Work Plan

North Cascade Ford Site
116 W Ferry Street, Sedro-Woolley, WA

Facility/Site No. 68313566
Cleanup Site No. 12075

Prepared for:

Akers Railroad Holdings, LLC

August 4, 2023
Project No. M2584.01.002

Prepared by:

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

MAUL FOSTER ALONGI

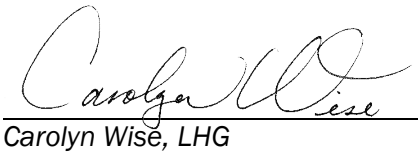
Site Restoration Work Plan

North Cascade Ford Site
116 W Ferry Street, Sedro-Woolley, WA

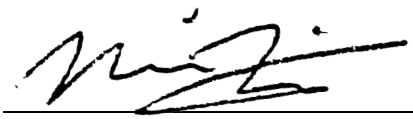
Facility/Site No. 68313566
Cleanup Site No. 12075

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

Maul Foster & Alongi, Inc.



Carolyn Wise, LHG
Project Hydrogeologist



Phil Wiescher, PhD
Principal Environmental Scientist

Contents

Limitations

Figures

Following the Report

Table

Following the Report

Appendixes

Abbreviations

AOCs	areas of concern
bgs	below ground surface
CMP	compliance monitoring plan
EC	environmental covenant
Ecology	Washington State Department of Ecology
IDW	investigation-derived waste
MFA	Maul Foster & Alongi, Inc.
the Property	116 W Ferry Street, Sedro-Woolley, Washington
the Site	North Cascade Ford site
SOP	standard operating procedure
WAC	Washington Administrative Code

1 Introduction

On behalf of Akers Railroad Holdings, LLC, Maul Foster & Alongi, Inc. (MFA) has prepared this work plan for site restoration activities associated with the North Cascade Ford site (the Site). The Site includes the North Cascade Ford property, located at 116 W Ferry Street in Sedro-Woolley, Washington (the Property) (see Figure 1-1). The Site is listed under Washington State Department of Ecology (Ecology) facility site identification number 58313566 and cleanup site identification number 12075.

1.1 Purpose

On June 12, 2023, Ecology was informed by the City of Sedro-Woolley that the Property had been used for the temporary processing and storage of used railroad ties, resulting in a *Notice of Violation and Order* from the City of Sedro-Woolley (included as an attachment to Ecology's letter of *Non-Compliance with Terms of Environmental Covenant* [EC] [Ecology 2023]). Following a site visit by the City of Sedro-Woolley and MFA staff, it was determined that at least one monitoring well had been damaged and the protective gravel cap covering Property areas of underlying contaminated soil had been fouled with tie debris (Ecology 2023).

On July 22, 2023, Ecology issued a letter describing the non-compliance with terms of the EC for the Property. The letter outlined specific requirements and a schedule to complete items necessary to resume compliance with the EC (see Section 4). Consistent with the letter requirements, this work plan outlines procedures for decommissioning damaged monitoring wells, installation and development of new wells, and guidance for restoration of the gravel cap.

2 Background

2.1 Property Description

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

2.2 Geology and Hydrogeology

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

The subsurface at the Property consists of approximately 1- to 2.5-feet of surficial fill, which is underlain by brown to gray sandy silt with lenses of fine to medium sand to a depth of approximately 10 feet below ground surface (bgs). At depths greater than 10 feet bgs, an intermittent layer of well-sorted, medium sand, with traces of woody debris, extends up to 20 feet bgs (MFA 2020b). Numerous groundwater monitoring events have been completed at the Property with groundwater typically measured between approximately 5 and 10 feet bgs (MFA 2022).

2.3 Site Status

Previous investigations identified environmental impacts in three areas of the Site, referred to as areas of concern (AOCs) 1 through 3 (MFA 2020b). In March 2020, a remedial action was completed in AOCs 1 through 3 (MFA 2020b). Following completion of the remedial action, a groundwater compliance monitoring plan (CMP) and an associated addendum were developed in coordination with the Ecology to guide performance groundwater monitoring at the Site (MFA 2020a,c). Per Washington Administrative Code (WAC) 173-340(b), the purpose of performance monitoring is to confirm that a remedial action has attained cleanup levels.

Compliance groundwater monitoring was initiated in September 2020. Groundwater monitoring activities were conducted consistent with the Confirmation Groundwater Monitoring Plan described in EC no. 202210190027 recorded in Skagit County, the groundwater CMP (MFA 2020a), the addendum to the groundwater CMP (MFA 2020c), and the Washington State Model Toxics Control Act (WAC 173-340-410(b)) requirements for performance monitoring. On January 4, 2023, Ecology presented its No Further Action opinion for the Property contingent upon the continued performance and effectiveness of the post-cleanup controls and monitoring specified in the No Further Action letter and the EC no. 202210190027 for institutional controls (Ecology 2023).

Compliance groundwater monitoring is ongoing at the site on a 15-month frequency in accordance with the EC. The next compliance groundwater monitoring event is scheduled for December 2023.

2.4 Monitoring Well Assessment

On July 20, 2023, an assessment of the condition of the nine monitoring wells on the Site was conducted (see Table 2-1 and photographs in Appendix A). Of the nine monitoring wells, three monitoring wells will need to be decommissioned and replaced:

- One monitoring well (MW09) has a missing monument and a damaged well casing. Therefore, monitoring well MW09 will need to be decommissioned and replaced.
- Two monitoring wells (MW01R and MW10) were unable to be located with a magnetometer, a vacuum truck, and shovel probing. These two monitoring wells will require replacement. It appears the monuments for the wells were displaced or removed during railroad tie storage activities and the casings were likely damaged. The monument and well tag for MW01R was

found detached from the well. Significant effort was expended to locate the buried well casings with a vacuum truck and survey data. MFA assumes that these casings are destroyed. If casings are located during restoration of the gravel cap, MFA recommends that they be decommissioned in accordance with WAC 173-160-381, as discussed in Section 3.3.

During the monitoring well assessment, an evaluation of the railroad tie debris was observed in portions of the Property previously remedied with compliance monitoring ongoing as a component of the EC. In order to preserve the integrity of the remedy, railroad tie debris mixed with the surficial gravel in these areas requires removal and replacement as described in Section 3.3.

3 Site Restoration Activities

The following section describes activities planned for restoration of the Site in accordance with Ecology's June 22, 2023, letter.

3.1 Preparation and Coordination

Before drilling at the Property, public and private utility locates will be conducted to identify the presence of underground utilities, piping, or other subsurface obstructions near the proposed monitoring well installation locations (see standard operating procedure [SOP] 18 in Appendix B). MFA will notify Ecology a minimum of 48 hours before field activities begin.

3.2 Monitoring Well Replacement

Three monitoring wells (MW01R, MW09, and MW10) will be replaced. Replacement monitoring wells will be named MW01R2, MW09R, and MW10R. Current and proposed monitoring well locations are shown on Figure 3-1.

3.2.1 Monitoring Well Decommissioning

Monitoring well MW09 was located and determined to be damaged during the monitoring well assessment, as described in Section 2.4. The casing for monitoring well MW09 is accessible and therefore, will be decommissioned with bentonite grout or chips hydrated with potable water, in accordance with WAC 173-160, the Minimum Standards for Construction and Maintenance of Wells.

Monitoring wells MW01R and MW10 were unable to be recovered during the monitoring well assessment described in Section 2.4. As described in Section 3.4, if these monitoring well casings are uncovered during restoration activities, they will be decommissioned with bentonite grout or chips hydrated with potable water, in accordance with WAC 173-160.

3.2.2 Monitoring Well Installation and Development

Replacement monitoring wells at the Property will be installed using a direct-push drill rig (i.e., Geoprobe), in accordance with the well installation details described below and provided in SOPs 2, 7, 11, and 12 in Appendix B. Subsurface soil will be logged and screened with a photoionization

detector. In the event that refusal is met before the desired well installation depth is reached (i.e., significant debris, cobbles, or bedrock are encountered), locations may be adjusted in the field.

Monitoring wells will be constructed according to the Washington State well construction standards (WAC 173-160) and as described below:

- Monitoring wells will be constructed with 2-inch-diameter polyvinyl chloride riser pipes and screened sections consisting of 0.010-inch machine slots. The monitoring wells may be constructed with prepacked well screen with 10 x 20 washed silica sand or by placing materials downhole, following WAC 173-160.
- Additional filter pack may be placed around the prepacked screen, if used. The additional filter pack will consist of graded 10 x 20 washed silica sand and will extend a maximum of 1 foot below the bottom of the screen and 3 feet above the top of the screen. A weighted line will be used to monitor the level of the filter pack during installation.
- Bentonite grout or chips hydrated with potable water (e.g., 0.75-inch minus) will be used to seal the annulus above the filter pack. A weighted line will be used to measure the top of the bentonite chips as they are poured into place.
- Following well installation, the well will be developed by surging, bailing, or pumping to remove sediment that may have accumulated during installation and to improve the hydraulic connection with the water-bearing zone.
- Water quality field parameters such as specific conductance, pH, temperature, and turbidity will be measured during well development, as deemed appropriate. The wells will be developed until the turbidity measurements are 5 nephelometric turbidity units or less, or until turbidity readings are stabilized within 10 percent. To the extent practical, water quality field parameters will be considered stable when the specific conductance is within 10 percent of the previous reading, pH is within 0.1 standard unit of the previous reading, and temperature is within 0.1 degree Celsius of the previous reading.
- Development methods, purge volumes, and water quality parameters will be recorded on well development field forms or in the field notes.

During well installation, soil will be logged by a geologist or hydrogeologist licensed in the State of Washington or a person working under the direct supervision of a geologist or hydrogeologist licensed in the State of Washington.

Replacement monitoring wells will be installed with the same screened interval and total depths as the missing/destroyed monitoring wells. Logs for monitoring wells MW01R, MW09, and MW10 are included in Appendix C for reference. Table 3-1 summarizes proposed installation details for replacement wells MW01R2, MW09R, and MW10R, respectively.

Boring logs will include information such as the project name and location, the name of the drilling contractor, the drilling method, the sampling method, sample depths, blow counts (if applicable), a description of soil encountered, and screened intervals. Soils will be described using ASTM International standard D2488-00, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure). The information will be recorded on an MFA boring log form or in the field notes.

3.2.3 Monitoring Well Placement and Surveying

Field staff will navigate to proposed well locations, using a handheld global positioning unit (e.g., Trimble) with submeter accuracy. The location and measuring point elevation of newly installed monitoring wells will be surveyed by a licensed surveyor.

3.2.4 Equipment Cleaning and Decontamination

3.2.4.1 Drilling Equipment

The drilling equipment will be decontaminated before installation of the first monitoring well and between each new monitoring well. Decontamination fluids will be transferred to drums approved by the Washington State Department of Transportation and will be managed according to the procedures outlined in Section 3.2.5.

3.2.4.2 Sampling Equipment Decontamination

Non-disposable sampling equipment and reusable materials that contact the soil or water will be decontaminated on Property and before and after each sample collection (see SOP 01 in Appendix B). Decontamination will consist of the following:

- Tap-water rinse. Visible soil to be removed by scrubbing.
- Non-phosphate detergent wash, consisting of a dilute mixture of Liqui-Nox (or equivalent) and tap water.
- Distilled-water rinse.
- Methanol solution rinse (1:1 solution of methanol with distilled water).
- Distilled-water rinse.

Decontamination fluids will be transferred to drums and managed as described in Section 3.2.5.

3.2.5 Management of Investigation-Derived Waste from Monitoring Well Installation and Development

Investigation-derived waste (IDW) may include items such as soil cuttings and decontamination fluids. IDW will be separated into solids and liquids and stored in a designated area on the Property in secure drums.

Drums will be labeled with their contents, the approximate volume of material, the date of collection, and the origin of the material. The drums will be sealed, secured, and transferred to a designated area on the Property, pending characterization. Analytical data from the soil and groundwater sampling activities previously completed on the Site may be used to characterize the soil cuttings, sampling debris, purge water, and decontamination fluids generated during the investigation.

3.3 Gravel Areas Restoration

3.3.1 Extent of Gravel Contaminated with Railroad Tie Debris

During the July 20, 2023, monitoring well assessment, gravel contaminated with railroad tie debris was observed throughout the central portion of the Site (see Figure 3-2). These areas have ongoing compliance groundwater monitoring as a component of the remedial action and requirement of the EC. The lateral extent of gravel areas mixed with railroad tie debris is shown on Figure 3-2. Railroad tie debris was observed to be mixed with surficial gravel up to six inches bgs. Residual treated wood debris from the railroad ties has the potential to impact the remedy on the site by leaching chemicals into areas of ongoing remediation and contributing to residual groundwater contamination. Therefore, in accordance with Section 1(a) of the EC, gravel containing railroad tie debris will be removed from the Site and disposed of at a permitted landfill.

3.3.2 Site, Erosion and Sediment Control

All grading and erosion control materials, workmanship, and method of construction will adhere to the current edition of Ecology's "Stormwater Management Manual for Western Washington". The contractor performing the work will identify any permits required to implement the gravel areas restoration work.

3.3.3 Export Characterization and Designation

Gravel contaminated with railroad debris will be removed up to six inches bgs in areas identified on Figure 3-2 with oversight by MFA personnel. Removal of gravel-contaminated wood material will be based on visual observations.

The railroad tie debris present is consistent with the description of treated wood and is considered under an exemption of the Dangerous Hazardous Waste in accordance with the Resource Conservation and Recovery Act. Therefore, MFA anticipates that disposal of the gravel and railroad tie debris would be designated as nonhazardous and nondangerous waste suitable for disposal at a Subtitle D landfill, and that a waste profile will be generated based on a description of the material for the area. Export characterization and designation will be conducted by the contractor in coordination with Akers.

Approval of the material will be dependent on the landfill acceptance criteria. If the excavated material is not approved for disposal at a Subtitle D landfill, it may be disposed of at a Subtitle C landfill.

3.3.4 Import Gravel Specifications and Sourcing

Excavations will be backfilled using clean gravel. Additionally, a fill source statement will be required from the landowner for each proposed off-site source, indicating the location and the current and previous land uses, and confirming that to the best of the landowner's knowledge there has never been contamination of the source site with hazardous or toxic materials.

Consistent with previous conditions, permeable ballast material consistent with the Washington State Department of Transportation standard specification 9-03.9(2) will be used to restore the gravel of the Property in areas where gravel material was used.

The following grading and quality requirements will be implemented:

Sieve Size	Percent Passing
2 ½”	99-100
2”	65-100
¾”	40-80
No. 4	5 max
No. 100	0 – 2
% Fracture	75 min.

Notes:
All percentages are by weight.
The sand equivalent and dust ratio do not apply.

3.3.5 Method for Placement, Grading and Compaction of Gravel

Following removal of the gravel contaminated with railroad debris, the excavated areas will be backfilled to existing grade in accordance with the Washington State Department of Transportation standard specification 4-04.3(4) through 4-04.3(5). Final grade for the backfilled excavation areas shall match existing conditions. All surfaces will be compacted and graded smooth and free of irregularities that might accumulate surface water.

3.3.6 Preservation of Existing Monitoring Wells

In areas with gravel replacement proposed in the vicinity of existing monitoring wells, the monitoring wells will be preserved via hand tool digging or other engineer-approved method around the monument. If casings from missing monitoring wells MW01R and MW10 are uncovered during gravel replacement, they will be decommissioned in accordance with Section 3.2.1.

3.4 Reporting

Deliverables documenting activities described in this work plan will include a completion report. The completion report will include a brief site background, photographic and written documentation of how the work was conducted, quantities of materials removed and brought on to the Site, well logs, and figures showing the extents of the restoration and monitoring well locations. The report will be submitted to Ecology for review and approval.

4 Schedule

The following is the anticipated schedule for the work outlined in this plan, in accordance with the June 22, 2023, letter prepared by Ecology:

Action	Completion Date
Prepare work plan (for Ecology review) for decommissioning of damaged wells and installation of new wells	August 4, 2023
Prepare work plan (for Ecology review) for restoration of gravel cap over restricted area, as mapped in the EC	August 4, 2023
Respond to Ecology comments on work plans	September 1, 2023
Decommission and replace monitoring wells, per WAC 173-160 in accordance with Ecology-approved work plan	September 29, 2023
Restore gravel cap	September 29, 2023
Submit completion report to Ecology, including well logs and Site maps	October 27, 2023

References

Ecology. 2023. Michael Warfel, LG, LHG, RG, Washington Department of Ecology. *Non-Compliance with Terms of Environmental Covenant North Cascade Ford Site, 116 West Ferry Street, Sedro Woolley WA 98284 Facility/Site No. 68313566; Cleanup Site No. 12075.* Letter to Coulter Properties, LLC c/o Joe Krivanek. June 22.

MFA. 2020a. *Groundwater Compliance Monitoring Plan, North Cascade Ford Property, Sedro-Woolley, Washington*. Prepared for VSF Properties, LLC. Maul Foster & Alongi, Inc., Bellingham, Washington. July 8.

MFA. 2020b. *Remedial Action Completion Report, North Cascade Ford Property, Sedro-Woolley, Washington*. Prepared for VSF Properties, LLC. Maul Foster & Alongi, Inc., Bellingham, Washington. July 13.

MFA. 2020c. J. Maul, Maul Foster & Alongi, Inc. *Addendum to Groundwater Compliance Monitoring Plan, North Cascade Ford Property, 116 W. Ferry Street, Sedro-Woolley, Washington, Facility Site ID: 58313566; Cleanup Site ID: 12075*. Memorandum to M. Warfel, Washington State Department of Ecology. August 10.

MFA. 2022. C. Wise and C. Sifford, Maul Foster & Alongi, Inc. *Eighth Quarterly Compliance Groundwater Monitoring Event, North Cascade Ford Property, Sedro-Woolley, Washington, VCP Number: NW3031, CSID: 12075, FSID: 58313566*. Letter to M. Warfel, Washington State Department of Ecology. September 8.

Limitations

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

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

Figures

MAUL
FOSTER
ALONGI

Figure 1-1
Property Location
North Cascade Ford Property
Sedro-Woolley, Washington

Legend

- Monitoring Well
- BNSF Railroad Centerline
- Surveyed Property Parcel
- Environmental Covenant Property Parcel
- Skagit County Parcel
- BNSF-owned Parcel

Notes

The surveyed Property parcel boundaries do not coincide with the adjacent parcel boundaries obtained from Skagit County; therefore, there is an overlap between the Property and BNSF parcels.

BNSF = Burlington Northern Santa Fe Railway.

Property = North Cascade Ford Property.

0 25 50
Feet

Data Sources

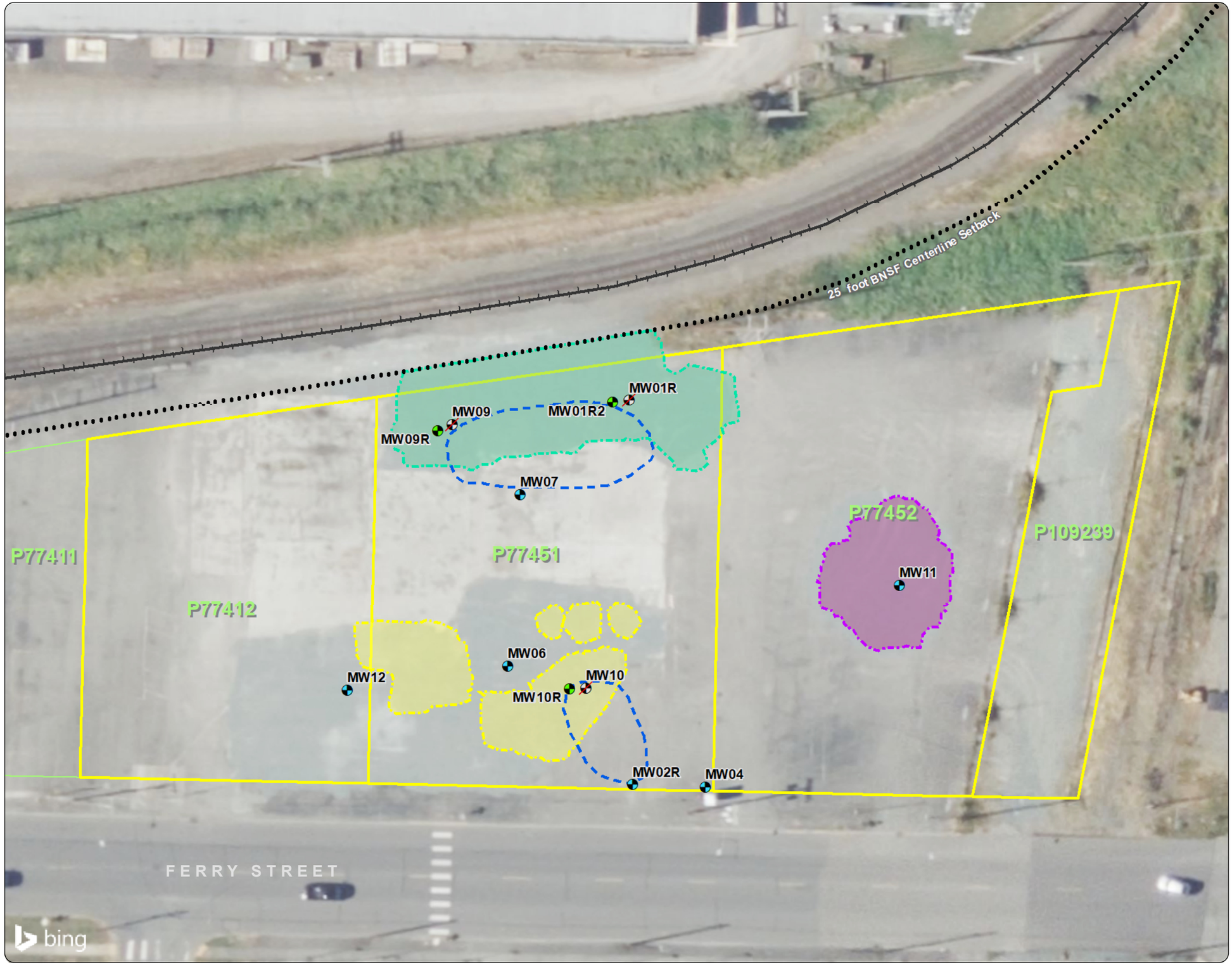
Aerial photograph obtained from Bing; property parcel boundaries surveyed by Wilson Engineering, LLC; adjacent parcel boundaries obtained from Skagit County.

MAUL FOSTER ALONGI
p. 971 544 2139 | www.maulfoster.com

Path: X:\0_MFA_Projects\M2584\01002\001\Fig1_1_Property_Location.mxd
Print Date: 8/2/2023
Reviewed By: cwise
Produced By: sturner
Project: M2584.01.002

Figure 3-1
Proposed New and Decommissioned Monitoring Wells

North Cascade Ford Property
Sedro-Woolley, Washington



Legend

- Proposed Monitoring Well
- Existing Monitoring Well
- Destroyed/Missing Monitoring Well
- AOC 1 Excavation (MFA 2020b)
- AOC 2 Excavation (MFA 2020b)
- AOC 3 Excavation (MFA 2020b)
- Property Parcel
- Environmental Covenant Property Parcel

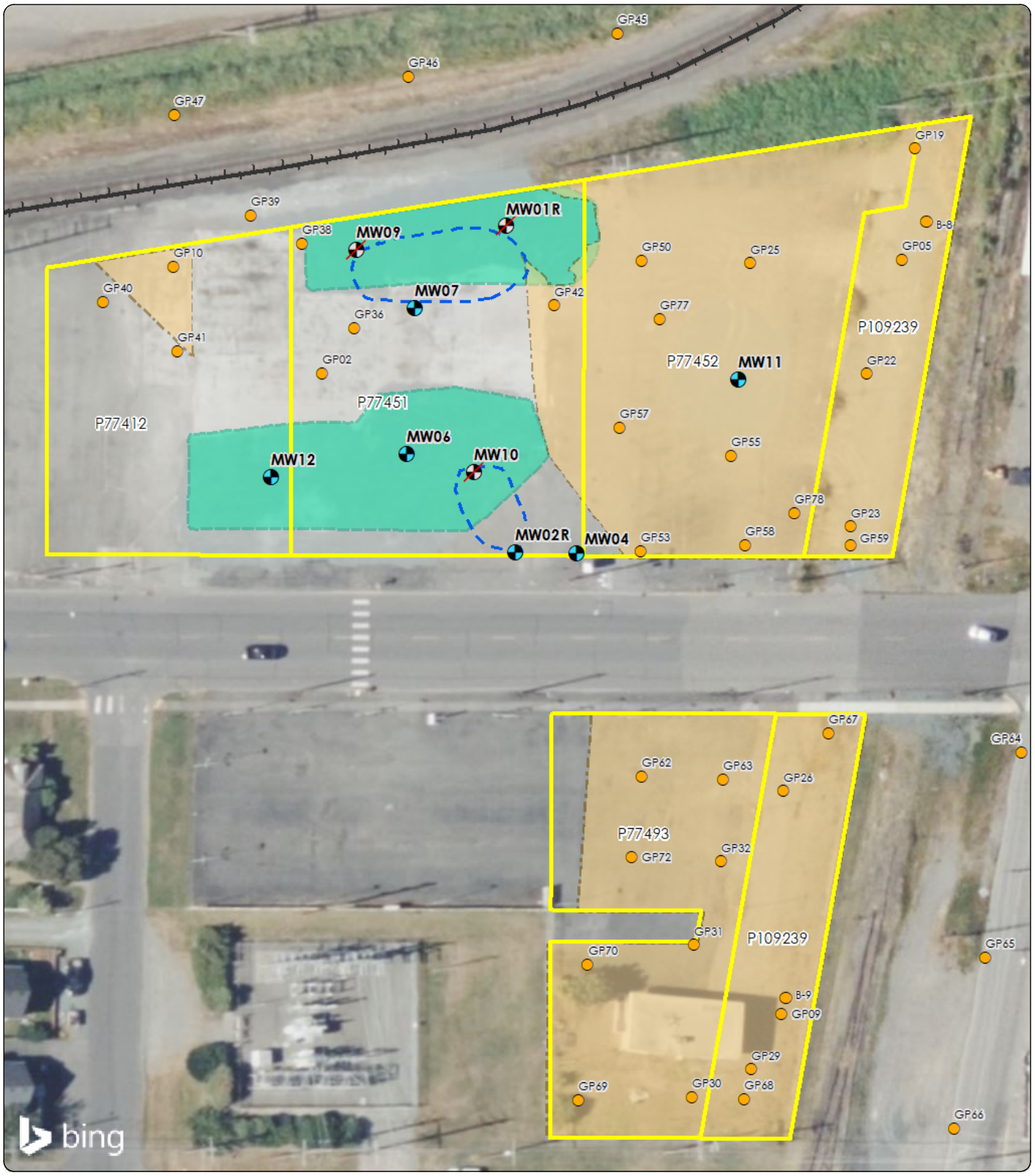
Notes
All features are approximate.
The excavations areas are set back from the BNSF railroad centerline by 25 feet.
The surveyed Property parcel boundaries do not coincide with the adjacent parcel boundaries obtained from Skagit County; therefore, there is an overlap between the Property and BNSF parcels.
AOC = area of concern.
BNSF = BNSF Railway.
Property = North Cascade Ford Property.

0 20 40
Feet

Data Sources
Adjacent parcel boundaries obtained from Skagit County.
Aerial photograph obtained from Microsoft Bing.
Excavation extents surveyed by Pacific Geomatic Services, Inc. in March 2020.
Property parcel boundaries surveyed by Wilson Engineering, LLC.

MAUL FOSTER ALONGI
p. 971 544 2139 | www.maulfoster.com

Path: X:\0_MFA_Projects\M2584\01\002\001\Fig3_1_Proposed_New_and_Decommissioned_MWs.mxd
Print Date: 8/2/2023
Reviewed By: cwise
Produced By: sturner
Project: M2584.01.002



Data Sources
Aerial photograph obtained from Bing; property parcel boundaries surveyed by Wilson Engineering, LLC.

Legend

- Monitoring Well
- Destroyed/Missing Monitoring Well
- Boring Location
- BNSF Railroad Centerline
- Environmental Covenant Property Parcel
- Gravel Area Contaminated with Railroad Tie Debris
- Estimated Extent of Petroleum Impacts in Groundwater (Areas subject to restrictions in Section 2 Subsection B of the Environmental Covenant)
- Coal Residues Area (Areas subject to restrictions in Section 2 Subsection A of the Environmental Covenant)

Figure 3-2
Gravel Restoration Areas

North Cascade Ford Property
Sedro-Woolley, Washington

0 50 100
Feet

MAUL FOSTER ALONGI
p. 971 544 2139 | www.maulfoster.com

Path: X:\0_MFA_Projects\M2584\01\002\001\Fig3_2_Gravel_Restoration_Areas.mxd
Print Date: 8/2/2023
Reviewed By: cwise
Produced By: sturner
Project: M2584.01.002

Tables

MAUL
FOSTER
ALONGI

Table 2-1
Monitoring Well Assessment
North Cascade Ford Property
Sedro-Woolley, Washington

Location	DTB (ft bgs)	Measured DTB (ft bgs)	Casing in Good Condition?	Monument in Good Condition?	J-Plug Present?	Soil Intrusion Present?
MW01R	14.52	Unable to be measured	Casing not found.	Monument with well tag found on north side of Property detached from well.	Unknown	Unknown
MW02R	14.80	14.77	Yes	Yes	Yes	No
MW04	13.55	13.56	Yes	Yes	Yes	No
MW06	19.78	19.76	Yes	Yes	Yes	No
MW07	19.59	19.60	Yes	Yes	Yes	No
MW09	19.92	19.92	Casing is damaged approximately 1.5 ft bgs.	Monument is missing.	Yes	Unknown
MW10	19.75	Unable to be measured	Casing not found.	Monument not found during conductible survey or vacuum truck excavation.	Unknown	Unknown
MW11	19.65	19.62	Yes	Yes	Yes	No
MW12	14.58	14.56	Yes	Yes	Yes	No

Notes

DTB = depth to bottom.

ft bgs = feet below ground surface.

Table 3-1
Replacement Monitoring Well Details
North Cascade Ford Property
Sedro-Woolley, Washington

Proposed Location	Replacement Location	Anticipated Total Depth	Anticipated Screened Interval
MW01R2	MW01R	15	5 -15
MW09R	MW09	20	5 - 20
MW10R	MW10	20	5 - 20

Notes
Final total depths and screened intervals will be determined based on field conditions.

Appendix A

Photo Array

MAUL FOSTER ALONGI

Photographs

Project Name: Site Restoration Work Plan, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, WA

Photo No. 1.

Description

Railroad tie debris at center of Property near MW06, looking northeast. Photo taken July 20, 2023.

Photo No. 2.

Description

Railroad tie debris at center of Property near MW10, looking northeast. Photo taken July 20, 2023.

Photographs

Project Name: Site Restoration Work Plan, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, WA

Photo No. 3.

Description

Railroad tie debris on northern graveled portion of the Property, looking west. Photo taken July 20, 2023.

Photo No. 4.

Description

Former location of monitoring well MW01R after search attempts completed. Railroad tie debris present in surrounding gravel. Photo taken July 20, 2023.

Photographs

Project Name: Site Restoration Work Plan, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, WA

Photo No. 5.

Description

Monitoring well monument with well tag for MW01R, looking north. Photo taken July 20, 2023.

Photo No. 6.

Description

Monitoring well MW02R in good condition, looking west. Photo taken July 20, 2023.

Photographs

Project Name: Site Restoration Work Plan, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, WA

Photo No. 7.

Description

Monitoring well MW04 in good condition, looking northeast. Photo taken July 20, 2023.

Photo No. 8.

Description

Monitoring well MW06, looking north. Railroad tie debris in surrounding gravel. Photo taken July 20, 2023.

Photographs

Project Name: Site Restoration Work Plan, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, WA

Photo No. 9.

Description

Monitoring well MW06 in good condition. Photo taken July 20, 2023.

Photo No. 10.

Description

Monitoring well MW07. Photo taken July 20, 2023.

Photographs

Project Name: Site Restoration Work Plan, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, WA

Photo No. 11.

Description

Monitoring well MW07 in good condition. Photo taken July 20, 2023.

Photo No. 12.

Description

Monitoring well MW09 casing without monument, looking southeast. Railroad tie debris in surrounding gravel. Photo taken July 20, 2023.

Photographs

Project Name: Site Restoration Work Plan, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, WA

Photo No. 13.

Description

Monitoring well MW09 casing without monument and bent casing. Photo taken July 20, 2023.

Photo No. 14.

Description

Search area for monitoring well MW10, looking south. Unable to locate monument or casing. Significant railroad tie debris in surrounding gravel. Photo taken July 20, 2023.

Photographs

Project Name: Site Restoration Work Plan, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, WA

Photo No. 15.

Description

Vicinity of Monitoring well MW11, looking west. No railroad tie debris present in surrounding gravel. Photo taken July 20, 2023.

Photo No. 16.

Description

Monitoring well MW11 in good condition, looking northwest. Photo taken July 20, 2023.

Photographs

Project Name: Site Restoration Work Plan, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, WA

Photo No. 17.

Description

Monitoring well MW12. Railroad tie debris in surrounding gravel. Photo taken July 20, 2023.

Photo No. 18.

Description

Monitoring well MW12 in good condition. Photo taken July 20, 2023.

Photographs

Project Name: Site Restoration Work Plan, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, WA

Photo No. 19.

Description

Photo of site looking southwest from approximate former location of monitoring well MW01R. Railroad tie debris present on gravel. Photo taken July 20, 2023.

Photo No. 20.

Description

Railroad tie debris on gravel looking northeast from monitoring well MW12.

Photographs

Project Name: Site Restoration Work Plan, North Cascade Ford
Project Number: M2584.01.002
Location: 116 W Ferry Street, Sedro-Woolley, WA

Photo No. 21.

Description

View of Site, looking west near monitoring well MW11.

Appendix B

Standard Operating Procedures

MAUL FOSTER ALONGI

STANDARD OPERATING PROCEDURE

Decontamination of Field Equipment

SOP Number: 1
Date: 3/9/2021
Revision Number: 0.1

SCOPE AND APPLICATION

This standard operating procedure (SOP) describes the decontamination procedure for field equipment that may come in contact with contaminated media and that Maul Foster & Alongi, Inc. (MFA) staff may reuse at multiple sample locations or sites. Decontamination is performed to reduce the potential for cross-contamination of samples that will be collected with multiuse equipment and that will undergo physical or chemical analyses. Other equipment that is multiuse—not used specifically for sample collection (e.g., water level meter, pump used for well development)—also requires decontamination. Finally, decontamination is necessary to minimize the potential for MFA staff's exposure to chemicals.

Typically, decontamination is not necessary for field equipment that is disposable and intended to be used only once (e.g., disposable bailer). Additionally, this SOP does not apply to equipment used by subcontractors, such as drilling equipment. However, MFA staff should confirm that subcontractors are implementing appropriate decontamination procedures to minimize the potential for cross-contamination of samples or MFA staff's exposure to chemicals.

EQUIPMENT AND MATERIALS REQUIRED

The following materials are necessary for this procedure:

- Nonphosphate detergent solution (e.g., Alconox, Liquinox)
- Distilled and potable water
- Personal protective equipment (as specified in the site-specific health and safety plan)
- Buckets to contain rinsate, brushes, paper towels

Depending on the site conditions and the types of contaminants that may be present, the use of other decontamination materials, such as deionized water, methanol, hexane, or isopropyl alcohol, may be necessary. The need for other materials should be determined prior to fieldwork. The decontamination procedures using other materials should be described in a site-specific sampling and analysis plan (SAP).

METHODOLOGY

When the site-specific SAP specifies additional or different requirements for decontamination, it takes precedence over this SOP. In the absence of a SAP, the following procedures shall be used.

General Sampling Procedure:

1. Rinse the equipment with potable water to remove visible soil, petroleum sheen, or contamination.
2. Scrub the equipment with a brush and solution of distilled water and nonphosphate detergent.
3. Rinse the equipment with distilled water.
4. Allow equipment to air dry, or dry it with paper towels.
5. At all times, ensure that the decontaminated equipment is stored so as to prevent it from becoming contaminated while not in use. Depending on the size of the equipment, it can be wrapped with new aluminum foil or placed in a new plastic bag.

Rinsate Storage:

All fluids resulting from equipment decontamination shall initially be contained in a bucket and then transferred to a Department of Transportation-approved container (e.g., 55-gallon drum) stored on site at a location that

does not interfere with on-site activities (e.g., vehicle traffic, pedestrian areas). Place a label on each container and include the following information:

- The date on which fluids were placed in the container
- Contents (e.g., "water from equipment decontamination")
- Contact information, including MFA staff or client phone number

Note that labels on containers exposed to sunlight or precipitation are prone to fading. Use a waterproof, indelible ink pen (e.g., Sharpie®) whenever possible. In the field notebook, keep a detailed inventory of all containers, including the number of containers, the approximate quantity of liquids generated, and a description of the source of the fluids. Provide this information to the MFA project manager. For future reference, take photographs of (1) each drum label, (2) the drum(s), and (3) the drum storage vicinity on site.

Note that some clients and site owners have specific requirements for labeling and storage of containers. The requirements should be determined in advance of the fieldwork.

MAUL FOSTER ALONGI

STANDARD OPERATING PROCEDURE

Lithologic Logging

SOP Number: 2
Date: 3/9/2021
Revision Number: 0.1

SCOPE AND APPLICATION

This standard operating procedure (SOP) describes the methods for observing and documenting the physical characteristics of unconsolidated geologic materials (soil and sediment) encountered during field investigations. If a Maul Foster & Alongi, Inc. (MFA) project requires hard rock drilling and description of rock core or cuttings, procedures for describing rock should be specified in a project-specific sampling and analysis plan (SAP).

EQUIPMENT AND MATERIALS REQUIRED

The following materials are necessary for this procedure:

- Blank field forms (e.g., boring logs) for documenting observations
- Dry-erase board
- Camera
- Munsell soil color chart (where required)
- MFA field logging checklist

METHODOLOGY

When the project-specific SAP specifies additional or different requirements for lithologic logging, it takes precedence over this SOP. In the absence of a SAP, the procedures in this SOP shall be used. MFA uses a combination of the Unified Soil Classification System (USCS) and the ASTM International method D2487 for describing and classifying soil and sediment by visual and manual examination. Before beginning fieldwork, verify with the project manager the logging standard to be used.

Logging Process:

The objective of lithologic logging is to document the physical characteristics of soil and sediment encountered and the changes in characteristics with depth. Typically, changes with depth will define the strata encountered. Therefore, each stratum encountered should be identified and the following characteristics described in the order given:

- Depth interval of each stratum to the nearest tenth of a foot below ground surface
- USCS classification Group Name and Symbol
- Color, using the Munsell color chart
- Grain-size distribution, as percentages of fines (silt and clay combined), sand, and gravel
- Percentages of larger gravels (cobbles and boulders) if present.
- Consistency when the content of fines is 50 percent or greater
- Density when the combined percentage of sand and gravel is 50 percent or greater
- Sand and gravel grain shapes
- Chemical odors, if noticeable
- Structures, if present (e.g., laminae, pores)
- Presence of organic matter (e.g., roots, leaves, twigs, wood fragments)
- Moisture content as "dry," "moist," or "wet"
- If possible, a description of the origin of each stratum (e.g., fill, alluvium)

MAUL FOSTER ALONGI

STANDARD OPERATING PROCEDURE

Push-Probe Drilling

SOP Number: 7
Date: 3/9/2021
Revision Number: 0.1

SCOPE AND APPLICATION

This standard operating procedure (SOP) describes the use of a push probe (i.e., Geoprobe™) to observe subsurface conditions and collect samples of various environmental media (e.g., soil, sediment, groundwater, soil vapor) for laboratory analysis. Push-probe drilling is generally not suitable for soils with gravel/rock clast larger than about 4 inches in diameter. If gravelly/rocky soils are expected at the project site, consider use of the sonic drilling method described in SOP 8.

Push-probe drilling can be used for a variety of purposes, including:

- Retrieving cores to document subsurface soil or sediment conditions and to obtain samples for physical and/or chemical evaluation
- Sampling soil vapors, using temporary well points
- Collecting reconnaissance groundwater samples from temporary well screens
- Installing permanent monitoring wells

EQUIPMENT AND MATERIALS REQUIRED

The following equipment and materials are necessary for this procedure:

- Push-probe drill rig and operator provided by a subcontractor to MFA. Ensure that the subcontractor is licensed to perform the drilling work.
- Sampling equipment appropriate for the media to be sampled (e.g., water level meter, pumps, hand tools, and pump tubing).
- Laboratory-supplied sample containers.
- Traffic cones, measuring tape, buckets.
- Department of Transportation (DOT)-approved containers (e.g., 55-gallon drum) for storing excess soil and decontamination water; the drums are typically provided by the drilling subcontractor.
- Boring log form and notebook.
- Equipment decontamination supplies if sampling equipment will be reused between sample locations (see SOP 1 for equipment decontamination procedures).
- Personal protective equipment (as required by the project health and safety plan).

METHODOLOGY

When the project-specific sampling and analysis plan (SAP) provides additional or different requirements for push-probe drilling, it takes precedence over this SOP. In the absence of a SAP, the procedures in this SOP shall be used.

Utility Locate:

- Before beginning the fieldwork, assess the proposed drilling location(s) for the presence of overhead and underground utilities, and adjust the locations, as needed, to avoid identified utilities.
- See SOP 18 for the utility locating procedures.

Push-Probe Drilling Process:

- The push-probe drilling rig is equipped with a soil sampling device that retrieves a continuous soil core. A combination of static force and percussion is used to drive the soil sampler into unconsolidated geologic material. A plastic liner placed inside the sampler contains the soil core and permits its removal from the sampler for examination. The sampler is driven into the subsurface, typically in 4- or 5-foot intervals, depending on the length of the sampling device. When each interval depth is reached, the soil sampler is removed from the ground, and the liner is removed to facilitate soil observation and sampling.
- This process is repeated for each soil sample interval until the targeted boring depth is reached.
- Ensure that the drilling subcontractor decontaminates all subsurface equipment before and after each boring. Document the decontamination procedures in the field notebook. Store decontamination water in DOT-approved containers for later off-site disposal.

Logging and Soil Sampling Process:

- Remove the soil core from the sampler for field screening, description, and sampling.
- Describe the lithology in accordance with SOP 2.
- Confirm the required depth interval(s) for soil sample collection and field screening with the MFA project manager, or conduct the work in accordance with the SAP. The sample interval may require adjustment based on core recovery, soil stratigraphy and characteristics, and evidence of contamination. Confirm any adjustments to the sample intervals with the project manager.
- If the project requires field screening for organic vapor, conduct it in accordance with SOP 3.
- If the project requires laboratory analyses for gasoline-range petroleum hydrocarbons or volatile organic compounds, conduct the sampling in accordance with SOP 5.
- Contain all soil core remaining after sample collection in DOT-approved containers for later off-site disposal. See SOP 1 for drum storage, labeling, and documentation procedures.

Reconnaissance Groundwater Sampling Process:

- Typically, reconnaissance groundwater samples are collected at the first occurrence of groundwater in a boring. Confirm the required depth and procedures for groundwater sample collection with the MFA project manager, or conduct the work in accordance with the SAP. If the project requires use of the low-flow sampling method, refer to SOP 9 for the low-flow sampling procedures.
- Reconnaissance groundwater samples are collected using a decontaminated stainless steel or disposable, temporary polyvinyl chloride well screen placed in the boring. If the soils in the boring are fine-grained and may cause excessive turbidity in groundwater, consider using a filter pack around the screen to reduce turbidity. Alternatively, purging the well screen of groundwater prior to sample collection may also reduce the turbidity. See SOP 9 for purging procedures.
- Purging and sampling will be conducted using a peristaltic pump unless otherwise specified in the SAP. New tubing will be used for each boring. Field parameters (e.g., temperature, conductivity, and pH) will be recorded in accordance with SOP 9 during purging and sampling.

Monitoring Well Installation:

- If the project requires installation of a monitoring well in the boring, refer to SOP 11 for the well installation procedures. Confirm the procedures with the MFA project manager.

Borehole Abandonment Process:

- Abandon each borehole in accordance with local and state regulations/procedures. The abandonment will be performed by the drilling subcontractor.
- The abandonment procedure typically consists of backfilling the boring with granular bentonite and hydrating the bentonite with potable water.
- If the boring was advanced through concrete or asphalt, backfill the boring to about 6 inches below grade to allow for placement of asphalt or concrete in the remaining 6 inches to match the surface conditions.

MAUL FOSTER ALONGI

STANDARD OPERATING PROCEDURE

Well Installation

SOP Number: 11
Date: 3/9/2021
Revision Number: 0.1

SCOPE AND APPLICATION

This standard operating procedure (SOP) describes the use of conventional machine slotted polyvinyl chloride (PVC) or prepacked well screens to install monitoring wells. The screen permits water to enter the well from the saturated aquifer, prevents soil from entering the well, and serves structurally to support the aquifer material. The slot size of the well screen is typically based on selection of the filter pack material. Monitoring wells must be designed and installed to ensure that low-turbidity groundwater samples, groundwater levels, and hydraulic conductivity data that are representative of conditions in the aquifer can be obtained.

EQUIPMENT AND MATERIALS REQUIRED

The following materials are necessary for this procedure:

- Drill rig and operator provided by a subcontractor to MFA. Ensure that the subcontractor is licensed to perform the well installations.
- Personal protective equipment (as specified in the health and safety plan).
- Water-level meter.
- Monitoring well construction log and notebook.

METHODOLOGY

When the project-specific sampling and analysis plan (SAP) provides additional or different requirements for well installation, it takes precedence over this SOP. In the absence of a SAP, the procedures in this SOP shall be used.

The drilling contractor will be responsible for conforming to all applicable local and state regulations for well construction.

The proposed well construction should be provided to the driller in advance so that (1) the driller can confirm that the proposed construction is consistent with state regulations, and (2) the driller comes to the project site with sufficient materials for the well construction.

General Procedure:

Drilling and Well Construction. This SOP assumes that a boring has already been drilled and is ready for well installation. See SOPs 7 and 8 for drilling procedures. If the boring was advanced to a depth below the targeted well screen interval, backfill the boring with cement-bentonite slurry or bentonite chips so that the boring bottom is at a depth about 2 feet below the lower screen interval depth. Well construction will include flush-threaded Schedule 40 PVC casing and conventional PVC well screen or stainless steel mesh prepacked well screen, placed at the bottom of the boring.

Filter Pack. Clean silica sand pack will be placed between the boring wall and the PVC screen/riser (i.e., the annulus) from the bottom of the well to approximately 1 to 2 feet above the screened interval. The filter pack should have greater hydraulic conductivity than the surrounding formation so that water can be drawn into the well. Before installation of the seal, the well may be surged using a surge block or similar technique to consolidate the filter pack and eliminate voids. Measure and document the depth to the sand filter pack before setting the seal.

Seal. A bentonite seal 1 to 2 feet thick will be placed above the sand. The bentonite will be hydrated and allowed to sit for a minimum of 30 minutes for proper hydration and sealing. Measure and document the depth to the top of the seal before placing grout.

Grout. Cement-bentonite slurry or bentonite chips (hydrated after installation) will be placed above the bentonite seal following proper hydration of the seal. The cement-bentonite slurry will be placed to within 1 foot of the ground surface.

Surface Seal and Monument. A concrete surface seal will secure a flush-mounted, traffic-rated monument, or a bollard-protected stickup monument. Flush-mounted surface monuments will be completed slightly above grade to prevent ponding of water on the monument lid. A locking cap and lock will secure the top of the well casing in a surface monument. Tamper-resistant bolts (e.g., pentagonal) may be used to secure the lid of a flush-mounted monument. The lid of a stickup monument should be secured with a lock.

The well constructor shall permanently affix a well identification label to the wellhead. In addition, the well number should be marked on the well (e.g., punched into monument ring, written on the well casing/cap with permanent marker). A v-notch is typically cut into the north side of the PVC riser for use as a survey point and for water level measurements.

Documentation. The field representative will produce the following documentation during the well installation:

- Length of well components, including blank casing, well screen, and sump (if included).
- Preinstallation boring depth below ground surface (bgs).
- Depth bgs to top and bottom of screen.
- Depth bgs to top of filter pack and seal.
- Types, brands, and amounts of materials (sand, bentonite, grout) used.
- Decontamination procedures followed, if needed (see SOP 1 for equipment decontamination procedures).
- If potable water was placed into the boring or well during installation, document the total volume of water placed; this information will be needed for well development (see SOP 12).
- Any deviation from standard procedures or any problems encountered during the installation activities.

MAUL FOSTER ALONGI

STANDARD OPERATING PROCEDURE

Well Development

SOP Number: 12
Date: 3/9/2021
Revision Number: 0.1

SCOPE AND APPLICATION

This standard operating procedure (SOP) describes the methods for developing new monitoring well installations. New wells should be developed no sooner than a period of 24 hours after the grout seal has been placed; longer periods of 48 to 72 hours may be necessary, depending on applicable local or state regulations. The objective of well development is to ensure that low-turbidity groundwater samples, groundwater levels, and hydraulic conductivity data representative of conditions in the aquifer can be obtained from the well. This SOP is also applicable to the redevelopment of existing monitoring wells.

EQUIPMENT AND MATERIALS REQUIRED

The following materials are necessary for this procedure:

- Personal protective equipment (as specified in the health and safety plan)
- Well purge equipment (e.g., Waterra Pump, bailer, and peristaltic pump)
- Water-quality meter (e.g., Oakton and turbidity meter)
- Water-level meter
- Well construction logs for all wells to be developed
- Equipment decontamination supplies if sampling equipment will be reused between sample locations (see SOP 1 for equipment decontamination procedures)
- Five-gallon buckets with lids
- Department of Transportation-approved storage containers (e.g., drums, totes)
- Well development log and notebook

METHODOLOGY

When the project-specific sampling and analysis plan (SAP) provides additional or different requirements for well development, it takes precedence over this SOP. In the absence of a SAP, the procedures in this SOP shall be used.

Owing to the potential for hazardous substances in groundwater, well development requires consideration of the work area and equipment setup, health and safety procedures, use of appropriate personal protective equipment, procedures for equipment decontamination, and disposal of expendable development supplies. Confirm all procedures in advance with the MFA project manager and the MFA health and safety professional.

1. Cut a segment of plastic sheeting to an approximate 10-foot-by-10-foot dimension. Cut a hole in the center of the sheeting and place the sheeting over the well so that the well monument can be accessed through the hole and the sheeting lies flat on the ground. The sheeting defines the work area for well development. All equipment that may come in contact with groundwater should remain in this work area until it has been decontaminated or containerized for disposal.
2. Measure the depth to water and the total depth of the well before development. Confirm that the entire screen length is below the water level; if it is not, contact the MFA project manager to discuss potential modification of the well-development procedures.
3. Subtract the depth to water from the total well depth to determine the height of the column of groundwater present in the well casing. Multiply the height by the gallon-per-foot value in the table

below, corresponding to the diameter of the well being developed, to calculate the volume of water in the well casing. Record the readings and casing volume on the well development log.

Casing Diameter (inches)	Volume (gallons per foot)
1	0.04
2	0.17
3	0.37
4	0.65
5	1.02
6	1.46

4. Surge groundwater through the entire well screen interval with a weighted bailer or Waterra pump with tubing equipped with surge block. Begin surging at the top of the well screen by vigorously moving the bailer or surge block in approximately 1-foot vertical increments. Gradually increase the surge depth until the entre screen interval has been surged. The surge time for each 1-foot increment will depend on type of drilling, lithology, and well completion details. Generally, there should be at least one minute of surging across each increment.

5. After surging the well screen, purge groundwater from the well into buckets at a higher purging rate than the expected purging rate of groundwater sampling. Ideally, purging will be completed using a method that does not continue to surge the well (i.e., peristaltic or submersible pump). If a Waterra pump is used, remove the surge block from the tubing and set the tubing intake above the well screen for purging. Measure the water level during the purging process and adjust the pumping rate to maintain a water level above the top of the screen interval if possible. Document the volume of water removed.

6. When the volume of water purged equals the casing volume, use the water-quality meter to measure the temperature, pH, conductivity, and turbidity of the purge water. Repeat the measurements for each casing volume removed. Note that a YSI water-quality meter or similar meters should not be used in highly turbid water, per the manufacturer's recommendation.

7. After the removal of five casing volumes, review the stability of the water quality meter readings. The well will be considered developed if the water quality readings have stabilized for three consecutive casing volumes for the following:

   pH (± 0.1 unit),
   Specific Conductance (3%),
   Turbidity (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized),

8. If the water-quality readings stabilize before a total of ten casing volumes are removed, development is complete. If the water-quality readings do not stabilize, well development will be consider complete after ten casing volumes have been removed.

9. If the water level cannot be maintained above the well screen or the well pumps dry during purging, contact the MFA project manager for further instructions.

10. If potable water was placed into the boring during drilling or into the well during installation, remove that volume of water and then begin purging as described in step 5.

MAUL FOSTER ALONGI

STANDARD OPERATING PROCEDURE

Underground Utility Locates

SOP Number: 18
Date: 3/9/2021
Revision Number: 0.1

SCOPE AND APPLICATION

This standard operating procedure (SOP) describes the practices for locating underground utilities. Refer to the MFA health and safety plan (HASP) for additional information regarding communication procedures to be followed when an inadvertent utility strike occurs, as well as regarding methods for mitigating hazards during a utility strike.

EQUIPMENT AND MATERIALS REQUIRED

The following materials are necessary for this procedure:

- Personal protective equipment (as specified in the HASP)
- Marking materials (e.g., marking paint, stakes, flags)
- Field documentation materials

METHODOLOGY

When the project-specific sampling and analysis plan (SAP) specifies additional or different requirements for underground utility locates, it takes precedence over this SOP. In the absence of a SAP, the procedures in this SOP shall be used.

Before Conducting Utility Locates:

- Ensure that the locate will be conducted reasonably soon before the excavation work begins, e.g., within 48 hours. There may be project-specific conditions, e.g., weather and/or ground features that could cause markings to fade, which would require scheduling of the excavation work sooner than 48 hours after the locate.
- Clearly define the boundary of the work and the locations of all proposed excavations. Prepare a map of the project area showing the excavation locations.
- Interview site managers/property owners and obtain plans or drawings, if available, showing on-site utilities.
- For project work that will not take place in the public right-of-way, ensure that the public rights-of-way nearest to the project are identified and communicated during the one-call notification.
- Identify the township and range of the project area. This information can be easily attained by a quick email to MFA's GIS Exchange.
- If feasible, conduct a site visit to identify site conditions that could cause fading or disruption of marking paint. Such conditions could include gravel or ground sensitive to erosion and high traffic.
- Check the weather forecast to assess the potential for snow or rain to make marking utilities difficult or cause the markings to fade.

One-Call Utility Notification:

- If possible, initiate the one-call utility notification at least one week before the proposed work begins.
- Include a map or GPS coordinates when submitting the notification.
- Before conducting any excavation activities, confirm with each public utility that the utility locate has been completed.

- On remote or complicated sites, consider meeting public locators on site.
- Document the one-call ticket number and results in the project files.
- Provide the one-call ticket number to subcontractors who will be doing the excavations.

Private Utility Locate:

- Conduct the private utility locate only after confirmation that the public utility locate has been completed and all public utilities have been marked and the results reviewed by MFA staff who will be overseeing the excavations.
- Meet the private locator on site and participate in the entire private utility locate. Be engaged in the process, ask questions, and take time to walk the site thoroughly with the locator.
- Bring a copy of the one-call utility ticket and results of the one-call utility locater to check against the utility markings on the ground.
- If possible, have a site/property representative knowledgeable of on-site utilities participate in the private utility locate.
- If paint alone may not suffice to ensure clear marking of utilities, add vertical markers such as stakes or flags.
- Visually assess the area of the proposed excavation(s) to identify features potentially indicative of buried utilities. Have the private utility locator examine each feature identified below to assess the presence of buried utilities.
  - Examine adjacent public rights-of-way where public utilities have been marked for evidence of utilities that may extend onto the project site.
  - Identify nearby light poles, telephone poles, electrical utility poles, or other overhead utility poles with wires or conductors that run from the overhead utility, down the pole, and into the ground.
  - Identify the location of gas meters, water meters, or other aboveground junction boxes for evidence of utilities extending from these features into the ground.
  - Examine asphalt and concrete ground surfaces for discontinuities in the surface indicative of utility installations. Discontinuities may include recent patches of asphalt or concrete inlaid within older concrete or asphalt surfaces.
  - Identify manholes and catch basins indicative of buried storm or sanitary sewer pipes. Open manholes to examine the orientation of associated pipes to assess whether the utilities may be present near proposed excavations.
  - Identify tank ports and vent pipes.
  - Identify irrigation systems and associated features such as valve boxes and controllers.
  - Identify any other signs indicating the presence of buried utilities.
  - Be wary of utility marks that suddenly begin or dead end.

Preparing to Perform Subsurface Activities after a Locate:

- Ensure that the markings are still visible when the work begins.
- Adjust locations, as needed, to avoid identified utilities, or use alternative methods such as nonmechanical excavation means (i.e., manual excavation or air-knifing) to a minimum depth of 5 feet.

Table
APWA UNIFORM COLOR CODE

	WHITE—Proposed Excavation
	PINK—Temporary Survey Markings
	RED—Electric Power Lines, Cables, Conduit and Lighting Cables
	YELLOW—Gas, Oil, Steam, Petroleum or Gaseous Materials
	ORANGE—Communication, Alarm or Signal Lines, Cables or Conduit
	BLUE—Potable Water
	PURPLE—Reclaimed Water, Irrigation and Slurry Lines
	GREEN—Sewers and Drain Lines
Source: Uniform Color Codes, ANSI Standard Z535.1. American Public Works Association. Revised 1999.	

Appendix C

Monitoring Well Logs

MAUL FOSTER ALONGI

Geologic Borehole Log

MAUL FOSTER ALONGI

Project Number	Well Number	Sheet
0747.01.12	MW01R	1 of 1

Project Name	VSF Properties, LLC - North Cascade Ford Compliance Monitoring	TOC Elevation (feet)	
Project Location	116 W Ferry Street, Sedro-Woolley, Washington	Surface Elevation (feet)	
Start/End Date	9/14/2020 to 9/14/2020	Northing	
Driller/Equipment	Holt Services, Inc., Mike Running/Geoprobe	Easting	
Geologist/Engineer	A. Bixby	Total Depth of Borehole	15.0-feet
Sample Method	Direct Push	Outer Hole Diam	2.25-inch

Depth (feet, BGS)	Well Details	Water Levels	Sample Data: Percent Recovery	Sample Data: Sample ID	Sample Data: PID (ppm)	Lithologic Column	Soil Description
1					1.0		0 to 3.5 feet: GRAVELLY SAND WITH SILT (SW-SM); dark grayish brown; 10% fines; 75% sand, fine to coarse grained; 15% gravel, fine size, angular to subrounded; loose; trace brick; no odor; moist. (FILL)
2							
3			70		1.1		
4							3.5 to 5.0 feet: No recovery.
5					1.8		5.0 to 5.7 feet: GRAVELLY SAND WITH SILT (SW-SM); dark grayish brown; 10% fines; 75% sand, fine to coarse grained; 15% gravel, fine size, angular to subrounded; loose; trace brick; no odor; moist. (FILL)
6							5.7 to 10.0 feet: No recovery; loose pea gravel.
7							
8			14				
9							
10					55.3		10.0 to 11.0 feet: SANDY SILT (MH); brownish gray; 60% fines, medium to high plasticity; 40% sand, fine to medium grained; soft; trace gravel, fine, angular; slight petroleum hydrocarbon-like odor; moist.
11		▽					11.0 to 12.4 feet: SAND WITH SILT (SP-SM); brownish gray; 10% fines; 90% sand, fine grained; dense; slight petroleum hydrocarbon-like odor; no sheen; wet.
12					1.8		
13			48		3.7		@ 12.2 feet: Silt laminae.
14							12.4 to 15.0 feet: No recovery.
15							

Total Depth = 15.0 feet bgs

NOTES:

1. bgs = below ground surface. 2. Depths are relative to feet below ground surface. 3. ID = identification. 4. PID = photoionization detector. 5. PID results shown in parts per million.

Borehole Completion Details

0 to 15.0 feet: 2.25-inch borehole.
0 to 2.0 feet: Concrete.
2.0 to 3.0 feet: Bentonite chips hydrated with potable water.
3.0 to 15.0 feet: 10x20 silica sand filter pack.

Monitoring Well Completion Details

Washington State Department of Ecology Well No. BMP360.
Traffic-grade, flush-mounted, monitoring well vault.
0 to 5.0 feet: 2-inch diameter, schedule 40, polyvinyl chloride, riser pipe.
5.0 to 14.75 feet: 2-inch diameter, schedule 40, polyvinyl chloride, 0.010 machine slot, prepacked well screen.
14.75 to 15.0 feet: 2-inch, schedule 40, polyvinyl chloride pipe end cap.

▽ ***Water level at approximately 11.0 feet bgs at time of drilling.***

MFA BOREHOLE W/WELL W:\GINT\GINTW\PROJECTS\0747.01\12_COMPLIANCE MONITORING\MW01R TO MW12.GPJ 9/18/20

MAUL FOSTER ALONGI

Geologic Borehole Log

Project Number	Well Number	Sheet
0747.01.12	**MW09**	**1 of 2**

Project Name	**VSF Properties, LLC - North Cascade Ford Compliance Monitoring**	TOC Elevation (feet)	
Project Location	**116 W Ferry Street, Sedro-Woolley, Washington**	Surface Elevation (feet)	
Start/End Date	**9/14/2020 to 9/14/2020**	Northing	
Driller/Equipment	**Holt Services, Inc., Mike Running/Geoprobe**	Easting	
Geologist/Engineer	**A. Bixby**	Total Depth of Borehole	**20.0-feet**
Sample Method	**Direct Push**	Outer Hole Diam	**2.25-inch**

Depth (feet, BGS)	Well Details	Water Levels	Sample Data: Percent Recovery	Sample Data: Sample ID	Sample Data: PID (ppm)	Lithologic Column	Soil Description
1					0.9		0 to 2.5 feet: GRAVELLY SAND WITH SILT (SW-SM); grayish brown; 10% fines; 70% sand, fine to coarse grained; 20% gravel, fine size, angular to subrounded; loose; trace coarse gravel; no odor; dry. (FILL)
2			50				@ 2.0 to 2.5 feet: Increasing gravel to 30%.
3					0.4		2.5 to 5.0 feet: No recovery.
4							
5					0.9		5.0 to 6.2 feet: GRAVELLY SAND (SW); grayish brown; 5% fines; 65% sand, fine to coarse grained; 30% gravel, fine size, angular to subrounded; loose; no odor; dry. (FILL)
6							6.2 to 7.8 feet: GRAVEL (GP); grayish brown; 10% sand, medium grained; 90% gravel, fine size, subangular to subrounded; loose; trace coarse gravel; no odor; moist. (PEA GRAVEL)
7			56		0.0		
8							7.8 to 10.0 feet: No recovery.
9							
10							10.0 to 11.0 feet: GRAVEL (GP); grayish brown; 10% sand, medium grained; 90% gravel, fine size, subangular to subrounded; loose; no odor; moist. (PEA GRAVEL)
11					65.4		11.0 to 12.5 feet: SILT WITH SAND (MH); grayish brown; 80% fines, high plasticity; 20% sand, very fine grained; firm; trace organic material (woody debris) in upper 3 inches; slight petroleum hydrocarbon-like odor; moist.
12		▽	56				
13					1.1		12.5 to 12.8 feet: SAND (SP); gray; 5% fines; 95% sand, fine grained; loose; trace reddish sand grains; slight petroleum hydrocarbon-like odor; moist.
14							12.8 to 15.0 feet: No recovery.
15							

MFA BOREHOLE W/WELL W:\GINT\GINTWPROJECTS\0747.01\12_COMPLIANCE MONITORING\MW01R TO MW12.GPJ 9/18/20

MAUL FOSTER ALONGI

Geologic Borehole Log

Project Number	Well Number	Sheet
0747.01.12	**MW09**	**2 of 2**

Depth (feet, BGS)	Well Details	Water Levels	Sample Data: Percent Recovery	Sample Data: Sample ID	Sample Data: PID (ppm)	Lithologic Column	Soil Description
16					**1.3**		15.0 to 16.7 feet: SAND (SP); gray; 5% fines; 95% sand, fine grained; loose; trace reddish sand grains; slight petroleum hydrocarbon-like odor; moist.
17			**64**		**1.6**		16.7 to 17.5 feet: SILT (MH); gray; 95% fines, medium to high plasticity; 5% sand, fine grained; soft; no odor; no sheen; wet.
18					**1.1**		17.5 to 18.2 feet: SILTY SAND (SM); grayish brown; 20% fines; 80% sand, very fine grained; loose; no odor; no sheen; wet. @ 18.1 feet: Silt laminae. 18.2 to 20.0 feet: No recovery.
19							
20							

Total Depth = 20.0 feet bgs

NOTES:

1. bgs = below ground surface. 2. Depths are relative to feet below ground surface. 3. ID = identification. 4. PID = photoionization detector. 5. PID results shown in parts per million.

Borehole Completion Details
0 to 20.0 feet: 2.25-inch borehole.
0 to 2.0 feet: Concrete.
2.0 to 3.0 feet: Bentonite chips hydrated with potable water.
3.0 to 20.0 feet: 10x20 silica sand filter pack.

Monitoring Well Completion Details
Washington State Department of Ecology Well No. BMP359.
Traffic-grade, flush-mounted, monitoring well vault.
0 to 5.0 feet: 2-inch diameter, schedule 40, polyvinyl chloride, riser pipe.
5.0 to 19.75 feet: 2-inch diameter, schedule 40, polyvinyl chloride, 0.010 machine slot, prepacked well screen.
19.75 to 20.0 feet: 2-inch, schedule 40, polyvinyl chloride pipe end cap.

▽ ***Water level at approximately 12.5 feet bgs at time of drilling.***

Geologic Borehole Log

MAUL FOSTER ALONGI

Project Number	Well Number	Sheet
0747.01.12	MW10	1 of 2

Project Name	VSF Properties, LLC - North Cascade Ford Compliance Monitoring	TOC Elevation (feet)	
Project Location	116 W Ferry Street, Sedro-Woolley, Washington	Surface Elevation (feet)	
Start/End Date	9/14/2020 to 9/14/2020	Northing	
Driller/Equipment	Holt Services, Inc., Mike Running/Geoprobe	Easting	
Geologist/Engineer	A. Bixby	Total Depth of Borehole	20.0-feet
Sample Method	Direct Push	Outer Hole Diam	2.25-inch

Depth (feet, BGS)	Well Details	Water Levels	Sample Data: Percent Recovery	Sample Data: Sample ID	Sample Data: PID (ppm)	Lithologic Column	Soil Description
1					0.0		0 to 2.8 feet: GRAVELLY SAND WITH SILT (SW-SM); grayish brown; 10% fines; 50% sand, fine to coarse grained; 40% gravel, fine size, angular to subrounded; loose; trace orange mottling; no odor; dry to moist. (FILL)
2					0.0		
3			56		0.0		@ 2.7 feet: 1-inch wood chunk. 2.8 to 5.0 feet: No recovery.
4							
5					1.3		5.0 to 7.8 feet: GRAVELLY SAND WITH SILT (SW-SM); grayish brown; 10% fines; 50% sand, fine to coarse grained; 40% gravel, fine size, angular to subrounded; loose; trace orange mottling; no odor; dry to moist. (FILL)
6							
7			60				
8		▽			1592		7.8 to 8.0 feet: SAND (SP); grayish brown; 100% sand, medium grained; loose; trace reddish sand grains; slight petroleum hydrocarbon-like odor; wet. 8.0 to 10.0 feet: No recovery.
9							
10					34.6		10.0 to 10.6 feet: SILT (ML); grayish brown; 90% fines, medium plasticity; 10% sand, fine to medium grained; soft; trace organic material (woody debris); no odor; no sheen; moist to wet.
11				MW10-S-11.0	18.0		10.6 to 11.5 feet: SAND WITH SILT (SP-SM); grayish brown; 10% fines; 90% sand, very fine grained; medium dense; slight petroleum hydrocarbon-like odor; no sheen; wet.
12							@ 11.4 feet: Silt laminae. 11.5 to 15.0 feet: No recovery.
13			30				
14							
15							

MFA BOREHOLE W/WELL W:\GINT\GINTWPROJECTS\0747.01\12_COMPLIANCE MONITORING\MW01R TO MW12.GPJ 9/18/20

MAUL FOSTER ALONGI

Geologic Borehole Log

Project Number	Well Number	Sheet
0747.01.12	**MW10**	**2 of 2**

Depth (feet, BGS)	Well Details	Water Levels	Sample Data: Percent Recovery	Sample Data: Sample ID	Sample Data: PID (ppm)	Lithologic Column	Soil Description
16					**6.6**		*15.0 to 16.1 feet: SILT (ML); grayish brown; 100% fines, medium plasticity; soft; slight petroleum hydrocarbon-like odor; slight sheen; wet.*
17			**62**				*16.1 to 18.1 feet: SAND (SP); grayish brown; 5% fines; 95% sand, fine grained; loose; no odor; no sheen; wet.*
18					**5.0**		*18.1 to 20.0 feet: No recovery.*
19							
20							

Total Depth = 20.0 feet bgs

NOTES:

1. bgs = below ground surface. 2. Depths are relative to feet below ground surface. 3. ID = identification. 4. PID = photoionization detector. 5. PID results shown in parts per million.

Borehole Completion Details
0 to 20.0 feet: 2.25-inch borehole.
0 to 2.0 feet: Concrete.
2.0 to 3.0 feet: Bentonite chips hydrated with potable water.
3.0 to 20.0 feet: 10x20 silica sand filter pack.

Monitoring Well Completion Details
Washington State Department of Ecology Well No. BMP357.
Traffic-grade, flush-mounted, monitoring well vault.
0 to 5.0 feet: 2-inch diameter, schedule 40, polyvinyl chloride, riser pipe.
5.0 to 19.75 feet: 2-inch diameter, schedule 40, polyvinyl chloride, 0.010 machine slot, prepacked well screen.
19.75 to 20.0 feet: 2-inch, schedule 40, polyvinyl chloride pipe end cap.

▽ ***Water level at approximately 7.8 feet bgs at time of drilling.***