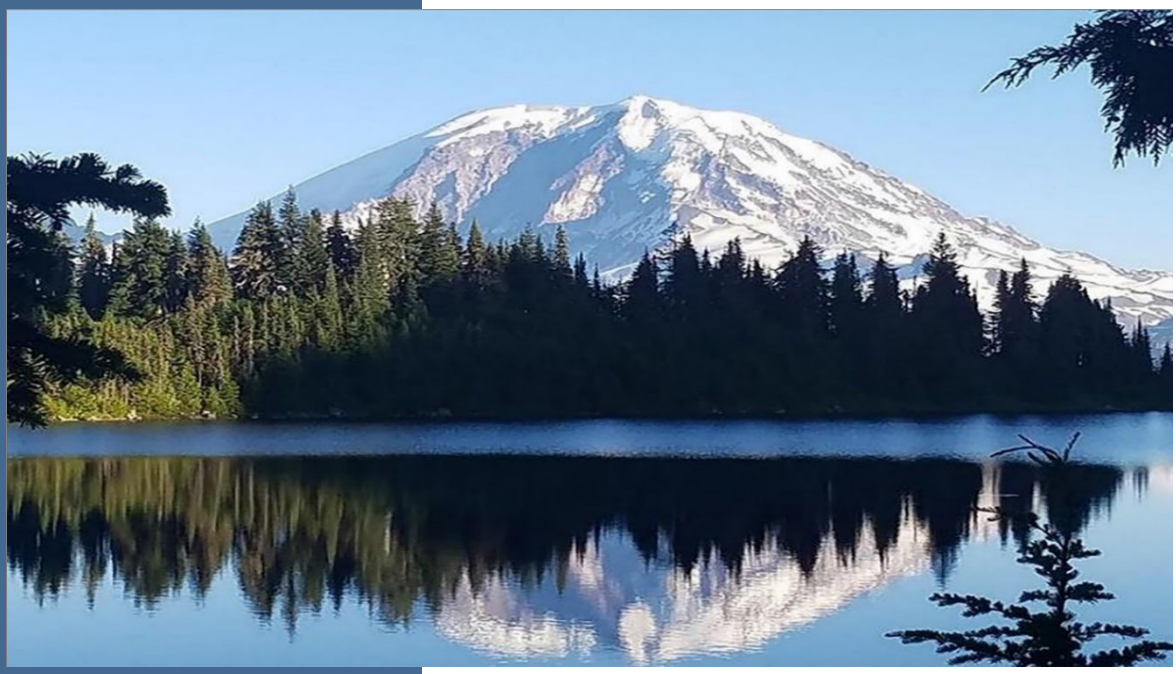

Draft Cleanup Action Plan

Goldendale Energy Storage Project

Columbia Gorge Aluminum Site

By

ERM on behalf of FFP Project 101, LLC

For the

Industrial Section

Washington State Department of Ecology

Olympia, Washington

January 2026

DEPARTMENT OF ECOLOGY
State of Washington

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Contact Information

Industrial Section

Industrial Section-Solid Waste Management Program
P.O. Box 47600
Olympia, WA 98504-7600
Phone: 360-280-4325
Website[2]: Washington State Department of Ecology

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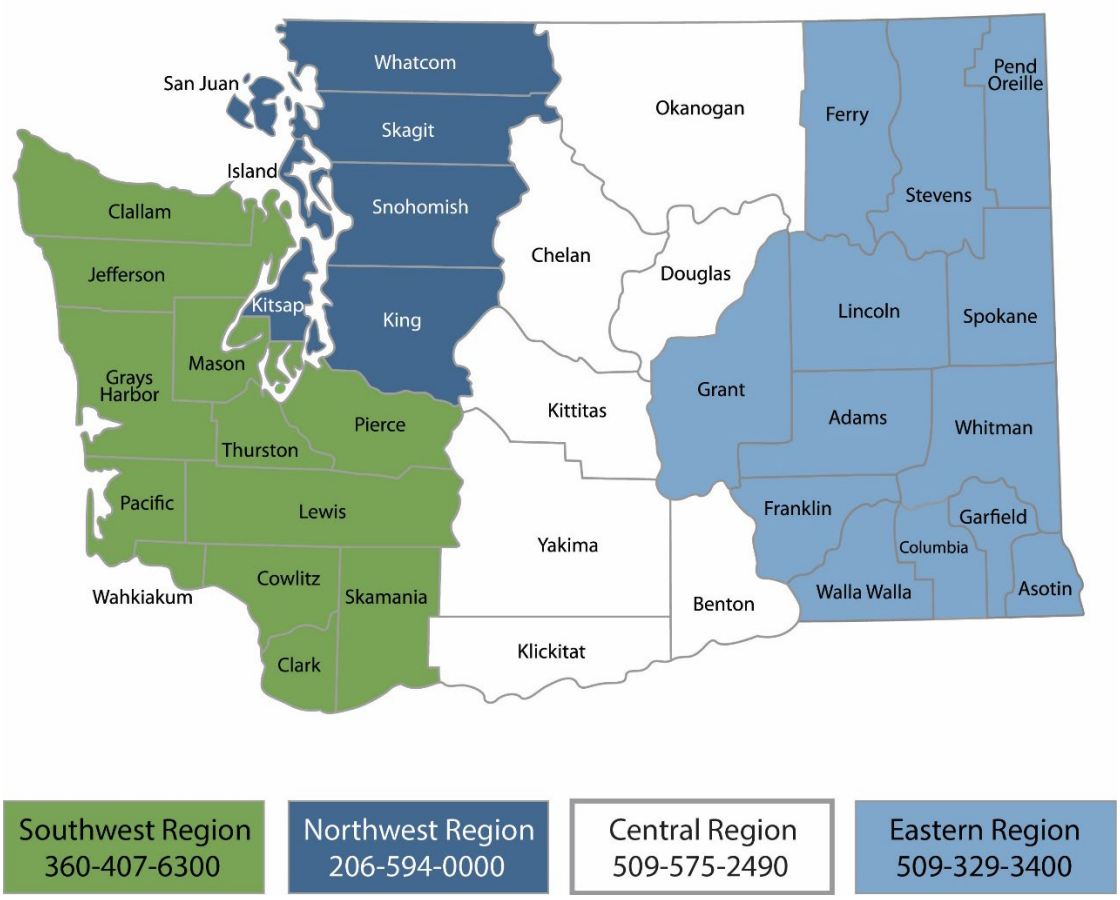

Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
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Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
Headquarters	Across Washington	PO Box 46700 Olympia, WA 98504	360-407-6000

Draft Cleanup Action Plan

Goldendale Energy Storage Project, FERC No. 14861

Columbia Gorge Aluminum Site, CSID 11797

85 John Day Dam Road, Goldendale, Washington

Industrial Section

Washington State Department of Ecology

Headquarters

Olympia, WA

January 2026 | Publication ##-###-###

SIGNATURE PAGE

Draft Cleanup Action Plan

Goldendale Energy Storage Project, FERC No. 14861

No. 14861

Erik Ipsen, P.E.
Partner-In-Charge

Danielle Foss, P.E.
Project Manager

Environmental Resources Management, Inc.
1050 SW 6th Avenue
Suite 1650
Portland, OR 97204

T: +1 503 488 5282
F: +1 503 488 5142

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ACRONYMS AND ABBREVIATIONS

Acronym	Description
AOC	area of concern
Applicant	FFP Project 101, LLC
CAP	Cleanup Action Plan
CAP Area	CGA Smelter Site environmental impacts addressed by this CAP
CGA	Columbia Gorge Aluminum
CGA Smelter Site	Former Columbia Gorge Aluminum site in its entirety
COC	contaminant/chemical of concern
CUL	cleanup levels
DCAP	Draft Cleanup Action Plan
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ERM	Environmental Resources Management, Inc. or ERM-West
FERC	Federal Energy Regulatory Commission
FS	Feasibility Study
LMCO	Lockheed Martin Corporation
MCL	maximum contaminate levels
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MTCA	Model Toxics Control Act
NSC	NSC Smelter, LLC
Order	Agreed Order No. DE 10483
PAH	Polycyclic Aromatic Hydrocarbons

Acronym	Description
PGG	Plateau Geoscience Group, LLC
POC	Point of Compliance
PLPs	potentially liable persons
PPCD	prospective purchaser consent decree
Project	Goldendale Energy Storage Project
Project Area	area of the site to be developed for the Project
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
Smelter PLPs	potentially liable persons for the CGA Smelter Site (LMCO and NSC)
SWMU	solid waste management unit
WAC	Washington Administrative Code
WSI	West Surface Impoundment

EXECUTIVE SUMMARY

This is the Draft Cleanup Action Plan (DCAP) for the Goldendale Energy Storage Project (the "Project") near Goldendale, Washington. The Washington State Department of Ecology (Ecology) will use this DCAP in collaboration with FFP 101, LLC (the "Applicant") to develop the final Cleanup Action Plan (CAP) for the Project. This DCAP has been prepared to meet the requirements of the Model Toxics Control Cleanup Act (MTCA) administered by the Ecology under Chapter 173-340-380 of the Washington Administrative Code (WAC). This CAP describes Ecology's proposed cleanup action for this site and sets forth the requirements that the cleanup must meet.

The Project is a proposed closed-loop, pumped-storage energy generation facility currently in the licensing process administered by the Federal Energy Regulatory Commission (FERC). The Applicant holds an option to develop the Project on 652 acres (the "Project Area") on the western side of the approximately 7,000-acre former Columbia Gorge Aluminum (CGA) Plant property (the "CGA Smelter Site") near Goldendale, Klickitat County, Washington (Figure 1). The Project will be constructed on a 529.6-acre tract of land currently owned by NSC Smelter, LLC (NSC; the "Property Boundary"). The CGA Smelter Site is a Resource Conservation and Recovery Act (RCRA) corrective action site being managed by Ecology as an active cleanup site, Cleanup Site ID 11797, under Agreed Order No. DE 10483 (the Order) with Lockheed Martin Corporation (LMCO) and the current owner, NSC. LMCO and NSC, collectively the Smelter potentially liable persons (PLPs), have completed a *Final Draft Remedial Investigation* (RI) (Tetra Tech 2022) and *Pre-Final Feasibility Study* with attached *Ecological Risk Assessment* (Weston 2025) to address the requirements of the order and pursuant to Chapter 70A.305 Revised Code of Washington.

A portion of the Project, the Lower Reservoir, will be constructed over Solid Waste Management Unit 4 (SWMU 4) (also known as the West Surface Impoundment [WSI]), an area formerly used for waste disposal and impacted by contamination from past smelter operations associated with the CGA Smelter Site. The WSI was closed in 2004 in accordance with applicable regulatory criteria under review and approval of Ecology with concurrence of the U.S. Environmental Protection Agency (EPA) RCRA program. The closed WSI will not provide a geotechnically stable foundation for the Lower Reservoir, therefore, must be removed to construct the Project. Therefore, this DCAP has been developed by the Applicant in collaboration with Ecology and the Smelter PLPs to detail cleanup actions to be undertaken by the Applicant for portions of the Project that overlap with the WSI.

The Applicant prepared *Remedial Investigation/Feasibility Study Report, Rev 2* that assessed cleanup action alternatives to remove the WSI (ERM 2024). The selected actions for the WSI consist of excavation of the WSI wastes and associated impacted soil and offsite disposal of the materials at an appropriate landfill. The selected action for the management of the groundwater plume consists of monitored natural attenuation with contingency. The PLPs will implement all groundwater remediation. This RI/FS was approved by Ecology as Final Draft on 23 December 2024, pending forthcoming EPA and public review and comment periods.

This DCAP describes the proposed cleanup action for the Project Area and establishes the cleanup requirements. Ecology will make a preliminary determination that a cleanup conducted in

conformance with this DCAP will comply with the requirements for selection of a remedy under WAC 173-340-360.

1. INTRODUCTION

This is the Draft Cleanup Action Plan (DCAP) for the Goldendale Energy Storage Project (the "Project") near Goldendale, Washington. The Washington State Department of Ecology (Ecology) will use this DCAP in collaboration with FFP 101, LLC (the "Applicant") to develop the final Cleanup Action Plan (CAP) for the Project. This DCAP meets the requirements of the Model Toxics Control Act (MTCA) administered by the Washington Department of Ecology (Ecology) under Chapter 173-340-380 of the Washington Administrative Code (WAC).

The Project is a proposed closed-loop, pumped-storage energy generation facility currently in the licensing process administered by the Federal Energy Regulatory Commission (FERC). The Applicant holds an option to purchase 652 acres on the western side of the approximately 7,000-acre former Columbia Gorge Aluminum (CGA) Smelter Site (CGA Smelter Site) near Goldendale, Klickitat County, Washington to develop the Project (see Figure 1) The Project will be constructed on a 529.6-acre tract of land currently owned by NSC Smelter, LLC (NSC). The Lower Reservoir will be constructed over environmental impacts associated with the CGA Smelter Site including the West Surface Impoundment (WSI) and impacted groundwater (see Figure 2).

The CGA Smelter Site is a Resource Conservation and Recovery Act (RCRA) corrective action site being managed by Ecology as an active cleanup site under Agreed Order No. DE 10483 (the Order) with Lockheed Martin Corporation (LMCO) and the current owner, NSC. LMCO and NSC, collectively the Smelter potentially liable persons (PLPs; Smelter PLPs), have completed a *Final Draft RI* (Tetra Tech 2022) and Pre-*Final Feasibility Study* (Weston 2025) to address the requirements of the order and pursuant to Chapter 70A.305 of the Revised Code of Washington.

The Applicant prepared *Remedial Investigation/Feasibility Study Report, Rev 2 (Final Draft RI/FS)* that assessed cleanup action alternatives to remove the WSI (ERM 2024). This RI/FS was approved by Ecology as "Final Draft" on 23 December 2024, pending forthcoming EPA and public review and comment periods.

This DCAP specifies cleanup actions associated with the CGA Smelter Site Solid Waste Management Unit 4 (SWMU 4), a landfill designated as the WSI and associated groundwater contamination (the "CAP Area"). The WSI was closed in 2004 but historically received state-only designated dangerous waste based on bioassay criteria in place at the time of waste interment. The Site including the WSI is regulated under RCRA as an interim-status facility. The WSI is currently in a long-term monitoring program required by Ecology as a condition of the closure. The WSI consists of an engineered liner system, the contents of the WSI, and an approved RCRA-engineered cover system. The Project Area is a 652-acre tract of land on the western side of the approximately 7,000-acre former CGA Plant property and includes the WSI and groundwater monitoring wells owned by the Smelter PLPs to monitor groundwater impact attributable to other historical CGA Smelter operations.

Figure 2 shows the 529.6-acre tract of land currently owned by NSC Smelter, LLC (NSC; the "Property Boundary"), including the closed WSI, groundwater monitoring wells owned by the Smelter PLPs, and the approximate extent of impacted groundwater located within the CAP Area.

The closed WSI will not provide a geotechnically stable foundation for the Lower Reservoir, therefore, the WSI must be removed to construct the Project.

1.1 PURPOSE

This DCAP has been prepared in accordance with the Washington State Department of Ecology's updated requirements under Chapter 173-340-380 WAC, as revised in August 2023. The DCAP outlines the proposed cleanup action for the Goldendale Energy Storage Project and is intended to meet the current standards for cleanup action plans under MTCA. This document also serves to inform the public and stakeholders, including tribal governments, by providing a clear explanation of the proposed remedy and its rationale, in accordance with WAC 173-340-620 and WAC 173-340-600. Figure 1 shows the general location and layout of the Project and Project Area.

In accordance with WAC 173-340-380(5), this plan includes the following required elements:

- A general description of the cleanup action selected;
- A summary of the rationale for selecting the cleanup action;
- A summary of how impacts on likely vulnerable populations and overburdened communities were considered when selecting the cleanup action and developing the plan;
- For ecology-conducted or ecology-supervised remedial actions, a brief summary of how ecology considered the following when selecting the cleanup action:
  - Public concerns identified;
  - Indian tribes' rights and interests identified;
- A brief summary of the other cleanup action alternatives evaluated in the remedial investigation/feasibility study;
- Cleanup standards and, where applicable, remediation levels, for each hazardous substance and for each environmental medium of concern at the site;
- Any changes to the default assumptions or reasonable maximum exposure scenarios used to establish cleanup standards or to demonstrate the protectiveness of the cleanup action;
- The schedule for implementing the cleanup action plan including, if known, the restoration time frame;
- Any institutional controls required as part of the cleanup action;
- Any applicable state and federal laws for the cleanup action known at this step in the cleanup process. This does not preclude subsequent identification of applicable state and federal laws; and,
- A preliminary determination by ecology that the cleanup action will comply with WAC 173-340-360.

The DCAP supports Ecology's determination that a cleanup conducted in conformance with this DCAP will comply with the requirements for selection of a remedy under WAC 173-340-360.

1.2 PREVIOUS STUDIES

The Order requires the Smelter PLPs to perform a remedial investigation (RI) and feasibility study (FS) on the CGA Smelter Site, which includes the CAP Area. Previous investigations describe the

nature and extent of contamination on the CGA Smelter Site. Reports that provide background information on the CGA Smelter Site and CAP Area pertinent to this DCAP include the following:

- *Draft Risk Assessment Problem Formulation*, Plateau Geoscience Group LLC (PGG), May 2014
- *Columbia Gorge Aluminum Smelter Site Final Remedial Investigation Work Plan Volumes 1 & 2*, Tetra Tech, Inc., (Tetra Tech), August 2015
- *Columbia Gorge Aluminum Smelter Site 2017 Groundwater Monitoring Report West Surface Impoundment*, Tetra Tech, September 2017
- *Columbia Gorge Aluminum Smelter Site Final Work Plan Addendum,* Tetra Tech, September 2020
- *Prospective Purchaser Agreement – Detailed Proposal,* Environmental Resources Management (ERM), August 2021
- *Remedial Investigation/Feasibility Study Report, Rev 0* for the Project Area, ERM, November 2021
- *Final Draft Remedial Investigation Report,* Tetra Tech, June 2022
- *Remedial Investigation/Feasibility Study Report, Rev 1* for the Project Area, ERM, June 2022
- *Final Draft Site Wide Feasibility Study*, Weston Solutions, Inc. (Weston), 2024
- *2024 Annual Groundwater Monitoring Report and Surface Maintenance Report West Surface Impoundment, Blue Mountain Environmental Consulting, Inc. (BMEC), October 2024*
- *Remedial Investigation/Feasibility Study Report, Rev 2* for the Project Area, ERM, November 2024
- *Pre-Final Feasibility Study,* Weston, May 2025

1.3 REGULATORY FRAMEWORK

The Project will be a closed-loop hydroelectric facility licensed by FERC. The FERC application requires the following.

- A State Environmental Policy Act analysis to assess potential environmental impacts associated with the Project. Ecology published the final Environmental Impact Statement in December 2022 (Ecology 2022).
- A signed Prospective Purchaser Consent Decree (PPCD). The Project Area is within the CGA Smelter Site property owned by NSC. The Applicant worked with Ecology and the Washington Office of the Attorney General and has a pending PPCD under MTCA for the Property Boundary to support purchase and redevelopment of the Project Area. The pending PPCD requires the Applicant to complete certain cleanup actions under requirements of MTCA.

The sections below describe requirements for cleanup actions within the Project Area and stakeholders in the PPCD.

1.3.1 MODEL TOXICS CONTROL ACT

Cleanup conducted under MTCA requires potentially liable parties or Ecology to prepare specific documents. The procedural tasks and resulting documents, along with the relevant MTCA reference, are listed below with a brief description of each.

- Remedial Investigation and Feasibility Study (RI/FS) (WAC 173-340-350). The RI/FS documents the investigations and evaluations conducted at the Site from the discovery phase to the RI/FS report. The RI collects and presents information on the nature and extent of contamination and the risks posed by the contamination. The FS evaluates cleanup alternatives and proposes a cleanup alternative. The documents are usually prepared by the responsible parties, accepted by Ecology, and provided to the public for comment.
- Cleanup Action Plan (CAP) (WAC 173-340-380): sets cleanup standards for the site, and selects the cleanup actions intended to achieve the cleanup standards. The DCAP and Final CAP may be prepared by either Ecology or the responsible party. Ecology is ultimately responsible for these documents and makes the final determination on the content. Ecology issues the Final CAP following public comment.
- Public Participation Plan (WAC 173-340-600): coordinates and encourages public involvement. Ecology prepares this document.
- Engineering Design Report, Construction Plans and Specifications (WAC 173-340-400): details the selected cleanup, including engineered systems and design components described in the CAP. The design is usually prepared by the responsible parties and accepted by Ecology. Public comment is optional.
- Health and Safety Plan (WAC 173-340-400): describes measures to meet safety and health requirements of WAC 173-340-810. The document is usually prepared by the responsible parties and accepted by Ecology.
- Cleanup Action Report (WAC 173-340-400): details the completed cleanup and documents adherence to or variance from the CAP and design. The document is usually prepared by the responsible parties and accepted by Ecology.
- Compliance Monitoring Plan (WAC 173-340-410): details monitoring required to demonstrate that the cleanup is implemented as intended and describes sampling and analysis to meet the requirements of WAC 173-340-820. The document is usually prepared by the responsible parties and accepted by Ecology.

The ERM *Remedial Investigation/Feasibility Study Report, Rev 2 (Final Draft RI/FS)* for the Project Area was approved as "Final Draft" by Ecology on 23 December 2024. The Final Draft RI/FS, PPCD, and DCAP will be provided for public comment.

1.3.2 RESOURCE CONSERVATION AND RECOVERY ACT

The Project will be constructed on part of the CGA Smelter Site identified as a RCRA site in 1981, identification number WAD990828642. The WSI received state-only designated dangerous waste based on bioassay criteria in place during waste interment. The RCRA closure process for the WSI began in 2004. A revised RCRA Part B application was submitted in August 2004 (Golder 2004) to reflect closure of the WSI. Ecology approved the WSI Closure Plan in October 2004, and the WSI was closed in November 2005. A final status permit has not been issued and the smelter CGA Smelter Site continues as a RCRA interim-status facility.

The Environmental Protection Agency's (EPA's) Post-Closure Care Final Rule provides the regulatory agency discretion to impose alternative requirements developed for corrective action in

lieu of the requirements of 40 CFR Parts 264 and 265, Subparts F, G, and H, where a regulated unit and another unregulated solid waste unit have contributed to the same release (Section 6). The alternative requirements for corrective action for this facility will be those developed in accordance with MTCA under Washington's authorized program.

If approved as part of an authorized program, Ecology may use enforceable documents developed under MTCA as an alternate administrative mechanism to require corrective action and implementation of ongoing controls/requirements in lieu of the RCRA post-closure permit for the WSI. The Applicant and Smelter PLPs propose to use the PPCD for this Project to serve this function for the WSI. The current Agreed Order together with the pending site-wide consent decree could serve this function for the remainder of the Project Area.

The Applicant proposes to use the Cleanup Action Plan for the Project implemented under the PPCD as an amended closure plan for the WSI, specifying the removal of wastes, liners and impacted soils above applicable, risk-based cleanup levels. Public notice requirements for closure plan amendment will be incorporated in the administrative process for the PPCD.

1.3.3 STAKEHOLDERS

Ecology will consult with the following key stakeholders during development and implementation of the RI/FS, CAP, and PPCD.

1.3.3.1 UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

The CGA Smelter Site is a RCRA Corrective Action site. Ecology must provide the EPA opportunity to provide input on the project at key decision points in accordance with the Memorandum of Understanding between Ecology and EPA for Corrective Action sites. Ecology plans to solicit EPA input on the DCAP, and PPCD after the documents have been prepared and before public comment is solicited.

1.3.3.2 YAKAMA NATION

The CGA Smelter Site is located within a treaty-defined "usual and accustomed fishing area" of the Confederated Tribes and Bands of the Yakama Nation (the Tribe). The North Shore Treaty Fishing Access Site is located approximately 1 mile from the CGA Smelter Site adjacent to the Columbia River immediately upstream of the John Day Dam (Ecology 2014). The Tribe has significant interest as custodians of ancestral lands and shared resources. They are crucial stakeholders due to potential impacts on treaty rights, cultural resources, and the health of their communities. Ecology will continue to engage and collaborate with the Tribe throughout the cleanup process.

Ecology has a Memorandum of Understanding with the Tribe for governmental coordination on state-led cleanup sites of interest to the Tribe. Ecology is currently receiving comments from the Tribe on the sitewide cleanup work at the CGA Smelter Site. Ecology and the Tribe share technical information for the CGA Smelter Site as it is developed and reviews and responds to comments from the Tribe on cleanup studies, plans, and documents. Ecology anticipates that the same approach will be used for cleanup actions within the Project Area. At the time of this report, a

Yakima Nation specific Tribal Engagement Plan is being prepared by Ecology. Ongoing and future engagement with the Tribe will be in accordance with the adopted plan and revised as needed.

1.3.3.3 LOCAL GOVERNMENT

Klickitat County is a key stakeholder in the Project due to its jurisdiction over land use, permitting, and solid waste handling. The County's role includes reviewing and issuing permits that may be required for implementing the CAP. The Applicant will coordinate with Klickitat County to comply with local requirements, as applicable.

1.3.3.4 GENERAL PUBLIC AND AFFECTED COMMUNITIES

Ecology will prepare a Public Participation Plan (PPP) under WAC 173-340-600 to support transparency and community involvement in the cleanup process. The PPP will describe how Ecology will share information and provide opportunities for public input. This may include public notices, fact sheets, meetings, and updates on Ecology's website. In accordance with WAC 173-340-380(5)(c), Ecology will hold a public comment period on the DCAP, the Final Draft RI/FS, and the PPCD. Comments received will be reviewed and considered before finalizing the CAP.

The Goldendale Energy Storage Project is located on private land zoned for energy development and presents an opportunity to remediate a brownfield site for development of renewable energy infrastructure. The project is expected to provide long-term environmental and economic benefits to the region. A low-carbon energy resource designed to last 100 years or longer, it will provide good-paying jobs and millions in annual tax revenue to Klickitat County while helping the state of Washington meet its clean energy mandate.

2. SITE DESCRIPTION

The former CGA Smelter facility is located at 85 John Day Dam Road, Goldendale, Washington (Figure 1). The CGA Smelter Site is located north of the Columbia River approximately 9 miles southeast of the city of Goldendale in Klickitat County. The CGA Smelter Site includes portions of Sections 20 and 21 in T3N, R17E, Willamette Meridian.

2.1 SITE HISTORY

Harvey Aluminum Company built the CGA Smelter in 1969 and 1970. There was one major expansion in 1971. Martin Marietta (later LMCO) owned the facility from 1971 to 1985. Other owners included Commonwealth Aluminum from 1985 through 1987, Columbia Aluminum from 1987 through 1996, and Goldendale Aluminum from 1996 through closure in 2003. NSC is the current owner of the CGA Smelter Site and surrounding land.

The smelter operated as a primary aluminum smelter from approximately 1970 until 2003, when smelting ceased. Since 2003, the site owners have demolished structures, except for a few office and storage buildings and a small active wastewater treatment plant permitted under the National Pollutant Discharge Elimination System permit WA0000540. Figures 1 and 2 show the Project Area and the overlap with CGA Smelter Site and the WSI.

2.1.1 WEST SURFACE IMPOUNDMENT (SMWU-04)

The WSI is the only SWMU that is within the Project Area. The smelter operators constructed the approximately 10-acre WSI in 1981 as an earthen impoundment with a maximum depth of approximately 18 feet. The wastes in the WSI include the following (Parametrix 2004).

- Sludge from plant process, as designed, included:
  - Tertiary plant waste solids underflow
  - Sulfur dioxide scrubbers underflow
  - Thickener and reaction clarifier filter press cake
- Basement cleanup and cell line sweepings
- Dormer dust
- Paving cleanup
- Sludge from auto shop wash station
- Sludge from paste plant cooling water
- Cleanup soil from paste plant
- Filter cake

The WSI managed waste through evaporation of wastewater and disposal of emission control sludge. The WSI contained approximately 89,000 cubic yards of material at the time of closure in 2004 (Parametrix 2004).

During the initial years of operation, the CGA Smelter operator managed the WSI under the operational and monitoring requirements of RCRA. In August 2004, Goldendale Aluminum Company submitted a revised Part A and Part B Dangerous Waste Permit Application for the WSI.

The revised application was necessary because the operator closed the WSI as a RCRA facility, although Ecology classified the WSI sludge as a solid waste. Originally, Ecology designated the WSI sludge as a state dangerous waste under WAC 173-303 until the regulations were amended in 1997, at which time the sludge was designated as a solid waste. Five composite WSI sludge samples passed a bioassay test (Goldendale Aluminum Company 1997; Ecology 1997), confirming that the WSI sludge was subsequently classified as a non-hazardous, non-dangerous, solid waste.

Although WSI wastes were designated as solid waste only, the WSI was closed by the operator in 2004 in accordance with applicable dangerous waste requirements under WAC 173-303 and federal RCRA regulations. NSC and LMCO have conducted site inspections and groundwater monitoring, under the oversight and review of Ecology and the EPA, as required by the RCRA closure plan.

Closure of the WSI included the following elements:

- Blending site borrow material with the landfill contents such that they will support construction equipment and consolidation of the landfill contents to reduce the impoundment footprint.
- Installing a ventilation system consisting of 12-inch wide strip drains, below the liner system that leads to three vertical ventilation pipes.
- Covering the landfill contents with an engineered RCRA cap that consists of geosynthetic clay liner, 30-millimeter thick polyvinyl chloride geomembrane, and an 8-ounce nonwoven geotextile.
- Placing a 2-foot thick layer of cover soil consisting of soil from the onsite borrow pit and soils from the existing south berm road.
- Hydroseeding the final cover system.

Appendix A includes details of the approximate location of each type of waste within the WSI and at the time of closure (see Figure A1 adapted from Parametric [2004]); figures showing the final grading plan for the WSI after closure (Figure A2); and a recent aerial photograph (Figure A3); Plan view maps with cross section locations (A4 and A5), and geological cross sections of the WSI (Figures A6-A8).

To avoid penetrating the WSI and potentially creating preferential downward contaminant migration pathways, soil samples have not been collected from beneath the WSI to delineate the potential soil contamination for WSI leaching. However, historical groundwater monitoring associated with the WSI has included analysis of some or all of the following: pH, conductivity, total organic carbon, sulfate, fluoride, chloride, sodium, iron, manganese, free cyanide, total cyanide, and total phenols. The Closure and Post-Closure Plan monitoring well locations include MW-8A, MW-10A, MW-12A, MW-14A, MW-3B, and MW-18. Sample results identified fluoride, chloride, sulfate, and cyanide as chemicals that had affected groundwater in the area of the WSI and thus became the main analytes monitored since closure. Figure 2 shows the location of groundwater monitoring wells near the WSI. Appendix B includes monitoring well construction details (Table B1) and sampling results from the 2024 annual groundwater monitoring report (Table B2) (BMEC 2024).

2.2 HUMAN HEALTH AND ENVIRONMENTAL CONCERNS

2.2.1 CONTAMINANTS OF CONCERN

Contaminants of potential concern (COPCs) in the Project Area, as identified in the Final Draft Remedial Investigation Report (Tetra Tech 2022), included chemicals associated with the former aluminum reduction facility and wastes formerly disposed of in the WSI. These COPCs included cyanide, fluoride, sulfate, and poly aromatic hydrocarbons (PAHs). In addition, polychlorinated biphenyls (PCBs), some metals (e.g., arsenic, cadmium, nickel, and lead), volatile organic compounds (VOCs) related to fuels and solvents, and total petroleum hydrocarbons (TPH) represented COPCs for some areas and media at the CGA Smelter Site.

Cyanide, fluoride, and sulfate are related to smelter operations and used pot liners at the site. Fluoride is present in the cryolite bath material, in spent pot liners, and air pollution control byproducts. PAHs and sulfates are present in the coke and pitch for the manufacture of briquettes used to line the pots. Cyanide is produced in trace amounts within spent pot liner during the aluminum reduction process. PCBs were historically used in oils in the capacitors and transformers at the site.

PAH particulates from the aluminum processing cells became entrained in gaseous emissions and removed by the scrubber air pollution control system (in particular the wet air scrubber system), which then generated a PAH-containing wastewater stream and sludges.

Contaminants of concern (COCs) addressed in this DCAP are based on the evaluation of the nature and extent of contamination data presented in the *Final Draft RI/FS* (ERM 2024), potential risks to human health and the environment, and Applicable or Relevant and Appropriate Requirements (ARARs). This DCAP assumes groundwater conditions following the implementation of the remedy will not substantially deteriorate from the conditions as documented in the RI (Tetra Tech 2022). COCs are summarized in the following sections.

2.2.1.1 SOIL

As there has been no sampling of the soil beneath the WSI, soil COCs are inferred based on their presence in groundwater above federal and state primary or secondary maximum contaminant levels (MCLs). The soil COCs include fluoride, sulfate, aluminum, arsenic, cyanide, and lead. Groundwater monitoring results indicate that selenium, cadmium, VOCs, PAHs, and petroleum hydrocarbons are not a concern for the soil-to-groundwater pathway as they have not been observed in groundwater above federal and state primary or secondary MCLs.

Fluoride and sulfate have consistently been found above MCLs in groundwater downgradient of the WSI. Although there is limited groundwater impacts of aluminum, arsenic, cyanide, and lead, these soil COCs have been retained in this CAP based on the potential soil-to-groundwater pathway (ERM 2024).

There are no known areas of contaminated soil associated with the CGA Smelter Site within the Project Area outside of the WSI footprint. If there is soil contamination outside of the WSI but within the Project Area, it is expected to be below the cleanup levels protective of groundwater since separate plumes have not been observed nor are there additional known sources.

2.2.1.2 GROUNDWATER

Historically the WSI groundwater monitoring network has consisted of six monitoring wells with additional wells added during the remedial investigation to supplement the dataset. Figure 2 shows the location of groundwater monitoring wells in and near the Project Area. Monitoring data reported in the RI prepared by the Smelter PLPs (Tetra Tech 2022) and recent monitoring data (BMEC 2024) indicate groundwater concentrations of fluoride and sulfate are consistently above screening levels in groundwater downgradient of the WSI. Aluminum, arsenic, cyanide, and lead have been detected at concentrations above screening levels but below cleanup levels (CULs) with limited frequency at select monitoring wells in this same area. VOCs, PAHs, and petroleum hydrocarbons have not been detected in this area (Tetra Tech 2022; BMEC 2024).

Groundwater COCs may be added pending results of soil samples beneath the WSI (e.g., multiple detections of a constituent in soil samples from beneath the WSI that are above its soil CUL for the protection of groundwater may warrant addition to the COC list). Soil results will be shared with Ecology and the PLPs with recommendations for additional groundwater COCs following completion of WSI excavation and confirmation sampling.

2.2.1.3 CONCEPTUAL SITE MODEL

A site conceptual model (CSM) integrates understanding of sources, nature, and extent of contamination; fate and transport mechanisms; and potential receptors and exposure pathways to environmental contamination. Figures 3-1 and 3-2 present the CSM schematic for the Project Area. This CSM is adapted from the Final Draft RI (Tetra Tech 2022) to be focused on the Project Area.

2.2.2 HUMAN AND ECOLOGICAL EXPOSURE

Potential exposure to COCs in soil and/or groundwater and/or physical stresses (e.g., destruction of habitat and disturbance) during the proposed Project construction and operation represent the primary effects to potential ecological and human receptors in the Project Area.

2.2.2.1 ECOLOGICAL RECEPTORS

Ecological exposure to COCs within the WSI is unlikely given the location of soil impacts are limited to the WSI which is capped, a low-quality habitat, and secured with fencing. As a result, wildlife is not considered a potential receptor. The WSI is a landfill with an engineered RCRA cap consisting of soil and geosynthetic materials. Quarterly inspections and maintenance are completed to maintain integrity of the cap including removal of rodent holes and vegetation clearance (BMEC 2024). According to MTCA WAC 173-340-7491(b), the WSI is exempted from Terrestrial Ecological Evaluation requirements as it was closed under RCRA program requirements and is undergoing long-term post-closure groundwater monitoring.

There is potential for ecological exposure to livestock and terrestrial wildlife at Spring 6 and 7 as it is suspected they are connected to the groundwater adjacent to the Project Area. These locations do not exceed the protective of livestock screening levels for sulfate (500 milligrams per liter [mg/L]) and fluoride (2 mg/L) and there is no established terrestrial wildlife screening level (Weston 2025). Additionally, both springs appear to be at the leading edge of the plume for their

respective aquifers where COPCs have primarily attenuated (i.e., low concentrations relative to the groundwater immediately downgradient from the WSI).

2.2.2.2 HUMAN RECEPTORS

The majority of the CGA Smelter Site is currently zoned for industrial use. In the eastern portion of the CGA Smelter Site an area zoned for extensive agriculture is present. In addition, south of main plant area there is an area zoned as Open Space. Land use surrounding the CGA Smelter Site includes livestock grazing, primarily cattle, in the sagebrush/grassland habitat (Tetra Tech 2022). Access to CGA Smelter Site and the Project Area is restricted, with most of the area fenced with locked gates.

Exposures by humans could occur through contact, ingestion, or inhalation of contaminated subsurface soil, dust entrained in air during construction, or use of contaminated groundwater. The Weston *Pre-Final Feasibility Study* describes possible exposure to CGA Smelter Site related contaminants (Weston 2025). Potential human receptors at the CAP Area include current and future users of the area, potential trespassers, and potential future users of groundwater. Current water rights identify drinking water as a possible beneficial use (PGG 2014); however, there are currently no drinking water wells located in the Project Area.

There are potential human receptors at Spring 6 and 7 as it is suspected they are connected to groundwater. However, these locations are primarily used for livestock watering (cattle) and human exposure can be eliminated/reduced through institutional controls.

2.3 CLEANUP STANDARDS

Remedial actions must comply with cleanup standards set forth in WAC 173-340-700 through 173-340-760. Cleanup standards include CULs for site COCs, the point of compliance (POC) (i.e., location where these CULs must be met), and other regulatory requirements that potentially apply to the site due to the remedial action type and/or site location. Cleanup standards are based on federal and state primary or secondary MCLs. Detailed rationales for the selection of COCs and CULs are presented in the *Final Draft RI/FS* (ERM 2024) and summaries are presented in the sections below.

2.3.1.1 SOIL CLEANUP LEVELS

Soil CULs are based on the most protective level between protection of groundwater and human health. Soil CULs are summarized below and detailed in Table 1.

- Proposed Cleanup Levels: Soil CULs protective of groundwater and human direct contact. The lowest soil CUL (most protective) will be used. All values are consistent with the most recent updates to Ecology's Cleanup Levels and Risk Calculation (CLARC) tables, published in February 2025.
    - Protection of groundwater CULs are based on the Ecology soil concentrations calculated using Equation 747-1 under WAC 173-340-747.
    - For constituents where protection of human health is more limiting, such as lead in shallow soil, cleanup levels are based on MTCA Method A Industrial soil values.

  - For arsenic, the cleanup level reflects the Eastern Washington regional background concentration, consistent with Ecology guidance.

- Soil COCs based on groundwater results that exceeded the CULs are fluoride and sulfate.
  - The cleanup level of 2,150 milligrams per kilogram (mg/kg) for sulfate is proposed for protection of groundwater (Tetra Tech 2022).
  - The cleanup level of 148 mg/kg for fluoride is proposed for the protection of groundwater based on the screening level calculated in the *Final Draft RI* (Tetra Tech 2022) for the protection of groundwater using site-specific data. The protective soil concentration was derived based on the groundwater screening level concentration of 0.96 mg/L, a soil/water soil adsorption coefficient (Kd) value of 153 liters per kilogram, and a dilution factor of 1 (Tetra Tech 2022).
- Although there were limited detections and MCL exceedances of aluminum, arsenic, cyanide, and lead in groundwater during the RI, these constituents will be included as soil COCs for screening and verification that they are not present in concentrations above the soil to groundwater pathway or background levels.

TTEC PAHs did not exceed the state and federal primary MCL of 0.2 microgram per liter in wells sampled during the RI (Tetra Tech 2022). Because the groundwater data for TTEC PAHs do not indicate significant impacts at the site, PAHs are not selected as soil COCs based on the protection of groundwater (Weston 2025).

TABLE 1 SOIL CLEANUP LEVELS

Analyte	Cleanup Level (mg/kg)	Basis for Cleanup Level
Aluminum	480,000	Protection of Groundwater
Arsenic[a]	7.61	Eastern Washington Regional Background
Cyanide (Free)	1	Protection of Groundwater
Fluoride[b]	148	Protection of Groundwater
Sulfate[c]	2,150	Protection of Groundwater
Lead	1,000 (0-15’ bgs); 3,000 (<15’ bgs)	Industrial Method A; Protection of Groundwater

Notes:
mg/kg = milligrams per kilogram
a= Natural background based on Ecology (1994; Publication #94-115) Natural Background Soil Metals Concentrations in Washington State study. Value represents 90th percentile of eastern Washington dataset.
b = Fluoride soil screening level for protection of groundwater based on empirical demonstration consistent with WAC 173-340-747.
c = Sulfate screening level for protection of groundwater based on literature distribution coefficient, secondary MCL, and fixed parameter three-phase partitioning model

2.3.1.2 GROUNDWATER CLEANUP LEVELS

The *Final Draft RI/FS* identified groundwater screening levels as drinking water MCLs, MTCA Method A formula values, or secondary MCLs (ERM 2024). Groundwater at this site is considered a potential source of drinking water as that represents its highest beneficial use consistent with MTCA requirements.

- Groundwater COCs for the Western AOC (i.e., groundwater contamination associated with the WSI): fluoride and sulfate.
- Proposed CULs:
  - The cleanup level for fluoride is set at the MTCA Method B CUL of 0.96 mg/L.
  - The cleanup level for sulfate is set at the secondary MCL of 250 mg/L.

As the Smelter PLPs are responsible for risks associated with groundwater and Springs 6 and 7, the final groundwater CULs as established in the pending sitewide CAP for the CGA Smelter Site will take precedent over the CULs listed herein. If there are any differences between the CULs established in this document and those in the final sitewide CAP, the CULs in the sitewide CAP will govern.

TABLE 2 PROPOSED GROUNDWATER CLEANUP LEVELS

Analyte	Proposed Cleanup Level (mg/L)	Basis for Cleanup Level
Fluoride	0.96	MTCA Method B
Sulfate	250	WA MCL

Notes:
mg/L = micrograms per liter
MTCA = Model Toxics Control Act
WA MCL = Washington Maximum Contaminant Level

3. DESCRIPTION OF SELECTED REMEDY

ERM completed an initial screening of cleanup alternatives as part of the *Final Draft RI/FS* (ERM 2024). The FS proposed a soil remedy according to requirements and procedures for selecting cleanup actions under MTCA (WAC 173-340-360(2)(a),(b),(c), and (d)) and was approved by Ecology on 23 December 2024.

3.1 SITE DESCRIPTION

The cleanup action location is the WSI itself, the soil below the WSI with concentrations of COCs exceeding the CULs, and the western groundwater AOC (Figure 2).

3.2 DESCRIPTION OF CLEANUP ACTION

The selected cleanup action for the WSI includes the excavation of the WSI to the bottom liner and over-excavation of the underlying contaminated soil exceeding CULs to a maximum depth of 15 feet beneath the bottom liner or until the groundwater table or bedrock is encountered, whichever is shallower. Confirmation soil sampling will be conducted below the WSI bottom liner to determine where over-excavation is required. The contaminated materials and soil will be disposed of at a landfill permitted to accept the waste. For costing purposes in the *Final Draft RI/FS* (ERM 2024), over-excavation was assumed to be required beneath 20 percent of the WSI footprint. If sampling determines that over-excavation to 15 feet beneath the bottom liner is required for more than 20 percent of the WSI area, the findings will be reported to Ecology and a focused FS will be prepared to evaluate the appropriate additional remedial actions at the site.

Groundwater monitoring wells in the Project footprint will be decommissioned in accordance with Washington regulations (WAC 173-160-381) as a part of the construction of the Lower Reservoir. Groundwater monitoring wells will be installed, as needed, to replace the decommissioned wells for use by the Smelter PLPs to meet the requirements of the Order.

As the Smelter PLPs are responsible for risks associated with groundwater and Springs 6 and 7, the final groundwater cleanup action as established in the pending sitewide CAP for the CGA Smelter Site will take precedent over the action presented herein. If there are any differences between the cleanup action in this document and that in the final sitewide CAP, the cleanup action in the sitewide CAP will govern. Remedial actions being considered in the sitewide FS (Weston 2025) include establishing a monitoring well network. The monitoring plan will be reassessed and updated as necessary in conjunction with five-year reviews. During each five-year review, trend analysis will be performed for fluoride and sulfate in groundwater and assess the remedy effectiveness. If necessary to achieve groundwater remedial action objectives, evaluation of contingency measures will be triggered. It is expected that a minimum of 10 years of data collection after remedy implementation will be required to evaluate trends and remedy effectiveness (Weston 2025).

The Weston *Pre-Final Feasibility Study* states that post-remedy implementation activities will include reporting the findings to Ecology and if necessary, a focused feasibility study will be performed to evaluate appropriate additional remedial actions at the site (Weston 2025). Potential

additional remedial actions that would be considered include refined stormwater management, additional soil removal, and hydraulic containment.

An environmental covenant on groundwater use will be recorded at the Klickitat County Auditor's Office to provide long-term protection of human health and the environment. The covenant will specify institutional controls to limit, restrict, or prohibit activities that would interfere with the integrity of the cleanup action or result in exposure to contaminated groundwater. The covenant will be executed by the property owner and recorded with the register of deeds for Klickitat County. Interim controls will protect workers from exposure to contaminated soil or groundwater during construction.

3.2.1 PROTECTIVENESS

Removing waste in the WSI and associated impacted soil will be protective of human health and the environment. The WSI wastes and associated soil will be excavated and transported offsite. The waste and soil removal will eliminate potential human and ecological exposure and eliminate a potential source of COCs to groundwater.

3.2.2 COMPLIANCE WITH CLEANUP STANDARDS

Removing waste in the WSI and associated impacted soil will achieve soil CULs protective of groundwater and human direct contact. The lowest soil CUL (most protective) will be used. All values are consistent with the most recent updates to Ecology's CLARC tables, published in February 2025.

3.2.3 COMPLIANCE WITH ARARS

The proposed cleanup action will comply with all applicable relevant and appropriate requirements, which are summarized in Table 3.

3.2.4 PROVIDE FOR COMPLIANCE MONITORING

The Applicant will prepare a compliance monitoring plan to describe confirmation sampling of the WSI excavation to document that the excavation achieves the soil CULs. The Smelter PLPs will develop and implement groundwater compliance monitoring at the CGA Smelter Site, including the western groundwater AOC, in accordance with the requirements of the Order.

3.2.5 USE OF PERMANENT SOLUTIONS

The proposed cleanup action is a permanent solution because excavation and offsite disposal will permanently remove the WSI source materials, thereby removing a potential contamination source to groundwater.

3.2.6 REASONABLE RESTORATION TIMELINE

The timeline for excavation of the WSI and soils above the CULs, mitigating direct contact exposure and groundwater pathway from impacted soil, is up to 2 years.

For groundwater, the timeline is longer due to reliance on monitored natural attenuation but is expected to be reasonable given the removal of the primary source and the implementation of

long-term monitoring and contingency measures (if needed). The remedy includes five-year reviews and trend analysis to evaluate progress and determine if additional actions are needed.

3.2.7 CONSIDERATION OF PUBLIC CONCERNS AND TRIBAL RIGHTS AND INTERESTS.

This DCAP has been developed in accordance with the requirements of WAC 173-340-360(4)(d)(i) and (ii), which call for consideration of public concerns and tribal rights and interests in selecting a cleanup action.

Ecology and the Applicant have coordinated with the Tribe. The CGA Smelter Site is located within the Tribe's treaty-defined usual and accustomed fishing area. Ecology has shared technical information with the Tribe and received input on the sitewide remedial investigation and feasibility study. A Tribal Engagement Plan is being prepared to guide future coordination.

In accordance with WAC 173-340-600(13) and (14), Ecology will prepare a PPP to support community involvement and provide opportunities for input. The PPP will be finalized before the public comment period on the DCAP, the Final Draft RI/FS, and PPCD.

The selected cleanup action also meets the intent of WAC 173-340-620, which outlines the process for selecting a cleanup action. The remedy reflects tribal input received to date, supports long-term protection of human health and the environment, and includes institutional controls to manage residual contamination. The action is compatible with future land use and considers the interests of affected communities and the Tribe.

3.3 CLEANUP STANDARDS AND POINT OF COMPLIANCE

3.3.1 SOIL POINT OF COMPLIANCE

Soil POCs are protective of groundwater, human health, surface water and are consistent with MTCA. Construction of the Project will entail excavation of the WSI and impacted soil beneath the WSI with COC concentrations that exceed the CULs. Soil below the WSI excavation with residual concentrations of COCs lower than the soil CULs does not present an unacceptable risk to humans and will not adversely impact groundwater. Confirmation sampling after excavation will demonstrate concentrations of COCs at the excavation limits.

3.3.1.1 PROTECTION OF GROUNDWATER AND SURFACE WATER

In accordance with WAC 173-340-740, the POC based on soil cleanup levels for protection of groundwater will be soils throughout the CAP Area.

3.3.1.2 GROUNDWATER POINT OF COMPLIANCE

For purposes of assessing groundwater quality within the Project Area and the need to protect potential human exposure to contaminated groundwater, this DCAP identifies Springs 6 and 7 as a conditional POC for groundwater. As the Smelter PLPs are responsible for risks associated with groundwater and Springs 6 and 7, the final groundwater point of compliance as established in the pending sitewide CAP for the CGA Smelter Site will take precedent over the POCs presented herein. If there are any differences between the POCs established in this document and those in

the final sitewide CAP, the POCs in the sitewide CAP will govern. The Weston *Pre-Final Feasibility Study* identifies proposed points of compliance for groundwater, included select springs (Weston, 2025). Groundwater monitoring for COCs (fluoride and sulfate) in the western groundwater AOC will be conducted by the Smelter PLPs to confirm concentration reductions following WSI source removal.

3.4 APPLICABLE, RELEVANT, AND APPROPRIATE REQUIREMENTS

WAC 173-340-710 provides that MTCA cleanup actions must comply with applicable state and federal laws. Potentially applicable federal, state, and local laws that may apply during the implementation of remedial actions at the site are summarized in Table 3. Ecology will confirm the listed applicable relevant and appropriate requirements and/or amend as needed.

TABLE 3 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS)

Jurisdiction	Summary of ARARs	
State of Washington Regulations	Ch. 173- 340 WAC	MTCA soil and groundwater cleanup levels and cleanup levels based on estimates of the reasonable maximum exposure.
	Ch. 18.104 RCW & Ch. 173-160 WAC	Establishes minimum standards for the construction and decommissioning of all wells in the state of Washington.
	Ch. 173-162 WAC	Rules & Regulations Governing the Licensing of Well Contractors & Operators
	Ch. 173-303 WAC	Dangerous Waste Management
	Ch. 173-304 WAC	Solid Waste Handling Standards
	Ch. 70A.300 RCW	Establishes framework for planning, regulation, control, and management of hazardous waste.
	Ch. 70A.305 RCW	Hazardous Waste Cleanup Model Toxics Control Act.
	Ch. 173-340 WAC	MTCA Cleanup Regulation
	Ch. 70A.205 RCW	Solid Waste Management - Reduction and Recycling
	Ch. 173-350 WAC	Solid Waste Handling Standards
	Ch. 43.21C RCW	State Environmental Policy Act
	Ch. 49.17 RCW	Washington Industrial Safety and Health Act requires employers to maintain work practices and work environments which do not endanger health and safety of employees.
	Ch. 197-11 WAC	SEPA Rules

Jurisdiction	Summary of ARARs	
	Ch. 70.94 RCW and Ch. 70A.15 RCW	Washington Clean Air Act - Regulates Air Emissions and Fugitive Dust
	Ch. 70.119A RCW & Ch. 246-290 WAC	Establishes MCLs for drinking water
	Ch. 90.48 RCW	Establishes NPDES permit requirements for discharging pollutants into water of the United States
Federal Regulations	29 CFR 1910	Occupational Safety and Health Act
	36 CFR 800	National Historic Preservation Act
	42 USC 6921-22	Identification and Listing of Hazardous Waste
	42 USC 7401	Clean Air Act of 1977
	40 CFR 50	National Ambient Air Quality Standards
	40 CFR 141	Drinking Water Regulations
	40 CFR 260-268	Hazardous Waste Regulations (RCRA)
	50 CFR Part 17	Endangered Species Act
County Regulations	KCMC, Title 8, Chapter 8.14	Solid Waste Handling

Notes:
ARAR = applicable or relevant and appropriate requirement
CFR = Code of Federal Regulations
MTCA = Model Toxics Control Act
RCRA = Resource Conservation and Recovery Act
RCW = Revised Code of Washington
SEPA = State Environmental Policy Act
TESC = Temporary Erosion and Sediment Control
USC = U.S. Code
WAC = Washington Administrative Code
NPDES = National Pollutant Discharge Elimination System
KCMC = Klickitat County Municipal Code

3.5 RESTORATION TIMEFRAME

The timeframe for mitigating direct contact exposure and groundwater pathway from impacted soil is up to 2 years as the WSI excavation, excavation of soil above CULs, and/or ISS will occur in a continuous sequence.

Groundwater cleanup actions required for the CGA Smelter Site including groundwater within the Project Area are the responsibility of Smelter PLPs under the Order No. DE 10483. The Applicant will implement institutional controls via an environmental covenant to limit, restrict, or prohibit activities that could result in exposure to contaminated groundwater within the CAP Area. The institutional controls will be immediately effective to limit exposure to groundwater.

3.6 COMPLIANCE MONITORING

The Applicant will prepare a compliance monitoring plan (WAC 173-340-410) to describe confirmation sampling of the WSI excavation to document the excavation achieves CULs.

The Smelter PLPs will implement long-term groundwater monitoring at the CGA Smelter Site in accordance with requirements of the Order. The groundwater compliance monitoring program is expected to align with the existing post-closure requirements for the RCRA-closed WSI and enforced through the post-CAP Administrative Order with Ecology.

3.7 SCHEDULE FOR IMPLEMENTATION

The preliminary schedule for implementing the proposed cleanup action is shown in Appendix C. The schedule start is assumed to be the date that the CAP and PPCD are finalized. The start date depends on the Applicant's attainment of a FERC license and purchase of the land within the Property Boundary from NSC. A more detailed schedule will be prepared as part of the Engineering Design Report.

3.8 INSTITUTIONAL/ENGINEERING CONTROLS

Institutional controls will include restrictions (e.g., restrict livestock watering and/or human consumption at springs) or procedures to limit exposure to residual contaminated soil or groundwater after the WSI is removed. For example, the institutional controls at the springs will eliminate exposure to ecological (cattle) and human receptors at those locations. The covenant will be executed by the property owner and recorded with the register of deeds for Klickitat County.

3.9 TRIBAL ENGAGEMENT

Tribal engagement is an integral part of this MTCA cleanup action. Ecology has engaged the Tribe throughout the cleanup process and will continue to work directly with the Tribe throughout implementation of the cleanup action discussed herein. A Tribal Engagement Plan will be created by Ecology in accordance with WAC 173-340-620. Tribal engagement will be in addition to and independent of any public participation requirements.

3.10 PUBLIC PARTICIPATION

Ecology will prepare a public participation plan to meet the state and federal public participation requirements and to inform the public of the cleanup actions. The Applicant will assist Ecology to prepare and implement the public participation plan as requested, which may include the preparation of mailing lists, fact sheets, public notices, public meetings, Ecology's website, and other outreach tools.

4. REFERENCES

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APPENDIX A WSI DETAIL

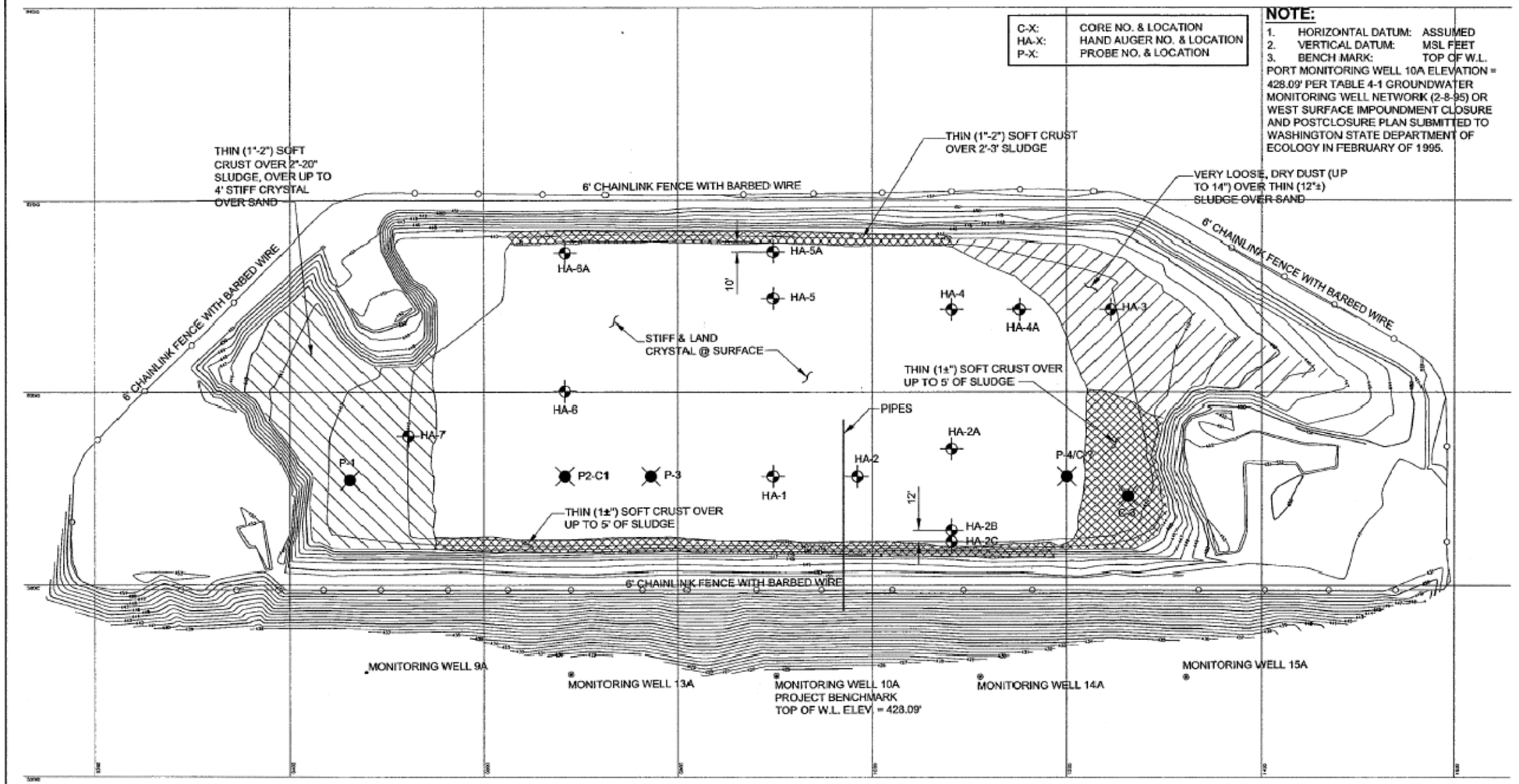
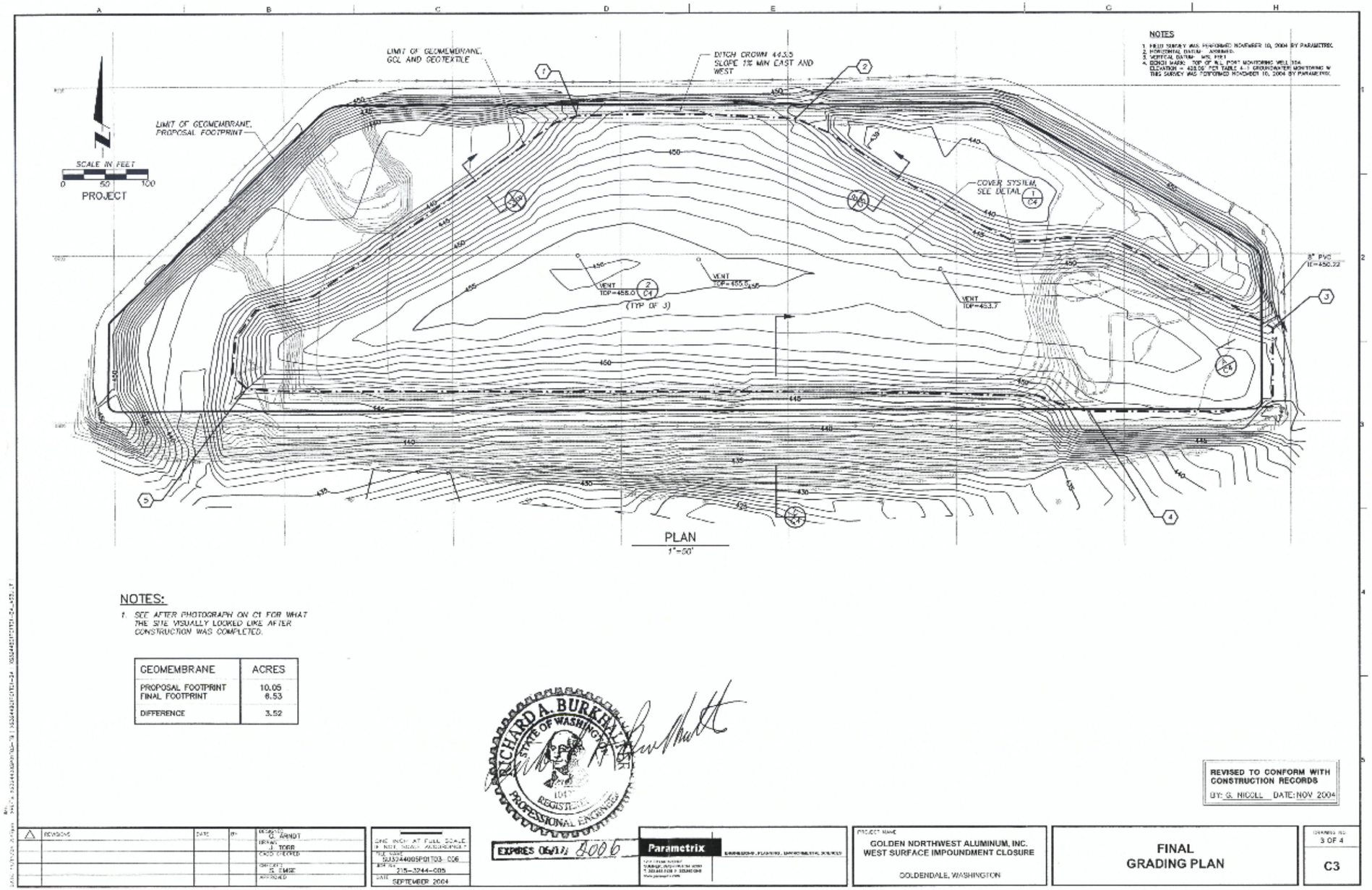


Figure 2-2
Waste Types & Locations
July 2004
Goldendale Aluminum

Figure A1
Waste Types
Draft Cleanup Action Plan
Goldendale Energy Storage Project
Goldendale, Washington

Source: Parametrix, Construction Quality Assurance Report, 2004.

ERM



NOTES:

1. SEE AFTER PHOTOGRAPH ON C1 FOR WHAT THE SITE VISUALLY LOOKED LIKE AFTER CONSTRUCTION WAS COMPLETED.

GEOMEMBRANE	ACRES
PROPOSAL FOOTPRINT	10.05
FINAL FOOTPRINT	6.53
DIFFERENCE	3.52

RICHARD A. BURKHART — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER
EXPIRES 06/11/2006

REVISED TO CONFORM WITH CONSTRUCTION RECORDS
BY: G. NICOLL DATE: NOV 2004

REVISIONS	DATE	BY

DESIGNED: G. ARNDT
DRAWN: J. TORR
CHECKED:
QA/QC: S. EMGE
APPROVED:

ONE INCH AT FULL SCALE IF NOT, SCALE ACCORDINGLY
FILE NAME: 0332440005P01T03-C06
JOB NO.: 215-3244-005
DATE: SEPTEMBER 2004

Parametrix — ENGINEERING, PLANNING, ENVIRONMENTAL SCIENCES

PROJECT NAME: GOLDEN NORTHWEST ALUMINUM, INC. WEST SURFACE IMPOUNDMENT CLOSURE
GOLDENDALE, WASHINGTON

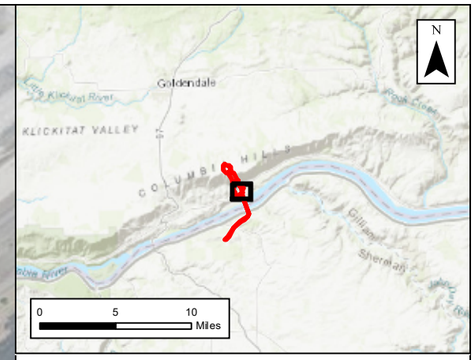
FINAL GRADING PLAN

DRAWING NO.: 3 OF 4
C3

Figure A2
WSI 2004 Closure Final Grading Plan
Draft Cleanup Action Plan
Goldendale Energy Storage Project
Goldendale, Washington

Source: Parametrix, Construction Quality Assurance Report, 2004.

ERM



Legend

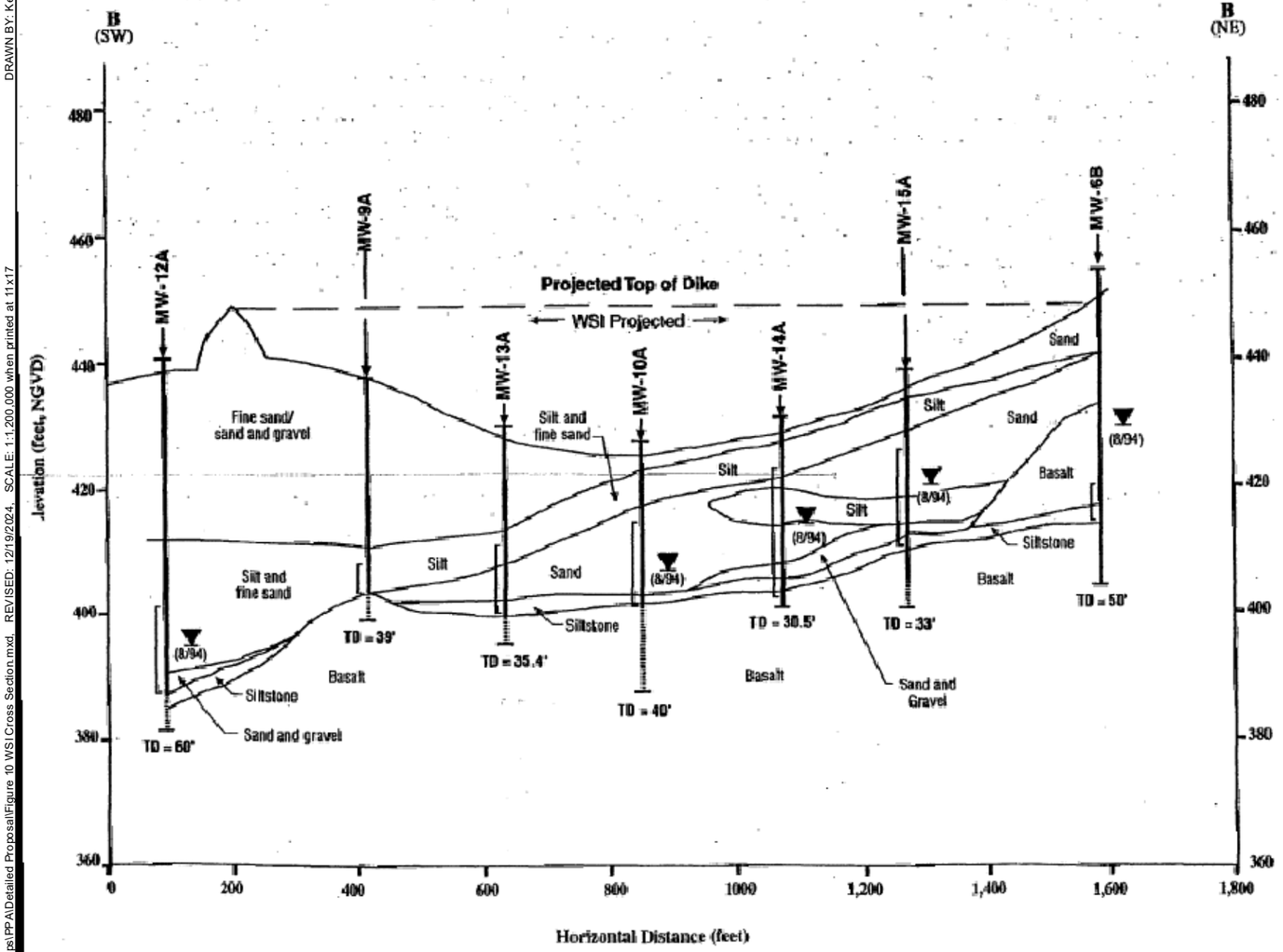
Project Boundary

Figure A3
Aerial Photograph
Project Boundary
Draft Cleanup Action Plan
Goldendale Energy Storage Project
Goldendale, Washington

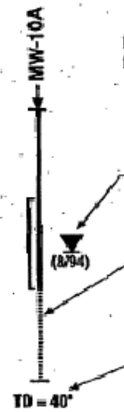
ERM

Source: National Agricultural Imagery Program, July 2017, flown 1m per pixel; NAD 1983 StatePlane Washington South FIPS 4602 Feet

M:\US\Projects\A-C\Copenhagen_Infra\Goldendale Energy Storage_Project\maps\PPA\Detailed Proposal\Figure A3 WSI Aerial.mxd Created By: Kelly Lyons Date: 12/19/2024 Project: 0483340



LEGEND



Monitoring well number. Refer to Figure 3-6 for well and cross section location map.

Static water level for August 1994

Dashed interval = boring backfilled with bentonite

Total well depth in feet below ground surface

NOTES

1. Wells MW-9A and MW-13A reported as "dry" after April and July 1992, respectively.
2. Subsurface conditions depicted on cross sections are interpretations and represent the opinion of the CH2M HILL hydrogeologist. Actual subsurface conditions may differ.

Vertical Exaggeration: 10X

Figure 3-3
Hydrogeologic Cross Section B-B'

Source: Parametrix, Construction Quality Assurance Report, 2004.

Figure A4
West Surface Impoundment Cross Section
Draft Cleanup Action Plan
Goldendale Energy Storage Project
Goldendale, Washington

ERM

APPENDIX B GROUNDWATER CONDITIONS

Table B1
Monitoring Well Construction Information
Draft Cleanup Action Plan
Goldendale Energy Storage Project, Goldendale, WA

Well ID	Construction Date	Well Material	Well Diameter (in)	Screen Interval (ft bgs)	Total Depth of Well (ft bgs)
MW-02A	4/5/1984	PVC Schedule 40	2	50 - 55	55
MW-02B	4/5/1984	PVC Schedule 40	4	104 - 109	109
MW-03A	4/13/1984	PVC Schedule 40	2	19.5 - 24.5	24.5
MW-03B	4/7/1984	PVC Schedule 40	4	46 - 51	51
MW-04A	4/17/1984	PVC Schedule 40	4	16 - 21	21
MW-04B	NA	NA	4	35 - 40	50
MW-05B	NA	NA	4	97 - 102	110
MW-06B	4/20/1984	PVC Schedule 40	4	35 - 40	50
MW-07B	4/25/1984	PVC Schedule 40	2	104 - 109	109
MW-08A	5/7/1989	PVC Schedule 40	4	21.5 - 31.5	32
MW-09A	4/18/1989	PVC Schedule 40	4	30.5 - 35.5	35.5
MW-10A	4/20/1989	PVC Schedule 40	4	13 - 25.5	26
MW-11A	4/28/1989	PVC Schedule 40	4	19 - 29	29.5
MW-12A	5/2/1989	PVC Schedule 40	4	40 - 54	55
MW-13A	5/4/1989	PVC Schedule 40	4	18.5 - 30.5	31
MW-14A	5/6/1989	PVC Schedule 40	4	8.5 - 29.5	30.5
MW-15A	5/6/1989	PVC Schedule 40	4	12.5 - 28	29
MW-16A	1/10/1990	PVC Schedule 40	4	22 - 42	43
MW-17A	1/10/1990	PVC Schedule 40	4	15 - 35	35
MW-18	10/1/2004	NA	4	35 - 50	51

Notes:
in = inches
ft = ft
bgs = below ground surface
NA = Not available.
MW-4B and MW-5B were abandoned in 1989.

Table B2
Groundwater Analysis Summary (mg/L)
Draft Cleanup Action Plan
Goldendale Energy Storage Project, Goldendale, WA

Analyte			Sulfate	Fluoride	Chloride	Total Cyanide
Lowest Groundwater Protection Standard			250	0.96	250	0.2
Monitoring Well ID	Location to WSI	Date Collected				
MW-8A	Up-Gradient	2/16/05	10	0.9	5.6	< 0.01
		5/11/05	9.8	0.3	4.6	< 0.01
		8/29/05	8.9	0.4	4.2	< 0.01
		11/1/05	9.6	0.9	4.7	< 0.01
		2/27/06	9.27	2.8	4.2	< 0.01
		6/5/06	9.8	0.2	4.9	< 0.05
		7/31/06	9.8	0.1	4.6	< 0.01
		10/9/06	9.7	< 0.2	4.5	< 0.01
		3/13/07	10	< 0.1	6.6	< 0.01
		6/22/07	1	< 10	4.9	< 0.01
		9/24/07	10	< 1	4.2	< 0.01
		11/14/07	-	-	-	-
		5/8/08	10	< 1	4	< 0.01
		10/14/08	10	0.1	4.5	< 0.01
		5/29/09	9	< 1	3	< 0.02
		10/27/09	10	< 1	5.5	< 0.02
		5/26/10	9.3	< 1	4.4	< 0.02
		10/6/10	8.9	< 1	3.6	< 0.02
		7/26/11	7.8	< 1	3.6	< 0.02
		4/19/12	10	0.18	3.8	< 0.005
		6/20/13	9.4	0.16	4.8	< 0.005
		4/25/14	9.5	0.19	4.9	< 0.005
		7/20/15	9.5	0.16	4.2	< 0.005
		8/2/16	9.3	0.13	4.1	< 0.005
		8/9/17	9.6	0.15	4.1	< 0.005
		7/26/18	9.5	0.15	3.2	< 0.005
		7/24/19	5.4	0.14	4.1	< 0.005
		6/20/20	11	0.16	3.9	< 0.005
		7/28/21	9	0.15	4.4	< 0.004
		6/30/22	9.2	0.15	3.7	< 0.005
		7/20/23	7.4	0.15	5	< 0.005
		7/23/24	10	0.15	5.9	<0.005
MW-3B	Down-Gradient	2/16/05	2300	0.6	130	< 0.01
		5/11/05	2500	0.4	140	< 0.01
		8/29/05	2700	0.6	120	< 0.01
		11/1/05	2600	0.9	130	< 0.01
		2/27/06	2610	0.7	118	< 0.01
		6/5/06	2220	0.2	113	< 0.01
		7/31/06	2000	3.7	110	< 0.01
		10/9/06	2500	3.8	110	< 0.01
		3/13/07	2500	3.8	110	< 0.01
		6/22/07	2500	< 10	97	< 0.01
		9/24/07	2200	< 1	125	< 0.01
		11/14/07	-	-	-	-
		5/8/08	2200	< 50	100	< 0.01
		10/14/08	2600	< 10	100	< 0.01
		5/29/09	2200	< 1	96	< 0.01
		10/27/09	2606	< 1	110	< 0.02
		5/26/10	2300	2.3	120	< 0.02
		10/6/10	2400	< 1	120	< 0.02
		7/26/11	2000	< 1	98	< 0.02
		4/19/12	2200	0.16	90	< 0.005
		6/20/13	1900	0.16	91	0.006
		4/25/14	2000	0.18	91	< 0.006
		7/20/15	1900	0.14	80	< 0.005
		8/2/16	1900	0.12	98	< 0.005
		8/9/17	1700	0.15	95	0.01
		7/26/18	1800	0.16	95	< 0.005
		7/24/19	1500	0.15	93	< 0.005
		6/20/20	1700	0.14	88	< 0.005
		7/28/21	1500	0.17	93	< 0.005
		6/30/22	1600	0.17	99	< 0.005
		7/20/23	1400	0.13	86	< 0.005
		7/23/24	2100	0.17	89	<0.005

Analyte			Sulfate	Fluoride	Chloride	Total Cyanide
Lowest Groundwater Protection Standard			250	0.96	250	0.2
Monitoring Well ID	Location to WSI	Date Collected				
MW-10A	Down-Gradient	6/5/06	1650	3.2	48	0.03
		7/31/06	860	2.3	35	0.08
		10/9/06	850	1.9	30	0.03
		3/13/07	1100	3.4	45	0.04
		6/22/07	1100	< 10	36	< 0.01
		9/24/07	760	1.2	30	0.04
		11/14/07	-	-	-	0.04
		5/8/08	2700	< 50	100	0.05
		10/14/08	860	< 10	30	0.04
		5/29/09	2000	2	68	0.03
		10/27/09	760	< 1	79	< 0.02
		5/26/10	2200	4.4	83	0.032
		10/6/10	710	1	23	0.022
		7/26/11	1800	3.3	62	0.028
		4/19/12	5800	1.9	180	0.007
		6/20/13	4700	3.1	99	0.008
		4/25/14	6100	2	190	< 0.005
		7/20/15	1900	2	58	< 0.005
		8/2/16	3500	2.1	82	< 0.005
		8/9/17	2900	3.2	170	< 0.005
		7/26/18	4800	4.1	71	< 0.005
		7/24/19	4000	3.7	82	< 0.006
		6/20/20	5700	4.4	77	< 0.006
		7/28/21	DRY	DRY	DRY	DRY
		6/30/22	2100	3.2	47	< 0.005
		7/20/23	1400	4	38	< 0.005
		7/23/24	3550	5	50	< 0.005
MW-12A	Down-Gradient	2/16/05	DRY	DRY	DRY	DRY
		5/11/05	DRY	DRY	DRY	DRY
		8/29/05	DRY	DRY	DRY	DRY
		11/1/05	DRY	DRY	DRY	DRY
		2/27/06	DRY	DRY	DRY	DRY
		6/5/06	DRY	DRY	DRY	DRY
		7/31/06	DRY	DRY	DRY	DRY
		10/9/06	DRY	DRY	DRY	DRY
		3/13/07	1800	6.3	150	< 0.01
		6/22/07	DRY	DRY	DRY	DRY
		9/24/07	DRY	DRY	DRY	DRY
		11/14/07	DRY	DRY	DRY	DRY
		5/8/08	DRY	DRY	DRY	DRY
		10/14/08	DRY	DRY	DRY	DRY
		5/29/09	DRY	DRY	DRY	DRY
		10/27/09	DRY	DRY	DRY	DRY
		5/26/10	DRY	DRY	DRY	DRY
		10/6/10	DRY	DRY	DRY	DRY
		7/26/11	DRY	DRY	DRY	DRY
		4/19/12	DRY	DRY	DRY	DRY
		6/20/13	DRY	DRY	DRY	DRY
		4/25/14	DRY	DRY	DRY	DRY
		7/20/15	DRY	DRY	DRY	DRY
		8/2/16	DRY	DRY	DRY	DRY
		8/9/17	DRY	DRY	DRY	DRY
		7/26/18	DRY	DRY	DRY	DRY
		7/24/19	DRY	DRY	DRY	DRY
		6/20/20	DRY	DRY	DRY	DRY
		7/28/21	DRY	DRY	DRY	DRY
		6/30/22	DRY	DRY	DRY	DRY
		7/20/23	DRY	DRY	DRY	DRY
		7/23/24	510	1.9	37	<0.005

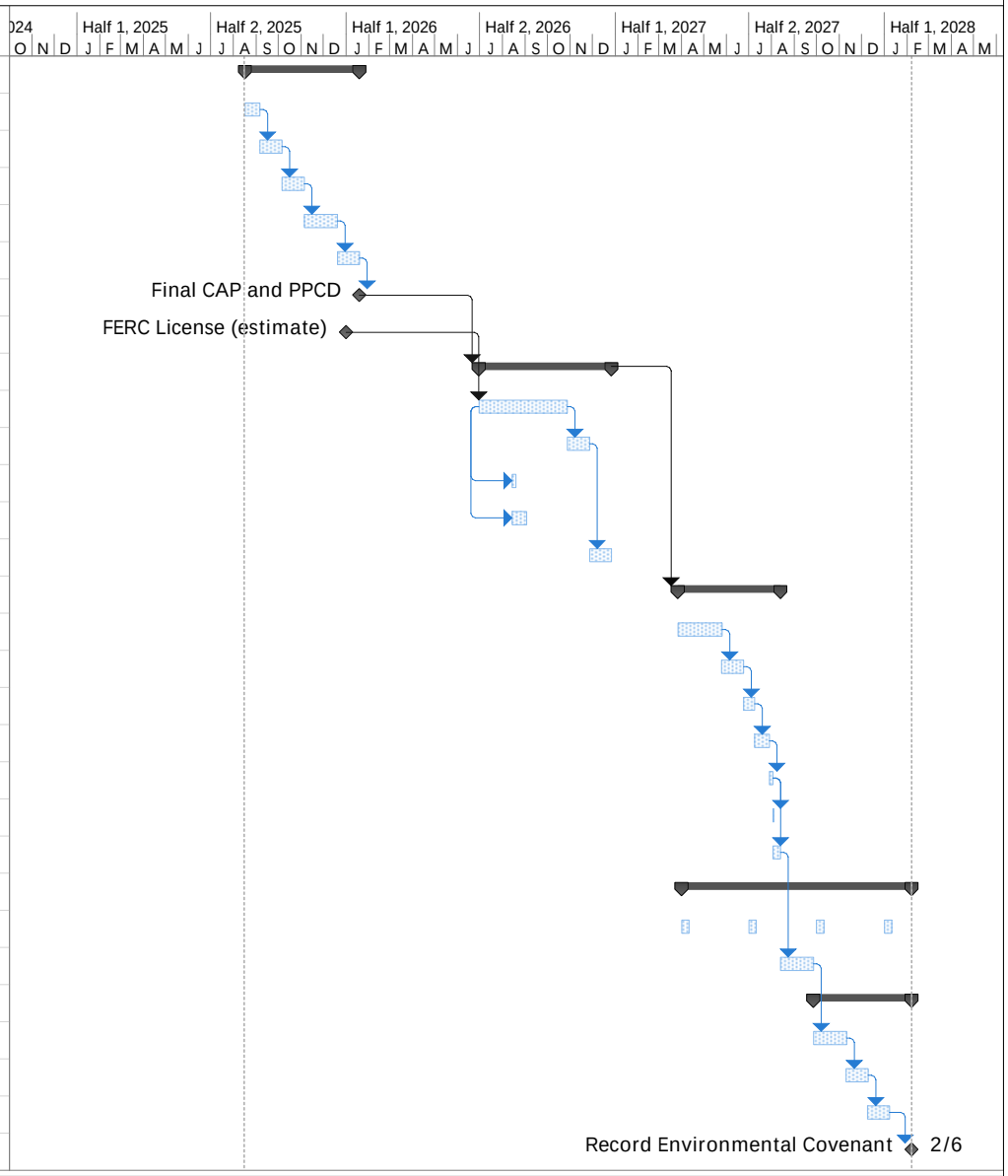
Analyte			Sulfate	Fluoride	Chloride	Total Cyanide
Lowest Groundwater Protection Standard			250	0.96	250	0.2
Monitoring Well ID	Location to WSI	Date Collected				
MW-14A	Down-Gradient	6/5/06	2380	27	63	0.2
		7/31/06	3300	30	98	0.17
		10/9/06	3900	24	130	0.01
		3/13/07	4400	16	140	0.12
		6/22/07	7900	19	170	< 0.01
		9/24/07	6400	< 50	200	0.03
		11/14/07	-	-	-	-
		5/8/08	5500	< 50	100	0.19
		10/14/08	6500	20	180	0.12
		5/29/09	7000	30	210	0.14
		10/27/09	5900	24	160	0.044
		5/26/10	5200	32	170	0.14
		10/6/10	4000	18	120	0.086
		7/26/11	3900	23	130	0.066
		4/19/12	DRY	DRY	DRY	DRY
		6/20/13	2300	17	66	0.028
		4/25/14	2100	18	61	0.037
		7/20/15	1100	6.8	47	0.008
		8/2/16	1400	3.5	61	0.019
		8/9/17	1700	2.5	68	0.017
		7/26/18	1800	3.6	66	< 0.005
		7/24/19	1700	2.8	64	0.018
		6/20/20	2000	7	49	0.018
		7/28/21	1100	7.8	36	< 0.004
		6/30/22	990	7.8	32	0.008
		7/20/23	1100	2.9	50	< 0.005
		7/23/24	1700	1.8	64	<0.005
MW-18	Down-Gradient	2/16/05	1500	0.6	86	< 0.01
		5/11/05	1300	0.4	91	< 0.01
		8/29/05	1500	0.4	75	< 0.01
		11/1/05	1300	1.8	84	< 0.01
		2/27/06	1520	0.9	83	< 0.01
		6/5/06	1490	0.2	91	< 0.01
		7/31/06	1500	2.6	89	< 0.01
		10/9/06	1600	2.4	80	< 0.01
		3/13/07	1600	2.6	93	< 0.01
		6/22/07	1700	< 1	77	< 0.01
		9/24/07	1400	< 50	100	< 0.01
		11/14/07	-	-	-	-
		5/8/08	1300	< 50	70	< 0.01
		10/14/08	1600	< 1	80	< 0.01
		5/29/09	1500	1	81	< 0.01
		10/27/09	1200	< 1	70	< 0.01
		5/26/10	1500	2	100	< 0.02
		10/6/10	1600	< 1	84	< 0.02
		7/26/11	1600	< 1	89	< 0.02
		4/19/12	1700	0.2	79	< 0.005
		6/20/13	1500	0.13	84	< 0.005
		4/25/14	1700	0.12	79	< 0.005
		7/20/15	1300	0.11	86	< 0.005
		8/2/16	1700	0.12	79	< 0.005
		8/9/17	1300	0.11	59	0.086
		7/26/18	1400	0.11	69	< 0.005
		7/24/19	1200	0.12	68	< 0.005
		6/20/20	1400	0.13	67	< 0.005
		7/28/21	1200	0.11	71	< 0.004
		6/30/22	1300	0.15	72	< 0.005
		7/20/23	1100	0.16	69	< 0.005
		7/23/24	1100	0.14	66	<0.005

Notes:
Data compiled from the BMEC 2024 Annual Groundwater Monitoring and Surface Maintenance Report, October 2024
mg/L = milligrams per liter or parts per million
< = not detected above laboratory practical quantitation limit (PQL)
BOLD = detected at concentration above PQL
- = not analyzed
= above Lowest Groundwater Protection Standard

APPENDIX C SCHEDULE

Appendix C
Project Implementaion Schedule
Draft Cleanup Action Plan
Goldendale Energy Storage Project

ID	Task Name	Finish	Duration
1	Cleanup Action Plan (WAC 173-340-380)	Sun 1/18/26	155 days
2	Draft Cleaup Action Plan (WAC 173-340-380)	Fri 9/5/25	20 edays
3	ECY review of draft cleanup action plan	Sun 10/5/25	30 edays
4	Public participation plan (WAC 173-340-600)	Tue 11/4/25	30 edays
5	Public comment period (WAC 173-340-600)	Fri 12/19/25	45 edays
6	Negotiate PPCD	Sun 1/18/26	30 edays
7	Final CAP and PPCD	Sun 1/18/26	0 days
8	FERC License (estimate)	Wed 12/31/25	0 days
9	**Engineering and Design (WAC 173-340-400)**	Sat 12/26/26	180 days
10	Draft engineering and design	Tue 10/27/26	120 edays
11	ECY review engineering and design report	Thu 11/26/26	30 days
12	Health and safety plan (WAC 173-340-400)	Tue 8/18/26	5 days
13	Compliance monitoring plan (WAC 173-340-410)	Wed 9/2/26	20 days
14	Final engineering and design report	Sat 12/26/26	30 days
15	**Cleanup Action Implementation**	Thu 8/12/27	139 days
16	Mobilization	Tue 5/25/27	60 days
17	Decommission monitoring wells	Wed 6/23/27	30 days
18	Install replacement monitoring wells	Thu 7/8/27	15 days
19	Excavation and disposal of WSI	Wed 7/28/27	20 days
20	Confirmation sampling	Mon 8/2/27	5 days
21	Additional excavation	Tue 8/3/27	1 day
22	Site grading	Thu 8/12/27	10 days
23	Reporting	Sun 2/6/28	222 days
24	Quarterly Progress Reporting	Tue 1/11/28	285 days
29	Construction Completion Report	Sun 9/26/27	45 days
30	**Institutional Controls Report**	**Sun 2/6/28**	**95 days**
31	Draft Report	Wed 11/10/27	45 days
32	Ecology review of institutional controls report	Thu 12/9/27	30 days
33	Final institutional controls report	Fri 1/7/28	30 days
34	Record Environmental Covenant	Sun 2/6/28	0 days



Project: Goldendale Energy Storage Project
Date: Fri 9/5/25

Task Milestone Summary

Implementation of the Cleanup Action is contingent upon receiving FERC Notice to Proceed on the Goldendale Energy Storage Project. All dates after January 2025 are esimates contingent on permitting.

FIGURES

Created By: Date: 12/16/2024 Project: 0483340

Upper Reservoir
Upper Reservoir Outer Berm
Headrace Tunnel
Powerhouse
Access Tunnel
Tailrace Tunnel
Water Supply Valve House
Multi-Use Tunnel
West Surface Impoundment
Lower Reservoir
Substation
John Day Substation
Hartley Canyon
Gerking Canyon
Scott Canyon
Lake Celilo
John Day Dam Rd
Frontage Rd
E 1st St
1st St
Rufus
14
84
2731 ft
2855 ft
1293 ft
0
2,000
4,000
Feet
N

Legend

- West Surface Impoundment (WSI)
- FERC Project Boundary
- Property Boundary
- Reservoir
- Reservoir Berm Outer Slope
- Laydown Area
- Powerhouse
- Substation
- Water Supply Valve House
- Access Tunnel
- Access Tunnel Portal
- Headrace/Tailrace Tunnel

Figure 1
Project Location
Draft Cleanup Action Plan
Goldendale Energy Storage Project
at the Former Columbia Gorge Aluminum Smelter Site
Goldendale, Washington

ERM

Source: Esri - World Topographic Map; NAD 1983 HARN StatePlane Washington South FIPS 4602 Feet

FILE: M:\US\Projects\A-C\Copenhagen_Infra\Goldendale Energy Storage Project\maps\PPA\PPA_Updates.aprx | REVISED: 12/16/2024 | SCALE: 1:24,000 when printed at 11x17

Created By: Date: 2/21/2025 Project: 0483340

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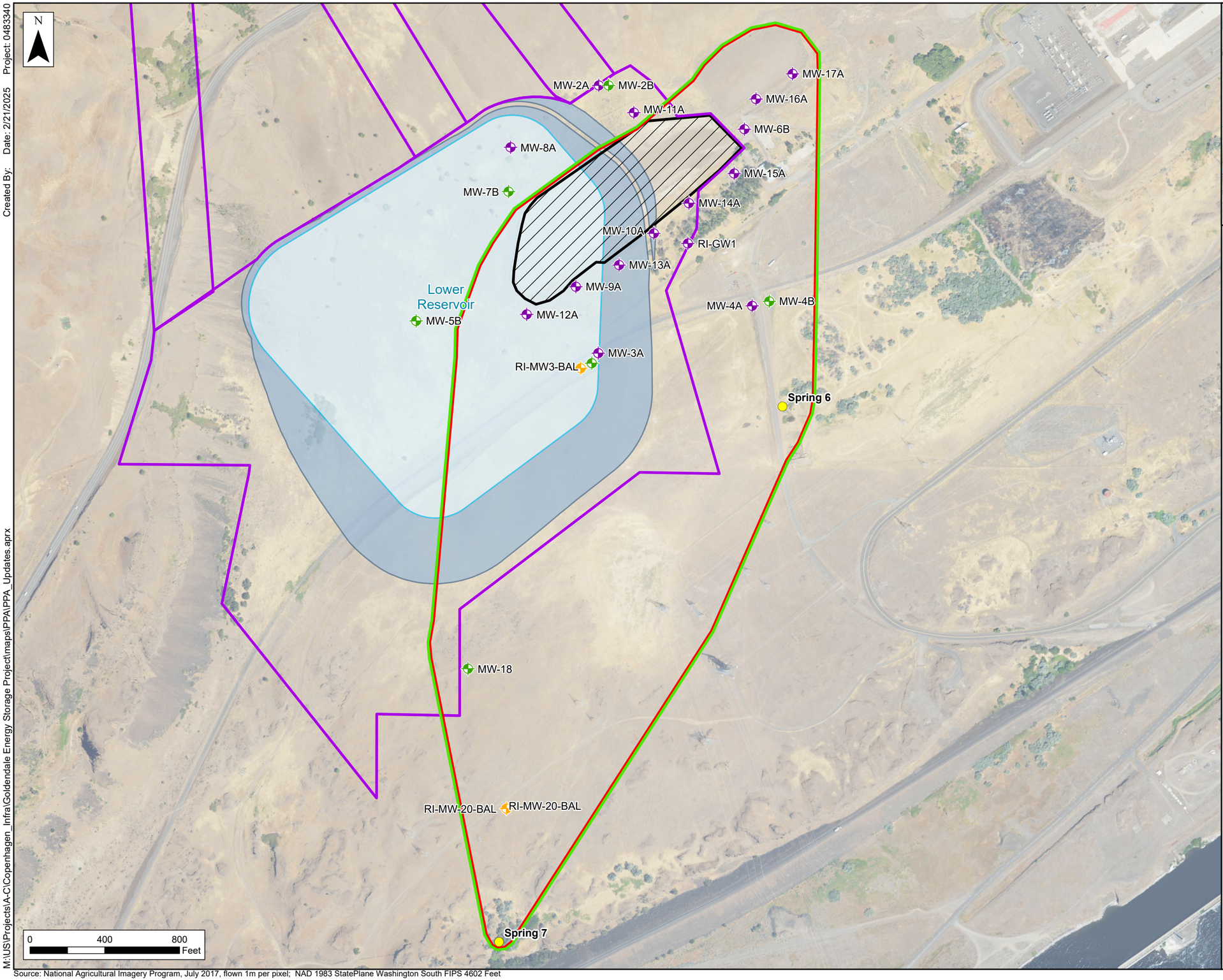
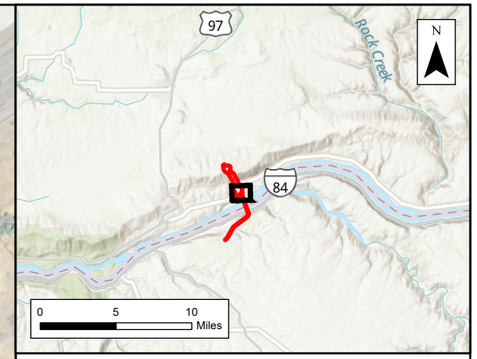




Legend

Existing Well
- Unconsolidated Aquifer Well
- Uppermost Basalt Aquifer Well

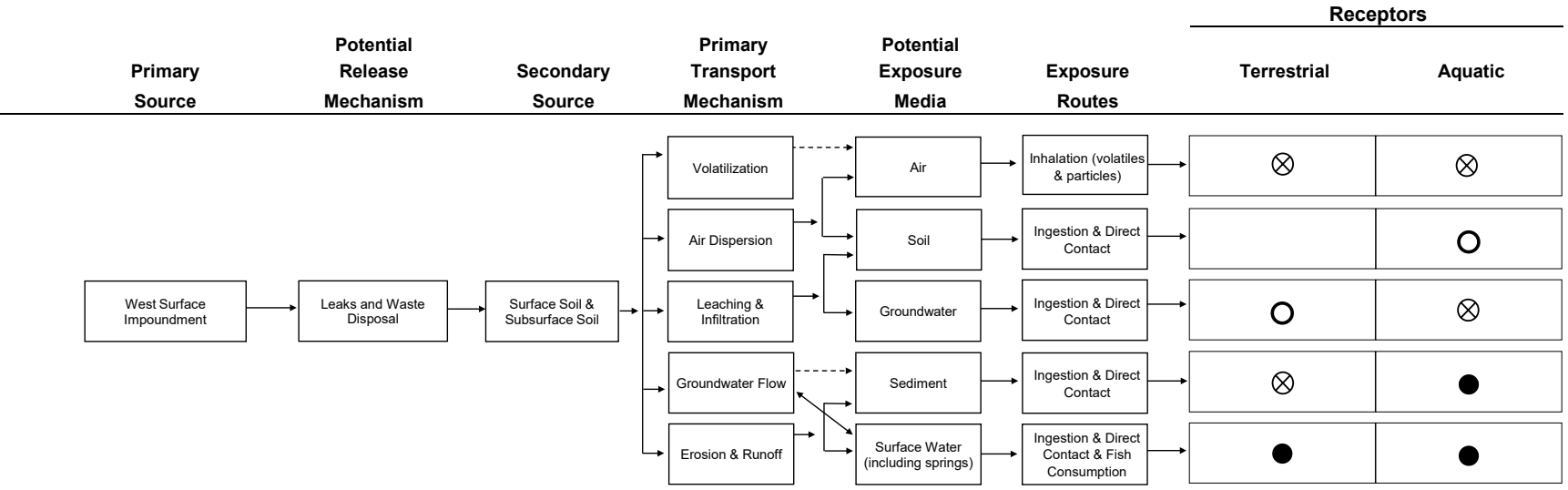
Proposed Well
- Deep Well with Coring (BAL)
- Temporary Shallow Well
- Springs
- West Surface Impoundment (WSI)
- Western GW AOC
- Reservoir
- Reservoir Berm Outer Slope
- Property Boundary
- Project Cleanup Area

Notes:
All well locations approximate, no survey data available.
CAP area includes impacts within the WSI (i.e., SWMU 4) and CGA Smelter Site groundwater impacts within the property boundary.

Source: National Agricultural Imagery Program, July 2017, flown 1m per pixel; NAD 1983 StatePlane Washington South FIPS 4602 Feet

Figure 2
Project Cleanup Detail
Draft Cleanup Action Plan
Goldendale Energy Storage Project
at the Former Columbia Gorge
Aluminum Smelter Site
Goldendale, Washington

ERM

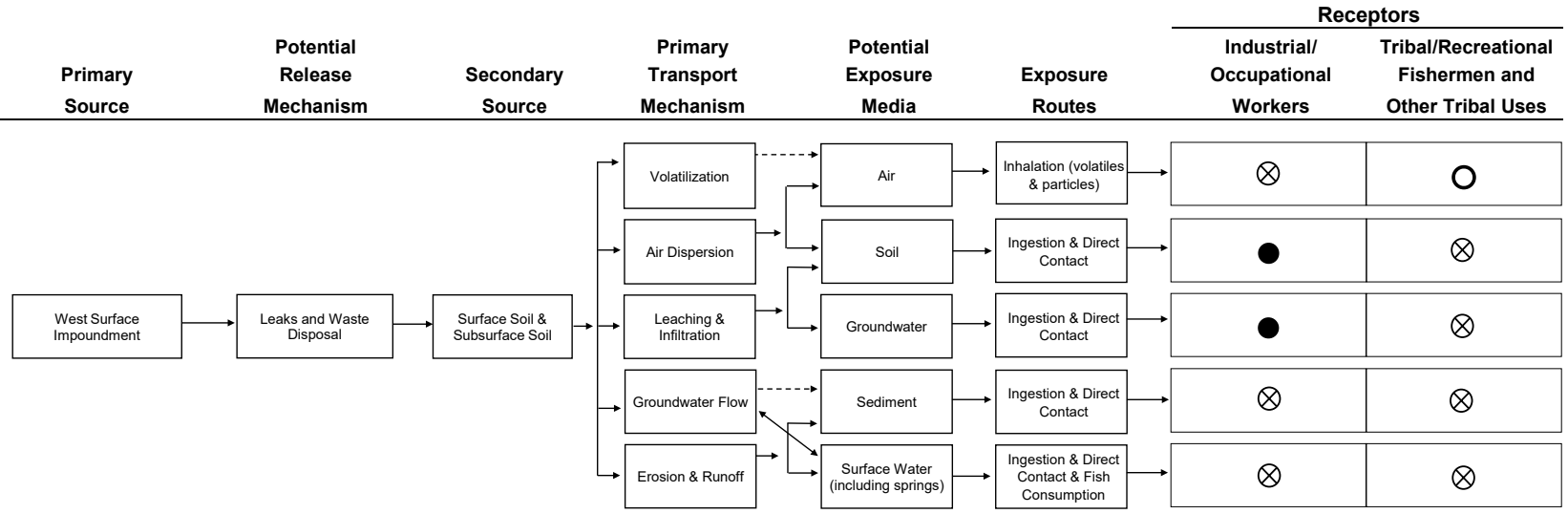


Legend

- ● = Complete Exposure
- ⊗ = Potentially Complete but Insignificant/Indirect Exposure
- ○ = Incomplete Exposure
- → = Complete Pathway or Medium
- ⇢ = Incomplete or Insignificant Pathway or Medium

Figure 3-1
Conceptual Ecological Exposure Site Model
Ecological Risk Assessment
Draft Cleanup Action Plan
Goldendale Energy Storage Project
at the Former Columbia Gorge Aluminum Smelter Site
Goldendale, Washington

ERM



Legend

- ● = Complete Exposure
- ⊗ = Potentially Complete but Insignificant/Indirect Exposure
- ○ = Incomplete Exposure
- → = Complete Pathway or Medium
- ⇢ = Incomplete or Insignificant Pathway or Medium

Note: This exposure model does not include potential municipal water use considerations for surface water and groundwater exposure media.

Figure 3-2
Conceptual Human Health Exposure Model
Human Health Risk Assessment
Draft Cleanup Action Plan
Goldendale Energy Storage Project
at the Former Columbia Gorge Aluminum Smelter Site
Goldendale, Washington

ERM