

# SAM Facility Vulnerability Study

*Winter 2023 Project Update*

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3/13/2023

Board of Directors Update



*Not for Third-Party Distribution*



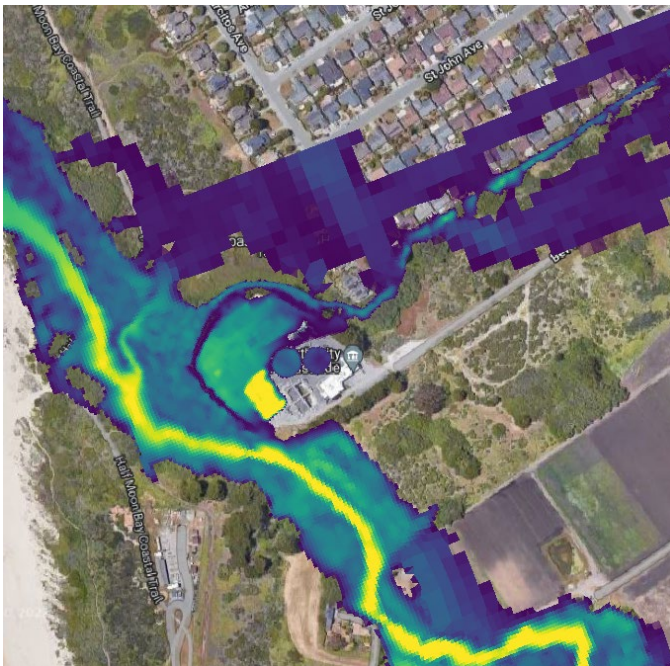
# Progress to date

- Revised model for Dec 2021 storm
- Post New Years 2022 storm site visit
- Modeled New Years Eve 2022 storm
- Identified scenarios for model application

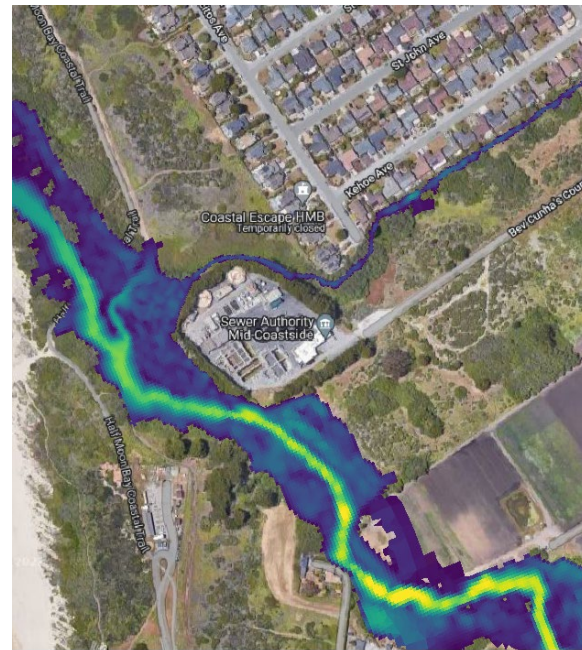


# Model updates

- Scaled Kehoe Watercourse by watershed area (2% of Pilarcitos)
- Previous efforts using Schaff and Wheeler suggested a  $\sim 20\%$  ratio.
- Facility Structure representation



Schaff & Wheeler Scaled  
*Not for Third-Party Distribution*



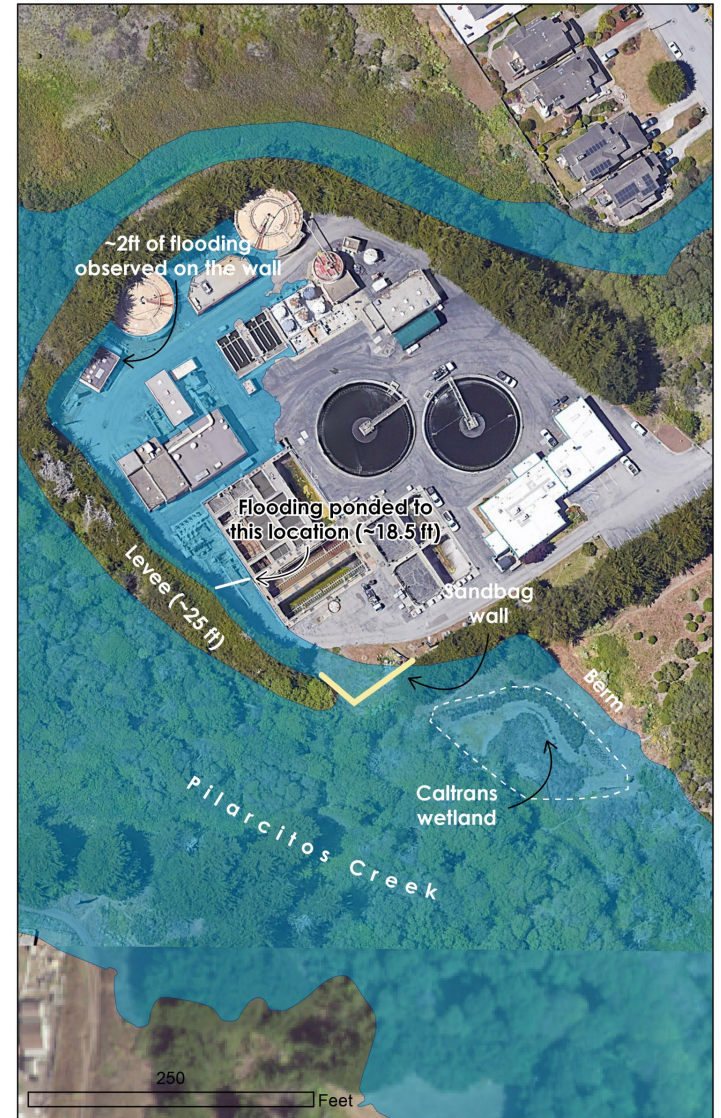
Using Watershed Scaling

# New Years Eve Storm 2022



Flood depths up to 2 feet on the facility  
and 6 feet in the basement

# New Years 2022 Storm Observations

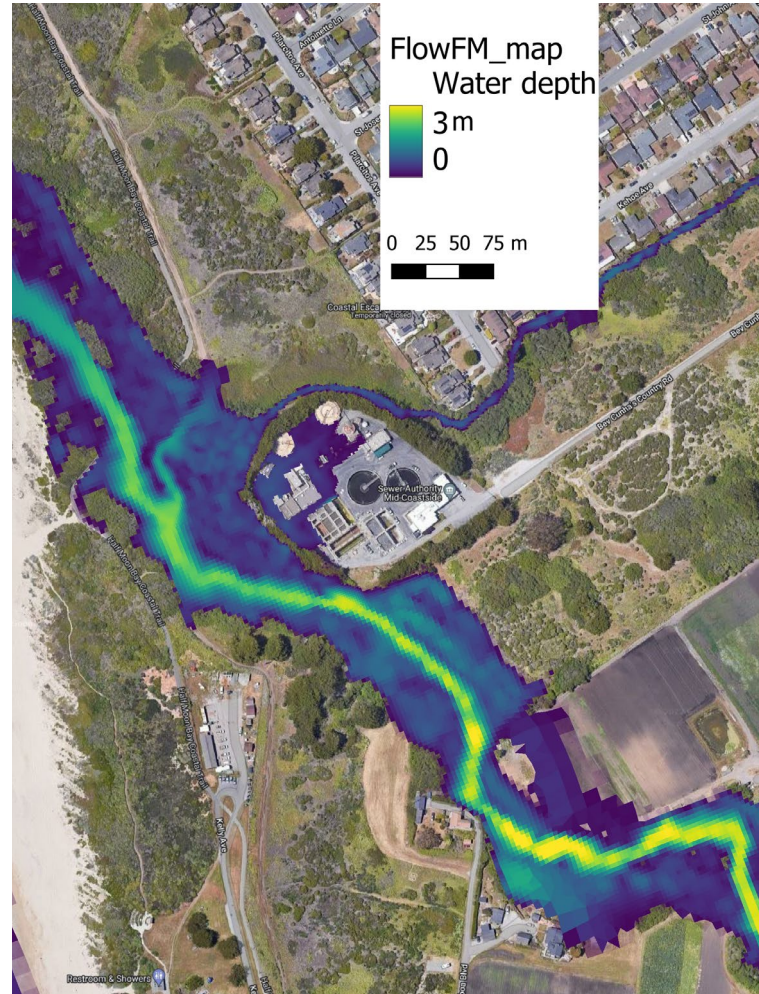


# New Years Ever Storm

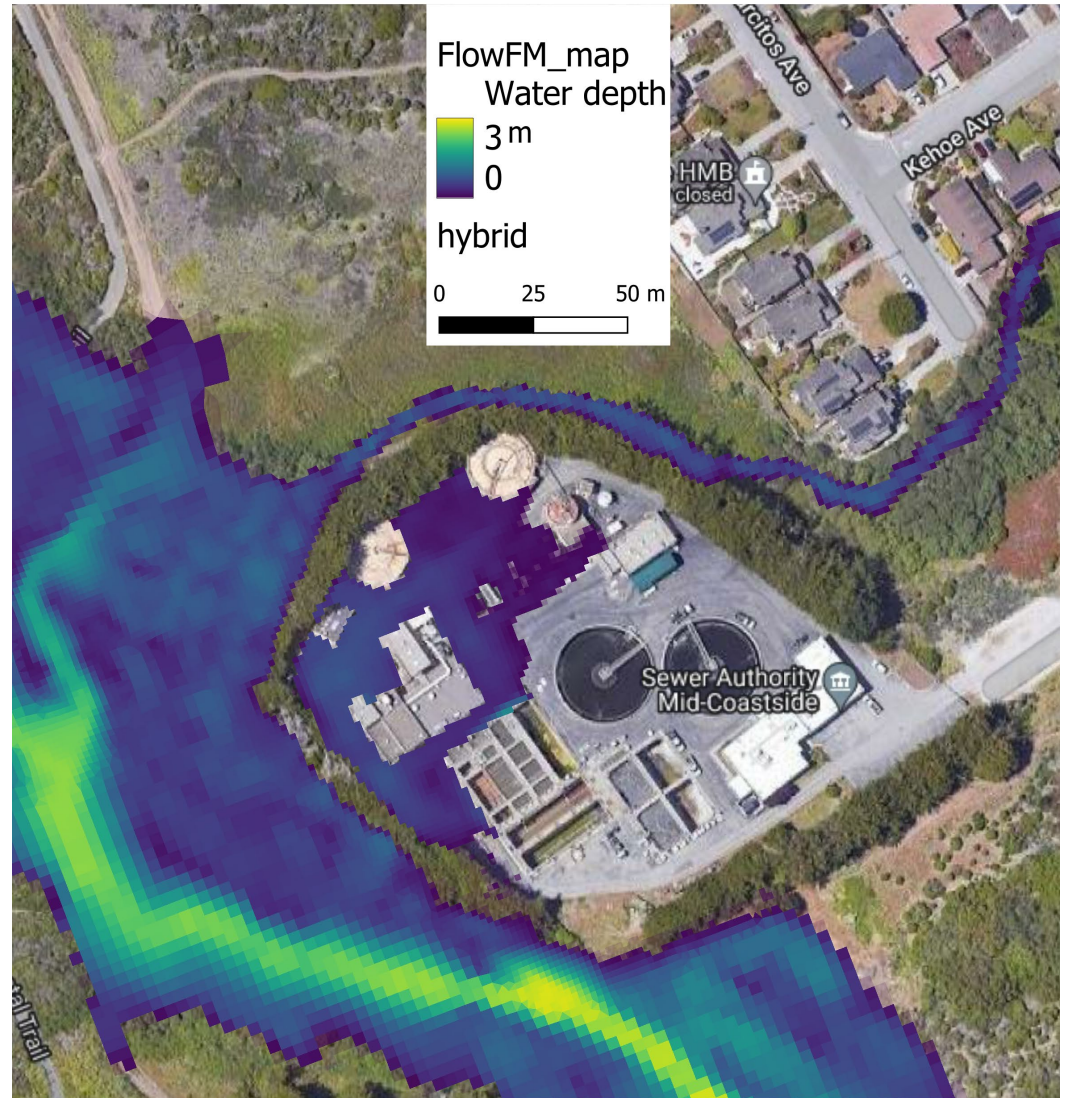
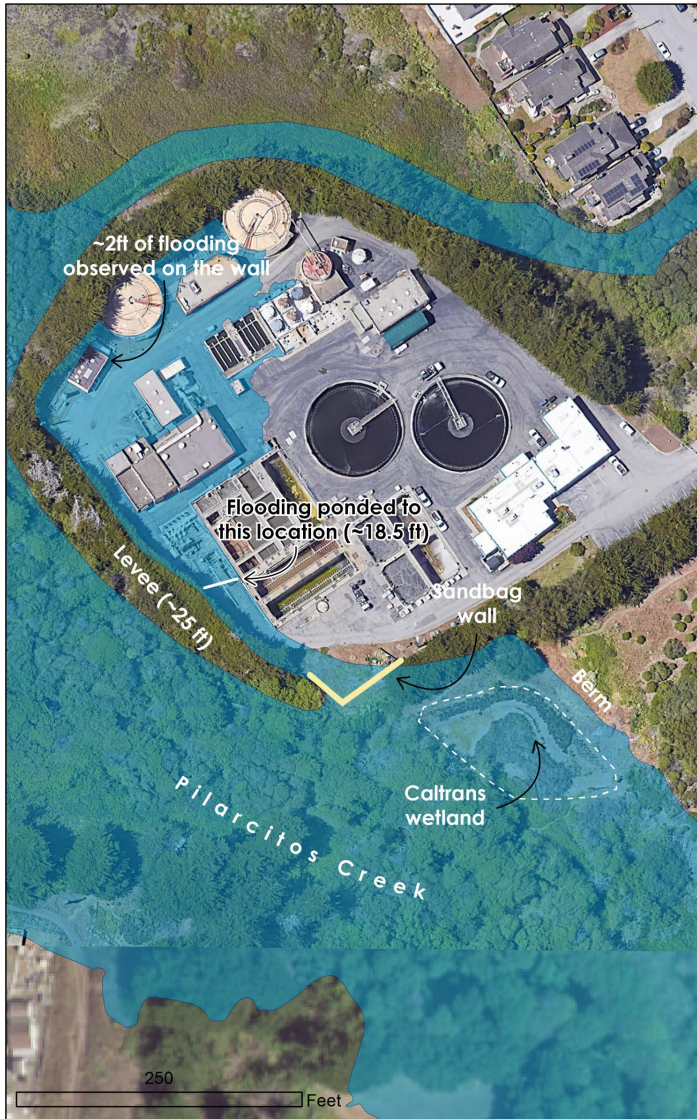


FlowFM\_in.ap  
Water depth at pressure points  
3  
0  
hybrid

# Area flooding



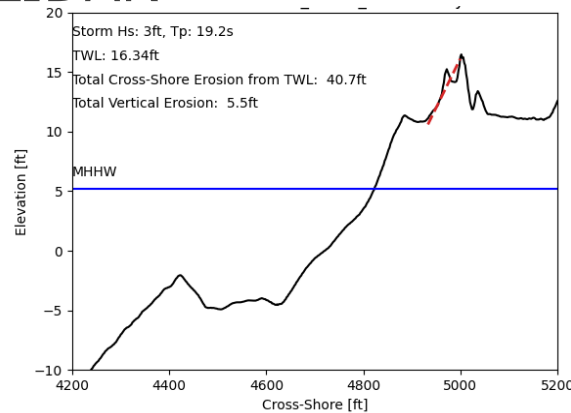
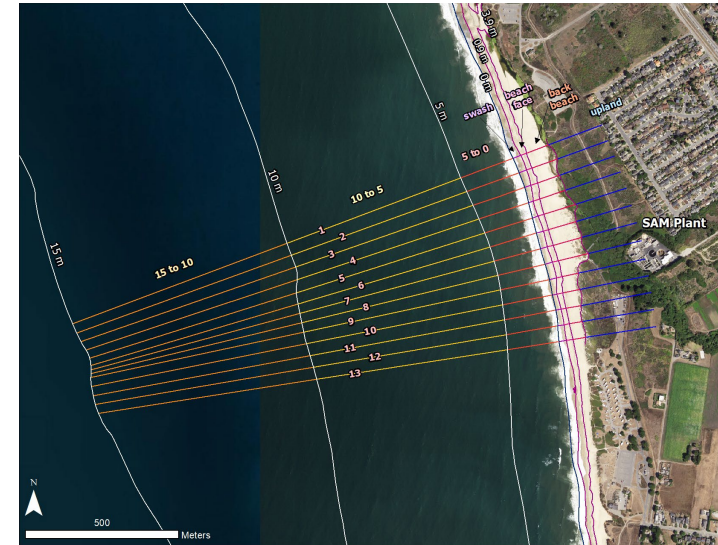
# Facility Flooding





# Coastal Modeling

- Coastal results feed into compound flooding model
- Assessing dune erosion for influence on creek outlet
- FEMA approach includes storm duration
- Dynamic wave set up on top of king tide
- Wave data coming from USGS CoSMoS
- 2018 topographic LIDAR



# Environmental Scenarios

## Coastal Change

- Present conditions
- SLR=1,2,4,7 ft
- FEMA base flood elevations (33ft) (100 year)
- King Tides + wave setup

## Discharge

- NYE Storm
- 100 Year Return period
- Discharge Increase via CalADAPT
- 500 year FEMA (grant Support)

## Local Precipitation\*

- Present conditions
- Based on CalADAPT

- Results will identify future areas that will likely require adaptation

# Adaptation Scenarios

## Now/Short-term

- › Emergency preparedness
- › Floodproofing electrical infrastructure
- › Raise critical infrastructure
- › Investigate berm elevation alterations
- › Vegetation management
- › Kehoe connectivity

## Medium-term

- › Caltrans wetland realignment
- › Identify inflow volumes and pumping needs

## Long-term

- › Managed Retreat (Land Ownership?)
  - Based on extents of beach erosion and flood depths

## Triggers

- Frequency of impacts
- Cost
- Coastal erosion influence
- Insurability
- Buoyancy forces





# Questions?

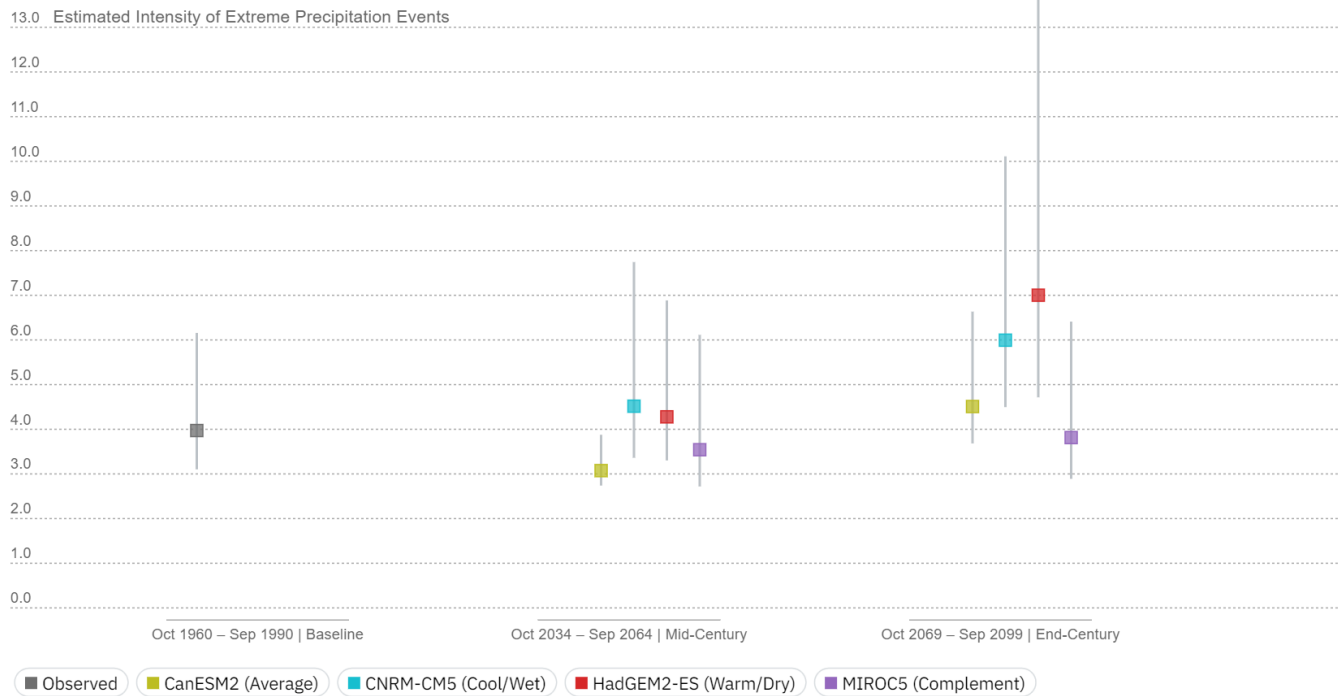
# Additional Considerations

- Additional model calibration around Kehoe Watercourse
- Stormwater at the facility
- Additional in-person meetings
- No instrumentation but 2 site visits to collect measurements

## LOCA Grid Cell 38.59375, -121.46875

Projected changes in **Estimated Intensity of Extreme Precipitation Events** which are exceeded on average once every **100 years** under a **High Emissions (RCP 8.5) Scenario**.

Extreme Precipitation events are successive days in which the **1-day** rainfall total is above an extreme threshold of **0.62 inch**.



Source: Cal-Adapt. Data: LOCA Downscaled CMIP5 Climate Projections (Scripps Institution of Oceanography), Gridded Observed Meteorological Data (University of Colorado Boulder), LOCA Derived Products (Geospatial Innovation Facility).