

## **CHAPTER 2.0 PROPOSAL AND ALTERNATIVES**

### **2.1 Description of the Columbia River Water Management Program**

This chapter describes the main components of the Columbia River Water Management Program (Management Program) authorized under the Columbia River Water Management Act. These components include storage, conservation, Voluntary Regional Agreements and other measures intended to meet the legislative mandate of aggressively pursuing new water supplies for instream and out-of-stream uses. The Management Program also includes administrative support functions such as development of a project inventory, a water supply and demand forecast, and a data management system.

The Management Program also involves funding and management of a number of major projects, many of which had been initiated prior to the passage of the Columbia River Water Management Act under a Memorandum of Understanding between the state of Washington, the Bureau of Reclamation (Reclamation), and three Columbia Basin Irrigation Districts signed in December 2004 (Section 1.3.1.1). These projects include the Columbia River Mainstem Off-Channel Storage Study, the Odessa Subarea Special Study, the Potholes Supplemental Feed Route Project, and the Lake Roosevelt Drawdown Project. These projects, discussed below, are being conducted jointly with Reclamation and are intended to be operated as part of Reclamation's Columbia Basin Project.

The Management Program is also providing funding to several water supply projects in tributaries to the Columbia River, including the Yakima Basin Water Storage Feasibility Study (Section 2.1.2.1) and the Walla Walla pump exchange (Section 2.1.2.2). These projects are also discussed below.

Ecology has identified and intends to take action on several "early actions" as soon as possible after the release of this Final Environmental Impact Statement. These include: the Potholes Supplemental Feed Route Project, the Lake Roosevelt Drawdown Project, and a Voluntary Regional Agreement proposed by the Columbia-Snake River Irrigators Association (CSRIA). These early actions are described in Section 2.6.

#### **2.1.1 Columbia River Water Management Act**

The 2006 legislature passed the Columbia River Water Management Act, an act related to water management in the portion of the Columbia River Basin that lies within Washington. The legislature recognized that a key priority of water resource management in the Columbia River Basin is the development of new water supplies that include storage and conservation in order to meet the economic and community development needs of people and the instream flow needs of fish" (RCW 90.90.005).

The Columbia River Water Management Act:

- Establishes a Columbia River Basin water supply development program,
- Directs Ecology to aggressively pursue development of water supplies to benefit both instream and out-of-stream uses, and
- Creates a Columbia River Basin Water Supply Development Account (Account).

Funding for the Account can come from legislative appropriations, funds earned through implementation of Management Program components, and other sources. Funds in the account can be used to assess, plan and develop new storage facilities, conservation projects, or other actions to provide new water supplies in the Columbia River Basin. Two-thirds of the funds provided by the legislature in the Account must be used to support the development of new storage facilities with the remaining one-third used for the other components of the Management Program (RCW 90.90.010). Water gained from the funded projects is to be used for both instream and out-of-stream uses.

### **2.1.2 Columbia River Water Management Program Components**

The purpose of the Management Program is to guide Ecology's implementation of the Columbia River Water Management Act, including administration of the Columbia River Basin Water Supply Development Account. The Columbia River Water Management Act directs Ecology to focus its efforts to develop water supplies for the Columbia River Basin to meet the following needs:

- Alternatives to ground water for agricultural users in the Odessa Subarea aquifer;
- Sources of water supply for pending water right applications;
- A new uninterruptible supply of water for the holders of interruptible water rights on the Columbia River mainstem that are subject to instream flows or other mitigation conditions to protect stream flows; and
- New municipal, domestic, industrial, and irrigation water needs within the Columbia River Basin (RCW 90.90.020).

After passage of the Columbia River Water Management Act, a team of Ecology staff established a 12-Month Work Plan to guide development of the Management Program. The plan identifies near-term and longer-term tasks and objectives to guide implementation and to lay the foundation for a successful long-term program. The plan focuses on specific near-term critical path activities within a 12-month period that meet the reporting requirements of the Columbia River Water Management Act. The plan can be viewed at [http://www.ecy.wa.gov/programs/wr/cwp/images/pdf/cr12\\_plan.pdf](http://www.ecy.wa.gov/programs/wr/cwp/images/pdf/cr12_plan.pdf).

The 12-Month Work Plan addresses all major components of the Management Program including:

- Storage facilities,
- Conservation projects,
- Voluntary Regional Agreements,

- The Columbia River water supply inventory and demand forecast, and
- The Columbia River water resources information system.

The following sections provide an overview of these Management Program components.

### **2.1.2.1 Storage Component**

Ecology may support the development of storage by funding feasibility studies, design, or construction of new storage facilities, and may do so independently, or in cooperation with other agencies, organizations or individuals. However, funds from the Columbia River Basin Water Supply Development Account may not be used for construction of any new storage facilities until Ecology evaluates the following:

- Water uses to be served by the facility;
- The quantity of water necessary to meet those uses;
- The benefits and costs to the state of meeting those uses, including short-term and long-term economic, cultural, and environmental effects; and
- Alternative means of supplying water to meet those uses, including the costs of those alternatives and an analysis of the extent to which long-term water supply needs can be met using these alternatives (RCW 90.90.010).

Water supplies secured through the development of new storage facilities, including new aquifer storage facilities, made possible with funding from the Columbia River Basin Water Supply Development Account will be allocated as follows:

- Two-thirds of active storage shall be available for appropriation for out-of-stream uses; and
- One-third of active storage shall be available to augment instream flows and shall be managed by Ecology. The timing of releases of this water shall be determined by Ecology, in cooperation with the Washington Department of Fish and Wildlife (WDFW) and fisheries co-managers, to maximize benefits to salmon and steelhead populations (RCW 90.90.020).

A variety of types of storage projects may be funded or approved under the legislation. For purposes of this programmatic EIS, potential storage projects are grouped into the following categories: new large storage facilities, new small to medium size storage facilities, modifications to existing storage facilities, and aquifer storage and recharge facilities.

#### **New Large Storage Facilities (Larger than 1 Million Acre-Feet)**

New large storage facilities with a capacity of 1 million acre-feet or more (> 1 million acre-feet) could be constructed. If a single storage facility is large enough, it could potentially resolve major instream and out-of-stream water supply problems in the Columbia River Basin. Benefits associated with a large reservoir could include:

- Supplying water to augment flows during critical periods in the river,
- Replacing ground water in the Odessa Subarea,

- Providing drought-year supply to interruptible water right holders, and
- Providing water for direct pump/pump exchange projects in major tributaries such as the Yakima River Basin.

Large storage facilities could be constructed either on-channel or off-channel. On-channel facilities would impound a river or stream, while off-channel facilities would divert or pump water to an impoundment structure at an upland location. Impoundment structures could be of earthen or concrete construction.

Under provisions of the Memorandum of Understanding between the State of Washington, Reclamation, and the three Columbia Basin Irrigation Districts signed in December 2004 (Section 1.3.1.1), Ecology and Reclamation are cooperating on a study to evaluate the feasibility of new large, off-channel storage sites in the Columbia River Basin. Reclamation is the federal agency that manages water projects, primarily for irrigation, in 17 western states. One of those projects is the Columbia Basin Project in the central portion of the Columbia River Basin in Washington State (Figure 2-1). Because Reclamation is a federal agency, its projects require Congressional authorization and appropriation and evaluation under the National Environmental Policy Act (NEPA).

A preliminary list of 11 potential off-channel storage sites was developed in a Pre-Appraisal Report completed prior to passage of the Columbia River Water Management Act (Ecology and Reclamation 2005). The Pre-Appraisal Report focused on potential sites that are within 10 miles of the Columbia River mainstem, would have capacity of at least 300,000 acre-feet, and would require pumping of no more than 800 vertical feet to lift water from the Columbia River to the reservoir. Ecology and Reclamation recently refined the list of sites by eliminating those that:

- Were too far downstream on the Columbia River to operate in conjunction with Reclamation's existing Columbia Basin Project,
- Would provide less than 1 million acre-feet of active storage, or
- Appeared to represent a high risk of failure or excess leakage.

In addition, the Confederated Tribes of the Colville Reservation requested that two potential reservoir sites that were included in the preliminary list of 11 not be further evaluated.

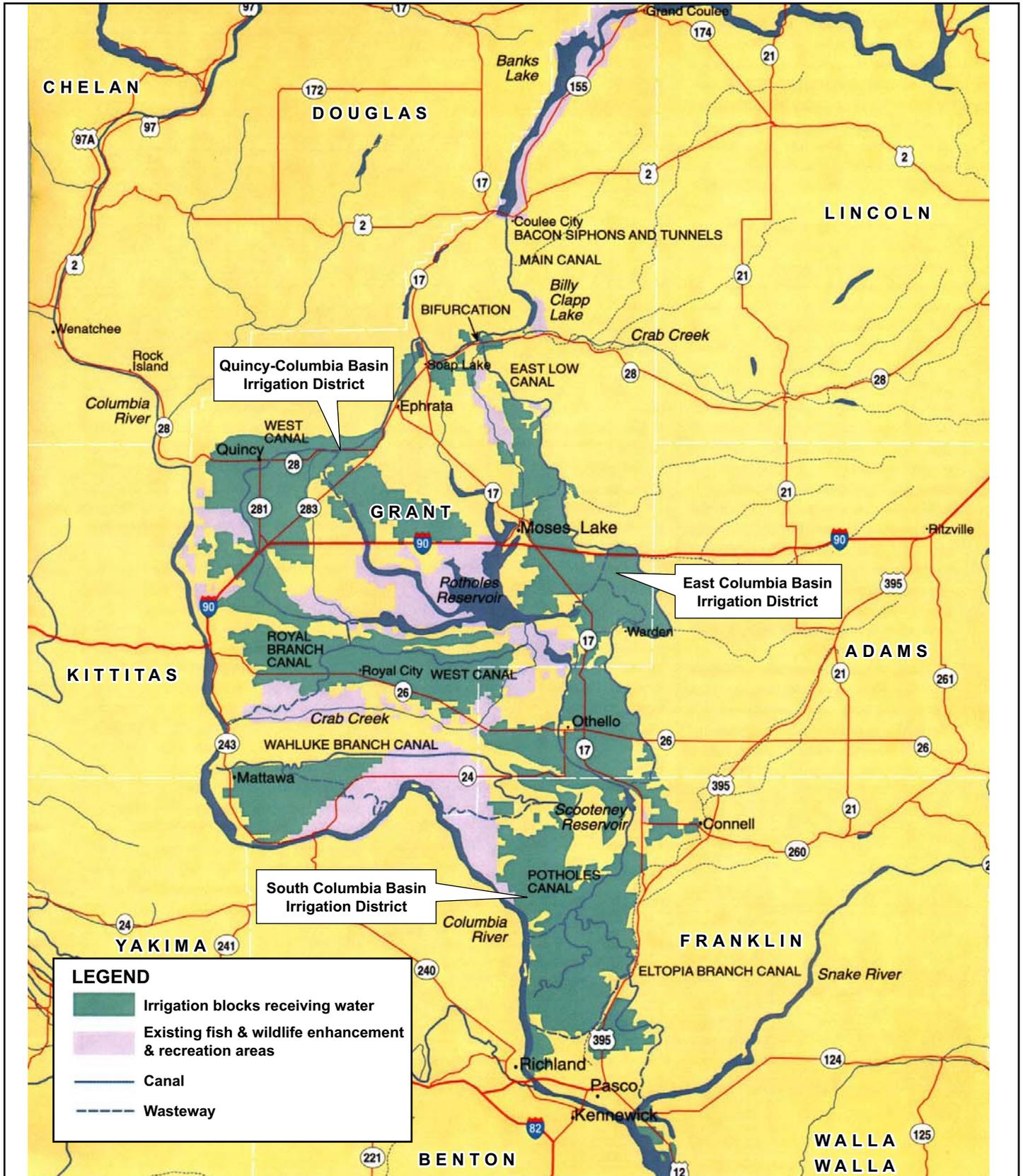
Four remaining sites identified in the Pre-Appraisal Report are being evaluated by Reclamation in an Appraisal Study. An Appraisal Study is the preparatory step to a comprehensive Feasibility Study and NEPA Environmental Impact Statement (EIS). Those sites, identified in Figure 2-2, include:

Hawk Creek - A site in northern Lincoln County tributary to Lake Roosevelt with potential active reservoir capacity of 1,400,000 acre-feet;

Foster Creek - A site in northern Douglas County tributary to Lake Pateros with potential active reservoir capacity of 1,210,000 acre-feet;

Sand Hollow - A site in western Grant County tributary to Lake Wanapum with potential active storage capacity of 1,100,000 acre-feet; and

Crab Creek - A site in western Grant County tributary to Priest Rapids Lake with potential active storage capacity of 2,300,000 acre-feet.



**LEGEND**

- Irrigation blocks receiving water
- Existing fish & wildlife enhancement & recreation areas
- Canal
- Wasteway



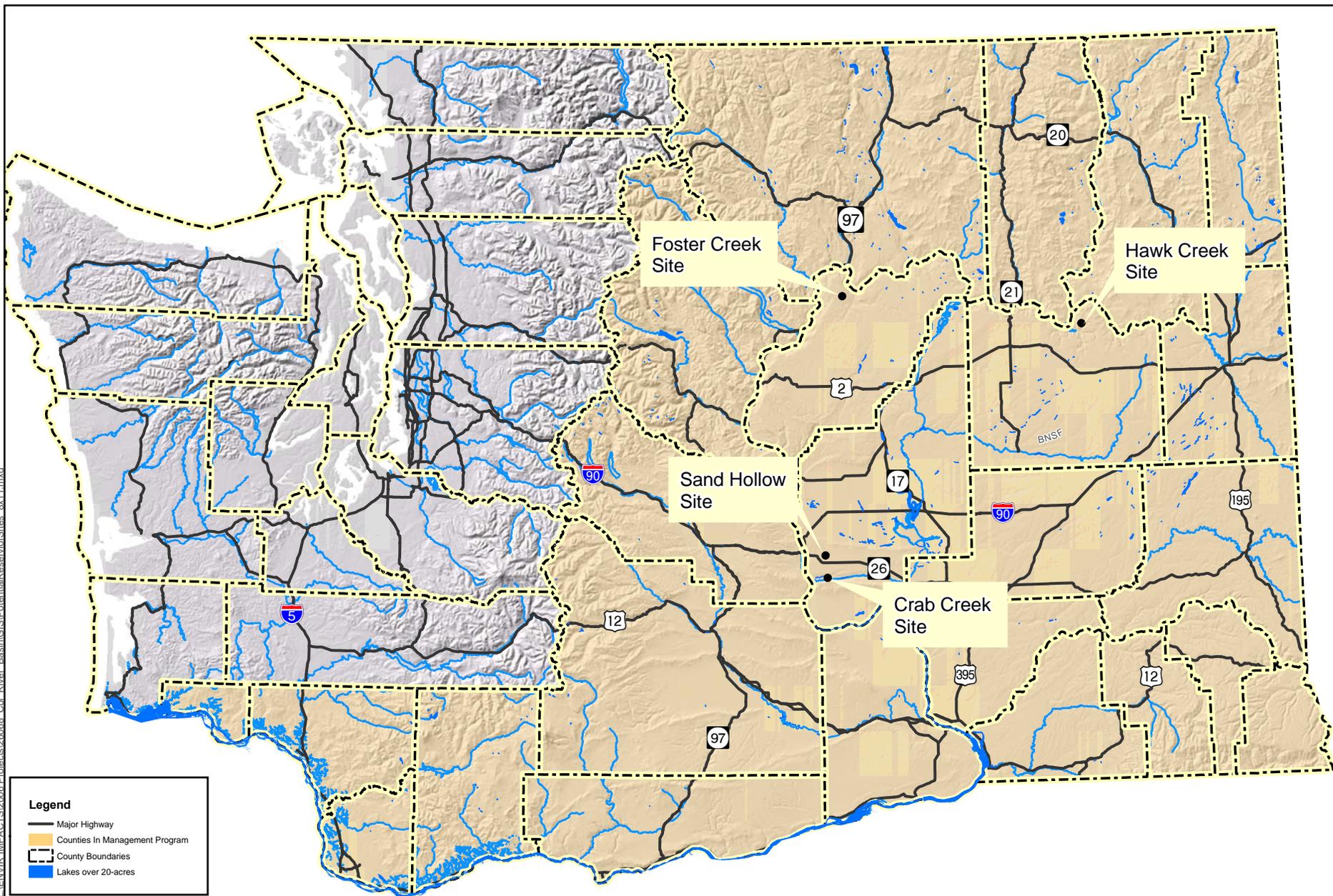
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**FIGURE 2-1**  
**COLUMBIA BASIN PROJECT**  
 COLUMBIA RIVER WATER MANAGEMENT PROGRAM EIS  
 WASHINGTON

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**Legend**

- Major Highway
- Counties In Management Program
- - - County Boundaries
- Lakes over 20-acres



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**FIGURE 2-2**  
 COLUMBIA RIVER WATER MANAGEMENT PLAN  
 POTENTIAL OFF-CHANNEL RESERVOIR SITES  
 WASHINGTON

During the Appraisal Study, the four sites will be further screened to identify one or two sites that may be suitable to move forward into a Feasibility Study and joint NEPA and State Environmental Policy Act (SEPA) EIS. The screening will involve evaluation of the sites for technical feasibility, preliminary costs, degree of potential benefits, as well as the extent of potential adverse environmental and cultural resource impacts. Areas of concern for potential adverse cultural and environmental impacts include, but are not limited to:

- Native American trust assets and sacred sites;
- Archeological resources;
- National Historic Register eligible resources;
- Special-status aquatic and terrestrial species (for example, federal threatened and endangered species and state sensitive species);
- Special-status habitat (for example, shrub-steppe habitat) and conservation/preservation designated areas (for example, Wild and Scenic River Areas and federal or state wildlife refuges);
- Existing residential, agricultural, extractive industrial, and recreational land uses (displacement impacts); and
- Existing transportation, communication, and utility infrastructure.

The Appraisal Study is scheduled to be completed in March 2007. Prior to conducting a Feasibility Study, Reclamation must receive specific Congressional authorization; thus, it would likely be 2008 or 2009 before such a study could potentially be initiated. In addition, expenditures from the Columbia River Basin Water Supply Development Account needed for the state share of the Feasibility Study and EIS would require authorization from the Washington State Legislature. It is estimated that a Feasibility Study and EIS would require three years for completion.

Reclamation is also involved in the Yakima River Basin Water Storage Feasibility Study. One of the storage alternatives identified in the study is a proposal for a large reservoir to be located approximately 30 miles east of the City of Yakima, known as the Black Rock Reservoir. While the Yakima Basin Storage Study is being partially funded from the Columbia River Supply Development Account (Account), it has its own Congressional authorization and evaluation criteria. Those criteria include:

- Improve anadromous fish habitat by leaving more water instream and creating more normative flows in the Yakima River;
- Improve reliability of water supply for pro-ratable irrigation districts; and
- Assist in meeting growth in demand for municipal water supply.

The Black Rock project involves a proposal to construct an 800,000 to 1,300,000 acre-foot storage reservoir in eastern Yakima County. The proposed reservoir would be filled with water pumped from Priest Rapids Lake on the Columbia River when such water is available in excess of current Columbia River flow targets. Water from Black Rock Reservoir would be used by participating irrigation entities within portions of the lower Yakima Basin in exchange for water currently diverted by those entities from the Yakima River under existing water rights. Also

under consideration in the Yakima Basin Storage Study are proposals for a smaller reservoir, known as Wymer, and a pump exchange project, both described in more detail below. Development of a Planning Report and joint NEPA/SEPA EIS for the Yakima Basin Storage Study was initiated in December 2006 and is scheduled to be completed by the end of 2008. Additional information regarding the Yakima River Basin Water Storage Feasibility Study and the Black Rock Reservoir proposal can be viewed at the following link: [http://www.usbr.gov/pn/programs/storage\\_study/](http://www.usbr.gov/pn/programs/storage_study/).

Ecology anticipates that, as part of the Columbia River Water Management Program, other potential large storage sites will be identified. For example, the Okanogan PUD and Okanogan County have requested that Ecology consider funding an Appraisal Study of a large reservoir proposal on the Similkameen River at a location known as Shankers Bend. This would involve development of up to a 1,600,000 acre-foot on-channel reservoir approximately five miles west of Oroville. This request is currently under consideration.

### **New Small Storage Facilities (Smaller than 1 Million Acre-Feet)**

The Columbia River Water Management Act does not indicate a preference for the size of storage reservoirs to be pursued as part of the Management Program. Thus, new facilities with a capacity of less than 1 million acre-feet could also be funded under the Management Program. These facilities would generally be similar in nature to the large storage facilities described above and would be evaluated using criteria similar to those described above for large storage facilities.

The Water Supply Inventory and Long-Term Water Supply and Demand Forecast Report was completed in November 2006 pursuant to RCW 90.90.040 (Section 2.1.2.5). It identified a number of storage proposals that have been contemplated in Watershed Plans prepared under Chapter 90.82 RCW as well as those identified by conservation districts, irrigation districts, and municipalities. Many of these proposals are for reservoirs of less than 1,000 acre-feet. Reservoir proposals identified through the inventory will be screened with the funding criteria developed as part of the Management Program to determine eligibility for funding from the Account. It is anticipated that annual updates of the Water Supply Inventory will identify a number of additional small storage projects.

In addition to the storage proposals identified in the Water Supply Inventory, Douglas County requested Ecology to consider evaluating a potential off-channel reservoir site at the east end of Foster Coulee near Banks Lake. A preliminary analysis of the site indicates that it could support approximately 140,000 acre-feet of active storage. However, construction of a reservoir at the site would require pumping greater than 800 feet in elevation to fill the reservoir from Banks Lake. Douglas County has also requested consideration of an off-channel reservoir site north of the intersection of State Route 17 and State Route 174. A preliminary analysis has not yet been conducted for that site.

As mentioned previously, partial funding from the Account has been provided to Reclamation's Yakima Basin Water Storage Feasibility Study. One of the projects under consideration as part of that study is the Wymer off-channel reservoir proposal. The Wymer Site is located between the Yakima River and Interstate 82 at a point approximately 10 miles south of Ellensburg. The

reservoir, with an active capacity of approximately 174, 000 acre-feet, is intended to be filled with water pumped from the Yakima River. As part of the Feasibility Study, Reclamation evaluated Wymer Reservoir in conjunction with the Bumping Lake Enlargement and Keechelus-to-Kachess Pipeline Projects. Reclamation also evaluated Wymer Reservoir in conjunction with a pump exchange from the mouth of the Yakima River. Under the pump exchange scenario, Wymer Reservoir would be filled from winter flows from Cle Elum Reservoir and excess flows in the Yakima River.

### **Modification of Existing Storage Facilities**

Projects of this type would make alterations to the structure or operation of existing facilities or conveyance systems to increase water availability. Modifications could include raising the height of existing impoundments (on-channel or off-channel) and/or altering operations at existing facilities in a manner that would provide water for additional beneficial uses. Examples of this type of project include re-operation of Banks Lake, under consideration as part of the Odessa Special Study described below and the proposed drawdown of Lake Roosevelt, described in more detail in Section 2.6.1.

### **Aquifer Storage and Recovery**

Aquifer storage and recovery (ASR) involves introducing water, usually surface water from rivers, into an aquifer through injection wells or through surface spreading and infiltration. The introduced water is stored in the aquifer until needed and then withdrawn from the aquifer through wells for beneficial use. Water to be stored in an aquifer must meet the state's ground water quality standards (Chapter 173-200 WAC). Aquifer storage and recovery does not include aquifer recharge from water artificially stored due to construction, operation, or maintenance of an irrigation system (Chapter 90.44.130 RCW) or projects involving recharge of reclaimed water (RCW 90.03.370).

The City of Kennewick has engaged in preliminary discussions with Ecology concerning the eligibility for funding from the Account for an ASR project associated with its municipal water system. The city's sources of water include a direct diversion from the Columbia River and two shallow wells near the Columbia River. Water from these sources is pumped to a water treatment facility before being routed to the municipal water system. Kennewick is proposing to pump water from the treatment facility during winter and spring, the period of greatest surplus production capacity, through the water distribution system to two injection wells to be installed at the south end of the city. The water would be introduced to the aquifer system and stored for use during the period of peak summer demand. Water would then be pumped back into the distribution system and made available for municipal use. If successful, the ASR system would give the city a firm supply of water for peak summer demand and allow it to reduce the level of diversions from the Columbia River during July and August, the most critical period for fish. Ecology is currently considering funding a portion of a pilot project to determine if the ASR project is feasible. Ecology anticipates that other ASR projects will be proposed for funding through the Account.

### **Odessa Subarea Special Study**

The Odessa Ground Water Management Subarea (Odessa Subarea, Figure 1-1) was designated by Ecology in response to declining ground water levels. Approximately 121,000 ground water irrigated acres of the Odessa Subarea are located within the boundaries of Reclamation's Columbia Basin Project. This number is somewhat variable depending on the extent of acreage in production in any given year and could range from about 103,000 acres to 140,000 acres. The easternmost 230,000 acres of the Odessa Ground Water Management Subarea, including about 49,000 acres of irrigated land, are located outside of the Columbia Basin Project. Reclamation, in conjunction with Ecology, is conducting a study of the portions of the Odessa Subarea that lie within the Columbia Basin Project to identify options for replacing ground water currently used for irrigated agriculture with surface water from the Columbia River. This project is referred to as the Odessa Subarea Special Study.

The Odessa Subarea Special Study is a ground water replacement project and not a storage study. However, for purposes of this EIS, it has been included in the storage section of the Management Project description because the strategies for supplying replacement water would involve modifications of existing storage facilities and/or construction of new storage facilities.

In 2006, Reclamation identified four initial alternatives for further study (Reclamation 2006). As originally proposed, these alternatives would replace ground water use on between 48,000 and 121,000 acres of existing farmland by means of the following conveyance infrastructure:

- Construction of a scaled down version of an East High Canal system to serve the lands currently irrigated with ground water (this canal was part of the original design of the Columbia Basin Project, but was never built);
- Construction of a scaled down version of the East High Canal system and enlargement of the existing East Low Canal south of Interstate 90;
- Enlargement and partial extension of the existing East Low Canal system south of Interstate 90; or
- Using the existing East Low Canal system infrastructure.

In order to provide a replacement surface water supply to implement the alternatives, ranging in quantities from 160,000 to 520,000 acre-feet, modifications to existing storage facilities or construction of new storage facilities, or both, would be necessary. Among the water supply options under consideration are the following:

- A number of scenarios for re-operation of Banks Lake ranging from increasing the pool elevation by 2 feet to drawing down the reservoir to levels below current operating levels;
- Cycling more water through Potholes Reservoir during the course of the year (also requiring acquisition of a larger downstream evacuation route); and
- Construction of new off-channel reservoirs at Dry Coulee, Rocky Coulee, and Lind Coulee, and Lower Crab Creek.

Reclamation is currently conducting appraisal level analyses involving additional engineering and hydrologic modeling to develop further engineering details and preliminary cost estimates,

verify ground water acreage, and determine the volume of water supply needed. The appraisal level analyses will likely result in revisions to the initial alternatives as more data are collected and evaluated. It is anticipated that a Feasibility Study and NEPA/SEPA EIS will be initiated in 2008 and completed in October 2010. More information regarding the Special Study can be obtained at the following link: [http://www.usbr.gov/pn/programs/ucao\\_misc/odessa/report-alternatives.pdf](http://www.usbr.gov/pn/programs/ucao_misc/odessa/report-alternatives.pdf).

While not considered as an alternative in the Odessa Subarea Special Study, the proposed diversion of an additional 30,000 acre-feet of water from Lake Roosevelt would supply a portion of the needed replacement water (Lake Roosevelt Drawdown Project in Section 2.6).

The purpose of this current Odessa Subarea Special Study is ground water replacement. While the alternatives envisioned by the study may help slow declines of ground water in areas receiving the new surface water, they are not intended to actually restore water levels in underlying ground water. Aquifer restoration would require some form of aquifer recharge project. Such a project was envisioned in Section 16 of the Memorandum of Understanding between the State of Washington, the Reclamation, and three Columbia Basin Irrigation Districts, and may be considered after the project or projects that emerge from the Odessa Subarea Special Study are initiated. However, at present, there are no specific plans for such a project.

#### **2.1.2.2 Conservation and Other Actions Designed to Provide New Water Supplies Component**

Funds from the Columbia River Basin Water Supply Development Account may be used to implement water conservation projects. Net water savings through conservation measures funded by the Management Program must be placed in Ecology's Trust Water Rights Program (Trust Program) in proportion to the state funding provided to the project (Appendix D for more details on the Trust Program). Water placed in the Trust Program would be managed by Ecology. Ecology would allocate water from the Trust Program for instream flows, irrigation, or other beneficial uses. Net water savings achieved through conservation projects within the boundaries of the Columbia Basin Project and for use as a replacement source of existing ground water use in the Odessa Subarea are not required to be placed in the Trust Program (RCW 90.90.010(5)).

Many different types of conservation projects are currently funded through Ecology, BPA, the Washington State Conservation Commission and other entities. Some of these conservation projects will complement the Management Program because they put more water into the Columbia River and allow for new water rights to be issued. Other projects would primarily benefit tributaries and may not complement Management Program goals. Through the recently completed Water Supply Inventory prepared pursuant to requirements of RCW 90.90.040, Ecology has developed an inventory of over 5,000 conservation projects. Screening and ranking procedures intended to elevate in priority those projects that best meet Management Program goals are currently under development.

The Management Program can fund a variety of types of conservation projects anywhere within the State of Washington portion of the Columbia River Basin. For purposes of this programmatic EIS, the following general types of conservation projects are described in this

subsection: Columbia Basin conservation projects, municipal conservation, agricultural conservation, and industrial conservation. In addition, this subsection addresses pump exchange projects.

### **Columbia Basin Conservation Projects**

Water users in the Columbia Basin counties of Grant, Adams, and Franklin have proposed several innovative approaches to conservation. The Ground Water Management Area (GWMA) organization, the Columbia-Snake Irrigators Association (CSRIA), and local conservation districts have led this effort. These organizations are evaluating approaches such as Irrigation Water Management, where growers are provided incentive payments to reduce water use by factoring in weather conditions (for example, using information from Reclamation's AgriMet system) and soil moisture conditions into decisions regarding timing of water application to meet crop demands. Proposals are also being developed for full- and partial-season water banking projects. These proposed projects will be evaluated on a project-by-project basis.

### **Municipal Conservation**

Municipal conservation projects could involve improvements to infrastructure for delivering municipal water supplies and/or demand management to reduce household water consumption. Operational efficiency measures could include minimizing losses of water during routine flushing of mains, detecting and repairing leaks, and testing and repairing meters. Household water conservation programs could include education, implementation of rate structures that discourage excessive water use, or adoption of local landscaping ordinances. Household programs could include incentives to purchase more water efficient appliances.

Municipal conservation may also include the use of reclaimed water. Reclaimed water can be used for industrial and commercial uses, in land application (for example, irrigation), direct recharge of ground water, surface percolation and indirect recharge of ground water, discharge to wetlands, direct stream-flow augmentation, and indirect stream-flow augmentation through ground water recharge.

### **Agricultural Water Conservation and Irrigation Efficiency Through Regional or Irrigation District Infrastructure Improvements**

Irrigation districts are responsible for delivering water to farmers and other agricultural producers for use in irrigating their land. As such, irrigation districts operate extensive regional conveyance systems. A number of types of conservation measures may be implemented for such systems including:

- Lining canals to reduce water losses through infiltration;
- Replacing canals and ditches with closed pipe systems;
- Installing pump-back stations to capture tail water for reuse;
- Implementing canal automation and constructing re-regulation reservoirs to optimize water delivery and use; and
- Improving water measurement and accounting systems.

## **On-Farm Conservation and Irrigation Efficiency Improvements**

On-farm agricultural water conservation and irrigation efficiency measures would typically be implemented by individual landowners, often with technical assistance from the local conservation district or the Natural Resources Conservation Service (NRCS). Such measures could include:

- Replacing open laterals and trenches with closed pipe systems;
- Replacing non-pressurized irrigation systems with pressurized sprinkler systems or drip irrigation systems;
- Using soil moisture sensors to optimize water use;
- Constructing on-farm ponds to capture and reuse tailwater; and
- Implementing automated water management and control systems in conjunctions with integrated soil moisture sensors.

## **Industrial**

Industrial conservation measures would primarily be undertaken by individual business owners. Conservation measures could include improving infrastructure and changing operations to reduce water use. Industrial conservation may include the use of reclaimed water.

## **Pump Exchanges**

Several pump exchange projects have been proposed in the project area. Use of funding from the Account to support Reclamation's Yakima River Basin Water Storage Feasibility Study was discussed in Section 2.1.2.1. Another one of the projects under consideration as part of that study is a Yakima River pump exchange. The pump exchange project would involve installation of a pumping plant at the mouth of the Yakima River near Kennewick, and a dual pipeline system that would convey the pumped water from the pumping plant up-river to the Sunnyside area. One purpose of the project is to improve stream-flows and water quality in the Yakima River. The water would be introduced to the Sunnyside Valley Irrigation District (SVID) and the Roza Irrigation District (RID) systems. The pump exchange project would deliver a total up to 1,200 cubic feet per second (cfs) of water in increments at various points along the pipeline route. Water provided to SVID and RID would replace water normally diverted from the Yakima River, allowing the water to remain in the river and augment stream-flows. Water delivery from the pump exchange would occur during the irrigation season from April through August.

Kennewick Irrigation District (KID) is also proposing a Yakima River pump exchange project to benefit flows in the Yakima River below the Prosser Dam. KID would forego a portion of their diversion at Prosser Dam in exchange for increased diversions lower on the Yakima River and on the Columbia River. Yakima River flows would increase by approximately 350 to 400 cfs from Prosser Dam to Chandler Canal. From Chandler Canal to a new pump station at Kiona, Yakima River flows would increase by approximately 175 cfs. Additional diversions at the new Kiona pump station on the Yakima River would reduce the net water savings to approximately 130 cfs from Kiona downstream to the Columbia River. Operation of a new pump station at Edison Street on the Columbia River that would be needed to supply water for the pump

exchange would create a 57 cfs deficit in Columbia River stream-flows. This project may be included as part of the proposed Columbia-Snake Irrigators Association Voluntary Regional Agreement (VRA) (Section 2.6.3). Under the proposed VRA, mitigation for the 57 cfs deficit in July and August could be provided by KID paying Ecology \$10 per acre-foot per year, in perpetuity, to acquire water or fund conservation projects.

Ecology recently agreed to provide funding from the Account to the Confederated Tribes of the Umatilla Indian Reservation to support a Feasibility Study of a Walla Walla pump exchange project. Under the proposed project, a water intake and pumping plant would be installed near the confluence of the Walla Walla and Columbia Rivers. At least two options are under consideration involving conveyance of between 150 and 225 cfs of water upstream to the Milton-Freewater area. The conveyed water would be used in lieu of water that would normally be diverted from the Walla Walla River, thus increasing stream flows from the normal point of diversion to the mouth of the river. The pump exchange is part of a larger study to evaluate a number of aquatic ecosystem restoration projects within the Walla Walla River Basin in Oregon and Washington. The study is being co-sponsored by the Corps of Engineers and involves broad-based involvement of irrigators, irrigation districts, elected officials, and watershed groups. In addition to the pump exchange, off-channel reservoirs, irrigation efficiency projects, aquifer storage recharge projects, and other measures are also under consideration. The study is expected to be completed in late 2007.

### **2.1.2.3 Voluntary Regional Agreement Component**

The legislation provides for groups or organizations to enter into Voluntary Regional Agreements (VRAs) with Ecology to exchange a package of water projects for new water rights. VRAs could be proposed anywhere within the Washington portion of the Columbia River Basin upstream of Bonneville Dam. According to RCW 90.90.030(2), VRAs must meet the following minimum requirements to be approved:

- For water rights issued from the Columbia River mainstem, there shall be no negative impact on Columbia River mainstem instream flows during July and August as a result of the new appropriations issued under the agreement;
- For water rights issued from the Snake River mainstem, there shall be no negative impact on Snake River mainstem instream flows from April through August as a result of the new appropriations issued under the agreement;
- Efforts must be made to harmonize the VRA with Watershed Plans adopted under the authority of Chapter 90.82 RCW that are applicable to the area covered by the agreement;
- The VRA may not impair or diminish a valid water right or a habitat conservation plan approved for purposes of compliance with the federal Endangered Species Act (ESA); and
- Any rights issued under a VRA approved through the Management Program must also meet the requirements of the “4-part test” that applies to all water right permits issued in Washington. That test includes the following criteria:
  - The water must be for a beneficial use.
  - The water must be available for appropriation.

- The proposed use must not impair existing water rights.
- The proposed use must not be detrimental to the public interest.

Ecology has received one formal request for a VRA submitted by the Columbia-Snake River Irrigators Association (CSRIA). That VRA is being evaluated as an early activity under this EIS (Section 2.6.3).

#### **2.1.2.4 Instream Water Component**

Sections 2.1.2.1 and 2.1.2.2, the Storage and Conservation and Other Actions Designed to Provide New Water Supplies Components, describe methods for securing water to be made available for instream and out-of-stream uses. Various projects that have been proposed or are contemplated are described in those sections, including a number that focus primarily on providing water for out-of-stream use. This section describes the overall strategy for developing water supplies needed for instream uses.

The primary directive of the Columbia River Water Management Act is for the Department of Ecology (Ecology) to:

“... aggressively pursue the development of new water supplies to benefit both instream and out-of-stream uses” (RCW 90.90.005) (emphasis added).

Ecology is pursuing a full range of options for augmenting instream resources including development of new storage, modification of existing storage, and conservation. Ecology intends to continue working with the Washington Department of Fish and Wildlife (WDFW) and the fisheries co-managers to determine the specific periods during which water supplies developed through the Management Program will be available for instream use. The strategy for developing water supplies needed for instream uses involves a number of different approaches.

The Columbia River Water Management Act, Chapter 90.90 RCW, states that one-third of the active storage in any new storage facility made possible with funding from the Columbia River Basin Water Supply Development Account (Account) must be made available to augment instream flows. The timing of releases of water stored for instream use would be determined by Ecology in consultation with the WDFW and the fisheries co-managers.

The Act does not specify a formula for allocating water developed through conservation measures and other investments not related to new storage but designed to provide new water supplies. However, in developing its policies for implementing the Act, Ecology is proposing a preferred alternative for addressing the lack of clear direction regarding allocation (Section 2.2.3). Under the proposed policy, when the Account is used to fund non-storage projects, preference will be given to projects that produce instream benefits in tributaries as water flows to the mainstem. Once in the mainstem, determinations will be made by Ecology on a case-by-case basis concerning when it is necessary for a portion of the water to remain in trust for instream use. When making a determination regarding the amount of water to retain instream, Ecology will consider the risks associated with allowing the full quantity of water developed to be appropriated in new water rights. These risks could include those to instream values as well as those associated with issuing and defending any new water permits issued by Ecology. Water

reserved for mainstem instream flow in this manner could be reallocated to out-of-stream use in the future when adequate water from new or modified storage becomes available.

In addition, the proposed Lake Roosevelt Drawdown Project, described in Section 2.6.1, is intended to provide significant instream benefits for the Columbia River mainstem downstream of Grand Coulee Dam. Under this proposal, 27,500 acre-feet of water would be released from Lake Roosevelt from each year dedicated in trust for instream use. In drought years, an additional 17,000 acre-feet of water would be allocated to augment instream flow downstream of Grand Coulee Dam.

While not directly a component of the Management Program authorized under the Columbia River Water Management Act, the Washington Water Acquisition Program is actively pursuing acquisition of water for instream use in eight river basins that are tributary to the Columbia River. The basins are: the upper and lower Yakima, Naches, Methow, Okanogan, Walla Walla, Wenatchee, and Middle Snake Rivers. These basins are considered to be critical to fish, where low flows have been identified as a known limiting factor to salmon populations.

The Washington Water Acquisition Program is supported by local, state, and federal agencies; tribal governments; and private entities. State agencies involved in the program include Ecology, WDFW, and Washington Conservation Commission. Using state and federal funds, program sponsors are providing opportunities for water right holders to participate in salmon recovery by selling, leasing, or donating their water where critically low stream-flows limit fish survival. Water obtained through the program is left instream. Water right holders can also participate through the Irrigation Efficiencies Program. Water right holders can voluntarily place all or part of water saved through efficiency measures that they pay for into trust to enhance stream-flow. In addition, water saved through the publicly funded portion of conservation or irrigation efficiency projects must be placed in trust for stream flow.

#### **2.1.2.5 Inventory and Demand Forecasting Component**

The Columbia River Water Management Act directed Ecology to develop a Columbia River water supply inventory and a long-term water supply and demand forecast. The long-term water supply and demand forecast will be updated every five years. The inventory includes, at a minimum:

A list of conservation projects that have been implemented under the legislation and the amount of water conservation achieved; and

A list of potential water supply and storage projects in the Columbia River Basin, including estimates of:

- Cost per acre-foot,
- Benefit to fish and other instream needs,
- Benefit to out-of-stream needs, and
- Environmental and cultural impacts.

The first water supply inventory and long-term water supply and demand forecast was released in November 2006, following release of the Draft EIS. The inventory was prepared by consultants hired by Ecology and in cooperation with the State Conservation Commission, local conservation districts, and Washington State University. The inventory includes the following components:

- Conservation and storage projects;
- Water rights inventory;
- Water use inventory;
- Long-term water supply forecast; and
- Long-term demand forecast.

The following is a summary of the inventory and demand forecast. The inventory is available at: [http://www.ecy.wa.gov/programs/wr/cwp/wsi\\_itsdf.html](http://www.ecy.wa.gov/programs/wr/cwp/wsi_itsdf.html).

### **Conservation Projects Inventory**

Ecology's initial effort at developing an inventory identified more than 5,000 potential agricultural conservation projects. The projects, identified through surveys conducted by the Washington State Conservation Commission and through existing irrigation district planning documents, have the potential to save almost 1 million acre-feet of water. About half of the conservation districts in the region participated in the survey and, together, identified over 5,000 potential conservation projects. The conservation district inventory results can be summarized as follows:

- 5,315 projects;
- Approximately 530,000 acre-feet of estimated water savings (consumptive and non-consumptive);
- Total estimated cost of \$663,000,000; and
- Average cost of \$1,250 per acre-foot.

Projects or groups of projects that were identified through the irrigation districts can be summarized as follows:

- 82 projects;
- Approximately 425,000 acre-feet of estimated water savings (consumptive and non-consumptive);
- Total estimated cost of \$450,000,000; and
- Average cost of \$1,100 per acre-foot.

The two important considerations for the agricultural conservation inventory are: 1) the costs and water savings presented should be viewed as preliminary and used only to screen or compare projects within the inventory; and 2) the volume of water conservation that is likely to actually

accrue to the Columbia River is currently expected to be less than the total volume from the conservation opportunities that have been identified. This is likely because of a variety of challenges with the delivery of conserved water to the mainstem of the Columbia River.

Potential municipal conservation projects were also identified by reviewing water system plans of the largest municipalities within the Management Zone. The total conservation potential from municipal entities is difficult to estimate. Actual reported volumes of conservation are much lower than what was identified for agriculture, but it is likely that municipal conservation is under-reported in existing documents.

### **Storage Projects Inventory**

Ecology and Reclamation are studying the feasibility of storage projects on different scales, in order to develop new water supplies for the Columbia River. The current inventory can be summarized as follows:

- Six large storage opportunities (larger than 1 million acre-feet), cost ranging from \$971 to \$4,000 million;
- Numerous small storage opportunities (smaller than 1 million acre-feet), many of which did not have a volume or cost estimate.

The large projects inventory includes four projects on the Columbia River (Hawk Creek, Foster Creek, Sand Hollow, and Crab Creek) and two projects on the Yakima River (Black Rock Reservoir and Wymer Reservoir with Columbia River Pumpback). The total volume of potential small surface storage and aquifer recharge projects, identified primarily through WRIA storage assessment reports, was difficult to estimate for the initial inventory and will be added to future inventory reports.

### **Water Rights Inventory**

Ecology's inventory of water rights within the Management Zone can be summarized as follows:

- 7,087 water rights in the Washington portion of the Management Zone totaling 8,194,586 acre-feet per year; and
- 551 water rights and applications in the Oregon portion of the Management Zone totaling 936,190 acre-feet per year.

The validity of these water rights was not determined as part of the inventory. It is probable that the actual use is less than the identified amount. Agricultural use accounts for over 79 percent of the water right quantity. The largest number of water rights, is in domestic uses, but the quantity of domestic water rights is only 7 percent of the total quantity.

### **Water Use Inventory**

Water use estimates were also prepared for the inventory. Data were drawn from the U.S. Geological Survey (USGS), which compiles the most comprehensive and consistent estimate of water use currently available. USGS conducts its inventory every five years, with the last available inventory from the year 2000. Estimates from that inventory are as follows:

- Washington (21 counties): 3,756,172 acre-feet; and
- Oregon (7 counties): 847,094 acre-feet

The 2000 USGS water use estimates indicate that the largest water use in the Columbia Basin is irrigation and that irrigation use is concentrated in counties in the Management Zone.

### **Long-Term Water Supply Forecast**

The future water supply of the Columbia Basin is not well defined and depends on a variety of fluctuating and undefined factors. In addition to changes in snowpack and runoff resulting from climate change, a number of management agreements such as flood control requirements and federal hydropower objectives influence future water supply. Interstate and international agreements also influence future water supply. Existing agreements with Canada, Idaho, and Oregon have varying levels of predictability for flow volume. Federal flow targets for fisheries management under the Biological Opinion for Columbia River fisheries listed under the Endangered Species Act have not been finalized. Tribal treaty rights to water in the Columbia River have also not been defined. All of these factors contribute to a lack of predictability for future water supply at this time.

### **Long-Term Water Demand Forecast**

The inventory's initial water demand forecast was carried out in two formats or "tiers". The first tier demand forecast is based solely on water right applications on file in Ecology's Water Rights Tracking System (WRTS) database as of July 2006. The second tier demand forecast is based on projections of estimated actual water use, rather than water rights issued.

The first tier demand forecast estimate is for 454 water rights applications totaling 383,000 acre-feet. About 56 percent of that demand is associated with requested irrigation of just over 57,000 acres of land. About 23 percent of that demand is for municipal/domestic purposes, which could support an additional population of just over 450,000 people. About 21 percent of that demand is for commercial and industrial purposes, providing a peak demand of 230 cubic feet per second (cfs).

Agricultural water demands associated with water right applications are estimated at approximately 211,323 acre-feet with interruptible water rights constituting at least an additional 163,000 acre-feet. Potential total conservation amounts are currently estimated at 971,065 acre-feet. The annual conservation estimate is encouraging, but there are three important considerations:

- Only a small portion of the annual conservation potential is likely to accrue directly to the Columbia River;
- Because the total annual amount of conservation is distributed on a monthly basis, there is less conservation volume available during the peak irrigation season; and
- The amount of water available from conservation savings will be further reduced by the time lag between a point of withdrawal or conservation and the return flow to the Columbia River.

The second-tier demand forecast was based on agricultural forecasting tools developed by Washington State University. The tools estimate how much water demand changes will be driven by changes in crops grown in the basin and the land area planted to each crop. The results of the study show little or no change expected in crop acreage, but could not forecast acreage for some crops such as wine grapes and alfalfa. Projections of future agricultural demand based on actual water use are uncertain and could be higher or lower than current water right applications. Crop acreage is expected to be stable, though an upper bound increase of more than 750,000 acres is possible.

Projections of future municipal demand based on population forecasts are lower than current water rights applications. The Office of Fiscal Management (OFM) estimates an increase of 350,000 people in the Columbia Basin with an increase of 157,000 people in the Management Zone.

The inventory compares the results of the first and second tier forecasts and makes two conclusions. First, Although there is a discrepancy between water right applications and potential future demand, this does not mean that individual water right applications are not valid or that future total water use will not approach the quantities currently requested in applications.

Second the estimated future use for both water right applications and expected levels of use are reasonably close to the conservation savings currently identified in the basin. This, coupled with the possibility of additional storage in the basin, suggests that actual future demands for water can be accommodated in large part through the conservation and storage parts of the Management Program.

### **2.1.2.6 Water Information System**

Ecology is in the process of developing a Columbia River Mainstem Water Resources Information System, with the intent of enabling Ecology, water users, and water resource planners to better understand water use, future demands, and supply alternatives in the Columbia River. It will form the basis for future permitting decisions, water marketing, and regional planning and forecasting. System development is well underway, with GIS mapping for all water rights within the one-mile corridor nearly complete. Future projects will include:

- Aerial photo delineation and field verification of actual water use;
- Water use metering;
- Creating electronic images of water right files;
- Incorporating existing stream gage and monitoring sites, and;
- Tracking conservation and storage inventories.

Ecology's goal is to publish its interactive information system to the internet by 2009.

As part of the Water Information System, Ecology is developing a water metering program. The Legislature requires that Ecology report metered water use data by June 30, 2009. Funding assistance is available for installation of water meters. The metering program will be implemented in phases. Phase 1, scheduled for 2007, covers the area from Priest Rapids Dam to

McNary Dam and up the Snake River to Ice Harbor Dam. Phase 2 will be completed in 2008 and extends from Wells Dam to Priest Rapids Dam. Phase 3 includes the area from the Canadian border to Wells Dam and from McNary Dam to Bonneville Dam. Phase 3 will be completed in 2009. Additional information on the metering program is available on Ecology's web site: <http://www.ecy.wa.gov/>.

## **2.2 Alternatives for Program Implementation**

The Columbia River Water Management Act establishes a new mandate for Ecology to "aggressively pursue the development of water supplies to benefit both instream and out-of-stream uses." To implement the new directive, Ecology needs to develop new policies and guidelines. Ecology is considering a number of policy alternatives for implementing the Management Program. These policy alternatives are described briefly here and discussed in more detail in Chapter 6, Policy Discussion.

### **2.2.1 Selecting Water Supply Projects**

Ecology's role in state water management has traditionally been one of regulation and permitting. The Columbia River Water Management Act adds to this traditional role by requiring the agency to "aggressively pursue" water supply development. Ecology currently plays some role in water supply development for instream flows and out-of-stream uses, but the legislation has "ramped up" this role by requiring that Ecology take an aggressive role in water supply development. This first policy alternative frames the discussion by describing Ecology's role in new water supply projects when it "aggressively pursues" them. Two alternatives are proposed:

**Review projects only as proposed by applicants.** Water supply projects would be reviewed only as proposed by applicants, and screened and ranked by criteria developed by Ecology, including cost effectiveness, fisheries benefits, and other criteria.

**Aggressively pursue water supply options.** In addition to reviewing water supply projects proposed by applicants, Ecology would aggressively pursue storage options (e.g., use Watershed Plans to identify and pursue smaller storage options; purchase stored water in Idaho and/or Canada; consider buying or negotiating changes in operations of existing federal facilities; conduct studies for ASR or passive ground water recharge; promote small projects that benefit small landowners); water conservation, and acquisition projects.

### **2.2.2 Calculating Net Water Savings from Conservation**

The Columbia River Water Management Act provides that net water savings from conservation projects shall be placed in the Trust Water Rights Program: "net water savings achieved through conservation measures funded by the account shall be placed in trust in proportion to the state funding provided to implement the project (RCW 90.90.010(4)). Integration of the Act with the existing Trust Water Rights Program results in two central questions. First, what conservation projects can be considered and second, how will conservation savings be calculated?

Ecology is considering two alternatives for calculating net water savings.

**Use GUID-1210 methodology.** Net water savings methodology would be defined by rule, primarily based on existing guidance in GUID-1210 (Ecology 2005), an Ecology document that establishes Ecology's approach for determining irrigation efficiency and consumptive use of water.

**Develop and use a methodology incorporating scientific evidence on the benefits of the net water savings to instream flows.** Net water savings methodology would be developed based on scientific evidence regarding the benefits to instream flows. The methodology could include any credible approach that addresses the fate, pathway, timing, and legality of the water transfer being proposed.

### 2.2.3 Funding Criteria for Conservation Projects

The Columbia River Water Management Act specifies that two-thirds of the funding in the Columbia River Water Supply Development Account (Account) must be spent on storage projects and establishes a specific standard for spending funds associated with storage projects funded from the Account. Two-thirds of the new water is allocated to out-of-stream use and one-third is allocated to instream flows. The Act does not provide similar policy direction for funding of conservation projects or the criteria by which conservation projects will be screened and ranked.

The Act provides that the remaining one-third of the funds from the Account must be "used for other purposes in this section," which includes conservation. Net water savings from conservation are to be placed in the Trust Program, but the Act does not specify how the water in the Trust Program is to be used (RCW 90.90.010(2)(b)(4)). Ecology is considering three alternatives for funding and allocating new water that results from conservation projects.

**Funding projects to benefit only out-of-stream water allocation.** Any net water savings derived from funds that Ecology spends for conservation projects would be assigned to mitigate for permits authorizing out-of-stream beneficial use. Net water savings would not benefit instream flows in the Columbia River, but could benefit tributaries depending on the source of conserved water.

**Funding projects to benefit only instream flows and water quality.** Under this allocation proposal, net water savings from funded conservation projects would be used to benefit instream flows and water quality in the Columbia River as well as tributaries, if applicable.

**Funding projects to obtain one-third of the benefit to instream purposes and two-thirds to benefit out-of-stream water allocation.** Net water savings derived from funding conservation projects would be assigned to benefit both instream flows and out-of-stream uses on the Columbia River. One-third of the net water savings would be managed in the Trust Program to benefit Columbia River instream flows, and two-thirds would be assigned to mitigate for out-of-stream beneficial uses authorized by permits that would be issued under the program.

## 2.2.4 Defining “Acquisition” and “Transfer”

The Columbia River Water Management Act prohibits Ecology from expending money from the Account on conservation projects that will result in “water acquisition or transfers from one water resource inventory area (WRIA) to another.” The bill does not define either acquisition or transfer. Ecology is considering two alternative definitions that describe the degree of flexibility that Ecology will have in issuing new water permits from the Columbia River based on projects funded under the Management Program:

**Acquisition and transfer means any non-storage project.** Ecology will interpret “acquisition or transfer” to mean any non-storage project funded in part by conservation monies from the Account that results in water put into the Trust Program. Ecology will manage new permits so that conserved water from a WRIA is used, where possible, to offset new permits from the Columbia for beneficial uses within that WRIA.

**Acquisition and transfer means direct purchase of water rights.** Ecology will interpret “acquisition or transfer” to mean the direct purchase of water rights, not infrastructure or conservation improvements that may yield conserved water. Ecology will manage new permits so that water rights purchased within a WRIA stay within a WRIA.

## 2.2.5 Conditioning Water Rights on Instream Flows

RCW 90.90.020(2) states that “Water developed under the provisions of this section to offset out-of-stream uses and for instream flows shall be deemed adequate mitigation for the issuance of new water rights.” Currently, Ecology conditions new water rights and water right changes to protect instream flows (Chapter 173-563 WAC and Chapter 173-564 WAC). This requirement has discouraged some water right changes that could provide a “new source of water” for municipal users. Ecology is considering two alternatives for processing water rights changes:

**Apply instream flow water right created by the June 24, 1980 Columbia River instream flow rule to new permits or changes of season of use that authorize use outside the season where the conserved water or acquired water right was beneficially used.** All changes of seasonal to year-round rights would continue to be subject to the adopted instream flows. Also, new permits that rely on a seasonal water right for mitigation, but which authorize a new use outside the season of use of the water right acquired for mitigation, would be subject to the adopted instream flow during the period outside the time when the mitigation water right was historically exercised.

**Waive instream flow water right created by the June 24, 1980 Columbia River instream flow rule where new permits or transfers shift consumptive demand away from critical periods and benefits aquatic species.** Under this alternative, Ecology would develop an approach that would recognize the benefit to aquatic species of shifting the demand from the critical July and August period to the period from October through March. This approach would include an evaluation of the public benefits and costs, and whether the overriding considerations of the public interest (OCPI) would be served by shifting the out-of-stream uses away from a critical period for fish. An example of this approach would be the conversion of a seasonal irrigation use to a year-round municipal use that would reduce actual water use during July and August for the mainstem

Columbia or the April to August period for the Snake River. If the municipal use would be less during July and August than the amount currently used for irrigation during that period, it would benefit instream flow in the same manner as a scheduled release of water from a storage facility. This determination could either be implemented on a case-by-case basis when rights are proposed for change (or mitigation is evaluated for adequacy to issue a new permit) or it could be addressed through rulemaking.

### **2.2.6 Initiating Voluntary Regional Agreements**

The alternatives considered here relate to how aggressively Ecology will pursue VRAs. Two alternatives are proposed:

**Process VRAs as proposed.** Ecology would review VRAs only as proposed by applicants.

**Aggressively pursue VRAs.** In addition to reviewing VRAs proposed by applicants, Ecology would aggressively pursue new water and actively seek groups who wish to develop VRAs through such strategies as water marketing and reverse auctions (a reverse auction occurs when Ecology notifies water rights holder that it is looking for water to buy or lease and asks those interested to respond to Ecology and let the agency know how much water they are willing to sell or lease and at what price).

### **2.2.7 Processing Voluntary Regional Agreements**

Ecology currently processes water rights applications according to the “Hillis Rule” (Chapter 173-152-050 WAC). Generally, Ecology will process new water right applications and water right change applications in two separate tracks in the order they are received within a region. Ecology may make decisions from multiple water sources within a region based on the oldest priority date in each source. Ecology generally prioritizes its work by source (WRIA) for efficiency in investigation and permitting. The oldest priority date is based on the date the application is filed with Ecology (WAC 173-152-030).

Ecology has identified three alternatives for processing applications for new water rights and water right changes associated with VRAs.

**Process applications according to Hillis Rule.** Ecology would continue to process new water rights applications according to the “Hillis Rule.” In order for an application associated with a VRA to be processed ahead of prior competing applications, it would have to meet one of the exceptions in the Hillis Rule.

**Amend the Hillis Rule for VRAs that convert interruptible rights.** The Hillis Rule would be amended to add a new processing line for water right applications submitted under VRAs that are solely for the conversion of interruptible rights to non-interruptible rights.

**Amend the Hillis Rule for new water rights from VRAs.** The Hillis Rule would be amended to add a new processing line for issuing new water rights resulting from VRAs.

### 2.2.8 Defining “No Negative Impact” to Instream Flows of the Columbia and Snake Rivers

The Columbia River Water Management Act sets forth that there shall be no negative impact to stream-flow allowed in July and August on the Columbia River and from April through August on the Snake River as a result of a VRA. VRAs could propose withdrawals of water in one part of the basin, based on net water savings through conservation in another part of the basin. There is no existing policy on how or where to measure whether a withdrawal of water pursuant to a VRA would result in a net reduction in stream-flow. The Management Program could include any project that would benefit instream-flows in the Columbia and Snake Rivers, which would include some projects on tributaries of these rivers. The location where net water savings from a tributary project would be measured would be at the mouth of the tributary.

Ecology is considering four alternative policies to address measuring a net reduction in instream flow. For each of these alternatives, if a VRA includes a conservation project funded by Ecology, there may be an additional restriction that the mitigation must be in the same WRIA as the new withdrawal (for example see RCW 90.90.010(2)(a) and Section 2.2.4).

**Same pool and downstream.** Withdrawal can occur anywhere downstream of, or anywhere in, the same pool where net water savings through conservation occur, including in tributaries.

**Same major reach.** Withdrawals can occur anywhere within the same major reach, but not downstream of the major reach in which the net water savings through conservation occur.

**Same pool, but not downstream.** Withdrawals can occur anywhere within the same pool where net water savings through conservation occur, but not downstream of the pool.

**Same pool, but only downstream of point of net water savings.** Withdrawals can occur within the same pool where net water savings through conservation occur, but only downstream of the point where net water savings through conservation occur, and not downstream of the pool.

### 2.2.9 Defining the Main Channel and One-Mile Zone

The legislation defines the mainstems of the Columbia and Snake Rivers to include “all water . . . within the ordinary high water mark [OHWM] of the main channel...” and “all ground water within one mile of the ordinary high water mark.” Ecology interprets “all water” in these definitions to refer to diversions within the one-mile corridor, whereas the place of use could be outside of the one-mile corridor. Significantly, this definition applies only to RCW 90.90.030 and RCW 90.90.050, which address VRAs and the water resource inventories. The definition applies to:

- Water rights issued from the mainstem;
- No negative impact on instream flows of the mainstem; and

- Water resource inventory for "effective mainstem water resource planning and management."

Ecology is considering how to define the OHWM of the main channel and how to measure the one-mile zone. If a narrow definition were used, the Management Program would focus on a smaller number of users. Many water users with interruptible water rights would not be included because they divert water outside of the one-mile corridor and thus might not be eligible to benefit from VRAs or storage projects. Further, there are springs and creeks tributary to the mainstems within the one-mile corridor that could be considered "all water". Ecology is considering two alternatives for defining the main channel OHWM and one-mile zone.

**No backwater areas included.** The definition of the main channel OHWM would not include any of the backwater areas on tributaries. A straight line would be drawn across the mouth of each tributary to delineate the mainstem channel. The main channel also would not include any tributary surface water rights within the one-mile corridor.

**Backwater areas included.** The definition of the main channel OHWM would include backwater areas on tributaries and tributary surface water. Thus the one-mile zone would extend one mile from the OHWM of any of the backwater areas as well as from the mainstem proper.

### 2.2.10 Coordinating VRA Mitigation and Processing New Water Rights

Processing new water rights from the Columbia River will require mitigation for any impacts to instream flows. The mitigation will be provided either through a VRA or through the consultation process (WAC 173-563-020, Section 1.3 for additional information). A VRA requires no negative impact on instream flows in July and August (April through August for the Snake River). Mitigation under a VRA means avoidance of impacts on flows and is in-kind, in-time, and in-place.

Ecology plans to aggressively pursue funding of storage and conservation projects to make mitigation water available for such permits. However, adequate mitigation water may not be available for new water rights associated with a VRA. RCW 90.03.380(5)(c) allows Ecology to skip over a water rights change application to the next person in line if information is lacking to make a decision on the request. Ecology does not have similar statutory discretion for processing new water rights and must process them in the order they are received. Ecology may request permission from the applicant to be skipped over if the applicant has not provided enough information on the application.

Ecology is considering two alternatives for processing applications if adequate mitigation water has not been acquired in the area needed to make a permit decision.

**Deny the application.** If mitigation water is not available to meet the requirements in the legislation, Ecology should deny the application or otherwise require the applicant to provide adequate mitigation in a timely manner (to meet the VRA standard or that imposed by Ecology following consultation). If the application is denied and mitigation later becomes available in that area, the applicant would have to refile an application and the mitigation water would be used for the oldest application in line in that area.

**Seek legislative authority to skip applications.** Ecology should seek legislative authority similar to that provided in the change statute (RCW 90.03.380(5)(c)) so it can skip over VRA applications upon request of the applicant where mitigation is not available. If mitigation later becomes available, the senior-most applicant in that area would be able to use the mitigation for the proposed project subject to the terms and conditions of Ecology's acquisition of the mitigation.

### **2.2.11 Coordinating VRA and Non-VRA Processing**

WAC 173-152-030 states that Ecology will process new water right applications in the order they are received within a region. It also allows Ecology to make decisions from multiple water sources within a region, based on the oldest priority date in each source (Ecology defines "source" as the same body of public water that is not hydraulically connected). The oldest priority date is based on the date of the application filed with Ecology. Generally, Ecology processes water rights applications on a WRIA-by-WRIA basis within the region to maximize permitting efficiency, which may include Columbia River applicants and non-Columbia River applicants.

The Columbia River spans multiple WRIsAs and three Ecology regions (Southwest, Central and Eastern). How Ecology chooses to prioritize its work will affect the seniority of applicants who will be processed under the Management Program, where Ecology should prioritize its conservation efforts to generate mitigation water through acquisitions and conservation project funding, and who will be eligible to receive mitigation water from projects funded with Columbia River dollars. Ecology is considering three alternatives for processing VRA and non-VRA applications:

**Grouped within the Columbia River one-mile corridor.** Ecology would group all applicants in the Columbia River one-mile corridor together, giving maximum weight to the existing priority system.

**Grouped within the Columbia River one-mile corridor by region.** Ecology would group all applicants in the Columbia River one-mile corridor by region and direct staff to work on the first applicant in each region at the same time. This would provide regional parity by processing water rights in each region. Water rights in one region would not be processed at the exclusion of another region.

**Grouped within the Columbia River one-mile corridor with WRIA permitting.** Ecology would group all applicants in the Columbia River one-mile corridor with tributary WRIA permitting, which integrates permitting at the WRIA level. Ecology would choose which WRIA to work in based on the existence of mitigation water available to offset Columbia River impacts.

### **2.2.12 Funding Projects Associated with a VRA**

The Columbia River Water Management Act does not directly require Ecology to use conservation or storage funding to assist in providing mitigation water for VRAs. Ecology is considering three alternatives for funding projects associated with VRAs.

**Mitigation for all applicants.** Ecology would spend conservation project money on projects that will provide mitigation for all applicants subject to their priority date in line regardless of whether they participate in a VRA or not.

**Mitigation only for applicants in VRAs.** Ecology would only spend conservation project money on projects that will provide mitigation for applicants in VRAs. Applicants not in VRAs that participate in the consultation process would provide their own mitigation.

**No mitigation for applicants in VRAs.** Ecology would not spend conservation project money for mitigation associated with VRAs. VRA participants would provide their own mitigation.

### **2.2.13 Inclusion of Exempt Wells in Water Use Inventory**

The Columbia River Water Management Act directs Ecology to develop a Columbia River mainstem water resources information system that includes “the total aggregate quantity of water rights issued under state permits and certificates and filed under state claims on the Columbia River mainstem and for ground water within one mile of the mainstem” (RCW 90.90.050(2)(a)). Exempt wells are not issued permits or certificates, and yet are allowed to withdraw water, and they are subject to interruption in order to protect instream flows. Exempt wells are an important part of the water balance for the defined area, but they are not technically within the definition of what the information system is expected to include. Ecology will consider two alternatives for including exempt wells in the inventory system.

**Do not include exempt wells in the information system.**

**Include exempt wells in the information system.**

## **2.3 Preferred Alternatives for Program Implementation**

The following section describes Ecology’s preferred alternatives for the policy choices described in Section 2.2 after considering comments received on the Draft EIS. These choices can be implemented through policy actions and permit decisions. Rulemaking may be required in conjunction with Ecology’s choices described in Sections 2.3.2 and 2.3.10. Additional discussions of the preferred alternatives is provided in Chapter 6.

### **2.3.1 Selecting Water Supply Projects**

Current water supply needs are identified in the *Water Supply Inventory and Long-Term Water Supply and Demand Forecast*, Ecology, November 15, 2006 (Section 2.1.5). This inventory will be updated frequently to ensure an ongoing understanding of real water needs. Ecology will actively pursue the most cost-effective and beneficial methods to meet the future water supply needs of the Columbia River Basin. Both large and small water supply projects will be evaluated and considered.

First, Ecology will continue to fund studies designed to identify large off-channel storage projects that would serve multiple water supply purposes and benefit both public and environmental water needs. Second, Ecology will work to identify other, likely smaller, water