling and monitoring activities,
- Section 3 – QAPP. Describes the quality assurance (QA) procedures for the field activities and laboratory analyses.

1.3 Roles and Responsibilities

Key roles and responsibilities are summarized below.

- Chevron Project Manager – James Kiernan: CEMC's representative for the site.
- AECOM Project Manager – Jamalyn Green: Responsible for providing technical oversight and reviewing activities performed to verify that project objectives are met.
- Health and Safety Officer – Austin Bragg: Responsible for overseeing project health and safety issues and implementing corrective actions as needed.
- AECOM Field Lead – TBD: Responsible for overseeing sampling activities to verify that field and analytical objectives are in compliance with this SAP.
- AECOM Field Personnel – TBD: Responsible for implementing the activities described in this SAP.
- Ecology-Certified Laboratory – Eurofins Environment Testing Northwest, LLC (Eurofins Seattle) located in Tacoma, Washington: Responsible for providing the analytical testing specified in this SAP.

2. Field Sampling Plan

2.1 Scope of Work

The proposed activities are described in the EDR and listed below. The EDR activities are as follows:

1. Decommissioning of monitoring wells B-3 and B-4 within the footprint of the remedial excavation.
2. Provide cultural resource monitoring during intrusive ground disturbing activities.
3. Excavate petroleum impacted soil per the plans and specifications provided in the EDR.
4. Collect soil confirmation samples from the excavation and sidewalls.
5. Implement stormwater pollution control measures as specified in the Stormwater Pollution Prevention Plan (SWPPP) appended to the EDR and future Construction Stormwater Construction General Permit (CSWGC) that will be obtained for the remedial excavation.
6. Dewater the bottom of the excavation and temporarily store water in aboveground storage tank(s) for subsequent disposal at an off-Site facility or on-site treatment with a permitted sanitary sewer discharge.
7. Add ORC® (or equivalent) amendment to the backfill for further treatment of residual petroleum hydrocarbons that are not removed during the soil removal activities.
8. Backfill excavation and install asphalt pavement over disturbed areas where asphalt or concrete was previously present.
9. Prepare completion report to document remedial activities.

Long-term groundwater monitoring is not a component of the EDR and will be addressed after the remedial action and downgradient site characterization is completed pursuant to the Agreed Order.

2.2 Sampling Objectives

The objectives of the soil and groundwater activities are presented below:

- Document concentrations of site contaminants in soil at the bottom and sidewalls of the excavation and compare soil concentrations with applicable MTCA Method A cleanup levels (CULs).
- Document concentrations of site contaminants in water collected from dewatering activities (including drainage of saturated soils from stockpiles and decontamination of field equipment) to facilitate waste profiling and off-Property disposal of liquid wastes at an appropriately licensed and approved off-Property facility.

2.3 Sampling Methodology

The sampling methodology was developed to collect data of sufficient quality to meet the objectives presented in Section 2.2. The sample collection techniques and specific sampling procedures will follow the methods presented in the Standard Operating Procedures (SOPs) provided in Attachment 1.

2.3.1 Utility Locate

Prior to any intrusive subsurface activities, AECOM and the excavation contractor will contact 811 (Utility Locate Service) a minimum of 48 hours prior to initiating the field activities. A private utility locating company will also be subcontracted by AECOM and the excavation contractor to conduct a utility scan that will include the use of ground-penetrating radar to confirm that the proposed ground disturbance locations are clear of underground utilities or other obstructions.

2.3.1.1 Subsurface Soil Sampling

AECOM will collect soil samples from the bottom and sidewalls of the excavation as described in the EDR. Soil samples will be collected according to the methodology presented in the SOP for Surface and Subsurface Soil Sampling Procedures (Attachment 1).

- AECOM field staff will conduct field screening which will include visual observation and using a photoionization detector (PID) to measure VOCs according to the SOP for Surface and Subsurface Soil Sampling Procedures (Attachment 1). Sampling field activity and data will be recorded on field sampling logs. Samples will be labeled and shipped using the procedures described in the AECOM SOP for Recordkeeping, Sample Labelling, and Chain of Custody (Attachment 1).
- Samples will be submitted to Eurofins Seattle for analysis as described in the EDR.

2.3.1.2 Groundwater Sampling

Groundwater sampling is not part of the EDR. However, water samples from dewatering will be collected from the frac tank using disposable bailers and tested for profiling prior to off-site disposal.

Note that on-site water treatment and permitted discharge to the sanitary sewer may also be used if possible as an alternative to offsite disposal, and additional influent and effluent samples may be required based on the permit obtained.

2.4 Quality Assurance/Quality Control Samples

The following QA samples will be collected during implementation of the sampling program.

- One duplicate sample per 10 field samples. Field duplicate samples will be sequentially numbered and for the purposes of laboratory analysis and chain-of-custody there will be no identifying markers of duplicate samples.
- One matrix spike/matrix spike duplicate per 20 field samples.
- One rinsate blank sample per day for decontaminated, non-dedicated sampling equipment, as needed.
- One trip blank per cooler containing samples that will be analyzed for volatile compounds.

2.5 Sample Nomenclature

Samples will be identified with a unique alpha-numeric code that will identify the type of sample and the location where the sample was collected.

The following sample identification will be used:

- Excavation bottom soil samples will be labeled with the prefix “EXBOT-DATE-SAMPLE NUMBER- DEPTH”. For example, the first soil bottom sample collected from the excavation on May 1, 2025, at a depth of 12 feet would be labeled EXBOT-050125-01-12.
- Excavation sidewall samples will be labeled with the prefix “EXSW-DATE-SAMPLE NUMBER-DEPTH”. For example, the first sidewall sampled collected on May 2, 2025, at a depth of 5 feet will be labeled EXSW-01-050225-01-5
- Field duplicate samples will be given the prefix “EXD-MATRIX-DATE-SAMPLE NUMBER”. For example, the first field duplicate for a soil sample collected on May 3, 2025, would be labeled EXD-S-050325-01.
- Trip blank samples will be given the prefix “TB-“ followed by the date the sample was collected. For example, a trip blank sample collected on May 4, 2025, would be labeled TB-050425.

2.6 Sample Labeling, Handling, and Chain of Custody

Sampling packaging and shipping will be in accordance with the procedures outlined in the AECOM SOP for Recordkeeping, Sample Labelling, and Chain of Custody (Attachment 1). All sample container labels will be completed with the following information:

- Project name and project number
- Sample designation
- Name or initials of the sampler
- Date and time of sample collection

2.7 Equipment Decontamination

Equipment decontamination will be performed using the procedures outlined in the SOP for Equipment Decontamination (Attachment 1). Site personnel will perform decontamination of all equipment prior to removal from the Site.

2.8 Investigation-Derived Waste Management

All soil, water, decontamination liquids, personal protective equipment (PPE), and other investigation-derived waste (IDW) generated during the field sampling activities will be managed in accordance with applicable local, state, and federal requirements. IDW will be managed in accordance with the procedures outlined in the SOP for Investigation-Derived Waste Management (Attachment 1).

Waste profiles will be generated for each waste stream to be transported off-site as required by the selected disposal facility. Disposal characterization samples will be collected as needed to meet facility requirements.

3. Quality Assurance Project Plan

3.1 Objective

The objective of this SAP/QAPP is to document the planning, implementation, and assessment procedures for the planned compliance monitoring and sampling activities described in the EDR. The SAP/QAPP also documents the QA/QC activities that will be performed to confirm that the data collected are of known and acceptable quality. The analytical methods and procedures used to analyze samples will be summarized in laboratory reports.

3.2 Quality Assurance Indicators

QA indicators are generally defined in terms of six parameters: representativeness, comparability, sensitivity, completeness, precision, and accuracy. Representativeness is the degree to which the sampling data accurately and precisely represents site conditions. Comparability is the degree of confidence with which one data set can be compared to another. The remaining four parameters are described below.

3.2.1 Completeness

Completeness is defined as a measure of the amount of valid data obtained from the sampling event compared to the total amount of data that was obtained. The completeness of a field or laboratory data set will be calculated by comparing the number of valid sample results generated to the total number of results generated.

$$Completeness = \frac{Number\ of\ Valid\ Results}{Total\ Number\ of\ Results\ Generated} x\ 100$$

The completeness acceptance criterion for samples collected in the field will be 90% of the quantity of samples planned for collection. Corrective action may be implemented to recollect samples where necessary and possible (e.g., modifying a planned sample location, addressing sample jars broken during shipment). Laboratory notification of sample receipt and conditions will be used to determine, as soon as possible, whether any problems during sample shipment would necessitate recollection of samples.

3.2.2 Precision

Precision is a measure of the reproducibility of sample results. To maximize precision, sampling and analytical procedures will be followed. Checks for precision will include the analysis of laboratory duplicates and field duplicates. Checks for field measurement precision will include duplicate field measurements. Field precision is difficult to measure because of temporal variations in field parameters. However, precision will be controlled through experienced field personnel, properly calibrated meters, and duplicate field measurements. Field duplicates will be used to assess precision for the entire measurement system, including sampling, handling, shipping, storage, preparation, and analysis.

Laboratory data precision will be monitored using laboratory duplicate sample analyses. The precision of data will be measured by calculation of the relative percent difference (RPD) using the following equation:

$$RPD = \frac{|\ A - B\ | \times\ 100}{(A + B)/2}$$

Where:

A = Analytical result from one of two duplicate measurements

B = Analytical result from the second measurement

For laboratory duplicate analyses, RPD will meet the laboratory-specific limit. Field duplicate RPD criteria are ≤35% for aqueous samples and ≤50% for soil and soli vapor samples.

3.2.3 Accuracy

Accuracy is a measure of how close a measured result is to the true value. Both field and analytical accuracy will be monitored through initial and continuing calibration of instruments. In addition, reference standards, matrix spikes (MSs), blank spikes, and surrogate standards will be used to assess the accuracy of the analytical data.

The accuracy of field measurements will be controlled by using experienced field personnel, properly calibrated field meters, and adherence to established protocols. The accuracy of field meters will be assessed by review of calibration and maintenance logs. Laboratory accuracy will be assessed through MS, surrogate spikes and laboratory control samples. Where available and appropriate, QA performance standards will be analyzed periodically to assess laboratory accuracy. Accuracy will be calculated in terms of percent recovery as follows:

$$Percent\ Recovery = \frac{(A - X) \times 100}{B}$$

Where:

A = Value measured in spiked sample or standard

X = Value measured in original sample

B = True value of amount added to sample or true value of standard

This formula is derived under the assumption of constant accuracy between the original and spiked measurements.

3.2.4 Sensitivity

Sensitivity is a quantitative measurement to determine if the analytical laboratory's procedures/methodologies and their associated method detection and reporting limits can satisfy the project requirements as they relate to the project action limits. The table below outlines the specific method detection and reporting limits and the associated MTCA Method A Cleanup Levels (CULs) for proposed site soil and groundwater analytes outlined in the Draft IAWP:

Table 1. Laboratory Method Detection Limits, Reporting Limits, and CULs - Soil

Analyte	Soil			
	Analytical Method	Method Detection Limit (mg/kg)	Reporting Limit (mg/kg)	MTCA Method A CUL (mg/kg)
TPH-GRO	NWTPH-Gx	3.83	8.00	30
TPH-DRO	NWTPH-Dx-NO SGT	12.3	50	2,000
TPH-HRO	NWTPH-Dx-NO SGT	17.5	50	2,000
Benzene	EPA 8260D	0.0038	0.020	0.03
Toluene	EPA 8260D	0.0135	0.060	7
Ethylbenzene	EPA 8260D	0.0091	0.040	6
Xylenes, total	EPA 8260D	0.0071	0.040	9
Lead, total	EPA 6020B	0.106	0.5	250

Notes:

-- = Not applicable / No Established MTCA CUL

* = Most conservative Method B CUL

TPH-DRO and TPH-HRO fractions in soil samples will be added together and compared against the DRO MTCA Method A Cleanup Level in accordance with Toxics Cleanup Program Implementation Memorandum #4 (Ecology 2004).

Table 2. Laboratory Method Detection Limits, Reporting Limits, and CULs - Groundwater

Analyte	Groundwater			
	Analytical Method	Method Detection Limit (µg/L)	Reporting Limit (µg/L)	MTCA Method A CUL (µg/L)
TPH-GRO	NWTPH-Gx	73.0	150	800
TPH-DRO	NWTPH-Dx-NO SGT	91.0	200	500
TPH-HRO	NWTPH-Dx-NO SGT	130	350	500
Volatile Organic Compounds				
Benzene	EPA 8260D	0.0300	0.200	5
Toluene	EPA 8260D	0.0500	0.200	1,000
Ethylbenzene	EPA 8260D	0.0820	0.200	700
Xylenes, total	EPA 8260D	0.230	0.501	1,000
1,2-Dibromoethane (EDB)	EPA 8011	0.0670	0.150	0.01
Metals				
Lead, total	EPA 6020B	0.040	0.50	15

Notes:

-- = Not applicable / No Established MTCA CUL
* = Most conservative Method B CUL

TPH-DRO and TPH-HRO fractions in groundwater samples will be added together and compared against the DRO MTCA Method A Cleanup Level in accordance with Toxics Cleanup Program Implementation Memorandum #4 (Ecology 2004).

3.2.5 Sample Hold Times, Preservatives, and Sample Containers

The tables below outline the specific sample hold times, preservatives, and sample containers for each of the analysis:

Table 3. Sample Hold Times, Preservatives, and Sample Containers - Soil

Constituent	Soil			
	Analytical Method	Holding Time (days)	Preservative	Sample Container Size and Quantity
TPH-GRO	NWTPH-Gx	14	Methanol, 0-6 Deg C	40-mL vial using Terracore type device for sample collection
TPH-DRO + TPH-HRO with SGT	NWTPH-Dx	14	0-6 Deg C	4-oz jar glass jar
TPH-DRO + TPH-HRO without SGT	NWTPH-Dx	14	0-6 Deg C	From Dx container
BTEX	EPA 8260D	14	Methanol, 0-6 Deg C	40-mL vial using Terracore type device for sample collection.
Total Lead	EPA 6020B	180	none	4-oz glass jar

Notes:
BTEX – benzene, toluene, ethylbenzene, and total xylenes

Table 4. Sample Hold Times, Preservatives, and Sample Containers - Groundwater

Constituent	Groundwater			
	Analytical Method	Holding Time (days)	Preservative	Sample Container Size and Quantity
TPH-GRO	NWTPH-Gx	14	HCl, 0-6 Deg C	3-40mL VOAS with HCl
TPH-DRO + TPH-HRO with SGT	NWTPH-Dx	14	HCl, 0-6 Deg C	3-40mL VOAS with HCl
TPH-DRO + TPH-HRO without SGT	NWTPH-Dx	14	HCl, 0-6 Deg C	3-40mL VOAS with HCl
BTEX	EPA 8260D	14	HCl, 0-6 Deg C	3-40mL VOAS with HCl
Total Lead	EPA 6020B	180	HNO3	250mL poly HNO3

Notes:
BTEX – benzene, toluene, ethylbenzene, and total xylenes

3.2.6 Laboratory Quality Control

Internal laboratory QC checks will be used to monitor data integrity. These checks will include method blanks, laboratory control samples, internal standards, surrogate samples, and calibration standards.

3.2.7 Method Blanks

Sources of contamination in the analytical process, whether specific analyses or interferences, must be identified, isolated, and corrected. The method blank is useful in identifying sources of potential contamination within the analytical process. For this reason, it is necessary that the method blank be initiated at the beginning of the analytical process and encompass all aspects of the analytical work. As such, the method blank would assist in accounting for any potential contamination attributable to glassware, reagents, instrumentation, or other sources that could affect sample analysis. One method blank will be analyzed with each analytical series associated with no more than 20 samples.

3.2.8 Laboratory Control Samples

Laboratory Control Samples (LCS) are standards of known concentration and are independent in origin from the calibration standards. LCS analysis provides insight into the analytical proficiency within an analytical series. This includes preparation of calibration standards, validity of calibration, sample preparation, instrument set-up, and the premises inherent in quantitation. Reference standards will be analyzed at the frequencies specified within the analytical methods.

3.2.9 Surrogate Spikes

Surrogates are compounds that are unlikely to occur under natural conditions but that have properties similar to the analytes of interest. This type of control is mainly used for organic samples analyzed by gas chromatography/mass spectrometry (GC/MS) and GC methods and is added to the samples before purging or extraction. The surrogate spike is utilized to provide broader insight into the proficiency and efficiency of an analytical method on a sample-specific basis. This control reflects analytical conditions that may not be attributable to sample matrix.

If surrogate spike recoveries exceed specified QC limits, the analytical results must be evaluated thoroughly with other control measures. In the absence of other control measures, the integrity of the data may not be verifiable, and re-analysis of the samples with additional control may be necessary.

Surrogate spike compounds will be selected utilizing the guidance provided in the analytical methods.

3.2.10 Laboratory Duplicates

Laboratory duplicates will be analyzed to assess laboratory precision. Laboratory duplicates are defined as a separate aliquot of an individual sample analyzed as a separate sample.

3.2.11 Calibration Standards

Calibration check standards analyzed within a particular analytical series provide insight regarding instrument stability. A calibration check standard will be analyzed at the beginning and end of an analytical series, or periodically throughout a series containing many samples.

In general, calibration check standards will be analyzed after every 12 hours or more frequently, as specified in the applicable analytical method. If results of the calibration check standard exceed specified tolerances, samples analyzed since the last acceptable calibration check standard will be re-analyzed.

3.3 Field Instruments and Equipment

Prior to field sampling, each piece of field equipment will be inspected to confirm that it is operational and calibrated in accordance with the manufacturer’s instruction manual or the analytical method used. All meters that require charging or batteries will be fully charged or have fresh batteries. If instrument servicing is required, the maintenance arrangements will be made for timely service. Field instruments will be maintained according to the instructions provided by the manufacturer.

Logbooks will contain records of operation, maintenance, calibration, and any problems and repairs.

3.4 Laboratory Instruments and Equipment

Laboratory instrument and equipment documentation procedures include details of any observed problems, corrective measure(s), routine maintenance, and instrument repair (including information regarding the repair and the individual who performed the repair). Preventive maintenance of laboratory equipment generally will follow the guidelines recommended by the manufacturer.

The laboratory manager will be responsible for the routine maintenance of instruments used. Any routine preventative maintenance carried out is logged into the appropriate logbooks. The frequency of routine maintenance is dictated by the samples being analyzed, the requirements of the method used, and/or the laboratory manager's judgment.

All major instruments are backed up by comparable (if not equivalent) instrument systems in unscheduled downtime.

3.5 Assessment and Response Actions

Performance and systems audits may be completed in the field and laboratory. Field performance audit summaries will contain an evaluation of field activities to verify that the activities are performed according to established protocols. The observations made during field performance audits and any recommended changes/deviations to the field procedures will be recorded and documented. In addition, systems audits comparing scheduled QA/QC activities with actual QA/QC activities completed may be performed. The audits will be performed periodically as required by the task needs and duration.

3.6 Data Management

Data management confirms that the necessary data is accurate and accessible to meet the project's analytical and reporting objectives. The field activities will include many samples that require a structured, comprehensive, and efficient program for data management.

3.6.1 Field Data Management

Field activities require consistent documentation and accurate record keeping. Complete and accurate record keeping will be maintained, including field books, digital field forms, and chain of custody forms. Field books or digital field forms will detail observations and measurements made during the site work. Data will be recorded directly into digital field forms.

Chain-of-custody forms will be used to document and track sample possessions. A chain of custody form will accompany each field sample collected, and one copy of the form will be filed in the field office. Field personnel are trained in the proper use of the chain of custody procedure.

Field documentation will be scanned and saved to the AECOM electronic project folder. Hard copies will be stored in the AECOM Seattle, Washington office.

3.6.2 Analytical Data Management

Chain of custody documentation, sample receipt information, and analytical data packages received from the laboratory will be reviewed to confirm that the correct analyses will be performed for each sample and that results for all samples submitted for analysis were received. Any discrepancies noted will be promptly corrected in coordination with the laboratory.

All data will be housed in a project database. The project database will include pertinent geographical, field, and analytical data. Information used to populate the database will be derived from surveying sampling locations, field observations and analytical results. The project database will be backed up weekly at minimum or when major modifications are made. Access to the database will be limited to authorized project personnel.

3.7 Sample Designation System

A concise and easily understandable sample designation system will be used to facilitate sample tracking and management. The sample designation system to be employed during the sampling activities will be consistent, yet flexible enough to accommodate unforeseen sampling events or conditions. A combination of letters and numbers will be used to yield a unique sample ID for each field sample collected, as outlined in Section 2.5.

3.8 Corrective Action

Corrective actions are required when field or analytical data are not within the objectives specified in this document. Corrective actions include procedures to promptly investigate, document, evaluate, and correct data collection and/or analytical procedures. All corrective actions for situations including analytical or field equipment malfunctions, nonconformance or noncompliance with the QA requirements, or changes to the sampling procedures will be documented with the project records and maintained in the project file. All corrective action procedures must be initiated prior to continuing with the field or analytical procedure.

3.9 Laboratory Reports

The laboratory will maintain QA records related to analyses, QC, and corrective action. This information will be made available upon request. Routine reporting will include documenting all internal QC checks performed for the project.

3.10 Data Validation and Verification

Data validation entails a review of the QC data and the raw data to verify that the laboratory was operating within required limits; and which, if any, environmental samples were related to out-of-control QC samples. The objective of data validation is to identify any questionable or invalid laboratory measurements.

Data validation during this project will be performed consistent with USEPA Stage 2B criteria in accordance with National Functional Guidelines for Organic Superfund Methods Data Review (EPA 2020) and Establishing Ecology Guidelines for Verification and Validation of Chemical Data (Ecology 2024). The data validation will include completeness and compliance checks of sample receipt conditions and sample-related and instrument-related quality control results. Data validation on this project will be completed by a qualified chemist or environmental scientist and will be documented in a data validation report that will be appended to the interim action completion report.

Data collected as part of these activities will be uploaded to Ecology's EIM database. Data will be presented in tables showing laboratory results compared to applicable MTCA CULs.

4. References

Washington State Department of Ecology (Ecology), 2004. Determining Compliance with Method A Cleanup Levels for Diesel and Heavy Oil, Toxics Cleanup Program Implementation Memorandum #4, June 17.

Ecology, 2024. Establishing Ecology Guidelines for Verification and Validation of Chemical Data. Publication No. 24-03-023, September

Attachment 1 AECOM Standard Operating Procedures

AECOM

Surface and Subsurface Soil Sampling Procedures

Procedure 3-21

1.0 Purpose and Scope

1.1 This standard operating procedure (SOP) describes the procedures for soil sampling. The procedure includes surface and subsurface sampling by various methods using hand auguring, test pit, direct-push, sonic drilling, and split-spoon equipment.

1.2 For project-specific information (e.g., sampling depths, equipment to be used, and frequency of sampling), refer to the Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP), which take precedence over these procedures. Surface soil sampling is typically accomplished using hand tools such as shovels or hand augers. Test pit samples are considered subsurface samples, although are normally collected via hand tools similar to surface soil sampling or by excavation machinery. Direct-push and split-spoon sampling offer the benefit of collecting soil samples from a discrete or isolated subsurface interval without the need of extracting excess material above the target depth. These methods dramatically reduce time and cost associated with disposal of material from soil cuttings when compared to test pit sampling. In addition, direct-push, sonic drilling, and split-spoon sampling methods can obtain samples at targeted intervals greater than 15 feet in depth, allowing for discrete depth soil sampling while speeding up the sampling process. Direct-push methods work best in medium to fine-grained cohesive materials, such as medium to fine sands, silts, and silty clay soils. Sonic drilling sampling works well in all types of soil and bedrock. Split-spoon sampling works well in all types of soil but is somewhat slower than direct-push and sonic drilling methods. With the exception of volatile organic compounds (VOCs) samples, the soil sample interval is composited so that each sample contains a homogenized representative portion of the sample interval. Due to potential loss of analytes, samples for VOC analysis are not composited. Samples for chemical analysis can be collected by any of the above-mentioned sampling methods, as disturbed soil samples. Undisturbed samples are best collected with direct push or by Shelby Tube (not covered in this SOP). They are collected, sealed, and sent directly to the laboratory for analysis without homogenizing.

2.0 Safety

2.1 The health and safety considerations for the work associated with this SOP, including both potential physical and chemical hazards, will be addressed in the project Health and Safety Plan (HASP). Work will also be conducted according to the **Field Coordinator**.

2.2 Before soil sampling commences, appropriate entities (e.g., DigSafe, local public works departments, company facilities) must be contacted to ensure the anticipated soil sampling locations are marked for utilities, including electrical, telecommunications, water, sewer, and gas.

3.0 Terms and Definitions

None.

4.0 Interferences

4.1 Low recovery of soil from sampling equipment will prevent an adequate representation of the soil profile and sufficient amount of soil sample. If low recovery is a problem, the hole may be offset and re-advanced, terminated, or continued using a larger diameter sampler.

4.2 Asphalt in soil samples can cause false positive results for hydrocarbons. To ensure samples are free of asphalt, do not collect samples that may contain asphalt. If the collection of samples potentially containing asphalt is unavoidable, note the sampling depths at which the presence of asphalt are suspected.

4.3 Cross contamination from sampling equipment must be prevented by using sampling equipment constructed of stainless steel that is adequately decontaminated between samples.

5.0 Training and Qualifications

5.1 Qualifications and Training. The individual executing these procedures must have read, and be familiar with, the requirements of this SOP.

5.2 Responsibilities

5.2.1 The **Field Coordinator** is responsible for ensuring that soil sampling activities comply with this procedure. The **Field Coordinator** is responsible for ensuring that all **Field Personnel** involved in soil sampling shall have the appropriate education, experience, and training to perform their assigned tasks.

5.2.2 All **Field Personnel** are responsible for the implementation of this procedure.

6.0 Equipment and Supplies

The depth at which samples will be collected and the anticipated method of sample collection will be presented in the FSP. The following details equipment typically needed for soil sampling, based on the various methods. See the FSP for specific detail of equipment and supply needs.

6.1 Depending on the nature of suspected contamination, field screening instrumentation may be used for direct sampling. Appropriate instrumentation and calibration standards should be available.

6.2 Appropriate decontamination procedures must be followed for sampling equipment. Refer to FSP Section 4.3 for equipment decontamination procedures. Equipment necessary for decontamination activities includes but is not limited to the following:

- Alconox® or Liquinox®
- Methanol
- Plastic buckets or washbasins
- Brushes
- Aluminum foil

6.3 The following general equipment is needed for all soil sampling, regardless of method:

- Stainless steel bowls
- Stainless steel trowels
- Appropriate sample containers for laboratory analysis
- Personal Protective Equipment (PPE)
- Water-repellent logbook
- Cooler and ice for preservation
- Stakes and flagging to document sampling location

6.4 The following additional equipment is needed for volatile organic sampling:

- Electronic pan scale and weights for calibration

- Syringes or other discrete soil core samplers

6.5 The following additional equipment may be needed for surface and test pit soil sampling:

- Hand auger
- Shovel

6.6 The following additional equipment may be needed for soil sampling from direct push and/or split-spoon equipment:

- Tape measure or folding carpenter's rule for recording the length of soil recovered

Note: All subsurface drilling equipment will be provided and maintained by the subcontractor.

7.0 Procedure

7.1 General Soil Sampling Procedure for All Soil Sampling Methods

7.1.1 Record the weather conditions and other relevant on-site conditions.

7.1.2 Select the soil sampling location, clear vegetation, if necessary, and record the sampling location identification number and pertinent location details.

7.1.3 Verify that the sampling equipment is properly decontaminated, in working order, and situated at the intended sampling location.

7.1.4 Place polyethylene sheeting on the ground and assemble all necessary sampling equipment on top of it. Cover surfaces onto which soils or sampling equipment will be placed (i.e., tables with polyethylene sheeting).

7.1.5 Follow the appropriate procedures listed below for the sampling.

7.1.6 Collect soil samples according to procedures listed in Section 7.7 depending on project-specific analyses.

7.1.7 Record date/time, sample ID, and sample descriptions in the field logbook or field data form. A sketch or description of the location may also be recorded so the sample location can be re-constructed, especially if the location will not be recorded using GPS equipment.

7.1.8 Immediately label the sample containers and place them on ice, if required for preservation. Complete the chain-of-custody form(s) as soon as possible.

7.1.9 Dispose of all excess excavated soil in accordance with the FSP.

7.1.10 If required, mark the sample location with a clearly labelled wooden stake or pin flag. If the location is on a paved surface, the location may be marked with spray paint.

7.1.11 Decontaminate the sampling equipment according to FSP.

7.2 Surface Sampling

7.2.1 The criteria used for selecting surface soil locations for sampling may include the following:

- Visual observations (soil staining, fill materials)
- Other relevant soil characteristics
- Site features
- Screening results
- Predetermined sampling approach (i.e., grid or random)
- Sampling objectives as provided in the QAPP

7.2.2 The following procedures are to be used to collect surface soil samples. Surface soils are considered to be soils that are up to 2 feet below ground surface, though state regulations and project objectives may define surface soils differently; therefore, the FSP should be consulted for direction on the depth from which to collect the surface soil samples. Sampling and other pertinent data and information will be recorded in the field logbook and/or on field forms.

7.2.2.1 Gently scrape any vegetative covering until soil is exposed. Completely remove any pavement.

7.2.2.2 Remove soil from the exposed sampling area with a stainless-steel trowel, hand auger, or shovel. Put soils within the sampling interval in a stainless-steel bowl for homogenizing. Monitor the breathing zone and sampling area as required in the HASP.

7.2.2.3 For VOC analyses, collect representative soil samples directly from the recently exposed soil using a syringe or other soil coring device (e.g., TerraCore®, EnCore®). Follow procedures in Section 7.7.1 for VOC sampling.

7.2.2.4 Collect sufficient soil to fill all remaining sample jars into a stainless-steel bowl. Homogenize the soil samples to obtain a uniform soil composition that is representative of the total soil sample collected according to the following procedure:

a) Remove all rocks and non-soil objects using a stainless-steel spoon or scoop.

b) Form a cone-shaped mound with the sample material, then flatten the cone and split the sample into quarters.

c) Use the stainless-steel spoon/scoop to mix the quarter samples that are opposite.

d) After mixing the opposite quarters, reform the cone-shaped mound.

e) Repeat this procedure a minimum of five times, removing any non-soil objects and breaking apart any clumps.

7.3 Split-Spoon Sampling

7.3.1 At each boring location, the frequency and depth of split-spoon samples will be determined from the FSP. Split-spoon samples may be collected continuously, intermittently, or from predetermined depths.

7.3.2 Split-spoon samplers shall be driven into undisturbed soil by driving the spoon ahead of the drill augers/casing. In cohesive soils, or soils where the borehole remains open (does not collapse), two split-spoon samples may be taken prior to advancing the augers/casing.

7.3.3 After split-spoons are retrieved, open the split-spoon and measure the recovery of soil. If a photoionization detector (PID) will be used for screening, immediately scan the recovered sample for VOCs using the PID. Scan the recovered soil boring by making a hole in the soil with a decontaminated trowel and placing the PID inlet very close to the hole. Be very careful not to get soil on the tip of the PID. Take PID readings every 6 inches along the split-spoon and/or in any areas of stained or disturbed soil. Record the highest PID reading and the depth at which it was observed along with all other pertinent observations. If required in the FSP, VOC and headspace samples should be collected (see Section 7.7.1) prior to logging the sample.

7.3.4 If headspace screening for VOCs is required in the FSP, collect a soil sample (as defined in the FSP) and perform headspace screening according to SOP 3-19, *Headspace Screening for Total VOCs*.

7.3.5 Soils collected using the split-spoon sampler will be logged by the field representative using the procedure required in the FSP.

7.3.6 Collect the remainder of the sample volume required into a stainless-steel bowl. Homogenize the soil so the material is uniform in composition and representative of the total soil sample collected. Follow homogenizing techniques as described in Section 7.2.

7.3.7 The FSP may specify that intervals to be sent to the laboratory be determined by visual observation and/or highest PID screening or headspace results, which can only be determined once the boring is complete. In this instance, a VOC sample should be collected at each interval. The remainder of the soil from that interval will be set aside in a clearly labelled stainless steel bowl covered with polyethylene sheeting. Once the boring has been completed and the sample interval has been determined, the remainder of the soil can be homogenized according to Section 7.2 and submitted for laboratory analysis.

7.3.8 Once a boring is complete and all required samples have been collected, the boring must be completed as specified in the FSP (e.g., completed as a monitoring well, backfilled with bentonite, etc.).

7.4 Sonic Drilling Sampling

7.4.1 At each boring location, the frequency and depth of sonic drilling samples will be determined from the FSP.

7.4.2 Sonic drilling methods, also known as vibratory drilling, use an eccentrically oscillating drill head to produce high-frequency vibratory energy that is then transmitted down a drill string to a core barrel to quickly advance through the subsurface. Sonic drilling utilizes a double-cased system using an inner core barrel and a larger override casing. This ensures that the borehole is continuously cased to the total depth, minimizing the potential for borehole collapse and providing the means to alter casing diameters to telescope through semi-confining units to prevent downhole cross contamination.

7.4.3 Upon retrieval of the core barrel, place the tubular plastic sleeve (confirmed PFAS-free) with sealed bottom over the bottom of the core barrel. The core barrel will then be vibrated, causing the soil sample to be extruded into the sleeve. Place the sleeve on the work surface (i.e., PFAS-free plastic covered table or ground). Open the sleeve and measure the recovery of soil.

7.4.4 If a PID will be used for screening, immediately scan the recovered sample for VOCs using the PID. Scan the recovered soil boring by making a hole in the soil with a decontaminated trowel and placing the PID inlet very close to the hole. Be very careful not to get soil on the tip of the PID. Take PID readings every 6 inches along the soil core and/or in any areas of stained or disturbed soil. Record the highest PID reading and the depth at which it was observed along with all other pertinent observations. If required in the FSP, VOC and headspace samples should be collected (see Section 7.7.1) prior to logging the sample.

7.4.5 If headspace screening for VOCs is required in the FSP, collect a soil sample (as defined in the FSP) and perform headspace screening according to SOP 3-19, *Headspace Screening for Total VOCs*.

7.4.6 Soils collected using sonic drilling will be logged by the field representative using the procedure required in the FSP.

7.4.7 Collect the remainder of the sample volume required into a stainless-steel bowl. Homogenize the soil so the material is uniform in composition and representative of the total soil sample collected. Follow homogenizing techniques as described in Section 7.2.

7.4.8 The FSP may specify that intervals to be sent to the laboratory be determined by visual observation and/or highest PID screening or headspace results, which can only be determined once the boring is complete. In this instance, a VOC sample should be collected at each interval. The remainder of the soil from each interval will be set aside. Once the boring has been completed and the sample

interval has been determined, the remainder of the soil can be homogenized according to Section 7.2 and submitted for laboratory analysis.

7.4.9 Once a boring is complete and all required samples have been collected, the boring must be completed as specified in the FSP (e.g., completed as a monitoring well, backfilled with bentonite, etc.).

7.5 Direct Push Sampling

At each boring location, the frequency of direct-push samples will be determined from the FSP. Typically, samples with direct-push equipment are collected in 4-foot intervals, but smaller (e.g., 2-foot) and larger (e.g., 5-foot) intervals are also possible.

7.5.1 Sample using Macro-Core samplers with acetate liners to obtain discrete soil samples at the depths specified in the FSP.

7.5.2 Cut open the acetate liner. If required in the FSP, immediately scan the recovered soil boring for VOCs using a PID by making a hole in the soil with a decontaminated trowel and placing the PID inlet very close to the hole. Be very careful not to get soil on the tip of the PID. Take PID readings every 6 inches along the split-spoon and/or in any areas of stained or disturbed soil. Record the highest PID reading and the depth at which it was observed along with all other pertinent observations. VOC and headspace samples, if required in the FSP, should be collected (see Section 7.7.1) prior to logging the sample.

7.5.3 If required in the FSP, collect a soil sample (as defined in the FSP) and perform headspace screening according to SOP 3-19, *Headspace Screening for Total VOCs*.

7.5.4 Soils collected using the direct-push sampler will be logged by the by the field representative using the procedure required in the FSP.

7.5.5 Collect the remainder of the sample into a stainless-steel bowl. Homogenize the soil collected so that the material is uniform in composition and representative of the total soil sample collected. Follow homogenizing techniques as described in Section 7.2.

7.5.6 Once a boring is complete and all required samples have been collected, the boring must be completed as specified in the FSP (e.g., completed as a monitoring well, backfilled with bentonite, etc.).

7.6 Test Pit Sampling

7.6.1 Excavate the test pit to the desired depth.

7.6.2 Using the excavator bucket, collect soil samples as specified in the FSP. Collect a sample and perform screening analyses as required by the FSP. If VOCs contamination is suspected, perform headspace screening according to SOP 3-19, *Headspace Screening for Total VOCs*.

7.6.3 Collect the sample from center of the bucket to avoid potential contamination from the bucket.

7.6.4 VOC samples should also be collected from an undisturbed section of soil in the excavator bucket. The top layer of exposed soil should be scraped away just prior to collecting the VOC samples.

7.6.5 Collect the remainder of the sample volume required into a stainless-steel bowl. Homogenize the soil so the material is uniform in composition and representative of the total soil sample collected. Follow homogenizing techniques as described in Section 7.2.

7.6.6 Dispose of all excavated soil according to the FSP.

7.7 Sample Collection Methods

7.7.1 Volatile Organics Sampling

For soils collected for analyses of volatile organics, including volatile petroleum hydrocarbons (VPH) or other purgeable compounds, a closed system is maintained. From collection through analysis, the sample bottles are not opened. The bottle kit for a routine field sample for these analyses will typically include three 40-milliliter (mL) Volatile Organic Analysis (VOA) vials and one soil jar. Two 40-mL VOA vials will contain either 5 mL reagent water or 5 mL sodium bisulfate and magnetic stir bars (i.e., low level vials). The third VOA vial will contain 15 mL methanol with no magnetic stir bar (i.e., high level vial). These vials are usually provided by the laboratory and are pre-weighed, with the tare weight recorded on the affixed sample label. No additional sample labels are affixed to the VOA vials, as addition of a label would alter the vial weight. All information is recorded directly on the sample label using an indelible marker. The soil jar is provided for percent solids determination. For VOC or VPH analyses, samples are collected prior to sample homogenization. Collect the VOC sample in accordance with the procedure described below.

7.7.1.1 Determine the soil volume necessary for the required sample weight, typically 5 grams:

a) Prepare a 5 mL sampling corer (e.g., Terra Core®) or cut-off plastic syringe.

b) Tare the sampler by placing it on the scale and zeroing the scale.

c) Draw back the plunger to the 5-gram mark or 5 mL (5 cc) mark on cut-off syringe and insert the open end of the sampler into an undisturbed area of soil with a twisting motion, filling the sampler with soil. Note the location of the plunger with respect to the mL (cc) or other graduation printed on the sampler.

d) Weigh the filled sampler and remove or add soil until the desired weight is obtained. Note the location of the plunger which corresponds to this weight. Do not use this sample for laboratory analysis.

7.7.1.2 Once the required soil volume has been determined, pull the plunger back to this mark and hold it there while filling the syringe for each sample.

7.7.1.3 Collect 5 grams of soil using the cut-off syringe or Terra Core® sample device. Extrude the 5 grams of soil into one of the low level 40-mL VOA vials. Quickly wipe any soil from the threads of the VOA vial with a clean Kimwipe® and immediately close the vial. It is imperative that the threads be free from soil or other debris prior to replacing the cap on the vial in order to maintain the closed system necessary for the analysis.

7.7.1.4 Gently swirl the vial so that all of the soil is fully wetted with the preservative.

7.7.1.5 Fill the other low level 40 mL VOA vial in this manner.

7.7.1.6 Repeat the process for the high-level VOA vials, only for the high-level VOA vial three 5-gram aliquots (i.e., 15 grams total) should be extruded into the high-level VOA vial.

Note: Depending on the laboratory, some high-level VOA vials only contain 5 mL or 10 mL of methanol. If this is the case, either 5 grams total or 10 grams total, respectively, should be extruded into the high-level VOA vial. In other words, the mass of soil in grams should be identical to the volume of methanol in mL (i.e., 1:1 ratio of soil to methanol).

7.7.1.7 Collect any additional quality control sample collected (e.g., field duplicate, matrix spike, and matrix spike duplicate) in the same manner as above.

7.7.1.8 Fill the 4-ounce glass jar with soil from the same area for percent moisture determination.

7.7.2 Soil Sampling Method (All other analyses except VOC/VPH)

When all the required soil for a sampling location has been obtained, the soil can be homogenized as described in Section 7.2. Collect sufficient volume to fill all of the remaining sample containers at least ¾ full for all other analyses. Homogenize the soil in a decontaminated stainless-steel bowl, removing rocks, sticks, or other non-soil objects and breaking apart any lumps of soil prior to filling the remaining sample containers.

Note: Soil samples must contain greater than 30 percent solids for the data to be considered valid.

8.0 Quality Control and Assurance

8.1 Sampling personnel should follow specific quality assurance (QA) guidelines as outlined in the QAPP. Proper QA requirements should be provided that will allow for collection of representative samples from representative sampling points. QA requirements outlined in the QAPP typically suggest the collection of a sufficient quantity of field duplicate, field blank, and other samples.

8.2 Quality control requirements are dependent on project-specific sampling objectives. The QAPP will provide requirements for equipment decontamination (frequency and materials), sample preservation and holding times, sample container types, sample packaging and shipment, as well as requirements for the collection of various QA samples such as trip blanks, field blanks, equipment blanks, and field duplicate samples.

9.0 Records, Data Analysis, Calculations

All data and information (e.g., sample collection method used) must be documented on field data sheets, boring logs, or within site logbooks with permanent ink. Data recorded may include the following:

- Weather conditions
- Arrival and departure time of persons on site
- Instrument type, lamp (PID), make, model and serial number
- Calibration gas used
- Date, time and results of instrument calibration and calibration checks
- Sampling date and time
- Sampling location
- Samples collected
- Sampling depth and soil type
- Deviations from the procedure as written
- Readings obtained

10.0 Attachments or References

SOP 3-19, *Headspace Screening for Total VOCs*

Author	Reviewer	Revisions (Technical or Editorial)
Robert Shoemaker, PMP Senior Scientist	Chris Barr Program Quality Manager	Rev 0 – Initial Issue (May 2012)
Ken O'Donnell, PG Geologist	Claire Mitchell, PE, PMP Senior Engineer	Rev 1 – PFAS sampling update (July 2019)
Robert Shoemaker, PMP Senior Scientist	Josh Millard, PG, CPG	Rev 2 – Addition of Sonic Drilling Methods (January 2020)
Rose Kelley, Environmental Scientist	Richard Purdy, Project Scientist	Rev 3 – Update & Review (June 2022)
Nicky Moody, Environmental Scientist	Jennifer Ray Environmental Engineering	Rev 3 – Update & Review (September 2024)

Recordkeeping, Sample Labelling, and Chain of Custody

Procedure 3-03

1.0 Purpose and Scope

1.1 The purpose of this standard operating procedure is to establish standard protocols for all field personnel for use in maintaining field and sampling activity records, writing sample logs, labelling samples, ensuring that proper sample custody procedures are utilized, and completing the chain-of-custody (COC) forms.

1.2 As guidance for specific activities, this procedure does not obviate the need for professional judgment. Deviations from this procedure while planning or executing planned activities must be approved in accordance with project requirements for technical planning and review.

2.0 Safety

Not applicable.

3.0 Terms and Definitions

3.1 Logbook

A logbook is a bound field notebook with consecutively numbered, water-repellent binding or pages that is clearly identified with the name of the relevant activity, the person responsible for maintenance of the logbook, and the beginning and ending dates of the entries.

3.2 Daily Field Report

A daily field report that is clearly identified with the name of the relevant activity and person completing the report may be completed each day instead of a logbook.

3.3 Chain-of-Custody Form

A COC form documents the process of custody control. Custody control includes possession of a sample from the time of its collection in the field to its receipt by the analytical laboratory and through analysis and storage prior to disposal. COC forms may be carbon copy or computer generated.

4.0 Training and Qualifications

4.1 The **Field Coordinator** is responsible for determining which team members shall record information in the logbook or daily field report and for checking the logbook or daily field report and COC forms to ensure compliance with these procedures.

4.2 The **Project Manager** is responsible for ensuring overall compliance with this procedure.

4.3 The Analytical **Laboratory Project Manager** or **Sample Control Department Manager** is responsible for reporting any sample documentation or COC problems to the **Field Coordinator** or **Quality Assurance/Quality Control (QA/QC) Manager** within 24 hours of sample receipt.

4.4 The **Field Coordinator** is responsible for ensuring that all **Field Personnel** follow these procedures. The **QA/QC Manager** is responsible for verifying that the COCs have been completed properly and match the Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP). The **Field Coordinator** or **QA/QC Manager** is responsible for notifying the **Laboratory Manager** in writing if analytical request changes are required as a corrective action. These small changes are different from change orders, which involve

changes to the scope of the subcontract with the laboratory and must be made in accordance with a respective contract (e.g., client remedial action contract).

4.5 All **Field Personnel** are responsible for following these procedures while conducting sampling activities. **Field Personnel** are responsible for recording pertinent data into the logbook or daily field report to satisfy project requirements and for attesting to the accuracy of the entries by dated signature.

5.0 Procedure

This procedure provides standards for documenting field activities, labelling the samples, documenting sample custody, and completing COCs. The standards presented in this section shall be followed to ensure that samples collected are maintained for their intended purpose and that the conditions encountered during field activities are documented.

5.1 Recordkeeping

The logbook or daily field report serves as the primary record of field activities. Make entries chronologically and in sufficient detail to allow the writer or a knowledgeable reviewer to reconstruct each day's events. Sampling forms or logs such as soil boring logs and groundwater sampling logs will also be used. These procedures are described in Procedure 3-02, *Logbooks and Daily Field Reports*.

5.2 Sample Labelling

Affix a sample label with adhesive backing to each individual sample container. Record the following information with a ballpoint pen, permanent ink pen, or pre-printed text on each label:

- Sample identifier
- Date and time of collection
- Matrix (optional)
- Sample preservatives (if applicable)
- Analysis to be performed on sample (this shall be identified by the method number or name identified in the subcontract with the laboratory)

These labels may be obtained from the analytical laboratory or printed from a computer file onto adhesive labels.

5.3 Custody Procedures

For samples intended for chemical analysis, sample custody procedures shall be followed through collection, transfer, analysis, and disposal to ensure that the integrity of the samples is maintained. Maintain custody of samples in accordance with the U.S. Environmental Protection Agency (EPA) COC guidelines prescribed in EPA *NEIC Policies and Procedures* (1986); EPA *RCRA Ground-Water Monitoring Technical Enforcement Guidance Document* (1992); *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (1988); Appendix 2 of the *Technical Guidance Manual for Solid Waste Water Quality Assessment Test (SWAT) Proposals and Reports* (Water Resources Control Board 1988); and *Test Methods for Evaluating Solid Waste* (EPA 1997)

A description of sample custody procedures is provided below.

5.3.1 Sample Collection Custody Procedures

According to EPA guidelines, a sample is in custody if one of the following conditions is met:

- It is in one's actual physical possession or view.
- It is in one's physical possession and has not been tampered with (i.e., it is under lock or official seal).
- It is retained in a secured area with restricted access.
- It is placed in a cooler and secured with an official seal such that the sample cannot be reached without breaking the seal.

Field Personnel shall place custody seals on coolers immediately after sample collection and on shipping coolers if the cooler is to be removed from the sampler's custody. Place custody seals in such a manner that they must be broken to open the containers or coolers. Label the custody seals with the following information:

- Sampler's name or initials
- Date and time that the sample/cooler was sealed

These seals are designed to enable detection of sample tampering. An example of a custody seal is shown in Attachment 1.

Field Personnel shall also log individual samples onto COC forms when a sample is collected. These forms may also serve as the request for analyses. Procedures for completing these forms are discussed in Section 5.4. The samplers will sign the COC form signifying that they were the personnel who collected the samples. The COC form shall accompany the samples from the field to the analytical laboratory. When a cooler is ready for shipment to the analytical laboratory, the person delivering the samples for transport will sign and indicate the date and time on the accompanying COC form. One copy of the COC form will be retained by the sampler, and the remaining copies of the COC form shall be placed inside a self-sealing bag and taped to the inside of the cooler. Each cooler must be associated with a unique COC form. Whenever a transfer of custody takes place, both parties shall sign and date the accompanying carbon copy COC forms, and the individual relinquishing the samples shall retain a copy of each form. One exception is when the samples are shipped; the delivery service personnel will not sign or receive a copy because they do not open the coolers. The laboratory shall include copies of the completed COC forms in the reports containing the results of the analytical tests. An example COC form is provided in Attachment 2.

5.3.2 Laboratory Custody Procedures

The following custody procedures are to be followed by an independent laboratory receiving samples for chemical analysis. A designated sample **Custodian** shall take custody of all samples upon their arrival at the analytical laboratory. The **Custodian** shall inspect all sample labels and COC forms to ensure that the information is consistent, and that each is properly completed. The **Custodian** will also measure the temperature of the temperature blank in the coolers upon arrival using either a National Institute for Standards and Technology calibrated thermometer or an infra-red temperature gun. The **Custodian** shall note the condition of the samples including:

- If the samples show signs of damage or tampering;
- If the containers are broken or leaking;
- If headspace is present in sample vials;
- If proper preservation of samples has occurred (made by pH measurement, except volatile organic compounds [VOCs] and purgeable total petroleum hydrocarbons [TPH] and temperature). The pH of VOC and purgeable TPH samples will be checked by the laboratory analyst after the sample aliquot has been removed from the vial for analysis; and
- If any sample holding times have been exceeded.

All the above information shall be documented on a sample receipt sheet by the **Custodian**.

The **Custodian** shall then assign a unique laboratory number to each sample and distribute the samples to secured storage areas. The unique laboratory number for each sample, COC sample number, client name, date and time received, analysis due date, and storage shall be logged onto a sample receipt record and later entered into the laboratory's computerized data management system. The **Custodian** shall sign the shipping bill and maintain a copy.

Laboratory Personnel shall be responsible for the care and custody of samples from the time of their receipt at the laboratory through their exhaustion or disposal. Samples should be logged in and out on internal laboratory COC forms each time they are removed from storage for extraction or analysis.

5.4 Completing COC Forms

COC form completion procedures are crucial in properly transferring the custody and responsibility of samples from field personnel to the laboratory. This form is important for accurately and concisely requesting analyses for each sample; it is essentially a release order from the analysis subcontract.

Attachment 2 is an example of a generic COC that may be used by **Field Personnel**. Multiple copies may be tailored to each project so that much of the information described below need not be handwritten each time. Attachment 3 is an example of a completed site-specific COC, with box numbers identified and discussed in text below.

COC forms should be tailored to the project to eliminate the need to rewrite the analytical methods column headers each time. It also eliminates the need to write the project manager, name, and number; QC Level; turnaround time (TAT); and the same general comments each time.

Complete one COC form per cooler. Whenever possible, place all VOC analyte vials into one cooler to reduce the number of trip blanks. Complete all sections and be sure to sign and date the COC form. One copy of the COC form must remain with the **Field Personnel**. A brief description of COC fields is summarized below:

Box 1 **Client Contact:** List the name and address of the person/company in addition to the name and number the results report should be addressed to.

Box 2 **Bill To**: List the name and address of the person/company to bill only if it is not in the subcontract with the laboratory

Box 3 **Sample Disposal Instructions:** These instructions will be stated in the Master Service Agreement or each Task Order statement of work with each laboratory.

Shipment Method: State the method of shipment (e.g., hand carry, laboratory courier or air courier).

Comments: This area shall be used by the field team to communicate observations, potential hazards, or limitations that may have occurred in the field or additional information regarding analysis (e.g., a specific metals list, samples expected to contain high analyte concentrations).

Box 4 **Cooler No.:** This will be written on the inside or outside of the cooler and shall be included on the COC. Some laboratories attach this number to the trip blank identification, which helps track samples for VOC analysis. If a number is not on the cooler, field personnel shall assign a number, write it on the cooler, and write it on the COC.

QC Level: Enter the reporting QC requirements (e.g., Full Data Package, Summary Data Package).

Turnaround time: TAT will be determined by a sample delivery group, which may be formed over a multi-day period, not to exceed 20 samples. Entering NORMAL or STANDARD in this field will be acceptable. If quicker TAT is required, it shall be in the

subcontract with the laboratory and reiterated on each COC to remind the laboratory.

Box 5 **Type of Containers:** Write the type of container used (e.g., 1-liter glass amber, for a given parameter in that column).

Preservatives: Field personnel must indicate on the COC the correct preservative used for the analysis requested. Indicate the pH of the sample (if tested) in case there are buffering conditions found in the sample matrix.

Box 6 **Description (Sample ID):** This name will be determined by the location and description of the sample, as described in the project-specific FSP. If a computer COC version is used, the sample identification can be input

Date Collected: Record the collection date to track the holding time of the sample. Note: For trip blanks, record the date it was placed in company with samples.

Time Collected: When collecting samples, record the time the sample is first collected. Use of the 24-hour military clock will avoid a.m. or p.m. designations (e.g., 1815 instead of 6:15 p.m.). Record local time; the laboratory is responsible for calculating holding times to local time.

Lab ID: This is for laboratory use only.

Box 7 **Matrix/QC:** Identify the matrix (e.g., water, soil, air, tissue, freshwater sediment, marine sediment, or product). If a sample is expected to contain high analyte concentrations (e.g., a tank bottom sludge or distinct product layer), notify the laboratory in the comment section. Mark an “X” for the sample(s) that have extra volume for laboratory QC matrix spike/matrix spike duplicate (MS/MSD) purposes. The sample provided for MS/MSD purposes is usually a field duplicate.

Box 8 **Analytical Parameters:** Enter the parameter by descriptor and the method number desired (e.g., BTEX 8260B, PAHs 8270C, etc.). Whenever practicable, list the parameters as they appear in the laboratory subcontract to maintain consistency and avoid confusion.

If the COC does not have a specific box for number of sample containers, use the boxes below the analytical parameter, to indicate the number of containers collected for each parameter.

Box 9 **Sampler’s Signature:** The person who collected samples must sign here.

Relinquished By: The person who turned over the custody of the samples to a second party other than an express mail carrier, such as FedEx or DHL, must sign and date here.

Received By: Typically, a representative of the receiving laboratory signs and dates here, or a field crew member who delivered the samples in person from the field to the laboratory might sign here. A courier, such as FedEx or DHL, does not sign here because they do not open the coolers. It must also be used by the prime contracting laboratory when samples are to be sent to a subcontractor.

Relinquished By: In the case of subcontracting, the primary laboratory will sign and date the Relinquished By space and fill out an additional COC to accompany the samples being subcontracted.

Received By (Laboratory): This space is for the final destination (e.g., at a subcontracted laboratory). A representative of the final destination (e.g., subcontracted laboratory) must sign and date here.

Box 10 **Lab No. and Questions:** This box is to be filled in by the laboratory only.

Box 11 **Control Number:** This number is the "COC" followed by the first contractor identification number in that cooler or contained on that COC. This control number must be unique (i.e., never used twice). Record the date the COC is completed. It should be the same date the samples are collected.

Box 12 **Total # of Containers:** Sum the number of containers in that row.

Box 13 **Totals:** Sum the number of containers in each column.

Because COC forms contain different formats depending on who produced the form, not all the information listed in Boxes 1 to 13 may be recorded; however, as much of this information as possible shall be included.

6.0 Quality Control and Assurance

6.1 Recordkeeping, sample labelling, and COC activities must incorporate QC measures to ensure accuracy and completeness.

6.2 Deviations from this procedure or the QAPP shall be documented in field records. Significant changes shall be approved by the **Project Manager**.

7.0 Records, Data Analysis, Calculations

7.1 The COC forms shall be emailed approximately daily to the **QA/QC Manager** for verification of accuracy. Following the completion of sampling activities, the logbook or daily field report and COC forms will be transmitted to the **Field Coordinator** for storage in project files. The original COC shall be submitted by the laboratory along with the laboratory reports. Any changes to the analytical requests that are required shall be made in writing to the laboratory. A copy of this written change shall be sent to the **QA/QC Manager** and placed in the project files. The reason for the change shall be included in the project files so that recurring problems can be easily identified.

7.2 Deviations from this procedure or the FSP or QAPP shall be documented in the records. Significant changes shall be approved by the **Project Manager**.

8.0 Attachments or References

Attachment 1 – Generic Chain-of-Custody Seal

Attachment 2 – Generic Chain-of-Custody Form

Attachment 3 – Sample Completed Chain-of-Custody

Procedure 3-02, *Logbooks and Daily Field Reports*.

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EPA. 1997. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846*. 3rd ed., Final Update IIIA. Office of Solid Waste.

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Author	Reviewer	Revisions (Technical or Editorial)
Mark Kromis Program Chemist	Chris Barr Program Quality Manager	Rev 0 – Initial Issue
Ken O'Donnell, PG Geologist	Claire Mitchell, PE, PMP Senior Engineer	Rev 1 – PFAS sampling update (July 2019)
Rose Kelley Environmental Scientist	Richard Purdy Project Scientist	Rev 2 – Update & Review (June 2022)
Nicky Moody Environmental Scientist	Jennifer Ray Environmental Engineering	Rev 3 – Update & Review (September 2024)

Attachment 1
Generic Chain-of-Custody Seal

CHAIN-OF-CUSTODY SEAL

[LABORATORY]	SAMPLE NO.	DATE	SEAL BROKEN BY
	SIGNATURE		DATE
	PRINT NAME AND TITLE *(Inspector, Analyst or Technician*		

Attachment 2
Generic Chain-of-Custody Form

M601378

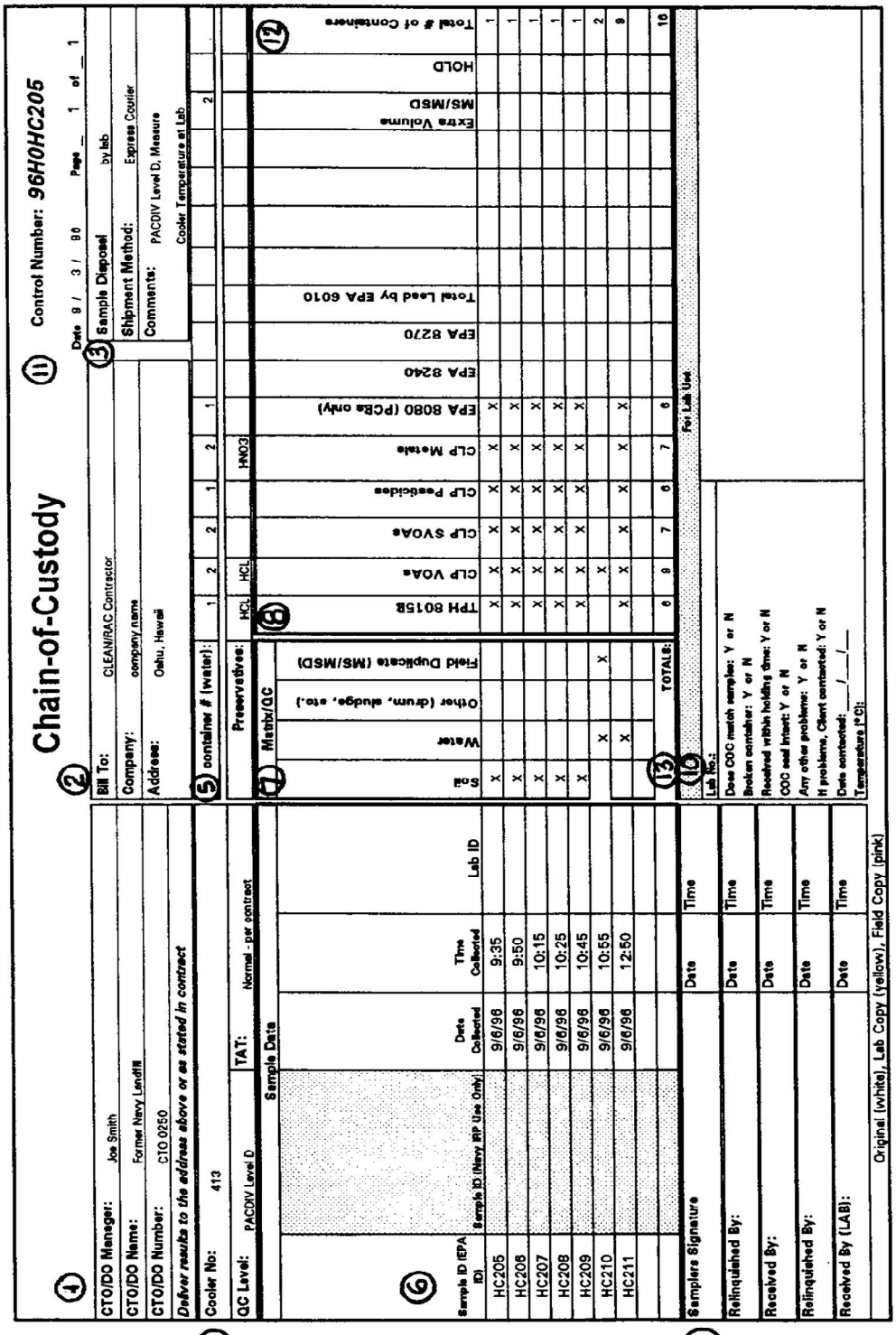
CHAIN OF CUSTODY RECORD Page ____ of ____

Client/Project Name:	Project Location:	Analysis Requested
Project Number:	Field Logbook No.:	
Sampler: (Print Name)/Affiliation:	Chain of Custody Tape No.:	
Signature:	Send Results/Report to:	

Field Sample No./ Identification	Date	Time	Grab	Comp	Sample Container (Size/Matl)	Sample Type (Liquid, Sludge, Etc.)	Preservative	Field Filtered							Lab I.D.	Remarks

Relinquished by: (Print Name)	Date:	Received by: (Print Name)	Date:	Analytical Laboratory (Destination):
Signature:	Time:	Signature:	Time:	
Relinquished by: (Print Name)	Date:	Received by: (Print Name)	Date:	
Signature:	Time:	Signature:	Time:	
Relinquished by: (Print Name)	Date:	Received by: (Print Name)	Date:	
Signature:	Time:	Signature:	Time:	Serial No.

Attachment 3
Sample Completed Chain of Custody



Equipment Decontamination

Procedure 3-06

1.0 Purpose and Scope

1.1 This standard operating procedure (SOP) describes methods of equipment decontamination to be used for activities where samples for chemical analysis are collected or where equipment will need to be cleaned before leaving the site or before use in subsequent activities.

1.2 As guidance for specific activities, this procedure does not obviate the need for professional judgment. Deviations from this procedure while planning or executing planned activities must be approved in accordance with project requirements for technical planning and review.

2.0 Safety

It is the responsibility of the **Site Safety and Health Officer** to set up the decontamination area. Separate spray bottles containing deionized water and cleaning solvents, as described in this procedure or the Field Sampling Plan (FSP), are used for decontamination of equipment. Depending on the nature of the hazards and the site location, decontamination of heavy equipment, such as augers, pump drop pipe, and vehicles, may be accomplished using a variety of techniques.

All **Field Personnel** responsible for equipment decontamination must adhere to the Health and Safety Plan (HASP) and must wear the personal protective equipment (PPE) specified in the HASP. Generally, this includes, at a minimum, steel-toed boots, safety glasses, gloves, and American National Standards Institute–standard hard hats.

In addition to the above, the following sections describe safe work practices that will be employed.

2.1 **Chemical Hazards Associated with Equipment Decontamination**

- Avoid skin contact with and/or incidental ingestion of decontamination solutions and water.
- Utilize PPE as specified in the HASP to maximize splash protection.
- Refer to material safety data sheets and/or consult with safety and/or sampling personnel regarding appropriate safety measures (e.g., handling, PPE including skin and respiratory).
- Take the necessary precautions when handling detergents and reagents.

2.2 **Physical Hazards Associated with Equipment Decontamination**

- To avoid possible back strain, it is recommended to raise the decontamination area 1 to 2 feet above ground level.
- To avoid heat stress, over exertion, and exhaustion, it is recommended to rotate equipment decontamination among all site personnel.
- Take necessary precautions when handling field sampling equipment.

3.0 Terms and Definitions

None.

4.0 Training and Qualifications

4.1 The **Field Team Coordinator** is responsible for ensuring that decontamination activities comply with this procedure. The **Field Team Coordinator** is responsible for ensuring that all personnel involved in

equipment decontamination shall have the appropriate education, experience, and training to perform their assigned tasks.

4.2 The **Project Manager** is responsible for ensuring overall compliance with this procedure.

4.3 The **Field Manager** is responsible for ensuring that all field equipment is decontaminated according to this procedure.

4.4 All **Field Personnel** are responsible for the implementation of this procedure.

5.0 Procedure

Decontamination of equipment used in soil/sediment sampling, groundwater monitoring, well drilling, and well development, as well as equipment used to sample groundwater, surface water, sediment, waste, wipe, asbestos, and unsaturated zone, is necessary to prevent cross-contamination and to maintain the highest integrity possible in collected samples. Planning a decontamination program requires consideration of the following factors:

- Location where the decontamination procedures will be conducted
- Types of equipment requiring decontamination
- Frequency of equipment decontamination
- Cleaning technique and types of cleaning solutions appropriate to the contaminants of concern
- Method for containing the residual contaminants and wash water from the decontamination process
- Use of a quality control measure to determine the effectiveness of the decontamination procedure

The following subsections describe standards for decontamination, including the frequency of decontamination, cleaning solutions and techniques, containment of residual contaminants and cleaning solutions, and effectiveness.

5.1 Decontamination Area

Select an appropriate location for the decontamination area at a site based on the ability to control access to the area, the ability to control residual material removed from equipment, the need to store clean equipment, and the ability to restrict access to the area being investigated. If necessary, locate the decontamination area an adequate distance away and upwind from potential contaminant sources to avoid contamination of clean equipment.

5.2 Types of Equipment

Drilling equipment that must be decontaminated includes drill bits, auger sections, drill-string tools, drill rods, split barrel samplers, tremie pipes, clamps, hand tools, and steel cable. Decontamination of monitoring well development and groundwater sampling equipment includes submersible pumps, bailers, interface probes, water level meters, bladder pumps, airlift pumps, peristaltic pumps, and lysimeters. Other sampling equipment that requires decontamination includes, but is not limited to, hand trowels, hand augers, slide hammer samplers, shovels, stainless-steel spoons and bowls, soil sample liners and caps, wipe sampling templates, composite liquid waste samplers, and dippers. Equipment with a porous surface, such as rope, cloth hoses, and wooden blocks, cannot be thoroughly decontaminated and shall be properly disposed of after one use.

5.3 Frequency of Equipment Decontamination

Decontaminate down-hole drilling equipment and equipment used in monitoring well development and purging prior to initial use and between each borehole or well. Down-hole drilling equipment, however, may require more frequent cleaning to prevent cross-contamination between vertical zones within a single borehole. When drilling through a shallow contaminated zone and installing a surface casing to seal off the contaminated zone, decontaminate the drilling tools prior to drilling deeper. Initiate groundwater sampling by sampling groundwater from the monitoring well where the least contamination is suspected. Decontaminate groundwater, surface water, and soil sampling devices prior to initial use

and between collection of each sample to prevent the possible introduction of contaminants into successive samples.

5.4 Cleaning Solutions and Techniques

Decontamination can be accomplished using a variety of techniques and fluids. The preferred method of decontaminating major equipment, such as drill bits, augers, drill string, and pump drop-pipe, is steam cleaning. To steam clean, use a portable, high-pressure steam cleaner equipped with a pressure hose and fittings. For this method, thoroughly steam wash equipment and rinse it with potable tap water to remove particulates and contaminants. Depending on the scope of work, PFAS-free tap water may be required for the final rinse and will be outlined in the FSP.

A rinse decontamination procedure is acceptable for equipment such as bailers, water level meters, new and re-used soil sample liners, and hand tools. The decontamination procedure shall consist of the following: (1) wash with a detergent (Alconox®, Liquinox®, or other suitable detergent) and deionized water solution, and (2) rinse in triplicate with deionized water. If possible, disassemble equipment prior to cleaning. Add an additional wash as needed at the beginning of the process if equipment is very soiled. Depending on the scope of the work, PFAS-free or sulfate free detergent and water may be required and will be outlined in the FSP.

Decontaminating submersible pumps requires additional effort because internal surfaces become contaminated during usage. Decontaminate these pumps by washing and rinsing the outside surfaces using the procedure described for small equipment or by steam cleaning. Decontaminate the internal surfaces by recirculating fluids through the pump while it is operating. This recirculation may be done using a relatively long (long enough to contain the pipe, typically 4 feet) large-diameter pipe (4-inch or greater) equipped with a bottom cap. Fill the pipe with the decontamination fluids, place the pump within the capped pipe, and operate the pump while recirculating the fluids back into the pipe. The decontamination sequence shall include (1) wash with detergent and deionized water solution, and (2) rinse in triplicate with deionized water rinse. Change the decontamination fluids after each decontamination cycle.

Rinse equipment used for measuring field parameters such as pH temperature, specific conductivity, and turbidity with deionized water after each measurement. Also wash new, unused soil sample liners and caps with a fresh detergent solution and rinse them with deionized water to remove any dirt or cutting oils that might be on them prior to use.

5.5 Containment of Residual Contaminants and Cleaning Solutions

A decontamination program for equipment exposed to potentially hazardous materials requires a provision for catchment and disposal of the contaminated material, cleaning solution, and wash water.

When contaminated material and cleaning fluids must be contained from heavy equipment, such as drill rigs and support vehicles, the area must be properly floored, preferably with a concrete pad that slopes toward a sump pit. If a concrete pad is impractical, planking can be used to construct solid flooring that is then covered by a nonporous surface and sloped toward a collection sump. If the decontamination area lacks a collection sump, use plastic sheeting and blocks or other objects to create a bermed area for collection of equipment decontamination water. Situate items, such as auger flights, which can be placed on metal stands or other similar equipment, on this equipment during decontamination to prevent contact with fluids generated by previous equipment decontamination. Store clean equipment in a separate location to prevent recontamination. Collect decontamination fluids contained within the bermed area and store them in secured containers in accordance with Procedure 3-05, *IDW Management.*

Use wash buckets or tubs to catch fluids from the decontamination of lighter-weight drilling equipment and hand-held sampling devices. Collect the decontamination fluids and store them on-site in secured containers, such as U.S. Department of Transportation–approved drums until their disposition is determined by laboratory analytical results. Label containers in accordance with Procedure 3-05, *IDW Management.*

6.0 Quality Control and Assurance

A decontamination program must incorporate quality control measures to determine the effectiveness of cleaning methods. Quality control measures typically include collection of equipment or rinsate blank samples or wipe testing. Equipment or rinsate blanks consist of analyte-free deionized water that has been poured over or through the sample collection equipment after its final decontamination rinse. Wipe testing is performed by wiping a cotton cloth over the surface of the equipment after cleaning. These quality control measures provide "after-the fact" information that may be useful in determining whether cleaning methods were effective in removing the contaminants of concern.

7.0 Records, Data Analysis, Calculations

Any project where sampling and analysis is performed shall be executed in accordance with an approved sampling and analysis plan. This procedure may be incorporated by reference or may be incorporated with modifications described in the plan.

Deviations from this procedure or the sampling and analysis plan shall be documented in field records. Significant changes shall be approved by the **Project Manager**.

8.0 Attachments or References

ASTM Standard D5088. 2008. *Standard Practice for Decontamination of Field Equipment Used at Waste Sites.* ASTM International, West Conshohocken, PA. 2008. DOI: 10.1520/D5088-02R08. www.astm.org.

Procedure 3-05, *IDW Management*.

Author	Reviewer	Revisions (Technical or Editorial)
Mark Kromis Program Chemist	Chris Barr Program Quality Manager	Rev 0 – Initial Issue
Ken O'Donnell, PG Geologist	Claire Mitchell, PE, PMP Senior Engineer	Rev 1 – PFAS sampling update (July 2019)
Rose Kelley Environmental Scientist	Richard Purdy Project Scientist	Rev 2 – Update & Review (June 2022)
Alex McLean Geologist	Lillian Celovsky, EIT Environmental Engineer	Rev 3 – Update & Review (March 2025)

Investigation-Derived Waste Management

Procedure 3-05

1.0 Purpose and Scope

This standard operating procedure (SOP) describes activities and responsibilities regarding management of investigation-derived waste (IDW). The purpose of this procedure is to provide guidance for the minimization, handling, labelling, temporary storage, inventory, classification, and disposal of IDW generated under the client contract. This procedure will also apply to personal protective equipment (PPE), sampling equipment, decontamination fluids, non-IDW trash, non-indigenous IDW, and hazardous waste generated during implementation of removal or remedial actions.

If there are procedures, whether issued by AECOM or required by state and/or federal agencies, that are applicable to IDW and not addressed in this SOP, then those procedures may be added as an appendix to the Field Sampling Plan (FSP).

As guidance for specific activities, this procedure does not obviate the need for professional judgment. Deviations from this procedure while planning or executing planned activities must be approved in accordance with program requirements for technical planning and review.

2.0 Safety

The health and safety considerations for the work associated with this SOP, including both potential physical and chemical hazards, will be addressed in the project Health and Safety Plan (HASP). Work will be conducted in accordance with the FSP.

All **Field Personnel** responsible for IDW management must adhere to the HASP and must wear the PPE specified in the site-specific HASP. Generally, this includes, at a minimum, steel-toed boots or steel-toed rubber boots, safety glasses, American National Standards Institute–standard hard hats, and hearing protection (if heavy equipment is in operation). If safe alternatives are not achievable, discontinue site activities immediately.

3.0 Terms and Definitions

None.

4.0 Training and Qualifications

4.1 The **Field Team Coordinator** is responsible for ensuring that IDW-management activities comply with this procedure. The **Field Team Coordinator** is responsible for ensuring that all personnel involved in IDW management shall have the appropriate education, experience, and training to perform their assigned tasks.

4.2 The **Project Manager** is responsible for ensuring overall compliance with this procedure.

4.3 The **Field Manager** is responsible for ensuring that all IDW is managed according to this procedure.

4.4 All **Field Personnel** are responsible for the implementation of this procedure.

All AECOM personnel who will perform any duties related to management of Resource Conservation and Recovery Act (RCRA) hazardous wastes or shipping of U.S. Department of Transportation (DOT) Hazardous Materials will be properly trained in accordance with 40 Code of Federal Regulations (CFR) § 262.34 and § 265.16 for RCRA Waste Generators, as well as 49 CFR § 172.704 for DOT Hazardous Materials Shippers.All RCRA Hazardous Wastes are by definition DOT Hazardous Materials.

5.0 Equipment and Supplies

The equipment and supplies required for implementation of this SOP include the following:

- Containers for waste (e.g., DOT-approved 55-gallon open and closed top drums) and material to cover waste to protect from weather (e.g., plastic covering)
- Hazardous, non-hazardous, and pending analysis waste drum labels (weatherproof)
- Permanent marking pens
- Inventory forms for project file
- Plastic garbage bags, zip-top storage bags, rolls of plastic sheeting
- Steel-toed boots, chemical resistant gloves, safety glasses, and any other PPE required in the HASP

6.0 Procedure

The following procedures are used to handle the IDW.

6.1 **Drum Handling**

6.1.1 IDW shall be containerized using DOT-approved drums. The drums shall be made of steel or polyethylene, be completely painted or opaque, and have removable lids (i.e., United Nations Code 1A2 or 1H2). Always consider IDW physical and chemical characteristics to make sure the drum material is compatible. Typically, 55-gallon drums are used; however, small drums may be used depending on the amount of waste generated. Large overpack drums may be used if smaller drums become damaged. New drums are preferred. The use of recycled drums should be avoided.

6.1.2 Recycled drums are not to be used for hazardous waste, polychlorinated biphenyls (PCBs), or other regulated shipments. For short-term storage of liquid IDW prior to discharge, double-walled bulk steel or plastic storage tanks may be used. For this scenario, consider the scheduling and cost-effectiveness of this type of bulk storage, treatment, and discharge system versus longer-term drum storage.

6.1.3 For long-term IDW storage at other project locations, the DOT-approved drums with removable lids are recommended. Verify the integrity of the foam or rubber sealing ring located on the underside of some drum lids prior to sealing drums containing IDW liquids.

6.1.4 If the sealing ring is only partially attached to the drum lid, or if a portion of the sealing ring is missing, select another drum lid with a sealing ring that is in sound condition.

6.1.5 To prevent damage to drums, loss of drum integrity/containment, and/or presenting hazards to drum handlers, the following best practices should be applied when filling drums.

- Liquid, soil, PPE/plastics, and construction debris must be segregated by media into individual drums.
- A **void space of 4 to 6 inches** from the top of the drum (the upper drum ring on most drums) will be left in the drum to allow room for ice expansion when filling drums with water or oil/water emulsions. Under freezing temperatures, expanding ice in a full drum can deform the bottom of a drum such that it is no longer DOT compliant, cause ruptures, and/or dislodge the drum lid and present a containment breach. The consequences of this damage can be both economic and environmental.
- Compatibility between the chemical component(s) of the IDW and the drum material must be considered before choosing the type of drum/container to use. Steel drums are susceptible to corrosion and loss of integrity when in contact with high pH water. Lime-based products (cement, concrete, grout, etc.) should not be disposed in steel drums containing water or soil–water mixtures, and liquid IDW should not be disposed in steel drums used to mix lime-based products (separate reusable containers for mixing should be used when possible). If high (>12) or low (<2) pH conditions are possible, IDW liquids should be monitored for pH using a calibrated pH meter or pH test strips. The use of plastic drum liners or polyethylene drums is also recommended for high or low pH liquid IDW.
- Soil drums will be filled to no more than two-thirds of the drum capacity. Drums completely full of soil can weigh over 600 pounds. Although drum-handling tools and carts provide some assistance, moving such excessive weights presents significant hazards, including muscle strain, crushing (foot and fingers), and loss of drum control, such as sliding off of lift gates.
- Drums should not be overfilled with PPE and plastic (tubing, old macrocores) such that the material is excessively compacted. Pinch points are presented when the drum is closed under force, and the compressed material can spring up when the drums are opened.

6.1.6 Stacking full or partially full drums is prohibited.

6.1.7 To prepare IDW drums for labelling, wipe clean the outer wall surfaces and drum lids of all material that might prevent legible and permanent labelling. If potentially contaminated material adheres to the outer surface of a drum, wipe that material from the drum, and segregate the paper towel or rag used to remove the material with visibly soiled PPE and disposable sampling equipment. Label all IDW drums and place them on pallets with proper containment prior to storage.

6.2 **Labelling**

6.2.1 Containers used to store IDW must be properly labelled. Two general conditions exist: (1) from previous studies or on-site data, waste characteristics are known to be either hazardous or nonhazardous; or (2) waste characteristics are unknown until additional data are obtained.

6.2.2 For situations where the waste characteristics are known, the waste containers should be packaged and labelled in accordance with state regulations and any federal regulations that may govern the labelling of waste.

6.2.3 The following information shall be placed on all non-hazardous waste labels:

- Description of waste (e.g., purge water, soil cuttings)
- Contact information (i.e., contact name and telephone number)
- Date when the waste was first accumulated

6.2.4 The following information shall be placed on all hazardous waste labels:

- Description of waste (e.g., purge water, soil cuttings)
- Generator information (i.e., name, address, contact telephone number)
- EPA identification number (supplied by on-site client representative);
- Date when the waste was first accumulated.

6.2.5 When the final characterization of a waste is unknown, a notification label should be placed on the drum with the words “waste characterization pending analysis” and the following information included on the label:

- Description of waste (e.g.., purge water, soil cuttings);
- Contact information (i.e., contact name and telephone number);
- Date when the waste was first accumulated.

6.2.6 Once the waste has been characterized, the label should be changed as appropriate for a nonhazardous or hazardous waste.

6.2.7 Waste labels should be constructed of a weatherproof material and filled out with a permanent marker to prevent being washed off or becoming faded by sunlight (faded entries should be re-marked during inspections performed, as specified in Section 6.2.3 and 6.2.4). It is recommended that waste labels be placed on the side of the container, because the top is more subject to weathering. However, when multiple containers are accumulated together, it may also be helpful to include labels on the top of the containers to facilitate organization and disposal. In addition to a label, each drum should be numbered on the side and top with a paint pen or wax pencil for easy identification.

6.2.8 Each container of waste generated shall be recorded in the field notebook used by the person responsible for labelling the waste. After the waste is disposed of, either by transportation off-site or disposal on-site in an approved disposal area, an appropriate record shall be made in the same field notebook to document proper disposition of IDW.

6.3 Types of Site Investigation Waste

Several types of waste are generated during site investigations that may require special handling. These include solid, liquid, and used PPE, as discussed further below.

Solid Waste

Soil cuttings from boreholes will typically be placed in containers unless site-specific requirements allow for soil cuttings to be placed back into the borehole after drilling is complete. Drilling mud generated during investigation activities shall be collected in containers. Covers should be included on the containers and must be secured at all times and only open during filling activities. The containers shall be labelled in accordance with this SOP. An inventory containing the source, volume, and description of material put in the containers shall be logged on prescribed forms and kept in the project file.

Most solid waste will be transported to a landfill by a DOT-regulated transportation company to an appropriate landfill, as determined by analytical testing. Small volumes of non-hazardous solid waste can

be disposed of on-site if an FSP-approved landfill or wastebin is available. In select instances, soil cuttings may be used to backfill shallow boreholes. All hazardous wastes must be disposed off-site at an appropriate hazardous waste landfill, per the regulations outlined in Section 4.4.

Liquid Waste

Groundwater generated during monitoring well development, purging, and sampling can be collected in truck-mounted containers and/or other transportable containers (i.e., 55-gallon drums). Lids or bungs on drums must be secured at all times and only open during filling or pumping activities. The containers shall be labelled in accordance with this SOP. Non-hazardous liquid waste can be disposed of on-site if an appropriate FSP-approved water treatment system or evaporation pond is available. Hazardous wastes must be handled separately and disposed off-site at an approved hazardous waste facility.

Personal Protective Equipment

PPE that is generated throughout investigation activities shall be placed in plastic garbage bags. If the solid or liquid waste that was being handled is characterized as hazardous waste, then the corresponding PPE should also be disposed as hazardous waste. If not, all PPE should be disposed as non-hazardous waste in designated on-site garbage disposal containers. Trash that is generated as part of field activities may be disposed of along with the PPE, as long as the trash was not exposed to hazardous media.

6.4 IDW Waste Classification

State and federal regulations require specific handling and storage requirements for wastes classified as hazardous, such as secondary containment and waste removal deadlines (see Section 6.5). The site owner/operator must determine whether the IDW may contain a listed hazardous waste based on the source of contamination, contaminants, and waste manifests or any other documentation of wastes generated at the site. It is presumed that the IDW will be considered a solid waste (40 CFR § 261.2), but this should be verified during the work plan development. If the available documentation indicates that a listed hazardous waste was generated at the site, then the IDW will be considered a hazardous waste regulated under RCRA.

If there is inconclusive documentation concerning the IDW generated at the site, then the U.S. Environmental Protection Agency (USEPA) has stated the IDW is not a listed hazardous waste. However, in this case, further evaluation is necessary to evaluate whether the IDW in question exhibits a characteristic of hazardous waste. This is determined by analytical testing or knowledge. An IDW that may be characteristically hazardous should be evaluated for the following hazardous characteristics:

- Characteristic of ignitability (40 CFR § 261.21)
- Characteristic of corrosivity (40 CFR § 261.22)
- Characteristic of reactivity (40 CFR § 261.23)
- Characteristic of toxicity (40 CFR § 261.24)

If the IDW contains a listed hazardous waste, then USEPA's contained-in policy (53 FR 31138, 31142, 31148, 57 FR 21453, 61 FR 18795) for contaminated environmental media should be evaluated. USEPA considers IDW to contain hazardous waste:

- when it exhibits a characteristic of hazardous waste; or
- when it is impacted with concentrations of hazardous constituents from listed hazardous wastes that are above health-based levels.

Generally, IDW that does not contain (or no longer contains) hazardous waste is not subject to RCRA, but in some circumstances, the IDW that contained hazardous waste when first generated remains subject to land disposal restrictions (LDR) (40 CFR § 268.45). There are also special LDR standards specific to contaminated debris (40 CFR § 268.45).

6.5 Waste Accumulation On-Site

6.5.1 Solid, liquid, or PPE waste generated during investigation activities that are classified as nonhazardous or "characterization pending analysis" should be disposed of as soon as possible. Until off-site transport and disposal is arranged, drums should be moved to a staging location accessible by pickup by truck. This location should be relatively flat, have a hard surface (densely compact dirt, concrete, or asphalt), and be secure (by a fence or building).

6.5.2 Solid, liquid, or PPE waste generated during investigation activities that are classified as hazardous **shall not** be accumulated on-site longer than **90 days**. All hazardous waste containers shall be stored in a secured storage area. The following requirements for the hazardous waste storage area must be implemented:

- Proper hazardous waste signs posted as required by any state or federal statutes that may govern the labelling of waste
- Secondary containment to contain spills
- Spill containment equipment
- Fire extinguisher
- Adequate aisle space for unobstructed movement of personnel

6.5.3 When possible, drums should be segregated in the storage area by media and or classification (liquid, solid, non-hazardous, hazardous, etc.) to facilitate type identification during characterization sampling and pickup and reduce the need to rearrange drums if multiple pickups by type are required.

6.5.4 Throughout the project, an inventory shall be maintained to itemize the type and quantity of the waste generated. During active site work, weekly storage area inspections should be performed and documented to ensure compliance with the requirements specified above. Monthly storage area inspections should be performed following the completion of active site work and the date the IDW is removed from the storage area by the waste hauler. Containers should be inventoried and inspected regularly. Labels should be checked to make sure they remain legible. If writing on the labels is beginning to fade or become illegible, a new, legible label is to be prepared and affixed to replace the illegible one. Inspection notes should include the condition of the staging area, as this will be important when coordinating the labor and equipment the waste hauler will require. Anomalies should be documented and photographed.

6.6 Waste Disposal

6.6.1 Solid, liquid, and PPE waste will be characterized for disposal by laboratory analytical data created from soil or groundwater samples gathered during the field activities and/or composite samples from individual containers. The selected disposal facility will prepare a waste profile based on the characterization results. The waste generator will review and sign the profile. In select circumstances, the waste generator may permit an AECOM representative to sign on behalf of the waste generator. This may only be done in compliance with the FSP and with advance notice and approval from the generator.

6.6.2 All waste generated during field activities will be stored, transported, and disposed of according to applicable state, federal, and local regulations. All wastes classified as hazardous will be disposed of at a licensed treatment storage and disposal facility or managed in other approved manners.

6.6.3 Disposal facilities for waste generated during activities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) will require EPA approval under the Off-Site Rule (OSR) procedures (40 CFR § 300.440) to ensure the facility is operating in compliance with RCRA or other federal and state requirements. After the waste profile is finalized, the generator will submit it with an OSR request form to the EPA project manager for approval. An example OSR request form is provided in Attachment A. IDW may not be shipped to the facility until approval is granted by the EPA. OSR approvals per waste profile are valid for 90 days.

6.6.4 In general, waste disposal should be carefully coordinated with the facility receiving the waste. Facilities receiving waste have specific requirements that vary even for non-hazardous waste, so characterization should be conducted to support both applicable regulations and facility requirements.

6.7 **Regulatory Requirements**

The following federal and state regulations shall be used as resources for determining waste characteristics and requirements for waste storage, transportation, and disposal:

- 40 CFR Part 261
- 49 CFR Parts 172, 173, 178, and 179

6.8 **Waste Transport**

A state-certified hazardous waste hauler shall transport all wastes classified as hazardous. Typically, the facility receiving any waste can coordinate a hauler to transport the waste. Shipped hazardous waste shall be disposed of in accordance with all RCRA/USEPA requirements. All waste manifests or bills of lading will be signed either by the client or the client's designee.

7.0 Quality Control and Assurance

Management of IDW must incorporate quality control measures to ensure conformance to these and the project requirements.

8.0 Records, Data Analysis, Calculations

8.1 Maintain records as required by implanting the procedures in this SOP.

8.2 Deviations from this procedure or the sampling and analysis plan shall be documented in field records. Significant changes shall be approved by the **Project Manager**.

9.0 Attachments or References

DOE (Department of Energy, United States). 1994. *The Off-Site Rule*. EH-231-020/0194. Office of Environmental Guidance. March.

DOE. 1999. *Management of Remediation Waste under the Resource Conservation and Recovery Act (RCRA)*. Office of Environmental Policy and Assistance. 20 December.

USEPA (Environmental Protection Agency, United States). No Date. *Compliance with the Off-Site Rule During Removal Actions.* Office of Regional Counsel (Region 3). Hendershot, Michael.

USEPA. 1991. *Management of Investigative-Derived Wastes During Site Inspections*. Office of Emergency and Remedial Response. EPA/540/G-91/009. May.

USEPA. 1992a. *Guidance for Performing Site Inspections under CERCLA*. EPA/540/R-92/021. Office of Emergency and Remedial Response. September.

USEPA. 1992b. *Guide to Management of Investigative-Derived Wastes*. Quick reference fact sheet. OSWER Dir. 9345.3-03FS. Office of Solid Waste and Emergency Response. January.

USEPA. 1997a. *Sending Wastes Off Site? OSC and RPM Responsibilities under the Off-Site Rule*. EPA/540-F-97-006, Office of Solid Waste and Emergency Response. September.

USEPA. 1997b. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846.* 3rd ed., Final Update IIIA. Office of Solid Waste. Updates available: www.epa.gov/epaoswer/hazwaste/test/new-meth.htm.

USEPA. 1998. *Management of Remediation Waste under RCRA*. EPA/530-F-98-026. Office of Solid Waste and Emergency Response. October.

Author	Reviewer	Revisions (Technical or Editorial)
Mark Kromis Program Chemist	Chris Barr Program Quality Manager	Rev 0 – Initial Issue (May 2012)
Joshua Millard Senior Geologist	Andrew Borden Geologist	Rev 1 – Technical (Jan 2017)
Ken O'Donnell, PG Geologist	Claire Mitchell, PE, PMP Senior Engineer	Rev 2 – PFAS sampling update (July 2019)
Rose Kelley Environmental Scientist	Richard Purdy Project Scientist	Rev 3 – Update & Review (June 2022); updated Attachment A
Alex McLean Geologist	Lillian Celovsky, EIT Environmental Engineer	Rev 4 – Language Updates (March 2025)

Attachment A
Off-Site Rule Request Form

United States Environmental Protection Agency – Region 1

Off-Site Rule Compliance Request Form

Date: (mm/dd/yy)		**Supporting Documentation Required-Attached?** (yes/no)	

RECEIVING FACILITY INFORMATION:		
1	**Name of Facility receiving CERCLA waste:**	
2	**Address of Facility:**	
3	**City:**	
4	**State:**	
5	**Zip Code:**	
6	**EPA/State Facility ID:**(e.g. Haz. Waste/Municipal Waste ID)	
7	**Other Pertinent ID Numbers:** (e.g. License #, permit #)	
8	**Phone Number** (if available)**:**	
9	**Contact Name** (if available)**:**	
10	**FAX Number** (if available)**:**	
11	**E-mail address** (if available)**:**	

GENERATING FACILITY INFORMATION:		
12	**CERCLA Site Name:**	
13	**CERCLA Site Address:**	
14	**City:**	
15	**State:**	
16	**Zip Code:**	
17	**CERCLA Site ID:** (i.e. alpha-numeric)	
18	**EPA CERCLA ID #:**	
19	**Waste Media:** (e.g., Soil, Water, Air, etc.)	
20	**CERCLA Hazardous Waste Contaminates:** (e.g. tce, lead)	
21	**Amount of CERCLA Waste:** (e.g. gallons, pounds, tons, ft^3, yd^3)	
22	**EPA representative making waste determination:** (e.g. OSC, RPM & Tel.#)	
23	**Basis of Waste Determination:** (e.g. analyses, TCLP, etc.)	
24	**Site Billing Code:**	

[Form: Off-Site Compliance Request] [Revised December 8, 2020]

For more information on the Off-Site Rule, please contact the appropriate Regional Off-Site Contact (ROC) listed at **https://www.epa.gov/superfund/site-rule#contacts**

	Regional Off-Site Contacts (listed as of January 4, 2021)	
Region # U.S. & DC,PR,VI	**Contact Name**	**Telephone #**
1 CT,MA,ME,NH,RI,VT	Conor O'Brien (OBrien.Conor@epa.gov)	**617.918.1769**
2 NY,NJ,PR,VI	Beckett Grealish (Region2_OSR@epa.gov)	**732.321.4341**
3 DC,DE,MD,PA,VA,WV	David Iacono (R3CERCLA_Offsite@epa.gov)	**215.814.3231**
4 AL,FL,GA,KY,MS,NC,SC,TN	Hector Danois (r4cercla_offsitecontact@epa.gov)	**404.562.8556**
5 IL,IN,MI,MN,OH,WI	William Damico (r5cercla.roc@epa.gov)	**312.353.8207**
6 AR,LA,NM,OK,TX	Wilkin (Ron) Shannon (shannon.wilkin@epa.gov)	**214.665.2282**
7 IA,KS,MO,NE	Mike Martin (martin.mike@epa.gov)	**913.551.7149**
8 CO,MT,ND,SD,UT,WY	Linda Jacobson (jacobson.linda@epa.gov)	**303.312.6503**
9 AZ,CA,HI,NV	Sharon Lin (lin.sharon@epa.gov)	**415.972.3446**
10 AK,ID,OR,WA	Cheryl Williams (williams.cherylb@epa.gov)	**206.553.2137**

[Form: Off-Site Compliance Request] [Revised December 8, 2020]

Appendix F Preliminary Institutional Control Language

Toxics Cleanup Program

Procedure 440A: Establishing Environmental Covenants under the Model Toxics Control Act

Established: August 20, 2015

Revised: December 22, 2016

Contact: Policy & Technical Support Unit, Headquarters

Purpose: This is one in a group of procedures related to establishing, amending, and removing Environmental Covenants that can be found on Ecology's Toxics Cleanup Program's policies and procedures webpage at: http://www.ecy.wa.gov/programs/tcp/policies/tcppoly.html

References:
WAC 173-340-440
Chapter 70.105D RCW, Hazardous Waste Cleanup-Model Toxics Control Act
Chapter 64.70 RCW, Uniform Environmental Covenants Act
Voluntary Cleanup Program (VCP) User Manual (on SharePoint)

Attachments:
A – Option 1: Ecology drafts /Ecology consults
A – Option 2: PLP/VCP customer drafts /PLP/VCP customer consults
A – Option 3: PLP/VCP customer drafts /Ecology consults
B – Local Government Notification Letter for a Proposed Covenant
C – Environmental Covenant for MTCA Sites: Instructions for Use & Covenant Template

Disclaimer: This Procedure is intended solely for the guidance of Ecology staff. It is not intended, and cannot be relied on, to create rights, substantive or procedural, enforceable by any party in litigation with the state of Washington. Ecology may act at variance with this Procedure depending on site-specific circumstances, or modify or withdraw this Procedure at any time.

Approved by:

James J. Pendowski, Program Manager
Toxics Cleanup Program

Accommodation Requests: To request ADA accommodation, including materials in a format for the visually impaired, call Ecology's Toxics Cleanup Program at 360-407-7170. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6341

Contents

Background and Applicability

WAC 173-340-440 of the Model Toxics Control Act (MTCA) regulation requires that restrictions be placed on the future use and activities at certain cleanup sites where residual contamination remains after completion of a cleanup. The legal mechanism that is typically used for these restrictions is an "environmental covenant," which is placed on the property title or deed.

An environmental covenant can be thought of as this: a restriction or obligation attached to a property that entitles somebody other than the owner (in this case, Ecology and other specified persons) certain specific legal rights to ensure that the cleanup protects future users of the property, the environment, and the integrity of the remedial actions at the site.

The Uniform Environmental Covenants Act (UECA), Chapter 64.70 RCW, was passed by the Washington State Legislature in 2007. That law establishes the process and procedures that must be followed for restrictions on future uses or activities at cleanup sites, so that the restrictions will be valid and enforceable over the long term.

Procedure 440A describes how to establish an environmental covenant at a site cleaned up under MTCA authority.

Note that this procedure refers to parties as though they were separate entities, including the potentially liable person (PLP), the landowner, and owners of other property interests and encumbrances that may also need to grant the Covenant or subordinate their interests. [1] This may not be the situation at a particular site. For simplicity in this procedure, the landowner and owners of other interests and encumbrances are referred to collectively as the "property owner(s)."

While the exact sequence of steps, as well as who conducts the work (Ecology, potentially liable person (PLP) or Voluntary Cleanup Program (VCP) customer), may vary from site to site, all of the elements identified here must be addressed. The Cleanup Project Manager can adjust approaches as necessary to reflect the site-specific situation.

[1] An example of other property interests is an easement or right-of-way that is impacted by the restrictions. Examples of encumbrances are mortgages and liens. Persons holding these instruments may need to either sign the Covenant as a "grantor" or sign a subordination agreement (meaning that the restrictions in Ecology's Covenant take precedence over their interest, i.e. they "subordinate" their interest). See the Environmental Covenant template for further discussion of this topic.

Procedure for Establishing an Environmental Covenant

Cleanup Project Manager	1. Determines an Environmental Covenant ("Covenant") is required under WAC 173-340-440(4). 2. Identifies issues to be addressed by Covenant. 3. Either proceeds with Steps 1 through 4 or, sends a letter or email to the PLP or VCP customer requesting that they complete one or more of these steps. See **Attachment A** for a suggested format for this letter or email, depending on the path selected.
Cleanup Project Manager **or** **PLP / VCP Customer**	4. Contacts the local government land use planning authority to inform them of need for a Covenant and seeks input on the conceptual terms of the Covenant; documents this conversation. [2]
Cleanup Project Manager **or** **PLP / VCP Customer**	5. Arranges for a Title Company to conduct a title search. [3]
Cleanup Project Manager (preferred) **or** **PLP / VCP Customer**	6. Using Ecology's template, works with property owner(s) to draft Covenant, and any necessary subordination agreements. [4]

[2] UECA and MTCA require Ecology to consult with the local government land use planning authority. Ecology may require the PLP or VCP Customer to do this. But Ecology is ultimately responsible for ensuring that the consultation occurs and the required information is obtained. If tribal lands are involved, consult with Ecology's tribal liaison.

The purpose of this consultation is to identify provisions in the Covenant that might conflict with current or future land use plans and development requirements for the property. It is recommended that an initial contact be made via phone or e-mail to discuss the proposed scope of the Covenant. Once the Covenant has been drafted, it should be sent to the local government for review (Step 11). See instructions in the Environmental Covenant template for a more comprehensive discussion of this topic.

[3] In general, the title search should be the responsibility of the person conducting the cleanup. The title search must identify all landowners and other persons holding an interest or encumbrance on the property. See instructions in the Environmental Covenant template for a more comprehensive discussion of this topic.

[4] In general, the preference is that Ecology drafts the Covenant and subordination agreements. However, Ecology may request that the PLP or VCP Customer do this.

Cleanup Project Manager (if Ecology drafts Covenant)	7. Sends draft Covenant and subordination agreement(s), if applicable, to PLP / VCP Customer and property owner(s) for review.
PLP / VCP Customer (if drafting Covenant)	8. Submits proposed draft Covenant and subordination agreement(s), if applicable, and the results of the title search to Ecology for review.
Cleanup Project Manager *NOTE: When establishing a Covenant, other than consulting with local government, there is no obligation to issue a public notice and comment opportunity on the Covenant. However, where a Covenant is expected to be used at formal process sites, this fact and any anticipated restrictions should be highlighted in the public notice used for the Cleanup Action Plan and the order or decree. (No public notice is required for Covenants at VCP sites.)* *See attached checklist for a summary of public involvement requirements for establishing a Covenant.*	9. Reviews draft Covenant or PLP / VCP Customer and property owner(s)' comments on draft Covenant. If changes are made to the template, consults with AGO. 10. After resolution of any issues, makes appropriate changes to Covenant. 11. Sends draft Covenant to local land use planning authority for review. See **Attachment B** for a suggested format for this letter. 12. After reviewing comments from local land use planning authority, makes appropriate changes in consultation with PLP and property owner(s). 13. If appropriate, sends final Covenant and subordination agreement(s) to PLP / VCP Customer, with a request that they arrange for signatures.
PLP / VCP Customer **or** **Cleanup Project Manager** [5]	14. Arranges for property owner(s) to sign final Covenant and subordination agreement(s).
Property Owners(s)	15. Signs Covenant as "grantor" of Covenant or subordination agreement.
Property Owner(s) **or** **PLP / VCP Customer**	16. Sends signed documents to Cleanup Project Manager.
Section Manager	17. Upon receipt of final signed Covenant, signs Covenant as "holder" or "grantee" of Covenant.
Cleanup Project Manager	18. Retains a copy of the final signed Covenant and subordination agreement(s).

[5] In general, the person conducting the cleanup should be responsible for collecting these signatures.

Cleanup Project Manager (cont'd.)	19. Sends the PLP / VCP Customer the final signed Covenant and subordination agreement(s), with a request that the documents be recorded.
PLP / VCP Customer **or** **Property Owner(s)** **or** **Ecology** [6]	20. Records the final signed Covenant and subordination agreement(s) with the County Auditor in every County where the real property subject to the Covenant is located.
PLP / VCP Customer **or** **Property Owner(s)** **or** **Ecology** [7]	21. After recording, per RCW 64.70.070: a. Sends original recorded Covenant to Ecology.[8] b. Sends a legible copy of the recorded Covenant, with the recording number evident, to the following persons: • Each person who signed the Covenant or a subordination agreement. • Each person holding a recorded interest in the real property subject to the Covenant. • Each person in possession of the real property subject to the Covenant at the time the Covenant is executed (such as renters). • The local government planning authority in which the real property subject to the covenant is located. • Any other person to whom the Covenant expressly grants the power to enforce the Covenant. • Any other person required by Ecology.

[6] In general, this recording should be done by the person conducting the cleanup or the property owner(s).

[7] In general, the distribution of the recorded documents should be done by the person conducting the cleanup or the property owner(s).

[8] Some Counties retain the original. If that is the case, the Cleanup Project Manager should make sure Ecology receives a legible copy of the recorded Covenant with all the signatures and the recording number.

Cleanup Project Manager **or** **Assigned Staff** [9]	22. Retains a copy of the recorded Covenant and subordination agreement(s) in the site file along with a note on where the original is located. 23. Arranges for relevant information to be entered into ISIS and DSARS, and updates site web page, if applicable. 24. Sends the original to HQ Fiscal Services for safekeeping. If there is a secure file/safe in the Regional Office for sensitive legal documents, the original may be placed there.

[9] In some offices this is done by the Cleanup Project Manager; in other Offices the Community Outreach and Environmental Education Specialist or Administrative support staff may do this.

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Public Involvement Checklist for <u>Establishing</u> Environmental Covenants at Both VCP and Formal Process Sites

Public Involvement Checklist for Establishing Environmental Covenants at Both VCP and Formal Process Sites

The following public involvement steps are excerpted from Procedure 440A. Some of the steps may be completed by the PLP or VCP customer, instead of Ecology. *This is a summary checklist. For detailed instructions on how to complete these steps, and who should complete them, see Procedure 440A and the instructions included with the Environmental Covenant template.*

- ✓ Conduct a title search to identify all persons currently holding a recorded interest in the property. Use this information to determine who needs to sign the Covenant or a subordination agreement.

- ✓ Notify and consult with local government officials to make sure the Covenant does not conflict with zoning and development regulations.

    - Informal consultation first (by phone or e-mail)
    - Formal consultation using letter template in Attachment B in Procedure 440A

- ✓ Public notice - Ecology is not required to issue a public notice and provide an opportunity for the general public to comment when establishing a Covenant. However, because a Covenant can affect future uses of a property and potentially impact future development in the area, the following steps are recommended:

    - For formal process sites, if a Covenant is anticipated when issuing a notice for a cleanup action plan or order/decree, include a general description of anticipated property restrictions with that notice. [10]

    - For both formal process and VCP sites, if there is a high level of public interest in the site and a public notice for the covenant cannot be combined with other notices, consider providing a public notice and comment period specifically for the Covenant.

- ✓ Update ISIS

- ✓ Create DSARs entry

- ✓ Update site web page (if applicable)

[10] Formal process sites are sites where Ecology is doing the cleanup OR sites being cleaned up under an order or decree.

General Public Notice Instructions

If it is decided to issue a public notice (either separately or incorporated into another notice), the following additional tasks must be completed:

- ✓ Arrange for translation of site notices, fact sheets, and other documents as appropriate.
- ✓ Create and distribute postcard or fact sheet describing the proposed action.
  - 300 foot radius for VCP sites. [11]
  - Quarter mile radius for formal process sites. [17]
  - Neighborhood and business associations encompassing site.
  - Plus, any person or organization that has asked to be noticed.
- ✓ Create/update the site web page
- ✓ Create and arrange for the publishing of a Display or Legal Ad
- ✓ Create and submit a Site Register notice for publishing
- ✓ Add a notice to Ecology's Public Calendar
- ✓ Inform your media consultant

[11] Recommended distance. Actual distance may vary depending on level of public interest and extent of potentially affected vicinity.

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Attachment A – Option 1 (Preferred Option):

Ecology drafts Covenant &
Ecology consults with local land use planning authority

Attachment A – Option 1 (Preferred Option)

Ecology Drafts Covenant & Ecology Consults with Local Land Use Planning Authority

See Procedure 440A for additional instructions for using this letter.

[**Print on Ecology letterhead**]

[DATE]

[PLP / VCP CUSTOMER]
[ADDRESS]

Re: **Proposed Activity and Use Restrictions at the following Cleanup Site:**

- **Site Name:** [CLEANUP SITE NAME]
- **Site Address:** [CLEANUP SITE ADDRESS]
- **Cleanup Site ID:** [CSID NUMBER]
- **Facility/Site ID:** [FSID NUMBER]
- **VCP Project ID:** [VCP PROJECT NUMBER] (Delete if not applicable)
- **Tax Parcels:** [TAX PARCEL NUMBERS]

Dear [PLP/VCP CUSTOMER]:

The Department of Ecology (Ecology) has completed a review of your cleanup for the above-referenced site. Because residual contamination will remain on the above-referenced property at the completion of the cleanup, Ecology has determined that certain future activities and uses of the property need to be restricted under WAC 173-340-440 to protect the integrity of the cleanup and protect human health and the environment.

Draft Covenant

Accordingly we have prepared the attached DRAFT environmental covenant (hereafter "Covenant") to implement the following restrictions on the property:

[SUMMARY LIST OF RESTRICTIONS]

We have also preliminarily consulted with [City/County] to seek their review of the restrictions in accordance with RCW 70.105D.030(1)(f). Their initial feedback is that the restrictions are compatible with their land use plan and development regulations for this property.

Request for Review and Assistance

Ecology is sending you this letter to request that you do the following by [DATE]:

1. Review the Covenant. If you have any concerns with any of the provisions, indicate what those concerns are and provide alternate language. Note that any changes to the template will require approval from the Attorney General's Office.

2. Complete the legal description in Exhibit A and prepare a property map for Exhibit B to the Covenant.

3. Conduct a title search to identify all persons holding an interest in, or encumbrance on, the real property subject to the Covenant.

Please submit your comments on the Covenant, your drafts of Exhibits A and B to the Covenant, and the results of your title search to Ecology for consideration.

Next Steps

Once we come to agreement on a final Covenant, you will need to:

1. Obtain the signatures of each person holding a recorded interest in the property. Each of these persons will need to sign either the Covenant as a grantor or a subordination agreement.

2. Submit the Covenant to Ecology for our signature as the grantee.

3. Record the Covenant in every county where the real property subject to the Covenant is located. For detailed recording instructions, please refer to Chapter 65.04 RCW.

4. Return the original signed and recorded Covenant to Ecology and provide a copy of the recorded Covenant to the following persons:

    - Each person who signed the Covenant.
    - Each person holding a recorded interest in the real property subject to the Covenant. This includes persons who signed subordination agreements.
    - Each person in possession of the real property subject to the Covenant at the time the Covenant is executed (i.e., renters).
    - The local government planning authority in which real property subject to the Covenant is located.
    - Any other person to whom the Covenant expressly grants the power to enforce the Covenant.
    - Any other persons Ecology requires.

    The copy must be legible and the recording number must be evident.

More Information

For more information on environmental covenants, see:

- Ecology's environmental covenant template: http://www.ecy.wa.gov/programs/tcp/policies/tcppoly.htm
- Ecology's Toxics Cleanup Procedure 440A: http://www.ecy.wa.gov/programs/tcp/policies/tcppoly.html.
- The Uniform Environmental Covenants Act (UECA), Chapter 64.70 RCW (http://apps.leg.wa.gov/RCW/default.aspx?cite=64.70).
- WAC 173-340-440 of the Model Toxics Cleanup Act (MTCA) Cleanup Regulation (http://apps.leg.wa.gov/WAC/default.aspx?cite=173-340-440)

If you have questions about how to complete the Covenant template or any of the directions provided above, please contact me at [PHONE] or [E-MAIL].

Sincerely,

[ECOLOGY CLEANUP PROJECT MANAGER]

Enclosure: Proposed Environmental Covenant

Attachment A – Option 2:

PLP/VCP customer drafts Covenant & PLP/VCP customer consults with local land use planning authority

Attachment A – Option 2

PLP/VCP Customer Drafts Covenant & PLP/VCP Customer Consults with Local Land Use Planning Authority

See Procedure 440A for additional instructions for using this letter.

[**Print on Ecology letterhead**]

[DATE]

[PLP/VCP CUSTOMER]
[ADDRESS]

Re: **Proposed Activity and Use Restrictions at the following Cleanup Site:**

- **Site Name:** [CLEANUP SITE NAME]
- **Site Address:** [CLEANUP SITE ADDRESS]
- **Cleanup Site ID:** [CSID NUMBER]
- **Facility/Site ID:** [FSID NUMBER]
- **VCP Project ID:** [VCP PROJECT NUMBER] (Delete if not applicable)
- **Tax Parcels:** [TAX PARCEL NUMBERS]

Dear [PLP/VCP CUSTOMER]:

The Department of Ecology (Ecology) has completed a review of your cleanup for the above-referenced site. Because residual contamination will remain on the above-referenced property at the completion of the cleanup, Ecology has determined that certain future activities and uses need to be restricted under WAC 173-340-440 to protect the integrity of the cleanup and protect human health and the environment. These restrictions include:

1. [INSTITUTIONAL CONTROL #1].

2. [INSTITUTIONAL CONTROL #2].

Ecology has also determined that these restrictions need to be implemented in an Environmental covenant (hereafter "Covenant").

Request for Assistance

To create a Covenant, Ecology is requesting that you do the following:

1. Conduct a title search to identify all persons holding an interest in the real property subject to the Covenant. Generally, Ecology will not sign the Covenant unless all interest holders are willing to sign on as grantors or subordinate their interests. See step 5 below.

2. Draft the Covenant implementing the above restrictions using the template document available on the following web site. Please note that any changes to the template language in the Covenant must be approved by the Attorney General's Office. http://www.ecy.wa.gov/programs/tcp/policies/tcppoly.html

3. Submit the draft Covenant for review and comment to the appropriate land use planning authority with jurisdiction over the site. See attached Ecology Procedure 440A for a description of who to contact and a transmittal letter template. When requesting such a review, please:

   - Send me a copy of your written request.
   - Provide the authority with my contact information.
   - Request that the authority send me a copy of any written response.

   Ecology will not approve the Covenant unless the authority has been adequately consulted.

4. After completing your consultation with the local land use planning authority, submit the draft Covenant, along with a copy of the title search, to Ecology for review and approval. Please include any comments provided by the planning authority or, if none were provided, documentation of your consultation.

5. Upon Ecology approval, obtain the signatures of all grantors of the Covenant and obtain subordination agreements signed by any persons holding an interest in the real property subject to the Covenant who are not signing the Covenant as a grantor.

6. After obtaining the signatures of the grantors and any necessary subordination agreements, submit the Covenant to Ecology for its signature as the grantee.

7. Upon obtaining Ecology's signature, record the Covenant in every county where the real property subject to the Covenant is located. For detailed recording instructions, please refer to Chapter 65.04 RCW.

8. After recording, return the original signed and recorded Covenant to Ecology and provide a copy of the recorded Covenant to the following persons:

   - Each person who signed the Covenant.
   - Each person holding a recorded interest in the real property subject to the Covenant.
   - Each person in possession of the real property subject to the Covenant at the time the Covenant is executed (i.e., renters).
   - The local government planning authority in which real property subject to the Covenant is located.
   - Any other person whom the Covenant expressly grants the power to enforce the Covenant.
   - Any other persons Ecology requires.

   The copy must be legible and the recording number must be evident.

More Information

For more information and instructions on how to create an environmental covenant, see:

- Ecology's environmental covenant template: http://www.ecy.wa.gov/programs/tcp/policies/tcppoly.html
- Ecology's Toxics Cleanup Procedure 440A: http://www.ecy.wa.gov/programs/tcp/policies/tcppoly.html
- The Uniform Environmental Covenants Act (UECA), Chapter 64.70 RCW. (http://apps.leg.wa.gov/RCW/default.aspx?cite=64.70)
- WAC 173-340-440 (http://apps.leg.wa.gov/WAC/default.aspx?cite=173-340-440) of the Model Toxics Cleanup Act (MTCA) Cleanup Regulation.

If you have questions about how to complete the Covenant template or any of the directions provided above, please contact me at [PHONE] or [E-MAIL].

Sincerely,

[ECOLOGY CLEANUP PROJECT MANAGER]

Attachment A – Option 3:

PLP/VCP customer drafts Covenant & Ecology consults with local land use planning authority

Attachment A – Option 3

PLP/VCP Customer Drafts Covenant & Ecology Consults with Local Land Use Planning Authority

See Procedure 440A for additional instructions for using this letter.

[**Print on Ecology letterhead**]

[DATE]

[PLP/VCP CUSTOMER]
[ADDRESS]

Re: **Proposed Activity and Use Restrictions at the following Cleanup Site:**

- **Site Name:** [CLEANUP SITE NAME]
- **Site Address:** [CLEANUP SITE ADDRESS]
- **Cleanup Site ID:** [CSID NUMBER]
- **Facility/Site ID:** [FSID NUMBER]
- **VCP Project ID:** [VCP PROJECT NUMBER] (Delete if not applicable)
- **Tax Parcels:** [TAX PARCEL NUMBERS]

Dear [PLP/VCP CUSTOMER]:

The Department of Ecology (Ecology) has completed a review of your cleanup for the above-referenced site. Because residual contamination will remain on the above-referenced property at the completion of the cleanup, Ecology has determined that certain future activities and uses need to be restricted under WAC 173-340-440 to protect the integrity of the cleanup and protect human health and the environment. These restrictions include:

1. [INSTITUTIONAL CONTROL #1].

2. [INSTITUTIONAL CONTROL #2].

Ecology has also determined that these restrictions need to be implemented in an Environmental covenant (hereafter "Covenant").

Request for Assistance

To create a Covenant, Ecology is requesting that you do the following:

1. Conduct a title search to identify all persons holding an interest in the real property subject to the Covenant. Generally, Ecology will not sign the Covenant unless all interest holders are willing to sign on as grantors or subordinate their interests. See step 5 below.

2. Draft the Covenant implementing the above restrictions using the template document available on the following web site. Please note that any changes to the template

language in the Covenant must be approved by the Attorney General's Office. http://www.ecy.wa.gov/programs/tcp/policies/tcppoly.html

3. Submit the draft Covenant, along with the title search, to Ecology for review and approval. Before approving the Covenant, Ecology will consult with and consider any comments the local land use planning authority may have regarding the Covenant.

4. Upon Ecology approval, obtain the signatures of all grantors of the Covenant and obtain subordination agreements signed by any persons holding an interest in the real property subject to the Covenant who are not signing the Covenant as a grantor.

5. After obtaining the signatures of the grantors and any necessary subordination agreements, submit the Covenant to Ecology for its signature as the grantee.

6. Upon obtaining Ecology's signature, record the Covenant in every county where the real property subject to the Covenant is located. For detailed recording instructions, please refer to Chapter 65.04 RCW.

7. After recording, return the original signed and recorded Covenant to Ecology and provide a copy of the recorded Covenant to the following persons:

    - Each person who signed the Covenant.
    - Each person holding a recorded interest in the real property subject to the
    - Covenant. This includes persons who signed subordination agreements.
    - Each person in possession of the real property subject to the Covenant at the time the Covenant is executed (i.e., renters).
    - The local government planning authority in which real property subject to the Covenant is located.
    - Any other person whom the Covenant expressly grants the power to enforce the Covenant.
    - Any other persons Ecology requires.

    The copy must be legible and the recording number must be evident.

More Information

For more information and instructions on how to create an environmental covenant, see:

- Ecology's environmental covenant template: http://www.ecy.wa.gov/programs/tcp/policies/tcppoly.html
- Ecology's Toxics Cleanup Procedure 440A: http://www.ecy.wa.gov/programs/tcp/policies/tcppoly.html
- The Uniform Environmental Covenants Act (UECA), Chapter 64.70 RCW: (http://apps.leg.wa.gov/RCW/default.aspx?cite=64.70).
- WAC 173-340-440 (http://apps.leg.wa.gov/WAC/default.aspx?cite=173-340-440) of the Model Toxics Cleanup Act (MTCA) Cleanup Regulation.

If you have questions about how to complete the Covenant template or any of the directions provided above, please contact me at [PHONE] or [E-MAIL].

Sincerely,
[ECOLOGY CLEANUP PROJECT MANAGER]

Attachment B:

Local Government Notification Letter for a Proposed Covenant

Attachment B

Local Government Notification Letter for a Proposed Covenant

Use this letter to notify the local government land use planning authority when proposing an environmental covenant.

See Procedure 440A for additional instructions for using this letter.

Ecology is required under RCW 70.105D.030(1)(f) to consult with the local government land use planning authority when proposing an environmental covenant. The purpose of the consultation is to identify provisions in the covenant that might conflict with current or future land use plans and development requirements for the property subject to the covenant.

When should I use this letter?

As specified in Procedure 440A, there are two steps to the consultation process:

1. Before drafting the covenant, call or meet informally with the local government land use planning authority to inform them of the need for a covenant and seek input on the conceptual terms of the Covenant and any potential conflicts (Procedure 440A, Step 4).
2. After drafting the covenant, send the proposed covenant to the local government land use planning authority for formal review and comment. **This letter may be used for this purpose** (Procedure 440A, Step 11).

To whom should I send this letter?

Identify the applicable local government and department with land use planning authority. While technically the Mayor or Executive is this authority, this procedure recommends contacting the staff who work with land use issues. However, if the jurisdiction prefers the contact be through the local elected executive, the letter can be sent to the Mayor/Executive instead. Use the following table as a guide:

Jurisdiction	Department
City or Town	City or Town Planning Department
Unincorporated Areas	County Planning Department
Urban Growth Areas not Annexed to City or Town	Both City or Town Planning Department and County Planning Department

Note that in larger communities, planning staff who work on zoning and comprehensive plan issues are typically different than those who review development proposals. *Make sure you are contacting the right staff.*

[**Print on Ecology letterhead**]

[DATE]

[LAND USE PLANNING DIRECTOR]
[LOCAL GOVERNMENT]
[ADDRESS]

Re: **Proposed Activity and Use Restrictions at the following Cleanup Site:**

- **Site Name:** [CLEANUP SITE NAME]
- **Site Address:** [CLEANUP SITE ADDRESS]
- **Cleanup Site ID:** [CSID NUMBER]
- **Facility/Site ID:** [FSID NUMBER]
- **VCP Project ID:** [VCP PROJECT NUMBER] (Delete if not applicable)
- **Tax Parcels:** [TAX PARCEL NUMBERS]

Dear [LAND USE PLANNING DIRECTOR]:

The purpose of this letter is to notify your agency that the Department of Ecology (Ecology) is proposing an environmental covenant to restrict certain activities and uses on the above-referenced property as part of the cleanup of the [SITE NAME] (Site). The proposed covenant is necessary because some residual contamination in the [GROUNDWATER/SOIL] will be left on the property after the cleanup is completed. As the local land use planning authority with jurisdiction over the property, Ecology is seeking your input on the proposed covenant (enclosed) in accordance with RCW 70.105D.030(1)(f).

Under the covenant, the following restrictions are proposed for this property:

[LIST RESTRICTIONS IN SUMMARY FORM]

Are any of these restrictions incompatible with your current comprehensive plan, zoning ordinances, and development requirements encompassing the above-referenced property?

Ecology would appreciate your response to this question in writing by letter or e-mail by [DATE].[1] If we do not hear from you by this date, we will assume you have no concerns. A copy of the environmental covenant will be sent to you after it is recorded.

If you have any questions regarding this letter or the cleanup of this property, please feel free to contact me at [E-MAIL] or [PHONE].

Sincerely,

[ECOLOGY CLEANUP PROJECT MANAGER]

Enclosure: Proposed Environmental Covenant

[1] Unless another deadline has been agreed to through a prior conversation, provide at least 20 calendar days for a response.

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Attachment C:

Environmental Covenant for MTCA Sites: Instructions for Use and Covenant Template

DEPARTMENT OF ECOLOGY
State of Washington

Environmental Covenant for MTCA Sites: Instructions for Use and Covenant Template

Established: August 20, 2015

Revised: December 22, 2016

To: Interested Persons

From: James. J. Pendowski, Program Manager
Toxics Cleanup Program

Contact: Policy & Technical Support Unit, Headquarters

Note: This is Attachment C in Procedure 440A. For additional instructions on using this Covenant, please see Toxics Cleanup Program's **Procedure 440A: Establishing Environmental Covenants under the Model Toxics Control Act,** publication no. 15-09-054.

Instructions for Use

The following steps provide guidance on how to develop an environmental covenant using the enclosed template. While the exact sequence of steps, as well as who conducts the work (Ecology, potentially liable person (PLP) or Voluntary Cleanup Program (VCP) customer), may vary from site to site, all of the elements identified here must be addressed. When requesting a Covenant, Ecology should identify which steps are the responsibilities of the PLP or VCP customer at the site. Questions about specific provisions in the Covenant template should be directed to the Ecology Cleanup Project Manager assigned to the site. If no Cleanup Project Manager has been assigned, contact Ecology's Toxics Cleanup Program at (360) 407-7170 and ask for advice from the Toxics Cleanup Program (TCP) Policy Unit.

Step 1: Identify the Parcels Subject to the Covenant

Using the County Assessors Tax records, identify the parcels subject to the Covenant. Even though the site (or part of the site subject to the Covenant) may be owned by one entity, it may actually encompass more than one parcel of real property as shown on the County's property (and tax) records.

Step 2: Identify the Specific Activity and Use Restrictions for the Property

Create a conceptual list of specific prohibited activities (e.g., don't drill wells on the property) and prohibited uses (e.g., property can't be used for residential uses).

Work with the PLP/VCP customer, the property owner, and owners of other property interests (if different) to refine the language implementing these restrictions.

Step 3: Consult with the Local Government Land Use Planning Authority

The Uniform Environmental Covenants Act (UECA) and Model Toxics Control Act (MTCA) require Ecology to "consult" with the local government land use planning authority on the terms of the Covenant. While technically the Mayor/Executive is this authority, this guidance recommends contacting the staff that who work with land use issues. However, if the jurisdiction prefers the contact be through the local elected executive, work through the Mayor/Executive instead.

Ideally, before drafting the Covenant, Ecology staff should discuss the proposed restrictions with the local government staff by phone or email. **Once the Covenant has been drafted, the full covenant should be sent to the local government for review.** This consultation should be done by Ecology, but may be delegated to the PLP or VCP customer, upon agreement by Ecology.

The purpose of this consultation is to identify provisions in the Covenant that might conflict with current or future land use plans and development regulations for the property. For example, a provision requiring the land to remain in industrial use won't hold up in the long term if the comprehensive plans for the area call for future mixed residential and commercial use development. Similarly, a provision prohibiting infiltration of stormwater anywhere on the property may conflict with local development regulations requiring all stormwater to be retained and infiltrated on the property. If there is a conflict, see if it's possible to apply the restriction to only part of the property where the exposure pathway is of concern.

Use the following table as a guide for whom to contact:

Jurisdiction	Department
City or Town	City or Town Planning Department
Unincorporated Areas	County Planning Department
Urban Growth Areas not Annexed to City or Town[1]	Both City or Town Planning Department and County Planning Department

Note: In larger communities, planning staff who work on zoning and comprehensive plan issues are typically different than those who review development proposals. *Make sure you are talking to the right staff.*

[1] City limits and urban growth area should be identified in the City's and County's comprehensive plans. They can typically be found on the local jurisdiction's website. If not, call the jurisdiction's staff to obtain a copy.

Step 4: Confirm the Recorded Interests in the Property

To determine who owns the property and any relevant property interests that may need to be superseded by the Covenant, a title search must be conducted to identify all recorded interests in the Property. The title search should be the responsibility of the PLP (or VCP customer) and conducted by a title company. **The results of this search, typically called a title report or plat certificate, must be included with any request asking Ecology to sign a Covenant.** An uninsured title report is sufficient for this purpose.

In general, the title search should be no more than six months old to ensure it reflects the current status of the property. However, under some circumstances, Ecology may accept an older title search, such as that completed during the PLP identification process. Accepting older title searches should be done only if Ecology has been closely involved with the site during the intervening time period since the last title search, and there is no reason to suspect the owner has changed or an easement or other interest in the property has been granted. Examples of changes that would trigger the need for a new title search are:

- Establishment of a new business on the property;
- Change in the name of the business currently on the property;
- Subdivision of the property;
- Construction of new utilities or roads across the property;
- Foreclosure on the property;
- Change in the status of the persons owning the property (death, divorce or marriage); and
- Bankruptcy of the site owner or operator.

Step 5: Determine Who Needs to Sign the Covenant

Real property interests are prioritized according to the date on which they were recorded with the land record authority. Such interests include not only ownership of the property, but may also include mortgages; tax or mechanics' liens; utility easements; surface land rights; and judgments. If a senior mortgage holder forecloses on the property, for instance, it may be able to dispose of all other interests, including Ecology's Covenant. For this reason, to ensure the restrictions in a Covenant are enforceable, the Covenant must supersede these pre-existing property interests.

Grantors or signatories to a Covenant not only are granting access to Ecology and agreeing to adhere to the restrictions on future activities or uses of the property, they are also agreeing to be responsible for any "affirmative obligations" described in the Covenant, such as maintaining the remedy and monitoring.

Signing a subordination agreement means the person holding a senior property interest is agreeing that the Covenant takes precedent over their interest, including providing Ecology with access, and consenting to the restrictions on future uses and activities on the property. However, they are not necessarily agreeing to the affirmative obligations in the Covenant.

Use the following as a guide to determine who must sign the Covenant as a grantor or subordinate their interests:

a) Persons holding fee simple title to the property (i.e., landowners).

The landowner must always sign the Covenant as a Grantor.

b) Persons holding other property interests (such as easements, right-of-ways, water & mineral rights).

In general, if a person holds a title to:

a) An easement or right-of-way,

b) Water rights (if groundwater use is restricted); or

c) Mineral rights,

…that is located within the area of activity or use restrictions, and compliance with those restrictions could be overridden by the person exercising their rights, then the person holding the title should either:

a) Sign the covenant as a Grantor, or

b) Subordinate their interests by signing a subordination agreement.

However, if a current contact cannot be located, or if the holder's interest is not critical to the success of the Covenant, it is probably not necessary to expend a lot of effort to track them down and obtain a signature. For example, many properties, especially in eastern Washington State, have underlying mineral rights that are controlled by someone different than the owner. In most urban areas it is unlikely those rights would be exercised to the detriment of the remedy, and so there would be no reason to pursue a signature.

Similarly, the holder of an easement or right-of-way for overhead power lines that is unlikely to affect the performance of the remedy does not need to be pursued.

However, if a cap is part of the remedy, and the easement or right-of-way grants the holder the right to conduct activities that could compromise the integrity of the cap (such as installation and maintenance of road or an underground utility), these holders should be required to sign the Covenant as a Grantor or subordinate their interests.

c) Persons holding encumbrances on the property (such as lien and mortgage holders).

In general, persons holding a lien have merely a monetary interest (lien imposed because of lack of payment of a bill) and do not need to sign the Covenant or subordinate their interests. However, if the lien holder is claiming a right that could affect the performance of the remedy, such as control over future sale and development of the property, then they should be required to subordinate their interest.

Mortgage holders such as banks usually hold the title to the property until the property owner pays off the loan for purchase of the property. Should they foreclose on a property, they may be able to extinguish all subsequent interests, including Ecology's Covenant. As such, they should be required to sign a subordination agreement.

A Covenant or subordination agreement must be voluntarily granted. There may be circumstances where the holder of an interest or encumbrance on the property (other than the property owner) refuses to grant a Covenant or subordinate their interests, can't be located, or are not responsive. In these cases, the Ecology Cleanup Project Manager should, in consultation with the Assistant Attorney General assigned to the site, consider the success of the remedy without their signature. If it is deemed necessary to secure their signature and they refuse to sign, then a more complete cleanup will be required.

In cases where there is minimal risk to the success of the remedy and it is decided to proceed without their signature, a letter should be sent to the holder of this interest or encumbrance notifying them that, should they do anything on the property that affects the integrity of the remedial action or results in a release of a hazardous substance, they could trigger liability under MTCA. If the holder of this interest is unresponsive or cannot be located, work with the Assistant Attorney General assigned to the site on an appropriate notification procedure.

Step 6: Prepare the Covenant

Use the attached Ecology template to prepare the Covenant.

A precise legal description of the Property and any interests in the Property (such as an easement) is essential to know where the Covenant applies. A map must also be developed to provide a visual representation of where the restrictions apply on the Property.

- If the restrictions apply to the entire Property, the legal description in the Property deed and a map of the Property should be sufficient.
- If the restrictions apply to only part of the Property, a new legal description and map will need to be developed, and boundary markers or reference monuments will need to be established on the Property by a licensed surveyor.

If the Property includes more than one parcel of real property, the legal description and map should cover all of the parcels. This will enable recording of the same covenant on each parcel instead of creating and recording a different covenant for each parcel.

There are specific formatting requirements that apply to recorded Covenants. For example, there must be a three inch margin on the top of the first page and a one inch margin on the bottom and sides. See Chapter 65.04.045 RCW for additional format requirements.

Step 7: Public Involvement

In general, there is no requirement for a public notice and comment period on a Covenant, other than the requirement for local government consultation discussed above. However, because a Covenant can affect future uses of a property and potentially impact future development in the area, any public notice issued for the cleanup action plan or order or decree governing the cleanup should highlight the fact that there will be restrictions on future activities or uses of the property.

For sites with a high level of public interest or controversy, it may be appropriate to provide a separate opportunity for public comment. The Ecology Cleanup Project Manager should consult with the public involvement specialist assigned to the site regarding the appropriate level of public involvement.

Step 8: Sign the Covenant

The Ecology Cleanup Project Manager must ensure all appropriate persons sign the Covenant and that each of those signatures is notarized. This responsibility can be delegated to the PLP (or VCP applicant) but Ecology staff must verify this step has been completed.

Ecology's representative should sign the Covenant only after all other parties to the Covenant have signed.

Step 9: Record the Covenant

The Covenant must be recorded on the title of each parcel of real property subject to the Covenant. Recording is done by the County Auditor. If the area covered by the Covenant extends across a County boundary, the Covenant will have to be recorded in both Counties.

Step 10: Send the Recorded Covenant to Ecology and Others per RCW 64.70.070

a. Send the original recorded Covenant to Ecology's contact for the site. [2]

b. Send a legible copy of the recorded Covenant, with the recording number evident, to the following persons (per RCW 64.70.070):

- Each person who signed the Covenant.
- Each person holding a recorded interest in the real property subject to the Covenant (including each person who subordinated their interests to Ecology's Covenant).
- Each person in possession of the real property subject to the Covenant at the time the Covenant is executed (such as renters).
- The local government planning authority in which the real property subject to the Covenant is located.
- Any other person to whom the Covenant expressly grants the power to enforce the Covenant.
- Any other persons required by Ecology.

Note: These instructions and attached template are intended solely for the guidance of Ecology staff. They are not intended, and cannot be relied on, to create rights, substantive or procedural, enforceable by any party in litigation with the state of Washington. Ecology may act at variance with these instructions and the attached template depending on site-specific circumstances, or modify or withdraw these documents at any time.

[2] Some Counties retain the original. If that is the case, make sure Ecology receives a legible copy of the recorded Covenant with all the signatures and with recorded notation.

Environmental Covenant for MTCA Sites: Covenant Template

See Toxics Cleanup Program's ***Procedure 440A*** *for additional instructions on the use of this Covenant.*

Text highlighted by yellow are instructions/comments and options.
Those instructions and related footnotes should be removed from the Covenant.

After Recording Return
Original Signed Covenant to: [1]
[ECOLOGY SITE MANAGER**]**
Toxics Cleanup Program
Department of Ecology
[ECOLOGY OFFICE ADDRESS**]**

NOTE: This Covenant is not valid without Ecology's approval and signature.

Environmental Covenant

(For MTCA Sites – August 20, 2015 Version)

Grantor: **[**NAME OF THE LANDOWNER OR OTHER GRANTOR**]** [2]
Grantee: State of Washington, Department of Ecology (hereafter "Ecology")
Brief Legal Description: **[**BRIEF LEGAL DESCRIPTION**]**
Tax Parcel Nos.: **[**INSERT TAX PARCEL NUMBERS**]**
Cross Reference: **[**SEE BOX**]**

- **If superseding or amending an existing Covenant, insert one of the following:** "Original Covenant #____(superseding)" OR "Original Covenant #____(amending)"
- **Insert a reference to any subordination agreements, if separately recorded**
- **Insert a list of other related documents such as consent decree, order, or NFA opinion**
- **Otherwise, delete**

RECITALS [3]

a. This document is an environmental (restrictive) covenant (hereafter "Covenant") executed pursuant to the Model Toxics Control Act ("MTCA"), chapter 70.105D RCW, and Uniform Environmental Covenants Act ("UECA"), chapter 64.70 RCW.

b. The Property that is the subject of this Covenant is part or all of a site commonly known as **[**ECOLOGY SITE NAME AND FACILITY ID**]**. The Property is legally described in Exhibit A, and illustrated in Exhibit B, both of which are attached (hereafter "Property"). If there are differences between these two Exhibits, the legal description in Exhibit A shall prevail.

c. The Property is the subject of remedial action conducted under MTCA. This Covenant is required because residual contamination remains on the Property after completion of remedial actions. Specifically, the following principal contaminants remain on the Property: [4]

[1] Some counties keep the original Covenant, others don't. If the signed original is available, it must be sent to Ecology. If the signed original is not available, send a legible copy to Ecology.
[2] The Grantor of a Covenant typically is the fee simple land owner of the property. The Grantor may also include holders of other property interests such as a holder of an easement, right-of-way, mineral right, lien, or mortgage.
[3] This section is primarily used to describe this document and its purpose. It should not be used for substantive binding provisions.
[4] List the contaminants for the associated media. If more than a few are present, list the top three to five for each medium.

Medium	Principal Contaminants Present
Soil	
Groundwater	
Surface Water/Sediment	

d. It is the purpose of this Covenant to restrict certain activities and uses of the Property to protect human health and the environment and the integrity of remedial actions conducted at the site. Records describing the extent of residual contamination and remedial actions conducted are available through Ecology. **[*Optional--This includes the following documents: (list key documents such as RI/FS, Cleanup Action Plan, Voluntary Cleanup Report(s), As-built report)*].**

e. This Covenant grants Ecology certain rights under UECA and as specified in this Covenant. As a Holder of this Covenant under UECA, Ecology has an interest in real property, however, this is not an ownership interest which equates to liability under MTCA or the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9601 *et seq.* The rights of Ecology as an "agency" under UECA, other than its' right as a holder, are not an interest in real property.

f. **[*Include the following statement if this Covenant is superseding another environmental covenant.*]** This Covenant supersedes and replaces the existing Environmental (Restrictive) Covenant, which is recorded with [_____] County as [# OF ORIGINAL COVENANT].

COVENANT

[NAME OF LANDOWNER OR OTHER GRANTOR**]**, as Grantor [5] and [FEE SIMPLE, EASEMENT OR OTHER] owner of the Property hereby grants to the Washington State Department of Ecology, and its successors and assignees, the following covenants. Furthermore, it is the intent of the Grantor that such covenants shall supersede any prior interests the GRANTOR has in the property and run with the land and be binding on all current and future owners of any portion of, or interest in, the Property.

Section 1. General Restrictions and Requirements.

The following general restrictions and requirements shall apply to the Property:

a. **Interference with Remedial Action**. The Grantor shall not engage in any activity on the Property that may impact or interfere with the remedial action and any operation, maintenance, inspection or monitoring of that remedial action without prior written approval from Ecology.

b. **Protection of Human Health and the Environment**. The Grantor shall not engage in any activity on the Property that may threaten continued protection of human health or the environment without prior written approval from Ecology. This includes, but is not limited to, any activity that results in the release of residual contamination that was contained as a part of the remedial action or that exacerbates or creates a new exposure to residual contamination remaining on the Property.

[5] If there is more than one Grantor, use the term "Grantors" here and throughout this document.

c. Continued Compliance Required. Grantor shall not convey any interest in any portion of the Property without providing for the continued adequate and complete operation, maintenance and monitoring of remedial actions and continued compliance with this Covenant.

d. Leases. Grantor shall restrict any lease for any portion of the Property to uses and activities consistent with this Covenant and notify all lessees of the restrictions on the use of the Property.

e. Preservation of Reference Monuments. Grantor shall make a good faith effort to preserve any reference monuments and boundary markers used to define the areal extent of coverage of this Covenant. Should a monument or marker be damaged or destroyed, Grantor shall have it replaced by a licensed professional surveyor within 30 days of discovery of the damage or destruction.

Section 2. Specific Prohibitions and Requirements.

In addition to the general restrictions in Section 1 of this Covenant, the following additional specific restrictions and requirements shall apply to the Property.

[See Appendix 1 for example restrictions.]

Select from the restrictions in Appendix 1 as appropriate, based on site-specific circumstances. Most sites will have only some of these restrictions. Options are provided to illustrate the range of potential restrictions. In some cases, the options are mutually exclusive (pick one or the other, but not both). In other cases, several options may need to be combined to cover the range of conditions at the site. This is not intended to be an all-inclusive list. In circumstances where none of the categories or suggested options fit the site conditions, adjust the language as appropriate to fit the situation.

a. Land use.
b. Containment of soil/waste materials.
c. Stormwater facilities.
d. Vapor/gas controls.
e. Groundwater use.
f. Sediments.
g. Monitoring.
h. Other.

Section 3. Access.

a. The Grantor shall maintain clear access to all remedial action components necessary to construct, operate, inspect, monitor and maintain the remedial action.

b. The Grantor freely and voluntarily grants Ecology and its authorized representatives, upon reasonable notice, the right to enter the Property at reasonable times to evaluate the effectiveness of this Covenant and associated remedial actions, and enforce compliance with this Covenant and those actions, including the right to take samples, inspect any remedial actions conducted on the Property, and to inspect related records.

c. No right of access or use by a third party to any portion of the Property is conveyed by this instrument.

Section 4. Notice Requirements.

a. Conveyance of Any Interest. The Grantor, when conveying any interest **[**IN ANY PART OF THE PROPERTY**]** ***OR*** **[**WITHIN THE AREA OF THE PROPERTY DESCRIBED AND ILLUSTRATED IN EXHIBITS B AND C**]**, including but not limited to title, easement, leases, and security or other interests, must:

i. Provide written notice to Ecology of the intended conveyance at least thirty (30) days in advance of the conveyance.[6]

ii. Include in the conveying document a notice in substantially the following form, as well as a complete copy of this Covenant:

NOTICE: THIS PROPERTY IS SUBJECT TO AN ENVIRONMENTAL COVENANT GRANTED TO THE WASHINGTON STATE DEPARTMENT OF ECOLOGY ON [DATE] AND RECORDED WITH THE [COUNTY] COUNTY AUDITOR UNDER RECORDING NUMBER [RECORDING NUMBER]. USES AND ACTIVITIES ON THIS PROPERTY MUST COMPLY WITH THAT COVENANT, A COMPLETE COPY OF WHICH IS ATTACHED TO THIS DOCUMENT.

iii. Unless otherwise agreed to in writing by Ecology, provide Ecology with a complete copy of the executed document within thirty (30) days of the date of execution of such document.

b. Reporting Violations. Should the Grantor become aware of any violation of this Covenant, Grantor shall promptly report such violation in writing to Ecology.

c. Emergencies. For any emergency or significant change in site conditions due to Acts of Nature (for example, flood or fire) resulting in a violation of this Covenant, the Grantor is authorized to respond to such an event in accordance with state and federal law. The Grantor must notify Ecology in writing of the event and response actions planned or taken as soon as practical but no later than within 24 hours of the discovery of the event.

d. Notification procedure. Any required written notice, approval, reporting or other communication shall be personally delivered or sent by first class mail to the following persons. Any change in this contact information shall be submitted in writing to all parties to this Covenant. Upon mutual agreement of the parties to this Covenant, an alternative to personal delivery or first class mail, such as e-mail or other electronic means, may be used for these communications.

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[6] Ecology may waive this notice provision for some units at a Property where the anticipated use is a multi-tenant/owner building where some owners or tenants are unlikely to be exposed to residual contamination. For example: upper story apartments or condominiums, or commercial tenants in a strip mall, with limited rights to use the grounds under and around the building (such as for parking).

If Ecology agrees to such a waiver, the circumstances of the waiver must be detailed in paragraph 4.a.i. In addition to the specific circumstances, this provision must include the following statement: "Waiver of this advance notice to Ecology for these transactions does not constitute waiver of this notice for the entire Property nor a waiver of the requirement in Section 4.a.ii. to include this notice in any document conveying interest in the Property."

[insert contact name, address, phone number and e-mail for Grantor]	Environmental Covenants Coordinator Washington State Department of Ecology Toxics Cleanup Program P.O. Box 47600 Olympia, WA 98504 – 7600 (360) 407-6000 ToxicsCleanupProgramHQ@ecy.wa.gov

Section 5. Modification or Termination.

a. Grantor must provide written notice and obtain approval from Ecology at least sixty (60) days in advance of any proposed activity or use of the Property in a manner that is inconsistent with this Covenant. [7] For any proposal that is inconsistent with this Covenant and permanently modifies an activity or use restriction at the site: [8]

i. Ecology must issue a public notice and provide an opportunity for the public to comment on the proposal; and

ii. If Ecology approves of the proposal, the Covenant must be amended to reflect the change before the activity or use can proceed.

b. If the conditions at the site requiring a Covenant have changed or no longer exist, then the Grantor may submit a request to Ecology that this Covenant be amended or terminated. Any amendment or termination of this Covenant must follow the procedures in MTCA and UECA and any rules promulgated under these chapters.

c. ***[Optional]*** By signing this agreement, per RCW 64.70.100, the original signatories to this agreement, other than Ecology, agree to waive all rights to sign amendments to and termination of this Covenant. [9]

Section 6. Enforcement and Construction.

a. This Covenant is being freely and voluntarily granted by the Grantor.

b. Within ten (10) days of execution of this Covenant, Grantor shall provide Ecology with an original signed Covenant and proof of recording and a copy of the Covenant and proof of recording to others required by RCW 64.70.070.

c. Ecology shall be entitled to enforce the terms of this Covenant by resort to specific performance or legal process. All remedies available in this Covenant shall be in addition to any

[7] Example of inconsistent uses are using the Property for a use not allowed under the covenant (i.e. mixed residential and commercial use on a property restricted to industrial uses), OR drilling a water supply well when use of the groundwater for water supply is prohibited by the covenant.
[8] An example of an activity that is unlikely to be considered a permanent modification is a proposal to disturb a cap to repair an existing underground utility that passes through the site. However, installing a new underground utility within a capped area would be a permanent change.
[9] As time passes, the original grantor and other signers of the Covenant may no longer exist as viable entities. This provision is intended to allow future amendments or termination of the Covenant without Ecology having to seek court authorization, as provided by RCW 64.70.100.

and all remedies at law or in equity, including MTCA and UECA. Enforcement of the terms of this Covenant shall be at the discretion of Ecology, and any forbearance, delay or omission to exercise its rights under this Covenant in the event of a breach of any term of this Covenant is not a waiver by Ecology of that term or of any subsequent breach of that term, or any other term in this Covenant, or of any rights of Ecology under this Covenant.

d. The Grantor shall be responsible for all costs associated with implementation of this Covenant. Furthermore, the Grantor, upon request by Ecology, shall be obligated to pay for Ecology's costs to process a request for any modification or termination of this Covenant and any approval required by this Covenant.

e. This Covenant shall be liberally construed to meet the intent of MTCA and UECA.

f. The provisions of this Covenant shall be severable. If any provision in this Covenant or its application to any person or circumstance is held invalid, the remainder of this Covenant or its application to any person or circumstance is not affected and shall continue in full force and effect as though such void provision had not been contained herein.

g. A heading used at the beginning of any section or paragraph or exhibit of this Covenant may be used to aid in the interpretation of that section or paragraph or exhibit but does not override the specific requirements in that section or paragraph.

[GRANTOR'S SIGNATURE BLOCK FOR ORIGINAL COVENANTS]

Each person who signs must have a separate signature block and applicable notary acknowledgment. Repeat as many times as necessary.

Holders of other property interests must either sign the amended Covenant as a GRANTOR or sign the subordination agreement in Exhibit D.

The undersigned Grantor warrants he/she holds the title **[to the Property] OR [to an (Easement/Right of Way/etc.) on the Property]** and has authority to execute this Covenant.

EXECUTED this _____ day of _____, 20___.

_____ [SIGNATURE] _____

by: _____ [PRINTED NAME] _____

Title: _____

Insert one of the following, as applicable after each signature. See example format on page after next:

INDIVIDUAL ACKNOWLEDGMENT
CORPORATE ACKNOWLEDGMENT
REPRESENTATIVE ACKNOWLEDGEMENT

[GRANTOR'S SIGNATURE BLOCK FOR AMENDED COVENANTS]

Each person who signs must have a separate signature block and applicable notary acknowledgment. Repeat as many times as necessary.

When amending a Covenant, each GRANTOR of the existing Covenant must sign the amended Covenant unless the GRANTOR waived its rights under Section 5(b) of the Covenant.

Holders of other property interests must either sign the amended Covenant as a GRANTOR or sign the subordination agreement in Exhibit D.

The undersigned Grantor warrants he/she holds the title **[to the Property] OR [to an (Easement/Right of Way/etc.) on the Property]** and has authority to execute this Covenant.

EXECUTED this _____ day of _____, 20___.

The undersigned further acknowledges [Environmental or Restrictive] Covenant [# OF THE ORIGINAL COVENANT] filed in **[_____]** County, is hereby terminated and replaced with the above Environmental Covenant.

_____ [SIGNATURE] _____

by: _____ [PRINTED NAME] _____

Title: _____

Insert one of the following, as applicable. See example format on next page:

INDIVIDUAL ACKNOWLEDGMENT
CORPORATE ACKNOWLEDGMENT
REPRESENTATIVE ACKNOWLEDGEMENT

INDIVIDUAL ACKNOWLEDGMENT

STATE OF _____
COUNTY OF _____

On this _____ day of _____, 20__, I certify that _____ personally appeared before me, acknowledged that **he/she** is the individual described herein and who executed the within and foregoing instrument and signed the same at **his/her** free and voluntary act and deed for the uses and purposes therein mentioned.

_____
Notary Public in and for the State of Washington [10]
Residing at _____
My appointment expires _____

CORPORATE ACKNOWLEDGMENT

STATE OF _____
COUNTY OF _____

On this _____ day of _____, 20__, I certify that _____ personally appeared before me, acknowledged that **he/she** is the _____ of the corporation that executed the within and foregoing instrument, and signed said instrument by free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that **he/she** was authorized to execute said instrument for said corporation.

_____
Notary Public in and for the State of Washington [15]
Residing at _____
My appointment expires _____

REPRESENTATIVE ACKNOWLEDGEMENT

STATE OF _____
COUNTY OF _____

On this _____ day of _____, 20__, I certify that _____ personally appeared before me, acknowledged that **he/she** signed this instrument, on oath stated that **he/she** was authorized to execute this instrument, and acknowledged it as the _____ [TYPE OF AUTHORITY] of _____ [NAME OF PARTY BEING REPRESENTED] to be the free and voluntary act and deed of such party for the uses and purposes mentioned in the instrument.

_____
Notary Public in and for the State of Washington [15]
Residing at _____
My appointment expires _____

[10] Where landowner is located out of state, replace with appropriate out-of-state title and location.

[ECOLOGY'S SIGNATURE BLOCK]

The Department of Ecology**,** hereby accepts the status as GRANTEE and HOLDER of the above Environmental Covenant.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

_____ [SIGNATURE] _____

by: _____ [PRINTED NAME] _____

Title: _____

Dated: _____

STATE ACKNOWLEDGMENT

STATE OF _____

COUNTY OF _____

On this _____ day of _____, 20__, I certify that _____ personally appeared before me, acknowledged that **he/she** is the _____ of the state agency that executed the within and foregoing instrument, and signed said instrument by free and voluntary act and deed, for the uses and purposes therein mentioned, and on oath stated that **he/she** was authorized to execute said instrument for said state agency.

_____
Notary Public in and for the State of Washington

Residing at _____

My appointment expires _____

Exhibit A

LEGAL DESCRIPTION

(Required)

Exhibit B

PROPERTY MAP

(Required)

Exhibit C

MAP ILLUSTRATING LOCATION OF RESTRICTIONS

While a map illustrating the location of the restrictions is required, the grantor has the option of creating a separate map or including this information in Exhibit B.

More than one map may be necessary to illustrate the area subject to restrictions. For example, the area encompassing a soil cap may be different than the area where vapor or groundwater contamination is a concern.

The area subject to the restrictions, if less than the entire property, should be a contiguous area with even boundaries that follow physical features on the site so the boundary can be easily discerned in the field.

Exhibit D

SUBORDINATION AGREEMENT

KNOW ALL PERSONS, That __ [HOLDER'S NAME] __, the owner and holder of that certain __[INSTRUMENT – E.G. EASEMENT/ROW/MORTGAGE/ETC.]__ bearing the date the _____ day of __[MONTH]__, __ [YEAR] __, executed by __[NAME OF PERSON THAT GRANTED THE INTEREST BEING SUBORDINATED] __, __[LEGAL STATUS OF ORIGINAL GRANTOR – E.G. LANDOWNER, CORPORATE OFFICER, ETC.]__, and recorded in the office of the County Auditor of __[COUNTY]__ County, State of Washington, on __[DATE]__, under Auditor's File Number _____, does hereby agree that said Instrument shall be subordinate to the interest of the State of Washington, Department of Ecology, under the environmental (restrictive) covenant dated __[DATE]__, executed by __[NAME OF PERSON SIGNING THIS SUBORDINATION AGREEMENT]__, and recorded in __[COUNTY]__ County, Washington under Auditor's File Number _____.

_____ [SIGNATURE] _____

by: _____ [PRINTED NAME] _____

Title: _____

Dated: _____

Insert one of the following, as applicable. See example format on next page:

INDIVIDUAL ACKNOWLEDGMENT
CORPORATE ACKNOWLEDGMENT
REPRESENTATIVE ACKNOWLEDGEMENT

INDIVIDUAL ACKNOWLEDGMENT

STATE OF _____
COUNTY OF _____

On this _____ day of _____, 20__, I certify that _____ personally appeared before me, acknowledged that **he/she** is the individual described herein and who executed the within and foregoing instrument and signed the same at **his/her** free and voluntary act and deed for the uses and purposes therein mentioned.

_____
Notary Public in and for the State of Washington [11]
Residing at _____
My appointment expires _____

CORPORATE ACKNOWLEDGMENT

STATE OF _____
COUNTY OF _____

On this _____ day of _____, 20__, I certify that _____ personally appeared before me, acknowledged that **he/she** is the _____ of the corporation that executed the within and foregoing instrument, and signed said instrument by free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that **he/she** was authorized to execute said instrument for said corporation.

_____
Notary Public in and for the State of Washington [16]
Residing at _____
My appointment expires _____

REPRESENTATIVE ACKNOWLEDGEMENT

STATE OF _____
COUNTY OF _____

On this _____ day of _____, 20__, I certify that _____ personally appeared before me, acknowledged that **he/she** signed this instrument, on oath stated that **he/she** was authorized to execute this instrument, and acknowledged it as the _____ [TYPE OF AUTHORITY] of _____ [NAME OF PARTY BEING REPRESENTED] to be the free and voluntary act and deed of such party for the uses and purposes mentioned in the instrument.

_____
Notary Public in and for the State of Washington [16]
Residing at _____
My appointment expires _____

[11] Where landowner is located out of state, replace with appropriate out-of-state title and location.

APPENDIX 1

EXAMPLE SITE-SPECIFIC COVENANT PROVISIONS

a. Land Use. [12]

Option 1 Industrial Land Use: The remedial action for the Property is based on a cleanup designed for industrial property. As such, the Property shall be used in perpetuity only for industrial uses, as that term is defined in the rules promulgated under Chapter 70.105D RCW. Prohibited uses on the Property include but are not limited to residential uses, childcare facilities, K-12 public or private schools, parks, grazing of animals, growing of food crops, and non-industrial commercial uses.

Option 2 Commercial Land Use: The remedial action for the Property is based on a cleanup designed for commercial property. As such, the Property shall be used in perpetuity only for commercial land uses as that term is defined in the rules promulgated under Chapter 70.105D RCW. Prohibited uses on the Property include but are not limited to residential uses, childcare facilities, K-12 public or private schools, parks, grazing of animals, and growing of food crops.

Option 3 Park: The remedial action for the Property is based on a cleanup designed for a public park. As such, the Property shall be used in perpetuity only for a public park. Prohibited uses on the Property include but are not limited to residential uses, childcare facilities, K-12 public or private schools, grazing of animals, and growing of food crops.

Option 4 [Specify other land use limitations as appropriate.]

b. Containment of Soil/Waste Materials. [13]

[Use where contaminated soil or solid or hazardous waste remains on the property.]

The remedial action for the Property is based on containing contaminated soil **[and waste materials]** under a cap consisting of **[Insert a description of the cap]** [14] and located as illustrated in **[Exhibit B/C]** [15]. The primary purpose of this cap is to **[Insert purpose of cap].** [16] As such, the following restrictions shall apply within the area illustrated in **[Exhibit B/C]** [17]:

Option 1 [Use where a cap is required.] Any activity on the Property that will compromise the integrity of the cap including: drilling; digging; piercing the cap with sampling device, post, stake or similar device; grading; excavation; installation of underground utilities; removal of the cap; or, application of loads in excess of the cap load bearing capacity, is prohibited without prior written approval by Ecology. The Grantor shall report to Ecology within forty-eight (48) hours of the discovery of any damage to the cap. Unless an alternative plan has been approved by Ecology in writing, the Grantor shall promptly repair the damage and submit a report documenting this work to Ecology within thirty (30) days of completing the repairs.

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[12] Use one of these restrictions only if the underlying zoning allows the use.
[13] Waste materials means solid wastes as defined in Chapter 70.95 RCW or hazardous wastes as defined in Chapter 70.105 RCW and the rules promulgated under these statutes.
[14] Such as: an X foot thick layer of clean soil; an engineered cap consisting of X inches of clean soil overlying a X mil thick geomembrane and/or clay layer; asphalt pavement; an X square foot building, etc.]
[15] Be very clear in describing or diagramming where the contamination is located relative to a legally defined benchmark such as a property line or survey monument; or use a legal description.
[16] Such as: minimize the potential for contact with contaminated soil; minimize leaching of contaminants to groundwater and surface water; prevent runoff from contacting contaminated soil; minimize airborne contaminants. A cap may have multiple purposes.
[17] NOTE: More than one exhibit may be necessary to illustrate the area restricted by this and other limitations.

Option 2 [Use when contamination is left behind under a building.]

The Grantor shall not alter or remove the existing structures on the Property in any manner that would expose contaminated soil **[and waste materials]**, result in a release to the environment of contaminants, or create a new exposure pathway, without prior written approval of Ecology. Should the Grantor propose to remove all or a portion of the existing structures illustrated in **[Exhibit B/C]** so that access to the underlying contamination is feasible, Ecology may require treatment or removal of the underlying contaminated soil **[and waste materials]**.

Option 3: [Use when periodic inspections of a cap/building are included.]

The Grantor covenants and agrees that it shall annually, or at another time as approved in writing by Ecology, inspect the **[cap/building]** and report within thirty (30) days of the inspection the condition of the **[cap/building]** and any changes to the **[cap/building]** that would impair its performance.

c. Stormwater facilities. [Use when infiltration needs to be controlled to minimize leaching from soil or waste materials, or spreading of groundwater contamination.]

To minimize the potential for mobilization of contaminants remaining in the **[soil/waste materials/groundwater]** on the Property, no stormwater infiltration facilities or ponds shall be constructed **[on the Property] OR [within the area of the Property illustrated in Exhibit B/C]**. All stormwater catch basins, conveyance systems, and other appurtenances located within this area shall be of water-tight construction.[18]

d. Vapor/gas controls. [Use when vapors and/or methane gas are a concern. An example of when this provision would be appropriate is if a soil cap or a groundwater conditional point of compliance are being used to address volatile contaminants remaining on the property.]

The residual contamination on the Property includes **[volatile chemicals that may generate harmful vapors] and/or [biodegradable wastes/chemicals that may generate methane, a combustible gas]**. As such, the following restrictions shall apply **[on the Property]** or **[within the area of the Property illustrated in Exhibit B/C]** to minimize the potential for exposure to these vapors:

1. No building or other enclosed structure shall be constructed **[on the Property/within this area]** unless approved by Ecology.
2. If a building or other enclosed structure is approved, it shall be constructed with a sealed foundation and a **[vapor/gas]** control system that is operated and maintained to prevent the migration of **[vapors/gas]** into the building or structure, unless an alternative approach is approved by Ecology.

e. Groundwater Use. [Use when groundwater use restrictions are required.]

The groundwater beneath **[the Property] OR [within the area of the Property illustrated in Exhibit B/C]** remains contaminated and shall not be extracted for any purpose other than temporary construction dewatering, investigation, monitoring or remediation. Drilling of a well for any water supply purpose is strictly prohibited. Groundwater extracted **[from the**

[18] NOTE: Most local ordinances require on-site infiltration of runoff. If redevelopment of the Property is anticipated, the cleanup plan should reserve an area for this infiltration to occur without exacerbating leaching of residual soil contamination or enhancing movement of contaminants within the groundwater.

Property/within this area] for any purpose shall be considered potentially contaminated and any discharge of this water shall be done in accordance with state and federal law.

f. Sediments. [Use for sediment cleanup sites.] [19]

The residual contamination on the Property includes contaminated sediments. As such, the following restrictions shall apply to minimize potential disturbance of these sediments **[on the Property] OR [within the area of the Property illustrated in Exhibit B/C]**:

Option 1 [Use where a cap is required.] Any activity **[on the Property/within this area]** that will compromise the integrity of the cap including: drilling; digging; piercing the cap with sampling device, post, stake or similar device; excavation; installation of buried utilities; removal of the cap; or, application of loads in excess of the cap load bearing capacity, is prohibited without prior written approval by Ecology. The Grantor shall report to Ecology within forty-eight (48) hours of the discovery of any damage to the cap. Unless an alternative plan has been approved by Ecology in writing, the Grantor shall promptly repair the damage and submit a report documenting this work to Ecology within thirty (30) days of completing the repairs.

Option 2 No docks or other structures shall be constructed **[on the Property/within this area]** without prior written approval of Ecology.

Option 3 No dredging shall be allowed **[on the Property/within this area]** without prior written approval of Ecology.

Option 4 No ships or boats shall be allowed to anchor or use side thrusters **[on the Property/within this area]**. A no wake zone shall be enforced and ships and boats shall be limited to a draft depth of **[XX]** feet **[on the Property/within this area]**.

Option 5 No digging for clams, setting of crab pots or fishing nets, anchoring of mooring buoys or channel markers, or similar activities that could disturb the surface of the sediment shall be allowed **[on the Property/within this area]** without prior written approval of Ecology.

g. Monitoring. [Use for long-term protection of monitoring devices.]

Several **[groundwater monitoring wells, vapor probes, etc.]** are located on the Property to monitor the performance of the remedial action. The Grantor shall maintain clear access to these devices and protect them from damage. The Grantor shall report to Ecology within forty-eight (48) hours of the discovery of any damage to any monitoring device. Unless Ecology approves of an alternative plan in writing, the Grantor shall promptly repair the damage and submit a report documenting this work to Ecology within thirty (30) days of completing the repairs.

h. Other.

[Add other property-specific use or activity restrictions and affirmative obligations that are necessary but not identified above. Examples include special remedy-specific requirements such as restrictions on structures over leachate/groundwater collection systems, or protection requirements for cut-off walls or sheet piling.]

[19] NOTE: Sediment restrictions are currently evolving. Additional guidance can be found in Ecology's Sediment Cleanup Users Manual II (SCUM II), Publication No. 12-09-057, located at: https://fortress.wa.gov/ecy/publications/SummaryPages/1209057.html

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