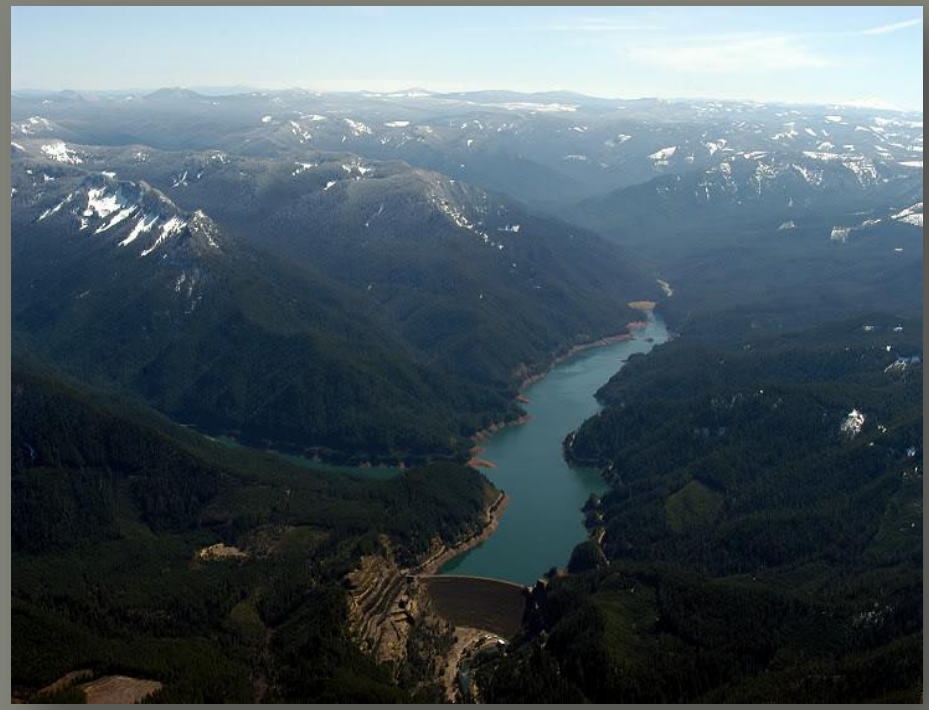
THE WILLAMETTE PROJECT – OVERVIEW OF MAJOR ESA AND NEPA ACTIVITIES

Rich Piaskowski
U.S. Army Corps of Engineers

Corvallis, OR
State of the Willamette Meeting
16 January, 2020



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OUTLINE

- The Portland District, U.S Army Corps of Engineers
- The Corps' Willamette Valley Project and environmental compliance
- Other Corps/federal programs relating to ecosystem restoration

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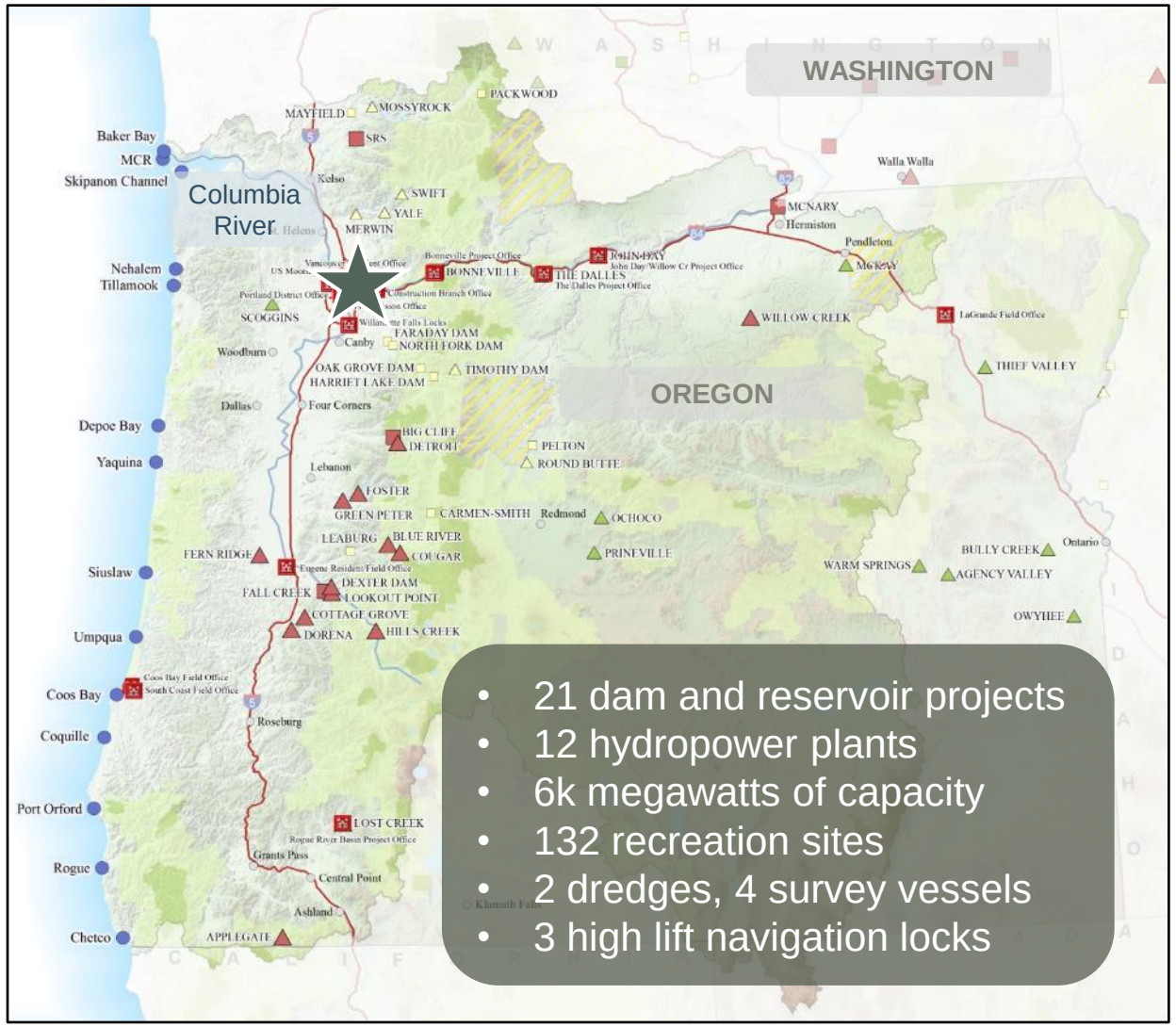
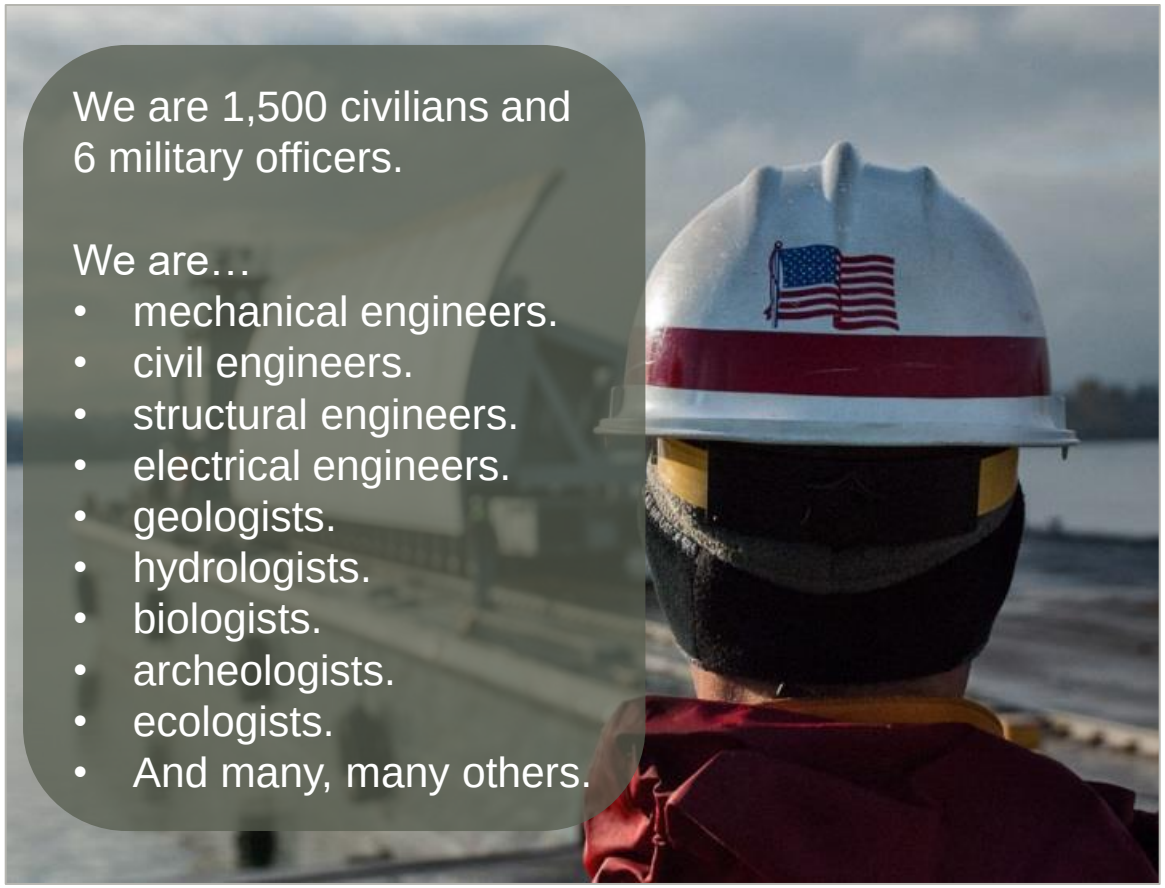
WHAT MAKES UP THE PORTLAND DISTRICT?



- 21 dam and reservoir projects
- 12 hydropower plants
- 6k megawatts of capacity
- 132 recreation sites
- 2 dredges, 4 survey vessels
- 3 high lift navigation locks



We are 1,500 civilians and 6 military officers.

We are…

- mechanical engineers.
- civil engineers.
- structural engineers.
- electrical engineers.
- geologists.
- hydrologists.
- biologists.
- archeologists.
- ecologists.
- And many, many others.

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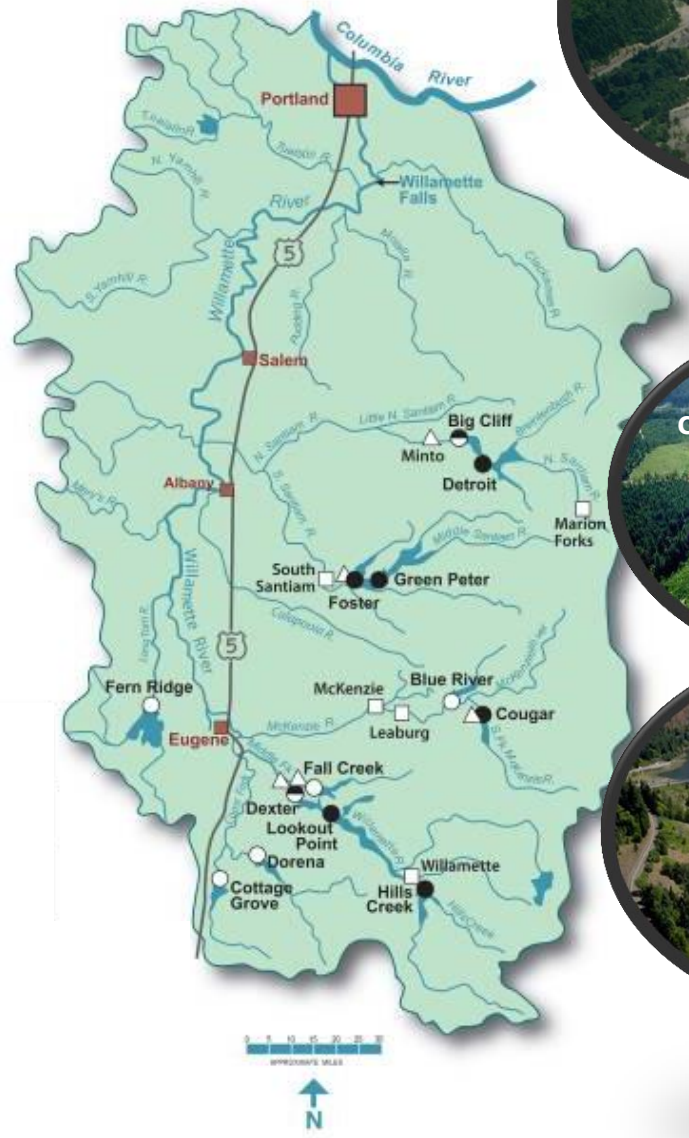
CORPS' WILLAMETTE VALLEY PROJECT (WVP)

- **13 multi-purpose dams and reservoirs**
- **91 miles of revetments**

Authorized Purposes

- Flood damage reduction
- Hydropower
- Navigation
- Irrigation
- Fish & wildlife
- Recreation
- Water quality
- Municipal & industrial water supply



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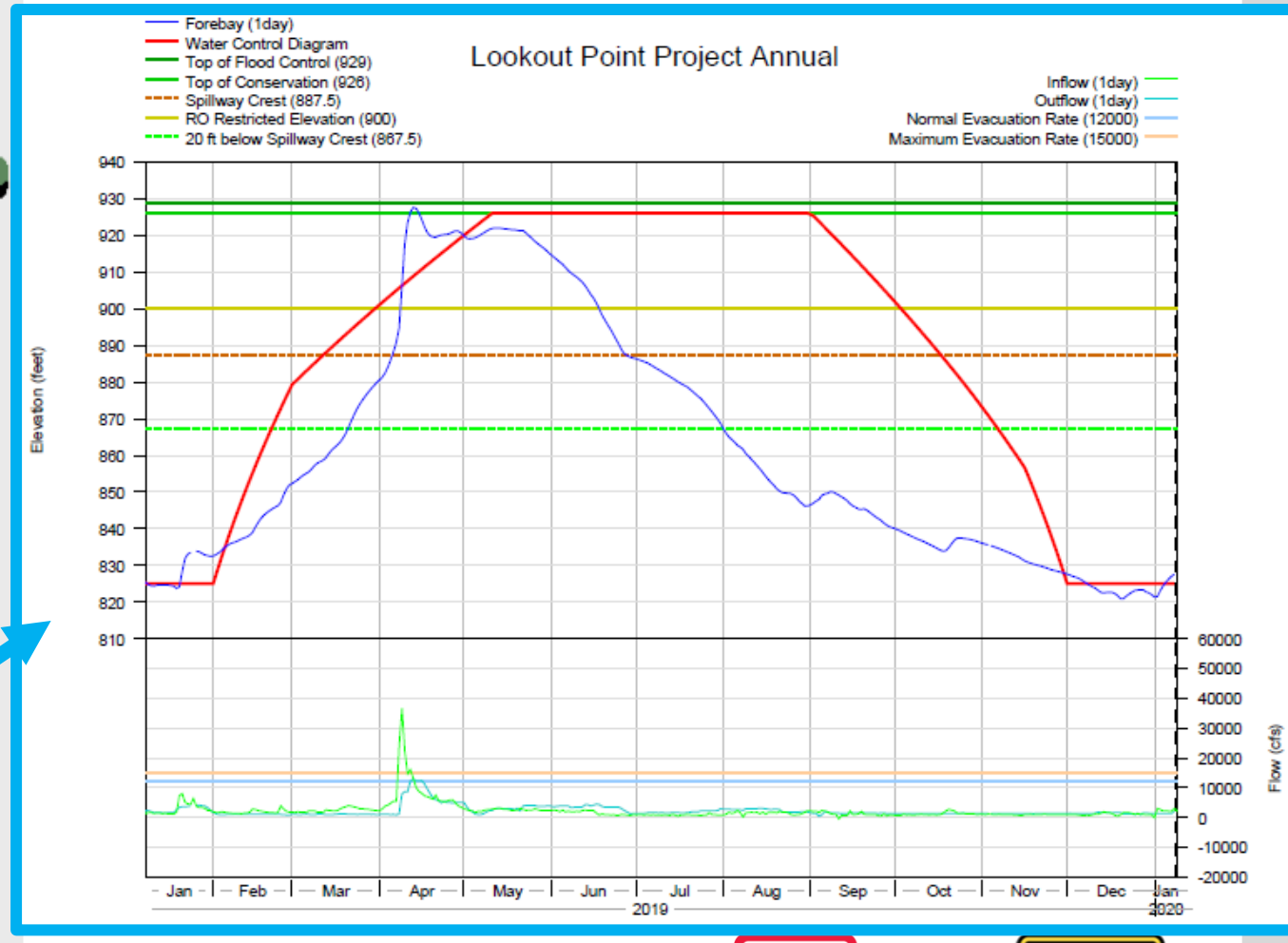
The Willamette Basin



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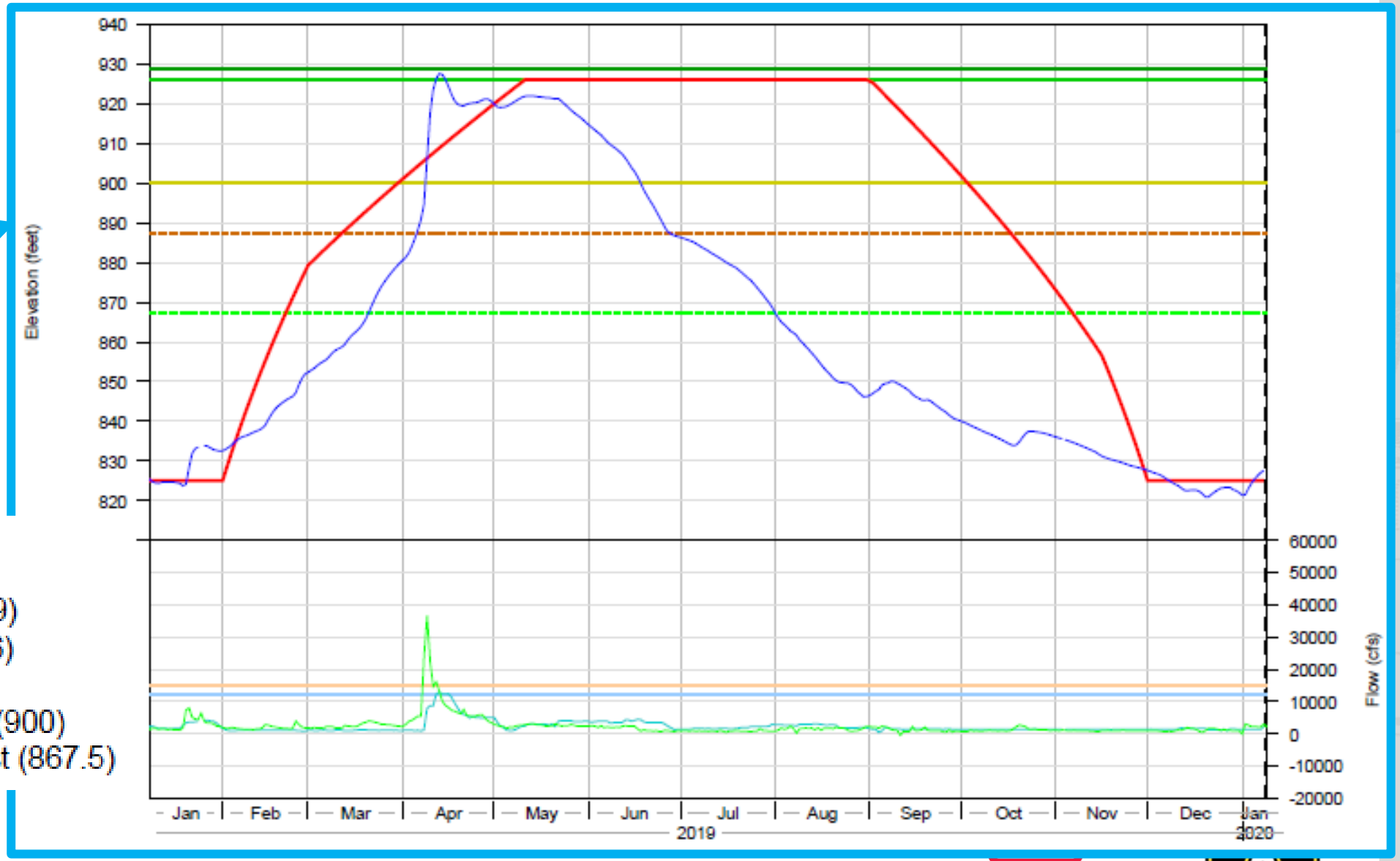
LOOKOUT POINT ANNUAL PROJECT, 2019



- Forebay (1day)
- Water Control Diagram
- Top of Flood Control (929)
- Top of Conservation (926)
- Spillway Crest (887.5)
- RO Restricted Elevation (900)
- 20 ft below Spillway Crest (867.5)

Data downloaded 01/01/20 from: http://www.nwd-wc.usace.army.mil/nwp/teacup/willamette/

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WILLAMETTE VALLEY SYSTEM EIS

"The purpose and need is continued operations and maintenance of the Willamette Valley System (WVS) in accordance with authorized project purposes; while meeting Endangered Species Act (ESA) obligations to avoid jeopardizing the continued existence of listed species."

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What types of actions will be evaluated in the EIS?

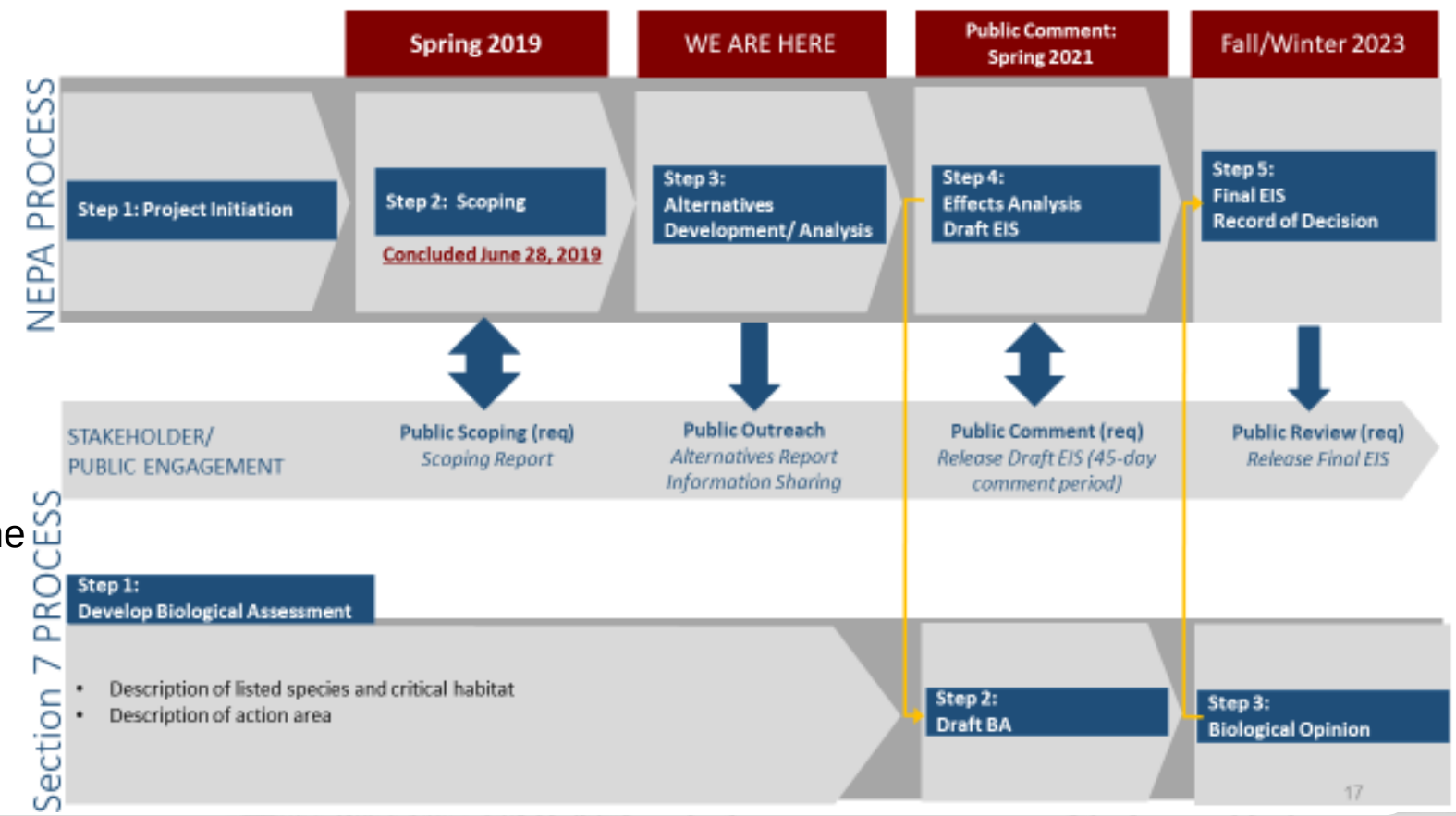
- Reservoir and flow management
- Fish facility
- Maintenance activities
- Hatchery mitigation program
- Bank Protection Program (i.e., revetments)

The Corps is integrating the NEPA and ESA processes:

- Draft EIS will provide an evaluation of the action alternatives, including the proposed action.

- Public comment on the Draft EIS will inform the proposed action included in the Biological Assessment for ESA consultation.

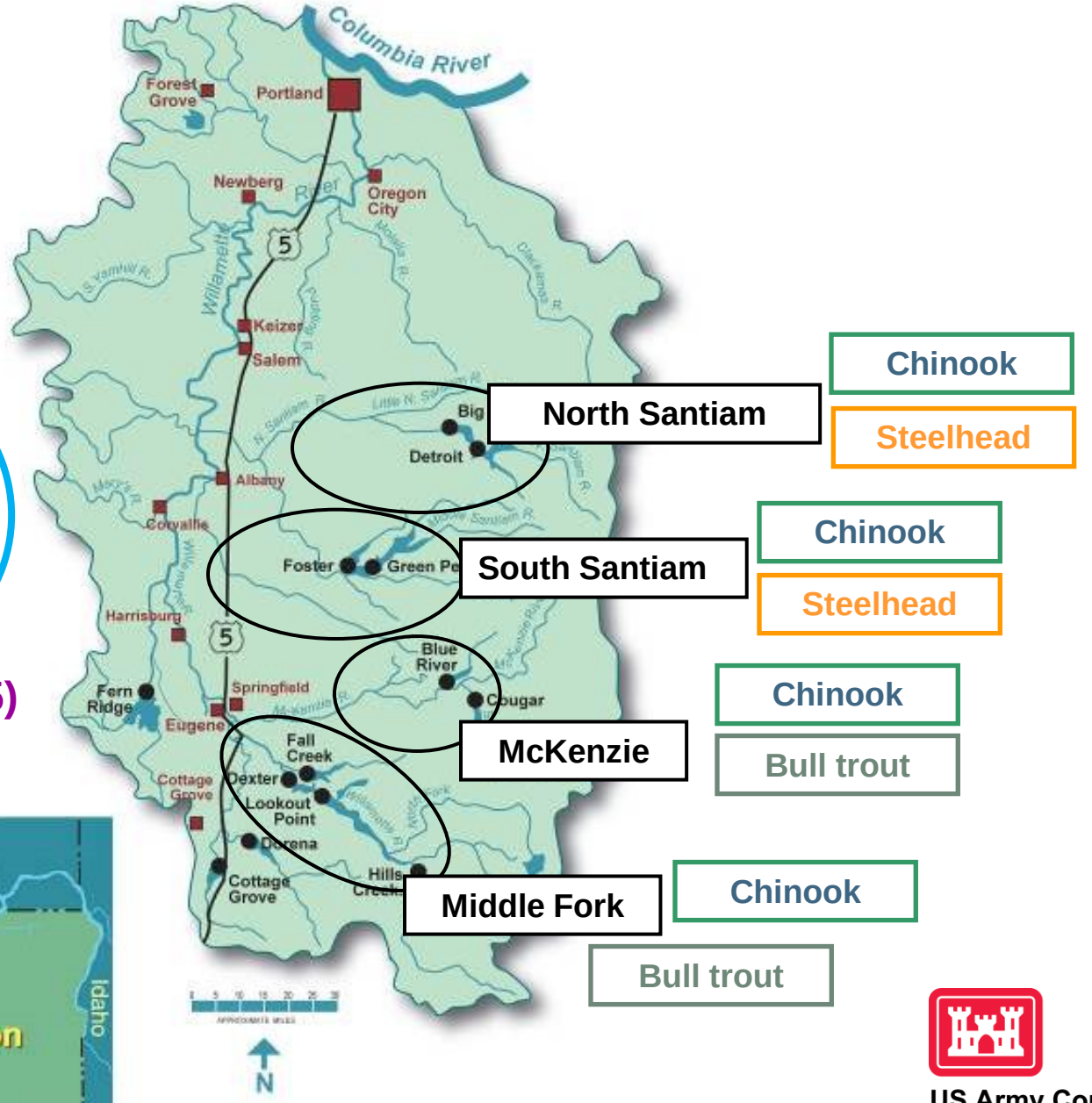
- Results of the ESA consultation will be integrated into the Final EIS.



Major populations of ESA-listed species affected by the Willamette Project

Oregon Chub in all 4 sub-basins

(de-listed, 2015)



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SPAWNING

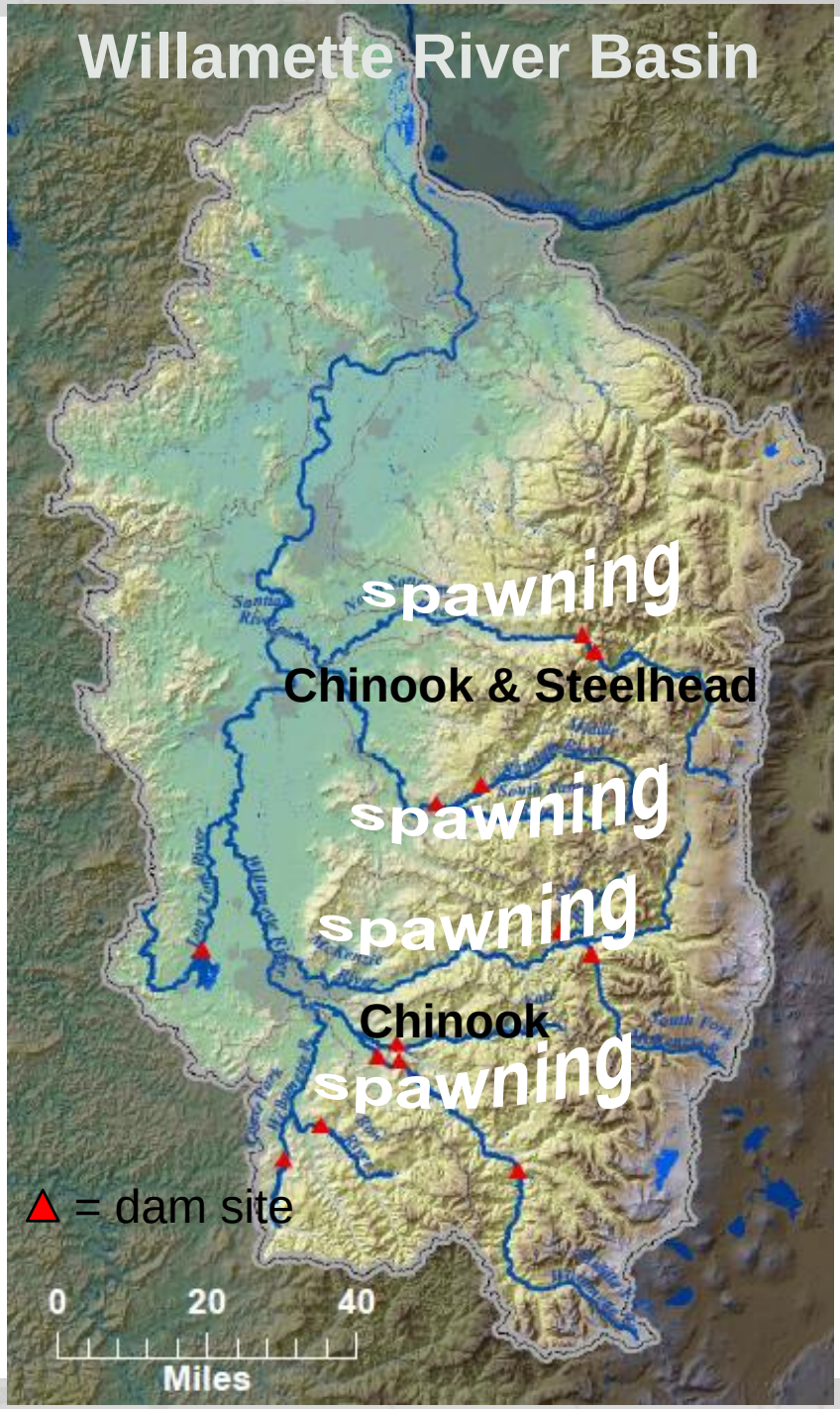
Historically, spring Chinook and winter steelhead spawned both upstream and downstream of where Willamette Project dams now exist

(Craig and Townsend, 1946; Mattson, 1948)

- Typically in riffles, glides or pool tail outs containing a mix of gravel and cobble with adequate depth (≥ 30 cm) and velocity (50 to 150 cm/s)

(Healey, 1991)

Photo courtesy Freshwaters Illustrated



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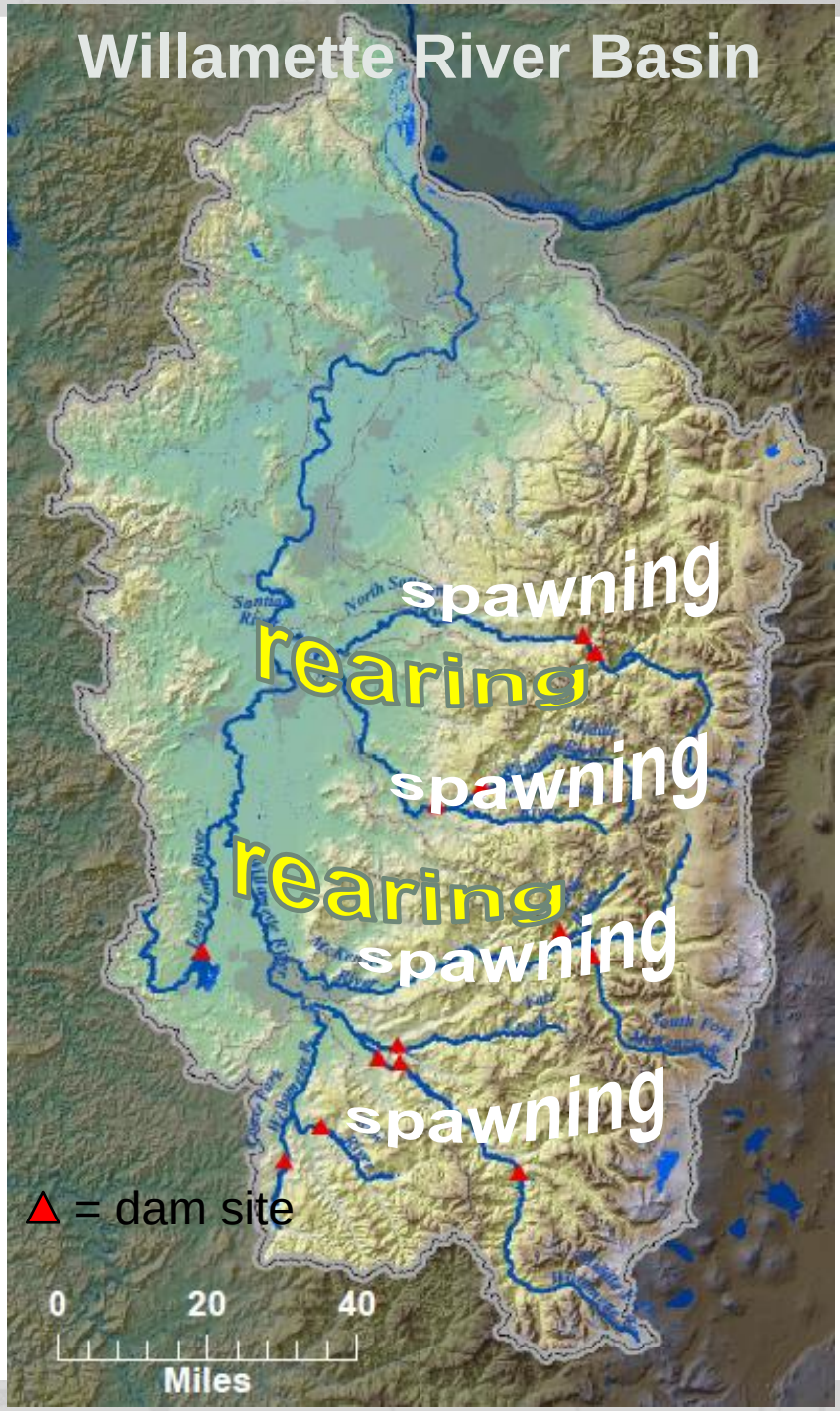
REARING

Chinook rear along river margins, flood plains, and lower reaches of natal and non-natal streams

(Craig and Townsend, 1946)

Steelhead often rear in riffles and also deep pools with relatively high velocities

(e.g. Bisson et al. 1988)



WILLAMETTE SALMON AND STEELHEAD RECOVERY APPROACH

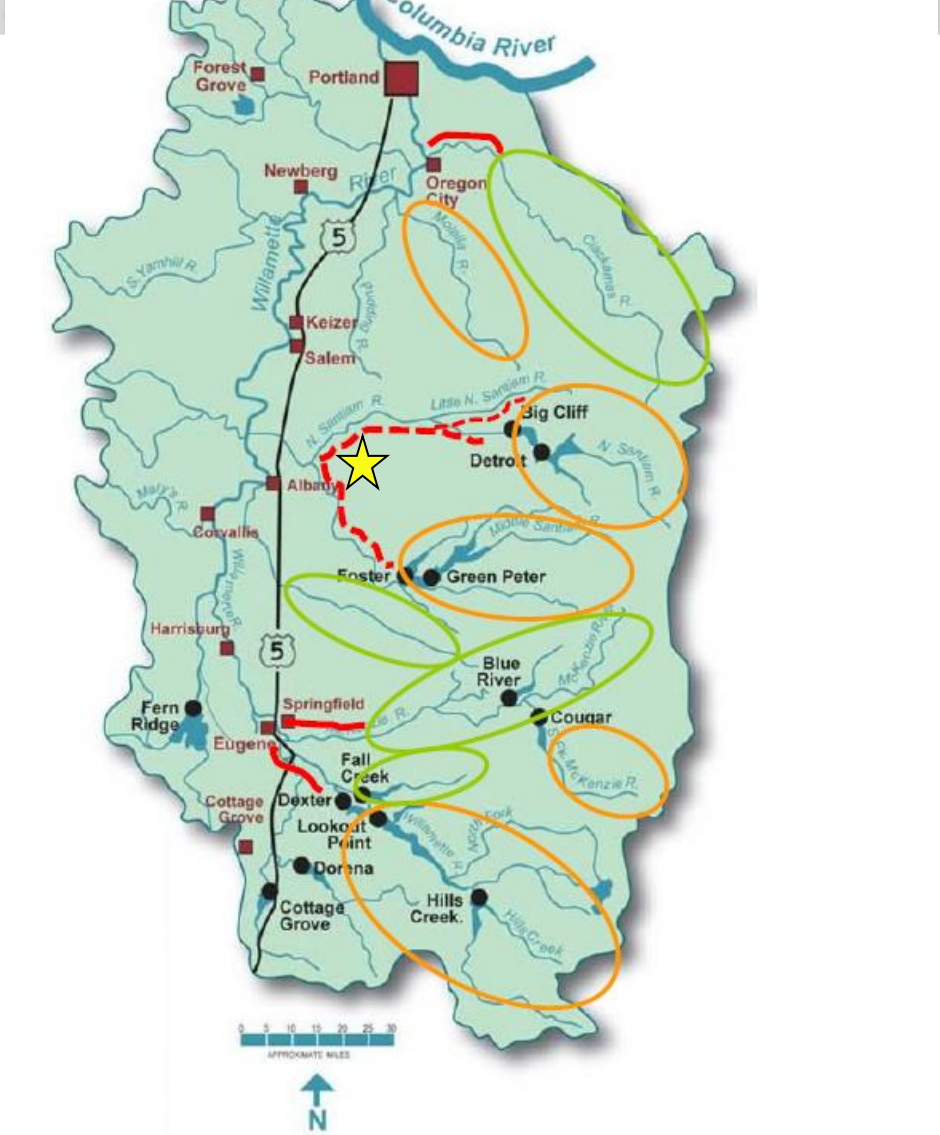
“Split-Basin” strategy

Wild fish above dams, maintain hatchery area below

Highest priority - address direct impacts of dams

- Up and downstream fish passage
- Pre-spawning mortality
- Downstream habitat attributes
  - flows,
  - water temperatures
  - sediment loads,
  - large wood recruitment

NMFS Biological Opinion, 2008
ODFW/NMFS Recovery Plan, 2011



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NMFS 2008 BIOLOGICAL OPINION RPA MAJOR ACTIONS

1. Provide safe downstream passage for three of the four UWR Chinook populations (McKenzie, Middle Fork, and N. Santiam), one of the two UWR steelhead populations (N. Santiam) and one Bull trout population (McKenzie).
2. Provide temperature control at Cougar and Detroit dam to increase survival of juveniles, eggs, and adults over baseline conditions.

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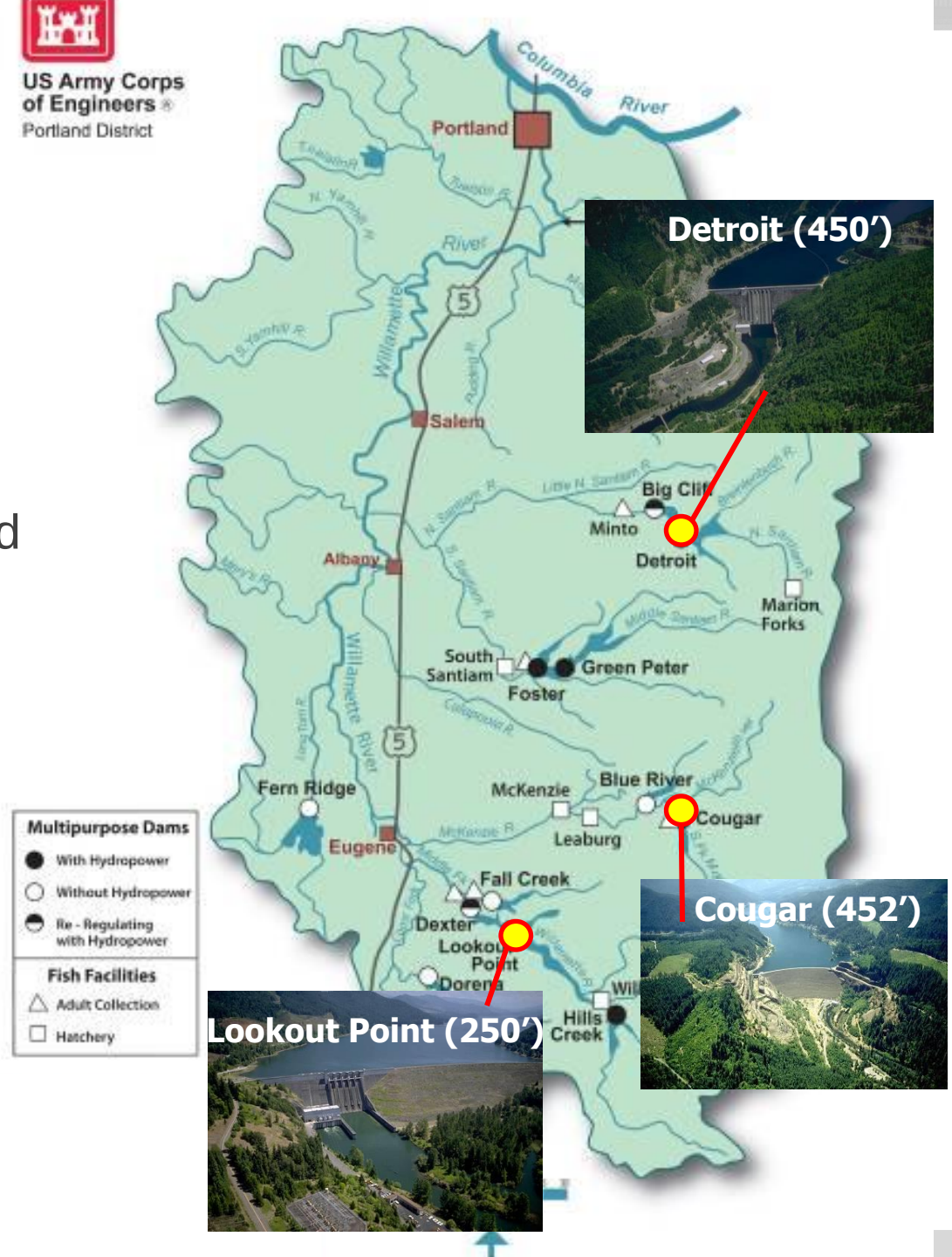

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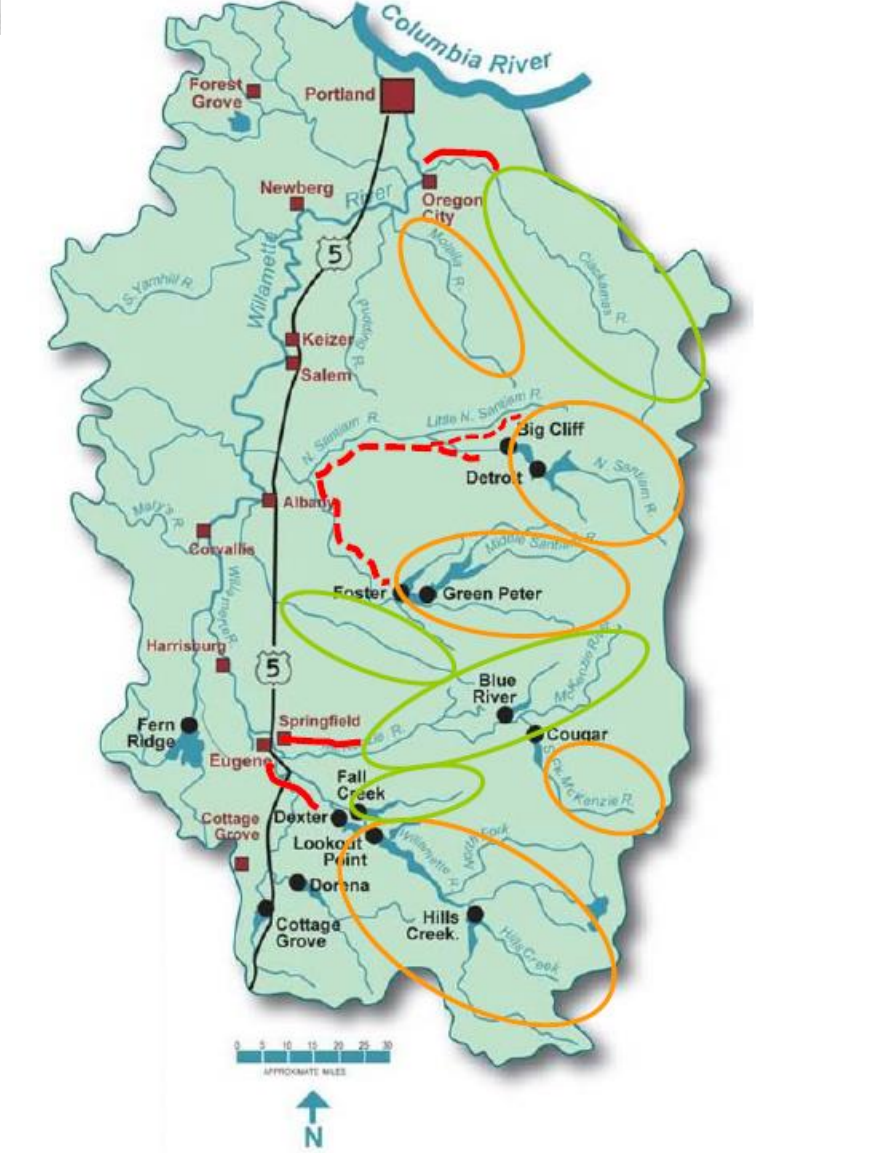
BIOP STATUS

	North Santiam	South Santiam	McKenzie	Middle Fork	
				Mainstem	Fall Creek
Upstream fish passage	Minto	Foster	Cougar	Continuing feasibility evaluations / alternative development	Fall Creek
Downstream fish passage	Detroit	Foster	Cougar		Fall Creek Drawdown
Temperature	Detroit (operational)	NA	Cougar Tower		Operational
Streamflow & Ramping Rates	New science to be applied to refine flow and temperature management				

Green = Implemented Blue = Interim Ops / Using Existing Facility



- wild fish only (with varying degrees of success)
- reintroduction needed into historically productive habitat
- mitigation hatchery program area (long term). Natural production not critical as upstream areas for meeting recovery goals.
- mitigation hatchery program area (long term), but significant natural production likely needed in this area to meet population goals.

OTHER FEDERAL PROGRAMS SUPPORTING ECOSYSTEM RESTORATION

Continuing Authority Program (CAP) : CAP is a suite of authorities which enable USACE to partner with a non-federal sponsor to address issues of limited complexity. Projects are typically small and the challenges are obvious and understood. Projects are cost-shared with a non-federal sponsor.

Planning Assistance to States (PAS) : PAS is intended to provide planning and other technical assistance to non-federal sponsors regarding issues related to the respective state's water plan. No site-specific designs or construction is authorized under PAS. Projects are cost-shared with a non-federal sponsor.

Specifically Authorized Project: Congress provides permission (authority) to undertake a study to evaluate the feasibility of an identified water-resources related project. Congress must also provide appropriations for the study. The scope of the feasibility study is generally $3M and 3 years to complete. Construction costs range from $25M (Lower Willamette Env. Dredging and Ecosystem Restoration is an example) to $1+B (Puget Sound Nearshore Ecosystem Restoration is an example). Projects are cost-shared with a non-federal sponsor.

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CONTINUING AUTHORITY PROGRAM

Relevant authorities:

- Section 206 of the Water Resources Development Act of 1996: a general authority for ecosystem restoration
- Section 1135 of the Water Resources Development Act of 1986: an authority specific to instances where a Corps project contributed to the degradation

Things to consider:

- All CAP projects are cost shared. (All CAP projects are two phases. (1) Feasibility and (2) Design & Implementation. Feasibility is cost shared 50/50 beyond the first $100k which is 100% federal. D&I is cost shared in various splits depending on authority. Sec 206 and 1135 are shared 65/35 (fed/non-fed) and 75/25 (fed/non-fed) respectively
- Potential CAP projects compete Nation-wide for funds
- CAP is intended for projects of limited complexity, scope, scale, and cost.
- A project does not qualify if it is a study only or construction only
- A non-federal sponsor is required
- Non-federal sponsors have responsibility for Operations and Maintenance and all Required Real Estate

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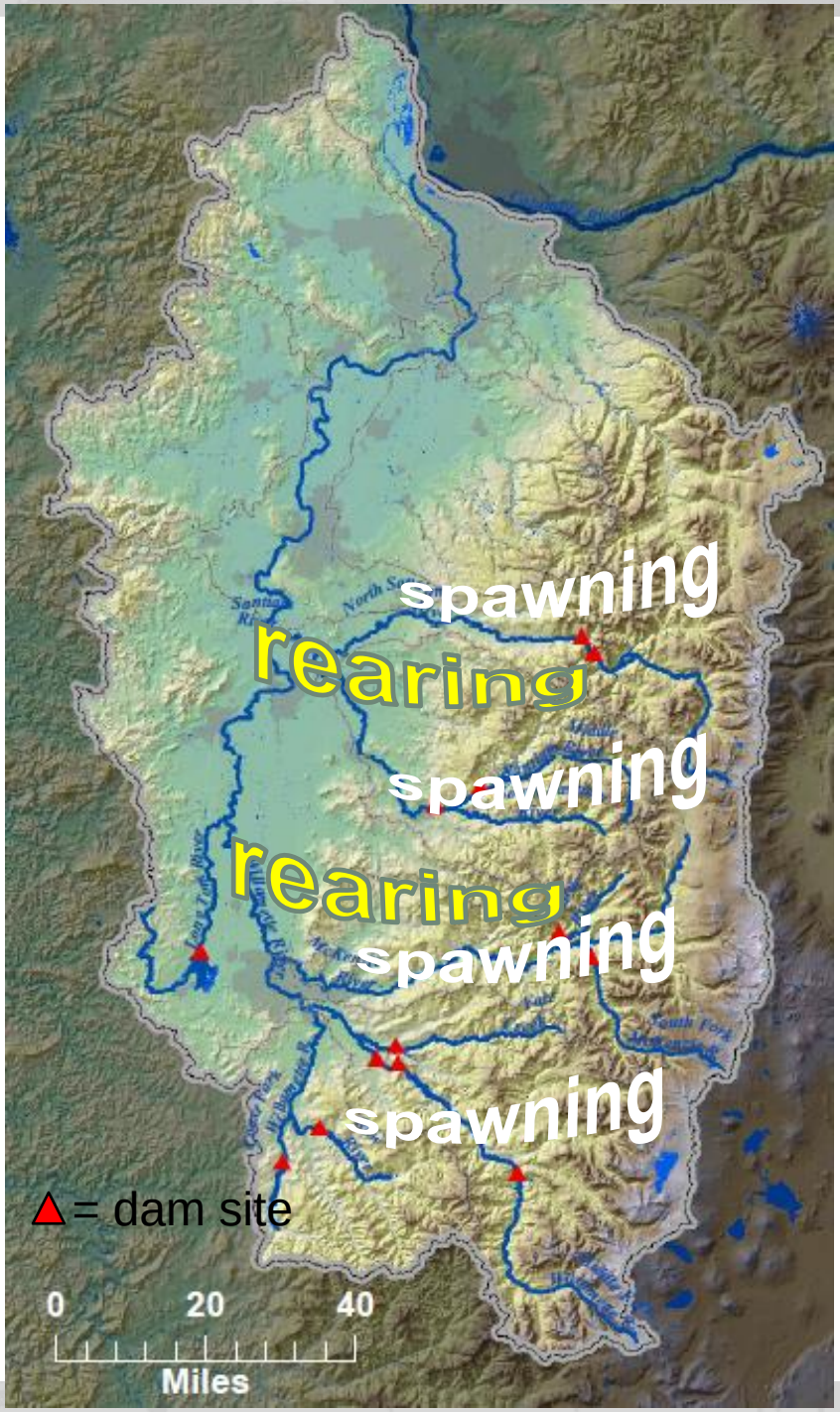
HABITAT BELOW DAMS – CRITICAL FOR ESA-FISH AND SUCCESS OF BIOP FISH PASSAGE PROGRAM

Juveniles passing downstream of dams or originating below dams depend on lower river areas to rear

Juvenile habitat preferences change as they grow and with stream size

Productivity of the basin can be substantially increased by the contribution of fish with dispersive life histories (over 50%)

(e.g. Everest and Chapman 1972; Friesen et al. 2004, 2007; Schroeder et al. 2016)



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Prioritize restoration where geomorphology supports diverse channels and active habitat formation?

Present-day geomorphic framework of salmon-bearing streams below USACE dams

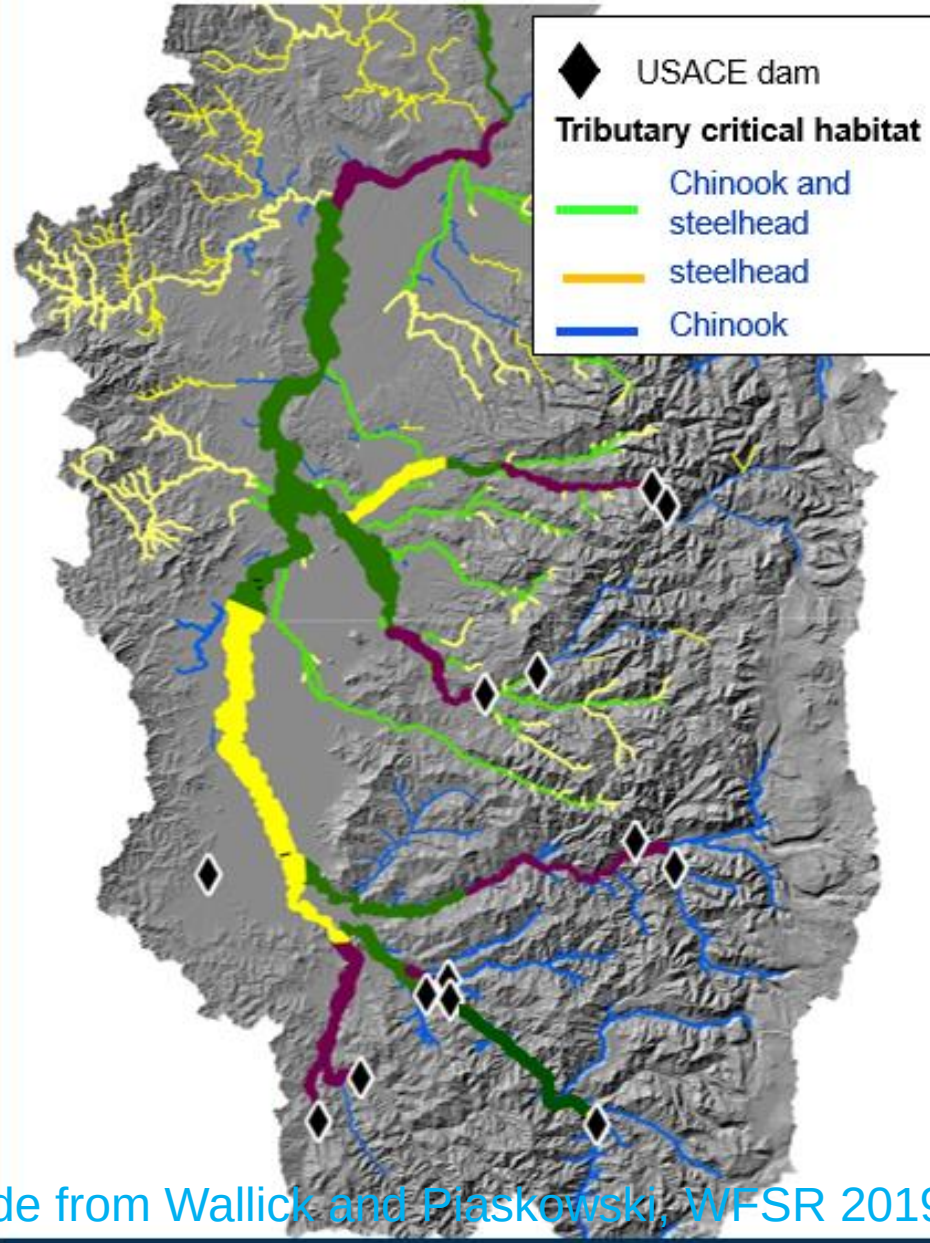
Presently dynamic reaches
(Diverse channel features, active habitat formation)
Upper Willamette
North Santiam

Historically dynamic, presently stable
(Habitat formation limited, many relict features)
Middle Fork
McKenzie
S. Santiam
Mainstem Santiam
Middle Willamette
Lower Willamette

Bedrock reaches
Below dams; Newberg Pool

Geomorphic reaches from Wallick and others, 2013; Critical habitat from NOAA

Chinook, steelhead and geomorphic classification of Willamette Basin Rivers



(Slide from Wallick and Plaskowski, WFSR 2019

Prioritize restoration in areas where natural production presently occurring?

North Santiam below Minto

- Wild spring Chinook and winter steelhead spawn and rear in mainstem and tributaries
  (e.g. Sharpe et al. 2015; Johnson et al. 2016; Schroeder et al. 2016)

South Santiam and tributaries above/below Foster Dam

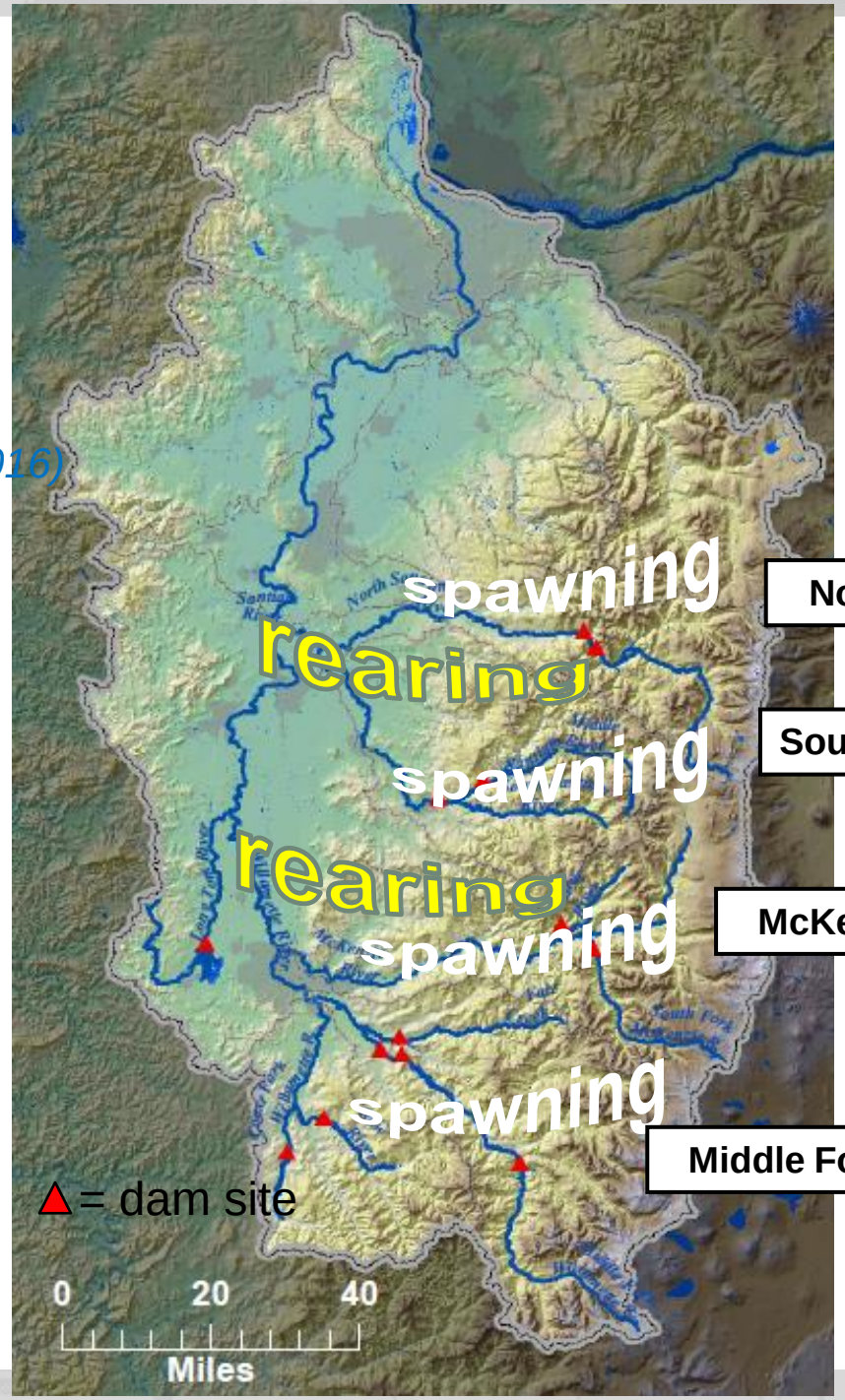
- Wild spring Chinook and winter steelhead sanctuary above Foster; redds susceptible to scour due to degraded channel *(e.g. O'Malley et al. 2015)*
- Wild winter steelhead spawn extensively in S. Santiam tributaries; much habitat blocked by culverts
  (e.g. Andersen 2009 ; Sharpe et al. 2017)

McKenzie River mainstem

- Primary spawning and rearing area for spring Chinook
  (e.g. Sharpe et al. 2015; Schroeder et al. 2016)

Above Fall Creek Dam

- Wild spring Chinook sanctuary above Fall Creek Dam; high PSM in part due to water temperatures
  (e.g. Naughton et al. 2015)



THANK YOU!

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