

Cedar River Instream Flow Management



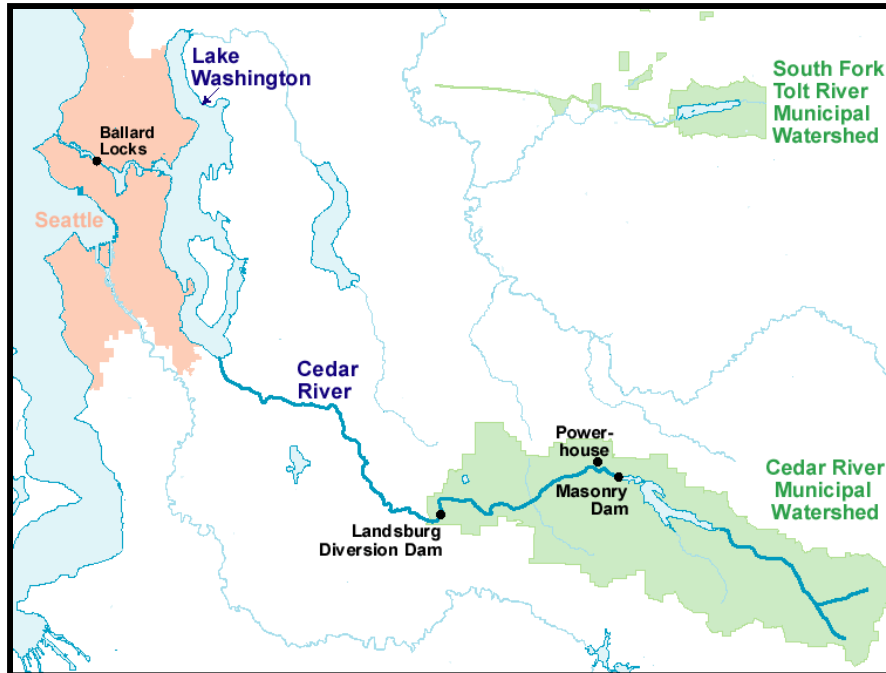
Seattle
 Public
Utilities

Geographic Context



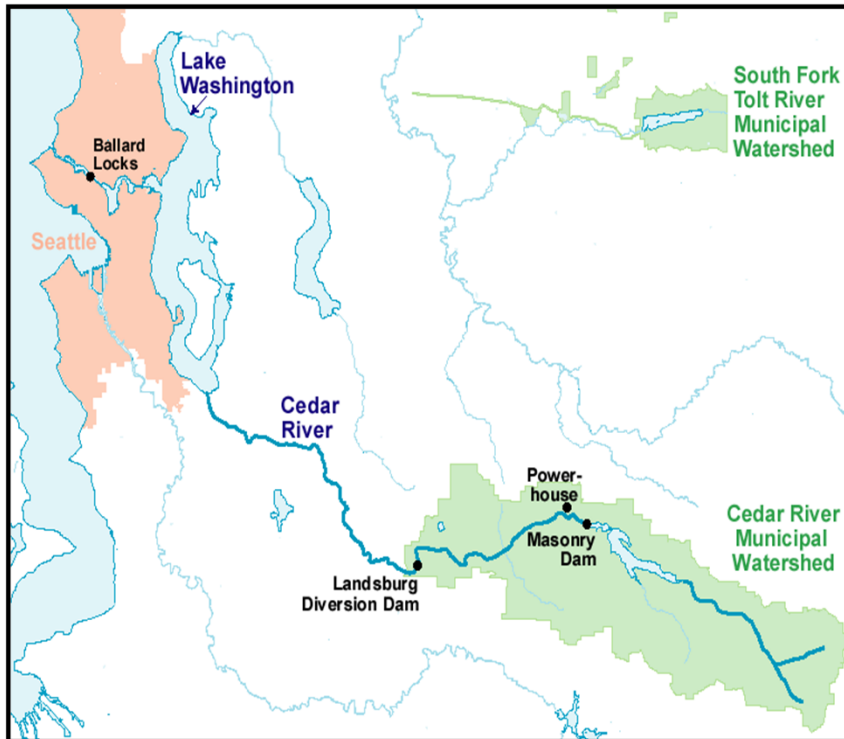
- ❑ Cedar is **largest sub-basin** in the Lake Washington Watershed
- ❑ Only portion connected to the **crest of the Cascades**
- ❑ Relatively **low elevation** basin; no glaciers

Geographic Context



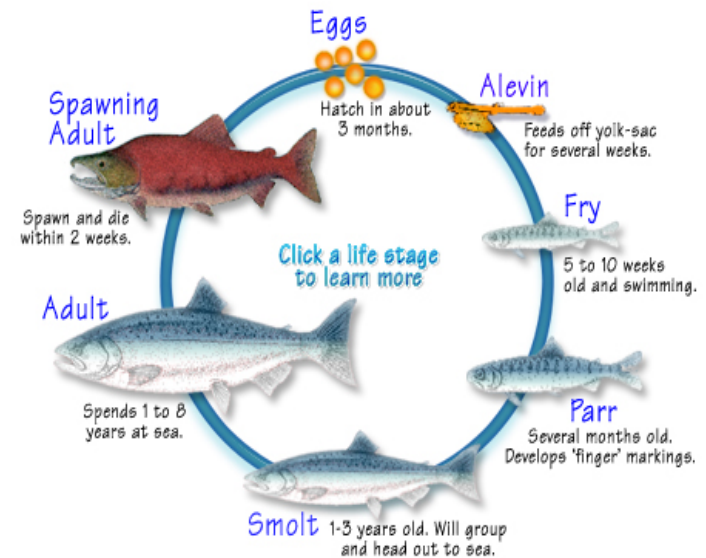
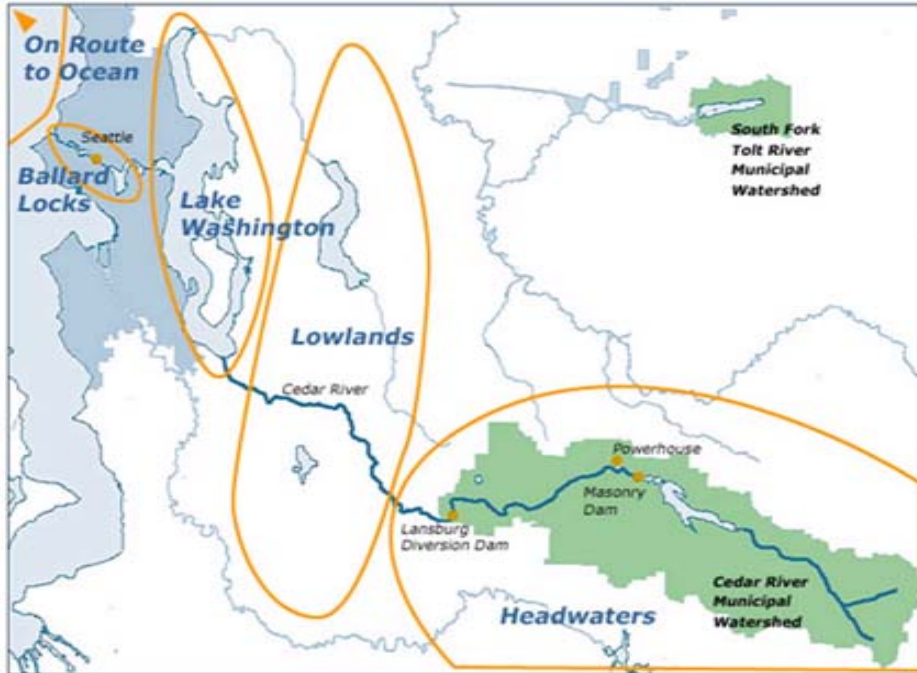
- ❑ Multiple objectives for river and reservoir mgmt. including: **water supply, instream resources, flood protection, hydropower**
- ❑ Storage reservoir receives run-off from the **upper 43% of the basin**
- ❑ Approx. **20% of average annual flow diverted** at the Landsburg Diversion Dam

Geographic Context



- ❑ Lower Cedar flows **35.5 miles** from Masonry Dam to Lake Washington
- ❑ Contributes approx. **50% of the total** annual flow to Lake Washington
- ❑ Migratory fish **access up to historic natural barrier** at Lower Cedar Falls (river mile 34.2)

The Salmon Link



Species Overview



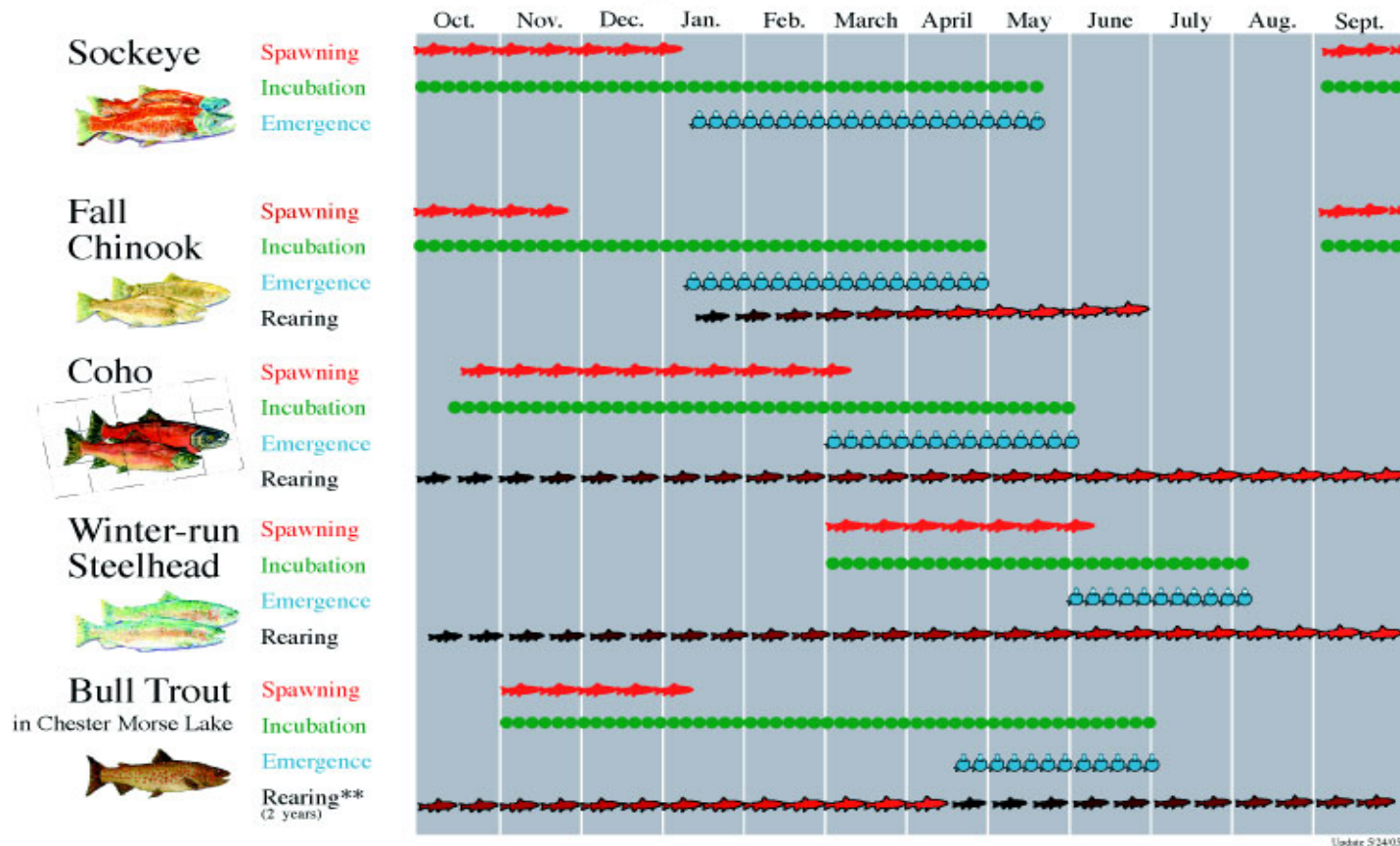
- ❑ River supports regionally important populations of sockeye, **Chinook**, coho salmon and **steelhead**/rainbow trout



- ❑ Reservoir supports unique populations of **bull trout**, **pygmy whitefish** and other aquatic, avian and terrestrial species

Lifestyles of the Fish and Famous

in the Cedar River Basin



Historical Overview

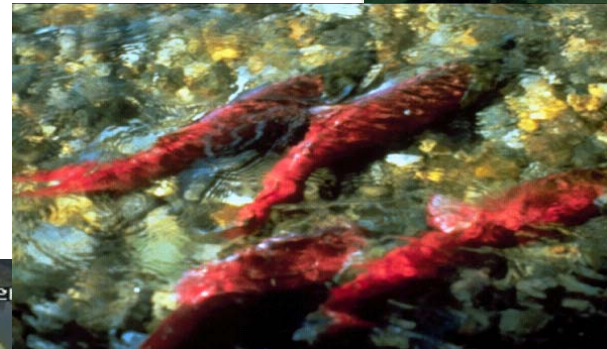
- ❑ Early work in the late 1960s - conducted by WDF and USGS, used to develop 1971 recommended minimum flow regime
- ❑ 1979: Additional work led to IRPP minimum flow regime promulgated by Ecology
- ❑ 1986 – 1991: Cedar River Instream Flow Committee (CRIFC) conducts additional research (NMFS, USFWS, MIT, WDF, WDW, Ecology, USACOE, Seattle)

Historical Overview

- ❑ **1993:** Using the results of studies, CRIFC **begins development** of a new instream flow management regime
- ❑ **1994-2000:** Instream flow **included in development of the HCP.** Additional analysis discussion – **federal and state approval of HCP** in 2000
- ❑ **2006:** **Muckleshoot Tribe/City of Seattle Settlement Agreement** adds additional limits on annual diversions

HCP Opportunity: Move toward an ecosystem approach

- Protect water quality
- Protect and restore the ecological processes that deliver high quality water, sediment, nutrients and wood to streams
- Restore stream connections at Landsburg and road crossings
- Provide improved instream flow mgmt. to protect the river's health and its salmonid populations

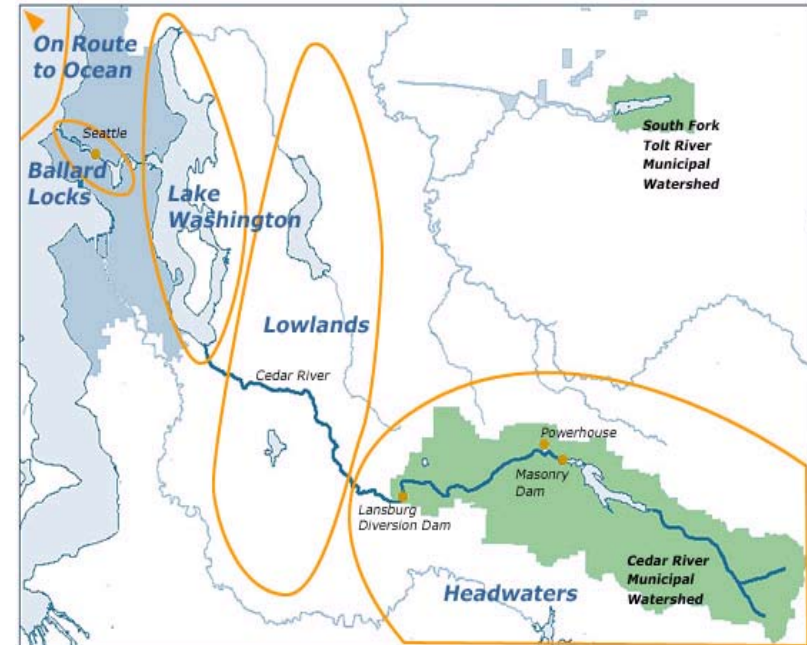


Toward an Ecosystem Approach

HCP has three primary component programs

1. **Watershed mgmt.** Guiding activities in the upper 2/3 of the basin
2. **Mitigation** of the fish migration barrier **at Landsburg**
3. **Instream flow mgmt.** governing river and reservoir operations

All components supported by R&M programs and guided by interagency oversight bodies



Guiding Principles for HCP Instream Flow Program Development

- ❑ Promote a **healthy river** and improve conditions in the Cedar for all **salmonids**
- ❑ Preserve sufficient **municipal water supply capacity & flexibility**
- ❑ Use best available **scientific information**
- ❑ Informed by the **natural hydrograph**
- ❑ Integrate flow management with **flood control**, mgmt. of **Chester Morse Reservoir** & water mgmt. in **Lake Washington**
- ❑ Provide **flexibility** and commitment to **adapt** flow management practices as more is learned and conditions change

Key Elements for Instream Flows

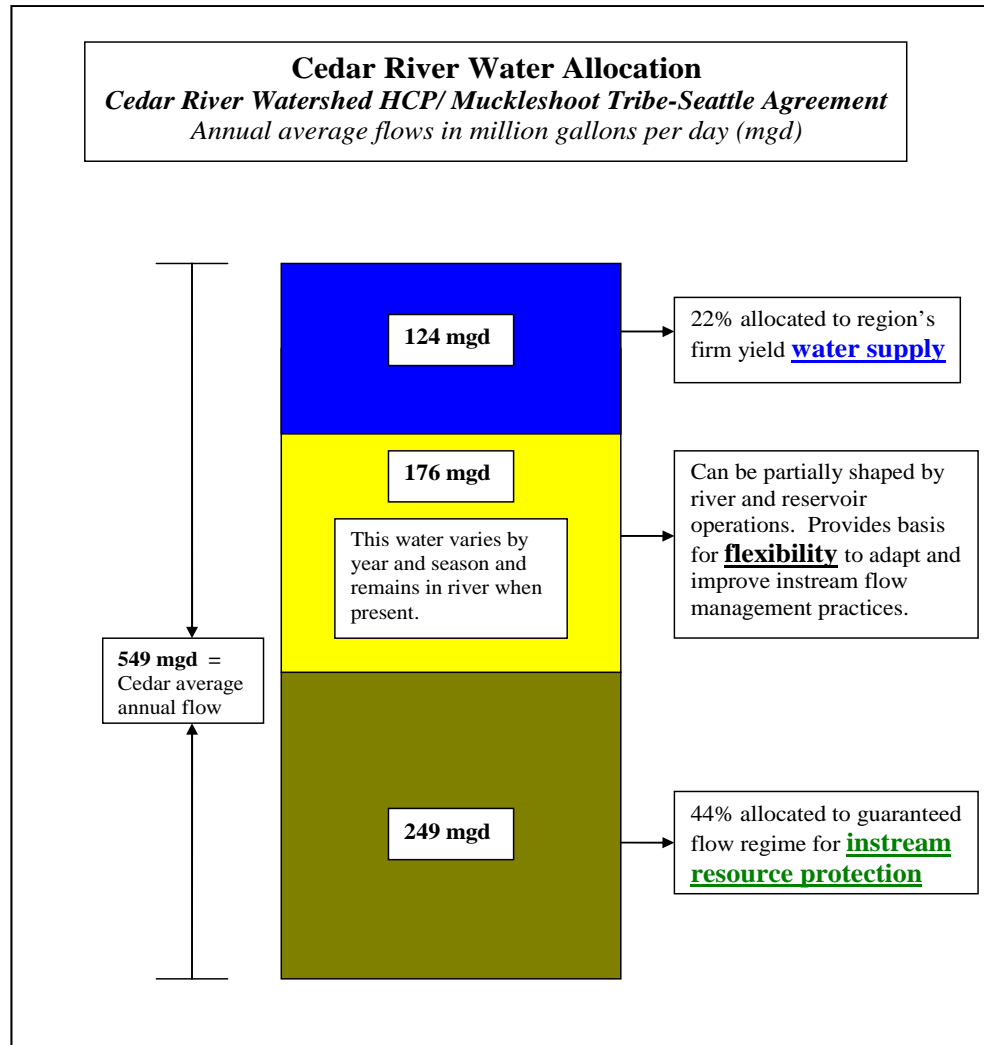
3. Instream Flow Mgmt.:

Provide beneficial conditions for all salmonids and promote a healthy river

- Guaranteed flow regime with minimum and supplemental base flows
- Funding for facility improvements and downstream habitat
- Limits on annual water diversions
- Flexibility in management of unallocated water
- Continued research and monitoring



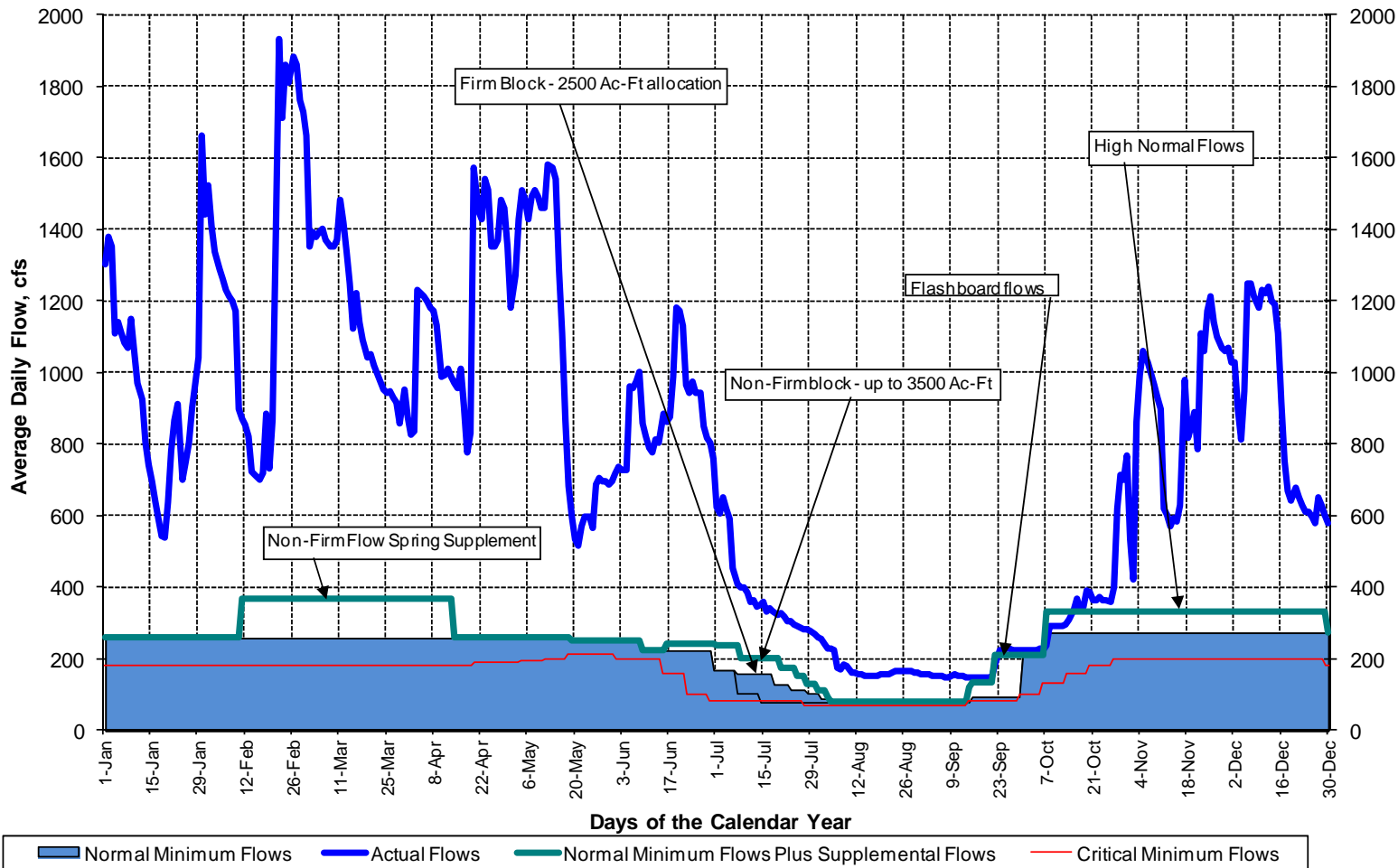
Aligning Certainty and Flexibility



Last Update: 01-01-2013

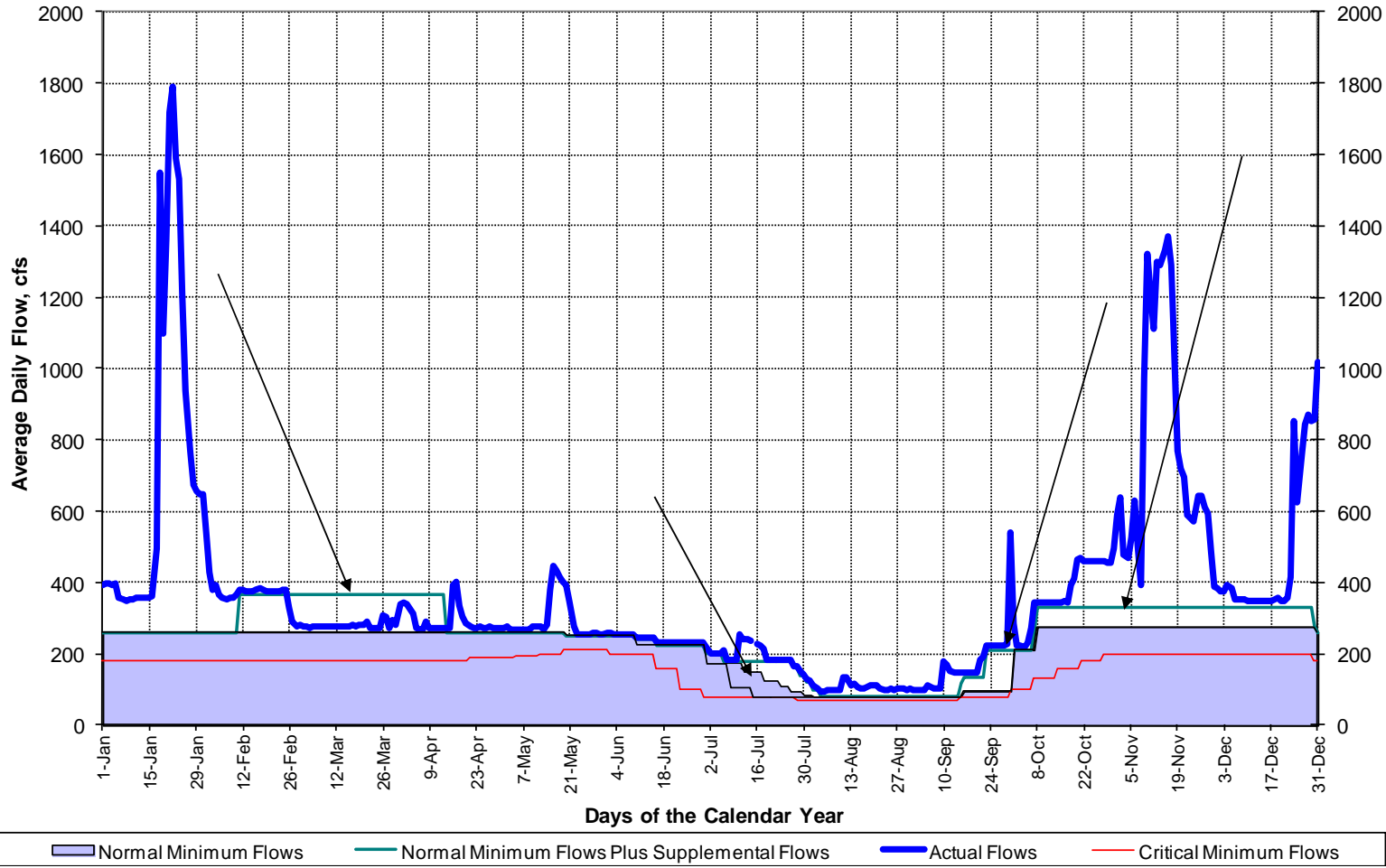
Calendar Year 2012 Cedar River Instream Flows Measured at USGS Stream Gage No. 12117600

All Data is Provisional and Subject to Revision



Last Update: 12/31/2005

Calendar Year 2005 Cedar River Instream Flows Measured at USGS Stream Gage No. 12117600 All Data is Provisional and Subject to Revision



Applied Monitoring and Research

Dedicated funding to investigate up to **18 prioritized study questions** addressing the effects of stream flow on:

- Steelhead spawning and incubation
- Chinook early life history
- Chinook and sockeye spawning and incubation
- Natural ecological processes that shape and maintain riparian and in-channel habitat

Commitment to **collaborative** study implementation and application of study results to management practices.

Oversight

Cedar River Instream Flow Commission

Representatives from:

- National Marine Fisheries Service
- U.S. Fish and Wildlife Service
- Muckleshoot Indian Tribe
- Washington Department of Fish & Wildlife
- Washington State Department of Ecology
- King County
- U.S. Army Corps of Engineers
- Seattle City Light
- Seattle Public Utilities

Does the Tool Box provide the right mix for success?

- ❑ ***Capital improvements*** to help protect fish and fish habitat
- ❑ ***Detailed flow mgmt. prescriptions*** that protect the river and maintain municipal water supply capacity
- ❑ ***Limitations on diversions*** to ensure flexibility to adapt and improve flow management
- ❑ Continued ***monitoring and research***
- ❑ Commitment to ***apply research*** results
- ❑ Collaborative ***oversight***

Guiding Principles for HCP Instream Flow Program

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Appendix slides

HCP website links

http://www.seattle.gov/util/EnvironmentConservation/OurWatersheds/Habitat_Conservation_Plan/index.htm

http://www.seattle.gov/util/EnvironmentConservation/OurWatersheds/Habitat_Conservation_Plan/ManagingRiverFlows/index.htm

http://www.seattle.gov/util/EnvironmentConservation/OurWatersheds/Habitat_Conservation_Plan/ManagingRiverFlows/ComplianceSummary/index.htm