Operations & Engineering Workgroup

December 14, 2022

Sites

Agenda

- Action items from November 2022 meeting
  - None
- 1.1 Updates on the Daily Operations Model
- 1.2 Review results from the latest mapping/surveying data and updated analysis of reservoir capacity
- 1.3 Review status of Geotechnical Work Package #1 and plans for Work Package #2
- Engineering and Construction Manager's Report
  - Baseline Program Schedule

Questions?

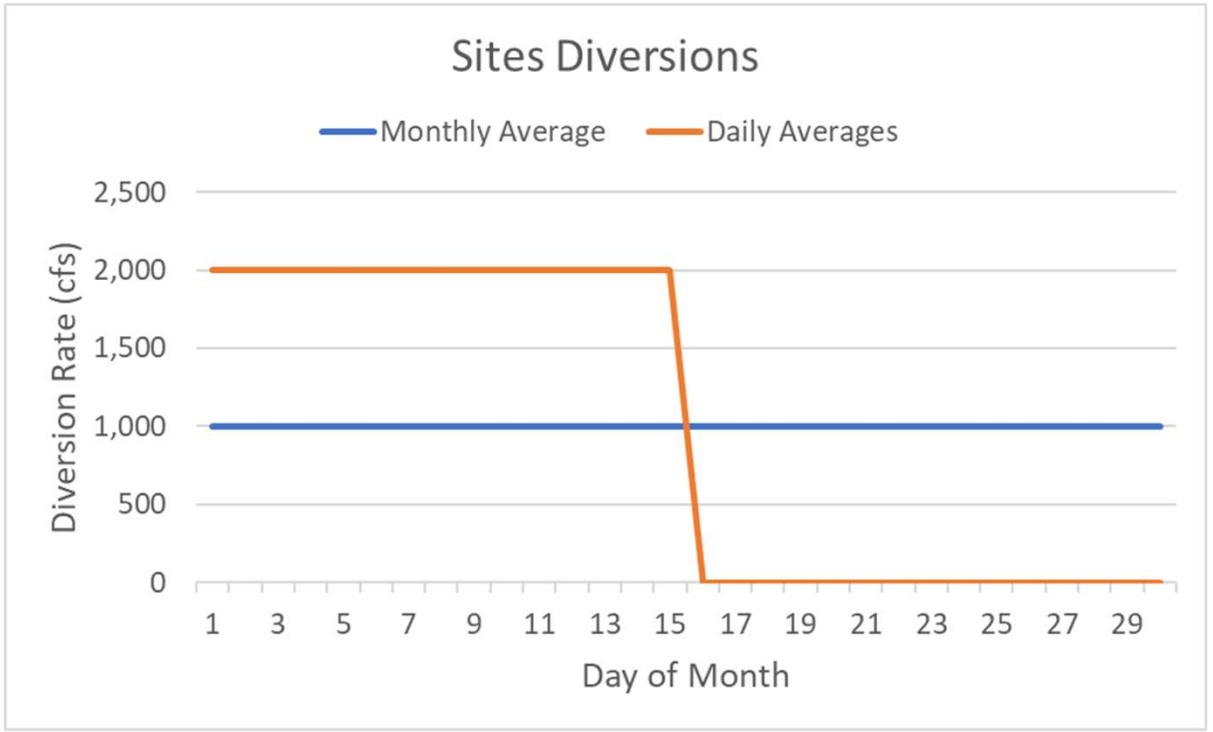
Agenda Item 1.1

Updates on Daily Operations Model

Angela Bezzone

Background

- CalSim II simulates full CVP/SWP system operations at a monthly timestep
  - CalSim II estimates Sites diversions/releases as monthly average flow rates
- For engineering design, a higher temporal resolution is required



Why is it needed?
– Support Engineering Design and Operations

- Support Engineering Design
  - Number of pumps needed at Red Bluff
    - Frequency of daily diversions at Red Bluff
  - TRR sizing and pumping plant design at Funks/TRR
    - Frequency of daily diversions at Hamilton City
  - Colusa Basin Drain (CBD) operations
    - Frequency of daily Sites releases through CBD in combination with end of season return flows
- Estimate power demands (for diversions) and generation (from releases)
- Refine operations with others: TCCA, GCID

Schedule

- Daily timeseries of Sacramento River diversions at Red Bluff and Hamilton City and Sites releases by the end of January 2023
- These results will be provided to the Engineering Design team to support their design of TRR and pumping plants

Questions?

Agenda Item 1.2
Review results from the latest mapping/surveying data and updated analysis of reservoir capacity

JP Robinette

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Storage Capacity Analysis: 2004 vs 2022

- 2004 Capacity Analysis
  - Developed from limited topography data
  - Based on 20-foot elevation intervals
- 2022 Capacity Analysis
  - Updated 2022 mapping & survey
  - Based on 1-foot elevation intervals from LiDAR dataset
  - ArcGIS Digital Elevation Model created and used for updated analysis

ArcGIS Digital Elevation Model Development

Considerations

- Dam geometries were adjusted to fit 2022 topography
- 2 additional dike locations were identified to provide the required closure
- Quantity of existing materials within the reservoir footprint are considered negligible relative to the overall volume, for example:
  - Excavation from anticipated borrow areas vs. Sites Lodoga Rd embankments

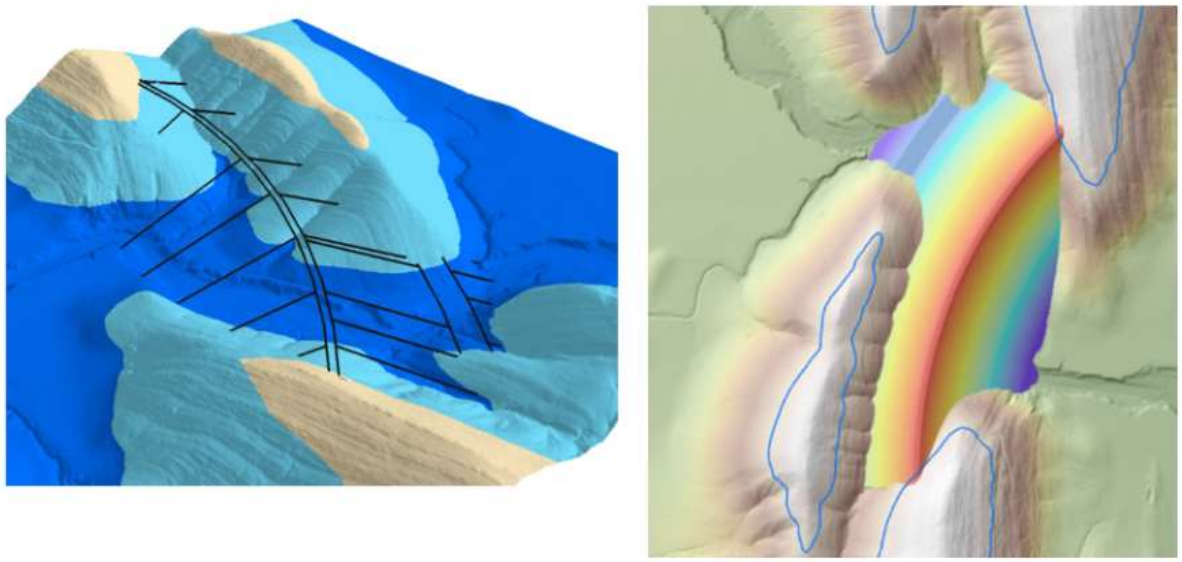

Figure 2-1: Modeling the downstream Golden Gate Dam Option in ArcGIS

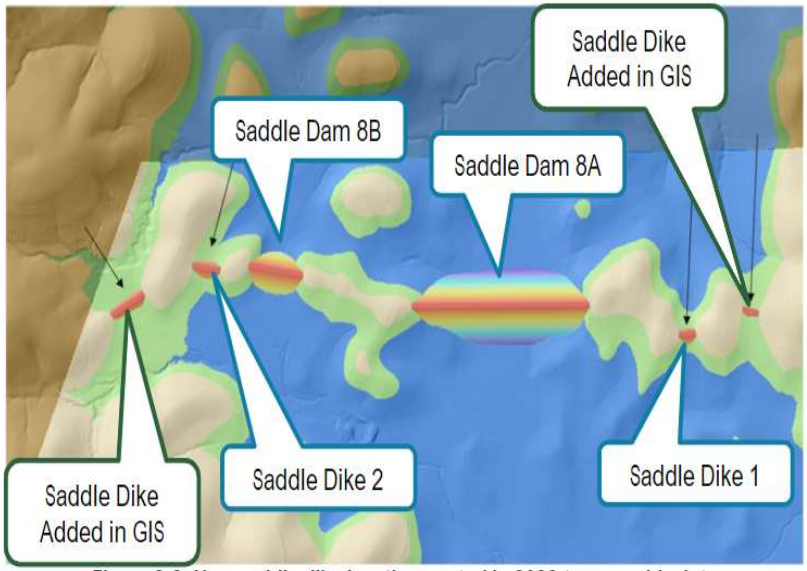

Figure 2-2: New saddle dike locations noted in 2022 topographic data

Results from 2022 Storage Capacity Analysis

- Maintaining the Feasibility Design maximum operating water surface elevation (MOWSE) at 498’ results in a 1.47MAF reservoir
  - Additional decimal point of accuracy
  - About a 2% change in storage capacity
- For comparison:
  - MOWSE at 499’ results in a 1.48MAF reservoir
  - MOWSE at 500’ results in a 1.49MAF reservoir
  - MOWSE at 501’ results in a 1.51MAF reservoir

Next Steps

- Staff assesses storage allocation vs. capacity and identify potential options
  - Consideration of operation vs. storage strategy
  - Evaluation of cost, schedule, permitting, water rights, and other limitations
- Return in February 2023 to provide updates and present options for this Workgroup's consideration

Questions?

Agenda Item 1.3:

Review status of Geotechnical Work Package #1 and plans for Work Package #2

Henry Luu

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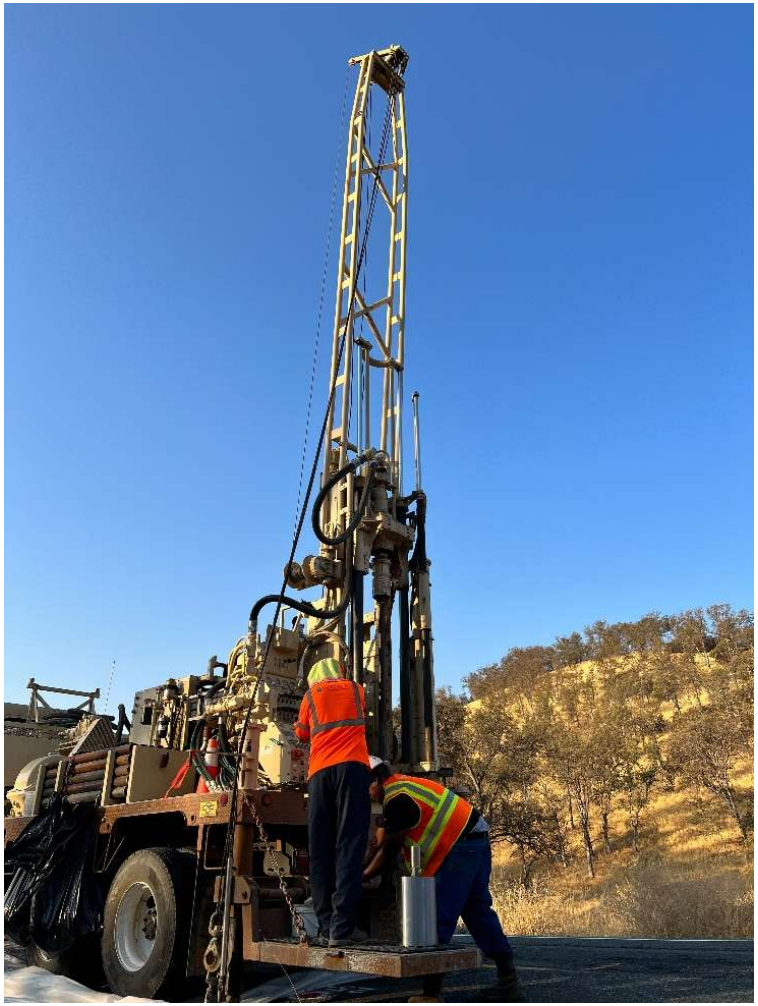
Updates on Package 1 Geotechnical Activities

- Work Package 1 Overview
  - September 6 to December 31, 2022
  - 42 geotechnical investigations planned
  - 23 geotechnical investigations completed as of November 18
    - All within Colusa County right-of-way
    - No work on private property
  - 19 Geotechnical investigations remaining
    - Scheduled for November and December
    - Colusa and Glenn County right-of-way
    - No work on private property
  - 100% of work anticipated to be completed by December 31, 2022



Updates on Package 1 Geotechnical Investigations

Project Feature	Activity	Planned	Completed	Remaining under WP #1*
Colusa County Roadway Improvements	Borings (including Pavement Cores)	20	17	3
Glenn County Roadway Improvements	Borings (including Pavement Cores)	16	0	16
Sites Dam (including borrow)	Borings within Colusa County Right-of-Way	6	6	0

*work to be completed by end of December 31, 2022

Completed Package 1 Geotechnical Investigations – Maxwell Sites Road (Sites Dam)

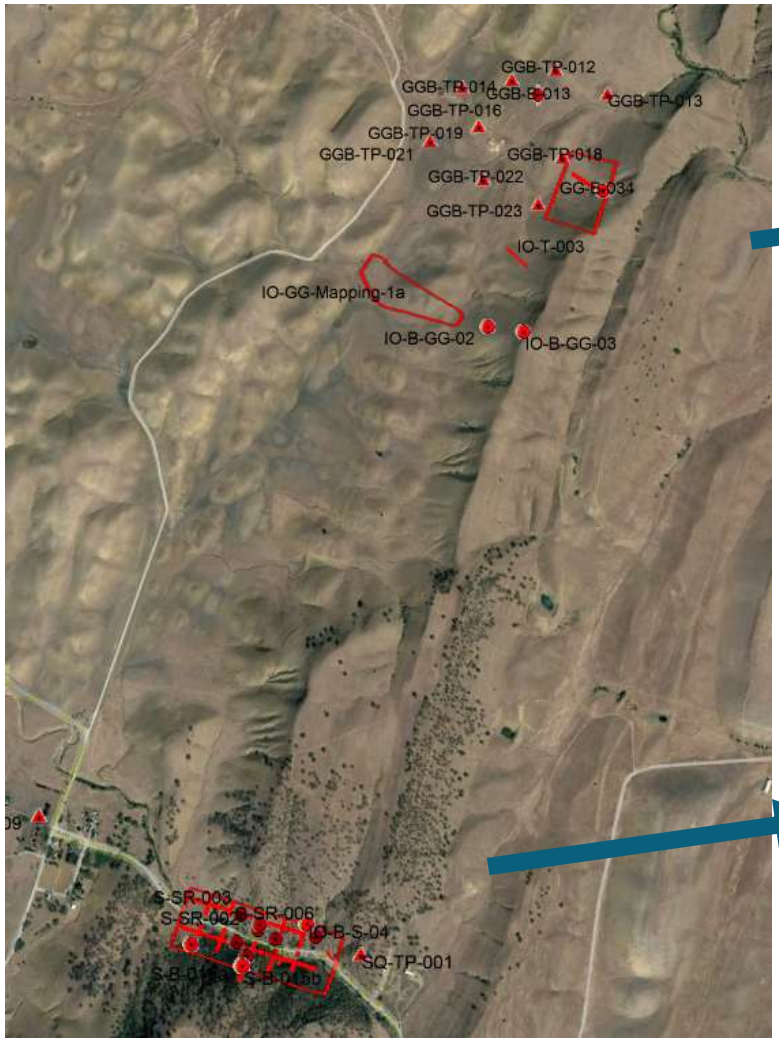
Plans for Package 2 Activities

- Work Package 2 Preview
  - January 1 to June 30, 2023
  - 128 geotechnical investigations, including:
    - Subsurface:
      - Borings
      - Cone Penetration Tests
      - Test Pits
      - Fault Studies
    - Surface:
      - Geologic Mapping
      - Seismic Refraction
      - Electrical Resistivity
  - Work within public and private property
    - Colusa and Glenn County right-of-way
    - Owens Ranch
    - Banyan / Brownstone Quarry
    - Funks Reservoir / Tehama Colusa Canal Authority / USBR

Plans for Package 2 Activities

Project Feature	Activity	Planned
Colusa County Roadway Improvements	Subsurface (Borings)	1
Glenn County Roadway Improvements	Subsurface (Borings)	4
TRR	Subsurface (Borings, CPT)	7
Sites Dam and I/O	Subsurface (Borings, Fault Study, Test Pit)	18
	Surface (Geologic Mapping, Seismic Refraction)	9
Funks Reservoir	Subsurface (Borings)	8
	Surface (Electrical Resistivity, Geologic Mapping)	3
Golden Gate Dam	Subsurface (Test Pits, Borings)	11
	Surface (Geologic Mapping, Seismic Refraction)	2
Saddle Dams	Subsurface (Borings, Test Pits, Fault Study)	20
	Surface (Geologic Mapping, Seismic Refraction)	29
Saddle Dam Quarries	Subsurface (Borings, Test Pits)	10
	Surface (Seismic Refraction)	6

Planned Package 2 Geotechnical Investigations



Questions?

Engineering and Construction Manager's Report:
Baseline Program Schedule

JP Robinette

Sites

Thank you!

Next Meeting: Wednesday, January 11, 2023 (1:30 pm – 3:30 pm)