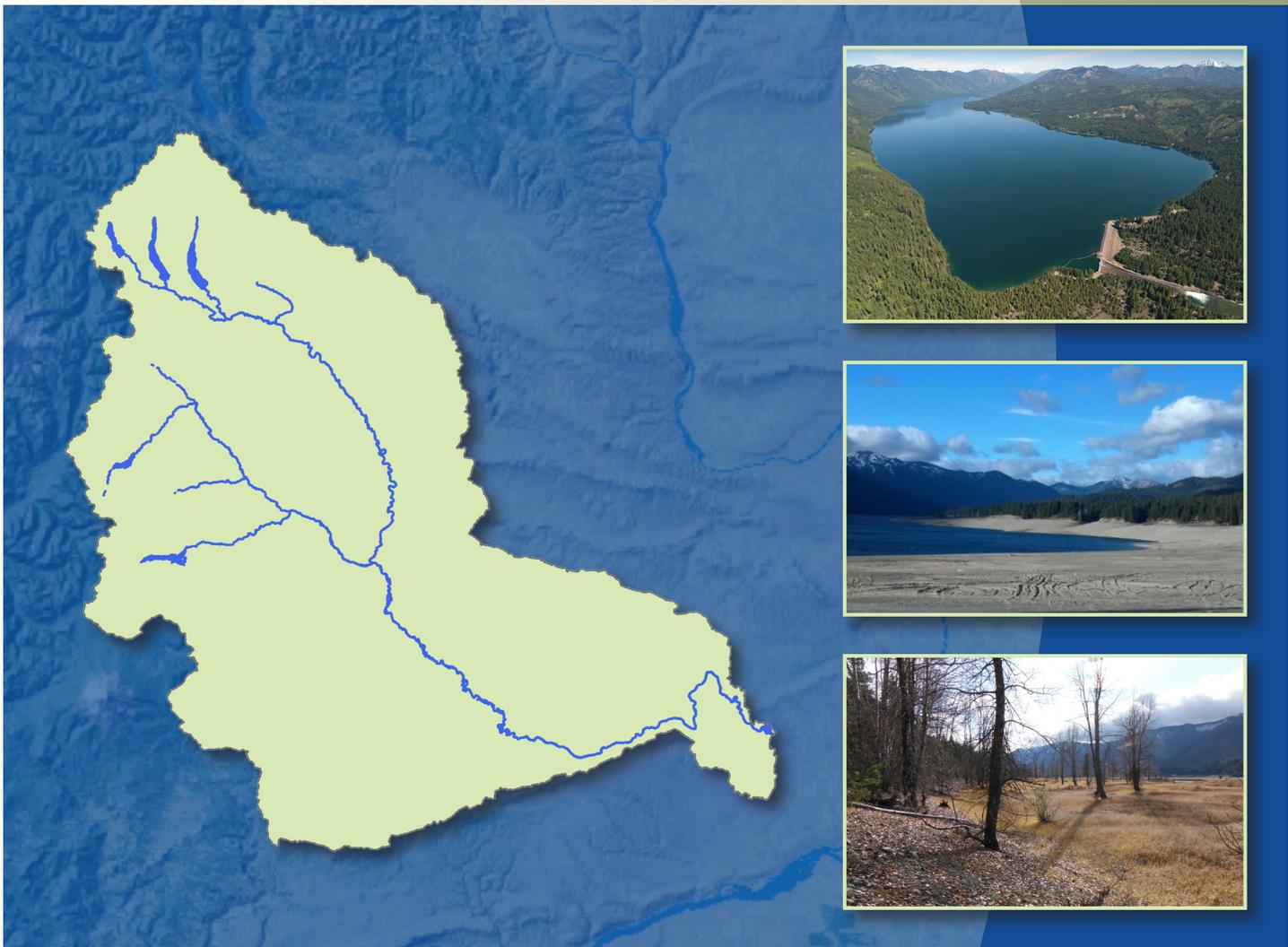


# Cle Elum Pool Raise Project

A Component of the Yakima River Basin  
Integrated Water Resource  
Management Plan

DRAFT Environmental Impact Statement  
EXECUTIVE SUMMARY

KITTITAS COUNTY, WASHINGTON



U.S. Department of the Interior  
Bureau of Reclamation  
Pacific Northwest Region  
Columbia-Cascades Area Office  
Yakima, Washington



State of Washington  
Department of Ecology  
Central Regional Office  
Yakima, Washington  
Ecology Publication Number: 14-12-003

## **Mission Statements**

The U.S. Department of the Interior protects America's natural resources and heritage, honors our cultures and tribal communities, and supplies the energy to power our future.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

The mission of the Department of Ecology is to protect, preserve and enhance Washington's environment, and promote the wise management of our air, land and water for the benefit of current and future generations.

**Draft Environmental Impact Statement  
Cle Elum Pool Raise Project  
Kittitas County, Washington**

**Joint Lead Agencies:**

U.S. Department of the Interior  
Bureau of Reclamation

State of Washington  
Department of Ecology

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**Cooperating Governments and Agencies:**

Confederated Tribes and Bands of the Yakama Nation  
U.S. Department of Agriculture, U.S. Forest Service  
U.S. Department of Energy, Bonneville Power Administration  
U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service

This Draft Environmental Impact Statement (DEIS) for the Cle Elum Pool Raise Project was prepared jointly by the U.S. Department of the Interior Bureau of Reclamation and Washington State Department of Ecology. The project is part of Title XII legislation (108 Stat. 4526 U.S. Code) and is an element of the Yakima River Basin Integrated Water Resource Management Plan (Integrated Plan). This DEIS evaluates a No Action Alternative and four action alternatives: Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection; Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection; Alternative 4 – Additional Stored Water Used for Total Water Supply Available (TWSA) with Rock Shoreline Protection; and Alternative 5 – Additional Stored Water Used for TWSA with Hybrid Shoreline Protection.

This DEIS was prepared in compliance with the National Environmental Policy Act (NEPA) 42 USC 4371 et seq. and the State of Washington Environmental Policy Act (SEPA), Chapter 43.21C RCW, and the SEPA Rules (Chapter 197-11 WAC).



## **SEPA FACT SHEET**

### **Brief Description of Proposal:**

Reclamation and the Washington State Department of Ecology have jointly prepared this Draft Environmental Impact Statement (DEIS) on the Cle Elum Pool Raise Project. This document was prepared in compliance with the National Environmental Policy Act (NEPA) and Washington State Environmental Policy Act (SEPA). Ecology is the SEPA lead agency for the proposal.

The Cle Elum Pool Raise Project would allow up to an additional 14,600 acre-feet of water to be stored and released from Cle Elum Reservoir by modifying the existing spillway radial gates at Cle Elum Dam. Reclamation and Ecology developed the project in response to congressional legislation (Title XII), and the project is an element of the Yakima River Basin Integrated Water Resource Management Plan (Integrated Plan).

### **Proponents and Contacts:**

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Yakima, Washington 98901-2058  
509-575-5848, ext. 613

State of Washington, Department of Ecology

**Contact:** Mr. Derek I. Sandison  
SEPA Responsible Official  
Director, Office of Columbia River  
15 W. Yakima Ave, Suite 200  
Yakima, Washington 98902-3452  
509-457-7120

### **Permits, Licenses, and Approvals Required for Proposal:**

To implement any component of the action alternative, the lead agency would need to apply for any required permits and comply with various laws, regulations, and Executive Orders. The following are those that are likely to apply:

- National Environmental Policy Act
- Endangered Species Act
- Magnusson-Stevens Fishery Conservation and Management Act
- Fish and Wildlife Coordination Act
- Secretary's Native American Trust Responsibilities
- National Historic Preservation Act
- Native American Graves Protection and Repatriation Act
- Executive Order 11988: Floodplain Management
- Executive Order 11990: Protection of Wetlands
- Executive Order 12898: Environmental Justice
- Executive Order 13007: Indian Sacred Sites
- Executive Order 13175: Consultation and Coordination with Indian Tribal Governments
- Clean Water Act
- State Environmental Policy Act
- Dam Safety Permit
- Hydraulic Project Approval

Additionally, Reclamation and Ecology would coordinate with Kittitas County on the applicability of local regulations, including critical areas regulations and the Shoreline Management Program.

**Authors and Contributors:**

A list of authors and contributors is provided in a section that follows Chapter 5.

**Date of Issue:**

September 23, 2014

**Public Comment Period:**

The DEIS will be available for a 60-day public comment period. Comments must be received or postmarked by 5 p.m. PST on November 25, 2014, and may be submitted orally, in writing via regular mail, by facsimile, or by email to:

Ms. Candace McKinley  
Environmental Program Manager  
Columbia-Cascades Area Office  
1917 Marsh Road  
Yakima, Washington 98901-2058  
Phone: 509-575-5848, ext. 613  
Fax: 509-454-5650  
Email: cepr@usbr.gov

**Public Meetings:**

Reclamation and Ecology will conduct two public meetings to receive comments on the DEIS. The meetings will be held from 4-7 p.m. on the following dates and at the following locations:

October 21, 2014	October 22, 2014
Hal Holmes Center	U.S. Forest Service
209 N. Ruby Street	Cle Elum Ranger District
Ellensburg, WA 98926	803 W. 2 <sup>nd</sup> Street
	Cle Elum, WA 98922

**Timing of Additional Environmental Review:**

Reclamation and Ecology anticipate releasing the Final EIS on the Cle Elum Pool Raise Project in March 2015.

**Document Availability:**

The DEIS can be viewed online at:  
<http://www.usbr.gov/pn/programs/eis/cleelumraise/index.html>. The document may be obtained in hard copy or CD by written request to the SEPA Responsible Official listed above, or by calling 509-575-5848, ext. 613. To ask about the availability of this document in a format for the visually impaired, call the Office of Columbia River at 509-662-0516. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

**Location of Background Materials:**

Background materials used in the preparation of this DEIS are available online at:

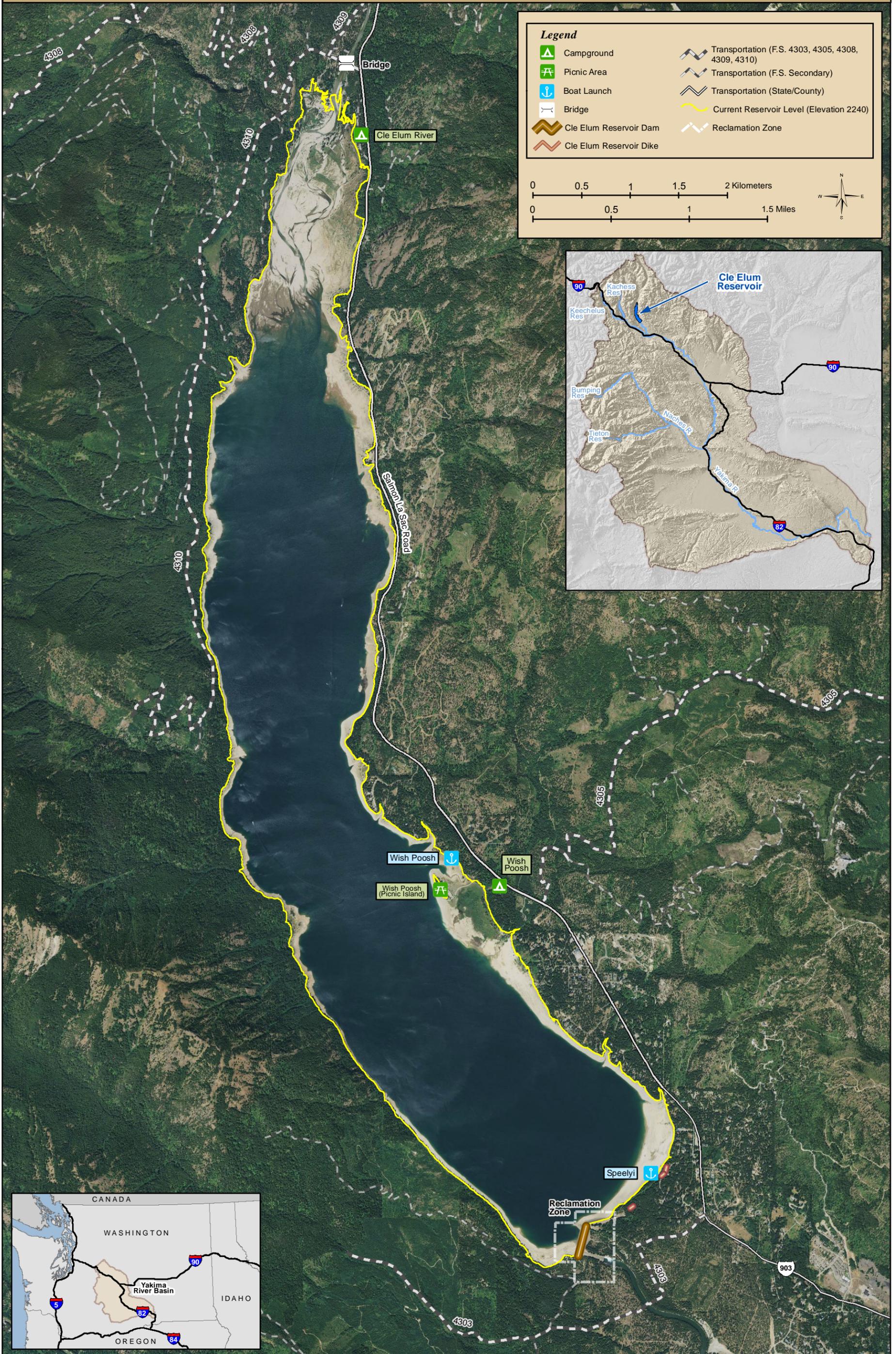
Cle Elum Pool Raise Project

<http://www.usbr.gov/pn/programs/eis/cleelumraise/index.html>

Additional information about the Yakima River Basin Integrated Water Resource Management Plan is available at:

<http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/index.html>.



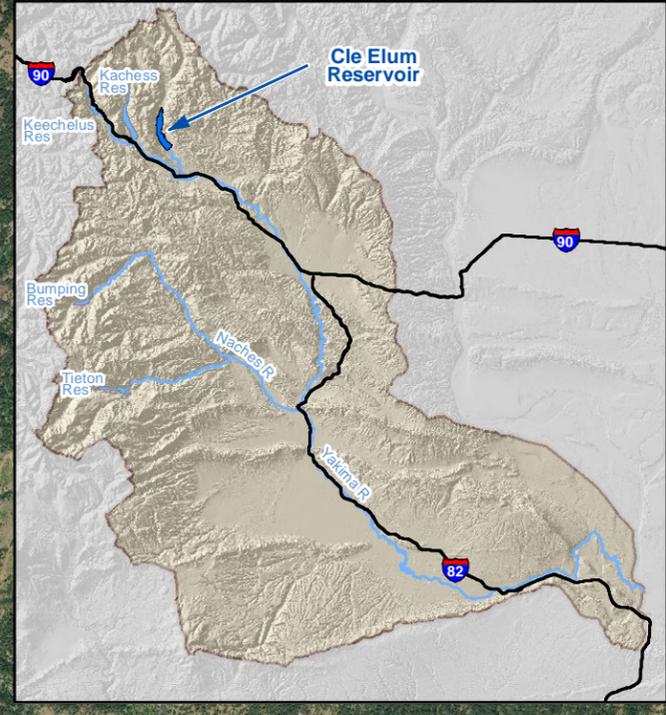


**Legend**

	Campground		Transportation (F.S. 4303, 4305, 4308, 4309, 4310)
	Picnic Area		Transportation (F.S. Secondary)
	Boat Launch		Transportation (State/County)
	Bridge		Current Reservoir Level (Elevation 2240)
	Cle Elum Reservoir Dam		Reclamation Zone
	Cle Elum Reservoir Dike		

0 0.5 1 1.5 2 Kilometers

0 0.5 1 1.5 Miles





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# EXECUTIVE SUMMARY

## Introduction

The U.S. Department of the Interior Bureau of Reclamation and the Washington State Department of Ecology have prepared this Draft Environmental Impact Statement (DEIS) on the Cle Elum Pool Raise Project. Reclamation and Ecology are jointly leading and preparing this DEIS as a combined National Environmental Policy Act (NEPA) and State Environmental Policy Act (SEPA) document. The Yakama Nation, U.S. Forest Service (USFS), Bonneville Power Administration (BPA), and National Marine Fisheries Service (NMFS) are serving as cooperating agencies in preparation of the DEIS.

## Proposed Action

Reclamation and Ecology propose to construct the Cle Elum Pool Raise Project within the congressional authorization given in Sections 1205 and 1206, Title XII, Yakima River Basin Water Enhancement Project (YRBWEP), of the Yavapai-Prescott Indian Tribe Water Rights Settlement Act of 1994 (Public Law 103-434, (108 Stat. 4526 U.S. Code)).<sup>1</sup> The authorization includes among other provisions:

- Modify the radial gates at Cle Elum Dam to provide an additional 14,600 acre-feet of storage capacity in Cle Elum Reservoir;
- Provide for shoreline protection of Cle Elum Reservoir; and
- Accomplish necessary environmental mitigation.

Reclamation proposes to use the additional stored water from the Cle Elum Pool Raise Project to improve instream flows consistent with the existing Title XII authorization (108 Stat. 4526 USC), or Reclamation would seek congressional authorization to redesignate the water as part of the Yakima Project Total Water Supply Available (TWSA) for both instream and out-of-stream uses.

The individual components of the proposed Cle Elum Pool Raise Project include:

- Modify the existing spillway radial gates to increase their height by 3 feet;
- Install erosion protection along portions of the shoreline;
- Raise the height of three existing earthen dikes north and east of the dam to provide additional freeboard;

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<sup>1</sup> The complete text of the portions of Title XII that pertain directly to the Cle Elum Pool Raise Project is included in Appendix A.

- Modify facilities and roads at the Cle Elum River Campground and Wish Poosh boat ramp to avoid inundation; and
- Acquire real property interests where necessary to accommodate shoreline erosion protection and/or provide access for construction and maintenance.

## **Purpose and Need for the Action**

The mission of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public. To advance this mission within the Yakima Project, Reclamation prepared the *Yakima River Basin Integrated Water Resource Management Plan Programmatic EIS* (Integrated Plan PEIS) (Reclamation and Ecology, 2012) to develop a comprehensive program of water resource and habitat improvements focused on fish passage, aquatic habitat, and water supply. The Integrated Plan PEIS confirmed that the current water resources infrastructure, programs, and policies in the Yakima River basin are not capable of consistently meeting the demands for fish and wildlife, irrigation, and municipal water supply.

The Integrated Plan PEIS preferred alternative included a wide range of projects and actions that contribute to solving the basin's water supply and aquatic ecosystem needs and included the Cle Elum Pool Raise Project in the Structural and Operational Changes Element. The Integrated Plan PEIS Record of Decision (signed by Reclamation on July 9, 2013) identified the Cle Elum Pool Raise Project as one of the projects necessary to help address these needs in the upper Yakima River basin (Reclamation, 2013). The purpose of the Cle Elum Pool Raise Project is to meet these needs and fulfill the intent of the congressional authorization expressed in Title XII to increase the capacity of the reservoir and improve aquatic resources for fish habitat, rearing, and migration in the Cle Elum and upper Yakima Rivers. In addition, if Congress authorizes designation of the additional stored water to be used as part of TWSA consistent with the Integrated Plan Record of Decision, then the proposed action would also help meet demands for water supply.

## **Yakima Integrated Water Resource Management Plan**

Reclamation and Ecology developed the Integrated Plan to meet the future water needs of the Yakima River basin. Based on over 30 years of studies in the basin, the agencies determined that current water supply in the basin does not meet instream or out-of-stream demand, including the aquatic demands for fish and wildlife and the out-of-stream needs of irrigation and municipal supply. In addition, climate change predictions indicate that the basin's snowpack will decrease, reducing spring and summer runoff.

The Integrated Plan addresses the need to restore ecological functions in the Yakima River system and to provide more reliable and sustainable water resources for the health of the riverine environment, as well as agriculture, municipal, and domestic water users. The Integrated Plan meets these needs while anticipating changing water uses and effects of predicted climate change on water resources in the basin.

Section 1.1 of the Integrated Plan PEIS presents the goals of the Integrated Plan as follows:

- Provide opportunities for comprehensive watershed protection, ecological restoration and enhancement addressing instream flows, aquatic habitat, and fish passage;
- Improve water supply reliability during drought years for agricultural and municipal needs;
- Develop a comprehensive approach for efficient management of water supplies for irrigated agriculture, municipal and domestic uses, and power generation;
- Improve the ability of water managers to respond and adapt to potential effects of climate change; and
- Contribute to the vitality of the regional economy and sustain the riverine environment.

To address these goals, the Integrated Plan includes seven elements: reservoir fish passage, structural and operational changes to existing facilities, surface water storage, groundwater storage, habitat and watershed protection and enhancement, enhanced water conservation, and market reallocation. The seven elements each include recommended projects to meet the goals. The structural and operational changes element includes the Cle Elum Pool Raise Project. The project would help meet the goal of enhancing instream flows, which would benefit fish habitat.

## Alternatives

This DEIS evaluates the potential environmental impacts associated with the Cle Elum Pool Raise Project. The Cle Elum Pool Raise Project would modify the existing radial gates at the dam spillway to raise the level of the reservoir pool 3 feet, allowing up to an additional 14,600 acre-feet of water to be stored and released from Cle Elum Reservoir. The existing dam would remain as is.

In addition to the No Action Alternative, Reclamation and Ecology are evaluating four action alternatives for the Cle Elum Pool Raise Project. All four action alternatives would include the same approach to raising the reservoir pool level by modifying the existing spillway radial gates. The action alternatives also include raising the elevation of the right abutment of the dam and the dam's saddle dikes to ensure adequate freeboard (a factor of safety usually expressed in feet above a flood level; in this case, it is a 3-foot zone of additional protection from wave erosion). As part of the project, Reclamation would protect USFS recreational facilities and access at Cle Elum River and Wish Poosh campgrounds and portions of Salmon La Sac Road.

Reclamation and Ecology are proposing the following two alternatives for allocating and using the additional stored water:

- For instream flow, as consistent with the Title XII legislation (108 Stat. 4526 USC) to improve conditions for fish; and
- For TWSA and out-of-stream uses as well as instream flows, requiring additional congressional authorization.

Reclamation and Ecology are also proposing the following two strategies for shoreline protection:

- Rock shoreline protection, consisting mostly of riprap with some plantings; and
- Hybrid shoreline protection, consisting of a range of treatments, including rock riprap and various bioengineered techniques.

Under both shoreline protection alternatives, Reclamation would continue its existing shoreline monitoring and maintenance program. Both forms of shoreline protection may require Reclamation to acquire private land or easements across private land from willing sellers.

Table ES-1 summarizes the components of the action alternatives.

**Table ES-1. Summary of Action Alternative Components**

	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Modify existing spillway radial gates to allow additional water to be stored.	Same for all action alternatives			
Increase the reservoir pool elevation by 3 feet, allowing up to an additional 14,600 acre-feet of water to be stored.	Same for all action alternatives			
Use of additional stored water.	Instream flows <sup>1</sup>		TWSA <sup>2</sup>	
Shoreline protection method.	Rock	Hybrid	Rock	Hybrid
Increase the freeboard at the saddle dikes and right bank abutment.	Same for all action alternatives			
Protect Federal property, such as USFS recreation facilities and access.	Same for all action alternatives			

<sup>1</sup>Consistent with 108 Stat. 4526 USC; <sup>2</sup>Requires additional congressional authorization

### Alternative 1 – No Action Alternative

Alternative 1, the No Action Alternative, represents the most likely future conditions in the absence of implementing the proposed action. The No Action Alternative forms the baseline for comparison of potential impacts of the proposed action and the action alternatives. Under the No Action Alternative, Reclamation and Ecology would not implement the Cle Elum Pool Raise Project and additional water would not be stored in or released from the reservoir.

For purposes of this DEIS, Reclamation and Ecology consider the No Action Alternative to include the following projects and actions:

- Interim juvenile fish passage facility and operations currently in place at Cle Elum Dam, including reconstruction of the facility.
- Ongoing fish reintroduction at Cle Elum Reservoir and upper Cle Elum River.

## **Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection**

Under Alternative 2, Reclamation would increase the Cle Elum Reservoir pool level by 3 feet, allowing an additional 14,600 acre-feet of water to be stored in the reservoir.

Reclamation would allocate the additional stored water to meet instream flow needs as authorized in the Title XII legislation (108 Stat. 4526 USC). Reclamation would implement a rock shoreline protection strategy to reduce the potential for increased shoreline erosion.

Alternative 2 includes the following major components:

- Modify the existing Cle Elum Dam spillway radial gates to increase the reservoir pool elevation by 3 feet, resulting in inundation of some shoreline areas.
- Allocate the additional stored water for instream flows.
- Implement rock shoreline protection to stabilize shorelines adjacent to private property that would experience increased erosion from the higher reservoir level.
- Monitor shoreline conditions and implement appropriate shoreline protection measures where necessary in conjunction with Reclamation's existing annual shoreline monitoring assessment.
- Raise the elevation of three existing earthen saddle dikes north and east of the dam and raise the height of the right abutment of the dam to provide adequate freeboard.
- Provide shoreline protection for Federal property, including USFS recreation facilities and access at Wish Poosh and Cle Elum River Campgrounds.
- Provide erosion protection for portions of Salmon La Sac Road.
- Acquire land or easements, or both, from private landowners where necessary to accommodate shoreline protection.

## **Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection**

Under Alternative 3, Reclamation and Ecology propose to use the additional stored water for instream flows as described for Alternative 2, but Reclamation would employ a hybrid shoreline protection strategy. Reclamation would protect shorelines using rock walls where needed combined with bioengineered shoreline protection, such as perched beaches, anchored logs, and other techniques. All other project components would be the same as described for Alternative 2.

## **Alternative 4 – Additional Stored Water Used for TWSA with Rock Shoreline Protection**

Under Alternative 4, Reclamation and Ecology propose to use the additional stored water for

TWSA to provide water supply for irrigation districts or for instream flows. This alternative would require additional authorization from Congress. Reclamation would employ the same Rock Shoreline Protection strategy described for Alternative 2. All other project components would be the same as Alternative 2.

### **Alternative 5 – Additional Stored Water Used for TWSA with Hybrid Shoreline Protection**

For Alternative 5, Reclamation and Ecology propose to use the additional stored water for TWSA as described for Alternative 4, but would employ Hybrid Shoreline Protection strategy as described for Alternative 3. All other project components would be the same as described for Alternative 2.

## **Summary of Environmental Consequences**

Chapter 4 of the DEIS describes the environmental consequences of the alternatives, including the No Action Alternative. The Cle Elum Pool Raise Project would provide additional stored water to benefit streamflows and fish or water supply. Depending on how Reclamation chooses to use the additional stored water, Alternatives 2 and 3 would provide either a 20 percent increase in winter streamflows in the Cle Elum River or maintain higher reservoir pool levels and provide better passage conditions for outmigrating salmon for the proposed Cle Elum Fish Passage project. Both water use scenarios would benefit fish, including federally listed bull trout and Middle Columbia River (MCR) steelhead, by either expanding overwintering habitat for salmonids or improving fish passage conditions. Alternatives 4 and 5 would increase water supply in drought years by up to 1.6 percent. This would improve conditions for proratable water rights users, but provide fewer benefits to fish.

Under all action alternatives, the additional stored water would inundate approximately 46 additional acres around the reservoir. The additional inundation would occur for about 40 days in June and July in years when water is available to fill the reservoir. Some losses to vegetation would occur and areas of coniferous forest would likely be replaced by more flood-tolerant species such as deciduous tree/shrub communities. Reclamation expects impacts to vegetation and wildlife habitat to be minor because of the limited duration and scale of the inundation.

The increased inundation would increase erosion along some of the shoreline. All action alternatives include shoreline protection to reduce this erosion and to protect private property and Federal facilities. However, Reclamation expects approximately 2 to 5 acres of area could erode in addition to the current levels of erosion. Reclamation would continue its annual shoreline survey program to identify erosion problems and approaches to address the problems. All action alternatives would protect recreational facilities along the reservoir, so Reclamation anticipates no long-term impacts to recreation.

Under all action alternatives, modification of the radial spillway gates would alter the historic Cle Elum Dam and the increased reservoir pool would impact archaeological resources along the shoreline. Reclamation would develop and implement a treatment plan for cultural

resources directly affected by the project and a Cultural Resource Management Plan to address ongoing and future operational and land management implications of the project.

Most impacts associated with the Cle Elum Pool Raise Project would be temporary construction impacts such as increased noise, dust, and traffic. These construction activities would also temporarily affect visual quality and the recreational experience around the reservoir. Construction would require clearing and grading of some areas. Reclamation would restore most of the disturbed areas with native vegetation following construction. Reclamation expects all construction impacts to be minor. Construction would occur in phases over a 5 year period, reducing the number of truck trips, vehicle emissions, and area disturbed during any one construction year. Reclamation would conduct all shoreline construction activities above the water line while the reservoir is drawn down, so no impacts to fish would occur.

Table ES-2 provides a summary of impacts and benefits associated with the No Action and four action alternatives.

**Table ES-2. Summary Comparison of Impacts**

<b>Surface Water</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	No opportunity to improve instream flows or improve water supply for TWSA. Water supplies for proratable irrigation districts would fall below 70 percent of entitlements more frequently. Reservoir would take longer to fill during dry years.		
Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection	<ul style="list-style-type: none"> <li>• Construction of the spillway gates would occur when the reservoir is drawn down near the end of the irrigation season and would not affect operation of the spillway gates or water storage and water releases from the dam.</li> <li>• Reservoir storage capacity increase of 3.3 percent.</li> <li>• Inundation of additional 46 acres of shoreline during pool raise with small increases in reservoir fluctuations.</li> <li>• Slight reduction of flow from the reservoir in spring when additional water is being stored.</li> <li>• Reservoir will fill above existing full pool level at elevation 2,240 in 72 percent of years and fill to elevation 2,243 in 52 percent of years.</li> <li>• Reservoir will stay above existing full pool for an average of 39 days (June 2 – July 10) during years sufficient runoff is available to fill the reservoir.</li> </ul>	<ul style="list-style-type: none"> <li>• Construction would not affect reservoir operations because it would occur when the reservoir is drawn down.</li> <li>• Additional stored water would provide instream flows of approximately 36 cfs for 6 months (20 percent increase in winter flows).</li> <li>• Increased instream flows would improve overwintering fish habitat.</li> <li>• Alternative use of water would maintain higher pool levels all year and provide better passage conditions for outmigrating smolts for proposed Cle Elum Fish Passage project.</li> </ul>	<ul style="list-style-type: none"> <li>• Construction would not affect reservoir storage or releases.</li> <li>• No impacts to long-term reservoir operation.</li> </ul>

<b>Surface Water</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.
Alternative 4 – Additional Water Used for TWSA with Rock Shoreline Protection	<ul style="list-style-type: none"> <li>• Volume stored and surface area would be the same as Alternative 2.</li> <li>• Additional water stored in the reservoir would be retained until needed for water supply. Construction would not affect reservoir storage or releases.</li> <li>• Reservoir will fill above existing full pool level at elevation 2,240 in 71 percent of years and fill to elevation 2,243 in 53 percent of years.</li> <li>• Reservoir will stay above existing full pool for up to 2 days longer than Alternative 2.</li> </ul>	<ul style="list-style-type: none"> <li>• Increased water supply in drought years of up to 1.6 percent compared to baseline conditions.</li> </ul>	Same as Alternative 2.
Alternative 5 – Additional Water Used for TWSA with Hybrid Shoreline Protection	Same as Alternative 2.	Same as Alternative 4.	Same as Alternative 2.

<b>Earth</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	Shoreline erosion would continue as it currently occurs. The west shoreline could have the greatest potential impact; the east shoreline includes some shoreline protection. No construction-related impacts would occur.		
Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection	<ul style="list-style-type: none"> <li>• Minimal construction-related impacts associated with the radial gate modification.</li> <li>• Increases in shoreline erosion where no shoreline protection is proposed.</li> <li>• 8,300 feet (17 percent) of the west shoreline would be susceptible to erosion.</li> <li>• 2 to 5 acres of area could be eroded with 17,000 to 34,000 CY of material deposited in the reservoir.</li> <li>• Impacts are considered minor compared to the size of the reservoir.</li> </ul>	<ul style="list-style-type: none"> <li>• No additional erosion would occur.</li> </ul>	<ul style="list-style-type: none"> <li>• Short-term increase in erosion during construction.</li> <li>• Approximately                         <ul style="list-style-type: none"> <li>• 22 acres of clearing</li> <li>• 195,000 CY of excavation</li> <li>• 55,000 CY of fill</li> <li>• 45,00 CY of riprap</li> <li>• 15 acres revegetated</li> <li>• 5 mi of temporary access roads</li> </ul> </li> <li>• Long-term protection from erosion.</li> </ul>

<b>Earth</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection	Same as Alternative 2.	Same as Alternative 2.	<ul style="list-style-type: none"> <li>• Short-term increase in erosion during construction.</li> <li>• Approximately                             <ul style="list-style-type: none"> <li>• 30 acres of clearing</li> <li>• 195,000 CY of excavation</li> <li>• 215,000 CY of fill</li> <li>• 6,100 CY of riprap</li> <li>• 12,000 CY of large rock</li> <li>• 20 acres revegetated</li> <li>• 5 mi of temporary access roads</li> </ul> </li> <li>• Hybrid shoreline protection could keep more shoreline bank slopes exposed to wave erosion than rock shoreline protection and would therefore result in more erosion in the first years after construction</li> <li>• Long-term protection from erosion.</li> </ul>
Alternative 4 – Additional Water Used for TWSA with Rock Shoreline Protection	Same as Alternative 2.		
Alternative 5 – Additional Water Used for TWSA with Hybrid Shoreline Protection	Same as Alternative 2.		

<b>Surface Water Quality</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	Construction-related water quality impacts will not occur. Existing water quality trends will continue. Criteria that currently do not meet water quality standards, including seasonal temperature exceedances, would continue and potentially increase with climate change conditions.		
Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection	<ul style="list-style-type: none"> <li>• No construction impacts would occur because construction will occur in dry conditions when the reservoir is drawn down.</li> <li>• Nutrient and sediment loads could increase by a small amount associated with erosion, and short term localized exceedances of water quality standard could occur.</li> <li>• Temperature increases are not expected to be measureable.</li> <li>• Long-term nutrient and dissolved oxygen levels, and temperature would remain similar to existing conditions resulting in the reservoir remaining oligotrophic.</li> </ul>	<ul style="list-style-type: none"> <li>• No construction impacts would occur.</li> <li>• Both decreases and increases to streamflows in the Cle Elum and Yakima rivers would occur.</li> <li>• Decreases in Yakima River instream flows would occur in spring, when flows are highest; water quality impacts would not occur.</li> <li>• Discharges to Cle Elum River would raise water temperatures no more than 0.3° C, which would meet State Water Quality Standards.</li> </ul>	<ul style="list-style-type: none"> <li>• Short-term suspended sediment and turbidity increases after shoreline protection is constructed. Some exceedances may exceed state standard of 5 NTU over background. Exceedances would be localized in construction area and dissipate and settle within the water column.</li> <li>• Long-term turbidity or suspended sediment impacts are not expected.</li> </ul>

<b>Surface Water Quality</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection	<ul style="list-style-type: none"> <li>Impacts would be the same as Alternative 2.</li> </ul>		<ul style="list-style-type: none"> <li>Short-Term suspended sediment and turbidity increases after shoreline protection is constructed. Some exceedances may exceed state standard of 5 NTU over background.</li> <li>Reservoir may experience an increase in suspended sediment by 1.5 to 3.0 mg/l for a period of 5 years following the 5-year construction period associated with fine sediments in the fill material. Exceedances would be localized and dissipate and settle within the water column.</li> <li>Minor to no turbidity impacts expected over the first decade of operation. Reservoir may experience an increase in suspended sediment by 0.25 to 0.5 mg/l after construction areas stabilize.</li> </ul>
Alternative 4 – Additional Water Used for TWSA with Rock Shoreline Protection	Impacts would be the same as Alternative 2.		
Alternative 5 – Additional Water Used for TWSA with Hybrid Shoreline Protection	Impacts would be the same as Alternative 3.		

<b>Groundwater</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	There would be no construction impacts to groundwater, because no construction would occur. Groundwater conditions would continue consistent with baseline conditions.		
Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection	<ul style="list-style-type: none"> <li>• Potential construction impacts associated with spills or leaks, dewatering not required.</li> <li>• Temporary and cyclical groundwater level responses to the increased pool level could occur. Maximum fluctuation of 3 feet is expected.</li> <li>• No anticipated negative effects on local aquifers, wells, or on-site septic systems (OSS) due to depth of wells and separation of inundated areas from OSS.</li> </ul>	<ul style="list-style-type: none"> <li>• Possible small temporary and cyclical fluctuations in groundwater levels adjacent to downstream rivers, but fluctuations would be within the range of normal seasonal variability.</li> </ul>	<ul style="list-style-type: none"> <li>• Spills or leaking construction equipment could affect groundwater quality.</li> <li>• No long-term impacts to groundwater are expected.</li> </ul>
Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection	Same as Alternative 2.		
Alternative 4 – Additional Water Used for TWSA with Rock Shoreline Protection	Same as Alternative 2.		
Alternative 5 – Additional Water Used for TWSA with Hybrid Shoreline Protection	Same as Alternative 2.		

<b>Fish</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	No changes in reservoir levels and no increases in instream flows downstream of Cle Elum Dam would result in continued low fish survival and productivity in the Cle Elum River. Kokanee and lake trout populations would gradually decline. Existing trends of fish survival and productivity could continue and/or worsen with climate change or other changed conditions in the basin.		
Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection	<ul style="list-style-type: none"> <li>• Construction impacts would not occur because construction would occur when the reservoir is drawn down.</li> <li>• Increased erosion in newly exposed shoreline areas could increase turbidity, impacts not expected to be significant.</li> <li>• Small impacts from changes to riparian vegetation, no lasting impacts are expected.</li> <li>• Minor increases in new littoral habitats and shifts in spawning habitats. Species using littoral habitats including mountain whitefish, cutthroat, brown, and rainbow trout and others would benefit.</li> <li>• Risk of stranding when the reservoir level recedes is similar to No Action alternative.</li> </ul>	<ul style="list-style-type: none"> <li>• Increased flows would expand overwintering habitat for resident and anadromous salmonids in the Cle Elum River.</li> <li>• Increased flows would incrementally bring Cle Elum River closer to unregulated flows, improving habitat conditions for native fish and ecosystems.</li> <li>• Additional water carried over to following year would improve efficiency of fish passage for out-migrating juvenile salmon.</li> <li>• Lower flows in spring would occur when high flows from snowmelt fill the reservoir above 2,240 feet. Impacts to fish in Cle Elum River not expected because current flow regime would continue.</li> </ul>	<ul style="list-style-type: none"> <li>• No construction impacts because construction would occur in the dry period.</li> <li>• Potential minor negative impacts to fish by interrupting natural hydrogeomorphic processes.</li> <li>• Riprap may increase the diversity and abundance of invertebrate prey and fish habitat use. Benefits would be minor because of the limited number of days when reservoir elevation is increased.</li> </ul>

<b>Fish</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection	Same as Alternative 2.	Same as Alternative 2.	<ul style="list-style-type: none"> <li>Similar to Alternative 2, but less potential to negatively affect fish due to use of natural habitat-forming processes for shoreline protection.</li> </ul>
Alternative 4 – Additional Water Used for TWSA with Rock Shoreline Protection	Same as Alternative 2.	<ul style="list-style-type: none"> <li>More water could be used for irrigation rather than instream flows, reducing benefits to fish.</li> <li>Timing of flow releases would not occur at a time that would benefit spawning or migration in Yakima and Cle Elum rivers.</li> </ul>	Same as Alternative 2.
Alternative 5 – Additional Water Used for TWSA with Hybrid Shoreline Protection	Same as Alternative 2.	Same as Alternative 4.	Same as Alternative 3.

<b>Vegetation and Wetlands</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	Minimal construction impacts would occur, associated with reconstruction of fish passage facilities. Ongoing projects would not affect vegetation or wetlands. Existing conditions and trends would continue.		
Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection	<ul style="list-style-type: none"> <li>Increased reservoir pool would seasonally inundate about 2 acres of wetland, including 1 acre of emergent wetland vegetation.</li> <li>No significant impacts anticipated because wetland vegetation communities around the reservoir are already adapted to seasonal inundation.</li> <li>Small shifts in wetland vegetation composition could occur, but would not result in substantial loss of wetland acreage.</li> <li>30 acres of coniferous forest, 11 acres of deciduous tree/shrub, and 0.1 acres of herbaceous vegetation would be inundated. Some coniferous trees could succumb to increased flooding, however, they could become snags or large debris, with habitat value.</li> <li>Species with habitat in inundated areas would likely adapt, some loss of USFS Survey and Manage plant species may occur.</li> </ul>	Proposed flows would not affect wetland or riparian vegetation communities downstream of the Cle Elum Dam. Temporarily reduced flows unlikely to substantially reduce hydrologic inputs to wetland and riparian communities.	<ul style="list-style-type: none"> <li>Rock shoreline protection activities would permanently impact approximately 22 acres of shoreline, small portions of which could include patches of wetlands. Affected wetland would comprise a very small percentage of the more than 140 acres of palustrine wetland mapped along the shoreline.</li> <li>Shoreline protection measures could cause small indirect, long-term impacts due to modification of vegetation and wetlands. Not expected to be a significant long-term impact, representing a less than 1 percent of total acreage in the watershed.</li> <li>USFS Survey and Manage plant species are not expected to be affected.</li> <li>No long-term impacts expected once construction is complete.</li> </ul>

<b>Vegetation and Wetlands</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection	Same as Alternative 2.	Same as Alternative 2.	<ul style="list-style-type: none"> <li>Hybrid shoreline protection would permanently impact approximately 30 acres of shoreline, small portions of which could include patches of wetlands. Affected wetland impacts would comprise a very small percentage of the more than 140 acres of palustrine wetland mapped along the shoreline.</li> <li>Shoreline protection measures could cause small indirect, long-term impacts due to modification of vegetation and wetlands. This is not expected to be a significant long-term impact, representing less than 1 percent of total acreage in the watershed.</li> <li>USFS Survey and Manage Species are not expected to be affected.</li> <li>No long-term impacts expected once construction is complete. Vegetation is likely to reestablish on some types of hybrid shoreline protection.</li> </ul>
Alternative 4 – Additional Water Used for TWSA with Rock Shoreline Protection	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.

<b>Vegetation and Wetlands</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 5 – Additional Water Used for TWSA with Hybrid Shoreline Protection	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 3.

<b>Wildlife</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	No short-term disturbance to wildlife would occur. Current trends and patterns of wildlife habitation would continue.		
Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection	<ul style="list-style-type: none"> <li>• Construction of spillway gate modifications would cause short-term disturbance in the vicinity of the dam, causing wildlife using the open water habitats to relocate.</li> <li>• Approximately 46 acres of terrestrial habitat along the shoreline would be flooded for about 40 days in June and early July during drought years. Impacts not expected to be significant because this represents only a small percentage increase in inundated area, and inundated areas currently provide limited habitat.</li> <li>• Inundation could impact wildlife habitat where foraging habitat or nesting sites, but impacts would be minor because of the availability of similar habitat in the reservoir area.</li> </ul>	Impacts to wildlife would not occur because changes to instream flow levels would occur during the winter months, outside of the breeding season.	<ul style="list-style-type: none"> <li>• Minimal short-term disturbance from construction would occur, expected to be minor.</li> <li>• Long-term impacts to wildlife are limited by the small scale of shoreline protection projects relative to total shoreline available, and because most projects would occur in previously disturbed areas.</li> </ul>
Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection	Same as Alternative 2.		
Alternative 4 – Additional Water Used for TWSA with Rock Shoreline Protection	Same as Alternative 2.		

<b>Wildlife</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 5 – Additional Water Used for TWSA with Hybrid Shoreline Protection	Same as Alternative 2.		

<b>Threatened and Endangered Species</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	No Action alternative would continue current conditions, which could result in detrimental long term impacts to listed species in the Cle Elum and upper Yakima rivers. There would be no opportunity to increase instream flows for bull trout and MCR steelhead, which would continue trends of degraded spawning and migration habitat.		
Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection	<ul style="list-style-type: none"> <li>• Construction of spillway gate modifications would cause short-term disturbance in the vicinity of the dam, but no listed species are likely to be affected in this developed area.</li> <li>• Positive temporary increases in bull trout productivity could occur associated with inundation. Effects would be minor.</li> <li>• Negative effects to bull trout could occur associated with increased turbidity. Effects would be minor.</li> <li>• Northern spotted owl and Marbled Murrelet are unlikely to be found in the immediate vicinity of the reservoir, and would be unaffected.</li> </ul>	<ul style="list-style-type: none"> <li>• Increased instream flows would benefit bull trout and MCR steelhead downstream of Cle Elum Dam.</li> <li>• Higher winter flows would improve habitat connectivity and promote access to side channel or off channel habitats for bull trout and would improve habitat functions for MCR steelhead</li> </ul>	<ul style="list-style-type: none"> <li>• Construction could cause short-term disturbance to bull trout and northern spotted owl if present in the work area vicinity.</li> <li>• Noise during construction may elicit disturbance behaviors in spotted owls or marbled murrelets that are in the area, however, their presence is unlikely.</li> <li>• No long-term impacts are anticipated.</li> </ul>

<b>Threatened and Endangered Species</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection	Same as Alternative 2.		
Alternative 4 – Additional Water Used for TWSA with Rock Shoreline Protection	Same as Alternative 2.	<ul style="list-style-type: none"> <li>• No benefit to bull trout and MCR steelhead in the lower Cle Elum or upper Yakima rivers if water is used for irrigation.</li> <li>• Use of water for TWSA would not impact other listed species.</li> </ul>	Same as Alternative 2.
Alternative 5 – Additional Water Used for TWSA with Hybrid Shoreline Protection	Same as Alternative 2.	Same as Alternative 4.	Same as Alternative 2.

<b>Visual Quality</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	Visual quality conditions would remain the same as they are currently.		
Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection	<ul style="list-style-type: none"> <li>Localized, adverse impacts during construction activities.</li> <li>Localized impacts from reservoir pool changes especially in first few years. Increased inundation would be most noticeable in the upper reservoir and along inundated narrow shoreline areas.</li> <li>No impact to overall, long-term visual character of the area because the overall appearance of the reservoir would be the same as current conditions</li> </ul>	<ul style="list-style-type: none"> <li>Visual quality would not be impacted.</li> </ul>	<ul style="list-style-type: none"> <li>Localized impacts during construction activities, approximately 2 months.</li> <li>Completed shoreline protection would be a long-term visual change on the landscape, but would minimally contrast with existing features.</li> </ul>
Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection	Same as Alternative 2.	Same as Alternative 2.	<ul style="list-style-type: none"> <li>Similar to Alternative 2, hybrid shoreline protection would minimally contrast with existing shoreline.</li> </ul>
Alternative 4 – Additional Water Used for TWSA with Rock Shoreline Protection	Same as Alternative 2.	<ul style="list-style-type: none"> <li>No impact.</li> </ul>	Same as Alternative 2.
Alternative 5 – Additional Water Used for TWSA with Hybrid Shoreline Protection	Same as Alternative 2.	Same as Alternative 4.	Same as Alternative 3.

<b>Air Quality</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	No changes from the existing air quality conditions would occur.		
Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection	Minor emissions from construction would occur, but they would not violate any air quality standards or result in any air quality impacts.		
Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection	Same as Alternative 2.		
Alternative 4 – Additional Water Used for TWSA with Rock Shoreline Protection	Same as Alternative 2.		
Alternative 5 – Additional Water Used for TWSA with Hybrid Shoreline Protection	Same as Alternative 2.		

<b>Climate Change</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	Under the No Action alternative there would be no increase of greenhouse gas emissions. Climate change could affect water related resources in the overall Yakima River basin. Additional stored water from the Cle Elum Pool Raise Project would not be available to help offset the impacts of climate change.		
Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection	<ul style="list-style-type: none"> <li>• Minor increase of greenhouse gas emissions during construction, but well below the significance threshold established by Ecology.</li> <li>• Alternative 2 would have a small, positive impact on the ability of fish to adapt to changing climate conditions by increasing streamflows.</li> </ul>		
Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection	Same as Alternative 2.		
Alternative 4 – Additional Water Used for TWSA with Rock Shoreline Protection	<ul style="list-style-type: none"> <li>• Same as Alternatives 2 and 3.</li> <li>• Use of additional stored water for TWSA would provide Reclamation with greater flexibility in responding to water shortages for proratable water users that are a result of climate change.</li> </ul>		
Alternative 5 – Additional Water Used for TWSA with Hybrid Shoreline Protection	Same as Alternative 4.		

<b>Noise and Vibration</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	There would be no construction related noise and vibration impacts generated by the No Action alternative.		
Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection	<ul style="list-style-type: none"> <li>• Minor, temporary increases in construction noise and vibration during daytime hours.</li> <li>• No long-term noise or vibration impacts.</li> <li>• No violation of noise standards.</li> </ul>		
Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection	Same as Alternative 2.		
Alternative 4 – Additional Water Used for TWSA with Rock Shoreline Protection	Same as Alternative 2.		
Alternative 5 – Additional Water Used for TWSA with Hybrid Shoreline Protection	Same as Alternative 2.		

<b>Recreation</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	No changes to recreational facilities or opportunities would occur.		
Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection	<ul style="list-style-type: none"> <li>Higher water levels would inundate some recreational facilities at Cle Elum River and Wish Poosh campgrounds.</li> <li>Access roads at Wish Poosh campground would be inundated and informal boat launch areas along the east bank of the Cle Elum River would be inundated.</li> <li>Shoreline protection for the inundated areas would avoid disrupting use of these facilities.</li> <li>Dispersed camping areas would be inundated, and dispersed camping activities could relocate to other areas not currently affected.</li> </ul>	<ul style="list-style-type: none"> <li>A small increase in instream flows in the Cle Elum and Yakima rivers would not affect recreation.</li> </ul>	<ul style="list-style-type: none"> <li>Construction could cause minor, temporary disruptions to recreation from August through October.</li> <li>Speelyi Beach would be closed for a period of less than 2 months.</li> <li>Shoreline protection measures at Federal recreation facilities would protect recreation uses and access.</li> <li>Construction would occur after Labor Day when camping use is lower.</li> <li>Access on Salmon La Sac Road would be reduced to one lane but remain open during construction.</li> <li>Affected recreational facilities would be replaced or improved following completion of shoreline protection measures.</li> </ul>
Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection	Same as Alternative 2.		
Alternative 4 – Additional Water Used for TWSA with Rock Shoreline Protection	Same as Alternative 2.		

<b>Recreation</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 5 – Additional Water Used for TWSA with Hybrid Shoreline Protection	Same as Alternative 2.		

<b>Land and Shoreline Use</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	Land uses and practices will continue as they currently occur.		
Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection	<ul style="list-style-type: none"> <li>• Inundation of an additional approximately 43 acres of federally owned lands and approximately 3 acres of privately owned property. Structures would not be affected.</li> <li>• Increased inundation would not change the ability of property owners to use the land because on a small portion of the shoreline would be inundated for up to 40 days during drought years.</li> <li>• Additional inundation of the Cle Elum River where it enters the reservoir could affect designation of this portion of the river as a Wild and Scenic River.</li> </ul>	<ul style="list-style-type: none"> <li>• Variations in instream flows would not affect land use.</li> </ul>	<ul style="list-style-type: none"> <li>• Temporary disruption of private residential properties during construction.</li> <li>• Acquisition of approximately 20 acres of land in narrow strips adjacent to the shoreline, which would not render private properties unsuitable for existing uses.</li> <li>• Reclamation would acquire land only from willing sellers.</li> </ul>
Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection	Same as Alternative 2.		

<b>Land and Shoreline Use</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 4 – Additional Water Used for TWSA with Rock Shoreline Protection	Same as Alternative 2.	<ul style="list-style-type: none"> <li>• Small improvement of reliability of irrigation water supply, which could alter the type of crops planted.</li> <li>• No increase in the amount of irrigated land would occur.</li> </ul>	Same as Alternative 2.
Alternative 5 – Additional Water Used for TWSA with Hybrid Shoreline Protection	Same as Alternative 2.	Same as Alternative 4.	Same as Alternative 2.

<b>Utilities</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	No changes or impacts to utilities would occur.		
Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection	No conflicts with existing utilities would occur. Impacts to wells and other utilities at Wish Poosh Campground would be addressed through shoreline protection measures.		
Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection	Same as Alternative 2.		
Alternative 4 – Additional Water Used for TWSA with Rock Shoreline Protection	Same as Alternative 2.		
Alternative 5 – Additional Water Used for TWSA with Hybrid Shoreline Protection	Same as Alternative 2.		

<b>Transportation</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	Traffic impacts would be limited to increases associated with reconstruction of fish passage facilities, which are expected to be minor.		
Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection	<ul style="list-style-type: none"> <li>Increases in truck traffic during modification of the spillway gates, expected to be a minimal impact to local roads.</li> <li>Shoreline protection measures will avoid impacts from inundation to Salmon La Sac Road.</li> <li>No other impacts anticipated.</li> </ul>		<ul style="list-style-type: none"> <li>Less than 5 percent increase in truck traffic along the lowest traveled sections of SR-903 for construction traffic.</li> <li>Closure of a portion of Lake Cabins Road for less than 2 weeks, but no access would be disrupted as alternate routes are available.</li> <li>No other traffic disruptions anticipated.</li> </ul>
Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection	Same as Alternative 2. Increases of construction-related truck traffic along SR-903 or Lake Cle Elum Dam Road would be slightly higher, but still not representing a significant impact.		
Alternative 4 – Additional Water Used for TWSA with Rock Shoreline Protection	Same as Alternative 2.		
Alternative 5 – Additional Water Used for TWSA with Hybrid Shoreline Protection	Same as Alternative 2.		

<b>Cultural Resources</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	No impact beyond those occurring due to current operations.		
Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection	<ul style="list-style-type: none"> <li>• Adverse effect on the character-defining features of the dam.</li> <li>• Inundation would impact one identified archaeological site.</li> </ul>	No cultural resources would be affected by the use of the additional stored water.	<ul style="list-style-type: none"> <li>• No impacts identified based on current surveys.</li> <li>• Surveys of all construction areas will be done prior to construction.</li> </ul>
Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection	Same as Alternative 2.		
Alternative 4 – Additional Water Used for TWSA with Rock Shoreline Protection	Same as Alternative 2.		
Alternative 5 – Additional Water Used for TWSA with Hybrid Shoreline Protection	Same as Alternative 2.		

<b>Indian Sacred Sites</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	No impact to Indian sacred sites is anticipated to occur.		
Alternative 2 - 5	No impacts anticipated under any of the action alternatives.		

<b>Indian Trust Assets</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	No impact.		
Alternative 2 -5	No impacts anticipated under any of the action alternatives.		

<b>Socioeconomics</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	No direct impacts would occur. No construction –related costs, but no direct increases in local employment associated with new construction jobs and support services. Current economic trends would continue, but increased uncertainty about the availability of proratable supplies for irrigation could result in a shift toward crops with lower irrigation needs, and lower economic value.		
Alternative 2 – Additional Stored Water Used for Instream Flow with Rock Shoreline Protection	<ul style="list-style-type: none"> <li>• Construction expenditures would fuel minor economic increases in the surrounding 4 county area over a 5-year period.</li> <li>• 27 jobs supported throughout the state.</li> </ul>	<ul style="list-style-type: none"> <li>• Unquantified increase in recreational or commercial fishing activity.</li> </ul>	<ul style="list-style-type: none"> <li>• Construction expenditures would result in minor economic increases in the surrounding 4-county area over a 5-year period.</li> <li>• 115 jobs supported.</li> </ul>
Alternative 3 – Additional Stored Water Used for Instream Flow with Hybrid Shoreline Protection	Same as Alternative 2.	Same as Alternative 2.	<ul style="list-style-type: none"> <li>• Statewide economic increases would be similar in magnitude to Alternative 2</li> </ul>
Alternative 4 – Additional Water Used for TWSA with Rock Shoreline Protection	Same as Alternative 2.	<ul style="list-style-type: none"> <li>• Increased agricultural production and market value during severe drought years relative to the No Action Alternative.</li> </ul>	Same as Alternative 2.
Alternative 5 – Additional Water Used for TWSA with Hybrid Shoreline Protection	Same as Alternative 2.	Same as Alternative 4.	Same as Alternative 3.

<b>Environmental Justice</b>			
<b>Alternative</b>	<b>Spillway Radial Gate Modifications to Raise the Reservoir Level</b>	<b>Use of Additional Stored Water</b>	<b>Shoreline Protection</b>
Alternative 1 – No Action	No impact.		
Alternatives 2 -5	No disproportionate impact to environmental justice populations under any of the action alternatives.		

## Cumulative Impacts

Cumulative impacts are the effects that may result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions (40 CFR 1508.7). “Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7). Section 4.24 of this DEIS evaluates cumulative impacts. The various environmental element sections in Chapters 3 and 4 of the DEIS also examine many of the cumulative impacts. Those analyses discuss the effects of past processes and trends that have cumulatively influenced or led to the resource conditions that exist today.

In addition, Reclamation considers four projects to be reasonably foreseeable future projects—the Cle Elum Fish Passage Project, the Kachess Drought Relief Pumping Plant (KDRPP) and Keechelus to Kachess Conveyance (KKC) Projects, and ongoing Interstate-90 (I-90) construction. The Cle Elum Pool Raise Project would provide benefits to fish and streamflow conditions that would be beneficial at a basin-wide level when implemented with other proposed projects. The Cle Elum Pool Raise Project construction could add cumulatively to construction impacts in the area such as traffic congestion, dust, and noise. It could also cumulatively contribute to regional trends toward reduced habitat, impacts to historic and cultural resources, and construction impacts in the region. These impacts would be minor and limited in scale; therefore, the project is not likely to contribute to significant cumulative impacts of foreseeable future projects.

## Environmental Commitments

Environmental commitments are measures or practices adopted by a project proponent to reduce or avoid adverse effects that could result from project operations. Chapter 4 describes specific mitigation measures for project impacts on each resource. The following list summarizes major environmental commitments for the Cle Elum Pool Raise Project. Reclamation and Ecology share the responsibility to ensure obligations to protect natural resources are fulfilled.

- Construct all shoreline protection measures above the water line while the reservoir is drawn down, to avoid in-water work.
- Complete all planned shoreline protection measures prior to raising the level of the reservoir.
- Continue the existing shoreline inventory to identify erosion problems and appropriate control measures.
- Obtain all applicable Federal, State, and local permits.
- Coordinate with Ecology’s water quality staff to ensure compliance with the State antidegradation policy.

- Install shoreline protection in locations on the west side of Cle Elum Reservoir to mitigate for erosion impacts.
- Install guardrails and other mitigation measures in specific locations to prevent unauthorized vehicle and dispersed camping access of Cle Elum River and Reservoir.
- Prior to construction, conduct cultural resource studies of all areas that would be disturbed by construction.
- Develop a treatment plan for all cultural resources directly impacted by the project.
- Develop a Cultural Resource Management Plan to address ongoing and future operational and land management implications of the proposed project.
- Prior to construction, conduct wetland surveys using current wetland delineation methodology. Design shoreline protection measures to avoid wetland impacts. If wetland impacts occur, comply with mitigation measures established in permit conditions to ensure no net loss.
- Prior to construction, coordinate with USFS to determine the presence of any Sensitive or Survey and Manage species and take steps to minimize impacts to those species.
- Install guardrails and other mitigation measures in specific locations to prevent unauthorized vehicle and dispersed camping access of Cle Elum River and Reservoir.
- Prior to construction, survey utilities in construction areas and take appropriate measures to minimize conflicts with any identified utilities.
- Prior to raising the pool level, identify any potentially affected on-site septic systems (OSS) to establish baseline conditions.
- Develop mitigation strategies for any OSS that would become noncompliant as a result of the increased reservoir pool.
- Implement current best management practices (BMPs) when appropriate to enhance resource protection and avoid additional potential effects to surface and groundwater quality, earth resources, fish, wildlife, and their habitats.

## **Public Involvement**

Reclamation and Ecology initiated the public scoping process for this DEIS in October 2013. Reclamation and Ecology held two public scoping meetings in Yakima, Washington on November 20, 2013 and two scoping meetings in Cle Elum, Washington

on November 21, 2013. At the meetings, Reclamation described the Proposed Action and gave attendees the opportunity to comment on the project, the scope of the EIS, the EIS process, and resources evaluated in the EIS.

The scoping period began October 30, 2013, and concluded December 16, 2013. During this period 17 comment documents and telephone calls were received. The comments covered a wide range of environmental effects. The major concerns were with surface water and the use of the additional stored water and impacts to fish, vegetation and wetlands, wildlife, threatened and endangered species, recreation, land use, transportation; socioeconomics; and cumulative effects.

Reclamation and Ecology prepared a Scoping Summary Report that summarizes the comments received (Reclamation and Ecology, 2014a). Reclamation will provide the report to readers upon request, or a reader can access the report from the Yakima River Basin Water Enhancement Project (YRBWEP) 2011 Integrated Plan website: <http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/index.html>.

## **Consultation and Coordination**

Reclamation has initiated consultation with the U.S. Fish and Wildlife Service (Service) and NMFS under the Endangered Species Act (ESA). Reclamation has completed consultation with the Service under the Fish and Wildlife Coordination Act. Reclamation has initiated consultation with the Washington Department of Archaeology and Historic Preservation under Section 106 of the National Historic Preservation Act. Government-to-Government consultation with the Confederated Tribes of the Yakama Nation, the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), and the Confederated Tribes of the Colville Reservation is ongoing. Reclamation has contacted the Bureau of Indian Affairs (BIA) Yakima Office and the BIA Colville Tribes Office regarding Indian Trust Assets or trust lands in the project area.

Reclamation and Ecology are committed to ongoing coordination with the Tribes and resource agencies. Reclamation will complete ESA coordination with the Service and NMFS. Reclamation will complete cultural resource surveys and will continue coordination with the DAHP on impacts to cultural resources. Reclamation and Ecology will continue to consult with the Yakama Nation, CTUIR, and Colville Tribes.

## **What Comes Next?**

### **Public Review of the DEIS**

Reclamation and Ecology announced the release of this DEIS on their websites and in local and regional newspapers. These announcements included the timeframe for public review and dates, times, and locations of public meetings. The public will have 60 days to review and provide comments on the DEIS.

Two public hearings will be held during the public review period, as described on the Fact Sheet. Participants will be encouraged to provide comments through several

mechanisms, including written comment cards, letters, e-mails, and oral comments at the meeting.

Reclamation and Ecology will give equal consideration to all comments received on the DEIS, regardless of how submitted, and will post the comments on the Cle Elum Pool Raise Project website at: <http://www.usbr.gov/pn/programs/eis/cleelumraise/index.html>.

### **Preparation of the Final EIS**

Reclamation and Ecology will carefully consider all comments received on the DEIS and will consider adjusting alternatives, supplementing or improving the analysis, or making factual corrections in response to substantive comments. Reclamation and Ecology expect to complete the Final EIS in spring 2015.

### **Record of Decision**

Reclamation will conclude the NEPA process by issuing a Record of Decision no sooner than 30 days after the FEIS is completed. The Record of Decision will identify Reclamation's and Ecology's decision on the proposed action, and will describe the basis for that decision.

