



Icicle Creek Water Resource Management Strategy

Public Open House
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Icicle Work Group (IWG) Background

- **Co-Conveners:** Ecology OCR and Chelan County DNR
- **Process:** Assembled Icicle Workgroup Stakeholders
- **Timeline:** Substantial progress on reaching consensus goals and initiating project evaluations since December 2012
- **Goals:** Meet instream and out-of-stream objectives in Icicle Creek Basin, provide an alternate pathway for conflict resolution other than litigation

IWG Members

- Office of Columbia River
- Chelan Co Board of Commissioners
- Conf Tribes of the Yakama Indian Nation
- WA State Dept of Fish & Wildlife
- Conf Tribes of the Colville Reservation
- WA State Dept of Ecology
- US Bureau of Reclamation
- Icicle & Peshastin Irrigation District
- USFWS – Leavenworth Fish Hatchery
- City of Leavenworth
- NOAA Fisheries
- Chelan County
- Cascade Orchard Irrigation Co
- Wild Fish Conservancy
- Icicle Creek Watershed Council
- WA Water Trust
- US Forest Service
- Trout Unlimited
- Agricultural Representative Mel Weythman
- Agricultural Representative Daryl Harnden
- City of Cashmere

Purpose

The purpose of the Icicle Creek Work Group (“Work Group”) is to develop a comprehensive Icicle Creek Water Resource Management Strategy through a collaborative process that will achieve diverse benefits defined by all of the Guiding Principles below. The Work Group will use best available science to identify and support water management solutions that lead to implementation of high-priority water resource projects within the Icicle Creek drainage.

ICICLE STRATEGY

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- ICICLE STRATEGY**
- i. Conservation
 - ii. Groundwater Augmentation
 - iii. Pump Exchange
 - iv. Modification of Existing Storage
 - v. New Storage
 - vi. Water Markets
 - vii. Fish Passage and Screening
 - viii. Habitat Improvement
 - ix. Tribal Fishery Enhancement

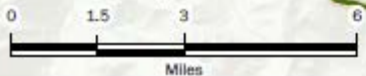
Icicle Work Group Co-Conveners



Chelan County
Department of
Natural Resources



Ecology Office
of Columbia River



Guiding Principles

- **Improve Streamflow**
 - Dry Year Goal = 60 cfs
 - Average Year Goal = 100 to 250 cfs
- **Improve Sustainability of the Leavenworth National Fish Hatchery**
 - Meet fish production requirements
 - Fulfill federally protected Tribal fishing rights
 - Protect and conserve water rights
 - Maximize fish health
 - Minimize fish barriers
- **Protect Tribal and Non-Tribal Harvest**

Guiding Principles continued

- **Meet Domestic Water Demand**
 - Increase year-round supply by 3-6 cfs (peak) meets demand through 2050
- **Improve Agricultural Reliability**
 - Improve management of existing lake storage
 - Current *interruptible* water use (2-4 cfs) made *firm*
- **Improve and Protect Icicle Creek Habitat**
 - Stream habitat protection and restoration
 - Improve fish passage
- **Comply with State and Federal Laws and Wilderness Acts**
 - Environmental Review and Permitting
 - Update fish screens on diversions

Projects

The Icicle Work Group evaluated many alternatives and developed a ***Base Package of Projects*** that has the ability to meet *all* of the guiding principles. The Work Group is evaluating project feasibility and conducting environmental review on these projects.

If a project is determined to be fatally flawed, it must be replaced or modified to ensure all guiding principles are met.

SEPA 101

- State Environmental Policy Act
- Project vs. non-project (programmatic)
- Determination of significance
- Scoping for Programmatic Environmental Impact Statement (PEIS)

Icicle Strategy SEPA

- Proposal: Guiding Principles and “base package” (see Section 11, page 5)
- Scoping: What should be addressed in the PEIS?
 - ✓ Alternatives
 - ✓ Mitigation measures
 - ✓ Impacts
 - ✓ Approvals

Timeline

- **May 11, 2016** comments due on the scope of the PEIS
- June 2016: Initiate PEIS development
- Summer 2017: Publish PEIS and begin *public comment period*
- Fall 2017: Issue final PEIS and begin project-level environmental review

Alpine Lakes Optimization and Automation

Improve management and releases of stored water based on changing conditions to meet needs.

Project Benefit

- Increased stream flow for fish
- Improved reliability and operation of stored water for agriculture and Leavenworth National Fish Hatchery

Irrigation Efficiencies

Icicle Peshastin Irrigation District

Cascade Orchards Irrigation Company

Explore options to improve irrigation delivery and on-farm efficiencies. Projects may include canal piping or lining, point of diversion change, and on-farm efficiency upgrades.

Project Benefit

- Increased stream flow for fish
- Improved irrigation system operation and reliability

Domestic Conservation

Implement municipal and rural water efficiency projects such as pipe replacements, meter installation and water use conservation.

Project Benefit

- Improve domestic supply

Leavenworth National Fish Hatchery

Conservation and Water Quality Improvements

Implement projects at the LNFH that would offset some of the surface water use and improve access to groundwater. Projects may include a Water Reuse System, Water Effluent Pump Back, and Wellfield Enhancements.

Project Benefit

- Increased Stream Flow for Fish
- Improved access to reliable water for hatchery operations

Eightmile Lake Restoration

Rebuild the dam to restore usable storage to the historic and permitted high water mark.

Project Benefit

- Increased instream flow for fish
- Meet domestic water needs for City of Leavenworth and rural areas.
- Improved operation of infrastructure and storage reliability.

Habitat Enhancement and Protection

Identify and implement stream restoration and protection projects such as riparian plantings, engineered log jams and conservation easements.

Project Benefit

- Improved stream habitat
- Improved ecosystem health

Fish Screen and Fish Passage Improvements

Upgrade fish screens on diversions to meet current standards. Improve fish passage by assessing and removing barriers.

Project Benefit

- Improved fish access to habitat
- Decreased fish mortality
- Compliance with laws

Tribal Fisheries Protection

Ensure that projects and actions do not have negative effects on the Tribal fishery in Icicle Creek. Monitor fishery effectiveness and implement actions to improve fishery.

Project Benefit

- Protects Tribal Treaty and federally protected harvest rights at all times.

Water Markets and Instream Flow Rule Amendment

Create a voluntary water market for irrigation water users. Modify instream flow rule's interim domestic reservation to final level.

Project Benefit

- Interruptible water users made firm
- Meet domestic water needs through 2050

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Questions?

Icicle Working Group Integrated Base Package

Draft 11/19/2015

Total Project Benefit ≈77 cfs & 26,800 acre-feet, Total Investment including 25% contingency = \$64.2 M, Cost/acre-foot = \$2,400 / acre-foot

This Integrated Package is characterized by a project list meeting all Icicle Subbasin Guiding Principles with substantive flow benefit in the late summer/early fall in the historic channel. Key features include retaining the existing hatchery facilities with aggressive multiple-source augmentation and conservation measures, modernization of the Alpine Lakes, restoration of Eight-Mile Lake, and habitat/screening projects. IPID Pump Exchange at Dryden (50 cfs) could increase benefits by up to 25 cfs in Icicle Creek, total cost would increase to about \$83 M (\$2,800 / acre-foot).

Project Name (Guiding Principle Met)	Description	Cost	Integrated Plan Benefits			
Alpine Lakes Reservoir Optimization, Modernization, and Automation (FLOW) (HAB)	Automate and optimize releases of the 6 Alpine Lakes (flow benefit estimated over 92 days), but can be adapted to shorter duration / higher peak flows (and winter flow benefit). Flow benefit to instream and out-of-stream uses in normal years, to IPID in drought years. INTERRUPTIBLE, REACH BENEFITS BELOW LAKES TO PACIFIC OCEAN	\$680K	30	cfs	5,465	ac-ft
IPID Irrigation Efficiencies (FLOW) (HAB)	Update Irrigation Comprehensive Plans and fund efficiency projects, assumes savings of 3,000 ac-ft (about 10%) at an average cost of \$2,500/ac-ft. Flow benefit is non-consumptive, reach specific, and during the irrigation season. GUARANTEED, REACH BENEFITS FROM IPID DIVERSION TO WENATCHEE RIVER	\$7.5 M	10.1	cfs	3,000	ac-ft
Cascade Orchards Irrigation Efficiencies (FLOW) (HAB)	Update Irrigation Comprehensive Plans and fund efficiency projects, assumes savings of 1,000 ac-ft (about 25%) at an average cost of \$2,500/ac-ft. Flow benefit is non-consumptive, reach specific, and during the irrigation season. GUARANTEED, REACH BENEFITS FROM IPID DIVERSION TO WENATCHEE RIVER	\$2.5 M	3.4	cfs	1,000	ac-ft
Domestic Conservation Efficiencies (DOM)	Fund domestic conservation for City of Leavenworth and Chelan County consisting of metering, pipe replacement, and rural conservation designed to achieve domestic savings at \$2,500/ac-ft. GUARANTEED	\$2 M	0.5	cfs	400	ac-ft
Leavenworth National Fish Hatchery Conservation, Water Quality Improvements (FLOW) (HAB) (LNFH) (LAWS)	Combination of on-site reuse, effluent pump-back, and wellfield enhancements. Flow benefit is nonconsumptive and reach-specific. FIRM, REACH BENEFITS IN HISTORIC CHANNEL	\$20 M	20	cfs	14,454	ac-ft
Eight-Mile Lake Reservoir Restoration Project (FLOW) (HAB) (DOM) (AG)	Restore Eight-Mile Lake from existing volume of 1,375 ac-ft to normal permitted pool volume of 2,500 ac-ft, 60-day flow benefit (and winter flow benefit). Flow benefit can be adapted to shorter duration / higher peak flows. INTERRUPTIBLE/GUARANTEED, REACH BENEFITS FROM EIGHT-MILE LAKE TO WENATCHEE RIVER	\$1.6 M	9.5	cfs	1,125	ac-ft
Water Markets (AG)	Create an Icicle Water Bank, seed with an initial acquisition of 1,000 ac-ft at \$3,000 / ac-ft for interruptible ag users during times of shortage and instream flows. INTERRUPTIBLE/GUARANTEED, IN ICICLE AND/OR WENATCHEE RIVER	\$3 M	3.4	cfs	1,000	ac-ft
Habitat improvements in Icicle Creek, land acquisition (HAB)	Riparian plantings, engineered log jams, conservation easements, and other habitat projects. Land acquisition coordinated with the Upper Wenatchee Community Lands Plan and opportunities identified in the Icicle Basin.	\$2.5 M	2.7	miles	2000	acres
Rehabilitate Leavenworth Hatchery Intake, Operational Improvements at Structure 2, Icicle Creek Passage, Tribal Fisheries Improvements (HAB) (TRIBAL)	Replace delapidated sections of intake piping, improve passage in Icicle Creek including to Upper Icicle Creek, reoperation of Structure 2 and Hatchery Channel, increased tribal fishing access/amenities.	\$6.5 M	Improve fish passage and hatchery operation			
LNFH / COIC Screening Improvements, IPID Screening, City of Leavenworth (HAB) (LAWS)	Improve existing screens to current standards. IPID/City of Leavenworth screening project to be completed in advance of Boulder Field implementation.	\$5 M	Improve fish passage and hatchery operation			
Instream Flow Rule Amendment (DOM)	Modify WAC 173-545 Icicle Reserve from interim level of 0.1 cfs to final level of 0.5 cfs	\$50 K	0.4	cfs	400	ac-ft
Guiding Principles	How Does This Integrated Plan Option Meet the Guiding Principles?					
Improve Instream Flow (FLOW)	100 cfs average year goal met (≈140 cfs), 60 cfs drought year goal met (≈67 cfs).					
Sustainable Leavenworth National Fish Hatchery (LNFH)	Goal of source redundancy, restored capacity, fish rearing, water quality, and passage met.					
Protect Tribal Treaty and Non-Tribal Harvest (TRIBAL)	Instream flow improvement balanced by preservation of fishery, with adaptive management strategy in place, amenity and access increases.					
Improve Domestic Supply (DOM)	Peak domestic need of 4,100 ac-ft met (≈10K available), if storage releases mitigating consumptive use when instream flows are not met (credits for natural flow availability and return flow).					
Improve Agricultural Reliability (AG)	Restoration goal of about 225 ac-ft (1,600 ac-ft total for IPID), 1,000 ac-ft for agricultural interruptibles met.					
Enhance Icicle Creek Habitat/Passage/Screens (HAB)	Goal of additional habitat improvement met with adaptive management.					
Comply with State and Federal Law, Wilderness Acts (LAWS)	Goal met through project check requirement on all permits and environmental review.					
Long-term projects to achieve 250 cfs could include the IPID Dryden Pump Exchange, conservation and markets, Snow Creek diversion project, Upper Klonauqua storage, etc. Flow benefits based on storage can be shaped for further flow benefits based on seasonal releases. For example, if IPID Pump Exchange and Eight-Mile releases could be combined to increase drought year low-month benefit to approximately 102 cfs.						