Cle Elum Dam Fish Passage Update: Moving Forward

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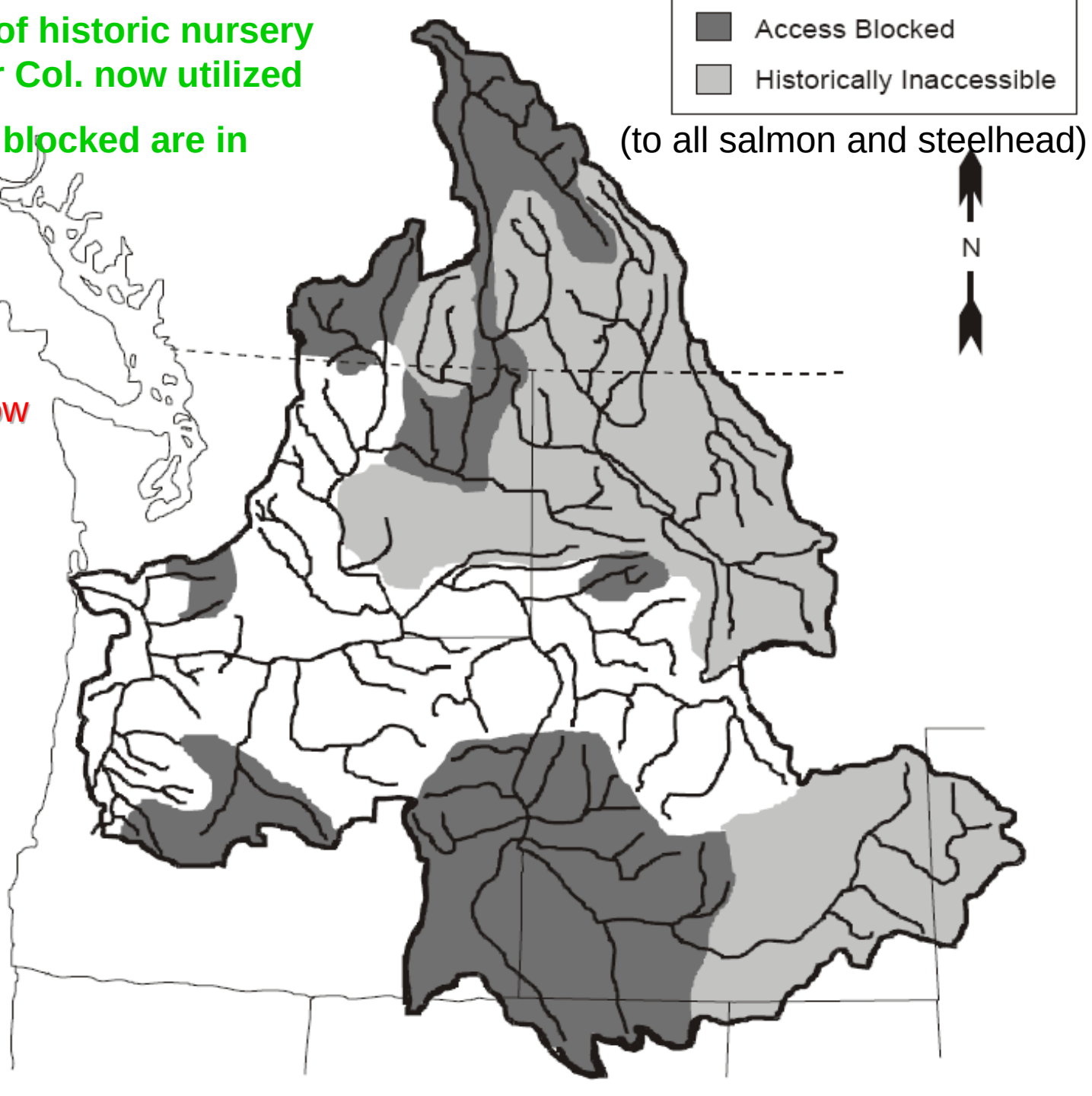
Cooperative Project

Bureau of Reclamation, Yakama Nation, Dept. of Ecology, WDFW, NOAA Fisheries & Forest Service

Mullan (1986): <4% of historic nursery lake habitat in Upper Col. now utilized

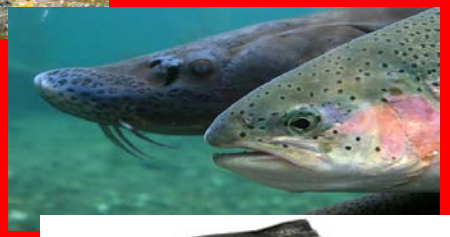
4 of the 13 currently blocked are in Yakima river basin

Bumping*
Cle Elum*
Keechelus
Kachess
Upper and Lower Arrow
Whatshan
Slocan
Osoyoos
Skaha
Okanogan
Wenatchee
Big, Little, and Upper
Payette
Wallowa
Redfish
Alturas
Pettit
Stanley
Yellowbelly
Suttle



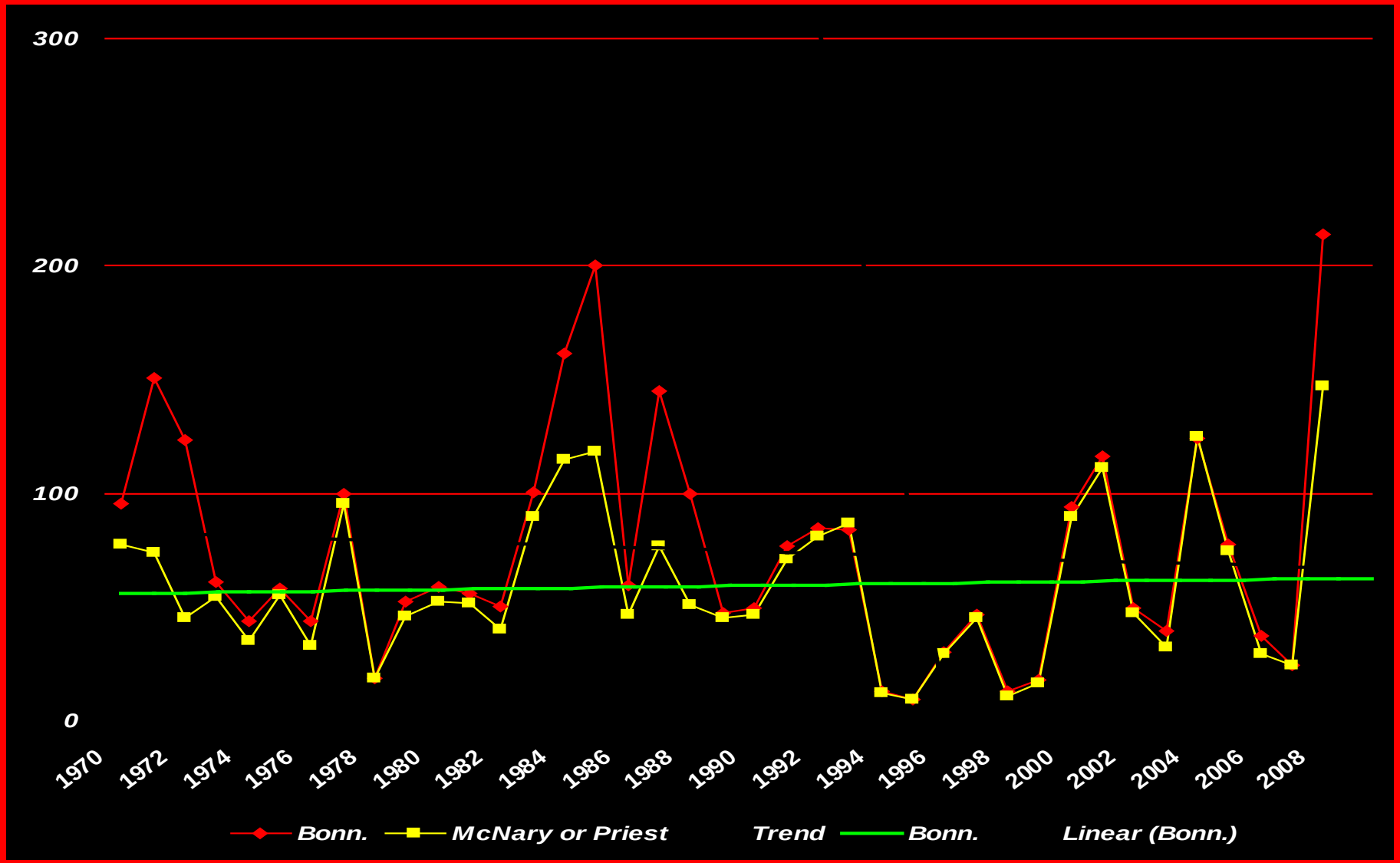
Potential Anadromous Fish Reintroduction

- Coho Salmon
- Sockeye Salmon
- Steelhead
- Spring Chinook
- Also could help Bull Trout movement (not functioning properly)

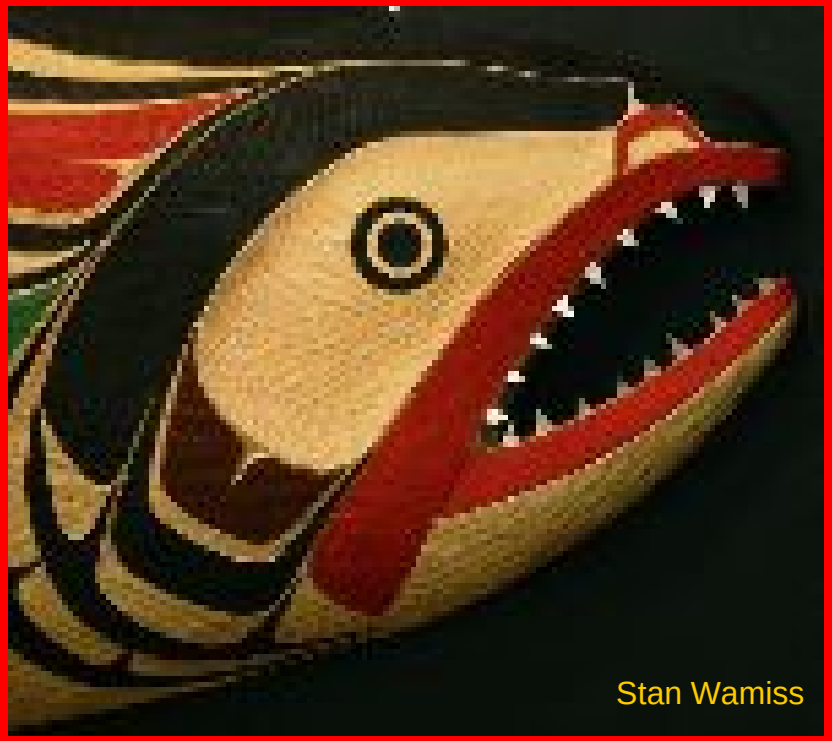


Columbia Basin Sockeye Counts, 1970-2008

Thousands of Fish



Cultural and Ecological Significance



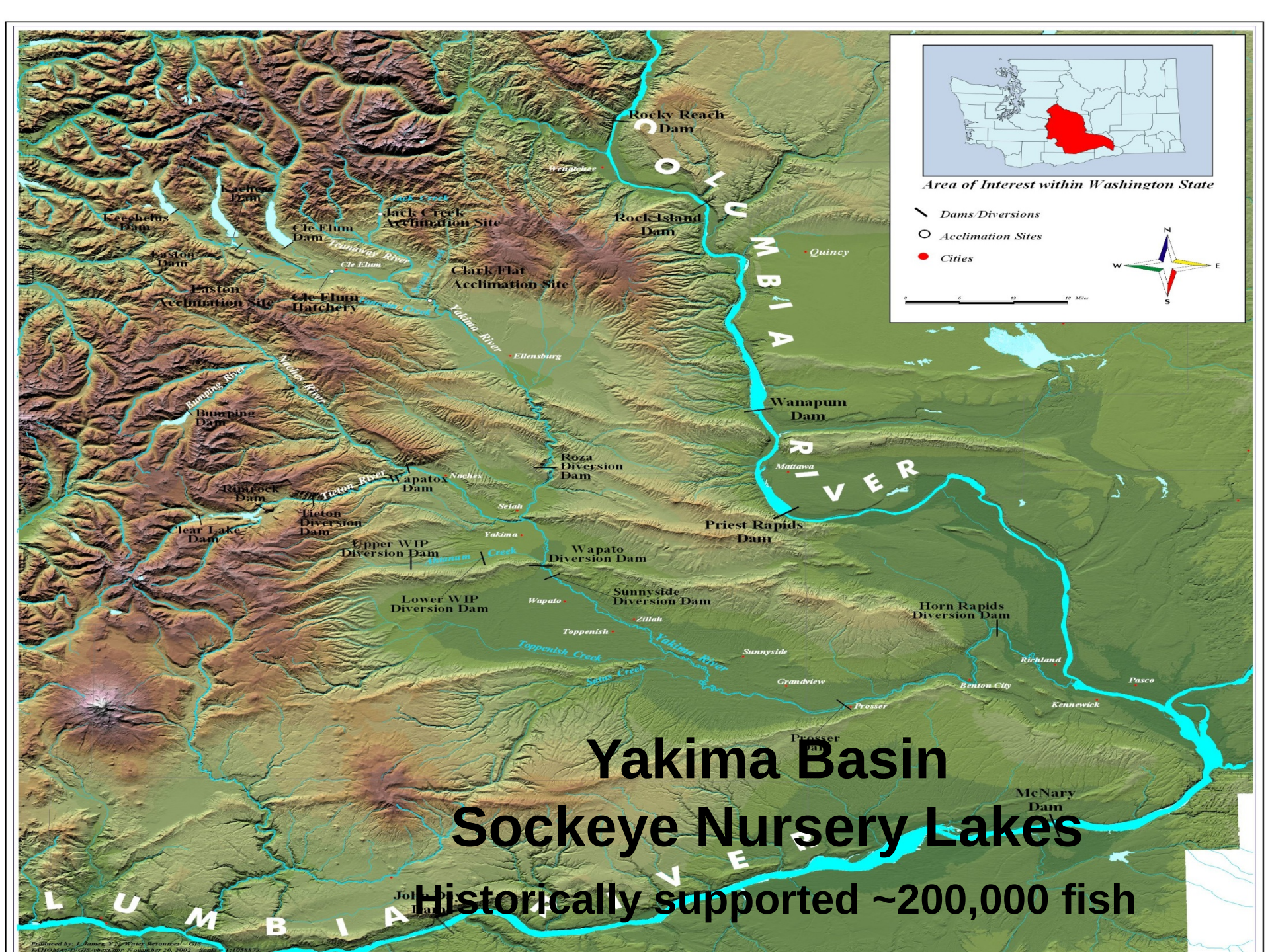
Restoring to Yakima Basin increases:

- **Abundance**
- **Spatial Distribution**
- **Diversity**
- **Productivity**

of Aggregate Upper Columbia Sockeye

Restore and Enhance

Tribal Fisheries and Culture



Yakima Basin Sockeye Nursery Lakes

Historically supported ~200,000 fish

Yakima River Basin Water Enhancement Project

(Title XII of Public Law 103-434, 31 Oct 1994)

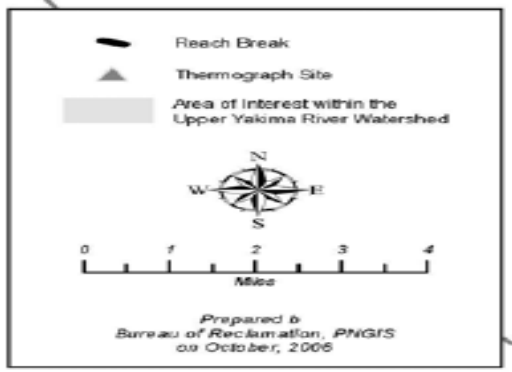
Protect, mitigate, enhance fish & wildlife

Improve reliability of water supply

Includes directives to develop:

- Water conservation
- Water acquisition
- Habitat enhancement
- Improved fish passage and screening

Lake Cle Elum and Watershed



Reach	Lengt (km)	Gradient %	Spawning Gravel (% in 12 -128mm range)
C-1	6.47	1	43.1
C-2	1.85	1	43.7
C-3	3.44	2	48.7
C-4	4.57	3	41.0
C-5	6.28	1	43.9
C-7	1.84	<3	38.2
C-8	1.25	<3	56.8
W-1	3.86	2.6	61.0
CO-1	2.25	1.6	45.0

Note: There is no C-6

Figure 1: Selected habitat information for some Cle Elum River reaches.

RECLAMATION
Managing Water in the West

Cle Elum Lake
Sockeye Production Potential

Steve Grabowski, BOR, 2007

Method All at lowest lake levels (sept)	Est. Smolt Production Using 2% egg to smolt survival
Lake Surface Area	1,514,250
Euphotic Volume	1,627,715
Spawners per Hectare	817,695
Available Spawning Habitat	1,227,798

30,000 to 50,000 Adult Spawners assuming average survival and median pool elevation

Cle Elum Lake
Coho Production Potential

Steve Grabowski, BOR, 2007

Method All at lowest lake levels (sept)	Est. Smolt Production Using 1% to 6% egg to smolt survival
Juvenile Overwintering Habitat	123,267 smolts
Available Spawning Habitat	596,817 smolts

15,000 to 36,000 Adult Spawners assuming average survival and median pool elevation

Temporary Juv. Passage

Preliminary Conclusions

2006:

- Operated on spill June 6th – July 9th
- Total of 617 through the flume

2007:

- Operated on spill April 4th – July 11th
- Total of 4,587 through the flume
- Of these 986 were 2006 net pen fish
- Adult returns of 2006 fish: 21 (Bonn), 9 (Prosser)

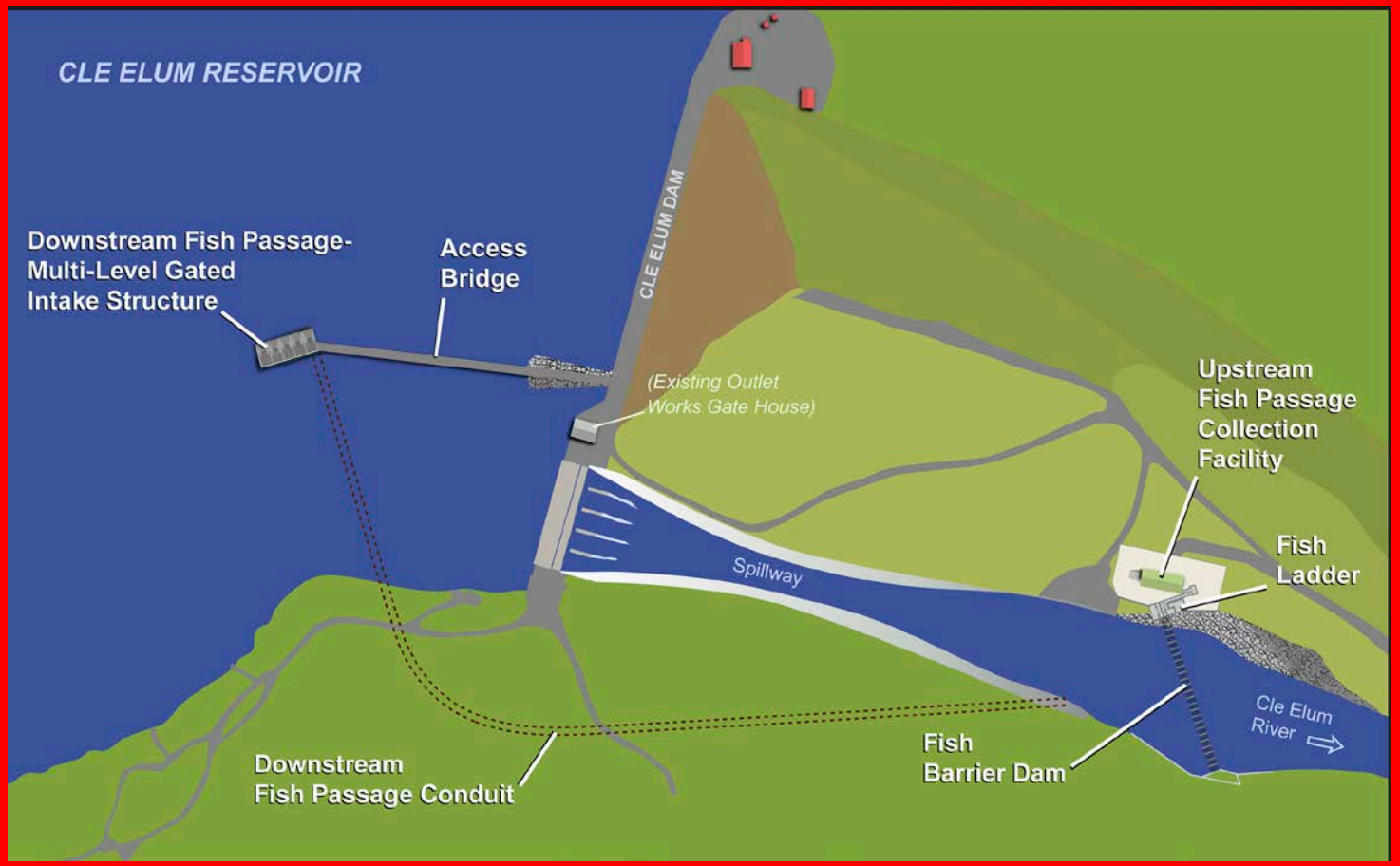
Preliminary Conclusions Cont'd

2007:

- **Detection Efficiencies is 96% Accurate**
- **We conclude that fish can safely pass over the entrance weir, pass through the plunge pool, and survive changing flume velocities with little or no physical injury**
- **Project has been determined to be FEASIBLE**

Cle Elum Fish Passage

- Downstream juvenile passage
  - Multi-level gated intake structure; conduit to below dam
- Upstream adult passage
  - Collection and transport facility



Moving Forward with Reintroduction

Reintroduction with Temporary Juv. Passage

2008

- Released 6,000 directly into the lake
- Release 6,000 PIT tagged coho from Net Pens ~one half mile from dam
- 170,000 fed fry plants using tribal funding
- Released 300,000 summer/parr plants above Cle Elum Lake

Reintroduction with Temporary Juv. Passage

2008:

- 3,072 tagged fish were detected migrating downstream in the flume
- 2,021 were from the Upper Cle Elum Lake (UCL) group, while
- 1,030 were fish released from the Cle Elum Lake Net Pen (CLN) release
- Four tags detected were from a group of parr released in Lake Tucquala in 2006
- Six tag detections were fish released from the net pens in 2007

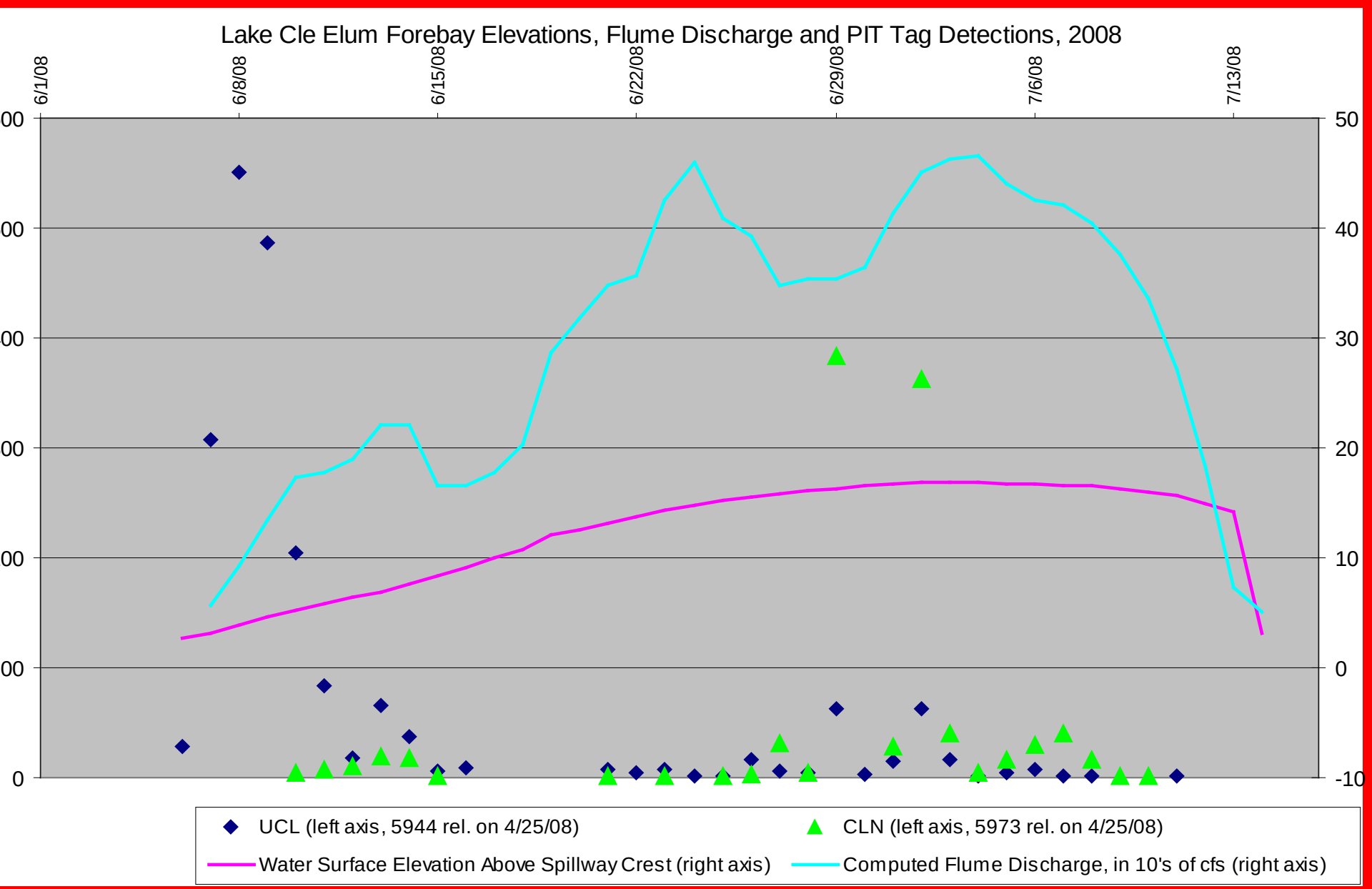


Figure X. Lake Cle Elum Forebay Elevations, Flume Discharge and PIT Tag Detections, 2008 operations. UCL refers to fish released at the upper end of the lake, CLN were fish reared and released from the net pen.

Helping Okanagan Nation Alliance with Broodstock Collection, Canada



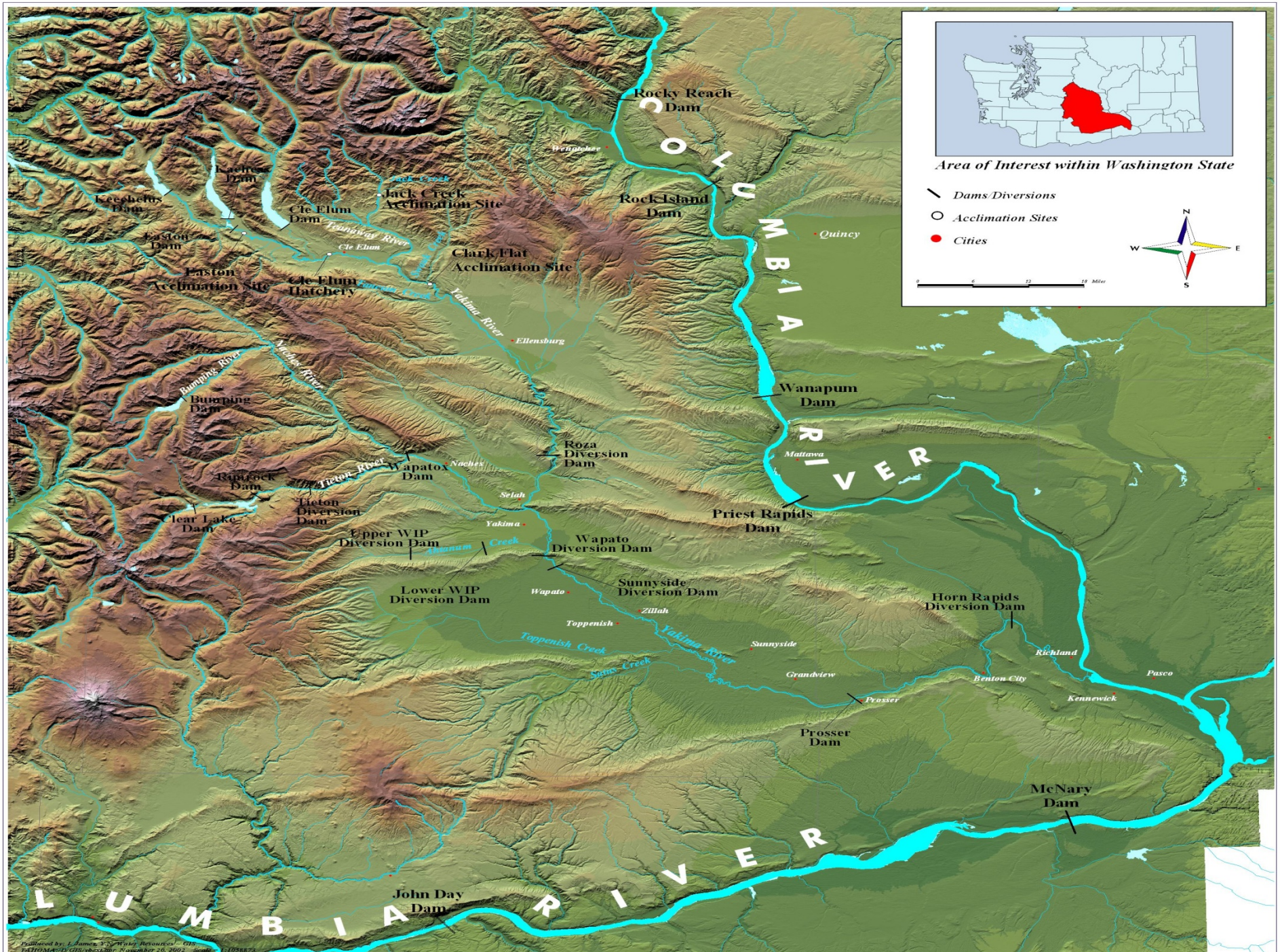



Near Term Reintroduction Plan

- Released 12,000 PIT tagged Coho directly into the Cle Elum River above lake
- 250,000 fed fry coho scatter plants
- Another 250,000 summer/parr scatter plants next week

Near Term Reintroduction Plan Cont'd

- After escapement goals have been met using real numbers we will collect 500 pairs of returning adults at Priest Rapids Dam
- Release adults in reservoir to monitor location and timing of spawning using radio tags, GPS (Notify Forest Service)
- Release fry/parr (when available) to monitor outmigration success and survival


Area of Interest within Washington State
Dams/Diversions
Acclimation Sites
Cities
N
S
E
W
0
6
12
18 Miles
Rocky Reach Dam
Wenatchee
Rock Island Dam
Quincy
COLUMBIA RIVER
Lake Creek
Jack Creek Acclimation Site
Cle Elum Dam
Tennaway River
Cle Elum
Keechelus Dam
Easton Dam
Easton Acclimation Site
Cle Elum Hatchery
Clark Flat Acclimation Site
Yakima River
Ellensburg
Bumping River
Naches River
Bumping Dam
Wanapum Dam
Roza Diversion Dam
Naches
Tieton River
Wapatox Dam
Rimrock Dam
Selah
Tieton Diversion Dam
Clear Lake Dam
Yakima
Upper WIP Diversion Dam
Priest Rapids Dam
Mattawa
Ahtanum Creek
Wapato Diversion Dam
Sunnyside Diversion Dam
Lower WIP Diversion Dam
Wapato
Zillah
Toppenish
Toppenish Creek
Yakima River
Sunnyside
Horn Rapids Diversion Dam
Richland
Grandview
Benton City
Pasco
Prosser
Kennewick
Prosser Dam
McNary Dam
John Day Dam
COLUMBIA RIVER

Moving Forward

- NEPA Process
- Value Engineering (VE) Study Complete
- Letter has been drafted from the ONA Chiefs to the YN Tribal Council
- Snettisham Hatchery Visit, Alaska
- Baseline Data Collection
- Maintain and Gain Momentum

Invitation To All

What: Cle Elum Lake Sockeye Reintroduction Ceremony

When: Date TBA

Where: Northeast Side of Cle Elum Lake

- **Spiritual Leader**
- **Keynote Speakers/Tribal Council**
- **Welcome Dance**
- **Free T-Shirt**
- **Ceremonial Dinner**

Acknowledgements

- **Dr. Stephen Grabowski (BOR)**
- **Dr. Dave Fast**
- **Mark Johnston**
- **Bill Bosch**
- **Dave Lind**
- **Pat Monk**
- **John Easterbrooks**

Access Reports and Documents

- Yakima Dams Fish Passage Study web page located at: http://www.usbr.gov/pn/programs/ucao_misc/fishpassage/index.html

- My email: passagebio@qwestoffice.net