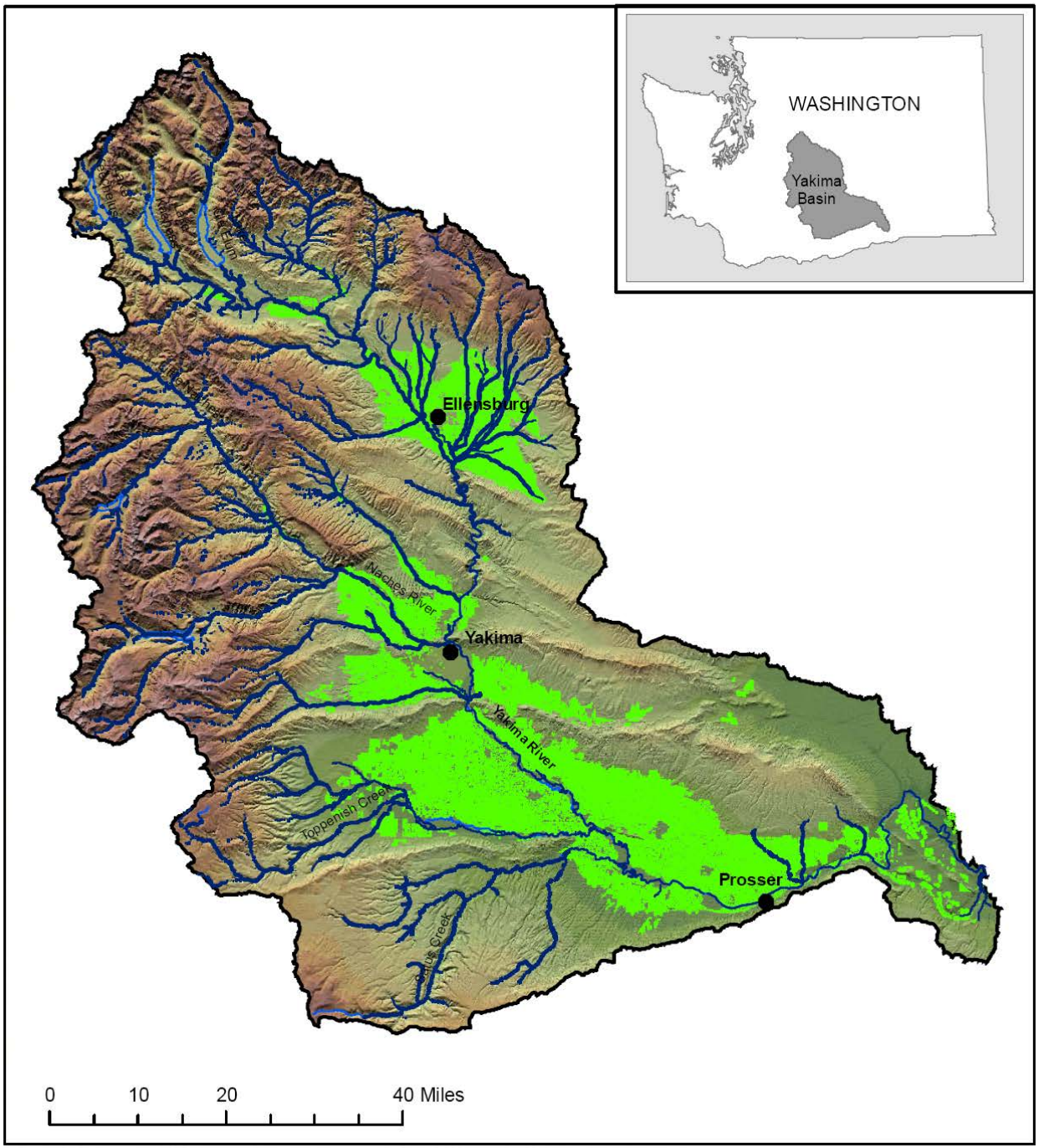
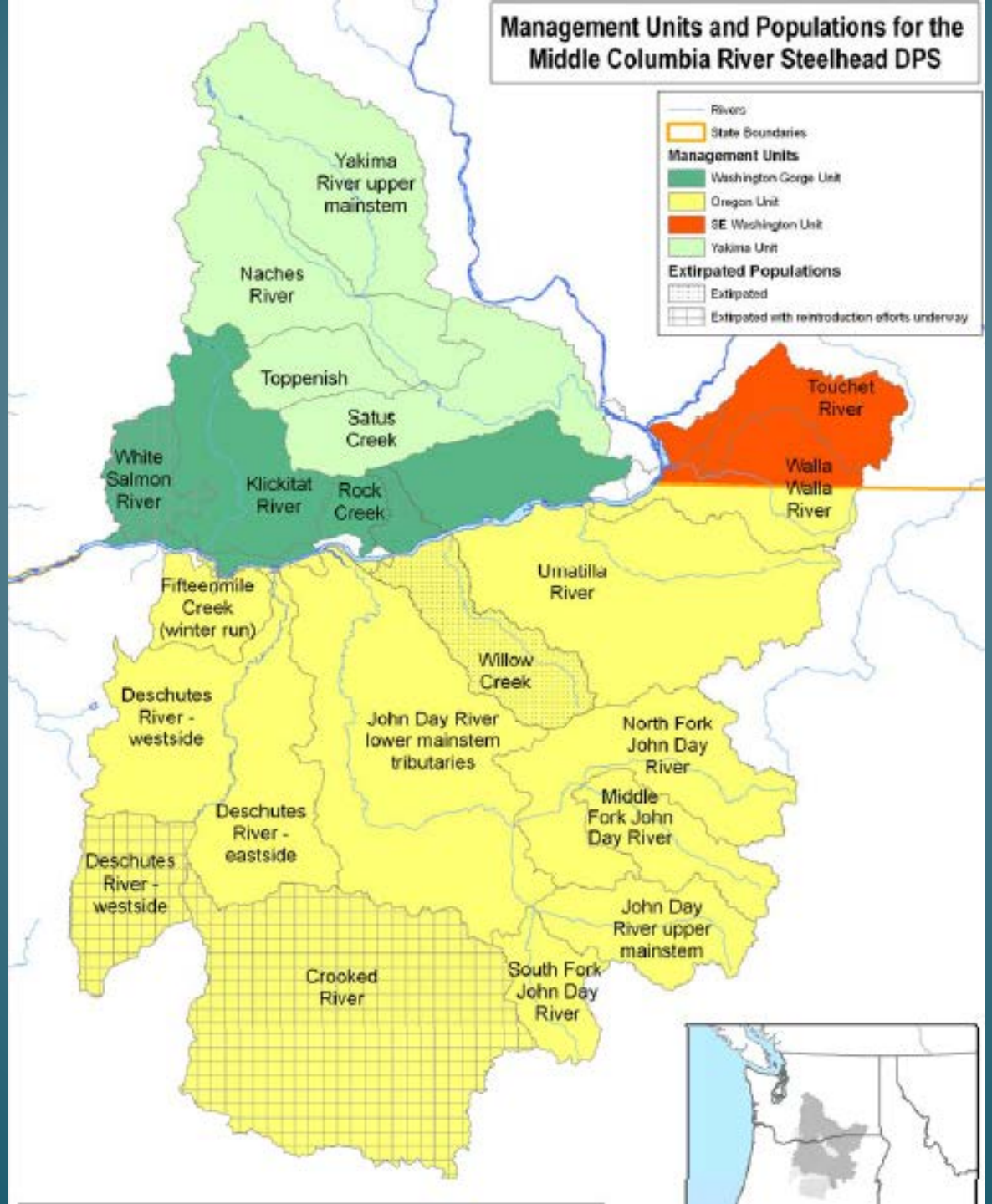
YAKIMA MPG

STATUS, ACCOMPLISHMENTS & GAPS

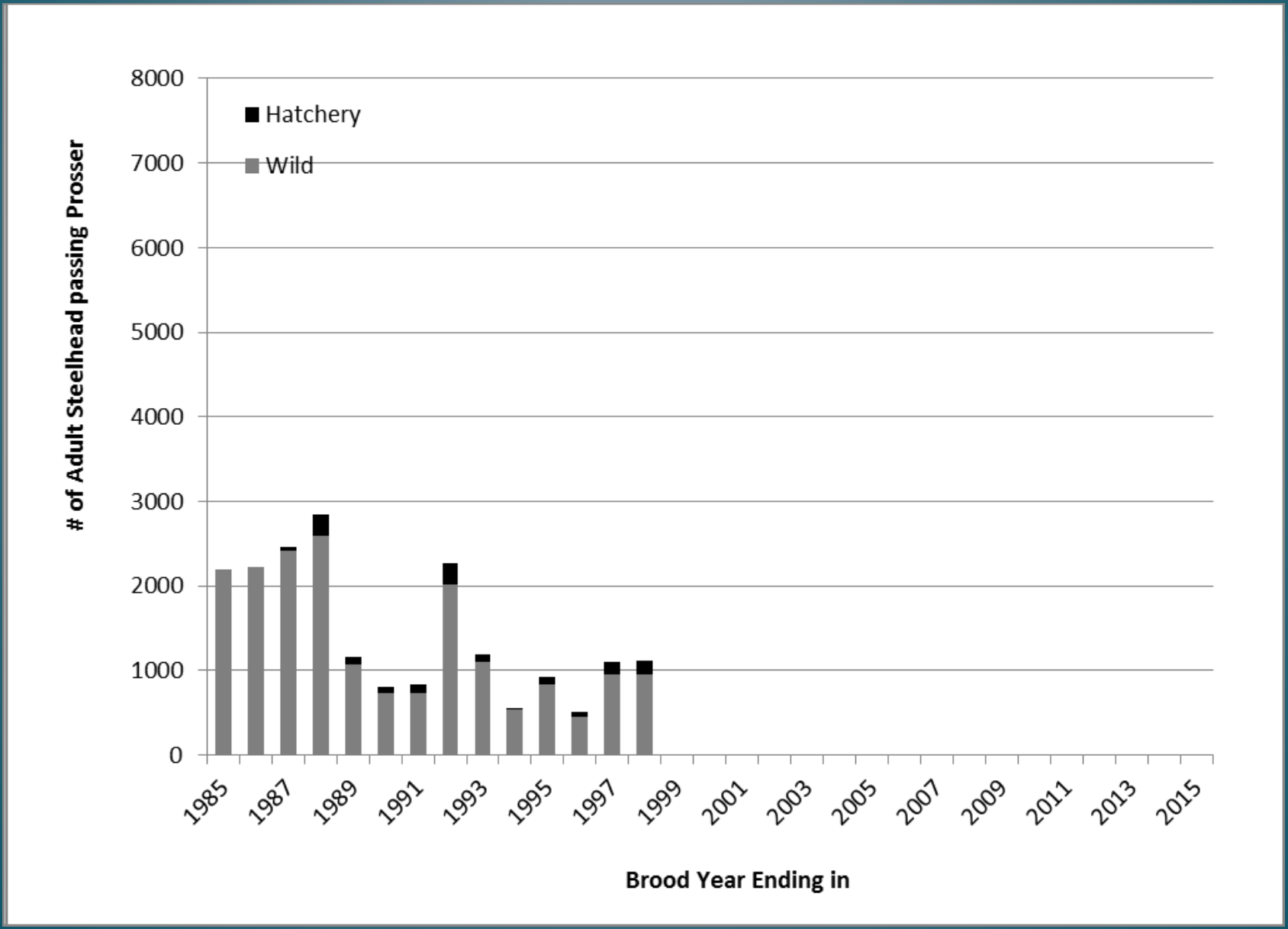
Presented by Alex Conley

Yakima Basin Fish & Wildlife Recovery Board


WASHINGTON
Yakima Basin
Ellensburg
Naches River
Yakima
Yakima River
Toppenish Creek
Prosser
Satus Creek
0
10
20
40 Miles


Management Units and Populations for the Middle Columbia River Steelhead DPS
Rivers
State Boundaries
Management Units
Washington Gorge Unit
Oregon Unit
SE Washington Unit
Yakima Unit
Extirpated Populations
Extirpated
Extirpated with reintroduction efforts underway
Yakima River upper mainstem
Naches River
Toppenish
Satus Creek
White Salmon River
Klickitat River
Rock Creek
Touchet River
Walla Walla River
Umatilla River
Fifteenmile Creek (winter run)
Willow Creek
Deschutes River - westside
John Day River lower mainstem tributaries
North Fork John Day River
Middle Fork John Day River
Deschutes River - eastside
Deschutes River - westside
John Day River upper mainstem
Crooked River
South Fork John Day River

MPG-LEVEL STEELHEAD ABUNDANCE WHEN LISTED



YAKIMA BASIN FISH & WILDLIFE RECOVERY BOARD

- *An Independent Non-Profit*
- *Board of Tribal, County and City Elected Officials*
- *Lead Entity for SRFB Grants in the Yakima Basin*
- *State-recognized Regional Recovery Board*

HERE TODAY WITH THANKS TO OUR MANY PARTNERS

YAKIMA BASIN
FISH AND WILDLIFE
RECOVERY BOARD
LIFETIME

2009 YAKIMA STEELHEAD RECOVERY PLAN

Extracted from the

2005 Yakima Subbasin Salmon Recovery Plan

With Updates

Final
August 2009

SETTING THE BAR

Table 4.1: Minimum abundance criteria for recovery thresholds

Population	Delisting Threshold	Short-Term Recovery	Long-term Recovery
Satus:			
Satus Watershed	500	500	2,000
Mainstem Block[36]	500	500	
Toppenish	250	500	1,500
Naches	1,500	1,500	5,400
Upper Yakima	500	1,500	7,700
Total for MPG	3,250	4,500	16,600

OCCUPANY EVALUATION

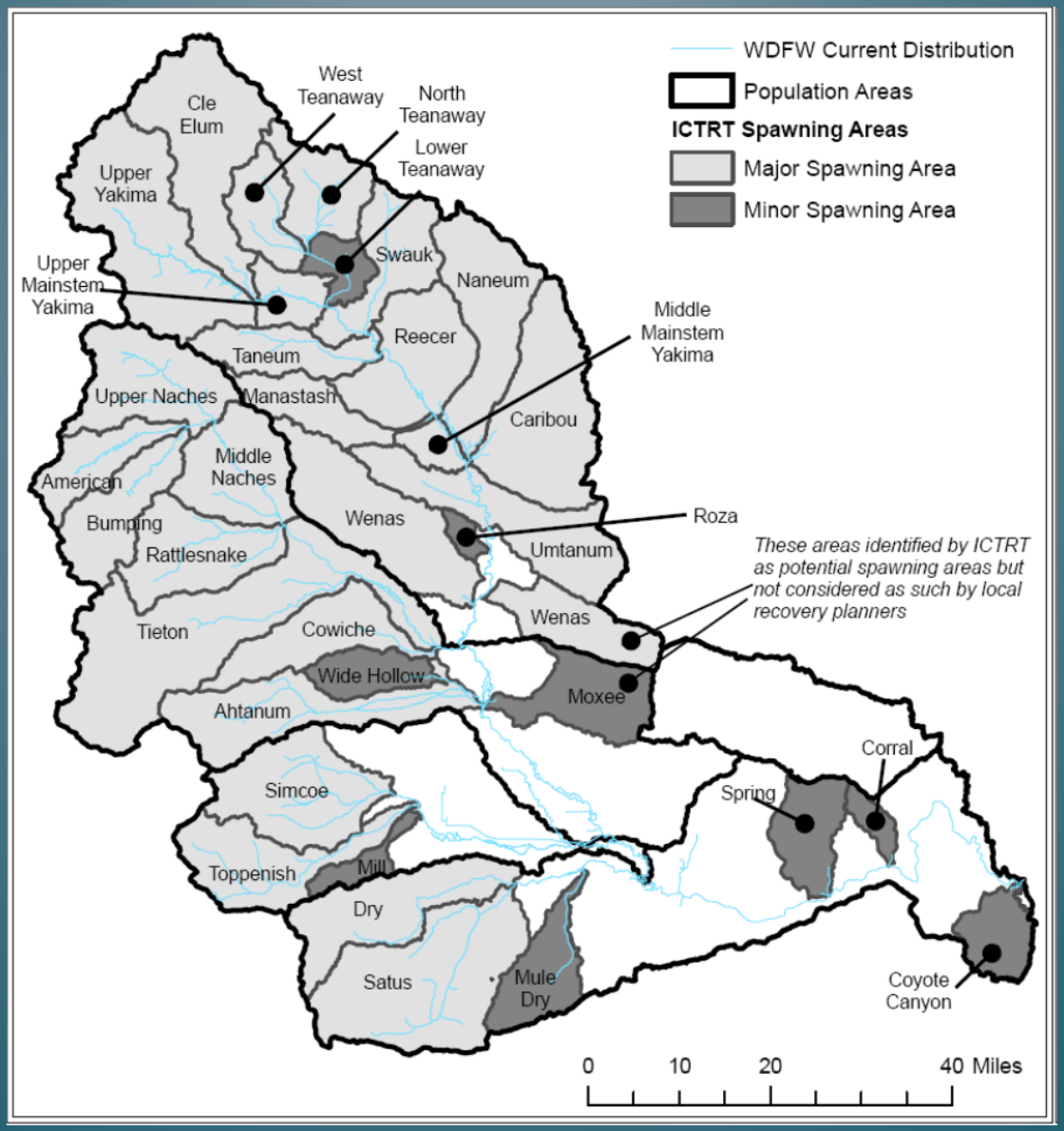


Table 4.4: Possible combinations of spawning areas for the Upper Yakima

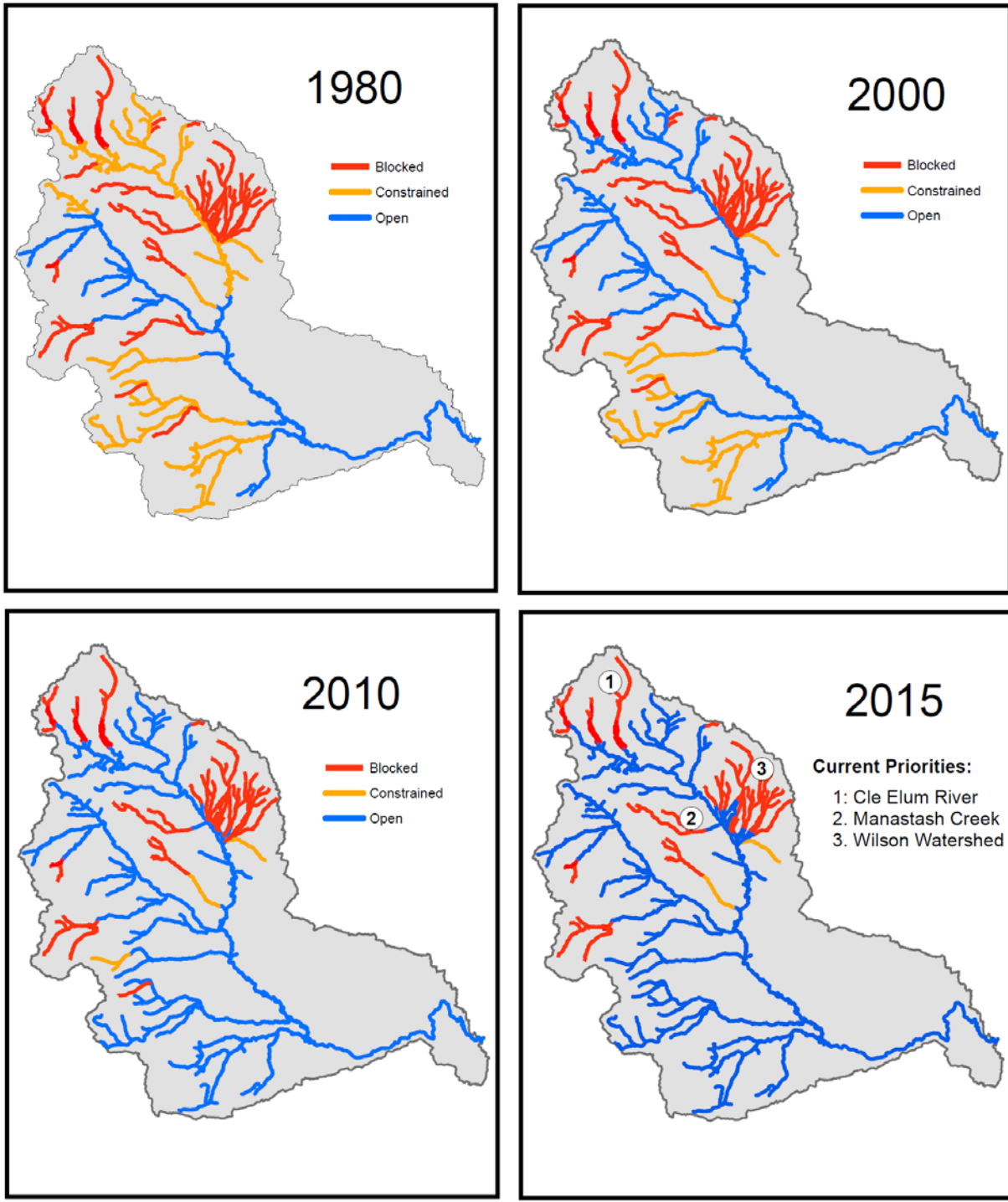
Required MSAs	Plus at least three of these:	Recovery not required
Umtanum	Cle Elum	Wenas
Swauk	Naneum	Roza/Burbank
North Teanaway	Reecer MSA	
West Teanaway	Caribou MSA	
Taneum	Middle Mainstem	
Manastash		
Upper Mainstem		

STEELHEAD RECOVERY PRIORITIES

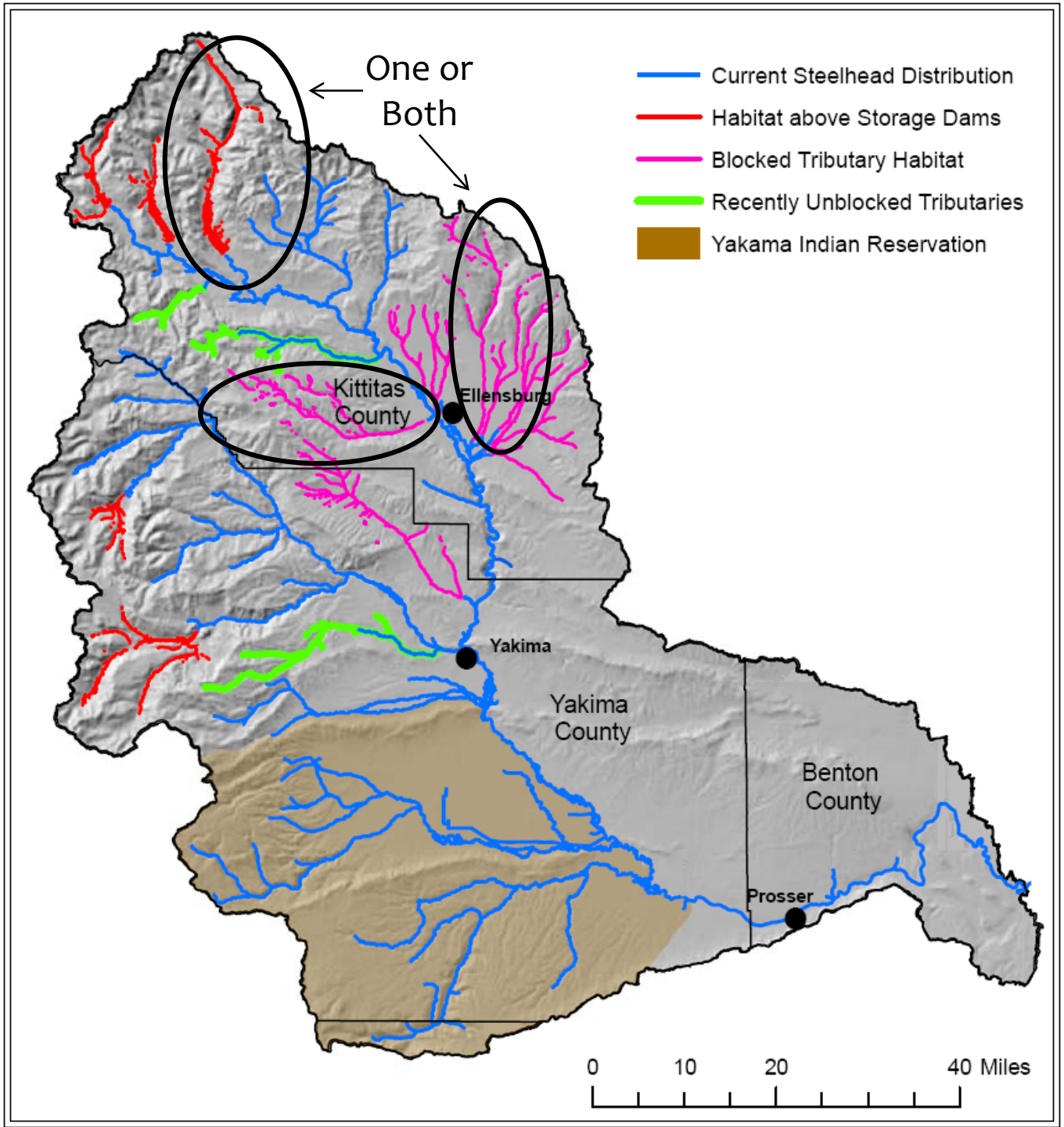
94 In-basin Actions Identified, focusing on:

- Improved passage in key tributaries
- Instream flows and habitat improvements in key tributaries
- Mainstem floodplain improvement in priority reaches
- Improved mainstem flow conditions

FISH PASSAGE



AREAS NEEDED TO MEET STEELHEAD SPATIAL STRUCTURE STANDARD



MANASTASH PASSAGE

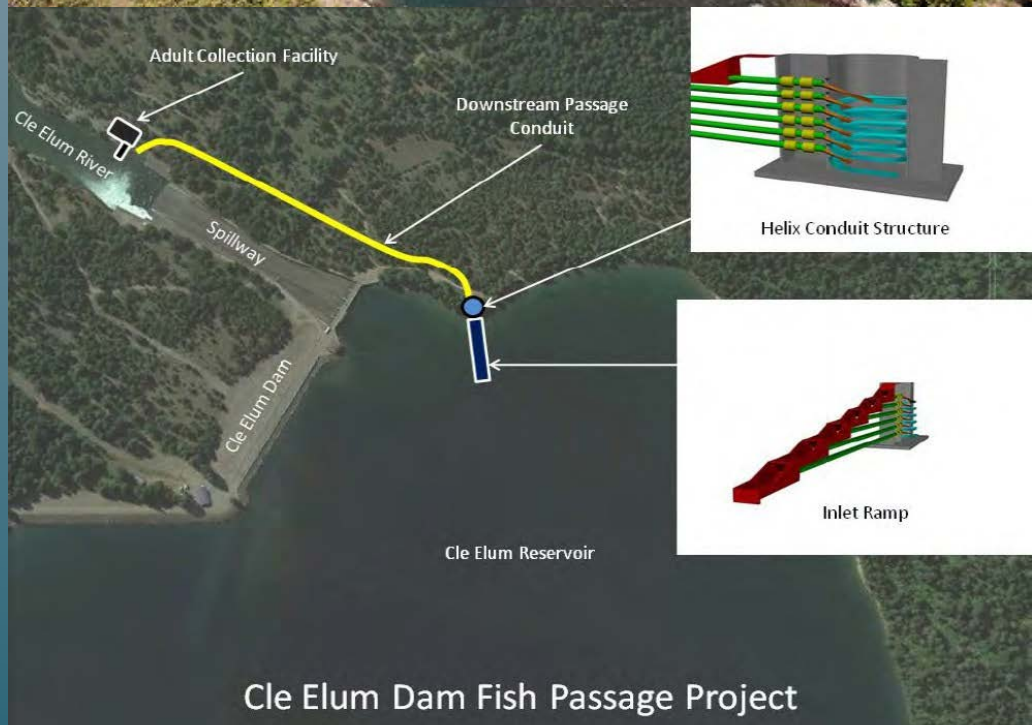
- *Decades work led by Manastash Committee & Kittitas County Conservation District*

- *Significant funding from:*
  - *SRFB*
  - *BPA*
  - *Ecology*
  - *Bureau of Reclamation*

- *Last barrier removed in 2016!*

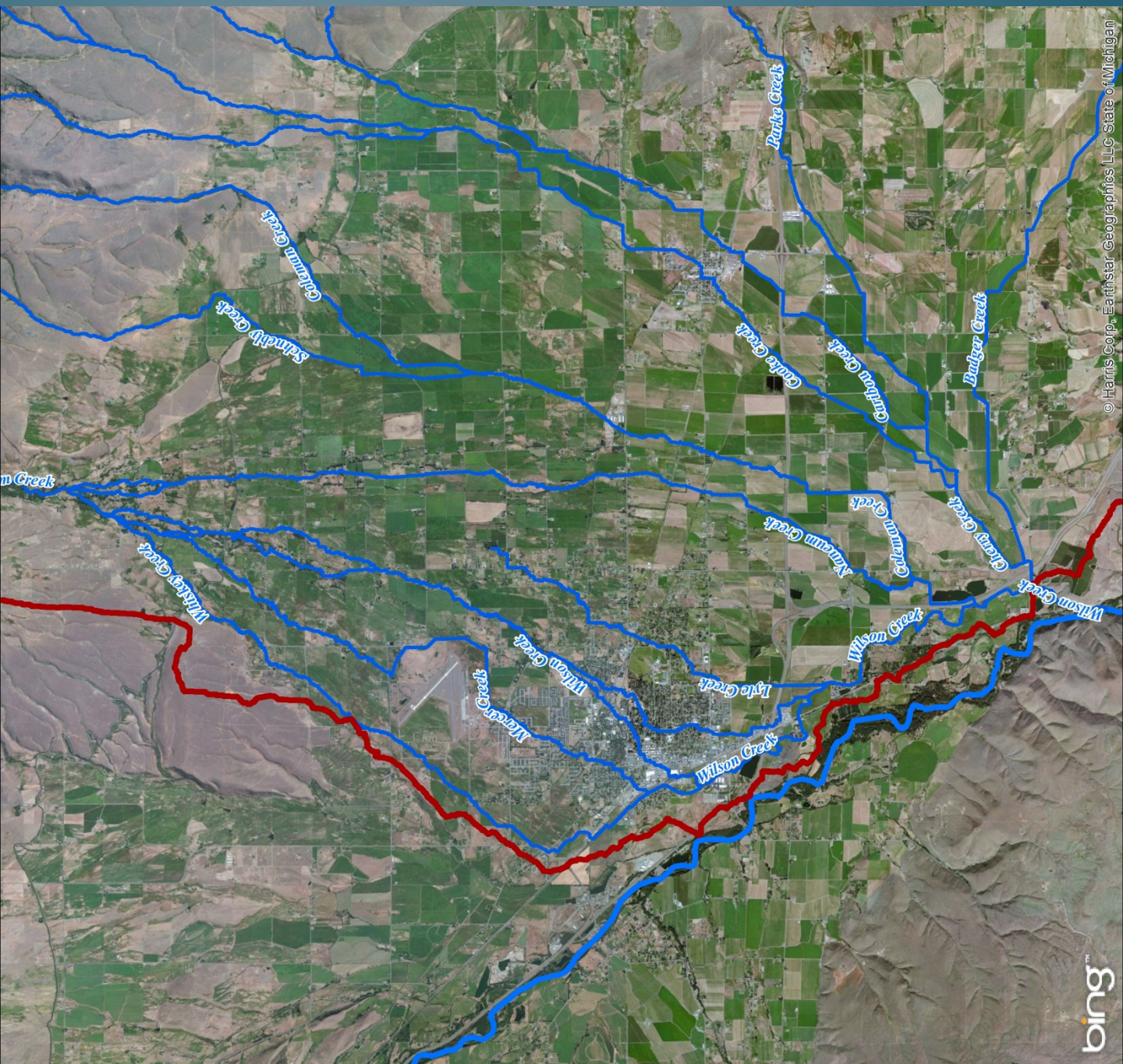
CLE ELUM DAM FISH PASSAGE

- *Bureau of Reclamation is lead*
- *Key part of Yakima Basin Integrated Plan*
- *Essential for sockeye reintroduction*
- *EIS complete; design in progress*
- *Will require Congressional action*

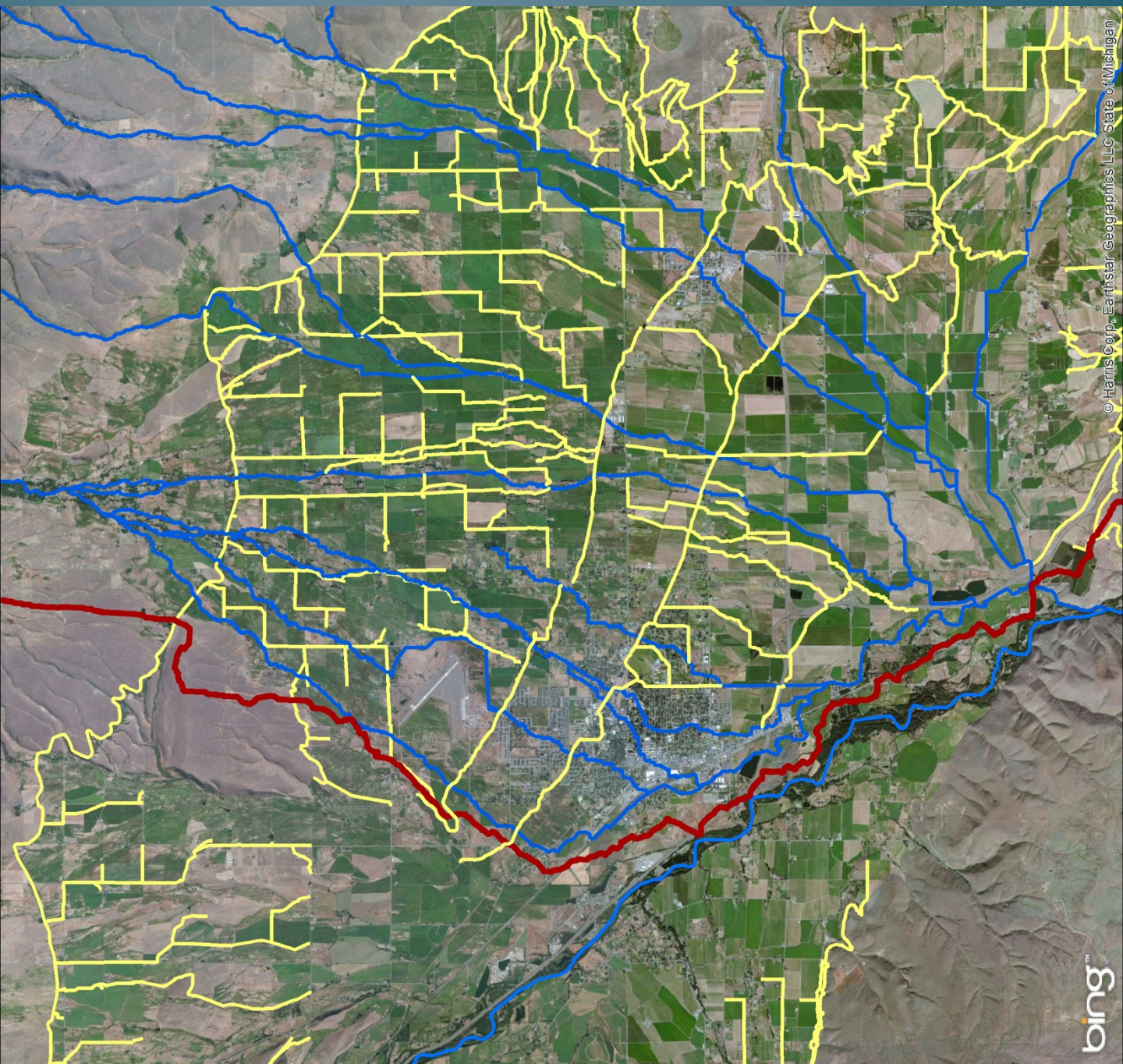


WILSON - NANEUM ASSESSMENT

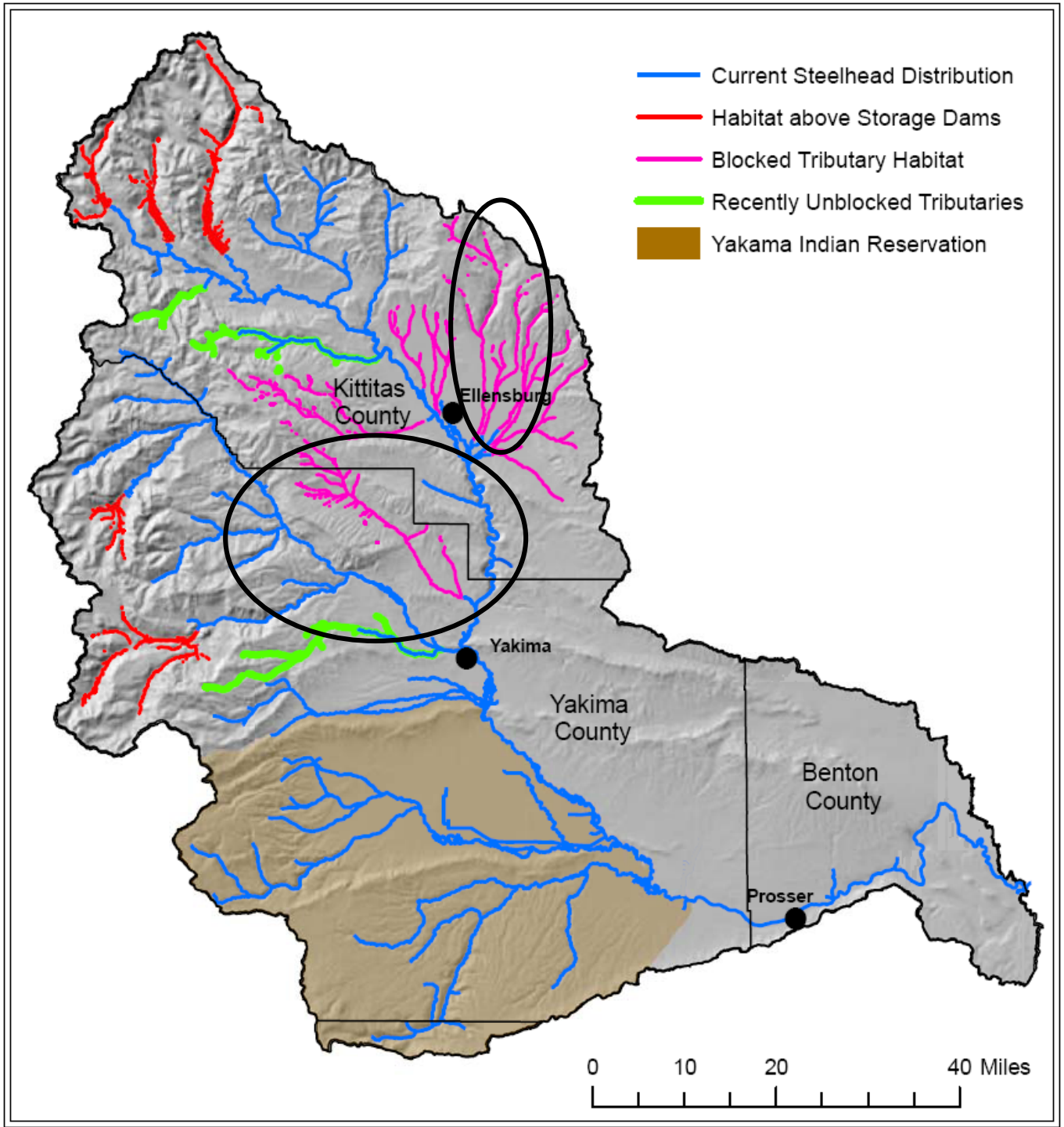
NANEUM, WILSON, CHERRY CREEK WATERSHED



IRRIGATION CANALS & DITCHES

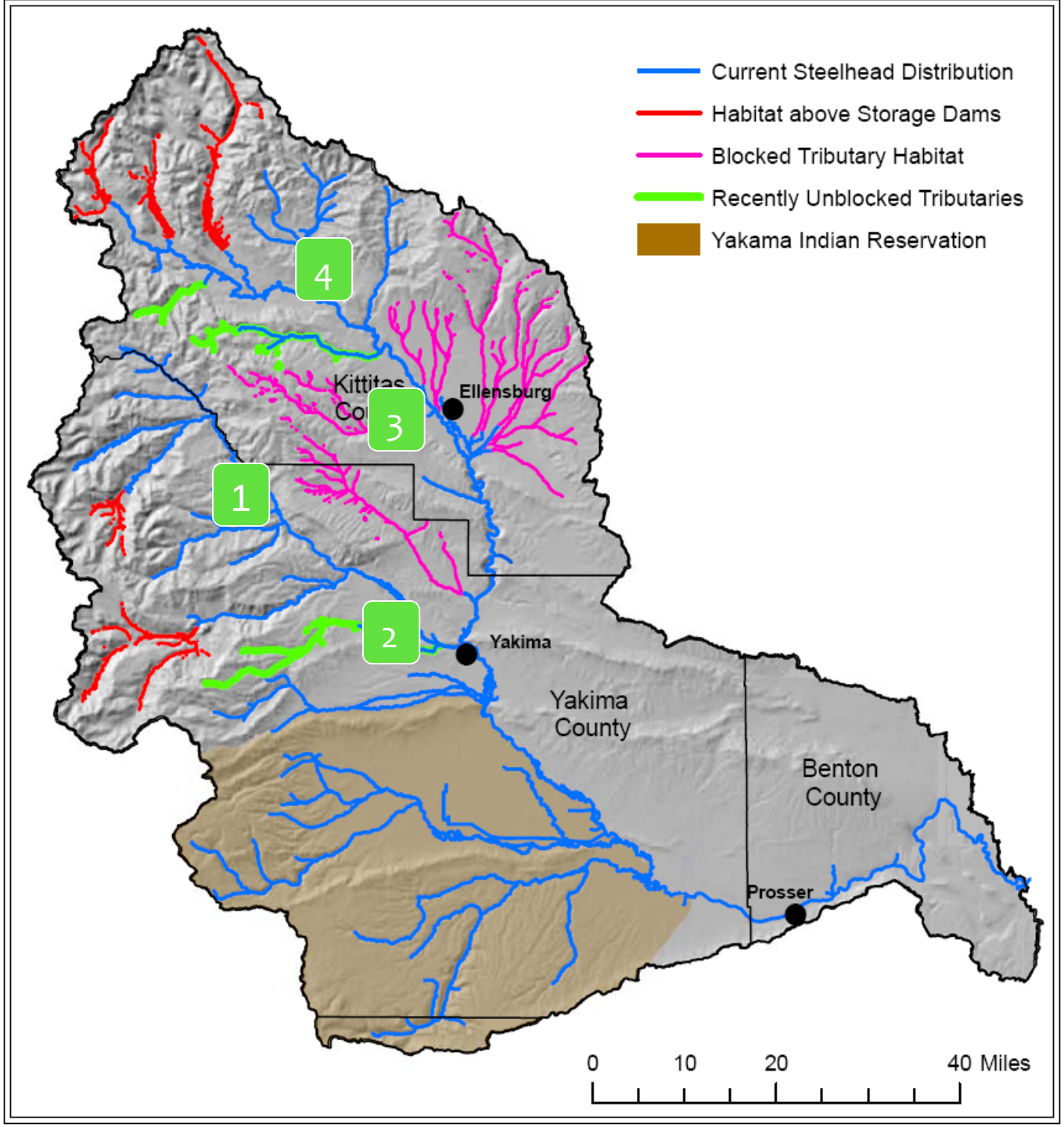


AREAS NEEDED TO MEET STEELHEAD SPATIAL STRUCTURE STANDARD



TRIBUTARY INSTREAM FLOW PROJECTS:

1. NILE
2. COWICHE
3. MANASTASH
4. TEANAWAY



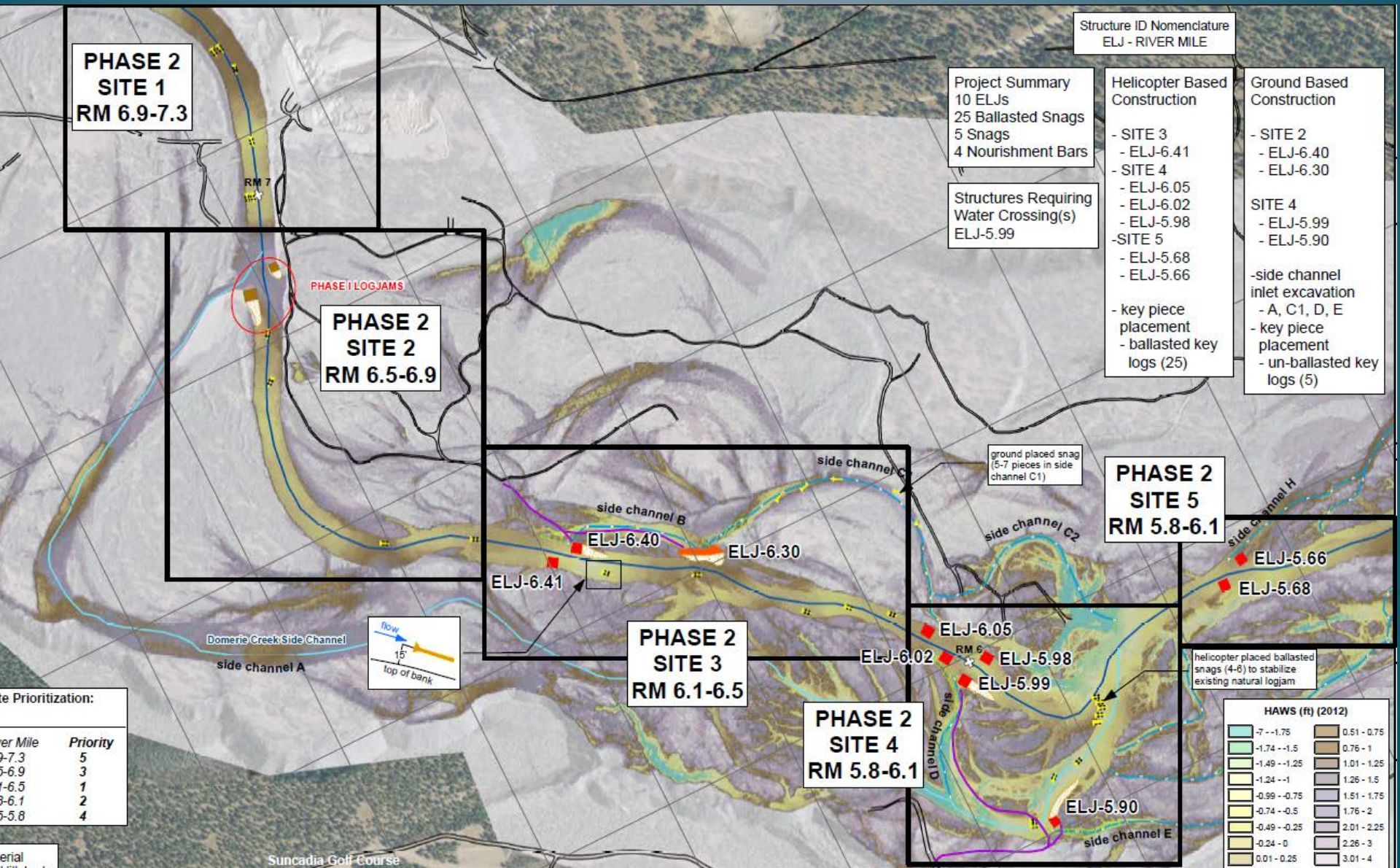
MANASTASH FLOW IMPROVEMENTS

OVER 15 CFS TRUSTED AND MORE TO COME…
MAJOR INVESTMENTS BY BOR AND DEPT OF ECOLOGY

COWICHE WATER USERS PROJECT

LITTLE CREEK RECHARGED NEAR I-90

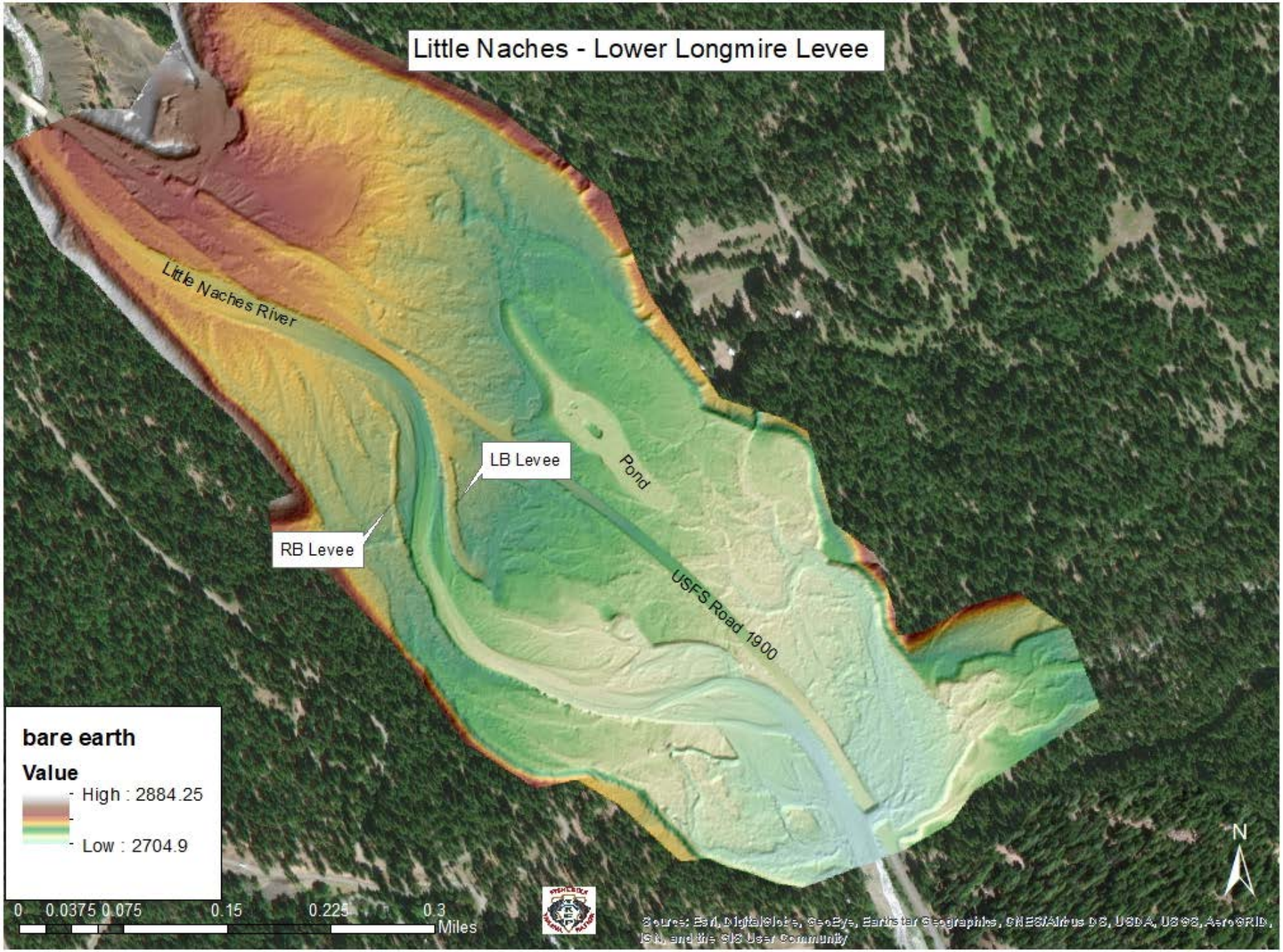
CLE ELUM SIDE CHANNELS



te Prioritization:

er Mile	Priority
9-7.3	5
5-6.9	3
1-6.5	1
3-6.1	2
5-5.8	4

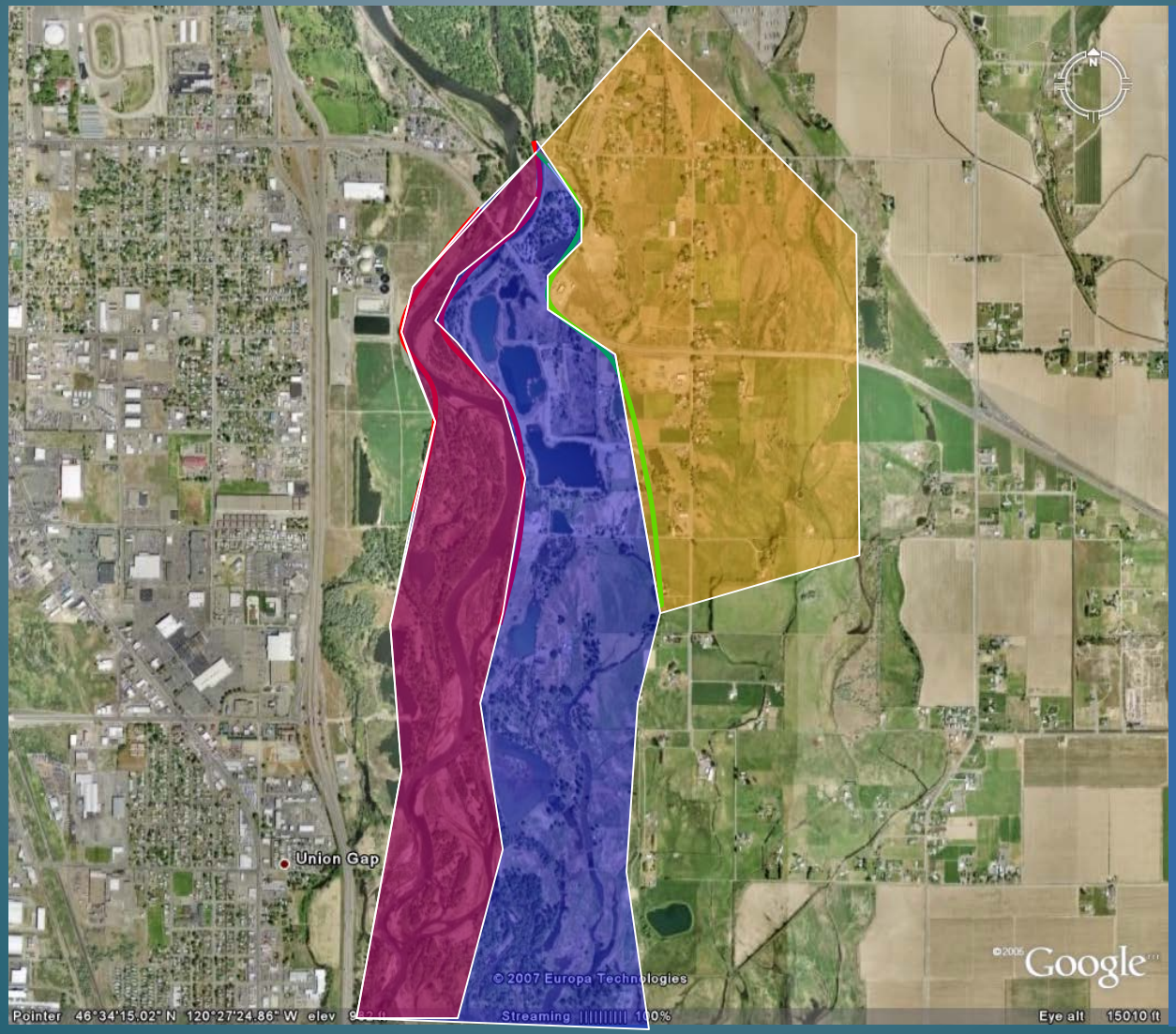
UNDERSTANDING ROLE OF FOREST ROADS


Little Naches - Lower Longmire Levee
Little Naches River
LB Levee
RB Levee
Pond
USFS Road 1900
bare earth
Value
High : 2884.25
Low : 2704.9
0 0.0375 0.075 0.15 0.225 0.3
Miles
N
Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

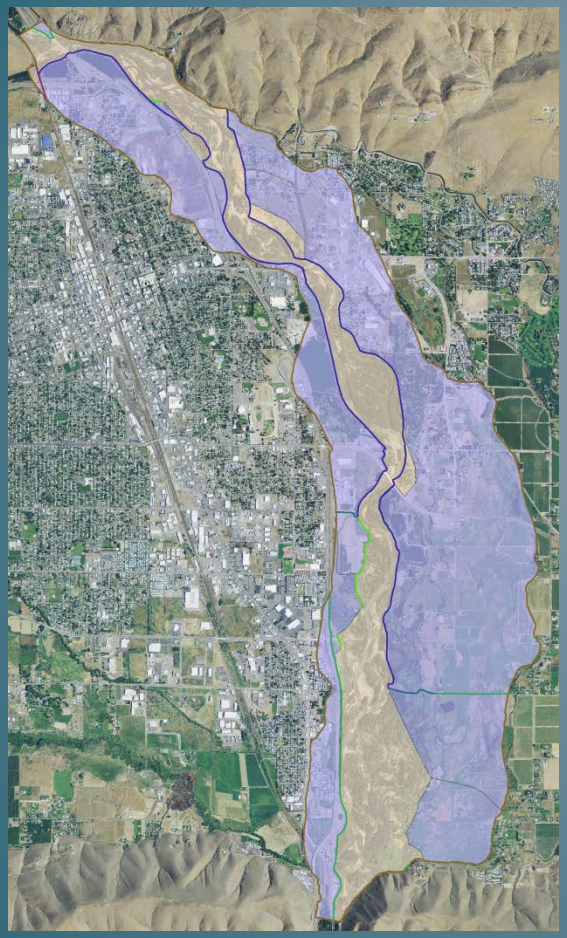
MAINSTEM FLOODPLAINS

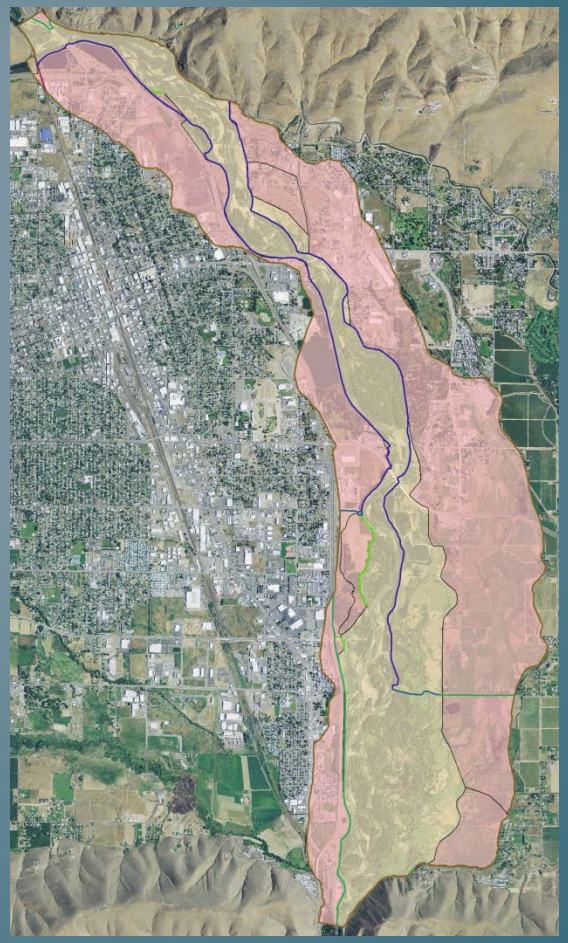
- More past- and current-active floodplains than any other interior Columbia system
- Active efforts to protect & enhance floodplains underway
- Floodplains by Design, Corps of Engineers and YBIP $s accelerating work

A System of Floodplains


Union Gap
© 2007 Europa Technologies
Google
Pointer 46°34'15.02" N 120°27'24.86" W elev
Streaming 100%
Eye alt 15010 ft

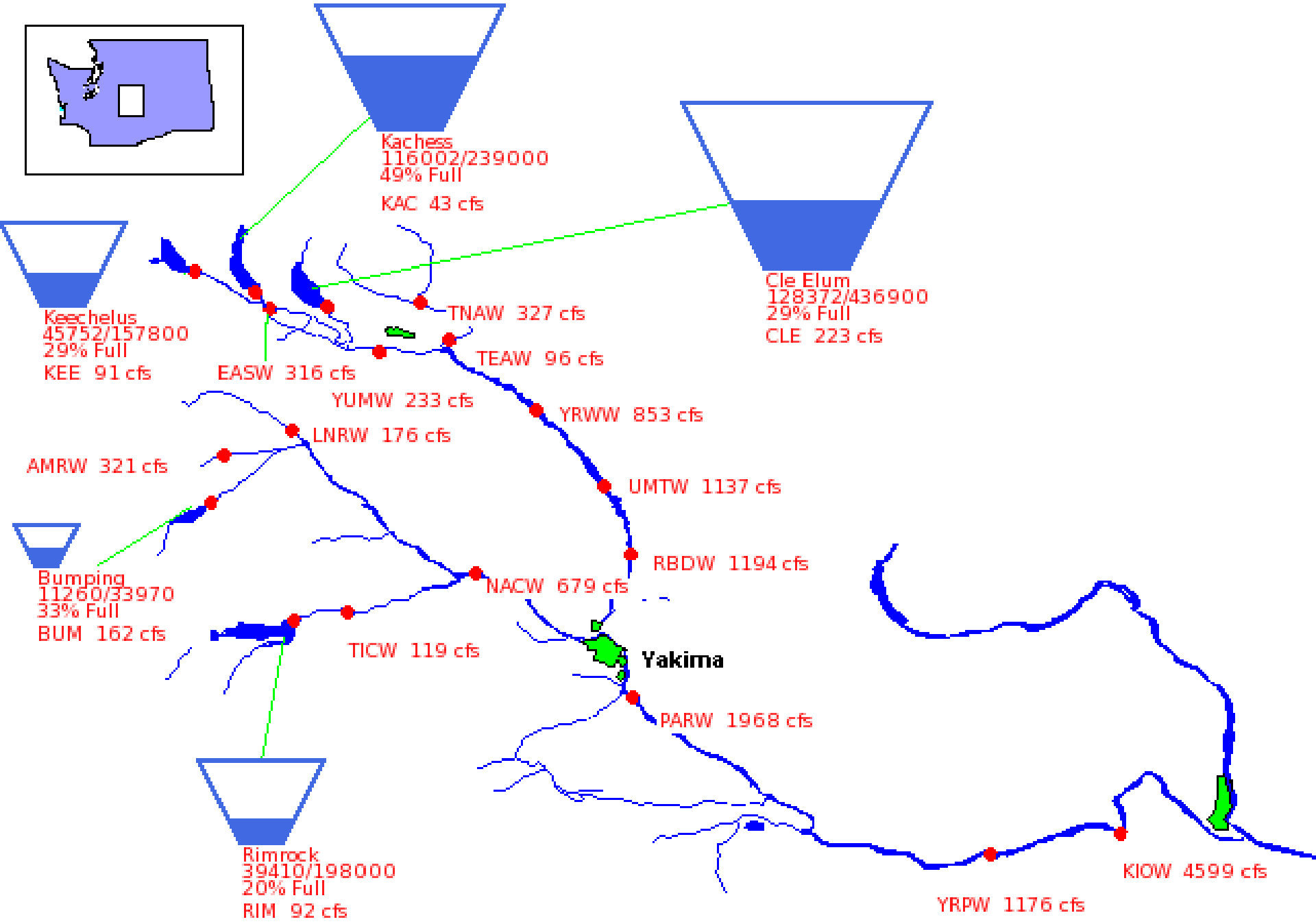
YAKIMA COUNTY & GAP TO GAP

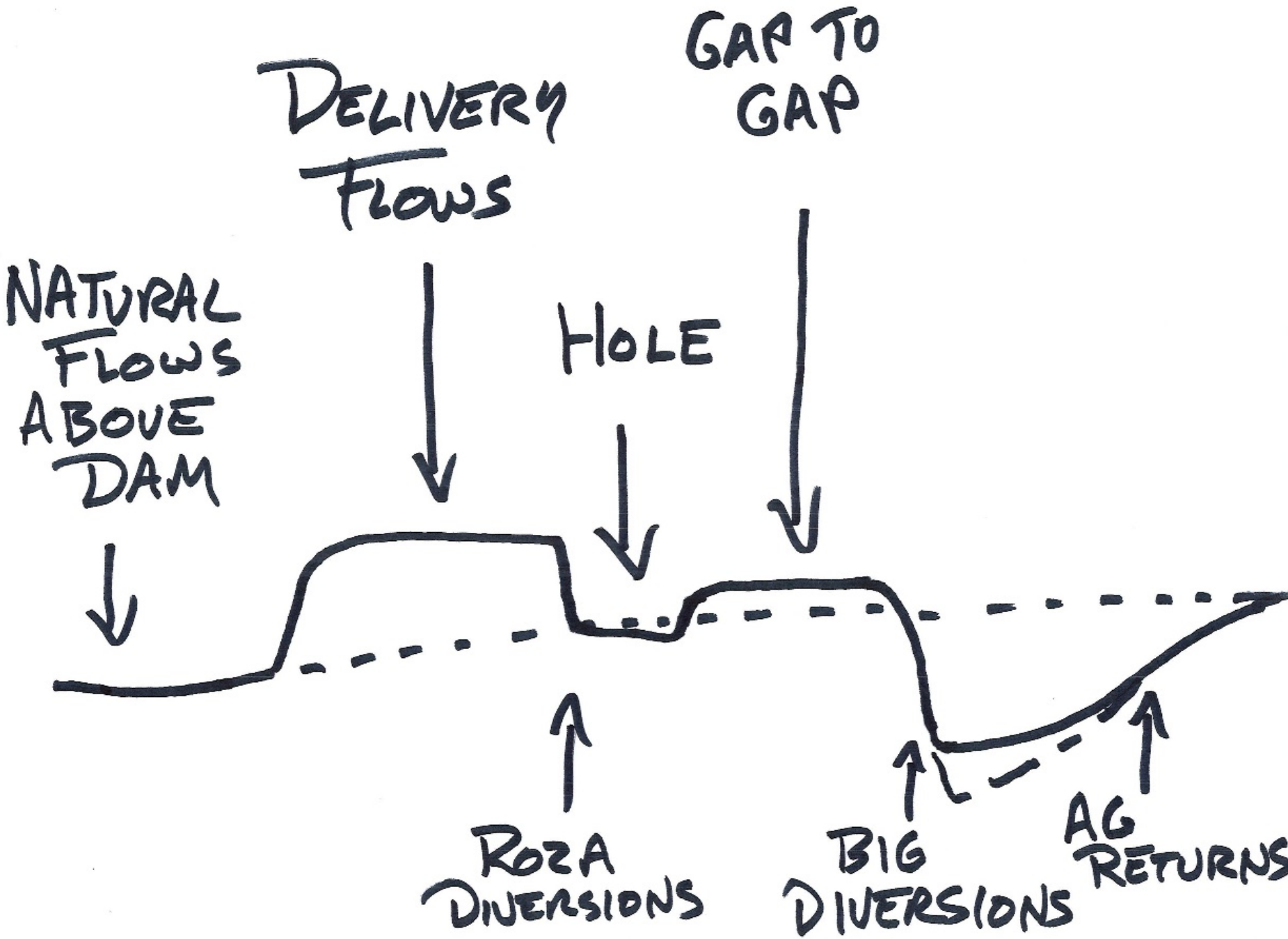




Floodplain Dates	Active (acres)	% of Historic (USGS)
2002	1,528	56
2014	1,640	60
2018	2,214	81

10/23/2014


Kachess
116002/239000
49% Full
KAC 43 cfs
Cle Elum
128372/436900
29% Full
CLE 223 cfs
Keechelus
45752/157800
29% Full
KEE 91 cfs
TNAW 327 cfs
TEAW 96 cfs
EASW 316 cfs
YUMW 233 cfs
YRWW 853 cfs
LNRW 176 cfs
AMRW 321 cfs
UMTW 1137 cfs
RBDW 1194 cfs
Bumping
11260/33970
33% Full
BUM 162 cfs
NACW 679 cfs
TICW 119 cfs
Yakima
PARW 1968 cfs
Rimrock
39410/198000
20% Full
RIM 92 cfs
KIOW 4599 cfs
YRPW 1176 cfs

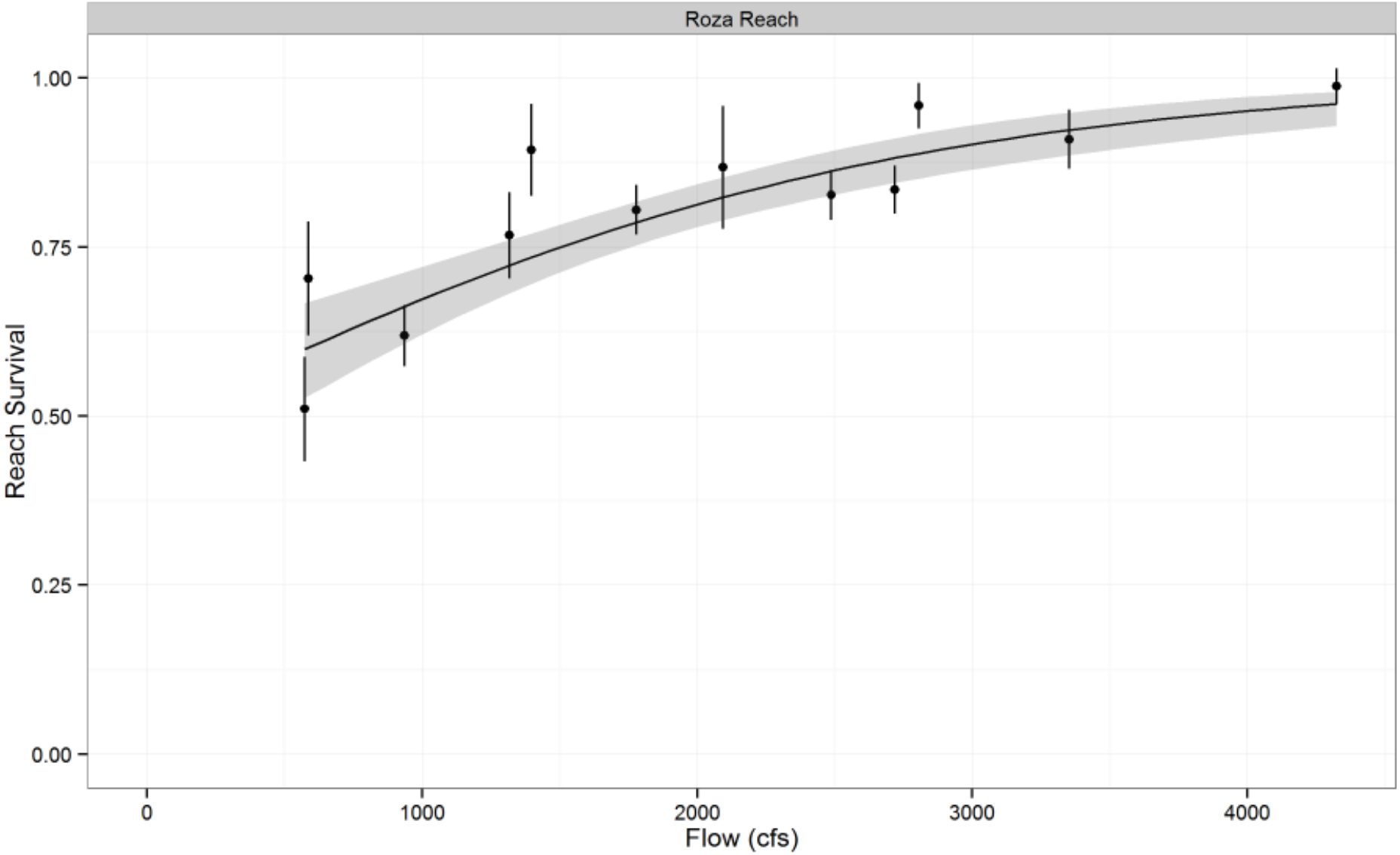

DELIVERY FLOWS
GAP TO GAP
NATURAL FLOWS ABOVE DAM
HOLE
ROZA DIVERSIONS
BIG DIVERSIONS
AG RETURNS

FLOW ISSUES IN THE YAKIMA BASIN

- **Lower winter/spring flows** below reservoirs
- **Unnaturally high flows** in irrigation season
  - Upper mainstem & lower ends of some tribs
- **Lower summer flows** due to diversions
  - Lower mainstems & selected tributaries
- **Holes in the River** (hydropower bypasses)

IMPROVE MAINSTEM FLOWS

- Increase ability to manage mainstem flows for fisheries
- Quantify, prioritize & implement flows for:
  - Smolt outmigration
  - Upstream passage of adults
  - Juvenile rearing in key reaches
- Address physical impacts of bypasses, etc

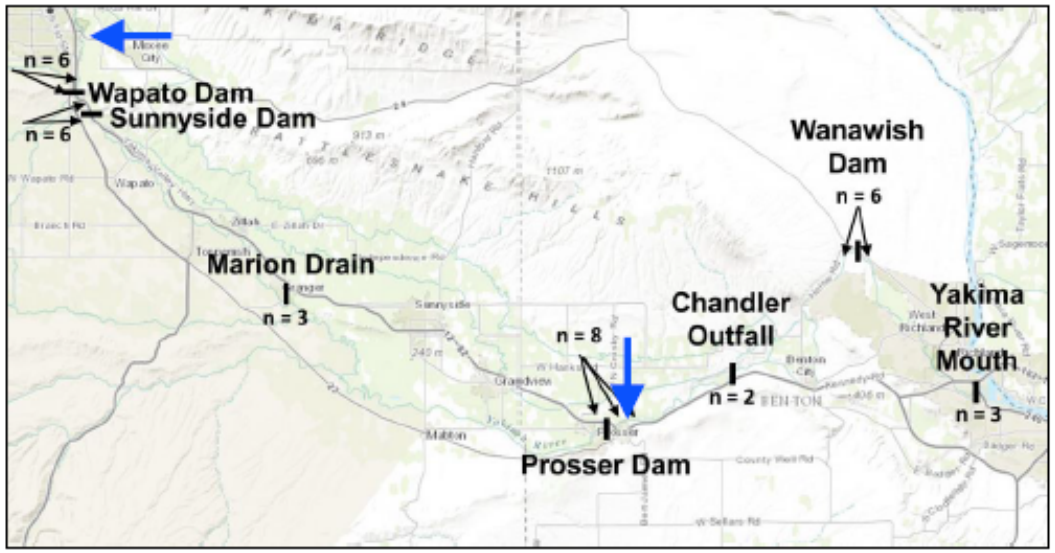

Roza Reach
Reach Survival
1.00
0.75
0.50
0.25
0.00
0
1000
2000
3000
4000
Flow (cfs)

ADDRESSING MAINSTEM ISSUES VIA:

- SOAC and other Existing Mechanisms
- BOR Yakima Operations BIOP
- The Integrated Plan Proposal
  - New and Expanded Reservoirs
  - Fish Passage at all Dams
  - Significant conservation and habitat programs
  - Water marketing & conservation
  - Aquifer recharge

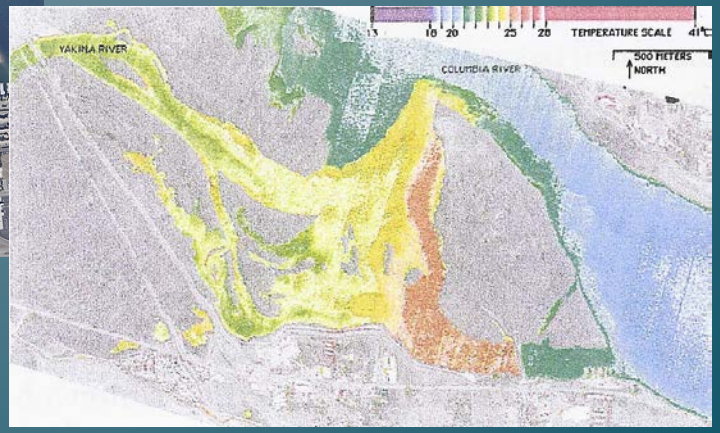
2018 and Beyond

- 2018 study planning underway
  - Yearling Chinook salmon
    - n = 350
    - late-March to mid-May
  - Subyearling Chinook salmon
    - n = 400
    - mid-May to late-June
  - Steelhead
    - n = 350
    - mid-April to late-May



USGS

WATER QUALITY
IN THE LOWER YAKIMA


TEMPERATURE SCALE
YAKIMA RIVER
COLUMBIA RIVER
500 METERS
NORTH

HATCHERY INTERACTIONS?

- No hatchery steelhead production
- Hatchery strays <5% of run
- Kelt Reconditioning

IN-BASIN HARVEST ISSUES?

- *Cessation of recreational steelhead fishery in Yakima in 1990s*
- *Limitations on other fisheries to protect steelhead in 2000s*
- *Cessation of trout stocking in streams*

ANNUAL HABITAT FUNDING SUMMARY

Program	Amount
BPA (Habitat only)	$ 4,000,000
YRBWEP (25% budget)	$ 2,125,000
SRFB	$ 1,500,000
Other (20% of above)	$ 1,525,000
ECOLOGY (YBIP)	**$ ~2,500,00**
ANNUAL TOTAL	**$ 14,150,000**

ADDITIONAL FUNDING IN PLAY…

- Integrated Plan Habitat Funding
- US Corps of Engineers 1134 Funds
- USFS Restoration & Road Repair Funds
- BLM Cowiche Restoration Funds
- BPA Funding for YTAHP & Yakama Nation

Building A Future for Water, Wildlife and Working Lands

Yakima River Basin Integrated Water Resource Management Plan

Reservoir Fish Passage

Provide fish passage at:

1. Clear Lake
2. Cle Elum
3. Bumping
4. Tieton (Rimrock)
5. Keechelus
6. Kachess

Enhanced Water Conservation

1. Implement an agricultural water conservation program designed to conserve up to 170,000 acre-feet of water in good water years.
2. Create a fund to promote water use efficiency basin-wide using voluntary, incentive-based programs. Focus on outdoor uses as top priority.

Habitat/Watershed Protection & Enhancement

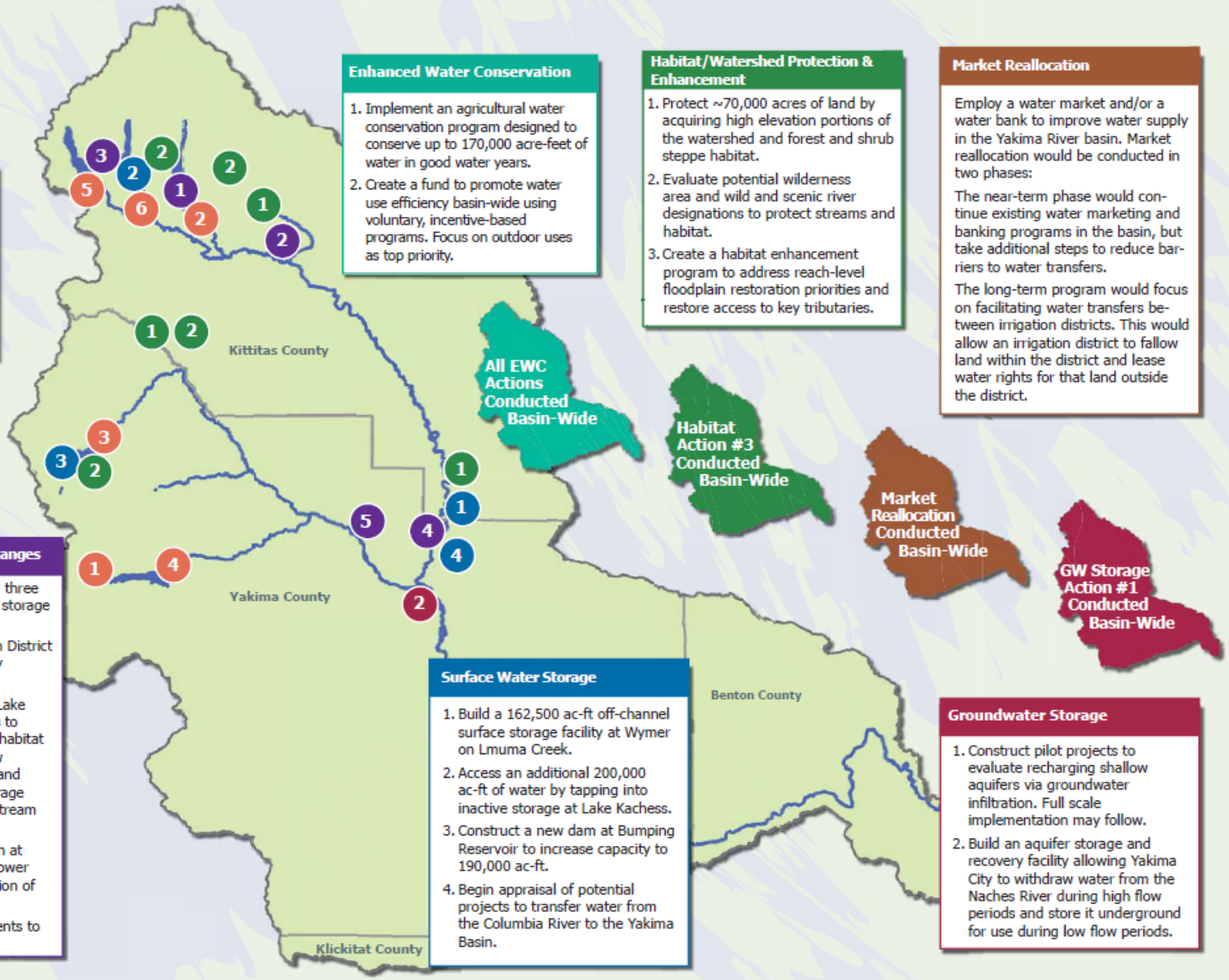
1. Protect ~70,000 acres of land by acquiring high elevation portions of the watershed and forest and shrub steppe habitat.
2. Evaluate potential wilderness area and wild and scenic river designations to protect streams and habitat.
3. Create a habitat enhancement program to address reach-level floodplain restoration priorities and restore access to key tributaries.

Market Reallocation

Employ a water market and/or a water bank to improve water supply in the Yakima River basin. Market reallocation would be conducted in two phases:

The near-term phase would continue existing water marketing and banking programs in the basin, but take additional steps to reduce barriers to water transfers.

The long-term program would focus on facilitating water transfers between irrigation districts. This would allow an irrigation district to fallow land within the district and lease water rights for that land outside the district.



Structural & Operational Changes

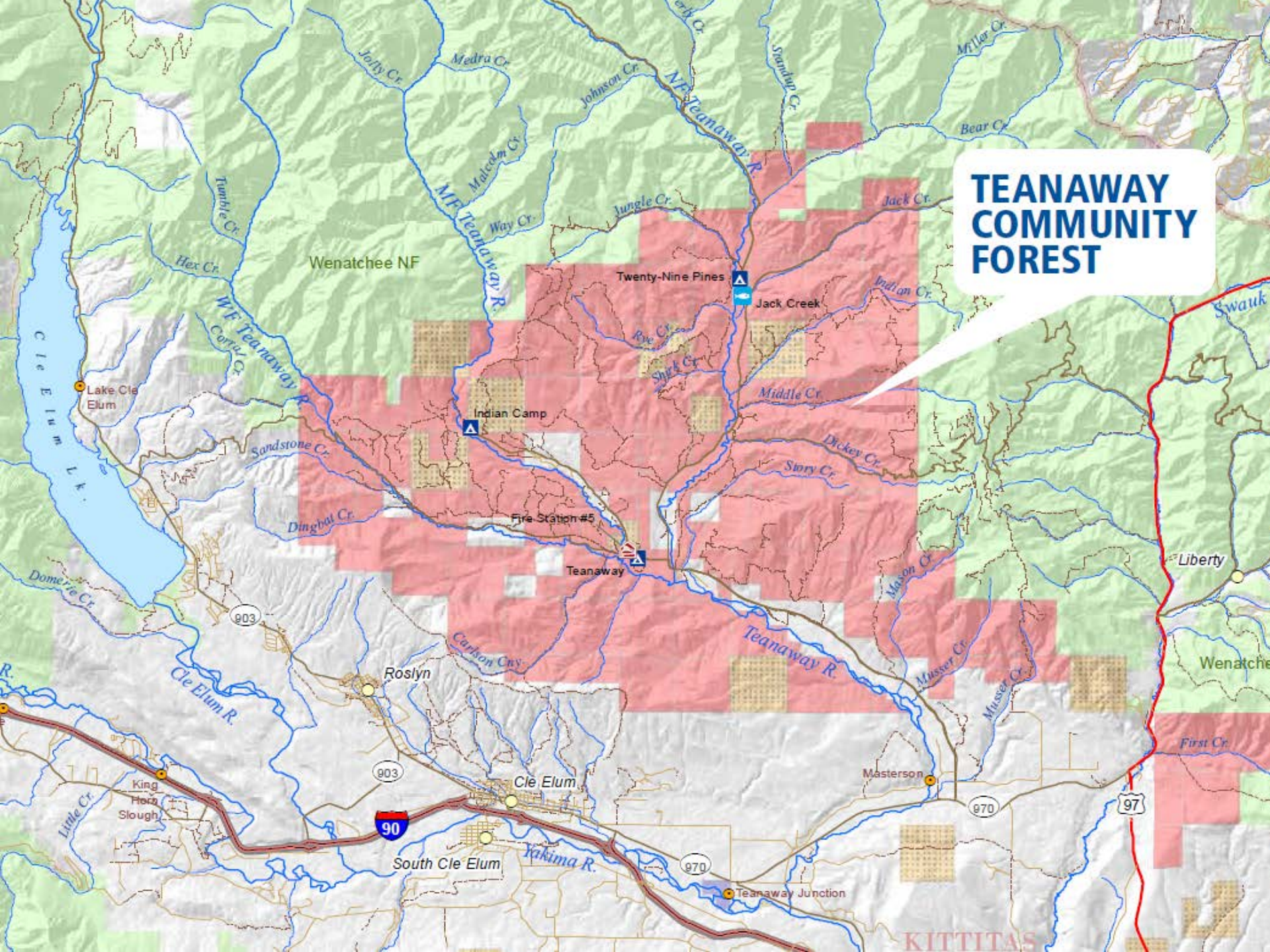
1. Raise the Cle Elum Pool by three feet to add 14,600 ac-ft in storage capacity.
2. Modify Kittitas Reclamation District canals to provide efficiency savings.
3. Construct a pipeline from Lake Keechelus to Lake Kachess to reduce flows and improve habitat conditions during high flow releases below Keechelus and to provide more water storage in Lake Kachess for downstream needs.
4. Decrease power generation at Roza Dam and Chandler power plant to support outmigration of juvenile fish.
5. Make efficiency improvements to the Wapatox Canal.

Surface Water Storage

1. Build a 162,500 ac-ft off-channel surface storage facility at Wymer on Lmuma Creek.
2. Access an additional 200,000 ac-ft of water by tapping into inactive storage at Lake Kachess.
3. Construct a new dam at Bumping Reservoir to increase capacity to 190,000 ac-ft.
4. Begin appraisal of potential projects to transfer water from the Columbia River to the Yakima Basin.

Groundwater Storage

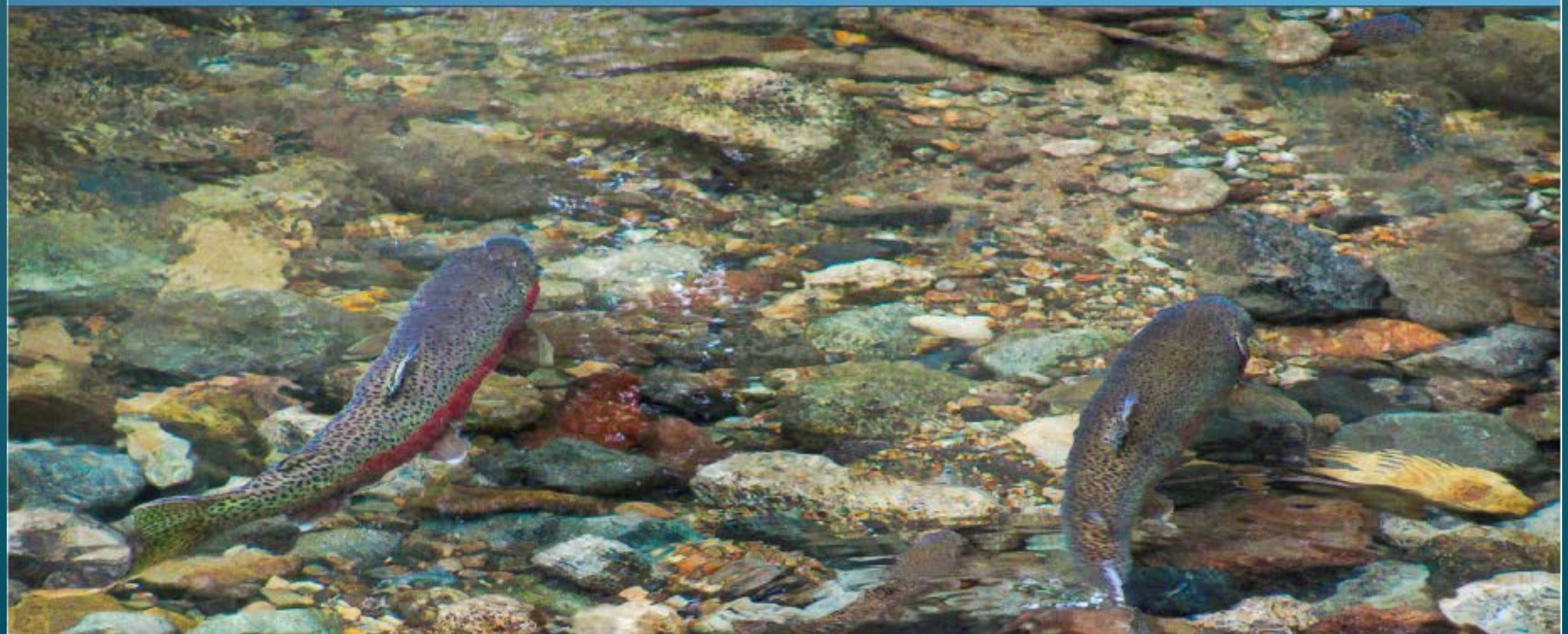
1. Construct pilot projects to evaluate recharging shallow aquifers via groundwater infiltration. Full scale implementation may follow.
2. Build an aquifer storage and recovery facility allowing Yakima City to withdraw water from the Naches River during high flow periods and store it underground for use during low flow periods.


TEANAWAY COMMUNITY FOREST
Wenatchee NF
Twenty-Nine Pines
Jack Creek
Indian Camp
Fire Station #5
Teanaway
Lake Cle Elum
Cle Elum L.
Roslyn
Cle Elum
South Cle Elum
King
Horn Slough
Masterson
Teanaway Junction
Liberty
Wenatche
KITTITAS
Teanaway R.
NF Teanaway R.
MF Teanaway R.
WF Teanaway R.
Cle Elum R.
Takima R.
Swauk
Jolly Cr.
Medra Cr.
Johnson Cr.
Standup Cr.
Miller Cr.
Bear Cr.
Tumble Cr.
Malcolm Cr.
Way Cr.
Jungle Cr.
Jack Cr.
Hex Cr.
Indian Cr.
Corral Cr.
Rye Cr.
Shack Cr.
Middle Cr.
Sandstone Cr.
Dickey Cr.
Story Cr.
Dingbat Cr.
Mason Cr.
Domerie Cr.
Carlson Cny.
Musser Cr.
First Cr.
Little Cr.
903
90
970
97

Final Draft: VSP Section

YAKIMA STEELHEAD RESEARCH, MONITORING AND EVALUATION PLAN

May 2011



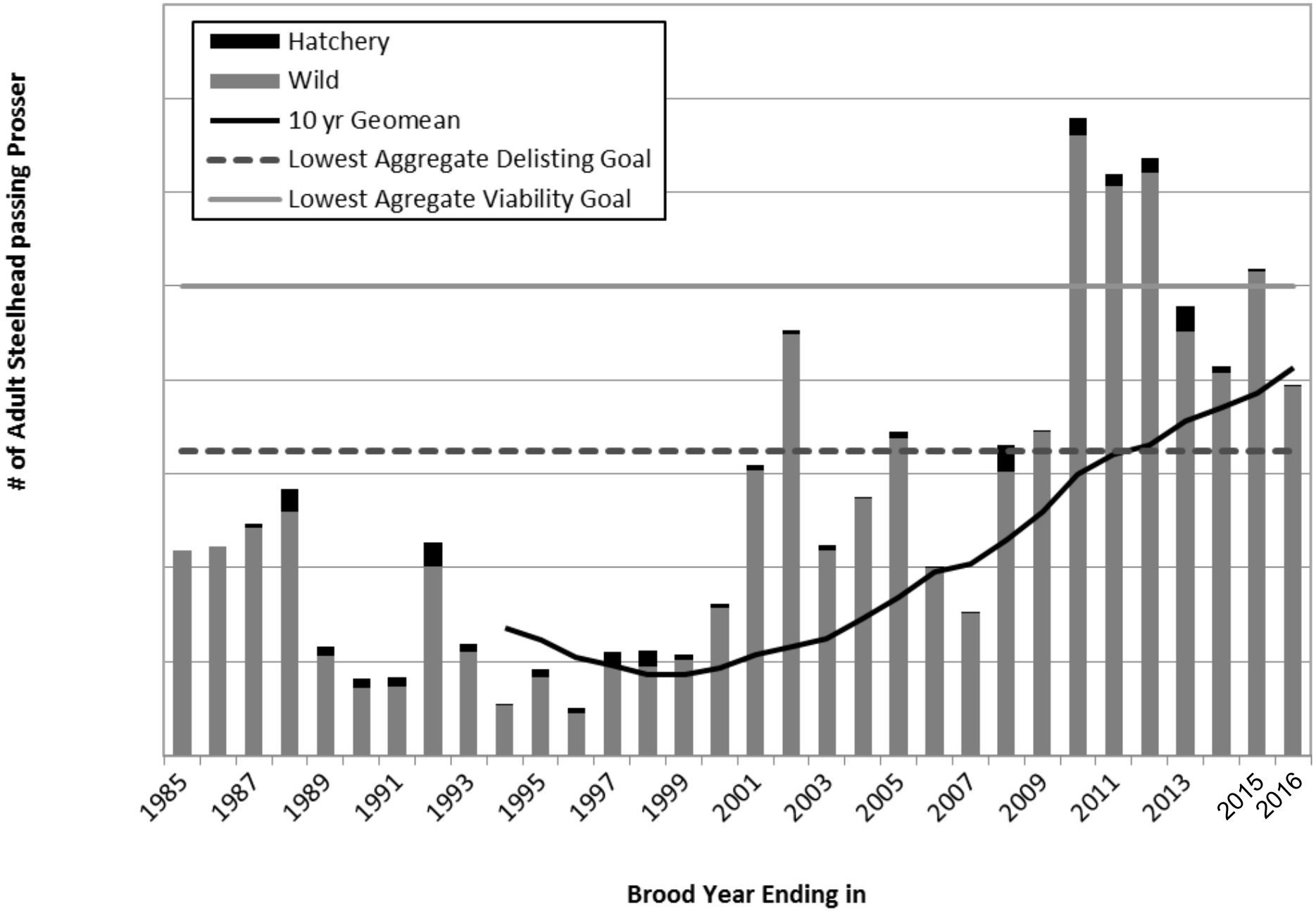
STEELHEAD RME PLAN

Steelhead VSP Monitoring Plan

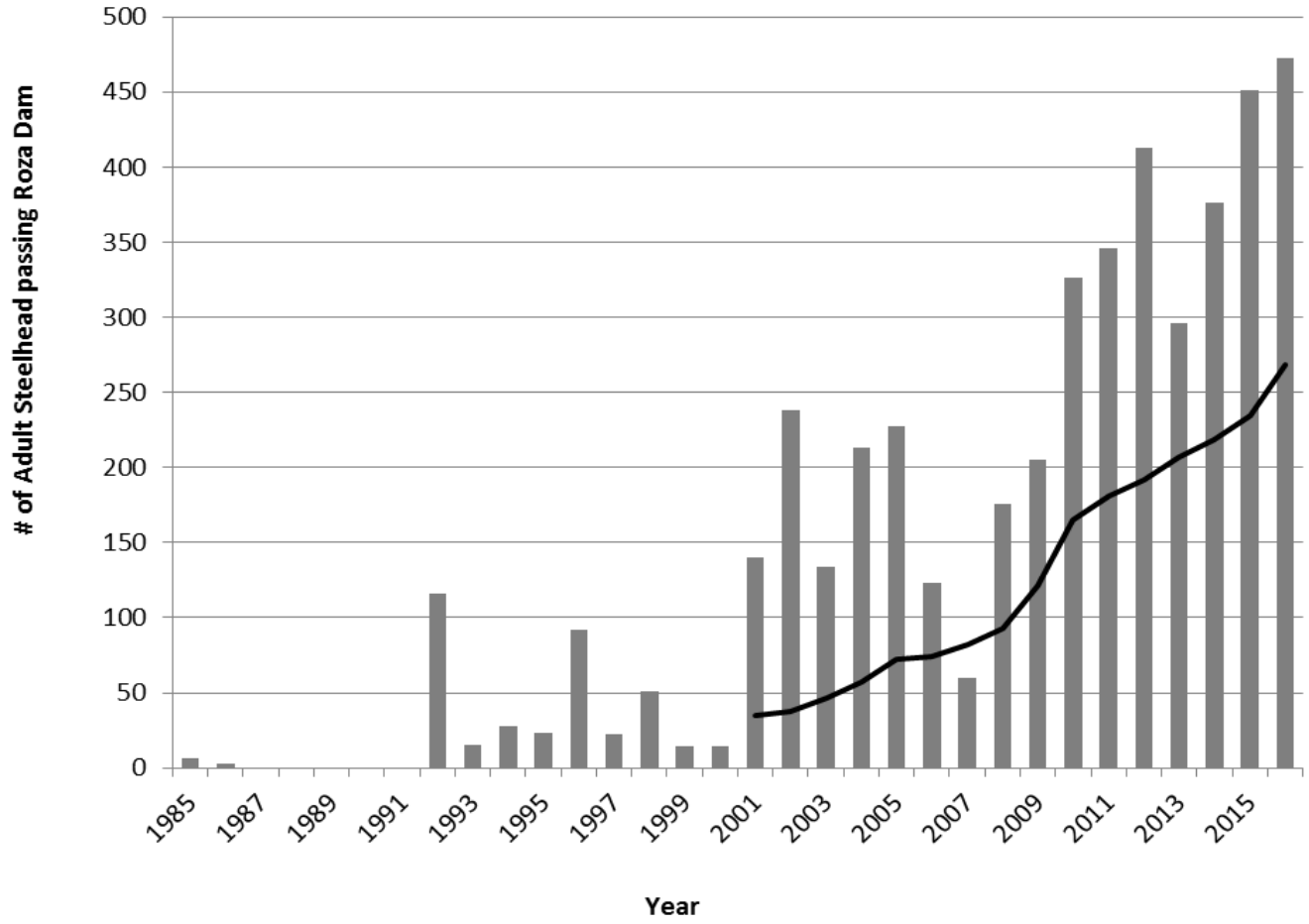
- Completed in 2011
- Resulted in new funding for priorities
- 3 year radio-tracking study wrapping up…
- Increase in Pit Tag detection capability throughout basin
- Annual Steelhead meeting in Jan/Feb

Habitat & Threats Monitoring Plan

- Focus on data and analysis that we will need to address NOAA threats criteria


Hatchery
Wild
10 yr Geomean
Lowest Aggregate Delisting Goal
Lowest Agregate Viability Goal
# of Adult Steelhead passing Prosser
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2016
Brood Year Ending in

UPPER YAKIMA POPULATION ABUNDANCE



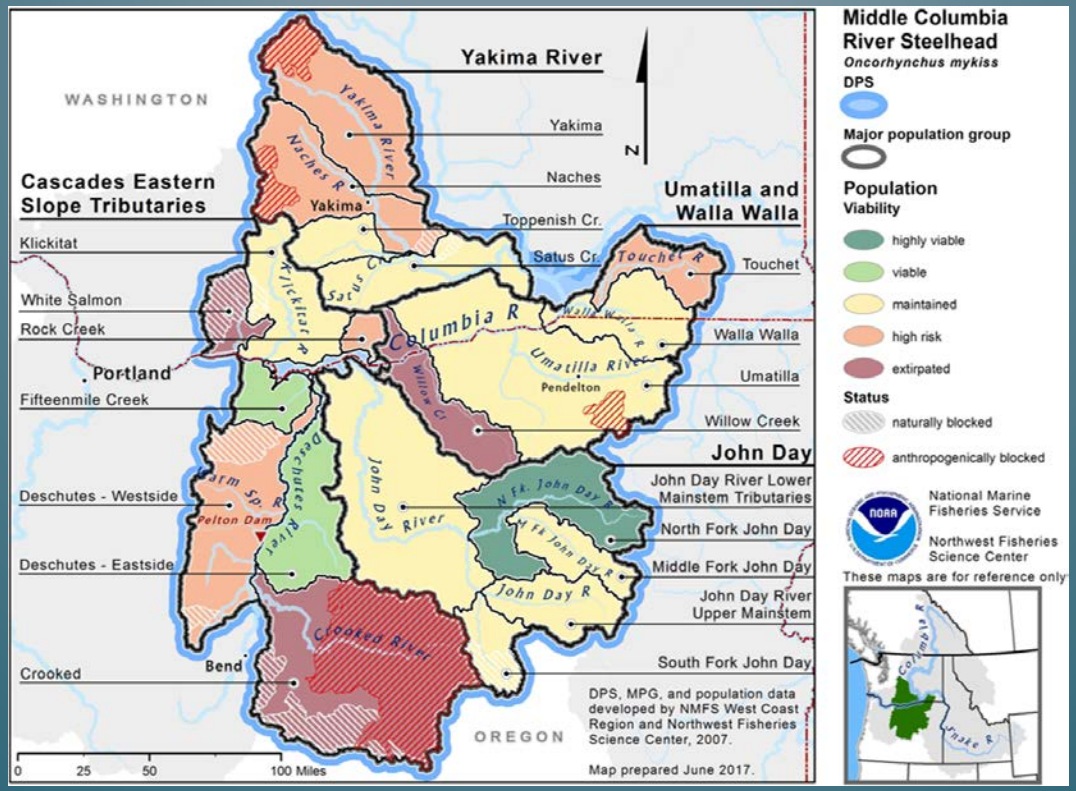
VSP MONITORING:

Abundance / Productivity Risk	Spatial Structure / Diversity Risk			
	Very Low	Low	Moderate	High
Very Low (<1%)	HV	HV	V	M
Low (1-5%)	V	V	V Toppenish, Satus [2]	M
Moderate (6 – 25%)	M	M	M Toppenish, Satus [1] Naches[2]	
High (> 25%)			Naches[1]	Upper Yakima [1], Upper Yakima [2]

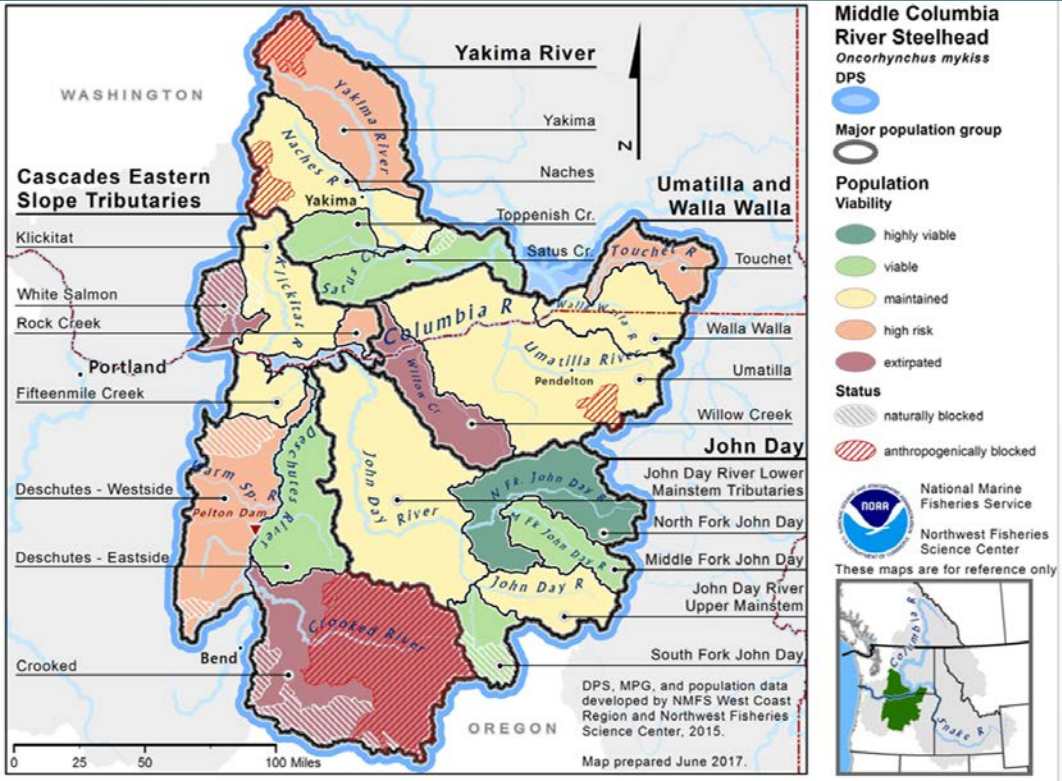
DRAFT

- Recovery Plan sets clear goals
- Existing YKFP infrastructure supports monitoring
- 2011 VSP Monitoring Plan identifies gaps and priorities
- Significant Funding available from BPA under FCRPS Biop
- Strong support from Yakama Nation, WDFW & NOAA
- Annual coordination among partners
- **Clear expectation of repeated analysis**

MID C STEELHEAD STATUS - 2007



Mid C Steelhead status - 2016



YAKIMA MPG SCENARIO

2015					
		Spatial Strucutre / Diversity Risk			
		Very Low	Low	Moderate	High
Abundance / Productivity Risk	Very Low		Satus		
	Low			Toppenish	
	Moderate			Naches	
	High				Upper Yakima

For MPG Viability we need to see:					
		Spatial Strucutre / Diversity Risk			
		Very Low	Low	Moderate	High
Abundance / Productivity Risk	Very Low		Satus		
	Low			Toppenish Naches	
	Moderate			Upper Yakima	
	High				

CURRENT NEEDS BY AGENCY

Bureau of Reclamation

- Assess and improve mainstem Yakima smolt survival rates via:
  - Subordination at Roza
  - Lower Yakima Smolt Survival Study
  - Improved spring flow conditions
- Complete passage projects at Cle Elum and Rimrock dams
- Fully Implement Yakima Basin Integrated Plan
- YRBWEP support for tributary habitat and flow actions

CURRENT NEEDS BY AGENCY

BPA

- Work with BOR on power subordination at Roza and Chandler
- Support of VSP monitoring
- Fish & Wildlife Program tributary habitat work

Corps of Engineers

- Gap to Gap levee setback
- Bateman Island causeway breeching
- Mid-Columbia Avian Predation Management

US Forest Service

- Little Naches Aquatic Restoration
- Manastash/Taneum & Swauk Landscape-scale Restoration Projects

CURRENT NEEDS BY AGENCY

USGS

- Smolt survival studies
- Lower Yakima Water Qulaity Studies

EPA

- Support efforts to improve cold water refugia
- Support Clean Water Act implementation

BLM

- Yakima Canyon, Swauk & Cowiche Habitat Projects

USFWS

- Habitat project funding and support

NEED TO MAINTAIN VSP ANALYSIS CAPACITY

- *Ensure VSP monitoring continues to be funded*
- *Continue use of consistent & repeatable analysis*
- *Maintain partnerships even as individuals come and go*
- *Improve population-level smolt abundance estimates*
- *Improve approach to diversity metrics*

VSP CRITERIA WILL BE THE MAIN DRIVERS OF DELISTING!