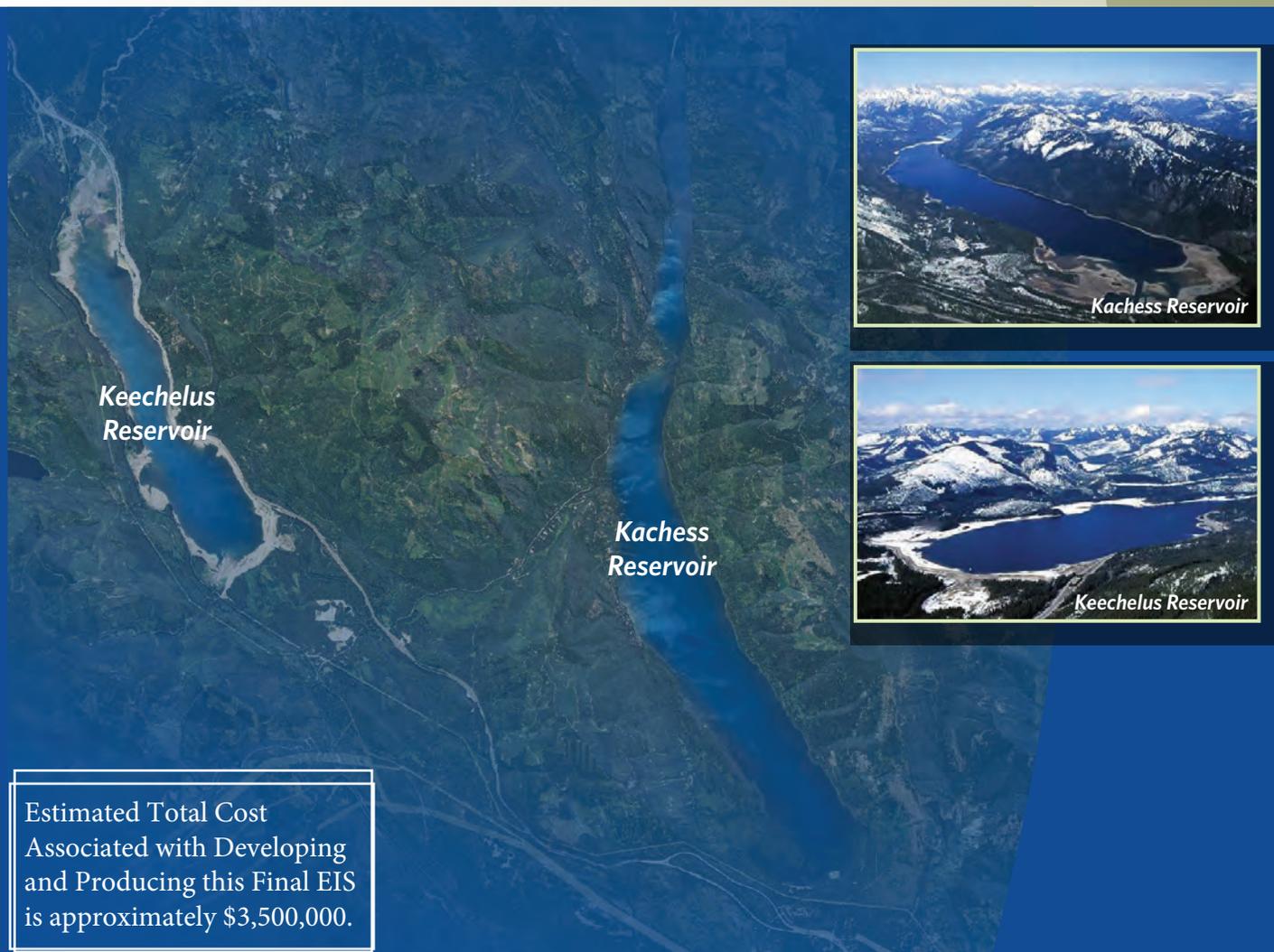


Kachess Drought Relief Pumping Plant and Keechelus Reservoir-to-Kachess Reservoir Conveyance

FINAL Environmental Impact Statement Executive Summary

KITTITAS and YAKIMA COUNTIES, WASHINGTON



Estimated Total Cost
Associated with Developing
and Producing this Final EIS
is approximately \$3,500,000.



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



State of Washington
Department of Ecology
Office of Columbia River
Yakima, Washington
Ecology Publication Number: 18-12-011

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.

Ecology is Washington's environmental protection agency. Our mission is to protect, preserve, and enhance Washington's land, air, and water for current and future generations. Our innovative partnerships support environmental work throughout the state.

March 6, 2019

CCA-1600
2.1.4.17

Subject: Kachess Drought Relief Pumping Plant and Keechelus Reservoir-to-Kachess Reservoir Conveyance Projects Final Environmental Impact Statement, Kittitas and Yakima Counties, Washington

Dear Interested Party:

The Final Environmental Impact Statement (FEIS) for the proposed Kachess Drought Relief Pumping Plant (KDRPP) and Keecheles Reservoir-to-Kachess Reservoir Conveyance (KKC) projects has been prepared jointly by the Bureau of Reclamation and the Washington State Department of Ecology (Ecology) Office of Columbia River. These projects are components of the Yakima River Basin Integrated Water Resource Management Plan (Integrated Plan).

In 2013, Reclamation and Ecology published in the Federal Register a Notice of Intent to prepare the KDRPP and KKC Draft EIS (DEIS) followed by a joint National Environmental Policy Act (NEPA) and State Environmental Policy Act (SEPA) scoping process. In 2015 both agencies then issued the DEIS for public review. Due to substantial changes to the Proposed Action and action alternatives, Reclamation and Ecology determined that a Supplemental Draft EIS (SDEIS) was required. The SDEIS was released for public review April 13, 2018 and the 90-day comment period ended July 11, 2018.

Reclamation and Ecology have identified Alternative 4 – KDRPP Floating Pumping Plant – as the Preferred Alternative. As described in Alternative 4, Reclamation and Ecology have identified Roza Irrigation District as the entity responsible for the design, construction, operation, maintenance and funding (with potential participation by other proratable entities) of Alternative 4 at Kachess Reservoir. Alternative 4 improves water supply reliability during drought years; improves the ability of water managers to respond and adapt to potential changing hydrology; and contributes to the vitality of the regional economy and riverine environment in the Yakima River Basin.

This FEIS was prepared in compliance with NEPA, Public Law 91-190, 42 U.S.C. §§ 4371 *et seq.*, and SEPA, Chapter 43.21C RCW, and the SEPA Rules (Chapter 197-11 WAC).

If you would like to have a copy of the FEIS in the form of a printed document, or compact disc (CD-ROM), or have a copy of the Executive Summary, please contact Ms. Candace McKinley by phone at (509) 573-8193, or email: kkbt@usbr.gov.

The FEIS is available for viewing on the internet at:
<http://www.usbr.gov/pn/programs/eis/kdrpp/index.html> and
<http://www.usbr.gov/pn/programs/eis/kkc/index.html>.

Additional information regarding the Integrated Plan may be found at:
<http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/index.html>.

Sincerely,



ACTING
FOR

Dawn A. Wiedmeier
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**Final Environmental Impact Statement
Kachess Drought Relief Pumping Plant
Kittitas County and Yakima 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

This Final Environmental Impact Statement (FEIS) for the Kachess Drought Relief Pumping Plant (KDRPP) was prepared jointly by the Bureau of Reclamation and Washington State Department of Ecology. This project is part of the Yakima River Basin Integrated Water Resource Management Plan (Integrated Plan). This FEIS evaluates a No Action Alternative and six action alternatives: Alternative 2 – KDRPP East Shore Pumping Plant; Alternative 3 – KDRPP South Pumping Plant; Alternative 4 (Proposed Action) – KDRPP Floating Pumping Plant; Alternative 5A – KDRPP East Shore Pumping Plant with KKC North Tunnel Alignment; Alternative 5B – KDRPP South Pumping Plant with KKC North Tunnel Alignment; Alternative 5C – KDRPP Floating Pumping Plant with Keechelus-to- Kachess Conveyance North Tunnel Alignment.

This FEIS 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).

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SEPA FACT SHEET

Brief Description of Proposal:

The Bureau of Reclamation (Reclamation) and the Washington State Department of Ecology (Ecology) have jointly prepared this Final Environmental Impact Statement (FEIS) for the Kachess Drought Relief Pumping Plant (KDRPP) and Keechelus Reservoir-to-Kachess Reservoir Conveyance (KKC) projects. This FEIS was prepared in compliance with the National Environmental Policy Act (NEPA) and Washington State Environmental Policy Act (SEPA). Reclamation is the NEPA lead agency for the proposal. Ecology is the SEPA lead agency for the proposal.

The action alternatives examine constructing and operating the KDRPP—a pumping plant to access up to 200,000 acre-feet of water in Kachess Reservoir during drought years. The KKC—a gravity flow tunnel from Keechelus Reservoir to Kachess Reservoir—is evaluated as a component of the KDRPP alternatives. The KKC and the KDRPP are components of the Yakima Basin Integrated Water Resources Management Plan (Integrated Plan). The KKC is not being pursued as a standalone project at this time.

Name of Entities Making Proposal

U.S. Department of the Interior, Bureau of Reclamation

State of Washington, Department of Ecology

Roza Irrigation District

The tentative date of implementation is 2021.

Contact and Responsible Official:

State of Washington, Department of Ecology

Mr. G. Thomas Tebb, L.Hg., L.E.G
SEPA Responsible Official
Director, Office of Columbia River
1250 Alder Street
Union Gap, Washington 98903-0009
509-575-2490

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
- State Water Right Permit
- Dam Safety Permit
- Hydraulic Project Approval
- Governor's Executive Order 05-05

Additionally, Reclamation and Ecology would coordinate with Kittitas County and Yakima 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:

March 2019

Public Comment Period:

In accordance with WAC 197-11-455, Ecology and Reclamation conducted a public comment period for the KDRPP and KKC Draft EIS (DEIS) from January 9, 2015 to June 15, 2015 and for the KDRPP and KKC Supplemental Draft EIS (SDEIS) from April 13, 2018 to July 11, 2018. A total of approximately 577 comment letters were received from agencies and individuals on the DEIS. A total of 1,746 comment letters were received from agencies and individuals on the SDEIS.

Timing of Additional Environmental Review:

Reclamation will issue the Record of Decision on the KDRPP and KKC no earlier than 30 days after the release of this FEIS. As noted in the FEIS, if there are changes in the project that could result in adverse impacts that are not identified in this FEIS, Reclamation and Ecology would conduct the appropriate environmental review required to identify and address potential significant adverse effects prior to taking action.

Document Availability:

The FEIS can be viewed online at:

<http://www.usbr.gov/pn/programs/eis/kdrpp/index.html>
and <http://www.usbr.gov/pn/programs/eis/kkc/index.html>

The document may be obtained in hard copy or CD-ROM by written request to the SEPA Responsible Official listed above, or by calling 509-573-8193. To ask about the availability of this document in a format for the visually impaired, call the Office of Columbia River at 509-454-4241. 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 FEIS are available online at:

Kachess Drought Relief Pumping Plant

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

Keechelus Reservoir-to-Kachess Reservoir Conveyance

<http://www.usbr.gov/pn/programs/eis/kkc/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>.

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Kachess Drought Relief Pumping Plant and Keechelus to Kachess Conveyance Project Locations



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EXECUTIVE SUMMARY

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Executive Summary

Introduction

In January 2015, the U.S. Department of the Interior Bureau of Reclamation (Reclamation) and Washington State Department of Ecology (Ecology) released the Kachess Drought Relief Pumping Plant (KDRPP) and Keechelus Reservoir-to-Kachess Reservoir Conveyance (KKC) Draft Environmental Impact Statement (DEIS) to evaluate the potential environmental effects of implementing one or both of two closely related water resource projects in the upper Yakima River basin. The KDRPP and KKC are components of the Yakima River Basin Integrated Water Resource Management Plan (Integrated Plan).

Reclamation and Ecology prepared a Supplemental Draft Environmental Impact Statement (SDEIS) to examine changes to the proposed action and alternatives described in the DEIS and to provide additional information. The SDEIS supplemented the analysis with respect to the No Action and action alternatives, where new circumstances or information existed that was relevant to environmental concerns and impacts. The SDEIS provided documentation of the purpose and need, proposed action and alternatives, affected environment, environmental effect, proposed mitigation, tribal and agency coordination, and public involvement.

Public comments on both the DEIS and SDEIS were received and considered by Reclamation and Ecology. This Final EIS (FEIS) includes some revisions to the SDEIS in response to public comments. This FEIS presents the updates and identifies Reclamation and Ecology's Preferred Alternative, which is Alternative 4, the Floating Pumping Plant Alternative of KDRPP, without KKC.

Reclamation and Ecology have prepared this FEIS as co-lead agencies to meet requirements of the National Environmental Policy Act (NEPA) and State Environmental Policy Act (SEPA). The Confederated Tribes and Bands of the Yakama Nation (Yakama Nation), the U.S. Forest Service (USFS), and Bonneville Power Administrative (BPA) are cooperating agencies in preparation of this FEIS in accordance with 40 CFR Section 1508.5. Under NEPA, a cooperating agency is any Federal agency, other than the lead agency, that has jurisdiction by law or special expertise with respect to any environmental impact involved in an action requiring an environmental impact statement. In addition, a State or local agency of similar qualifications or an Indian Tribe may by agreement with the lead agency become a cooperating agency under NEPA. Roza Irrigation District is a state cooperating agency to Ecology under SEPA.

Background of the Proposed Action

In June 2009, Ecology and Reclamation brought representatives from the Yakama Nation, Federal, State, county, and city governments, irrigation districts, and environmental organizations together to form the Yakima River Basin Water Enhancement Project

(YRBWEP) Workgroup to help develop a consensus-based solution to the basin's water problems. Over the subsequent 18 months, the group developed the Integrated Plan¹.

The Integrated Plan includes the following components:

- Reservoir fish passage
- Structural and operational changes
- Surface water storage
- Groundwater storage
- Habitat/watershed protection and enhancement
- Enhanced water conservation
- Market reallocation

Reclamation and Ecology prepared the program-level *Yakima River Basin Integrated Water Resource Management Plan Final Programmatic Environmental Impact Statement* (Integrated Plan FPEIS) to determine the effects of implementing the Integrated Plan (Reclamation and Ecology, 2012)². The Integrated Plan FPEIS supports the conclusion 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 (Reclamation and Ecology, 2012).

The selected alternative identified in Reclamation's 2013 Integrated Plan PEIS Record of Decision (Integrated Plan PEIS ROD) identified distinct actions that collectively provide a comprehensive approach to water management in the Yakima River basin and meet the need to restore ecological functions and provide more reliable and sustainable water resources for the health of the riverine environment and for agricultural, municipal, and domestic needs (Reclamation, 2013). KDRPP and KKC are identified in the Integrated Plan PEIS ROD as necessary components of the Integrated Plan that contribute to achieving the Integrated Plan's overall goals. This FEIS provides a site-specific assessment of KDRPP and KKC tiered from the Integrated Plan PEIS and ROD.

¹ The following websites contain information about the Integrated Plan:

- <https://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/index.html>
- <https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-supply-projects-EW/Yakima-River-Basin-projects/Yakima-integrated-plan>

² Available online at <https://www.usbr.gov/pn/programs/yrbwep/reports/FPEIS/fpeis.pdf>

Proposed Action

The Proposed Action is to fund, design, construct, operate, and maintain a floating pumping plant on Kachess Reservoir in order to recover up to 200,000 acre-feet of inactive water storage from Kachess Reservoir during drought years when prorationing is less than 70 percent supply.³ This water would otherwise remain in Kachess Reservoir at an elevation below the existing gravity outlet works (see Figure 1-2). The Proposed Action would also include volitional fish passage at the downstream end of the Narrows which is located between the upper and lower Kachess Reservoir. Roza proposes to fund, design, construct, operate, and maintain some or all of the Proposed Action. Alternatively, Reclamation if authorized or the State may fund, design, construct, operate, and maintain some or all of the Proposed Action.

The Proposed Action implements the Kachess Reservoir Inactive Storage project identified in the 2012 Integrated Plan FPEIS to provide additional water supply from Kachess Reservoir during a drought. Since 2012, the KDRPP has undergone additional refinement and design. Reclamation and Ecology have identified *Alternative 4 – Floating Pumping Plant* as their Preferred Alternative in this FEIS.

To implement the proposed action, Reclamation would need to issue a ROD documenting the selected alternative and approving the construction of the pumping plant on Kachess Reservoir, over which the agency has jurisdiction. The agency would provide any necessary permits, agreements, or other approvals, review design, monitor construction, coordinate and manage water releases from Kachess Dam and deliveries to downstream users, and possibly enter into water, power, and transmission contracts. Ecology would take actions implementing applicable regulations and would issue permits as required for implementation of the preferred alternative. Reclamation and Ecology would also participate in avoidance, minimization, and mitigation actions described in the supporting FEIS.

Purpose and Need for the Action

As described in Section 1.4, Reclamation and Ecology each propose to fund, design, construct, operate, and maintain some or all of KDRPP and/or KKC or to authorize Roza Irrigation District (Roza)⁴ to fund, design, construct, operate, and maintain some or all of KDRPP and/or KKC. Reclamation, Ecology, and Roza are each referred to herein as a “project proponent” and, collectively, as “project proponents” and each entities purpose and need for the action is set forth in Section 1.3.

³ See Sections 3.3 and 4.3 Surface Water Resources of this FEIS, and Section 1.3 of the Integrated Plan PEIS for details on the 70 percent proration level determination.

⁴ Roza is an irrigation district that operates 95 miles of main canal and more than 350 miles of laterals to serve Yakima Project water to 1,700 growers on 72,000 acres from the northwestern edge of the Yakima Valley at Selah, to the southeastern end at Benton City. Other proratable irrigation entities, such as the Kittitas Reclamation District (KRD), Wapato Irrigation Project (WIP), and Kennewick Irrigation District (KID), may also participate, and are referred to herein as “Proratable Entities.”

Reclamation's Purpose and Need

Reclamation's purpose and need for action is to provide more sustainable water resources for agricultural, municipal, and domestic needs, while also helping to restore the ecological functions and health of the riverine environment in the Yakima River basin.

Specifically, Reclamation needs to analyze and authorize, the site-specific projects identified here in accordance with the 2013 Integrated Plan PEIS ROD. Reclamation may fund, design, construct, operate, and maintain some or all of the Proposed Action, if authorized to do so pursuant to Section 4007 of the Water Infrastructure Improvements for the Nation Act or other law that provides similar authorization.

Ecology's Purpose and Need

Ecology's purpose for the action is to participate in the Integrated Plan and fund (not more than 50 percent) of the plan, and promote timely and effective implementation of associated projects in an aggressive pursuit of water supply solutions for instream and out-of-stream uses in the Yakima River basin [Revised Code of Washington (RCW) 90.38.005]. Ecology is also responding to the need to evaluate and consider, and determine whether to provide the necessary authorizations for Roza to fund, design, construct, operate and maintain some or all of KDRPP and/or KKC."

Roza and Proratable Entities' Purpose and Need

Roza and other Proratable Entities' purpose for the action is to access up to 200,000 acre-feet of water from Kachess Reservoir during drought years, as they need to improve water supply and reduce prorationing, whenever feasible, and improve flexibility to respond to the uncertainties of climate change. To participate in the Proposed Action, Roza and/or other Proratable Entities would need to seek all necessary authorizations. This FEIS was prepared by Reclamation and Ecology, but Roza and/or other Proratable Entities may adopt this FEIS for their own purposes.

Alternatives

Alternative 1 – No Action

The No Action Alternative represents the most likely future in the absence of implementing any of the action alternatives. The No Action Alternative forms the baseline for comparing potential impacts of the Proposed Action and alternatives. Under *Alternative 1*, project proponents would not implement the Proposed Action or alternatives. Reclamation would continue to manage the water supply provided by Kachess and Keechelus reservoirs consistent with current operational practices and constraints. The current operations served as the basis for analyzing impacts of the action alternatives.

Alternative 2 – KDRPP East Shore Pumping Plant

KDRPP East Shore Pumping Plant

Alternative 2 consists of facilities to pump water from Kachess Reservoir and convey it to the Kachess River, which discharges to the Yakima River at Lake Easton. KDRPP would allow the reservoir to be drawn down to about elevation 2,112.75, approximately 80 feet lower than the current outlet and 149.25 feet below full pool, by using a pumping plant. This pumping plant would allow access to up to an additional 200,000 acre-feet of water that is currently stored in the reservoir below the elevation of the existing gravity outlet (elevation 2,192.75).

The pumping plant would be used to deliver up to 200,000 acre-feet of water during drought years to participating Proratable Entities, potentially including Roza, Kittitas Reclamation District, and Wapato Irrigation Project⁵. For the Yakima Project Reclamation and Ecology define a drought year as a year when water supply falls below 70 percent of proratable water entitlements. KDRPP would contribute to increasing prorationing up to 70 percent in these years. The quantity 200,000 acre-feet is the maximum capacity of KDRPP, and this quantity would not be needed during every drought. In addition to drought years, pumping will be needed in some years following a drought to meet Reclamation water delivery obligations and instream flow requirements in conjunction with other reservoirs, as Kachess Reservoir refills to a level above the existing gravity outlet.

Alternative 2 includes an underground pumping plant on the east shore of Kachess Reservoir. The pumping plant would receive water through a tunnel from an intake on the floor of the reservoir. A buried pipeline on the reservoir bed would convey water from the pumping plant to a spillway and discharge structure just downstream from the existing Kachess Dam outlet channel, where it would be released to the Kachess River.

Volitional Bull Trout Passage Improvements

Volitional Bull Trout Passage Improvements are proposed as a component of the KDRPP *Alternative 2* and all other action alternatives. When operation of the KDRPP reduces the pool elevation of Kachess Reservoir below a pool elevation of approximately 2,220 feet, the reservoir separates into an upper pool (Little Kachess) and a lower pool (Big Kachess) at a location known as the Kachess Narrows (the Narrows). As the pool elevation of Big Kachess is drawn below 2,208 feet, a steep shelf is exposed that impedes passage into Little Kachess for resident bull trout in Big Kachess. To encourage migration through the Narrows during drought relief pumping and refill, project proponents would construct a roughened channel between Little Kachess and Big Kachess. The roughened channel would be approximately 5.5 feet deep and 28 feet wide and would function as intended only when Big Kachess is below pool elevation 2,208. It would function both during draw down and while the reservoir refills.

⁵ Kennewick Irrigation District has also expressed interest in participating in KDRPP.

Avoidance, Minimization, and Mitigation Measures

Project proponents would incorporate measures to avoid, minimize, and mitigate impacts associated with *Alternative 2* and all other action alternatives. Project proponents would also comply with the applicable environmental laws and regulations. Avoidance, minimization, and mitigation measures include the following:

- Prior to construction, conduct geotechnical studies to identify subsurface issues, unstable slopes, and other local factors that could contribute to slope instability and increase erosion potential.
- Implement 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.
- Restore areas disturbed during construction to pre-construction conditions or better.
- Conduct continued monitoring of site conditions and erosion potential.
- Continue a surface water quality monitoring program to support design efforts and minimize and avoid water quality impacts.
- Monitor a representative group of wells near Kachess Reservoir to determine whether groundwater levels are lowered by additional reservoir drawdown attributable to the action alternatives and coordinate with affected parties on a case-by-case basis. If well water levels fall and water yields in specific wells are adversely affected to the point that property uses are compromised, then mitigation will be applied to restore or replace the ground water supply.
- Pursuant to the 2013 Integrated Plan PEIS ROD, Reclamation, Ecology, the Yakama Nation, the U.S. Fish and Wildlife Service (Service), Washington Department of Fish and Wildlife, and the USFS (Bull Trout Enhancement [BTE] parties) are developing and implementing improvements to bull trout habitat within the Yakima River basin as described in the BTE framework (Appendix C). Consistent with environmental commitments in this section, Reclamation and Ecology will continue to support and fulfill roles in implementation of specific BTE improvement actions.
- Prior to construction, conduct wetland surveys using current wetland delineation methodology. Design projects 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. Implement specific mitigation for listed fish and wildlife species that the agencies require as part of consultation. Update WDFW preconstruction surveys prior to construction. Reclamation would implement the conservation measures and recommendations provided by the Service in the Fish and Wildlife Coordination Report.

- Monitor for infestations of invasive plant species associated with project ground disturbances and periods of prolonged drawdown of the reservoirs and implement suppression strategies using BMPs to control invasive plant populations.
- Extend boat ramps at Kachess Reservoir when the reservoir is drawn down during drought years, and construct new east shore ramp that would be available at all reservoir elevations.
- Implement a public communication strategy to prepare recreation users for the impacts on recreation at Kachess Reservoir.
- Implement a construction traffic management plan with specific traffic management measures and procedures for construction contractors.
- Prior to construction, conduct cultural resource studies of areas that would be disturbed by construction.
- In consultation with WA Department of Archaeology and Historic Preservation (DAHP) and affected Indian Tribes, 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, survey utilities in construction areas and take appropriate measures to minimize conflicts with any identified utilities and to restore service, if needed, for utilities disrupted by construction.
- Design facilities according to applicable standards and codes; having construction crews comply with all applicable guidelines and standards of construction practices for installing facilities; and limiting access to authorized and trained personnel.

Alternative 3 – KDRPP South Pumping Plant

Alternative 3 is similar to *Alternative 2*, except that the pumping plant would be located at the south end of the reservoir, downstream from Kachess Dam and adjacent to the Kachess River. The proposed south pumping plant would be adjacent to the existing gravity outlet works discharge pool, just downstream from the existing Kachess Dam outlet channel, where the water would be released to the Kachess River. Thus, a pipeline between the pumping plant and outlet works would not be needed. *Alternative 3* would include Volitional Bull Trout Passage Improvements and mitigation similar to *Alternative 2*.

Alternative 4 – Floating Pumping Plant (Preferred Alternative)

Alternative 4 differs from *Alternative 2* and *Alternative 3* in that the intake and pumping plant would be located on a floating barge, and support facilities would be located at the south end of the reservoir, adjacent to Kachess Dam. The proposed floating pumping plant would be moored adjacent to the existing outlet channel. The floating pumping plant would discharge water to the existing outlet channel where it would be retained by a new flow control structure and would be released through the existing Kachess Dam outlet works.

Alternative 4 would include Volitional Bull Trout Passage Improvements and mitigation similar to *Alternative 2*.

Alternative 5A – KDRPP East Shore Pumping Plant with KKC North Tunnel Alignment

Under *Alternative 5A*, the KDRPP East Shore Pumping Plant would be the same as described above for *Alternative 2*, including Volitional Bull Trout Passage Improvements and mitigation. In addition, *Alternative 5A* would include the KKC North Tunnel Alignment to enhance refill of Kachess Reservoir during and following drought relief pumping and to improve flows for fish in the Keechelus reach of the Yakima River.

KKC North Tunnel Alignment Facilities

KKC would consist of an underground tunnel to convey water from Keechelus Reservoir to Kachess Reservoir. This tunnel would allow Reclamation to reduce flows in the upper Yakima River, thereby improving rearing habitat for steelhead and spring Chinook salmon and enabling more rapid refill of Kachess Reservoir following drought years after pumping of KDRPP. The proposed conveyance would extend east from the Keechelus Dam outlet and would discharge on the west shore of Kachess Reservoir. The tunnel would be a single segment tunnel that would be excavated upgradient from a portal at Kachess Reservoir.

Reclamation would operate KKC by diverting water by gravity flow from the Yakima River downstream from Keechelus Reservoir into the new tunnel so it could be conveyed to Kachess Reservoir. Reclamation would transfer flows in years when Keechelus Reservoir is above its target pool elevation and Kachess Reservoir is below its target pool elevation.

Alternative 5B – KDRPP South Pumping Plant with KKC North Tunnel Alignment

Alternative 5B would include the South Pumping Plant of *Alternative 3*, and would also include the KKC North Tunnel Alignment described for *Alternative 5A*, above. *Alternative 5B* would include Volitional Bull Trout Passage Improvements and mitigation, similar to *Alternative 3*.

Alternative 5C – KDRPP Floating Pumping Plant with KKC North Tunnel Alignment

Alternative 5C would include the Floating Pumping Plant of *Alternative 4*, and would also include the KKC North Tunnel Alignment described for *Alternative 5A*, above. *Alternative 5C* would include Volitional Bull Trout Passage Improvements and mitigation similar to *Alternative 3*.

Public Scoping and Involvement

Public scoping began on October 30, 2013 with publication of an NOI to prepare the *Kachess Drought Relief Pumping Plant and Keechelus Reservoir-to-Kachess Reservoir Conveyance Draft EIS* in the *Federal Register*. On November 4, 2013, Ecology issued its SEPA Determination of Significance. Two scoping meetings were held in Yakima, Washington on November 20, 2013, and two scoping meetings were held in Cle Elum, Washington on November 21, 2013. At the meetings, Reclamation described the Proposed Action and gave attendees the opportunity to discuss the proposal with Reclamation and Ecology staff, as well as comment on the project, the scope of the EIS, the process, and resources to be evaluated in the EIS.

The scoping period concluded on December 16, 2013. During this period, 39 comment documents and telephone calls were received. More information about the scoping process, including the comments received, may be found in the Scoping Summary Report (Reclamation and Ecology, 2014g) and on the Yakima River Basin Water Enhancement Project 2011 Integrated Plan website: <http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/index.html>. Reclamation and Ecology took these comments into consideration in preparing the DEIS, SDEIS and this FEIS.

Reclamation and Ecology issued the DEIS in January 2015. The public comment period for the DEIS closed 60 days later on March 10, 2015. After considering the comments received, Reclamation and Ecology reopened the comment period for an additional 60 days. The second comment period ended June 15, 2015. Public meetings were held on February 3, 2015, and February 5, 2015, in Cle Elum and Ellensburg, Washington, respectively. Reclamation and Ecology reviewed the public comments on the DEIS, while also collecting additional scientific data, and prepared an SDEIS to affirm or revise, as appropriate, the findings presented in the DEIS.

Reclamation and Ecology circulated the SDEIS for review and comment to engage interested public, agencies, stakeholders, and Tribes. The public comment period for the SDEIS began April 13, 2018 and concluded July 11, 2018. Reclamation and Ecology held public meetings on May 16 and 17, 2018 in Cle Elum and Ellensburg, Washington, respectively. Reclamation and Ecology considered comments received on the SDEIS during the public review period. Responses to public comments on both the 2015 DEIS and the 2018 SDEIS are included in this FEIS.

In addition, Reclamation and Ecology have conducted outreach with local stakeholders to understand concerns, provide project information, and encourage input during the public comment periods for the DEIS and SDEIS.

Consultation and Coordination

Reclamation is consulting with the Service and National Marine Fisheries Service under the Endangered Species Act (ESA). Reclamation has also 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, and the Confederated Tribes of the Colville Reservation is ongoing. Reclamation has contacted the Bureau of Indian Affairs Yakima Office and the Bureau of Indian Affairs 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 continue coordination with the Department of Archaeology and Historic Preservation on impacts to cultural resources. Reclamation and Ecology will continue to consult with the Yakama Nation, Umatilla Tribe, and Colville Confederated Tribes.

Key Issues

Key issues or resources relevant to the analysis were identified based on public comments raised during scoping, from internal scoping, and outreach to Federal, State, local agencies, Tribal governments, and legal, regulatory and policy requirements. The following issues or resources are analyzed in detail in this FEIS.

- ***Earth and Physical Resources:*** air quality, climate, geology, noise, and soils
- ***Water Resources:*** surface water resources, groundwater, and water quality
- ***Biological Resources:*** fish, wildlife, species listed under the Endangered Species Act (ESA) and critical habitat, and vegetation and wetlands
- ***Cultural Resources:*** historic properties, Indian sacred sites, and resources of tribal concern
- ***Socioeconomic Resources:*** environmental justice, health and safety, Indian trust assets, land and shoreline use, recreation, regional economic impacts and economic benefits, transportation, visual quality, utilities, and energy requirements

Major Conclusions

Based upon the analysis of impacts to these resources in Chapter 4, the major conclusions of this FEIS are as follows:

- ***Change in Water Supply:*** The action alternatives would improve water supply to proratable water users by up to 22 percentage points in the worst drought years, raising the proration percentage to about 53 percent of entitlement. This would be a substantial benefit to water supply because it would offer substantial progress toward the Integrated Plan's 70 percent proration goal.
- ***Change in Reservoir Levels:*** Under all action alternatives, Reclamation would operate Keechelus Reservoir to help Kachess Reservoir refill following a drought. This action would result in slightly lower mean Keechelus Reservoir pool levels, with a maximum incremental reservoir drawdown of 18 feet in late summer (in 1996) compared to *Alternative 1 - No Action*. Under all action alternatives, Kachess Reservoir would be drawn down below the existing minimum pool level in some years. The maximum extent of the drawdown would be 80 feet in some years. In other affected years the drawdown would be much less than 80 feet and pool levels would fluctuate both above and below the existing, minimum pool level. In years when neither drought-relief nor refill operations are needed there would be no pool drawdown below the elevations existing under current operations. At the maximum extent of drawdown Big Kachess will continue to hold approximately 385,000 acre-feet of water. Little Kachess will continue to hold approximately 59,000 acre-feet of water, the same as under existing conditions.
- ***Change in Groundwater Supply to Wells:*** Based on groundwater monitoring of wells around Kachess Reservoir, KDRPP operations may result in decreased groundwater levels in shallow aquifers adjacent to the reservoir, potentially decreasing the groundwater supply to some wells. Of the approximately 107 wells in the primary study area, about 15 wells are located in areas that could be affected by reservoir operations
- ***Effects on Listed Species:*** Based on modeled water surface elevations, *Alternatives 2, 3 and 4* would increase the number of days when Kachess Reservoir's water surface elevation would drop below 2,220 feet (the evaluation at which Big and Little Kachess reservoirs separate and begin to affect fish passage, particularly for bull trout). These impacts to passage of bull trout would be mitigated by the Volitional Bull Trout Passage Improvements. *Alternatives 5A, 5B, and 5C* would increase the number of days when flows in the Keechelus reach of the Yakima River are suitable for Middle Columbia River steelhead outmigration. All alternatives would result in noise impacts to northern spotted owls, but the alternatives are not expected to harm or injure northern spotted owls, or impact their habitat.
- ***Regional Economic Impacts and Benefits:*** The socioeconomic effects of the action alternatives arising from changes in water supply available for agriculture are expected to be positive, resulting in a net gain in regional economic activity relative to *Alternative 1 - No Action*.

What Comes Next?

Public Release of the FEIS

Reclamation will file this FEIS with the U.S. Environmental Protection Agency, who will publish the Notice of Availability in the *Federal Register*. Reclamation and Ecology will announce the release of this FEIS on their websites and in local and regional newspapers.

Reclamation will issue a Record of Decision (ROD) no sooner than 30 days after the Notice of Availability of this FEIS is published in the Federal Register. The ROD will identify Reclamation's decision on KDRPP and KKC and will describe the basis for that decision.

A Second EIS for Siting and Analysis

Reclamation and Ecology intend to engage in site-specific analysis that will tier to this FEIS in the near future. This FEIS evaluates impacts on a broad scale to allow the decisionmakers to narrow the feasible options for further review in the site-specific, tiered EIS. This tiered EIS ("Tier-2 EIS") will enable the decisionmakers to consider and analyze micro-siting issues and refine, if necessary, the broader analysis in the FEIS. The Tier-2 EIS will be a streamlined EIS under the Department of the Interior and Council of Environmental Quality (CEQ) Regulations and policies (40 CFR 1502.20; 43 CFR 46.120, 46.140; and Secretarial Order 3355).