3.4 Water Resources

This Programmatic Environmental Impact Statement (EIS) considers the adverse environmental impacts on water resources that would result from the types of facilities described in Chapter 2, Overview of Transmission Facilities, Development Considerations, and Regulations. This section addresses the following topics related to the new construction, operation and maintenance, upgrade, and modification of high-voltage electric transmission facilities (transmission facilities) in Washington:

- Section 3.4.1 identifies regulatory, siting, and design considerations.
- Section 3.4.2 describes the affected environment.
- Section 3.4.3 describes the adverse environmental impacts.
- Section 3.4.4 describes Mitigation Measures.
- Section 3.4.5 identifies probable significant adverse environmental impacts on water resources.
- Section 3.4.6 provides an environmental sensitivity map and criteria weighting for the siting of transmission facilities as it relates to water resources, based on the identified considerations, adverse environmental impacts, and Mitigation Strategies.

3.4.1 Regulatory, Siting, and Design Considerations

This Programmatic EIS establishes a broad framework for compliance, outlining general laws, regulations, best management practices (BMPs), and design considerations. It is assumed that project-specific applications would be developed within this pre-established regulatory context and comply with existing laws and regulations. Any projects not complying with applicable laws and regulations or failing to adhere to design considerations or BMPs would require additional project-specific environmental analyses and mitigation. The federal, state, and local laws and regulations that apply to water resources are summarized in **Table 3.4-1**.

Table 3.4-1: Laws and Regulations for Water Resources

Applicable Legislation	Agency	Summary Information
16 USC § 791a et seq. – Federal Power Act	Federal Energy Regulatory Commission	The Federal Power Act, originally enacted in 1920 as the Federal Water Power Act, is a key piece of legislation governing the regulation of hydroelectric power and interstate electricity transmission in the United States. The act grants FERC the authority to issue licenses for non-federal hydroelectric projects on navigable waters and federal lands, ensuring that these projects serve the public interest.
16 USC § 1451 et seq. – Coastal Zone Management Act	National Oceanic and Atmospheric Administration[a]	The federal consistency provisions of the CZMA require that federal actions, including the issuance of federal licenses and permits, be consistent with the enforceable policies of the Washington Coastal Zone Management Program. This applies to federal actions in Washington's 15 coastal counties that could have reasonably foreseeable adverse environmental impacts on state coastal resources and uses. The CZMA was enacted to protect the coastal environment from growing demands associated with residential, recreational, commercial, and industrial uses. It encourages coastal states to develop and implement coastal zone management programs to manage and balance competing uses of the coastal zone. Washington's program is discussed in the Washington Coastal Zone Management Program section of this table. Projects within a coastal zone are required to comply with the State of Washington's Coastal Zone Management Program Enforceable Policies. The Washington Coastal Zone Management Program's enforceable policies are found in the following laws, regulations, and plans: ▪ Washington Shoreline Management Act and implementing WACs ▪ Washington State Water Pollution Control Act and implementing WACs ▪ Washington Clean Air Act ▪ Washington State Ocean Resources Management Act and Ocean Management Guidelines ▪ The Marine Spatial Plan for Washington's Pacific Coast
33 USC Chapter 26 – Clean Water Act	U.S. Environmental Protection Agency[a][b][c]	This act establishes regulations for discharging pollutants into waters of the United States and regulates water quality standards for surface water.

Applicable Legislation	Agency	Summary Information
		Under the CWA, it is unlawful to release pollutants into navigable waters unless a permit is obtained. The following sections of the CWA may apply to projects covered under this Programmatic EIS: ▪ Section 404 of the CWA establishes regulations for discharging pollutants into WOTUS[1] and regulates water quality standards for surface water. Section 404 of the CWA requires authorization for the discharge of dredge or fill material into WOTUS, including some wetlands. The CWA also includes regulated state-specific water quality standards. ▪ Section 401 of the CWA is a series of laws passed by the U.S. Congress to regulate and improve the nation's waterways. It provides states, some Tribes, and the U.S. EPA the authority to issue water quality certifications, which are required for federal discharge permits[2] into WOTUS. ▪ Section 402 of the CWA regulates point sources of discharge for pollutants to waters of the United States. A NPDES permit is required for a facility to discharge a specified amount of pollutants into receiving waters under certain conditions.
42 USC § 300(f) et seq. – Safe Drinking Water Act	Environmental Protection Agency[(a)]	This act establishes regulations intended to preserve groundwater as a source of drinking water. It manages underground injection of liquid wastes and designates some aquifers as irreplaceable sources of drinking water.
Executive Order 11990, Protection of Wetlands	Federal Agencies	This order aims to minimize the destruction, loss, or degradation of wetlands and to enhance their natural and beneficial values.
Washington State Executive Order 89-10, Protection of Wetlands	Washington State Department of Ecology[(d)]	Establishes an interim goal to achieve no overall net loss in acreage and function of Washington's remaining wetlands base and a long-term goal to increase the quantity and quality of Washington's wetlands resource base.

[1] Defines the scope of waters that fall under federal jurisdiction for regulatory purposes. The definition of WOTUS has been subject to changes and legal interpretations. The most recent update, following the Supreme Court's decision in Sackett v. EPA, refined the criteria for what constitutes Waters of the United States, particularly focusing on wetlands directly connected to permanent waters (EPA 2025a).

[2] A legal document issued by regulatory agencies that authorizes the release of pollutants into waterbodies under specific conditions. These permits are designed to ensure that the discharge meets environmental standards to protect water quality and public health.

Applicable Legislation	Agency	Summary Information
RCW 77.55, Construction Projects in State Waters	Washington Department of Fish and Wildlife[(d)]	Under state law, a Hydraulic Project Approval from WDFW would be required prior to any activity that will divert, obstruct, or change the natural flow or bed of state waters. Bed is defined as the land below the ordinary high water lines of state waters.
RCW 79.105.030, Aquatic lands—Management guidelines	Washington State Department of Natural Resources[(d)]	This code establishes that management of state-owned aquatic lands shall be in conformance with constitutional and statutory requirements.
RCW 79.105.210, Aquatic lands—Preservation and enhancement of water-dependent uses—Leasing authority	Washington State Department of Natural Resources[(d)]	This code outlines the leasing authority of state-owned aquatic lands by the DNR.
RCW 79.110.020, Certain aquatic lands subject to easements for removal of valuable materials—Private easements subject to common use in removal of valuable materials	Washington State Department of Natural Resources[(d)]	This code establishes that every ROW for an easement over and across any state-owned aquatic tidelands or shorelands "shall be subject to joint and common use in accordance with provisions of RCW 79.36.380."
RCW 90.03, Water Code	Washington State Department of Ecology[(d)]	This code establishes the framework for water rights[3] and water resource management in Washington.
RCW 90.48, Water Pollution Control Act	Washington State Department of Ecology[(d)]	This chapter establishes the legal framework for protecting water quality in Washington. This policy aims to maintain the highest standard for Waters of the State[4] to protect public health, public enjoyment, wildlife, birds, fish, and aquatic life, as well as support industrial development.
RCW 90.58, Washington State	Washington State Department of Ecology[(d)]	This law establishes a state-local partnership for managing, accessing, and protecting Washington's shorelines. This law applies to shorelines of the state,

[3] A legal entitlement that allows a person or entity to use water from a specific source, such as a river, stream, lake, or groundwater, for a particular purpose like irrigation, industrial use, or domestic consumption.

[4] All salt and fresh waters that are waterward of the ordinary high water line and within the territorial boundaries of the state. This includes lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the state's jurisdiction.

Applicable Legislation	Agency	Summary Information
Shoreline Management Act		including marine waters, streams and rivers with greater than 20 cubic feet per second mean annual flow, lakes 20 acres or larger, upland areas extending 200 feet landward from the edge of these waters, biological wetlands and river deltas connected to these waterbodies, and some or all of the 100-year floodplain, including all wetlands. ▪ The law requires local governments to prepare locally tailored policies and regulations for managing shoreline use in their jurisdictions, called SMPs. Local governments review shoreline development proposals for compliance with SMP standards.
WAC 173, Ecology, Department of	Washington State Department of Ecology[(d)]	This chapter encompasses a wide range of environmental regulations managed by Ecology. This title includes chapters on various topics, including water quality standards.
WAC 220-660, Hydraulic Code Rules	Washington Department of Fish and Wildlife	This chapter establishes requirements to obtain approval for a hydraulic project, such as projects that will divert, obstruct, or change the natural flow of marine or freshwater.
WAC 365-190-90, Wetlands	Washington State Department of Commerce	This section provides guidelines for counties and cities in Washington to designate and protect wetlands as part of their critical areas under the Growth Management Act. Local governments are encouraged to align their actions with the intent and goals of Washington State Executive Orders 89-10 and 90-04 (wetlands protection).
WAC 463-76, Regulations for Compliance with NPDES Permit Program	Washington Energy Facility Site Evaluation Council	This chapter requires compliance with several other regulations, including: ▪ WAC 173-200: Water Quality Standards for Groundwaters of the State of Washington ▪ WAC 173-201A: Water Quality Standards for Surface Waters of the State of Washington ▪ WAC 173-204: Sediment Management Standards ▪ 40 CFR 131.36: Toxics criteria for states not complying with Clean Water Act section 303(c)(2)(B)
WAC 508-12, Administration of Surface and Groundwater Code	Washington State Department of Ecology	This code provides procedures and regulations for Ecology's administration of waters, including diversions and appropriation.

Applicable Legislation	Agency	Summary Information
Washington State Environmental Policy Act	▪ Washington State Agencies ▪ Local governments	This act is a process that identifies and analyzes adverse environmental impacts that can be related to issuing permits. SEPA helps permit applicants and decision-makers understand how a proposed project will impact the environment. Certain projects, as defined in the SEPA Rules (WAC 197-11-704) and that are not exempt, are required to go through the SEPA process.
Growth Management Act[5]	Washington State Department of Commerce(d)	Protection of CARAs is required under the GMA. CARAs are defined by WAC 365-190-100 as "areas with a critical recharging effect on aquifers used for potable water." CARAs are established to protect the drinking water supply by preventing pollution from entering groundwater and maintaining access to the groundwater supply. The GMA also identifies frequently flooded areas, geologically hazardous areas, wetlands, and fish and wildlife habitats, such as stream corridors, as critical areas.

Notes:

(a) Federal agencies set national standards and oversee the implementation of these acts, but states have the authority to issue permits and enforce regulations through their own programs. This system, known as cooperative federalism, allows states to tailor their programs to local conditions while maintaining consistency with federal standards.

(b) Section 404 permits are issued by the U.S. Army Corps of Engineers.

(c) Section 401 certifications are issued by the U.S. EPA, Ecology, or some Tribes.

(d) The agency responsible for administering most permits or authorizations for the identified regulation. However, if EFSEC is determined to be the agency responsible for approving a proposal, EFSEC can administer several types of permits at the state and local levels. EFSEC provides a streamlined process for siting and licensing major energy facilities, including transmission facilities in Washington. EFSEC coordinates all evaluation and licensing steps, specifies the conditions for new construction and operation, and issues a Site Certification Agreement, which assumes the responsibility for issuing individual state or local permits. By consolidating these permits into a single Site Certification Agreement, EFSEC can simplify the regulatory process for energy facility developers. While EFSEC itself does not directly administer federal permits, it works closely with federal agencies to ensure that all necessary federal requirements are met during the evaluation and licensing of energy facilities.

CARA = Critical Aquifer Recharge Area; **CFR** = Code of Federal Regulation; **CWA** = Clean Water Act; **CZMA** = Coastal Zone Management Act; **DNR** = Washington State Department of Natural Resources; **Ecology** = Washington State Department of Ecology; **EFSEC** = Washington Energy Facility Site Evaluation Council; **EPA** = U.S. Environmental Protection Agency; **FERC** = Federal Energy Regulatory Commission; **GMA** = Growth Management Act; **NOAA** = National Oceanic and Atmospheric Administration; **NPDES** = National Pollutant Discharge Elimination System; **RCW** = Revised Code of Washington; **ROW** = right-of-way; **SEPA** = State Environmental Policy Act; **USC** = United States Code; **WAC** = Washington Administrative Code; **WOTUS**= Waters of the United States; **WDFW** = Washington Department of Fish and Wildlife

[5] A Washington State law that requires state and local governments to manage growth by identifying and protecting critical areas and natural resource lands, designating urban growth areas, and preparing and implementing comprehensive land use plans (RCW Chapter 36.70A).

The siting of transmission facilities is determined by engineering, technical, environmental, and socioeconomic factors. **Table 3.4-2** summarizes guidance documents and management plans that outline the design considerations and BMPs generally used to avoid or minimize adverse environmental impacts on water resources, including water quality and water quantity.

Table 3.4-2: Siting and Design Considerations for Water Resources

Siting and Design Consideration	Description
Stormwater Management Manual for Western Washington	This manual provides guidelines for managing stormwater in areas west of the Cascade Mountains crest to protect water quality and aquatic habitats.
Stormwater Management Manual for Eastern Washington	This manual provides guidelines for managing stormwater in areas east of the Cascade Mountains crest to protect water quality and aquatic habitats.
Federal Energy Regulatory Commission Guidelines	FERC provides guidelines for the siting of interstate electric transmission facilities, including environmental and community impact assessments.
Recommended Siting Practices for Electric Transmission Developers (Americans for a Clean Energy Grid 2023)	This document outlines BMPs for siting electric transmission facilities. Recommended practices include: ▪ Early and transparent engagement ▪ Respect and fair dealing ▪ Environmental considerations ▪ Interagency coordination ▪ Use of existing infrastructure

BMPs = best management practices; **FERC** = Federal Energy Regulatory Commission

3.4.2 Affected Environment

This section describes water resources within the Study Area (see Chapter 1, Introduction). The analysis of the affected environment incorporates the following:

- Regulatory Definitions, including water rights and use
- Watershed Management, including hydrology and water quality

3.4.2.1 Regulatory Definitions

Many waters in Washington are classified as either Waters of the United States (WOTUS) or Waters of the State. Both WOTUS and Waters of the State are subject to regulations aimed at protecting water quality and managing water resources.

Waters of the United States

WOTUS are defined in 40 Code of Federal Regulations (CFR) part 120.2 and are subject to regulation under federal laws, such as the Clean Water Act. The U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency (EPA) are responsible for determining which waters are classified as WOTUS. This includes issuing permits for activities that may impact these waters. WOTUS generally consists of:

- **Navigable waters:** Traditional navigable waters like large rivers and lakes
- **Tidal waters:** Waters that are subject to the ebb and flow of the tide
- **Territorial seas:** Coastal waters up to 3 nautical miles offshore
- **Interstate waters:** Waters that cross state boundaries, including rivers, lakes, and ponds
- **Impoundments:** Reservoirs and other impounded waterbodies that are connected to navigable waters, tributaries, or adjacent wetlands
- **Tributaries:** Streams and rivers that flow into navigable or interstate waters
- **Adjacent wetlands:** Wetlands that are directly connected to other WOTUS

The classification of WOTUS ensures that these waterbodies are protected and regulated to maintain their water quality and ecological health.

Waters of the State of Washington

Waters of the State are defined by Washington Administrative Code (WAC) 173-226-30 and Revised Code of Washington (RCW) 90.48.020. Waters of the State generally consist of all surface waters and watercourses within the jurisdiction of the state, including the following:

- Lakes
- Rivers
- Ponds
- Streams
- Inland waters
- Underground waters
- Salt waters
- All other surface waters and watercourses within the jurisdiction of the State of Washington

In contrast to WOTUS, Waters of the State include groundwater, are not limited to navigable waterways, and are not limited to waterbodies that have a continuous surface connection to other waterbodies. Waters of the State are subject to regulation under state law, even though they may not be subject to federal regulation. In Washington, the Washington State Department of Ecology (Ecology) is primarily responsible for managing the state's water resources. This department oversees water quality, water supply, and shoreline management to ensure that the state's waters meet environmental standards and support both human and ecological needs. Additionally, the Washington State Department of Natural Resources manages state-owned aquatic lands, including navigable lakes, rivers, streams, and marine waters.

Water Rights

As defined in RCW 90.03.010, a water right is a legal authorization to use a specific amount of water for a beneficial purpose, such as irrigation, domestic water supply, or industrial use. Water rights in Washington are defined and managed by Ecology (Ecology 2013). All waters in Washington are publicly owned. Individuals or entities can obtain the right to use water, but they do not own the water itself.

There are three types of water rights:

- **Claims:** These are assertions of water use that predate the state's water permitting system (1917 for surface water, 1945 for groundwater). The validity of a claim can only be confirmed through judicial processes (Ecology 2013).
- **Permits:** These allow the development of a water right. A permit is not a final water right but grants permission to construct a water system and start using water according to the permit's terms.
- **Certificates:** These are issued after confirming that all permit conditions are met; a certificate is the legal record of a water right and is attached to the land where the water is used.

To obtain a water right, applicants must follow a detailed process that includes submitting an application, public notice, and environmental analysis. Washington follows the "first in time, first in right" principle, meaning that older water rights have priority over newer ones during shortages. Water rights must be used beneficially and continuously. Rights can be lost through non-use, a process known as "relinquishment." Ecology monitors water use, ensures compliance with water rights, handles disputes, and enforces regulations.

Water availability varies across the state, and new water rights can be challenging to obtain in some areas due to limited supply. An executed agreement for water is often necessary during the construction of a project in Washington for several reasons, including the following:

- **Legal Compliance:** Ensuring that the project complies with state and local water use regulations. This includes obtaining the necessary permits and adhering to water rights laws.
- **Water Supply Assurance:** Securing a reliable water supply for construction activities, such as dust control, concrete mixing, and other needs. An executed agreement guarantees that the water source is legally available and sufficient for the project's duration.
- **Environmental Protection:** Protecting local water resources by ensuring that water use during construction does not negatively impact nearby waterbodies or ecosystems. This includes managing stormwater runoff and preventing contamination.
- **Dispute Avoidance:** Preventing potential disputes with other water users by clearly defining the terms of water use, including the amount, source, and duration of water withdrawal.
- **Project Planning and Budgeting:** Facilitating accurate project planning and budgeting by securing water resources in advance. This helps avoid delays and additional costs associated with water shortages or legal issues.

Water Use and Importance

Washington is committed to sustainable water management practices to ensure that water remains available for future generations. Effective management of water resources is crucial for addressing the challenges posed by climate change, such as increased frequency and severity of droughts. The waters of Washington State are important for several reasons, including the following:

- **Agriculture:** Washington's waters support a multi-billion-dollar agricultural industry, providing essential irrigation for crops. Section 3.9, Land and Shoreline Use, describes the affected environment and analyzes adverse environmental impacts from the new construction and operation and maintenance of transmission facilities on land use, including agriculture.

- **Fishing Industry:** The state's waters sustain one of the nation's most prominent commercial fishing industries, crucial for both the economy and local communities. Section 3.6, Habitat, Wildlife, and Fish, describes the affected environment and analyzes impacts from the construction and operation and maintenance of transmission facilities on wildlife, including fish.
- **Biodiversity:** The waters of Washington, from rivers to lakes and wetlands, support diverse ecosystems. They provide critical habitats for species. Section 3.6, Habitat, Wildlife, and Fish, describes the affected environment and analyzes adverse environmental impacts from the new construction and operation and maintenance of transmission facilities on wildlife.
- **Ecosystem Health:** Healthy waters are essential for maintaining the natural processes that sustain the environment, including nutrient cycling and habitat formation. Section 3.6, Habitat, Wildlife, and Fish, describes the affected environment and analyzes adverse environmental impacts from the construction and operation and maintenance of transmission facilities on habitat.
- **Hydroelectric Power:** Washington generates about one-third of the nation's hydroelectric power, thanks to its abundant rivers and water resources. Section 3.7, Energy and Natural Resources, describes the affected environment and analyzes adverse environmental impacts from the construction and operation and maintenance of transmission facilities on energy and natural resources, including hydroelectric power.
- **Recreation:** Washington's waters offer numerous recreational opportunities, such as fishing, boating, and swimming, which are vital for quality of life and tourism. Section 3.14, Recreation, describes the affected environment and analyzes adverse environmental impacts from the new construction and operation and maintenance of transmission facilities on recreation.
- **Cultural Heritage:** Many of Washington's waters hold cultural and historical value, especially for Indigenous communities who have relied on these resources for time immemorial.[6] Section 3.15, Historic and Cultural Resources, describes the affected environment and analyzes adverse environmental impacts from the

[6] A period so long ago that it extends beyond the reach of memory, record, or tradition.

new construction and operation and maintenance of transmission facilities on historic and cultural resources, including Tribal rights, interests, and resources.

3.4.2.2 Watershed Management

A watershed is an area of land that drains all streams and rainfall to a common outlet, such as the outflow of a reservoir, the mouth of a bay, or any point along a stream channel (USGS n.d.). Watershed boundaries outline these areas and provide a logical framework for managing water resources. By focusing on the natural hydrology, it is easier to understand and address the conditions and stressors affecting water quality and availability.

The Watershed Boundary Dataset is a geographical information system (GIS)-based dataset delineating drainage boundaries across the United States. Developed by the Natural Resources Conservation Service and other agencies, it provides detailed information on watershed boundaries, which is crucial for various environmental and planning purposes.

The drainages are described using a hierarchal system consisting of hydrographic regions, subregions, basins, subbasins, watersheds, and subwatersheds.[7] There are 21 regions across the United States, including Hawaii, Alaska, and Puerto Rico/U.S. Virgin Islands (USGS 2021). Each subsequent level is divided into smaller drainages that nest within the higher level. At each level, beginning with the region, the drainages are described with a two-digit hydrologic unit code (HUC). Hydrographic regions are identified by a two-digit HUC, subregions are four digits (HUC4), basins are six digits (HUC6), subbasins are eight digits (HUC8), watersheds are 10 digits (HUC10), and subwatersheds are 12 digits (HUC12).

The eight sub-regional levels (HUC4) help in managing and studying the water resources within the state. A subregion includes the area drained by a river system, a reach of a river and its tributaries in that reach, one or more closed basins, or a group of streams forming a coastal drainage area. Washington has 16 HUC4 subregions. The HUC4 sub-regional levels in Washington are summarized in **Table 3.4-3**.

[7] A smaller division within a larger watershed. It represents a specific area of land where all the water drains to a particular point within the larger watershed.

Table 3.4-3: Hydrographic Regions and Basins

Hydrographic Region	Subregions
Pacific Northwest	Puget Sound
	Lower Columbia
	Middle Columbia-Hood
	Middle Columbia-Lake Wallula
	Middle Columbia-Snake
	Upper Columbia
	Yakima
	Snake River
	Upper Snake
	Lower Snake
	Clearwater
	Salmon
	Hells Canyon
	Grande Ronde
	Walla Walla
	Umatilla

Source: USGS 2021

Major surface waterbodies in and adjacent to Washington, and hydrologic unit boundaries, are shown in **Figure 3.4-1.**

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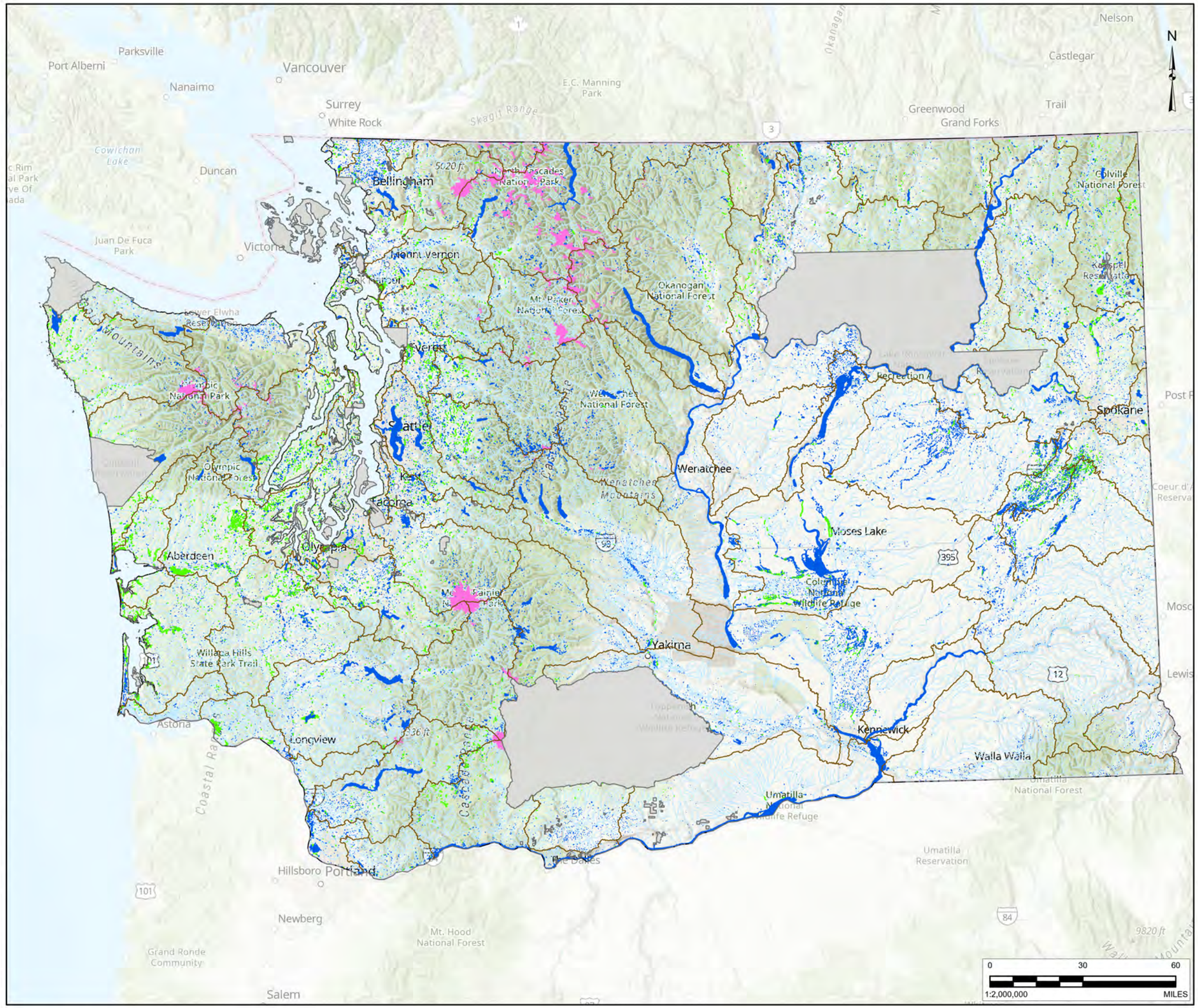

LEGEND

- Study Area
- Exclusion Areas
- Watershed Boundary Dataset 8-Digit Hydrologic Unit (USGS, 2024)
- Surface Water Flowline (USGS, 2024)

Surface Waterbody (USGS, 2024)

- Lake/Pond/Reservoir
- Estuary/Swamp/Marsh
- Ice Mass

REFERENCES AND NOTES

1. SERVICE LAYER CREDITS: SOURCES: ESRI, TOMTOM, GARMIN, FAO, NOAA, USGS, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY, ESRI, USGS
2. USGS. 2024. NATIONAL WATERSHED BOUNDARY DATASET (WBD): HYDROLOGIC UNIT CODE 8-DIGIT BASINS OF WASHINGTON STATE. ACCESSED SEPTEMBER 18, 2024. HTTPS://GEO.WA.GOV/DATASETS/WAECY::NATIONAL-WATERSHED-BOUNDARY-DATASET-WBD-HYDROLOGIC-UNIT-CODE-8-DIGIT-BASINS-OF-WASHINGTON-STATE/ABOUT
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Washington State Energy Facility Site Evaluation Council

PROJECT

PROGRAMMATIC EIS
HIGH-VOLTAGE TRANSMISSION

TITLE

MAJOR SURFACE WATERBODIES

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Surface Water

The term *surface water* refers to bodies of water at the ground surface (DNR 2025). These include oceans, rivers, streams, lakes, ponds, reservoirs, springs, and wetlands. Approximately 75 percent of Washington's total water supply comes from surface water sources (DNR 2025).

Washington's coastal waters support a wide range of ecosystems. The coastal waters of Puget Sound and the Pacific Ocean are included in the definition of WOTUS. Puget Sound is one of the largest estuaries in the United States. It plays a crucial role in the region's ecology, providing habitat for many marine species and supporting commercial and recreational activities.

Washington is home to several major rivers, including the Columbia River, Snake River, and their tributaries, which are considered WOTUS. These rivers play a crucial role in the state's ecosystem and economy. The Columbia River is the largest river in Washington, with an average discharge of about 265,000 cubic feet per second at its mouth. The Snake River, a major tributary, has an average discharge of about 56,900 cubic feet per second (USGS 2025a).

Washington has more than 8,000 lakes and reservoirs, and while all of them are considered Waters of the State, many are also considered WOTUS (DNR 2025). Lakes such as Lake Washington and Lake Chelan, as well as their numerous wetlands, are classified as WOTUS.

Groundwater

Groundwater provides about 25 percent of the state's total water supply and over 60 percent of its drinking water (DNR 2025). An aquifer is a water-bearing geologic unit from which useful amounts of groundwater can be extracted. The underground location where the water collects is called a saturated zone. When there is enough water in the saturated zone to be pumped from a well, it is called an aquifer. Aquifers have the capacity to both store and transmit water. Both unconsolidated (i.e., soil) and consolidated (i.e., rock) units can yield sufficient water to be classified as an aquifer. Washington has seven principal aquifers,[8] as defined by the U.S. Geological Survey Ground Water Atlas of the United States (USGS 2025b). Principal aquifers in Washington are shown in **Figure 3.4-2.**

[8] A regional, extensive aquifer system with the potential to be used as a source of drinking water.

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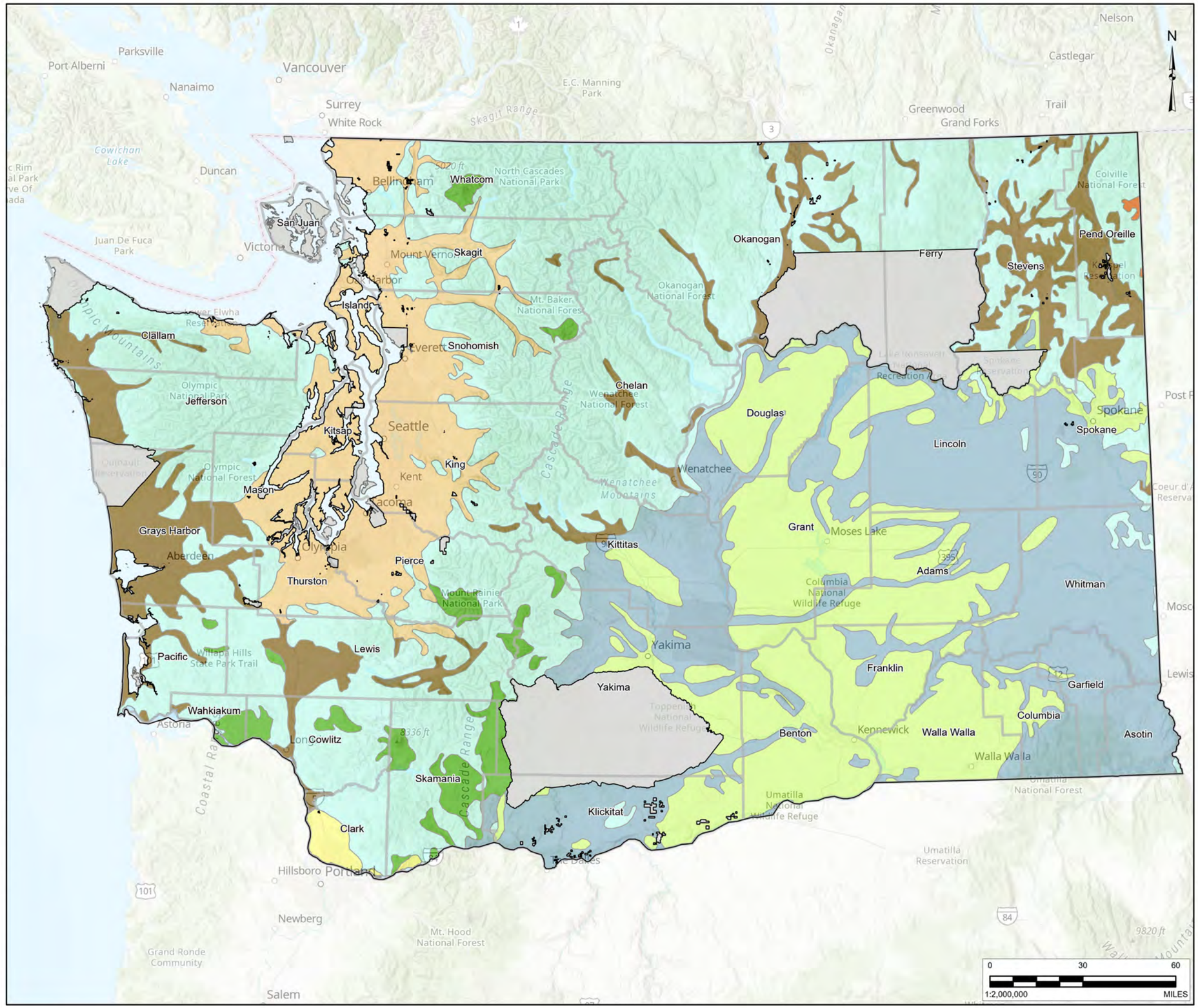

LEGEND

- Study Area
- Exclusion Areas
- County Boundary

Principal Aquifers (USGS, 2023)

- Columbia Plateau basaltic-rock aquifers
- Columbia Plateau basin-fill aquifers
- Northern Rocky Mountains Intermontane Basins aquifer system
- Pacific Northwest basaltic-rock aquifers
- Pacific Northwest basin-fill aquifers
- Puget Sound aquifer system
- Willamette Lowland basin-fill aquifers
- Other rocks

REFERENCES AND NOTES

1. SERVICE LAYER CREDITS: SOURCES: ESRI, TOMTOM, GARMIN, FAO, NOAA, USGS, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY, ESRI, USGS
2. USGS. 2023. PRINCIPAL AQUIFERS OF THE 48 CONTERMINOUS UNITED STATES, HAWAII, PUERTO RICO, AND THE U.S. VIRGIN ISLANDS. ACCESSED JULY 18, 2024, HTTPS://WWW.SCIENCEBASE.GOV/CATALOG/ITEM/63140610D34E36012EFA385D

Washington State Energy Facility Site Evaluation Council

PROJECT

PROGRAMMATIC EIS
HIGH-VOLTAGE TRANSMISSION

TITLE

PRINCIPAL AQUIFERS IN WASHINGTON

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There are several designations aimed at protecting groundwater resources, all serving slightly different purposes and managed through different frameworks, including the following:

- Critical Aquifer Recharge Areas (CARAs)
    - **Purpose:** To protect areas that are crucial for recharging aquifers used for drinking water.
    - **Designation:** Identified by local governments, such as cities and counties, based on factors like soil type, geology, and potential contamination sources. Ecology provides guidance and technical assistance to local governments to help identify and protect CARAs.
    - **Management:** Local regulations and BMPs are implemented to prevent contamination and ensure sustainable groundwater recharge.
- Sole Source Aquifers (SSAs)
    - **Purpose:** To protect aquifers that supply at least 50 percent of the drinking water for an area with no viable alternative sources.
    - **Designation:** Requires a formal petition to the EPA and a determination that the aquifer is the sole or principal source of drinking water.
    - **Management:** Federal review of projects that could potentially contaminate the aquifer, ensuring that federal funds are not used for projects that pose a risk. SSAs in Washington are listed in **Table 3.4-4** (FHWA, EPA, and WSDOT 2014).
- Groundwater Management Areas (GWMAs)
    - **Purpose:** To manage and protect groundwater resources in areas identified as vulnerable or overused.
    - **Designation:** Established under Chapter 173-100 WAC, designated by Ecology based on factors like groundwater quality, quantity, and usage.
    - **Management:** Development of groundwater management programs that include monitoring, regulation, and public education to ensure sustainable use. GWMAs have been designated in Yakima County and King County.

CARAs, SSAs, and GWMAs often overlap geographically, as they all aim to protect critical groundwater resources. For example, an SSA might be designated a CARA and fall within a GWMA.

Table 3.4-4: Sole Source Aquifers in Washington

Aquifer Name	Location
Bainbridge Island	Kitsap County
Camano Island	Island County
Cedar Valley	City of Renton King County
Central Pierce County	City of Tacoma Pierce County
Cross Valley	Snohomish County King County
Guemes Island	Skagit County
Lewiston Basin	Asotin County Garfield County
Marrowstone Island	Jefferson County
Newberg Area	Snohomish County
Spokane Valley - Rathdrum Prairie	Spokane County
Troutdale	City of Vancouver Clark County
Vashon-Maury Island	King County
Whidbey Island	Island County

Source: EPA n.d.

Stormwater

Stormwater, which originates from precipitation like rain or snow, interacts with both surface water and groundwater. Washington's precipitation varies widely, from over 150 inches annually in the Olympic Peninsula to less than 10 inches in the Columbia Basin (NOAA 2022).

National Pollutant Discharge Elimination System (NPDES) permits for discharging stormwater are required for specific categories of facilities or activities (40 CFR §

122.26(a)). Facilities that use steam to generate electric power, including coal-handling sites, require industrial stormwater permit coverage (40 CFR § 122.26 (b)(14)(vii)); electric power transmission facilities generally do not.[9] Construction activities with ground disturbance require stormwater permit coverage if the disturbed area exceeds 1 acre. In Washington, construction stormwater permits are generally managed by Ecology. However, EFSEC can issue these permits if applicable. Construction stormwater permits and the associated control measures are intended to control discharge of pollutants to surface water and to control erosion, sediment transport, and discharge of suspended sediment to surface waters. Additionally, measures for controlling discharge of other pollutants are included in construction stormwater permit requirements.

Flooding

Flood Insurance Rate Maps issued by the Federal Emergency Management Agency (FEMA) delineate zones based on the probability of flood inundation. These maps typically depict zones with 1 percent and 0.2 percent chance annually of being flooded—i.e., the zones with 100-year and 500-year recurrence intervals, which are also known as the 100-year and 500-year floodplains. Additionally, flood maps typically depict floodways, which are the areas adjacent to stream channels that cannot be obstructed without causing upstream flood elevations to increase. The area between the floodway and the flood zone edge is the flood fringe.

FEMA has identified flood zones adjacent to major streams and rivers in many populated areas throughout Washington, as shown in **Figure 3.4-3.** Channel migration zones are areas where stream channels move over time. Channel migration is a natural process. Meandering streams are a common example of channels that migrate. A migrating channel can damage infrastructure by undermining foundations or eroding soil adjacent to underground transmission facilities.

[9] The Washington State Department of Ecology has the authority to require facilities to obtain coverage under the Industrial Stormwater General Permit or an individual stormwater permit if the facility is a contributor of pollutants to waters of the state or is reasonably expected to cause violations of any water quality standard.

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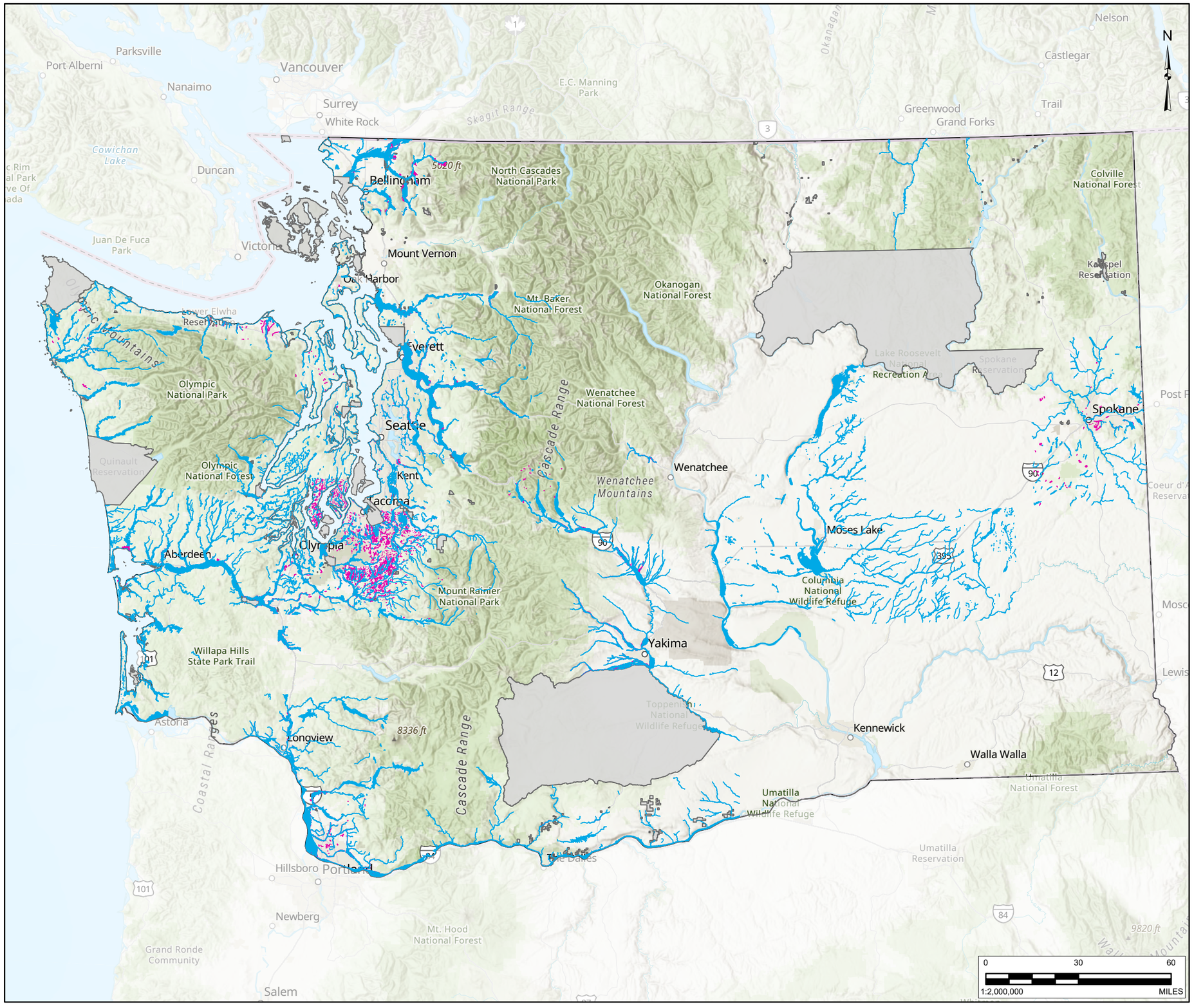

LEGEND

- Study Area
- Exclusion Areas
- 100-Year Floodzone (FEMA, 2025)
- 500-Year Floodzone (FEMA, 2025)

REFERENCES AND NOTES

1. SERVICE LAYER CREDITS: SOURCES: ESRI, TOMTOM, GARMIN, FAO, NOAA, USGS, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY, ESRI, USGS
2. FEMA (FEDERAL EMERGENCY MANAGEMENT AGENCY). 2025. FLOODPLAIN AND FLOOD WAYS. ACCESSED AUGUST 20, 2025. HTTPS://WWW.ARCGIS.COM/HOME/ITEM.HTML?ID=2B245B7F816044D7A779A61A5844BE23

Washington State Energy Facility Site Evaluation Council

PROJECT

PROGRAMMATIC EIS
HIGH-VOLTAGE TRANSMISSION

TITLE

FLOODZONES IDENTIFIED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY

YYYY-MM-DD 2025-09-16 CONSULTANT wsp FIGURE 3.4-3

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Water Quality

There are multiple approaches to water quality management in Washington, including the following:

- Clean Water Act (CWA) Section 303: Water Quality Standards
- CWA Section 401: Water Quality Certification
- CWA Section 404: Dredge and Fill Permits
- Source Water Protection Areas (SWPAs)
- Special Protection Areas (SPAs)
- Wellhead Protection Areas (WHPAs)

CWA Section 303: Water Quality Standards

Section 303 of the CWA requires that states assess surface water quality biannually and identify waterbodies that do not meet water quality criteria. Management of surface water quality under the CWA has been delegated to Ecology, though the EPA retains responsibility for NPDES permits for federally owned facilities and on Tribal lands within the state.

The list of waterbodies with impaired water quality is known as the 303(d) list. Ecology maintains an online database and a mapping tool called the Water Quality Atlas, where individuals can view the most current assessment results. The 303(d) list is part of the CWA requirements and helps prioritize waterbodies for restoration and protection efforts. Waterbodies are commonly listed for failing to meet water quality criteria, including:

- **Suspended Solids:** Particles that cloud the water and can harm aquatic life
- **Nutrients:** Excessive levels of nutrients like nitrogen and phosphorus (i.e., eutrophication), which can lead to algal blooms and other water quality issues
- **Microorganisms:** Pathogens, such as bacteria and viruses, that can pose health risks to humans and animals
- **Temperature:** Elevated water temperatures that can affect the health of fish and other aquatic organisms

For each waterbody on the 303(d) list, the state is required to identify the total maximum daily load (TMDL), which is the maximum amount of a pollutant that a

waterbody can receive and attain water quality standards (EPA 2024). Typically, a TMDL is allocated between point sources, such as wastewater treatment facilities, and non-point sources that essentially apply to an entire watershed except for point sources.

Permits are often required for activities that may impact 303(d) listed waterbodies in Washington. Activities that discharge pollutants into these waterbodies typically require an NPDES permit. These permits must comply with the TMDL requirements to ensure that pollutant levels do not exceed the established limits. Erosion and sediment control measures typically implemented at disturbed ground sites can be effective in controlling pollutant discharge to surface waters. Projects that include ground disturbance near 303(d) listed waterbodies may be subject to more stringent water quality control measures than typical to meet TMDL requirements.

CWA Section 401: Water Quality Certification

Section 401 of the CWA requires that any applicant for a federal license or permit for an activity that may result in a discharge into waters of the United States must obtain a water quality certification. This certification, issued by the state, authorized Tribe, or EPA where the discharge originates, ensures that the proposed activity will comply with applicable water quality standards and other provisions of the CWA. Section 401 certifications are a critical tool for protecting aquatic resources and maintaining water quality. Certifying authorities may grant, conditionally grant, deny, or waive certification. The certification process must be completed before a federal agency can issue the associated license or permit. Activities subject to Section 401 include those requiring Section 404 dredge and fill permits, hydropower licenses, and other federally regulated discharges.

CWA Section 404: Dredge and Fill Permits

Section 404 of the CWA regulates the discharge of dredged or fill material into WOTUS, including wetlands. Permits are required for such activities to ensure they do not harm water quality or aquatic ecosystems. All discharges that affect the bottom elevation of a waterbody must obtain a CWA Section 404 permit from the U.S. Army Corps of Engineers. Wetlands are adjacent to many waterbodies and would be identified on a project-specific basis.

Source Water Protection Areas

SWPAs, as defined in the Safe Drinking Water Act, are areas designated to limit potential contamination of surface water sources of drinking water. These are

analogous to WHPAs, described below, for groundwater sources of drinking water. The Washington State Department of Health oversees the SWPA program, which includes the following:

- **Sanitary Control Areas:** These are zones immediately surrounding drinking water sources, with specific regulations to prevent contamination. For wells, the radius is typically 100 feet, and for springs or surface water intakes, it is 200 feet (DOH 2012).
- **Watershed Control Programs:** These programs involve detailed inventories of potential contamination sources within a watershed and implement measures to control and monitor activities that could affect water quality (DOH n.d.).

Projects within SWPAs must comply with stringent regulations to prevent contamination of water sources. This often involves obtaining permits and adhering to specific construction practices designed to protect water quality. The Source Water Assessment Program provides a GIS mapping tool that visually represents drinking water source protection areas. This tool helps utilities, regulatory agencies, and the public understand and manage risks to water quality.

Special Protection Areas

SPAs, as defined by WAC 173-200-090, are designated to provide increased protection to certain groundwater sources due to their unique characteristics, such as the following:

- **Beneficial Use or Ecological Systems:** Groundwaters that support a beneficial use or an ecological system requiring more stringent criteria than drinking water standards
- **Vulnerability to Pollution:** Groundwaters, including recharge areas and WHPAs, that are particularly vulnerable to pollution due to their hydrogeologic characteristics
- **Sole Source Aquifer Status:** Groundwaters that have been designated as SSAs by federal authorities

Wellhead Protection Areas

WHPAs, as defined by WAC 246-290-135, are crucial for safeguarding drinking water sources. WHPAs are divided into zones based on the time it takes for water to travel to

the well or spring. These zones are typically set at six months, one year, five years, and 10 years. Responsibilities of local government authorities include the following:

- **Inventorying Contamination Sources:** Local authorities must identify and inventory potential sources of groundwater contamination within the WHPA.
- **Notification:** Local authorities are responsible for notifying owners and operators of contaminant sources about the WHPA boundaries and the results of the inventory.
- **Documentation:** Authorities must document these notifications and report them to regulatory agencies and local governments.
- **Contingency Planning:** It is essential to develop plans to address temporary or permanent loss of the water source due to contamination. This includes coordinating with emergency responders in case of a contaminant release.
- **Imposing Restrictions:** Local governments may impose restrictions and requirements on activities within WHPAs to minimize risks to the drinking water source.

3.4.3 Impacts

For this Programmatic EIS, adverse environmental impacts were assessed for the new construction, operation and maintenance, upgrade, and modification of transmission facilities within the Study Area.

3.4.3.1 Method of Analysis

The study area for a project-specific application would typically encompass several key regions and features, such as the following:

- **Project Site and Immediate Vicinity:** This includes the specific location of the project and the surrounding area that might be directly affected by new construction and operation and maintenance activities.
- **Watershed and River Basins:** The study area would be large enough to determine if there were any adverse environmental impacts on a watershed or river basins.
- **Wetlands and Floodplains:** The study area would be large enough to determine if there were any adverse environmental impacts on wetlands and floodplains.

- **Groundwater Aquifers:** Groundwater aquifers in the vicinity of the project would be included within the study area to evaluate adverse environmental impacts on groundwater resources.

This Programmatic EIS analyzes the affected environment and adverse environmental impacts on water resources within the Study Area defined in Chapter 1, Introduction. Four project stages for each transmission facility type (overhead or underground) were considered: new construction, operation and maintenance, upgrade, and modification.

This evaluation considers both overhead and underground transmission facilities for each stage. Overhead transmission facilities consist of transmission lines, substations, and ancillary infrastructure. Overhead and underground transmission facilities may involve similar aboveground infrastructure. Underground transmission facilities consist of underground transmission lines, underground access vaults, and other infrastructure located below the ground surface. The new construction of underground transmission facilities could include both open-trench and trenchless construction methods.

Impact Determination

The discussion of adverse environmental impacts is qualitative given the high-level nature of a Programmatic EIS; quantification would require project-specific details to analyze. **Table 3.4-5** describes the criteria used to evaluate adverse environmental impacts from the Action Alternative and No Action Alternative. Information reviewed to identify adverse environmental impacts on water resources in the Study Area was obtained from federal agencies, state agencies, local planning documents, and public scoping.

Table 3.4-5: Criteria for Assessing the Impact Determination on Water Resources

Impact Determination	Description
Nil	No foreseeable adverse environmental impacts are expected. A project would not adversely affect water quality or reduce water quantity, cause redirection, or destroy wetlands. No changes to watersheds, floodplains, or aquifers would occur, and existing hydrological conditions pose no risk to infrastructure or personnel.
Negligible	A project would have minimal adverse environmental impacts on water resources. Changes would either be non-detectable or, if detected, would have only slight effects. A project would have minor disturbances to water resources, but there would be no degradation of water quality, quantity, redirection, or wetland integrity. Watershed and aquifer conditions would remain stable.

Impact Determination	Description
	Negligible impacts would be short-term in duration. BMPs and design considerations are expected to be effective.
Low	A project would result in noticeable adverse environmental impacts on water resources, even with the implementation of BMPs and design considerations. These adverse environmental impacts may affect water quality and quantity, but they would be limited in extent and duration. Slight changes to watersheds, floodplains, or aquifers may require minor design adjustments. Adverse environmental impacts may be short or long-term in duration.
Medium	A project would result in adverse environmental impacts on water resources, even with the implementation of BMPs and design considerations. A project would cause water quality degradation, reduced quantity, flow redirection, or wetland loss. Changes to hydrological systems may affect water resources, as well as infrastructure and personnel, which would necessitate specific design adjustments. Medium impacts may be short or long-term in duration.
High	A project would result in adverse and potentially severe environmental impacts on water resources even after implementation of BMPs and design considerations. A project would cause extensive degradation of water quality, water quantity limitations, flow alterations, wetland destruction, or loss of hydrological features. These adverse environmental impacts could pose serious risks to infrastructure, equipment, and personnel. Substantial changes to watersheds, aquifers, and floodplains would require intensive design adjustments. Adverse environmental impacts on water resources may affect a larger area, not just localized to the construction site. High adverse environmental impacts may be short or long-term.

BMP = best management practice

To clearly understand the potential severity of adverse environmental impacts without any interventions, the following impact determinations exclude the use of Avoidance Criteria and Mitigation Measures. The ratings assume compliance with all federal, state, and local laws and regulations, as well as standardized BMPs and design considerations. Assessing adverse environmental impacts without Avoidance Criteria or Mitigation Measures offers a baseline understanding of potential environmental effects, helping to identify the true extent of these impacts. Environmental laws often require that initial impact assessments be conducted without considering mitigation to maintain the integrity of the environmental review process.

When impact determinations are identified as medium or high, then either the applicant would adopt applicable Mitigation Measures from this Programmatic EIS, or the State Environmental Policy Act (SEPA) Lead Agency may require applicable mitigation measures to be implemented to reduce project-specific impacts. When

impact determinations are low, applicable Mitigation Measures should still be considered by the applicant and the SEPA Lead Agency, as these measures would help to further reduce adverse environmental impacts, including the project's contribution to cumulative impacts. These Mitigation Measures would be implemented in addition to compliance with laws, regulations, environmental permits, plans, and design considerations required for transmission facilities.

3.4.3.2 Action Alternative

New Construction

Overhead Transmission Facilities

Activities for the new construction of overhead transmission facilities would vary and depend on the scale of the facility and site characteristics. New construction could include a relatively short site preparation period (e.g., a few months), followed by a longer construction and start-up period. It is assumed that the new construction of overhead transmission facilities, per mile, would have a shorter duration than underground construction. Overhead transmission facilities could have the following adverse environmental impacts during new construction:

- Impacts on Water Quality
- Impacts on Water Quantity
- Damage to Infrastructure

Impacts on Water Quality

Adverse environmental impacts on water quality during the new construction of overhead transmission facilities may include changes in sedimentation and water chemistry. Construction activities typically involve ground disturbance, which can increase soil erosion and sediment transport, leading to higher concentrations of suspended solids and sedimentation in surface waterbodies if not properly controlled. Sources of erodible material include excavations for footings, blasting sites, and soil stockpiles. Work conducted in, over, or near waterbodies, including wetlands, can elevate turbidity and directly affect water quality. Inadequate erosion control may allow soils to enter adjacent waters or wetlands, further degrading water quality. Additionally, concrete work may increase water usage, and if concrete or process

water enters waterbodies (either directly or through untreated dewatering[10]), it can negatively impact water quality parameters such as pH. Spills that occur near waterbodies can also change water quality through the introduction of deleterious substances such as lubricants, oils, and fuel. Typical sources of spills during new construction include construction equipment (handheld and machinery) operating near watercourses. Spills to land can also impact groundwater quality if spilled material is allowed to seep into the ground.

Impact Determination: Adverse environmental impacts on water resources resulting from impacts on water quality during the new construction of overhead transmission facilities are expected to vary depending on the scale of the project and site-specific conditions. In the absence of mitigation, these adverse environmental impacts could range from low to medium.

Impacts on Water Quantity

The new construction of transmission facilities can have several short-term adverse environmental impacts on water quantity, including the following:

- **Increased Water Usage:** Construction activities often require water for dust control, concrete mixing, and other processes, which may strain local water resources. Generally, water use for construction is short-term in duration and limited in quantity. For construction in areas with reduced water availability and/or in times of drought conditions, impacts may be more pronounced. Individual projects must refer to applicable local and regional water use restrictions or permitting requirements.
- **Altered Hydrology:** The clearing of vegetation and soil compaction can change the natural flow of water, potentially leading to reduced infiltration and increased surface runoff.
- **Temporary Water Diversions:** New construction may involve temporary diversions of waterbodies to facilitate the building process, which will maintain the availability of water downstream per WAC 220-660-250. Compliance with Hydraulic Project Approval (HPA) conditions is required for any in-stream work, including temporary diversions, and these conditions are designed to prevent adverse downstream environmental impacts.

[10] The process of removing groundwater or surface water from a construction site. This is typically done to create a dry and stable environment for excavation, foundation work, or other construction activities.

- **Groundwater Extraction:** In some cases, groundwater may be extracted for new construction, which can lower the water table and affect nearby wells and ecosystems. Groundwater extraction and management can also be required at excavations and trenches to keep these sites dry.

Impact Determination: Adverse environmental impacts on water resources resulting from impacts on water quantity during the new construction of overhead transmission facilities are expected to vary depending on the scale of the project and site-specific conditions. In the absence of mitigation, these adverse environmental impacts could range from negligible to medium.

Damage to Infrastructure

There is potential for floodwater and storm surge events to inundate construction sites during the new construction of overhead transmission facilities. During flooding or storm surge events, construction sites can become inundated with water, resulting in potential damage to equipment, materials, and existing infrastructure, increased risk of delays in construction timelines, and heightened safety hazards for workers on site. While construction equipment and temporary project-related activities are not infrastructure themselves, their presence and operation may interact with or place temporary demands on infrastructure systems (e.g., roads, utilities). Damage to infrastructure could also occur if weather events cause watercourse scour or debris deposition in floodways near construction sites.

Impact Determination: Adverse environmental impacts on water resources resulting from damage to infrastructure during the new construction of overhead transmission facilities are expected to vary depending on the scale of the project and site-specific conditions. In the absence of mitigation, these adverse environmental impacts could range from negligible to medium.

Underground Transmission Facilities

Activities for the new construction of underground transmission facilities would vary and depend on the scale of the facility and site characteristics. New construction could include a site preparation period of relatively short duration (e.g., a few months), followed by a longer construction and start-up period. It is assumed that the new construction of overhead transmission, per mile, would have a shorter duration than underground construction. Underground transmission facilities could have the following adverse environmental impacts during new construction:

- Impacts on Water Quality

- Impacts on Water Quantity
- Damage to Infrastructure

Impacts on Water Quality

New construction of underground facilities poses an increased risk of sedimentation during installation that may disturb sediments and impact water quality if construction is near waterbodies.

Installation of underground facilities could also unearth contaminated sediments. Contaminated sediments that may accumulate include heavy metals, polychlorinated biphenyls, and toxic substances. These substances can originate from various sources, such as mine waste, industrial runoff, or agricultural chemicals.

New construction of underground transmission facilities that disturb waterbodies is likely to require a CWA Section 404 Permit or 401 Certification. In addition to activities within navigable waters, new construction or maintenance activities that involve excavation (dredging) or placing fill in wetlands require a permit. Some construction activities may require the use of drilling mud or slurry containing additives. In certain cases, these substances may come into contact with waterbodies or wetlands, potentially impacting water quality.

Similar to the new construction of overhead transmission facilities, spills and leaks from machinery and other equipment used for underground construction near waterbodies could result in input of deleterious substances into these systems. Spills to the ground can also result in adverse environmental impacts on groundwater quality.

Impact Determination: Adverse environmental impacts on water resources resulting from impacts on water quality during the new construction of underground transmission facilities are expected to vary depending on the scale of the project and site-specific conditions. In the absence of mitigation, these adverse environmental impacts could range from low to high.

Impacts on Water Quantity

The new construction of underground transmission facilities would have adverse environmental impacts on water quantity similar to those for new overhead

transmission facility construction; however, increased ground disturbance associated with trenching may increase impacts on water quantity, including the following:

- **Increased Water Usage:** New underground construction activities often require large amounts of water for dust control, concrete mixing, and other processes, which can strain local water resources.
- **Altered Hydrology:** The clearing of vegetation, soil excavation, and compaction can change the natural flow of water, potentially leading to reduced infiltration and increased surface runoff.
- **Temporary Water Diversions:** New underground construction may involve temporary diversions of waterbodies to facilitate the building process, which can affect the availability of water downstream.
- **Groundwater Extraction:** In some cases, groundwater may be extracted for construction needs and to maintain dry trenches, which can lower the water table and affect nearby wells and ecosystems.

Impact Determination: Adverse environmental impacts on water resources resulting from impacts on water quantity during the new construction of underground transmission facilities are expected to vary depending on the scale of the project and site-specific conditions. In the absence of mitigation, these adverse environmental impacts could range from low to high.

Damage to Infrastructure

During the new construction of underground facilities, there is the potential for damage to infrastructure from flooding if facilities are located within floodplains or coastal flood hazard areas. During flooding or storm surge events, underground construction sites can become inundated with water, resulting in compromised structural integrity, potential damage to equipment, materials, and existing infrastructure, increased risk of delays in construction timelines, and heightened safety hazards for workers on site. While construction equipment and temporary project-related activities are not infrastructure themselves, their presence and operation may interact with or place temporary demands on infrastructure systems (e.g., roads, utilities).

Impact Determination: Adverse environmental impacts on water resources resulting from damage to infrastructure during the new construction of underground transmission facilities are expected to vary depending on the scale of the project and

site-specific conditions. In the absence of mitigation, these adverse environmental impacts could range from low to high.

Operation and Maintenance

Overhead Transmission Facilities

Activities for the operation and maintenance stage of overhead transmission facilities would vary based on the type of facility, scale, and site characteristics. Facilities are not expected to have staff on site daily, but maintenance crews are anticipated to be regularly deployed. Transmission facilities require ongoing maintenance for equipment and ROWs. Overhead transmission facilities could have the following adverse environmental impacts during the operation and maintenance stage:

- Impacts on Water Quality
- Impact on Water Quantity
- Damage to Infrastructure

Impacts on Water Quality

During the operation and maintenance of transmission facilities, there is the potential for surface water and groundwater quality degradation if petroleum liquids are leaked or spilled during the use of vehicles or other maintenance equipment. Other sources of deleterious substances that could impact surface water and groundwater quality include spills of concentrated herbicides, pesticides, and liquids used in electrical equipment, as well as improper disposal of these materials. In addition, changes to altered flow regimes from hydroelectric dams may result in temperature changes of aquatic ecosystems or cause erosion and deposition downstream from dams (Clarke et al. 2008).

Impact Determination: Adverse environmental impacts on water resources resulting from impacts on water quality during the operation and maintenance of overhead transmission facilities are expected to vary depending on the scale of the project and site-specific conditions. In the absence of mitigation, these adverse environmental impacts could range from negligible to low.

Impacts on Water Quantity

During the operation and maintenance of transmission facilities, there is a potential for overhead transmission facilities to change dam operations depending on the energy production. New transmission facilities may allow for the expanded

introduction of variable-production forms of energy sources, such as wind and solar, and hydroelectric facilities may need to alter flow regimes to maintain grid stability (Pracheil et al. 2022). These altered flow regimes may not align with existing environmental flow agreements or fish passage needs. Altered flow timing and magnitude can cause bird nests to flood (van Oort et al. 2015), fish stranding, and disrupt fish migration, spawning, and rearing habitat, especially for species like salmon or steelhead (Clarke et al. 2008). Cultural and treaty rights of Tribes may be impacted if fish populations or access to traditional fishing areas are affected.

Operation and maintenance activities often require water for dust control, washing equipment, and other processes, which may strain local water resources in some cases. Generally, water used for operation and maintenance is short-term in duration and limited in quantity. For operation and maintenance in areas with reduced water availability and/or in times of drought conditions, adverse environmental impacts may be more pronounced. Individual projects must refer to applicable local and regional water use restrictions or permitting requirements.

Impact Determination: Adverse environmental impacts on water resources resulting from water quantity during the operation and maintenance of overhead transmission facilities are expected to vary depending on the scale of the project and site-specific conditions. In the absence of mitigation, these adverse environmental impacts could range from negligible to medium.

Damage to Infrastructure

Electrical equipment could be damaged during the operation and maintenance of transmission facilities due to inundation during a flood event or storm surge. Damage to infrastructure in floodways could occur if scour patterns destabilize waterbody banks or if channel migration resulted in soil erosion that undermined facilities or damaged foundations. Further, debris migrating downstream can collide and collect around water infrastructure or be deposited against infrastructure during flood events, resulting in damage to these features.

Impact Determination: Adverse environmental impacts on water resources resulting from damage to infrastructure from the operation and maintenance of overhead transmission facilities are expected to vary depending on the scale of the project and site-specific conditions. In the absence of mitigation, these adverse environmental impacts could range from negligible to high.

Underground Transmission Facilities

Similar to overhead transmission facilities, activities for the operation and maintenance of underground transmission facilities would vary based on the type of facility, scale, and site characteristics. Facilities are not expected to have staff on site daily, but maintenance crews are anticipated to be regularly deployed. Transmission facilities require ongoing maintenance for equipment and ROWs, similar to any other linear industrial facility. Underground transmission facilities could have the following adverse environmental impacts during the operation and maintenance stage:

- Impacts on Water Quality
- Impacts on Water Quantity
- Damage to Infrastructure

Impacts on Water Quality

Spills and leaks of petroleum, herbicides, pesticides, and liquids used in electrical equipment could occur during the operation and maintenance of underground transmission facilities. Spills and leaks could impact surface water and groundwater quality.

Similar to overhead transmission facilities, changes to altered flow regimes from hydroelectric dams may result in temperature changes of aquatic ecosystems or cause erosion and deposition downstream from dams (Clarke et al. 2008).

Impact Determination: Adverse environmental impacts on water resources resulting from impacts on water quality during the operation and maintenance of underground transmission facilities are expected to vary depending on the scale of the project and site-specific conditions. In the absence of mitigation, these adverse environmental impacts could range from low to high.

Impacts on Water Quantity

Adverse environmental impacts on water quantity are similar to those for overhead transmission facilities. Underground transmission facilities may impact the flow regimes from hydroelectric facilities and will also require water for maintenance activities such as dust suppression. In addition, underground transmission facilities may also require water for hydrojetting to remove debris and cool the underground system.

Impact Determination: Adverse environmental impacts on water resources from impacts on water quantity during the operation and maintenance of underground transmission facilities are expected to vary depending on the scale of the project and site-specific conditions. In the absence of mitigation, these adverse environmental impacts could range from low to medium.

Damage to Infrastructure

Impacts during the operation and maintenance of underground transmission facilities would be similar to adverse environmental impacts during the operation and maintenance of overhead transmission facilities; however, underground systems would be more vulnerable to damage by flooding.

Underground transmission facilities that are located within floodplains or coastal flood hazard areas may be vulnerable to water damage during flooding or storm surge events. Water inundation of vaults and substations can result in damaged equipment, compromised functionality, and safety hazards. In coastal regions, saltwater infiltration can accelerate corrosion of metal materials and further damage underground facility components.

Impact Determination: Adverse environmental impacts on water resources resulting from damage to infrastructure during the operation and maintenance of underground transmission facilities are expected to vary depending on the scale of the project and site-specific conditions. In the absence of mitigation, these adverse environmental impacts could range from low to high.

Upgrade

Overhead Transmission Facilities

Upgrades to overhead transmission facilities would occur within existing ROWs without expanding the existing facility footprint or causing new ground disturbance. However, these upgrades may result in adverse environmental impacts on water resources, including:

- Impacts on Water Quality
- Impacts on Water Quantity
- Damage to Infrastructure

The adverse environmental impacts from upgrading overhead transmission facilities are often comparable to those of maintaining overhead transmission facilities. These

adverse environmental impacts are generally anticipated to be lower than those for modifying or constructing a new transmission facility due to several factors. Table 2.3-1 highlights how upgrading existing transmission facilities would generally result in fewer or less impactful adverse environmental impacts.

Underground Transmission Facilities

Upgrades to underground transmission facilities would occur within existing ROWs without expanding the facility footprint or causing new ground disturbance. However, these upgrades may result in adverse environmental impacts on water resources, including:

- Impacts on Water Quality
- Impacts on Water Quantity
- Damage to Infrastructure

The adverse environmental impacts from upgrading underground transmission facilities are often comparable to those of maintaining underground transmission facilities. These adverse environmental impacts are generally anticipated to be lower than those for modifying or constructing a new transmission facility due to several factors. Table 2.3-1 highlights how upgrading existing transmission facilities would generally result in fewer or less impactful adverse environmental impacts.

Modification

Overhead Transmission Facilities

Modifying existing overhead transmission facilities typically involves several key steps, each with specific requirements, timelines, and settings, as outlined in Chapter 2, Overview of Transmission Facilities, Development Considerations, and Regulations. The adverse environmental impacts of modifying existing transmission facilities would vary depending on the scale of the project-specific application. Overhead transmission facilities could have the following adverse environmental impacts on water resources during the modification stage:

- Impacts on Water Quality
- Impacts on Water Quantity
- Damage to Infrastructure

Adverse environmental impacts of modifying overhead transmission facilities could be similar to those of new construction but are anticipated to be lower. Table 2.3-2 highlights how modifying existing transmission facilities would generally result in fewer or less impactful adverse environmental impacts.

Underground Transmission Facilities

Modifying existing underground transmission facilities typically involves several key steps, each with specific requirements, timelines, and settings, as outlined in Chapter 2, Overview of Transmission Facilities, Development Considerations, and Regulations. The adverse environmental impacts of modifying existing transmission facilities would vary depending on the scale of the project-specific application. Underground transmission facilities could have the following adverse environmental impacts on water resources during the modification stage:

- Impacts on Water Quality
- Impacts on Water Quantity
- Damage to Infrastructure

Adverse environmental impacts of modifying underground transmission facilities could be similar to those of new construction, but are generally anticipated to be lower. Table 2.3-2 highlights how modifying existing transmission facilities would generally result in fewer or less impactful adverse environmental impacts.

3.4.3.3 No Action Alternative

Under the No Action Alternative, the Programmatic EIS would not be adopted as a planning or analytical framework. Instead, transmission facility siting and development would continue under existing state and local regulatory processes, with each project evaluated for environmental compliance without the benefit of the environmental review provided in this document. This approach would lack the advanced notice of potential serious environmental concerns for those planning transmission facilities, as well as the Mitigation Strategies developed under the Programmatic EIS. As a result, environmental outcomes could be less predictable and consistent, and adverse environmental impacts could be greater.

3.4.4 Mitigation Measures

Under SEPA, there are six recognized forms of mitigation that agencies can apply to reduce or address adverse environmental impacts:

- **Avoiding the adverse environmental impact** altogether by not taking a certain action or parts of an action.
- **Minimizing adverse environmental impacts** by limiting the degree or magnitude of the action and its implementation.
- **Rectifying the adverse environmental impact** by repairing, rehabilitating, or restoring the affected environment.
- **Reducing or eliminating the adverse environmental impact** over time by preservation and maintenance operations during the life of the action.
- **Compensating for the adverse environmental impact** by replacing or providing substitute resources or environments.
- **Monitoring the adverse environmental impact** and taking appropriate corrective measures.

This section describes the Avoidance Criteria and Mitigation Measures that could apply to adverse environmental impacts from new construction, operation and maintenance, upgrade, and modification of transmission facilities.

All General Measures adopted for this Programmatic EIS (see Section 3.1 of Chapter 3, Affected Environment, Significant Impacts, and Mitigation) are relevant to this resource section. Applicants would be responsible for providing information within their application materials documenting their implementation of the General Measures.

Avoidance Criteria[11] that are relevant to this resource section are described below:

AVOID-1 – Hazardous Areas: Avoid having equipment or infrastructure within known hazardous areas, including, but not limited to, contaminated soils, geologically hazardous areas, landfills, and cutbanks.

Rationale: Avoiding hazardous areas provides safety for workers, the public, and infrastructure, as well as environmental protection. Disturbing sites of known

[11] The complete list of Avoidance Criteria and their rationales can be found in Section 3.1 and Appendix 3.1-1.

contamination or other hazards may require the development of remediation plans.

AVOID-2 – Wetland Disturbance: Avoid having equipment or infrastructure within 300 feet of all wetlands.

Rationale: Protecting wetlands would decrease the chances of wetland degradation during new construction activities, as these areas are important for sustained wetland function. Wetlands within the project footprint would be delineated following the U.S. Army Corps of Engineers wetland delineation methodology and rated using the ECY's Western Washington, Version 2, and Eastern Washington, Version 1.

AVOID-3 –Sensitive Water Features: Avoid impacting areas sensitive to degradation, including adjusting the layout of new transmission facilities to steer clear of sensitive water features.[12]

Rationale: Avoiding sensitive water features that are susceptible to degradation from new construction activities, including changes to the water features' physical characteristics (e.g., banks, bathymetry, and substrate[13]), as well as chemical properties. Avoiding these areas helps preserve their structure and function.

AVOID-4 – Floodplains: Avoid having equipment or infrastructure within floodplains.

Rationale: This Avoidance Criterion would eliminate the potential for damage to infrastructure and electrical safety hazards because of inundation and would avoid some riparian ecosystems.

[12] Washington does not have a single, unified legal definition for "sensitive water features," but the concept is addressed through several statutes and regulatory frameworks that define and protect critical areas and water resources. Washington's Growth Management Act (RCW 36.70A.030) defines five types of critical areas, which include water-related features considered sensitive: wetlands, areas with a critical recharging effect on aquifers used for potable water, frequently flooded areas, geologically hazardous areas, and fish and wildlife habitat conservation areas. These areas must be designated and protected using best available science, and local governments are required to adopt development regulations to preserve their functions and values. While the Washington State Department of Ecology does not offer a definition for "sensitive water features," areas such as fish-critical basins, instream flows, and water quality and quantity compliance zones may be identified to protect water features (RCW 90.54).

[13] A layer of material or surface where an organism could live.

AVOID-5 – Channel Migration Zones (CMZs): Avoid having equipment or infrastructure in Channel Migration Zones (CMZs), defined in WAC 222-16-010 as areas where the active channel of a stream is prone to move, resulting in a potential near-term loss of riparian function and associated habitat adjacent to the stream, except as modified by a permanent levee or dike. Avoidance of CMZs is recommended where feasible, but compliance with applicable shoreline, floodplain, and critical areas regulations will guide project-level decisions.

Rationale: This Avoidance Criterion would eliminate potential damage to infrastructure caused by erosion of soil or foundations for infrastructure, if a channel were to migrate. Additionally, placing equipment or personnel within CMZs poses safety risks due to unstable ground conditions, sudden changes in stream flow, and increased likelihood of flooding or debris movement. Avoidance reduces the risk of injury, equipment loss, and costly emergency responses, while supporting compliance with shoreline, floodplain, and critical area regulations.

The Programmatic EIS is intended to support more efficient and effective siting and permitting of transmission facilities, consistent with the legislative direction in RCW 43.21C.408, by streamlining environmental review where projects incorporate the recommended planning and Mitigation Strategies. Applicants would be responsible for providing information within their application materials documenting the project's compliance with the above Avoidance Criteria. While total avoidance of all adverse environmental impacts is not required in order to use the Programmatic EIS, applicants are expected to demonstrate how their project aligns with the intent of the Avoidance Criteria to the extent practicable. If specific Avoidance Criteria are not met, the applicant would provide an explanation and supporting information. Additional environmental analyses would be required as part of the documentation for SEPA for the project. Additional mitigation could be required, depending on the nature of the deviation and its potential to result in probable significant adverse environmental impacts.

Mitigation Measures have been identified to minimize adverse environmental impacts from transmission facility projects. These measures are intended to be broad so that they can be applied to most projects that would be covered under this Programmatic EIS. However, project-specific plans would be needed to adapt the measures for project-specific applications. The inclusion of a Mitigation Measure in this Programmatic EIS does not imply that a given adverse environmental impact is presumed to occur. Rather, the measures are provided to support early planning and

the avoidance of adverse environmental impacts, streamlining project-specific environmental reviews when impacts are identified. Mitigation Measures are intended to serve as a set of potential strategies that the SEPA Lead Agency and applicants can draw from, depending on the specific environmental context and project footprint. Applicants and the SEPA Lead Agency retain discretion to:

- Propose alternative mitigation strategies that achieve equivalent or better outcomes.
- Demonstrate that certain Mitigation Measures are not applicable due to the absence of relevant impacts.

When impact determinations are identified as medium or high, then either the applicant would adopt applicable Mitigation Measures from this Programmatic EIS or the SEPA Lead Agency may require applicable mitigation to be implemented to reduce project-specific adverse environmental impacts. When impact determinations are low, applicable Mitigation Measures should still be considered by the applicant and the SEPA Lead Agency, as these Mitigation Measures would help to further reduce adverse environmental impacts, including the project's contribution to cumulative impacts. These Mitigation Measures would be implemented in addition to compliance with laws, regulations, environmental permits, plans, and design considerations required for transmission facilities.

The following Mitigation Measures could be adopted to mitigate adverse environmental impacts:

W-1 – Minimize Water Use: Minimize water use, to the greatest extent practicable.

Rationale: Minimizing water use during new construction and operation and maintenance of transmission facilities in Washington is essential for both environmental sustainability and cost efficiency.

W-2 – Clear Spanning or Trenchless Methods for Water Crossings: When feasible, use clear spanning for new overhead transmission or trenchless construction for underground transmission to minimize disturbance to riparian areas, wetlands and wetland buffers, and surface waters.

Rationale: By clear spanning with overhead transmission lines, water resources and associated vegetation would remain intact and continue to provide ecological functions and habitat for wildlife.

Trenchless construction methods involve significantly less surface disruption than traditional trenching methods and help prevent soil erosion and sedimentation in waterbodies.

Maintaining intact vegetation also helps minimize soil erosion and sedimentation and provides bank stability. The closed nature of trenchless methods reduces the risk of contaminants entering waterbodies and minimizes adverse environmental impacts on the surrounding environment, including vegetation and wildlife habitats.

W-3 – Phased Construction: Sequence and schedule new construction, maintenance, and upgrade/replacement activities when near surface waterbodies to minimize erosion and sediment transport.

Rationale: Construction sequencing, in which activities are planned and executed in stages, helps limit the amount of exposed soil at any given time. This approach reduces the risk of erosion and sediment transport by allowing disturbed areas to be stabilized before moving to new sections. The scheduling of activities during seasonal dry periods would minimize adverse environmental impacts associated with high water, as well as adverse effects on the environment related to working in wet conditions or in water.

W-4 – Store Chemicals, Operate Equipment, and Conduct Maintenance away from Water: Store fuel, oils, and lubricants away from watercourses. Maintain, repair, and/or service vehicles and equipment away from watercourses and at designated repair facilities whenever possible. Operate equipment and machinery from the top of the bank and outside of riparian areas, wetlands and wetland buffers, and surface waters.

Rationale: This Mitigation Measure aims to reduce adverse environmental impacts on water quality (contaminants, sediment), fish, and aquatic habitat.

W-5 – Implement Erosion and Sediment Control Measures: Implement effective and appropriate erosion control measures in new construction and operation to mitigate runoff into streams.

Rationale: This Mitigation Measure aims to reduce sediment loading[14] into stream reaches and maintain water quality and fish habitat quality.

[14] The amount of sediment in a waterbody.

W-6 – Minimize Hydrology Changes: Minimize water diversions and changes to natural hydrology or hydroelectric dam flow regimes to the greatest extent possible.

Rationale: Minimizing changes in hydrology would reduce the effects of transmission facility development on plant communities within and adjacent to the ROW. Minimizing changes to hydroelectric dam flow regimes would ensure that adequate flows are maintained for fish.

W-7 – SWPAs, SPAs, and WHPAs: Locate substations, underground vaults, and any facility where materials that could degrade groundwater quality are used or stored, outside of surface water protection areas (SWPAs), special protected areas (SPAs), and wellhead protection areas (WHPAs) to the greatest extent possible.

Rationale: This Mitigation Measure aims to minimize the potential for groundwater contamination that could result in a water supply well being removed from service temporarily or permanently.

In addition to the above Mitigation Measures, the following Mitigation Measures[15] developed for other resources may be applicable:

Geo-1 – Minimize Soil Disturbance: Minimize soil disturbance, including footprints related to access roads and permanent structures, to the greatest extent practicable. Minimize the use of construction techniques that would be harmful to topsoil composition, where feasible.

Geo-2 –Slope Stabilization: Use retaining walls, terracing, and vegetation to stabilize slopes and prevent landslides when appropriate to do so.

Geo-3 –Drainage Control: Implement effective drainage systems and manage water runoff to reduce soil saturation.

Geo-4 – Minimize Impacts on Sensitive Soils: Design projects to minimize adverse environmental impacts on high erodibility zones and areas sensitive to degradation.

[15] The rationales for the identified Mitigation Measures are provided in their respective resource sections.

Veg-1 – Site Transmission Facilities in Existing ROW or Disturbed Areas: Site transmission facilities in existing ROW or disturbed areas, to the greatest extent practicable.

Hab-1 – Use of Pesticides, Herbicides, and Fungicides: Minimize the use of harmful chemicals, including pesticides, herbicides, and fungicides, during the new construction and operation and maintenance stages of transmission facility projects.

Hab-2 – Minimize Transmission Line Crossings at Canyons and Riparian Habitat and Parallel to Rivers and Ridge Lines: Minimize transmission line crossings of canyons and draws, along ridge lines, parallel to rivers, and within riparian habitat.

Hab-5 – Vehicle and Equipment Use and Maintenance: Prohibit vehicles and other equipment from idling when not in use during new construction. Vehicles and other equipment would be inspected daily for leaks and would be kept in good condition. Vehicles and equipment would only be stored with proper spill protection measures in place and in areas where contaminants would not enter the environment, watercourses, or riparian areas if spills were to occur.

Hab-6 – Worker Education Program: Develop a worker education program for implementation during new project construction and operation. The program would train workers on operating near sensitive wildlife habitat and features, sensitive wildlife periods, working around watercourses and riparian features, management of wildlife attractants, management of special status species, wildlife reporting, and wildlife mortality reporting.

Fish-2 – Design Perpendicular Approaches: Construct transmission facility access road approaches and crossings perpendicular to streams or rivers and maintain the existing channel form and dimensions.

Fish-4 – Fords: Minimize low-water crossings (fords) by selecting the use of temporary bridges if temporary access is needed to cross waterways.

Fish-5 – Delineate Riparian Management Zones: Delineate riparian management zones or buffers where certain activities (vegetation clearing or herbicide treatment) may be restricted.

Fish-7 – Work in Dry Conditions: Plan and schedule work in streams during dry conditions or when flows are anticipated to be at their lowest, when possible.

Fish-11 – Regular Maintenance of Infrastructure: Regularly inspect and maintain infrastructure during operation to prevent leaks and spills into aquatic habitat.

Fish-12 – Reduce Number of Stream Crossings: Design transmission facilities to reduce the number of stream crossings. Access roads and utilities would share common rights-of-way.

Fish-13 – Use Bioengineering: Design stabilization structures to incorporate bioengineering principles; for example, use of living and nonliving plant materials in combination with natural and synthetic support material for slope stabilization, erosion reduction, and vegetation establishment.

Fish-15 – In-stream Sediment Disruption: If new transmission facility construction requires open-cut trenching or would generate in-stream sedimentation, then establish a dilution zone suitable to the location and flow.

3.4.5 Probable Significant Adverse Environmental Impacts

Determining the significance of an adverse environmental impact involves consideration of context and intensity, which, in turn, depend on the magnitude and duration of the impact. “Significant” in SEPA means a reasonable likelihood of more than a moderate adverse environmental impact on environmental quality. An adverse environmental impact may also be significant if its chance of occurrence is not great, but the resulting impact would be severe if it occurred (WAC 197-11-794).

Identification of adverse environmental impacts and assignment of discipline-specific ratings are based on a structured evaluation consistent with the criteria outlined in WAC 197-11-330. Significance determinations consider the context and intensity of potential adverse environmental impacts, using both quantitative and qualitative information where appropriate. Professional expertise does not substitute for regulatory compliance. Regulatory requirements establish the baseline for environmental analysis and mitigation. Professional experience is used to supplement this baseline, providing additional insight to identify whether mitigation beyond what is required by regulation may be warranted. In cases where data are incomplete or unavailable, a conservative approach has been applied to ensure that potential adverse environmental impacts are not underestimated.

This Programmatic EIS weighs the potential adverse environmental impacts on water resources that could result from transmission facilities after considering the application of laws and regulations; siting and design considerations, including agency guidance and BMPs, and Mitigation Strategies, and makes a resulting determination of significance for each impact. **Table 3.4-6** summarizes the impacts anticipated for the new construction, operation and maintenance, upgrade, and modification of transmission facilities.

Table 3.4-6: Summary of Adverse Environmental Impacts, Mitigation Strategies, and Significance Rating for Water Resources

Adverse Environmental Impact	Project Stage	Description of Impact	Impact Determination Before Applying Mitigation	Mitigation Strategy Applied[a]	Significance After Applying Mitigation Strategy	Rationale for Significance Rating
Water – Impacts on Water Quality	New Construction	Water quality could be impacted during new construction from increased suspended solids and sedimentation, and changes in physical and chemical water quality parameters. Ground disturbance, stockpiling, and construction in and around surface water features can result in erosion and sediment transport, leading to increased turbidity. Loss of vegetation cover, spills, leaks, and improper storage of materials can result in changes to physical (e.g., temperature, pH) and chemical (e.g., metal) water quality characteristics.	**Overhead:** low to medium **Underground:** low to high	▪ **AVOID-1:** Hazardous Areas ▪ **AVOID-2:** Wetland Disturbance ▪ **AVOID-3:** Sensitive Water Features ▪ **AVOID-4:** Floodplains ▪ **AVOID-5:** Channel Migration Zones (CMZs) ▪ **W-1:** Minimize Water Use ▪ **W-2:** Clear Spanning or Trenchless Methods for Water ▪ **W-3:** Phased Construction ▪ **W-4:** Store Chemicals, Operate Equipment, and Conduct Maintenance away from Water ▪ **W-5:** Implement Erosion and Sediment Control Measures ▪ **W-6:** Minimize Hydrology Changes ▪ **W-7:** SWPAs, SPAs, and WHPAs ▪ **Geo-1:** Minimize Soil Disturbance ▪ **Geo-2:** Slope Stabilization ▪ **Geo-3:** Drainage Control ▪ **Geo-4:** Minimize Impacts on Sensitive Soils ▪ **Veg-1:** Site Transmission Facilities in Existing ROW or Disturbed Areas ▪ **Hab-1:** Use of Pesticides, Herbicides, and Fungicides ▪ **Hab-2:** Minimize Transmission Line Crossings at Canyons and Riparian Habitat and	Less than Significant	Adverse impacts on water quality associated with the construction, operation, upgrade, and modification of overhead and underground transmission facilities can be managed through the application of regulatory requirements, standard BMPs, Avoidance Criteria, and Mitigation Measures. With the application of these measures, it is expected that impacts on water quality would be less than significant.
	Operation and Maintenance	Maintenance activities can lead to soil erosion, increasing sediment in nearby waterbodies. Excavation for underground cables during maintenance can disrupt soil structure, leading to sedimentation in waterbodies. In both instances, sedimentation would lead to adverse environmental impacts on water quality. Accidental spills of chemicals or fuels associated with maintenance activities for overhead and underground transmission facilities can contaminate surface water and groundwater, resulting in impacts on water quality. Excavation and soil disruption pose greater risks to water quality, especially near sensitive aquatic environments.	**Overhead:** negligible to low **Underground:** low to high			
	Upgrade	During the upgrade stage, water quality may be adversely affected due to activities that disturb soil and interact with surface water features. The use of fuels, lubricants, and other chemicals during upgrade activities poses a risk of accidental release, which can contaminate water resources and affect aquatic ecosystems. Although no new disturbance would occur during upgrade activities, the use of equipment may lead to erosion and sediment transport into nearby waterbodies, increasing turbidity and degrading water clarity.	**Overhead:** negligible to low **Underground:** low to high			

Adverse Environmental Impact	Project Stage	Description of Impact	Impact Determination Before Applying Mitigation	Mitigation Strategy Applied[a]	Significance After Applying Mitigation Strategy	Rationale for Significance Rating
		Excavation and soil disruption pose greater risks to water quality, especially near sensitive aquatic environments.		Parallel to Rivers and Ridge Lines ▪ **Hab-5:** Vehicle and Equipment Use and Maintenance ▪ **Hab-6:** Worker Education Program ▪ **Fish-2:** Design Perpendicular Approaches ▪ **Fish-4:** Fords ▪ **Fish-5:** Delineate Riparian Management Zones ▪ **Fish-7:** Work in Dry Conditions ▪ **Fish-11:** Regular Maintenance of Infrastructure ▪ **Fish-12:** Reduce Number of Stream Crossings ▪ **Fish-13:** Use Bioengineering ▪ **Fish-15:** In-stream Sediment Disruption		
	Modification	Water quality could be impacted during the modification stage from increased suspended solids and sedimentation, and changes in physical and chemical water quality parameters. Ground disturbance, stockpiling, and construction in and around surface water features can result in erosion and sediment transport, leading to increased turbidity. Loss of vegetation cover, spills, leaks, and improper storage of materials can result in changes to physical (e.g., temperature, pH) and chemical (e.g., metal) water quality characteristics.	**Overhead:** low to medium **Underground:** low to high			
Water – Impacts on Water Quantity	New Construction	The new construction of overhead and underground transmission facilities can impact water quantity in various ways, including increasing surface water runoff, water diversion, groundwater disruption, and dewatering.	**Overhead:** negligible to medium **Underground:** low to high	▪ **AVOID-1:** Hazardous Areas ▪ **AVOID-2:** Wetland Disturbance ▪ **AVOID-3:** Sensitive Water Features ▪ **AVOID-4:** Floodplains ▪ **AVOID-5:** Channel Migration Zones (CMZs) ▪ **W-1:** Minimize Water Use ▪ **W-2:** Clear Spanning or Trenchless Methods for Water ▪ **W-3:** Phased Construction ▪ **W-6:** Minimize Hydrology Changes ▪ **W-7:** SWPAs, SPAs, and WHPAs	Less than Significant	Adverse environmental impacts can be avoided or minimized by using alternate water sources (e.g., trucking in water) and reducing water consumption requirements. Mitigation must be evaluated in the context of local hydrology and ecological sensitivity, including impacts on salmon-bearing streams, wetlands, and Treaty-reserved resources. With the application of Avoidance Criteria and Mitigation Measures, impacts on water quantity during construction, operation and maintenance, upgrade, and
	Operation and Maintenance	Operation and maintenance of overhead and underground transmission facilities may involve the use of water during maintenance activities or may alter flow regimes to hydroelectric dams, depending on energy production. Adverse environmental impacts for underground transmission facilities are generally more pronounced due to excavation and potential groundwater interactions.	**Overhead:** negligible to medium **Underground:** low to medium			
	Upgrade	The upgrade of transmission facilities may affect water quantity through several mechanisms, depending on whether the infrastructure is overhead or underground. The use of equipment and vegetation removal during upgrades can increase impervious surfaces and reduce infiltration, leading	**Overhead:** negligible to medium			

Adverse Environmental Impact	Project Stage	Description of Impact	Impact Determination Before Applying Mitigation	Mitigation Strategy Applied[a]	Significance After Applying Mitigation Strategy	Rationale for Significance Rating
		to elevated surface water runoff and potential downstream flooding or erosion. Activities such as trenching or excavation for existing underground transmission facilities may require temporary water diversion or dewatering, which can alter local hydrology and reduce water availability in nearby aquatic systems. Water may be used for dust suppression, equipment cleaning, or other maintenance activities, which could temporarily affect local water availability.	**Underground:** low to medium	▪ **Geo-1:** Minimize Soil Disturbance ▪ **Geo-2:** Slope Stabilization ▪ **Geo-3:** Drainage Control ▪ **Geo-4:** Minimize Impacts on Sensitive Soils ▪ **Veg-1:** Site Transmission Facilities in Existing ROW or Disturbed Areas ▪ **Hab-1:** Use of Pesticides, Herbicides, and Fungicides ▪ **Hab-2:** Minimize Transmission Line Crossings at Canyons and Riparian Habitat and Parallel to Rivers and Ridge Lines ▪ **Hab-5:** Vehicle and Equipment Use and Maintenance ▪ **Hab-6:** Worker Education Program ▪ **Fish-2:** Design Perpendicular Approaches ▪ **Fish-4**: Fords ▪ **Fish-5:** Delineate Riparian Management Zones ▪ **Fish-7:** Work in Dry Conditions ▪ **Fish-11:** Regular Maintenance of Infrastructure ▪ **Fish-12:** Reduce Number of Stream Crossings ▪ **Fish-13:** Use Bioengineering ▪ **Fish-15:** In-stream Sediment Disruption		modification of overhead and underground transmission facilities are expected to be less than significant.
	Modification	The modification of existing overhead and underground transmission facilities can impact water quantity in various ways, including increasing surface water runoff, water diversion, groundwater disruption, and dewatering.	**Overhead:** negligible to medium **Underground:** low to high			

Adverse Environmental Impact	Project Stage	Description of Impact	Impact Determination Before Applying Mitigation	Mitigation Strategy Applied[a]	Significance After Applying Mitigation Strategy	Rationale for Significance Rating
Water – Damage to Infrastructure	New Construction	Flooding or storm surge events that occur during the new construction of either overhead or underground transmission facilities could result in damage to equipment and materials, schedule delays, and worker hazards.	**Overhead:** negligible to medium **Underground:** low to high	▪ **AVOID-1:** Hazardous Areas ▪ **AVOID-2:** Wetland Disturbance ▪ **AVOID-3:** Sensitive Water Features ▪ **AVOID-4:** Floodplains ▪ **AVOID-5:** Channel Migration Zones (CMZs) ▪ **W-2:** Clear Spanning or Trenchless Methods for Water ▪ **W-3:** Phased Construction ▪ **W-6:** Minimize Hydrology Changes ▪ **W-7:** SWPAs, SPAs, and WHPAs ▪ **Geo-2:** Slope Stabilization ▪ **Geo-3:** Drainage Control ▪ **Geo-4:** Minimize Impacts on Sensitive Soils ▪ **Veg-1:** Site Transmission Facilities in Existing ROW or Disturbed Areas ▪ **Fish-4:** Fords ▪ **Fish-5:** Delineate Riparian Management Zones ▪ **Fish-7:** Work in Dry Conditions ▪ **Fish-12:** Reduce Number of Stream Crossings ▪ **Fish-13:** Use Bioengineering ▪ **Fish-15:** In-stream Sediment Disruption	Less than Significant	Adverse environmental impacts on infrastructure from flooding, storm surges, stream migration, erosion, and back destabilization can be mitigated with the application of Avoidance Criteria and Mitigation Measures such that adverse effects are expected to be less than significant.
	Operation and Maintenance	Flooding and storm surge events during the operation and maintenance of either overhead or underground transmission facilities could result in damage to equipment and electrical equipment (substations and similar). Channel migration during the operation and maintenance stage could result in soil erosion and scour, leading to damage to the foundations of infrastructure. Similarly, flooding or debris migration at towers located in floodways could result in damage to the fill or foundations of ancillary infrastructure.	**Overhead:** negligible to high **Underground:** low to high			
	Upgrade	Upgrading overhead or underground transmission facilities may expose infrastructure to water-related hazards, particularly during periods of flooding or storm surge. Water-related events may pose safety risks to personnel and cause interruptions in the upgrade schedule. Channel migration and debris flow during flood events can erode soil around foundations, especially for towers and substations located in flood-prone areas. This can lead to structural instability or failure of ancillary infrastructure. Underground systems are susceptible to water infiltration, especially in areas with high water tables or poor drainage.	**Overhead:** negligible to high **Underground:** low to high			
	Modification	Flooding or storm surge events that occur during the modification of an existing overhead or underground transmission facility could result in damage to equipment and materials, schedule delays, and worker hazards.	**Overhead:** negligible to medium **Underground:** low to high			

Notes:

[a] Appendix 3.1-1 provides a detailed listing of each Mitigation Strategy. This appendix serves as a reference section that can be consulted independently of the main text. This is particularly useful for detailed guidance and technical specifications that may be referred to multiple times. Additionally, including this information in an appendix allows for easier updates and revisions. If Mitigation Strategies or guidance changes, the appendix can be updated without altering the main content.

BMP = best management practice; **ROW** = right-of-way; **SPA** = special protection area; **SWPA** = surface water protection area; **WHPA** = wellhead protection area

3.4.6 Environmental Sensitivity Map

Project-specific applications require a comprehensive analysis to identify the site-specific adverse environmental impacts on resources and determine the suitability of this Programmatic EIS. Environmental review may be phased by incorporating relevant information from this Programmatic EIS by reference while evaluating site-specific adverse environmental impacts of individual project applications. For more information on phased reviews (see Chapter 1, Introduction).

Each project-specific application would include details about the proposal's location and site-specific conditions. This Programmatic EIS provides environmental sensitivity maps that, when used alongside project-specific data, could support more informative and efficient environmental planning. An online mapping tool has also been developed to provide public access to the most current data used in creating these environmental sensitivity maps.

Figure 3.4-4 presents the environmental sensitivity map for water resources, identifying areas of varying sensitivity based on the siting criteria described in the following sections.

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LEGEND

Sensitivity Score

Low Sensitivity

Very High Sensitivity

Nanaimo
Richmond
Surrey
White Rock
Abbotsford
SKAGIT RANGE
2582 m
Greenwood
Grand Forks
Trail
Cowichan Lake
Duncan
5020 ft
10762 ft
Bellingham
Victoria
Skagit River
Mount Vernon
Salish Sea
Oak Harbor
Sandpoint
OLYMPIC MOUNTAINS
6027 ft
7967 ft
Everett
Lake Chelan
Franklin D Roosevelt Lake
Post Falls
Spokane
Seattle
CASCADE RANGE
Wenatchee
WENATCHEE MOUNTAINS
Kent
Tacoma
Olympia
Aberdeen
Moses Lake
Yakima River
14411 ft
Yakima
Moscow
Lewiston
Astoria
COASTAL RANGES
Longview
8336 ft
CASCADE RANGE
Kennewick
Walla Walla
4680 ft
Columbia River
The Dalles
Hillsboro
Portland
Newberg
11215 ft

Washington State Energy Facility Site Evaluation Council

PROJECT

PROGRAMMATIC EIS
HIGH-VOLTAGE TRANSMISSION

TITLE

SENSITIVITY MAP
WATER RESOURCES

YYYY-MM-DD 2025-09-02

CONSULTANT wsp

FIGURE 3.4-4

N

0 30 60

1:1,700,000 MILES

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

DESIGNED MK PREPARED MK REVIEWED SHUP APPROVED AHSGZA

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3.4.6.1 Environmental Sensitivity Map Criteria Cards

The environmental sensitivity map evaluates various siting criteria and assigns sensitivity levels to geographic areas based on their potential for adverse environmental impacts, as analyzed in this Programmatic EIS. Each criterion was assigned a sensitivity level (1, 2, or 3), with Level 3 representing the highest sensitivity. Criteria cards illustrate the spatial extent of the siting criteria chosen. A summary of the criteria cards is provided below. Appendix 3.1-2 details the data preparation process for the criteria cards.

Water Quality Degradation - Sensitivity Level 2

Figure 3.4-5 illustrates the spatial extent of sole source aquifers and impaired water of Washington identified in Section 303(d) of the Clean Water Act (EPA 2022, 2025b).

Source aquifers are defined as providing over 50 percent of drinking water with no alternatives and require special permits for new construction. Impaired waterbodies are those listed under Section 303(D) of the CWA and are prioritized for cleanup to meet water quality standards and the TMDLs.

Water Quality Degradation – Sensitivity Level 3

Figure 3.4-6 illustrates the spatial extent of well head protection areas, source water protection areas, channel migration zones with a 300-foot buffer, 500- and 100-year flood hazard areas, seeps and springs with a 300-foot buffer, and wetlands and estuaries with a 300-foot buffer (DOH 2023, 2025; Ecology 2024, 2025; FEMA 2025; USFWS 2025).

The illustrated areas are at high risk of water quality degradation and include water protection areas, wetlands, estuaries, seeps, and springs. Water protection areas are intended to prevent contaminants like chemicals, fuels, and waste from reaching water resources.

Channel migration zones are areas where rivers and streams shift, causing erosion and property damage. Floodplains (100- and 500-year, as defined by FEMA) and floodways are vulnerable to flooding, and development in these areas can increase the risk of flood-related damage.

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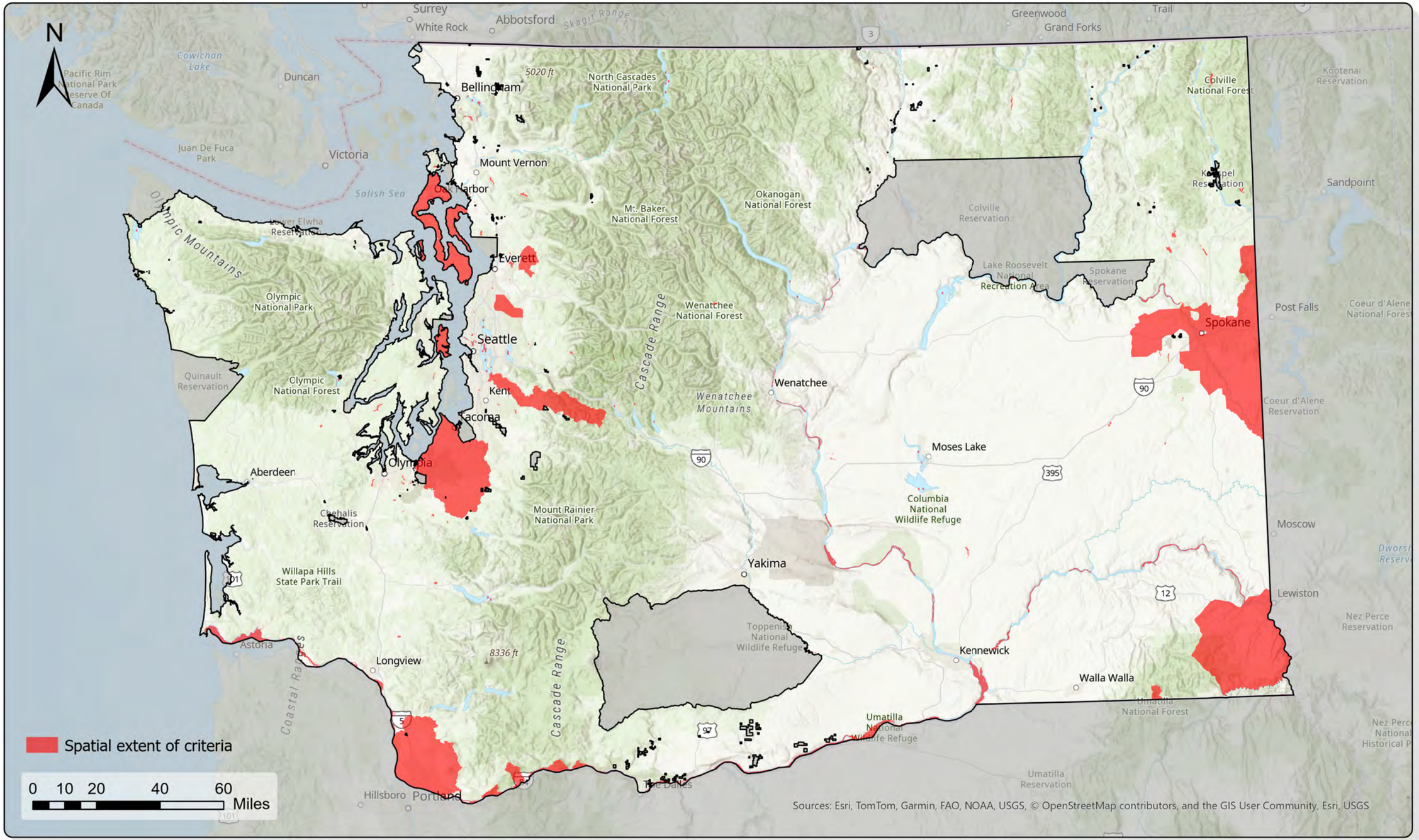
Water Quality Degradation – Sensitivity Level 2

Washington State Energy Facility Site Evaluation Council



WATER RESOURCES

Figure 3.4-5

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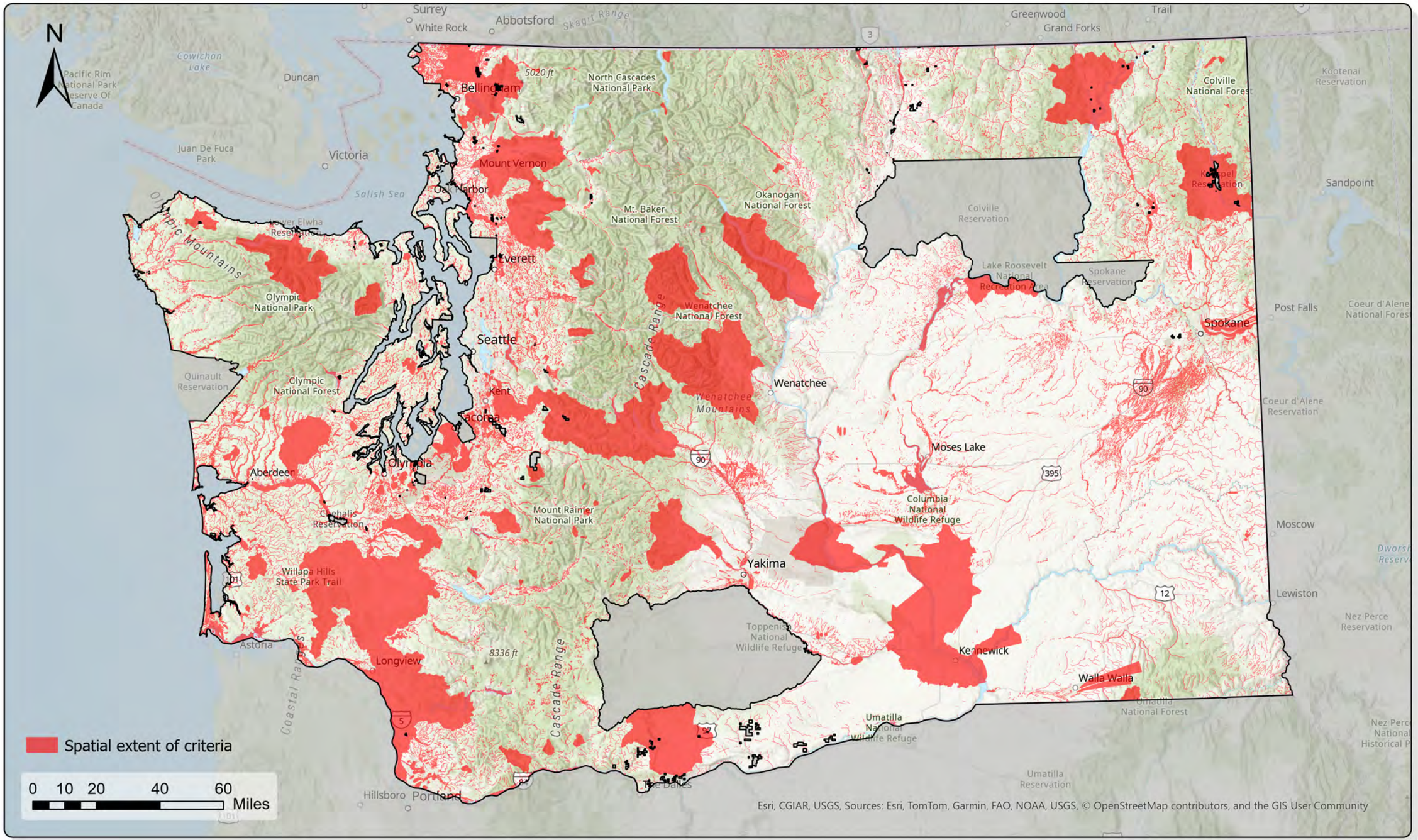
Water Quality Degradation – Sensitivity Level 3

Washington State Energy Facility Site Evaluation Council



WATER RESOURCES

Figure 3.4-6

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