• Commissioner Bateman
• Lieutenant Collins
• Supervisor Connelly
• Supervisor Conant
• Secretary Crowfoot
• Chief Deputy Director Curry
• Supervisor Flores
• Supervisor Fuhrer
• Assemblyman Gallagher

• Supervisor Kimmelshue
• Deputy Licon
• Captain Million
• Director Nemeth
• Senator Nielsen
• Councilmember Pittman
• Mayor Reynolds
• Lieutenant Stokes
• Superintendent Teague
• Supervisor Vasquez
ITEM 1
WELCOME AND INTRODUCTIONS
ITEM 2
COMMISSION REPORT UPDATE
Commission Report Development Timeline

Review timeline for Report development (August 2021) COMPLETE

High-Level Report Outline (December 2021) COMPLETE

Present Detailed Report Outline (Q1 2022) COMPLETE

Version 1 Draft – Commission Reviewers Input (July 2022) COMPLETE

Version 2 Draft Report (Q3 2022)

Final Report
Commission Report Process

Commission Reviewers

- Supervisor Bill Connelly
- Lt. Stephen Collins
- Senator Nielsen's Office (Rob Olmstead)

Process

- Reviewed and approved outline
- Reviewed and approved detailed outline
- Reviewed and approved content and approach
- Reviewed and approved draft report version 1
Commission Report Structure

Introduction

➢ Commission Background
  ▪ February 2017 spillway incident
  ▪ SB 955 legislation (Nielsen/Gallagher)
  ▪ Forum for input and information [non-regulatory body]

➢ Commission Purpose
  ▪ Serve as a representative to the public for the purposes of providing public input and receiving information from the dam operator.
  ▪ Act as a unified voice from the communities surrounding Oroville Dam to provide public feedback, advice, and best practices to the dam operator.
  ▪ Publish a report at least once every three years.

➢ Report and Content Mandated by SB 955
  ▪ “Publish a report at least once every three years”
Commission Report Structure

Forward
- Overview of public meetings
- Overview of presentation topics
- Commission actions to-date

Content
1. An overview of ongoing maintenance and improvements made at the dam and its site.
2. A register of communications received from the department and other parties to the Commission.
3. Notice of upcoming plans made by the department for the dam and its site.
Conclusion

- Accomplishments to-date
  - Multiple public meetings each year
  - Dam facility visit
  - Commissioner Joint Flood Operations Center Tour/Briefing
  - Sponsored Flood Safety Stakeholder Technical Workshop
  - Dam owner briefings requested by the Commission regarding operations, maintenance, and public safety topics

- Forward-looking

Appendix

- Register of communications from State agencies and other parties.
ITEM 3
FLOOD SAFETY STAKEHOLDER TECHNICAL WORKSHOP RECAP
Making Investments to “Buy Down” Flood Risk

Oroville Citizens Advisory Commission
Flood Management Stakeholder Workshop
April 22, 2022
Outline of Today’s Topics

• “Buying Down Risk Concept”
• Central Valley Flood Protection Plan (CVFPP) Overview
• Using the CVFPP to Guide Future Investment Need
• Example of a Risk Assessment from the CVFPP
“Buying Down” Risk

Several of today’s other presentations will focus on understanding flood risk through better understanding of flood hazards, mapping, inspections, forecasting, and sharing information.

OCAC has previously featured presentations on reservoir storage operations.
Central Valley Flood Protection Plan

Key Features (as of 2017):
• Land area size of the State of Florida
• Highest net agricultural production region in the United States
• 1,600 miles of Federal-State levees
• Extensive system of bypasses & floodways
• 2 completely different river basins, each with over 5 major rivers
• Over 1.3 million people living in floodplains
• +$80 billion property/assets at risk
Recommended 2017 CVFPP Update Investment

CVFPP

$17 to 21 billion Investment over 30 years

ONGOING INVESTMENTS $M/Y

Annual funding for routine activities:
$250–310 M/year

+ CAPITAL INVESTMENTS $$$

One-time funding for construction or improvements:
$12–16.2 B
Example of a Risk Assessment

- **290** Life risk associated with the system before Early Implementation Program projects
- **66** Reduced life risk due to Early Implementation Program projects
- **141** Increased life risk due to climate change and socioeconomic changes
- **22** Reduced life risk due to enhanced flood response and emergency management actions
- **43** Reduced life risk due to SSIA project elements
ITEM 4
OROVILLE DAM FACILITIES UPDATE
State Water Project
Asset Management & Oroville
Annual Maintenance & Projects

Oroville Citizens Advisory Commission Meeting
July 29, 2022

David Rennie, Manager
Asset Management
Division of Operations and Maintenance
## Oroville Expenditures

<table>
<thead>
<tr>
<th>Expense Type</th>
<th>Actual Expenditures</th>
<th>Planned Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CY2018</td>
<td>CY2019</td>
</tr>
<tr>
<td>Annual Operations &amp; Maintenance (O&amp;M)</td>
<td>$42.7M</td>
<td>$47.2M</td>
</tr>
<tr>
<td>Capital Projects</td>
<td>$44.4M</td>
<td>$50.9M</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$87.1M</td>
<td>$98.1M</td>
</tr>
</tbody>
</table>

Note: Excludes costs for Oroville Spillways Emergency and Reconstruction
Annual O&M Field Division

Activities

Field Division Administration
- Business Services (Warehouse Operations)
- Training & Development
- Program Management
- Service Contracts

Facilities Operations & Maintenance
- Preventative Maintenance
- Condition Assessment Program Inspections
- Dam Safety Surveillance
- Civil Maintenance
- Facilities Security
- Facilities Safety
- Plant Operations
- Visitors Center Operations
- Area Control Centers
# Annual Operation & Maintenance Activities

## HYATT POWERPLANT
- Unit Reliability Outage/CAP Inspection
- Unit Transformers Annual Maintenance
- Unit Annual Maintenance & Relay Testing
- Switchyard and Breaker Inspections
- Unit Runner Inspections and Repair
- Fire Systems Annual Inspection/Testing
- Station Service Annual Maintenance
- Battery/Charger Testing

## THERMALITO POWERPLANT
- Unit Reliability Outage/CAP Inspection
- Unit Transformer Annual Maintenance
- Station Service Transformer Annual Maintenance
- Fire Systems Annual Inspection/Testing
- Unit Breaker Maintenance
- Bypass Gate Reliability Inspection
- Battery/Charger Testing

## THERMALITO DIVERSION DAM POWERPLANT
- Unit Annual Outage/Inspection
- Radial Gate Full Open Testing
- Battery/Charger Testing

## OROVILLE DAM/LAKE / THERMALITO FB/AB / OTHER LOCATIONS
- Flood Control Systems Annual Maintenance
- **DSOD/FERC Annual Inspections**
- Intake Shutter Annual Maintenance
- Fence Repair and Gate/Sign Maintenance
- Oroville Spillway Radial Gate Testing
- Roadway Maintenance
- Fish Hatchery Annual Maintenance
- Oroville Lake Debris Removal/Log Boom Maintenance
- **Dam Surveillance and Monitoring – DAILY**
- Water Flow and Temperature Monitoring – DAILY
- Water Quality Sampling
- Debris Removal/Erosion Repair – All Dams
- Vegetation Maintenance – All Dams
- Fuel Load Reduction

## UPPER FEATHER RIVER DAMS/LAKES
- **DSOD Annual Inspections**
- Vegetation Maintenance – All Dams
- Debris Removal – All Dams
- Roadway Maintenance
- Debris Removal/Erosion Repair
- Precipitation Site Maintenance
- **Dam Surveillance and Monitoring**
- Two – Watermaster Areas
- Annual Snow Surveys
2022 Capital Improvement Projects

- Oroville RVOS Rehabilitation
- Oroville RVOS – Standby Contract
- Oroville Dam - Lakeside Access Rd
- Thermalito Afterbay Dam Well Replacement - Phase 2
- Hyatt Powerplant & Thermalito Powerplant Fire Detection System
- Oroville Field Division Physical Security Project - Phase 1
- Palermo Tunnel Bulkhead Improvements
- Furnish and Refurbish Feather River Fish Hatcher & Thermalito Diversion Dam Stoplogs
- 2022 Lake Oroville Survey
- Thermalito Diversion Dam Power Canal Spall Repair
- Bidwell Bar Bridge Seismic Retrofit - Phase 1
- Loafer Creek Launch Ramps
- FCO Hoist Refurbishment
- Hyatt Powerplant Units 2, 3, 5, & 6 Air Cooler Replacement
- Plant Maintenance Building HVAC Replacement
- Canyon Creek Bridge Seismic Retrofit – Phase 1
- FERC B105 – Fish Monitoring Station and Segmentation Weir Planning
- Recon Study Update for Feather River – Fish Habitat Temperature
- Hyatt Powerplant Units 3 & 5 Refurb Value Engineering Study
- Hyatt Powerplant Turbine Shutoff Valve Value Engineering Study - Phase 2
- Hyatt Powerplant and Thermalito Powerplant 230KV Circuit Breaker Retrofit
- Enterprise Bridge Seismic Retrofit - Phase 1
- Craig Access Road
- Hyatt Powerplant Penstock 1 & 2 Inspection and Repair
- Hyatt Powerplant Station Service 480VAC Breaker Replacement
- Hyatt Powerplant 230 KV High Pressure Fluid Filled Cable System Study
- Seal and Pave Roads
- Thermalito Afterbay River Outlet Radial Gate Refurbishment
- Oroville Dam Core Block and Grout Gallery Piezometer Installation
- Oroville Comprehensive Needs Assessment Early Implementation
  - Parish Camp Saddle Dam Raise
  - Palermo Canal Relining
- Oroville Dam BBCSDM Flood Fight Materials
- Oroville Dam Woody Debris Pilot Study
- Oroville Dam Seismic Stability Study
- Oroville Dam – Hyatt Powerplant Seismic Walkdown Phase II
- Oroville Dam Flood Control Outlet – Structural Re-analyses
- Oroville Dam Coreblock Gallery Drainhole Inspection and Cleaning
- Thermalito Diversion Dam Updated Stability Analysis
Oroville Dam Safety Project Updates

- Coreblock and Grout Gallery Piezometers (DWR - CNA)
- Parish Camp Saddle Dam Raise (DWR - CNA)
- Lake Oroville Bathymetry (DWR)
- Hyatt Powerplant Intake Structure Inspection (Part 12D)
- Palermo Canal Lining & Maintenance (DWR - CNA)
- Embankment Deformation Monitoring (DWR - CNA)
- Updated Seismic Stability/Deformation Analysis (Part 12D)
- Flood Control Outlet Projects (CNA & Part 12D)
- Emergency Spillway – Further Studies
Oroville Dam Coreblock and Grout Gallery Piezometers

- Eight piezometers planned, as well as improvements to seepage weir instrumentation.
- Installation planned for Fall 2022.
Parish Camp Saddle Dam Raise

Raise Parish Camp Saddle Dam to reduce potential for overtopping during very extreme flood events.

✓ Geotechnical Exploration Plan submitted to FERC and DSOD; comments addressed.
✓ Fieldwork scheduled for Fall 2022 – Contingent on FERC & DSOD approval.
✓ Preliminary design and environmental reviews initiated.
✓ Initiate Construction – 2026
Lake Oroville Bathymetry

- Update Reservoir Capacity Curve
- Assess Sedimentation
- Provides a baseline for comparison in the future (burned watershed)
Hyatt Powerplant Intake Structure Inspection

- Rope access structural inspection of structure during historic low reservoir condition.
- Inspection of small diameter air vent via pipe crawler remotely operated vehicle.
Palermo Canal Lining Improvements

Improve canal lining to reduce leakage and potential for landslides/instability above the Hyatt Powerplant switchyard and other facilities.

✓ Condition assessment completed
✓ 95%-Level Drawings and Specifications completed in May 2022
  ✓ New Liner for 130-foot unlined portion
  ✓ Cleaning and maintenance of existing liner
✓ Construction planned for 2023 – Contingent on FERC approval.

Photo by Florence Low, DWR
Embankment Deformation Monitoring

- Originated under CNA Task 6; evaluation of various technologies.
  - Spaceborne Radar
  - Terrestrial Radar
  - **Airborne LiDAR**
  - Waterborne Sonar

Radar image of Oroville Dam, as part of Oroville Comprehensive Needs Assessment Task 6 Pilot Projects
Updated Seismic Stability/Deformation Analysis

- December 2021: Work Plan submitted to Part 12D Independent Consultants, FERC, and DSOD for review and comment.
- The analysis will further inform the performance of the dam under a wide range of earthquake loading and reservoir conditions.
- Study anticipated to be completed in late 2024.
Flood Control Outlet (FCO) Projects

- 10-year Radial Gate Structural Inspection
- Radial Gate Phase 3 Maintenance Repairs; 2022-2030
- Monolith 25 & 26 Analyses – Retrofit Design Criteria; awaiting collection of piezometer data during high reservoir conditions, further refinement of model.
- 2022-2025: Alternatives Study, possible Quantitative Risk Analysis
Relationship between FCO Studies and Forecast Informed Reservoir Operations/Water Control Manual Update

2021

Flood Control Outlet Non-Linear Analysis of Existing Conditions

2022-2025

Alternatives Analysis, possible Quantitative Risk Analysis; Incorporate Piezometer Data in Modeling; Identify most effective/efficient combination of Risk Treatments.

Phase 3 Radial Gate Hoist Maintenance (1 gate per year)

2025 +

USACE Water Control Manual Update – Schedule Determined by USACE

2025 +

If Feasible and Risk Reduction Sufficient: Initiate Design and Permitting

If Not Feasible or Risk Reduction Insufficient: Consider New FCO Headworks Structure (Unlikely)
Emergency Spillway – Further Studies

- $300 million+/- improvements implemented for the Emergency Spillway during the Spillway Recovery.
- Between 2018-2020, DWR conducted two parallel risk assessments, the Comprehensive Needs Assessment, and the Level 2 Risk Analysis, the latter of which followed FERC’s risk processes.
- Both studies found that risks associated with the Emergency Spillway were less than the risks associated with other areas we have been working and reporting on.
- DWR responded to FERC comments on the Probable Maximum Flood study on March 22, 2021. DWR indicated further studies evaluating the erodibility/ performance of the Emergency Spillway would be implemented after studies for higher risks identified by the CNA and 10th Part 12D Independent Consultants.
- FERC July 14, 2022 Letter: Requested “DWR develop and submit a detailed plan and schedule for determining the safe capacity of the emergency spillway and the spillway adequacy of Oroville Dam.”
- DWR will submit the plan and schedule to FERC in September 2022 (60 Days).
Thank you

Questions?
The Oroville Dam Citizens Advisory Commission will now take public comment.

We appreciate your input.
ITEM 6
ADJOURN

Thank you all for joining us today, our next Oroville Dam Citizens Advisory Commission meeting will be on October 21, 2022.