

**Snake River – Reach 1                      Asotin County**

**Reach Description:** Reach 1 of the Snake River begins at the Washington/Oregon State Line and runs north to the Asotin city limits (river mile [RM] 176.2 to RM 147).

**Shoreline Jurisdiction:** 1,718 acres, 29.2 miles



Source: <https://fortress.wa.gov/ecy/coastalatlus/UICoastalAtlas/Tools/ShorePhotos.aspx>

**Subreaches (SR); see Maps C-1 and C-2**

SR 1a: Begins at the Washington/Oregon State border and ends near the mouth of the Grande Ronde River; 350 acres, 7.1 miles

SR 1b: Begins near the mouth of the Grande Ronde River and ends at Box Gulch; 231 acres, 4.2 miles

SR 1c: Begins at Box Gulch and ends just north of Couse Creek; 463 acres, 7.6 miles

SR 1d: Begins just north of Couse Creek and ends at the end of developed area south of Tenmile Creek; 333 acres, 5.2 miles

SR 1e: Begins at the developed area south of Tenmile Creek and ends at the start of the developed area near the mouth of Tenmile Creek; 68 acres, 1.1 miles

SR 1f: Begins at the start of the developed area near the mouth of Tenmile Creek and ends at the end of the developed area near Tenmile Rapids; 165 acres, 2.5 miles

SR 1g: Begins at the end of the developed area near Tenmile Rapids and ends at the south end of the City of Asotin; 107 acres, 1.5 miles.

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| <b>CHARACTERISTICS</b>  |                      |
| <p><b>Ownership:</b></p> <p>SR 1a: Ownership is almost entirely public, split between Washington State Department of Natural Resources, U.S. Bureau of Land Management (BLM), and U.S. Department of Energy (DOE).</p> <p>SR 1b: Ownership is about 50% public (Washington Department of Fish &amp; Wildlife [WDFW] and DOE) and 50% private.</p> <p>SR 1c – 1g: Ownership is mostly private, with small areas of BLM ownership.</p>  |                      |
| <p><b>Land Use/Current Shoreline Master Program (SMP):</b></p> <p>Current land use designation:</p> <ul style="list-style-type: none"> <li>Land uses have not been designated. Existing uses in the entire reach are recreation, agriculture, and residential.</li> </ul> <p>Current zoning designation</p> <ul style="list-style-type: none"> <li>The entire reach is zoned Rural Residential.</li> </ul> <p>Current SMP environment designation:</p> <ul style="list-style-type: none"> <li>SR 1a is designated natural with a small portion of rural at the mouth of the Grande Ronde River.</li> <li>SR 1b is designated Rural and Conservancy.</li> <li>SR 1c – 1g is designated Conservancy.</li> </ul> |                      |
| <p><b>Existing Land Cover/Development:</b></p> <p>Reach 1 of the Snake River is mostly undeveloped. Steep hillsides limit development. There are a handful of private residences along the shoreline and several campgrounds and boat launches. The rest of the reach is open space.</p>  |                      |
| <p><b>Geomorphic Character:</b></p> <p><b>Description:</b> The river is impounded by Little Granite Dam, which forms Lower Granite Lake. The lake shoreline mostly consists of Grande Ronde Basalt, continental sedimentary rocks, and outburst flood deposits.</p> <p><b>Hardened Banks:</b> Approximately 15,025 linear feet of artificial hardened banks exist along Reach 1.</p>  |                      |
| <p><b>Flooding and Geological Hazards:</b></p> <p><b>Flooding:</b> Federal Emergency Management Agency (FEMA) floodplains are mapped throughout this reach. Floodplains are relatively narrow throughout the reach. Lower Granite Dam pool begins in SR 1g, which helps maintain a generally stable water surface elevation.</p> <p><b>Geological Hazards:</b> Severely erodible soils can be found along the most length of SR 1a – 1c and SR 1e. Moderately erodible soils exist in SR 1d and 1f. SR 1g does not contain any erosion hazards. There are a few places with moderate to high liquefaction susceptibility in SR 1a, 1b, 1d, and 1g. Landslide hazards exist in</p>                             |                      |

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| SR 1g where slopes are steeper than 15% over underlying Columbia River Basalts.   |                      |
| <b>Existing Public Access:</b>  |                      |
| SR 1a:  |                      |
| <ul style="list-style-type: none"><li>• Corral Creek Road runs along the top of the bluff on the most southeastern end of this subreach and terminates at a private residence located on the Idaho shoreline.</li><li>• BLM owns portions of the shoreline in this subreach. BLM lands are “open to the public, unless closed,” so personal watercraft have many places to come ashore along this subreach.</li><li>• There is virtually no road access to the Washington State side of this subreach.</li></ul>  |                      |
| SR 1b:  |                      |
| <ul style="list-style-type: none"><li>• Snake River Road begins in this subreach (before it turns west down the Grande Ronde River) and runs the length of the subreach.</li><li>• Heller Bar (WDFW) is located near the mouth of the Grande Ronde River and provides boat launches, restrooms, and camping.</li><li>• There is a large WDFW parking area in the same vicinity as Heller Bar. Camping is allowed, but there is no restroom available.</li><li>• There are several places along this subreach where personal vessels could pull into the shoreline.</li><li>• There are several informal parking areas along Snake River Road in this subreach.</li><li>• The Idaho side of the Snake River has multiple roads along this subreach, but for the purposes of this report, they will not be addressed.</li></ul> |                      |
| SR 1c:  |                      |
| <ul style="list-style-type: none"><li>• Snake River Road runs the length of this subreach.</li><li>• There are multiple turn-outs on Snake River Road, which have parking and beach access.</li><li>• Buffalo Eddy is part of the Nez Perce National Historic Park. It is located 15 miles south of the Town of Asotin. There is a trailhead with water access. Visitors can observe petroglyphs.</li><li>• There is a primitive boat launch and truck/trailer parking area just upstream (south) of Buffalo Eddy.</li><li>• Couse Creek Road comes from the west and intersects Snake River Road at the end of this subreach. There is a primitive concrete boat launch and parking area but no restrooms or camping at this intersection.</li></ul>   |                      |
| SR 1d:  |                      |
| <ul style="list-style-type: none"><li>• Snake River Road runs the length of this subreach.</li><li>• Most of this subreach is privately held, so public access is limited.</li><li>• There are two areas where the road is directly adjacent to the shoreline. There are pull-offs and informal trails to the shoreline at these locations.</li><li>• There are several sandy bars along this subreach where personal vessels could come ashore.</li></ul>  |                      |
| <b>Identified Public Access Improvements:</b> Informal access areas along the Snake River Road need signage for   |                      |

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| <p>rules and access limitations, parking improvements, and clarification of ownership in some areas, as well as improved enforcement of existing rules.</p> <p><b>Public Access Opportunities:</b> Implement identified access improvements for informal areas. Also, road crossings provide some access; otherwise opportunities are limited in most of this reach because of steep banks and terrain.</p>   |                      |
| <b>ECOLOGICAL CONDITIONS</b>  |                      |
| <p><b>Water Quantity and Sediment:</b></p> <p>This reach has two active U.S. Geological Survey (USGS) gages. Gage No. 13317660 is located in SR 1a and has been active since 2004, and Gage No. 13334300 is located in SR 1b and has been active since 1958. Several tributaries drain into this reach, including the Grande Ronde River in SR 1b, Captain John Creek and Couse Creek in SR 1c, and Tenmile Creek in SR 1f. The mean annual flow recorded at Gage No. 13334300 for the period of record (1958-present) is 34,520 cubic feet per second (cfs), and the maximum discharge recorded is 195,000 cfs.</p> <p>Sediment is likely to accumulate in SR 1g where the Lower Granite Dam pool begins and water velocities begin to slow.</p>   |                      |
| <p><b>Water Quality:</b></p> <p>This reach requires a total maximum daily load (TMDL) for temperature in SR 1b and for pH in SR 1g. SR 1g is also listed as a water of concern for temperature and dissolved oxygen.</p>  |                      |
| <p><b>Habitat Characteristics and Priority Habitat Species (PHS) Presence:</b></p> <p>This reach includes feeding, resting, and nesting habitat for PHS migratory waterfowl. The Snake River in this reach supports a number of Endangered Species Act (ESA)-listed fish species, bighorn sheep, peregrine falcon, white-tailed deer, mountain quail, and other species that may be present in Asotin County as identified in the main text of the Inventory, Analysis, and Characterization (IAC) Report.</p> <p><b>SR 1a:</b> This subreach flows through a canyon of steep cliffs and bluffs, where the slope and accumulation of rocks and boulders along the shoreline generally prevents the establishment of wide riparian vegetation along the banks of the river. Riparian vegetation exists in patches and is particularly concentrated around outlets of gulches and canyons draining the uplands. The river in SR 1a includes patches of sandy pocket beaches, which are characterized by some small trees, shrubs, and grasses. There are locations where shrubs and trees grow on the slopes of the cliffs, but for the most part, the upper boundary of the shoreline jurisdiction has limited vegetation. Near the mouth of the Grande Ronde River is the community of Rogersburg, which represents the only development within SR 1a. The canyon widens here, and there is a more accessible valley floor adjacent to the river channel. Some residences of Rogersburg are within the 200-foot shoreline boundary.</p> <p><b>SR 1b:</b> This subreach continues through the canyon, and there is a 50- to 200-foot undulating strip of land along the riparian zone of the shoreline within the first half of SR 1b, which narrows somewhat as it approaches the alignment of Snake River Road. This strip of land is generally vegetated with small trees and</p> |                      |

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| <p>shrubs, and it has been identified as emergent wetland habitat. Snake River Road is within the 200-foot shoreline boundary throughout SR 1b. The upland habitat on the other side of Snake River Road is characterized by shrubs and grasses growing in patches on the sides of the steep cliffs and bluffs. At the downstream end of the subreach approaching Box Gulch, the canyon valley widens and there is a wider floodplain. On this floodplain, on the landward side of Snake River Road, there are several parcels developed for residential and agricultural use.</p> <p><b>SR 1c:</b> The riparian zone is separated from the upland throughout SR 1c by Snake River Road. The initial portion of this reach is similar to SR 1a, with patches of sandy beach and upland vegetation minimized by the steep slopes of cliffs and bluffs on the landward side of the road. In the middle section of SR 1c, the floodplain is again wider, and there is more development in the form of residential parcels, although these are almost all outside of the shoreline boundary. There is a recreational access area within the shoreline boundary. Approaching Steamboat Island and Couse Creek, there is again a narrower zone of land riverward of Snake River Road, with areas of sandy beaches. Riparian vegetation consists of small trees, shrubs, and grasses. Upland vegetation, where present, is typical of shrub-steppe community, although along gulch or canyon drainages, additional riparian vegetation may be present. Steamboat Island is almost entirely sandy, with a small reach of vegetation along the eastern shoreline.</p> <p><b>SR 1d:</b> Snake River Road continues along this subreach. The floodplain is much wider throughout SR 1d, and the area of land waterward of Snake River Road ranges from 50 to 300 feet. This reach has a number of developed areas of residential and agricultural lands interspersed with areas where the canyon narrows and shoreline runs against the steep slopes of the cliffs and bluffs that minimize the presence of vegetation in the riparian zone or in the uplands. The developed areas closer to Couse Creek are generally outside of the 200-foot shoreline boundary.</p> <p><b>SR 1e:</b> This reach flows through a canyon of steep cliffs and bluffs, and Snake River Road runs along the west bank. The slope and riprap along the shoreline generally prevents the establishment of wide riparian vegetation along the narrow area between the road and water. Riparian vegetation exists but is degraded and comprises significant cover of non-native grasses and shrubs, with some trees associated with drainage areas. There is no development aside from Snake River Road along this subreach.</p> <p><b>SR 1f:</b> The subreach includes developed areas near the outlet of Tenmile Creek; these developed areas are generally all within the shoreline boundary. There is a broad floodplain along this subreach that has been developed for agricultural and residential use, and the outer edge of this floodplain along the water’s edge has been stabilized with riprap. The riparian zone contains some larger trees, mostly occurring in groups of three to five, along with a minor amount of shrub and other herbaceous groundcover. Downstream of the confluence of the creek is a small sidechannel wetland complex, with shrub-steppe habitat partially covering a small gravel/sand bar that exists between the sidechannel and the river. At the end of this subreach, several more residential parcels exist on the landward side of Snake River Road but within the shoreline jurisdiction.</p> <p><b>SR 1g:</b> This subreach is similar to SR 1e. At the end of the subreach there is a dredged channel that leads to a recreational boat launch at the edge of the City of Asotin line.</p> |               |

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| <b>ECOLOGICAL FUNCTIONS ANALYSIS</b>   |               |
| <p><b>SR 1a:</b></p> <p><b>Level of Existing Function:</b> Functioning</p> <p><b>Stressors:</b></p> <p>Upland development:</p> <ul style="list-style-type: none"><li>• Residential development near Rogersburg</li></ul> <p>Runoff from upland development may affect water quality. It may also impact continuity of riparian and shrub-steppe habitats and, therefore, riparian functions such as migratory corridors.</p> <p>Recreational use:</p> <ul style="list-style-type: none"><li>• Formal and informal recreation trails</li><li>• Motorized boat use</li><li>• Boat camping</li></ul> <p>Recreational use primarily affects water quality, forage, and rearing aquatic habitat functions. It may result in reduced or disturbed shoreline vegetation, impacting riparian functions such as erosion control, wildlife habitat, and migratory corridors.</p> <p><b>Potential Restoration Opportunities:</b> Restore shrub-steppe consistent with WDFW 2011 recommendations.</p> <p><b>Potential Protection Opportunities:</b> Protect intact riparian and shrub-steppe habitat from fragmentation by future trails or roads. Concentrate recreation water access to limit habitat fragmentation. Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.</p> |               |
| <p><b>SR 1b:</b></p> <p><b>Level of Existing Function:</b> Functioning</p> <p><b>Stressors:</b></p> <p>Upland development within shoreline jurisdiction:</p> <ul style="list-style-type: none"><li>• Residential development</li><li>• Snake River Road</li></ul> <p>Runoff from upland development primarily affects water quality. It may also impact continuity of riparian and shrub-steppe habitats and, therefore, riparian functions such as migratory corridors.</p> <p>Recreational use:</p> <ul style="list-style-type: none"><li>• Motorized boat use</li><li>• Boat camping</li></ul> <p>Recreational use primarily affects water quality, forage, and rearing functions of aquatic habitat. It may</p>  |               |

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| <p>result in reduced or disturbed shoreline vegetation, impacting riparian functions such as erosion control, wildlife habitat, and migratory corridors.</p> <p><b>Potential Restoration Opportunities:</b> Restore shrub-steppe consistent with WDFW 2011 recommendations.</p> <p><b>Potential Protection Opportunities:</b> Protect intact riparian and shrub-steppe habitat from fragmentation by future trails or roads. Concentrate recreation water access to limit habitat fragmentation. Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.</p>  |               |
| <p><b>SR 1c:</b></p> <p><b>Level of Existing Function:</b> Functioning</p> <p><b>Stressors:</b></p> <p>Upland development within shoreline jurisdiction:</p> <ul style="list-style-type: none"><li>• Residential development</li><li>• Snake River Road</li></ul> <p>Runoff from upland development primarily affects water quality. It may also impact continuity of riparian and shrub-steppe habitats and, therefore, riparian functions such as migratory corridors.</p> <p>Recreational use:</p> <ul style="list-style-type: none"><li>• Motorized boat use</li><li>• Boat camping</li></ul> <p>Recreational use primarily affects water quality, forage, and rearing functions of aquatic habitat. It may result in reduced or disturbed shoreline vegetation, impacting riparian functions such as erosion control, wildlife habitat, and migratory corridors.</p> <p><b>Potential Restoration Opportunities:</b> Restore shrub-steppe consistent with WDFW 2011 recommendations.</p> <p><b>Potential Protection Opportunities:</b> Protect intact riparian and shrub-steppe habitat from fragmentation by future trails or roads. Concentrate recreation water access to limit habitat fragmentation. Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.</p> |               |
| <p><b>SR 1d:</b></p> <p><b>Level of Existing Function:</b> Functioning</p> <p><b>Stressors:</b></p> <p>Upland development within shoreline jurisdiction:</p> <ul style="list-style-type: none"><li>• Residential development</li><li>• Snake River Road</li></ul> <p>Runoff from upland development primarily affects water quality. It may also impact continuity of riparian</p>  |               |

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| <p>and shrub-steppe habitats and, therefore, riparian functions such as migratory corridors.</p> <p>Recreational use:</p> <ul style="list-style-type: none"><li>• Motorized boat use</li><li>• Boat camping</li></ul> <p>Recreational use primarily affects water quality, forage, and rearing functions of aquatic habitat. It may result in reduced or disturbed shoreline vegetation, impacting riparian functions such as erosion control, wildlife habitat, and migratory corridors.</p> <p><b>Potential Restoration Opportunities:</b> Restore shrub-steppe consistent with WDFW 2011 recommendations.</p> <p><b>Potential Protection Opportunities:</b> Protect intact riparian and shrub-steppe habitat from fragmentation by future trails or roads. Concentrate recreation water access to limit habitat fragmentation. Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.</p>  |                      |
| <p><b>SR 1e:</b></p> <p><b>Level of Existing Function:</b> Impaired</p> <p><b>Stressors:</b></p> <p>Upland development within shoreline jurisdiction:</p> <ul style="list-style-type: none"><li>• Residential and agricultural development adjacent to water’s edge</li><li>• Snake River Road</li></ul> <p>Runoff from upland development primarily affects water quality. Upland development contributes to fragmentation of riparian and shrub-steppe habitats. There is a lack of habitat complexity along the shoreline, and development affects riparian functions such as migratory corridors, rearing, refugia, and water quality.</p> <p>Recreational use:</p> <ul style="list-style-type: none"><li>• Motorized boat use</li></ul> <p>Recreational use primarily affects water quality, forage, and rearing functions of aquatic habitat. It may result in reduced or disturbed shoreline vegetation, impacting riparian functions such as erosion control, wildlife habitat, and migratory corridors.</p> <p><b>Potential Restoration Opportunities:</b> Enhance and restore riparian vegetation at agricultural development boundaries. Restore shrub-steppe consistent with WDFW 2011 recommendations.</p> <p><b>Potential Protection Opportunities:</b> Protect intact riparian and shrub-steppe habitat from fragmentation by future trails or roads. Concentrate recreation water access to limit habitat fragmentation. Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.</p> |                      |

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| <p><b>SR 1f:</b></p> <p><b>Level of Existing Function:</b> Partially Functioning</p> <p><b>Stressors:</b></p> <p>Upland development within shoreline jurisdiction:</p> <ul style="list-style-type: none"><li>• Snake River Road</li></ul> <p>Upland development primarily affects water quality through runoff, and impacts continuity of riparian and shrub-steppe habitats and, therefore, riparian functions such as migratory corridors.</p> <p>Recreational use:</p> <ul style="list-style-type: none"><li>• Motorized boat use</li><li>• Boat camping</li></ul> <p>Recreational use primarily affects water quality, forage, and rearing functions of aquatic habitat. It may result in reduced or disturbed shoreline vegetation, impacting riparian functions such as erosion control, wildlife habitat, and migratory corridors.</p> <p><b>Potential Restoration Opportunities:</b> There are minimal opportunities for restoration due to adjacent roadway. Control invasive species to support native species re-establishment.</p> <p><b>Potential Protection Opportunities:</b> Protect intact riparian and shrub-steppe habitat from fragmentation by future trails or roads. Concentrate recreation water access to limit habitat fragmentation. Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.</p> |               |
| <p><b>SR 1g:</b></p> <p><b>Level of Existing Function:</b> Partially Functioning</p> <p><b>Stressors:</b></p> <p>Upland development within shoreline jurisdiction:</p> <ul style="list-style-type: none"><li>• Snake River Road</li></ul> <p>Upland development primarily affects water quality through runoff and impacts to continuity of riparian and shrub-steppe habitats and, therefore, riparian functions such as migratory corridors.</p> <p>Recreational use:</p> <ul style="list-style-type: none"><li>• Motorized boat use</li><li>• Recreational access</li></ul> <p>Recreational use primarily affects water quality, forage, and rearing functions of aquatic habitat. It may result in reduced or disturbed shoreline vegetation, impacting riparian functions such as erosion control, wildlife habitat, and migratory corridors.</p>  |               |

| <b>Snake River – Reach 1</b>   | <b>Asotin County</b> |
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| <p><b>Potential Restoration Opportunities:</b> Enhance and restore riparian vegetation at the downstream end of the subreach. Restore shrub-steppe consistent with WDFW 2011 recommendations.</p> <p><b>Potential Protection Opportunities:</b> Protect intact riparian and shrub-steppe habitat from further fragmentation by future trails or roads. Concentrate recreation water access to limit habitat fragmentation. Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.</p> |                      |

**Snake River – Reach 2                      Asotin County**

**Reach Description:** Reach 2 of the Snake River begins at the north end of the Asotin city limits and ends at the Clarkston Pond at RM 136.4.

**Shoreline Jurisdiction:** 511 acres, 5.5 miles



Source: <https://fortress.wa.gov/ecy/coastalatlus/UICoastalAtlas/Tools/ShorePhotos.aspx>

**Subreaches (SR); see Map C-3 through C-5**

SR 2a: Begins at the north end of the Asotin city limits (RM 145.1) and ends at the south end of Swallows Nest Park (RM 142.8); 213 acres, 2.4 miles

SR 2b: Begins at Swallows Nest Park (RM 142.8) and ends at the east Clarkston city limits (RM 138.4); 196 acres, 2.0 miles

SR 2c: Begins at the west Clarkston city limits and ends at Clarkston Pond (RM 136.4); 102 acres, 1.1 miles

**CHARACTERISTICS**

**Ownership:**

The majority is public lands owned by the U.S. Army Corps of Engineers (USACE).

**Land Use/Current SMP:**

Current land use designation:

- Land uses have not been designated. Existing uses in the entire reach are Recreation and Residential.

| <b>Snake River – Reach 2</b>  | <b>Asotin County</b> |
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| <p>Current zoning designation:</p> <ul style="list-style-type: none"> <li>Reach 2 is designated Urban.</li> </ul> <p>Current SMP environment designation:</p> <ul style="list-style-type: none"> <li>Reach 2 is designated Conservancy.</li> </ul>  |                      |
| <p><b>Existing Land Cover/Development:</b></p> <p>Reach 2 of the Snake River is heavily developed, mostly with private residences. State Route 129 runs alongside the water the entire reach. The Port of Clarkston is located within this reach. USACE has left a thin green belt between the water’s edge and the highway.</p>  |                      |
| <p><b>Geomorphic Character:</b></p> <p><b>Description:</b> The river is impounded by Little Granite Dam, which forms Lower Granite Lake. The lake shoreline mostly consists of Saddle Mountain Basalt, continental sedimentary rocks, outburst flood deposits, alluvium, and Bonneville Flood Deposits.</p> <p><b>Hardened Banks:</b> Approximately 21,825 linear feet of artificial hardened banks exist along Reach 2.</p>  |                      |
| <p><b>Flooding and Geological Hazards:</b></p> <p><b>Flooding:</b> FEMA floodplains are mapped throughout this reach. Floodplains are relatively narrow throughout the reach. The Lower Granite Dam pool maintains a relatively consistent water surface elevation throughout this reach.</p> <p><b>Geological Hazards:</b> Severely erodible soils can be found in SR 2a and 2b. Moderately erodible soils also exist in SR 2a – 2c. There are a few places with moderate to high liquefaction susceptibility in SR 2a and 2b. Landslide hazards exist in SR 2a and 2b where slopes are steeper than 15% over underlying Columbia River Basalts, sedimentary deposits, or alluvial deposits.</p>                                       |                      |
| <p><b>Existing Public Access:</b></p> <p>Shoreline and public access is managed by USACE.</p> <p>SR 2a:</p> <ul style="list-style-type: none"> <li>Highway 129 runs the length of this subreach.</li> <li>Chief Looking Glass Park (portion of north end) is located at the confluence of Asotin Creek and the Snake River. It is a day-use area and has the following amenities: restrooms, picnic area, swimming area, and playground.</li> <li>The Greenbelt Trail runs the length of this subreach, immediately adjacent to the shoreline and flanked to the west by Highway 129.</li> <li>The shoreline has been hardened by USACE, so boat access is limited beyond established boating access areas in this subreach.</li> </ul> |                      |

| <b>Snake River – Reach 2</b>  | <b>Asotin County</b> |
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| <p>SR 2b:</p> <ul style="list-style-type: none"> <li>• Swallow’s Park is located at the southern end of this subreach. It has boat launches, docks, playground, water, restrooms, electricity, and day-use amenities.</li> <li>• The Greenbelt Trail runs the length of this subreach. There are multiple points of water and view access along the trail.</li> <li>• Highway 129 parallels the shoreline until the Southway Bridge where it veers to the northwest.</li> </ul> <p>SR 2c:</p> <ul style="list-style-type: none"> <li>• Port Drive runs along the shoreline through the first part of this subreach.</li> <li>• Highway 128 crosses the Snake River in this subreach via a large bridge.</li> <li>• Hell’s Canyon Resort is located at the base of the 128 bridge. The Resort is a full-service marina with ample boat mooring.</li> <li>• The Inland Empire Highway runs along the remaining portion of this subreach and is directly adjacent to the shoreline. It becomes Highway 12 at the end of the subreach.</li> <li>• The shoreline has been hardened by USACE, so boating opportunities along this subreach are limited.</li> <li>• Clarkston Pond is managed by WDFW. There is access to the pond and restrooms.</li> </ul> <p><b>Identified Public Access Improvements:</b> Suggested improvements include ongoing management and improvements to replace aging facilities at existing parks and public access facilities along the shoreline.</p> <p><b>Public Access Opportunities:</b> State Route 129 runs the length of the Snake River shoreline, limiting any potential additional access to the reach from the land. Access is available from the river.</p> |                      |
| <b>ECOLOGICAL CONDITIONS</b>  |                      |
| <p><b>Water Quantity and Sediment:</b></p> <p>There are no noted gages or major tributaries along this reach. Water quantity may be slightly impacted by residential and agricultural use. USGS Gage No. 13334300 in Reach 1 is used to define flow in this reach, which has a mean annual flow of 34,520 cubic feet per second (cfs) and a maximum discharge of 195,000 cfs.</p> <p>Sediment is likely to be input during extreme runoff events due to a lack of vegetative cover.</p>   |                      |
| <p><b>Water Quality:</b></p> <p>This reach is not on the Washington State Department of Ecology (Ecology) 305b list as being a water of concern. Water quality in this reach may be slightly impacted by residential, agricultural, and/or industrial runoff, specifically in SR 2b.</p>  |                      |
| <p><b>Habitat Characteristics and PHS Presence:</b></p> <p>This subreach is noted for presence of resting and nesting habitat for migratory waterfowl but may support feeding and habitat may be present. The PHS identifies chukar in this subreach. The Snake River in this reach supports a number of ESA-listed fish species, as identified in the main text of the IAC Report.</p>   |                      |

**Snake River – Reach 2                      Asotin County**

**SR 2a:** This subreach is characterized by a minimal amount of riparian habitat, as the shoreline habitat area is constrained by the presence of Riverside Drive/Highway 129 and a pedestrian/bike trail, both within the 20-foot shoreline jurisdiction. In addition, there is a mix of more residential, agricultural, and commercial/industrial lands riverward of Riverside Drive. Some of the development along the upland side of Riverside Drive is within the 200-foot shoreline boundary.

**SR 2b:** This subreach is similar to SR 2a, although the steep slope of the cliff bluffs prevents significant development from occurring within the shoreline jurisdiction, aside from State Route 129. The riprap along the shoreline to protect the road prevents development of significant riparian vegetation.

**SR 2c:** This subreach begins at the bridge for Highway 128. Downstream of the bridge is a marina, which is protected by an artificial jetty perpendicular to the shoreline. Highway 12 runs adjacent to this subreach. There is a golf course in the uplands, landward of Highway 12, that is partially within the shoreline jurisdiction. The shoreline remains hardened with riprap along this subreach, and as such, it is very similar habitat to SR 2b.

**ECOLOGICAL FUNCTIONS ANALYSIS**

**SR 2a:**

**Level of Existing Function:** Impaired

**Stressors:**

Upland development within shoreline jurisdiction:

- Residential and agricultural development
- Riverside Drive/Highway 129

Runoff from upland development primarily affects water quality, which affects forage functions. Upland development also impacts the continuity of riparian and shrub-steppe habitats and, therefore, riparian functions such as migratory corridors.

Recreational use:

- Recreational trails
- Motorized boat use

The presence of the recreational trail does not likely impair the riparian habitat (any significantly more than would otherwise result from the shoreline riprap placed in support of Highway 129).

**Potential Restoration Opportunities:** Due to presence of the road, restoration options along the shoreline are likely minimal. There is the potential to enhance and restore riparian vegetation at agricultural development boundaries. Restore shrub-steppe consistent with WDFW 2011 recommendations.

**Potential Protection Opportunities:** Protect intact riparian and shrub-steppe habitat from fragmentation by future trails or roads. Concentrate recreation water access to limit habitat fragmentation. Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.

| Snake River – Reach 2   | Asotin County |
|---|---------------|
| <p><b>SR 2b:</b></p> <p><b>Level of Existing Function:</b> Impaired</p> <p><b>Stressors:</b></p> <p>Upland development within shoreline jurisdiction:</p> <ul style="list-style-type: none"><li>• Riverside Drive/Highway 129</li></ul> <p>Runoff from upland development primarily affects water quality, which affects forage functions. Upland development also impacts the continuity of riparian and shrub-steppe habitats and, therefore, riparian functions such as migratory corridors.</p> <p><b>Potential Restoration Opportunities:</b> Due to presence of the road, restoration options along the shoreline are likely minimal. There is the opportunity to enhance and restore riparian vegetation at agricultural development boundaries. Restore shrub-steppe consistent with WDFW 2011 recommendations.</p> <p><b>Potential Protection Opportunities:</b> Protect intact riparian and shrub-steppe habitat from fragmentation by future trails or roads. Concentrate recreation water access to limit habitat fragmentation. Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.</p>  |               |
| <p><b>R 2c:</b></p> <p><b>Level of Existing Function:</b> Impaired</p> <p><b>Stressors:</b></p> <p>Upland development within shoreline jurisdiction:</p> <ul style="list-style-type: none"><li>• Residential and agricultural development</li><li>• Riverside Drive/Highway 129</li></ul> <p>Runoff from upland development primarily affects water quality, which affects forage functions. Upland development also impacts the continuity of riparian and shrub-steppe habitats and, therefore, riparian functions such as migratory corridors.</p> <p>Recreational use:</p> <ul style="list-style-type: none"><li>• Recreational trails</li><li>• Motorized boat use</li></ul> <p>Recreational use along the shoreline does not likely impair the riparian or aquatic habitat significantly more than would otherwise result from the shoreline riprap placed in support of Highway 12. Water quality impacts may result from marina operations.</p> <p><b>Potential Restoration Opportunities:</b> Due to presence of the road, restoration options along the shoreline are likely minimal.</p> <p><b>Potential Protection Opportunities:</b> Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.</p> |               |

**Snake River – Reach 3                      Asotin County**

**Reach Description:** Reach 3 of the Snake River runs from Clarkston Pond (RM 136.4) to the Asotin/Garfield County line.

**Shoreline Jurisdiction:** 1,492 acres, 9.6 miles



Source: <https://fortress.wa.gov/ecy/coastalatlant/UICoastalAtlas/Tools/ShorePhotos.aspx>

**Subreaches (SR); see Map C-6**

3a: Begins at Clarkston Pond (RM 136.4) and ends at RM 133.3; 292 acres, 3.0 miles

3b: Begins at RM 133.3 and ends at Page Creek (RM 130.8); 641 acres, 2.7 miles

3c: Begins at Page Creek (RM 130.8) and ends at the Asotin/Garfield County line (RM 126.8); 559 acres, 3.9 miles

**CHARACTERISTICS**

**Ownership:**

The majority is public-, USACE-, and Washington State Department of Transportation-owned where Highway 12 runs along the bank of the Snake River.

| <b>Snake River – Reach 3</b>  | <b>Asotin County</b> |
|---|----------------------|
| <p><b>Land Use/Current SMP:</b></p> <p>Current land use designation:</p> <ul style="list-style-type: none"> <li>Land uses have not been designated. Existing uses in the entire reach are agriculture, residential, and recreation.</li> </ul> <p>Current zoning designation:</p> <ul style="list-style-type: none"> <li>Reach 3 is zoned Ag Transition and Agricultural.</li> </ul> <p>Current SMP environment designation:</p> <ul style="list-style-type: none"> <li>The current designation is Conservancy.</li> </ul>  |                      |
| <p><b>Existing Land Cover/Development:</b></p> <p>Because of the steep terrain, there is very little development along this reach. It is mostly in open spaces. Highway 12 runs along the shoreline for part of the reach and then turns south. There are several areas of unimproved water access and one campground.</p>  |                      |
| <p><b>Geomorphic Character:</b></p> <p><b>Description:</b> The river is impounded by Little Granite Dam, which forms Lower Granite Lake. The lake shoreline mostly consists of Grande Ronde Basalts.</p> <p><b>Hardened Banks:</b> Approximately 21,600 linear feet of artificial hardened banks exist along Reach 3.</p>   |                      |
| <p><b>Flooding and Geological Hazards:</b></p> <p><b>Flooding:</b> FEMA floodplains are mapped throughout this reach. Floodplains are relatively narrow throughout the reach. The Lower Granite Dam pool maintains a relatively consistent water surface elevation throughout this reach.</p> <p><b>Geological Hazards:</b> Severely erodible soils can be found in reach. Moderately erodible soils also exist in SR 3b. There are a few places with moderate to high liquefaction susceptibility in this reach. Landslide hazards exist in SR 3a and 3b where slopes are steeper than 15% over underlying Columbia River Basalts, sedimentary deposits, or alluvial deposits.</p> |                      |
| <p><b>Existing Public Access:</b></p> <p>SR 3a:</p> <ul style="list-style-type: none"> <li>Highway 12 runs the length of this subreach.</li> <li>WDFW manages the Clarkston Pond at the beginning of this subreach. There is a parking lot and restroom at the site.</li> <li>Evans Road comes into the drainage from the southwest and intersects with Highway 12.</li> <li>There is a pond located at the intersection of Highway 12 and Evans Road. There is a parking lot and vault toilet at the pond access site.</li> <li>USACE has hardened the shoreline through most of this subreach, reducing the possibility for boat</li> </ul>                                       |                      |

**Snake River – Reach 3                      Asotin County**

access.

- This subreach is bordered to the southwest by steep basalt cliffs, and Highway 12 is immediately adjacent to the shoreline, reducing the amount of public access possible.
- Chief Timothy Habitat Management Unit (HMU) is located at the western end of this subreach. There is parking and hiking trails leading to the shoreline in this HMU.

SR 3b:

- Highway 12 runs the length of this subreach.
- Chief Timothy HMU runs along most of the shoreline of this subreach.
- The shoreline is not hardened in this subreach, which makes boating and fishing access possible.
- Chief Timothy State Park is located on Silcott Island. The park has dock space, boat launch, moorage, day-use amenities, trails, playground, camping, showers, and a recreational vehicle (RV) dump. The island is accessed by a bridge spanning the length from Highway 12 to the island. Chief Timothy is formerly a Washington State Park's park but is now owned by USACE and managed by an independent contractor.

SR 3c:

- Highway 12 turns south from this subreach away from the shoreline.
- There are a few gravel county roads that provide access to private residences at the beginning of this subreach.
- The shoreline is not hardened, so boat access is possible; however, steep basalt hills rise up from the shoreline, which reduce the likelihood of additional public access.
- At the western end of this subreach, there are three areas of land that extend out into the water. Boat access to these pieces of land is possible.

**Identified Public Access Improvements:** Possible improvements include ongoing management and improvements to replace aging facilities at existing parks and public access facilities along the shoreline.

**Public Access Opportunities:** Opportunities are limited in most of this reach because of steep banks and terrain. Highway 12 runs along the shoreline of much of this reach, reducing the possibility for additional public access. Planned and existing public access opportunities may be adequate for this reach.

**ECOLOGICAL CONDITIONS**

**Water Quantity and Sediment:**

USGS had a gage (No. 13343500) located in SR 3b that was active from 1916 to 1972. Alpowa Creek is a tributary that drains into SR 3c of this reach. USGS Gage No. 13334300 in Reach 1 is used to define flow in this reach, which has a mean annual flow of 34,520 cubic feet per second (cfs) and a maximum discharge of 195,000 cfs.

Sediment will likely be input from extreme runoff events due to steep slopes and a lack of vegetative cover.

| <b>Snake River – Reach 3</b>  | <b>Asotin County</b> |
|---|----------------------|
| <p><b>Water Quality:</b></p> <p>This reach has several impairments to water quality. TMDLs are required for dieldrin, 4,4'-dichlorodiphenyldichloroethylene (DDE), and polychlorinated biphenyl (PCB) in SR 3a; for pH, PCB, dioxin, and 4,4'-DDE in SR 3b; and for temperature in SR 3c. TMDLs have been implemented for dioxin in SR 3a and 3b. SR 3a is a water of concern for chlordane and 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD). SR 3b is a water of concern for dissolved oxygen, temperature, chlordane, dichlorodiphenyltrichloroethane (DDT), dieldrin, and aldrin. SR 3c is a water of concern for pH and dissolved oxygen.</p>   |                      |
| <p><b>Habitat Characteristics and PHS Presence:</b></p> <p>This reach includes feeding, resting, and nesting habitat for migratory waterfowl and the following species identified under PHS lists: chukar, mule deer, and ring-necked pheasant. The Snake River in this reach supports a number of ESA-listed fish species, as identified in the main text of the IAC Report.</p> <p><b>SR 3a:</b> At the beginning of this reach outside of Clarkston, the river flows along steep cliffs and bluffs, and combined with the presence of Highway 12, there is minimal area along the shoreline to support development of riparian vegetation. A small pond occurs landward of Highway 12 at the beginning of this subreach.</p> <p><b>SR 3b:</b> Approaching Silcot Island, there is floodplain habitat that supports small trees, shrubs, and grasses, although this area appears to be vegetated as a result of irrigation support. There is an informal trail that provides access to the river and a small pond that is entirely surrounded by riparian vegetation. Non-irrigated vegetation along this span of floodplain is more consistent with shrub-steppe community east of the pond. To the west of the pond, more riparian vegetation appears to be common, especially closer to Silcot Island. The island is partially developed as a campground and accessible by Silcot Grade road. The island is vegetated by shrub-steppe plants, except in areas that have been developed for the campground. The shoreline opposite Silcot Island has little shoreline vegetation due to the roadway constraints. There is another small pond on the landward side of Highway 12, which supports a narrow band of vegetation.</p> <p><b>SR 3c:</b> Past the confluence of Page Creek to the Asotin/Garfield County line, the canyon narrows and the shoreline is adjacent to steeply sloped bluffs and cliffs. There is a very minimal amount of floodplain habitat, with the exception being some of the canyon/gully drainages, where small outflows of alluvial fan deposits extend into the river. These small areas have riparian shrubs and grasses along the water's edge, though even here the extent is limited. There is little vegetation along the shoreline in this subreach and little vegetation established on the cliff slopes.</p> |                      |
| <b>ECOLOGICAL FUNCTIONS ANALYSIS</b>  |                      |
| <p><b>SR 3a:</b></p> <p><b>Level of Existing Function:</b> Impaired</p> <p><b>Stressors:</b></p> <p>Upland development within shoreline jurisdiction:</p> <ul style="list-style-type: none"> <li>• Highway 12</li> </ul>  |                      |

| <b>Snake River – Reach 3</b>  | <b>Asotin County</b> |
|---|----------------------|
| <p>Runoff from upland development primarily affects water quality, which affects forage functions. Upland development also impacts the continuity of riparian and shrub-steppe habitats and, therefore, riparian functions such as migratory corridors.</p> <p><b>Potential Restoration Opportunities:</b> There are minimal opportunities for restoration due to the presence of the highway. Shrub-steppe restoration could be implemented in the uplands consistent with WDFW 2011 recommendations.</p> <p><b>Potential Protection Opportunities:</b> Protect intact riparian and shrub-steppe habitat from fragmentation by future trails or roads. Concentrate recreation water access to limit habitat fragmentation. Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.</p>   |                      |
| <p><b>SR 3b:</b></p> <p><b>Level of Existing Function:</b> Partially Functioning</p> <p><b>Stressors:</b></p> <p>Upland development within shoreline jurisdiction:</p> <ul style="list-style-type: none"> <li>• Highway 12</li> </ul> <p>Upland development primarily affects water quality through runoff, which impacts forage and rearing functions. It also impacts continuity of riparian and shrub-steppe habitats and, therefore, riparian functions such as migratory corridors.</p> <p>Recreational use:</p> <ul style="list-style-type: none"> <li>• Motorized boat use</li> <li>• Camping and camping maintenance on Silcott Island</li> </ul> <p>Recreational use on and around Silcott Island may affect water quality, forage, and rearing functions of aquatic habitat. It may result in reduced or disturbed shoreline vegetation, impacting riparian functions such as erosion control, wildlife habitat, and migratory corridors.</p> <p><b>Potential Restoration Opportunities:</b> There is an opportunity to enhance and restore riparian vegetation along the floodplain areas waterward of Highway 12. Restore shrub-steppe in uplands of Silcott Island consistent with WDFW 2011 recommendations.</p> <p><b>Potential Protection Opportunities:</b> Protect intact riparian and shrub-steppe habitat from fragmentation by future trails or roads. Concentrate recreation water access to limit habitat fragmentation. Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.</p> |                      |
| <p><b>SR 3c:</b></p> <p><b>Level of Existing Function:</b> Functioning</p> <p>Steep bluffs limit developable lands and access to the shoreline from the uplands.</p>  |                      |

| Snake River – Reach 3  | Asotin County |
|--|---------------|
| <p><b>Stressors:</b></p> <p>Recreational use:</p> <ul style="list-style-type: none"><li>• Motorized boat use</li><li>• Boat camping</li></ul> <p>Recreational use primarily affects water quality, forage, and rearing functions of aquatic habitat. It may result in reduced or disturbed shoreline vegetation, impacting riparian functions such as erosion control, wildlife habitat, and migratory corridors.</p> <p><b>Potential Restoration Opportunities:</b> There is an opportunity to enhance and restore riparian vegetation along the shoreline.</p> <p><b>Potential Protection Opportunities:</b> Protect intact riparian and shrub-steppe habitat in the uplands from fragmentation by future trails or roads. Concentrate recreation water access to limit habitat fragmentation. Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.</p> |               |

**Snake River – Reach 4                      Garfield County**

**Reach Description:** Reach 4 of the Snake River runs from Lower Granite Lake from (RM 126.9) to Garfield/Asotin County line (RM 107.5).

**Shoreline Jurisdiction:** 2,422 acres, 19.3 miles



Source: <https://fortress.wa.gov/ecy/coastalatlant/UICoastalAtlas/Tools/ShorePhotos.aspx>

**Subreaches (SR); see Map C-7**

There are no subreaches located in Snake River – Reach 4.

**CHARACTERISTICS**

**Ownership:**

Ownership is almost entirely federal and USACE.

**Land Use/Current SMP:**

Current land use designation:

- Land use is designated Agricultural and Recreational.

Current zoning designation:

- Reach 4 is zoned is Agricultural.

Current SMP environment designation:

- The current designation is Rural, except for Port of Garfield property (Urban) and WDFW property (Natural).

| <b>Snake River – Reach 4</b>  | <b>Garfield County</b> |
|---|------------------------|
| <p><b>Existing Land Cover/Development:</b></p> <p>Reach 4 of the Snake River is almost entirely open space. Steep cliff walls and almost no road access prevent development.</p>  |                        |
| <p><b>Geomorphic Character:</b></p> <p><b>Description:</b> The river is impounded by Little Granite Dam, which forms Lower Granite Lake. The lake shoreline mostly consists of Grande Ronde, Wanapum, and Saddle Mountain Basalts, and loess.</p> <p><b>Hardened Banks:</b> Approximately 3,350 linear feet of artificial hardened banks exist along Reach 4.</p>   |                        |
| <p><b>Flooding and Geological Hazards:</b></p> <p><b>Flooding:</b> FEMA floodplains are mapped throughout this reach. Floodplains are relatively narrow throughout the reach. The Lower Granite Dam pool maintains a relatively consistent water surface elevation throughout this reach.</p> <p><b>Geological Hazards:</b> Severely erodible soils associated with steep slopes can be found along the most length of Reach 4. Due to the bedrock found in most of Reach 4, there are very few places with moderate to high liquefaction susceptibility. A few landslide hazard areas exist in Reach 4 where slopes are steeper than 15% over underlying alluvial deposits.</p>  |                        |
| <p><b>Existing Public Access:</b></p> <ul style="list-style-type: none"> <li>• The only road access for Reach 4 of the Snake River is Highway 193, but it is located on the north shore of the Snake River and is in Whitman County, so it will not be addressed in this report.</li> <li>• Reach 4 of the Snake River is extremely inaccessible. Cliffs rise almost straight up from the shoreline along much of this reach, making land access almost impossible for much of the reach.</li> <li>• Boat access is possible for most of the reach.</li> <li>• Offfield Landing is a USACE-managed park located 1 mile east of Lower Granite Dam at Snake River RM 108. The park includes boat launches, docks, camping, restrooms, and day-use amenities.</li> </ul> <p><b>Identified Public Access Improvements:</b> There is ongoing management and improvements to replace aging facilities at existing parks and public access facilities along the shoreline.</p> <p><b>Public Access Opportunities:</b> Opportunities are limited in most of this reach because of steep banks and terrain. Access to this reach is minimal.</p> |                        |
| <b>ECOLOGICAL CONDITIONS</b>  |                        |
| <p><b>Water Quantity and Sediment:</b></p> <p>USACE maintains records of Lower Granite Dam flow; additionally, USGS Gage No. 13334300 in Reach 1 is used to define flow in this reach, which has a mean annual flow of 34,520 cubic feet per second (cfs) and a maximum discharge of 195,000 cfs.</p> <p>Sediment builds up in the reach, especially at the upstream base of Lower Granite Dam.</p>   |                        |

| <b>Snake River – Reach 4</b>  | <b>Garfield County</b> |
|---|------------------------|
| <p><b>Water Quality:</b></p> <p>This reach requires a TMDL for pH, dissolved oxygen, and temperature. It has a TMDL in place for total dissolved gas, and it is a water of concern for endrin, heptachlor epoxide, dieldrin, DDT, 4,4'-DDE, heptachlor, toxaphene, and PCB.</p>   |                        |
| <p><b>Habitat Characteristics and PHS Presence:</b></p> <p>This reach ends at Lower Granite Dam, and the river in this reach is not free-flowing. There is no development along the shoreline as the reach runs adjacent to steeply sloped cliffs and bluffs. The riparian vegetation in this reach is constrained by the steep slopes of the adjacent cliffs and bluffs, and there is minimal floodplain habitat. There are small patches of land at the end of some canyon/gully drainages where alluvial deposits have extended into the river. These landforms support some small shrubs and grasses along the water's edge. There are other canyon/gully drainage valleys that are characterized by riparian vegetation communities that include trees and shrubs that extend from the water into the uplands. Some of these areas also form small coves and inlets that may provide off-channel refugia for aquatic fish species such as salmonids. Upland vegetation outside of the riparian zone within the shoreline jurisdiction consists of shrub-steppe species of shrubs and grasses. In the last 0.75-mile of this reach, there is a boat launch near the dam, and the shoreline is hardened and adjacent to Wawawai Grade Road.</p> <p>This reach may include feeding, resting, and nesting habitat for migratory waterfowl. The Snake River in this reach supports a number of ESA-listed fish species, as identified in the main text of the IAC Report.</p> |                        |
| <p><b>ECOLOGICAL FUNCTIONS ANALYSIS</b></p>   |                        |
| <p><b>Level of Existing Function:</b> Functioning</p> <p>The steep slope of the cliffs prevents upland access to the shoreline. The water flow and quantity is controlled by Lower Granite Dam.</p> <p><b>Stressors:</b></p> <p>Recreational use:</p> <ul style="list-style-type: none"> <li>• Motorized boat use</li> <li>• Boat camping</li> </ul> <p>Recreational use primarily affects water quality, forage, and rearing functions of aquatic habitat. It may result in reduced or disturbed shoreline vegetation, impacting riparian functions such as erosion control, wildlife habitat, and migratory corridors.</p> <p><b>Potential Restoration Opportunities:</b> Minimal opportunities exist. Enhance and restore existing riparian vegetation through removal of invasive species.</p> <p><b>Potential Protection Opportunities:</b> Protect intact riparian and shrub-steppe habitat from fragmentation by future trails or roads. Concentrate recreation water access to limit habitat fragmentation. Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.</p>   |                        |

**Snake River – Reach 5                      Garfield County**

**Reach Description:** Reach 5 of the Snake River runs from Lake Bryan (Lower Granite Dam; RM 107.5) to the Garfield/Columbia County line (RM 80.5).

**Shoreline Jurisdiction:** 3,649 acres, 26.7 miles



Source: <https://fortress.wa.gov/ecy/coastalatlant/UICoastalAtlas/Tools/ShorePhotos.aspx>

**Subreaches (SR); see Map C-8**

There are no subreaches located in Snake River – Reach 5.

**CHARACTERISTICS**

**Ownership:**

The majority of ownership is federal and USACE.

**Land Use/Current SMP:**

Current land use designation:

- Land uses have not been designated. Existing uses in the entire reach are recreation and agriculture.

Current zoning designation:

- Reach 5 is zoned Agricultural.

Current SMP environment designation:

- The current designation is Rural, except for Port of Garfield property (Urban) and WDFW property

| <b>Snake River – Reach 5</b>   | <b>Garfield County</b> |
|--|------------------------|
| (Natural).   |                        |
| <p><b>Existing Land Cover/Development:</b></p> <p>Lower Granite Dam is the largest development on Reach 5. Almota Ferry Road (paved) begins at the dam and runs the length of the reach. Because there is some access to this reach, there are several improved campgrounds. There are also a number of farms along this reach.</p>  |                        |
| <p><b>Geomorphic Character:</b></p> <p><b>Description:</b> The river is impounded by Little Goose Dam, which forms Lake Byron. The lake's shoreline mostly consists of Grande Ronde Basalt, outburst flood deposits, and loess.</p> <p><b>Hardened Banks:</b> Approximately 6,275 linear feet of artificial hardened banks exist along Reach 5.</p>  |                        |
| <p><b>Flooding and Geological Hazards:</b></p> <p><b>Flooding:</b> FEMA floodplains are mapped throughout this reach. Floodplains are relatively narrow throughout the reach. The Little Goose Dam pool maintains a relatively consistent water surface elevation throughout this reach.</p> <p><b>Geological Hazards:</b> Severely erodible soils associated with steep slopes can be found along the most length of Reach 5. Due to the bedrock, there are very few places susceptible to liquefaction. Some landslide hazards exist near the mouth of tributaries where slopes are steeper than 15% over underlying flood deposits, alluvial deposits, sedimentary deposits, and Columbia River Basalts.</p>  |                        |
| <p><b>Existing Public Access:</b></p> <p>Shoreline and public access is managed by USACE, the Port of Garfield County, and WDFW. The sites include the following items:</p> <ul style="list-style-type: none"> <li>• There is a lock at Lower Granite Dam that allows boats and barges to travel upstream from the dam.</li> <li>• Lower Granite Dam is located at the eastern most portion of Reach 5. There are day-use amenities, restrooms, fishing, and parking access at the dam. The dam also has fish viewing inside the visitor center.</li> <li>• Almota Ferry Road runs along the shoreline, the first few miles of Reach 5. It then turns into Casey Creek Road and heads south, away from the reach.</li> <li>• There is no more road access until the Rice Bar HMU, (located at Snake River RM 93) where Rice Bar Hill Road enters the drainage. Rice Bar HMU has a parking lot and vault toilets and provides access to hiking and hunting.</li> <li>• Lambi Creek is located at Snake River RM 101 (5 miles downstream from Lower Granite Dam). It has day-use amenities, primitive camping, picnic tables, fire pits, and vault toilets.</li> <li>• Illia Landing is a USACE-owned and USACE-operated park located at Snake River RM 103. The park has a boat launch, primitive tent camping, fire pits, picnic tables, drinking water, and restrooms.</li> <li>• Willow Landing is a USACE-owned and USACE-operated park located at Snake River RM 88. There is a boat launch, tent/RV camping, picnic tables, and vault toilets.</li> <li>• Highway 127 crosses the Snake River at the western end of Reach 5.</li> </ul> |                        |

| <b>Snake River – Reach 5</b>   | <b>Garfield County</b> |
|--|------------------------|
| <ul style="list-style-type: none"> <li>The Central Ferry (Port of Garfield) boat launch is located on the west side of Highway 127.</li> </ul> <p><b>Identified Public Access Improvements:</b> Access improvements include ongoing management and improvements to replace aging facilities at existing parks and public access facilities along the shoreline.</p> <p><b>Public Access Opportunities:</b> Opportunities are limited in most of this reach because of steep banks and terrain and limited road access. Planned and existing public access opportunities may be adequate for this reach.</p>  |                        |
| <b>ECOLOGICAL CONDITIONS</b>   |                        |
| <p><b>Water Quantity and Sediment:</b></p> <p>Tributaries flowing into this reach include Almota Creek, Penawawa Creek, Deadman Creek, and Meadow Creek. USGS Gage No. 13334300 in Reach 1 is used to define flow in this reach, which has a mean annual flow of 34,520 cubic feet per second (cfs) and a maximum discharge of 195,000 cfs.</p> <p>Sediment is not likely to transport well due to the Lower Granite Dam upstream trapping sediment.</p>   |                        |
| <p><b>Water Quality:</b></p> <p>This reach is impaired by several water quality issues. TMDLs are required for PCB, chlordane, 4,4'-DDE, dieldrin, dissolved oxygen, temperature, and 2,3,7,8-TCDD. TMDLs are currently in place for total dissolved gas. This reach is also impaired by invasive exotic species and is an Ecology water of concern for pH.</p>  |                        |
| <p><b>Habitat Characteristics and PHS Presence:</b></p> <p>This reach begins at Lower Granite Dam. There is some dam-related development along the shoreline just downstream of the dam.</p> <p>The reach runs adjacent to steeply sloped cliffs and bluffs, as well as Almota Ferry Road. The riparian vegetation in this reach is constrained by Highway 12. There is generally a narrow band of floodplain habitat adjacent to the road that supports a narrow strip of riparian vegetation consisting of small trees shrubs and grasses. Occasionally, this strip of land becomes much wider, and these wider areas support more robust vegetation. The steep slopes of the adjacent cliffs and bluffs prevent significant vegetation from occurring on the landward side of the road, although there are some cliff faces that support grasses during some times of the year.</p> <p>As the road transitions away from the river near Almota Ferry, there is a small boat launch and campground along the shoreline located within the area of broader floodplain habitat. Past this area, the shoreline habitat alternates between stretches where the steep cliff slopes are immediately adjacent to the water and riparian vegetation is very limited, with stretches where wider floodplain habitat is available. These floodplains are generally 1 to 2 miles long, and may be 500 to 2,000 feet wide. These areas are generally under agricultural development or irrigated to support vegetation.</p> <p>There are canyon/gully drainage valleys that are characterized by riparian vegetation communities that include trees and shrubs that extend from the water into the uplands. Some of these areas also form small coves and inlets that may provide off-channel refugia for aquatic fish species such as salmonids.</p> <p>Upland vegetation outside of the riparian zone within the shoreline jurisdiction consists of shrub-steppe</p> |                        |

**Snake River – Reach 5                      Garfield County**

species of shrubs and grasses. In the last 5 miles of this reach there is the mouth of the Tucannon River, but there is little vegetation around the confluence and the shoreline just downstream. At the end of the reach is a 0.75-mile long habitat area supported by irrigation.

This reach may include feeding, resting, and nesting habitat for migratory waterfowl, chukar, and mule deer. The Snake River in this reach supports a number of ESA-listed fish species, as identified in the main text of the IAC Report and Table 28.

**ECOLOGICAL FUNCTIONS ANALYSIS**

**Level of Existing Function:** Partially Functioning

**Stressors:**

Upland development within shoreline jurisdiction:

- Residential and agricultural development
- Almota Ferry Road

Upland development primarily affects water quality through runoff and continuity of riparian and shrub-steppe habitats and, therefore, riparian functions such as migratory corridors.

Recreational use:

- Motorized boat use
- Boat camping

Recreational use primarily affects water quality, forage, and rearing functions of aquatic habitat. It may result in reduced or disturbed shoreline vegetation, impacting riparian functions such as erosion control, wildlife habitat, and migratory corridors.

**Potential Restoration Opportunities:** Enhance and restore riparian vegetation at agricultural development boundaries. Restore shrub-steppe consistent with WDFW 2011 recommendations.

**Potential Protection Opportunities:** Protect intact riparian and shrub-steppe habitat from fragmentation by future trails or roads. Concentrate recreation water access to limit habitat fragmentation. Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.

**Snake River – Reach 6                      Columbia County**

**Reach Description:** Reach 6 of the Snake River runs from the Columbia/Garfield County line to Little Goose Dam.

**Shoreline Jurisdiction:** 2,611 acres, 10.3 miles



Source: <https://fortress.wa.gov/ecy/coastalatlus/UICoastalAtlas/Tools/ShorePhotos.aspx>

**Subreaches (SR); see Map C-9**

There are no subreaches located in Snake River – Reach 6.

**CHARACTERISTICS**

**Ownership:**

The majority of ownership is federal and USACE.

**Land Use/Current SMP:**

Current land use designation:

- Land uses have not been designated. The reach is undeveloped due to limited access.

Current zoning

- Reach 6 is zoned 15% Heavy Industrial (near Little Goose Dam) and 85% Agricultural.

Current SMP environment designation:

- The current designation is Rural.

| <b>Snake River – Reach 6</b>   | <b>Columbia County</b> |
|--|------------------------|
| <p><b>Existing Land Cover/Development:</b></p> <p>Reach 6 of the Snake River is mostly open space. Little Goose Dam is the main development for the reach. Little Goose Dam Road runs the length of the reach. There are several boat launches and developed campgrounds.</p>  |                        |
| <p><b>Geomorphic Character:</b></p> <p><b>Description:</b> The river is impounded by Little Goose Dam, which forms Lake Byron. The lake shoreline mostly consists of Grande Ronde Basalt and outburst flood deposits.</p> <p><b>Hardened Banks:</b> Approximately 5,000 linear feet of artificial hardened banks exist along Reach 6.</p>  |                        |
| <p><b>Flooding and Geological Hazards:</b></p> <p><b>Flooding:</b> FEMA floodplains are mapped throughout this reach. Floodplains are relatively narrow throughout the reach. The Little Goose Dam pool maintains a relatively consistent water surface elevation throughout this reach.</p> <p><b>Geological Hazards:</b> Reach 6 contains moderately and severely erodible soils associated with steep slopes. Due to the bedrock, there are very few places susceptible to liquefaction. Landslide hazards exist where slopes are steeper than 15% over underlying flood deposits, alluvial deposits, sedimentary deposits, and Columbia River Basalts.</p>   |                        |
| <p><b>Existing Public Access:</b></p> <ul style="list-style-type: none"> <li>• Reach 6 has no road access until Archer Road comes from the south and terminates near the shoreline.</li> <li>• Much of the shoreline in Reach 6 is steep; however, in areas where there is a more gradual slope, boat access is possible.</li> <li>• There is an airplane runway just upstream from Little Goose Dam, which is accessed from Little Goose Dam Road.</li> <li>• Shoreline and public access is managed by USACE.</li> <li>• Little Goose Landing is owned and managed by USACE. There are tent/RV camping, fire pits, picnic tables, shade shelters, vault toilets, a boat launch, and a dock.</li> <li>• Little Goose Dam has a lock that allows boat/barge traffic to travel upstream from the dam.</li> </ul> <p><b>Identified Public Access Improvements:</b> There are no known specific improvements other than repair and replacement of existing facilities.</p> <p><b>Public Access Opportunities:</b> Opportunities are limited in most of this reach because of very limited access, steep banks, and terrain.</p> |                        |

| <b>Snake River – Reach 6</b>   | <b>Columbia County</b> |
|--|------------------------|
| <b>ECOLOGICAL CONDITIONS</b>   |                        |
| <p><b>Water Quantity and Sediment:</b></p> <p>USACE maintains records of Little Goose Dam flow; additionally, USGS Gage No. 13334300 in Reach 1 is used to define flow in this reach, which has a mean annual flow of 34,520 cubic feet per second (cfs) and a maximum discharge of 195,000 cfs.</p> <p>Sediment is likely to accumulate at the upstream base of Little Goose Dam.</p>   |                        |
| <p><b>Water Quality:</b></p> <p>This reach is impaired by invasive exotic species.</p>   |                        |
| <p><b>Habitat Characteristics and PHS Presence:</b></p> <p>This reach begins at the Garfield/Columbia County line and ends at the Little Goose Dam; the river in this reach is not free-flowing as Little Goose Dam forms the waterbody known as Lake Bryan.</p> <p>New York Island is located at the upstream end of this reach. This island is relatively undisturbed and is characterized by a riparian habitat zone of between 50 and 100 feet on the east shoreline, while the west shoreline accumulates significant amounts of woody debris but has less riparian vegetation. The upland area is vegetated with shrub-steppe vegetation.</p> <p>This reach includes five larger coves (extending back 700 to 2,200 feet from the main channel) and several smaller ones that have formed within the mouths and drainages of smaller seasonal creeks. The shorelines of these cove areas have significant riparian vegetation, including some small trees, with larger coves supporting wider riparian vegetation zones and larger trees. These cove areas—regardless of size—may provide off-channel refugia for salmonids and other fish species in the Snake River. Along the shoreline between these coves are steep bluffs, which generally limit the presence of riparian vegetation. Vegetation established on the slopes of the cliffs and bluffs along the shoreline is characteristic of a shrub-steppe or grassland community. Riparian vegetation is virtually non-existent along the last mile of this reach due to steep slopes and the presence of bank stabilization related to Little Goose Dam Road.</p> <p>This reach includes feeding, resting, and nesting habitat for PHS migratory waterfowl. The Snake River in this reach supports a number of ESA-listed fish species and other species that may be present in Columbia County as identified in the main text of the IAC Report.</p> |                        |
| <b>ECOLOGICAL FUNCTIONS ANALYSIS</b>   |                        |
| <p><b>Level of Existing Function:</b> Functioning</p> <p><b>Stressors:</b></p> <p>Upland development within shoreline jurisdiction:</p> <ul style="list-style-type: none"> <li>• Dam infrastructure</li> </ul> <p>Upland development may impact water quality through runoff, and impacts continuity of riparian and shrub-steppe habitats and, therefore, riparian functions such as migratory corridors.</p> <p>Recreational use:</p>  |                        |

| Snake River – Reach 6  | Columbia County |
|--|-----------------|
| <ul style="list-style-type: none"><li>• Motorized boat use</li><li>• Boat camping</li></ul> <p>Recreational use primarily affects water quality, forage, and rearing functions of aquatic habitat. It may result in reduced or disturbed shoreline vegetation, impacting riparian functions such as erosion control, wildlife habitat, and migratory corridors.</p> <p><b>Potential Restoration Opportunities:</b> There is an opportunity to enhance and restore riparian vegetation at development boundaries. Shrub-steppe restoration is consistent with WDFW 2011 recommendations.</p> <p><b>Potential Protection Opportunities:</b> Protect intact riparian and shrub-steppe habitat from fragmentation by future trails or roads. Concentrate recreation water access to limit habitat fragmentation. Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.</p> |                 |

| Snake River – Reach 7  | Columbia County |
|--|-----------------|
| <p><b>Reach Description:</b> Reach 7 of the Snake River runs from Little Goose Dam to the Columbia/Walla Walla County line (RM 70.2 to RM 58.7).</p>   |                 |
| <p><b>Shoreline Jurisdiction:</b> 1,320 acres, 11.5 miles</p>  |                 |
|  <p data-bbox="651 1171 1438 1199">Source: <a href="https://fortress.wa.gov/ecy/coastalatlantools/UICoastalAtlas/Tools/ShorePhotos.aspx">https://fortress.wa.gov/ecy/coastalatlantools/UICoastalAtlas/Tools/ShorePhotos.aspx</a></p>  |                 |
| <p><b>Subreaches (SR); see Map C-10</b></p> <p>There are no subreaches located in Snake River – Reach 7.</p>   |                 |
| <p><b>CHARACTERISTICS</b></p>  |                 |
| <p><b>Ownership:</b></p> <p>The majority of ownership is federal and USACE.</p>  |                 |
| <p><b>Land Use/Current SMP:</b></p> <p>Current land use designation:</p> <ul style="list-style-type: none"> <li>• Land uses have not been designated. Current land use is undeveloped due to limited access and steep terrain.</li> </ul> <p>Current zoning designation:</p> <ul style="list-style-type: none"> <li>• Reach 7 is zoned 50% Heavy Industrial (western portion) and 50% Agricultural.</li> </ul> <p>Current SMP environment designation:</p> <ul style="list-style-type: none"> <li>• The current designation is Rural, except for the grain elevator at Port of Columbia County near the</li> </ul> |                 |

| <b>Snake River – Reach 7</b>  | <b>Columbia County</b> |
|---|------------------------|
| Tucannon River, which is Urban.   |                        |
| <p><b>Existing Land Cover/Development:</b></p> <p>The majority of Reach 7 of the Snake River is in open space. Limited access and steep cliffs prevent development. A railroad bridge and a Highway 261 bridge cross the Snake River on this reach. There are two farms along Reach 7.</p>  |                        |
| <p><b>Geomorphic Character:</b></p> <p><b>Description:</b> The river is impounded by Lower Monumental Dam at RM 42 Lake Herbert West. The lake shoreline consists of Grande Ronde Basalt, outburst flood deposits, and a minor amount of alluvium at the mouth of tributary river and streams.</p> <p><b>Hardened Banks:</b> Approximately 24,400 linear feet of artificial hardened banks exist along Reach 7.</p>   |                        |
| <p><b>Flooding and Geological Hazards:</b></p> <p><b>Flooding:</b> FEMA floodplains are mapped throughout this reach. Floodplains are relatively narrow throughout the reach. The Lower Monumental Dam pool maintains a relatively consistent water surface elevation throughout this reach.</p> <p><b>Geological Hazards:</b> Severely erodible soils can be found near Texas Rapids Recreation Area. Moderate to high liquefaction susceptibility also exists in the same area, as well as on both sides of Tucannon River. Landslide hazards exist where slopes are steeper than 15% over underlying flood deposits, alluvial deposits, and Columbia River Basalts.</p>  |                        |
| <p><b>Existing Public Access:</b></p> <ul style="list-style-type: none"> <li>• Little Goose Dam Road runs along much of Reach 7.</li> <li>• Texas Rapids Recreation Area is located at Snake River RM 66 and is managed by USACE. The recreation area includes; boat launches, day-use amenities, primitive camping, vaulted toilets, picnic tables, fire pits, and non-potable water.</li> <li>• Boat access is possible along portions of the reach that are not too steep.</li> <li>• Highway 261 accesses Reach 7 downstream from Texas Rapids at the confluence of the Tucannon River.</li> <li>• There is a barge terminal and grain elevators just downstream from the confluence of the Tucannon.</li> <li>• Lyon’s Ferry Road enters the drainage from the southwest and intersects with Highway 261.</li> <li>• Lyons Ferry Marina (owned by Port of Columbia, managed by KOA) includes camping, showers, kayak rentals, dog park, day-use amenities, swimming area, electricity, and RV amenities and is located at the base of the Snake River Bridge for Highway 261.</li> <li>• A railroad bridge crosses the Snake River at the western end of Reach 7.</li> <li>• Lyons Fish Ferry Hatchery has river/lake access managed cooperatively by WDFW, USACE, USFW, and Bonneville Power Administration.</li> </ul> |                        |

| <b>Snake River – Reach 7</b>   | <b>Columbia County</b> |
|--|------------------------|
| <p><b>Identified Public Access Improvements:</b> The Port of Columbia County has two objectives for improvements to Lyons Ferry Marina:</p> <p>Objective 1 – Maintain and replace aging facilities as needed to retain a quality recreation experience for the public.</p> <p>Objective 2 – Install new facilities to keep up with the demands of the modern recreational public.</p> <p>Specific planned improvements include a playground, laundry facilities, rental cabins, an upland restroom replacement, swimming pool, boat moorage replacement, and breakwater replacement.</p> <p>Additionally, there are planned improvements to replace aging facilities at existing parks and public access facilities along the shoreline.</p> <p><b>Public Access Opportunities:</b> Opportunities are provided in suitable areas with limited opportunities in other areas of this reach because of steep banks and terrain.</p>   |                        |
| <b>ECOLOGICAL CONDITIONS</b>   |                        |
| <p><b>Water Quantity and Sediment:</b></p> <p>Several tributaries flow into this reach, including the Alkali Flat Creek, Tucannon River, and Palouse River. USGS Gage No. 13334300 in Reach 1 is used to define flow in this reach, which has a mean annual flow of 34,520 cubic feet per second (cfs) and a maximum discharge of 195,000 cfs.</p> <p>Little Goose Dam is located upstream of this reach; therefore, minor amounts of sediment are expected to be transported. Sediment input may occur from tributaries or from runoff from non-vegetated land during extreme events</p>  |                        |
| <p><b>Water Quality:</b></p> <p>In this reach, a TMDL is required for temperature, and a TMDL is in place for total dissolved gas. The reach is impaired by invasive exotic species and is a water of concern for pH and dissolved oxygen.</p>   |                        |
| <p><b>Habitat Characteristics and PHS Presence:</b></p> <p>This reach begins at Little Goose Dam and ends just past the confluence with the Tucannon River; the river in this reach is not free-flowing. Riparian vegetation is virtually non-existent along the first several miles of this reach due to steep slopes of the river shoreline and the presence of Little Goose Dam Road. Where the road is not immediately adjacent to the river, a narrow strip of riparian vegetation has become established; this area also includes the Texas Rapids recreation and a day-use area. Little Goose Dam Road is adjacent to the river until it turns area toward Highway 261, approximately 1.25 miles upstream of the confluence with the Tucannon River.</p> <p>Riparian vegetation is present along the shoreline of the river in the last mile before the Tucannon River but remains very narrowly confined to a strip between 10 to 30 feet near the water due to steep upland slopes. This strip includes willows, rushes, and grasses closer to the shoreline, with shrub-steppe vegetation present in most of the shoreline jurisdiction zone. Immediately downstream of the mouth of the Tucannon River,</p> |                        |

| <b>Snake River – Reach 7</b>  | <b>Columbia County</b> |
|---|------------------------|
| <p>the shoreline steepens and becomes less vegetated, with almost non-existent riparian vegetation zone where Highway 261 runs adjacent to the river toward the railroad bridge.</p> <p>From the railroad bridge to the county line at the end of this reach, the riparian vegetation consists of only a 1,020-foot strip along the water’s edge due to steep slopes of the upland bluffs. The vegetation is broken by informal river access areas and infrastructure-related shoreline stabilization.</p> <p>This reach includes little resting and nesting habitat for migratory waterfowl but may support feeding and habitat may be present near the confluence with the Tucannon River. The Snake River in this reach supports a number of ESA-listed fish species, as identified in the main text of the IAC Report.</p>  |                        |
| <b>ECOLOGICAL FUNCTIONS ANALYSIS</b>  |                        |
| <p><b>Level of Existing Function:</b> Functioning</p> <p><b>Stressors:</b></p> <p>Upland development within shoreline jurisdiction:</p> <ul style="list-style-type: none"> <li>• Dam Infrastructure</li> <li>• Roadways</li> </ul> <p>Runoff from upland development primarily affects water quality, which affects forage functions. Upland development also impacts the continuity of riparian and shrub-steppe habitats and, therefore, riparian functions such as migratory corridors.</p> <p>Recreational use:</p> <ul style="list-style-type: none"> <li>• Motorized boat use</li> <li>• Boat camping</li> </ul> <p>Recreational use primarily affects water quality, forage, and rearing functions of aquatic habitat. It may result in reduced or disturbed shoreline vegetation, impacting riparian functions such as erosion control, wildlife habitat, and migratory corridors.</p> <p><b>Potential Restoration Opportunities:</b> Enhance and restore riparian vegetation at development boundaries. Restore shrub-steppe consistent with WDFW 2011 recommendations.</p> <p><b>Potential Protection Opportunities:</b> Protect intact riparian and shrub-steppe habitat from fragmentation by future trails or roads. Concentrate recreation water access to limit habitat fragmentation. Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.</p> |                        |

**Snake River – Reach 1                      City of Clarkston**

**Reach Description:** Reach 1 begins at the Clarkston city limits RM 140.5 and ends at the west city limits RM 137.4.

**Shoreline Jurisdiction:** 259 acres, 3 miles



Source: <https://fortress.wa.gov/ecy/coastalatlus/UICoastalAtlas/Tools/ShorePhotos.aspx>

**Subreaches (SR); see Map C-11**

SR 1a: Begins at the south city limits (RM 140.5) and ends at Bridge Street (RM 139.5); 73 acres, 0.9 miles

SR 1b: Begins at Bridge St (RM 139.5) and ends at the boundary of the PC Port Commercial and ID Industrial Clarkston zoning districts (RM 138.4); 89 acres, 1.2 miles

SR 1c: Begins at the boundary of the PC Port Commercial and ID Industrial Clarkston zoning districts (RM 138.4) and ends at the west city limits (RM 137.4); 98 acres, 0.9 miles

**CHARACTERISTICS**

**Ownership:**

SR 1a: USACE has ownership.

SR 1b: USACE and Port of Clarkston have ownership.

SR 1c: Port of Clarkston and City of Clarkston have ownership.

| <b>Snake River – Reach 1</b>   | <b>City of Clarkston</b> |
|--|--------------------------|
| <p><b>Land Use/Current SMP:</b></p> <p>Current land use designation:</p> <ul style="list-style-type: none"> <li>• SR 1a: Residential, Parks, and Recreation</li> <li>• SR 1b: Commercial and Industrial</li> <li>• SR 1c: Commercial and Industrial</li> </ul> <p>Current zoning designation:</p> <ul style="list-style-type: none"> <li>• SR 1a: R1 Low Density Residential (more than 90%), R3 High Density Residential</li> <li>• SR 1b: SC Service Commercial (less than 5%) Greenbelt Park (70% of this park is within Asotin County)</li> <li>• SR 1c: PC Port Commercial (20%), ID Industrial (50%), 30% within Asotin County</li> </ul> <p>Current SMP environment designation:</p> <ul style="list-style-type: none"> <li>• SR 1a: Conservancy</li> <li>• SR 1b: Urban</li> <li>• SR 1c: Urban</li> </ul> |                          |
| <p><b>Existing Land Cover/Development:</b></p> <p>The City of Clarkston Reach of the Snake River is highly developed. This reach supports private homes, parks, industry, and Port facilities.</p>   |                          |
| <p><b>Geomorphic Character:</b></p> <p><b>Description:</b> The river is impounded by Little Granite Dam, which forms Lower Granite Lake. The lake shoreline mostly consists of outburst flood deposits and continental sedimentary rocks.</p> <p><b>Hardened Banks:</b> Approximately 4,725 linear feet of artificial hardened banks exist along Reach 1.</p>  |                          |
| <p><b>Flooding and Geological Hazards:</b></p> <p><b>Flooding:</b> FEMA floodplains are mapped throughout this reach. Floodplains are relatively narrow throughout the reach. The Lower Granite Dam pool maintains a relatively consistent water surface elevation throughout this reach.</p> <p><b>Geological Hazards:</b> Severely erodible soils can be found in SR 1A. Moderately erodible soils present in SR 1b and 1c. In all of Reach 1, liquefaction susceptibility is very low. Landslide hazard areas exist in SR 1b where slopes are steeper than 15% over underlying sedimentary deposits.</p>  |                          |
| <p><b>Existing Public Access:</b></p> <p>Shoreline and public access is managed by USACE</p> <p>SR 1a:</p> <ul style="list-style-type: none"> <li>• Greenbelt Park runs the length of the subreach.</li> <li>• There are multiple water access points along this subreach.</li> </ul>  |                          |

| Snake River – Reach 1   | City of Clarkston |
|---|-------------------|
| <ul style="list-style-type: none"><li>• There are multiple viewshed opportunities along the Greenbelt Park.</li><li>• SR 1a begins with an improved parking lot, restrooms, and water access for the Greenbelt Park.</li><li>• Highway 12 crosses the Snake River at the northern end of the subreach.</li></ul> <p>SR 1b:</p> <ul style="list-style-type: none"><li>• Just downstream (north) of the Highway 12 bridge, the Greenbelt Park has an improved boat launches, restrooms, phone, water, trails, dock, and day-use amenities.</li><li>• Downstream from the improved Greenbelt Park access point is a premier RV resort that is directly adjacent to the Greenbelt Park walkway and shoreline.</li><li>• Gateway Golf Center is located on the waterfront in this subreach.</li><li>• There is a barge terminal with grain elevators located just downstream of the golf center.</li><li>• There are two waterfront restaurants located in this subreach.</li></ul> <p>SR 1c:</p> <ul style="list-style-type: none"><li>• There are no formal public access points for this subreach.</li><li>• Water access is via Port lands. The Port facilities have access for regional tourism by providing a docking point for Paddle Boat Cruise Ships that travel from Portland, Oregon, to Clarkston, Washington.</li></ul> <p><b>Identified Public Access Improvements:</b> The Port of Clarkston has a 2013 to 2018 document, <i>Comprehensive Scheme of Harbor Improvements</i>, to allocate capital spending. Improvements include recreational amenities at Granite Lake Park, including completed public pathway improvements. Additionally, the Port has a Parks and Recreation Plan from June 2010, which identifies 2014 improvements such as improving bike/pedestrian paths along Port-owned streets and constructing a recreational trail at the Port Business Park.</p> <p><b>Public Access Opportunities:</b> The Greenbelt Park provides public access. It is also evident the Port is planning on providing public access within reason for its Port-owned properties.</p> |                   |
| ECOLOGICAL CONDITIONS   |                   |
| <p><b>Water Quantity and Sediment:</b></p> <p>A major tributary entering in this reach is the Clearwater River in SR 1b. USGS Gage No. 13334300 is used to define flow in this reach, which has a mean annual flow of 34,520 cubic feet per second (cfs) and a maximum discharge of 195,000 cfs.</p> <p>Sediment is likely to accumulate in SR 1b where the Clearwater River enters the Snake River and slows within the Lower Granite Dam pool.</p>  |                   |

| <b>Snake River – Reach 1</b>  | <b>City of Clarkston</b> |
|---|--------------------------|
| <p><b>Water Quality:</b></p> <p>TMDLs are required in SR 1a and 1b for pH, temperature, and dissolved oxygen. In SR 1c, a TMDL is in place for dioxin, and it is a water of concern for 4,4'-dichlorodiphenyldichloroethane (DDD), 4,4'-DDE, temperature, and dissolved oxygen. Runoff from residential, roadway, and industrial activities may cause impacts to water quality throughout this reach.</p>   |                          |
| <p><b>Habitat Characteristics and PHS Presence:</b></p> <p><b>SR 1a:</b> The shoreline in this subreach includes enhanced park and managed off-shore habitat areas created for recreational use. There is a bike trail along the shoreline on the opposite side of the park. The shoreline is stabilized with riprap in many locations, including around the bridge support for Southway Bridge and Highway 12 at the end of the subreach. There is a riparian zone with trees along the length of this subreach, with most development occurring outside of the shoreline jurisdiction.</p> <p><b>SR 1b:</b> This subreach is generally similar to SR 1a, although the riparian vegetation does not feature many tall trees. Land use in the uplands is a mix of recreational and commercial. There are several boat docks in this subreach.</p> <p><b>SR 1c:</b> Shoreline conditions in this subreach area generally similar, with upland development transitioning to a mix of industrial, port/marina, and commercial. This subreach includes a boat dock and berthing area. The riparian vegetation is minimal, and shoreline banks are stabilized with riprap.</p> |                          |
| <b>ECOLOGICAL FUNCTIONS ANALYSIS</b>  |                          |
| <p><b>SR 1a:</b></p> <p><b>Level of Existing Function:</b> Partially Functioning</p> <p><b>Stressors:</b></p> <p>Upland development within shoreline jurisdiction:</p> <ul style="list-style-type: none"> <li>• Residential development</li> <li>• Riverside Drive</li> </ul> <p>Runoff from upland development primarily affects water quality, which affects forage functions. Upland development also impacts the continuity of riparian and shrub-steppe habitats and, therefore, riparian functions such as migratory corridors.</p> <p>Recreational use:</p> <ul style="list-style-type: none"> <li>• Parks and trails</li> <li>• Marina and motorized boat use</li> <li>• Boat camping</li> </ul> <p>Recreational use primarily affects water quality, forage, and rearing functions of aquatic habitat. It may result in reduced or disturbed shoreline vegetation, impacting riparian functions such as erosion control, wildlife habitat, and migratory corridors.</p>  |                          |

| Snake River – Reach 1  | City of Clarkston |
|--|-------------------|
| <p><b>Potential Restoration Opportunities:</b> Enhance and restore riparian vegetation, place large woody debris (LWD) instream, and remove invasive species.</p> <p><b>Potential Protection Opportunities:</b> Protect intact riparian habitat from fragmentation by future trails or roads. Concentrate recreation water access to limit aquatic habitat disturbance. Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.</p>  |                   |
| <p><b>SR 1b:</b></p> <p><b>Level of Existing Function:</b> Partially Functioning</p> <p><b>Stressors:</b></p> <p>Upland development within shoreline jurisdiction:</p> <ul style="list-style-type: none"><li>• Residential development</li><li>• Bridges and boat docks</li></ul> <p>Runoff from upland development primarily affects water quality, which affects forage functions. Upland development also impacts the continuity of riparian and shrub-steppe habitats and, therefore, riparian functions such as migratory corridors.</p> <p>Recreational use:</p> <ul style="list-style-type: none"><li>• Parks and trails</li><li>• Marina and motorized boat use</li><li>• Boat camping</li></ul> <p>Recreational use primarily affects water quality, forage, and rearing functions of aquatic habitat. It may result in reduced or disturbed shoreline vegetation, impacting riparian functions such as erosion control, wildlife habitat, and migratory corridors.</p> <p><b>Potential Restoration Opportunities:</b> Enhance and restore riparian vegetation, place LWD instream, and remove of invasive species.</p> <p><b>Potential Protection Opportunities:</b> Protect intact riparian habitat from fragmentation by future trails or roads. Concentrate recreation water access to limit aquatic habitat disturbance. Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.</p> |                   |

| Snake River – Reach 1   | City of Clarkston |
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| <p><b>SR 1c:</b></p> <p><b>Level of Existing Function:</b> Partially Functioning</p> <p><b>Stressors:</b></p> <p>Upland development within shoreline jurisdiction:</p> <ul style="list-style-type: none"><li>• Residential development</li><li>• Bridges and roads</li><li>• Boat docks and berthing areas</li></ul> <p>Runoff from upland development primarily affects water quality, which affects forage functions. Upland development also impacts the continuity of riparian and shrub-steppe habitats and, therefore, riparian functions such as migratory corridors.</p> <p>Recreational use:</p> <ul style="list-style-type: none"><li>• Parks and trails</li><li>• Marina and motorized boat use</li><li>• Boat camping</li></ul> <p>Recreational use primarily affects water quality, forage, and rearing functions of aquatic habitat. It may result in reduced or disturbed shoreline vegetation, impacting riparian functions such as erosion control, wildlife habitat, and migratory corridors.</p> <p><b>Potential Restoration Opportunities:</b> Enhance and restore riparian vegetation, place LWD, and remove invasive species.</p> <p><b>Potential Protection Opportunities:</b> Protect intact riparian habitat from fragmentation by future trails or roads. Concentrate recreation water access to limit aquatic habitat disturbance. Make stormwater controls for new development consistent with Eastern Washington Stormwater Manual. Protect steep slope areas from runoff and sedimentation.</p> |                   |