

DETROIT TEMPERATURE CONTROL AND DOWNSTREAM PASSAGE – PROJECT UPDATE

Jon Rerecich, Fish Biologist - Presenting

Jeff Ament, Project Manager

Kristy Fortuny, Technical Lead

Kelly Janes, Environmental Resource Specialist

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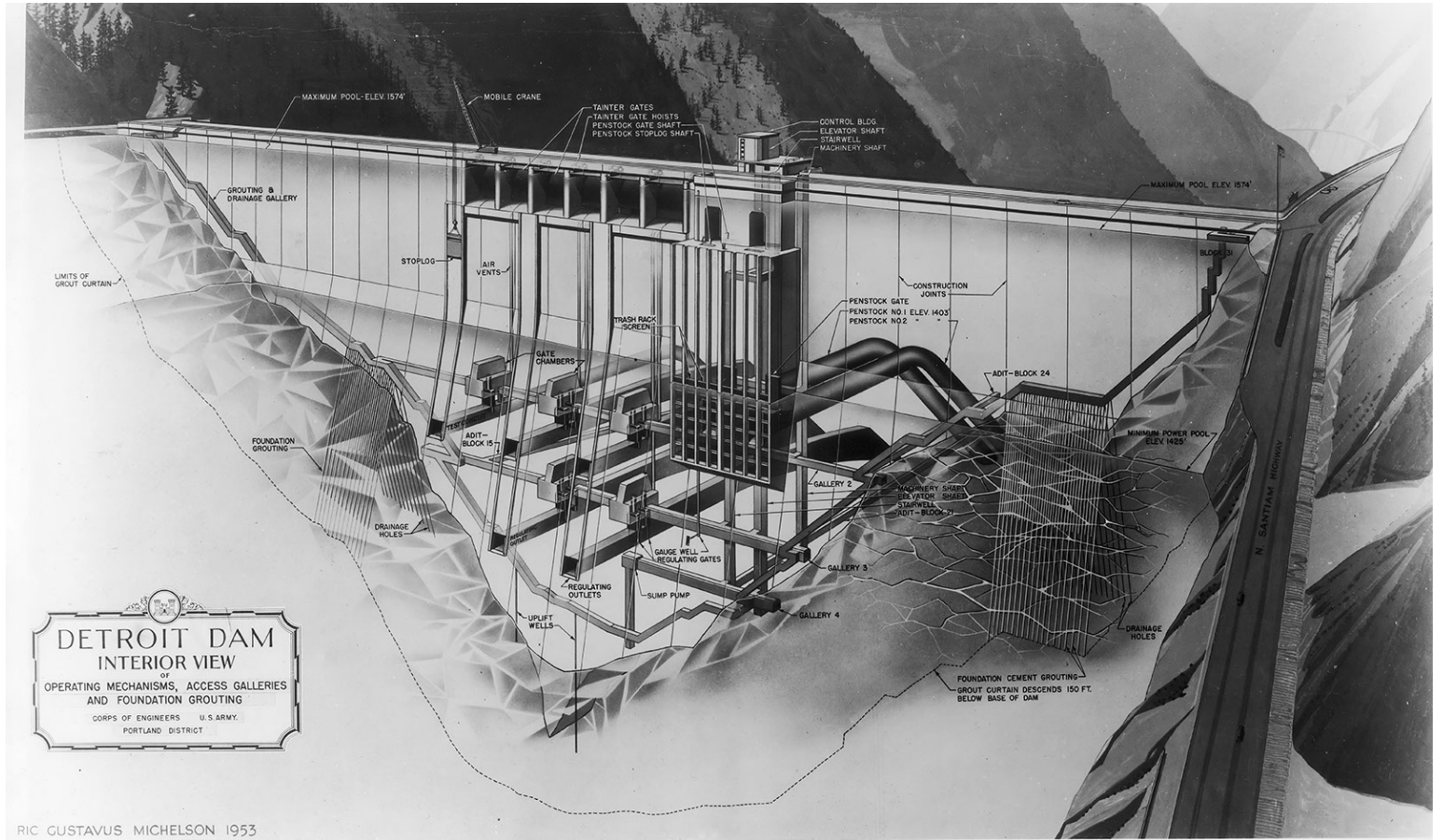
NOTE:
TAINTER GATE

PRESENTATION OUTLINE

Design at last Science Review

NEPA

- Schedule
- Project Impacts
- Possible Solutions



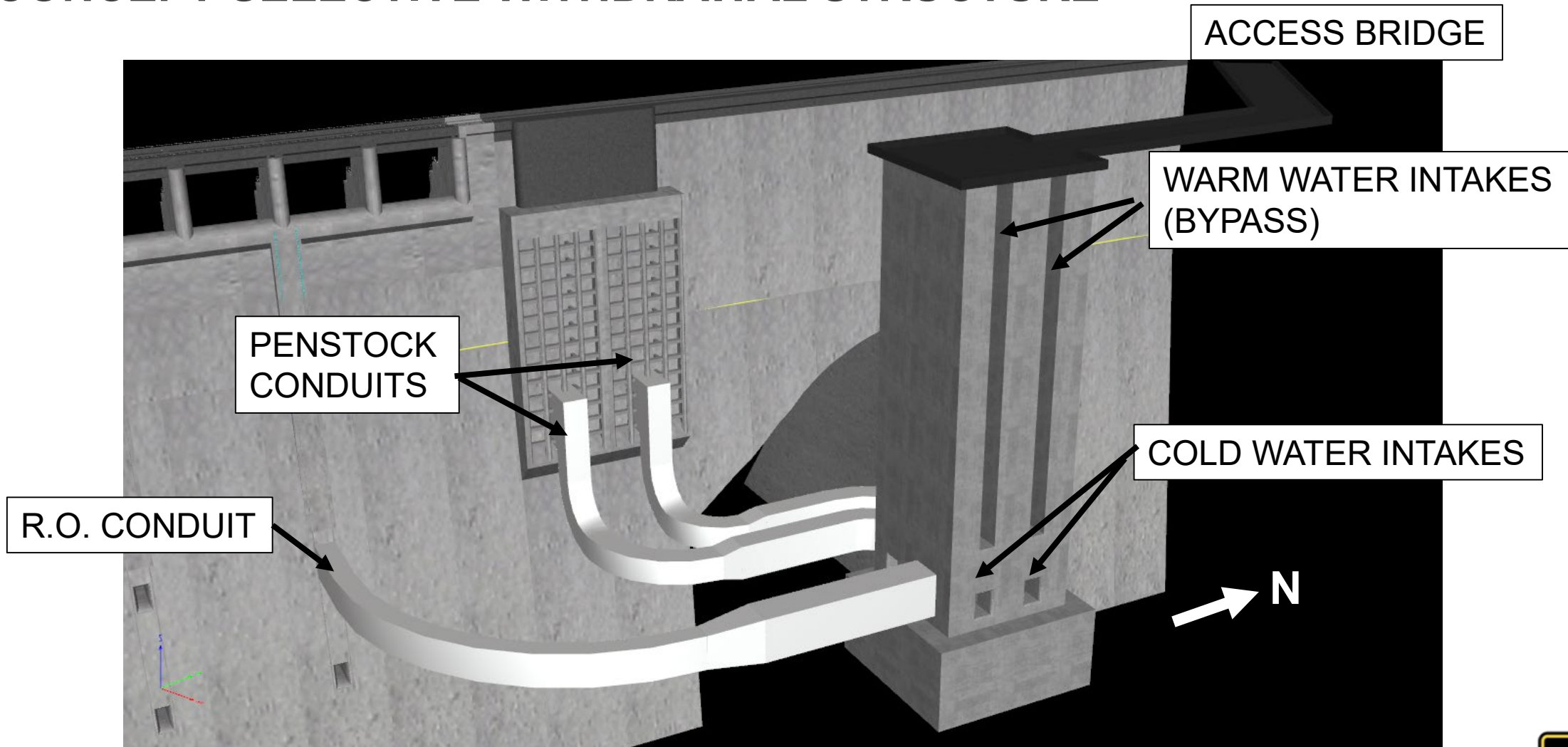
Summary



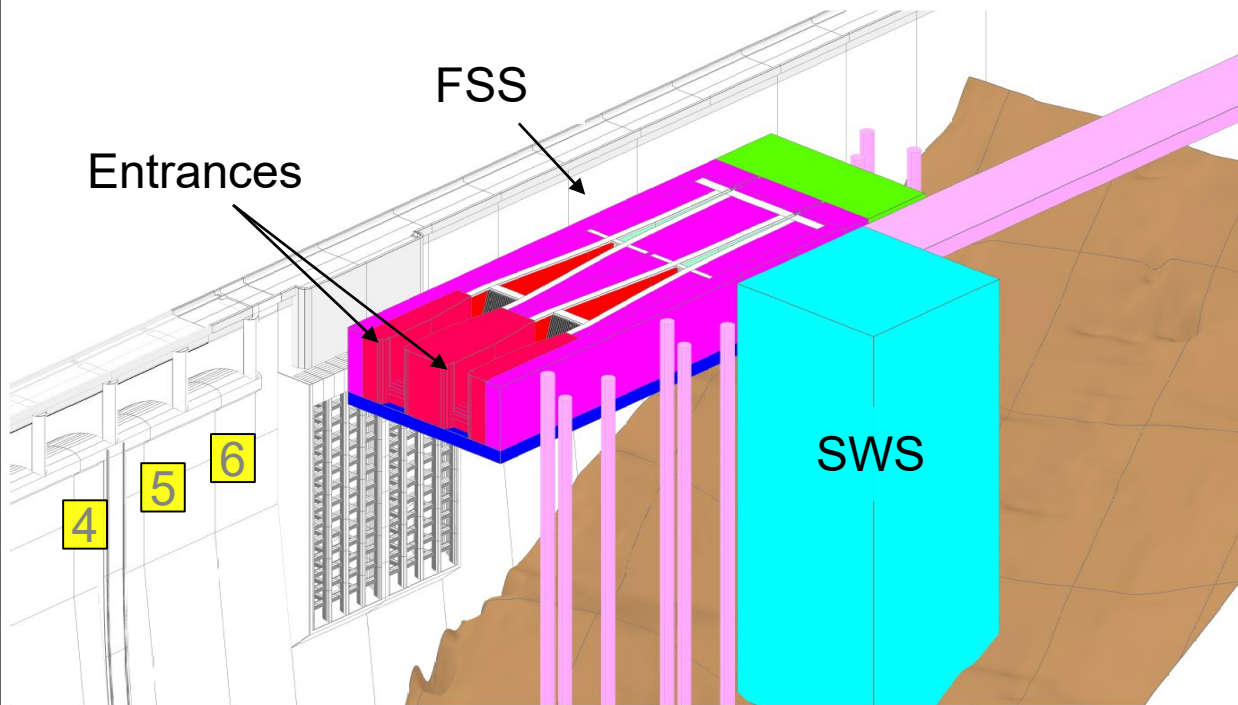
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CONCEPT SELECTIVE WITHDRAWAL STRUCTURE



AE CONCEPT COLLECTOR AND TOWER LOCATION



Utilize fish behavior in design features.

Maximize the surface flow hydraulic signature in the forebay.

Position entrance close to the dam. Utilize the dam as a guidance feature.

Minimize competing flow or confusing flows.

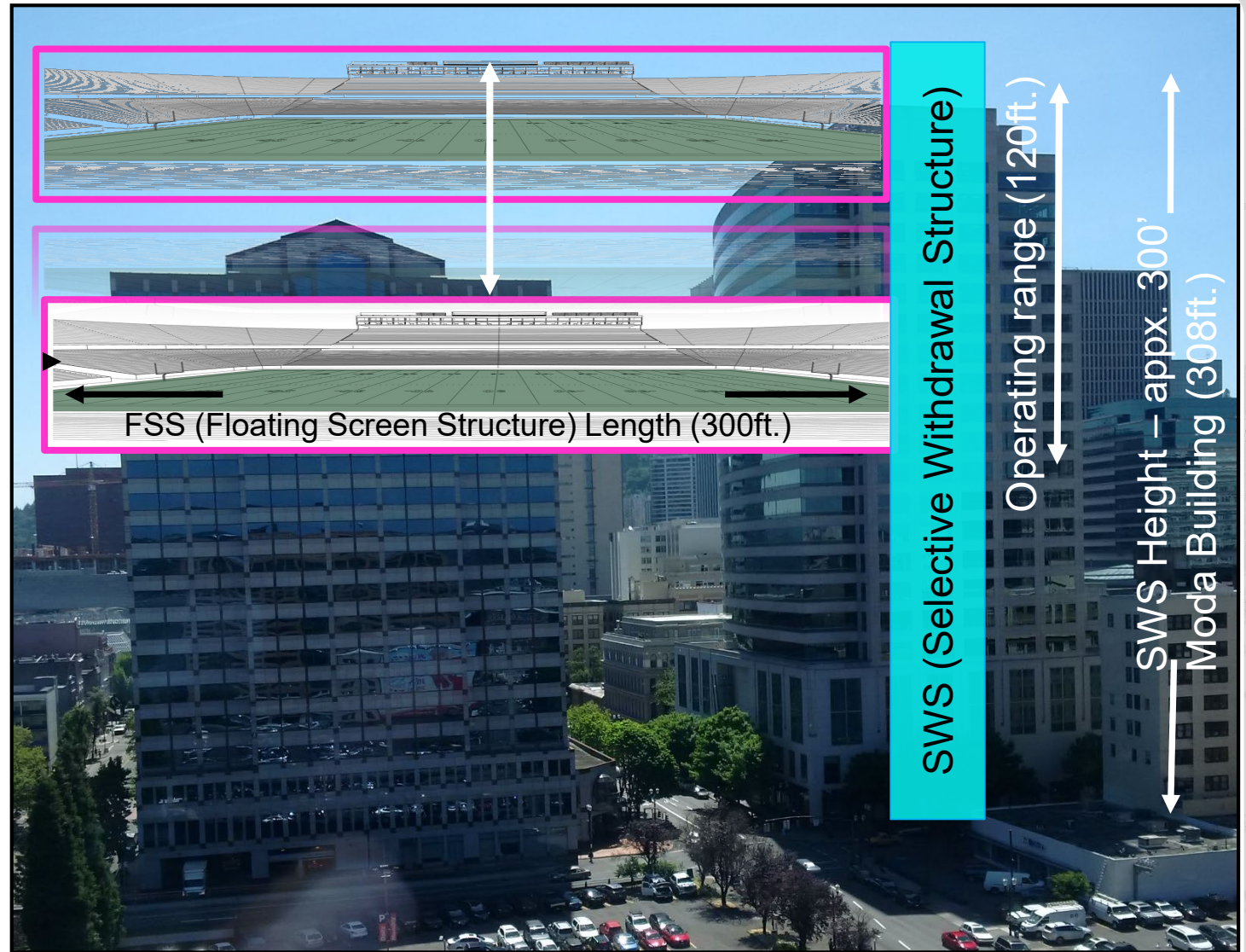
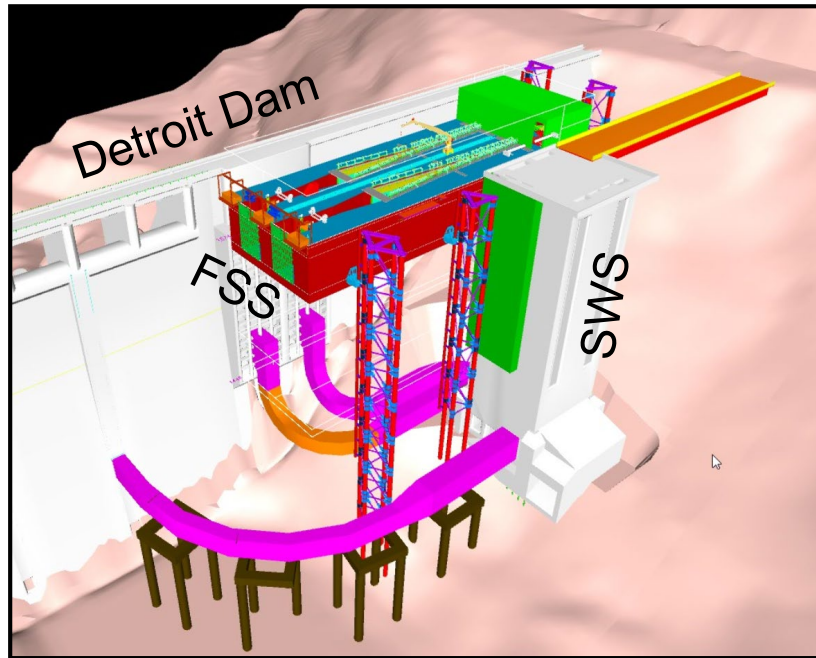
Exclude fish from areas that would limit their ability to find the entrance.

Shape the entrance to optimize hydraulic conditions to maximize collection efficiency.



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DETROIT DOWNSTREAM PASSAGE



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HOW TO CONSTRUCT????

Easiest – build it in the dry!

But what are the impacts at Detroit?

- National Environmental Policy Act (NEPA)
- Public meetings
- Environmental Impact Statement (EIS)



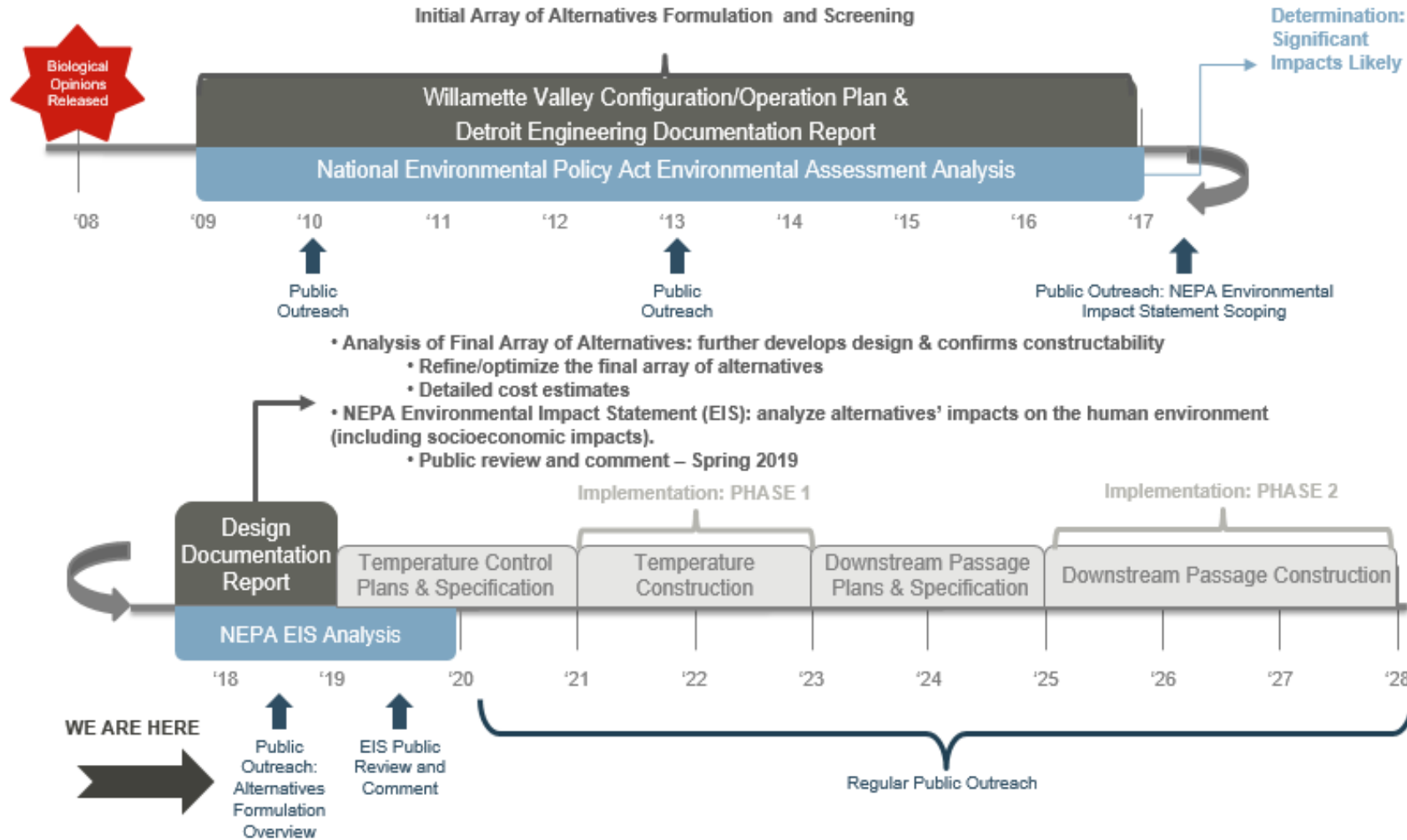
Cougar Temperature Tower



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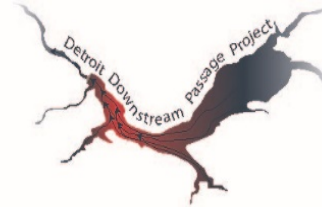
PROJECT TIMELINE



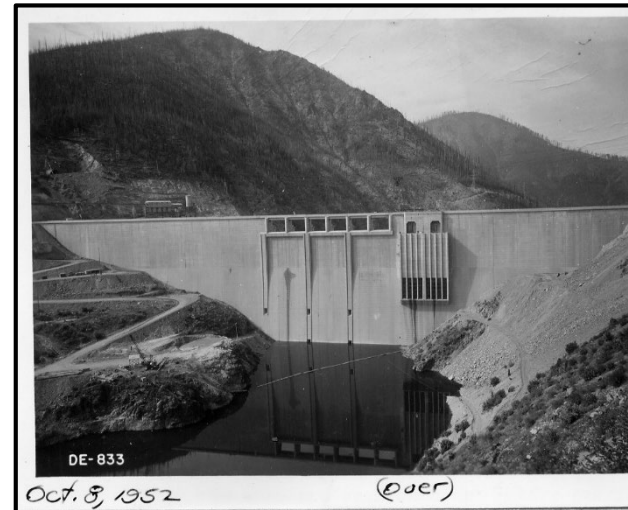
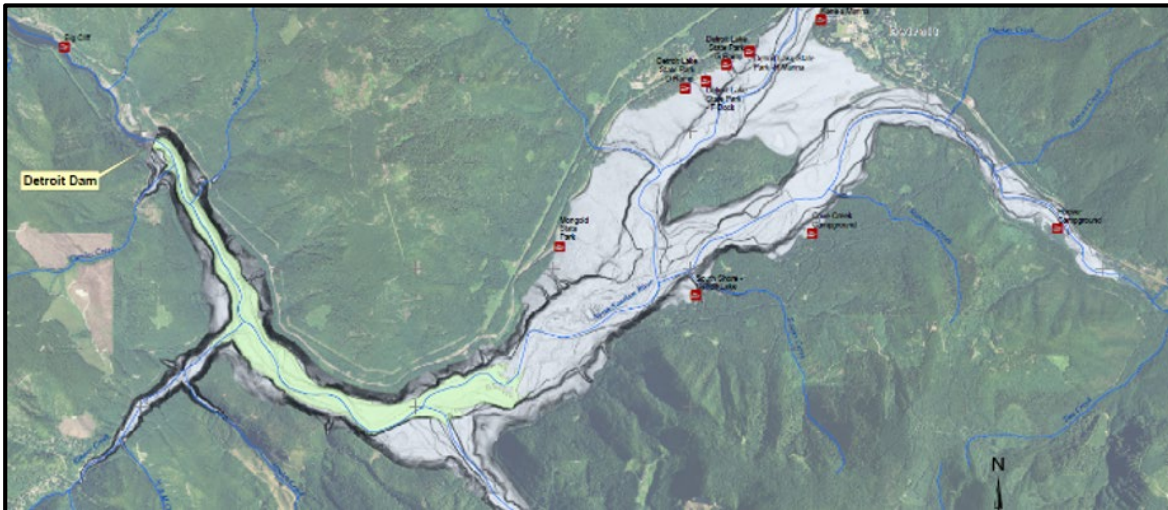
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Detroit Downstream Passage Project: Construction Alternatives



Alternative	Retained	Reason
CA 1 – 2 Year Low Drawdown	Yes	Feasible, lowest construction cost
CA 2 – 1 Year Low Drawdown	Yes	Feasible
CA 3 – Variable Low Drawdown with Temporary Cofferdam	No	High construction cost and increased impacts resulting from longer drawdown required to build coffer dams
CA 4 – 1 Year Variable Drawdown	Yes	Feasible
CA 5 – Build in the Wet	Yes	Feasible



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DETROIT TEMPERATURE CONTROL - DRAWDOWN IMPACTS

Recreation Impacts

- Loss of business revenue



Photos – Oregonlive.com



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DETROIT TEMPERATURE CONTROL - DRAWDOWN IMPACTS

Recreation Impacts

- Loss of business revenue

30 miles downstream - Stayton

Downstream Water Supply Impacts (July – October)

- Municipal water supply
 - Cities of Salem, Stayton, Turner, Gates - withdraw municipal water
 - City of Salem alone – 192,000 residents and businesses impacted
 - No full scale backup systems exist
- Agriculture
 - 850 farmers on over 17,000 acres rely on North Santiam for irrigation water
 - Many crops perennial. Loss of water = loss of plants



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DETROIT TEMPERATURE CONTROL - DRAWDOWN IMPACTS

Still analyzing impacts in the Environmental Impact Statement (EIS) but:

Deep drawdown impacts – Low river flows

- Minto – minor
- Chinook outplants – minor
- Anadromous fish – appear to be quite large

What can be done to minimize impacts?



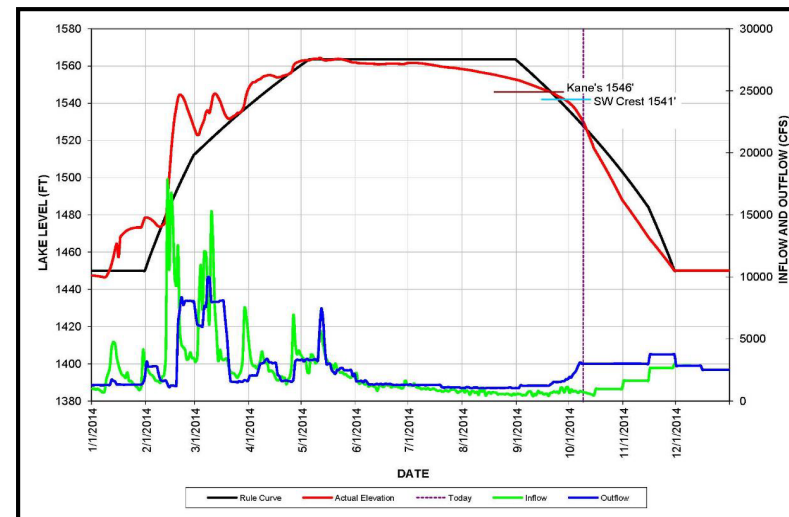
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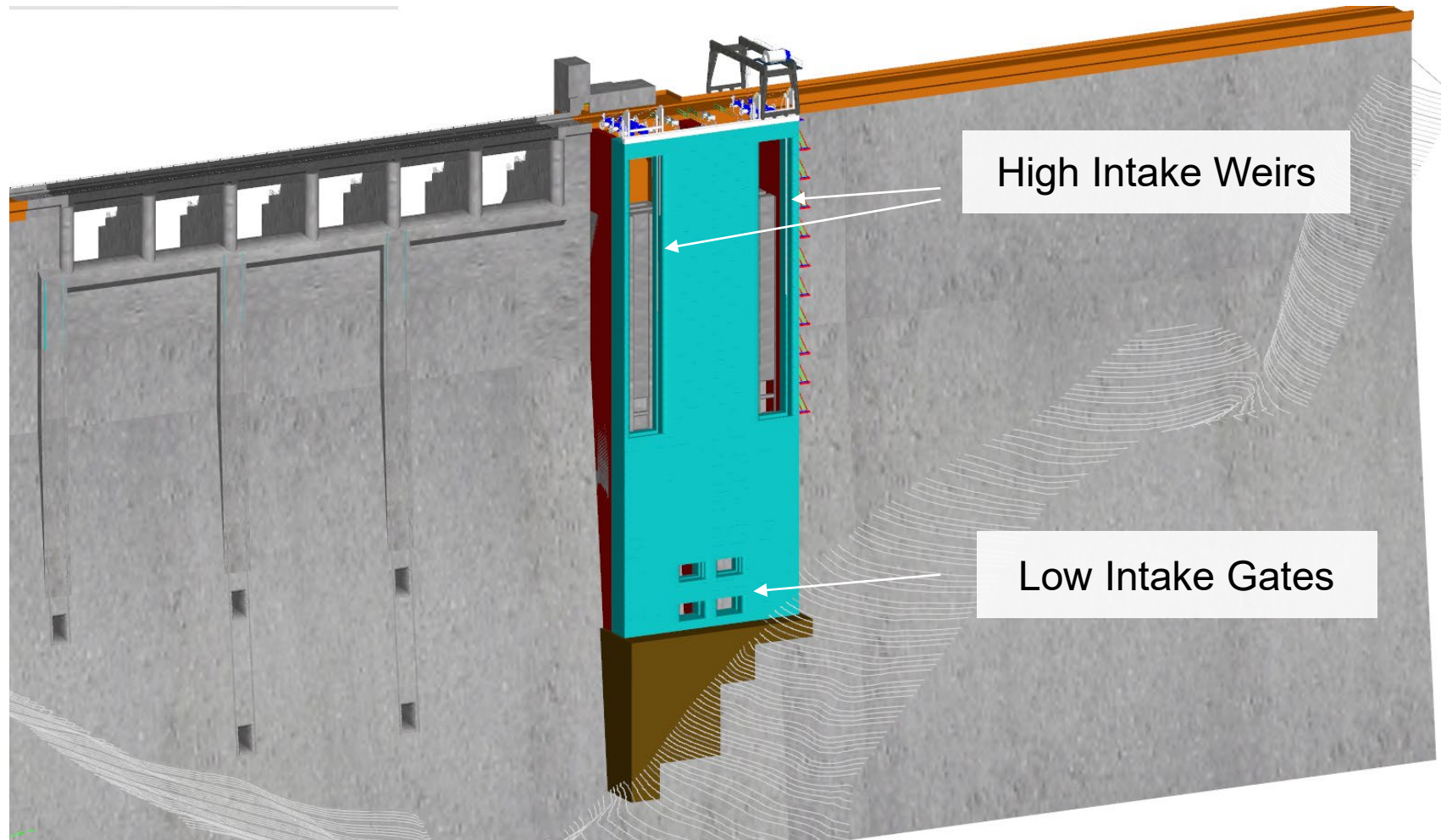
DRAWDOWN ALTERNATIVES AS WE EVALUATE IMPACTS

Determine a way to construct in the wet

- Drawdown to 1400' to provide water supply
 - Provides 750 cfs for municipal water
 - Some impacts remain
 - Water quality
 - » Sediment
 - No stored water for agricultural users with rights to only stored water
- Follow normal rule curve
 - Normal operations
 - Deeper dive depths



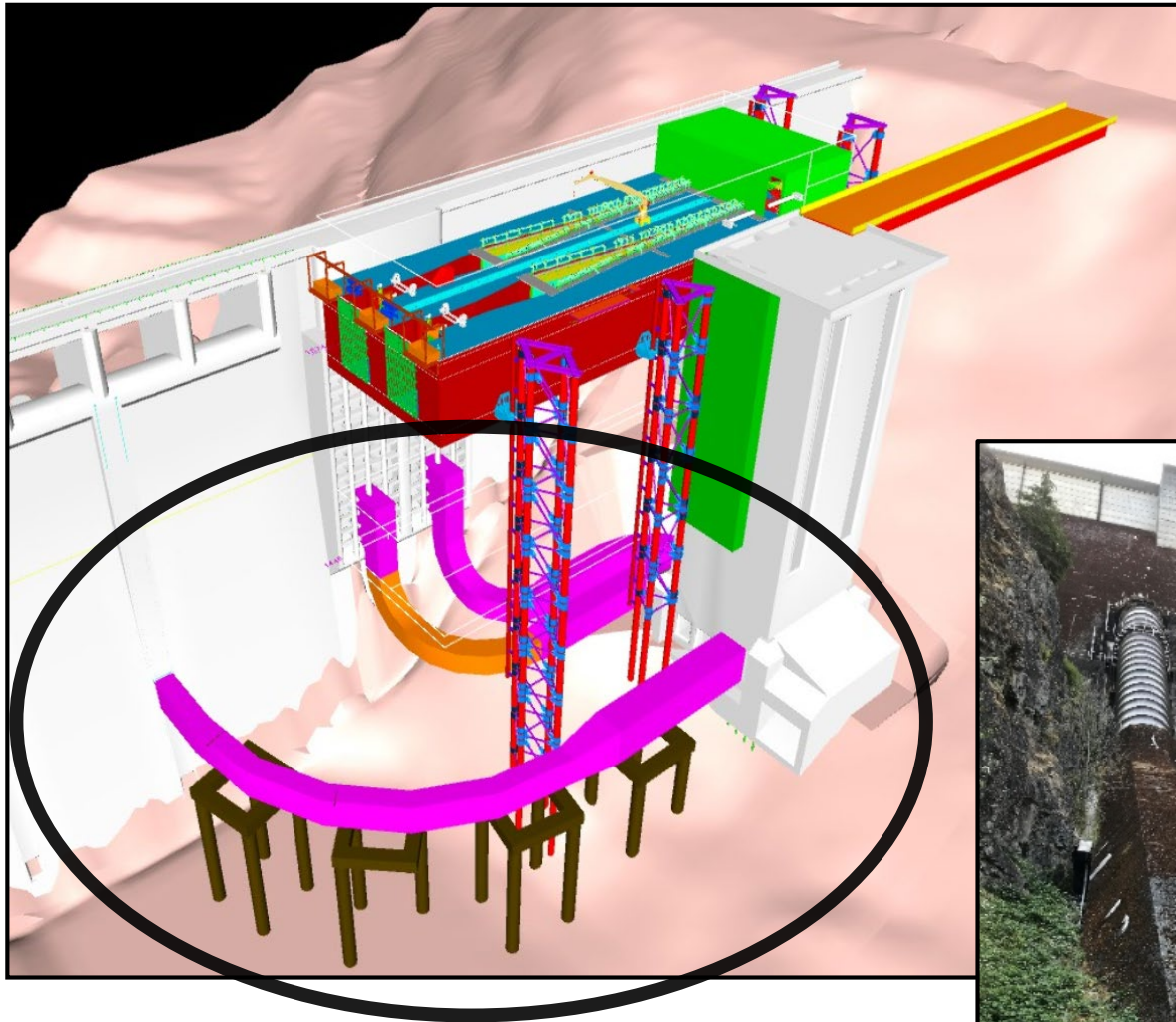
POSSIBLE SWS ATTACHED TO DAM



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POSSIBLE PENSTOCK BIFURCATION



Eliminate conduits

Bypass to
stilling basin

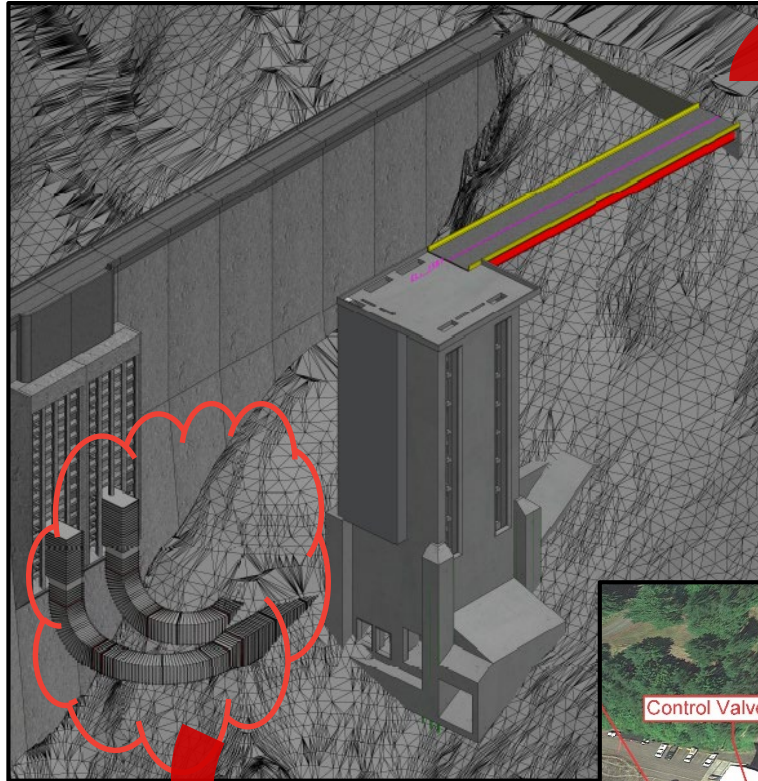


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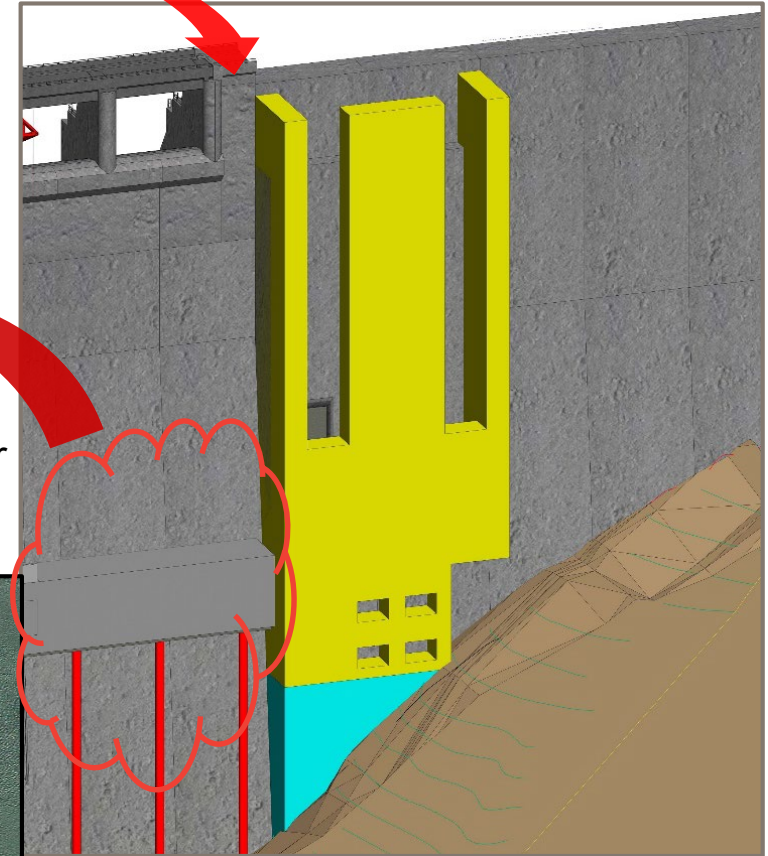
POSSIBLE UNDERWATER CONSTRUCTION SUMMARY

Free Standing SWS

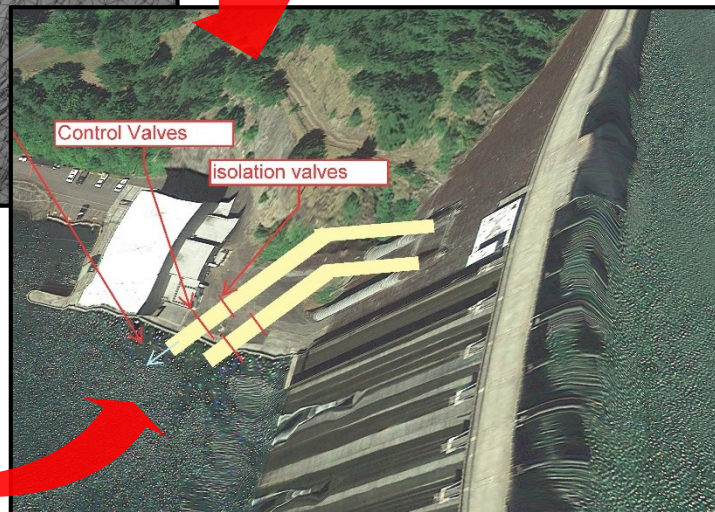


Eliminate bridge

Attached to Dam SWS



Eliminate underwater conduit construction



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DRAWDOWN AND IMPACTS SUMMARY

Weighing impacts of reservoir drawdown vs. in-the-wet construction.

Drawdown for in-the-dry construction = Large impacts

- Socioeconomics, recreation, environment

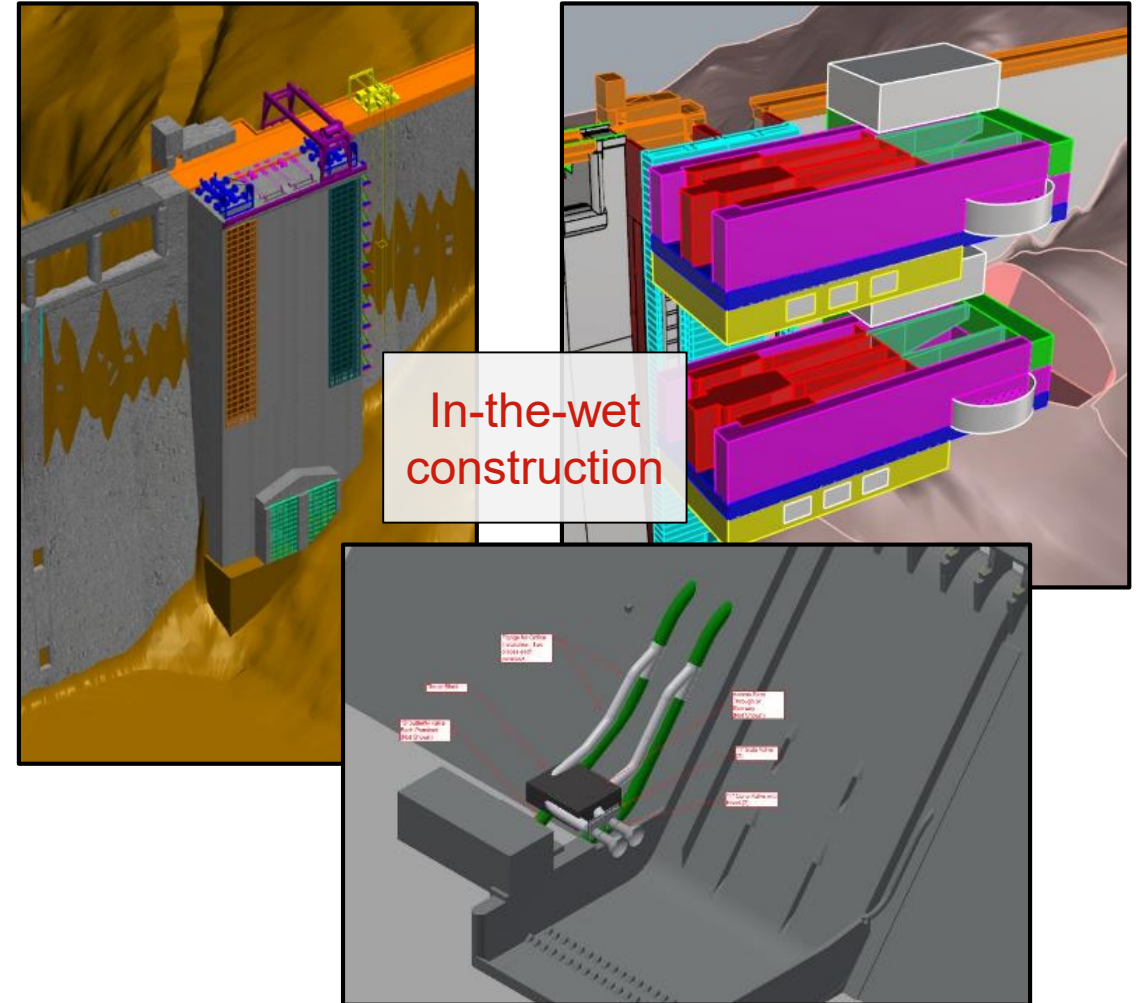
Is it actually possible to build in the wet?

- Normal rule curve
 - Up to 300-400' dive depth
- Modified rule curve – 1400'
 - Shallower dive depth (100-200')
 - Ability to provide water quantity (750 cfs)
 - Issues with water quality

NEPA process is helping shape SWS design alternatives to reduce impacts.

More to come in the draft EIS

– Out for public review late spring/summer 2019



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