



# PRESENTATION ITEM 13

## SLEEPY HOLLOW STEELHEAD REARING FACILITY UPGRADES

*Meeting Date: September 21, 2020*

*Staff contact: Larry Hampson*

# Sleepy Hollow Facility Timeline

- **1990 to 1996** – concept developed jointly with CDFG
- **1996** – construction and operation initiated
- **2000 to 2008** – upgrades to improve water quality
- **2010** – issues identified with removal of San Clemente Dam; \$1.4 million retrofit recommended
- **2014** – NMFS recommends several upgrades including a recirculating aquaculture system (RAS); design goals include better reliability and longer rearing season
- **2015** – MPWMD Board approves \$450,000 for upgrade design; Coastal Conservancy reimbursed \$450,000
- **2018 to 2019** – MPWMD Board approves up to \$2.2 million for facility construction; Coastal Conservancy to reimburse for \$1.8 million of expenses

# San Clemente Dam Removal

## increase in sediment load at facility



# Project Requirements

- **Divert flow in a protected part of the river**
- **Increase pump capacity**
- **Improve access/protection of river pumps**
- **Filter out all material larger than fine sand**
- **Recirculate flow when water quality is poor**
- **Provide remote access to plant operations**
- **Be able to operate year-round in a drought**
- **Simplify maintenance of equipment**

# Entrance to the Facility

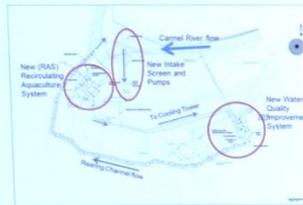
## SLEEPY HOLLOW STEELHEAD REARING FACILITY, Est. 1996

Monterey Peninsula Water Management District

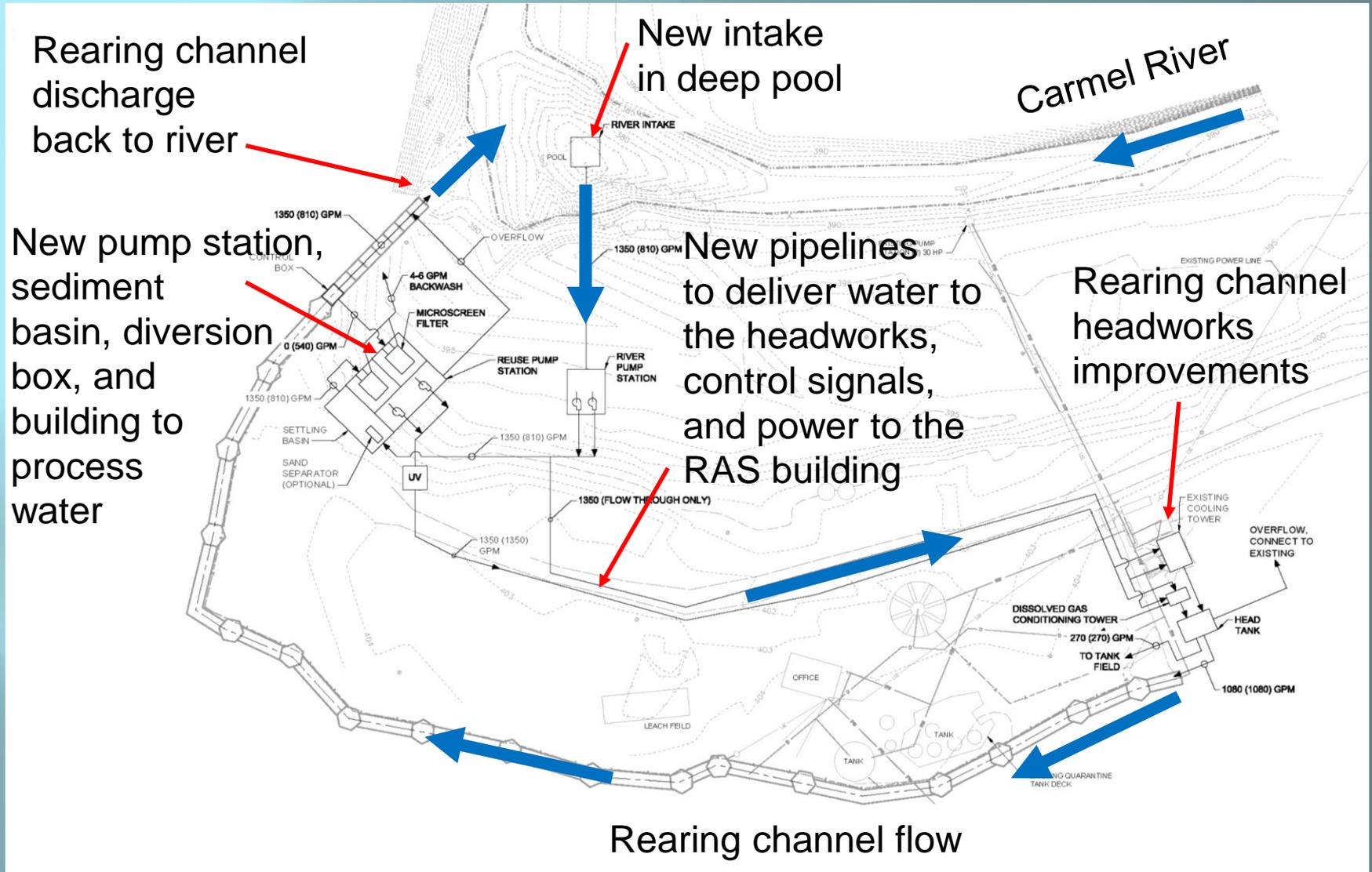
Intake Upgrade Project, jointly funded by California American Water Company, the State Coastal Conservancy, and MPWMD for \$2 million.

Steelhead trout are a federally endangered species that live in the Carmel River. In most years, pumping along the river leads to the lower reaches going dry in the summer. Because of this, the MPWMD rescues juvenile steelhead from the drying reaches, raises them in the Rearing Facility, and then releases them back into the river when it fills again in the winter.

The Intake Upgrade Project secures the facility's water supply in both flood and drought conditions and helps manage the increased bedload from the San Clemente Dam removal project upstream. Specific improvements include relocating the intake screen to a deeper pool, removing the pumps from the flood zone, adding a water quality improvement system, and installing a recirculating aquaculture system (RAS).



# Improvements schematic



# New intake screen



- \$52,500 intake screen
- stainless steel
- 2 mm openings



Three brushes scrub at user-defined interval

# New building and vaults



- New valve vault and meter vault
- Facilities placed above 100-year flood elevation
- New 22-foot deep wet well
- Sediment detention basin
- New 1,500 sq. ft. metal building to protect equipment

# Wet well pumps



- 1,350 gpm design
- Pumps slide on rails and cam-lock system engages pump at bottom of wet well
- System allows access for maintenance from the surface
- Automatic control through HMI



# Sediment basin

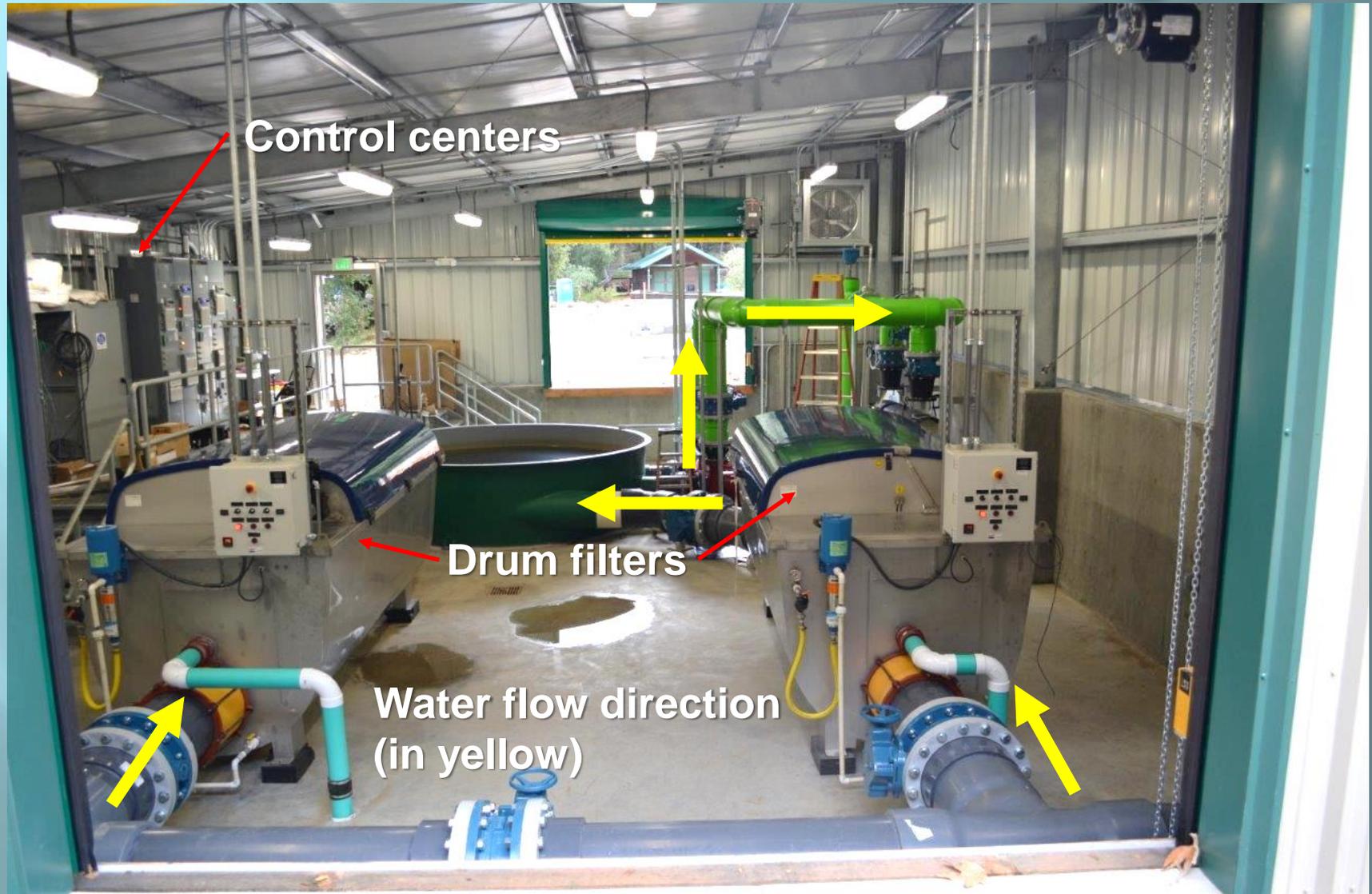


- 15,000 gallons; settles fine material  $< 2$  mm

# Recirculating Aquaculture System (RAS)



# Inside the RAS building



# Drum filter

- Automatic backwash
- 1,350 gpm design flow
- Gravity flow

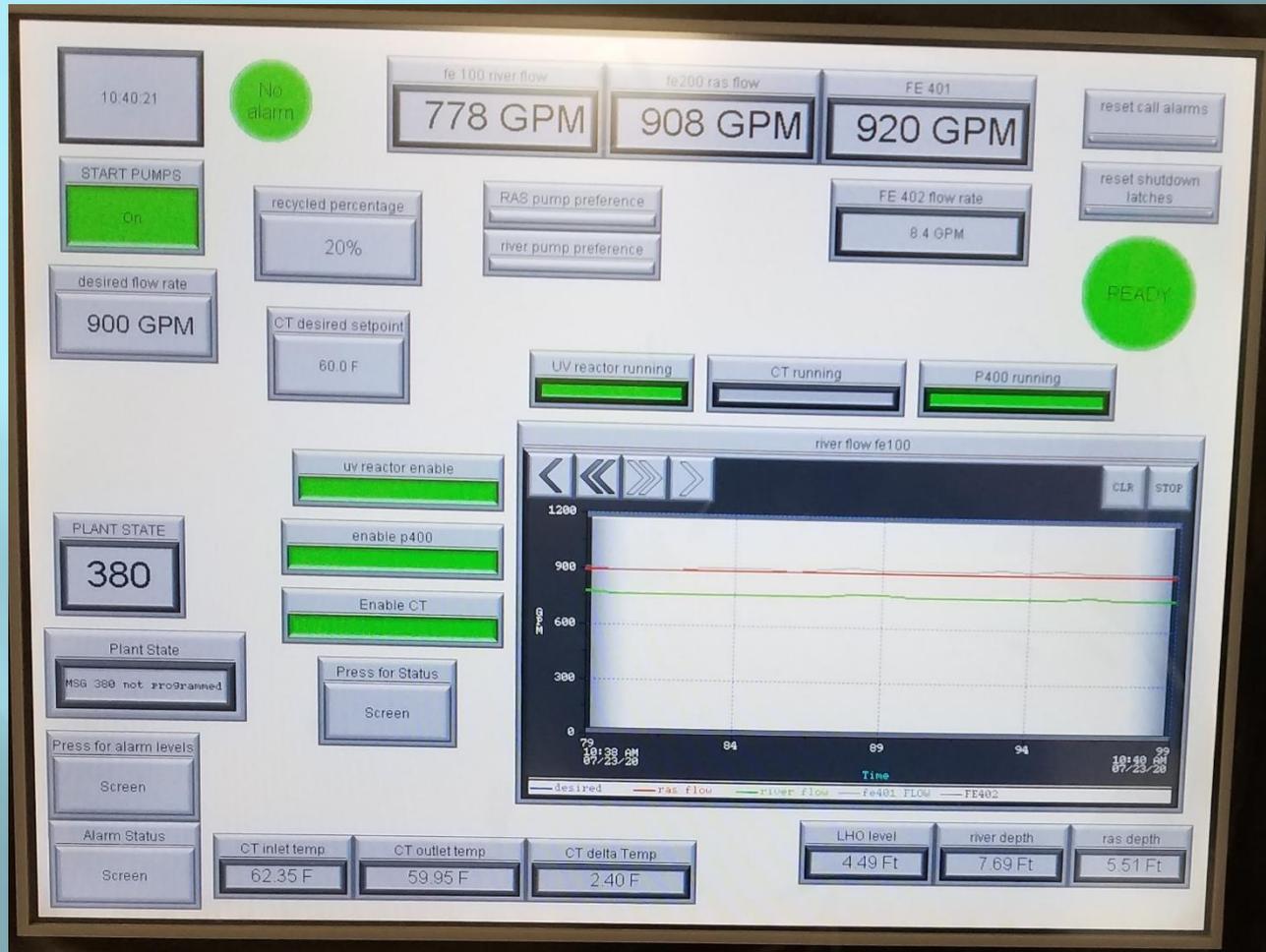


# Sump tank and pumps



- Dual pump system for redundancy
- 1,350 gpm design flow
- 2,500-gallon sump tank to buffer inflow/outflow
- Pumps and tank tied into HMI; flow adjusted automatically based on plant demand
- Pumps switch weekly

# Human Machine Interface (HMI)



- Real-time data about plant operation
- Controls most equipment onsite
- Remote access for staff
- Logs data for future analysis
- Sends alarms by telephone when plant is not operating correctly

# Water tanks and cooling tower



- 6,000 gallon degas tower
- 2,500 gallon low head oxygenation tank
- New control panels for auxiliary pump, water quality sensors
- 1,350 gpm design flow
- Elevated cooling tower eliminates repumping

# Challenges to operation



Above – Carmel fire from Sleepy Hollow

Above left – access road into Sleepy Hollow

Left – firefighters at Sleepy Hollow on August 27, 2020

# Sleepy Hollow Challenges

- The plant operated for days on generator power after PG&E cut power during the Carmel fire; but getting into Sleepy Hollow during the fire to refuel proved challenging
- The fire showed that MPWMD needs better communication with local and State firefighting organizations
- Bacterial or algal growth has significantly reduced the UV unit effectiveness
- There are leaks to fix in the new construction; adjustments to the programming code needed
- The cooling tower does not cool on very hot days

# Carmel River Intake Construction



- Bypass river flow
- Excavate four feet into riverbed
- Densely packed cobbles and boulders
- Up to about 1,500 gpm inflow

# Concrete Pour – at last!



# Difficult trenching



# Constant battle against water



# Building concrete pour



# Maze of pipes underground





# FOR MORE INFORMATION

District website:

[www.mpwmd.net](http://www.mpwmd.net)

PowerPoint presentations will be  
posted on the website the day  
after the meeting

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