Bowman Dam Hydroelectric Project

Oregon Sub-Committee on Water Meeting

December 17th, 2020

OID
OCHOCO IRRIGATION DISTRICT

CITY OF PRINEVILLE OREGON

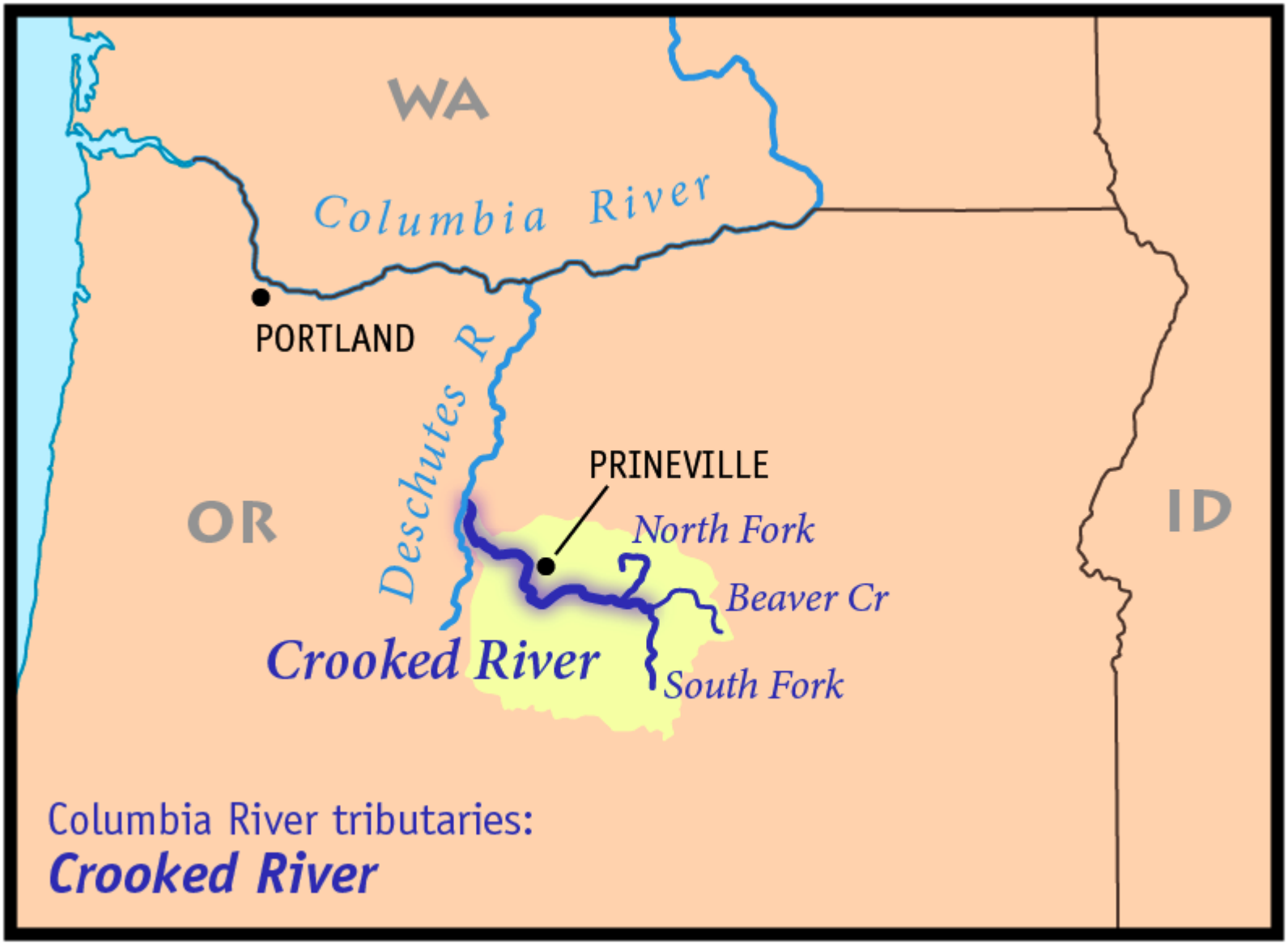
OREGON

CROOK COUNTY OREGON

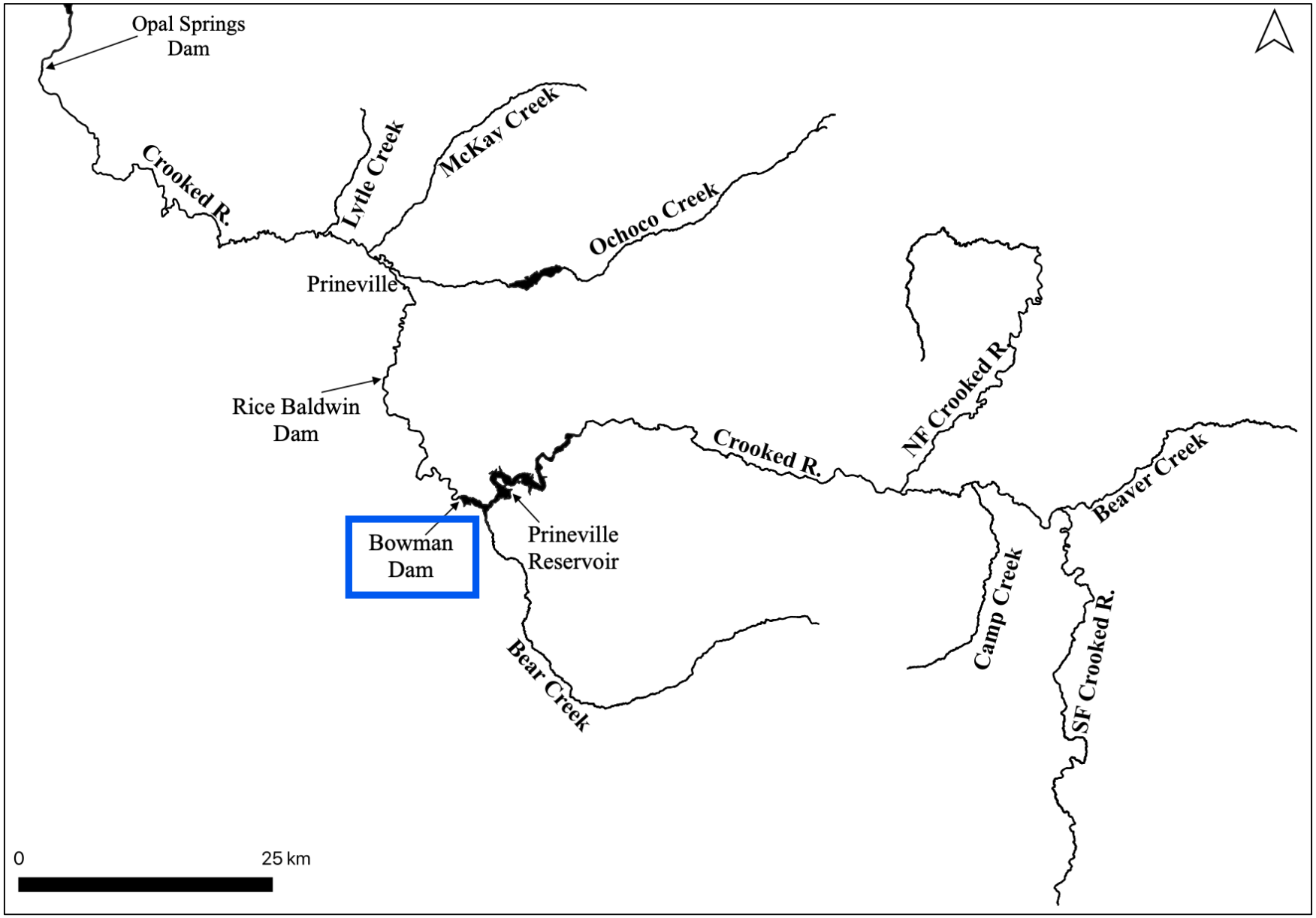
Bowman Dam Hydroelectric Project

- “It is the policy of the State of Oregon to provide for upstream and downstream passage for native migratory fish […} and to achieve the enhancement and restoration of Oregon’s native salmonid populations […} (ORS 509.585.1)”

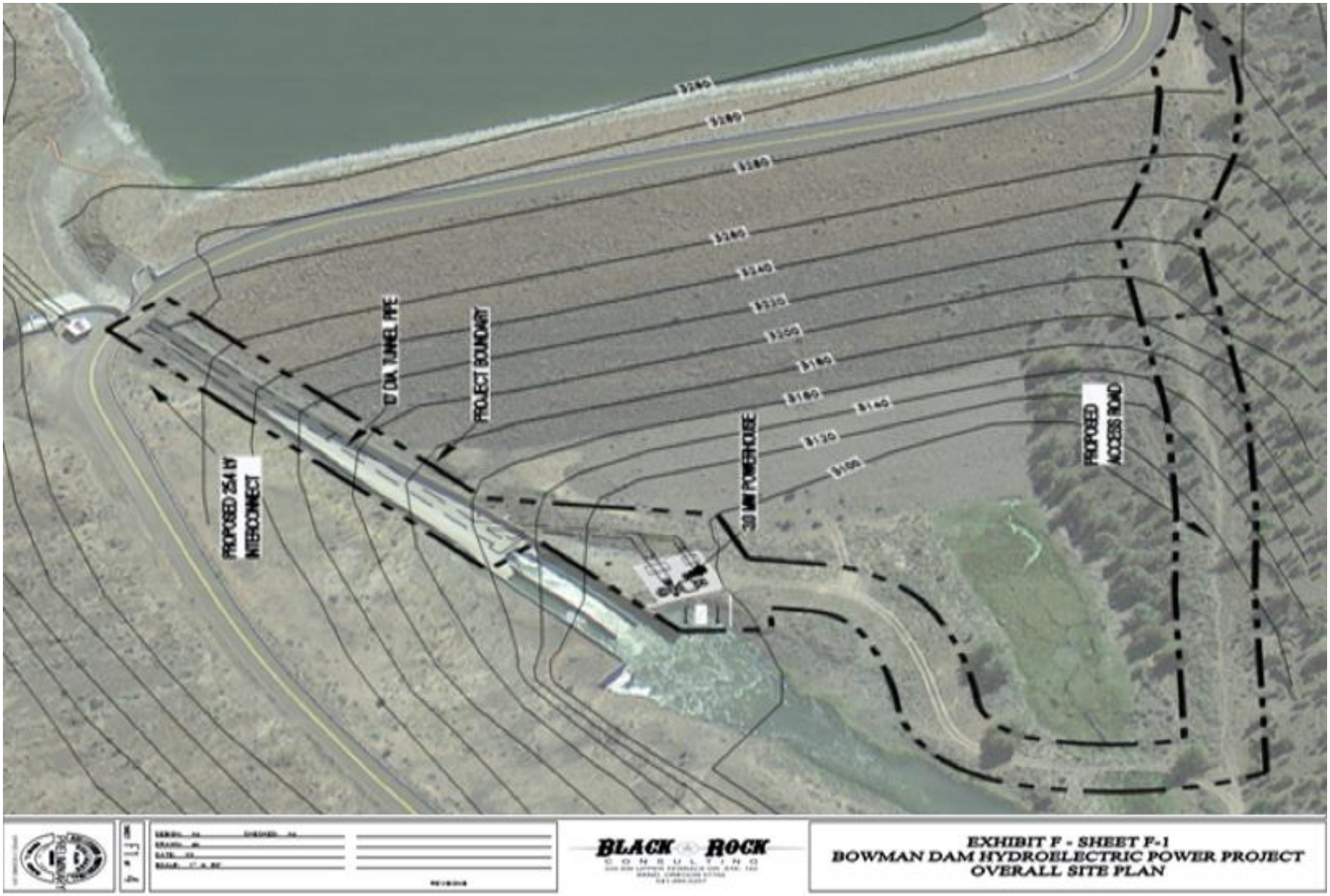
Crooked River Basin



Crooked River Basin



Modifications to Bowman Dam



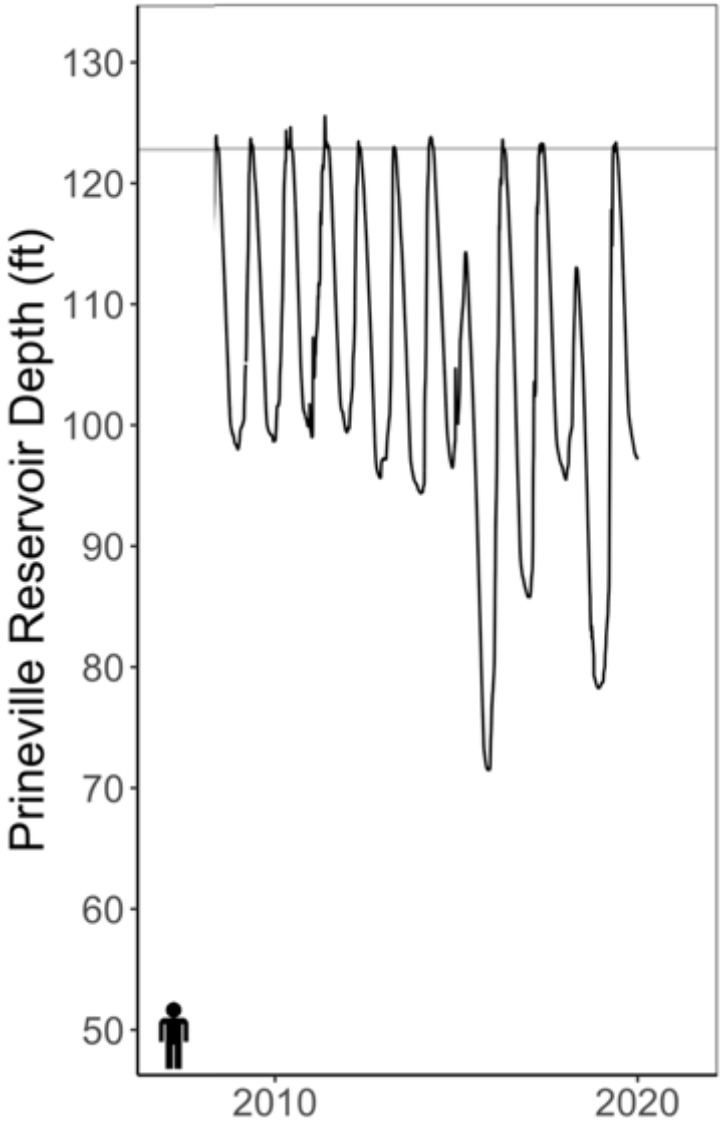
Fish Passage Rules

- When modifications are made, owner/operator must submit a proposal to ODFW for fish passage, or apply for a Fish Passage Waiver (ORS 509.585.4)

- A Waiver can be granted if the Oregon Fish and Wildlife Commission determines that the proposed alternatives to fish passage provide a “net benefit” to native migratory fish (ORS 509.585.7a).

Passage at Bowman Dam

- Difficult due to high variation in Prineville Reservoir surface water elevation
- Volitional passage would cost $138 to 250 million
- Only 2 steelhead and 2 Chinook salmon reach Bowman Dam in an average year

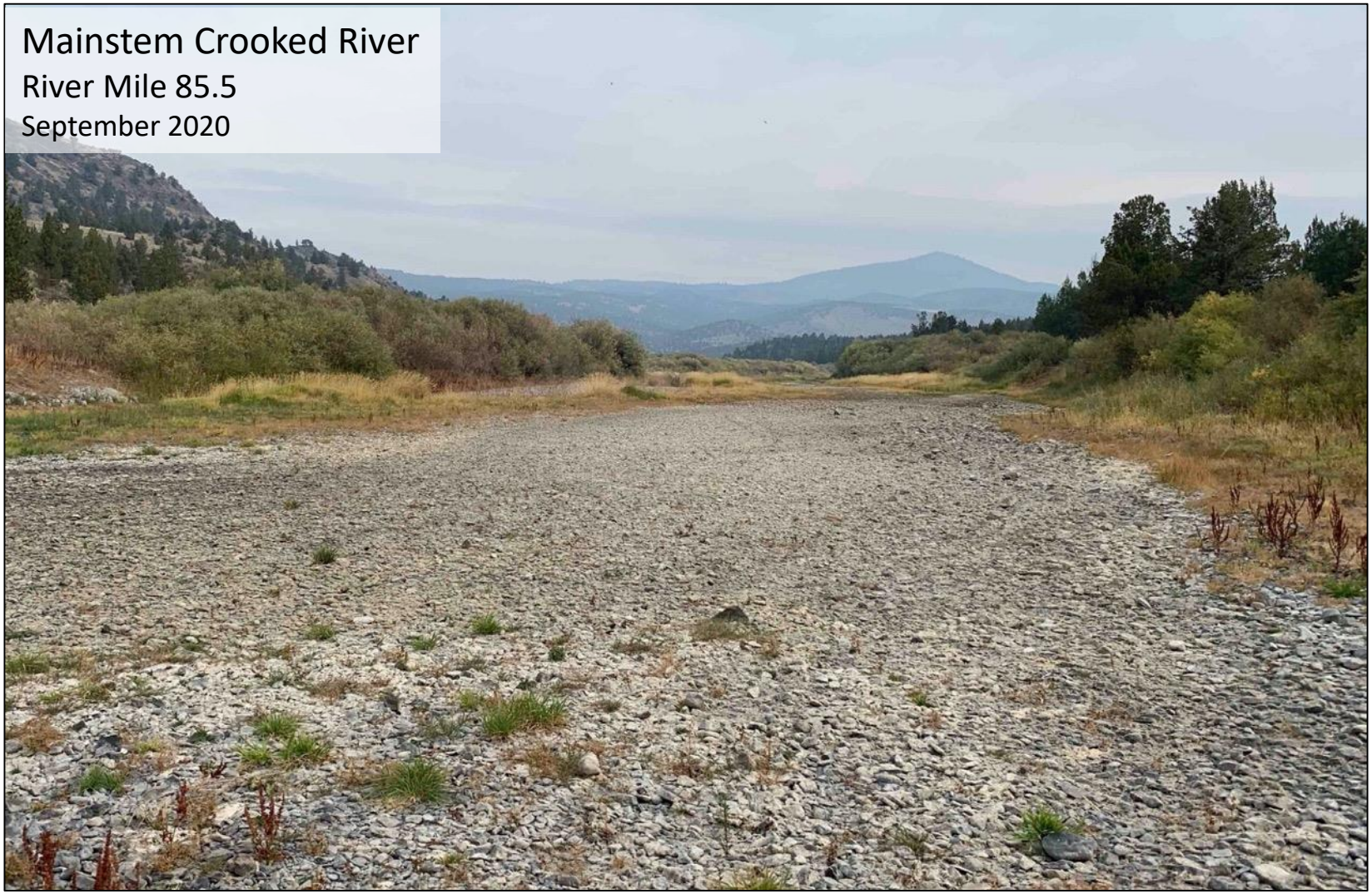


Pursuit of a Fish Passage Waiver

- Upper Crooked River basin characterized by low summer flows, high water temperatures, and generally poor water quality.

- Fish passage at Bowman Dam is not regarded as a priority for fish restoration in the basin due to poor upstream habitat conditions for migratory fish.

Habitat in the Upper Crooked Basin



Habitat in the Upper Crooked Basin

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Habitat in the Upper Crooked Basin

Project Finances

Construction	Proposed Fish Mitigation	Estimated Net Profit (20 years)
$16 Million	$5-6 Million	$4-5 Million

Waiver Application

- Bowman Hydro will not adversely effect fish, but restoration measures were proposed to satisfy Oregon's fish passage laws.

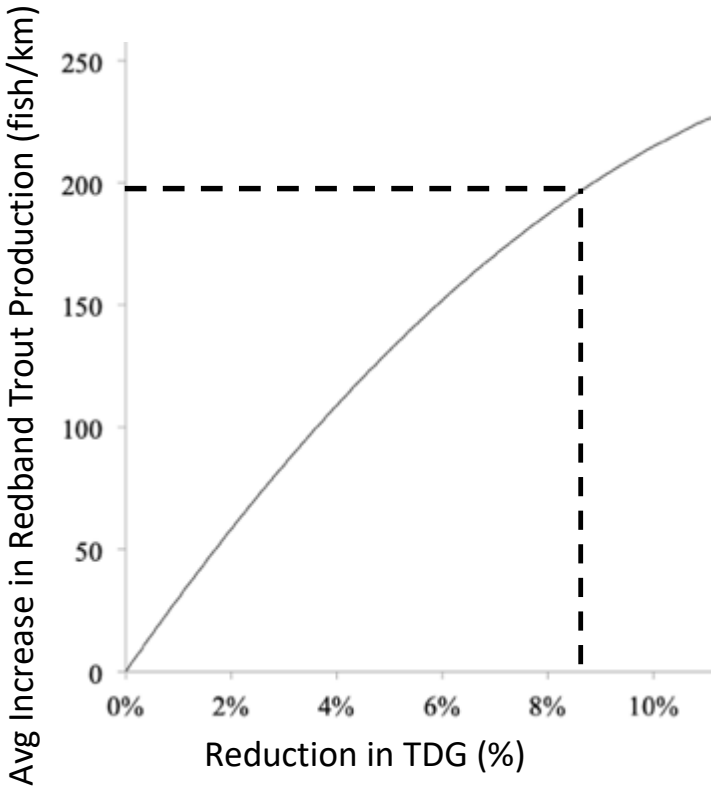
- Proposed measures:
  - Ochoco Preserve Habitat Restoration ($200,000)
  - Ochoco Creek Fish Passage ($90,500)
  - Crooked River Gravel Augmentation ($265,000-471,000)
  - Total Dissolved Gas Reduction ($4 million)

Modifications to Bowman Dam

Gas Bubble Disease

Lower Crooked River

- GBD likely occurs every two out of three years
- Up to 85% of Redband Trout have been affected by GBD in the past
- The project is expected to increase the population of Redband Trout > 2,000 fish



Support from Fish Agencies

"The Service believes that the proposed Bowman Dam hydro project will provide significant and needed measures to protect native fish species, including redband trout, steelhead, spring chinook, and bull trout."

- U.S. Fish & Wildlife Service

"We believe that the proposed Bowman Dam Hydroelectric Project does provide needed measures to support the ongoing reintroduction of steelhead and spring-run Chinook salmon."

- National Marine Fisheries Service

Waiver Denial

Fish Passage at Bowman Dam (miles of accessible habitat above Bowman dam)		**Proposed Mitigation Waiver** (miles of habitat provided below Bowman dam)[4]	
redband trout	464 mi.	Mainstem Crooked River Gravel Augmentation	0-14
steelhead trout	63 mi.	McKay Creek (DLT Ochoco Preserve Restoration)	0.4 mi.
Chinook salmon	57 mi.	Mainstem Crooked River (DLT Ochoco Preserve Restoration)	0.9 mi.
mountain whitefish	??	Ochoco Creek (DLT Ochoco Preserve Restoration)	0.4 mi.
		Ochoco Creek (Ochoco Creek Passage)	2.25 mi.
Total	**464 mi.**		**3.95-17.95 mi.**

Waiver denied by Fish and Wildlife Commission on October 9th 2020

Lost Opportunity

- Bowman Hydro would have:
  - Generated > 15,000 megawatt hours/year
  - Powered 1,400 homes with clean energy
  - Funded $5-6 million in fish habitat restoration and water quality improvements
  - No adverse effects on the environment