

Dec 13th, 3:40 PM - 5:20 PM

# Mud Mountain Upstream Migrant Trap & Haul Facility Design

Peter Christensen  
*R2 Resource Consultants*

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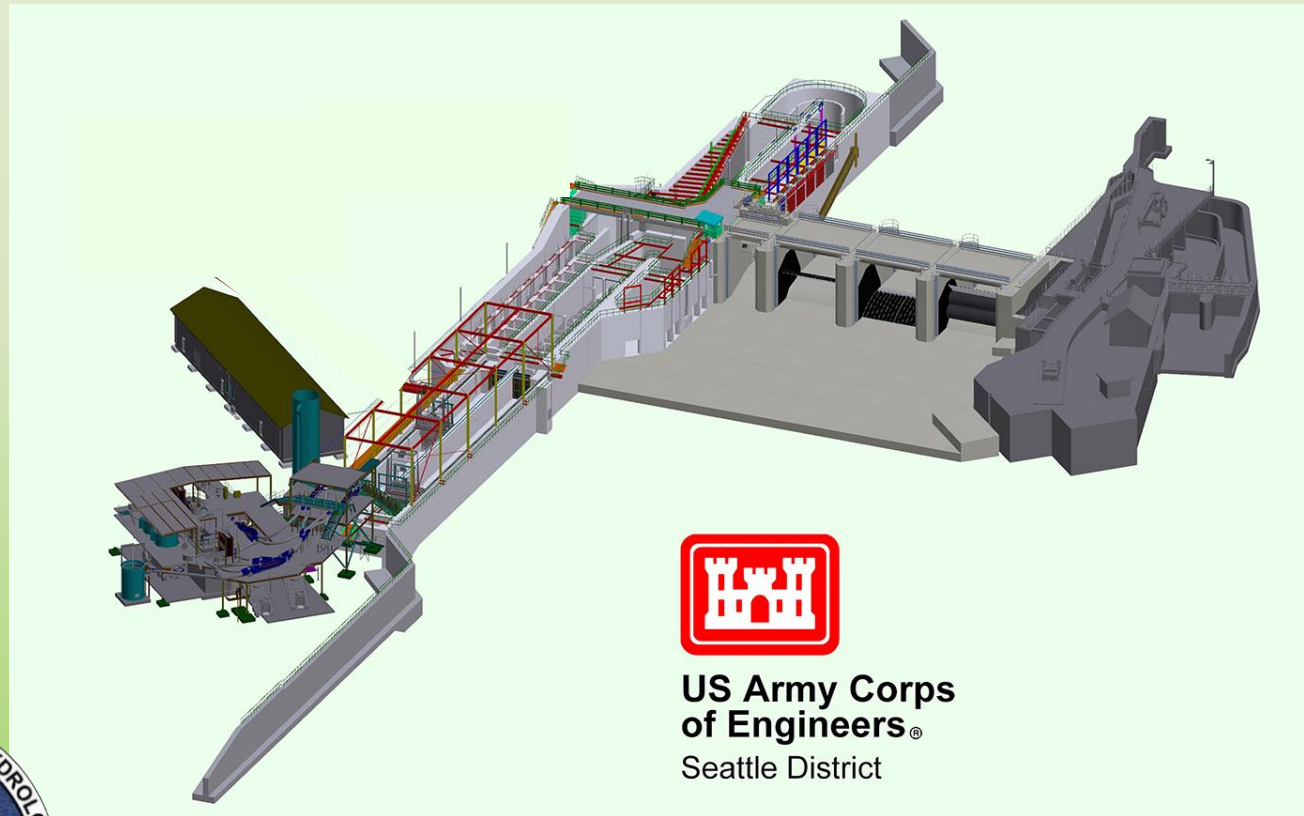
Christensen, Peter, "Mud Mountain Upstream Migrant Trap & Haul Facility Design" (2018). *International Conference on Engineering and Ecohydrology for Fish Passage*. 18.

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# Mud Mountain Upstream Migrant Trap & Haul Facility Design

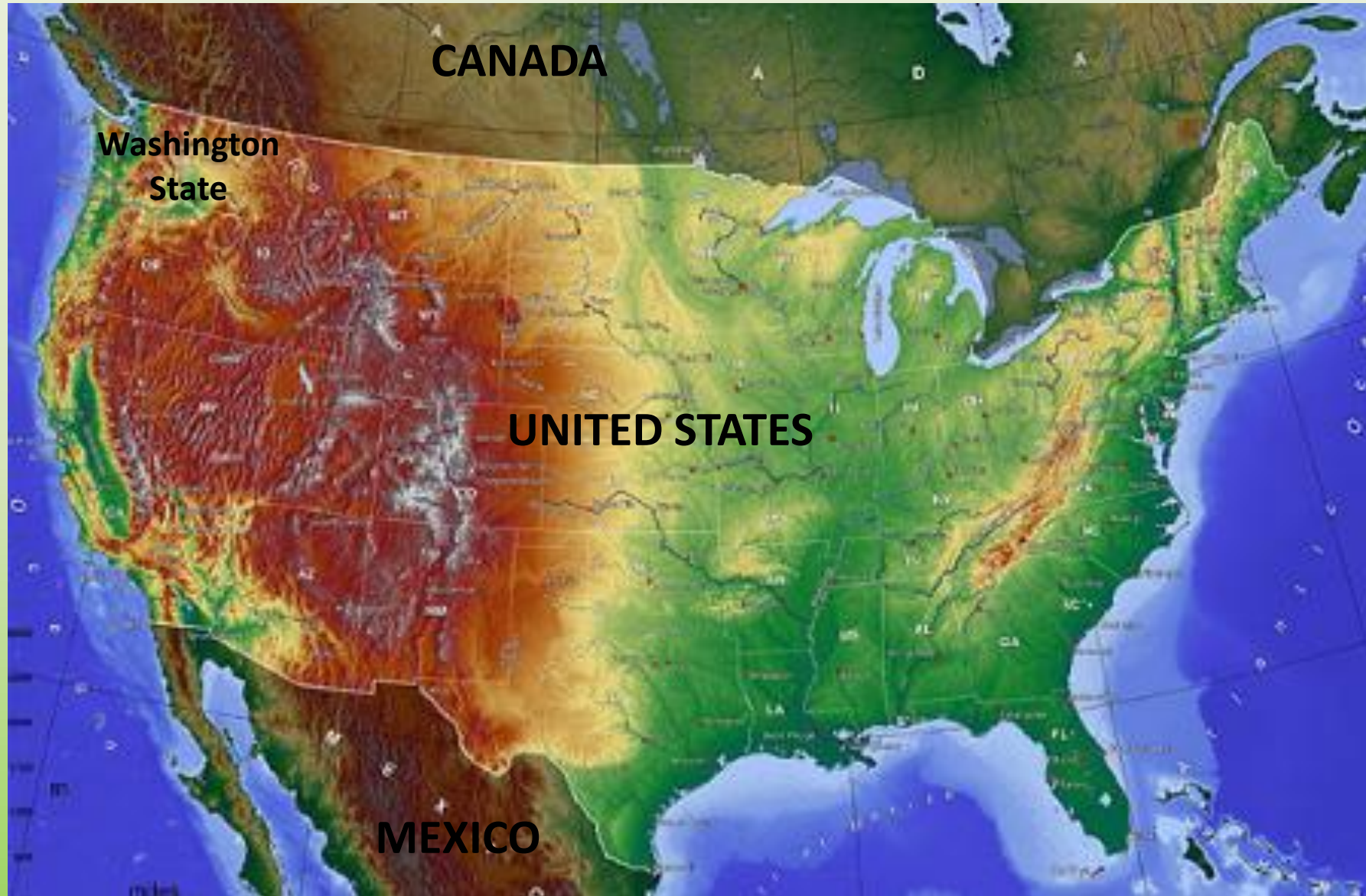
Peter Christensen – R2 Resource Consultants



**FISH PASSAGE 2018 - INTERNATIONAL CONFERENCE ON RIVER CONNECTIVITY**

**DECEMBER 10-14, 2018 | ALBURY, NEW SOUTH WALES (AUSTRALIA)**

# Project Location



**FISH PASSAGE 2018 - INTERNATIONAL CONFERENCE ON RIVER CONNECTIVITY**

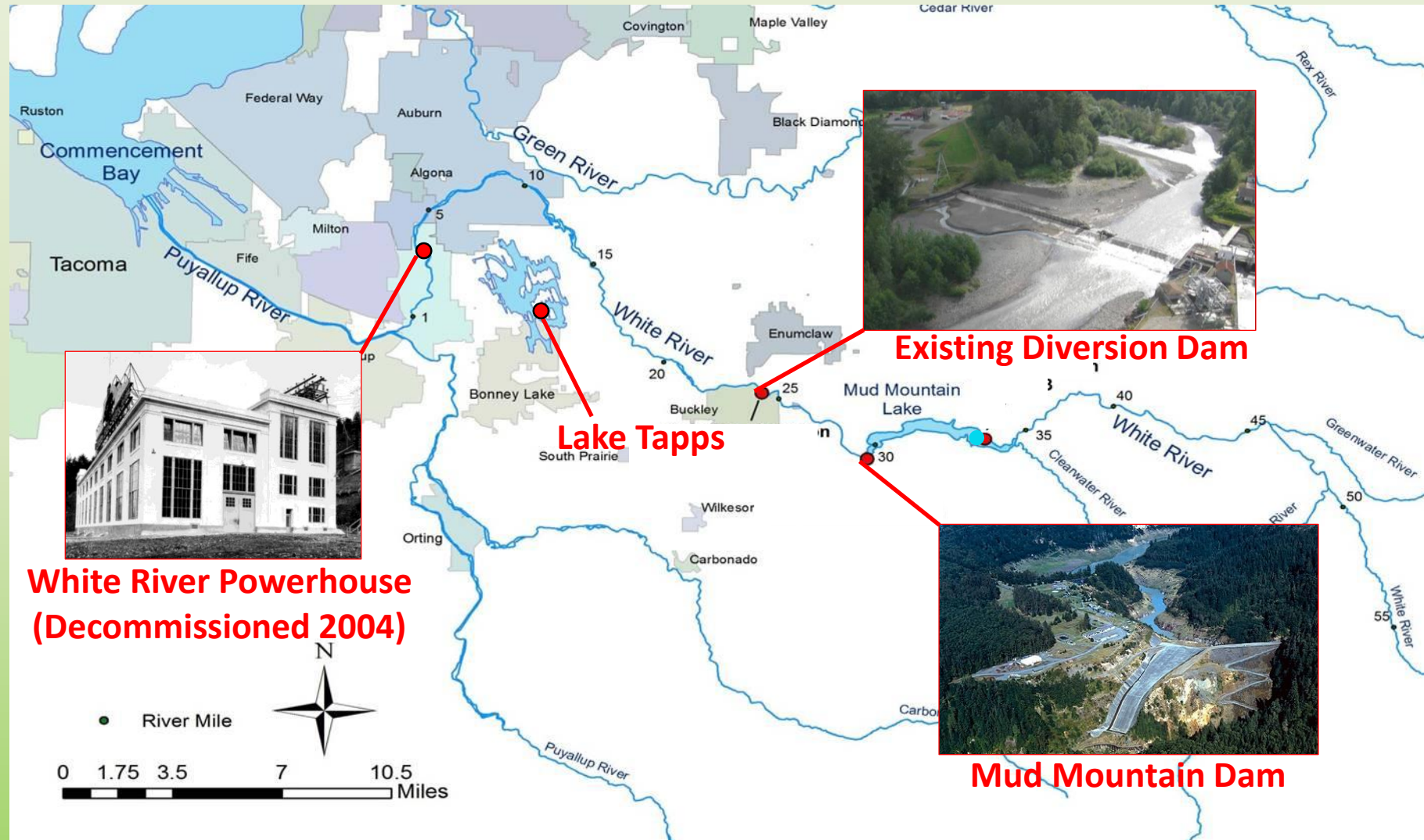


# White River Location





# White River, Washington State



# Existing Facilities





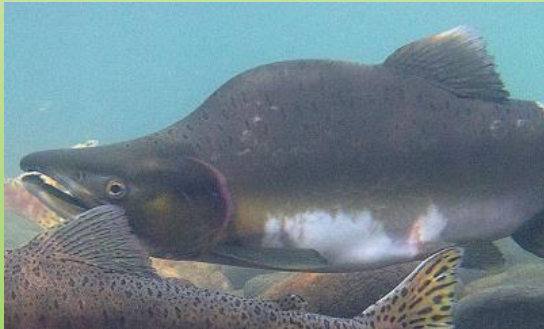
# Target Species for Passage



Chinook Salmon



Bull Trout



Pink Salmon



Steelhead Trout



Coho Salmon

## Chinook Salmon: (ESA Listed)

Annual Target - 5,500

Hatchery Broodstock - 1,000

Peak Daily Run - 300

## Steelhead Trout: (ESA Listed)

Annual Target - 2,000

Peak Daily Run - 125

## Bull Trout: (ESA Listed)

Annual Target - 1,000

Peak Daily Run - 50

## Coho Salmon:

Annual Target - 40,000

Peak Daily Run - 2,000

## Pink Salmon:

Annual Target - 1,250,000

Peak Daily Run - 60,000

*(Not found in White River prior to decommissioning of Powerhouse)*

# Disposition of Species

All fish to be Identified and Counted

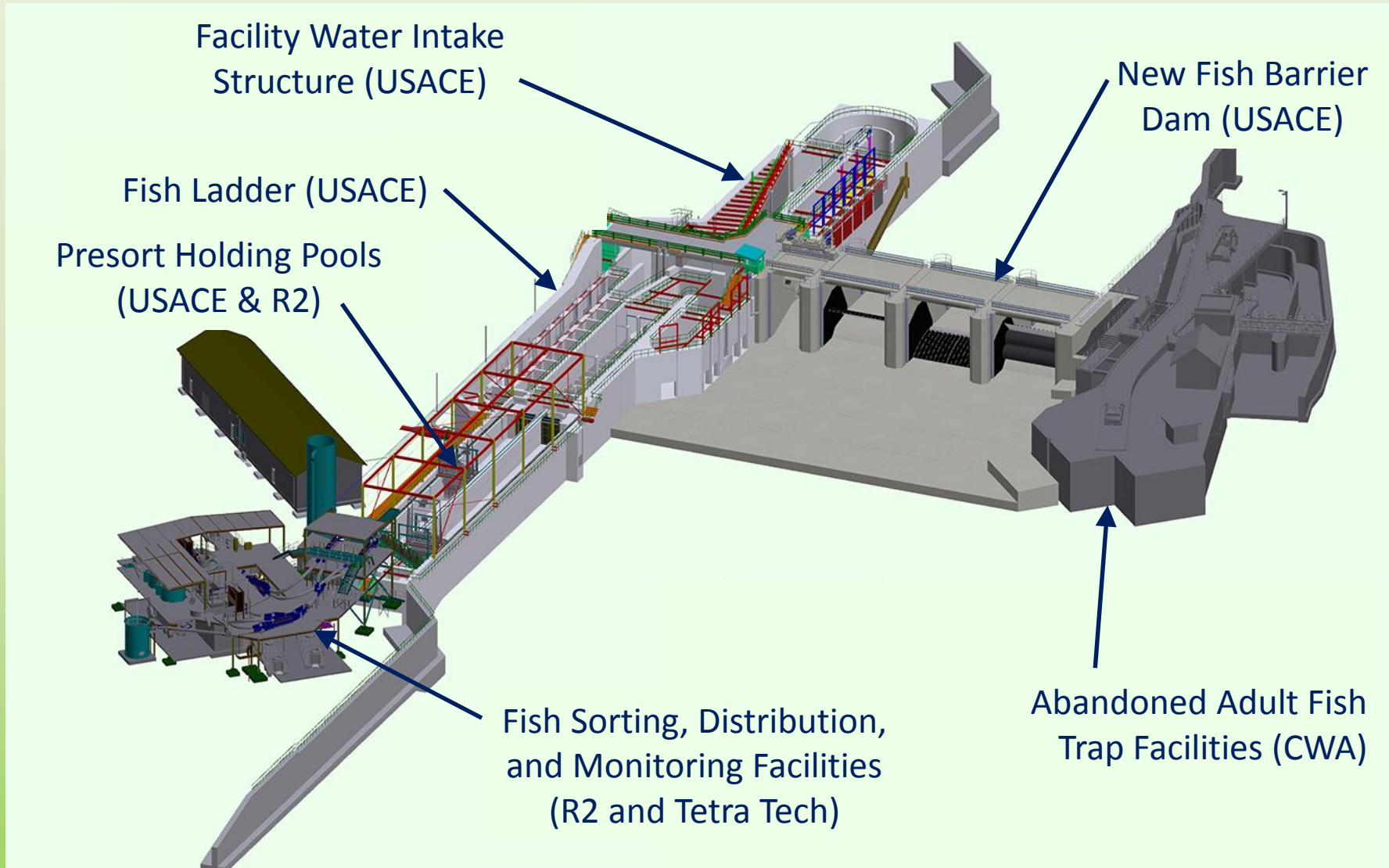
Pink and Coho Salmon to be Passed Upstream without Handling

ESA Listed Species (Chinook, Steelhead, and Bull Trout) to be separated out for Monitoring

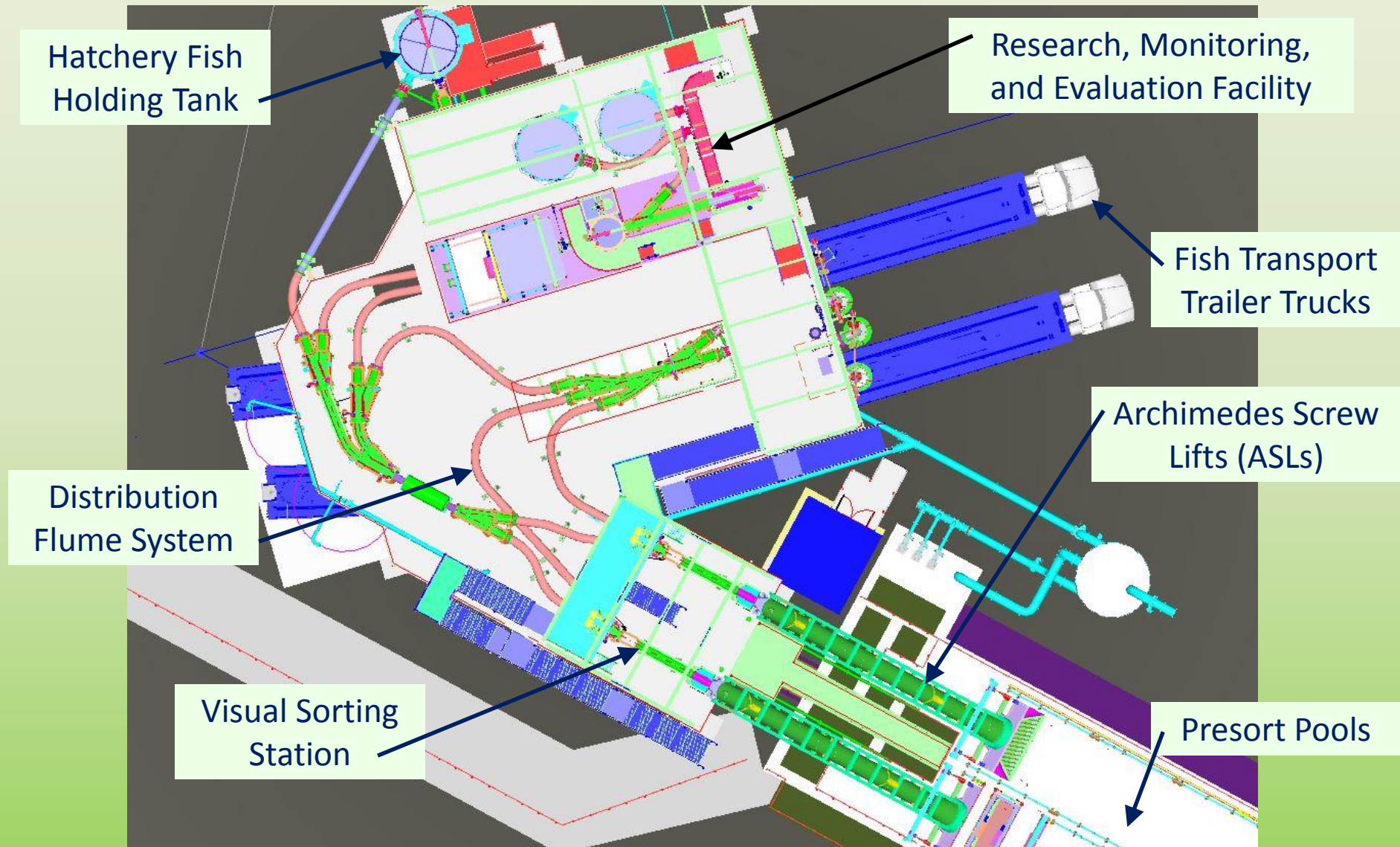
Hatchery Chinook Broodstock (coded-wire tagged) to be Separated Automatically prior to Monitoring



# New Facilities Design



# Fish Sorting, Distribution & Monitoring Facilities

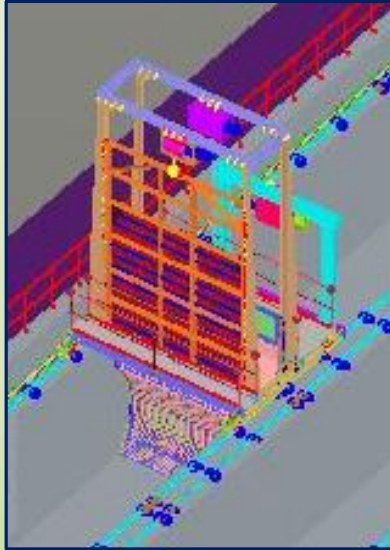


**FISH PASSAGE 2018 - INTERNATIONAL CONFERENCE ON RIVER CONNECTIVITY**

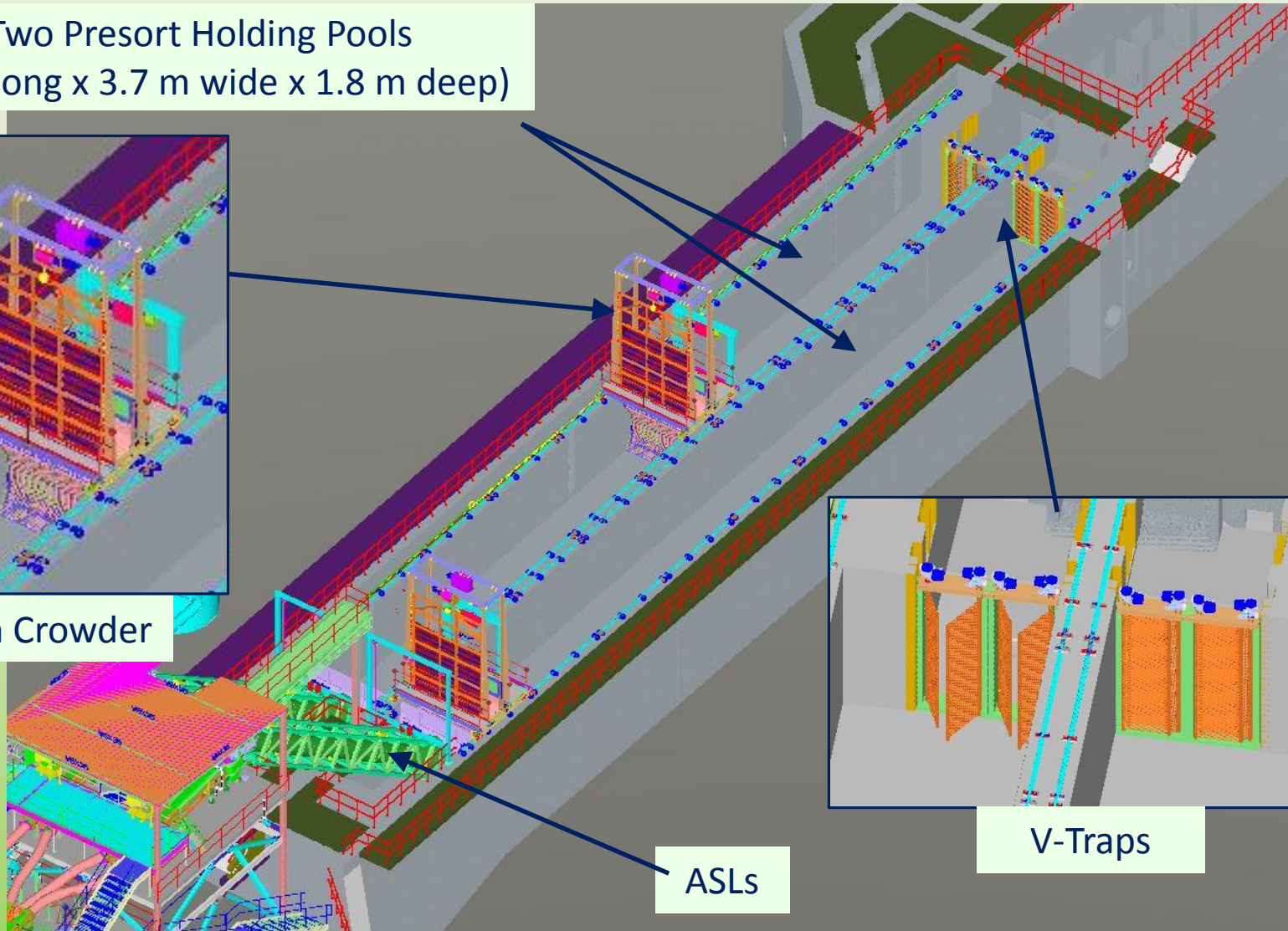


# Presort Pools & Fish Crowding

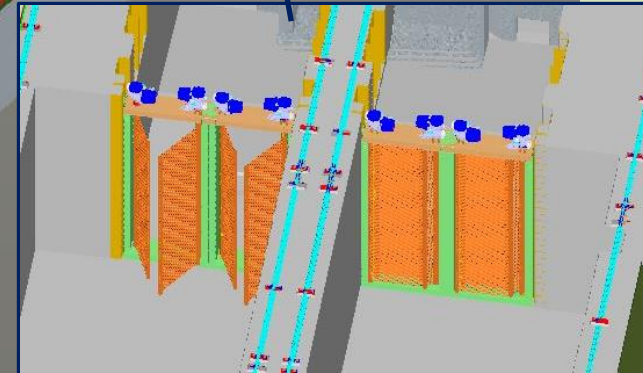
Two Presort Holding Pools  
(47 m long x 3.7 m wide x 1.8 m deep)



Fish Crowder

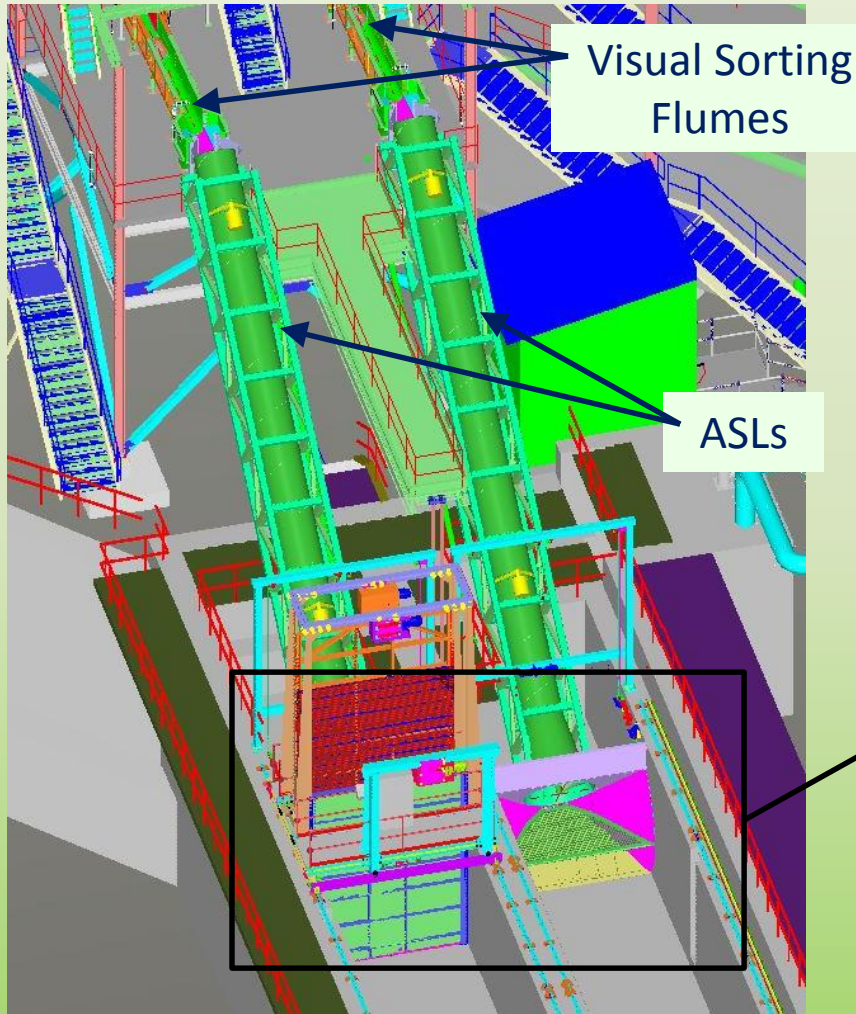


ASLs

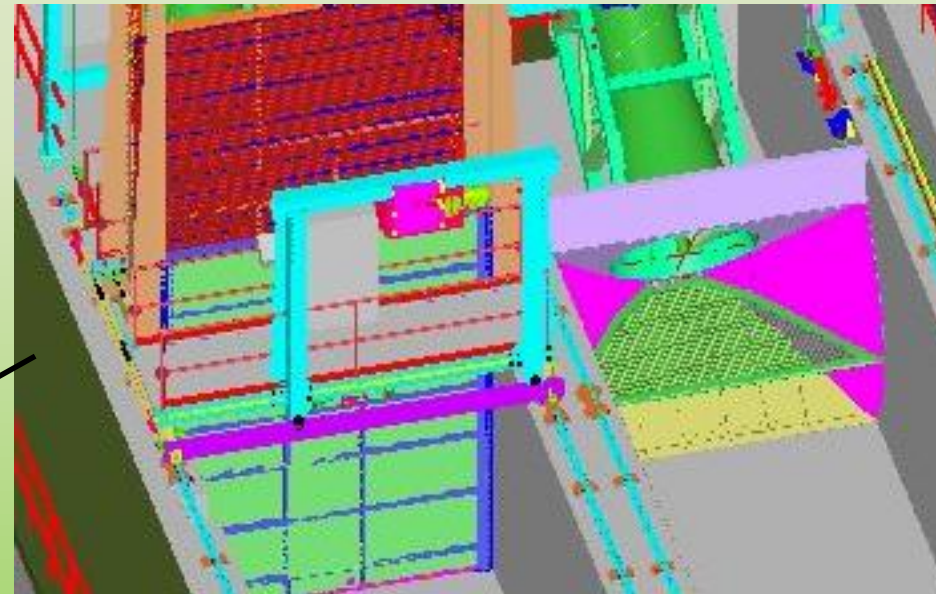


V-Traps

# Archimedes Screw Lifts (ASLs)



Length = 15.75 m  
Diameter = 0.915 m  
Rise from Pools = 9.26 m



ASL Foot Crowder

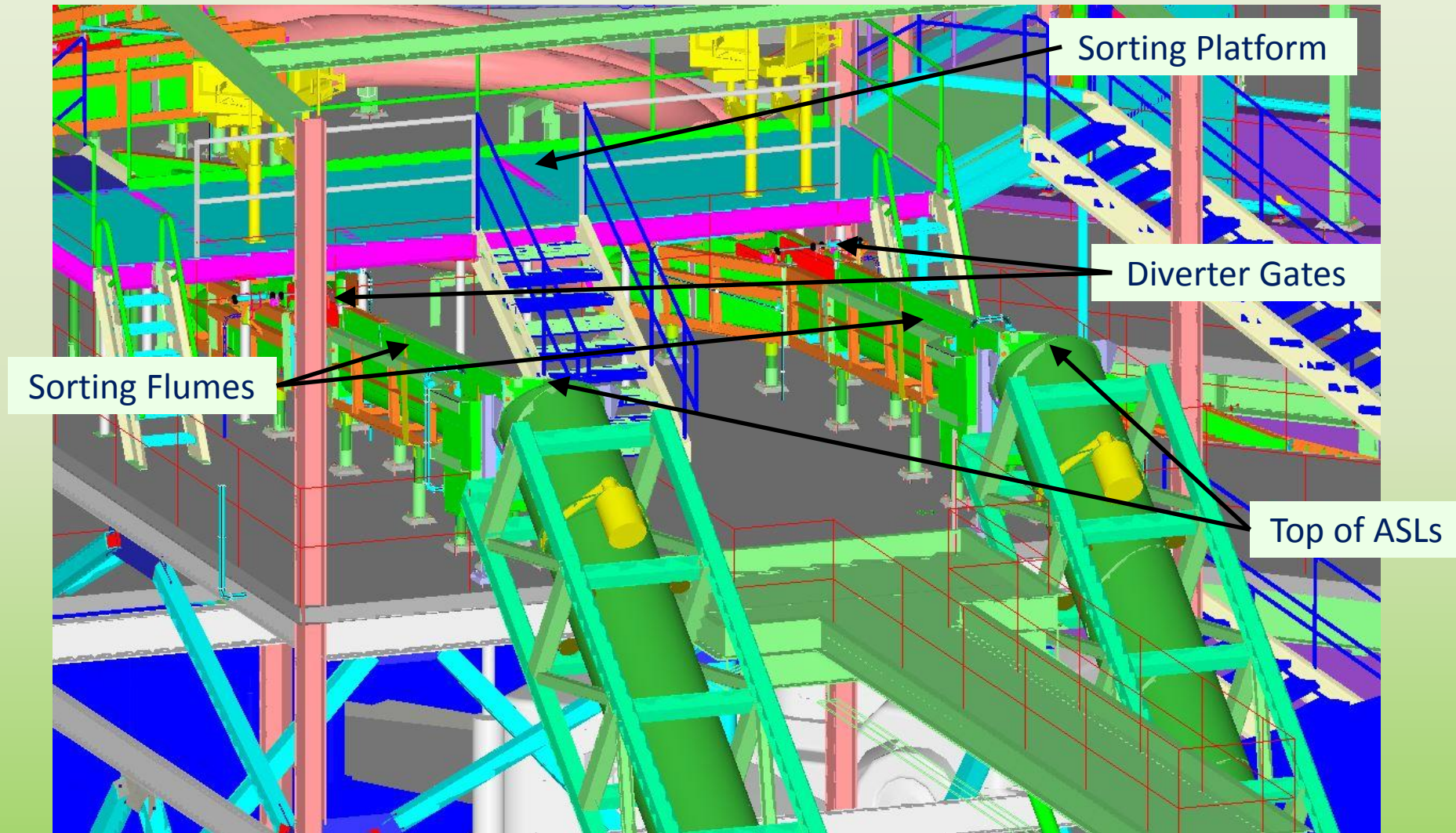


# Small Existing ASL at Muckleshoot Hatchery



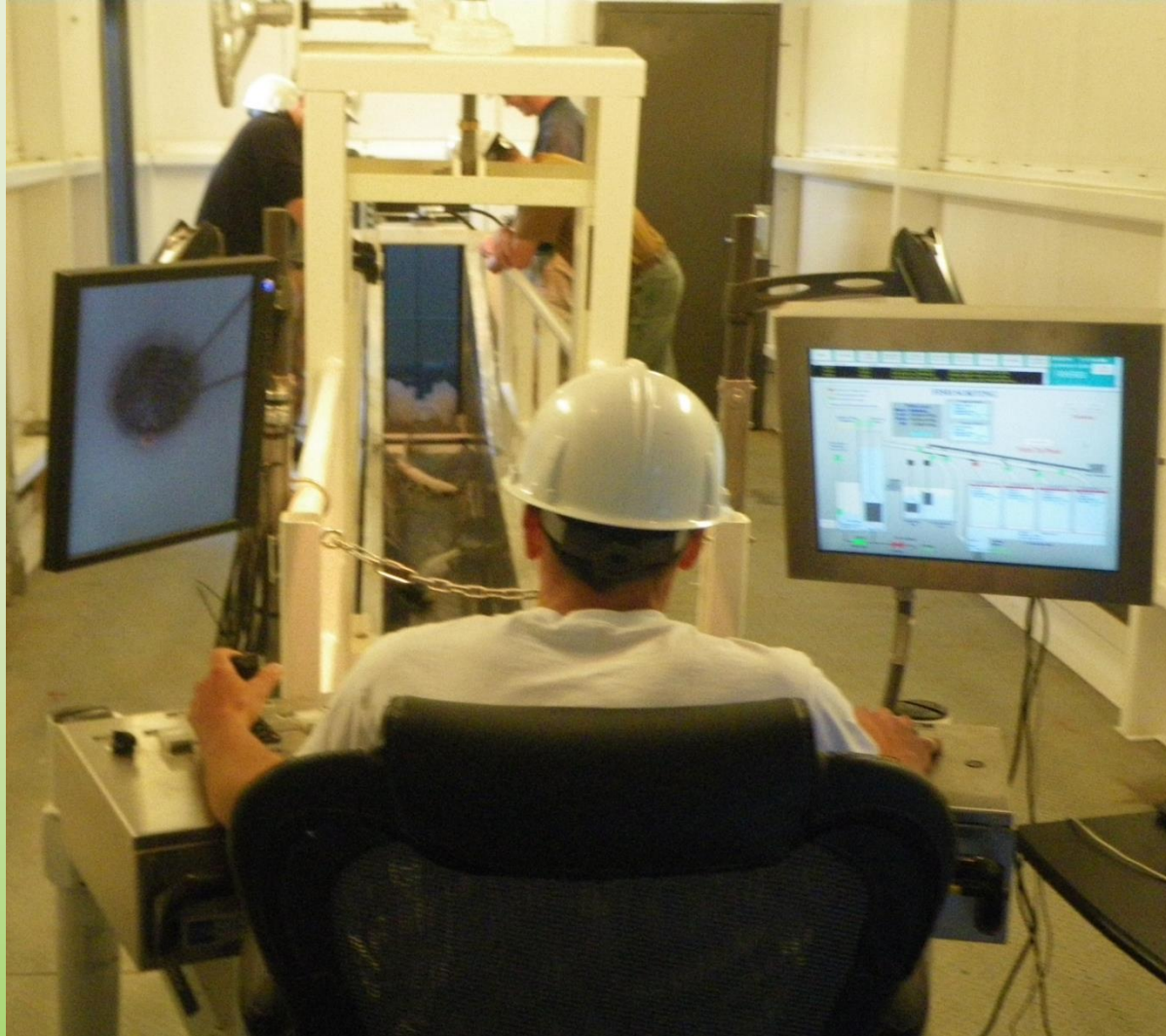


# Visual Sorting Station

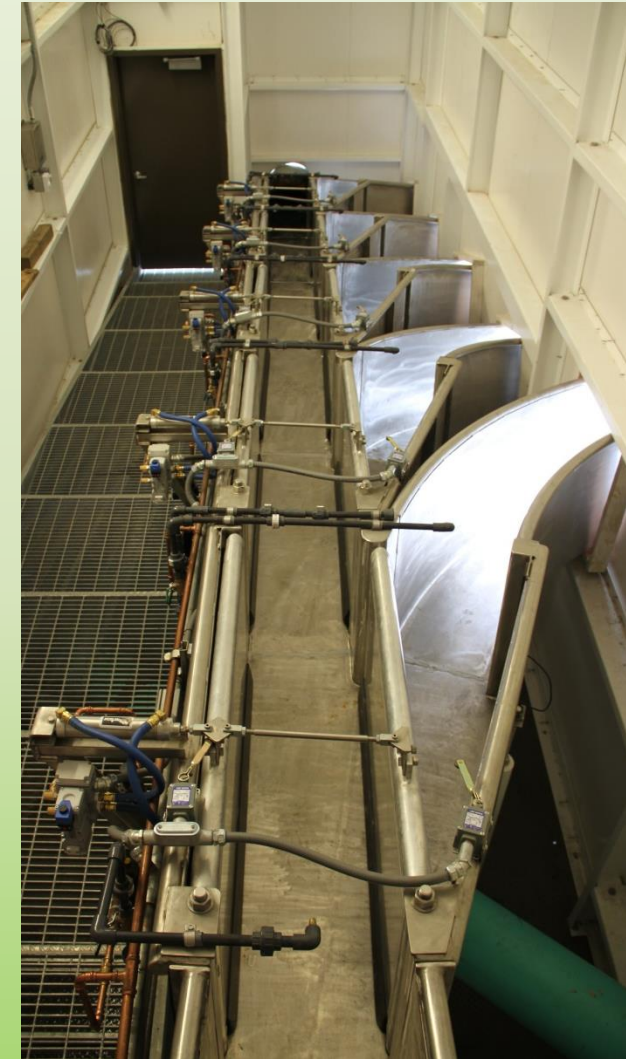




# Baker River Adult Trap Components

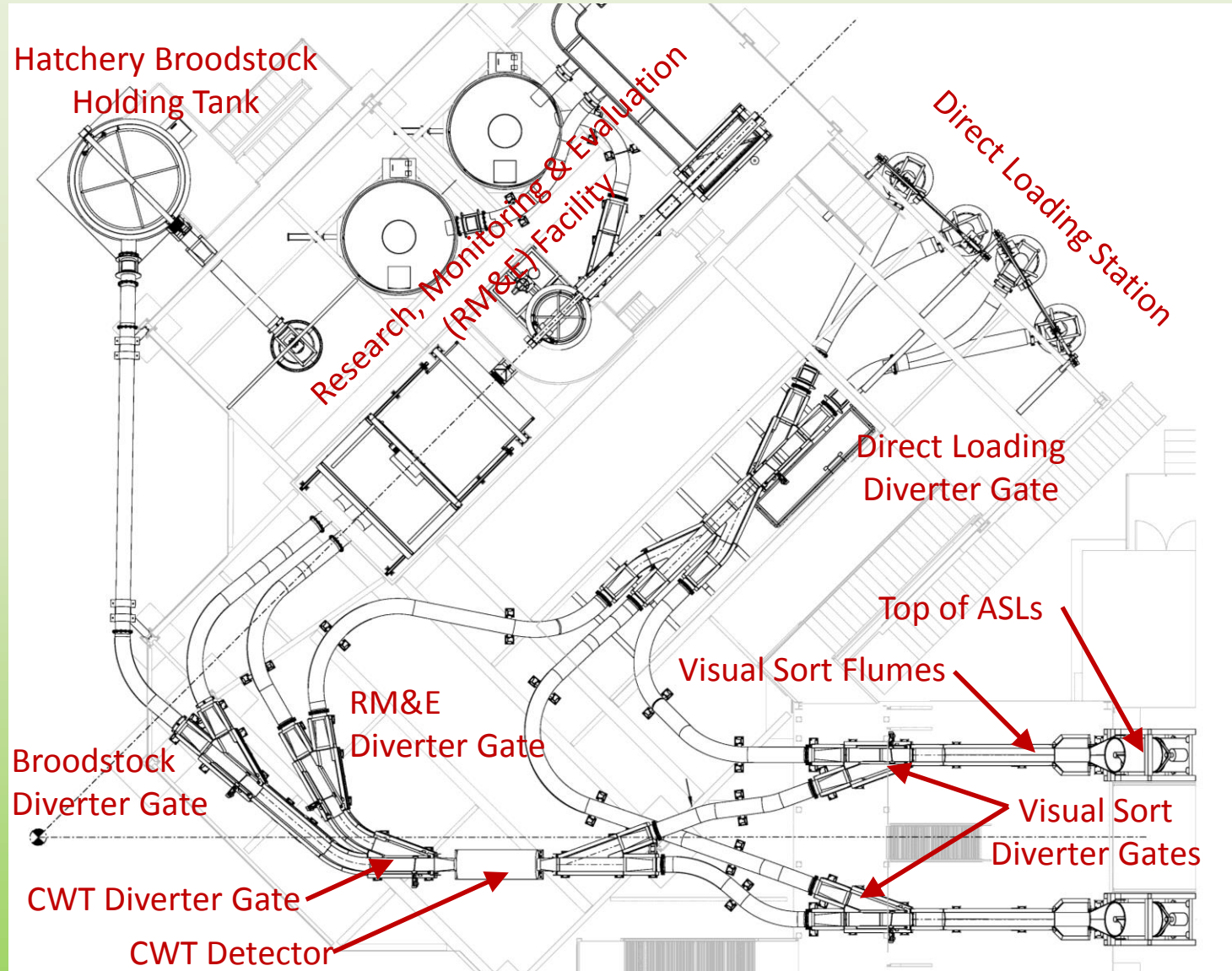


Visual Sorting Station



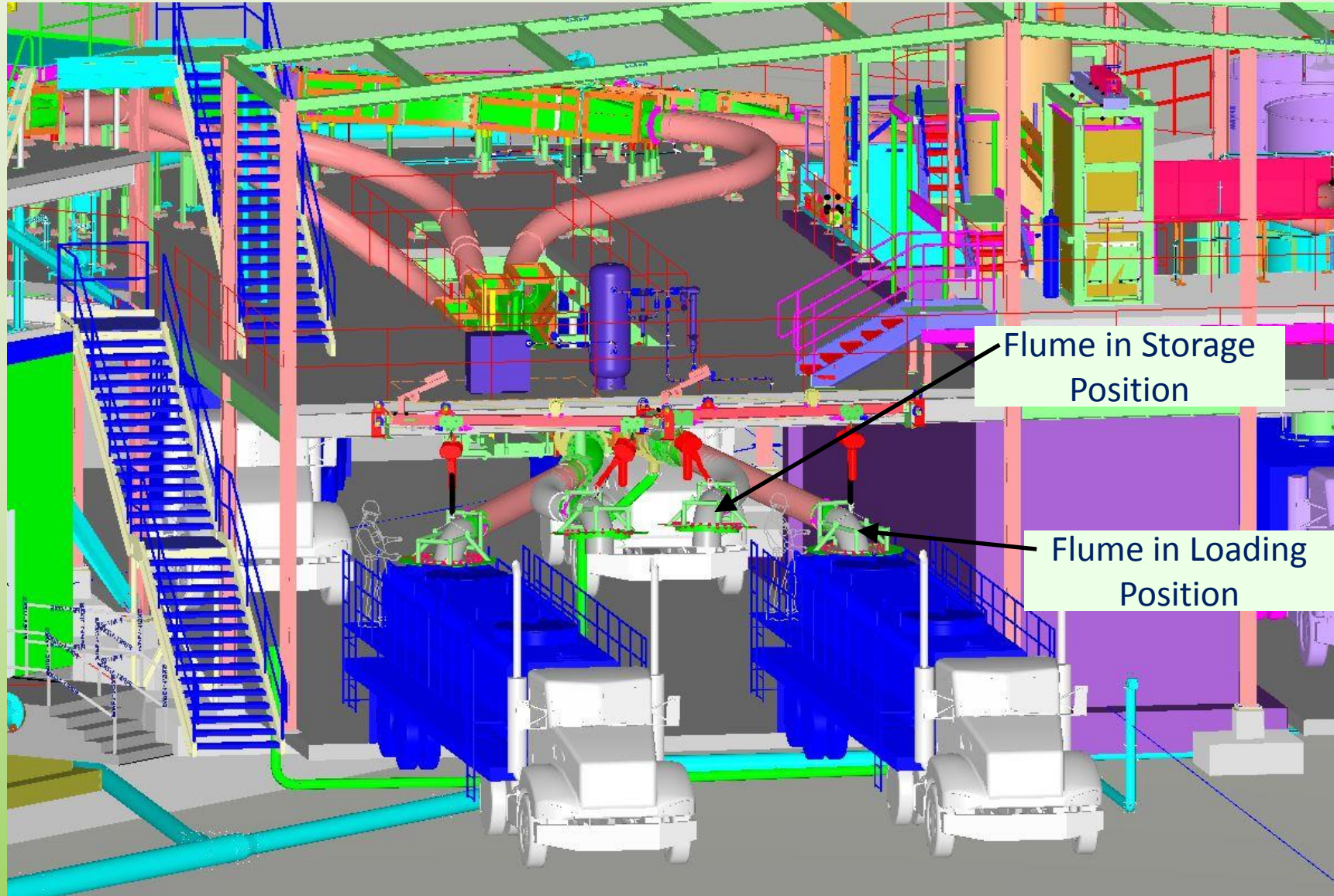
Flume Diverter Gates

# Flume Distribution System

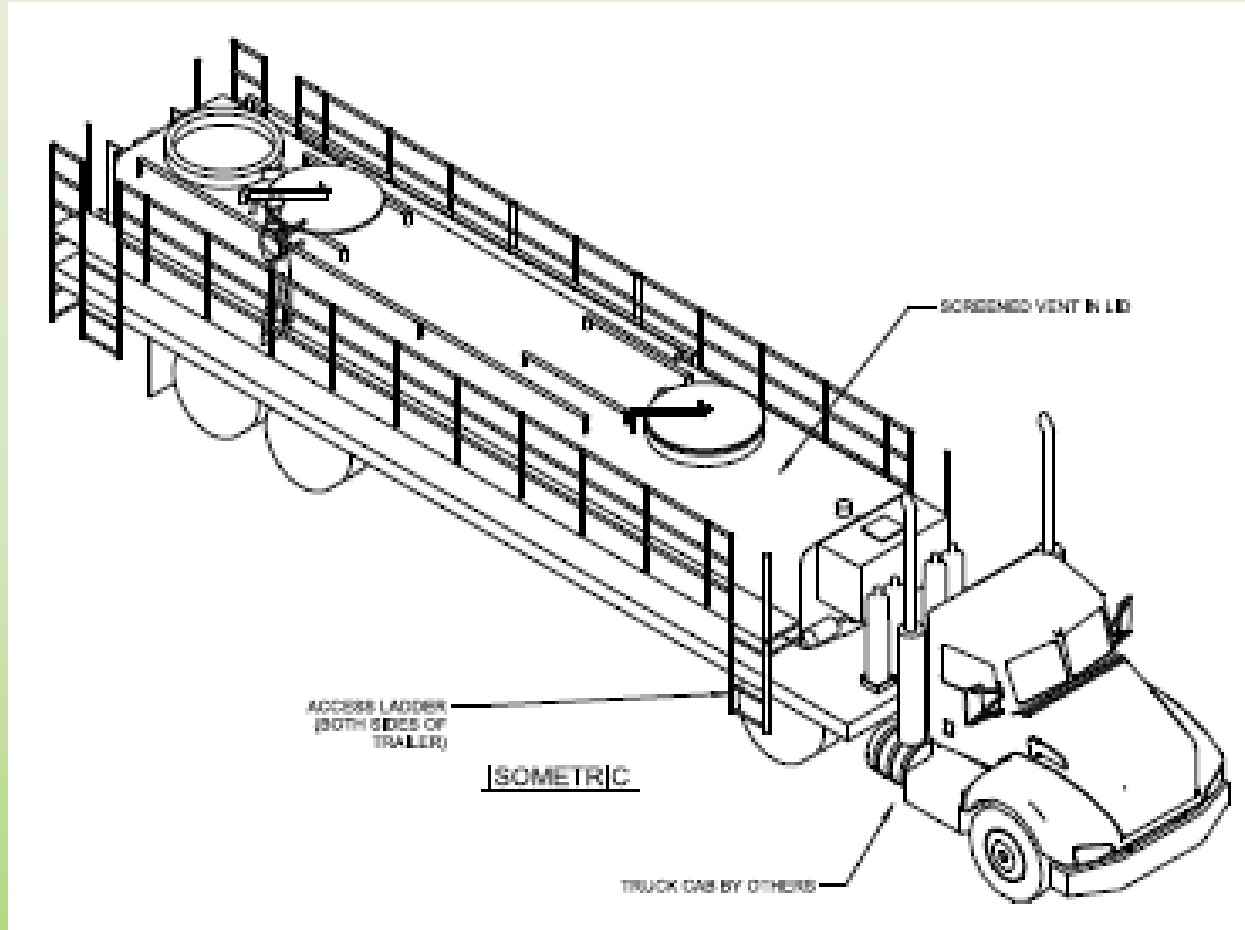




# Direct Truck Loading Station



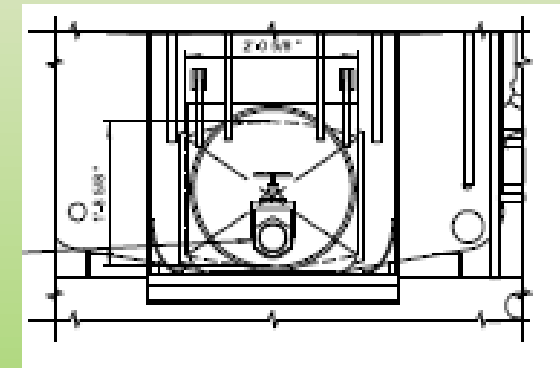
# Fish Transport Truck Trailer Tanks



Trailer Truck Layout

19,000 Liter Capacity

Five required to  
operate continuously  
to move 60,000 fish  
in 24 hours



Fish Release Gate



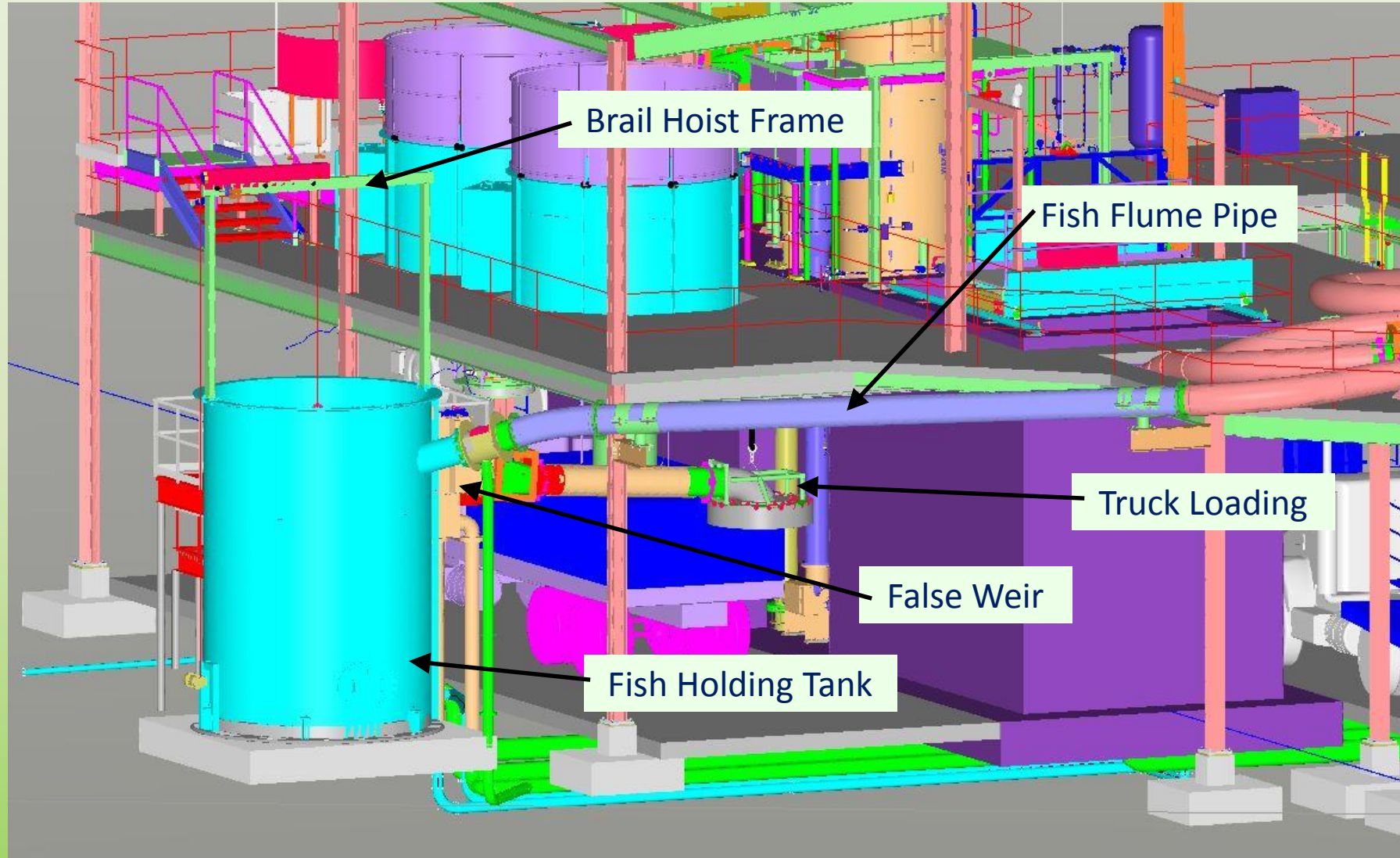
# Coded-Wire Tag Detector



Northwest Marine Technology - Model T13 CWT Detector

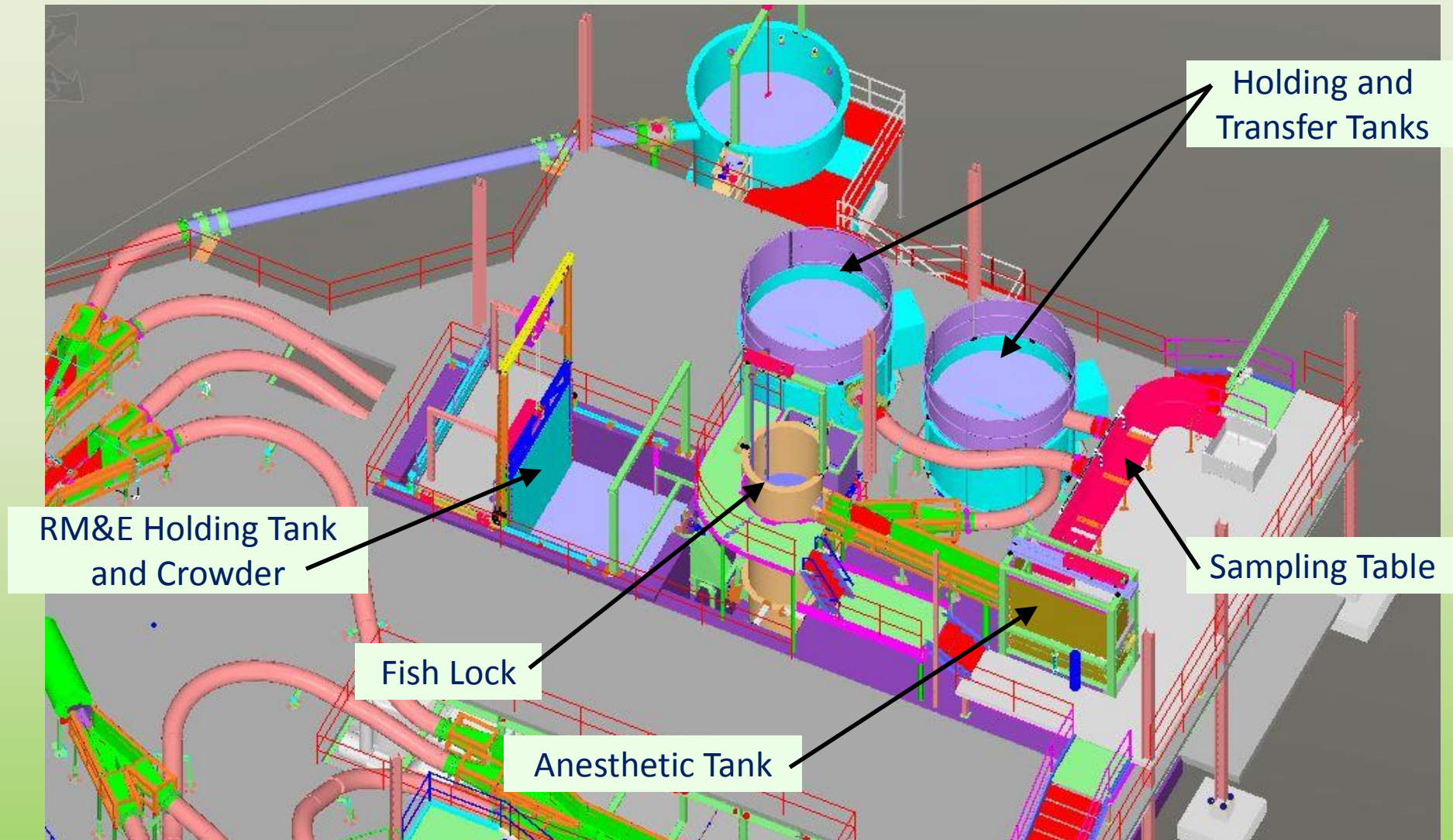


# Hatchery Broodstock Holding & Transfer





# Research, Monitoring & Evaluation (RM&E) Facility



# Water-to-Water Fish Transfer

Existing USACE Fish  
Transport Truck



Fish Transfer Assembly on  
Underside of RM&E Holding Tanks  
(from PGE North Fork Project)



# Construction in Progress



# Acknowledgements

Kim May & Michael Peele (USACE)

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Dan Turner (R2)

plus over 100 engineers, biologists, and managers

**Thank You**

**Peter Christensen – R2 Resource Consultants**

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