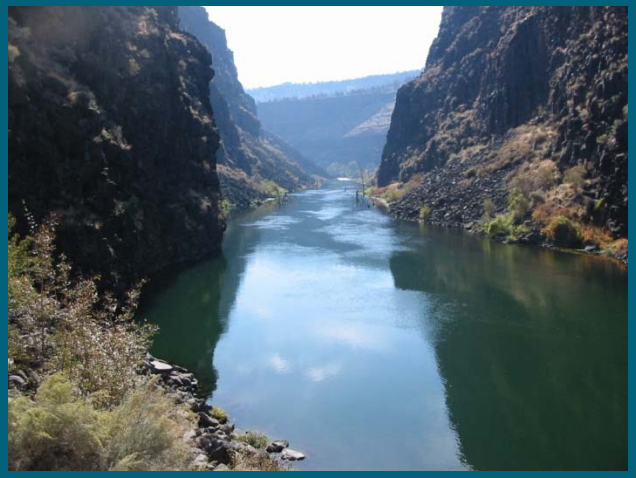
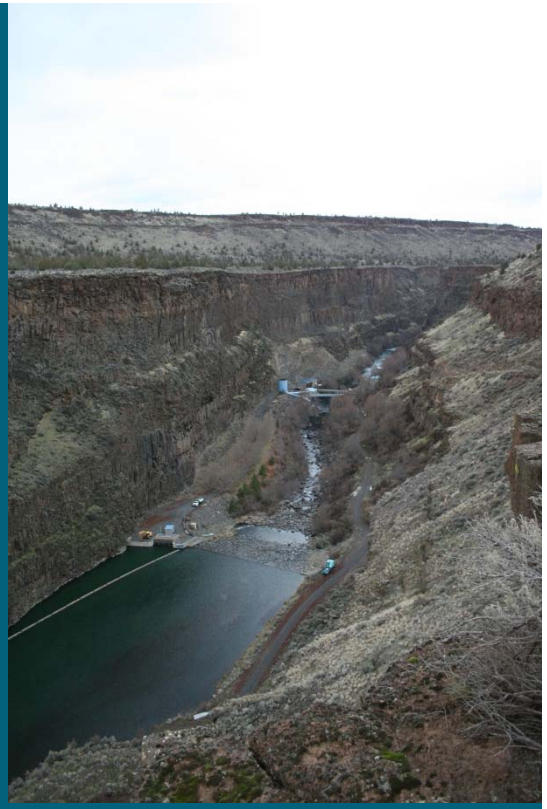
OPAL SPRINGS





FISH PASSAGE PROJECT

Pelton Round Butte Fisheries Workshop

June 14, 2018

What a difference a year makes!

Project Overview

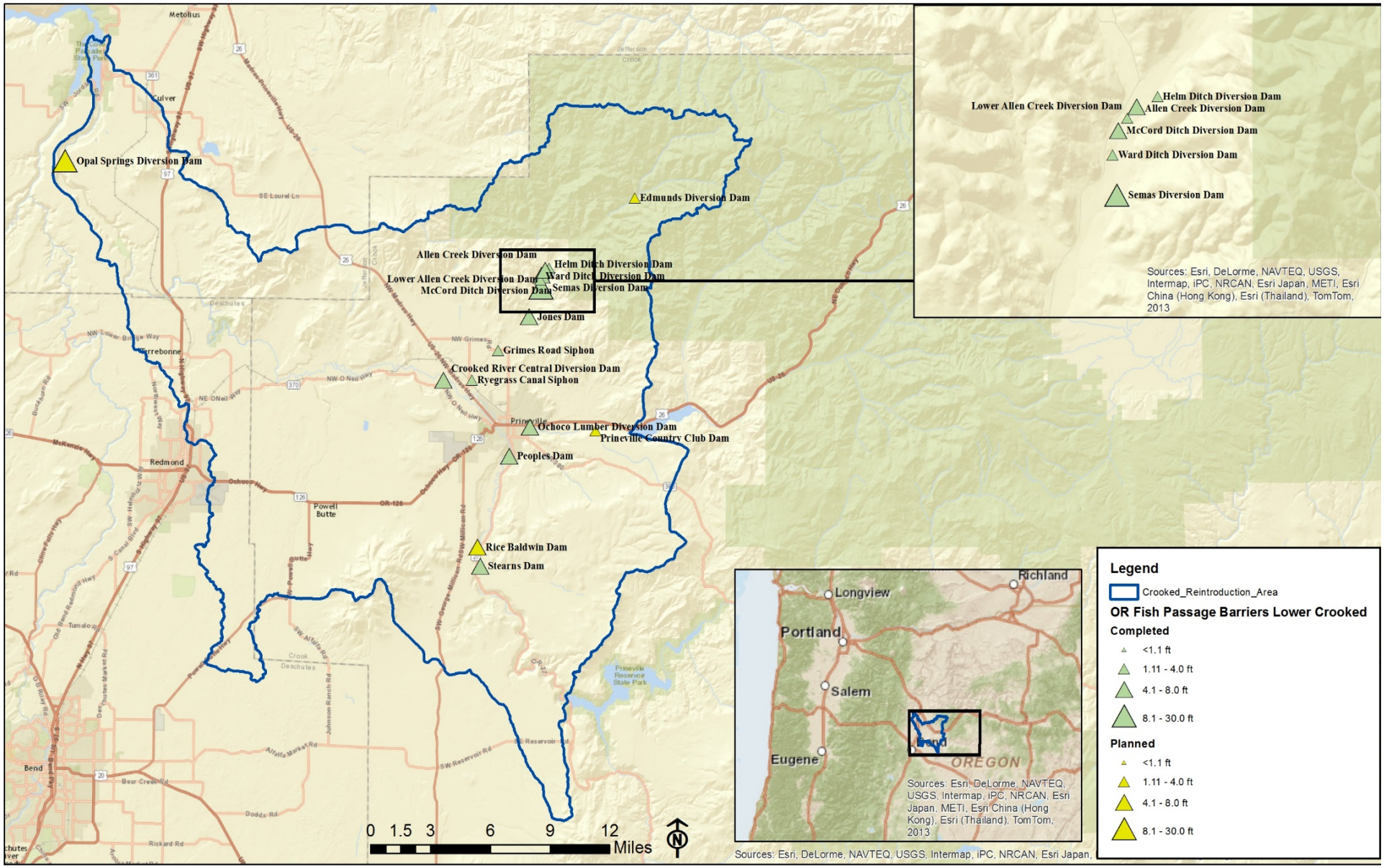
Fish Passage at Opal Springs– The Missing Link:

- Not addressed as part of Pelton Round Butte relicensing or associated reintroduction plans;
- Fish passage not a requirement of Opal Springs License
- License expiration in 2032

Project Overview

Therefore, the fish agencies, land managers, and non-governmental organizations worked with DVWD to identify solutions:

- Safe, timely, effective upstream and downstream fish passage at Opal Springs
- Avoidance of operational constraints/restrictions at the project
- Make it affordable to the District



Fish Passage Work in Crooked River above Opal Springs Dam

Deschutes Valley Water District

- Provides potable water to over 4,000 homes and businesses
- Source of that water is Opal Springs (not Crooked River)
- Hydro project is key to making water service economical in economically distressed Jefferson County

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Project Chronology

- 2008 – Begin negotiations about fish passage at Opal
- 2011 – Settlement Agreement
- 2012 – first adult returns; trap and haul at Opal
- 2011-2015 – Funding, design
- 2015 – Amendment Application
- 2017 – Construction bids, in anticipation of amendment (targeted start in May 2018)

Fish Passage Plan

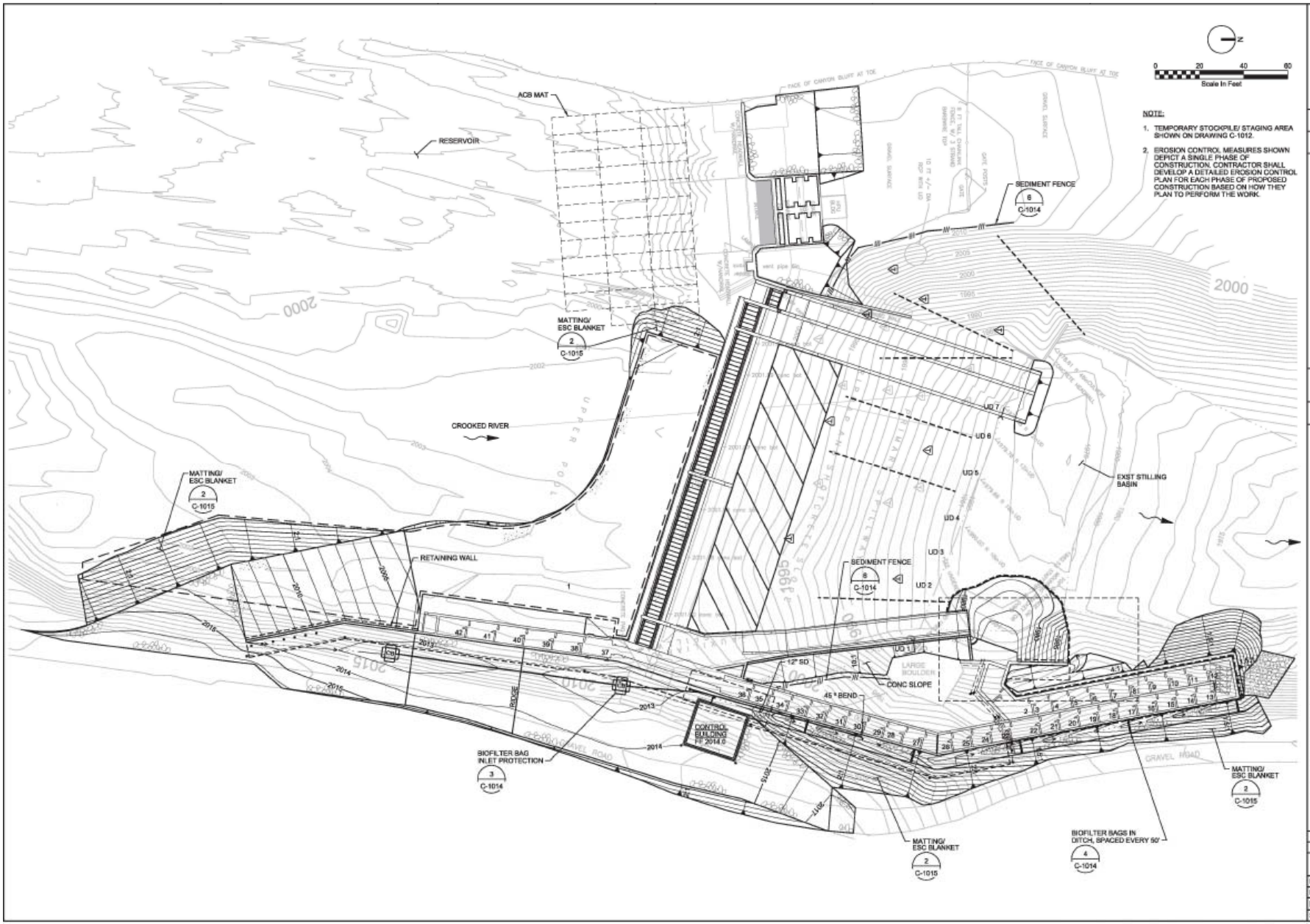
- Volitional passage
- Performance criteria for upstream and downstream passage
- Monitoring and evaluation
- Adaptive management
- Ongoing consultation, coordination, and communication

Design Considerations for Fish Passage

- Putting fish ladder through the dam or around abutments was problematic from an engineering standpoint
- At normal flows, powerhouse utilizes the majority of Crooked River flow, which led to a concern about false attraction (delay) in the tailrace
- No proposed changes to intake

Pool raise:

- Solved engineering issue
- Provides a way to increase bypass flow potential



CH2MHILL.

EROSION CONTROL

EROSION CONTROL PLAN

Opal Springs Hydroelectric Project
Pool Raise and Fish Passage Improvements
Deschutes Valley Water District

NO.	DATE	BY	CHK	APVD
DESIGN	N WILLIAMS	DR	AR HOWE	MR LITTLE
			REVISION	DM McCLELLAND

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY

DATE	OCTOBER 2016
PROJ	459988
DWG	C-1013
SHEET	21 of 60

Bid Results and Aftermath

- Low bid for construction came in at $12.2M
  - Construction management and engineering services during construction expected to be $1.5M
  - Total of 13.7M needed
- Funding was secure for approximately $8M
- Therefore challenge was to bridge $5.7M gap

Solution 1: Reset Expectations

- Settlement Parties
  - Confirm key priorities of Parties will be met with value engineering process
  - No changes in performance metrics, monitoring and evaluation approach, adaptive management measures
  - Everyone agreed on 1-year window to resolve design and find funds
- FERC
  - "suspended" processing of amendment while Parties discussed options. Provided one-year pause
  - Regular communication and updates
- Contractor
  - Partnered with low-bid contractor to evaluate means/methods and scope of changes

Solution 2: Value Engineering

- Sources of high cost
  - Upstream submerged access
  - Obermeyer weirs
  - Concrete into the canyon
  - Construction duration
- Engineered solution: Smaller pool raise
  - Eliminated number, size and complexity of weirs
  - Eliminated access road
  - Simplified exit structure and reduced footprint
- Compromises
  - Elimination of Chutes 1 and 2 (adjacent to intake)
  - Less incremental power

Solution 3: Project Economics

- Additional Funding
  - Water Resources Department Funding
  - Oregon Watershed Enhancement Board
  - Bureau of Land Management and Trout Unlimited
- Value for Services
  - Energy Trust of Oregon Incentive (Energy)
  - Pelton Water Fund (water for fish passage in lieu of energy)

Bringing it all together

- Quickly identified alternative design with Design Engineers (CH2 / Jacobs)
- Tentative costing with contractor
- Socialize with settlement parties, obtain agreement on approach
- Revised design
- Confirm costs and economics and make go/no go decision

Bringing it all together

- "Go" decision made mid-October
- Re-engage FERC (end of October)
  - Mark-up technical portions of settlement agreement to reflect new expectation and explain approach
  - New project description
  - New exhibits
  - Agencies had to clean up administrative record to be consistent
    - Biological Opinions
    - ODFW Recommendations
    - ODEQ Section 401 Certifications
  - Clear schedule and critical path
- Let loose contractor despite FERC risks

Where are we today?

- Mobilization in early May
  - Equipment
  - Staging
  - Communications
- FERC Amendment Issued May 9
- FERC Dam Safety (ongoing)
- Final permits from DSL, USACE, ODFW completed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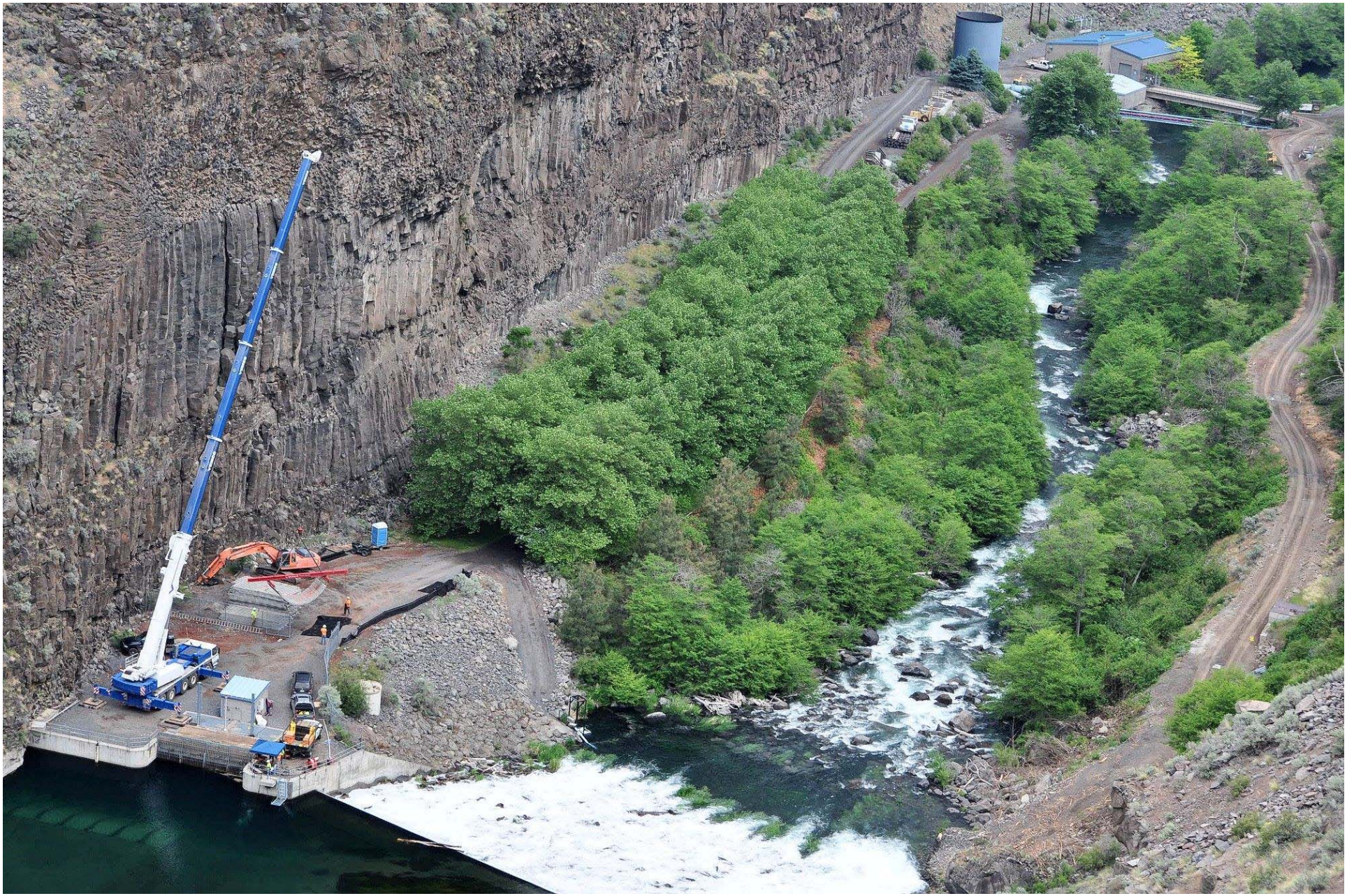


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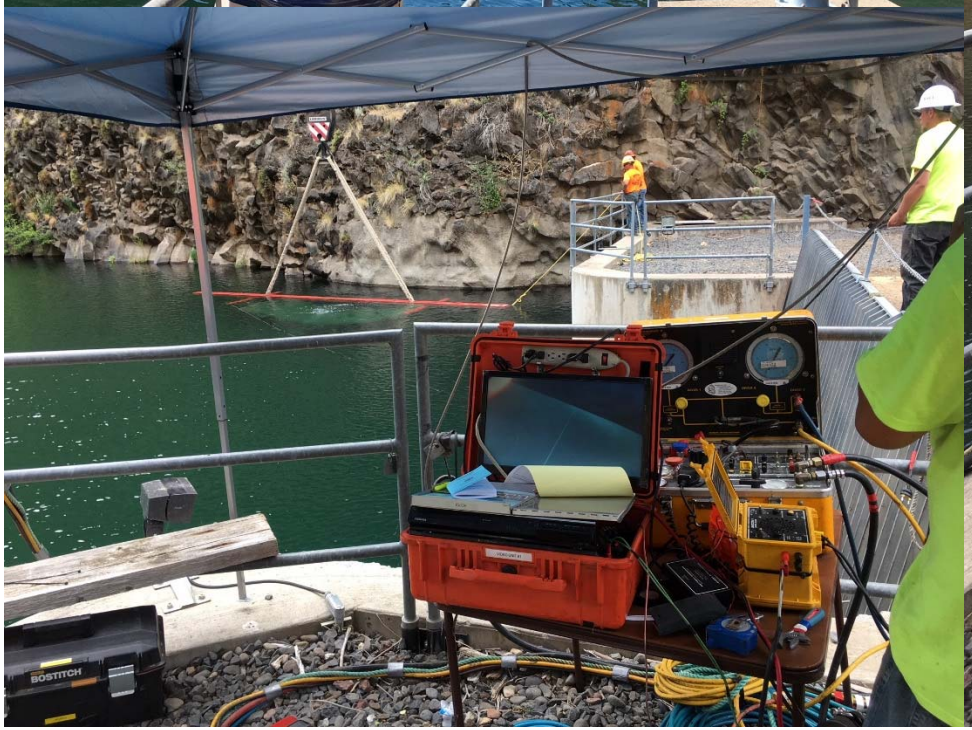
OVERSIZE LOAD


SIZE LOAD


BOSTITCH


AUS

Next Steps

- Develop Operations and Maintenance Plan
- Implement water bank
- Start planning for monitoring and evaluation

Acknowledgements

- Settlement Partners
  - Bureau of Land Management
  - Oregon Department of Fish & Wildlife
  - Bureau of Indian Affairs
  - National Marine Fisheries Service
  - US Fish and Wildlife Service
  - Deschutes Valley Water District
  - Trout Unlimited
- Funding Team
  - Crooked River Watershed Council and the Deschutes Partnership
  - Opalpassage.org and all its sponsoring groups (Northwest Steelheaders, WaterWatch)
  - Trout Unlimited/BLM
  - Oregon Department of Fish and Wildlife
  - Oregon Water Resources Department
  - Oregon Watershed Enhancement Board
  - Portland General Electric and the Confederated Tribes of the Warm Springs Reservation of Oregon
  - Energy Trust of Oregon