Appendix F: Water Resources Technical Report

For Programmatic Environmental Impact Statement on Utility-Scale Solar Energy Facilities in Washington State

By

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For the

Shorelands and Environmental Assistance Program

Washington State Department of Ecology

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Acronyms and Abbreviations List

BESS	battery energy storage system
BMP	best management practice
CLOMR	Conditional Letter of Map Revision
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
Ecology	Washington State Department of Ecology
FEMA	Federal Emergency Management Agency
HPA	Hydraulic Project Approval
HUC	Hydrologic Unit Code
LOMR	Letter of Map Revision
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NPDES	National Pollutant Discharge Elimination System
PEIS	Programmatic Environmental Impact Statement
RCW	Revised Code of Washington
Risk MAP	Risk Mapping, Assessment, and Planning
SEPA	State Environmental Policy Act
SMP	Shoreline Master Program
SSA	sole-source aquifer
SWPPP	Stormwater Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
USC	*United States Code*
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WRIA	Water Resource Inventory Area

Summary

This technical resource report describes the conditions of water resources in the study area. It also describes the regulatory context, potential impacts, and measures to avoid, reduce, and mitigate impacts.

A project developer would need to ensure that there is sufficient water available for a project, both physically and legally. Water availability will vary based on the project and location. If water is needed for a project and is not available, a project would not be feasible.

Findings for water resources impacts described in this technical resource report are summarized as follows:

- Through compliance with laws and permits and with the implementation of measures to avoid and reduce impacts, construction, operation, and decommissioning would likely result in **less than significant impacts** on:
    - Surface water
    - Groundwater
    - Water availability or water rights
    - Wetlands
    - Floodplains
- Through compliance with laws and permits and with the implementation of measures to avoid, reduce, and mitigate significant impacts, construction, operation, or decommissioning would have **no significant and unavoidable adverse impacts** on water resources.

Crosswalk with Water Resources Technical Report for Utility-Scale Onshore Wind Energy

Two Programmatic Environmental Impact Statements (PEISs) are being released at the same time, one for utility-scale solar energy facilities and one for utility-scale onshore wind energy facilities. This crosswalk identifies the areas with substantial differences between the water resources technical reports for each PEIS.

Utility-Scale Solar Energy PEIS (this document)	Utility-Scale Onshore Wind Energy PEIS
• Differences in which WRIAs and aquifers the study area overlaps • Different impacts related to impervious surfaces • Includes potential water use for washing solar panels	• Differences in which WRIAs and aquifers the study area overlaps • Different impacts related to impervious surfaces

1 Introduction

This technical resource report describes water resources within the study area and assesses potential impacts associated with types of facilities (alternatives) and a No Action Alternative. Chapter 2 of the State Environmental Policy Act (SEPA) Programmatic Environmental Impact Statement (PEIS) provides a description of the types of facilities evaluated (alternatives).

This section provides an overview of the aspects of water resources evaluated in the technical resource report and lists relevant regulations that contribute to the evaluation of potential impacts.

1.1 Resource description

In this technical resource report, the term "water resources" refers to surface water and groundwater, wetlands, and floodplains. Water quality, water quantity (flows and levels), and water availability and water rights are key features of water resources. The study area for water resources is described in Section 2.1.

The following resources could have impacts that overlap with impacts to water resources. Impacts on these resources are reported in their respective technical resource reports:

- **Earth:** The *Earth Resources Technical Report* (Appendix D) includes information on subsidence and some geologic hazards that interact with waters.
- **Biological resources:** Use and function of waters and wetlands as habitat are addressed in the *Biological Resources Technical Report* (Appendix G).
- **Environmental health and safety**: The *Environmental Health and Safety Technical Resource Report* (Appendix I) addresses impacts to ground and surface water due to hazardous materials.
- **Public services and utilities**: Information on water supply and wastewater is covered in the *Public Services and Utilities Technical Resource Report* (Appendix P).

1.2 Regulatory context

Table 1 identifies the primary federal, state, and local regulations that relate to water resources in the study area. Section 3.3 identifies the water-related permits that may be required for project implementation.

Table 1. Applicable laws, plans, and policies

Regulation, statute, guideline	Description
Federal	
Safe Drinking Water Act, 42 (*United States Code* [USC] 300 et seq., Chapter 6A)	Principal federal law protecting drinking water for the public. Requires states to develop source water assessment programs. Authorizes U.S. Environmental Protection Agency (USEPA) administration of the Sole Source Aquifer Protection Program.
National Flood Insurance Act of 1968 and Flood Disaster Protection Act of 1973 (42 USC 4001 et seq.)	Establishes insurance requirements within high-risk flood areas.
Clean Water Act (CWA) (33 USC 1251 et seq.)	The Federal Water Pollution Control Act of 1948 was the first major U.S. federal law to address water pollution. The law was amended in 1972 and became commonly known as the CWA. The CWA establishes the basic structure for regulating pollutant discharges into waters of the United States and makes it unlawful to discharge any pollutant from a point source into those waters without a permit.
CWA Section 401 Water Quality Certification	Provides states with the authority to ensure that federal agencies do not issue permits or licenses that violate state water quality standards or other protections of the CWA. An applicant for a federal permit must obtain a Section 401 Water Quality Certification from the state in which the activity would occur. Washington State Department of Ecology (Ecology), USEPA, and some Tribes administer Section 401 of the CWA in Washington.
CWA Section 402 (National Pollutant Discharge Elimination System [NPDES])	Establishes the NPDES program, requiring pollutant discharges to surface waters be authorized by a permit. USEPA issues NPDES permits for federally owned facilities and Tribal lands in Washington. Ecology administers the NPDES permitting program for other facilities and lands in Washington.
CWA Section 404 (Permits for Dredged or Fill Material)	Establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. The U.S. Army Corps of Engineers (USACE) issues Section 404 permit decisions.
CWA Section 303(d) (Impaired Waters and Total Maximum Daily Loads)	Section 303(d) requires states to identify waters that do not meet or are not expected to meet water quality standards. Total Maximum Daily Loads are developed and are then prioritized on the 303(d) list. Administered by Ecology in Washington.
Rivers and Harbors Act of 1899 (33 USC 403)	Requires USACE Section 10 authorization for the construction of any structure in or over any navigable water of the United States.
Executive Order 11990, Protection of Wetlands	Provides the overall wetlands policy applicable to all agencies managing federal lands, sponsoring federal projects, or providing federal funds to state or local projects. Requires federal agencies to follow avoidance, mitigation, and preservation procedures and to obtain public input before new construction in wetlands. Consistency with the overall wetlands policy contained in Executive Order 11990 is achieved through CWA Section 404 compliance requirements.

Regulation, statute, guideline	Description
Presidential Executive Order 11988, Floodplain Management	Requires avoidance, as feasible, of federal development and other activities within the 100-year floodplain.
Federal Water Quality Criteria Applicable to Washington (40 *Code of Federal Regulations* 131.45)	Establishes water quality standards for Washington; used during administration of the CWA. Includes human health criteria for priority toxic pollutants in surface waters in Washington.
Coastal Zone Management Act (CZMA) Federal Consistency (16 USC 1451 et seq.)	The federal consistency provisions of the CZMA require that federal actions, including federal activities and 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 impacts on state coastal resources and uses. Administered by Ecology.
State	
Water Quality Standards for Surface Water (Chapter 173-201A Washington Administrative Code [WAC])	Establishes water quality standards for surface water, implementing Title 90 Revised Code of Washington (RCW; Chapter 90.48 RCW – Water Pollution Control Act).
Water Quality Standards for Groundwater (Chapter 173-200 WAC)	Establishes water quality standards for groundwaters, implementing Title 90 RCW including Chapters 90.48 (Water Pollution Control Act) and 90.54 RCW (Water Resources Act of 1971).
NPDES Permit Program (Chapter 173-220 WAC)	Establishes a state individual permit program, applicable to the discharge of pollutants and other wastes and materials to the surface waters of the state, operating under state law as a part of the NPDES created by Section 402 of the CWA. Permits issued under this chapter are designed to satisfy the requirements for discharge permits under both Section 402(b) of the CWA and Chapter 90.48 RCW.
Water Rights (Chapter 173-152 WAC)	Establishes the framework for Ecology's performance of basin assessments and processing of water rights applications, implementing Title 90 laws including Chapters 90.03 (Water Code) and 90.82 RCW (Watershed Planning).
Water Rights-Environment (Title 90 RCW)	Contains many laws covering subjects including water rights, claims registration, minimum streamflows, water pollution control, shoreline management, and aquatic resources mitigation.
Washington State Hydraulic Code (Construction Projects in State Waters) (Chapter 77.55 RCW, Chapter 220.660 WAC)	Requires a permit for any facility that will use, divert, obstruct, or change the natural flow or bed of any waters of the state. Requires entities who are planning such projects to obtain a Hydraulic Project Approval from Washington Department of Fish and Wildlife.
Floodplain Management (Chapter 173-158 WAC)	Implements Title 86 RCW (Chapter 86.16 RCW – Floodplain Management). Directs floodplain management and compliance with minimum requirements of the National Flood Insurance Program (NFIP).
Administration of Surface and Groundwater Codes (Chapter 508-12 WAC)	Establish regulations for Ecology's administration of surface water and groundwater codes, including regulation of water rights diversions, surface water and groundwater appropriation procedures, and reservoir permits.

Regulation, statute, guideline	Description
Growth Management Act (Title 36 RCW)	Requires local governments to manage growth by identifying and protecting critical areas and natural resource lands, among other measures.
Chapter 90.48 RCW, Water Pollution Control Act	The Water Pollution Control Act sets standards to ensure the purity of all waters of the state and to work cooperatively with the federal government where interest overlaps in a joint effort to extinguish the sources of water quality degradation. Grants Ecology the jurisdiction to control and prevent the pollution of streams, lakes, rivers, ponds, inland waters, salt waters, water courses, and other surface and groundwater in the state, including wetlands. Tool Ecology uses to regulate certain activities in non-federally regulated waters, including wetlands, through the issuance of authorizations to work in waters of the state.
Washington State Executive Order 89-10, Protection of Wetlands	Establishes statewide goals to achieve no overall net loss in function and acreage of wetlands and to increase the quantity and quality of Washington's wetlands.
Chapter 90.58 RCW, Washington State Shoreline Management Act	Establishes a state-local partnership for managing, accessing, and protecting Washington's shorelines. The law requires local governments to prepare locally tailored policies and regulations for managing shoreline use in their jurisdictions called Shoreline Master Programs (SMPs). Local governments review shoreline development proposals for compliance with SMP standards. Applies to shorelines of the state, 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.
Local	
Comprehensive plan goals and objectives pertaining to water resources	A local planning effort by cities and counties that provides a vision for the community and identifies steps needed to meet that vision.
Critical areas ordinances	As required under Washington's Growth Management Act, cities and counties have development regulations to protect critical areas including wetlands and their buffers, streams and their buffers (fish and wildlife habitat conservation areas), critical aquifer recharge areas, and frequently flooded areas.
Floodplain codes	Local codes regulate floodplain development as required by Federal Emergency Management Agency NFIP regulations.
Shoreline codes	Local codes regulate development within shorelines of the state in accordance with SMPs and state Shoreline Management Act requirements.

2 Methodology

2.1 Study area

The study area for water resources encompasses the overall geographic scope of study for the PEIS (Figure 1) and the state's major hydrological basins. The study area consists almost entirely of areas in Washington located east of the Cascade Mountain crest, within the Columbia River basin. Limited areas of western Washington within the Lower Columbia River and Puget Sound basins are also part of the study area. The study area for the evaluation of water resources associated with the construction and operation of projects would be determined by the presence (or absence) of water resources during project specific reviews. Resources could be streams, rivers, lakes, reservoirs, wetlands, groundwater, and floodplains.

The PEIS geographic scope of study includes various federal, state, and locally managed lands; however, Tribal reservation lands; national parks, wilderness areas, and wildlife refuges; state parks; and areas within cities and urban growth areas were excluded. Some of these areas adjacent to the PEIS geographic scope of study are considered in the study area if they contain water resources that may be impacted by projects.

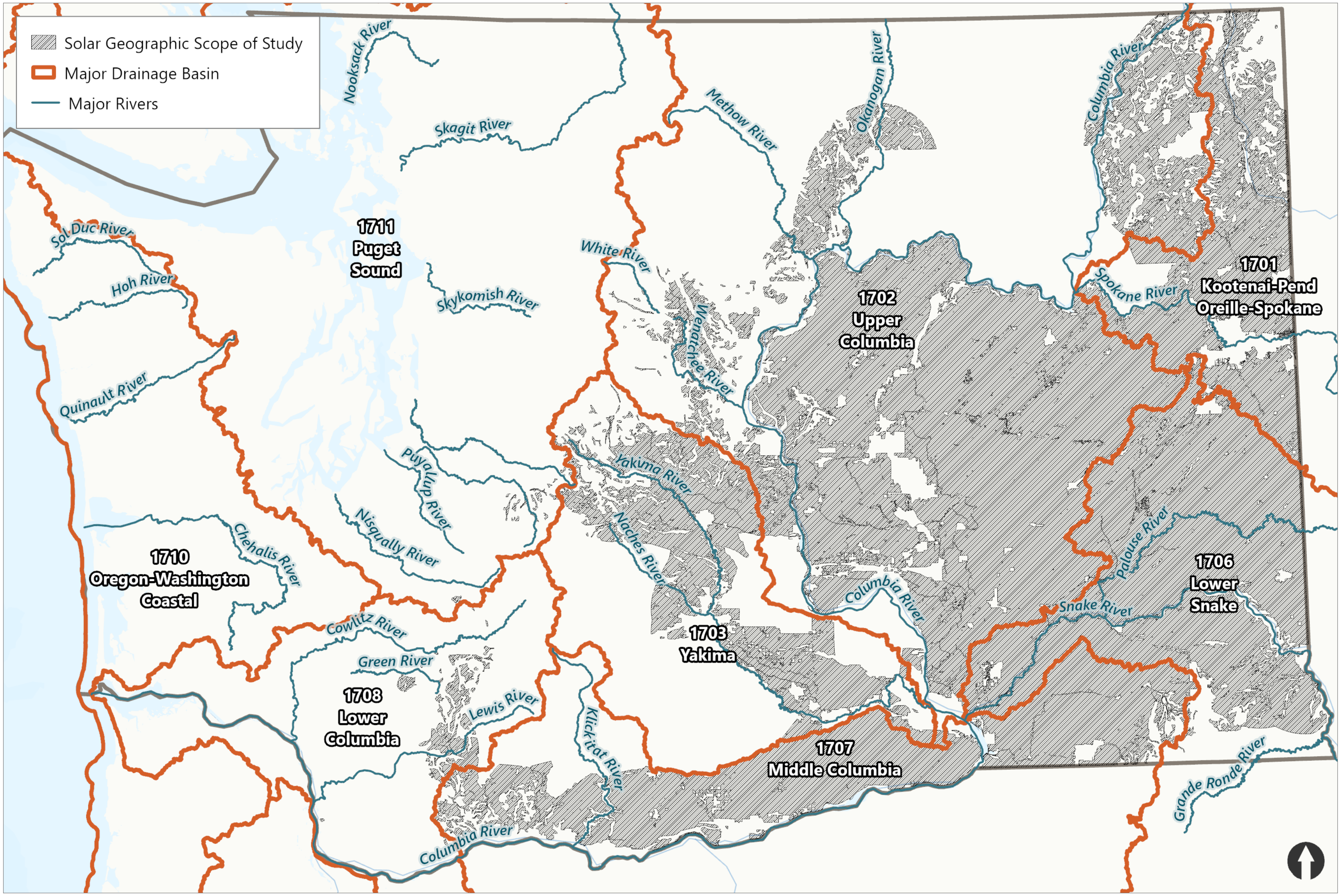

Figure 1. Hydrologic subregions

Data source: Ecology 2024a

2.2 Technical approach

The geographic scope of study for the PEIS covers a large portion of the state, and the types of facilities considered include broad ranges of parameters for potential future sites and projects rather than specific locations or details. The analysis considers water resources that have the potential to be affected by the following:

- Short-term construction impacts on surface water quality and streamflows, groundwater quality and subsurface flows, streams and wetlands and associated regulatory buffers, floodplains, and water availability and water rights.
- Long-term impacts from construction, operations, maintenance, and decommissioning on surface water quality and streamflows, groundwater quality and subsurface flows, streams and wetlands and associated regulatory buffers, floodplains, and water availability and water rights.

Based on these considerations, the technical approach for this analysis included the following steps:

- Existing data and information from publicly available sources were used to generally characterize key water resource conditions in the study area (e.g., major watersheds and rivers/streams, aquifers and water uses, wetlands).
- Information and assumptions were considered to understand the types and sizes of projects and range of activities that could be expected in utility-scale solar project development—for construction, operation, and decommissioning. That information was used to qualitatively evaluate water resource impacts relative to baseline and predicted future conditions.
- Potential impacts were evaluated relative to applicable laws and regulations (e.g., water quality standards, water rights laws, and wetland regulations).

2.3 Impact assessment approach

The PEIS analyzes a time frame of up to 20 years of potential project construction and up to 30 years of potential project operations (totaling up to 50 years into the future). Impacts on water resources were evaluated for site characterization, construction, operation, and decommissioning. The assessment of impacts was qualitative, and potential impacts considered applicable laws and regulations (e.g., water quality standards, water rights laws, and wetland regulations).

The impact analysis considered water resources that have the potential to be affected by construction and operation, including the following:

- Surface water quantity and quality
- Groundwater quantity and quality
- Water availability and water rights
- Waterbodies and wetlands and associated regulatory buffers

- Floodplains

This analysis assumes the following for the facilities evaluated:

- Water rights would be obtained as needed. If water is needed for a project and is not available, a project would not be able to operate.
- Construction blasting, if needed, would occur in upland areas.

Impact indicators for key features of water resources were assessed, and criteria for each impact indicator were used to identify potentially significant adverse impacts. For the purposes of this assessment, a potentially significant impact would occur if a project resulted in the following:

- Permanent alterations to the course of surface water that are substantial or occur frequently
- Measurable changes in surface water quality that do not comply with Washington surface water quality standards (Chapter 173-201A Washington Administrative Code [WAC])
- Large-scale disruption of the groundwater flow regime (including groundwater recharge), such as a widespread disruption that occurs outside of the project development footprint
- Impacts that lead to exceedance of groundwater standards (Chapter 173-200 WAC)
- Alterations to water availability or rights for designated uses that cause impairment of existing water rights, including waterways with established minimum instream flows, or water diminishment of administratively closed waterways
- Temporary or long-term alterations to floodplain functions and/or any loss of floodplain storage that would cause a net rise in flood elevation during the occurrence of the 100-year flood

3 Technical Analysis and Results

3.1 Overview

This section describes key elements of the affected environment for water resources and provides an overview of how those resources are managed and regulated in Washington. The affected environment represents existing conditions at the time this study was prepared. Potential impacts on water resources resulting from site characterization, construction, operation, and decommissioning are described. This section also evaluates measures to avoid, minimize, and mitigate impacts, and determines whether there would be potential unavoidable significant adverse impacts on water resources.

3.2 Affected environment

3.2.1 Surface water

3.2.1.1 Water quantity

Surface water includes streams, rivers, lakes, reservoirs, estuaries, and marine waters. Wetlands are also surface waters and are discussed in Section 3.2.4. Surface waters within the study area vary considerably in size and flow. The study area encompasses land along surface waters ranging in magnitude from the Columbia River and major river tributaries including the Yakima, Snake, White Salmon, and Klickitat rivers; to small- to large-size perennial creeks; to unnamed smaller drainageways with only seasonal flow.

The U.S. Geological Survey (USGS) has delineated drainage areas in the United States based on surface water features. Geographic areas are divided and subdivided into successively smaller hydrologic units, each with a defined numeric Hydrologic Unit Code (HUC), which describe the area of land upstream of a point on a waterbody that contributes surface runoff to that point.

There are eight hydrologic subregions (HUC-4 basins) under the national HUC system that are entirely or partially within the state of Washington. The study area includes portions within seven of these subregions, as summarized in Table 2 and shown in Figure 1.

Table 2. Hydrologic subregions

Hydrologic subregion name	HUC-4 number	Contains portions of study area
Kootenai-Pend Oreille-Spokane	1701	Yes
Upper Columbia	1702	Yes
Yakima	1703	Yes
Lower Snake	1706	Yes
Middle Columbia	1707	Yes
Lower Columbia	1708	Yes
Oregon-Washington Coastal	1710	No
Puget Sound	1711	Yes

Washinton has 62 Water Resource Inventory Areas (WRIAs) established under WAC 173-500-040 to provide a framework for water resources management in the state (Ecology 2024b). WRIAs are based on natural watershed boundaries and are used by Washington State Department of Ecology (Ecology) and other natural resources agencies as a basis for study, planning, and regulation of activities affecting water resources. The study area for this analysis includes lands located within 40 of Washington's 62 WRIAs, as listed in Table 3 and shown in Figure 2.

Table 3. Water Resource Inventory Areas

WRIA number	WRIA name	Overlaps portions of study area
1	Nooksack	No
2	San Juan	No
3	Lower Skagit – Samish	No
4	Upper Skagit	No
5	Stillaguamish	No
6	Island	No
7	Snohomish	No
8	Cedar – Sammamish	Yes
9	Duwamish – Green	Yes
10	Puyallup – White	Yes
11	Nisqually	Yes
12	Chambers – Clover	No
13	Deschutes	No
14	Kennedy – Goldsborough	No
15	Kitsap	No
16	Skokomish – Dosewallips	No
17	Quilcene – Snow	No
18	Elwha – Dungeness	No

WRIA number	WRIA name	Overlaps portions of study area
19	Lyre – Hoko	No
20	Soleduc	No
21	Queets – Quinault	No
22	Lower Chehalis	No
23	Upper Chehalis	No
24	Willapa	No
25	Grays – Elochoman	No
26	Cowlitz	Yes
27	Lewis	Yes
28	Salmon – Washougal	Yes
29	Wind – White Salmon	Yes
30	Klickitat	Yes
31	Rock – Glade	Yes
32	Walla Walla	Yes
33	Lower Snake	Yes
34	Palouse	Yes
35	Middle Snake	Yes
36	Esquatzel Coulee	Yes
37	Lower Yakima	Yes
38	Naches	Yes
39	Upper Yakima	Yes
40	Alkali – Squilchuck	Yes
41	Lower Crab	Yes
42	Grand Coulee	Yes
43	Upper Crab-Wilson	Yes
44	Moses Coulee	Yes
45	Wenatchee	Yes
46	Entiat	Yes
47	Chelan	Yes
48	Methow	Yes
49	Okanogan	Yes
50	Foster	Yes
51	Nespelem	No
52	Sanpoil	Yes
53	Lower Lake Roosevelt	Yes
54	Lower Spokane	Yes
55	Little Spokane	Yes
56	Hangman	Yes
57	Middle Spokane	Yes

WRIA number	WRIA name	Overlaps portions of study area
58	Middle Lake Roosevelt	Yes
59	Colville	Yes
60	Kettle	Yes
61	Upper Lake Roosevelt	Yes
62	Pend Oreille	Yes

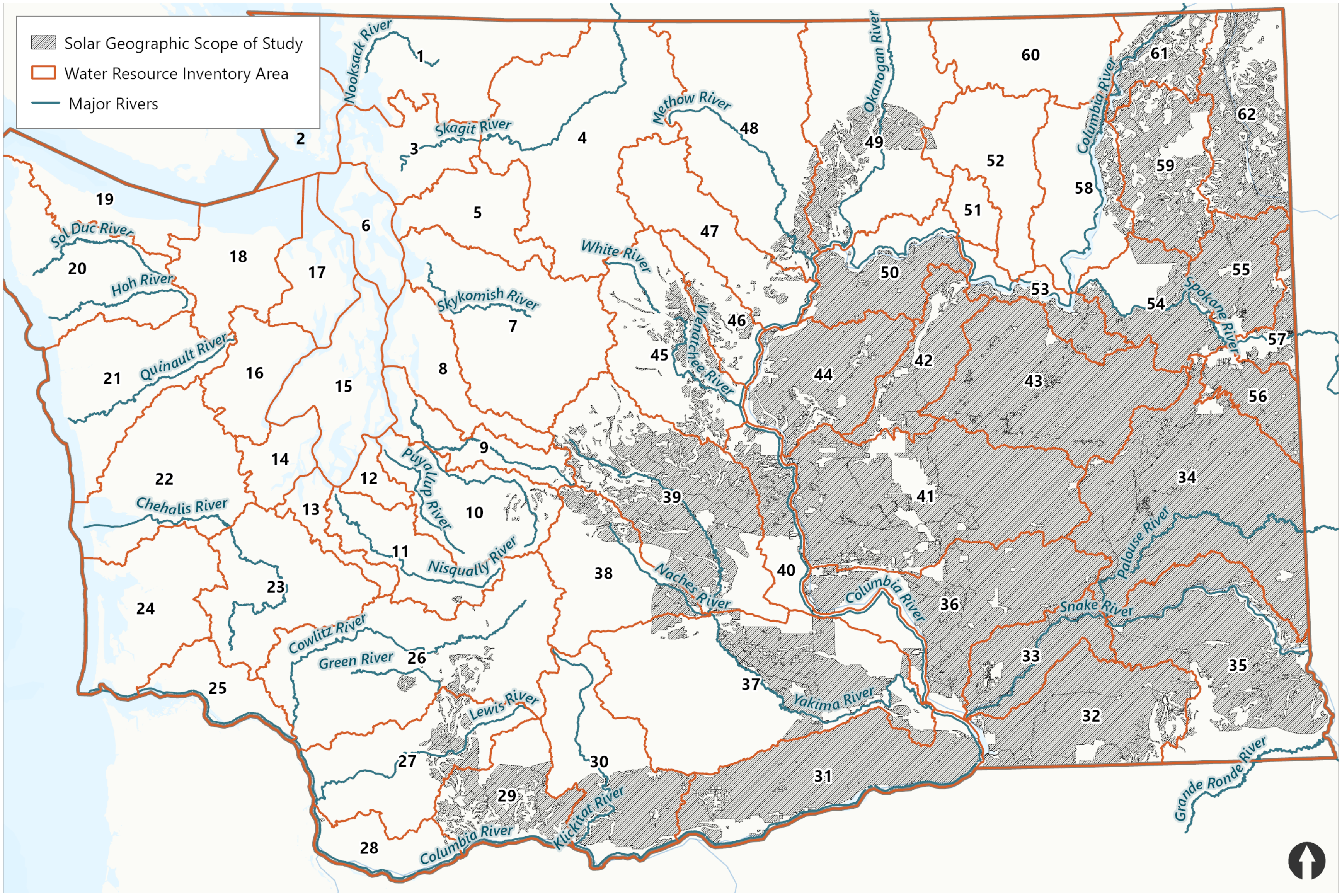

Figure 2. Water Resource Inventory Areas

Data source: Ecology 2024a

3.2.1.2 Water quality

Water quality is a key element of surface water regulation and management in Washington, and the state is required by the federal Clean Water Act (CWA) to perform a water quality assessment every 2 years to track the water quality status of the state's rivers, streams, lakes, and marine waterbodies (Ecology 2018). The assessments are conducted by Ecology and submitted to the U.S. Environmental Protection Agency (USEPA) for review and approval. Waterbodies that are identified as impaired by pollutants are categorized as Category 5 waters and placed on the state's CWA Section 303(d) list, indicating that they require a water improvement project. Ecology develops water cleanup plans, or Total Maximum Daily Loads, for impaired waters to reduce pollution with the goal of bringing the water into compliance with water quality standards. Many waters that are on the CWA Section 303(d) list are found in the study area. Washington's Water Quality Assessment and CWA Section 303(d) list are available to review on Ecology's website.[1]

Water quality conditions across the study area vary by location and are affected by physical conditions of the waterbody (width, depth, flows), underlying soils and geology, and human influences. In general, surface water quality conditions are typically better higher in a watershed, upstream of intensive land uses. Common water quality issues that affect some waters within Washington and the study area include the following:

- Elevated temperatures from land clearing and development (reduced shading), point source discharges, and dams
- Low dissolved oxygen from elevated water temperatures and excessive organic material decay
- High total suspended solids and turbidity from land disturbance and erosion
- Bacteria from livestock and failing septic systems
- Elevated nutrients and pesticides from agricultural activities
- Toxics from industrial activities
- Pollutants, including metals and petroleum hydrocarbons, in stormwater runoff from roads and other impervious surfaces

3.2.2 Groundwater

Groundwater is the water found underground in the spaces of saturated soil and rock. A saturated soil or rock layer with spaces that allow water to move through it is called an aquifer. Aquifers may be confined or unconfined. A confined aquifer is bound by impermeable layers (e.g., rock or clay) above and below it and is usually under pressure. Unconfined aquifers have no upper confining layer; the top of the aquifer is the water table that is in equilibrium with atmospheric pressure and rises and falls in response to recharge or discharge.

[1] Available at: https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Assessment-of-state-waters-303d.

Groundwater recharge occurs when water from the surface (e.g., rain or snowmelt, or surface waterbodies) seeps downward to groundwater. Groundwater flow is influenced by topography and generally moves toward surface water drainages and marine waterbodies.

There are seven principal aquifers in Washington as identified in the USGS Groundwater Atlas of the United States (USGS 2000). The study area for this analysis includes land overlying portions of most of these aquifers, as shown in Figure 3.

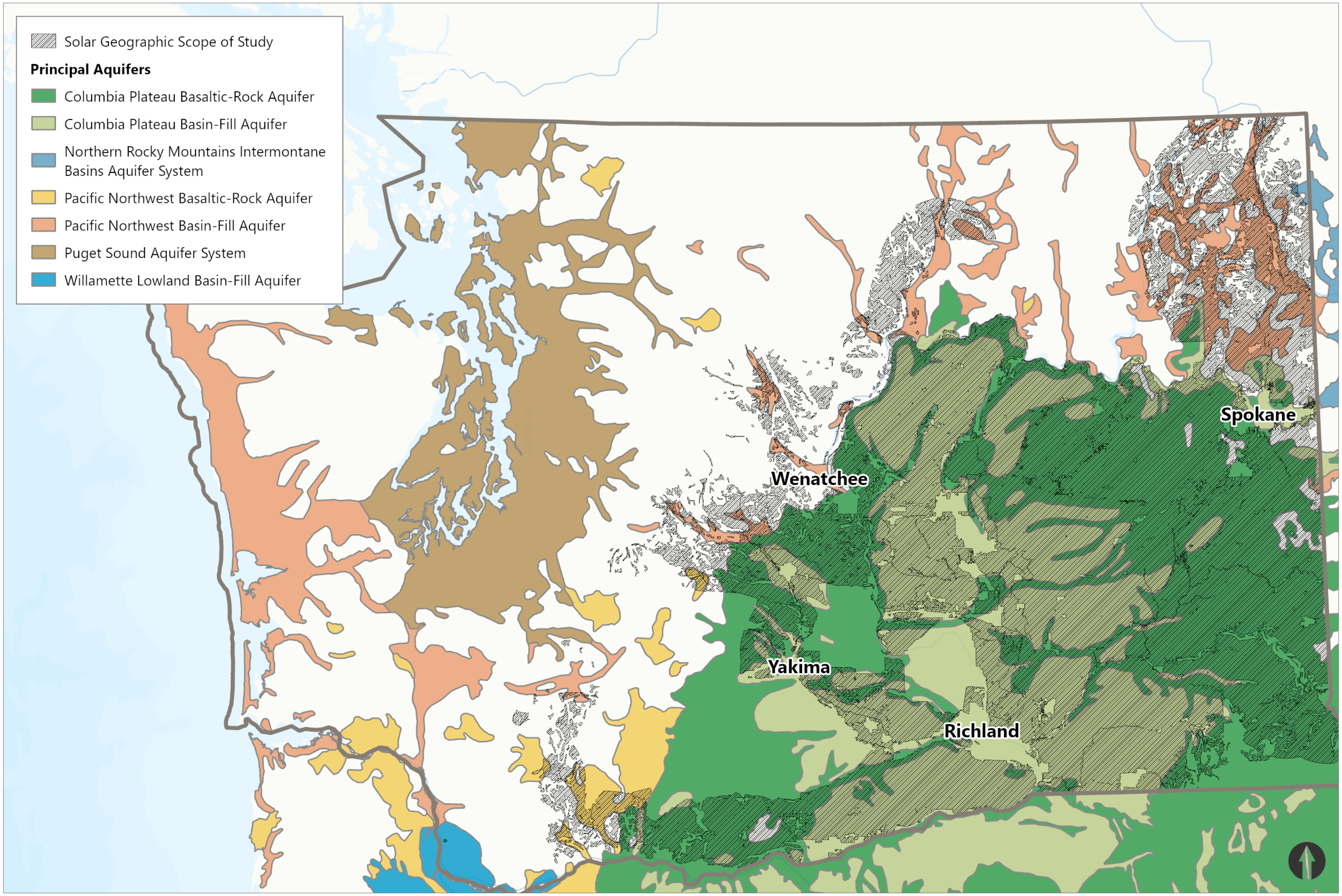

Figure 3. Principal aquifers in Washington

Data source: USGS 2021

Most of the study area in eastern Washington is on lands with Columbia Plateau basaltic-rock and Columbia Plateau basin-fill aquifers. Smaller portions of the study area include areas with the Pacific Northwest basin-fill aquifer, Pacific Northwest basaltic-rock aquifer, and Puget Sound aquifer system. Portions of the study area are on lands identified by USGS as “other rocks that are minimally permeable” (USGS 2000).

USEPA administers a sole-source aquifer (SSA) program through its authorities under the federal Safe Drinking Water Act of 1974 (Section 1424[e]). SSAs are defined as aquifers that supply at least 50% of the drinking water for its service area and for which there are no reasonably available alternative drinking water sources should the aquifer become contaminated. Projects within SSAs that received federal funding must undergo USEPA review to ensure the projects will not contaminate the SSA.

USEPA has designated 13 SSAs in Washington (USEPA 2024), three of which are in the study area for this analysis (Figure 4):

- Spokane Valley-Rathdrum Prairie Aquifer Source Area, which is located in Spokane County in the eastern portion of the study area.
- Lewiston Basin Aquifer Area, which is located in Asotin and Garfield counties and overlaps with the southeastern portion of the study area.
- Cedar Valley Aquifer Source Area, which is located in King County and overlaps with a small portion of the western part of the study area.

Cities and counties in Washington protect groundwater resources by establishing critical aquifer recharge areas, as required by the state’s Growth Management Act. Development activities within critical aquifer recharge areas are regulated by city and county critical area ordinances and codes. These codes establish standards and review processes intended to protect a community’s drinking water by preventing pollution and maintaining supply.

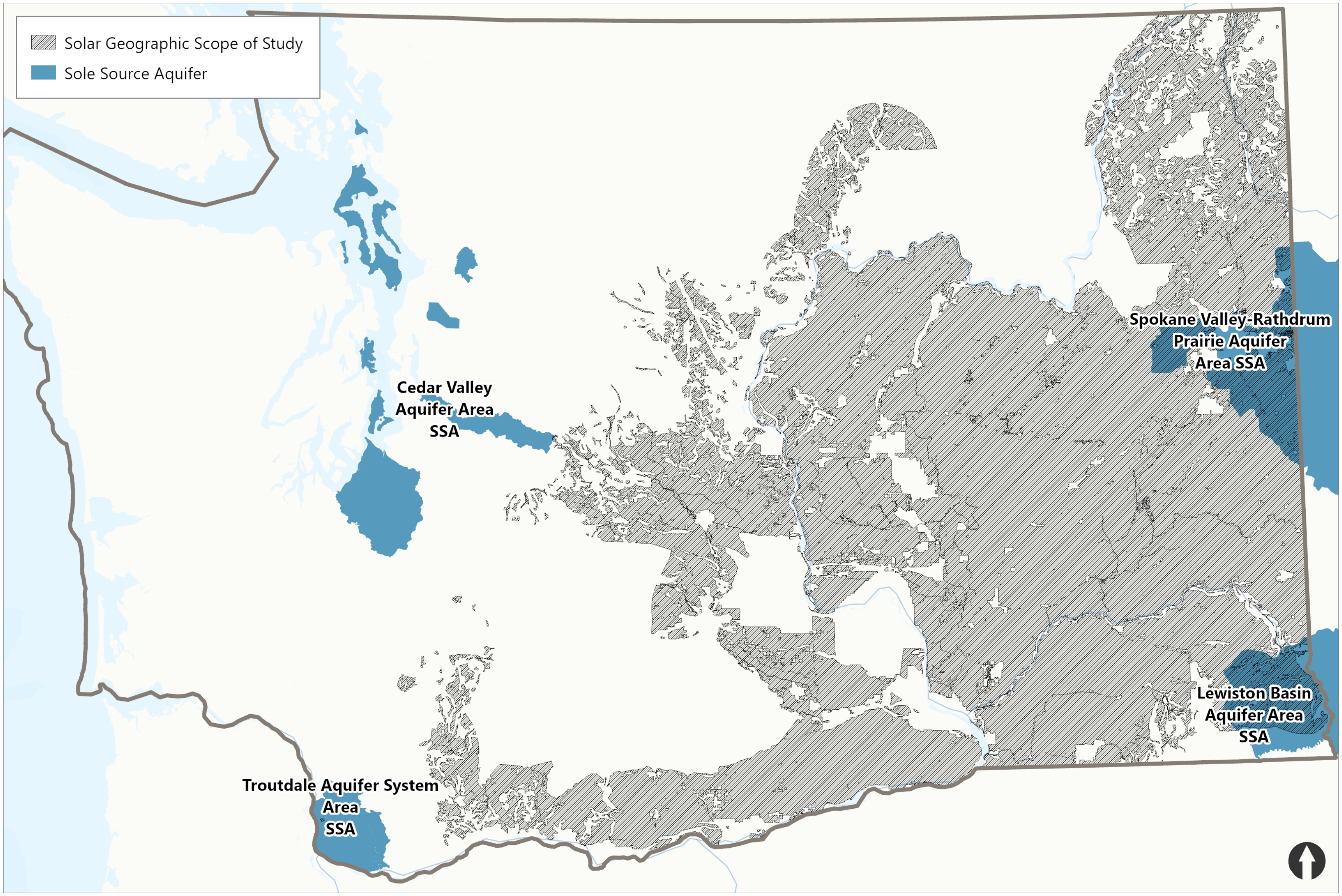

Figure 4. Sole-source aquifers that intersect the solar study area

Data source: USEPA 2024

3.2.3 Water availability and water rights

Across the study area, water availability varies by location and is dependent on many factors such as local hydrology and climate conditions (precipitation, air temperature, snowpack), land uses, and existing water rights including minimum instream flows. Ecology has responsibilities for managing waters of the state, including issuing rights to use water while protecting instream resources for public benefit. Water rights in Washington are issued based on a prior appropriation system, whereby a senior water rights holder who established a right first cannot be impaired by a junior water rights holder who was granted rights later.

USGS compiles and publishes data on water withdrawals by state, tracking use trends over time. For the most recent publication reporting 2015 data (USGS 2018), total water withdrawals in Washington were estimated to be approximately 4,255 million gallons per day across eight use categories, ranked as follows:

- Irrigation 59%
- Public Supply 20%
- Industrial 10%
- Aquaculture 6%
- Domestic 3%
- Thermoelectric 1%
- Livestock 1%
- Mining < 1%

While irrigation and public supply comprise nearly 80% of the state's water use overall, water use differs substantially between western and eastern Washington. The dominant water use in the western part of the state, where most of the state's population resides, is public supply. In the drier and more sparsely populated eastern portions of the state, where much of the state's agricultural production is based, crop irrigation is by far the dominant water use category. The areas of highest water use in the state are in central Washington, for crop irrigation (USGS 2018).

In addition to water rights for withdrawals, water availability is influenced by requirements to maintain minimum instream flows. Washington State law requires that streamflows be managed in a way that protects instream resources and values including fish and wildlife, Tribal resources, water quality, recreation, aesthetics, and navigation. Ecology has established by rule minimum instream flows and stream closures for many surface waters—covering nearly half of the state's watersheds and including the Columbia River—to accomplish this. Ecology considers instream flow requirements and closed waterbodies in its review of new water rights applications, and if approved, junior water right holders typically see their rights curtailed during periods when minimum instream flows are not met (e.g., during dry summer low-flow periods). Areas within basins within the study area that have instream flows and stream closures established are mapped by Ecology on their Instream Flow Rule Status map. Ecology conditions new permits to ensure that instream flow levels are protected and stream closures are maintained (Ecology 2024c).

Water availability varies throughout the state and is broadly tracked by Ecology and USGS. Precipitation, a key component influencing water availability, has become less predictable due to human-induced climate change (Stanford University 2021). In addition to physical availability, water availability is dependent upon the legal availability as dictated by instream flow requirements and water rights held by others within each watershed, sub-basin, aquifer, or similar body of water. Water availability for a proposed project can be understood through review of the WRIA. In many areas of the state, Ecology has designated rules that require new uses of water be fully mitigated or balanced through return of an equal amount of water to the watershed (Ecology 2024d).

3.2.4 Wetlands

Wetlands are waters of the state and are a specific type of water resource that often occur in transitional areas between terrestrial and aquatic systems. They include areas that are commonly referred to as swamps, marshes, bogs, and fens. Wetlands are characterized as areas where the underlying water table is at or near the soil surface (saturated) or where the ground is covered by shallow water (inundated) for an extended duration during the growing season. Such conditions result in the development of anaerobic (low-oxygen) conditions in the upper part of the soil column and the formation of hydric soils. Wetlands also support hydrophytic or "water-loving" vegetation, which can include herbs, shrubs, vines, and trees that are specifically adapted to growing in saturated or flooded soil conditions.

Wetlands can occur in and adjacent to stream and river channels, on floodplains, in low-lying areas and depressions, around the edges of ponds and lakes, on slopes, and in estuaries and coastal areas. They are often supported by perennial water sources such as springs, permanently flowing streams, or permanent waterbodies. However, wetlands can also occur in association with intermittent or ephemeral waters including seasonally flowing drainageways and vernal pools. Estuarine wetlands, found in brackish water in estuaries where freshwater meets saltwater, do not occur in the study area.

Wetlands occur throughout the study area where utility-scale solar projects are considered. However, unlike many streams, rivers, lakes, and marine waters whose locations and boundaries are often evident and relatively well mapped, there is no detailed single source that identifies and maps the presence, extent, and condition of all wetlands. Remote mapping of wetlands using aerial photography and satellite imagery is often challenging because the most visible aspects of wetlands, vegetation cover and hydrology, are highly variable and often change both seasonally and over longer periods in response to variations in climate and other factors such as land use. The presence of hydric soils is something that must be determined by direct observation in the field and is not something that can be detected remotely.

As such, developers of utility-scale solar energy facilities would be required to conduct quantitative analyses and site surveys (e.g., wetland determination or delineations, wetland rating and functions and values assessments, critical area assessments) to determine the extent, type, and category of wetlands on and around potential project sites, and the width and condition of associated wetland buffers. Information on the potential occurrence of wetlands in the landscape is available from the following sources:

- U.S. Fish and Wildlife Service's National Wetlands Inventory (USFWS 2024)
- Ecology's 2016 Modeled Wetland Inventory (Ecology 2016)[2]
- USGS National Hydrography Dataset (USGS 2024)
- Available local wetland inventories
- Aerial photography and Light Detection and Ranging imagery
- USGS topographic maps
- Natural Resources Conservation Service Web Soil Survey (USDA-NRCS 2024)

Although these sources can offer general information on the likelihood of a site to support wetlands, they do not provide a definitive indication of the presence or absence of wetlands. The definitive presence of wetlands and a demarcation of their boundaries can only be determined through a wetland delineation performed in accordance with 1987 *Corps of Engineers Wetland Delineation Manual* (1987 Manual; Environmental Laboratory 1987) and the appropriate regional supplement.[3]

Wetlands provide a number of important ecosystem functions, including habitat for terrestrial, aquatic, and amphibious species; water quality improvement; flood flow reduction/protection; shoreline stabilization; groundwater recharge; and streamflow maintenance (Ecology 2023). Many of these functions, such as flood flow reduction and shoreline stabilization, are particularly valuable to humans. This technical resource report focuses on hydrological wetland functions and values, including those related to water quality, flood protection, shoreline stabilization, and groundwater recharge. Wetland functions and values associated with the provision of habitat for aquatic and terrestrial species are addressed in the *Biological Resources Technical Report*.

Because of their ecological importance and value to humans, wetlands are regulated under various federal, state, and local laws including Sections 401 and 404 of the CWA, the Washington State Water Pollution Control Act, and county and municipal critical areas ordinances. Although the definitions of the jurisdictional limits of wetlands are similar under these various laws, there are differences in whether or not a wetland is subject to federal or state regulation. In particular, federal regulations typically only apply to those wetlands that are directly connected to certain surface waters that are considered to be waters of the United States. Those wetlands determined to be non-federally regulated are generally regulated under state and local laws.

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[2] The Ecology (2016) Modeled Wetland Inventory only covers the western portion of the state.

[3] Two regional supplements to the 1987 Manual are applicable to Washington: (1) *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (USACE 2010); and (2) *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008).

As part of state and local regulation of wetlands in Washington, wetlands are rated and categorized using the Washington State Wetland Rating System, which was developed by Ecology. The rating system includes specific regional methods for the western (Hruby and Yahnke 2023) and eastern (Hruby 2014) portions of the state. These methods are designed to consider regional differences in climate, landforms, hydrology, and wetland types that are characteristic of those areas. Ecology's wetland rating system is used to differentiate wetlands based on their sensitivity to disturbance, significance in the watershed, rarity, ability to be replaced, and the beneficial functions they provide to society. The rating system evaluates wetlands on their ability to provide water quality improvement, hydrologic, and wildlife habitat functions based on the wetland's physical characteristics (site potential), surrounding environment (landscape potential), and the importance of those functions to humans (value) in the vicinity. The categories derived using the rating system include the following:

- **Category I wetlands** represent a unique or rare wetland type, are more sensitive to disturbance, are relatively undisturbed, or contain ecological attributes that provide a high level of functions. These types and functions are very difficult to replace.
- **Category II wetlands** provide high levels of some functions. These types and functions are very difficult to replace.
- **Category III wetlands** have moderate levels of functions. They have been disturbed in some ways and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands.
- **Category IV wetlands** have the lowest levels of functions and are often heavily disturbed.

Wetland categories are also used by local entities to assign protective buffers to wetlands under their critical areas regulations and Shoreline Master Programs (SMPs).

Because Category I and II wetlands typically represent relatively unique or rare wetland types that are difficult to replace and that provide high levels of function, any impacts to those wetland types would be difficult to compensate for and would be determined on a case-by-case basis. As shown in Table 4, Ecology has identified typical Category I and II wetlands for both the eastern and western portions of the state. Based on the geographic area of study for solar facilities, some western Washington wetland types (e.g., estuarine, interdunal, and coastal lagoons) are unlikely to occur where projects may be sited.

Table 4. Typical Category I and II wetlands in eastern and western Washington

Regional wetland category descriptions
Eastern Washington Category I wetlands
Alkali Wetlands: Wetlands characterized by the presence of shallow saline water with a high pH. Such wetlands provide primary habitat for several species of migratory shorebirds and are also heavily used by migratory waterfowl. They also support unique plants and animals not found anywhere else in eastern Washington, including important pollinators (e.g., alkali bees) that are vital to agriculture in the western United States.
Wetlands of High Conservation Value: Wetlands previously called Natural Heritage Wetlands that have been identified by the Washington Natural Heritage Program as important ecosystems for maintaining plant diversity in the state.

Regional wetland category descriptions
Bogs and Calcareous Fens: *Bogs:* Wetlands with peat soils and a low pH (typically < 5) that support plants and animals specifically adapted to such conditions. Bogs do not tolerate changes or disturbance well, with even minor changes in water quality or nutrient inputs potentially resulting in major adverse effects on the plant and animal communities. They are also extremely slow to develop. *Calcareous Fens:* Wetland with peat soils that exhibit neutral or alkaline conditions (pH > 5.5) that are maintained by groundwater rich in calcium and magnesium bicarbonates (or sometimes calcium and magnesium sulfates) and that support rare plants and animals. Considered to be one of the rarest wetland types in the United States and one of the rarest peat wetland types in Washington. Found only in north-central to northeastern part of the state.
Mature and Old-growth Forested Wetlands with Slow-growing Trees: Wetlands containing mature or old-growth forested wetlands that are over 0.25 acre and dominated by slow-growing tree species such as redcedar (*Thuja plicata*), Alaska yellow cedar (*Chamaecyparis nootkatensis*), pines (mostly western white pine, *Pinus monticola*), western hemlock (*Tsuga heterophylla*), Oregon white oak (*Quercus garryana*), and Engelmann spruce (*Picea engelmannii*).
Forests with Aspen Stands: Forested wetlands that include quaking aspen (*Populus tremuloides*) stands. Aspen stands are a WDFW Priority Habitats and Species habitat.
Wetlands that Perform Many Functions Very Well: Wetlands scoring 22 points or more (out of 27) from the rating of functions.
Eastern Washington Category II wetlands
Forested Wetlands in the Floodplains of Rivers: Forested wetlands in the floodplain that are critical to the proper functioning and dynamic processes of rivers, including influencing channel form and providing habitat for many aquatic species.
Mature and Old-growth Forested Wetlands with Fast-growing Trees: Mature and old-growth forested wetlands with over 0.25 acre of forest dominated by fast-growing native trees such as red alder (*Alnus rubra*), cottonwood (*Populus* spp.), willow (*Salix* spp.), quaking aspen, and birch (*Betula* spp.)
Vernal Pools: Vernal pool ecosystems are formed when small depressions in the scabrock or in shallow soils fill with snowmelt or spring rains. They retain water until the late spring when they dry out as a result of reduced precipitation and increased evapotranspiration. Vernal pools hold water long enough throughout the year to allow some strictly aquatic organisms to flourish, but not long enough for the development of typical wetland characteristics.
Wetlands that Perform Functions Well: Wetlands scoring between 19 and 21 points (out of 27) on the questions related to functions. Includes wetlands judged to perform most functions relatively well or one group of functions very well and the other two moderately well.
Western Washington Category I wetlands
Large Undisturbed Estuarine Wetlands: Relatively undisturbed estuarine wetlands that are larger than 1 acre.
Wetlands of High Conservation Value: Wetlands previously called Natural Heritage Wetlands that have been identified by the Washington Natural Heritage Program as important ecosystems for maintaining plant diversity in the state.
Bogs: Wetlands with peat soils and a low pH (typically < 5) that support plants and animals specifically adapted to such conditions. Bogs do not tolerate changes or disturbance well, with even minor changes in water quality or nutrient inputs potentially resulting in major adverse effects on the plant and animal communities. They are also extremely slow to develop.
Wetlands with Mature/Old-growth Forests: Mature and old-growth forested wetlands over 1 acre in size.

Regional wetland category descriptions
Wetlands in Coastal Lagoons: Relatively undisturbed wetlands in coastal lagoons (shallow bodies of water that are partly or completely separated from the sea by a barrier beach) that are larger than 0.1 acre.
Interdunal Wetlands Larger than 1 Acre that Score High (8 or 9 points) for Habitat Functions: Interdunal wetlands are a type of wetland that form in the deflation plains and swales that are geomorphic features in areas of coastal dunes. These dune forms are the result of the interaction among sand, wind, water, and plants. For the purpose of rating, any wetlands that are located west of the upland boundary mapped in 1889 (western boundary of upland ownership) are considered to be interdunal.
Wetlands that Perform Functions at High Levels: Wetlands scoring 23 points or more (out of 27) on the questions related to functions are Category I wetlands.
Western Washington Category II wetlands
Smaller Estuarine Wetlands: Any estuarine wetland smaller than 1 acre, or those that are disturbed and larger than 1 acre.
Wetlands that Perform Functions Well: Wetlands scoring between 20 and 22 points (out of 27) on the questions related to functions. Includes wetlands judged to perform most functions relatively well or one group of functions very well and the other two moderately well.
Interdunal Wetlands Larger than 1 Acre or those in a Mosaic: Interdunal wetlands larger than 1 acre and that score 7 or lower for habitat, or those found in a mosaic of wetlands and dunes larger than 1 acre.

Source: Hruby 2014; Hruby and Yahnke 2023

Category III and IV wetlands are the most common types of wetlands in the state. As a result, most wetlands that would be encountered on potential development sites for projects are likely to be those types. Category III and IV wetlands typically provide moderate to low levels of functions and support relatively common plant and animal species. While such wetlands are still important (and regulated), they have likely experienced some level of disturbance and are easier to replace through compensatory mitigation. Permits that may be required for impacts to such areas are described in Section 3.3.

3.2.5 Floodplains

A floodplain is any land area susceptible to being inundated by floodwaters from any source. Frequently flooded areas are floodplains and other areas subject to flooding (WAC 365-190-110). Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps identify flood hazard areas regulated under the National Flood Insurance Program (NFIP). Special flood hazard areas are defined as areas that would be inundated by the flood event having a 1% chance of being equaled or exceeded in any given year (i.e., the “100-year” flood) and generally form the basis for state and local floodplain management regulations. Local governments (cities and counties) are responsible for managing development in floodplains under the NFIP, and construction and development activities that involve grading or structural improvements in the floodplain typically require a floodplain development permit from the local jurisdiction.

Flood risks vary across the study area based on location and setting. Information on flood risks for a given site should be evaluated using FEMA's Risk Mapping, Assessment, and Planning (Risk MAP) program tools available on the FEMA website.[4]

3.3 Potentially required permits and approvals

The following permits related to water resources would potentially be required for construction, operation, or decommissioning activities for typical solar energy projects:

- **Clean Water Act Section 401 Water Quality Certification (Ecology/USEPA/Tribes):** This certification is required for any facility needing a federal permit or license that may result in discharges to waters of the United States, ensuring compliance with state water quality standards.
- **Clean Water Act Section 402 National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit (Ecology):** Required for construction that disturbs more than one acre of land and has potential to discharge stormwater to state surface waters or construction disturbance of any size that has the potential to be a significant contributor of pollutants or may be expected to cause a violation of any water quality standard (including groundwater standards). Requires Stormwater Pollution Prevention Plans (SWPPPs) be prepared and implemented to ensure compliance with state and federal water quality standards. The SWPPPs need to include best management practices (BMPs) from the most recent version of Ecology's Stormwater Management Manual for Eastern Washington or Stormwater Management Manual for Western Washington, depending on site location.
- **Clean Water Act Section 402 NPDES Industrial Stormwater Permit (Ecology):** Required to operate sites with certain industrial activities that could discharge stormwater pollutants to surface waters of the state or certain facilities that have the potential to be significant contributors of pollutants or may be expected to cause a violation of any water quality standard (including groundwater standards). Requires a SWPPP.
- **Clean Water Act Section 402 NPDES Individual Permit (Ecology):** Ecology prepares individual NPDES water quality permits for one entity when discharge characteristics are variable and do not fit a general permit category.
- **Clean Water Act Section 404 Permit (U.S. Army Corps of Engineers [USACE]):** Required for activities that involve the discharge of dredged or fill materials in waters of the United States, including streams and wetlands. The application for Section 404 permit coverage would need to document BMPs the developer will implement to avoid and minimize impacts to water resources.
- **Chapter 90.48 Revised Code of Washington (RCW) authorizations (Ecology):** Impacts on non-federally regulated waters, including wetlands, may require authorization to work in waters of the state from Ecology pursuant to Chapter 90.48 RCW (Water Pollution Control). Compensatory mitigation is required for any impacts.

[4] Available at: https://www.fema.gov/flood-maps/tools-resources/risk-map.

- **Coastal Zone Management Act Consistency (Ecology):** Required if the project is located in Washington's 15 coastal counties and could have reasonably foreseeable impacts on state coastal resources and uses. A notice of consistency with the state Coastal Zone Management Program is a condition of federal actions, including federal activities and the issuance of federal licenses and permits.
- **Environmental permits (e.g., critical areas, shorelines) (local agency):** Must be obtained for construction and development activities within designated critical areas and shorelines regulated by local jurisdictions. Projects would be reviewed under local critical areas ordinances and SMPs.
- **Floodplain Development Permit (local agency):** Needed for development activities including grading within special flood hazard areas mapped by FEMA.
- **Hydraulic Project Approval (HPA) (Washington Department of Fish and Wildlife [WDFW]):** Required for projects in, near, or over state waters that use, divert, obstruct, or change the natural flow or bed of any of the salt or fresh waters of the state. Ensures that construction is done in a way that protects fish and aquatic habitats.
- **Notice of Intent to Construct or Decommission a Well (Ecology):** Required for all drilling activities including, deepening, alteration, reconstruction, or decommissioning of a well.
- **State Waste Discharge Permit (Ecology):** Required for discharge to either groundwater or publicly owned treatment works.
- **Water Right Authorization (Ecology):** Needed to use any amount of surface water (stream, river, lake, spring) for any purpose. Also needed to withdraw groundwater from a well for any uses not covered by a groundwater permit exemption pursuant to RCW 90.44.050 (e.g., typically limits domestic and industrial uses to no more than 5,000 gallons per day each, although some areas are more restrictive). A new water right or change in water right would be reviewed by Ecology.

3.4 Utility-scale solar facilities

3.4.1 Impacts from construction and decommissioning

3.4.1.1 Surface water

3.4.1.1.1 Water quantity

Site characterization, construction, and decommissioning activities could impact surface water flows for projects that involve elements within or adjacent to waterbodies, such as for an access road crossing of a stream. Streamflows could be temporarily re-routed from their natural channels by diversions needed to construct such crossings. Permanent alterations to streams could occur if culvert installations are needed at access road crossings, which if not adequately designed and sized, could restrict streamflow conveyance. These impacts would be minimized by following design guidelines and adhering to water crossing regulations, including WDFW's Water Crossing Guidelines for fish-bearing streams.

Ground disturbance for construction could impact flow rates and volumes of surface runoff reaching nearby waterbodies. Vegetation clearing and soil compaction in site investigation and construction areas would reduce the land's potential to absorb and infiltrate precipitation, potentially leading to increases in stormwater peak flows.

Construction of operations and maintenance buildings and service roads would add impervious surface area, with building structures up to 5,000 square feet in size. The addition of impervious surfaces would increase surface water runoff from those areas and, depending on how stormwater drainage is managed, could permanently change the amount and timing of surface flows reaching nearby waterbodies.

In addition to increased stormwater runoff from impervious surface additions, construction of project elements could alter drainage patterns in other ways. Project changes in site topography from grading for site improvements, installation of access roads interrupting natural surface runoff patterns, and installation of utility trenches acting as a conduit for surface flow all affect how surface runoff moves across a site to nearby waterbodies. Additionally, the solar arrays themselves, which are assumed to cover up to 12,000 acres of ground, could impact local drainage patterns by redirecting where precipitation falls on the land (i.e., reducing precipitation that reaches the ground directly below each panel) and how it infiltrates or flows to surface waters. Structure removal at decommissioning would restore pre-project drainage patterns.

3.4.1.1.2 Water quality

Site characterization, construction, and decommissioning activities could adversely affect surface water quality in several ways. In-water construction for elements such as new stream crossings for roads could temporarily elevate stream turbidity levels from soil disturbance and temporary water management (e.g., bypassing and then re-introducing flows). Soil disturbance from establishing initial site access for geotechnical surveys or to install meteorological towers or from construction activity anywhere on a site could temporarily increase erosion potential and soil transport to receiving waters in runoff or by wind, contributing soil and associated pollutants such as metals and organics. The erosion potential of the soils, the proximity of disturbance to surface waters, and the size and nature of construction activity would all influence the potential for water quality issues from ground disturbance.

The presence of construction equipment and materials could increase the potential for associated pollutants to enter surface waters during in-water construction or through stormwater runoff from areas of upland construction. Typical construction equipment could include bulldozers, loaders, graders, mobile cranes, pumps, pile drivers, and trucks. Potential pollutants from operating such equipment would include fuel (gasoline and diesel fuel), oil, grease, coolant, and hydraulic fluid. If a photovoltaic panel breaks during transport or installation, chemicals could be released by leaching rainwater that falls on broken modules. This water could be transported in runoff and could eventually be transported to groundwater.

Fuel may be stored on the project site in an aboveground storage tank for equipment and vehicle use. Hazardous material storage requirements and federal requirements for projects storing more than 1,320 gallons of petroleum fuel would require secondary containment. For these types of quantities, spills would likely be to secondary containment or nearby soil and able to be cleaned up. Environmental health and safety impacts are discussed in the *Environmental Health and Safety Technical Resource Report*.

Construction would include on-site concrete mixing and pouring and could also include concrete production at on-site batch plants. Concrete work could create the potential for introducing high-pH discharges to surface waters if not properly managed, which could elevate in-water pH levels. Discharge of construction wastewater could increase flow rates, temperature, dissolved oxygen, or turbidity of receiving surface waters.

During decommissioning, demolition of concrete pads and foundations could result in water coming into contact with freshly exposed concrete surfaces and debris/dust, which could lead to elevated water pH levels. Demolition of transformers could result in accidental releases of oil used for coolant, which could reach nearby surface waters. Temporary ground disturbance from structure and access road removal, and from site grading to restore original grades after structure and road removal, would temporarily increase the erosion potential of the site and increase the potential for exposed soils to reach nearby waterbodies through runoff or by wind. Revegetation of temporary disturbance areas would limit the length of time soils are exposed.

Developers would be required to complete activities in compliance with applicable permits such as an NPDES permit and implement BMPs to manage surface water flows and runoff. Implementation of permit requirements would reduce impacts to surface water quality. Any blasting adjacent to waters, including wetlands, would also require site-specific BMPs.

Through compliance with laws and permits and with the implementation of measures to avoid and reduce impacts, construction and decommissioning activities would likely result in **less than significant impacts** on surface water.

3.4.1.2 Groundwater

Site characterization and construction—including groundwater or geotechnical drilling and testing to gather information or construction of foundations for buildings and electrical substations—would include subsurface excavation, fill, and concrete work, which could potentially require dewatering during construction. Such activities would depend on the site but could locally affect shallow groundwater flows to approximately the depth of the excavation.

The construction of new impervious surfaces in the form of buildings (up to 5,000 square feet for each project) and access roads would locally change surface-to-groundwater interactions and reduce groundwater recharge capability within those footprints. These make up a small portion of a project site. This would result from impervious surfaces preventing infiltration of rainfall and snowmelt in the impervious surface footprints and directing runoff to locations adjacent to those footprints. The installation of new solar panels would have a similar effect but to a lesser extent, with solar panels reducing precipitation reaching the ground directly below the panels but maintaining infiltration capabilities of the underlying ground.

Some projects may include on-site water well installation and groundwater extraction to support construction and would require a water right (see Section 3.4.1.3). Projects using groundwater may result in localized water table drawdown.

During decommissioning, removal of structures and their foundations, access roads, and solar panel arrays and restoration to more natural, pre-project conditions would allow surface-groundwater interactions, including infiltration of rain and snowmelt and groundwater recharge.

Through compliance with laws and permits and with the implementation of measures to avoid and reduce impacts, construction and decommissioning activities would likely result in **less than significant impacts** on groundwater.

3.4.1.3 Water availability and water rights

Construction would create a water use need for supplying drinking water to construction workers, which are estimated to number between approximately 100 and 400 workers. Additionally, projects would require a water supply during construction for fugitive dust control, equipment cleaning, and concrete work. Water for some projects may be available from existing municipal sources or may be transported by truck to the site. Other projects may require obtaining water from new surface water diversions or groundwater withdrawals.

A water right would be required prior to diversions of surface water for construction. Groundwater pumping would also require a water right if withdrawals exceeded groundwater permit exemption thresholds of 5,000 gallons per day for industrial uses. Water used to produce concrete and for other construction activities could likely exceed 5,000 gallons per day; this would require a water right. Water availability and the likelihood of obtaining new water rights for construction vary by location in the study area. Water rights may not be granted in watersheds that are already over-appropriated and subject to instream flow requirements that are often not met.

If projects need a water supply from ground or surface water on-site, they would be required to obtain a water right for construction water needs. Water availability will vary based on the project and location. If water is not physically and legally available, a water right will not be issued. If water is needed for a project and is not available, a project would not be able to operate.

Decommissioning activities would create a temporary demand for water supply that is similar in magnitude to the demand described for construction. Water would be needed for on-site workers and likely for fugitive dust control while ground disturbance for decommissioning is underway. Water supply could also be needed to irrigate site restoration plantings for some period after structures are removed and grading is complete until successful plant establishment.

A developer would need to have sufficient water rights for a project to be feasible, so the PEIS assumes adequate water is available. With this assumption, through compliance with laws and permits and with the implementation of measures to avoid and reduce impacts, construction and decommissioning activities would likely result in **less than significant impacts** on water availability or water rights.

3.4.1.4 Wetlands

Impacts to areas and functions of wetlands could occur during site characterization, construction, and decommissioning phases. Wetlands and regulated buffers may need to be cleared and/or filled for the construction of meteorological towers, staging/laydown areas, roads, solar array fields, gen-tie line corridors, and other supporting facilities. Roads and other infrastructure constructed in the vicinity of wetlands could introduce invasive plant species, change surface drainage patterns, and/or introduce soils or pollutants into adjacent wetlands via runoff.

Wetlands and regulated buffers may be present and the types of wetlands would be identified as part of the site characterization phase. The type, size, and extent of wetlands would determine the degree of potential impact. If wetland or regulated buffer impacts are likely, project developers comply with a mitigation sequencing process in order to achieve the state goal of no net loss of wetland acreage and function. For projects involving unavoidable impacts to wetlands and regulated buffers, compensatory mitigation will generally be required to ensure there is no net loss of wetland functions for wetlands and regulated buffers. A project would require an approved wetland mitigation plan before permits are issued.

The removal of solar arrays, supporting infrastructure, access roads, and culverted road crossings from wetlands (or areas adjacent to wetlands) during project decommissioning could introduce invasive plant species and temporarily increase erosion potential in those areas. Decommissioning activities could result in or increase soil compaction that could affect soil infiltration and alter drainage patterns.

Such impacts would be minimized by the implementation of erosion control measures and BMPs and via prompt revegetation and decompaction of disturbed soils. As with construction and operations, decommissioning work would increase the potential for spills and leaks of fuel and other vehicle fluids from construction equipment to enter wetlands and regulated buffers. Removal of project infrastructure and access roads could also alter drainage patterns on the site, potentially affecting wetlands that occur in the vicinity.

Through compliance with laws and permits and with the implementation of measures to avoid and reduce impacts, construction and decommissioning activities would likely result in **less than significant impacts** on wetlands.

3.4.1.5 Floodplains

Site characterization and construction activities could impact floodplains, such as an access road crossing of a stream. The majority of solar energy projects would not include construction of impermeable areas and would not be likely to affect floodplain functions.

Permanent alterations to waterbodies could occur with culvert installations at access road crossings, which could restrict natural surface water flow and floodplain functions for flood storage, soil transport, and large wood transport and could also restrict aquatic species movements. WAC 220-660-190 requires culverts for fish-bearing streams be designed to pass 100-year flood flow and debris. Development in floodplains is regulated under the NFIP through county and city code. Floodplain development permits are required to prevent development that would lead to alteration of floodplain functions, loss of storage, increase hazards, or cause a net rise in flood elevation during a 100-year flood.

During decommissioning, temporary work activity and ground disturbance in the floodplain could result in temporary impacts on floodplain functions. Floodplain functions could be restored to pre-project conditions following structure and road removal and restoration grading and planting.

Through compliance with laws and permits and with the implementation of measures to avoid and reduce impacts, construction and decommissioning activities would likely result in **less than significant impacts** on floodplains.

3.4.2 Impacts from operation

3.4.2.1 Surface water

Operation and maintenance would involve the on-site storage and use of potential pollutants including oil for electrical transformers (up to 600 gallons per transformer) and fuel and oil for generators to provide backup power. Fuel is expected to be stored in aboveground storage tanks with containment. If more than 1,320 gallons are stored on site, a project must have a plan to prevent, control, and respond to spills. Hazardous material storage requirements and federal requirements for projects storing more than 1,320 gallons of petroleum fuel would require secondary containment. For these types of quantities, spills would likely be to secondary containment or nearby soil and able to be cleaned up. Environmental health and safety impacts are discussed in the *Environmental Health and Safety Technical Resource Report*.

The addition of impervious surfaces for buildings and access roads, combined with on-site oil and fuel storage and the periodic presence of maintenance vehicles and equipment on the site, would create some potential for pollutants in stormwater discharges. Maintenance of facilities could also involve periodic use of herbicides to manage unwanted vegetation, which could impact water quality in receiving waterbodies if not applied properly. A study performed on electric vehicle fires identified runoff of contaminated firefighting water can affect water quality in surface and groundwaters (Washington State Patrol and State Fire Marshal’s Office

2025). Depending on proximity and soil surface conditions, water used in firefighting or from post-fire runoff may contain chemicals released from burned facilities that could impact receiving waterbodies.

Maintenance of solar panels could involve periodic washing of the panels with water, to remove particulates that accumulate on the surface of the panels. If water were to be applied excessively, runoff from panel washing could cause localized erosion and increase the potential for soil transport to nearby waterbodies. It is assumed that no surfactants would be used in panel washing.

Developers would be required to complete operational activities with standard BMPs and spill prevention measures and in compliance with applicable permits. Implementation of permit requirements would reduce impacts to surface water.

Through compliance with laws and permits and with the implementation of measures to avoid and reduce impacts, operation activities would likely result in **less than significant impacts** on surface water.

3.4.2.2 Groundwater

On-site storage and use of generator fuel and transformer oil present some risk of spills or releases of pollutants to the subsurface and could present a potential source of groundwater contamination. Buildings for operation could include sanitary wastewater discharges (e.g., from restrooms) to the subsurface through on-site septic systems. Septic systems could present risks of bacterial contamination of groundwater if not designed and maintained in accordance with local codes. A study performed on electric vehicle fires identified runoff of contaminated firefighting water can affect water quality in surface and groundwaters (Washington State Patrol and State Fire Marshal’s Office 2025). Depending on proximity and soil surface conditions, water used in firefighting or from post-fire runoff may contain chemicals released from burned facilities that could impact groundwater.

Through compliance with laws and permits and with the implementation of measures to avoid and reduce impacts, operation activities would likely result in **less than significant impacts** on groundwater.

3.4.2.3 Water availability and water rights

Water supply would be needed to operate and maintain solar energy projects for use in buildings and potentially to allow periodic washing of solar panels. If water is used for solar panel washing, a utility-scale facility could use approximately 16,000 to 114,000 gallons per year, per megawatt (BLM 2024). At the high end of water usage (including water for solar panel washing) for a 1,200-megawatt facility, this would total 136.8 million gallons of water per year. Water demand would vary based on panel size, soiling rates, and cleaning frequency. Based on these estimates, many facilities (especially large facilities) would exceed the 5,000 gallons per day industrial use threshold to qualify for a groundwater permit exemption in many locations in Washington. Such a withdrawal rate from an on-site well would require a water right. As an alternative to washing solar panels with water, waterless cleaning methods, including use of soft brushes, may be feasible for removing particulates from panel surfaces. Using dry cleaning methods would result in much lower overall facility water use.

A project developer would need to ensure there is sufficient water available for a project, both physically and legally. Water availability will vary based on the project and location. If water is needed for a project and is not available, a project would not be able to operate.

A developer would need to have sufficient water rights for a project to be feasible, so the PEIS assumes adequate water is available. With this assumption, through compliance with laws and permits and with the implementation of measures to avoid and reduce impacts, operation activities would likely result in **less than significant impacts** on water availability or water rights.

3.4.2.4 Wetlands

General operating procedures are unlikely to affect wetlands and regulated buffers because they typically involve relatively passive activities that do not readily alter the landscape once the infrastructure is installed. Potential water quality impacts on wetlands could occur during periodic washing of solar panels or rain events, which could create runoff that carries soils. Spills of pesticides, fuel, vehicle fluids, or other hazardous materials used or stored at a project could impact nearby wetlands if outside of containment.

Runoff from parking areas, buildings, and other project infrastructure or septic system discharges would also degrade water quality in adjacent wetland areas.

Maintenance activities such as routine mowing, vegetation removal in gen-tie line corridors, and access road maintenance would also affect wetlands and regulated buffers. Potential soil transport to nearby wetlands, resulting in decreased water quality and function, could occur as a result of periodic ground disturbance. Developers would be required to complete operational activities with applicable BMPs and spill prevention measures and in compliance with applicable permits. Implementation of permit requirements would reduce impacts to wetlands and regulated buffers.

Through compliance with laws and permits and with the implementation of measures to avoid and reduce impacts, operation activities would likely result in **less than significant impacts** on wetlands.

3.4.2.5 Floodplains

Potential operation and maintenance impacts on floodplains would be similar to those described previously for surface waters. Maintenance of project elements within floodplains could interfere with floodplain functions. For example, if vegetation maintenance at facilities and along access roads were to prevent natural vegetation from re-establishing, it could affect vegetation support for floodplain functions for water quality, habitat, and water velocity attenuation. Due to floodplain development permit requirements, project operation is not expected to lead to increased hazards, alterations to floodplain functions, or loss of floodplain storage that would cause a net rise in flood elevation during a 100-year flood.

Through compliance with laws and permits and with the implementation of measures to avoid and reduce impacts, operation activities would likely result in **less than significant impacts** on floodplains.

3.4.3 Measures to avoid, reduce, and mitigate impacts

The PEIS identifies a variety of measures to avoid, reduce, and mitigate impacts. These measures are grouped into five categories:

- **General measures:** The general measures apply to all projects using the PEIS.
- **Recommended measures for siting and design:** These measures are recommended for siting and design in the pre-application phase of a project.
- **Required measures:** These measures must be implemented, as applicable, to use the PEIS. These include permits and approvals, plans, and other required measures.
- **Recommended measures for construction, operation, and decommissioning:** These measures are recommended for the construction, operation, and decommissioning phases of a project.
- **Mitigation measures for potential significant impacts:** These measures are provided only in sections for which potential significant impacts have been identified.

3.4.3.1 General measures

- **Laws, regulations, and permits:** Obtain required approvals and permits and ensure that a project adheres to relevant federal, state, and local laws and regulations.

  Rationale: Laws, regulations, and permits provide standards and requirements for the protection of resources. The PEIS impact analysis and significance findings assume that developers would comply with all relevant laws and regulations and obtain required approvals.

- **Coordination with agencies, Tribes, and communities:** Coordinate with agencies, Tribes, and communities prior to submitting an application and throughout the life of the project to discuss project siting and design, construction, operations, and decommissioning impacts, and measures to avoid, reduce, and mitigate impacts. Developers should also seek feedback from agencies, Tribes, and communities when developing and implementing the resource protection plans and mitigation plans identified in the PEIS.

  ***Rationale*:** Early coordination provides the opportunity to discuss potential project impacts and measures to avoid, reduce, and mitigate impacts. Continued coordination provides opportunities for adaptive management throughout the life of the project.

- **Land use:** Consider the following when siting and designing a project:
  - Existing land uses

- Land ownership/land leases (e.g., grazing, farmland, forestry)
  - Local comprehensive plans and zoning
  - Designated flood zones, shorelines, natural resource lands, conservation lands, priority habitats, and other critical areas and lands prioritized for resource protection
  - Military testing, training, and operation areas

  ***Rationale*:** Considering these factors early in the siting and design process avoids and minimizes the potential for land use conflicts. Project-specific analysis is needed to determine land use consistency.

- **Choose a project site and a project layout to avoid and minimize disturbance:** Select the project location and design the facility to avoid potential impacts to resources. Examples include the following:
  - Minimizing the need for extensive grading and excavation and reducing soil disturbance, potential erosion, compaction, and waterlogging by considering soil characteristics
  - Minimizing facility footprint and land disturbances, including limiting clearing and alterations to natural topography and landforms and maintaining existing vegetation
  - Minimizing the number of structures required and co-locating structures to share pads, fences, access roads, lighting, etc.

  ***Rationale*:** Project sites and layouts may differ substantially in their potential for environmental impacts. Thoughtful selection of a project site and careful design of a facility layout can avoid and reduce environmental impacts.

- **Use existing infrastructure and disturbed lands, and co-locate facilities:** During siting and design, avoid and minimize impacts by:
  - Using existing infrastructure and disturbed lands, including roads, parking areas, staging areas, aggregate resources, and electrical and utility infrastructure
  - Co-locating facilities within existing rights-of-way or easements
  - Considering limitations of existing infrastructure, such as water and energy resources

  ***Rationale*:** Using existing infrastructure and disturbed lands and co-locating facilities reduces impacts to resources that would otherwise result from new ground disturbance and placement of facilities in previously undisturbed areas.

- **Conduct studies and surveys early:** Conduct studies and surveys early in the process and at the appropriate time of year to gather data to inform siting and design. Examples include the following:
  - Geotechnical study
  - Habitat and vegetation study
  - Cultural resource survey

- Wetland delineation

*Rationale***:** Conducting studies and surveys early in the process and at the appropriate time of year provides data to inform siting and design choices that avoid and reduce impacts. This can reduce the overall timeline as well by providing information to agencies as part of a complete application for environmental reviews and permits.

- **Restoration and decommissioning:** Implement a Site Restoration Plan for interim reclamation following temporary construction and operations disturbance. Implement a Decommissioning Plan for site reclamation at the end of a project. Coordinate with state and local authorities, such as WDFW, county extension services, weed boards, or land management agencies on soil and revegetation measures, including approved seed mixes. Such plans address:
  - Documentation of pre-construction conditions and as-built construction drawings
  - Measures to salvage topsoil and revegetate disturbed areas with native and pollinator-supporting plants
  - Management of hazardous and solid wastes
  - Timelines for restoration and decommissioning actions
  - Monitoring of restoration actions
  - Adaptive management measures

*Rationale***:** Restoration and decommissioning actions return disturbed areas to pre-construction conditions, promote soil health and revegetation of native plants, remove project infrastructure from the landscape, and ensure that project components are disposed of or recycled in compliance with all applicable laws and regulations.

- **Cumulative impact assessment:** Assess cumulative impacts on resources based on reasonably foreseeable past, present, and future projects. Identify measures to avoid, reduce, and mitigate cumulative impacts. Consider local studies and plans, such as comprehensive plans.

*Rationale***:** Cumulative impacts can result from incremental, but collectively significant, actions that occur over time. The purpose of the cumulative impacts analysis is to make sure that decision-makers consider the full range of consequences under anticipated future conditions.

3.4.3.2 Recommended measures for siting and design

- Conduct a hydrologic study of the site to understand the local surface water and groundwater hydrology. Identify site surface runoff and drainage patterns and groundwater levels and flow direction.
- Conduct site reconnaissance to identify the potential presence of wetlands, seeps, and intermittent or ephemeral waters, including seasonally flowing drainageways and vernal pools, that may be present on the site.

- Perform a wetland delineation on the wetlands present on the project site, including access roads and gen-tie line corridors. Delineations need to identify and map the boundaries of wetlands present on the site and indicate where wetlands continue off the site. Assess wetland functions and rate all on-site wetlands using the appropriate Washington Wetland Ratings System method to determine their category and local buffer requirements. Examine adjacent properties for the presence of off-site wetlands that could be affected by project construction and operation, map their locations, and identify any off-site connections to surface waters.
- Identify sources of water for project water needs, including for firefighting. Examine existing water rights and alternative sources of water. Water availability for new water rights varies dramatically across the state. Many areas have administrative rules that close or limit water sources for new consumptive water rights. Contact Ecology's water rights program early for new or modified water rights. Some WRIAs have more restrictive administrative groundwater permit exemptions, which the developer should verify for the project location early in the planning process. Local water purveyors may have existing water right capacity to serve.
- Avoid siting structures and roads within waterbodies, wetlands, associated buffers, shorelines of the state, mapped floodplains and other frequently flooded areas, and critical aquifer recharge areas. Where these areas cannot be avoided, span waterbodies (e.g., road bridges or aboveground lines) or use horizontal directional drilling to cross beneath (e.g., underground lines).
- Design structures located within floodplains or other frequently flooded areas to not restrict or redirect flows from their natural flow path.
- Avoid siting structures in areas of known soil or groundwater contamination, or in proximity to impaired receiving waters.
- Avoid alteration of existing drainage patterns, especially in sensitive areas such as erodible soils or steep slopes.
- Avoid creating hydrologic conduits between two aquifers (Chapters 173-200 and 173-201A WAC).

3.4.3.3 Required measures

This section lists permits and approvals, plans, and other required measures for use of the PEIS, as applicable. See Section 3.3 for more detailed information on potentially required permits and approvals.

- Clean Water Act Section 401 Water Quality Certification (Ecology/USEPA/Tribes)
- Clean Water Act Section 404 Permit (USACE)
- Clean Water Act Section 402 NPDES Construction Stormwater Permit (Ecology)
- Clean Water Act Section 402 NPDES Industrial Stormwater Permit (Ecology)
- Clean Water Act Section 402 NPDES Individual Permit (Ecology)
- Chapter 90.48 RCW authorization to work in waters of the state (Ecology)
- Coastal Zone Management Act Consistency (Ecology)
- Environmental permits (e.g., critical areas, shorelines) (local agency)

- Floodplain Development Permit (local agency)
- HPA (WDFW)
- Notice of Intent to Construct or Decommission a Well (Ecology)
- State Waste Discharge Permit (Ecology)
- Water Right Authorization (Ecology)
- Develop an SWPPP.
- Develop a Spill Prevention, Control, and Countermeasure Plan if the project has an aggregate storage capacity of oil greater than 1,320 gallons or is located where a discharge could reach a navigable waterbody.
- Develop a water quality monitoring and protection plan.
- Impacts to both jurisdictional and non-federally regulated wetlands require a wetland mitigation plan developed in accordance with Wetland Mitigation in Washington State.
- Restore pre-construction contours, decompact soil, and replant native hydrophytic vegetation in surface waters and wetlands in temporarily disturbed areas.

3.4.3.4 Recommended measures for construction, operation, and decommissioning

- Use highly visible fencing/flagging around streams, wetlands, and buffers to prevent unnecessary disturbance in sensitive areas and minimize the potential for downstream water quality impacts.
- Manage runoff from panel washing activities, and stormwater runoff from buildings, parking areas, and access roads. Properly maintain on-site sanitary wastewater systems to minimize water quality impacts on surface waters and wetlands from potential contaminants.
- Minimize impacts to water quality by working below the ordinary high water mark during the dry season when no rain is predicted.
- Implement water conservation techniques, including for dust control and panel washing. Consider using soil stabilizers to reduce water needs for dust suppression. Avoid use of polyacrylamide dust-control methods where there is potential for it to enter surface waters.
- If construction occurs near or within groundwater recharge areas, monitor activities to reduce the potential for contamination.

3.4.3.5 Mitigation measures

- No potential significant impacts identified.

3.4.4 Unavoidable significant adverse impacts

Through compliance with laws and permits and with the implementation of measures to avoid, reduce, and mitigate impacts described in Section 3.4.3, construction, operation, or decommissioning would have **no significant and unavoidable adverse impacts** on water resources.

3.5 Solar facilities with battery energy storage systems

3.5.1 Impacts from construction, operation, and decommissioning

The potential impacts on water resources described for projects without a co-located battery energy storage systems (BESS) also apply to construction, operations, and decommissioning of facilities with a co-located BESS.

Co-locating BESSs with solar energy facility development would require some additional construction-related ground disturbance and an increased building footprint relative to facilities with no BESS. Battery storage containers are typically 40 feet by 8 feet by 8.5 feet and installed on a concrete pad or concrete piles over gravel designed for secondary containment. A warehouse-type enclosure of a similar scale and size may also be used.

A BESS would add another stormwater consideration to a project and potentially another regulated element to be included in an Industrial SWPPP. Specific stormwater management controls during construction, operation, and decommissioning for each project would be dependent on the project design and project site.

National Fire Protection Association (NFPA) 855 and state regulations require fire and spill containment measures for spills and fire for certain battery types with liquid electrolytes (WAC 51-54A-0322 and 51-54A-1207). Additionally, lithium-ion BESS that are not listed under UL 9540 require a hazard mitigation analysis which includes an evaluation of potential energy storage system failures and safety-related impacts. Although the likelihood is remote, in the event of a BESS failure, there is a risk of environmental contamination from firefighting water. Emergency response actions are to allow the fire to burn to prevent water contaminated with pollutants to affect surface water and groundwater quality. However, firefighting water may be used on adjacent facility components to prevent fire spread. Firefighting water and post-fire runoff may be contaminated with hazardous materials, such as lithium, cobalt, and electrolytes. The potential for impacts from runoff increases if BESS are located close to surface waters, wetlands, or floodplains.

Spill response measures would be included in the project's SWPPP, Emergency Response Plan, and the BESS operations and safety manual as required by NFPA 855. Secondary containment measures would consider the volume of water to be contained, and the methods and materials used for containment and treatment. Impacts to earth resources are discussed in the Earth Resources Technical Report and hazardous materials are discussed in the *Environmental Health and Safety Technical Resource Report*.

Through compliance with laws and permits and with the implementation of measures to avoid and reduce impacts, the construction, operation, and decommissioning of facilities with a co-located BESS would likely result in **less than significant impacts** on water resources.

3.5.2 Measures to avoid, reduce, and mitigate impacts

Measures to avoid, reduce, and mitigate impacts are the same as those identified in Section 3.4.3, with addition of the following.

3.5.2.1 Recommended measures for siting and design

- BESS facilities and associated infrastructure should be located so as to prevent contamination of surface waters, floodplains, and wetlands, as well as buffer areas from runoff that may contain chemicals released from a fire and/or integrated fire suppression agents.

3.5.2.2 Recommended measures for construction, operation, and decommissioning

- Implement secondary spill and leak containment measures around BESS components for all battery types to prevent or minimize the spread of hazardous materials in the event of a failure. Examples include reinforced storage facilities and containment barriers to contain spills and leaks.
- Include spill response measures for BESS failure in the Emergency Response Plan and SWPPP.
- Develop and implement water quality and soil monitoring plans to monitor for contaminants in the event of a BESS failure.

3.5.3 Unavoidable significant adverse impacts

Through compliance with laws and permits and with the implementation of measures to avoid, reduce, and mitigate impacts described in Section 3.4.3, construction, operation, or decommissioning activities with a co-located BESS would have **no significant and unavoidable adverse impacts** on water resources.

3.6 Solar facilities that include agricultural uses

3.6.1 Impacts from construction, operation, and decommissioning

The potential impacts on water resources described for facilities in Section 3.4 generally apply to facilities combined with agricultural use for construction, operations, and decommissioning.

There are some ways the impacts for facilities with co-located agricultural use would differ from facilities without agricultural land use:

- There would be a combined demand for water that is higher than the same project with no agricultural use. For sites with existing agricultural use, the increase in water demand would only result from the addition of a solar project, as described in Section 3.4. For sites where the type of agricultural use is changed or where agriculture is added, there could be increased demand for water. The demand for water could be higher for a site with irrigated crop production and lower for a site for livestock grazing. This could place a higher need for considering water availability and water rights issues.

- Substances commonly associated with farm operations such as pesticides, fertilizers, and livestock waste could lead to increased pollutants in stormwater runoff.

Through compliance with laws and permits and with the implementation of measures to avoid and reduce impacts, the construction, operation, and decommissioning of facilities with a co-located agricultural use would likely result in **less than significant impacts** on water resources.

3.6.2 Measures to avoid, reduce, and mitigate impact

Measures to avoid, reduce, and mitigate impacts are the same as those identified in Section 3.4.3.

3.6.3 Unavoidable significant adverse impacts

Through compliance with laws and permits and with the implementation of measures to avoid, reduce, and mitigate impacts described in Section 3.4.3, construction, operation, or decommissioning activities with agricultural land use would have **no significant and unavoidable adverse impacts** on water resources.

3.7 No Action Alternative

Under the No Action Alternative, agencies would continue to conduct environmental review and permitting for utility-scale solar energy projects under existing state and local laws on a project-by-project basis.

The potential impacts would be similar to the impacts for the types of projects described above for construction, operation, and decommissioning, depending on project size and design, and would likely result in **less than significant** impacts.

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