



DEPARTMENT OF
ECOLOGY
State of Washington

2018 Columbia River Basin Water Supply Inventory Report

Publication No. 18-12-007
January 18, 2019



Publication and Contact Information

This document is available on the Department of Ecology's website at:
<https://fortress.wa.gov/ecy/publications/summarypages/1812007.html>

For more information contact:

Office of Columbia River
1250 West Alder Street
Union Gap, WA 98903
Phone: (509) 575-2490

Washington State Department of Ecology — www.ecology.wa.gov

- Headquarters, Olympia 360-407-6000
- Northwest Regional Office, Bellevue 425-649-7000
- Southwest Regional Office, Olympia 360-407-6300
- Central Regional Office, Union Gap 509-575-2490
- Eastern Regional Office, Spokane 509-329-3400

To request ADA accommodation including materials in a format for the visually impaired, call Ecology at 509-454-4335 or visit <https://ecology.wa.gov/accessibility>. People with impaired hearing may call Washington Relay Service at 711. People with speech disability may call TTY at 877-833-6341.

Cover photo: John W Keys III pumping plant on Lake Roosevelt

2018 Columbia River Basin Water Supply Inventory Report

Submitted by

Washington State Department of Ecology
Office of Columbia River
Union Gap, Washington



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
1250 West Alder Street • Union Gap, Washington 98903 • (509) 575-2490

January 18, 2019

The Honorable Jay Inslee, Governor
Honorable Members of the Washington State Legislature
Olympia, Washington

RE: Columbia River Basin Water Supply Inventory Report

The Office of Columbia River is pleased to present the 2018 *Columbia River Basin Water Supply Inventory Report* to the Legislature, meeting the requirements under RCW 90.90.040. This report is now available at the following website:

<https://fortress.wa.gov/ecy/publications/SummaryPages/1812007.html>

This report is a continuation of our yearly documentation detailing ongoing efforts in our aggressive pursuit of water supply development to meet the economic and community development needs of people and the instream flow needs of fish. It includes details on new projects, updates on projects currently underway, and an inventory of water developed through completed projects.

If you have any questions regarding this report or would like more information, please contact me by phone at (509) 574-3989 or by email at: thomas.tebb@ecy.wa.gov. If you would like hard copies of the report, contact Colleen Smith by phone at (509) 454-4239 or email at: colleen.smith@ecy.wa.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "G. Thomas Tebb".

G. Thomas Tebb, L.H.g., L.E.G.
Director
Office of Columbia River

Table of Contents

	<u>Page</u>
Introduction	1
The Office of Columbia River	1
Project Updates and Achievements	4
Odessa Subarea Groundwater Replacement Program	4
Potholes Reservoir	5
Icicle Creek Water Resource Management Strategy	7
Lake Roosevelt Incremental Storage Releases Program	8
Lake Roosevelt Program and Drought Response	8
Walla Walla Basin	9
Reassessing Walla Walla Pilot.....	9
Port of Walla Walla Lease Program	10
Aquifer Storage and Recovery.....	11
Benefits of Aquifer Storage and Recovery	11
Highlights	12
Challenges.....	12
Proposed Switzler Reservoir Storage Project	13
Sullivan Lake Water Supply Project.....	14
Yakima River Basin Integrated Water Resource Management Plan	15
Looking Ahead	17
Near Term Goals.....	17
Budget Sustainability	17
Partnership Building and Outreach.....	18
The Implications of Treaty Talks.....	19
In Conclusion	19

List of Figures and Tables

Page

Figures

Figure 1: Icon Key.....	iii
Figure 2: Map of OCR Water Supply Projects for 2018.....	2
Figure 3: OGWRP East Low Canal Improvements	6
Figure 4: Map and Goals of the Icicle Strategy.....	7
Figure 5: Breakdown of Annual Water Releases	8
Figure 6: Breakdown of the Water Released During Drought Years.....	8
Figure 7: Map of the Walla Walla Basin.....	9
Figure 8: Aquifer Storage and Recovery.....	11

Tables

Table 1: Columbia River Basin Water Supply Development Funding Sources Solutions	18
---	----

Statutory Directive 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 in the Columbia river basin, 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.

[[2011 c 83 § 6](#); [2006 c 6 § 5](#).]

Throughout the report, these symbols are used to identify the legislative directive that the project addresses:



Alternatives to groundwater for Odessa Subarea



Pending water right applications



Future water supplies for interruptible water right holders



Future water supplies for municipal, domestic, industrial and irrigation



Instream benefits

Figure 1: Icon Key

Introduction

This 2018 Columbia River Basin Annual Water Supply Inventory Report summarizes ongoing accomplishments of the Office of Columbia River (OCR) as we implement the requirements defined in Chapter 90.90 of the Revised Code of Washington (RCW).

The year 2018 presented challenges that we are working to mitigate. Big winter snows in Canada provided a cushion for water supply early in the year that was tempered by rapid snowmelt in May, resulting in many areas flooding. Through the summer, the basin continued to experience record high temperatures and lower levels of precipitation. These conditions resulted in drier than normal conditions, wildfires, and rapid streamflow drops during late summer across the basin.

While an official drought was not declared, these conditions remind us of the uncertainty we face due to changes in our climate. Coupled with limited reservoir capacity, population growth, and declining groundwater levels the Columbia River Basin's limited water supply is in higher demand than ever before. The development of secure and reliable water is vital to the future success of agriculture, industry, municipalities, and aquatic needs throughout the Columbia River Basin.

The Office of Columbia River

Our Office of Columbia River's purpose is the aggressive pursuit of water supply solutions in the Columbia River Basin for both instream and out-of-stream uses. Since 2006, the program has focused on its directives to meet water supply demands by implementing water supply strategies that maximize benefits and minimize expenses across central and eastern Washington (see Figure 2).

As of today, we have successfully developed 413,845 ac-ft of sustainable and permittable water supplies, benefitting irrigators in the Odessa subarea, securing water for pending water right applications and interruptible water right holders, projecting future water needs, and maintaining healthy streamflows. Our efforts will not stop there. Within the next three to five years, our program aims to develop another 340,000 ac-ft, with an overall goal to develop over 1 million ac-ft for both Columbia River Basin and Yakima Basin Integrated Plan projects over the next 10 years.

As we continue to work to solve today's water needs, we are also looking to the future. Our office has published three Columbia River Basin Long-Term Water Supply and Demand forecasts¹ that outline the future water supplies and demands of Eastern Washington. These reports provide the information needed to respond to the impacts of climate change, aging water conveyance infrastructure, and an ever-growing population. Each forecast looks 20 years forward and provides extensive insights into the future water needs of the Washington portion of the Columbia River Basin along with the needs of each individual watershed. These forecasts are a useful tool to inform water supply investments for meeting predicted demand.

¹ These reports can be found on the Department of Ecology's website at: ecology.wa.gov

OCR WATER PROJECTS 2018

- **Completed, Developed**
- **Active, Under Development**

Locations are approximate

Yakima Basin Integrated Plan Initial Development Projects

Kachess Drought Relief Pumping Plant 200,000 ac-ft Out-of-Stream
Cle Elum Pool Raise 14,600 ac-ft In-stream
Cle Elum Fish Passage Reservoir Fish Passage
Teanaway Acquisition 50,272 acres of Watershed Protected
Manastash Conservation and Tributary Enhancement 1,300 ac-ft Instream
Passive Aquifer Recharge 600 ac-ft Out-of-Stream
Yakima City ASR 10,000 ac-ft Out-of-Stream Instream ac-ft TBD

Multiple Site Projects
Habitat Enhancement & Restoration 3,170 acres of floodplain reconnected 47,921 acres of watershed protected
Enhanced Water Conservation 10,000 ac-ft
Kittitas Distributed Off-Channel Small Storage ac-ft TBD
Other Yakima Basin Integrated Plan Projects 150,400 ac-ft Instream & Out-of-Stream

Methow Projects
2854 ac-ft Out-of-Stream

Goose Lake & Nine Mile Flat Storage
ac-ft TBD

Methow Trust Water Acquisition
79 ac-ft Out-of-Stream

Peshastin ID Piping
360 ac-ft Instream

Lower Wenatchee Instream Flow Enhancement
7,823 ac-ft Instream

Peshastin Pump Exchange
ac-ft TBD

Icicle Creek Water Management Strategy
20,000+ ac-ft Instream and Out-Of-Stream

Upper Kittitas Tributary Enhancement
Conveyance

White Salmon ASR
145 ac-ft Instream

Sunnyside Valley ID
7,815 ac-ft Instream

KID/Red Mountain
11,005 ac-ft Instream

Horse Heaven Hills
105,000 ac-ft Out-of-Stream



Figure 2: Map of OCR Water Supply Projects for 2018.

Pine Creek Acquisition

900 ac-ft Out-of-Stream

Mill Creek Storage

11,000 ac-ft Out-of-Stream

Sullivan Lake Water Supply

9,400 ac-ft Out-of-Stream
4,600 ac-ft Instream

Lake Roosevelt Incremental Storage Releases

All Years:
55,000 ac-ft Out-of-Stream
25,000 ac-ft Instream
Drought Years:
88,000 ac-ft Out-of-Stream
44,000 ac-ft Instream

Rilette ASR

ac-ft TBD

Lincoln CD Passive Rehydration

ac-ft TBD

Spokane-Rathdrum ASR

105,000 ac-ft Out-of-Stream

Columbia Basin ID Piping

35,955 ac-ft Out-of-Stream

Weber Siphon

Conveyance

East Low Canal Widening

Conveyance

Odessa Subarea Groundwater Replacement

164,000 ac-ft Out-of-Stream

Potholes Supplemental Feed Route

Conveyance

Pasco Municipal Supply Improvements

5,000 ac-ft Out-of-Stream

Walla Walla Flow Enhancement

30,000 ac-ft Instream

Port of Walla Walla Leases

4,761 ac-ft Out-of-Stream

Kennewick ASR

>318 ac-ft Instream

Kennewick General Hospital

4,000a ac-ft Out-of-Stream

Region-Wide Projects

Conservation Commission Irrigation Efficiency

7,823 ac-ft Instream

Conservation Commission Retiming

ac-ft TBD

Regional Aquifer Storage and Recover

ac-ft TBD

Donations

4,396 ac-ft Instream

Pasco Basin Water Supply

ac-ft TBD

Barker Ranch

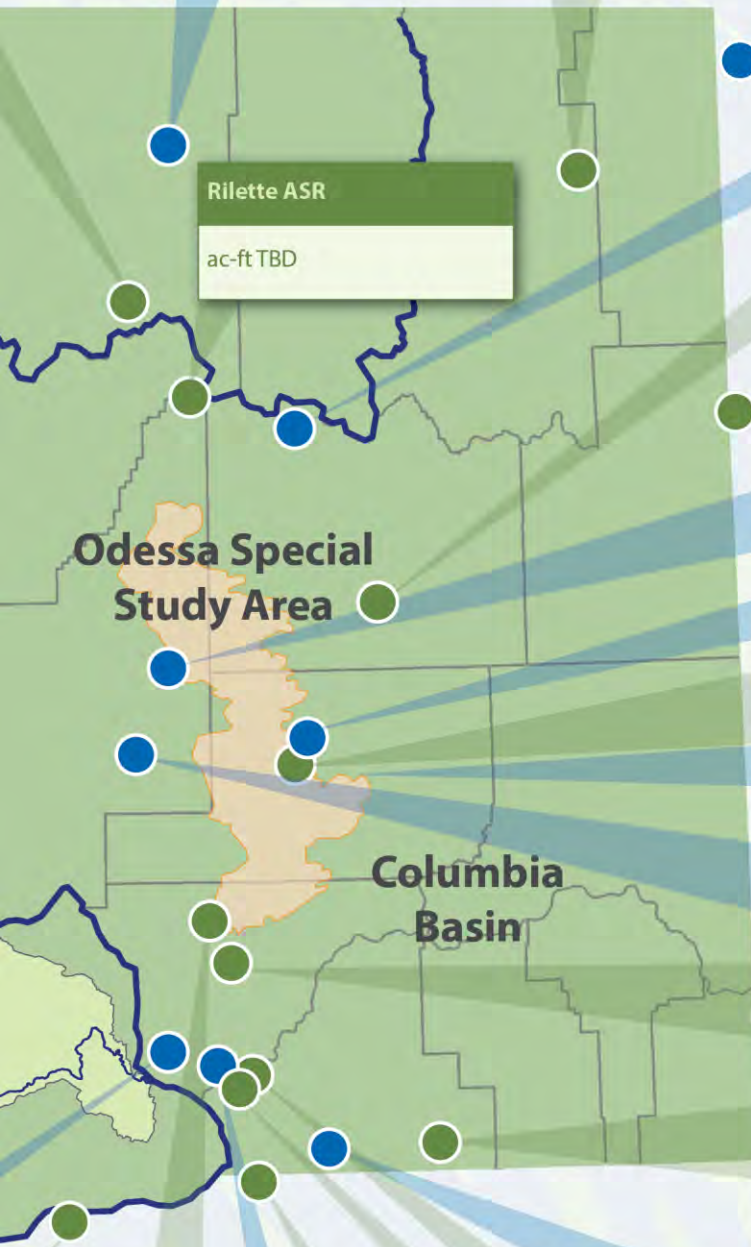
6,436 ac-ft Instream

Switzler Off-Channel Reservoir

44,000 ac-ft Out-of-Stream

Odessa Special Study Area

Columbia Basin



Project Updates and Achievements



Odessa Subarea Groundwater Replacement Program

In 2018, we have continued to partner with the United States Bureau of Reclamation (Reclamation) and East Columbia Basin Irrigation District (ECBID) to carry on the design work and construction of the East Low canal mile 47.5 pumping plant and delivery system (commonly referred to as the EL 47.5 delivery system). Our office is also working with ECBID and the landowners on the conceptual preliminary design phase for several other distribution systems including EL 11.8 and EL 22.1.

The ECBID continues to meet with all the landowner groups contemplating distribution lines. However, the EL 11.8 and 22.1 system groups have already signed Memorandum of Understandings (MOU) with ECBID to coordinate the financing and the development of the design and construction of the irrigation delivery systems. By the 2020 irrigation season, the EL 47.5 system will be set to deliver enough surface water to convert up to 10,500 acres of farmland through Odessa Subarea Groundwater Replacement Program (OGWRP).

East Low Canal (ELC) improvements will allow the conveyance of surface water necessary for the conversion of 87,700 acres of irrigated farmland from declining groundwater, providing much-needed relief to the declining Odessa subarea aquifer. As a reminder, there are several sources of Columbia Basin Project water under the Odessa Groundwater Replacement Program that will be conveyed from Lake Roosevelt to Banks Lake, down East Low Canal, to surface water delivery systems and ultimately to OGWRP eligible lands.

The Odessa Subarea Special Study provides the largest amount of water supplies reaching 70,000 acres, the Lake Roosevelt Incremental Storage Releases Program provides water for another 10,000 acres, while the three Columbia Basin Irrigation Districts'² Coordinated Conservation Program provides water to approximately 7,700 acres.

Since 2013, we have issued 29 change authorizations on Odessa Subarea groundwater rights, which largely allows for groundwater users to move their current irrigated place of use to areas that are anticipated to be closer to surface water delivery systems. To date, water service contracts have been issued to landowners for approximately 14,000 acres by ECBID. Additionally, ECBID and Reclamation are in negotiations to finalize a master water service contract for delivering up to 70,000 acres of water. Negotiations are expected to conclude by the end of 2018.

These massive water supply infrastructure projects continue to move steadily forward despite running into unexpected obstacles along the way. During the 2017-2019 biennium, we are providing \$10 million for continued ELC improvements that will allow for some combination of the remaining ELC construction; including two additional siphon barrels (Kansas Prairie 1 & 2), multiple radial gates, a water check structure, and 10 county road bridges (see Figure 3).

² East Columbia Basin Irrigation District, Quincy Columbia Basin Irrigation District and South Columbia Basin Irrigation District

Potholes Reservoir

OCR continues to partner with Reclamation on developing reliable routes to feed water from Banks Lake to the Potholes Reservoir to ensure irrigators within the South Columbia Basin Irrigation District (SCBID) will have a full water supply from the reservoir. This year, the project partners refined possible feed route alternatives, invested in additional subsurface hydrogeological modeling, continued assessing infrastructure needs, performed groundwater monitoring, and continued property acquisitions and easement rights along Crab Creek.

Historically, East Low Canal (ELC) has been the main delivery route to feed water to the Potholes Reservoir, which in turn provides irrigation water for farms in the SCBID. However, the ELC no longer has the capacity to deliver the same amount of supplemental feed water from Banks Lake to Potholes Reservoir due to the necessary operational changes within the federal Columbia Basin Project for the groundwater replacement program. Instead, any ‘unused’ capacity in the East Low Canal will deliver Columbia Basin surface water to OGWRP users.



Potato irrigation within the Odessa Subarea

East Columbia Basin Irrigation District Odessa Groundwater Replacement Program (OGWRP) East Low Canal Improvements (04/06/2018)

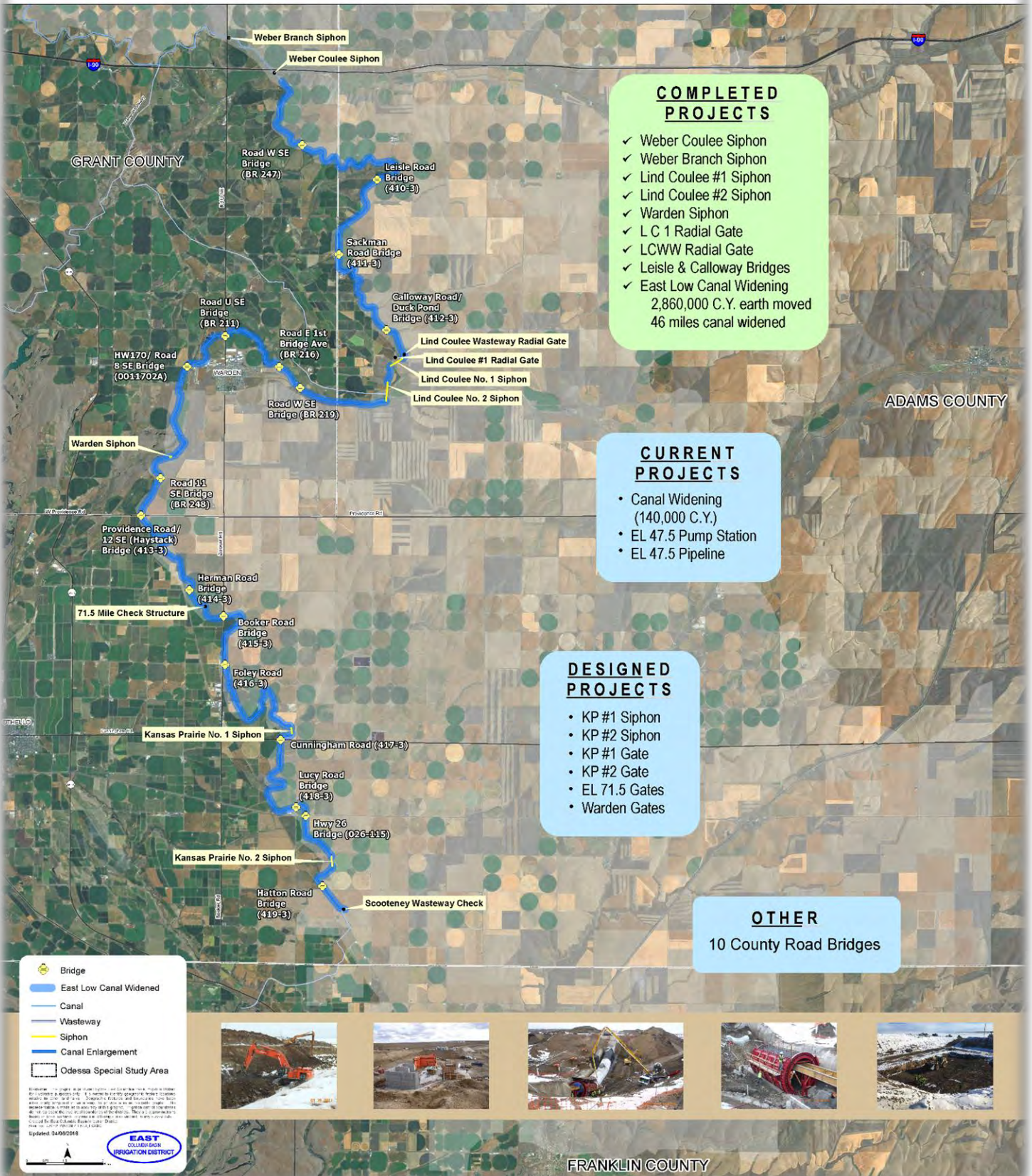


Figure 3: OGWRP East Low Canal Improvements
Graphic provided by ECBID



Icicle Creek Water Resource Management Strategy

After many years of watershed planning and collaboration to develop water supply solutions, the Icicle Creek Workgroup released a Draft Programmatic Environmental Impact Statement (PEIS) on the Icicle Creek Water Resource Management Strategy in May 2018. As co-leads, Ecology and Chelan County are currently in the process of addressing comments received on the Draft PEIS. The comment responsiveness summary is scheduled to be released by the end of the calendar year.

The Icicle Strategy (see Figure 4) is a comprehensive plan that addresses climate change impacts to the watershed and is designed to balance instream and out-of-stream needs and resolve habitat and fisheries issues in the watershed today and in the future. The goal of the Icicle Strategy is to reach instream flows of 100 cubic feet per second (cfs) in Icicle Creek during average water years and 60 cfs of supply during dry water years. For reference, Icicle Creek flowed as low as 16.4 cfs during the 2015 drought. Instream flow improvements will be accomplished by implementing a suite of projects that will improve the sustainability of the Leavenworth National Fish Hatchery, domestic supply, agriculture reliability, and enhances Icicle Creek habitat while protecting both tribal and non-tribal fishing interests and remaining in compliance with state and federal laws, including wilderness acts.



Figure 4: Map and Goals of the Icicle Strategy



Lake Roosevelt Incremental Storage Releases Program

The Lake Roosevelt Incremental Storage Releases Program (Lake Roosevelt Program) continues to provide up to 132,500 ac-ft of water to offset new uses and to cover additional instream and out-of-stream demands during drought years in the Columbia River Basin. The Lake Roosevelt program encompasses the annual release of 82,500 ac-ft (Figure 5) and drought year release of an additional 50,000 ac-ft (Figure 6).

To date, our office has permitted 46 municipal and industrial (M&I) water rights totaling 15,187 ac-ft of the 25,000 ac-ft made available for M&I through this program. We will continue to process pending water applications for the remaining 9,813 ac-ft M&I water. Our permitting staff is currently reaching out to all pending water right applicants in an effort to gauge current interest in the Lake Roosevelt Program. It should be noted that all M&I water recipients are required to pay a cost recovery fee of \$35 per ac-ft per year, which goes towards offsetting development costs.

Lake Roosevelt Program and Drought Response

Currently, Ecology is updating the Washington State Drought Contingency Plan with the support of a Reclamation WaterSMART Grant. This plan outlines the framework for drought response, defines known drought vulnerabilities, and identifies specific mitigation and response actions. Moreover, once this plan is filed with Congress as required by Reclamation’s Drought Response Program³, it will streamline the state’s request for federal drought relief by eliminating the Reclamation and Bonneville Power Administration coordination requirement. Overall, these efforts will lay the foundation for access to the 50,000 ac-ft of water under the Lake Roosevelt Program during drought years.

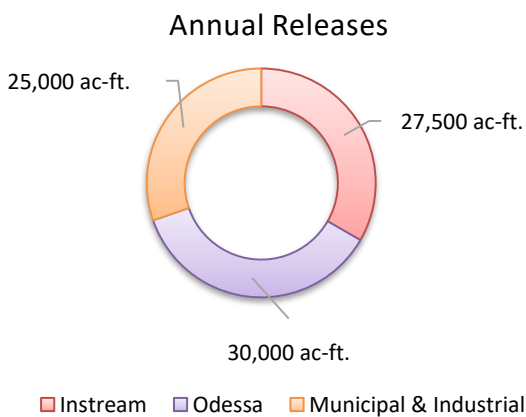


Figure 5: Breakdown of Annual Water Releases

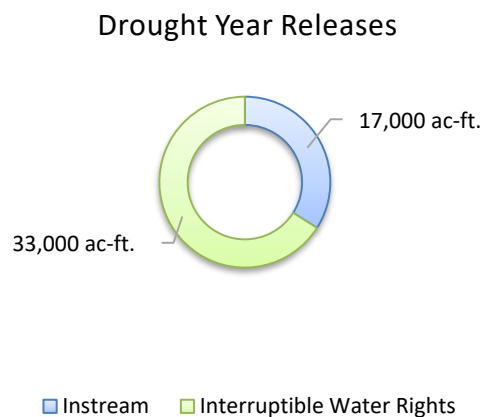


Figure 6: Breakdown of the Water Released During Drought Years

³ More information can be found on Reclamation’s website: <https://www.usbr.gov/drought/>



Walla Walla Basin

In 2018, investments continued in the Walla Walla Basin, specifically for a study to improve flows in the Walla Walla River (also known as the Bi-State Flow Study because the river touches both Washington and Oregon, Figure 7). The flow study reviews and analyzes potential water supply solutions to achieve meaningful instream flows in the Walla Walla River. The nature of the Bi-State Flow Study adds a level of complexity, as it requires cross-border coordination and cooperation among the numerous state, local, tribal, and other stakeholders involved in this important work.

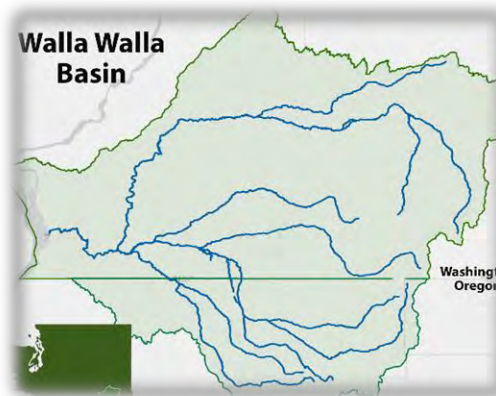


Figure 7: Map of the Walla Walla Basin

OCR continues working with the Walla Walla Watershed Management Partnership (the Partnership) in Washington and the Walla Walla Basin Watershed Council in Oregon, both of whom co-lead the Bi-State Flow Study steering committee. The Confederated Tribes of the Umatilla Indian Reservation are an important member of the Partnership and hold seats on the Board of Directors, Water Resource Panel, and Policy Advisory Group. With the tribe's ongoing support, we have been able to provide continued funding for the Bi-State Flow Study. In addition to the funding provided by OCR, the Walla Walla Basin Watershed Council secured a Reclamation WaterSMART grant in 2017 that runs through 2019 to contribute to continued bi-state water management planning, including the flow study.

Reassessing Walla Walla Pilot

The Partnership is approaching the end of its 10-year pilot phase as authorized in RCW 90.92 and is undergoing a self-assessment. The Partnership process is based on the belief that greater flexibility in the way water is managed will improve instream flows while maintaining existing out-of-stream uses. While the Walla Walla Partnership program has had good results in establishing a variety of programs to assist water users in the basin, it has not achieved meaningful instream flow benefits in the Walla Walla River.

Since January 2018, Ecology's OCR and Water Resources program staff have been engaged in ongoing discussions with the Partnership to collaborate about the fate of the Partnership and any future authority. We have suggested without significant changes in direction, management/decision making, broader stakeholder involvement and scope of the effort in the Walla Walla Basin would likely leave Ecology in a position of being unable to support their final 10-year report to the legislature and subsequent recommendations for further funding. We are pleased the Partnership embraced the recommendations that appear in the *Walla Walla Pilot Local Water Management Program, Final Progress Report*⁴ to the legislature (October 2018).

We are optimistic that the Partnership's previous work efforts will provide a foundation that can be built on to create a plan more in line with a comprehensive integrated water resource

⁴ Walla Walla Pilot Local Water Management Program, Final Progress Report (October 2018)
<https://drive.google.com/file/d/1njN-YTViwtLt9i1STWoLzzGJPKHStPbK/view>

management strategy similar in approach to the Yakima Basin Integrated Plan and the Icicle Creek Strategy.

Ecology, the Partnership, and the Umatilla Tribe have agreed that more time is needed to “transition” from the current program under RCW 90.92, learn from a financial and performance audit process, and look towards developing future goals. We anticipate a transition period to assess what worked and what did not over the past decade. Components of the previous program to be evaluated include local water plans, water banking, landowner agreements to forego diversions, exempt well mitigation, and water acquisitions.

Along these lines, the Partnership made a recommendation in its Final Progress Report to the Legislature in October 2018 to extend the Partnership’s authorization for a two-year transition period (2019 - 2021). The Partnership will work with local legislators over the next several months to develop a strategy and introduce legislation during the 2019 session that extends RCW 90.92 expiration to June 30, 2021. During this two year transition period, the Board and community partners plan to create an evolved Partnership based on components that work and provide value, while reconsidering the framework of the old pilot program. Specific requirements proposed for the transition phase include:

- Preparing a multi-decade integrated strategic plan to meet growing water demands and protect ecological function, to be presented to the legislature by January 31, 2021.
- Identifying a dedicated funding and organizational structure in the strategic plan.
- Coordinating with Ecology to perform environmental reviews of the Comprehensive Flow Enhancement Study and, when appropriate, develop a Programmatic Environmental Impact Statement for the multi-decade plan.
- Undergoing performance and financial audits to inform decision makers on previous efforts of the Partnership program elements.
- Continuing work on existing programs and efforts during the transition period, including co-chairing the Bi-State Flow Study Steering Committee.
- Exploring interstate agreements to maximize water management across the state line.

We believe that the Walla Walla River Basin is an ideal setting to develop an integrated water resource strategy and the Walla Walla Water Management Partnership can provide the foundation upon which a strategic vision of integrated water resource management for today and decades to come can be built.

Port of Walla Walla Lease Program

With 4,496 ac-ft of water leased from the Port of Walla Walla, OCR continues to aid water users in the basin by providing the opportunity to apply for short-term permits (set to expire November 30, 2020, or sooner). At this time, we are processing a temporary application allocating the remaining 265 ac-ft of this leased water.

Permits are issued on a temporary basis to seasonal water users, allowing them time to find a permanent water supply source. These permits have also been used as a means to obtain compliance from unauthorized (non-compliant) users. All users benefitting from this short-term water are required to pay an annual cost-recovery fee of \$105 per ac-ft to offset Ecology’s cost to develop this temporary water supply.



Aquifer Storage and Recovery

Aquifer storage and recovery (ASR) takes advantage of naturally occurring geologic reservoirs to store water below the surface. As seen in Figure 8, surface water is pumped into the underground reservoir via injection wells during times of high flow, where it is held until it is needed for out-of-stream benefits.

Benefits of ASR

Requiring minimal infrastructure compared to traditional surface reservoirs, ASR is seen as a cost-effective alternative to surface water storage. ASR projects have fewer environmental impacts and no impediments to fish passage, but changes to water chemistry and water quality impacts do need to be considered and factored into project development. Injecting chlorinated municipal water into native groundwater requires additional monitoring to ensure no degradation of water quality. As is true with any storage project, issues related to how much water is available for reuse must also be resolved.

ASR can be used in places where traditional surface water storage (reservoirs) is not practical or feasible, such as urban, industrial and residential areas. Because of its cost-effectiveness and multiple benefits, the number of ASR projects in the state has increased over the past few years.

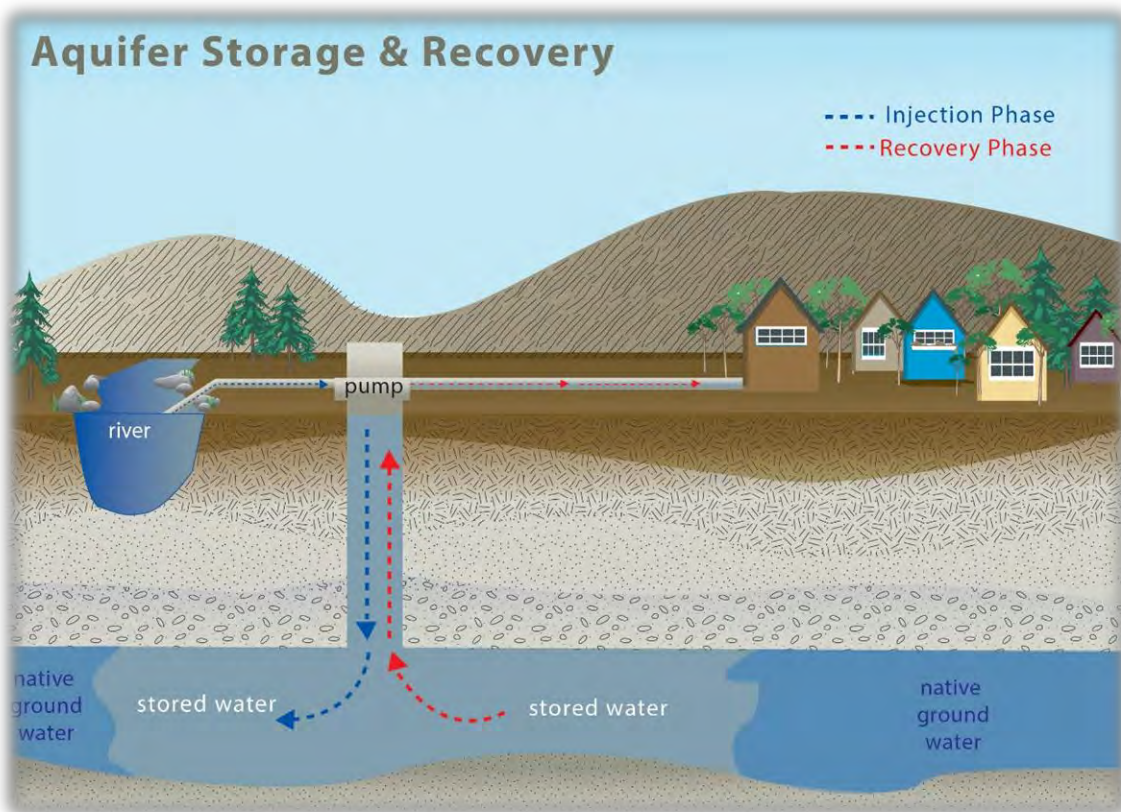


Figure 8: Aquifer Storage and Recovery

Highlights

We anticipate finalizing ASR project permits for the cities of Kennewick and White Salmon soon, allowing them to begin storing water underground. Other ASR projects are in development for the cities of Othello, Pasco, Quincy, and West Richland.

We continue to explore and evaluate the potential for a large-scale aquifer storage site in northern Douglas County, where preliminary underground storage capacity of the area is estimated to be in the tens of thousands ac-ft range.

Our office remains committed to analyzing suitable ASR locations throughout the Columbia Basin and streamlining the permitting process to help reduce risks and costs of implementing these types of projects in the future.

Challenges

To date, most ASR projects being explored in the state are small municipalities in eastern Washington whose duty is to serve its citizens safe and reliable drinking water. Some cities and towns, facing declining water levels in aquifers, have begun to explore options for additional source(s) of supply for their drinking water.

Because water supply development is as unique for each locale as the geology, each town must first assess its existing water supplies and local hydrogeology before starting ASR projects. With few ASR projects operable across the state, many towns are weary of the investments needed to explore local hydrogeology, conduct chemical analysis, drill wells, and upgrade drinking water system infrastructure, while maintaining drinking water quality standards.

ASR project costs can range from hundreds of thousands of dollars to several million dollars in initial capital, with tens to hundreds of thousands of dollars associated with annual operational costs.

These costs include feasibility, water quality analysis, well drilling for a production well and/or observation well, pilot testing, well monitoring, on-going water quality sampling, environmental review and permitting and added operation and maintenance on the system. We see value in partnering with these small communities across central and eastern Washington as they explore options for finding innovative water supply solutions into the future.



Proposed Switzler Reservoir Storage Project

Water storage development is a key component of OCR's mandate and requires long-term planning and analysis for both feasibility and need. We have conducted a number of preliminary storage studies and are partnering on a proposal in the Horse Heaven Hills of Benton and Klickitat counties, where lack of water available for out-of-stream uses has limited agricultural growth just above the Columbia River in South Central Washington.

After nearly a decade of watershed planning and coordination with a variety of stakeholders, Benton and Klickitat counties and the Water Resource Inventory Area (WRIA) 31 Planning and Advisory Committee are moving a proposal forward for an off-channel reservoir in Switzler Canyon, approximately 16 miles south of Kennewick and 11 miles east of Plymouth, Washington.

In a three-way co-lead with Benton and Klickitat counties, we are currently working on the Switzler Reservoir Storage Project's (Switzler Reservoir) SEPA and environmental review. Switzler Reservoir proposes to take water from the Columbia River mainstem (McNary pool) and pump it into the proposed 44,000 ac-ft reservoir during times of high flows. This stored water will then be released during periods of low flows to offset new out-of-stream uses that could include:

- New irrigation of 12,000 to 28,000 acres.
- Up to 1,000 new homes for municipalities.
- Instream flow improvements through targeted reservoir releases.
- Mitigation of interruptible water rights during drought years.

Overall, Switzler Reservoir will help resolve existing water resource challenges and allow for the creation of new economic opportunities from mitigated (water budget neutral) water right permits on the Columbia River. A public comment period closed on October 22, 2018, to determine the scope of a proposed EIS for the project. The next phase includes the co-leads preparing a comment responsiveness summary for the scoping comments received. Once scoping on Switzler is completed, the co-leads will launch into developing an EIS that will evaluate alternatives and significant impacts associated with construction and operation of a reservoir, with full public participation.



Proposed Switzler Reservoir Storage Project Site



Sullivan Lake Water Supply Project

Efforts to allocate 14,000 ac-ft of water available for the Sullivan Lake Water Supply Project continue. This water is provided through an MOU with the Pend Oreille Public Utility District (PUD). Under the terms of the MOU, the PUD agreed to re-time the release of 14,000 ac-ft of Sullivan Lake water stored in the wetter months of October to December to the drier months of June to September, providing water for instream and out-of-stream uses when it is needed.

Consistent with RCW 90.90, one-third (4,667 ac-ft) of this water will remain instream, protected to the mouth of the Columbia River. The remaining two-thirds (9,333 ac-ft) will be made available for local out-of-stream uses including municipal, domestic, industrial, and agricultural uses.

To date, our office has issued permits totaling 2,093 ac-feet for Sullivan Lake water, with two permits for irrigation (totaling 993 ac-ft) and one for municipal use (1,100 ac-ft). At this time, the amount of water requested by pending applications far exceeds the remaining available 7,240 ac-ft of water provided by this project.

The out-of-stream uses for this water are limited to the northeastern counties of Douglas, Ferry, Lincoln, Okanogan, Stevens, and Pend Oreille. Water users benefitting from water developed by this project must pay a one-time cost-recovery fee of \$1,500 per ac-ft, or \$60 per ac-ft for 25 years, to help offset the development costs of this water.



Sullivan Lake



Yakima River Basin Integrated Water Resource Management Plan

The Yakima River Basin Integrated Plan (Integrated Plan) provides a comprehensive approach to water supply improvements and ecosystem restoration in the Yakima River Basin. In 2018, the following significant achievements occurred under the Integrated Plan:

- Completed construction of the juvenile passage facility vault, which will house the helix structure that will transport fish from the reservoir to the Cle Elum River, for the Cle Elum Fish Passage project.
- Released the Supplemental Draft EIS for the Kachess Drought Relief Pumping Plant and Keechelus Reservoir-to-Kachess Reservoir Conveyance for public comment.
- Finalized the City of Yakima's low water use landscape water conservation pilot project.
- Conducted thermal monitoring from Parker gauge to Bateman Island to locate cool thermal refugia for migrating salmon and steelhead.
- Completed a basin wide aquifer analysis to evaluate groundwater recharge potential in the Yakima Basin.
- Began bank stabilization at Speely Beech as part of the Cle Elum Pool Raise project.
- Initiated a Market Reallocation Study utilizing a federal WaterSMART grant secured by Kittitas Reclamation District.

The Integrated Plan is five years into the first 10-year phase known as the Initial Development Phase. Federal authorization and a secure state funding framework are necessary for a smooth transition from the Integrated Plan's Initial Development Phase to its Middle Development Phase, allowing for continued success implementing large scale, high-cost capital funded projects, and achieve water security for people, farms, and fish.

For more information, see the 2018 Cost Estimate and Financing Plan available on Ecology's website:

<https://ecology.wa.gov/About-us/Get-to-know-us/Our-Programs/Office-of-Columbia-River/Office-of-Columbia-River-Legislative-reports>



Construction of the Cle Elum juvenile passage facility vault, aerial photo provided by Reclamation

Figure 9: OCR Water Supply Development - 2018

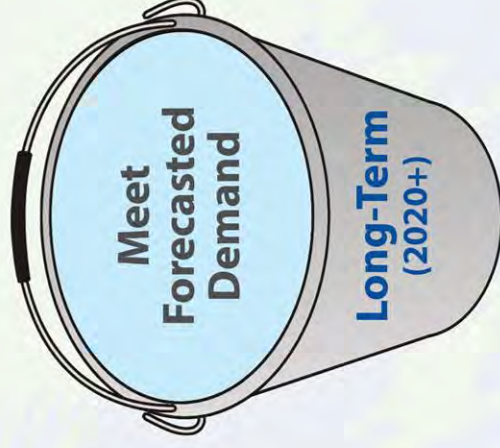
Water Supply Development by the Office of Columbia River - 2018



- » Barker Ranch: 6,436 ac-ft
- » Columbia Basin ID Piping: 35,955 ac-ft
- » Conservation Commission Irrigation Efficiency: 3,476 ac-ft
- » Donations: 14,396 ac-ft
- » KID/Red Mountain: 11,005 ac-ft
- » Kennewick General Hospital 4,000 ac-ft
- » Lake Roosevelt: 132,500 ac-ft
- » Lower Wenatchee Piping: 7,823 ac-ft
- » Manastash: 1,300 ac-ft
- » Methow Trust Water Acquisition: 79 ac-ft
- » Methow Projects: 2854 ac-ft
- » Odessa Subarea: 164,000 ac-ft
- » Peshastin ID Piping: 360 ac-ft
- » Potholes Feed Route (conveyance)
- » Pine Creek Acquisition: 900 ac-ft
- » Sullivan Lake: 14,000 ac-ft
- » Port of Walla Walla Leases: 4,761 ac-ft
- » Upper Kittitas Tributary Enhancement (conveyance)
- » Weber Siphon (conveyance)
- » Yakima City ASR: 10,000 ac-ft



- » Cle Elum Pool Raise: 14,600 ac-ft
- » Columbia Basin ID Piping: 5000 ac-ft
- » Kachess Drought Relief Pumping Plant: 200,000 ac-ft
- » East Low Canal Widening: (conveyance)
- » Icicle Creek Water Management Strategy Projects: 20,000+ ac-ft
- » Kennewick ASR: 318+ ac-ft
- » Pasco Basin Water Supply: TBD
- » Pasco Municipal Supply Improvements: 5,000 ac-ft
- » SVID: 7,815 ac-ft
- » White Salmon ASR: 145 ac-ft
- » Yakima Basin Enhanced Conservation: 85,000 ac-ft
- » Yakima Basin Shallow Aquifer Recharge: TBD



- » Regional Aquifer Storage and Recover: TBD
- » Conservation Commission Retiming: TBD
- » Goose Lake & Nine Mile Flat Storage: TBD
- » Horse Heaven Hills: 61,000+ ac-ft
- » Kittitas Distributed Off-Channel Small Storage: TBD
- » Lincoln CD Passive Rehydration: TBD
- » Mill Creek Storage: 2,000 to 11,000 ac-ft
- » Peshastin Pump Exchange: TBD
- » Rilette Aquifer Storage and Recovery: TBD
- » Spokane-Rathdrum ASR: 105,000 ac-ft
- » Switzler Off-Channel Storage: 44,000 ac-ft
- » Walla Walla Flow Enhancement: 25,500 to 58,500 ac-ft
- » Yakima Basin Integrated Plan Projects: 150,400+ ac-ft



**THE OFFICE OF
COLUMBIA RIVER**
Water for Families, Farms, and Fish

Looking Ahead

A holistic integrated watershed approach providing both instream and out-of-stream benefits is key to the successful development of sustainable and dependable water supplies for Eastern Washington. Using this approach, OCR has developed and delivered water for irrigators in the Odessa subarea, municipal, industrial, and interruptible uses and enhanced instream flows. With more to be done to ensure sustainable water supplies for growing communities, rural economies, and natural environment, we remain committed to continuing the aggressive pursuit of water supply solutions for the Columbia River Basin in 2019.

Near Term Goals

- Constructing Odessa Groundwater Replacement Program ELC canal infrastructure, county road bridge modifications and bringing the first delivery pumping plant on-line.
- Completing the proposed Switzler Storage EIS.
- Completing the Icicle Creek Water Resource Management Strategy PEIS and securing funding for 2019-2021 early action implementation.
- Coordinating with the Partnership and the Confederated Tribes of the Umatilla Indian Reservation for an integrated plan for the Walla Walla Basin.
- Exploring and developing ASR projects.
- Exploring hydro-pump power generation possibilities at surface and groundwater storage projects.
- Continuing Columbia Basin Project water conservation efforts under the Coordinated Conservation Plan.
- Continuing permitting efforts for Lake Roosevelt Program and Sullivan Lake Water Supply Project.

Budget Sustainability

The ability to achieve projects such as those listed above has been contingent upon an investment by our state's Legislature of \$200 million in dedicated general obligation bonds. Authorized in 2006, this stable source of funding has allowed us to implement large-scale water delivery, water conservation measures, and develop basin-wide integrated water management plans. At the end of the 2017-2019 biennium, those funds will be fully exhausted (Table 1 next page). Continued progress requires a sustainable source of long-term funding.

For the 2019-2021 biennium, Ecology is proposing bonding reauthorization in the amount of \$300 million to allow for the completion of existing projects while exploring new solutions for the water supply needs of Eastern Washington. If bonding reauthorization is not approved, OCR will begin to operate under an alternative to dedicated debt financing, known as the "pay-as-you-go" (Pay-Go) model, where funding requests are made every biennium.

Table 1: Columbia River Basin Water Supply Development (CRBWS) Funding Sources Solutions

	CRBWS Account	CRBWS Recovery Account	Other State Funding Sources	Biennia Total
<i>Prior Biennia Expenditures</i>	\$187,700,000	\$2,200,000		\$189,900,000
<i>2017 - 2019 Appropriations</i>	\$12,300,000	\$2,000,000	\$16,800,000	\$31,100,000
<i>2019 - 2021 Requested Capital Budget</i>		\$2,000,000	\$38,000,000	\$40,000,000
<i>TOTAL</i>	\$200,000,000	\$6,200,000	\$54,800,000	\$261,000,000

Without a stable funding source, long-term projects are put at risk and increase the state’s oversite and implementation costs. Large-scale water supply infrastructure projects will either need to be fast-tracked or split into multiple phases with each phase requiring individual bid and contracting needs to be successful. We continue to explore additional funding strategies including public-private partnerships and federal assistance programs.

Currently, OCR has authority under RCW 90.90.010(6) to enter into water service contracts with applicants receiving water developed under an OCR program to recover all or a portion of the project development costs (see the Lake Roosevelt Incremental Storage and Releases Program, Sullivan Lake Water Supply Project and Port of Walla Walla Lease Program sections for more detail in this report). These cost recovery fees are requested as either a one time fee or on an annual basis from users benefitting from water OCR has developed and delivered and will be reinvested in future water supply projects.

Partnership Building and Outreach

Our office remains committed to public outreach and stakeholder engagement, who are crucial to our water development success. Quarterly, OCR convenes meetings of the Columbia River Policy Advisory Group and Yakima River Basin Water Enhancement Project workgroup. These advisory groups comprise state, local, federal and tribal governments, irrigators, business, environmental groups, and other stakeholders. Discussions during these meetings include policy issues, project development and budget needs associated with the Integrated Plan (Yakima River Basin Water Enhancement Project Workgroup) and for developing new water supplies for Eastern Washington (Columbia River Policy Advisory Group).

Meetings are open to the public and public participation is encouraged. In addition, stakeholders are involved in subcommittee work to advance the goals of the Yakima Basin Integrated Plan and project partners provide presentations at both the Yakima and Columbia River Policy Group meetings. Through these outreach efforts, we will continue to build and nurture these partnerships and engage with communities to deliver integrated, multi-use water resource solutions.

The Implications of Treaty Talks

Ecology's Office of Columbia River has actively participated in the development of regional recommendations associated with current negotiations between Canada and the United States to update the Columbia River Treaty. The US State Department named Jill Smail as the lead negotiator in October 2017, and the first formal negotiations commenced on May 29, 2018.

Set forth in 1964, this treaty addresses navigation, flood control, hydropower, and irrigation needs. Now, a half-century later, talks are addressing the need for more coordination for treaty and non-treaty storage to increase the benefits of ecosystem improvements, fish passage and habitat restoration, and developing a strategy for dealing with climate change.

Many of our long-term goals hinge on the results of these negotiations and the federal Columbia River Power Supply System EIS as these two processes may alter operations and flows of the Columbia River into the future.

In Conclusion

Every year, our office produces a Columbia River Basin Water Supply Inventory Report to identify and review current water development efforts for Eastern Washington.

To date, we have:

- Invested in locally managed integrated water resource planning and implementation to achieve our mission: to aggressively pursue the development of water supplies for both in-stream and out-of-stream uses in the Columbia River Basin.
- Wisely leveraged the \$200 million in bond authority that the legislature provided in 2006, to fund water supply projects to meet long-standing water needs in the basin.
- Secured more than 413,845 acre-feet of new water supply to serve the growing needs of the region and provide much-needed instream flow benefits for fisheries both in the mainstem of the Columbia River and many of its tributaries.
 - That's enough water to serve:
 - 100,000 acres of farmland.
 - 80,000 homes.
 - Fish in 17 Columbia River tributaries.

Our projects are helping to resolve contentious water management challenges in the Wenatchee, Walla Walla, and White Salmon river basins to name a few. By far, the most significant and complex integrated water resource management effort that OCR leads is in the Yakima River Basin. The Yakima Basin Integrated Plan has been recognized, both nationally and internationally, as a model in collaborative water resource management, creating a path for the future in wise water resource planning and investment.

Additionally, we are exploring water resource planning, development and management approaches in the Icicle Creek and the Walla Walla River basins by collaborating on long-term visions much like the Yakima Basin Integrated Plan. We believe that taking a holistic watershed approach, seeking solutions that integrate watershed health, aquatic restoration, and out-of-stream water supply works best under a single plan.

As we continue to work towards solving eastern Washington's current water needs, we are also looking to the future. Every five years, our office publishes a Long-term Water Supply and Demand Forecast for the Columbia River Basin. This report looks forward 20 years and describes in detail how much water will be needed, where it will be needed, and who will need it and compares/contrasts these projected future needs to current water needs. To meet these long-term demands we must continue exploring technology and new tools, such as aquifer storage and recovery and hydropower pump storage, to ensure long-term sustainable water supplies.

Working in the dynamic world of water resources comes with its own unique set of challenges; whether it is Columbia River Treaty negotiations, long-term funding uncertainties, aging infrastructure or climate change. We will continue to build on our innovative partnerships and secure long-term funding to deliver integrated water management solutions throughout the Columbia River Basin in central and eastern Washington.



OCR's Director, Tom Tebb, at the Cle Elum Fish Passage construction site

