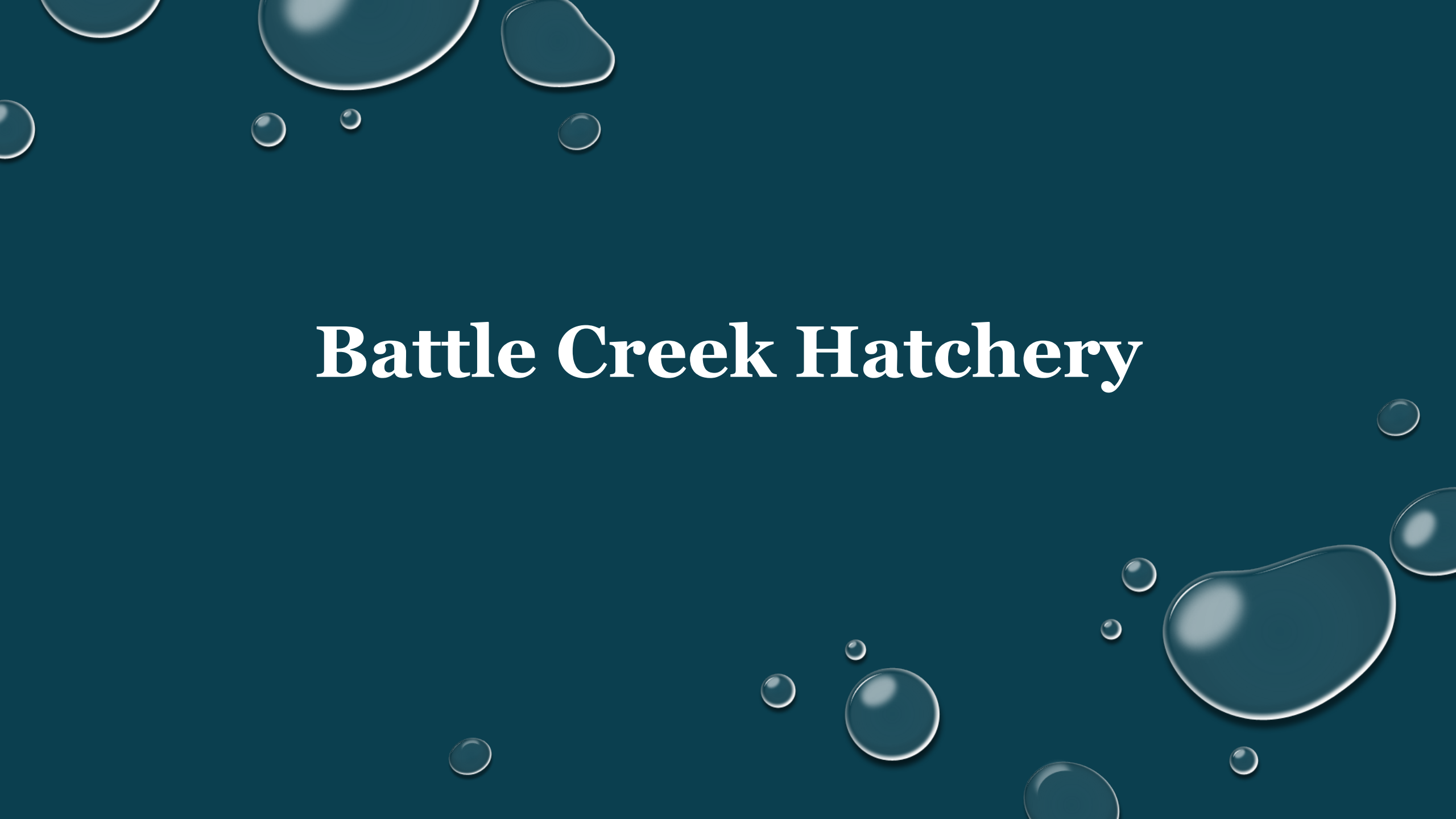


The background is a solid teal color. It is decorated with numerous water droplets of various sizes. Some droplets are large and prominent, while others are small and scattered. The droplets have a realistic appearance with highlights and shadows, giving them a three-dimensional look. They are distributed across the entire frame, with a higher concentration in the top-left and bottom-right corners.

# Battle Creek Hatchery

# BATTLE CREEK HATCHERY

## Purposes of Project:

- Enables full term chum and other salmon rearing, egg- to release
- Eliminates time and labor to haul millions of eggs and fish back and forth between Battle Creek and Bernie Kai Kai Gobin Hatchery (BKKG), eliminates risks and stress associated with these transfers
- Increases rearing capacity at Battle Creek
- Increases rearing capacity at BKKG by freeing up incubation and rearing space and water, which reduces rearing densities and improves fish health
- Improves water quality at Battle Creek and BKKG
- Provides a safe work location, basic facilities for Tribal staff currently lacking

# BATTLE CREEK HATCHERY

## **Project Components:**

- Well water supply
- Surface water supply
- Incubation building, staff facilities
- Circular rearing tanks, early rearing troughs
- Effluent treatment, solids control and removal systems

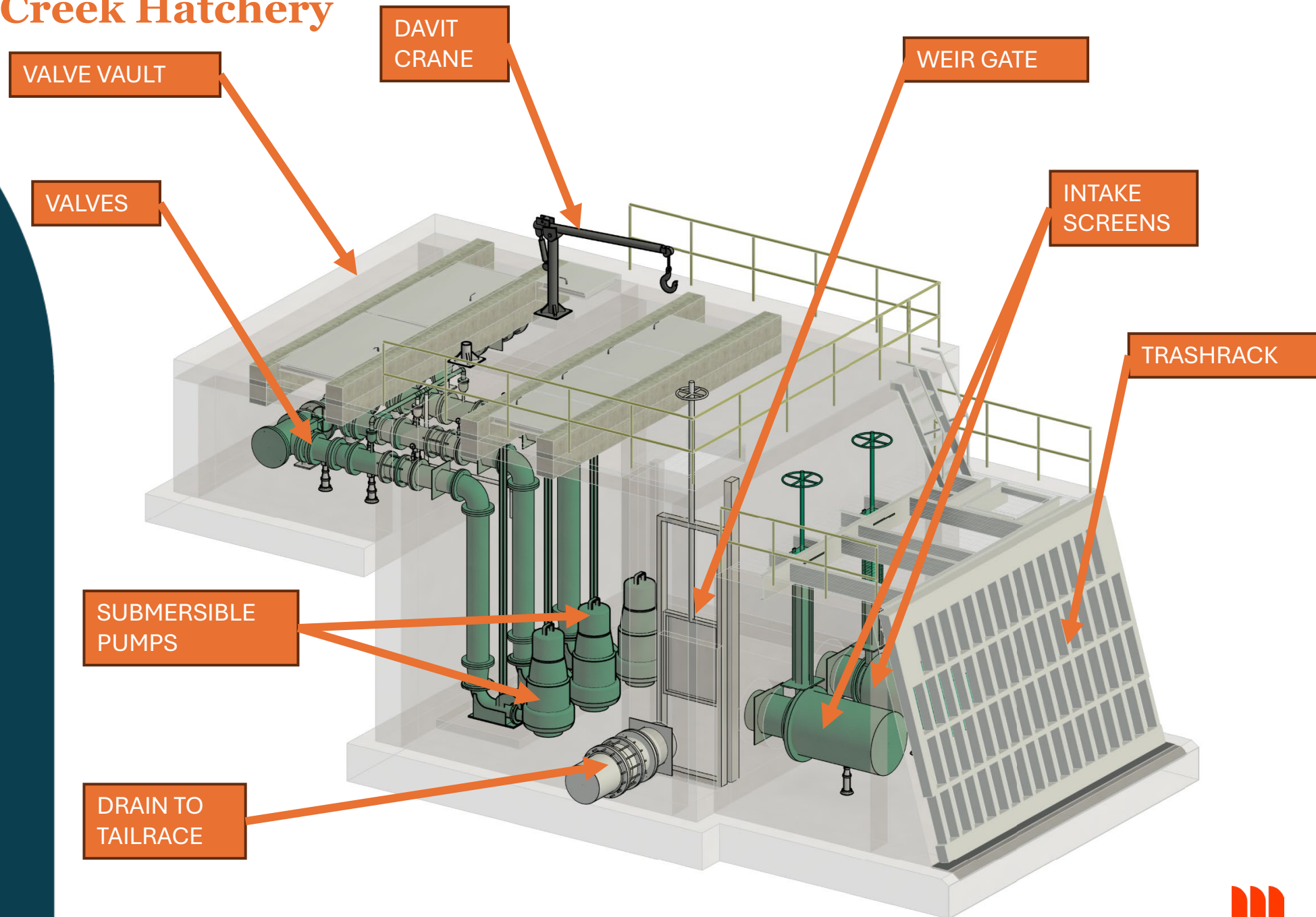
## Battle Creek Hatchery

# Pumped Surface Water Supply

- Intake structure in pond will have self-cleaning fish-proof screens
- 3 intake pumps 2,400 gpm capacity each, 1-2 duty and 1 backup
- Water will be pumped from Battle Creek Pond to a surface water headbox
- Surface water will be distributed from headbox to rearing vessels
- Clean treated water may be returned to Battle Creek pond to be available for recirculation
- Solids filtration and removal is provided for bottom drain effluents

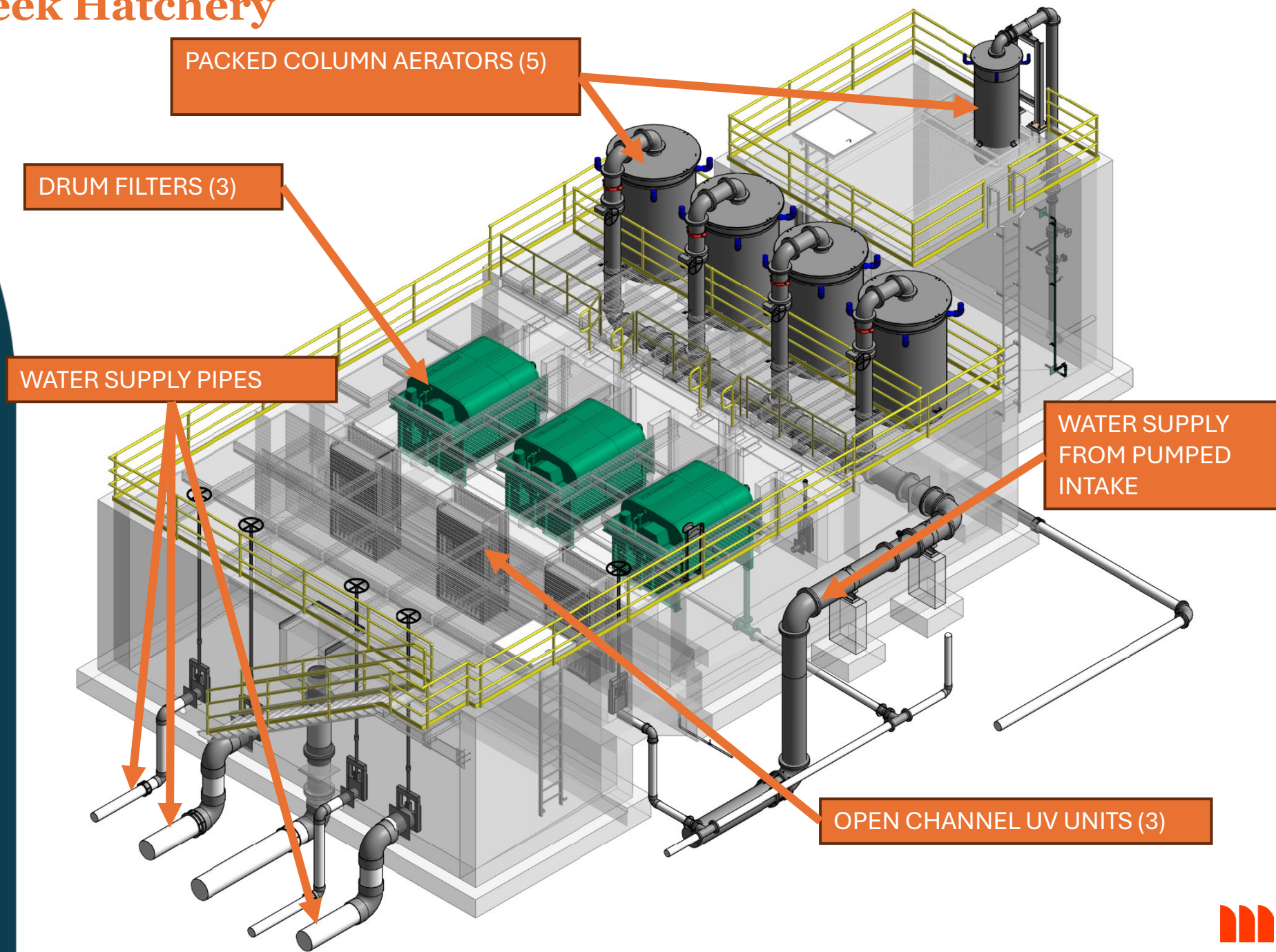
## Battle Creek Hatchery

# Pumped Surface Water Supply



## Battle Creek Hatchery

# Water Supply Headbox



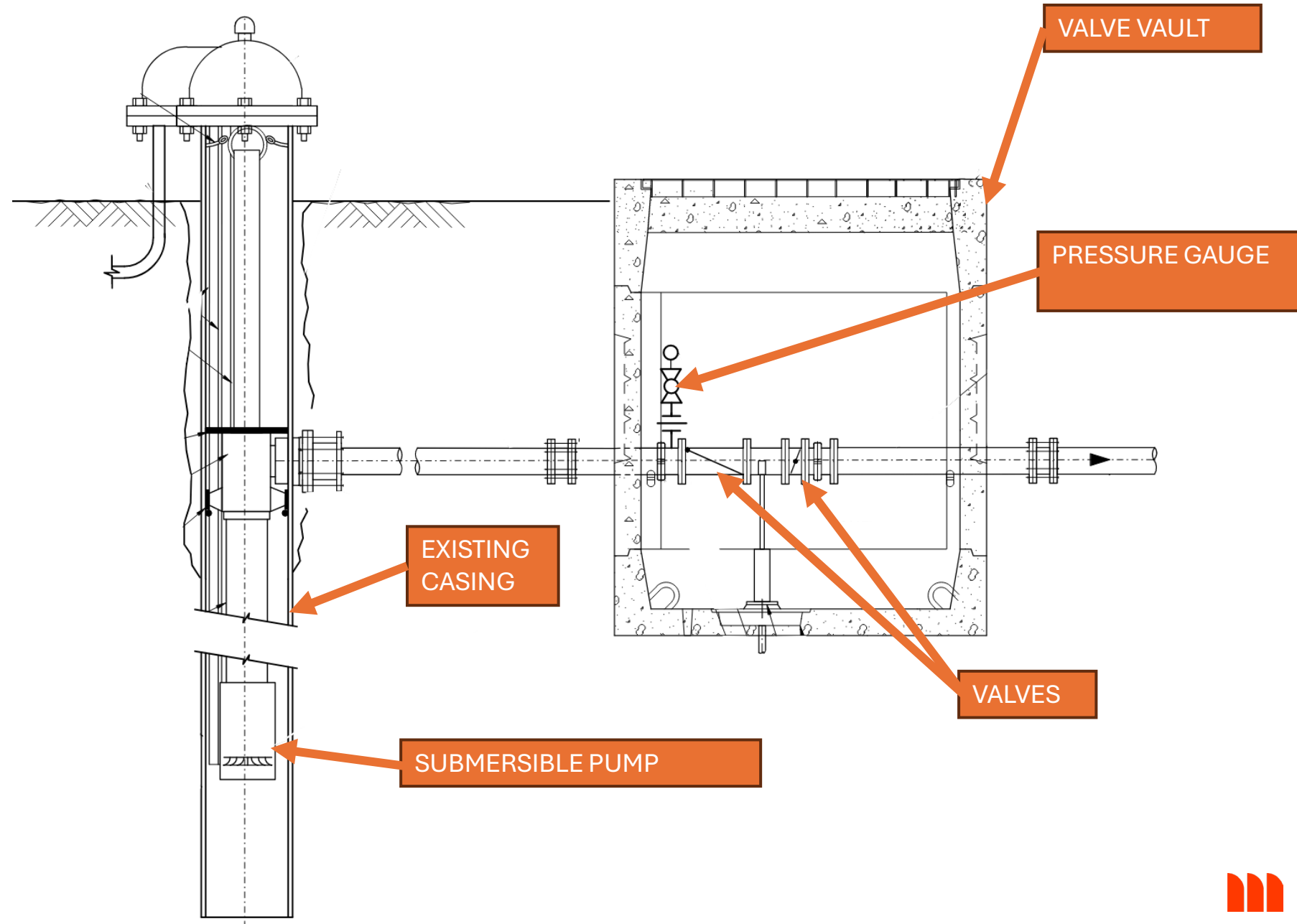
## Battle Creek Hatchery

# Well Water Supply

### WELL DEVELOPMENT:

- Keta Waters initially produced a groundwater supply report
- A productive aquifer was subsequently located and a well was drilled, developed and tested
- Has capacity of 250gpm
- Will supply cool, clean pathogen-free water needed for egg incubation and early rearing
- Will have recirculation capacity

## Well Pump



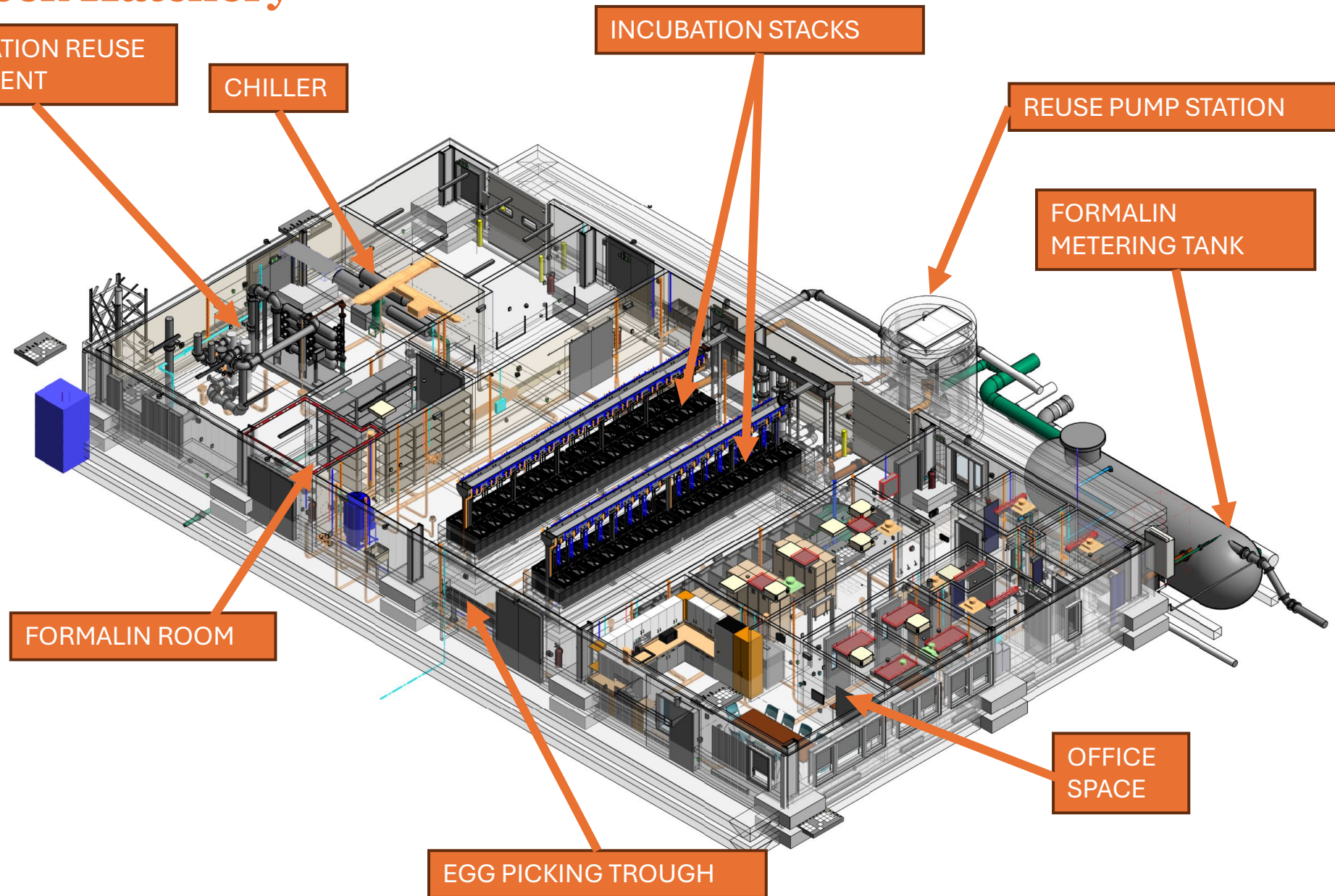
## Battle Creek Hatchery

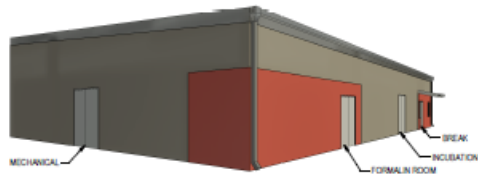
# Incubation Building

- 64 stacks of 8 incubators each
- 12 additional Kitoi incubators
- 8,000,000 egg incubation capacity
- Break Room
- Bathrooms
- Office Spaces

# Battle Creek Hatchery

## Incubation Building





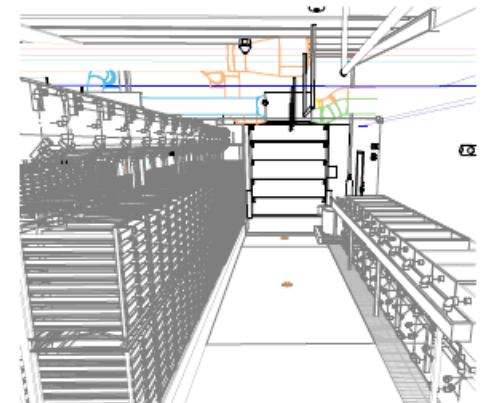
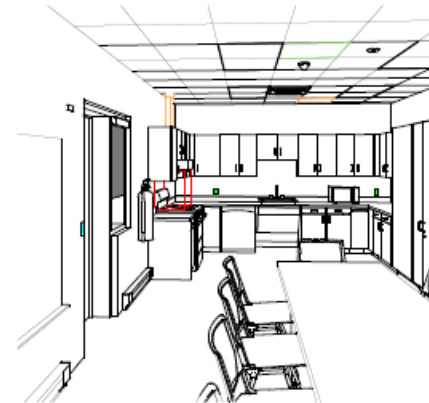
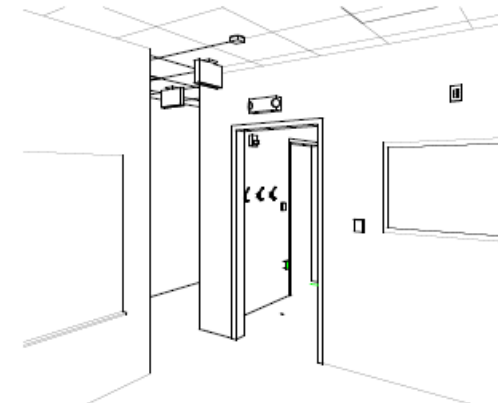
SIDING: KINGSPAN COLONIAL RED  
 SIDING: KINGSPAN ZINC GREY  
 ROOF: KINGSPAN SLATE GREY  
 SMALL CANOPY: KINGSPAN SLATE GREY  
 LARGE CANOPY: TRANSLUCENT

8  
SA-20  
LOOKING NORTHEAST VIEW

7  
SA-20  
LOOKING SOUTHEAST VIEW

6  
SA-20  
LOOKING SOUTHWEST VIEW

5  
SA-20  
LOOKING NORTHWEST VIEW

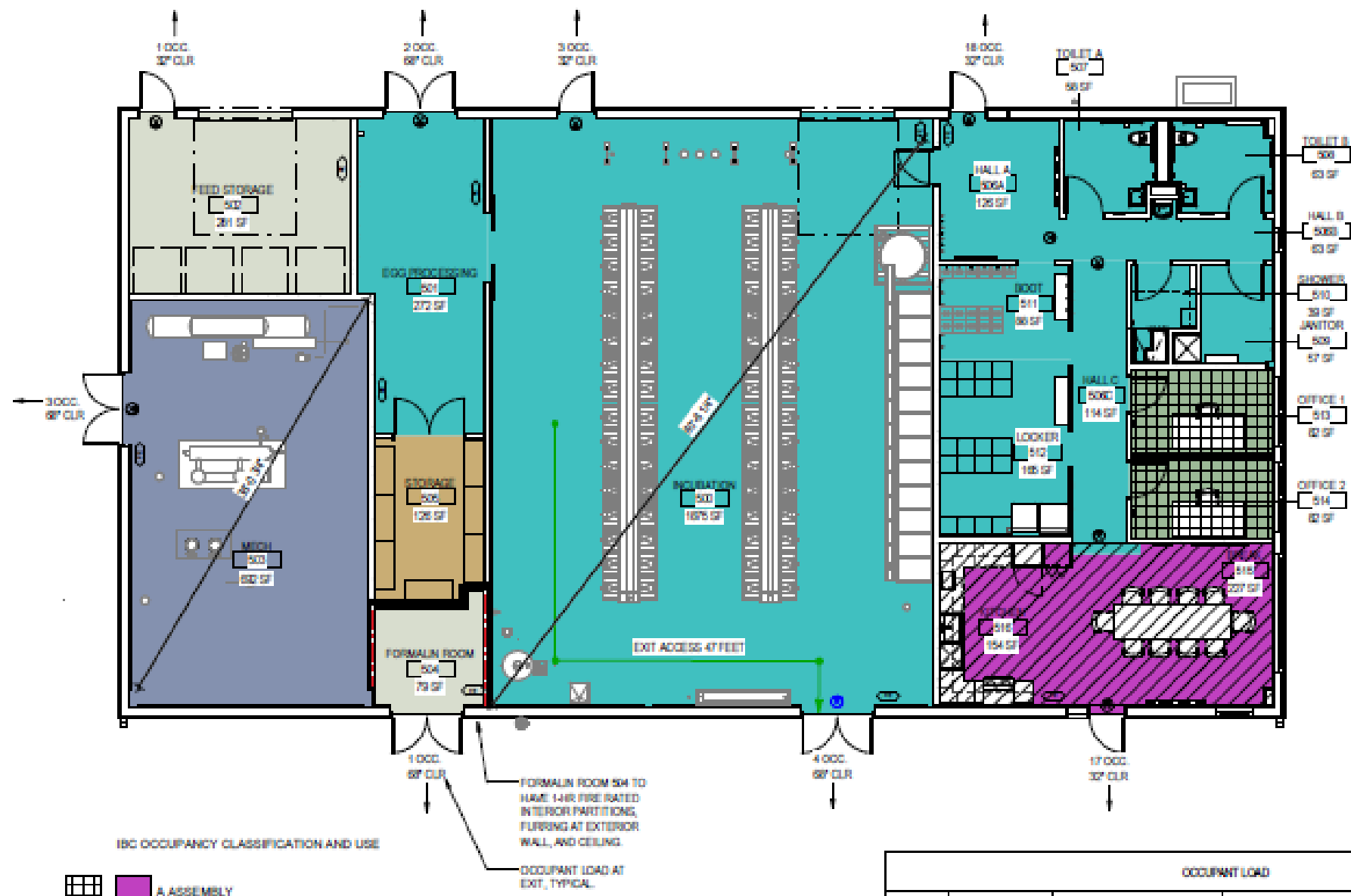


4  
SA-20  
ENTRY

3  
SA-20  
BOOT ROOM

2  
SA-20  
BREAK ROOM

1  
SA-20  
INCUBATION



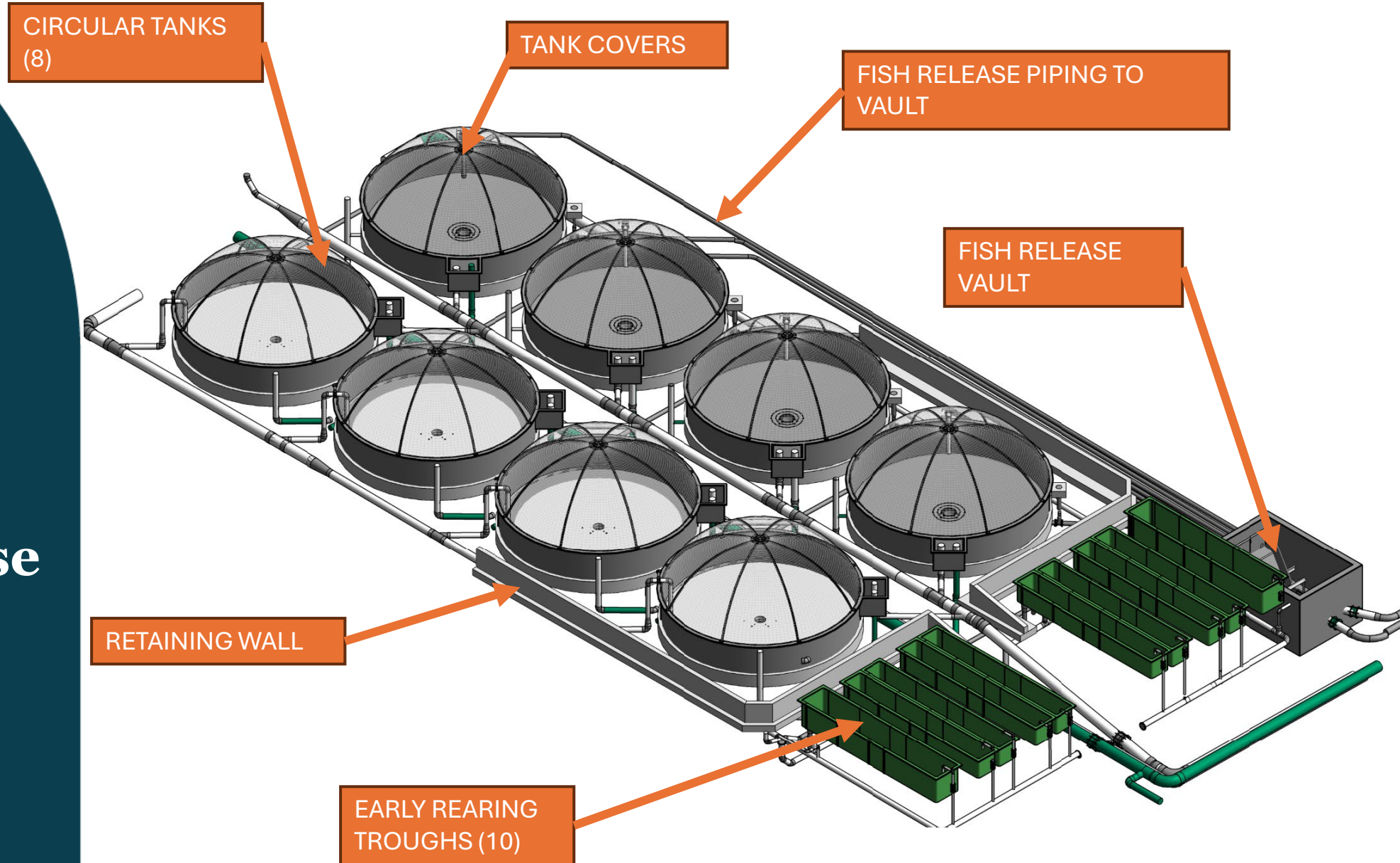
# Battle Creek Hatchery

## Circular Rearing Tanks, Early Rearing Troughs

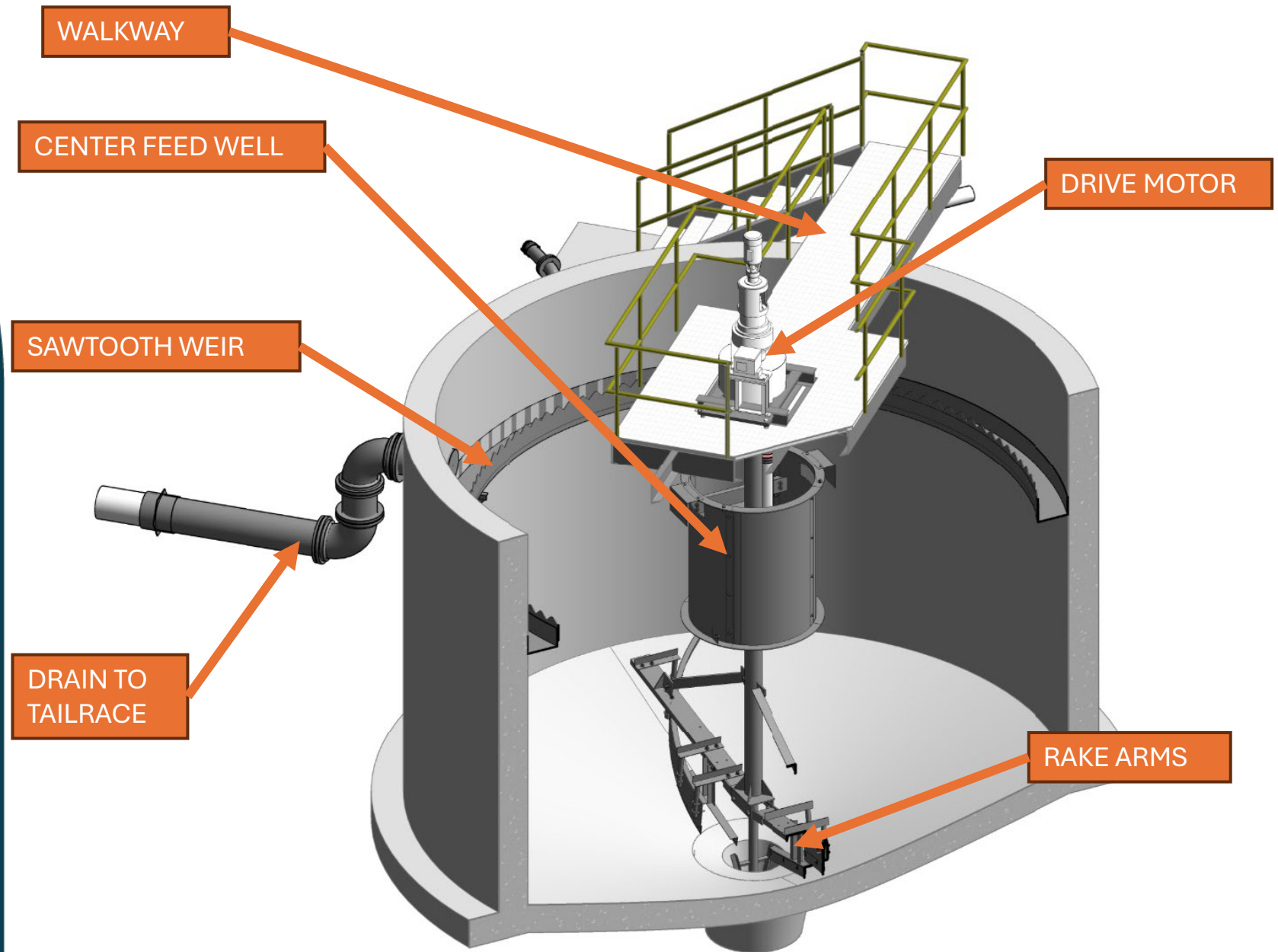
- 8 circular rearing tanks, 26' diameter, 5' deep
- 10, 25- by 3-foot rectangular early rearing troughs
- Circulars and troughs allow for gravity release of juveniles to Battle Creek without handling
- Capacity for 8,000,000 chum rearing and release
- Original earthen pond is retained, adding additional rearing capacity

# Battle Creek Hatchery

8 Circular Rearing Tanks  
10 Early Rearing Troughs  
Fish Release Vault



# Effluent Clarifier



## Battle Creek Hatchery

**Effluent  
Drum  
Filter Bldg.**  
Filtration  
and solids  
removal of  
tank bottom  
drain  
effluents

PREFABRICATED METAL  
CANOPY

EFFLUENT FROM TANKS  
AND ERTS

DRAIN TO  
TAILRACE

CHAIN LINK FENCE

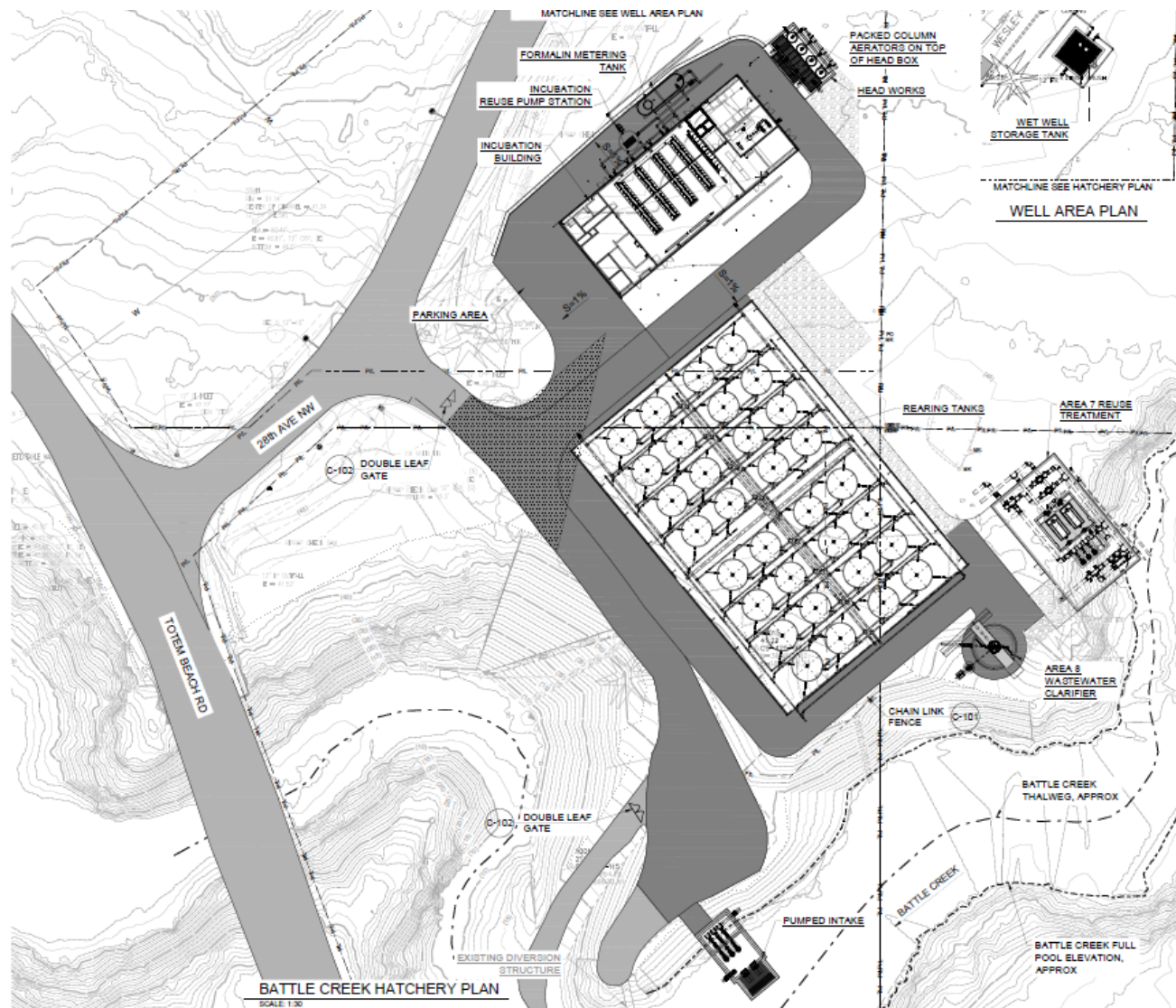
TANK-MOUNTED DRUM  
FILTER

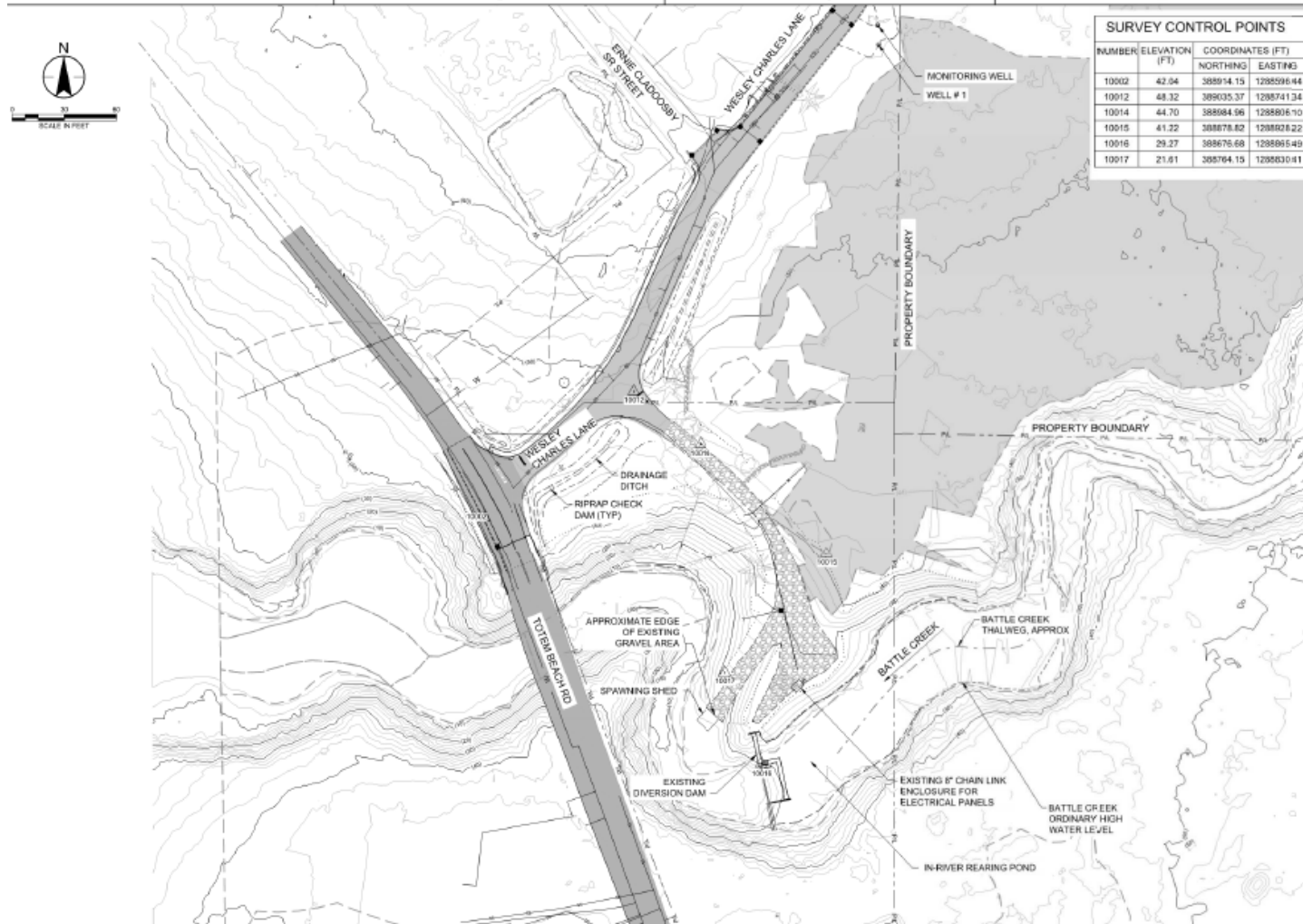


# Battle Creek Hatchery

## Progress to Date

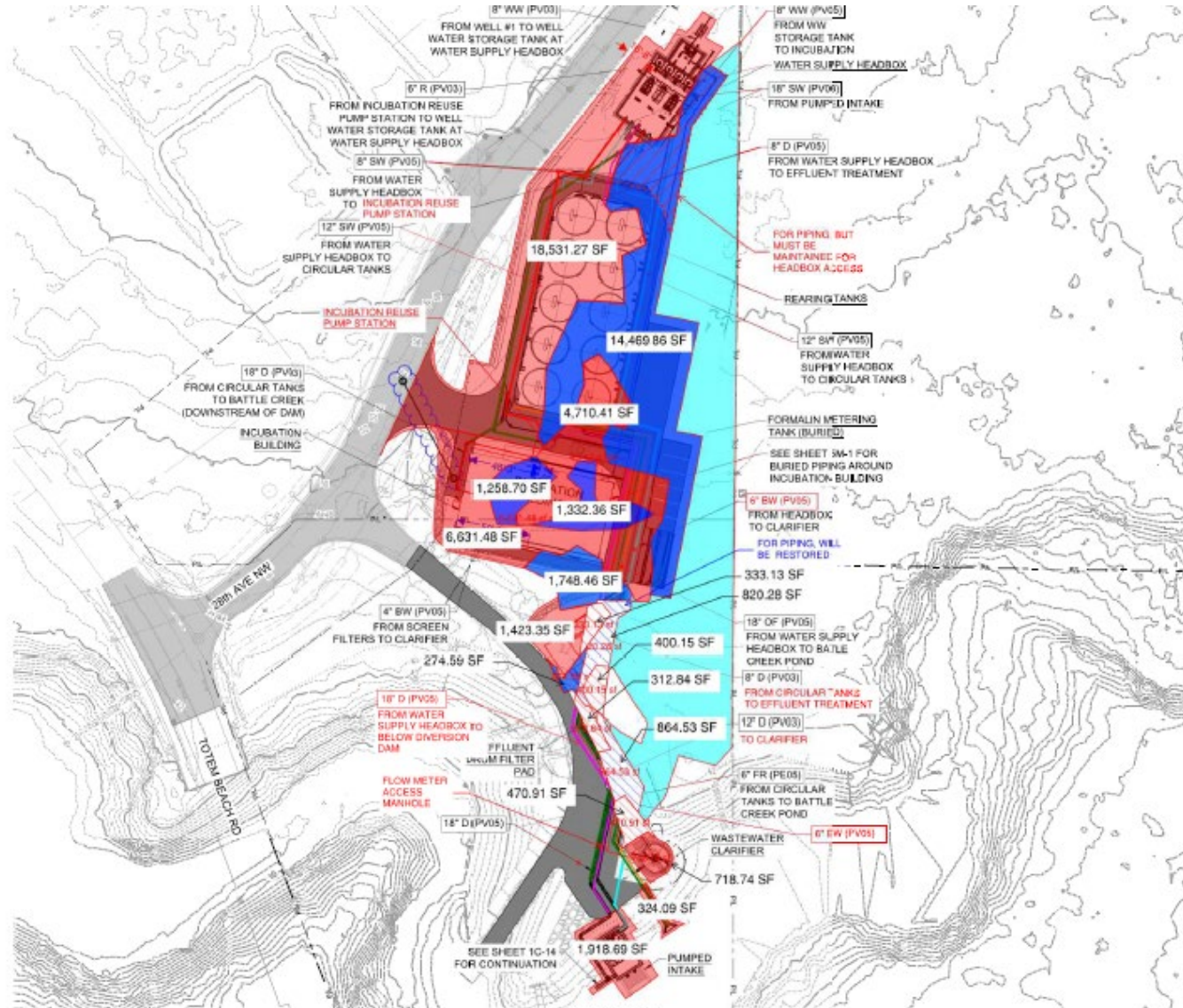
- Well water report COMPLETED by Keta Waters (Joel Massmann)
- Drilled, developed and tested groundwater supply well (essential for egg incubation)
- Geotechnical engineering study COMPLETED
- 100% design COMPLETED (15 grants previously secured for \$1.3m to complete Final Design for Battle Creek Hatchery):
- Wetland Delineation Report COMPLETED
- Wetland Mitigation Plan COMPLETED
- USACE permitting COMPLETED- This was extensive, see next few slides





#### SURVEY CONTROL POINTS

| NUMBER | ELEVATION (FT) | COORDINATES (FT) |            |
|--------|----------------|------------------|------------|
|        |                | NORTHING         | EASTING    |
| 10002  | 42.04          | 388914.15        | 1288596.44 |
| 10012  | 48.32          | 389035.37        | 1288741.34 |
| 10014  | 44.70          | 388684.96        | 1288806.10 |
| 10015  | 41.22          | 388678.82        | 1288826.22 |
| 10016  | 29.27          | 388676.68        | 1288806.40 |
| 10017  | 21.61          | 388764.15        | 1288830.41 |



SITE PIPING PLAN

# Battle Creek Hatchery

**Elimination and Major Reduction of Facility Components required by USACE for Nationwide Permit, significantly reduced costs**

- Parking and roadways were reduced
- Rearing tank numbers were reduced along with rearing capacity
- Incubation building footprint was significantly reduced, which resulted in a reduction in egg incubation capacity and stacking incubators to utilize vertical space
- Recirculation system building was eliminated
- Water system elements were combined to reduce surface area
- Moving structures away from the stream was constrained by the extent of the wetlands on one side and proximity to an existing drainage ditch along Wesley Charles Ln. that needs to be maintained, and access requirements for fire trucks, large vehicles

