Appendix C
Wetlands and Regulated Waters Resource Analysis Report

June 2022

Proposed Goldendale Energy Storage Project

Wetlands and Regulated Waters Resource Analysis Report

Prepared for

DEPARTMENT OF ECOLOGY
State of Washington

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Acronyms and Abbreviations

CFR	Code of Federal Regulations
CGA	Columbia Gorge Aluminum
Ecology	Washington Department of Ecology
EIS	environmental impact statement
HGM	hydrogeomorphic
HUC	hydrologic unit code
MTCA	Model Toxics Control Act
N/A	not applicable
NHD	National Hydrography Dataset
NPDES	National Pollutant Discharge Elimination System
NWI	National Wetlands Inventory
OHWM	ordinary high water mark
PEM1C	palustrine emergent, persistent, seasonally flooded
PSS1C	palustrine scrub-shrub, persistent, seasonally flooded
PUBCx	palustrine unconsolidated bottom, seasonally flooded
PUBFx	palustrine unconsolidated bottom, semipermanently flooded
R4SBJ	riverine, intermittent, streambed, intermittently flooded
RCW	Revised Code of Washington
USACE	U.S. Army Corps of Engineers
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WSI	West Surface Impoundment

Summary

This *Wetlands and Regulated Waters Resource Analysis Report* describes the existing conditions of wetlands and regulated waters (streams) and their buffers in the study area, considering wetland and stream functions and values and their jurisdictional determinations. It also describes the potential impacts on those resources from both the proposed project and the No Action Alternative. A separate *Surface and Groundwater Hydrology Resource Analysis Report* (Appendix B of the EIS; Aspect Consulting 2022) describes the hydrologic characteristics and water quality of streams and groundwater in the study area.

Table 1 summarizes the impact findings for wetlands, regulated waters, and buffers as well as the required and proposed additional mitigation measures.

Table 1
Wetlands and Regulated Waters Impact Summary

TYPE OF IMPACT	SIGNIFICANT ADVERSE IMPACT FINDING	MITIGATION REQUIRED BY PERMIT	ADDITIONAL MITIGATION PROPOSED	SIGNIFICANT AND UNAVOIDABLE ADVERSE IMPACT
Proposed Project: Construction				
Permanent excavation and/or placement of fill in wetlands and streams	No	Compensatory wetland and stream mitigation	None	No
Temporary disturbance to wetlands and streams	No	Restoration of disturbed wetlands and streams	Construction Water Resource Monitoring and Response Plan	No
Permanent removal of wetland and stream buffers	No	Compensatory buffer mitigation	None	No
Temporary disturbance to wetland and stream buffers	No	Restoration of disturbed buffers	None	No
Proposed Project: Operations				
None	Not applicable	Not applicable	Operations Water Resource Monitoring and Response Plan	Not applicable
No Action Alternative				
Permanent excavation and/or placement of fill in wetlands and streams	No	No	None	No
Temporary disturbance to wetlands and streams	No	No	None	No
Permanent removal of wetland and stream buffers	No	No	None	No
Temporary disturbance to wetland and stream buffers	No	No	None	No

1 Introduction

Free Flow Power Project 101, LLC (the Applicant) proposes to build a pumped-water energy storage system that is capable of generating energy through release of water from an upper reservoir down to a lower reservoir. This is referred to as the "proposed project" (FFP 2020a). This report describes wetlands, streams, and the regulated buffers of wetlands and streams within the study area and assesses probable impacts on those resources from the construction and operation of the proposed project and from a No Action Alternative. Chapter 2 of the State Environmental Policy Act Environmental Impact Statement (EIS) provides a more detailed description of the proposed project and No Action Alternative. Information on the hydrologic characteristics of streams and water quality are addressed in the *Surface and Groundwater Hydrology Resource Analysis Report* (Appendix B of the EIS; Aspect Consulting 2022).

1.1 Resource Description

1.1.1 Wetlands

Wetlands are defined as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (Code of Federal Regulations [CFR] 33.328.3[c][4]). Wetlands typically require the presence of three diagnostic characteristics: hydrophytic vegetation, hydric soils, and wetland hydrology.

1.1.2 Regulated Waters

Regulated waters include non-wetland waterbodies such as unvegetated tidal waters, rivers, streams, lakes, ponds, and regulated waters that are regulated under the Clean Water Act and state and local regulations. At the federal level, the current definition of "waters of the United States" is consistent with the pre-2015 regulatory regime as amended by Rapanos and SWANCC (40 CFR 230.3[s]). Regulated waters include traditional navigable waters; interstate waters; impoundments of waters; tributaries of traditional navigable waters, interstate waters, or impoundments of waters; and the territorial seas. The jurisdictional boundaries of non-tidal regulated waters are typically identified in the field by an ordinary high water mark (OHWM). The OHWM is defined in 33 CFR 328.3(c)(6) as follows:

> The line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Waters considered to be regulated waters of the state in Washington are those non-wetland waters that would meet the definition of waters of the state, which are defined in the Revised Code of Washington (RCW) 90.48.030 as follows:

> ..."waters of the state" shall be used in this chapter, they shall be construed to include lakes, rivers, ponds, streams, inland waters, underground waters, salt waters and all other surface waters and watercourses within the jurisdiction of the state of Washington.

1.1.3 Buffers

Regulated wetland buffers are defined under Klickitat County (County) Critical Areas Ordinance No. 0080613, Chapter III (Wetlands), and the County Shoreline Master Program if the wetland is determined to be a Shoreline-associated wetland. The portion of the Columbia River adjacent to the project area has an existing shoreline environment designation of Urban/Industrial and Conservancy (see Section 4.11 of the EIS). The project area would be adjacent to these designations but not within shoreline environmental designations, except for an overhead transmission line.

Wetland buffer widths are based on the wetland size, connectivity to regulated waters, and wetland category per the Washington Department of Ecology's (Ecology's) *Washington State Wetland Rating System for Eastern Washington: 2014 Update* (Hruby 2014). Critical areas are not currently mapped by the County, but the County specifies minimum buffer widths ranging from 75 to 300 feet, depending on wetland category, for wetlands in excess of 2,500 square feet (approximately 0.06 acre). Buffers are measured horizontally outward from the wetland boundary.

Shorelines

The Shoreline Management Act applies to all counties and cities that have "Shorelines of the State," as defined in RCW 90.58.030. Shoreline Master Programs regulate development typically within 200 feet of jurisdictional waterbodies to be consistent with the Shoreline Management Act goals stated in RCW 90.58.020.

Critical Areas

The Growth Management Act requires jurisdictions to protect critical areas (Washington Administrative Code 36.70A.030[5]). Critical areas are environmentally sensitive natural resources areas that are designated for protection by the Growth Management Act. This involves developing and adopting critical areas ordinances that contain development regulations to ensure their protection. Protecting critical areas preserves the ecological functions and values of the natural environment.

Regulated buffers for non-wetland waters (including tributaries, streams, rivers, ponds, lakes, and other drainageways) are defined under County Critical Areas Ordinance No. 0080613, Chapter IV (Critical Fish/Wildlife Habitat Conservation Areas), and the County Shoreline Master Program. The extent of waters is identified by the OHWM, as defined by the Shoreline Management Act. Buffers are measured horizontally outward from the OHWM. Buffer widths for all waters inventoried as "Shorelines of the State" under RCW 90.58 are based on the buffer requirements specified in the Shoreline Master Program. For all regulated waters, buffer widths are based on the Washington State Department of Natural Resources water type in accordance with criteria set forth in Washington Administrative Code (WAC) 222.16.030. The County specifies minimum buffer widths ranging from 25 to 200 feet for regulated waters.

The following key features of wetlands will be analyzed in the affected environment, potential impacts, and mitigation measures discussions:

- Wetlands
- Non-wetland regulated waters (streams)
- Regulatory buffers for wetlands and streams

1.2 Regulatory Context

Table 2 provides the federal, state, and local regulations, statutes, and guidelines that potentially apply to the analysis for Wetlands.

Table 2
Applicable Laws, Plans, and Policies

REGULATION, STATUTE, GUIDELINE	DESCRIPTION
Federal	
Rivers and Harbors Act of 1899 (United States Code 33.403)	• Authorizes the U.S. Army Corps of Engineers (USACE) to protect commerce in navigable streams and waterways of the United States by regulating various activities in such waters. – **Section 10:** Regulates construction, excavation, or deposition of materials into, over, or under navigable waters, or any work that would affect the course, location, conditions, or capacity of those waters.
Clean Water Act (United States Code 33.1251 et seq.)	• Establishes the basic structure for the U.S. Environmental Protection Agency to regulate discharges of pollutants into the waters of the United States and regulates water quality standards for surface waters. – **Section 301(a):** Prohibits the discharge of any pollutant into navigable waters except in compliance with the Clean Water Act. – **Section 303:** Addresses the development of water quality standards and implementation plans for interstate waters by individual states; Section 303(d) includes requirement for states to identify and list waters where current water pollution control regulations and controls alone cannot meet the water quality standards set for those waters. – **Section 401:** Requires Water Quality Certification from the state for activities requiring a federal permit or license to discharge pollutants into a water of the United States. Certification attests the state has reasonable assurance the proposed activity will meet state water quality standards. – **Section 402:** Establishes the National Pollutant Discharge Elimination System program, under which certain discharges of pollutants into waters of the United States are regulated. – **Section 404:** Regulates the discharge of dredged or fill material into waters of the United States, including jurisdictional wetlands.
Executive Order 11990, Protection of Wetlands	• Provides the overall wetlands policy applicable to all agencies managing federal lands, sponsoring federal projects, or providing federal funds to state or local projects. Does not apply to the issuance by federal agencies of permits, licenses, or allocations to private parties for activities involving wetlands on non-federal property. • Requires affected federal agencies to follow avoidance, mitigation, and preservation procedures and to obtain public input before proposing new construction in wetlands. Consistency with the overall wetlands policy contained in Executive Order 11990 is achieved through Clean Water Act Section 404 compliance requirements and USACE preparation of the 404(b)(1) evaluation.

REGULATION, STATUTE, GUIDELINE	DESCRIPTION
State	
Washington State Water Code (RCW 90.03)	• Establishes water policy for the state of Washington, which is administered by Ecology. • Addresses projects that require a water right or require a legal authorization to use a predefined quantity of public water for a designated purpose that qualifies as a beneficial use. • Addresses construction and safety of dams and permitting of reservoirs that will impound 10 acre-feet or more of water.
Washington State Hydraulic Code (RCW 77.55; WAC 220.660)	• Regulates projects that use, divert, obstruct, or change the natural flow or bed of any water of the state of Washington. • Requires entities who are planning such projects to obtain a Hydraulic Project Approval from the Washington Department of Fish and Wildlife (WDFW). As part of the Hydraulic Project Approval review process, WDFW considers the project's potential effects on riparian and shoreline/bank vegetation in issuance and conditions of the permit, including for the installation of piers, docks, pilings, and bank armoring and crossings of streams and rivers (including culverts).
Washington State Water Pollution Control Law (RCW 90.48)	• Grants Ecology the jurisdiction to control and prevent the pollution of streams, lakes, rivers, ponds, inland waters, salt waters, water courses, and other surface and groundwater in the state. • Allows Ecology to regulate certain activities in wetlands and regulated waters that are non-jurisdictional under Section 404 of the Clean Water Act through the issuance of Administrative Orders.
Washington State-Administered Section 401 of the Clean Water Act	• Grants Ecology authority to require certification that activities authorized by certain federal permits and licenses meet state water quality standards. This helps to protect the state's surface waters such as estuaries, wetlands, lakes, rivers, and streams. Issuance of a Section 401 Certification means that Ecology, Tribes with treatment as a state, or the U.S. Environmental Protection Agency has reviewed the applicant's project and has determined if the project will comply with state or federal water quality standards.
Water Resources Act of 1971 (RCW 90.54)	• Sets forth fundamental policies for the state to ensure that waters of the state are protected and fully utilized for the greatest benefit.
Washington State Growth Management Act (RCW 36.70A)	• Defines a variety of critical areas, which are designated and regulated at the local level under city and county critical areas ordinances. These critical areas may include shorelines or portions of fish habitat.
Shoreline Management Act (RCW 90.58)	• Regulates and manages the use, environmental protection, and public access of the state's shorelines. The Shoreline Management Act was passed by the Washington State Legislature in 1971 and adopted in 1972. Ecology and the local government have authority to enforce the Shoreline Management Act.
Water Quality Standard for Surface Waters of the State of Washington (WAC 173.201A)	• Establishes water quality standards for surface waters in the state of Washington. Ecology is the responsible agency.

REGULATION, STATUTE, GUIDELINE	DESCRIPTION
Washington State Executive Order 89-10, Protection of Wetlands	• Adopts a statewide goal of no overall net loss in acreage and function of Washington's remaining wetlands base. • Directs Ecology to provide guidance to other state agencies in the preparation of action plan to lessen the destruction, loss, or degradation of wetlands and to preserve and enhance their natural and beneficial values. • Directs state agencies, in the pursuit of their agency mandates, to consider the benefits provided by wetlands and to avoid any activities that would adversely affect wetlands and to adequately mitigate when wetland impacts are unavoidable.
Local	
Klickitat County Shoreline Master Program	• Regulates all work in areas of the County designated as shorelines of the state and in areas that occur landward within 200 feet of the ordinary high water mark of such areas, floodways, and all wetlands and river deltas associated with streams and lakes subject to the Shoreline Management Act. • Requires that a Klickitat County Shoreline Permit be obtained in compliance with the Klickitat County Shoreline Master Program for any work within areas subject to the Shoreline Management Act. Shoreline Conditional Use Permits or Variances also require Ecology's final approval.
Klickitat County Critical Areas Ordinance (No. 0080613, Chapters III and IV)	• Provides development standards and requirements for projects that occur in wetlands. • Assigns upland buffers to wetlands based on categories determined by the Washington State Wetland Rating System for Eastern Washington. • Describes allowed uses and includes development impact thresholds and mitigation requirements for wetlands and their associated buffers.
Klickitat County Flood Damage Protection Ordinance (No. 0120120)	• Promotes public health, safety, and general welfare; reduces the annual cost of flood insurance; and minimizes public and private losses due to flood conditions in specific areas. • Restricts or prohibits development that is dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities. • Requires that development vulnerable to floods be protected against flood damage at the time of initial construction. • Controls the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel flood waters. • Controls the filling, grading, dredging, and performance of other development activities that may increase flood damage. • Prevents or regulates the construction of flood barriers that unnaturally divert floodwaters or may increase flood hazards in other areas.

2 Methodology

2.1 Study Area

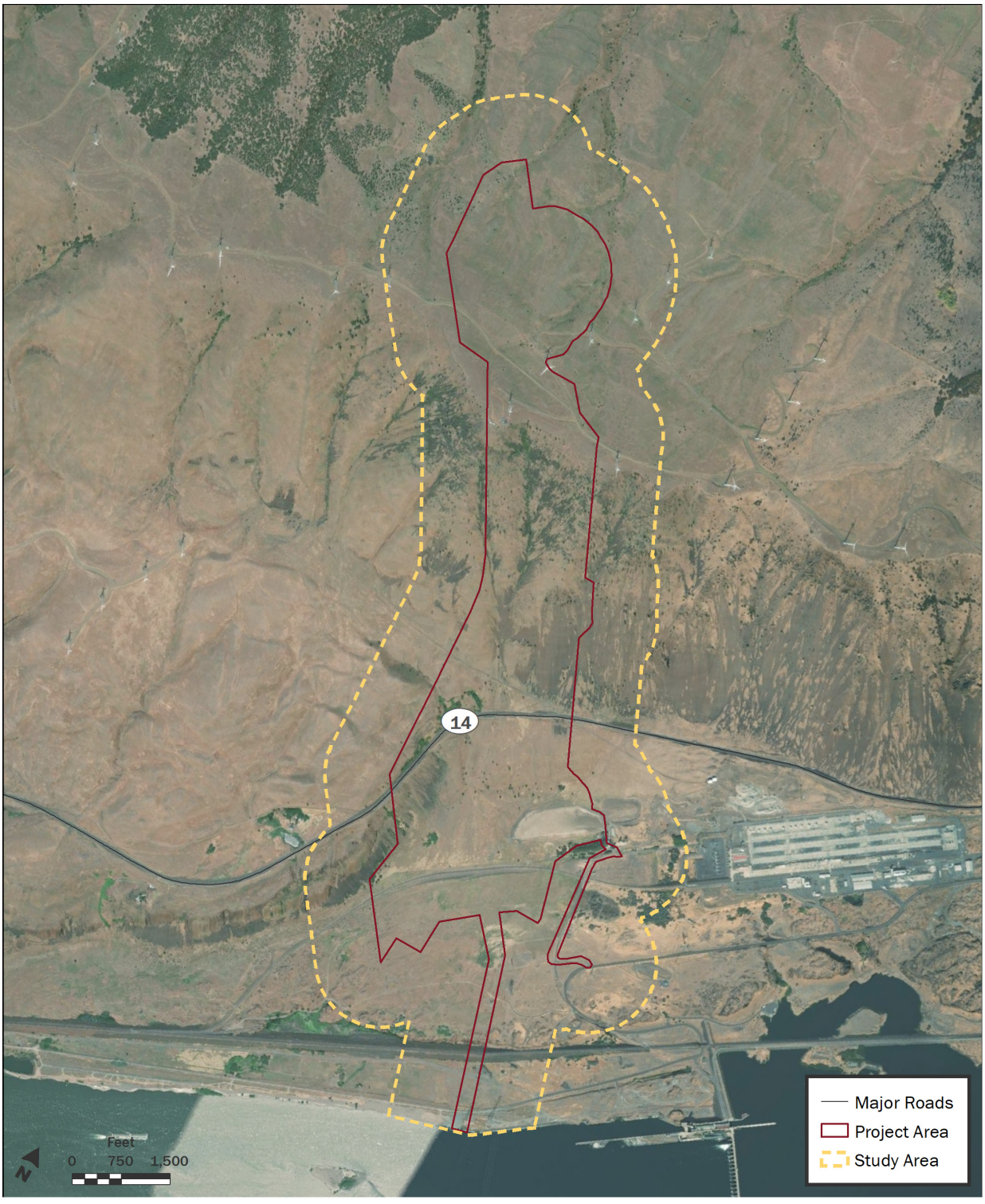
The study area for wetlands, streams, and their regulatory buffers includes all areas potentially affected by construction and operation of the proposed project as identified by the Applicant and by the No Action Alternative. The study area for the impact analysis includes the project area plus a 1,000-foot offset beyond the project footprint to account for potential indirect effects on wetlands, streams, and their regulatory buffers (Figure 1).

2.2 Technical Approach

The following studies and reports related to wetlands and regulated waters were used to conduct the analysis:

- Goldendale Energy Storage Hydroelectric Project: Final License Application. Appendix B: Wetlands and Water Delineation Report (FFP 2020b)
- Goldendale Energy Storage Hydroelectric Project: Final License Application. Exhibit E: Environmental Report (FFP 2020a)
- Attachment C, Streamflow Duration Assessment Method (SDAM) Datasheets and Photo (ERM 2021a)
- Approved Jurisdictional Determination Request Memorandum (ERM 2021b)
- Attachment A, Wetland Rating System Form - Eastern Washington (ERM 2021c)
- Septic System, Wetlands, Upper Fluoride Area, and Soil Background Investigation Report, Former Columbia Gorge Aluminum Smelter (PGG 2013)
- Goldendale Energy Storage Hydroelectric Project (SEPA) Environmental Checklist (FFP 2020c)
- Final Work Plan Addendum, Columbia Gorge Aluminum Smelter Site (Lockheed 2020)
- Anchor QEA, LLC (Anchor QEA) and Ecology site visit (July 19 and 20, 2021)
- Preliminary Supporting Design Report - Goldendale Energy Storage Project. Appendix A: Preliminary Engineering Geology Technical Memorandum (HDR 2020)
- Geotechnical Report - Cliffs Project, Goldendale, Washington (Shannon & Wilson, Inc. 2002)
- Natural Resource Conservation Service Web Soil Survey (NRCS 2021)
- U.S. Fish and Wildlife Service Wetlands Mapper for National Wetlands Inventory (NWI) map information (USFWS 2021)
- Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species maps for priority aquatic habitats (WDFW 2021)
- Washington Natural Heritage Program Wetlands of High Conservation Value Map Viewer (WDNR 2021a)
- Ecology's 2016 Modeled Wetland Inventory (Ecology 2016)
- U. S. Geological Survey National Hydrography Dataset (NHD) online mapping tool (USGS 2021)
- Washington State Forest Practices Act (RCW 76.13) Mapping Tool for Department of Natural Resources Water Type (WDNR 2021b)
- Historical aerial photography (Google Earth)

Figure 1
Wetlands and Regulated Waters Study Area



Existing conditions of wetlands and buffers were determined using the 2020 wetland delineation provided by the Applicant (FFP 2020b). In addition, wetlands mapped in the 2013 wetland delineation prepared for the Columbia Gorge Aluminum (CGA) smelter site (PGG 2013) were included where they coincide with the study area. Additional wetlands and waters were mapped based on available mapping (e.g., NWI, Modeled Wetland Inventory, and NHD), aerial photography interpretation, and field knowledge gained through the site visits performed by Anchor QEA and Ecology in July 2021.

2.3 Impact Assessment

Direct impacts on wetlands, regulated waters, or their regulatory buffers are those that occur as the result of and at the same time and place as the proposed project activities. Under the No Action Alternative, the analysis for direct impacts would consider future potential conditions that could occur in the study area.

For the proposed project, direct impacts include any activities that involve excavation, grading, discharge of fill material, or the removal of material from wetlands, regulated waters, or their regulatory buffers to construct the proposed project. Construction activities that directly disturb wetlands, regulated waters, or their regulatory buffers, or that affect the continued existence of such a resource in its current form (e.g., hydrologic alteration) were considered to be direct impacts. Direct impacts related to excavation, grading, or fill placement in wetlands and waters were determined by overlaying the footprint of the proposed facilities on the resource mapping using ArcGIS. Any mapped wetlands or waters that occur within the proposed project footprint were considered to be permanent direct impacts. Wetland impacts determined through these analyses were quantified by their Cowardin and Hydrogeomorphic classification and their state wetland rating. Regulated water impacts were quantified by their flow type and Cowardin classification, if applicable. Direct impacts on the protective buffers that are required around wetlands and regulated waters by state and local regulations were also identified and quantified using the ArcGIS overlay process.

Indirect impacts on wetlands, regulated waters, or their regulatory buffers are those that occur later in time or farther in distance from the immediate project location but that are attributable to proposed project actions. Indirect impacts are those that would not have occurred "but for" the construction of the project. Under the No Action Alternative, indirect impacts on wetlands from operation of potential future project activities were assessed qualitatively.

For the analysis of the proposed project actions, indirect impacts include effects that would occur as the result of operating the proposed project over time (e.g., initial filling of reservoirs, periodic refilling, and effects of underground features on subsurface hydrology). Indirect impacts resulting from altered subsurface hydrology were assessed using mapping of wetlands and geological mapping provided by the Applicant. Indirect impacts were evaluated qualitatively.

Project impacts on wetlands, regulated waters, or their regulatory buffers also have a duration. Permanent impacts remove or impair these resources to such a degree that they would not return to their preconstruction state. Temporary impacts result in short-term disturbance but would not prevent the re-establishment of conditions similar to those before the project in the affected areas. Ecology defines short-term temporary impacts as impacts that last for a limited time where functions return to pre-impact performance within about 1 year or within one growing season of the impact. Long-term temporary impacts are defined by Ecology as impacts that affect functions that will eventually be restored or recover over time, but not within a year or so.

Any potential changes related to wetlands, regulated non-wetland waters, and their associated buffers due to climate change are addressed in Chapter 5, Climate Change, of the Draft EIS. Cumulative impacts are addressed according to Section 404 of the Clean Water Act (CFR 40.230.11[g]), in Chapter 6 of the Draft EIS.

3 Technical Analysis and Results

3.1 Overview

This section describes the existing conditions of wetlands, regulated waters, and buffers within the study area (Section 3.2). It also discusses probable impacts on wetlands, regulated waters, and buffers from the proposed project (Section 3.3) and No Action Alternative (Section 3.4). For the proposed project, required permit conditions and planning document requirements that could address the impacts are identified (Section 3.3.3). This report also identifies mitigation measures that could avoid, minimize, or reduce the potential impacts (Section 3.3.4) and determines if there would be significant and unavoidable adverse environmental impacts remaining after mitigation (Section 3.3.5).

3.2 Affected Environment

The approximately 1,480-acre study area for wetlands, regulated waters, and buffers is located in Klickitat County, Washington, approximately 8 miles southeast of the City of Goldendale (Figure 1). The study area includes all areas potentially affected by ground-disturbing work for construction and operation of the alternatives as identified by the Applicant. A 1,000-foot offset beyond the project footprint is included in the impact analysis to account for potential indirect effects on wetlands, regulated waters, and regulatory buffers.

The study area is within two U.S. Geological Survey 12-digit hydrologic unit code (HUC) subwatersheds (USGS 2021). The southern (lower) portion of the study area is within the Hells Gate Canyon-Columbia River subwatershed (HUC 170701050103) of the Columbia Tributaries watershed, which is within the Middle Columbia-Hood subbasin. The northern (upper) portion of the study area is within the Upper Swale Creek subwatershed (HUC 170701060403) of the Swale Creek watershed, which is in the Klickitat River subbasin. Both watersheds are within the Middle Columbia basin (USGS 2021) and in Washington's Klickitat Watershed Water Resource Inventory Area 30 (Ecology 2021).

The study area is situated in two subregions of the Columbia Plateau ecoregion, which is characterized as an arid sagebrush steppe and grassland ecoregion, surrounded on all sides by moister, predominantly forested, mountainous ecological regions, and underlain by basalt up to 2 miles thick (USEPA 2021). The lower portion of the study area is situated in the Pleistocene Lake Basins subregion and the upper portion of study area is situated in the Yakima Folds subregion (USEPA 2021). The Pleistocene Lake Basins subregion is currently described as the lowest and driest area on the Columbia Plateau and receives an annual average precipitation of only 6 to 12 inches. The Yakima Folds subregion consists of a series of unforested anticlinal ridges and synclinal valleys covering the western Columbia Plateau and receives little precipitation due to being located in the rain shadow of the Cascade Range.

The project area includes 621.9 acres of private lands primarily owned by NSC Smelter, LLC, and an existing utility right-of-way owned by Bonneville Power Administration. A portion of the lower study area is located on lands that previously housed the CGA smelter (also known as Harvey Aluminum, Martin Marietta Aluminum, Commonwealth Aluminum, or Goldendale Aluminum). This facility was a primary aluminum reduction smelter that generally operated from 1969 to 2003, with a few periods when the plant shut down or had limited operation. Additional land in the lower study area is owned by the U.S. government and is associated with the John Day Dam. Current land use consists of open space, wind energy production, a former smelter, and transportation infrastructure (SR 14).

3.2.1 Resource Identification Methods

The following sections describe how wetlands, regulated waters, and their buffers were identified and mapped in the study area. Wetlands and regulated waters in the study area were formally delineated in the field by ERM-West, Inc (ERM) in May 2019 (FFP 2020a). Additional wetlands and waters were delineated in the smelter portion of the study area by Plateau Geoscience Group LLC (PGG 2013). Supplemental identification of wetlands and regulated waters was accomplished using existing wetland inventories, including the NWI (USFWS 2021), 2016 Modeled Wetland Inventory (Ecology 2016), National Hydrography (USGS 2021) datasets, and site visits conducted by Anchor QEA and Ecology in July 2021.

3.2.2 Wetlands, Regulated Waters, and Their Regulatory Buffers

This section presents the results of the wetlands, regulated waters, and regulatory buffer investigations for the study area (Figures 2a and 2b).

3.2.2.1 Wetlands

A wetland delineation was performed to support the proposed project in May 2019 by ERM-West, Inc. That delineation identified two excavated ponds (Pond/Wetlands P1 and P2) that exhibited wetland characteristics and an emergent wetland (Wetland W6) within or adjacent to the study area (FFP 2020b). A delineation was also performed to support the cleanup of the CGA smelter site in 2013 by Plateau Geoscience Group LLC. That delineation identified four wetlands (Wetlands A, B, C, and D) within or adjacent to the study area (PGG 2013). Additional potential wetlands were identified during a July 2021 site visit performed by Anchor QEA and Ecology (Wetlands 1 and 2). These features are presented in Figures 2a and 2b, summarized in Table 3, and described in more detail in the following subsections.

Table 3
Wetlands Within the Study Area and the 1,000-Foot Buffer Area

WETLAND	DESCRIPTION	CONNECTED TO REGULATED WATERS	CLASSIFICATION SYSTEM		AREA	
			COWARDIN	HGM	SQUARE FEET	ACRES
Wetland W6	Herbaceous wetland	No	PEM1C	Slope	123	0.003
Pond/ Wetland P1[1]	Excavated pond with wetland characteristics	No	PUBFx	Depressional	450	0.010
Pond/ Wetland P2	Excavated pond with wetland characteristics	No	PUBCx	Depressional	1,160	0.027
Wetland A	Herbaceous wetland	No	PEM1C	Depressional	1,202	0.028
Wetland B	Scrub-shrub wetland	No	PSS1C	Depressional	2,207	0.051
Wetland C	Herbaceous wetland	No	PEM1C	Depressional	2,120	0.049
Wetland D[2]	Scrub-shrub wetland	No	PSS1C	Depressional	600,439	13.784

WETLAND	DESCRIPTION	CONNECTED TO REGULATED WATERS	CLASSIFICATION SYSTEM		AREA	
			COWARDIN	HGM	SQUARE FEET	ACRES
Wetland 1	Scrub-shrub/ herbaceous wetland	Yes	PSS/PEM1C	Depressional	864	0.020
Wetland 2	Scrub-shrub/ herbaceous wetland	Yes	PSS/PEM1C	Depressional	1,613	0.037

Notes:
1. Pond/Wetland P1 extends outside of the study area to the north.
2. Wetland D extends outside of the study area to the east.

HGM: hydrogeomorphic

Cowardin system wetland codes:

PEM1C: palustrine emergent, persistent, seasonally flooded
PSS1C: palustrine scrub-shrub, broad-leaved deciduous, seasonally flooded
PSS/PEM1C: palustrine scrub-shrub/palustrine emergent, persistent, seasonally flooded
PUBCx: palustrine, unconsolidated bottom, seasonally flooded, excavated
PUBFx: palustrine, unconsolidated bottom, semipermanently flooded, excavated

Wetland W6 is a 0.003-acre palustrine, emergent wetland located on an old roadbed consisting of compacted rock and gravel and associated with a seep on a hillslope roadcut along SR 14 (Figure 2b). Seep monkeyflower (*Mimulus guttatus*) is the dominant vegetation observed in Wetland W6. The wetland is adjacent to a riparian corridor surrounding a small intermittent stream (Stream S17 as discussed in Section 3.2.4). Vegetation in this area is predominantly netleaf hackberry (*Celtis reticulata*) and Himalayan blackberry (*Rubus arme*niacus). Additional species observed in and adjacent to Stream S17 and Wetland W6 included bedstraw (*Galium* sp.), dock (*Rumex* sp.), bulbous bluegrass (*Poa bulbosa*), cheatgrass (*Bromus tectorum*), milkweed (*Asclepias* sp.), and blue wildrye (*Elymus glaucus*). Hydrology in the wetland was observed as flowing and standing water. The wetland does not appear to have a surface connection to Stream S17, which is located about 70 feet downslope.

Pond/Wetland P1 is a 0.010-acre pond with wetland characteristics located in the northern portion of the study area and appears to be artificially created (i.e., excavated) in uplands as a stock watering pond (Figure 2a). Pond/Wetland P1 is located close to a small ephemeral stream (Stream S7 as discussed in Section 3.2.4), but the two features are not hydrologically connected and Pond/Wetland P1 has no surface outlet. At the time of the May 2019 ERM delineation, Pond/Wetland P1 appeared to be nearly full of water (FFP 2020b). During the Anchor QEA and Ecology 2021 site visits unidentified emergent vegetation was observed growing sparsely in about 1 to 2 feet of standing water. Aerial imagery suggests that Pond/Wetland P1 partially dries up during summer months but retains a small amount of water throughout the year (Google Earth 2021).

Pond/Wetland P2 is a 0.027-acre pond with wetland characteristics located in the northern portion of the study area and appears to be artificially created (i.e., excavated) in uplands as a stock watering pond (Figure 2a). Pond/Wetland P2 does not have a surface outlet or channel connecting it to Stream S7. At the time of the May 2019 ERM delineation, Pond/Wetland P2 appeared to be about half full of water (FFP 2020b). During the Anchor QEA and Ecology 2021 site visits, the edges of the pond were sparsely vegetated and no emergent vegetation was observed growing in the water. Aerial imagery suggests that Pond/Wetland P2 dries up annually (Google Earth 2021).

Wetland A is a 0.028-acre wetland located on the CGA smelter site in the southern portion of the study area, south of SR 14 (Figure 2b). It is hydrologically fed by a spring that has been piped to an overflowing livestock watering trough. Vegetation is predominantly grasses and forbs. Site observations and a review of aerial photography indicates the wetland has seasonal hydrology (Google Earth 2021). Wetland A has no surface connection to other wetlands or waters.

Wetland B is a 0.051-acre wetland located on the CGA smelter site in the southern portion of the study area (Figure 2b). It is located just north of a gravel access road and appears to be located in an excavated ditch. It is fed hydrologically by stormwater that drains from the north through ditches to the wetland, but the wetland has no surface water outlet. Vegetation is primarily willow (*Salix* spp.) species and grasses. Standing surface water is present during wetter periods, but the wetland dries out in the summer.

Wetland C is a 0.049-acre wetland located on the CGA smelter site in an isolated depression west of the access road leading south from the smelter (Figure 2b). It is vegetated with grasses and forbs and has seasonal standing water. Wetland hydrology is likely provided by a high groundwater table, direct precipitation, and overland runoff. Wetland C dries out in the summer.

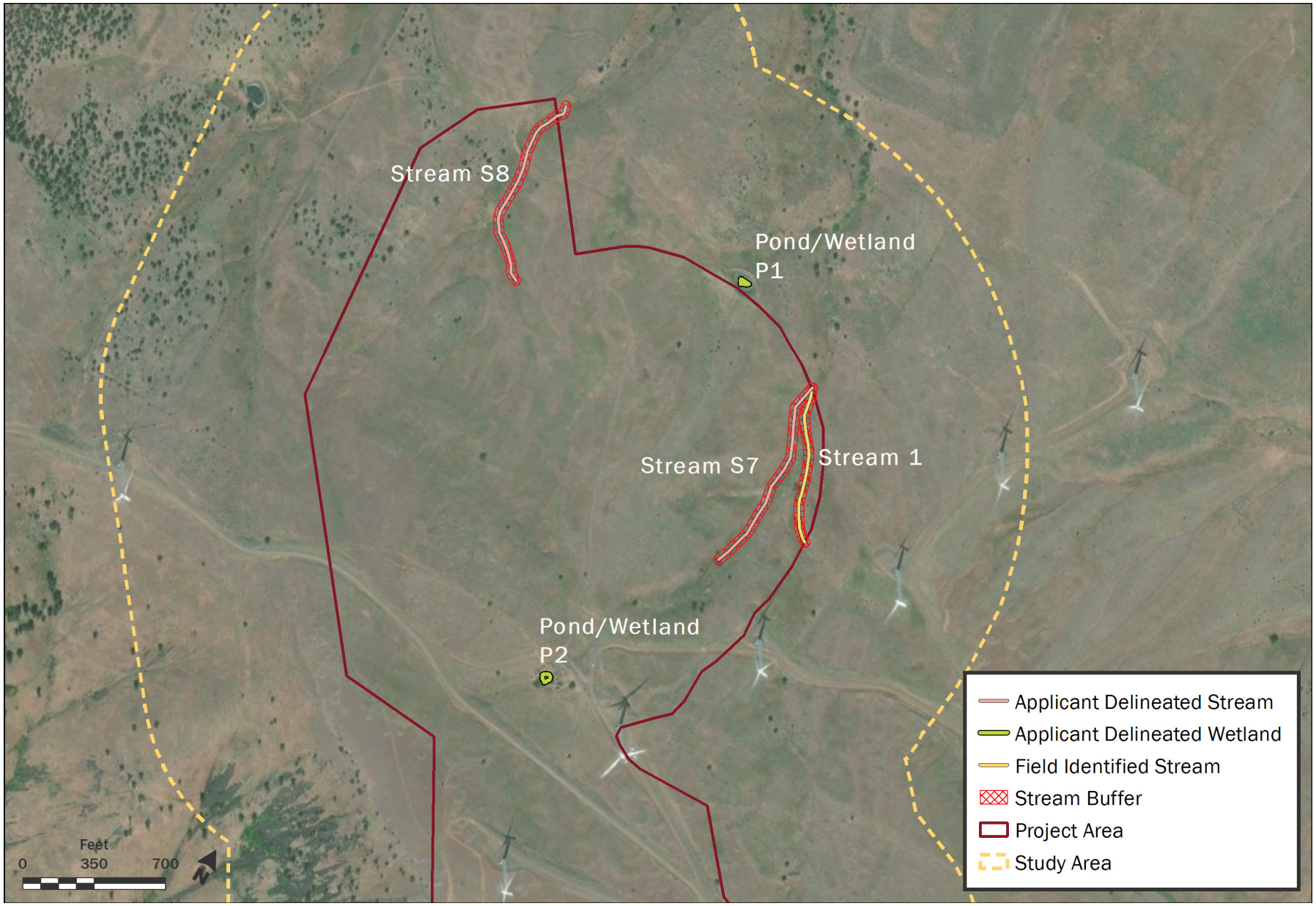
Wetland D is a large wetland located on the CGA smelter site in the southern portion of the study area (Figure 2b). Vegetation is predominantly willows, grasses, and forbs. Hydrology is provided by a seasonal spring in the southwestern margin, which flows into a small pond and then continues west through a culvert to a small depression. The spring likely provides water to the wetland throughout the year, although much of the wetland dries out in the summer. Wetland D is approximately 17.206 acres in size, of which approximately 13.784 acres is within the study area.

Wetland 1 was identified during a July 2021 site visit performed by Anchor QEA and Ecology and consists of a small 0.020-acre wetland located where a small intermittent stream (Stream S24 as discussed in Section 3.2.4) abuts SR 14 (Figure 2b). The stream does not appear to cross SR 14, and water collects in a depression formed by the road fill embankment. Dominant vegetation includes seep monkeyflower, smartweed species (*Polygonum* sp.), reed canary grass (*Phalaris arundinacea*), and Himalayan blackberry.

Wetland 2 was identified during a July 2021 site visit performed by Anchor QEA and Ecology and consists of a 0.037-acre wetland located where an intermittent stream (Stream S17 as discussed in Section 3.2.4) flows to the SR 14 road embankment (Figure 2b). The stream does not cross SR 14 due to a damaged culvert. Dominant vegetation consists of grasses, forbs, and Himalayan blackberry.

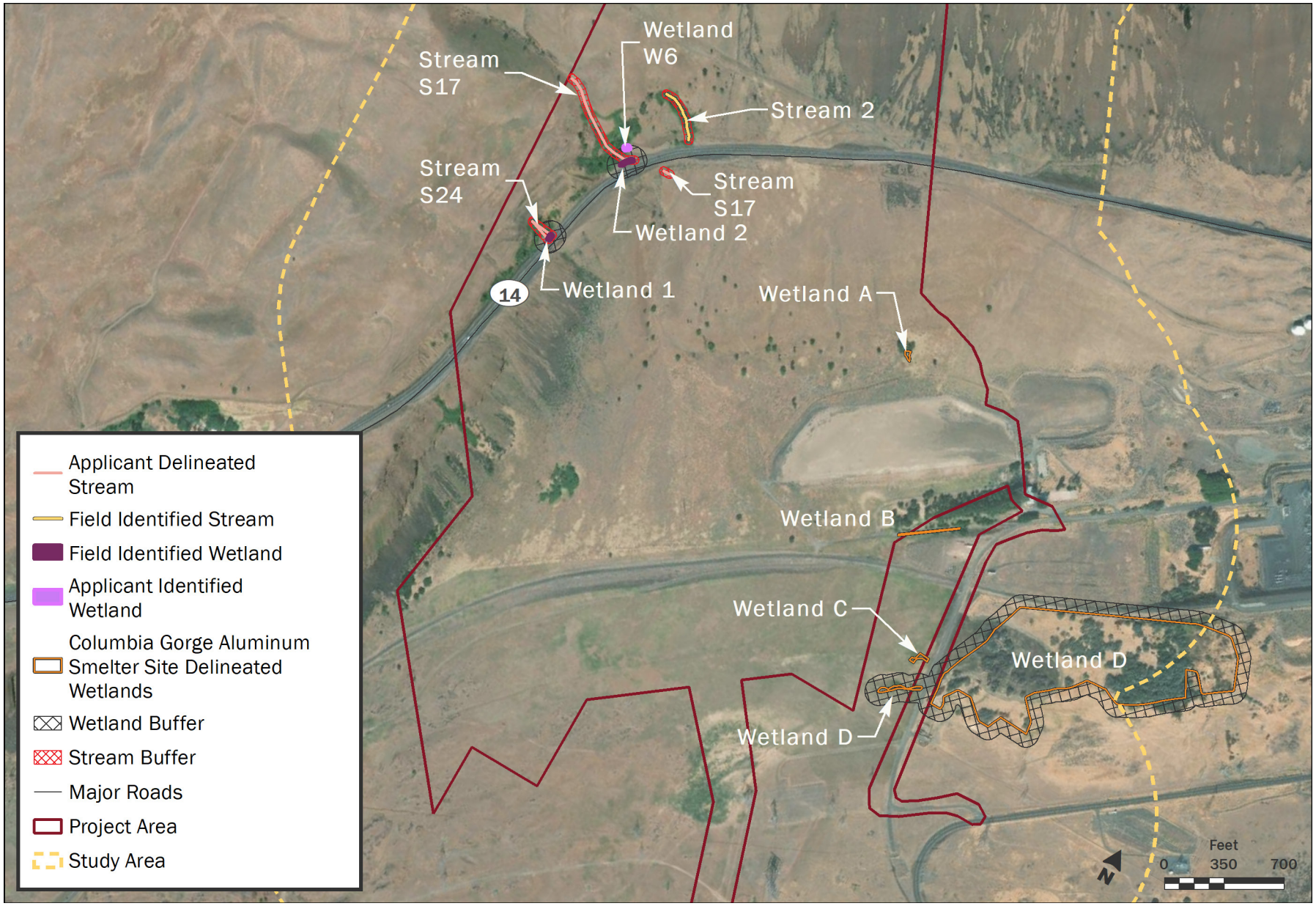
Based on existing documentation and field observations, all of the mapped wetlands appear to lack a surface connection to waters of the United States. Based on current regulatory guidance none of the mapped wetlands are likely to be regulated under Section 404 of the Clean Water Act. It is assumed that all mapped wetlands in the study area, except for Wetlands A, Pond/Wetland P1, and Pond/Wetland P2, would be considered both critical areas and waters of the state and would be regulated by Ecology under the Growth Management Act (RCW 36.70A) and Water Pollution Control Law (RCW 90.48). Wetlands A, Pond/Wetland P1, and Pond/Wetland P2 are stock watering ponds, and are not likely to be considered wetlands under the Growth Management Act per RCW 36.70A.030(31). However, those areas would be regulated as waters of the state under the Water Pollution Control Law per RCW 90.48.020.

Figure 2a
Wetlands, Regulated Waters, and Buffers in the Northern Portion of the Study Area (Upper Reservoir Area)



Source: FFP 2021; field knowledge gained through site visits performed by Anchor QEA and Ecology July 2021

Figure 2b
Wetlands, Regulated Waters, and Buffers in in the Southern Portion of the Study Area (Lower Reservoir Area)



Sources: FFP 2021; PGG 2013; field knowledge gained through site visits performed by Anchor QEA and Ecology July 2021

3.2.2.2 *Wetland Buffers*

Wetland buffer widths in Klickitat County are designated using the County Critical Areas Ordinance and based on wetland size, connectivity to regulated waters, and wetland category, as determined using the most current version of the *Washington State Wetland Rating System for Eastern Washington: 2014 Update* (Hruby 2014). Wetland ratings and buffers are described in Table 4.

Table 4
Wetland Ratings and Buffers Within the Study Area and the 1,000-Foot Offset Area

WETLAND	CATEGORY	BUFFER WIDTH (FEET)	BUFFER AREA		BUFFER CONDITIONS
			SQUARE FEET	ACRES	
Wetland W6[1]	IV	N/A	N/A	N/A	N/A
Pond/Wetland P1[2]	IV	N/A	N/A	N/A	N/A
Pond/Wetland P2[2]	IV	N/A	N/A	N/A	N/A
Wetland A[2]	IV	N/A	N/A	N/A	N/A
Wetland B[1]	IV	N/A	N/A	N/A	N/A
Wetland C[1]	III	N/A	N/A	N/A	N/A
Wetland D	III	75	323,735	7.432	Shrub-steppe vegetation; includes portions of gravel and paved access roads associated with the CGA smelter site
Wetland 1[3,4]	IV	75	18,831	0.432	Shrub-steppe vegetation with invasives; includes a portion of the SR 14 road prism
Wetland 2[3,4]	IV	75	26,240	0.602	Shrub-steppe vegetation with invasives; includes a portion of the SR 14 road prism

Notes:
1. Wetlands W6, B, and C would not be regulated for development under the Klickitat County Critical Areas Ordinance due to being isolated wetlands less than 2,500 square feet in size; therefore, buffer requirements do not apply.
2. Pond/Wetlands P1 and P2 and Wetland A would not be regulated for development under the Klickitat County Critical Areas Ordinance because they do not meet the definition of wetlands under RCW 36.70A.030(31) and would not be considered critical areas.
3. These wetlands were not formally rated. Categories were assumed based on field observations.
4. Although less than 2,500 square feet in size, these wetlands are connected to streams and therefore are regulated for development under the Klickitat County Critical Areas Ordinance and buffer requirements apply.

3.2.3 *Regulated Waters and Stream Buffers*

This section presents the results of the regulated waters (streams) and stream buffer investigations for the study area (Figures 2a and 2b).

3.2.3.1 Regulated Waters

The proposed project's wetland delineation report (FFP 2020b), the CGA smelter site wetland delineation report (PGG 2013), and site observations were used to determine the regulated waters present in the study area. The existing delineation reports found one ephemeral/intermittent stream (Stream S7) and three intermittent streams (Streams S8, S17, and S24) in the study area (FFP 2020b). The additional site investigations found one ephemeral stream (Stream 1) and one intermittent stream (Stream 2) within the study area. These features are presented in Figures 2a and 2b, summarized in Table 5, and described in more detail in the following subsections. They are also discussed further in the *Surface and Groundwater Hydrology Resource Analysis Report* (Appendix B of the EIS), and Section 4.2 of the Draft EIS.

An **intermittent** stream flows during some but not all times of the year.

An **ephemeral** stream contains water only following precipitation.

Table 5
Regulated Waters Within the Study Area

REGULATED WATERS	DESCRIPTION	COWARDIN CLASSIFICATION	ON SITE AREA	
			SQUARE FEET	ACRES
Stream S7	Intermittent stream with ephemeral upstream extent	N/A	1,990	0.046
Stream S8	Intermittent stream	N/A	1,980	0.045
Stream S17	Intermittent stream	R4SBJ	1,352	0.031
Stream S24	Intermittent stream	R4SBJ	2,609	0.060
Stream 1	Ephemeral stream	N/A	773	0.018
Stream 2	Intermittent stream	R4SBJ	663	0.015

Notes:
Cowardin system wetland codes:
R4SBJ: riverine, intermittent, streambed, intermittently flooded

Stream S7 begins as an ephemeral stream channel that becomes an intermittent stream channel further downslope. It is 16 to 24 inches wide, 1 to 3 inches deep, and extends approximately 995 feet into the study area with no evidence of a connection between Pond/Wetland P2 and the upper extent of Stream S7 as mapped by ERM. Evidence of an OHWM included an incised bed and bank, sediment sorting, and debris wracking. Substrate consists of small cobbles, gravels, and fines. Although no flowing water was observed, much of the substrate was covered with algal matting indicating water was present earlier in the year. Vegetation adjacent to Stream S7 consists of bulbous bluegrass, cheatgrass, smallflower woodland-star (*Lithophragma parviflorum*), barestem biscuitroot (*Lomatium nudicaule*), and Hood River milk-vetch (*Astragalus hoodianus*). A portion of the stream flows through a linear patch of Douglas hawthorn (*Crataegus douglasii*).

Stream S8 is an intermittent stream channel that is 12 to 24 inches wide, 1 to 3 inches deep, and extends approximately 990 feet into the study area (Figure 2a). Evidence of an OHWM included an incised bed and bank, sediment sorting, and debris wracking. Substrate consists of small cobbles, gravels, and fines. Although no flowing water was observed, several pockets of standing water were

present and much of the substrate was covered with algal matting. Vegetation adjacent to the banks of Stream S8 is similar to the species described along Stream S7.

Stream S17 is an intermittent stream channel that is about 24 inches wide and 1 to 3 inches deep, with substrate consisting of mud and fine gravels (Figure 2b). Evidence of an OHWM included a defined bed and bank and sediment sorting. The channel begins upslope (north) of SR 14 and is conveyed beneath the highway through a metal culvert. Flowing water 1 to 3 inches deep was observed north of SR 14; however, no water was observed exiting the culvert at the outlet on the southeast side of the highway. Below the culvert outlet, the stream channel extends only about 20 feet where it resembles a grassy swale that lacks the OHWM indicators of a stream observed above the highway. These conditions suggest the culvert may be damaged and that most of the stream flows subsurface beneath SR 14 before reaching the culvert outlet. Vegetation adjacent to Stream S17 consists of netleaf hackberry, Himalayan blackberry, seep monkeyflower, bedstraw, bulbous bluegrass, and cheatgrass.

At the time of the May 2019 ERM delineation, Stream S24 was identified as a groundwater seep located along the excavated hillside above SR 14 near the proposed location of the lower reservoir (Figure 2b). Water flows down the hillside into a roadside drainage ditch and into a culvert that conveys the water to the east side of the highway. Similar to Stream S17, no flowing water was observed exiting the culvert outlet. No stream channel was observed below the culvert and only marginal swale like conditions were observed. Vegetation within the seep consists primarily of Himalayan blackberry and black cottonwood (*Populus trichocarpa*) saplings.

Stream 1 is located immediately east of the ephemeral portion of Stream S7 and flows into Stream S7 near the study area boundary (Figure 2a). It is assumed to be an ephemeral stream channel that is 8 to 12 inches wide, 1 to 3 inches deep, and approximately 773 feet long. Evidence of an OHWM included an incised bed and bank, sediment sorting, and debris wracking. Substrate consists of small cobbles, gravels, and fines. At the time of the site visit, no flowing water was observed in the channel; however, much of the substrate was covered with algal matting. Vegetation along the banks of Stream 1 is similar to the bank vegetation along Stream S7. A portion of the stream flows through a small patch of Douglas hawthorn.

Stream 2 is located immediately north of SR 14 and approximately 350 feet east of Stream S17 (Figure 2b). It is assumed to be an intermittent stream channel that is about 24 inches wide, 1 to 3 inches deep, and approximately 316 feet long. At the time of the site visit, no water was observed in the channel; however, substrate and evidence of OHWM is similar to Stream S17. Vegetation along Stream 2 is similar to the vegetation along Stream S17 (e.g., netleaf hackberry, Himalayan blackberry, seep monkeyflower, bedstraw, bulbous bluegrass, and cheatgrass).

In June 2021, ERM submitted a request for an Approved Jurisdictional Determination to the U.S. Army Corps of Engineers (USACE; ERM 2021b). Prior to the application, ERM completed a streamflow duration assessment (ERM 2021a) to distinguish between ephemeral, intermittent and perennial reaches of Streams S7 and S8. The study involved a field visit in March 2021, walking the length of Streams S7 and S8 within the project footprint, and selecting within each stream one reach with flow and one reach without flow, each with minimum length of 30 meters, for assessment. The assessment used hydrological, geomorphological, and biological indicators to classify streamflow duration within each reach as ephemeral or intermittent. The assessment concluded that the upstream portion of Stream S7 is ephemeral based on biological indicators. The downstream portion of Stream S7 was characterized as intermittent based on biological and geomorphological observations. Within the study area, Stream S8 was characterized as intermittent because similar characteristics to the intermittent reach of Stream S7

were observed. Stream 1, a tributary to Stream S7, is assumed to be ephemeral as it receives no water from springs or other sources besides precipitation. Stream 2 is assumed to be intermittent as it likely receives seep hydrology from the embankment similar to Stream 17 and Stream 24.

Stream 17, Stream 24, and Stream 2 flow from north to south down the bluff north of SR 14. All of these streams flow subsurface at, or just below SR 14, and do not have a surface water connection to any other streams or wetlands. Therefore, none of these streams are likely to be considered jurisdictional waters of the United States and subject to regulation under Section 404 of the Clean Water Act.

Stream 1, Stream S7, and Stream S8 are headwater tributaries to Swale Creek, which flows into the Klickitat River, a tributary to the Columbia River. Based on current regulatory guidance, Stream 1, Stream S7, and Stream S8 are likely to be jurisdictional waters of the United States and subject to regulation under Section 404 of the Clean Water Act. It is assumed that all mapped streams in the study area would be considered waters of the state and jurisdictional under Ecology regulations.

The Columbia River is located outside of but directly adjacent to the southern end of the study area (Figure 1). The portion of the Columbia River adjacent to the project area is a designated Shoreline of Statewide Significance under the 1996 Klickitat County Shoreline Master Plan Update (Klickitat County 1996) and the draft 2019 Klickitat County Shoreline Master Plan Update (Klickitat County 2016, 2019). The project area would be adjacent to these designations but would not involve any work within shoreline environmental designations, except for adding transmission lines to the existing overhead transmission line, which would not involve work on the ground or in waters.

3.2.3.2 Stream Buffers

Stream buffer widths in Klickitat County are determined based on the Washington State Department of Natural Resources Water Typing System (WDNR 2021). Stream types and buffers are described in Table 6.

Table 6
Stream Buffers Within the Study Area

STREAM	TYPE	BUFFER WIDTH (FEET)	BUFFER AREA		BUFFER CONDITIONS
			SQUARE FEET	ACRES	
Stream S7	Ns	25	49,733	1.142	Shrub-steppe vegetation
Stream S8	Ns	25	49,453	1.135	Shrub-steppe vegetation
Stream S17	Ns	25	36,409	0.836	Shrub-steppe vegetation with invasives; includes a portion of the SR 14 road prism
Stream S24	Ns	25	9,427	0.216	Shrub-steppe vegetation with invasives; includes a portion of the SR 14 road prism
Stream 1	Ns	25	39,821	0.914	Shrub-steppe vegetation
Stream 2	Ns	25	17,149	0.394	Shrub-steppe vegetation with invasives; includes a portion of the SR 14 road prism

Note:
Ns is defined as streams that do not have surface flow during at least some portion of the year, and do not meet the physical criteria of a fish-bearing stream (WDNR 2021).

3.2.3.3 Existing Wetland Inventories

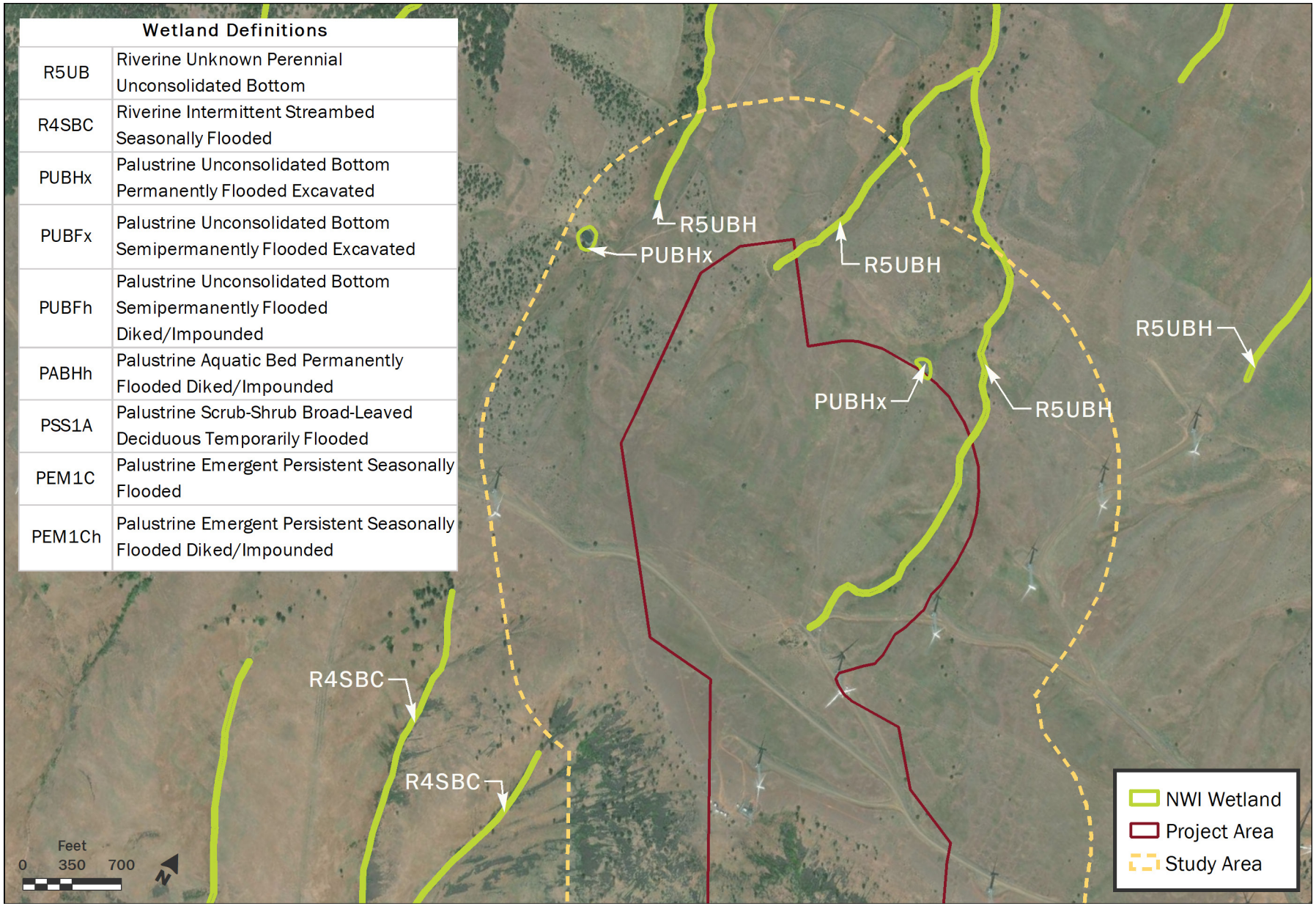
The U.S. Fish and Wildlife Service NWI (USFWS 2021) identifies seven mapped wetlands in the study area including two Freshwater Forested/Shrub, one Freshwater Pond, and four Riverine wetlands (Figures 3a

and 3b). Five of these features (one Freshwater Pond and four Riverine wetlands) are also identified by the U.S. Geological Survey NHD (USGS 2021). Two Riverine wetlands are associated with Stream S17, and two Riverine wetlands are each associated with Streams S7 and S8. The Freshwater Pond wetland is associated with Pond/Wetland P1. The NWI-mapped Freshwater Forested/Scrub-Shrub wetlands were not identified during the delineations performed for the proposed project.

The WDFW Priority Habitats and Species data (WDFW 2021) identifies several upland habitats and terrestrial wildlife species that are analyzed in the *Terrestrial Species and Habitats Resource Analysis Report* (Appendix G of the EIS; Anchor QEA 2022), and Section 4.7 of the Draft EIS. There is one mapped Priority Habitats and Species Freshwater Forested/Scrub-Shrub Wetland in the study area that is located in the general vicinity of Stream S17 and the mapped NWI Riverine wetland shown in Figure 3b.

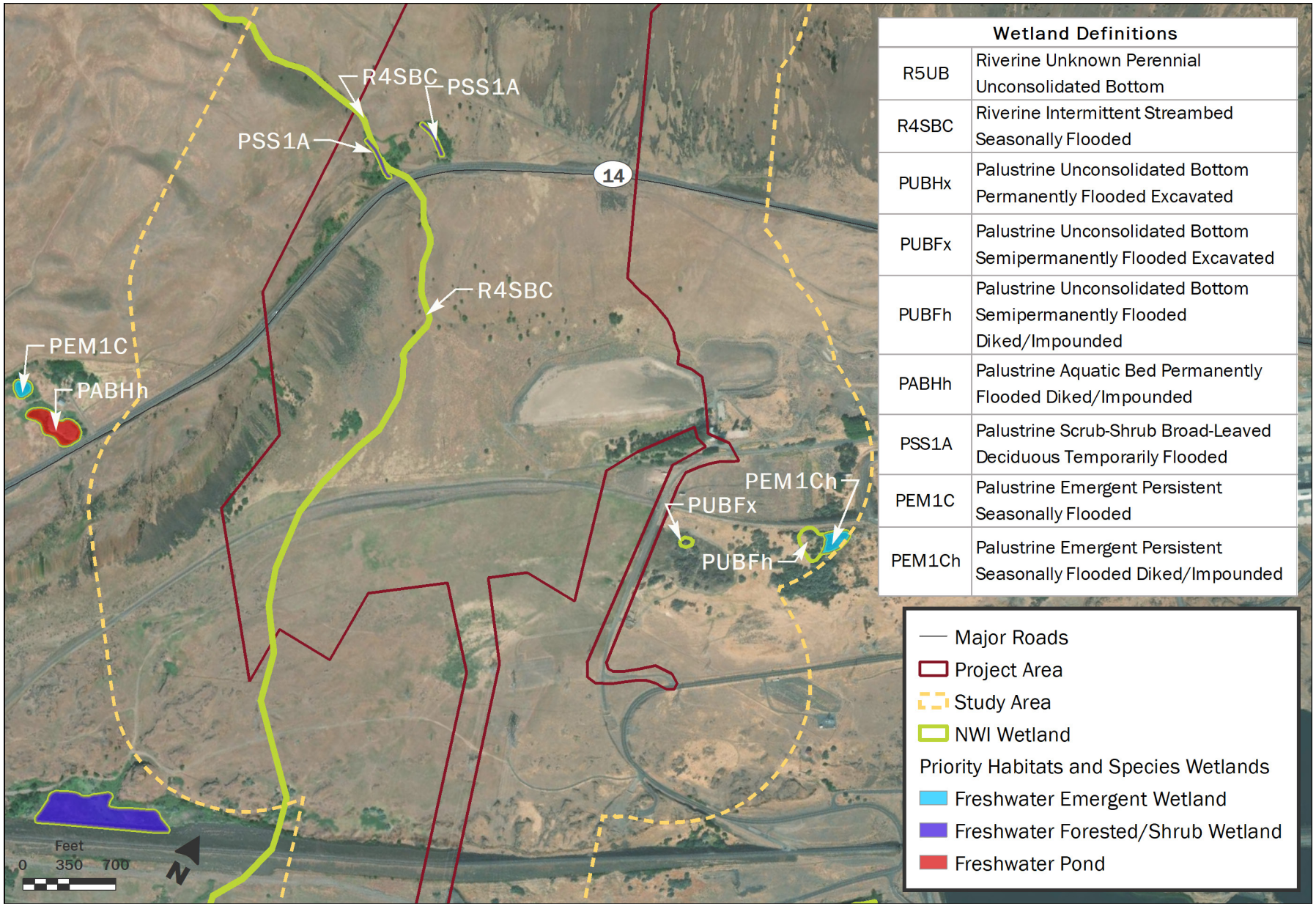
Ecology's 2016 Modeled Wetland Inventory (Ecology 2016) does not show any mapped wetlands within or nearby the study area. The closest mapped resources are approximately 5 miles to the northwest of the study area.

Figure 3a
Existing Wetland Inventories in the Upper Reservoir Area



Source: USFWS 2021

Figure 3b
Existing Wetland Inventories in the Lower Reservoir Area



Wetland Definitions	
R5UB	Riverine Unknown Perennial Unconsolidated Bottom
R4SBC	Riverine Intermittent Streambed Seasonally Flooded
PUBHx	Palustrine Unconsolidated Bottom Permanently Flooded Excavated
PUBFx	Palustrine Unconsolidated Bottom Semipermanently Flooded Excavated
PUBFh	Palustrine Unconsolidated Bottom Semipermanently Flooded Diked/Impounded
PABHh	Palustrine Aquatic Bed Permanently Flooded Diked/Impounded
PSS1A	Palustrine Scrub-Shrub Broad-Leaved Deciduous Temporarily Flooded
PEM1C	Palustrine Emergent Persistent Seasonally Flooded
PEM1Ch	Palustrine Emergent Persistent Seasonally Flooded Diked/Impounded

Source: USFWS 2021

3.3 Proposed Project

3.3.1 Impacts from Construction

3.3.1.1 Direct Impacts

Wetlands and Wetland Buffers

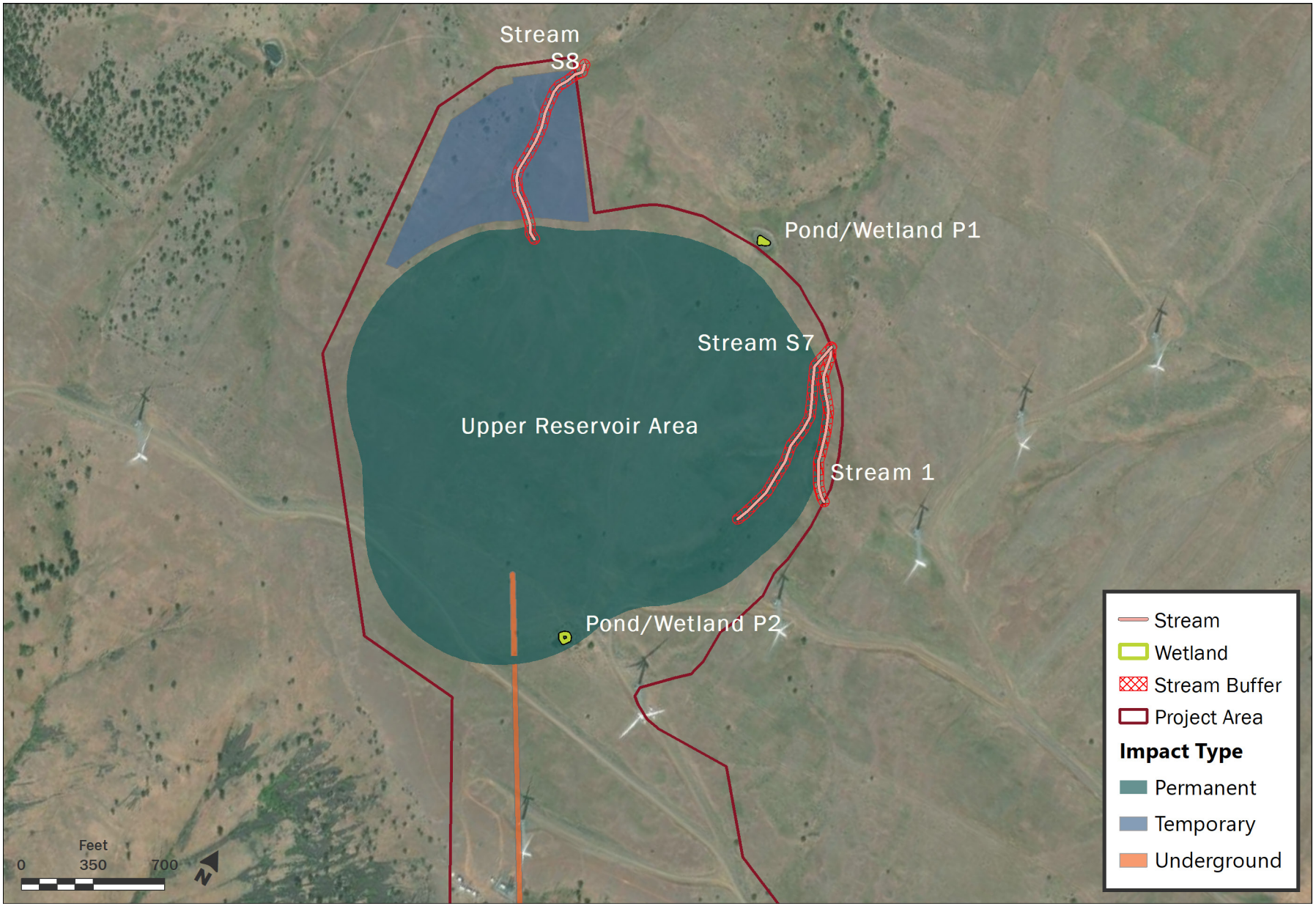
Wetlands in the study area would be directly affected by construction of the proposed project (Figures 4a and 4b). Land clearing, excavation, grading, and fill placement activities would result in permanent and temporary impacts. As discussed in Section 3.2.2, nine wetlands have been identified in the study area. Of these, the proposed project would result in permanent impacts on all of Pond/Wetland P2 (1,160 square feet [0.027 acre]) and a portion of Wetland A (658 square feet [0.015 acre]), both Category IV wetlands, through the permanent loss of wetland area and associated functions and values. Because of their constructed condition, those two wetlands are not considered critical areas under RCW 36.70A.030(31) and do not have assigned regulatory buffers, so no wetland buffer impacts would occur. These impacts would not result in significant adverse impacts because the total area of wetland impact would be 1,818 square feet (0.042 acre) and these wetlands have low functions. A significant impact would be defined as a permanent change in wetland function or type and/or permanent loss of 0.5 or more acre of Category I wetlands, 5 or more acres of Category II wetlands, and/or 10 or more acres of Category III or IV wetlands.

Pond/Wetland P1 is outside the construction footprint of the upper reservoir, and therefore would not be directly affected by construction activities (Figure 4a). Construction of the proposed underground access tunnel would be constructed at a sufficient depth to avoid any impacts on Wetlands W6, 1, and 2 (Figure 4b). The access road that extends south from the lower reservoir would not be widened. Therefore, impacts on Wetlands C and D would be avoided (Figure 4b). No direct permanent impacts on the buffers of Wetland D or Wetlands 1 and 2 would occur during construction of the proposed project.

Some temporary impacts are expected to result from construction of the proposed project. Temporary construction impacts on wetlands include removal or disturbance of wetland vegetation during construction activities. The eastern portion of Wetland A and the western portion of Wetland B would be temporarily affected by the construction of laydown areas for stockpiling excavated materials at the lower reservoir (Figure 4b). These impacts would be moderate. It is expected that the affected areas of Wetlands A and B would be restored following construction. No direct temporary impacts on wetland buffers would occur during construction of the proposed project.

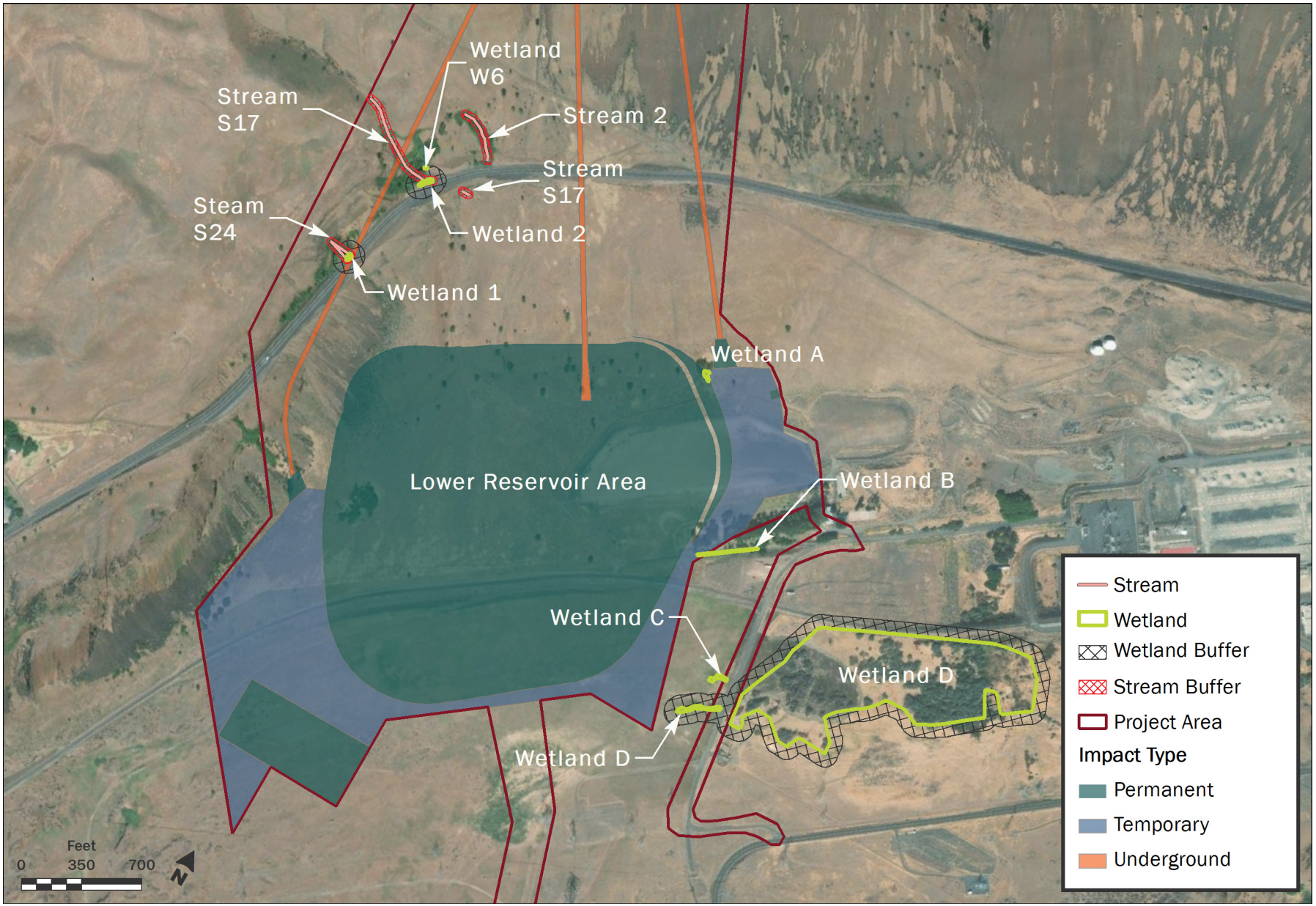
Wetland and wetland buffer impacts are summarized in Table 7.

Figure 4a
Direct Impacts on Wetlands, Regulated Waters, and Buffers from Proposed Project Construction in Northern Portion of the Study Area



Sources: FFP 2021; field knowledge gained through site visits performed by Anchor QEA and Ecology July 2021

Figure 4b
Direct Impacts on Wetlands, Regulated Waters, and Buffers from Proposed Project Construction in Southern Portion of the Study Area



Sources: FFP 2021 ; PGG 2013; field knowledge gained through site visits performed by Anchor QEA and Ecology July 2021

Table 7
Direct Wetland and Wetland Buffer Impacts

WETLAND	AREA OF IMPACT		DURATION OF IMPACT	AREA OF BUFFER IMPACT (ACRES)	CAUSE OF IMPACT
	SQUARE FEET	ACRES			
Wetland W6	0	0	N/A	N/A	N/A
Pond/ Wetland P1	0	0	N/A	N/A	N/A
Pond/ Wetland P2	1,160	0.027	Permanent	N/A	Construction of the upper reservoir would result in excavation and backfilling of all Pond/Wetland P2.
Wetland A	658	0.015	Permanent	N/A	Construction of the lower reservoir would result in excavation and backfilling a portion of Wetland A.
Wetland A	578	0.013	Temporary	N/A	Portions of Wetland A would be affected by temporary laydown areas for stockpiling excavated materials near the lower reservoir.
Wetland B	391	0.009	Temporary	N/A	Portions of Wetland B would be affected by temporary laydown areas for stockpiling excavated materials near the lower reservoir.
Wetland C	0	0	N/A	N/A	N/A
Wetland D	0	0	N/A	0	N/A
Wetland 1	0	0	N/A	0	N/A
Wetland 2	0	0	N/A	0	N/A

Regulated Waters and Buffers

Streams and their buffers in the study area would be directly affected by construction of the proposed project (Figure 4a). Land clearing, excavation, grading, and fill placement activities would result in temporary and permanent direct impacts. As discussed in Section 3.2.3, six streams have been identified in the study area. Of these, the proposed project would result in permanent impacts from excavating and filling sections of stream channel to support the project. Temporary impacts would result from vegetation removal and temporary fill placement for construction access and staging. Of the six streams identified in the study area, only Stream S7, Stream S8, and Stream 1 would be affected by construction.

The proposed project would result in impacts on assumed jurisdictional waters of the United States through the permanent loss of Stream S7 and Stream 1, and temporary and permanent impacts on Stream S8 within the study area. Construction of the proposed upper reservoir would remove and permanently cover approximately 0.041 acre (890 linear feet) of Stream S7, approximately 0.003 acre (75 linear feet) of Stream S8, and approximately 0.004 acre (775 linear feet) of Stream 1. These impacts would not result in a significant adverse impact because the total area of stream impact would be 0.048 acre. A significant impact would be defined as a permanent change in stream function or type and/or permanent loss of 0.5 or more acre of stream channel. Immediately north of the proposed upper reservoir, approximately 0.037 acre (800 linear feet) of Stream S8 would be disturbed due to its location within the temporary construction staging area. The Applicant proposes to design the staging area and

employ construction best management practices throughout the work, to minimize impacts on Stream S8 and facilitate its restoration to the extent practical following completion of construction.

Stream buffers would be directly affected by construction of the proposed project. Land clearing, excavation, grading, and fill placement activities would result in permanent and temporary impacts on buffers. As discussed in Section 3.2.4.1, all six streams that have been identified in the study area are assigned 25-foot-wide buffers. Of these, buffer areas around Stream S7, Stream 1, and a small portion of Stream S8 buffer area would be permanently affected by project construction. These impacts would not result in a significant adverse impact because the total area of buffer impact would be 1.395 acres of degraded buffer. A significant impact would be defined as permanent loss or change in type or function of 10 or more acres of stream buffers. The remaining buffer area around Stream S8 would be temporarily affected by the construction of laydown areas for stockpiling excavated materials at the upper reservoir.

Because no ground-disturbing work would occur within the shorelands area of the Columbia River, there would be no impacts on shorelines of the state or associated shorelands.

Stream and stream buffer impacts are shown in Table 8.

Table 8
Direct Stream and Stream Buffer Impacts

STREAM	AREA OF STREAM IMPACT		DURATION OF IMPACT	AREA OF BUFFER IMPACT		CAUSE OF IMPACT
	SQUARE FEET	ACRES		SQUARE FEET	ACRES	
Stream S7	1,785	0.041	Permanent	43,805	1.006	Construction of the upper reservoir would result in excavation and backfilling portions of Stream S7 and its buffer area.
Stream S8	1,610	0.037	Temporary	38,607	0.886	Portions of Stream S8 and its buffer area would be affected by temporary laydown areas for stockpiling upper reservoir excavated materials .
	142	0.003	Permanent	4,373	0.100	Construction of the upper reservoir would result in excavation and backfilling portions of Stream S8 and its buffer area.
Stream S17	0	0	N/A	0	0	N/A
Stream S24	0	0	N/A	0	0	N/A
Stream 1	189	0.004	Permanent	12,574	0.289	Construction of the upper reservoir would result in excavation and backfilling portions of Stream 1 and its buffer area.
Stream 2	0	0	N/A	0	0	N/A

Mitigation is not required to reduce any significant impacts, but compensatory mitigation for impacts on wetlands and waterbodies will be required through permitting. The identified impacts could also be reduced if the Applicant develops a mitigation plan that meets regulatory requirements and for which implementation is feasible (see Sections 3.3.3 and 3.3.4). There would not be a significant adverse impact on surface waters, wetlands, and buffers.

3.3.1.2 Indirect Impacts

Excavation and dewatering for construction of the reservoirs may affect shallow groundwater hydrology, which could result in indirect impacts on wetlands and regulated waters in the vicinity. Excavation of the reservoirs may direct shallow groundwater into the excavated areas, potentially affecting the supporting hydrology for nearby wetlands and regulated waters. Such impacts could increase if the excavations are actively dewatered. The wetland areas that are most likely to be affected by such impacts include Pond/Wetland P1, which is located adjacent to the upper reservoir, and Wetland B, which is located adjacent to the lower reservoir. Although these impacts could occur throughout the duration of the 5-year construction period, they would not constitute a significant adverse impact because they are unlikely to result in the permanent loss of wetlands or wetland functions. In addition, the effects of such dewatering could be minimized by implementation of best management practices within permit requirements to comply with water quality standards.

Construction of the underground portions of the project could also cause indirect impacts on wetlands and regulated waters. The proposed multi-use tunnels would be installed beneath Wetland W6, Wetland 1, Wetland 2, Stream S24, Stream S17, and Stream 2. The tunnels would be installed using tunneling techniques and would not involve disturbance of the ground surface in these locations. The tunnels would ultimately be lined and impermeable. As the tunnels are being constructed, however, there is minor potential for surface water to infiltrate into the tunnels and drain wetlands and streams on the overlying surface. The tunnels would be located approximately 1,050 feet below the ground surface of those wetlands and streams and the underlying geology includes approximately 1,000 feet of Grande Ronde Basalt (HDR 2020). Given the depth of the tunnels and the thickness of basalt separating them from the wetlands and streams on the surface, tunnel construction is highly unlikely to affect shallow groundwater in those wetlands and streams.

Indirect impacts on wetland and stream buffers may result from changes to adjacent habitat directly affected by the proposed project. These impacts are not expected to degrade buffer function because the regulated buffer widths are small, and the existing habitat is degraded with invasive species or human development. These effects may also result in reduced hydrology in Streams S7, Stream S8, and Stream 1 that extend downstream of the study area. These indirect effects are not expected to result in significant adverse impacts.

3.3.2 Impacts from Operation

Operation of the proposed project would involve periodic pumping of water into the upper reservoir and discharging that water through the underground headrace, powerhouse, and tailrace to the lower reservoir. Operations would not involve any land disturbance. The reservoirs and tunnels would all be lined with an impermeable material, which would minimize changes to surface and subsurface drainage. As such, operation is not expected to affect wetlands, streams, and their buffers. No shorelines of the state would be affected by project operation. Operation of the proposed project would not result in significant adverse impacts.

3.3.3 Required Permits

The following permits applicable to wetlands and regulated waters and their associated buffers would be required for construction and operation of the proposed project:

- **Section 404 Clean Water Act Permit (USACE):** Construction and operation of the proposed project would affect wetlands and streams, which are waters of the United States. Department of the Army authorization from USACE under Section 404 of the Clean Water Act would be required. As part of this approval, Endangered Species Act and Section 106 of the National Historic Preservation Act consultations would be required.
- **Section 401 Clean Water Act Water Quality Certification (Ecology):** A Section 401 Water Quality Certification from Ecology will be required. This certification is required for any project that needs a federal permit or license that may result in any discharge into water of the United States. It is intended to provide reasonable assurance that the Applicant's proposed project will comply with state water quality standards and other requirements for protecting aquatic resources. The Section 401 Water Quality Certification would cover both construction and operation of the proposed project. Conditions from the Section 401 Water Quality Certification would become part of the new FERC license and the USACE permit.
- **Section 402 Clean Water Act NPDES Construction Stormwater General Permit (Ecology):** The construction of the proposed project would require a construction stormwater general permit. As part of the National Pollutant Discharge Elimination System (NPDES) permit process, stormwater and wastewater generated on the site would be evaluated and characterized, after which the specific language and type of NPDES would be determined.
- **Section 402 Clean Water Act (NPDES) Industrial Stormwater Permit (Ecology):** The proposed project would result in releases of water that require an industrial stormwater permit. All wastewater and stormwater generated from the proposed project and potentially discharged would be evaluated and characterized by the state. Once the water to be discharged has been accurately evaluated and characterized by the state, the specific standards for water discharged from the project area would be defined and the type of NPDES permit would be determined and issued.
- **Washington State Water Pollution Control Law Administrative Order (Ecology):** The proposed project would result in both the temporary and permanent placement of fill material into wetlands and streams (waters of the state) that may not be regulated as waters of the United States under Section 404 of the Clean Water Act. Impacts to wetlands or streams outside of federal jurisdiction are authorized through administrative orders under the state Water Pollution Control Act.
- **Potential Critical Areas Review (Klickitat County):** Critical areas review may be required because the proposed project is within, abutting, or likely to adversely affect a critical area or buffer.
- **Potential Floodplain Development Permit (Klickitat County):** A flood hazard zone permit may be required for any construction or development that takes place within an area of special flood hazard.
- **Potential Fill and Grade Permit (Klickitat County):** A permit could be required for filling and grading necessary to construct the proposed project.
- **Potential Building Permit (Klickitat County):** A building permit may be required for activities to construct, enlarge, alter, repair, move, demolish, or change the occupancy of a building or structure.

3.3.4 Proposed Mitigation Measures

Permit-Required Mitigation Measures

Compensatory mitigation for impacts on wetlands and regulated waters would be addressed through USACE's Clean Water Act Section 404 Permit process and Ecology's Section 401 Water Quality Certification process for federally jurisdictional wetlands and streams or through Ecology's Administrative Order process under RCW 90.48 of the Washington Water Pollution Control Law for non-federally regulated wetlands and streams. Mitigation for any buffer impacts would be determined by Klickitat County.

The following mitigation measures for wetlands and regulated waters would likely be required through the permitting processes:

- **Compensatory Wetland and Stream Mitigation.** To mitigate for permanent excavation and/or placement of fill in wetlands and streams during construction of the proposed project, compensatory mitigation would be provided by the Applicant at agency-approved mitigation ratios through the federal, state, and local permitting processes.
- **Restoration of Disturbed Wetlands and Streams.** For wetlands and streams that are temporarily disturbed during construction of the proposed project, the Applicant would be required to restore the resource to pre-construction conditions through the federal, state, and local permitting processes.
- **Compensatory Buffer Mitigation.** To mitigate for permanent removal of wetland and stream buffers during construction of the proposed project, compensatory mitigation would be provided by the Applicant as determined by County laws and ordinances.
- **Restoration of Disturbed Buffers.** For wetland and stream buffers that are temporarily disturbed during construction of the proposed project, the Applicant would be required to restore buffers as determined by local laws and ordinances.

Applicant-Proposed Mitigation Measures

In addition to the permit-required measures, Applicant-proposed mitigation measures are intended to further reduce potential effects from construction and operation of the proposed project. These mitigation measures would be included as articles of the FERC license and would be enforced with other license requirements. The Applicant has proposed preparation of a mitigation plan, to be submitted to and approved by USACE and Ecology as a component of the Clean Water Act Section 404/401 permitting process. Their overall goal is to provide the greatest improvement to ecological functions in the broader Klickitat River subbasin, within which Swale Creek is a tributary. To reduce temporary construction impacts, the Applicant proposes to design the staging areas and employ construction best management practices throughout the work to minimize impacts on Stream S8, Wetland A, and Wetland B and facilitate their restoration to the extent practical following completion of construction.

Relevant Mitigation Measures in Other Resource Reports and Sections

In addition to the permit-required and Applicant-proposed measures, implementation of mitigation proposed in other sections of this EIS would also further reduce potential effects of the proposed project and protect wetlands, regulated waters, and their associated buffers.

The following is a brief summary of Ecology-proposed surface and groundwater resources mitigation measures; Section 4.2.2.3 of the EIS and the *Surface and Groundwater Hydrology Resource Analysis Report* (Appendix B of the EIS) contain complete descriptions of these measures:

- **Construction Water Resource Monitoring and Response Plan.** This mitigation measure for the protection of water quantity and water quality during construction would also protect wetlands, regulated waters, and their associated buffers (see Section 4.2 of the EIS).
- **Operations Water Resource Monitoring and Response Plan.** This mitigation measure for the protection of water quantity and water quality during operations would also protect wetlands, regulated waters, and their associated buffers (see Section 4.2 of the EIS).

3.3.5 Significant and Unavoidable Adverse Impacts

The analysis found the proposed project would have no significant adverse impacts related to wetlands, regulated waters, and their associated buffers. Compensatory mitigation for impacts on wetlands and regulated waters would be addressed through USACE's Clean Water Act Section 404 Permit process and Ecology's Section 401 Water Quality Certification process for federally jurisdictional wetlands and streams or through Ecology's Administrative Order process under RCW 90.48 of the Washington Water Pollution Control Law for non-federally regulated wetlands and streams. Additional measures may be required as part of permitting, and permit-required, Applicant-proposed, and Ecology-proposed mitigation measures are described in Sections 3.3.3 and 3.3.4 to further reduce potential impacts. There would be no significant and unavoidable adverse impacts related to wetlands and regulated waters and their associated buffers.

3.4 No Action Alternative

Under the No Action Alternative, the proposed project facilities would not be constructed. Investigation of contamination and development of cleanup actions for the CGA smelter site would continue through a separate Model Toxics Control Act (MTCA) cleanup process. KPUD would continue to hold the existing Cliffs water right, which may provide water supply to other customers or be placed in trust. Under the No Action Alternative, there would be no changes to the existing quantity and quality of groundwater and surface water within the study area.

In the absence of the proposed project fully removing the West Surface Impoundment (WSI), it is unknown what cleanup action would be required for the WSI through the full site cleanup process, which is underway. Under the MTCA process, a feasibility study would evaluate alternatives to address the contaminant impacts associated with all areas of the site including groundwater impacts associated with the WSI. For purposes of evaluating the No Action Alternative, it is assumed that the MTCA disproportionate cost analysis conducted as part of the feasibility study would conclude that the incremental cost to fully remove the WSI would be greater than the incremental environmental benefit achieved relative to the continued containment, inspection, and monitoring of the WSI. Therefore, under the No Action Alternative, it is assumed that the WSI would remain intact and continue to be monitored and maintained under the existing closure plan. However, the WSI would remain within the ongoing MTCA cleanup process for the smelter site and could be subject to additional remedial actions potentially requiring long-term stewardship measures, monitoring, and land-use restrictions that would be expected to be part of the cleanup plan.

3.4.1 Direct Impacts

A cleanup action could involve direct impacts on wetlands, regulated waters, and buffers including potential losses in the amount of area of those resources and loss of wetland and stream functions and

values from cleanup actions. A cleanup action may involve restoration and may provide benefits to wetlands, regulated waters, and buffers in the study area. Any cleanup action that would require excavation or placement of fill material into a wetland or water would follow the required Clean Water Act Section 404 permit process, which would include mitigation requirements. Other state and local permits would also be required, which would also require mitigation for unavoidable impacts. Overall, impacts on wetlands, regulated waters, and buffers under the No Action Alternative are expected to be minor. Through compliance with laws and with implementation of appropriately determined mitigation measures, there would be no significant adverse impacts related to wetlands, regulated waters, and buffers from the No Action Alternative.

3.4.2 Indirect Impacts

Indirect impacts on wetlands, regulated waters, and buffers could also occur under the No Action Alternative. Wetlands, regulated waters, and buffers could be indirectly affected by a cleanup action that could result in long-term changes in erosion and sedimentation processes, surface water flow patterns, land use, or invasive species colonization. Overall, such impacts are expected to be low and would be mitigated by the requirements of existing federal, state, and local regulatory programs and policies.

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