Columbia River Basin

WATER SUPPLY INVENTORY REPORT

Submitted to the Washington State Legislature Pursuant to RCW 90.90.040

December 2009

Publication No. 09-12-015

DEPARTMENT OF
ECOLOGY
State of Washington

View of Columbia River near Patterson, WA 2009

Front & Back cover main photos: View of Columbia River, both taken near Biggs Junction at the Washington/Oregon border, looking west (front cover) and east (back cover).

This report is available on the Department of Ecology website at:
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2009 Report to the Legislature

DEPARTMENT OF
ECOLOGY
State of Washington

Columbia River Basin Water Supply Inventory Report

submitted by Office of Columbia River

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View of Columbia River near Maryhill State Park (WA/Oregon border)

INTRODUCTION

The Legislature recognized that developing new water supplies is essential to successful water resource management in the Columbia River Basin. In response, during the 2006 legislative session ESSHB 2860 was passed (codified as Chapter 90.90 RCW, Columbia River Basin Water Supply).

The goal of the legislation is to meet the economic and community development needs of people and the stream flow needs of fish. Ecology intends this report to provide Program transparency to the public and to help us communicate and coordinate with other agencies and interested parties.

2009 was a watershed year for the program. All the groundwork, studies, and negotiations began to pay off. The US Bureau of Reclamation (Bureau) released 13,527 acre-feet of water from Lake Roosevelt. The release allowed the Office of Columbia River (OCR) to "perfect" the water right under state law (Perfection is a legal process that must occur before permits can be issued). OCR is placing that water in trust in preparation for issuing municipal/industrial permits (6,441 acre-feet) and using it to enhance instream flows (7,086 acre-ft).

The release represents a portion of the 132,500 acre-feet OCR developed for the Lake Roosevelt Incremental Storage Releases Project. The remainder will be released for perfection in 2010.

RCW 90.90.040

Columbia river water supply inventory — Long-term water supply and demand forecast.

(1) To support the development of new water supplies in the Columbia river and to protect instream flow, the department of ecology shall work with all interested parties, including interested county legislative authorities and watershed planning groups, adjacent to the Columbia river, and affected tribal governments, to develop a Columbia river water supply inventory and a long-term water supply and demand forecast. The inventory must include:

(a) A list of conservation projects that have been implemented under this chapter and the amount of water conservation they have achieved; and

(b) A list of potential water supply and storage projects in the Columbia river basin, including estimates of:

(i) Cost per acre-foot;

(ii) Benefit to fish and other instream needs;

(iii) Benefit to out-of-stream needs; and

(iv) Environmental and cultural impacts.

(2) The department of ecology shall complete the first Columbia river water supply inventory by November 15, 2006, and shall update the inventory annually thereafter.

(3) The department of ecology shall complete the first Columbia river long-term water supply and demand forecast by November 15, 2006, and shall update the report every five years thereafter.

This fourth annual Columbia River Water Supply Inventory Report provides information and updates on our work to:

- Aggressively pursue development of water supplies to benefit both instream and out-of-stream uses.
- Administer the Columbia River Basin Water Supply Development Account.
- Enter into voluntary regional agreements, including harmonization of such agreements with adopted watershed plans.
- Develop inventories of water conservation and storage projects in consultation with interested parties, and developing water supply and demand forecasts.
- Establish and update a Columbia River Mainstem Water Resource Information System that provides the information necessary for effective mainstem water resources planning and management.
- Meet the provisions of RCW 90.90.080 requiring OCR to assess potential impacts of proposed water releases.

This 2009 Report presents our efforts to meet the requirement in Chapter 90.90 RCW that directs Ecology to publish a water supply inventory annually and a long-term water supply and demand forecast every five years. This Report is organized to detail major efforts undertaken in 2009 and to provide status updates on grant-funded projects as well as other efforts funded by the OCR.

OCR is continuously working toward acquiring water for instream and out-of-stream uses. The latest grant funding cycle began in August 2009 and successful applicants will be announced in early 2010. OCR also continues to work on projects that we invested in during the 2008 grant funding cycle and on prior efforts. This report presents on-going efforts to aggressively pursue the development of new water supplies, and shows our progress to date.

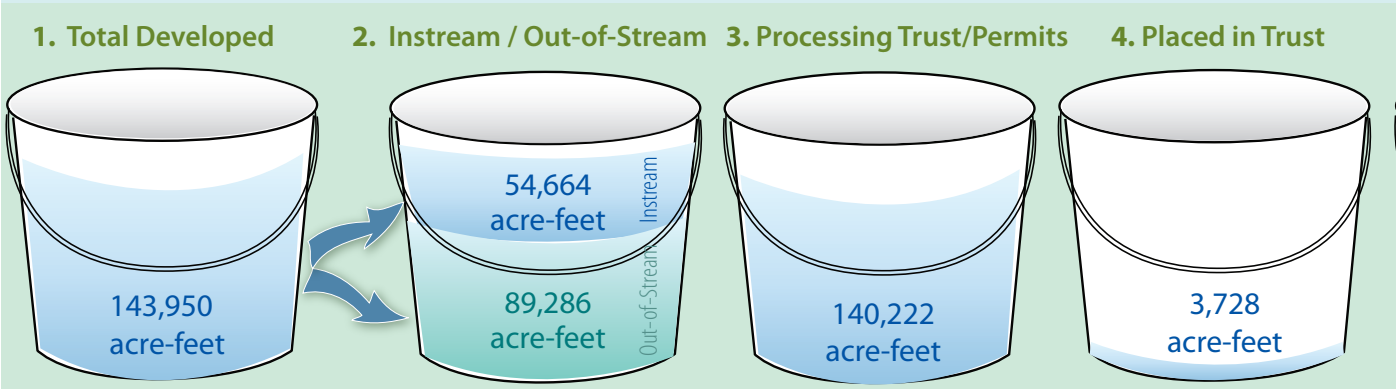
The graphic below shows the progress OCR made in 2009. Projects delivering over 150,000 acre-feet of water are being readied for trust and permitting.

OCR's progress in developing new water supplies: the top row of buckets depict water that is in the process of being permitted for out-of-stream uses or placed in trust to enhance instream flows. The first bucket shows the total water currently available for permitting and trust. The second bucket illustrates how that water will be split to augment instream uses and offset new out-of-stream uses. The third bucket shows how much water is now being processed for

OFFICE OF COLUMBIA RIVER

Water Development Progress -- 2009

New Water Supply Developed by Office of Columbia River



Developed

Lake Roosevelt - 132,500 ac-ft

Barker Ranch - 6,436 ac-ft

Col. Basin Irrig. Dist Piping - 1,286 ac-ft

Donations - 3,728 ac-ft

Potholes Supplemental Feed Route (conveyance)

Weber Siphon (conveyance)

Near Term *

Wanapum Pool Raise - 70, 000 ac-ft

Rocky Reach Pool Raise - 28,000 ac-ft

KID Pump Exchange - ~10,000 ac-ft

Walla Walla Pump Ex - ~30,000 ac-ft

Boise Cascade ASR - 1,657 ac-ft

Yakima River Water Enhancement - ~350,000

Long Term *

Lincoln Co. Aquifer Recharge

Foster Creek Storage

Mill Creek Storage

Rock Lake Storage

Spokane Rathdrum-Prairie ASR

Yakima River Water Enhancement Phase III

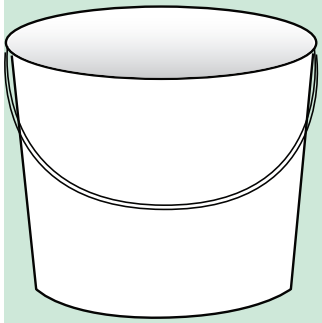
DEPARTMENT OF ECOLOGY
State of Washington

* Some projects may be deemed unsuitable for further development after additional review.

permits and trust. The final two buckets will fill as water rights are issued and water is placed into trust and permitted.

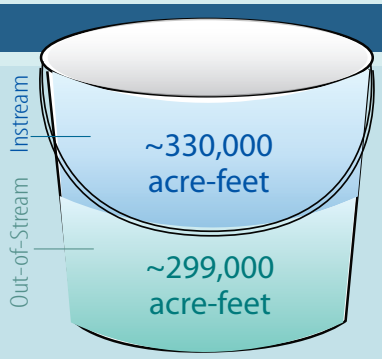
The "Near Term" and "Long Term" buckets depict projects that are in development but are not expected to yield water for permitting or trust in the immediate future. These projects are undergoing feasibility, appraisal, and environmental studies, or awaiting federal approval to move forward. In one case, Manastash piping, the proponents are having trouble finding additional funding to complete the project. Some of the projects may be abandoned if after further investigation they are deemed to be unfeasible.

5. Permitted



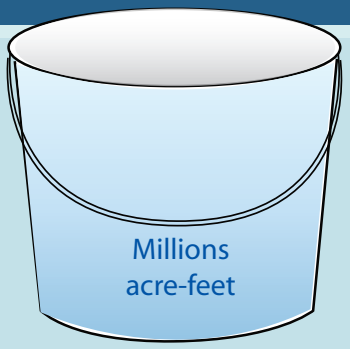
1. Total new water supply developed as of 11/ 2009.
2. How the new water will be split between instream and out-of-stream uses.
3. Amount of water being processed for water rights and trust (Bucket 1 minus buckets 4 and 5).
4. Amount of water placed in trust as of 11/ 2009.
5. Amount of water permitted for out-of-stream use as of 11/ 2009.

Odessa Subarea - 140,000 ac-ft
Manastash Piping - 454 ac-ft
Kennewick ASR - 318 ac-ft
White Salmon ASR - 145 ac-ft
Conservation Projects - Developing



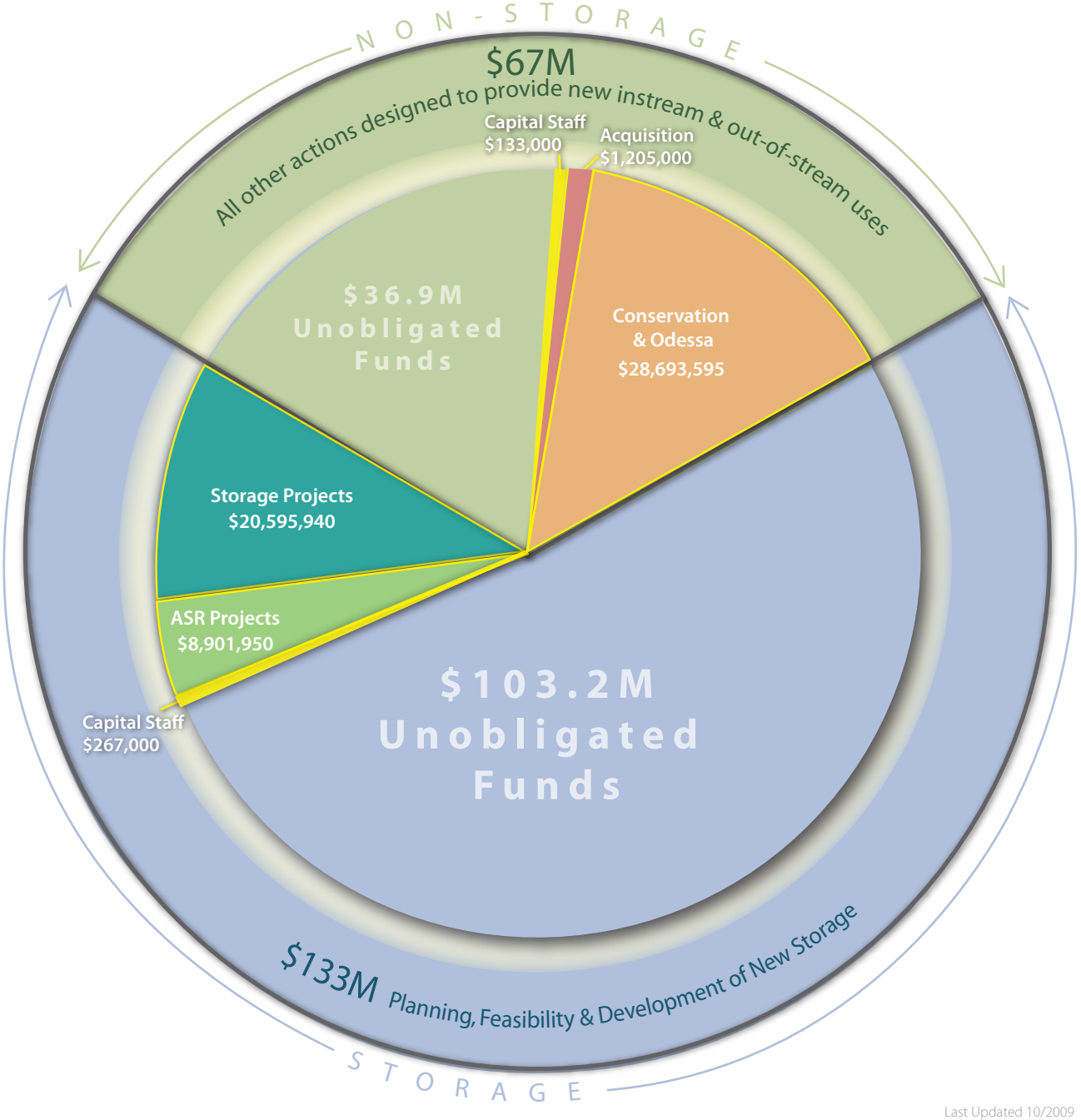
Total ~628,454 acre-feet

Campbell Creek Storage
Horse Heaven Hills Storage
Off-Channel Storage
Similkameen Storage
Lands Council Beaver Study
Canada Treaty



Status of the $200M Columbia River Basin Water Supply Account

2/3 for storage and 1/3 for conservation and other non-storage projects



Last Updated 10/2009

Projects funded by other sources such as State Building Construction Account and Operating Budget include: Programmatic Environmental Impact Statement Mainstem Storage Alternatives Study, Walla Walla Pump Exchange, Metering, Odessa Subarea, Supplemental Feed Route, Lake Roosevelt Supplemental Environmental Impact Statement (SEIS), Crab Creek SEIS, Frenchman Hills Construction, Yakima Storage Study, Fish & Wildlife Project Support, Conservation Commission staff, Legislative Report Forecasting, Conservation Commission staff and Yakima Basin Water Supply projects.

Ecology is currently reviewing the allocation of contract costs between the storage and non-storage portions of the Columbia River Account. Allocations subject to change.

The account status chart depicts the current appropriation of funds from the Columbia River Basin Water Supply Development Account. Under RCW 90.90.010(2)(b), two-thirds of the account must be spent on storage and one-third for "other purposes." The arrows surrounding the circle reflect this split. The pie slices within the circle reflect allocations and remaining funds within each split.

PROGRAM EFFORTS IN 2009

2011 Supply and Demand Strategic Planning

OCR continues to work on securing long-term water supply and achieving reliability for the Columbia River Basin (CRB). In November 2011, the agency will publish its second water supply and demand forecast. The forecast incorporates scientific data with independent expertise and insight. The forecast employs state of the art technology and scientific research to develop a water management plan that meets actual environmental and economic needs. The forecast will act as a strategic capital investment planning tool for OCR; helping to identify where water demands are highest and where potential supplies can help meet demands.

Ecology entered into contracts with Washington State University (WSU) and Washington Department of Fish & Wildlife (WDFW) to evaluate future agricultural, municipal, hydroelectric, and instream demands. The report will forecast demand on three tiers: basin-wide, at the watershed, or WRIA, level, and within the one-mile mainstem corridor described under RCW 90.90. Each tier will report the existing regulatory framework for supply management in the CRB, and potential changes due to changing legal conditions, policy choices, climate change, and water supply projects. The report will include existing regional conditions by updating the 2006 report to account for recent changes.

Agricultural demand will be modeled using climate and economic scenarios to create reliable estimates linking supply to demand. WSU will combine Cropping Systems Simulation (CropSyst) and Variable Infiltration Capacity (VIC) models to examine agricultural supply and demand. CropSyst modeling will simulate soil water budgets, crop growth, crop yield, soil erosion and other parameters for tree fruit, grains, biofuels, and row crops. VIC modeling will be used to simulate a broad range of climate change scenarios and the effects on regional hydrology. Combining the two models will allow WSU to project water supply and demand under a variety of climatic change scenarios.

Municipal demand will be projected based on existing population forecasts provided by the United States Census, US Geological Survey data, and Washington State Department of Health planning data. Hydropower demand will be estimated based on a review of power planning by entities including Bonneville Power Administration, Northwest Power Planning Council, and local public utility districts.

Instream flow needs will be forecasted by Ecology in cooperation with WDFW and provided to WSU for inclusion in the report. The initial approach for forecasting instream needs will be to simply identify stream reaches where minimum instream flows (identified in WAC) are not being met, either seasonally, sporadically, or predictably in dry and drought water years. A scheme for prioritizing stream reaches for flow enhancement is being updated, and will identify locations where flow deficits, whether measured in relation to instream flows or to basic biological needs (stream depth, for example), are inhibiting salmonid utilization. Further, a more in-depth analysis of fish life history needs through the year will be conducted for streams in which instream flows are periodically not being met, and for the "Priority Stream Reaches," to further hone and prioritize among flow deficit concerns. All the information will be viewed in context with other products relating to forecasts of climate change scenarios, to predict where flows that are adequate currently might be insufficient in the future.

The supply and demand forecast will help OCR determine where water demands are most critical and where water supply development is needed most.

In addition to the WSU and WDFW contracts, OCR continues to take the following steps toward creating the 2011 report:

FLOW DATA

OCR is compiling data on 32 historical stream flows in order to project instream needs. OCR is analyzing the data to consider seasonal changes and drought occurrences as we work to best match available water supplies to projected demand. OCR is also assessing tributary flow data to determine how often droughts have occurred historically. This effort will help determine when wet, average and dry years have occurred and consequently, when they can be predicted to occur in the future. This will help OCR's ongoing efforts in planning for future droughts. The 2011 report will contain a summary of this information.

CLIMATE CHANGE STUDY

Ecology is collaborating with other state and federal agencies to fund a study by the Climate Impacts Group. The study will provide greater accuracy in predicting climate change in the Columbia River Basin. It will place particular focus on the Yakima, Walla Walla, Wenatchee, and Okanogan watersheds. We expect the completed study in 2010. The results of this will be combined with our supply and demand forecasting endeavors and will be included in the 2011 report.

INSTREAM DEMANDS

Ecology entered into a contract with WDFW to produce an Instream Atlas that will help OCR select projects and ensure that investments benefit instream flow and protect fish habitats. The Instream Atlas project will provide tools to help project reviewers and others select projects that maximize benefits to fish. Tools will include maps showing the prioritization of stream reaches for flow restoration, maps and figures showing stream-level information on fish life history stages, and need for enhanced flows. These tools will also support water demand forecasting, water acquisitions, and permitting decisions.

STREAM REACHES

WDFW last updated their list of priority stream reaches in 2003. Since that time, local, state and federal funding partners have invested in many conservation and habitat and fish barrier improvements. The list also needs to achieve consistency with federal recovery plans, watershed plans and subbasin plans that have been completed since 2003.

Ecology contracted with WDFW to identify stream reaches in Ecology-identified basins where additional stream flows and/or improved water quality could benefit fish and other instream resources. Additionally, WDFW will collect existing weekly and monthly data on instream life stages for eight eastside critical basins along with other basins in which OCR is considering Program investments.

MUNICIPAL DEMAND AND CONSERVATION

Ecology has plans to a partner with the Washington State Department of Health (WDOH) to better understand municipal demand and opportunities for municipal conservation. For example, in the 2006 legislative report, we estimated municipal demand using 170 gallons per capita per day (gpcd) based on data from the Office of Financial Management, U.S. Geological Survey, and WDOH. However, in 2003, the Legislature passed the Municipal Water Law that included new conservation mandates for municipalities. WDOH adopted a new water use efficiency rule (Chapter 246-290 WAC) in 2007, which is expected to alter municipal water use goals in the future. For example, new demand would drop from 67,500 acre-feet to about 60,000 acre-feet if the 170 gpcd average was reduced by just ten percent for the 350,000 additional people projected in the Columbia River Basin over the next 20 years.

We cannot yet predict how much of the projected savings from municipal conservation efforts will offset new consumptive demand (e.g. xeriscaping, lawn watering controls) versus timing of returns to the river (e.g. fixing leaky pipes). OCR is compiling this information as municipalities submit their new water system plans. New water system plans for the major municipalities on the Columbia River will not be available until 2010.

HYDROPOWER

OCR will incorporate feedback from Columbia River dam operators to better understand how new storage would affect power generation and demand. Diverting water to a reservoir in the winter can result in lost power production in those months. However, the opportunity to produce power returns when that water is released from storage before its diversion out-of-stream. There may also a be an opportunity to develop integrated pump-storage in the Columbia River system that gives dam operators more flexibility to manage fluctuations in hydropower demand that may arise as more wind-based electrical generation is developed. In some cases, this may also provide a benefit by reducing trapped gases that are harmful to fish. All new storage developments will require extensive coordination with dam operators so that state water supply actions do not result in unanticipated consequences for hydropower generators.

NEW PROGRAM PROJECTS IN 2009

The OCR has been working on several new projects. These include the proposed Wanapum Pool Raise, Rocky Reach Storage Modifications, and the combined Yakima Basin Projects.

Wanapum Pool Raise (Modification to Existing Storage)

OCR is working with Public Utilities District No. 2 of Grant County to assess the possibility of raising the pool at Wanapum Dam. The working group also includes federal, state, and tribal fishery interests, the Bonneville Power Administration (BPA), and other interested parties.

Increasing the normal maximum operating elevation by 3.5 feet at Wanapum Dam could provide about 70,000 acre-feet of added Columbia River storage. The proposed raise would bring the operating level to 575 feet, which is currently authorized under the regulating water rights and FERC license. Currently, the expected construction cost of this project is around $35 million[1] (Draft Wanapum Pool Raise Effects Evaluation Study 2008), with additional expected costs for mitigation. In October 2009, Ecology began scoping an Environmental Impact Statement (EIS). The cost of the EIS is $500,000.

Wanapum Reservoir looking south

Chelan PUD Storage Studies

Rocky Reach Pool Raise

Chelan PUD and Ecology are working together to investigate the potential for a incremental three feet pool raise at Rocky Reach Dam during the months of July, August, and part of September. The pool raise would generate 28,000 acre-feet of water for instream and out-of-stream use. The projected cost of the full project is $71 million.

Phase I of this project is a study that will determine the potential impacts of the proposed pool raise on Ute Ladies' Tresses (Spiranthes diluvialis), which is listed as a threatened species under the Endangered Species Act (ESA), and is known to occur in areas influenced by Rocky Reach Reservoir. The cost of this study is $44,275.

Rock Island Impacts

Rock Island Dam is the next upstream dam above Wanapum Dam. The proposed pool raise at Wanapum Dam has the potential to reduce power generation at Rock Island Dam. OCR is funding a $225,000 study to evaluate encroachment impacts of the Wanapum Pool Raise on the Rock Island Dam.

1 This cost includes projected expenses for fish bypass gates, fish bypass gate guides, attraction flow prototype structure, electrical cable gallery, spillway gates, and a trash sluice gate.

Pump Storage Feasibility

OCR is funding a $180,000 appraisal study for Chelan PUD to evaluate pump storage opportunities on and near Lake Chelan that will compliment the goals of RCW 90.90.

Yakima Basin Projects *

In January 2008, Ecology and the U.S. Bureau of Reclamation (Bureau) released a Draft Planning Report/Environmental Impact Statement (EIS) for water storage in the Yakima Basin. The agencies evaluated a no action alternative and three storage alternatives—Black Rock reservoir, Wymer reservoir, and Wymer reservoir with a Yakima River pump exchange. Ecology evaluated three additional alternatives—enhanced water conservation, market-based reallocation of water resources, and ground water storage. The three State Alternatives were developed in response to comments received during EIS scoping indicating that Ecology should consider a broader range of alternatives, including non-surface storage options, to meet the State Environmental Policy Act (SEPA) requirements for identifying and evaluating reasonable alternatives.

Comments received on the Draft Planning Report/EIS asserted that Reclamation and Ecology failed to consider an adequate range of reasonable alternatives. The comments also asserted that the alternatives that had been evaluated were analyzed outside of the context of fish habitat and passage needs for the Yakima River Basin. Ecology consulted with Reclamation about whether additional alternatives should be evaluated. Ecology determined that the scope of the EIS should be expanded; however, Reclamation concluded that its congressional authorization precluded it from expanding its analysis under the National Environmental Policy Act (NEPA). Therefore, Ecology decided to separate from the joint NEPA/SEPA process for the study and pursue completion of a stand-alone SEPA EIS that would build on the January 2008 Draft Planning Report/EIS.

In June 2009, Ecology issued its Supplemental Draft EIS that evaluated additional water supply alternatives together with related fish habitat improvements. The study's Integrated Water Resource Management Alternative included seven general elements to improve water resources in the Yakima River Basin:

- Fish passage improvements
- Modifying existing operations and facilities.
- New storage.
- Fish habitat enhancement on the Mainstem and tributaries.
- Enhanced water conservation.
- Market-based reallocation of water resources.
- Ground water storage.

Ecology and the Bureau initiated the Yakima River Basin Water Enhancement Project Workgroup after completing the final EIS. It is composed of representatives from tribal, local, state and federal governments and environmental organizations and irrigation districts. The workgroup is tasked with developing an integrated water management plan for the Yakima River Basin. The workgroup will issue its plan in 2010.

* Partially funded by Columbia River Basin Water Supply Account

View of Yakima River south of Union Gap, WA

2009-2010 Grant Funding Cycle

The OCR launched the 2009-2010 Columbia River Basin Water Management Grant Program[2] (grants) application cycle on August 27, 2009. OCR received nine grant applications (listed in table below), six of which have moved on to the Technical Advisory Group (TAG) for scoring. Grant funds are made available from the Columbia River Account. The following types of projects will be funded out of the grant cycle:

- Design and construction of new storage projects.
- Feasibility studies, environmental reviews, design, and construction of modifications to existing storage sites.
- Design and construction of "shovel-ready" projects (conservation or storage projects that are ready to construct within one year of the grant award.)

Project Name	Project Description	Cost	Moved to TAG Process? (Y / N)
Beehive Irrigation District	Replace up to 5 miles of existing concrete segmented pipeline with PVC or HDPE pipeline.	$1,400,000	Y
Lands Council	Introduce beavers to create natural water storage which will enhance late summer streamflow in the Columbia River basin.	$50,000	Y
Lincoln County Conservation District	ASR feasibility study in the Franklin County basalt aquifers.	$7,860,000	N
WRIA 43 WRMG/Lincoln County	Small Scale Water Storage Project Construction	$87,915	N
Moses Lake Irrigation Rehabilitation District	Dredging Moses Lake to increase storage capacity.	$500,000	N
Chelan County Natural Resource Department	Conversion of approximately 9,900 feet of the Peshastin Irrigation District Canal from an open canal to a closed pipeline.	$325,000	Y
Selah-Moxee Irrigation District	Piping / lining of approximately 15,000 feet of lateral.	$2,667,200	Y
Squilchuck Highline Ditch Association	Replacement of approximately 13,300 ft of existing segmented concrete pipeline.	$928,000	Y
Washington Rivers Conservancy	Piping the existing Pioneer Water Users Association open canal, installing a new efficient pump-back water withdrawal system, and changing the point of diversion from the lower Wenatchee River to groundwater wells adjacent to the Columbia River.	$1,000,000	Y

2 For additional information about the Columbia River Basin Water Management Grant Program please visit our webpage at: http://www.ecy.wa.gov/programs/wr/cwp/cr_08fund.html

PROJECT UPDATES

Modification to Existing Storage

Lake Roosevelt Incremental Storage Releases *

The Lake Roosevelt Incremental Storage Releases Project[3] will provide water for drought relief, municipal and industrial supply, replacement of ground water use in the Odessa Subarea, and enhanced stream flows for fish. The storage releases will come from Reclamation's existing 6.4 million acre-foot storage behind Grand Coulee Dam.

View of Lake Roosevelt

The released water will be used to provide water for the following:

- **Pending Municipal Water Right Applications (RCW 90.90.020 (3) (b))**
  Of the 82,500 acre-feet, 25,000 acre-feet will be used to meet demand from over 100 pending municipal and industrial water right applications.
- **Alternatives to Groundwater for the Odessa (RCW 90.90.020 (3) (a))**
  A total of 30,000 acre-feet would be available annually to individuals in the Odessa Subarea who currently irrigate with a valid state groundwater right.
- **Instream Benefits (RCW 90.90.005 (1))**
  Additionally, 27,500 acre-feet would be available annually to augment instream flows. This when combined with the above totals (municipal, industrial and Odessa uses) equals 82,500 acre-feet that would be released in a non-drought year with 27,500 acre-feet of that water remaining in the river for fish flows. In drought years an additional 33,000 acre-feet would be released and available to offset diversions by existing water right holders whose water rights are interruptible in drought years and another 17,000 acre-feet would be available for instream flow augmentation.
- **Drought Relief for Interruptible Water Rights Holders (RCW 90.90.020 (3))**
  During drought years an additional 50,000 acre-feet (0.8 foot of drawdown) will be released. From that, 33,000 acre-feet will be used for Columbia River mainstem interruptible water right holders. The OCR will use this water to issue standby / reserve permits for interruptible water right holders, providing more reliability in times of drought. Another 17,000 acre-feet will be used to enhance instream flows downstream of Grand Coulee Dam.

Releases will occur from April to August and lake levels will return to normal by the end of September. The storage releases will result in one foot of additional drawdown of the lake level during spring and summer months, and 1.8 feet during drought years. This added drawdown is small compared to the normal operating range of Lake Roosevelt, which fluctuates up to 80 feet a year and up to 2.5 feet a day.

On October 23, 2008, Vision for Our Future, the Center for Environmental Law and Policy, and Columbia Riverkeeper filed appeals with the Pollution Control Hearings Board (PCHB) on the state-issued permits authorizing the releases. The plaintiffs withdrew their appeals and the cases were officially closed by the PCHB on February 23, 2009. On December 1st, the appellants filed a complaint in federal court alleging that the Bureau had not complied with NEPA. That case is still pending.

In June 2009, the Bureau of Reclamation released a Final Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for implementation of the Lake Roosevelt Incremental Storage Releases Project. The EA analyzes the withdrawal of additional water from Lake Roosevelt to provide drought relief, improve municipal and industrial supply, provide a replacement for some of the groundwater use in the Odessa Subarea, and improve instream flows in the Columbia River below Grand Coulee Dam.

* Funded by a combination of Columbia River Basin Water Supply Account and State Building Construction Account.

3 For additional information about the Lake Roosevelt Incremental Storage Releases, please visit our webpage dedicated to this project at http://www.ecy.wa.gov/programs/wr/cwp/cr_lkroos.html

In 2009, the Bureau released 13,527 acre-feet of water under a one-year contract with Ecology. The release is the first step in permitting the water for municipal and industrial use. Additionally, the released water will benefit fish from the dam to the point of diversion.

FDR Municipal and Industrial Permitting Supplemental Environmental Impact Statement (SEIS)

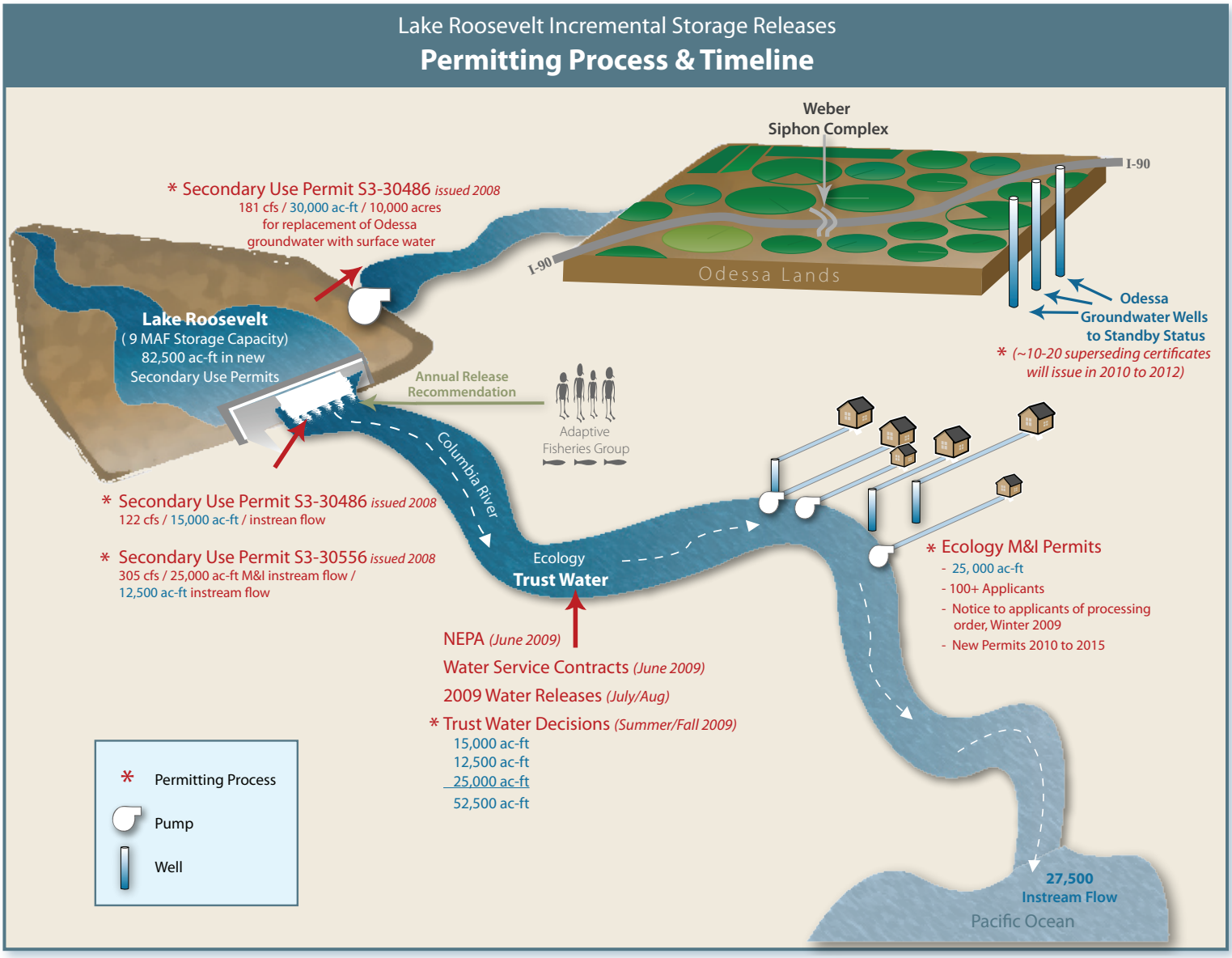
Ecology intends to develop a second SEIS, scheduled for December 2009, to help clarify the following issues:

Municipal and Industrial User Permitting Process

OCR will issue permits in conformance with the recent Lummi v. Ecology case. OCR will, however, keep track of private water systems needs should the case be overturned.

Water for Municipal Purposes

Due to changing population projections for municipal public water suppliers OCR is considering a method for determining a reasonable quantity of water to authorize for municipal water supply purposes.



Groundwater Applications

A review being conducted by OCR will identify the areas in which groundwater pumping impacts may have a near-immediate impact on the Columbia River; new groundwater withdrawals in these areas may be mitigated by storage releases.

OCPI Consultation Process

OCR will conduct the overriding considerations of the public interest (OCPI) consultation process according to the requirements of WAC 173-563-080[4]. This is expected to begin in fall 2009.

Impacts of Water Releases (RCW 90.90.080)

In 2008, the Legislature passed an amendment to RCW 90.90 directing OCR to address the impacts of proposed water releases from Lake Roosevelt on counties on or upstream of Lake Roosevelt. The amendment directs OCR to:

- Conduct an assessment of the potential impacts, including recommendations for mitigation, and report to the appropriate committees of the legislature.
- Establish a process to help identify and report on potential impacts on affected counties, and for making recommendations for mitigation.
- Provide technical assistance to help affected counties identify and develop competitive project applications to benefit both instream and out-of-stream uses.
- Assist affected counties in exploring options to ensure water resources are available for their current and future needs.
- Consider regional equity when making funding decisions on water supply applications.

To address this new legislation, the OCR addressed impacts of the Lake Roosevelt Incremental Storage Releases in Ecology's Final Supplemental EIS (SEIS), adopted on August 29, 2008[5]. Impacts and potential mitigation, when moving water out of WRIA's north of Lake Roosevelt, was also considered in the 2008 legislative report, Protecting Local Economies (MacDonald 2008)[6]. The report recommended mitigation to include revegetation (or other appropriate cover) of fallowed lands, weed control management on temporarily fallowed lands, and compensation to local governments to offset losses in property tax revenue.

To assess projects that could benefit these counties, Ecology and county staff conducted site visits of prospective projects in Lincoln County, Pend Oreille County, Stevens County, Ferry County, and Okanogan County on August 5-6, 2008. Technical assistance on Ecology's grant program was provided. As a result, grant applications originating in Lincoln and Stevens counties were submitted, both of which were funded through the Columbia River Basin Water Management Grant Program [7].

A memorandum of understanding has been drafted and is being reviewed by the counties in compliance with RCW 90.90.080. Additionally, OCR will continue to provide technical assistance to counties as the need arises.

Regional equity considerations was selected in the project Supplemental EIS as part of the preferred alternative and a process for monitoring regional equity is in place. Ecology will use the implementation of future releases and individual permit decisions to identify future impacts, and will use the County Commissioners Policy Advisory Group as the forum for reporting and discussing any impacts, and how regional equity is being addressed.

4 Perennial rivers and streams of the state shall be retained with base flows necessary to provide for preservation of wildlife, fish, scenic, aesthetic and other environmental values, and navigational values. Lakes and ponds shall be retained substantially in their natural condition. Withdrawals of water which would conflict therewith shall be authorized only in those situations where it is clear that overriding considerations of the public interest will be served.

5 Information on impacts and mitigation can be found on-line at http://www.ecy.wa.gov/programs/wr/cwp/cr_lkroos.html#SEIS.

6 http://www.ecy.wa.gov/programs/wr/wrac/images/pdf/wa_local_econ_web.pdf.

7 Information on the site visits can be found at http://www.ecy.wa.gov/programs/wr/cwp/images/pdf/ppt_files/wa_tour_ppt.pdf. Project funding information is available for Lincoln County and Stevens County at http://www.ecy.wa.gov/programs/wr/cwp/images/pdf/grants/map/08proj.html.

Odessa Subarea Special Study

RCW 90.90.020 directs Ecology to focus efforts on alternatives to groundwater from the Odessa subarea aquifer for agricultural users. The Bureau's Odessa Subarea Special Study[8] looks at continued phased development of the Columbia Basin Project to replace groundwater irrigation in the Odessa Subarea with surface water use. An estimated 170,000 acres within the Odessa Subarea are now irrigated with groundwater. About 140,000 of these acres are eligible to receive Columbia Basin Project surface water. Ecology is taking part in the Study to ensure support is provided for any state and local agency permit decisions needed for the selected alternative.

On April 1, 2008, the Bureau released an appraisal-level engineering investigation of four water delivery alternatives and six water supply options. The four water delivery alternatives looked at possible infrastructure (canals, pumping plants and laterals) and layouts for delivering replacement surface water to groundwater irrigated lands in the Study area[9]. The study also includes storage options, such as reoperation of Banks Lake and construction of Rocky Coulee Dam.

The Bureau is preparing an EIS in cooperation with Ecology to comply with NEPA /SEPA. Scoping for the EIS occurred in September 2008 and we expect to issue the draft EIS in 2010. The EIS will look at alternatives for delivering surface water to replace current groundwater irrigation. The alternatives include construction to expand the capacity of existing facilities or construction of new canals, siphons, tunnels, pumping plants, and piped laterals. The proposed infrastructure is part of the original development plan for the Columbia Basin Project. Additional diversions will be required from the Columbia River above current diversions for the Columbia Basin Project to provide the replacement surface water supply. The Bureau is examining several options to provide replacement water including modifying operations at Banks Lake, and construction of a new 127,000 acre-foot reservoir in Rocky Coulee. The Bureau estimates that 50,000 acre-feet of storage is available from Banks Lake for every two-foot rise or drawdown. The project requires both storage (for water available from the Columbia River in the winter/spring) and conveyance infrastructure. WDFW is working to understand the possible effects of a large drawdown through the Banks Lake Fish Study. This is necessary for identifying impacts and possible mitigation measures. WDFW will assess impacts on fish using sampling data collected over two years.

All water supply options can be configured to work with the proposed alternatives; several water supply options may be necessary to provide a sufficient replacement of water supply. The Bureau plans to issue a Draft EIS in 2010. The Bureau is conducting a study comparing the cost of building the infrastructure needed to convert irrigation supply of the Odessa Subarea from groundwater to surface water versus the impact of taking no further action.

Weber Siphon

A second siphon is needed at the Weber Siphon Complex to convey water from the Lake Roosevelt releases to the southern portion of the Odessa Subarea. It will eliminate a water delivery bottleneck at the East Low Canal and Interstate 90 near Moses Lake, WA.

Under the American Recovery and Reinvestment Act (ARRA) of 2009, the Bureau received $50 million toward construction of the second siphon. Construction work will begin on the Weber project in late 2009.

Potholes Reservoir—Supplemental Feed Route

In 2005, Ecology and the Bureau began studying the need for adding a feed route to provide water to the South Columbia Basin Irrigation District. In August 2007, the Bureau issued a final Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for the Potholes Reservoir Supplemental Feed Route[10].

8 For additional information about the Odessa, please visit our webpage dedicated to this project at http://www.ecy.wa.gov/programs/wr/cwp/cr_odessa.html

9 The study will focus on lands currently irrigated with groundwater in Adams and Grant Counties and a small portion of Franklin County. The study area is within the Columbia Basin Project boundary and is generally defined by the area bounded on the west by the Project's East Low Canal, on the east by the City of Lind and extending north to Wilson Creek and south to the Connell area. Previous Reclamation studies have determined these lands to have irrigation development potential. They are also located within the Odessa groundwater subarea as designated by the Washington Department of Ecology.

10 For additional information about the Potholes Supplemental Feedroute, please visit our webpage dedicated to this project at http://www.ecy.wa.gov/programs/wr/cwp/cr_potholes.html

The Bureau identified Crab Creek and Frenchman Hills Wasteway as the preferred alternative for the Potholes Supplemental Feed Route. This alternative will release feed water to Crab Creek from Billy Clapp Reservoir by way of Brook Lake, a natural water body within the Crab Creek channel. Crab Creek would then convey the water into Moses Lake and Potholes Reservoir. Water would also be released from Billy Clapp Reservoir through the Main and West Canals, to the Frenchman Hills Wasteway and into Potholes Reservoir (US Bureau of Reclamation, 2007 EA).

Construction of Frenchman Hills Wasteway was finished in March 2008. On May 14, 2009, Ecology issued a Mitigated Determination of Nonsignificance MDNS) under the SEPA for Phase II of the Potholes Supplemental Feed Route project. After studying potential impacts to the environment, Ecology determined that with appropriate mitigation, there will be no probable significant adverse environmental impacts.

Aerial view of Potholes Reservoir

In 2009, the Bureau received $5 million in American Recovery and Reinvestment Act funding to modify a release gate at Pinto Dam Outlet, build a weir at Brook Lake and replace culverts where Road 16 crosses Crab Creek. The Bureau began seeking a contractor in late 2009. Construction will be completed in 2010.

Negotiations for easements on land that will be inundated along Crab Creek are also underway. Ecology, the Bureau, and WDFW have developed a plan that optimizes additional flow in the feed route to protect and enhance existing fish and wildlife habitats and develop new habitats for fish, waterfowl, and other species.

The total cost of Supplemental Feed Route Project is expected to be $20-$25 million. Ecology has committed $10 million for the project.

CONSERVATION

State law directs OCR to place water gained through conservation measures into the state's Trust Water Rights Program in proportion to the level of state money used in a project. Conservation that reduces groundwater use in the Odessa does not need to be managed in the trust water program. The following sections describe OCR's ongoing conservation investments.

Coordinated Conservation Plan

In 2008, Ecology provided $30,000 to the Columbia Basin Project Irrigation Districts to develop a Coordinated Conservation Plan. The plan is a strategy to maximize water conservation opportunities in each district. Net water savings from the conservation projects will be used to supply the Odessa Sub-Area and to enhance Columbia River stream flows. The Columbia Basin Project Irrigation Districts developed a list of potential projects. Ecology committed to provide $1 million to implement the projects (primarily piping and reregulation reservoirs) resulting from the plan. Ecology will sponsor this project through the 2009-2010 grant funding cycle. The District is providing $60,000 for the project. The estimated cost per acre-foot for this project is $824. The money will be used to replace 22,250 feet of open canal with pipe and 1,500 feet of canal lining. Estimated water savings total 1,286 acre-feet and are broken out as follows:

- Quincy District: 211 AF/yr (Columbia River).
- East District: 718 AF/yr (Potholes East Canal).
- South District: 357 AF/yr (Columbia River).

Conservation Commission Retiming Project

The Washington State Conservation Commission (WSCC), in partnership with the Washington Association of Conservation Districts (WACD) and OCR, is developing a Retiming Pilot Program (RPP) to conserve water in the Columbia River Basin.

In 2008, the WSCC received a $1 million grant from OCR to implement and construct three pilot projects under the RPP. The purpose of the RPP is to determine whether some conservation projects can retime non-consumptive return flows resulting in more water in the Columbia River during July and August (April through August for the Snake River). Retiming non-consumptive water involves the temporary storage of water from times of relative surplus to times of scarcity.

The Washington Association of Conservation Districts (WACD) Irrigation Work Group (IWG) is working in conjunction with the WSCC to implement the RPP through conservation districts. Conservation districts in the Columbia River Basin will provide outreach, coordination, planning, construction and implementation of the RPP. The Irrigation Work Group, with the aid of OCR and the WDFW, set the Retiming Pilot Program criteria.

Benefits include:

- New permits for out-of-stream uses.
- Increased instream flow in fish critical streams at times most beneficial to fish.
- More funding available for farmers to install irrigation efficiency projects.

Additionally, OCR funded the following three conservation projects through the 2008 Columbia River Basin Grant Funding Progam.

Barker Ranch Canal Piping	Conversion of the Horn Rapids Canal from an open ditch system to a closed pipe system. Project completion will result in 6,000 acre-feet of water. *Cost = $5,600,000 Water = 6,436 acre-feet*	Under construction
Kittitas CD (Manastash)	Conversion of the Manastash Water Ditch Association's earthen, unlined ditch from the Kittitas Reclamation District's South Branch to Hanson Road. *Cost = $576,000 Water = 454 acre-feet*	No contract to date. Proponent is seeking additional funding.
Franklin CD IWM	Feasibility study to document and develop a program to capture the conserved water gained by implementing Irrigation Water Management (IWM). *Cost = $78,000 Water = 394,400 acre-feet*	Contract signed. Feasibility study in progress.

PUMP EXCHANGES

Pump exchange projects, such as the proposed Kennewick Irrigation District (KID) and Walla Walla Pump Exchanges, have potential to benefit fish, wildlife and their habitats by substituting tributary diversions with alternative sources of water from lower in the watershed or other water bodies. Water left in the tributary increases flows where habitat is critical for fish. Water remaining in the tributary also has potential to establish a more normative flow regime that will enhance the growth of riparian vegetation.

Kennewick Irrigation District Pump Exchange

The KID proposes to forgo a portion of their 782 cubic feet per second (cfs) water right at Prosser Dam and Chandler Powerhouse on the Yakima River. Instead, they would divert an equal amount of water downstream:

- From the Yakima River, 45 cfs would be taken at Kiona.
- From the Columbia River, 195 cfs would be taken at Edison Street.

OCR is currently in negotiation with the Confederated Tribes and Bands of the Yakama Nation, WDFW, the Bureau, and KID on an AIP, regarding the Red Mountain Viticulture Area (AVA). Ecology will begin SEPA scoping in 2010.

Under this proposal, the flow in a critical reach of the lower Yakima River would double and KID would develop added acreage on Red Mountain. OCR has provided a $95,000 grant to assess piping alignments to reduce costs and improve the operational efficiency of the project. OCR has also reserved $15 million towards construction of the project.

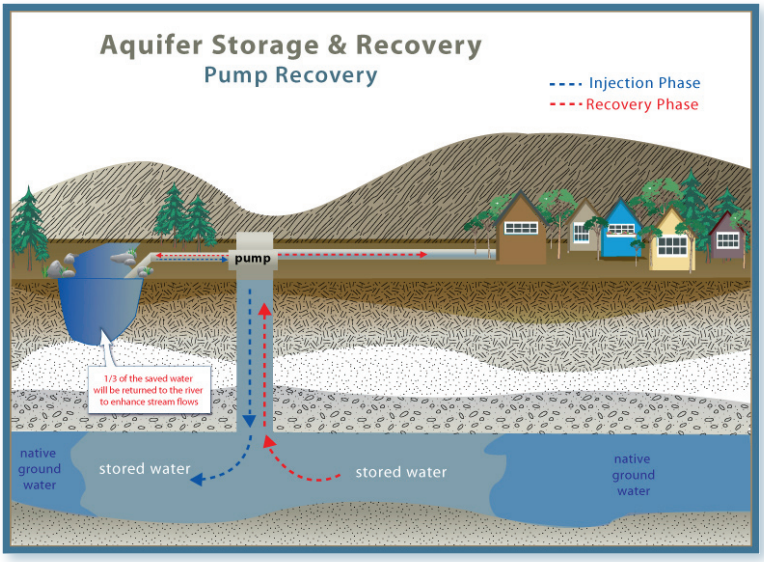
Walla Walla Pump Exchange *

In 2006, OCR provided $400,000 to the Confederated Tribes of the Umatilla Indian Reservation for a cooperative study in the Walla Walla River Basin. In 2009, OCR provided an additional $200,000 for further study. Due in 2010, the study assesses the feasibility of restoring stream flows through several options, including:

- Acquisition.
- Water conservation.
- Ground water recharge.
- Replacing Walla Walla River irrigation water with Columbia River water.

AQUIFER STORAGE AND RECOVERY (ASR)

OCR is currently funding five ASR projects. Two projects are currently in the planning or construction phases. The remaining projects are being studied to determine if underground storage in these areas is feasible.



Kennewick ASR	Injection of water into a basalt aquifer with a potential to hold approximately 318 acre-feet of water with less than ten percent leakage back to the river. *Cost = $15,000,000 Water = 318*	Phase I near completion. Phase II planning in progress.
Lincoln CD Passive Rehydration	Feasibility study to examine rehydration of the basalt aquifers in Lincoln and Adams Counties (Odessa sub aquifer) through passive infiltration. This feasibility study is estimated to be completed June 2011. *Cost = $925,000 Water = 300,000 acre-feet*	Contract signed. Feasibility study in progress.
Boise Cascade ASR	Installation of an aquifer storage system. *Cost = $4,500,000 Water = 1,657 acre-feet*	Secured preliminary permit to drill test wells. Drilling began in September 2009.

* Funded by a combination of Columbia River Basin Water Supply Account and State Building Construction Account.

White Salmon ASR	Installation of an aquifer storage system. The feasibility study is estimated to be completed January 2010. *Cost = $956,950 Water = 145 acre-feet*	Contract signed. Feasibility study in progress.
Spokane Rathdrum Prairie ASR	Feasibility study to examine the viability of aquifer storage and recovery in the Spokane Valley-Rathdrum Prairie (SVRP) aquifer. This feasibility study is estimated to be completed summer 2010. *Cost = $250,000 Water = Unknown*	Contract signed. Feasibility study in progress.

SMALL STORAGE

OCR is currently funding six small storage feasibility studies to determine if these proposed projects are viable.

Foster CD Surface Storage	Feasibility study for two small water storage sites at: Foster Coulee (WRIA 50) and at Rock Island Creek (WRIA 44). This feasibility study is estimated to be completed late 2010. *Cost = $93,750 Water = 60,000 acre-feet.*	Contract signed. Feasibility study in progress.
Stevens PUD (Mill Creek Storage)	Feasibility study for a small surface storage facility on Mill Creek. This feasibility study is estimated to be completed in January 2010. *Cost = $125,000 Water = 2,000 – 11,000 acre-feet*	Contract signed. Feasibility study in progress.
Rock Lake Storage	Feasibility study to examine the potential for a small storage facility on Rock Lake. This feasibility study is estimated to be completed at the end of 2012. *Cost = $126,000 Water = 110,000 acre-feet.*	Contract signed. Feasibility study in progress.
Campbell Creek	Feasibility study to examine the possibility of constructing an off-stream reservoir to store water and release it to the Peshastin Irrigation District to replace Peshastin Creek diversions. This feasibility study is estimated to be completed in Summer 2010. *Cost = $232,500 Water = 500 acre-feet*	Contract signed. Feasibility study in progress.
Klickitat County (Horse Heaven Hills Surface Storage & Conveyance	Feasibility study for diverting water from the John Day and McNary Pools during the winter and spring into a new surface storage site in the Glade-Four mile Sub-basin and creating a new conveyance system. This feasibility study is estimated to be completed December 2010. *Cost = $170,000 Water = Unknown*	Contract signed. Feasibility study in progress.
Lands Council	Feasibility study of natural ecosystem small storage potential by the re-introduction of beaver to the upper Columbia basin and tributaries. *Cost = $30,000 Water = Unknown*	Contract signed. Feasibility study in progress.

LARGE STORAGE

RCW 90.90.010 directs Ecology to spend two-thirds of the Columbia River funds "to support the development of new storage facilities." OCR has been evaluating the potential for new large storage facilities with a capacity of 1 million acre-feet or more for several years. OCR is evaluating four large storage facility sites:

- Crab Creek – No new activity in 2009. (http://www.ecy.wa.gov/programs/wr/cwp/cr_mainstem_storage.html)
- Goose Lake - negotiating appraisal scope with Confederated Tribes of the Colville Reservation.
- Nine Mile - negotiating appraisal scope with Confederated Tribes of the Colville Reservation.
- Similkameen - Ecology reviewed the results of a $325,000 pre-feasibility appraisal of the Shanker's Bend project. (http://www.ecy.wa.gov/programs/wr/cwp/cr_shankers_storage.html)

OCR is working with WSU to forecast future demand to determine if a new large storage facility is needed. This study will be competed in 2011.

OTHER PROGRAM GOALS

Acquisitions and the Drought Insurance Program

Acquisition is one of the water supply development tools that the Legislature directed Ecology to use in RCW 90.90.010. Acquisition can involve purchased or leased water rights, donated water rights, and transferred water savings from conservation projects funded by the state. OCR has received a total of four donations to the state's Trust Water Rights Program. The donations have resulted in 3,728 acre-feet of water. In 2010, approximately 6,430 acre-feet of pending trust water will become available from the Barker Ranch grant-funded project.

The Trust Water Rights Program allows Ecology to reallocate water for new permits and enhance stream flows for healthier fish habitat.

Ecology acquires trust water rights by purchasing or leasing water rights from willing water right holders who may choose to temporarily or permanently lease all or a portion of their water rights. Trust water may also come from water conservation projects resulting from on-farm irrigation improvements. By taking part, water right holders keep their water rights in good standing. Ecology is working with Washington Rivers Conservancy (WRC) and Washington Water Trust (WWT) to find and acquire Trust Water.

The Trust Water Rights Program operates in collaboration with:

- Water Resource Inventory Area (WRIA) Leads
- local governments
- fisheries experts and wildlife biologists
- non-profit environmental organizations
- community & private citizen groups

Columbia-Snake River Irrigators Association (CSRIA) Voluntary Regional Agreements

In 2009, OCR awarded the Franklin and Foster Creek Conservation Districts $25,000 to assist in certifying Best Management Practices (BMPs) under the CSRIA VRA[11]. OCR will report on the results of the certifications in 2010. The purpose of the VRA is to provide new water for issuing:

- Drought permits to holders of existing interruptible water rights.
- New water rights on the Columbia and Snake Rivers.

11 For additional information about the CSRIA VRA, please visit our webpage dedicated to this project at http://www.ecy.wa.gov/programs/wr/cwp/cr_vra.html

New water rights issued under the VRA cannot reduce or negatively impact Columbia River stream flows in the months of July and August, or Snake River flows from April through August. To meet this standard, OCR and CSRIA will pursue conservation, storage, acquisition, and other methods to provide new water to offset new withdrawals during the summer months. OCR completed an interim legislative report (required in RCW 90.90.030) on VRAs in October 2008, which provided further detail on VRA implementation[12].

Cultural Resource Management Plan (CRMP)

OCR is developing a web-based CRMP. The CRMP will be a set of guidelines for the treatment and management of cultural resources affected by projects aimed at acquiring water for instream and out-of-stream needs. The CRMP will be consistent with the cultural resource laws and national policies of environmental stewardship and fulfill the requirements of Washington State Executive Order 05-05. The CRMP will respond to and support the Program's mission to "aggressively pursue development of water supplies to benefit both instream and out-of-stream water uses" (90.90.005 RCW). This project will help provide clarity to OCR project managers as to how cultural resources should be treated where they may be threatened. The web-based CRMP will provide guidance on the consultation process as well as what steps should be taken to ensure cultural resource protection.

INSTREAM BENEFITS

Program Benefits to Fish

OCR has been working to ensure that Program funded projects provide benefits to fish and wildlife. In doing so, OCR has been working with WDFW to determine what projects provide the best fish and wildlife benefits while still providing water for out-of-stream use. Clearly, OCR is focused on instream benefits to salmonids, and some examples of this include:

Photo source: WA State Dept. of Fish & Wildlife

Lake Roosevelt Incremental Releases

Incremental storage releases from Lake Roosevelt will provide increased stream flows for fish along the Columbia River. The water releases for both instream and out-of-stream uses are planned for the spring-summer period to increase flows during salmon and steelhead migration times. Flows earmarked for instream use will be released April through August in normal and wet years, and April through June in dry and drought years. Flows allocated year-round for municipal and industrial uses and drought relief will be released in the spring-summer, increasing the magnitude of flows downstream throughout historically high flow months, and augmenting low, late summer flows. Bolstering spring and summer flow is a move toward a more normative (or "pre-dam") regime benefiting all instream resources.

Grants Program – Barker Ranch Canal Piping

This project, funded for $5.6 million out of the Columbia River Basin Grant Program, broke ground on July 14, 2009. When completed in late 2009, the project will save about 6,500 acre-feet through elimination of canal leakage, which represents about 5% of the stream flow in the lower Yakima River during extreme low flow periods.

Barker Ranch Canal Piping Project

12 http://www.ecy.wa.gov/biblio/0811041.html

Grants Program

Although not the only goal of the Columbia River Basin Water Management Grant Program, instream benefits and other fish, wildlife, and habitat values are an important part of the scoring criteria for a project. Elements such as quantification of the percentage flow increase from a project, length of the stream reach where flow is improved, potential to improve water quality, and presence of salmonid species of concern are scored for each project to provide an assessment of the potential for the project to provide instream benefits as well as conserve or store water. Projects are not required to provide instream benefits in order to be funded, but projects that provide both out-of-stream and instream benefits score higher than projects with just one or the other. Examples of projects providing instream benefit are presented below.

Manastash Ditch Piping and Lining:

OCR is one agency contributing to upgrades of the Manastash Water Ditch Association that includes consolidation of irrigation diversions, provides fish passage and screening, and enhances instream flows. The project would result in piping approximately 4,440 feet of ditch that is currently unlined. The resulting reduction in leakage would add 454 acre-feet to instream flows in a stream reach that is essentially dry during the irrigation season. As a result, habitat connectivity and fish passage will be restored in 20 miles of habitat in and upstream of the project area.

Beaver Relocation:

The idea of providing in-channel and side-channel storage through relocation of beavers is an intriguing concept being studied through a 2008 OCR grant. Beaver dams would store or re-time spring runoff, recharge groundwater, and enhance late-summer stream flows through slow release of dammed water in July, August, and September. Having beaver in a watershed is generally a benefit for salmonids since the channel complexity introduced by beaver activity is critical to life stages of some salmonids.

Other Potential Storage Projects:

Studies are being conducted to determine feasibility of eight storage projects (small storage and ASR). The OCR statute says that one-third of stored water generated through funding provided by this program will be identified specifically for instream use. The statute also requires Ecology to consult with fish managers to determine the best way to release this stored water to maximize instream benefit for salmonids. This provision could become especially important for salmonids as climate change alters stream flow timing and quantity.

Program Benefits Beyond Salmonid Fish

One aspect of this program that is not readily obvious is the development of a unique relationship between sister agencies Ecology and WDFW. Impacts of OCR projects to other species and terrestrial habitat would normally be identified during the environmental review process – after projects are slated for implementation. This unique relationship has allowed these discussions to occur while projects are being designed, thus reducing or eliminating environmental concerns, and even enhancing project benefits beyond OCR interest in instream benefits. Some examples of this are provided below.

Potholes Supplemental Feed Route Project Enhancements:

As managers were discussing alternatives for the supplemental feed route, opportunities for enhancements for fish and wildlife were identified that transformed anticipated damage from this project into tangible benefits. With little additional cost Ecology, the Bureau, and WDFW have developed a plan that optimizes additional flow in the feed route to protect and enhance existing fish and wildlife habitats and develop new habitats for fish, waterfowl, and other species.

Odessa Subarea Studies:

WDFW is one of several contractors developing environmental information for the proposed delivery of project water to groundwater irrigators in the Odessa Subarea. WDFW is coordinating a Habitat Evaluation Procedure whereby the value of habitats impacted by the project can be estimated, and mitigation for those losses identified. Another project includes an investigation of fish and invertebrate ("fish food") production in Banks Lake that will help to identify changes to this popular and valuable fishery from the fluctuations of Banks Lake elevation necessary to provide water supply to the Odessa.

A terrestrial wildlife survey is being conducted in and adjacent to areas that would be impacted from the project footprint; along the preliminary alignment of the proposed East High Canal, in the area where the East Low Canal would be widened and extended, and in locations identified for water storage reservoirs. Together, these studies will provide critical information on the extent of impacts to fish and wildlife, but there are other benefits from these studies as well. For example, Bureau of Reclamation engineers are using preliminary terrestrial survey data, and recommendations from fish and wildlife biologists, to design and locate several canal escape ramps and crossings that maintain wildlife migration corridors and reduce entrapments of wildlife (especially deer) within canals. Project mitigation that would normally have been identified when permits were sought have now been built into the project in the design stage, thus eliminating one source of unanticipated additional project costs.

IMPLEMENTATION ISSUES

Office of Columbia River Needs. OCR is evaluating ways to streamline the permitting to shorten processing time and increase productivity during the current budget shortfall. Strategies for increasing permitting efficiency include digital workload management, reduction of staff and applicant paperwork, and restructuring the application investigation process. In the meantime, additional supplies are also being developed, which will create additional permitting work. Permitting all of these newly available water supplies in a timely manner will remain a significant challenge.

Water for Columbia River or Water for Tributaries. Ecology is proposing to amend the Hillis Rule to provide clarity on how applicants can access OCR-funded water supplies developed in the tributaries. This rule amendment is expected to be completed in 2010. OCR's granting of $46.4 million for projects in 2008 will provide an opportunity for on-the-ground implementation. OCR is recommending continued outreach to seek effective strategies for coordinating and where appropriate, integrating OCR activities with watershed planning efforts. Ecology has contracted with WSU and WDFW to evaluate Columbia River Basin water demand. The report, due in 2011, will help resolve this issue.

Allocating Water Savings. Proponents want both money for projects and water for new permits; whereas, OCR typically spends money on a project at the request of one party, it gives the water from that project to someone else (who may have been waiting for up to 20 years). While there are potential legislative fixes to this problem, it can also be solved by eliminating the permitting backlog. New water supplies made available this year will enable Ecology to start issuing new permits. For now, OCR is recommending an emphasis on permit processing to resolve this issue.

Cost Recovery. OCR is working toward the development of a cost recovery system specific to the 132,500 acre-feet of supply from the Lake Roosevelt Incremental Storage Releases. This cost recovery system would serve to cover the cost of the water and would help make OCR financially sustainable. Engrossed Substitute Senate Bill 5583 (2009) states that, "Costs incurred by the department associated with water service contracts with federal agencies may be recovered by the department from persons withdrawing water or credits for water associated with water banking purposes as a condition of the exercise of a water right supplied from a federal water project." OCR is looking for additional cost recovery opportunities as new projects are developed.

Contacting Applicants. In some cases, water rights applications on file with Ecology are 20, or more, years old. This could create a problem in contacting applicants. OCR will send certified letters to water rights applicants in an effort to contact them. Additionally, RCW 90.30.310 states that water permits need to be assigned subject to the conditions of the permit. Water permit applications may be assigned by the applicant, but are not without Ecology's consent. OCR will be requesting more detailed information on the water right application in order to determine how much water requested is for commercial / industrial versus irrigation.

One-Mile Corridor and Groundwater Issue. OCR is reviewing the geology of the Columbia River Basin to identify where groundwater supply is in continuity with the River. Originally, OCR determined the one-mile corridor as surrogate to groundwater continuity. OCR will approach this issue on a case-by-case basis as new water projects are developed, relying on the premise that groundwater must be managed in the same manner as the surface water source.

SUPPLY INVENTORY

OCR compiled this 2009 inventory building upon previous years' inventories. In order to solicit projects, OCR used a web-based Water Supply Inventory Form. The 2009 Inventory Web Form was made available for new project entries from July 15th to August 15th. One new project was submitted for the 2009 inventory. OCR has compiled a total of 6,174 projects between 2006 and 2009, representing the full range of storage and conservation options in the Columbia River Basin. The table below summarizes the types of storage and conservation projects for which data was gathered.

Detailed descriptions of the various project types listed in the summary table are available on the CD that accompanies this report.

Summary of Water Supply Inventory Table for 2007 and 2008

Type of Project	Number of Projects Listed		Projects with Water Savings (Projects with Cost Data)		Projects with Water Savings & Cost Data	
	2008	2009	2008	2009	2008	2009
New Large Storage (>1,000,000 acre-feet)	5	5	5(5)	5(5)	5	5
New Small Storage (<1,000,000 acre-feet)	112	113	91(55)	92(56)	45	45
Aquifer Storage and Recovery	37	37	8(14)	8(14)	4	4
Modification to Existing Storage	7	8	6(1)	7(2)	1	1
Lining/Piping	173	177	113(128)	115(131)	111	113
On-farm Efficiency	5,589	5,589	5,404(5,412)	5,404(5,412)	5,401	5,401
Irrigation Water Management^	34	34	2(1)	2(1)	1	1
Automation & System Control	46	46	21(40)	21(40)	21	21
General Water Conservation*	89	89	5(9)	5(9)	4	4
Tail Water Reuse	4	4	4(4)	4(4)	4	4
Surface to Groundwater Conversion	1	1	1(1)	1(1)	1	1
Reclaimed Water	1	1	0(0)	0(0)	0	0
Municipal Conservation	0	0	0(0)	0(0)	0	0
Partial Season Acquisitions/Leases^	10	10	5(3)	5(3)	3	3
Fallowed Corners/Land Retirement	45	45	31(31)	31(31)	31	31
Crop Water Duty Reductions	15	15	0(0)	0(0)	0	0
Land Conservation Programs	0	0	0(0)	0(0)	0	0
Crop Change	0	0	0(0)	0(0)	0	0
Total (all)	6,168	6,174	5,696(5,704)	5,700(5,709)	5,632	5,634
Total (conservation & acquis. only)	6,007	6,011	5,586 (5,629)	5,588 (5,632)	5,577	5,579

2009 numbers reflect 2008 data with added and updated data from 2009.

* General Water Conservation projects include public education, planning, researching and developing innovative irrigation implementation.

^ Annual cost per-acre feet

	Estimated Water savings acre-ft/year		Estimated Cost		Estimated Cost per acre-feet	
	2008	2009	2008	2009	2008	2009
	9,580,000	9,580,000	$13,457,886,563	$13,457,886,563	$1,405	$1,405
	269,740	269,750	$762,832,510	$762,920,425	$2,828	$2,828
	2,581	2,581	$8,857,000	$8,857,000	$3,432	$3,432
	70,000	70,300	$33,000,000	$33,500,000	$471	$477
	478,030	484,031	$540,667,321	$546,692,587	$1,131	$1,129
	263,143	263,143	$343,079,425	$343,079,425	$1,304	$1,304
	243,503	243,503	$9,167,184	$9,167,184	$38	$38
	26,307	26,307	$9,757,000	$9,757,000	$371	$371
	12,914	12,914	$7,196,300	$7,196,300	$557	$557
	5,800	5,800	$1,040,000	$1,040,000	$179	$179
	360	360	$200,000	$200,000	$556	$556
	unknown	unknown	unknown	unknown	unknown	unknown
	unknown	unknown	unknown	unknown	unknown	unknown
	80,360	80,360	$6,700,000	$6,700,000	$83	$83
	392	392	$392,100	$392,100	$1,000	$1,000
	unknown	unknown	unknown	unknown	unknown	unknown
	unknown	unknown	unknown	unknown	unknown	unknown
	unknown	unknown	unknown	unknown	unknown	unknown
	11,033,130	11,039,441	$15,180,775,403	$15,187,388,584		
	1,110,809	1,116,810	$918,199,330	$924,224,596		

EXPANDED SUPPLY INVENTORY

View of Columbia River near Biggs Junction (Washington/Oregon border).

DEPARTMENT OF
ECOLOGY
State of Washington

OFFICE OF COLUMBIA RIVER

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