



Icicle Creek Water Resource Management Strategy

Public Hearing, Leavenworth
June 27, 2018

Mike Kaputa

Director

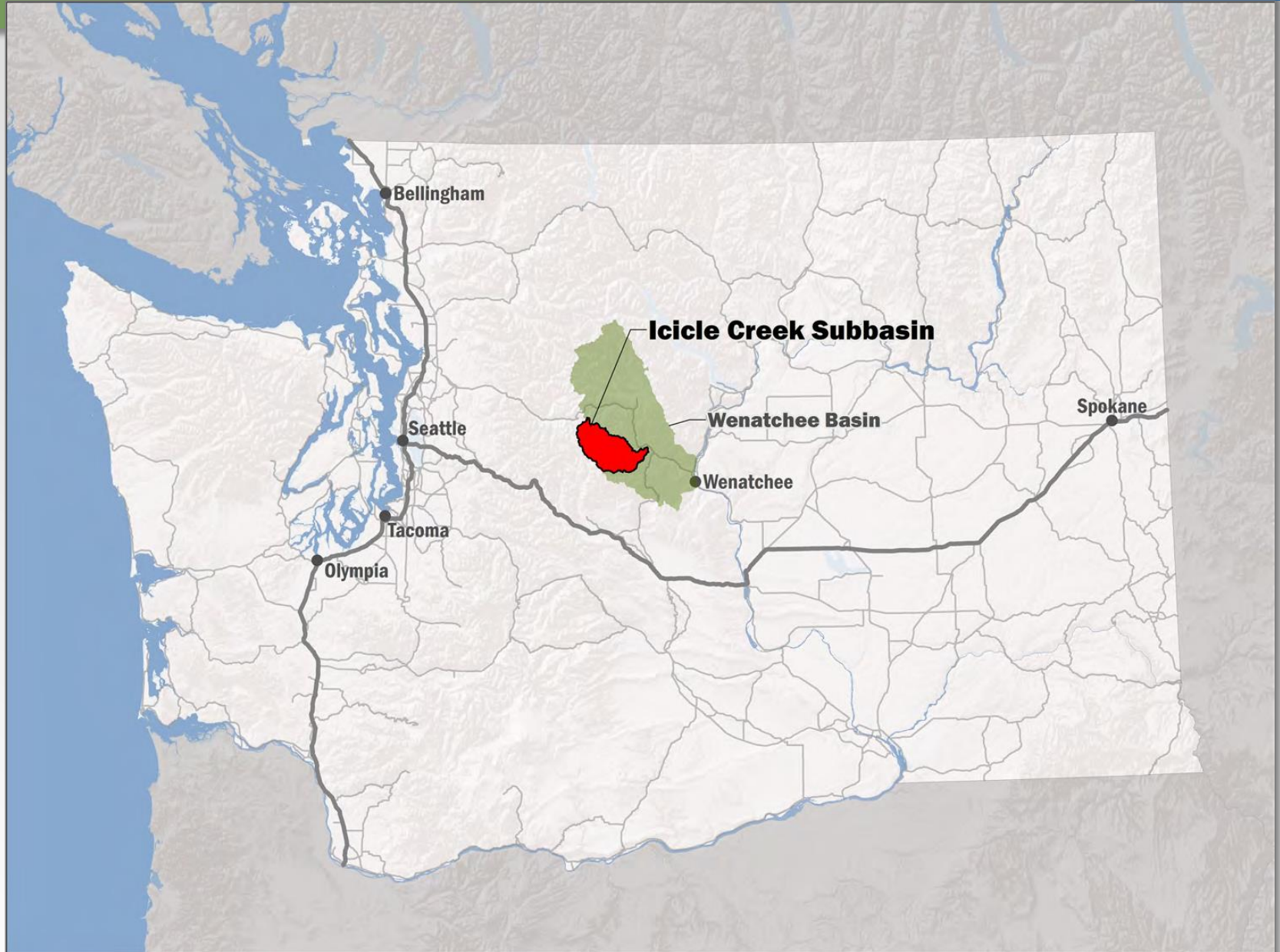
Chelan County Natural Resources

Melissa Downes

Office of Columbia River

WA Dept. of Ecology

Icicle Creek is a Tributary in WRIA 45



Background

- **Co-Lead Agencies:** Ecology OCR and Chelan County DNR
- **Process:** Assembled Icicle Workgroup (IWG) Stakeholders
- **Timeline:**
 - **2012 to 2015:** Guiding Principles adopted, studies completed, and alternative projects considered
 - **2015 to 2016:** Icicle Strategy (base package) endorsed by IWG and SEPA scoping
 - **2016 to 2018:** Programmatic Environmental Impact Statement and feasibility studies ongoing
 - **2018 to 2022:** Individual project environmental review checks, permitting, design and implementation
- **Goals:** Meet instream and out-of-stream objectives in Icicle Creek Basin, provide an alternate pathway for conflict resolution other than litigation (3 separate lawsuits were active in 2012)

IWG Members

- Ecology 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
- Icicle & Peshastin Irrigation District
- USFWS – Leavenworth Fish Hatchery
- City of Leavenworth
- NOAA Fisheries
- Cascade Orchard Irrigation Co
- Icicle Creek Watershed Council
- WA Water Trust
- US Forest Service
- Trout Unlimited
- Agricultural Representatives
- City of Cashmere
- Cascadia Conservation District
- US Bureau of Reclamation

Guiding Principles for the Icicle Strategy

ICICLE STRATEGY

The purpose of the Icicle Creek Work Group ("Work Group") is to develop a comprehensive Icicle 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**
- 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



DEPARTMENT OF
ECOLOGY
State of Washington
Ecology Office
of Columbia River

Guiding Principles

■ Improve Streamflow

- Dry Year Goal = 60 cfs (current conditions <20 cfs)
- Average Year Goal = 100 to 250 cfs (current is 60 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

Guiding Principles

- **Protect Tribal Treaty and Federally-Protected fishing/ harvest rights**
- **Meet Domestic Water Demand**
 - Increase year-round supply by 5 cfs (peak) (thru 2050)
- **Improve Agricultural Reliability**
 - Improve management of existing lake storage
 - Current interruptible water use (2 - 4 cfs depending on drought severity) made firm

Guiding Principles

- **Improve and Protect Icicle Creek Habitat**
 - Stream habitat enhancement and protection
 - Improve fish passage
 - Fish screen upgrades
- **Protect Non-Treaty Harvest**
- **Comply with State and Federal Laws and Wilderness Acts**

Icicle Strategy Overview

Who Benefits? Who Gets The Water?

(Ranges provided because different alternatives analyzed in PEIS have different quantities)

a.



**71 to 195 cfs of increased flow
benefits fish**

b.



**3.6 cfs of increased flow improves
agricultural reliability**

c.



**5 to 6.5 cfs of increased flow extends
domestic growth locally**

d.

All other guiding principles met for each alternative

What Does Flow In Icicle Creek Look Like?



Low flow in late 2001 was about 20 cfs (and 16.4 cfs in 2015)

Icicle Creek Looking Upstream of End of LNFH



148 cfs
August 30, 2016



85 cfs
September 15, 2016

Guiding Principle is 100 cfs in non-drought years and 60 cfs in drought years

SEPA - Process

- **Pre-Scoping**
 - Co-Lead Agency Memorandum of Agreement
 - Identified cooperating agencies
 - NEPA integration strategy
 - Stakeholder meetings
 - Identified potential permits
- **Completed Expanded Checklist**
 - Assembled existing environmental documents, outreach materials,
 - Issued Determination of Significance
- **Public Notice / Open House / Comment Period**
- **Evaluated Comments**
- **Created 5 Alternatives**
- **Began Draft EIS Process**

SEPA Process Overview

Icicle Strategy SEPA

- **Proposal: Guiding Principles and “Base Package”**
- **Draft EIS: What is Included?**
 - Existing environment
 - Alternatives and no-action
 - Impacts
 - Mitigation measures
 - Permitting framework
- **Will Project Environmental Review Occur?**
 - Yes, if NEPA required or new substantial environmental impacts are found.
 - No, just the Programmatic EIS if no new substantial impacts.
 - Project-by-Project determination

Overview of Potential Projects

Projects	Proposed Alternatives					
	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Conservation						
IPID Irrigation Efficiencies	○	●	●	●	●	
COIC Irrigation Efficiencies (Piping)	●	●	●	●	●	●
Domestic Conservation Efficiencies	○	●	●	●	●	●
LNFH Conservation and Water Quality Improvements	●	●	●	●	●	●
Pump Exchange						
IPID Dryden Pump Exchange	○	○	●	●		
Full IPID Pump Station						●
COIC Irrigation Efficiencies (Pump Exchange)	●	●	●	●	●	●
Modification/Restoration of Existing Storage						
Alpine Lakes Reservoir Optimization, Modernization and Automation	○	●			●	●
Eightmile Lake Storage Restoration	○	●	●	○	●	●
New Storage						
Eightmile Lake Storage Enhancement					●	
Upper Klonauqua Lake Storage Enhancement					●	
Upper and Lower Snow Lakes Storage Enhancement					●	
Habitat/Fisheries Improvements						
Tribal Fishery Protection	○	●	●	●	●	●
Habitat Protection and Enhancement	○	●	●	●	●	●
Fish Passage	●	●	●	●	●	●
Fish Screening	●	●	●	●	●	●
Legislative/Administrative Tools						
Water Markets		●	●	●	●	●
Instream Flow Rule Amendment	○	●	●	●	●	●
OCPI legislative fix from instream flow impacts				●		

○ Represents projects that might proceed if funding becomes available. However, under the No-action Alternative, project beneficiaries may be different and project timelines are unknown.

● Represents projects that are likely to occur as described, but could be replaced by another project that fulfills the same guiding principles if a design, funding, or permitting fatal flaw is identified.

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COIC Irrigation Efficiencies (Piping)	●	●	●	●	●	●
Domestic Conservation Efficiencies	○	●	●	●	●	●
LNFH Conservation and Water Quality Improvements	●	●	●	●	●	●
Pump Exchange						
IPID Dryden Pump Exchange	○	○	●	●		
Full IPID Pump Station						●
COIC Irrigation Efficiencies (Pump Exchange)	●	●	●	●	●	●
Modification/Restoration of Existing Storage						
Alpine Lakes Reservoir Optimization, Modernization and Automation	○	●			●	●
Eightmile Lake Storage Restoration	○	●	●	○	●	●
New Storage						
Eightmile Lake Storage Enhancement					●	
Upper Klonauqua Lake Storage Enhancement					●	
Upper and Lower Snow Lakes Storage Enhancement					●	
Habitat/Fisheries Improvements						
Tribal Fishery Protection	○	●	●	●	●	●
Habitat Protection and Enhancement	○	●	●	●	●	●
Fish Passage	●	●	●	●	●	●
Fish Screening	●	●	●	●	●	●
Legislative/Administrative Tools						
Water Markets		●	●	●	●	●
Instream Flow Rule Amendment	○	●	●	●	●	●
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Conservation

The practice of reducing water lost to inefficiencies, like leaks in canals or water reuse.



■ IPID Irrigation Efficiencies

- Piping and Lining
- Up to 10 cfs of savings anticipated

■ COIC Irrigation Efficiencies (piping)

- Piping entire system
- 0.5 cfs of savings anticipated

■ Domestic Conservation Efficiencies

- Leak detection, conservation metering, and incentive programs
- 0.5 cfs of savings anticipated

■ LNFH Conservation and Water Quality Improvements

- Circular Tanks, Groundwater Augmentation, Water Reuse
- 20 cfs of savings anticipated

Pump Exchanges

Typically involves replacing an upstream gravity diversion with a downstream pump station.

- **IPID Dryden Pump Exchange**

- Removes IPID diversion on Peshastin Creek and reduces diversion on Icicle Creek
- Estimated flow benefit in Icicle Creek 25 cfs, plus 25 cfs in Peshastin Creek

- **IPID Full Piping and Pump Exchange**

- Completely removes IPID diversion on Icicle Creek
- Estimated savings in Icicle Creek is up to 117 cfs

- **COIC Pump Exchange**

- Replaces current diversion with one near the confluence of Icicle Creek and the Wenatchee River
- Estimated Icicle Creek savings is up to 11.9 cfs

Modification / Restoration of Existing Storage

Involves changing the management/timing of existing reservoirs or restoring previous storage volumes.



■ Alpine Lakes Reservoir Optimization, Modernization, and Automation

- Modernize outlet structures on Alpine Lake dams
- New solar power and radio controls
- Release stored water to meet instream flow goals

■ Eightmile Lake Storage Restoration

- Repair or replace Eightmile Lake dam to restore historical storage volumes and update infrastructure to meet dam safety requirements
- Use additional water to meet instream flow and domestic goals
- Restoration to historic high water mark (3.5') and 22.4' drawdown via siphon

Eightmile Lake Emergency

▪ Jack Creek Fire

- Created hazardous and potentially life-threatening conditions
- Dam safety rating changed from low to high
- Fire resulted in change to forest hydrology

▪ Preventative Actions

- Debris cleared
- Additional spillway modifications
- Attempts to remove obstructions from the outlet pipe
- Beginning design for longer term repairs to the dam
- Design and permitting for permanent improvements are underway

▪ Coordination

- IPID, USFS, Ecology's Dam Safety Office, National Weather Service, Emergency Management and others all coordinating response
- Public meetings held and information made available

New Storage

Building new reservoirs or expanding existing storage to increase water supply within the Icicle Creek subbasin.

- **Eightmile Lake Storage Enhancement**
 - Increase storage volume by 11 feet over historic high water mark
 - Drawdown of 25 feet via siphon
 - Increase storage by 1,000 acre-feet

- **Upper Klonaqua Lake Storage Enhancement**
 - Tunneling, pumping or siphoning water from Upper Klonaqua Lake to Lower Klonaqua Lake
 - Drawdown of 50 feet via siphon
 - Increases storage potential by 2,500 acre-feet

- **Upper and Lower Snow Lake Storage Enhancement**
 - Increasing dam heights by 5 feet and drawdown of 3 feet
 - Increases storage potential by 1,079 acre-feet

Habitat / Fisheries Improvements

Non-flow projects aimed at improving fish habitat and protecting fish harvest within the Icicle Creek subbasin.



■ Tribal Fishery Protection

- Adaptive management strategy to monitor harvest conditions and determine whether unintended or unforeseen adverse impacts occur

■ Habitat Protection and Enhancement

- Improve instream habitat and acquire riparian and forest lands to improve ecosystem function

■ Fish Passage

- Improve passage at known barriers such as Structure 2 and the Boulder Field

■ Fish Screening

- Screen all large diversions on Icicle Creek with compliant fish screens

Legislative / Administrative Tools

Tools that rely on administrative rules changes, legislation, or markets to meet water demand.

- **Water Markets**

- Existing senior water rights are retired into Ecology trust water program, and then used to mitigate for interruptible irrigation uses
- Up to 1,000 acre-feet for water markets

- **Instream Flow Rule Amendment**

- Move 0.4 cfs from the Wenatchee reserve to the Icicle reserve
- Requires instream and habitat enhancement and a formal rule amendment

- **Legislative fix from instream flow impacts**

- This would allow for out-of-time impacts to the instream flow rule if in-kind, in-place, in-time mitigation cannot be found for domestic use

What PEIS Alternatives Are Evaluated?

- **No Action**
- **Alternative 1 (Base Package)**
 - **IWG endorsed**
 - **Includes a balance of conservation and storage modification and restoration projects, plus habitat/screening/passage improvements.**
- **Other alternatives combine projects to focus on different local values:**
 - Alternative 2, 5 – Pump exchange focused alternatives
 - Alternative 3 – A conservation focus with no impacts to the Wilderness Area
 - Alternative 4 – Storage-focused alternative

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COIC Irrigation Efficiencies (Piping)	●	●	●	●	●	●
Domestic Conservation Efficiencies	○	●	●	●	●	●
LNFH Conservation and Water Quality Improvements	●	●	●	●	●	●
Pump Exchange						
IPID Dryden Pump Exchange	○	○	●	●		
Full IPID Pump Station						●
COIC Irrigation Efficiencies (Pump Exchange)	●	●	●	●	●	●
Modification/Restoration of Existing Storage						
Alpine Lakes Reservoir Optimization, Modernization and Automation	○	●			●	●
Eightmile Lake Storage Restoration	○	●	●	○	●	●
New Storage						
Eightmile Lake Storage Enhancement					●	
Upper Klonauqua Lake Storage Enhancement					●	
Upper and Lower Snow Lakes Storage Enhancement					●	
Habitat/Fisheries Improvements						
Tribal Fishery Protection	○	●	●	●	●	●
Habitat Protection and Enhancement	○	●	●	●	●	●
Fish Passage	●	●	●	●	●	●
Fish Screening	●	●	●	●	●	●
Legislative/Administrative Tools						
Water Markets		●	●	●	●	●
Instream Flow Rule Amendment	○	●	●	●	●	●
OCPI legislative fix from instream flow impacts				●		

○ Represents projects that might proceed if funding becomes available. However, under the No-action Alternative, project beneficiaries may be different and project timelines are unknown.

● Represents projects that are likely to occur as described, but could be replaced by another project that fulfills the same guiding principles if a design, funding, or permitting fatal flaw is identified.

Alternative 1

12 elements that work in concert to achieve all of the Guiding Principles

- *Alpine Lakes Reservoirs Optimization, Modernization, and Automation*
- IPID Irrigation Efficiencies
- COIC Irrigation Efficiencies and Pump Exchange
- Domestic Conservation Efficiencies
- *Eightmile Lake Storage Restoration*
- Tribal and Non-Tribal Fisheries
- Habitat Protection and Enhancement
- Instream Flow Rule Amendment
- LNFH Conservation and Water Quality Improvements
- Fish Passage
- Fish Screening
- Water Markets

\$81.7 million

**89 cfs and 31,958 acre-feet of total water benefit (instream and out-of-stream)
88 cfs and 28,458 acre-feet instream flow benefit¹.**

¹ This estimate of instream flow benefit includes reach benefit for out-of-stream uses that would occur downstream.

Alternative 2

12 elements that work in concert to achieve all of the Guiding Principles

- *IPID Dryden Pump Exchange*
- IPID Irrigation Efficiencies
- COIC Irrigation Efficiencies and Pump Exchange
- Domestic Conservation Efficiencies
- *Eightmile Lake Storage Restoration*
- Tribal and Non-Tribal Fisheries
- Habitat Protection and Enhancement
- Instream Flow Rule Amendment
- LNFH Conservation and Water Quality Improvements
- Fish Passage
- Fish Screening
- Water Markets

\$91 million

84 cfs and 27,978 acre-feet of total water benefit (instream and out-of-stream)

83 cfs and 24,478 acre-feet instream flow benefit¹

¹ This estimate of instream flow benefit includes reach benefit for out-of-stream uses that would occur downstream.

Alternative 3

12 elements that work in concert to achieve all of the Guiding Principles

- *IPID Dryden Pump Exchange*
- IPID Irrigation Efficiencies
- COIC Irrigation Efficiencies and Pump Exchange
- Domestic Conservation Efficiencies
- Tribal and Non-Tribal Fisheries
- Habitat Protection and Enhancement
- Instream Flow Rule Amendment
- LNFH Conservation and Water Quality Improvements
- Fish Passage
- Fish Screening
- Water Markets
- *OCPI Legislative Fix for Instream Flow Impacts*

\$89 million

71 cfs and 24,379 acre-feet of total water benefit (instream and out-of-stream)

Alternative 4

14 elements that work in concert to achieve all of the Guiding Principles

- *Alpine Lakes Reservoirs Optimization, Modernization, and Automation*
- *Eightmile Lake Storage Enhancement Upper*
- *Klonaqua Lake Storage Enhancement*
- *Upper and Lower Snow Lakes Storage Enhancement*
- IPID Irrigation Efficiencies
- COIC Irrigation Efficiencies and Pump Exchange
- Domestic Conservation Efficiencies
- Tribal Fisheries Protection
- Habitat Protection and Enhancement
- Instream Flow Rule Amendment
- Leavenworth National Fish Hatchery Conservation and Water Quality Improvements
- Fish Passage
- Fish Screening
- Water Markets

\$96 million

132 cfs and 35,385 acre-feet of total water benefit (instream and out-of-stream)

131 cfs and 34,585 acre-feet instream flow benefit¹

¹*This estimate of instream flow benefit includes reach benefit for out-of-stream uses that would occur downstream.*

Alternative 5

12 elements that work in concert to achieve all of the Guiding Principles

- *Alpine Lakes Reservoirs Optimization, Modernization, and Automation*
- *IPID Full Piping and Pump Exchange*
- COIC Irrigation Efficiencies and Pump Exchange
- Domestic Conservation Efficiencies
- *Eightmile Lake Storage Restoration*
- Tribal and Non-Tribal Fisheries
- Habitat Protection and Enhancement
- Instream Flow Rule Amendment
- LNFH Conservation and Water Quality Improvements
- Fish Passage
- Fish Screening
- Water Markets

\$174.4 million

196 cfs and 58,958 acre-feet of total water benefit (instream and out-of-stream)

195 cfs and 55,458 acre-feet instream flow benefit¹

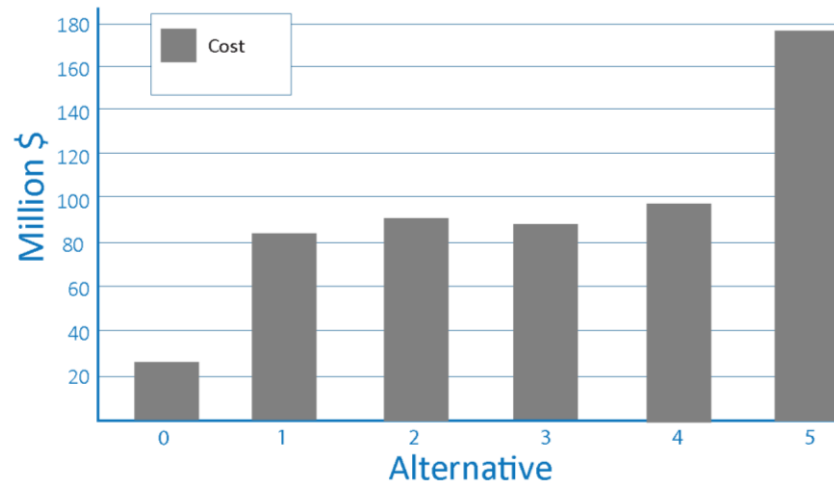
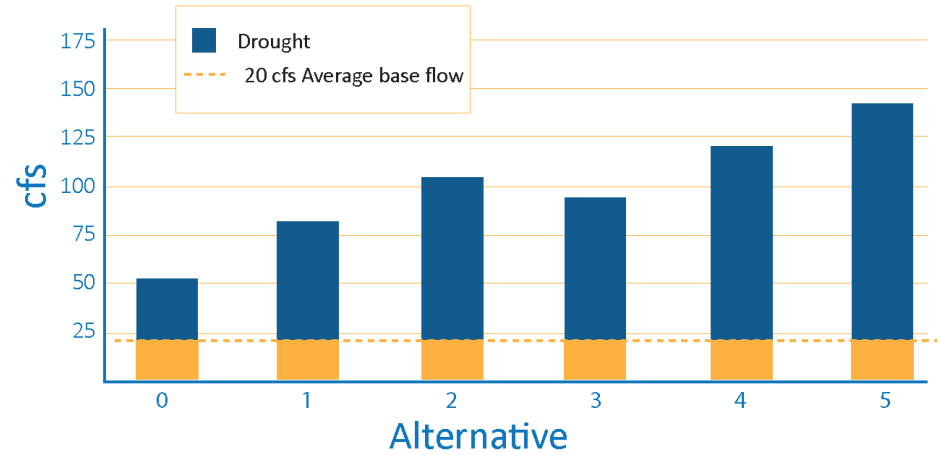
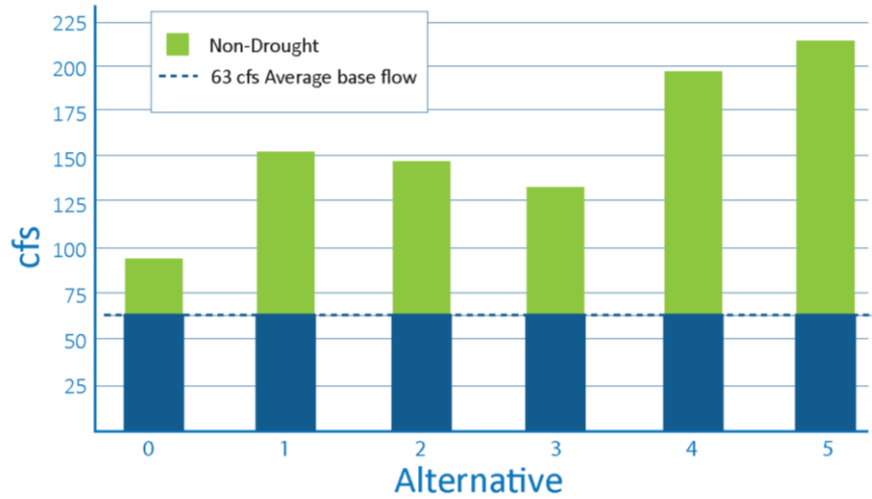
¹ This estimate of instream flow benefit includes reach benefit for out-of-stream uses that would occur downstream.

Do the Alternatives Meet Guiding Principles with Climate Change?

- All Alternatives meet the Guiding Principles today.
- Most Alternatives Meet the Guiding Principles in 2080.

	Present	Low Change	Medium Change	High Change
No-Action	No	No	No	No
Alternative 1	Yes	Yes	Yes	Yes
Alternative 2	Yes	Yes	Yes	Yes
Alternative 3	Yes	No	No	No
Alternative 4	Yes	Yes	Yes	Yes
Alternative 5	Yes	Yes	Yes	Yes

Instream Flow Benefit and Cost per Alternative



What PEIS Alternatives Are Not Evaluated?

- **Removing Leavenworth National Fish Hatchery**
- **Decommissioning existing dams**
- **Selling District water rights**

SEPA Process Overview

Timeline

- **May 31, 2018: Draft PEIS available for public comment**
- **May 31 – July 30, 2018: Draft PEIS Public Comment Period**
- **Summer-Fall 2018: Meeting with Icicle Workgroup to get advice on Preferred Alternative**
- **Fall 2018: Selection of a Preferred Alternative**
- **Winter 2018: Goal to issue Final PEIS**
- **Winter 2018 / Spring 2019: Begin implementation of Preferred Alternative**
 - Supplemental environmental review (and NEPA if necessary), permitting, design, construction

How to comment?

Submit written comments to:

Mike Kaputa

Director, Natural Resource Department

Chelan County

411 Washington Street, Suite 201

Wenatchee, WA 98801

(509) 670-6935 / nr.iciclesepa@co.chelan.wa.us

Oral comments will be accepted at a public hearing which is being held at Leavenworth Festhalle, 1001 Front Street, Leavenworth, Washington on June 27, 2018, from 4:00 pm to 8:00 pm.

Comments on this document must be postmarked **July 30, 2018**, to ensure inclusion into the Final PEIS. Before including your name, address, phone number, email address or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time.



Questions?

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Director

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Office of Columbia River,
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