

# Sites Reservoir Project

Construction Network

September 26, 2023



# Agenda

- Overview of the Sites Authority and Sites Project
- Project Facilities
- Delivering the Sites Project
- Project Packages Spotlight

# Sites Authority and Sites Project Overview

# Sites Project Authority



## Board of Directors:

- Colusa County
- Colusa County Water District
- Glenn County
- Glenn-Colusa Irrigation District
- Placer County Water Agency/City of Roseville
- Reclamation District 108
- City of Sacramento/Sacramento County Water Agency
- Tehama-Colusa Canal Authority
- Westside Water District

# Sites is a local led project

Respect for local communities...

*"The Sites Authority recognizes the **significant contributions of local Sacramento Valley** landowners and communities and will be a respectful, supportive partner and be a **good neighbor** throughout the project."*

It's how we work.



# Broad Statewide Participation

## *'the Sites Project is Beneficiary Pays'*

### **Sacramento Valley**

City of American Canyon  
Colusa County  
Colusa County Water Agency  
Cortina Water District  
Davis Water District  
Dunnigan Water District  
Glenn County  
Glenn-Colusa Irrigation District  
LaGrande Water District  
Placer County Water Agency  
Reclamation District 108  
City of Roseville  
Sacramento County Water Agency  
City of Sacramento  
Tehama-Colusa Canal Authority  
Westside Water District  
Western Canal Water District

### **Bay Area**

Santa Clara Valley Water District  
Zone 7 Water Agency

### **San Joaquin Valley**

Wheeler Ridge-Maricopa Water Storage  
District  
Rosedale-Rio Bravo Water Storage District

### **Southern California**

Antelope Valley – East Kern Water Agency  
Coachella Valley Water District  
Desert Water Agency  
Irvine Ranch Water District  
Metropolitan Water District  
San Bernardino Valley Municipal Water District  
San Geronio Pass Water Agency  
Santa Clarita Valley Water Agency

### **Waiting List**

Cal-Am Sacramento  
City of Napa  
Delta View WUA  
Glenn County  
La Cumbre MWC  
Madera County  
Pacific Resources MWC  
Palmdale WD  
Santa Clara Valley WD  
Western Municipal WD  
Westlands WD  
Wheeler Ridge Maricopa WSD  
Woodland Davis CWA

# Sites Reservoir and Participants Location relative to other projects



*Blue shading represents participant service areas; does not account for State and Federal participation.*

# Feasibility Project Cost Estimate

Serving California's **environment, families,** and **farms** takes:

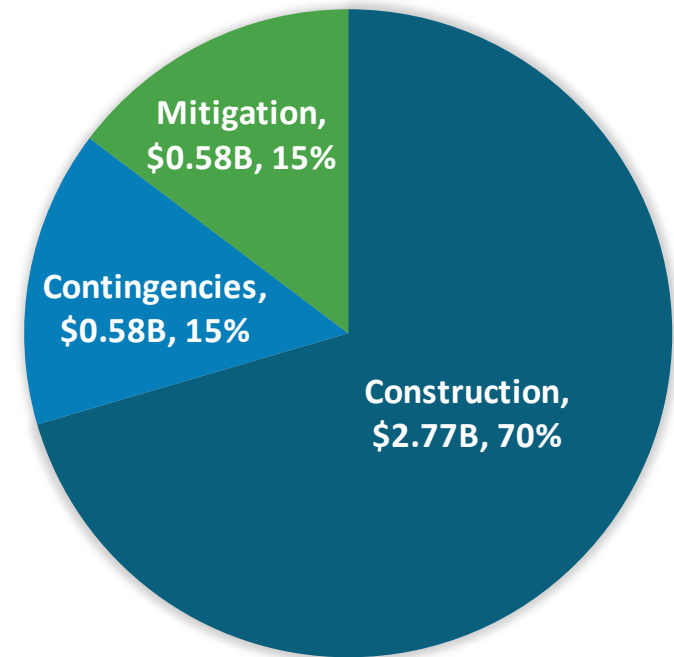
**1.5** million acre-ft of storage

**9** new dams

**11** miles of big pipes (9-12ft)

**20** million cubic yards of fill

ESTIMATED PROJECT COSTS  
(\$3.9B, 2021\$)

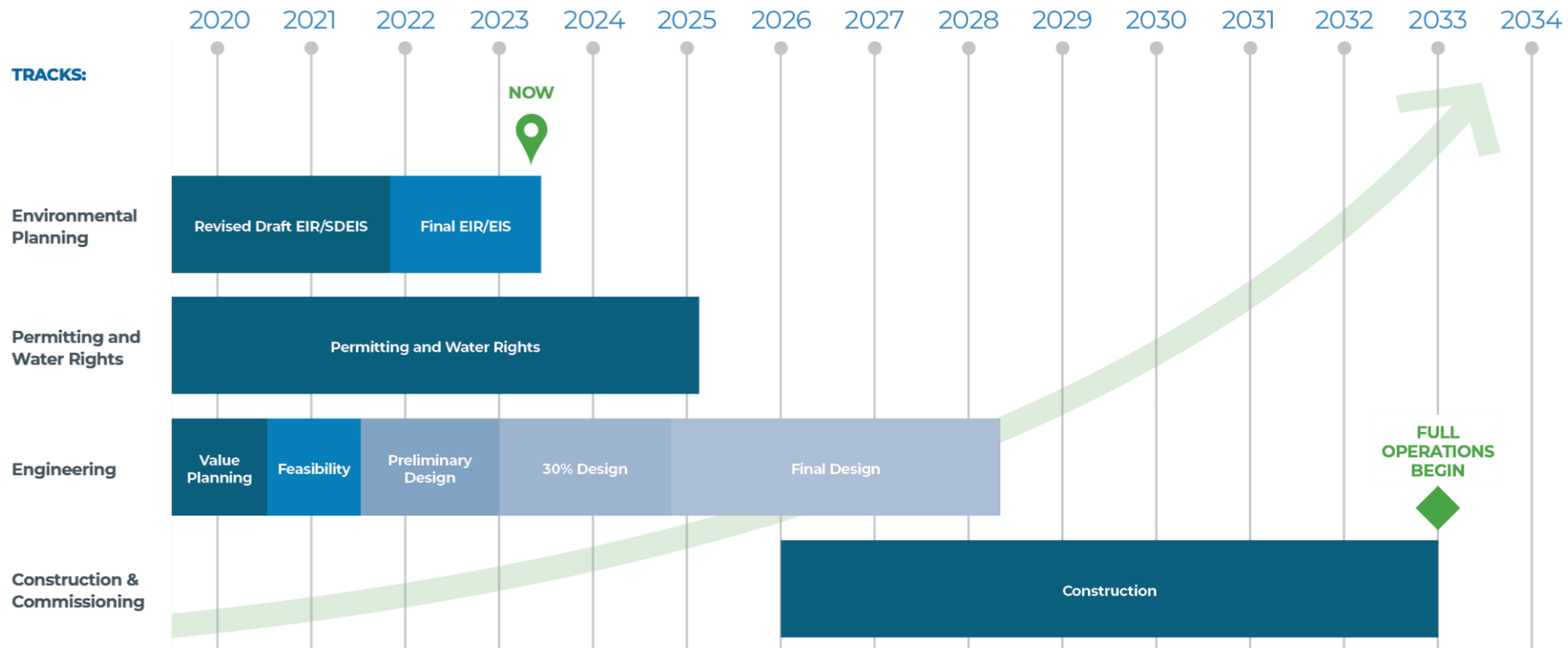


*Estimated construction costs are based on the class 4 cost estimate for approved by the Reservoir Committee and Authority Board in June 2021*



# Project Schedule

## Sites Reservoir Project Schedule



# What if Sites was operational today?

Total for 2022/2023 Season  
**700,000 AF** (almost ½ of  
the reservoir)

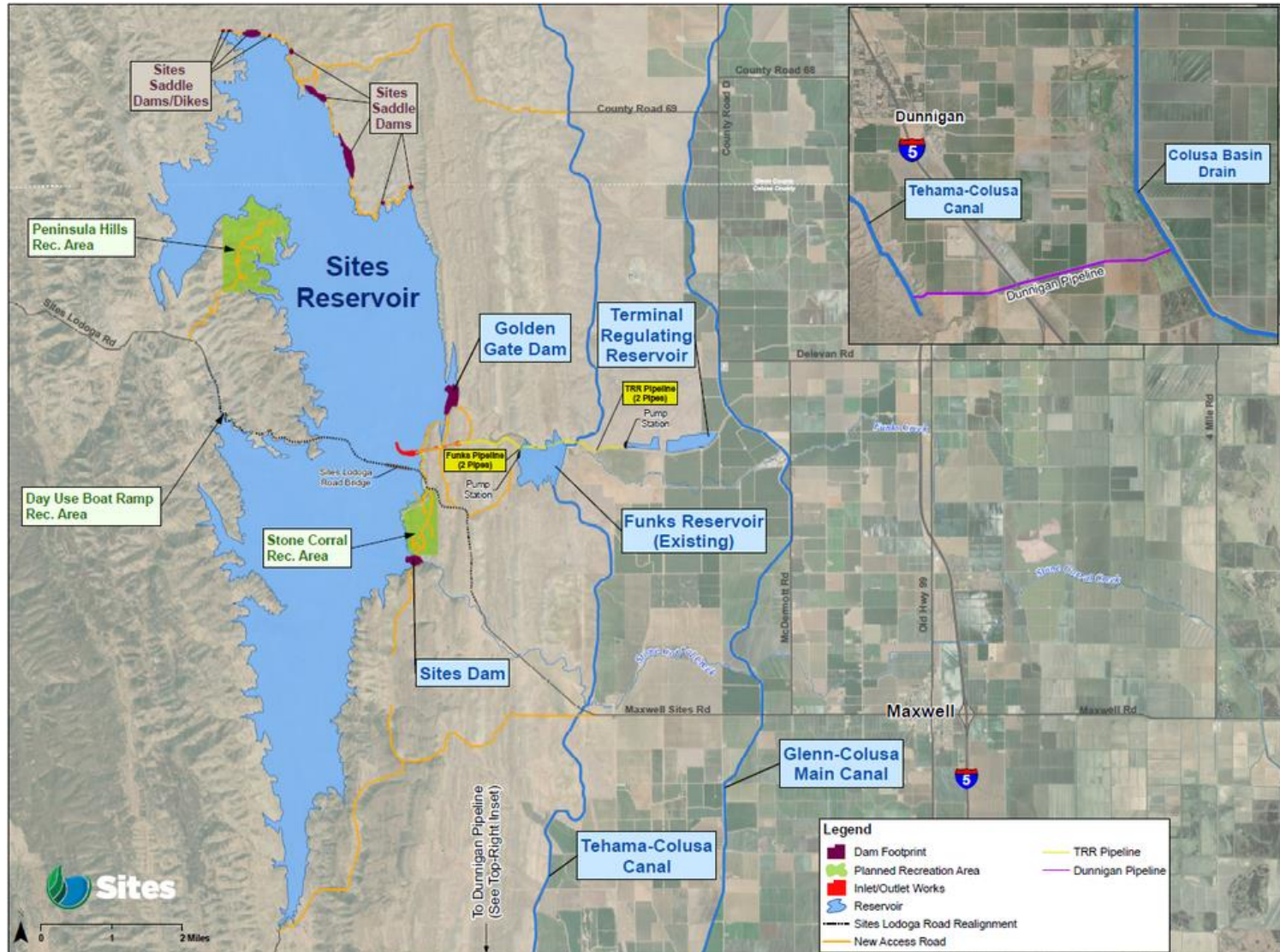
- Estimates are based on operations simulation tool that monitors actual and forecasted river/Delta conditions
- This real-time analysis shows that the Project is capable of delivering the expected diversion performance



# Project Facilities

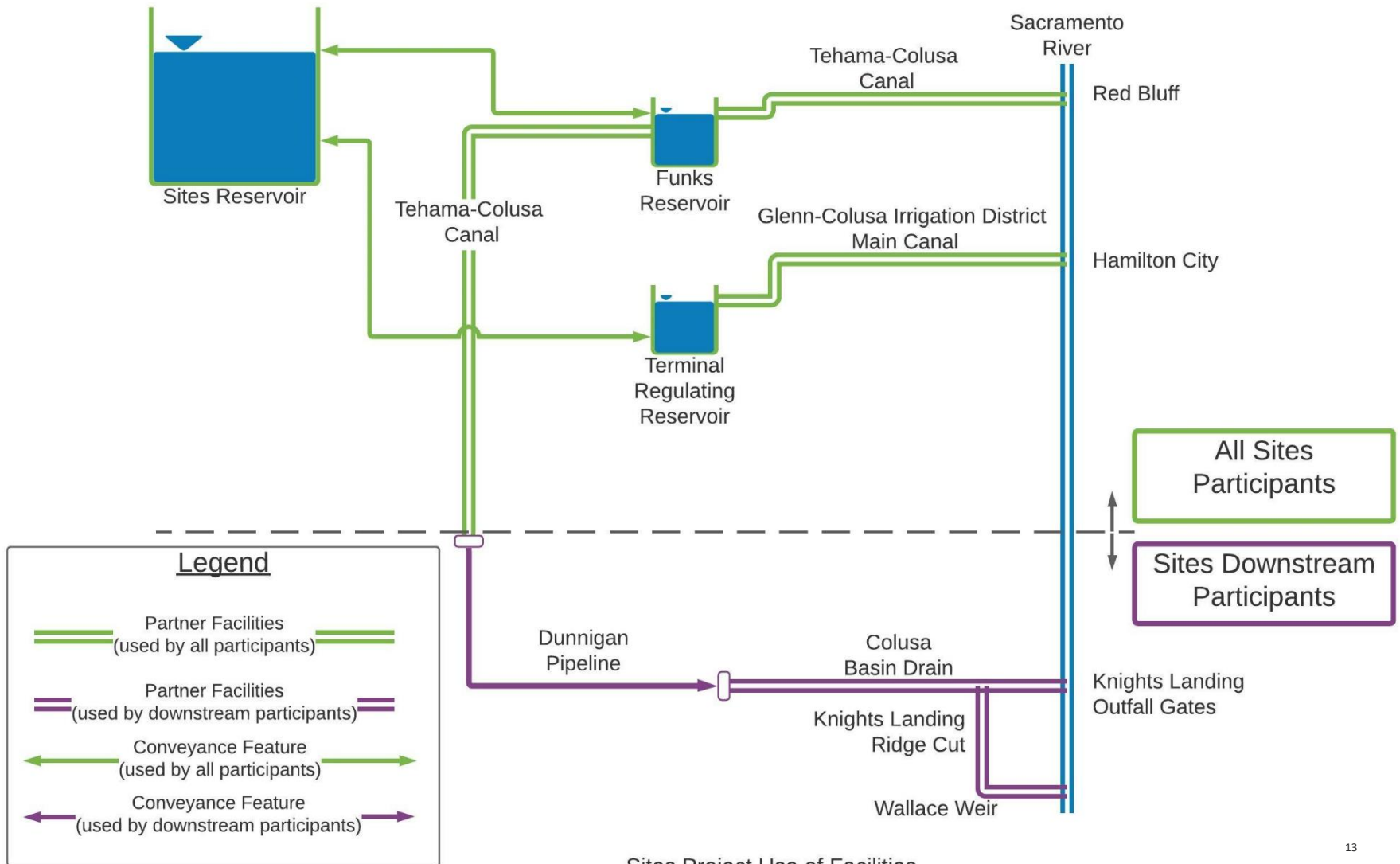
# Project Map

*Affordable · Permittable · Buildable*





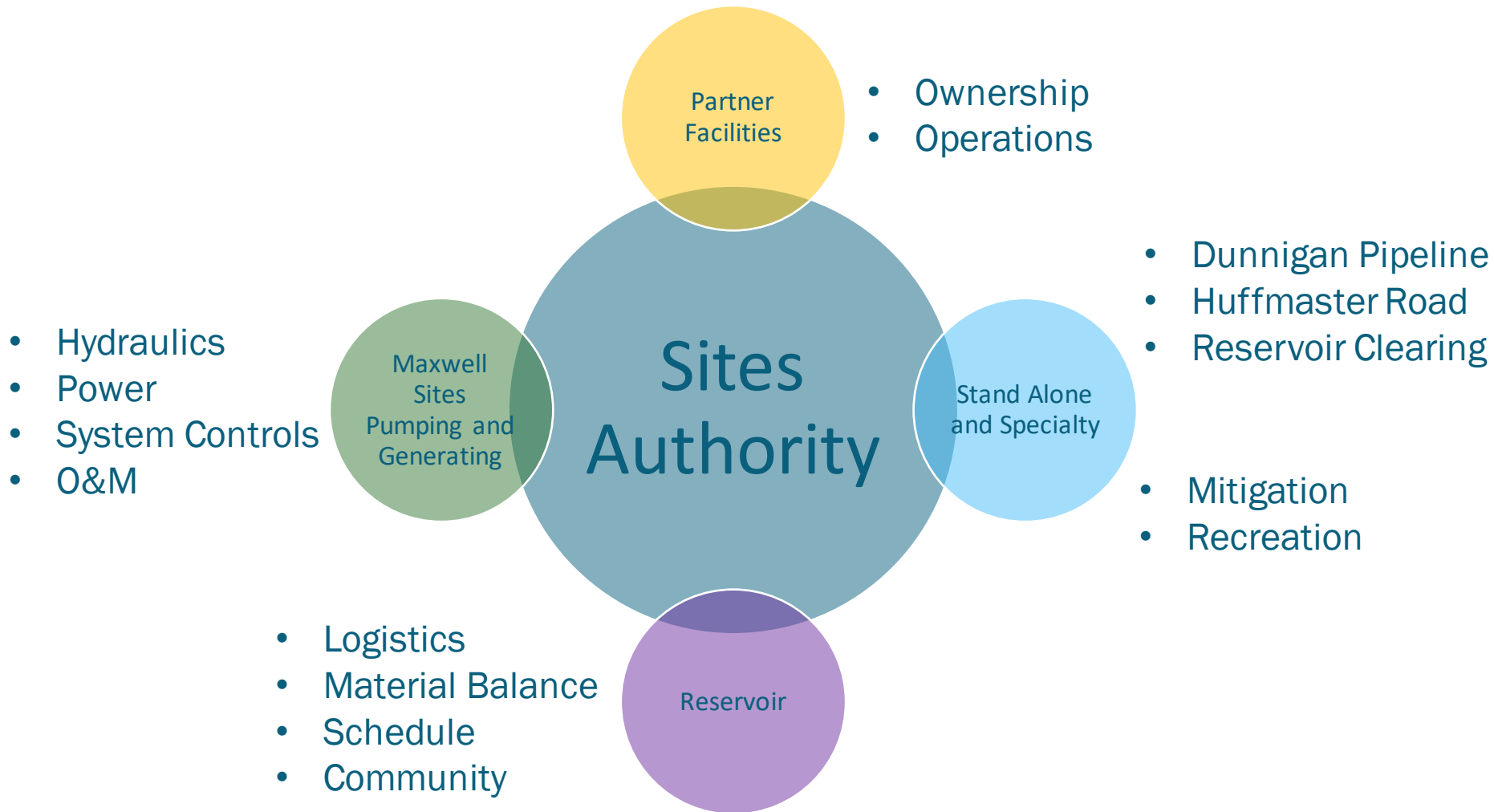
# Project Infrastructure Schematic



# Delivering the Sites Project

# Project Packages and Risk Summary

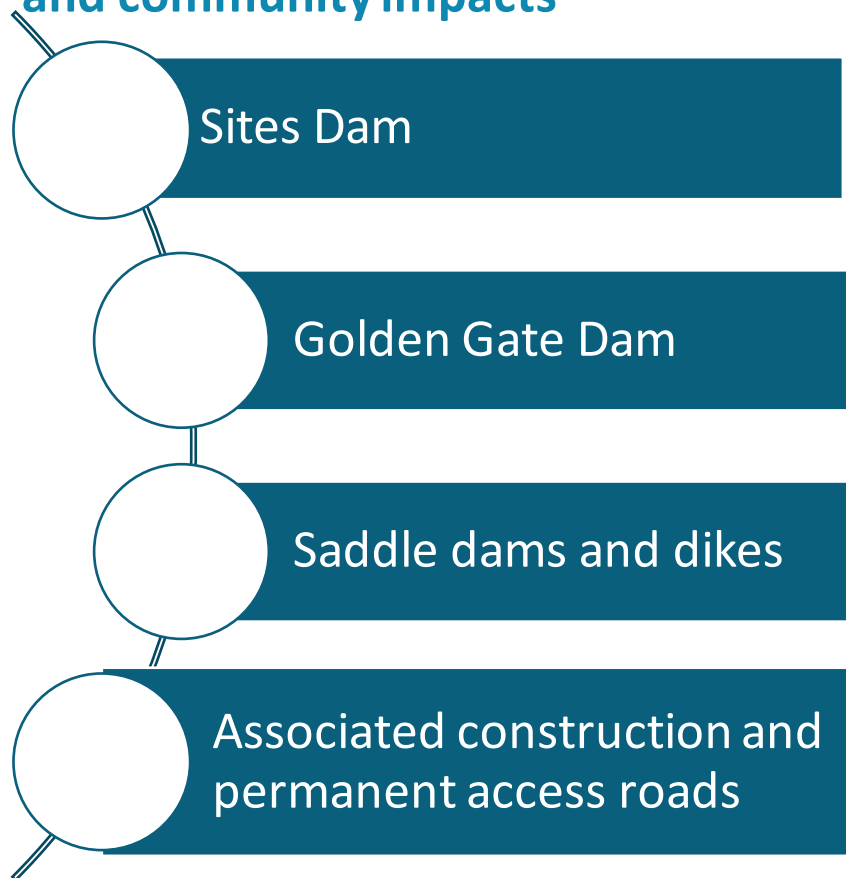
Contracting Strategy adopted in July 2022



# Adopted Contract Strategy identified two significant CMAR packages

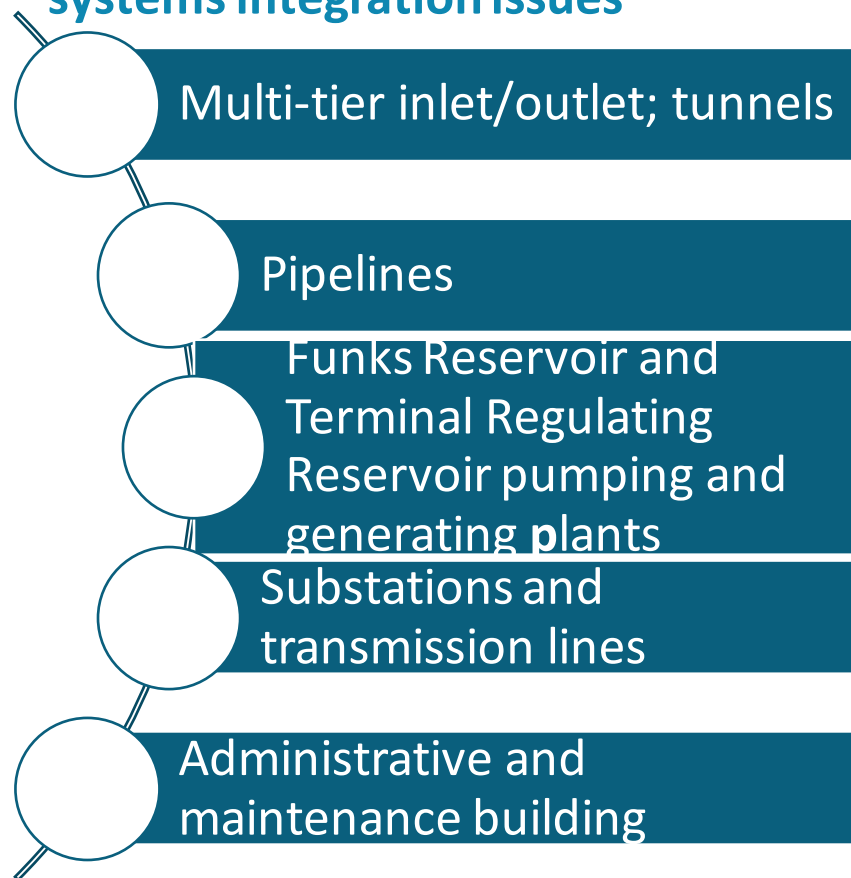
## Reservoir Package \$2B (\$2021)

CMAR recommended to provide early input on logistical challenges, schedule and community impacts



## Maxwell-Sites Pumping and Generating Package \$1.2B (\$2021)

CMAR recommended due to complex systems integration issues





# Project Packages Spotlight

Reservoir

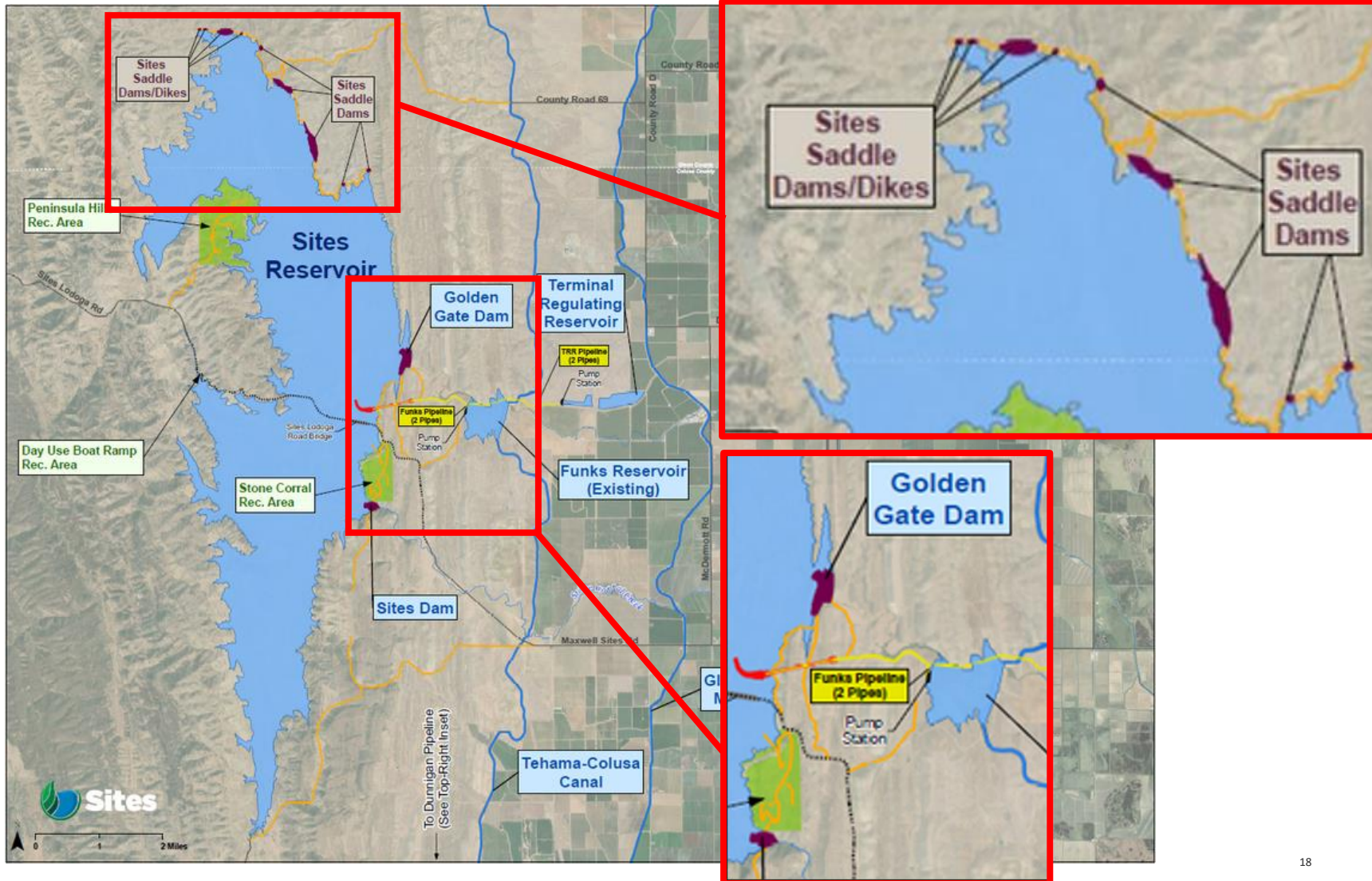
Maxwell Sites Pumping and Generating

Dunnigan Pipeline



# Reservoir Package

Main Dams, Saddle Dams and Dikes, roads and bridge



# Reservoir Package Spotlight (\$2B)

## Dam/Dike Heights

- 2 Main: 287 ft
- 7 Saddle: up to 120 ft
- 2 Saddle Dikes: 10 - 15 ft

## Roads

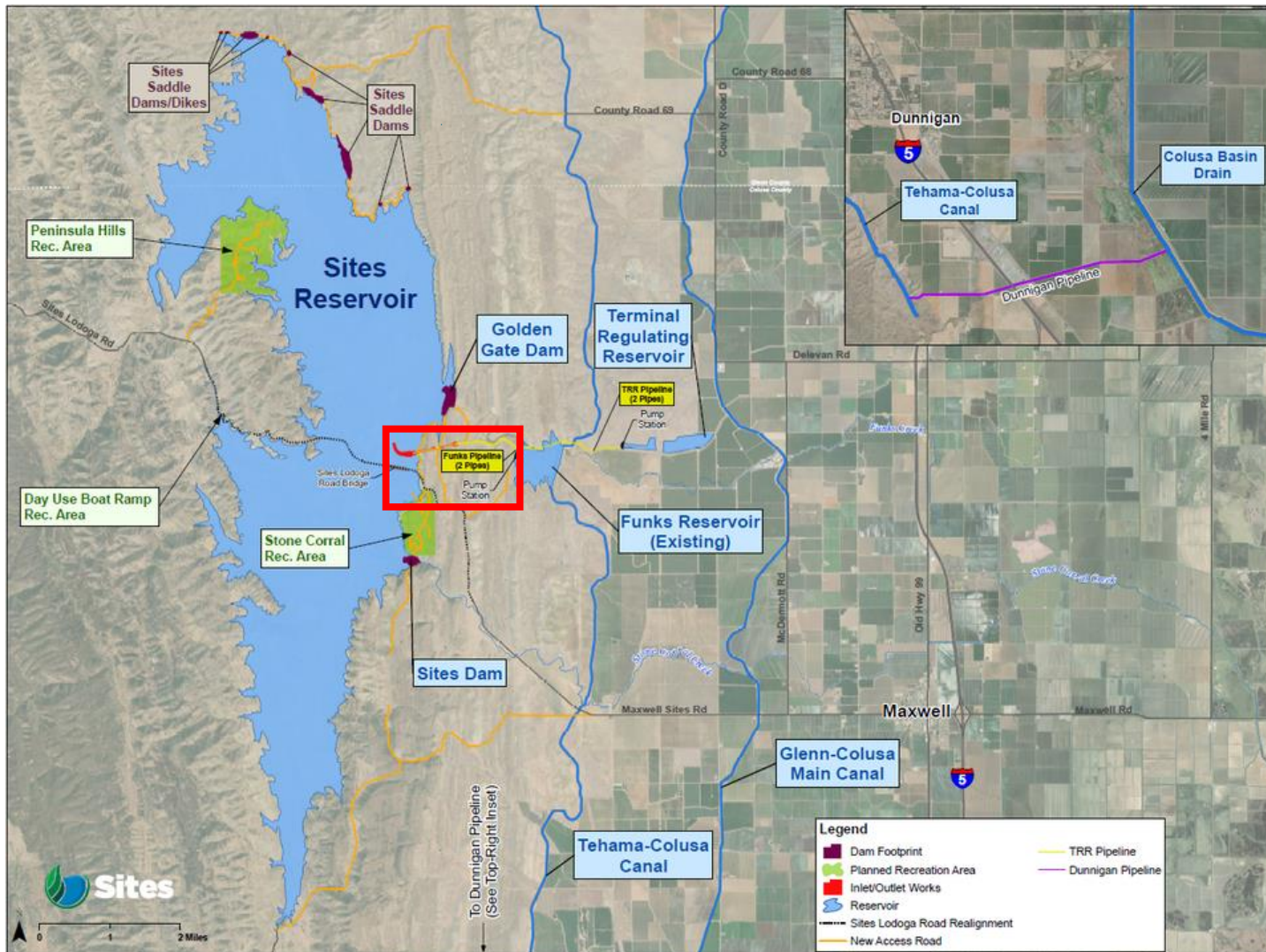
- 22 miles (12 paved; 10 gravel)

## New Sites Lodoga Bridge:

- 4,050 ft long, 150 feet tall



# Maxwell Sites Pumping and Generating (MSPG)



# Conveyance Goals and Purpose

- Move water from the Sacramento River to Sites Reservoir for storage
- Release water from Sites to the Sacramento River
- Generate power during the release of water from Sites Reservoir
- Provide flow path for a portion of emergency drawdown flows from Sites Reservoir

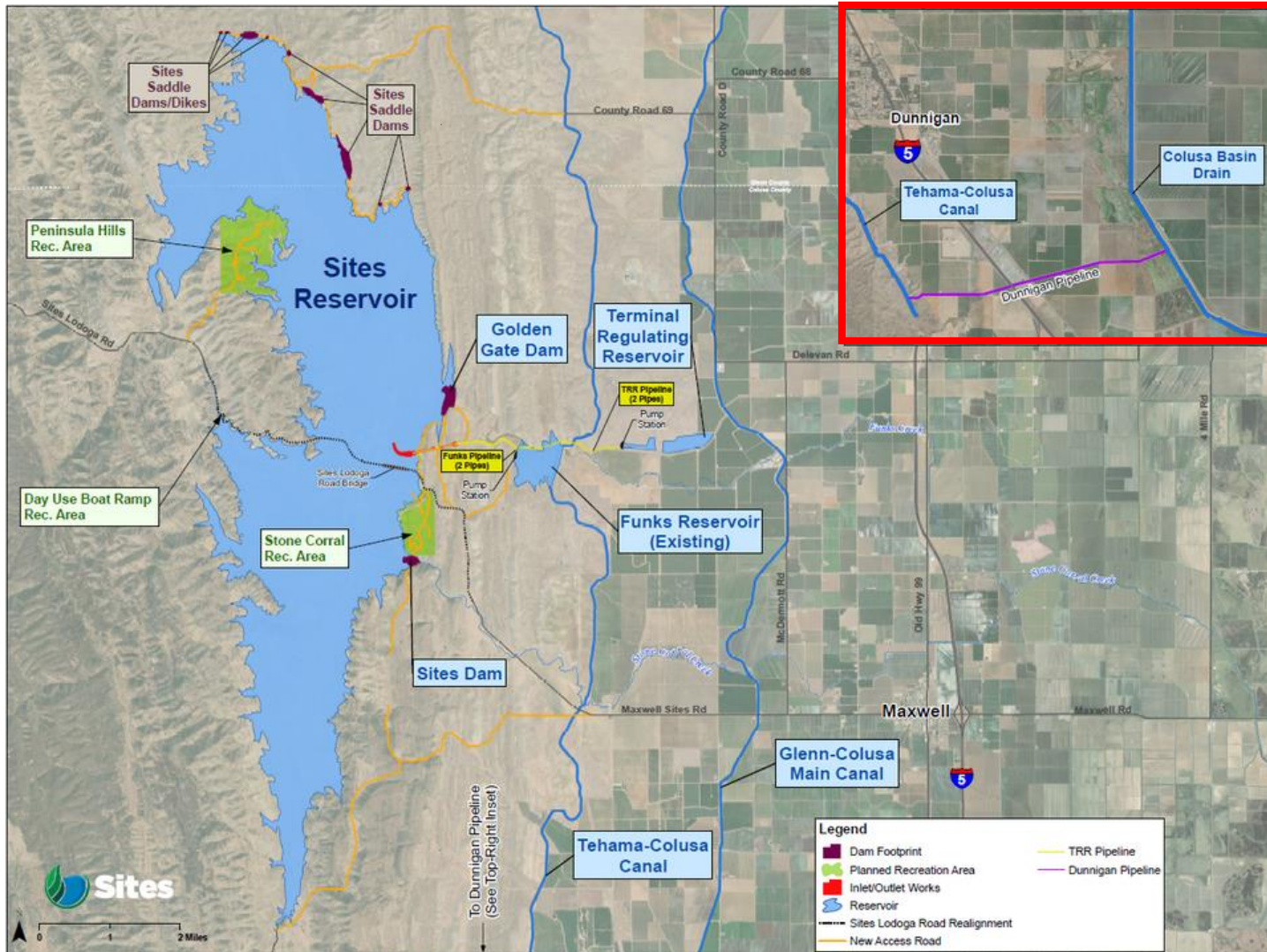
# MSPG Spotlight (\$1.2B)

- ❑ 230 ft tall multi-tier
- ❑ Sloping inlet/outlet structure with 21 ports at 7 different levels
- ❑ 7 miles of 12' pipes
- ❑ 3,100 LF of 32' tunnel
- ❑ Mechanical/I&C Building
- ❑ Transition Manifold connecting 4 – 12' diameter pipes to 32' diameter tunnel

- ❑ 2 Pumping and Generating Plants
  - ❑ Funks: 12 pumps (8,000 HP each)
  - ❑ Terminal Regulating Reservoir: 13 pumps (9,000 HP each)
- ❑ 2 Power Interconnection Facilities



# Dunnigan Pipeline



# Dunnigan Pipeline

- ❑ Pipeline that directs flow from the Tehama Colusa Canal to the Colusa Basin Drain, which flows to the Sacramento River
- ❑ Requires tunneled crossings under I-5 and Hwy 99/railroad with 10.5-foot casing
- ❑ Fixed-cone valves will be placed at the discharge to dissipate energy and adjust flow
- ❑ Flow: 1,000 cfs, based on gravity flow from the Tehama Colusa Canal
- ❑ Pipe Diameter: 9 feet
- ❑ Approximate Length: 4 miles



**Questions?**



# Bullpen



# How do we pay for it?

## Financing Before Project Construction

- Cash calls from Participants
- Short-term bank line of credit
- WIFIA loan

## Project Construction Financing

- WIFIA loan(s): fund up to 49% of eligible project costs
- State of California Proposition 1 Funding: \$875M
- Federal WIIN Act funds
- Long-term bonds

# Packages and Delivery Methods (1 of 2)

No.	Package	Estimated Value (2021\$)	Major Facilities	Recommended Delivery Method	Key Risk Areas
1	Reservoir	\$2.0 B	2 Main Dams 7 Saddle Dams 2 Saddle Dikes Sites-Lodoga Road & Bridge Construction/Access/O&M Roads	Construction Manager at Risk (CMAR)	Logistics Material Balance Schedule Community
2	Maxwell-Sites Pumping and Generating (MSPG)	\$1.15 B	Inlet/Outlet Tower Inlet/Outlet Tunnel Pipelines and Manifold 2 Pumping and Generating Plants 2 Power Interconnection Facilities Instrumentation and Controls Forebay/afterbay Improvements	CMAR	Hydraulics Power System Controls Operation & Maintenance
3	Reservoir Clearing and Demolition	\$35 M	Clearing and Demolition within Reservoir Footprint	Design-Bid-Build (DBB)	Community
4	Huffmaster Road	\$50 M	Local Access Road	DBB	Community
5	Dunnigan Pipeline	\$100 M	Canal Turnout Pipeline Colusa Basin Drain Release	DBB	Operational Flexibility

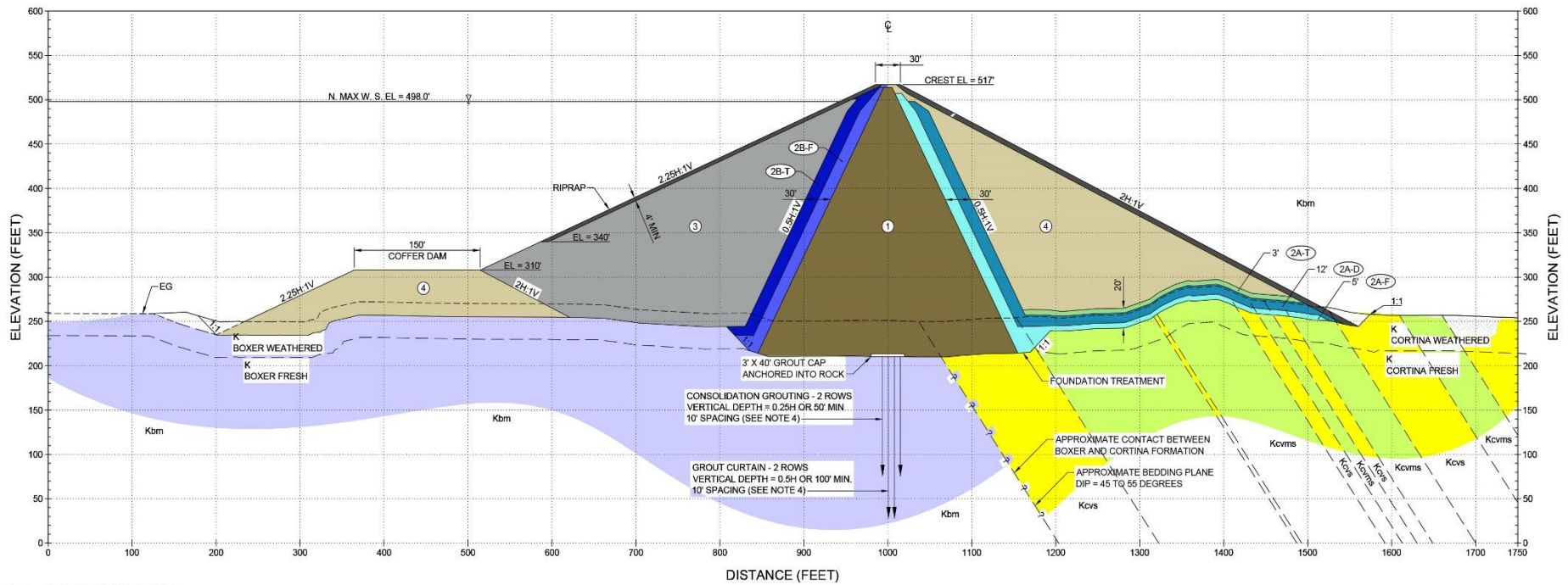
# Packages and Delivery Methods (2 of 2)

No.	Package	Estimated Value (2021\$)	Major Facilities	Recommended Delivery Method	Key Risk Areas
6	Tehama Colusa Canal Authority	\$5 M	Existing Facility Improvements	Owner Agreements	Ownership & Operation
7	Glenn Colusa Irrigation District	\$7 M	Existing Facility Improvements	Owner Agreements	Ownership & Operation
8	Recreation	\$35 M	Peninsula Hills Stone Corral Creek Day-use Boat Ramp	DBB with concessions or Design-Build-Operate	Specialty
9	Mitigation	\$600 M	Implement Environmental Mitigation Commitments	Various	Schedule

# Outlet Flow Requirements

- I/O Works
  - Operational flows (max): 3,900 cfs
  - Creek releases: 5-200 cfs
  - Emergency Reservoir Drawdown: 7,870-12,120 cfs
- Sites Diversion Outlet
  - Creek releases: 5-200 cfs
  - Emergency Reservoir Drawdown: 4,770-7,870 cfs
- Emergency reservoir drawdown flows dependent on:
  - Flow allocation impacts to downstream communities
- Creek releases dependent on regulatory requirements

# Dam Cross Section



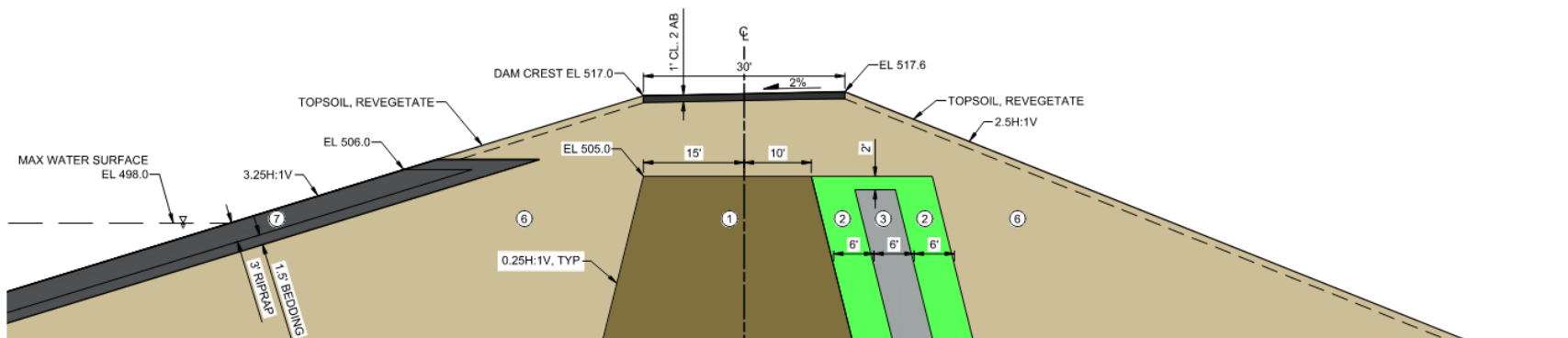
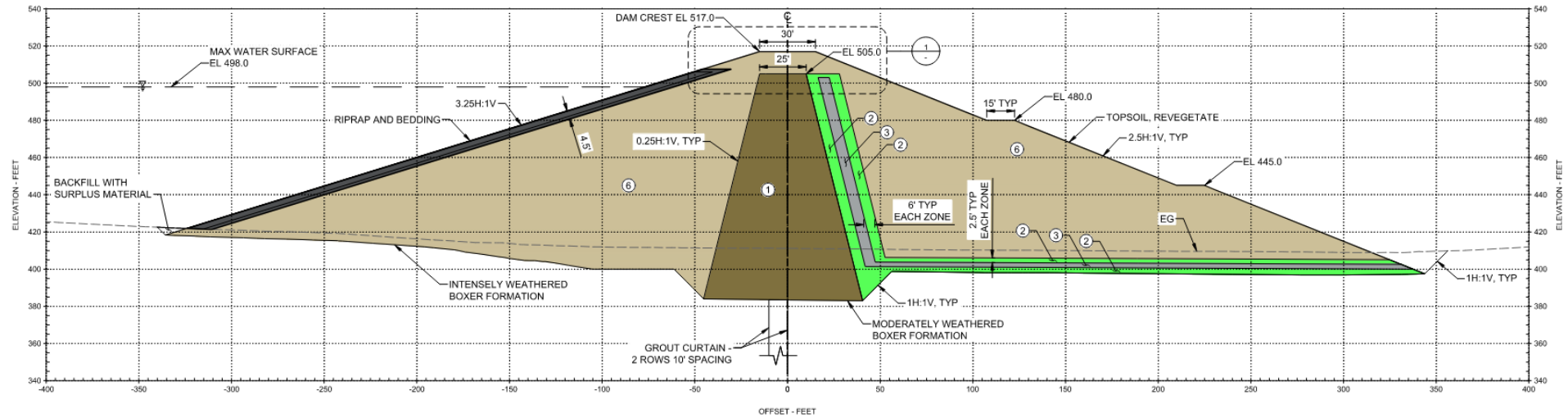
C1 SECTION (STA 14+32)

SCALE: 1" = 60'

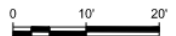
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# Saddle Dam 3 Cross Section

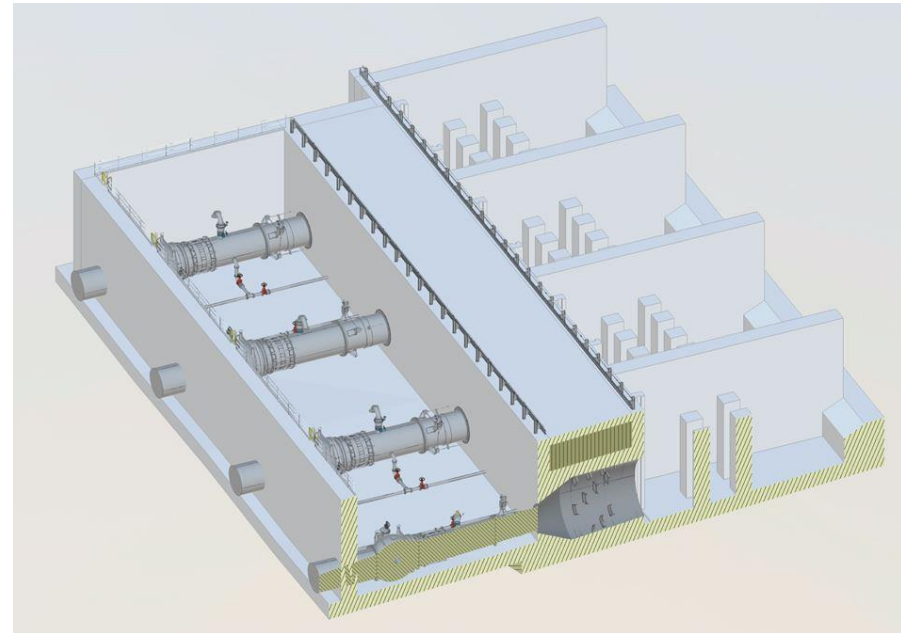


**1** **DETAIL - SADDLE DAM CREST**  
 SCALE: 1" = 10' NOTE: CAMBER NOT SHOWN



# Funks Pumping/Generating Plant

- Intended to pump water from the Funks Reservoir to the Sites Reservoir
- Pumping Plant includes 13 pumps (8,000 hp each) 12 Duty and 1 standby.
- Includes two hydroelectric turbines (14.5 MW each) to generate electricity when flow is released from the Sites Reservoir to Funks Reservoir, to the TCC and ultimately to the Sacramento River
- Includes energy-dissipation valves/facilities that will allow releases back to Funks as backup to the turbines & provide reservoir emergency flow
- Pumping plant capacity: 2,100 cfs
- Generating plant capacity: 2,000 cfs (1,000 cfs per turbine for redundancy)



# Terminal Regulating Reservoir Pumping/Generating Plant

- Intended to pump water from the TRR to the Sites Reservoir
- Pumping Plant includes 13 pumps (9,000 hp each) 12 Duty and 1 standby.
- Includes two hydroelectric turbines (11.5 MW each) to generate electricity when flow is released from the Sites Reservoir to TRR, to the GCID main canal.
- Includes energy-dissipation valves/facilities that will allow releases back to Funks as backup to the turbines & provide reservoir emergency flow
- Pumping plant capacity: 1,800 cfs
- Generating plant capacity: 1,000 cfs (500 cfs per turbine for redundancy)

