Yakima River Basin Integrated Water Resource Management Plan

Draft Programmatic Environmental Impact Statement Executive Summary

BENTON, KITTITAS, KLICKITAT AND YAKIMA COUNTIES

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

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Mission Statements

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

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 Programmatic Environmental Impact Statement
Yakima River Basin Integrated Water Resource Management Plan
Benton, Kittitas, Klickitat, and Yakima, Counties, Washington

Joint Lead Agencies:

U.S. Department of the Interior
Bureau of Reclamation

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Cooperating Agencies:

U.S. Department of Agriculture, U.S. Forest Service
U.S. Department of Energy, Bonneville Power Administration

This Draft Programmatic Environmental Impact Statement (DPEIS) for the Yakima River Basin Integrated Water Resource Management Plan (Integrated Plan) was prepared jointly by the Bureau of Reclamation and Washington State Department of Ecology. This DPEIS evaluates two alternatives to meet the water supply and ecosystem restoration needs in the Yakima River basin—the No Action Alternative and the Yakima River Basin Integrated Water Resource Management Plan Alternative. A preferred alternative has not been identified. The environmental impacts of the Integrated Plan have been evaluated at a programmatic level in this document.

This DPEIS was prepared in compliance with the National Environmental Policy Act (NEPA), Public Law 91-190, and the State of Washington Environmental Policy Act (SEPA), Chapter 43.21C RCW, and the SEPA Rules (Chapter 197-11 WAC).

The DPEIS will be available for a 45-day public comment period. Comments are due to the above Bureau of Reclamation address by January 3, 2012.

SEPA FACT SHEET

Brief Description of Proposal:

The Bureau of Reclamation (Reclamation) and the Washington State Department of Ecology (Ecology) have jointly prepared this Draft Programmatic Environmental Impact Statement (DPEIS) on the Yakima River Basin Integrated Water Resource Management Plan (Integrated Plan). 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 Integrated Plan identifies a comprehensive approach to water resources and ecosystem restoration improvements in the Yakima River basin. The Integrated Plan includes seven elements: reservoir fish passage, structural and operational changes to existing facilities, surface water storage, groundwater storage, habitat/watershed protection and enhancement, enhanced water conservation, and market reallocation. The Integrated Plan was developed to address a variety of water resource and ecosystem problems affecting fish passage, fish habitat, and water supplies for agriculture, municipalities, and domestic uses.

Proponents and Contacts:

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

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Director, Office of Columbia River
15 W. Yakima Ave, Suite 200
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Permits, Licenses, and Approvals Required for Proposal:

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

- National Environmental Policy Act
- Endangered Species Act
- Secretary's Native American Trust Responsibilities
- National Historic Preservation Act
- Executive Order 11988: Floodplain Management
- Executive Order 11990: Protection of Wetlands
- Executive Order 12898: Environmental Justice
- Executive Order 13007: Indian Sacred Sites
- Section 401 Certification, Clean Water Act
- Section 402 Permit, Clean Water Act
- Section 404 Permit, Clean Water Act
- State Environmental Policy Act
- Washington Department of Natural Resources Permit
- Additional Points of Diversion Authorization
- State Trust Water Rights Program Participation
- Water use permit/certificate of water right
- Reservoir permit/aquifer storage and recovery
- Dam safety permit
- Shoreline conditional use permit or variance
- Water system plan approval
- Hydraulic project approval
- Critical areas permit or approval
- Floodplain development permit

Authors and Contributors:

A list of authors and contributors is provided following Chapter 6.

Date of Issue:

November 16, 2011

Public Comment Period:

The DPEIS will be available for a 45-day public comment period. Comments must be received or postmarked by 5 p.m. PST on January 3, 2012, and may be submitted orally, in writing via regular mail, or email to:

Ms. Candace McKinley
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Columbia-Cascades Area Office
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Email: yrbwep@usbr.gov

Public Meetings:

Reclamation and Ecology will conduct six public meetings to receive comments on the DPEIS. The meetings will be held from 1:30 PM to 3:30 PM and from 5:00 PM to 7:00 PM on the following dates:

December 5, 2011
U.S. Forest Service Ranger Station
803 W. 2nd Street
Cle Elum, WA 98922

December 6, 2011
Hal Holmes Center
209 N. Ruby Street
Ellensburg, WA 98926

December 14, 2011
Yakima Arboretum
1401 Arboretum Drive
Yakima, WA 98901

Timing of Additional Environmental Review:

Reclamation and Ecology anticipate releasing the Final PEIS on the Integrated Plan in January or February 2012. This analysis is programmatic in nature and has been prepared to generally address probable significant adverse impacts associated with the Integrated Plan. Any individual projects that are carried forward will require additional, more detailed project-level environmental review prior to implementation. These projects and actions may require SEPA compliance, NEPA compliance, or both, depending on the implementing agency, source of funding, and/or types of permits required. If a decision is made to implement the Integrated Plan following the Final PEIS, some projects and actions could be advanced and ready for additional environmental review early in 2012; others could require several years before they would be advanced for implementation.

Document Availability:

The DPEIS for the Integrated Plan can be viewed online at: http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/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 509-457-7120. 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 DPEIS are available online at:

Yakima River Basin Water Enhancement Project

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

List of Tables

EXECUTIVE SUMMARY

Introduction

The Bureau of Reclamation (Reclamation) and the Washington Department of Ecology (Ecology) have prepared a Draft Programmatic Environmental Impact Statement (DPEIS) on the Yakima River Basin Integrated Water Resource Management Plan (Integrated Plan). The Integrated Plan identifies a comprehensive approach to water resources and ecosystem restoration improvements in the Yakima River basin. The Integrated Plan includes seven elements: reservoir fish passage, structural and operational changes to existing facilities, surface water storage, groundwater storage, habitat/watershed protection and enhancement, enhanced water conservation, and market reallocation. The Integrated Plan was developed to address a variety of water resource and ecosystem problems affecting fish passage and habitat, and agricultural and municipal and domestic water supplies.

Purpose and Need for the Action

The current water resources infrastructure of the Yakima River basin has not been capable of consistently meeting aquatic resource demands for fish and wildlife habitat, dry-year irrigation demands, and municipal water supply demands. Specific problems that the Integrated Plan is proposed to address include:

- Anadromous and resident fish populations are seriously depleted from historic levels due to the following major factors:
    - Dams and other obstructions block fish passage to upstream tributaries and spawning grounds;
    - Riparian habitat and floodplain functions have been degraded by past and present land use practices; and
    - Irrigation operations have altered streamflows, resulting in flows at certain times of the year that are too high in some reaches and too low in others to provide good fish habitat.
- Demand for irrigation water significantly exceeds supply in dry and drought years, leading to severe prorationing[1] for proratable, or junior, water rights holders;
    - A water supply of 70 percent of proratable water rights during a drought year would provide a minimally acceptable supply to prevent severe economic losses to farmers. This number was reached following

[1] Prorationing refers to the process of equally reducing the amount of water delivered to junior ("proratable") water right holders in water-deficient years based on Total Water Supply Available (TWSA).

extensive discussions with stakeholders regarding the lowest level of water supply that could be accommodated without catastrophic losses to crops, assuming aggressive water management techniques were employed. This 70 percent threshold is similar to the State of Washington's definition of a drought condition contained in RCW 43.83B.400, which recognizes a drought when water supply for a significant portion of a geographic area falls below 75 percent of normal and is likely to cause undue hardship for various water uses and users.

- Demand for municipal and domestic water supplies is difficult to meet because of the following factors:
    - Water rights in the basin are fully appropriated, making it difficult to acquire water rights to meet future municipal and domestic water demand;
    - Pumping groundwater for irrigation and municipal uses may reduce surface water flows in some locations, which may affect existing water rights; and
    - Hydraulic continuity between groundwater and surface water in the basin creates uncertainty over the status of groundwater rights and permit exempt wells within the basin's appropriative water rights system ("first in time, first in right"), potentially making groundwater use junior to nearly all surface water use.
- Climate change projections indicate that there will be changes in runoff and streamflow patterns, increasing the need for prorationing and reducing flows for fish.

These problems have created a 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, and for agricultural, municipal, and domestic needs. These problems should be addressed in a way that anticipates increased water demands and changes in water supply related to climate change.

The purposes of the Integrated Plan are to:

- Implement a comprehensive program of water resource and habitat improvements in response to existing and forecast needs of the Yakima River basin; and
- Develop an adaptive approach for implementing these initiatives and for long-term management of basin water supplies that contributes to the vitality of the regional economy and sustains the health of the riverine environment.

Alternatives

Development and Analysis of Alternatives

The Integrated Plan presented in this DPEIS is the result of 30 plus years of study and proposals to improve water supply and fish habitat in the Yakima basin, including elements and projects identified in Reclamation's Yakima River Basin Water Storage Feasibility Study Planning Report/EIS (Reclamation, 2008g) and Ecology's Final EIS on Yakima River Basin Integrated Water Resource Management Alternative (Ecology, 2009). The Yakima River Basin Water Enhancement Project (YRBWEP) Workgroup further evaluated these elements and projects. The result is an Integrated Plan of actions to address water supply and fish needs in the basin.

The combination of projects and actions included within the Integrated Plan has been optimized during nearly three years of discussion with the YRBWEP Workgroup and other stakeholders to achieve the objectives outlined in the Purpose and Need statement. Extensive modeling and analyses completed during the Yakima River Basin Study (April 2011) determined that the Integrated Plan Alternative represents the only combination of programs, projects and resource allocations that could feasibly meet the objectives outlined in the Purpose and Need statement. Therefore, only one action alternative is presented in this DPEIS.

During implementation of the Integrated Plan, individual components may be modified as new information becomes available or conditions change. Should these modifications result in substantial changes to the components, supplemental programmatic environmental evaluations will be conducted. Additional information may also become available during project-level review for individual components. Any new information that could result in substantial reshaping of the program or project under consideration would be subject to additional environmental review.

No Action Alternative

Under the No Action Alternative, Reclamation and Ecology would not carry out the Integrated Plan Alternative. Reclamation and Ecology would not develop new water storage in the Yakima River basin or expand programs to protect or enhance fish habitat. In addition, Reclamation and Ecology would not implement enhanced water conservation, market reallocation, or groundwater storage. Although Reclamation and Ecology would not implement these actions as an integrated program, various agencies and other entities would likely continue to undertake individual actions to accomplish some water resource improvements. These actions could include small water storage projects, artificial fisheries supplementation programs, fish passage, habitat improvements, water conservation, and water quality improvements. Reclamation would continue to study fish passage options at its major reservoirs in accordance with its Mitigation Agreement with the Washington Department of Fish and Wildlife (WDFW) and its Settlement Agreement with the Yakama Nation. These actions, although beneficial, would only provide slow and partial progress in addressing the water resource problems of the basin. With the No Action Alternative, existing problems with water

availability and habitat quality would likely worsen with increased population and climate change.

The No Action Alternative is intended to represent the most likely future expected in the absence of implementing the proposed action. For the purposes of this DPEIS, Reclamation and Ecology consider the No Action Alternative to include projects that are ongoing and ready for implementation. These are projects, actions, and policies that:

- Have been planned and designed through processes outside the Integrated Plan;
- Are authorized and have identified funding for implementation; and
- Are scheduled for implementation.

Several entities in the Yakima River basin, including the Yakama Nation, Reclamation, the Bonneville Power Administration (BPA), U.S. Fish and Wildlife Service (Service), National Marine Fisheries Service (NMFS), Ecology, WDFW, county and municipal governments, local conservation districts, nonprofit organizations, and other landowners and managers throughout the basin have been actively involved in storage modification, supplementation, and fish enhancement projects in the past 30 years. Projects, actions, and policies developed by these entities that meet the ready for implementation criteria described above are considered part of the No Action Alternative.

Integrated Water Resource Management Plan Alternative

The Integrated Water Resource Management Plan Alternative (Integrated Plan) represents a comprehensive approach to water management in the Yakima River basin. It is intended to meet 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 and for agriculture and municipal and domestic needs. The Integrated Plan is also intended to provide the flexibility and adaptability to address potential climate changes and other factors that may affect the basin's water resources in the future. The Integrated Plan includes three components of water management in the Yakima basin—Habitat, Systems Modification, and Water Supply. The intent of the Integrated Plan is to implement a comprehensive program that will incorporate all three components using seven elements to improve water resources in the basin:

- Reservoir Fish Passage Element (Habitat Component);
    - Provide fish passage at the five major Yakima River basin dams – Cle Elum, Bumping Lake, Tieton, Keechelus, and Kachess – as well as Clear Lake Dam.
- Structural and Operational Changes Element (Systems Modification Component);
    - Cle Elum Pool Raise,
    - Kittitas Reclamation District Canal Modifications,
    - Keechelus-to-Kachess Pipeline,

    - Subordinate Power at Roza Dam and Chandler Powerplants, and
    - Wapatox Canal Improvements.
- Surface Water Storage Element (Water Supply Component);
    - Wymer Dam and Pump Station,
    - Kachess Reservoir Inactive Storage,
    - Bumping Lake Reservoir Enlargement, and
    - Study of Columbia River Pump Exchange with Yakima Storage.
- Groundwater Storage Element (Water Supply Component);
    - Shallow Aquifer Recharge, and
    - Aquifer Storage and Recovery.
- Habitat/Watershed Protection and Enhancement Element (Habitat Component);
    - Targeted Watershed Protections and Enhancements, and
    - Mainstem Floodplain and Tributary Enhancement Program.
- Enhanced Water Conservation Element (Water Supply Component);
    - Agricultural Conservation, and
    - Municipal and Domestic Conservation Program.
- Market Reallocation Element (Water Supply Component).

Reclamation and Ecology worked with the YRBWEP Workgroup to develop a package of projects to meet the goals of the Integrated Plan. These projects are described individually; however, Reclamation, Ecology and the YRBWEP Workgroup intend that the Integrated Plan would be implemented in a comprehensive manner, incorporating all elements of the proposed plan. Implementing the different elements of the Integrated Plan as a total package is intended to result in greater benefits than implementing any one element alone.

Resource Analysis

Following is a narrative summary of the environmental elements with the potential to have the most substantive impacts, based on current evaluations. Table ES-1 at the end of this Executive Summary presents a summary of impacts on all resources evaluated in this DPEIS.

Earth

No Action Alternative

Erosion and sediment delivery to streams likely would continue to occur at about the same rates as under existing conditions or could increase in the future, as past trends have indicated.

Integrated Plan Alternative

Short-term impacts to Earth would be related to construction activities that may result in erosion and sedimentation. Long-term impacts would include a combination of effects, including loss of earth-related resources, permanent landscape modifications, new roads, and changes in stream channel and floodplain conditions. Implementation of the Surface Water Storage Element of the Integrated Plan would result in increased disruption of the natural sedimentation process downstream of new or expanded storage facilities, as the reservoirs trap and hold sediments. Implementation of the Integrated Plan would also likely result in a decrease in erosion potential as floodplains are reconnected, channel scouring is reduced, and as conservation areas are created and land use practices are modified to benefit the watershed as a whole.

Surface Water Resources

No Action Alternative

The No Action Alternative includes conservation measures through YRBWEP and other programs that may impact surface water. These impacts could include a slight increase in Total Water Supply Available (TWSA) and streamflow in various Yakima River reaches and tributaries.

Integrated Plan Alternative

The Integrated Plan Alternative would benefit instream flows and improve the reliability of water supply for agriculture and municipal and domestic uses. Short-term impacts would be minor but could affect water deliveries to water users, streamflows, flood control operations, or TWSA or cause a surface water body to be temporarily diverted from its typical location. Long-term improvements in water supply would be reflected in increases in TWSA, end-of-season reservoir storage, and annual diversions compared to the No Action Alternative. In dry years, the increases in annual diversions would be substantial.

Groundwater

No Action Alternative

Under the No Action Alternative, the existing activities, programs, and trends in the Yakima River basin would continue. Deficiencies in water availability from surface

water sources may increase demand on groundwater. In general, groundwater recharge from irrigation is expected to decrease, and this would result in lowered water tables, reduced water levels in area wells, and reduced discharges to rivers, creeks and wetlands.

Integrated Plan Alternative

Short-term impacts of groundwater are limited to potential reduced usability of wells in the immediate vicinity of construction sites. Impacts would be temporary and are likely to be minor. Long-term groundwater levels and quantity are expected to increase through additional recharge from irrigation deliveries made from storage facilities, groundwater recharge enhancement, riparian enhancements, wetland and wet meadow construction, and from floodplain enhancements. Decreases in recharge are expected from enhanced conservation (improving conveyance facilities and increasing application efficiencies). No impacts to groundwater quality are anticipated.

Water Quality

No Action Alternative

Under the No Action Alternative, the existing activities, programs, and trends in the Yakima River basin would continue. Operation, maintenance, and construction associated with these projects could have impacts to water quality.

Integrated Plan Alternative

The Integrated Plan is designed to provide an overall net benefit to water quality conditions by improving streamflow conditions, riparian areas, and floodplain habitat in the basin. Localized impacts to water quality may occur, particularly with regard to temperature conditions in late summer and early fall immediately downstream of surface water storage projects. In addition there is some potential for existing contamination of soils in some locations to affect water quality if floodplain restoration projects are carried out in those areas.

Hydropower

No Action Alternative

The No Action Alternative is not expected to have long-term impacts on hydropower because no changes in flow through hydroelectric facilities are currently proposed.

Integrated Plan Alternative

Short-term impacts are not anticipated. In the long-term, the Integrated Plan would result in a combination of effects including a reduction of hydroelectric generation at the Roza and Chandler powerplants and at the Drop 2 and Drop 3 powerplants in the Wapato Irrigation Project. A slight reduction in hydroelectric generation at dams along the Columbia River would occur when a new reservoir is refilling after the irrigation portion of the water stored is used during a drought year. While power recovery facilities are not

included in the Integrated Plan, they could be constructed at several facilities in the future if economic conditions are favorable.

Fish

No Action Alternative

Various agencies and other entities would likely continue to undertake individual actions to accomplish some water resource improvements. These actions could include small water storage projects, artificial fisheries reintroduction and supplementation programs, fish passage, habitat improvements, water conservation, and water quality improvements. These actions, although beneficial, would provide slow and partial progress in addressing the water resource problems of the basin. With the No Action Alternative, existing problems with water availability and habitat quality would likely worsen with increased population and climate change.

Integrated Plan Alternative

Given implementation of the combined elements, the Integrated Plan would contribute to more flow conditions resembling natural flows and the creation of habitat conditions more capable of supporting salmonid populations in the Yakima River basin. In particular, the Surface Water Storage Element would improve flow conditions throughout the basin. The Habitat/Watershed Protection and Enhancement Element, the Structural and Operational Changes element, and the Reservoir Fish Passage Element, would also benefit fish and help meet fish production and survival targets.

Vegetation

No Action Alternative

Some of the individual actions proposed under the No Action Alternative involve improvement of vegetation communities such as riparian areas or wetlands. This includes projects for water storage, artificial supplementation programs, and fish passage and habitat improvements. The projects would likely include removal of nonnative vegetation and planting with native plants. Some projects could reduce the amount of shrub-steppe vegetation.

Integrated Plan Alternative

Although there would be some negative impacts to vegetation, particularly shrub-steppe and old-growth in the areas of new or expanded reservoirs, the overall long-term impact of the Integrated Plan is expected to be positive. The Habitat/Watershed Protection and Enhancement Element would improve degraded habitat and protect large areas of intact habitat, including threatened shrub-steppe and old-growth habitats. The integrated implementation of the Habitat/Watershed Protection and Enhancement element and streamflow improvements provided by the Structural and Operational Changes, Surface Water Storage, and Groundwater Storage elements would provide greater benefits to

riparian and wetland vegetation in comparison to a program that implements the elements separately. Thus, integrated management approaches are more likely to achieve systemwide benefits for vegetation.

Wildlife

No Action Alternative

Some of the individual actions proposed under the No Action Alternative involve riparian vegetation improvement or alteration of wildlife habitats and species using those habitats. This includes projects for water storage, artificial supplementation programs, and fish passage and habitat improvements. The projects would likely include removal of nonnative vegetation and planting with native plants. Improved riparian vegetation would result in increased habitat for terrestrial wildlife species. Some projects could reduce the amount of shrub-steppe vegetation.

Integrated Plan Alternative

The overall impact of the Integrated Plan is expected to be positive for wildlife. Although there would be some negative impacts to wildlife habitat, particularly to shrub-steppe and old-growth in the areas of new or expanded reservoirs, the combined effect of the proposed elements would result in improved fish and wildlife habitat over time. Many of the proposed projects under the Enhanced Conservation and Structural and Operational Changes elements would not impact habitat because they would be located in previously disturbed areas. However, they would provide flow benefits to fish and other aquatic species. Fish passage facilities would open up new territory for anadromous fish and help restore ecosystems upstream of the dams. The Habitat/Watershed Protection and Enhancement Element would improve degraded habitat and protect large areas of intact habitat, including declining shrub-steppe and old-growth habitats.

Threatened and Endangered Species

No Action Alternative

Some of the individual actions proposed under the No Action Alternative involve riparian vegetation improvement or alteration of wildlife habitats and species using those habitats. This includes projects for water conservation, artificial supplementation programs, and fish passage and habitat improvements. The projects would likely include removal of nonnative vegetation and planting with native plants. Improved riparian vegetation would result in increased habitat for terrestrial wildlife species. Some projects could reduce the amount of shrub-steppe vegetation.

Integrated Plan Alternative

Impacts would be positive for listed species along the mainstem and tributaries in the Yakima River basin. Construction associated with structural and operational changes to existing facilities is not expected to result in impacts because it would occur in previously

disturbed areas or built environments. In addition, they would provide flow benefits to Middle Columbia River (MCR) steelhead, bull trout and other aquatic species. Fish passage facilities would open up new territory for MCR steelhead and help restore ecosystems upstream of the dams. The Habitat/Watershed Protection and Enhancement Element would improve degraded habitat and protect large areas of intact habitat, including threatened shrub-steppe and old-growth habitats critical for greater sage-grouse and northern spotted-owl, respectively. The integrated implementation of fish habitat enhancement projects and the streamflow improvements provided by the Structural and Operational Changes, Surface Water Storage, Groundwater Storage, and Habitat/Watershed Protection and Enhancement elements would provide greater benefits to listed fish and wildlife species in comparison to a program that implements the elements separately. Thus, integrated management approaches are more likely to achieve systemwide benefits for listed species.

However, the integrated elements would result in negative impacts to listed fish and wildlife using the area of a new reservoir or the proposed reservoir expansion adjacent to Bumping Lake.

Climate Change

No Action Alternative

Changes in precipitation, snowmelt, and runoff that may occur as a result of climate change could affect projects included in the No Action Alternative. There may be changes in water availability for irrigation, fish, and municipal uses. Without a comprehensive, integrated management program, projects would be completed in a piecemeal fashion, reducing the potential for coordination and increased efficiencies in implementation. An uncoordinated approach may reduce the potential to adapt water management strategies and adjust to changing climatic conditions. Depending on its severity, climate change could cause existing water supply shortages and adverse effects on streamflows and fish in the basin to become significantly worse under the No Action Alternative.

Integrated Plan Alternative

As an integrated package, this alternative would provide multiple benefits to water supply, agriculture, and fish while improving the ability of water managers to adapt to future climate changes. Approaching management on a basinwide level could provide additional consistency in water management. Additional water storage and improved irrigation operations would provide a more reliable water supply for agriculture during dry periods. Improved streamflows and fish habitat, along with access to upper river tributaries, would produce enhanced fish populations that would be better able to withstand habitat changes caused by climate change.

Recreation

No Action Alternative

The No Action Alternative would not result in long-term impacts to recreation in the Yakima River basin. This alternative includes storage modification, supplementation, and fish enhancement projects that would likely be implemented by other agencies and special interest groups. Recreational activities would be expected to continue as they are currently occurring. These projects could provide minor benefits to recreation by improving fishing opportunities.

Integrated Plan Alternative

Implementation of most of the projects and elements of the Integrated Plan would result in short-term disruptions to facilities due to access limitations during construction; however, many of these impacts will be resolved following completion of construction. Long-term impacts to recreational resources could occur associated with land acquisition for habitat protection, which could limit some recreational uses. Designation of areas as Wilderness or Wild and Scenic Rivers could limit some recreational uses such as motorized vehicles or mountain biking. Recreational facilities at Bumping Lake Reservoir would be significantly impacted by eliminating shoreline recreational facilities and access to trails. It is anticipated that some of the recreational facilities that would be eliminated could be replaced over time. However, it may not be possible to replace all impacted facilities at or near Bumping Lake Reservoir. Reclamation would coordinate with the U.S. Forest Service (USFS) to determine appropriate mitigation for impacted recreational facilities. Many of the proposed projects in the Integrated Plan would improve riparian and fish habitat. This would have a beneficial impact on recreation by improving fishing and wildlife viewing opportunities.

Land and Shoreline Use

No Action Alternative

The No Action Alternative could result in long-term land use impacts in the Yakima River basin if projects require property acquisition. This alternative includes water conservation, artificial fish supplementation, and fish enhancement projects that would be implemented by other agencies and entities.

Integrated Plan Alternative

The Cle Elum Dam pool raise, Keechelus-to-Kachess pipeline, Bumping Lake enlargement, and Kachess Reservoir inactive storage projects would require acquisition of land or easements, but are not anticipated having a significant impact on land use. Approximately 4,000 acres of private land would need to be purchased for the Wymer Dam project and changed from Forest and Rangeland to water storage, which could be a significant impact to land use. Habitat enhancement projects could require acquisition of property or easements, but they would be located on property owned by willing participants to the extent possible and would be compatible with existing land uses. Even

with willing sellers, some land use impacts could occur. Additionally, land use impacts could occur associated with habitat enhancement projects if acquisition results in more restrictive land uses. In particular, logging or other relatively high intensity activities would likely be curtailed on these acquired properties. Market Reallocation could result in changes in land use as water rights are transferred from one area and land use to another.

Cultural Resources

No Action Alternative

Under the No Action Alternative many water supply and habitat enhancement projects would be independently undertaken. Long-term impacts to cultural resources under the No Action Alternative would include ground-disturbing activities, erosion of cultural deposits, and increased vandalism of cultural resources. The net impact to cultural resources is expected to be lower under the No Action Alternative because fewer large-scale projects are likely to be constructed.

Integrated Plan Alternative

Projects undertaken as part of the Integrated Plan have the potential to cause long-term impacts to cultural resources located within the footprint of any new ground-disturbing construction activities. Many of the impacts to cultural resources would occur during ground-disturbing activities related to construction; although these impacts are construction related they would be permanent; therefore, they are considered long-term impacts. Construction impacts would include access and staging areas as well as any off-site mitigation areas. The main non-construction long-term impact for most elements would be erosion of cultural deposits. Potential impacts to cultural resources would be evaluated through site-specific studies and consultation with the Department of Archaeology and Historic Preservation and affected Tribes to develop appropriate mitigation measures.

Cumulative Impacts

The Integrated Plan has been developed with the intention of addressing some of the cumulative impacts associated with past projects in the Yakima River basin, including past impacts caused by dam construction, land use actions, inefficiencies in irrigation systems, and other impacts. There are cumulative impacts that could occur associated with implementation of the Integrated Plan. Cumulative construction impacts could occur if projects within the basin are constructed concurrently, including impacts to water quality, vegetation, and local transportation and access. These cumulative construction-related impacts would be further compounded if other present and reasonably foreseeable projects such as wind power development, expansion of the Department of Army's Yakima Training Center, potential hydropower at existing dams, and areawide ongoing developments are constructed concurrently with Integrated Plan projects.

The long-term cumulative impacts of the Integrated Plan are expected to be beneficial, although some localized impacts could occur associated with individual projects. Expanding existing reservoirs or building new water storage facilities would add to existing impacts on fisheries in a river basin that has already been extensively dammed, and has been impacted by development, climate change, and other modifications to the system. Additional storage facilities could exacerbate the impacts of existing facilities, including the potential to create additional impediments to fish passage, increased migration times, and impaired downstream water quality. However, these storage projects will also contribute to improving instream flows. Hydropower facilities could be expanded in the future by utilities as well as private developers, resulting in water quality impacts, altered reservoir operations, and other detrimental effects that could affect fisheries. The Integrated Plan has been developed in a comprehensive manner to offset these cumulative impacts, by including new fish passage, and retrofitting existing reservoirs with improved fish passage, and by including measures to enhance habitat, maintain flows, reduce water temperatures, and offset climate change-induced impacts. Land acquisition and wilderness designations associated with habitat/watershed protection and enhancement components have the potential to cumulatively affect and/or be affected by the USFS Okanogan-Wenatchee Forest Plan Revision Process.

There are projects and programs outside the Yakima River basin that could potentially cumulatively affect or be affected by the Integrated Plan, including the Odessa Subarea Special Study, Lake Roosevelt Incremental Storage Releases, Walla Walla Pump Exchange, Sullivan Lake Water Supply Project, Umatilla Aquifer Recharge project in Oregon, and potential renegotiation or termination of the Canadian Treaty, among others. Some of these projects would improve streamflows, most represent increased demand for water in the Columbia River. All these projects include opportunity costs. The Integrated Plan is an effort to evaluate the full range of impacts on a systemwide basis, to avoid both short term and long term adverse cumulative impacts.

Environmental Commitments

Reclamation has the primary responsibility to ensure that environmental commitments are met if any action is implemented. Because this a programmatic environmental review of the Integrated Plan elements, specific mitigation measures have not been developed for specific project actions at this time. The type of actions that Reclamation would undertake to minimize short-term construction impacts include erosion and sediment control, mitigation for construction impacts, evaluation of existing habitat, additional studies, property acquisition. For long-term impacts Reclamation would develop measures to address impacts to surface water and habitat, earth, groundwater, hydropower, visual resources, air quality, climate change, property acquisition, and cultural resources. Additional measures would be developed during project-specific review for each project action carried forward.

Public Involvement

On April 5, 2011, Reclamation published a Notice of Intent (NOI) to prepare a Draft Programmatic EIS in the *Federal Register*. Reclamation and Ecology issued a joint press release to local media on April 6, 2011, announcing the scoping meetings and a meeting notice was mailed to interested individuals, Tribes, groups, and Government agencies which described the project, requested comments, and provided information about the public scoping meeting. On May 3, 2011 Reclamation and Ecology held two scoping meetings at the Hal Holmes Center in Ellensburg, Washington, one in the afternoon and one in the evening; 45 individuals attended the two meetings. On May 5, 2011, two public scoping meetings were held at the Yakima Arboretum in Yakima, Washington; one in the afternoon and one in the evening; 26 individuals attended the two meetings. At the meetings, the proposed Integrated Plan was described and attendees were given the opportunity to comment on the proposal, the National Environmental Policy Act (NEPA)/State Environmental Policy Act (SEPA) process, and resources being evaluated in the DPEIS.

Reclamation and Ecology received 79 written comments during the scoping period which were used in the preparation of the DPEIS. The *Scoping Summary Report* (Reclamation and Ecology, 2011m) is available upon request or can be accessed from the YRBWEP 2010 Integrated Plan Web Site: http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/index.html.

Consultation and Coordination

Reclamation has conferred with the U.S. Fish and Wildlife Service (Service) and National Marine Fisheries Service (NMFS) and the agencies have reached agreement that Reclamation will not conduct consultation under Section 7 for the PEIS. Reclamation will carry out compliance in accordance with the Endangered Species Act, National Historic Preservation Act (NHPA) of 1966, and Clean Water Act Consultation for individual projects that are carried forward under the Integrated Plan in the future. Reclamation will initiate Government-to-Government consultation with the Confederate Tribes of the Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation, and Bureau of Indian Affairs regarding cultural resources, Indian trust assets, and Indian sacred sites. Most of this consultation will take place when individual projects proposed under the Integrated Plan are carried forward to implementation.

Reclamation and Ecology were responsible as joint lead agencies for developing this joint NEPA/SEPA DPEIS. BPA and USFS are cooperating agencies.

Summary of Impacts

Table ES-1 summarizes impacts associated with the No Action and Integrated Plan Alternatives.

Table ES-1. Comparison of Impacts for Alternatives

Resource	No Action Alternative	Integrated Plan Alternative
Earth	Erosion and sediment delivery would continue or increase.	Short-term: Construction-related erosion and sedimentation. Long-term: Loss of earth-related resources, permanent landscape modifications, and changes in stream channel and floodplain conditions. Disruption of sedimentation downstream of storage facilities. Decrease in erosion potential in conservation areas.
Surface Water Resources	Conservation measures through other projects could result in a slight increase in water supply and increases in streamflows in various reaches and tributaries. Overall goals and objectives of the Integrated Plan would not be achieved.	Short-term: Potential disruption during construction. Long-term: Increased TWSA, end-of-season reservoir storage, annual diversions, and improved streamflow.
Groundwater	Groundwater recharge is expected to decrease and demand on groundwater may increase.	Short-term: Temporary reduction of usability of wells in the immediate vicinity of construction sites. Long-term: Groundwater levels and quantities would increase with potential decreases near canal lining sites.
Water Quality	Construction projects could result in water quality impacts, localized benefits from habitat enhancement projects. Net benefits to water quality unlikely to occur.	Short-term: Risk of erosion and contaminants from construction. Long-term: Net benefit to water quality by improving streamflow conditions, riparian areas, and floodplain habitat.
Hydropower	Hydroelectric generation would continue to operate as under current patterns and trends.	Short-term: No impact. Long-term: Reduction of hydroelectric generation at Roza and Chandler Powerplants and the Drop 2 and Drop 3 powerplants in the Wapato Irrigation Project.
Fish	Habitat quality would likely worsen with increased population and climate change, although proposed projects could produce localized improvements.	Short-term: Temporary habitat disturbance, construction-related impacts. Long-term: Overall benefits from fish passage facilities, improved streamflows and habitat/watershed protection and enhancement projects.

Resource	No Action Alternative	Integrated Plan Alternative
Vegetation	Some vegetation removal from construction projects. Some projects could reduce the amount of shrub-steppe vegetation. Minor improvements from habitat enhancement projects. Current patterns and trends would likely continue into the foreseeable future.	Short-term: Temporary disruption of vegetation, including shrub-steppe and old-growth vegetation Long-term: Negative impacts, including habitat loss, from expanded reservoirs, but an overall positive impact due to habitat/watershed protection and enhancement. Permanent impact on shrub-steppe and old-growth vegetation.
Wildlife	Temporary dislocations during construction. Some vegetation removal or alteration of wildlife habitat from construction projects. Some projects could reduce the amount of shrub-steppe vegetation and habitat. Minor improvements to habitat from enhancement projects. Current patterns and trends would likely continue into the foreseeable future.	Short-term: Temporary disruption of habitat during construction. Substantial habitat impact could occur if replacement habitat is unavailable. Short term impacts for some species could be substantial at Wymer Dam and expansion of Bumping Lake Reservoir. Long-term: Negative impacts to habitat from new or expanded reservoirs. Overall positive impact for wildlife from habitat/watershed protection and enhancement. Permanent impact on shrub-steppe and old-growth vegetation.
Threatened and Endangered Species	Construction projects would likely include alteration of wildlife habitats. Some projects could reduce the amount of shrub-steppe vegetation. Minor improvements to habitat may provide limited benefits to listed species. Current patterns and trends would likely continue into the foreseeable future.	Short-term: Temporary disruption of habitat during construction, including reduction of shrub-steppe and old-growth habitat. Long-term: Negative impacts to species that may be displaced from the area of a new or expanded reservoir. Overall positive impacts from fish passage facilities, improved streamflows, and habitat/watershed protection and enhancement projects. Permanent impact on shrub-steppe and old-growth vegetation.
Visual Resources	Projects could alter visual resources. Individual actions would have varying levels of long-term visual impacts.	Short-term: Construction equipment and activities would be visible. Long-term: Visual impacts would be primarily of local scale and are not expected to be significant with the potential exception of new and expanded reservoirs.
Air Quality	Construction projects would likely cause minor increases in fugitive dust and vehicle emissions. Individual projects may cause long-term impacts from emissions if they include stationary pollutant sources such as pumping equipment driven by diesel, natural gas, or other fossil fuels.	Short-term: Minor dust and emissions associated with construction and traffic. Long-term: Some projects may cause long term impacts from emissions associated with stationary pollutant sources, although impacts are not expected to be significant.

Resource	No Action Alternative	Integrated Plan Alternative
Climate Change	Water supply shortages and adverse effects on streamflows and fish could become significantly worse. Limited ability to respond to climate change-induced impacts.	Short-term: Increases in greenhouse gas emissions associated with construction of individual projects. Long-term: Multiple benefits to water supply, agriculture, and fish, improving the ability of water managers to adapt to future climate change.
Noise	Increased construction noise. Individual projects have the potential to generate noise during long-term operation.	Short-term: Increased construction noise. Long-term: Some equipment or vehicles may be audible in the vicinity of projects.
Recreation	Temporary access restrictions or nuisance dust and noise during construction projects. Current patterns and trends impacting recreation facilities would likely continue into the foreseeable future.	Short-term: Temporary access restrictions or nuisance dust and noise. Long-term: Recreational facilities and resources at Bumping Lake Reservoir would be eliminated and it may not be possible to relocate. Many projects would improve fishing and wildlife viewing opportunities. Recreational opportunities such as motorized vehicle use would be restricted in areas acquired for conservation or designated as Wild and Scenic or Wilderness.
Land and Shoreline Use	Temporary access restrictions during construction. Individual projects could result in long-term land use impacts from property or easement acquisitions. Current patterns and trends impacting land use would likely continue into the foreseeable future.	Short-term: Temporary access restrictions caused by construction. Long-term: Property and easement acquisitions, shift from Forest and Rangeland to water storage in Wymer Reservoir area, potential land use changes due to market reallocation. Logging and other uses would be restricted in areas acquired for conservation or given special designations.
Utilities	Potential temporary disruptions during construction.	Short-term: Potential temporary disruption during construction. Long-term: Reduced electrical supply of electricity due to power subordination and increased demand from new equipment.
Transportation	Potential temporary traffic delays and possible detours associated with individual projects. Long term transportation not likely to be affected.	Short-term: Temporary traffic delays and possible detours, in some cases for up to 3 to 5 years for major projects. Long-term: Bumping Lake Enlargement would eliminate some Forest Roads, reducing access to recreation sites.
Cultural Resources	Ground disturbance, erosion, and increased vandalism of cultural resources. Potential impacts to historic structures.	Short-term: Construction could cause permanent impacts to cultural resources. Long-term: Ground disturbance, erosion, and increased vandalism of cultural resources. Potential impacts to historic structures.

Resource	No Action Alternative	Integrated Plan Alternative
Socioeconomics	Current economic patterns and trends would likely continue into the foreseeable future. Climate change and population increases would impact the relation between natural resources and the economy in the basin.	Short-term: Project-related funding would likely have short-term impacts positive on jobs and incomes and uncertainty and risk. Long-term: Potential increase in the value of goods and services derived from the basin's water and related resources in the long term. Reduction in uncertainty and risk.
Environmental Justice	Most projects would not be expected to cause disproportionate impacts to environmental justice communities.	Most projects are not expected to cause disproportionate impacts to environmental justice communities. Additional environmental justice analysis would be required during project-level analysis.