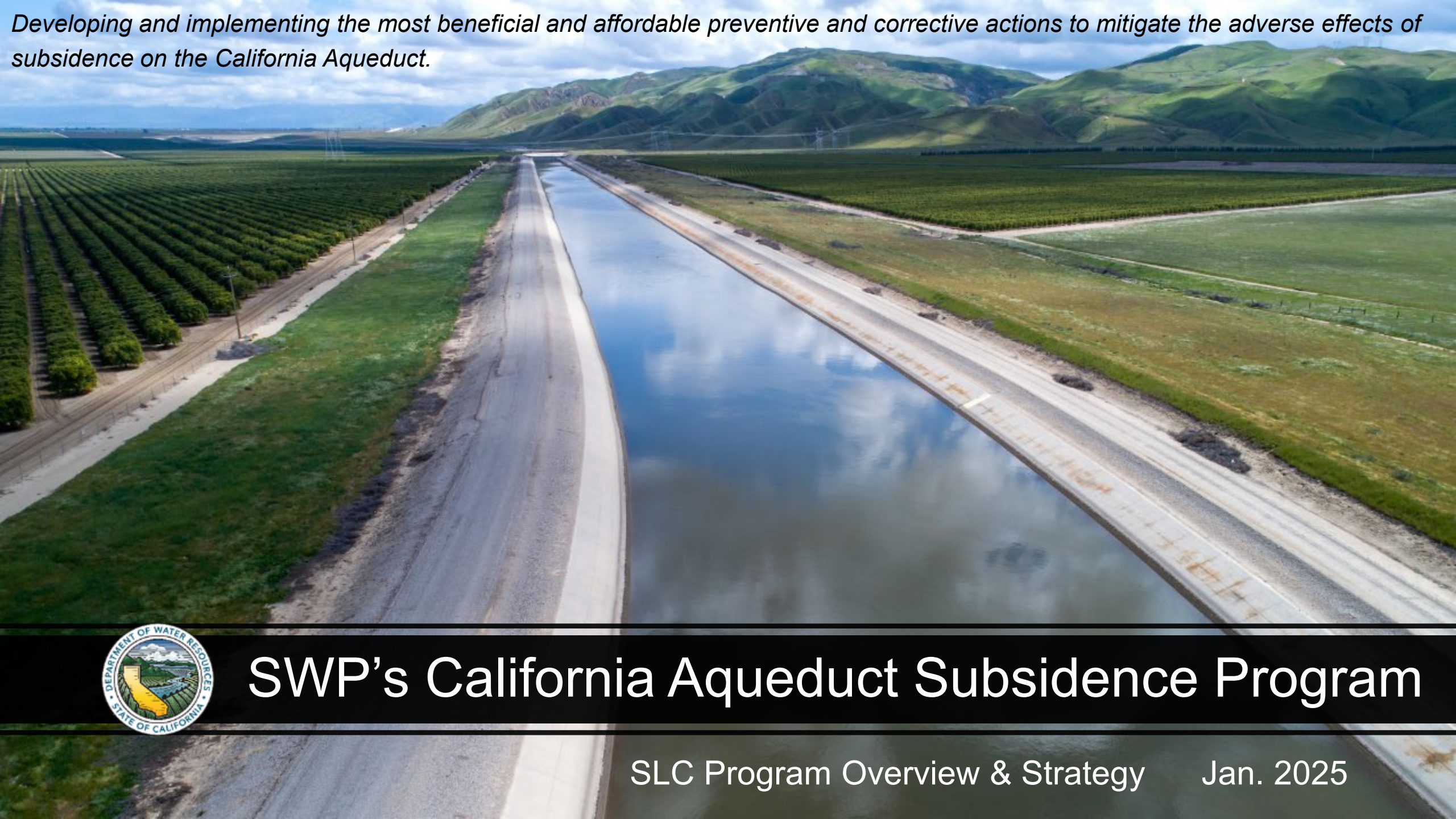
Developing and implementing the most beneficial and affordable preventive and corrective actions to mitigate the adverse effects of subsidence on the California Aqueduct.



SWP's California Aqueduct Subsidence Program

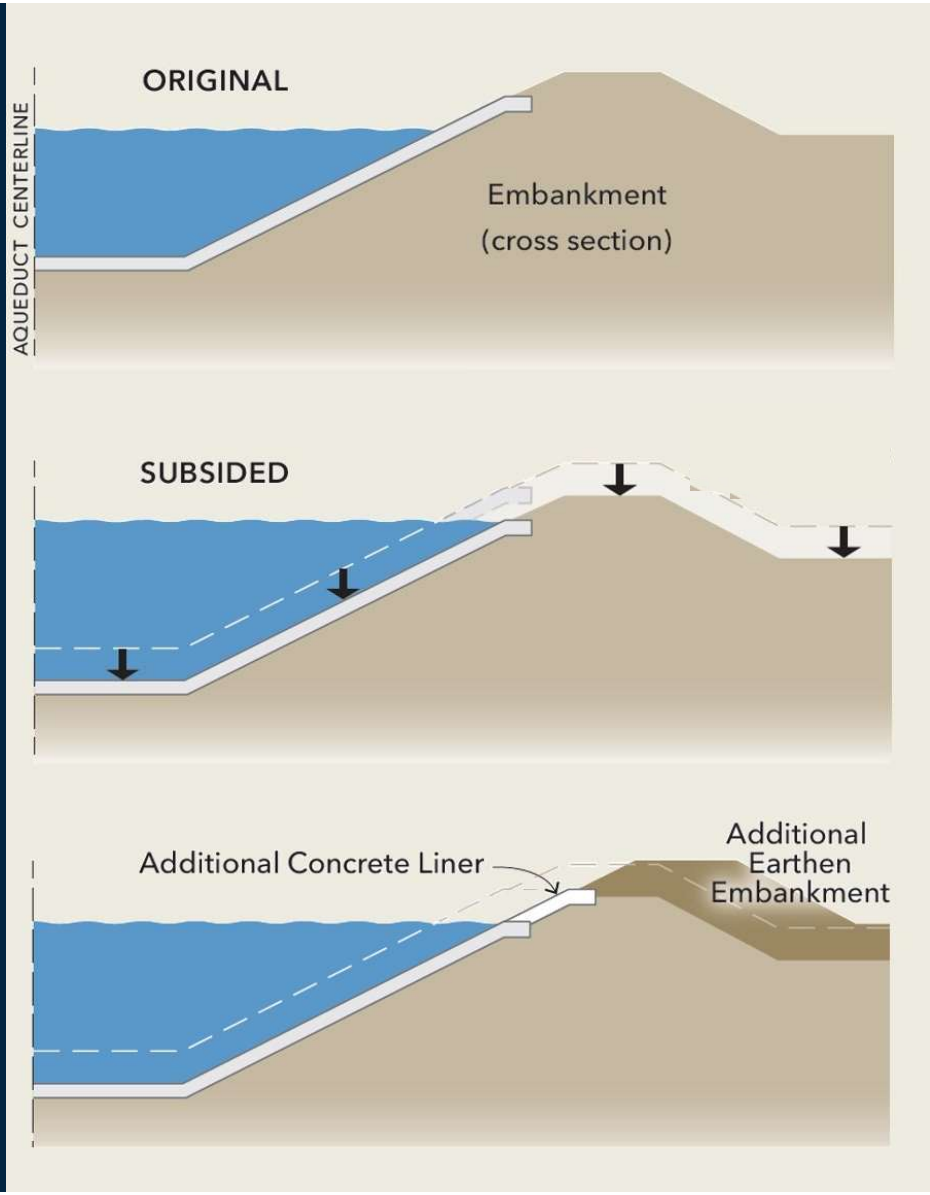
SLC Program Overview & Strategy Jan. 2025

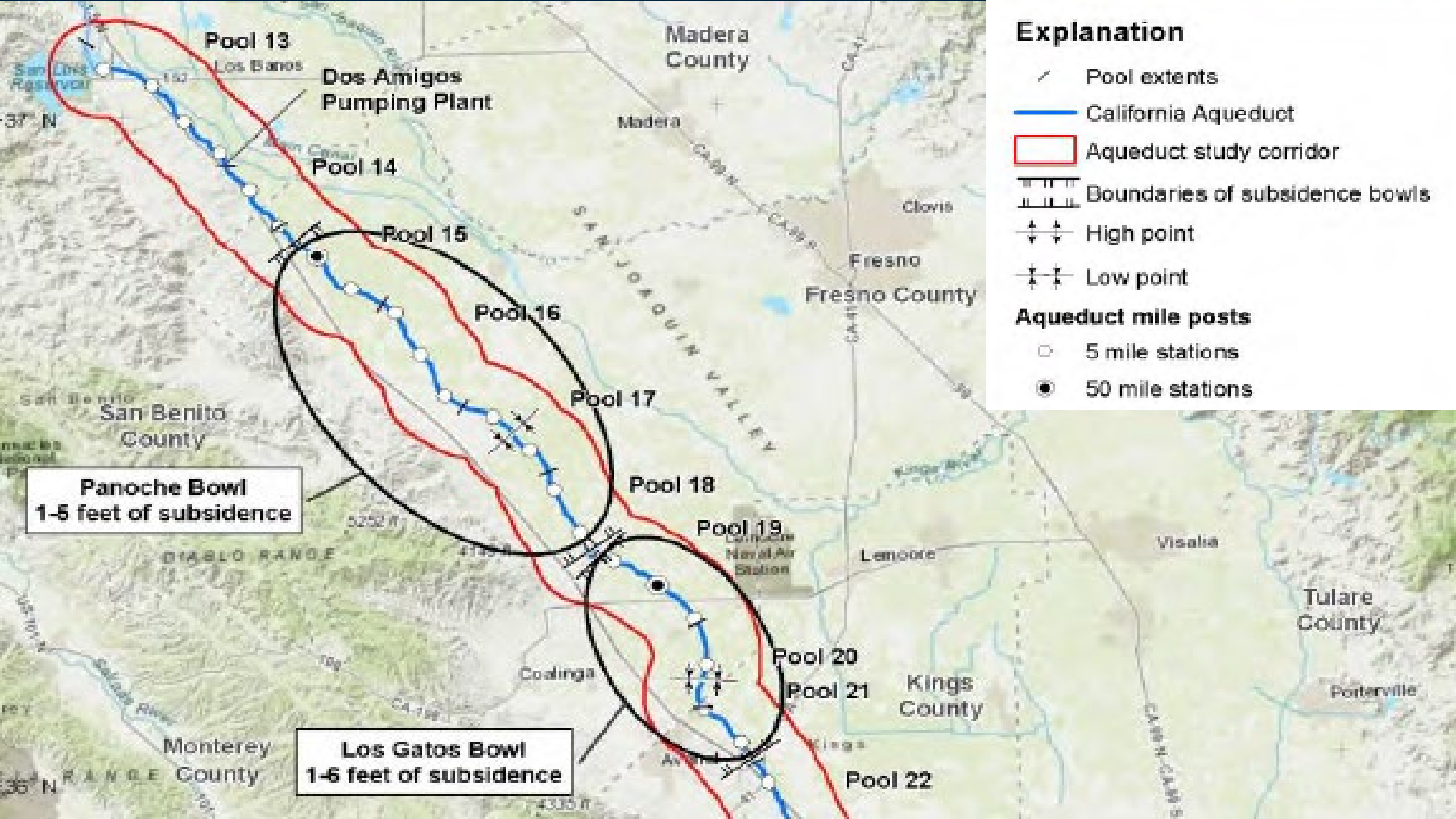
Subsidence and the State Water Project

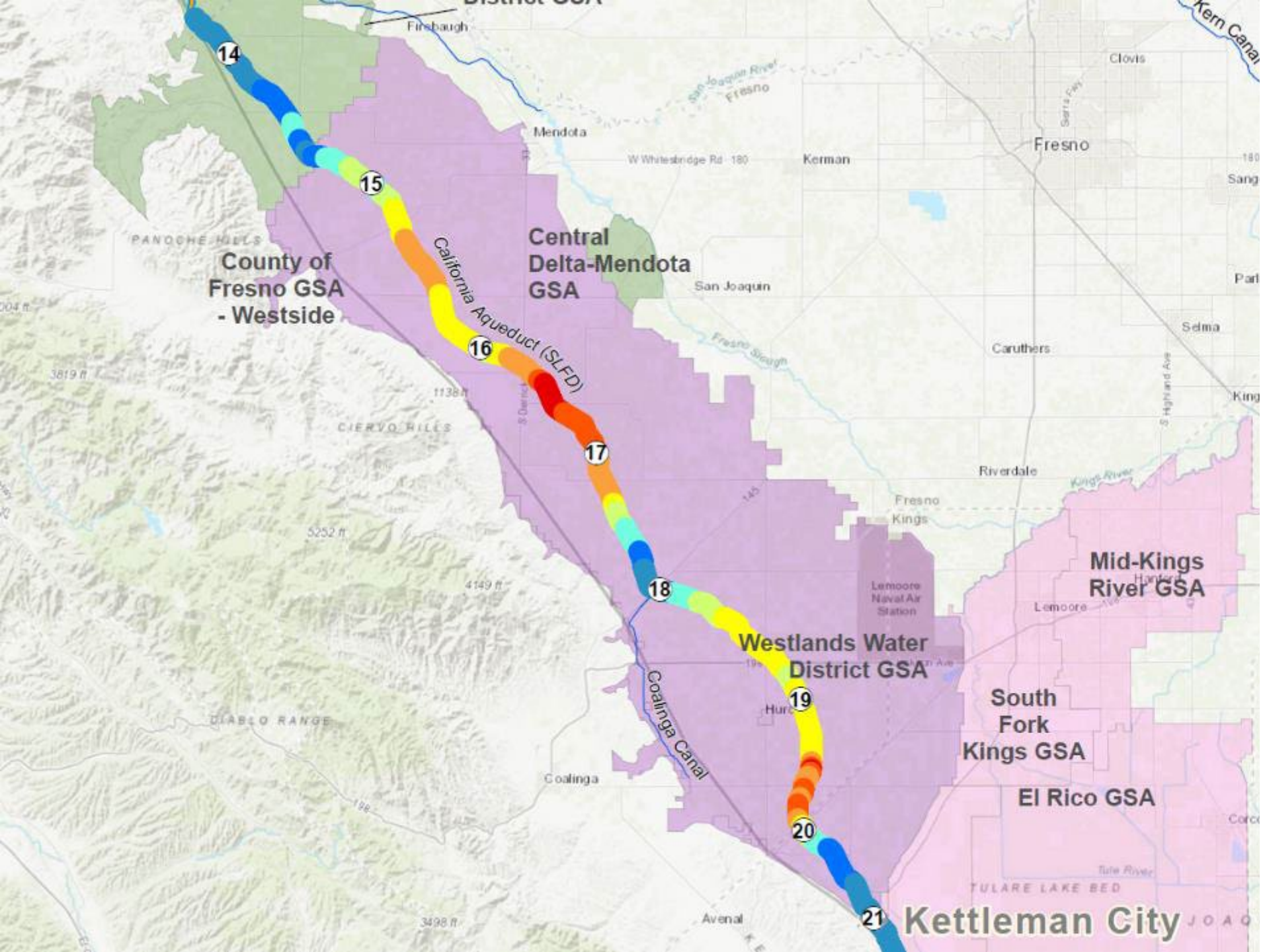
Through the western side of the San Joaquin Valley:

- Reductions in the system's capacity to move water due to subsidence are as high as 46%.
- The current reductions in conveyance capacity will increase as subsidence continues.

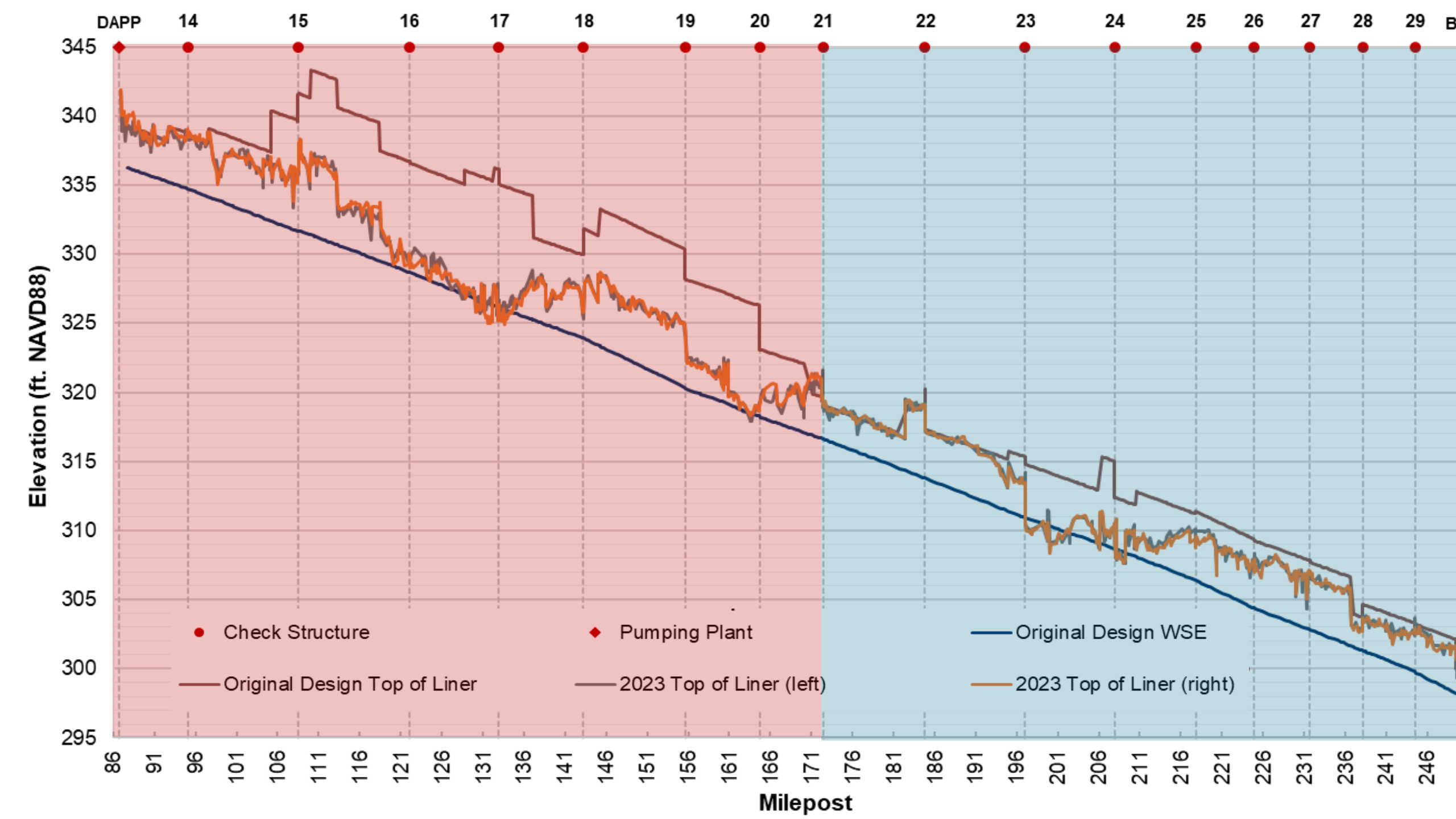
Re-establishing system capacities lost to subsidence will require billions of dollars over the next 20 years.




Pool 13
Los Banos
Dos Amigos
Pumping Plant
Pool 14
Pool 15
Pool 16
Pool 17
Pool 18
Pool 19
Pool 20
Pool 21
Pool 22
Madera
County
Madera
Clovis
Fresno
Fresno County
San Benito
San Benito
County
Panoche Bowl
1-5 feet of subsidence
Los Gatos Bowl
1-6 feet of subsidence
Coalinga
Lemoore
Visalia
Tulare
County
Kings
County
Monterey
County
Explanation
Pool extents
California Aqueduct
Aqueduct study corridor
Boundaries of subsidence bowls
High point
Low point
Aqueduct mile posts
5 mile stations
50 mile stations



- Less than 2 ft
- 2-3 ft
- 3-4 ft
- 4-5 ft
- 5-6 ft
- 6-7 ft
- 7-8 ft
- 8-9 ft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Elevation (ft. NAVD88)
Check Structure
Pumping Plant
Original Design WSE
Original Design Top of Liner
2023 Top of Liner (left)
2023 Top of Liner (right)
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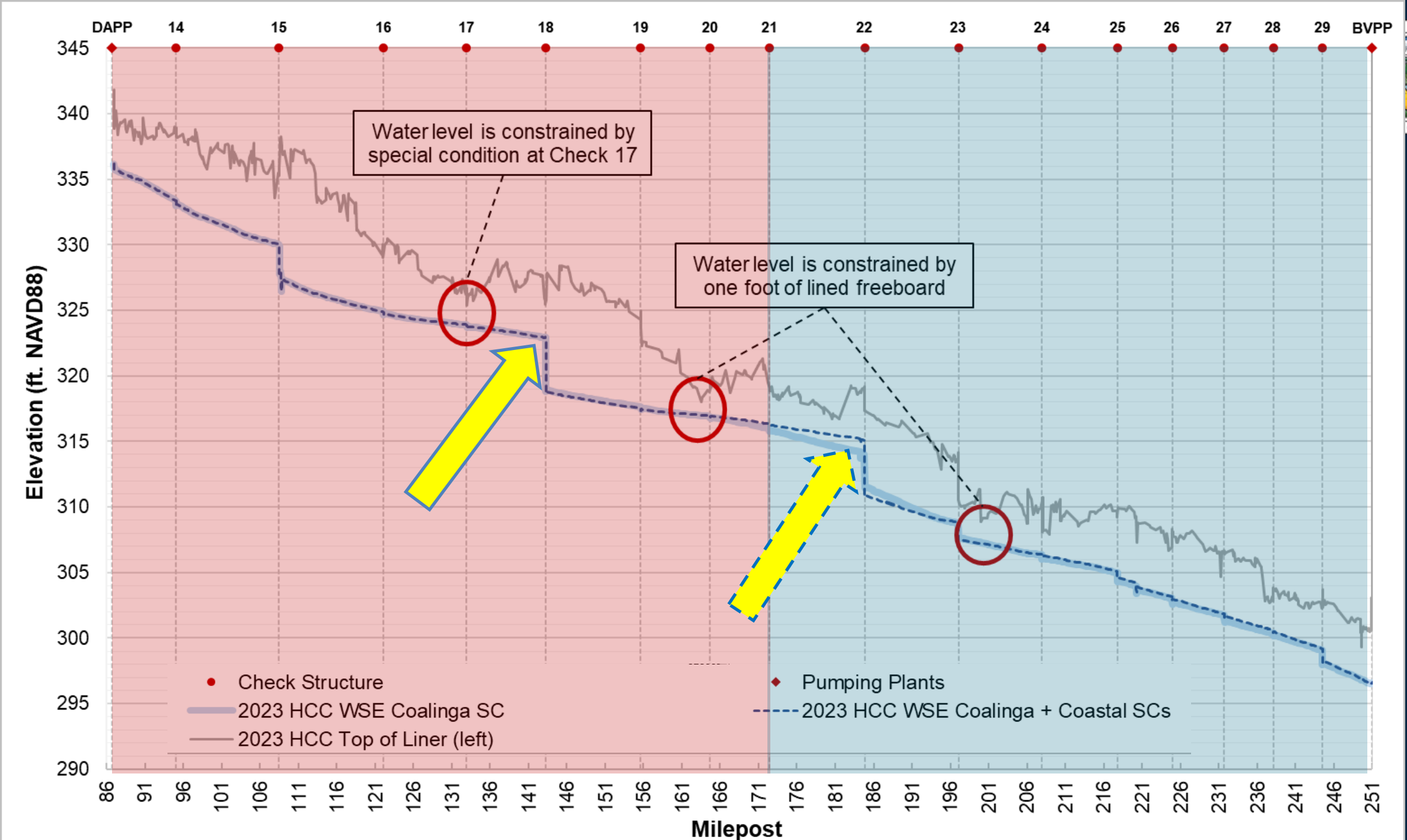
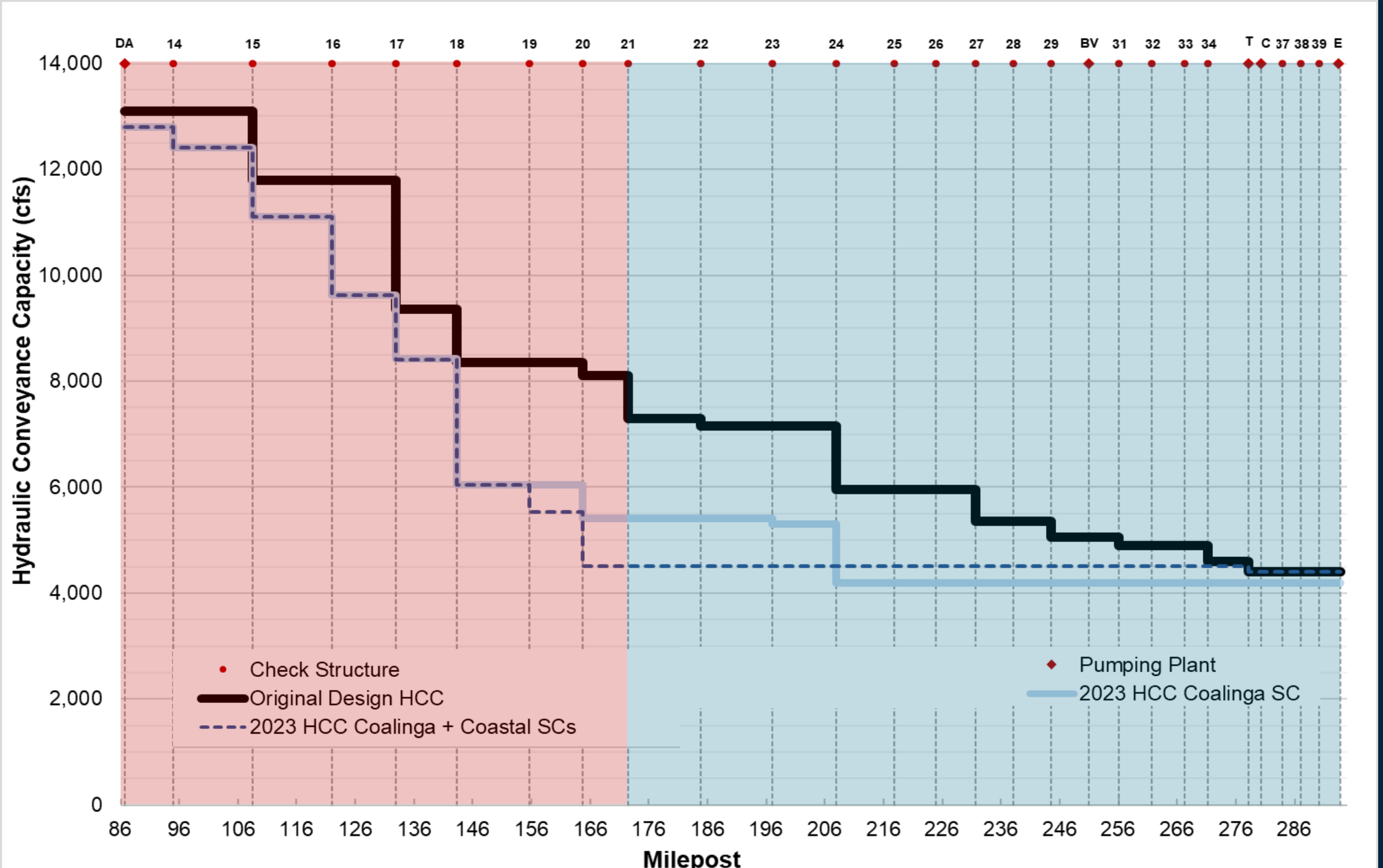


2023 HCC w/ SOO

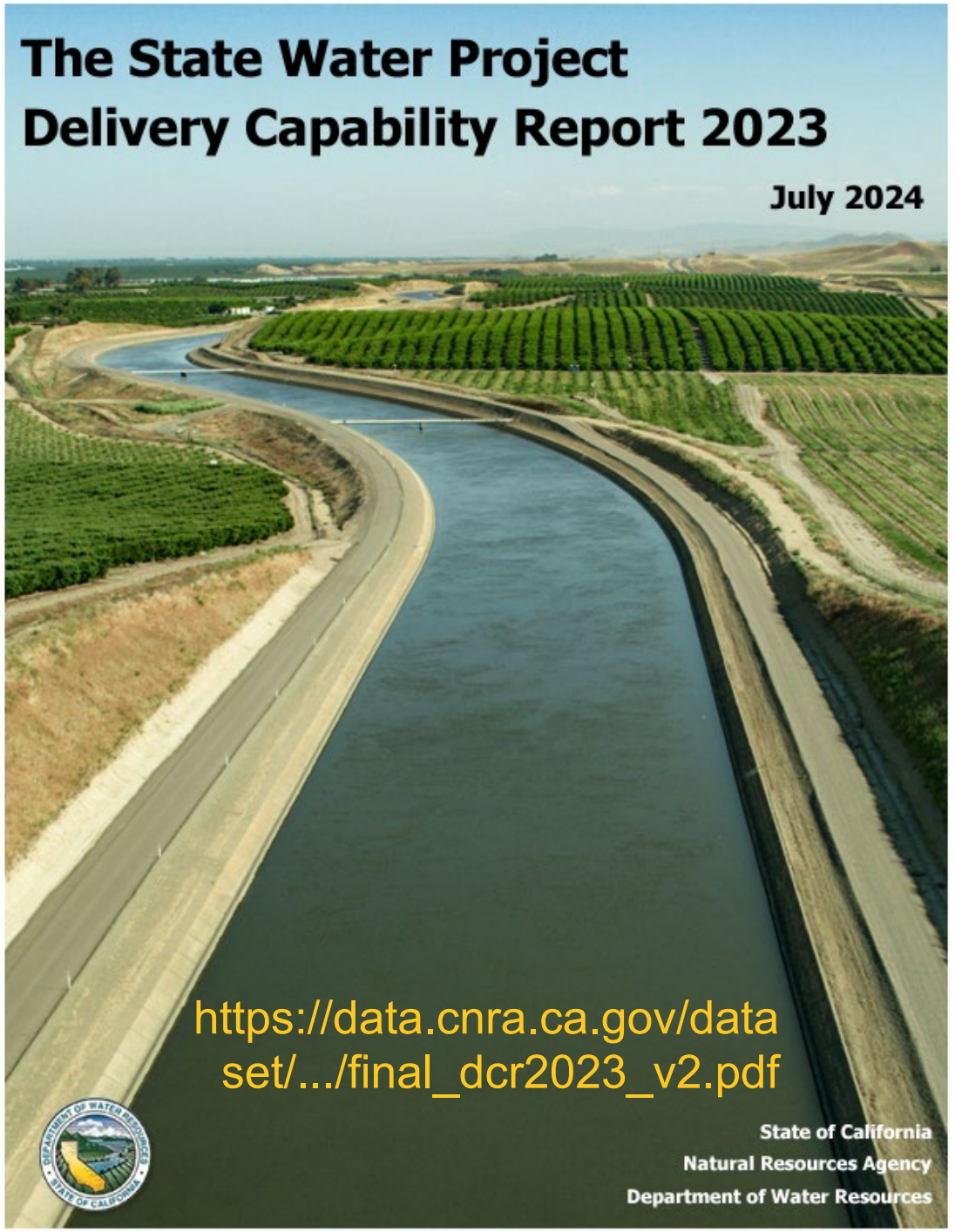


2023 HCC w/ SOO

Future Deliveries: 2023 DCR

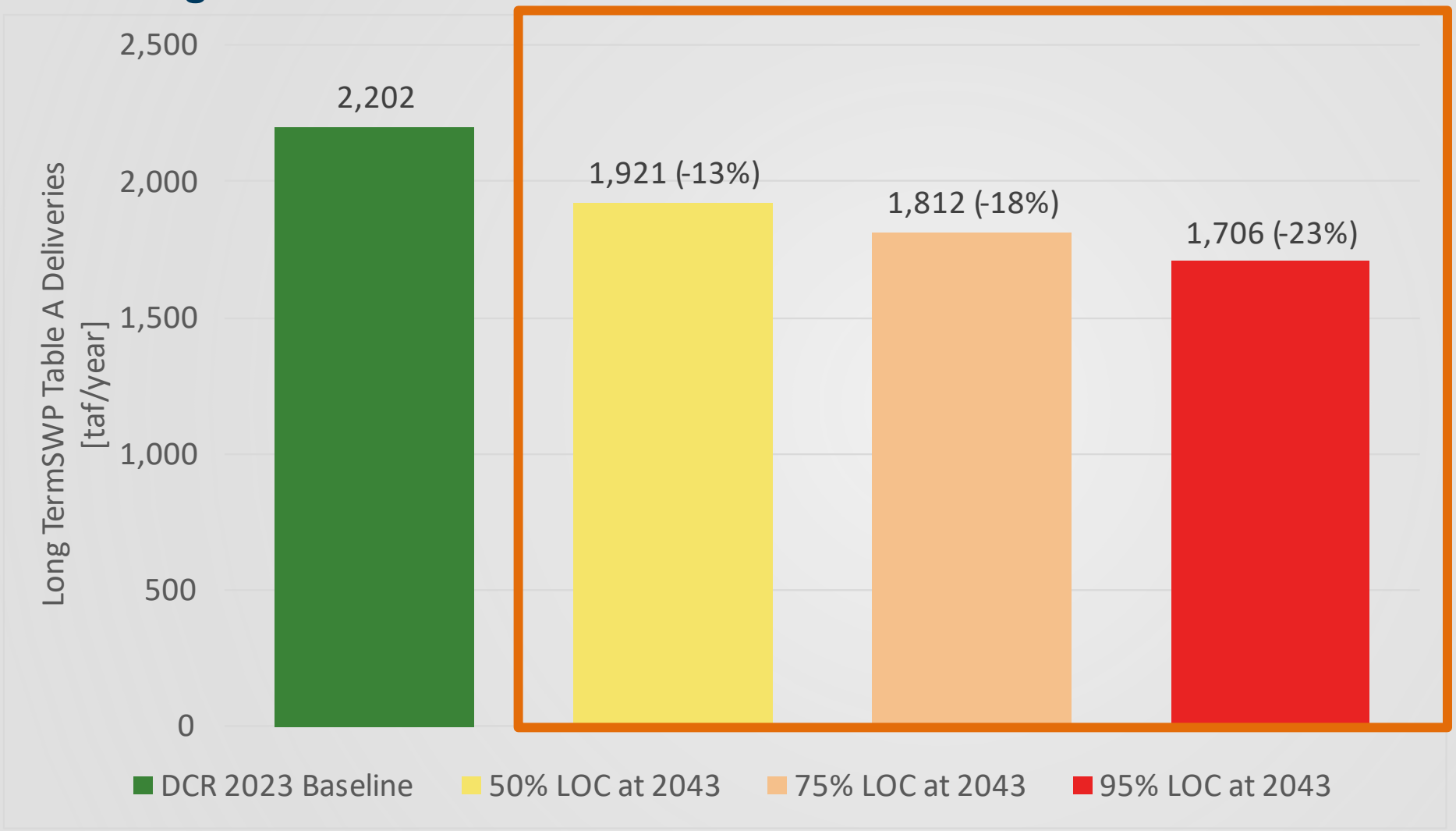
"If actions are not taken to address the water delivery challenges faced by the SWP, the 2023 DCR forecasts substantial reductions in SWP delivery capability and reliability. These reductions are driven by the impacts of **climate change** and **constraints within the federal and State Permits** needed to protect critical species.

…underscore the need for investments in the SWP in order to maintain its historical delivery capability and reliability."



DCR 2023 Main Report

Average Annual SWP Table A Deliveries



Climate change with NO adaptation likely to decrease average long-term deliveries by 13-23%

CALIFORNIA DEPARTMENT OF WATER RESOURCES

Future Conditions: Dealing w/ Uncertainties

Probabilistic Subsidence Forecast Model

The output from the Probabilistic Subsidence Forecast model provides the distribution of forecasted subsidence magnitudes, rendered as profiles of elevation along the Aqueduct, for any year of interest through the SWP/CASP planning horizon (2085).

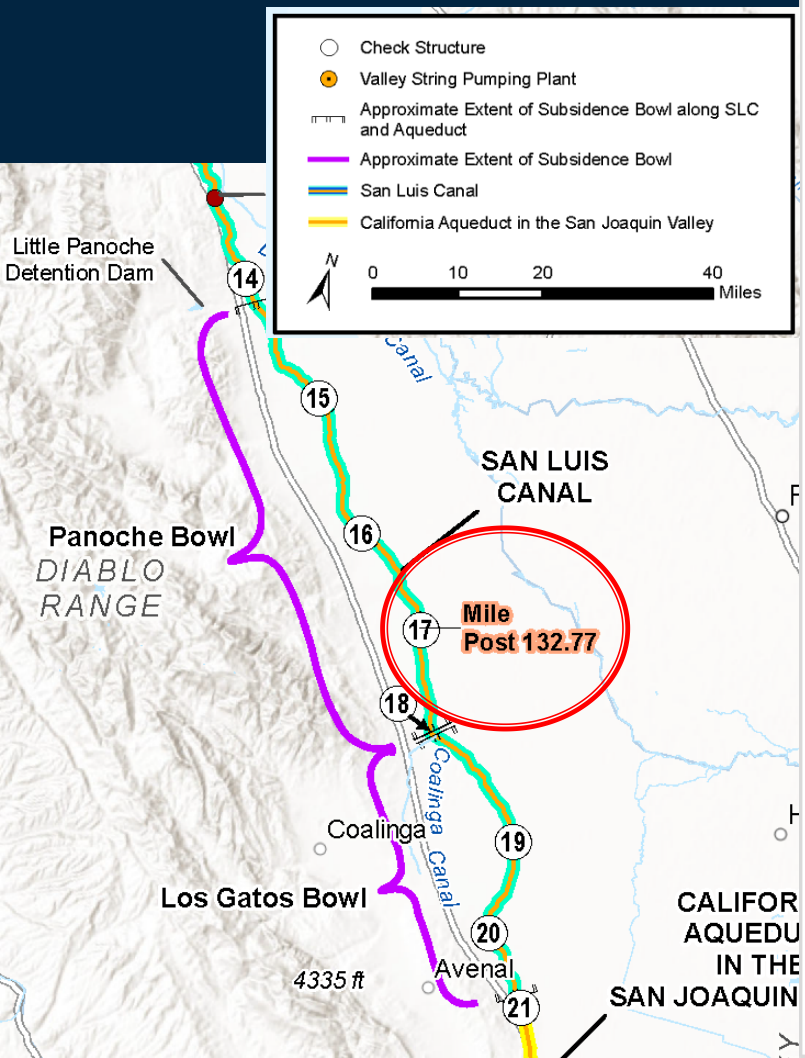
State of California
California Natural Resources Agency
DEPARTMENT OF WATER RESOURCES

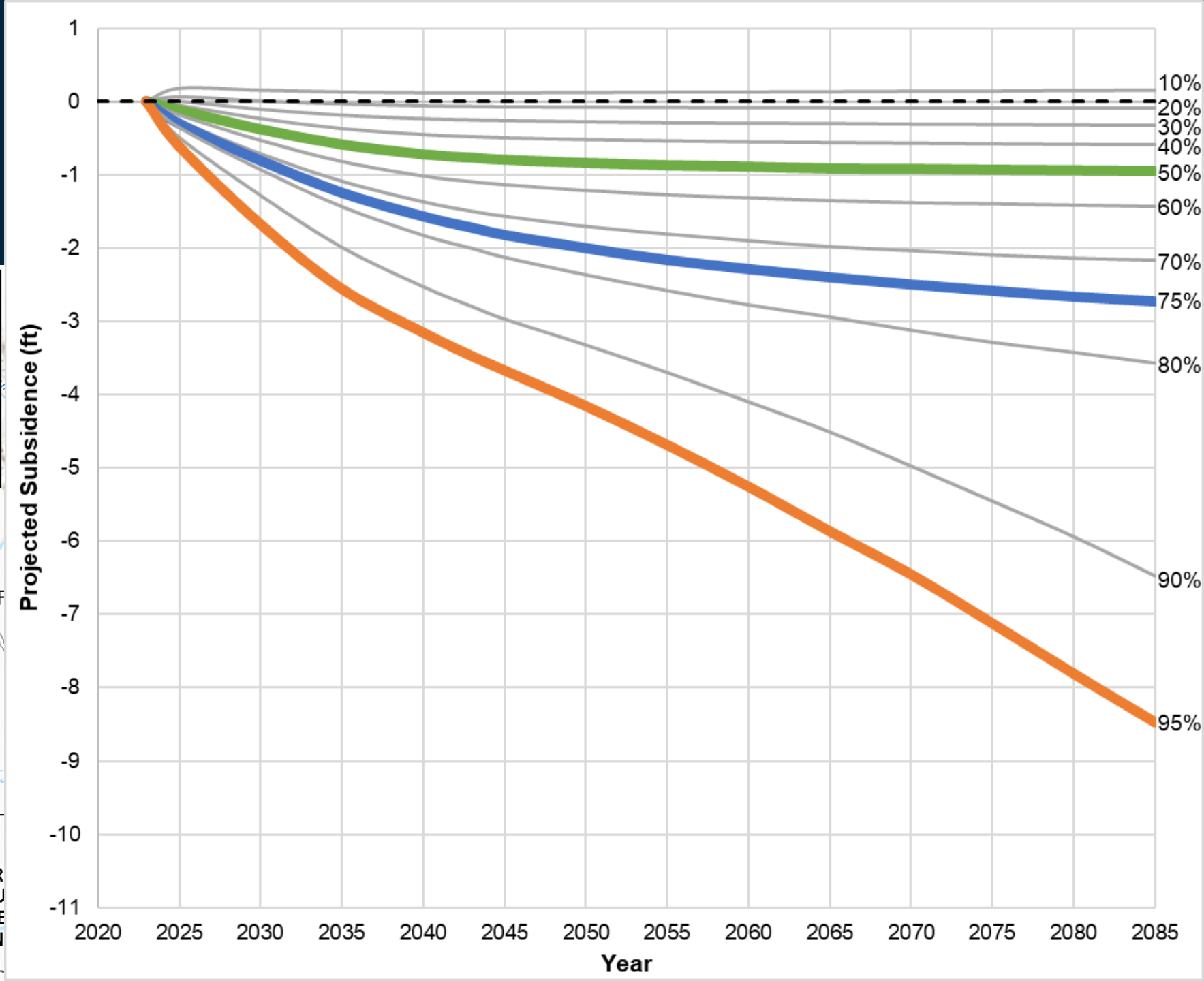
PROBABILISTIC SUBSIDENCE FORECAST MODEL FOR THE CALIFORNIA AQUEDUCT SUBSIDENCE PROGRAM, SAN JOAQUIN VALLEY, CALIFORNIA: REVISION 1

October 4, 2024

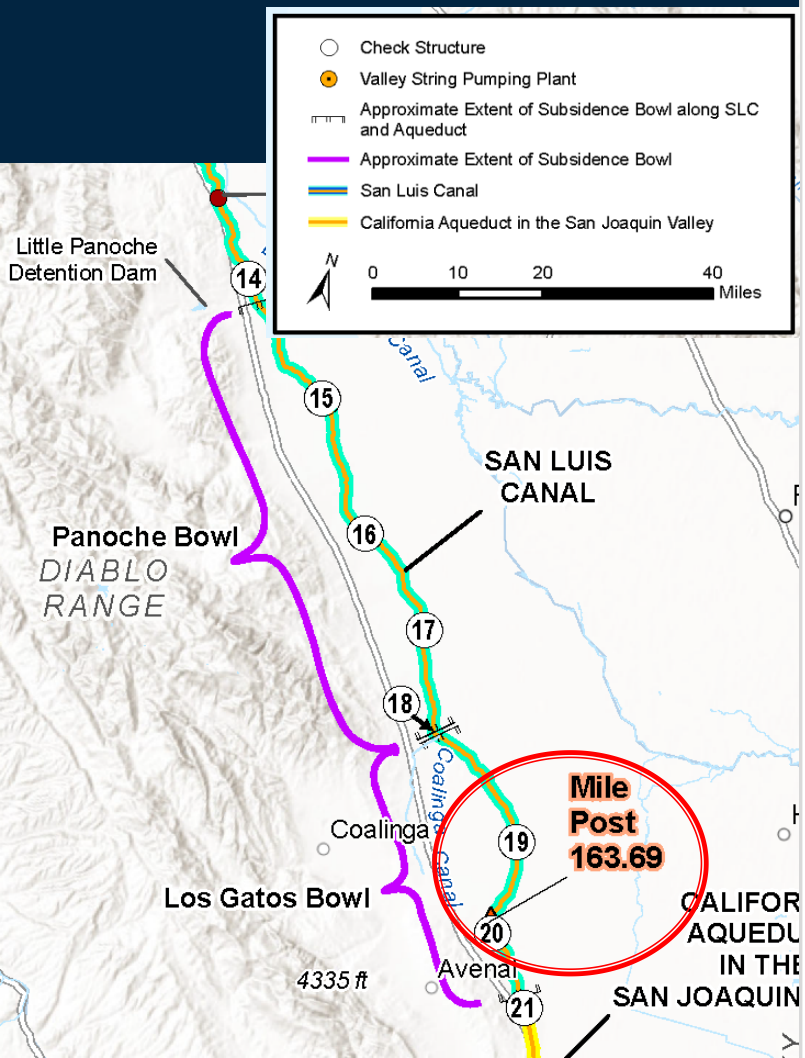
https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence

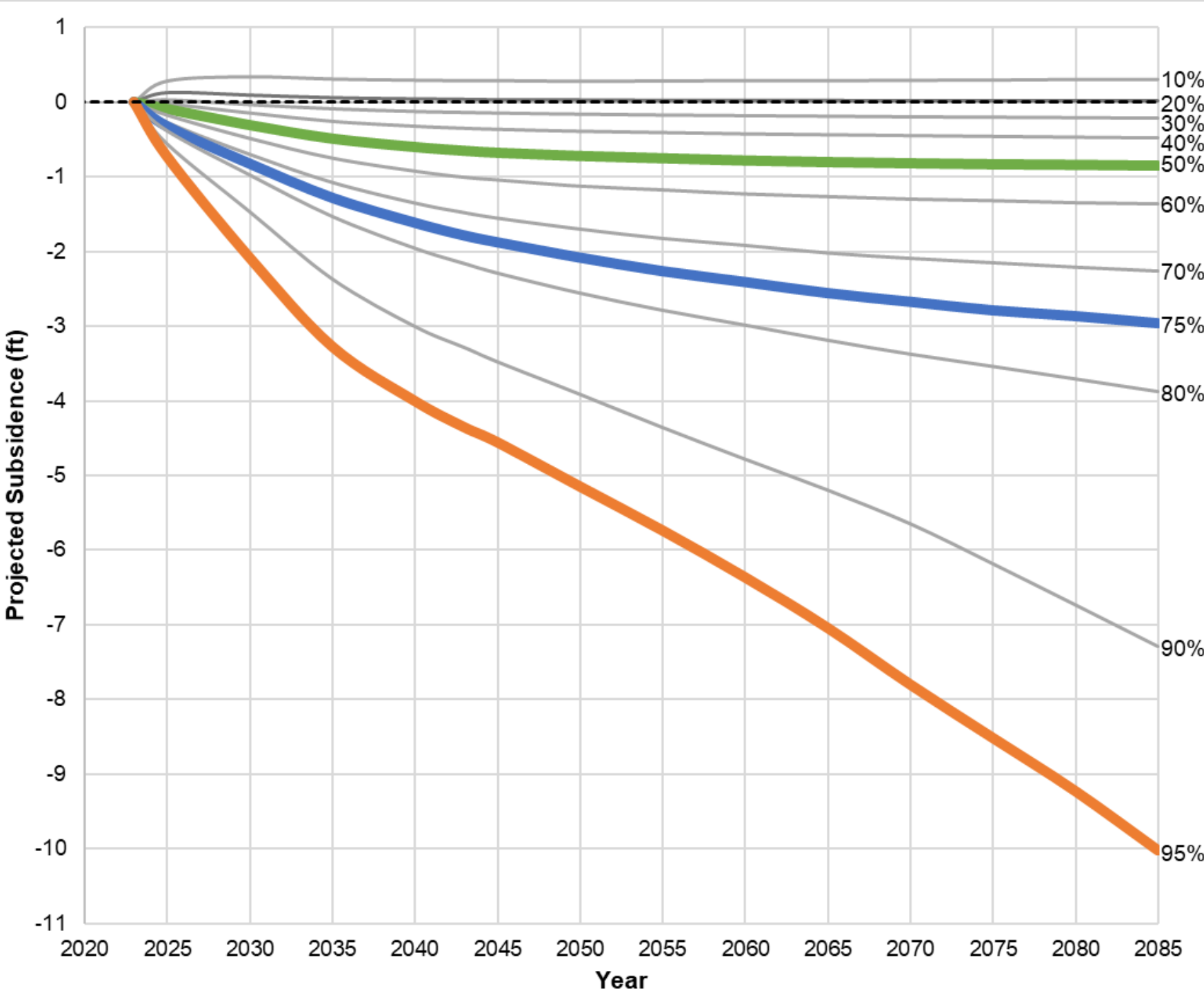
SFM Projections:
MP 132.77
(~Chk. 17)



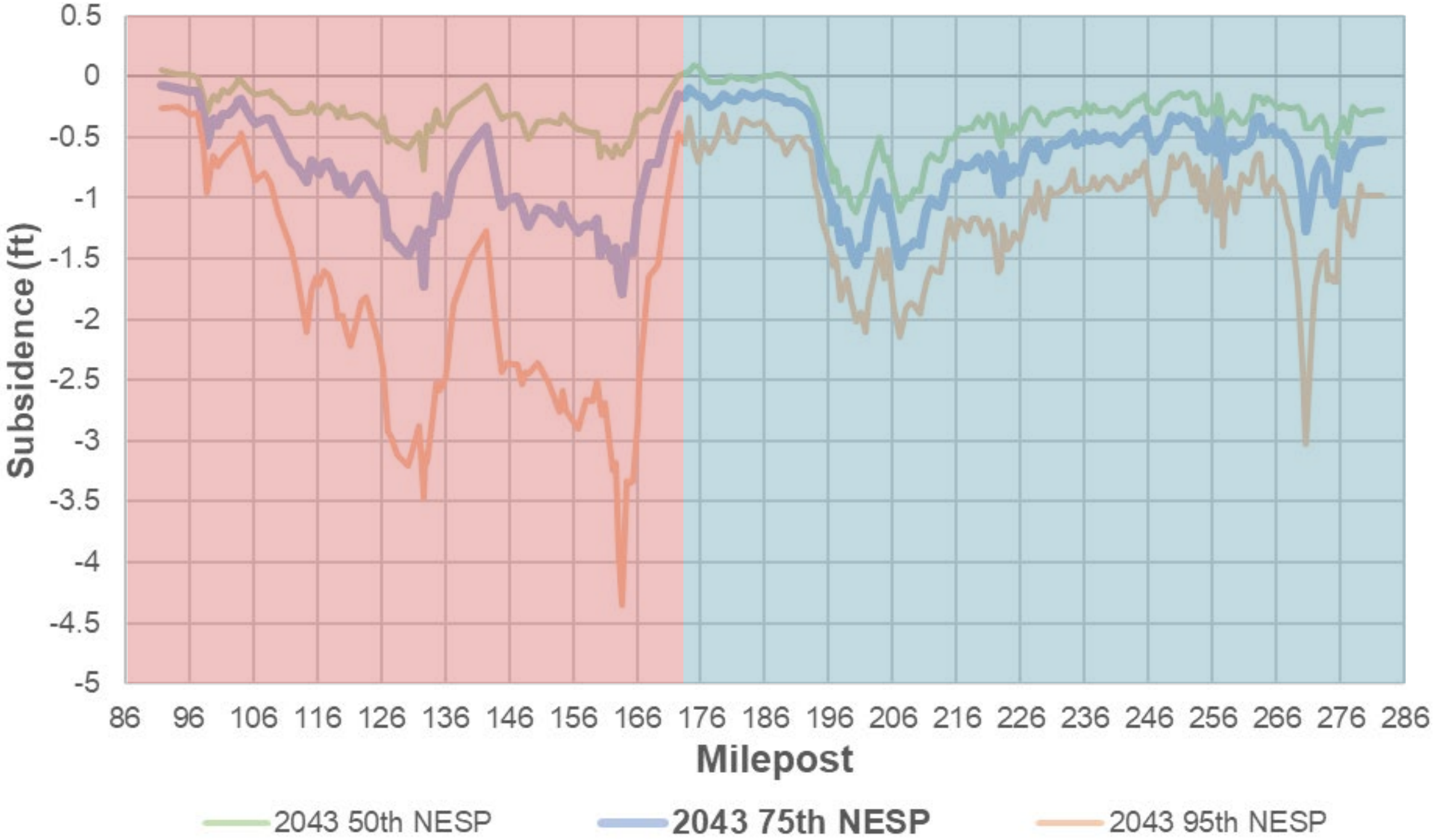


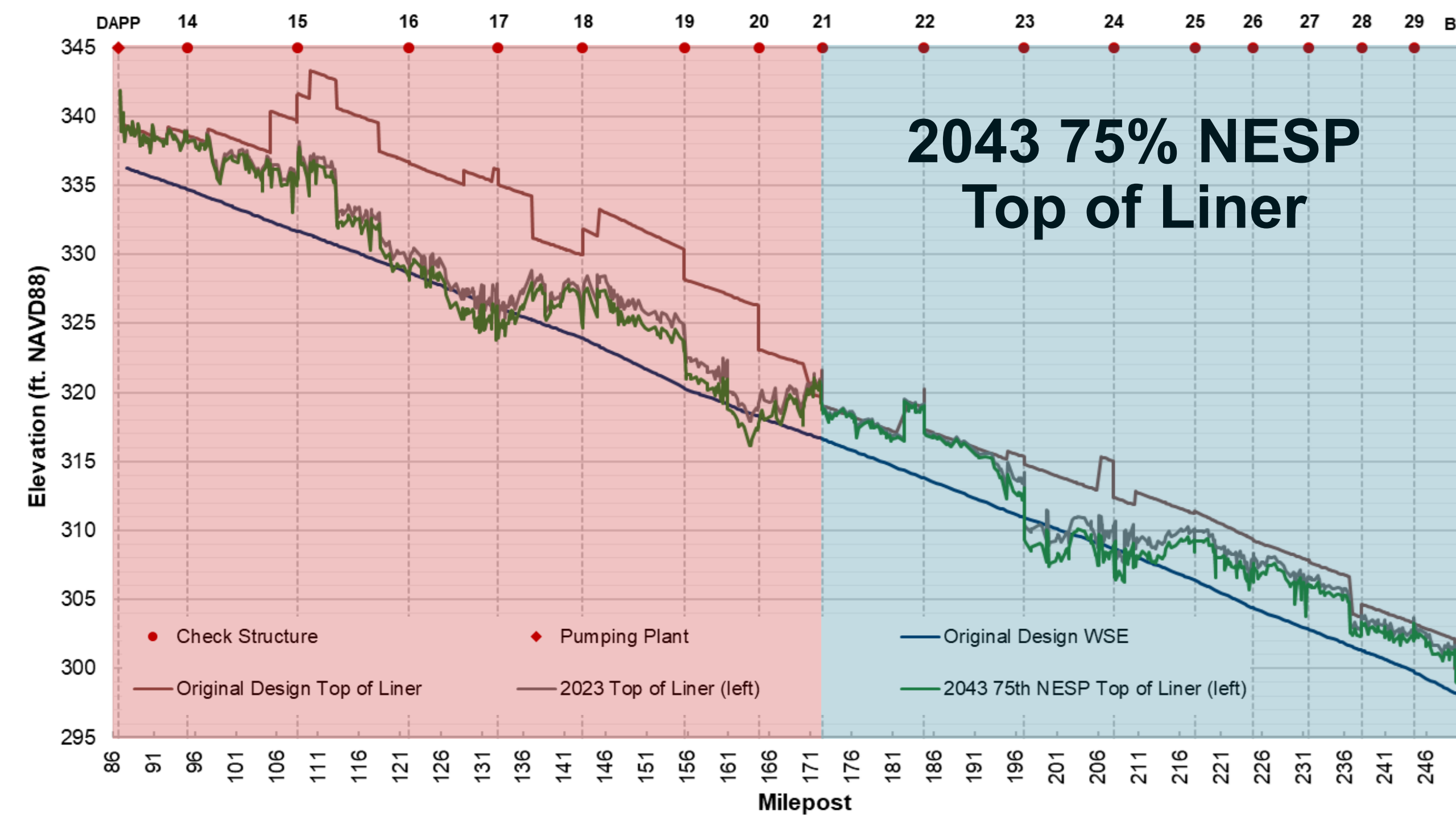
SFM Projections:
MP 163.69
(Pool 20)





SFM Projections: 2043 Additional Subsidence Profile

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Elevation (ft. NAVD88)
2043 75% NESP
Top of Liner
Check Structure
Pumping Plant
Original Design WSE
Original Design Top of Liner
2023 Top of Liner (left)
2043 75th NESP Top of Liner (left)
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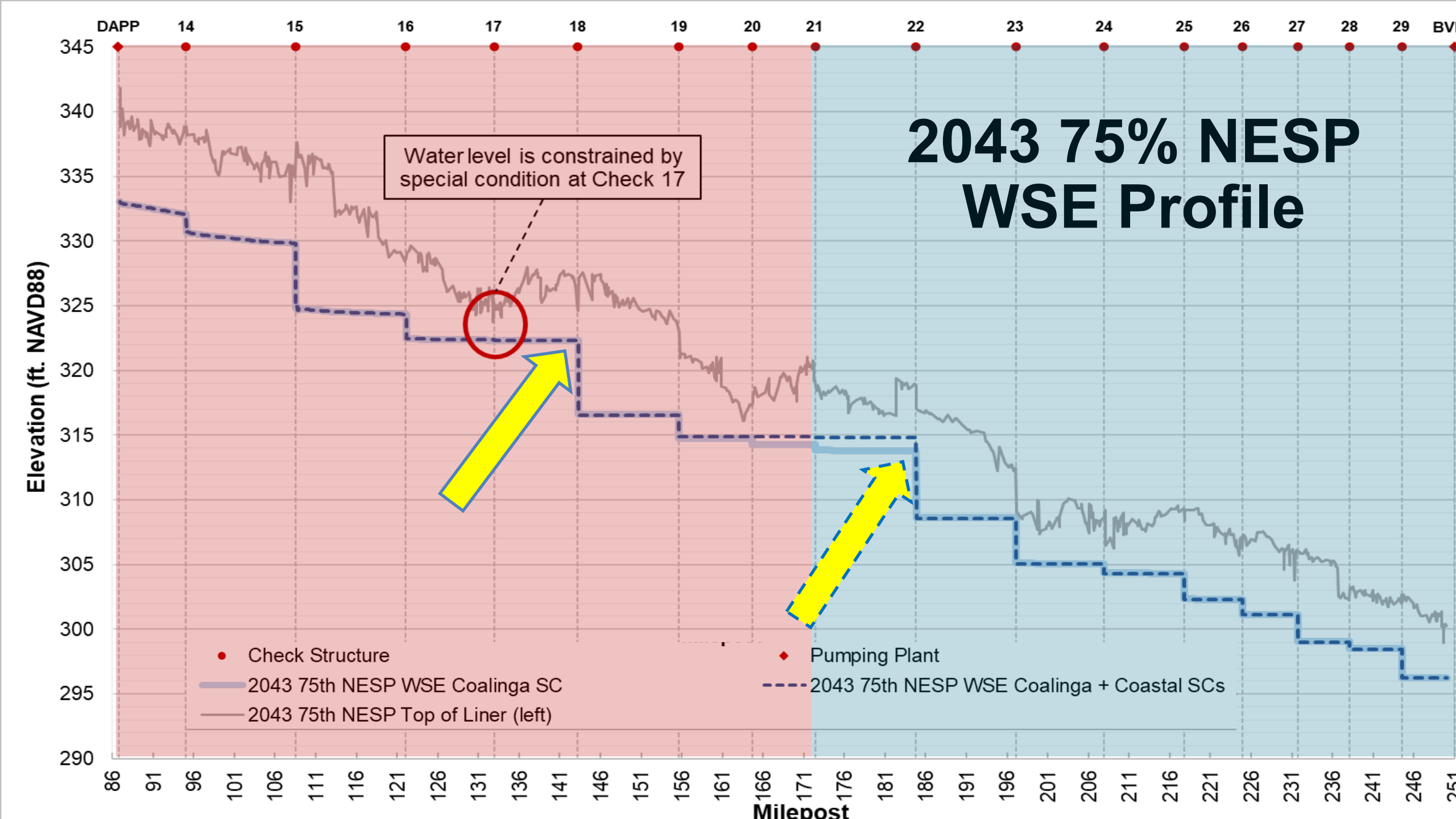
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290
Elevation (ft. NAVD88)
Water level is constrained by special condition at Check 17
2043 75% NESP WSE Profile
Check Structure
Pumping Plant
2043 75th NESP WSE Coalinga SC
2043 75th NESP WSE Coalinga + Coastal SCs
2043 75th NESP Top of Liner (left)
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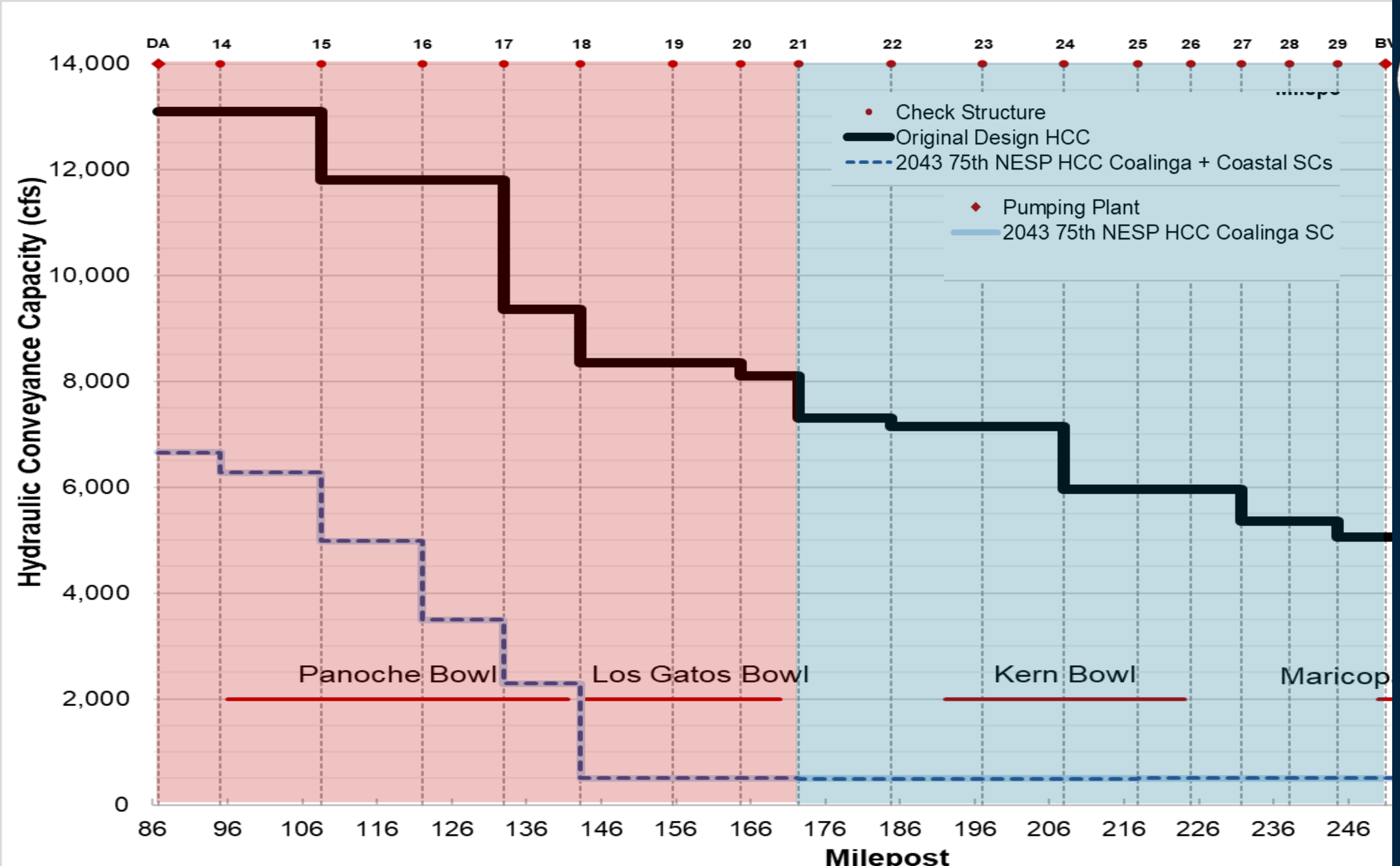
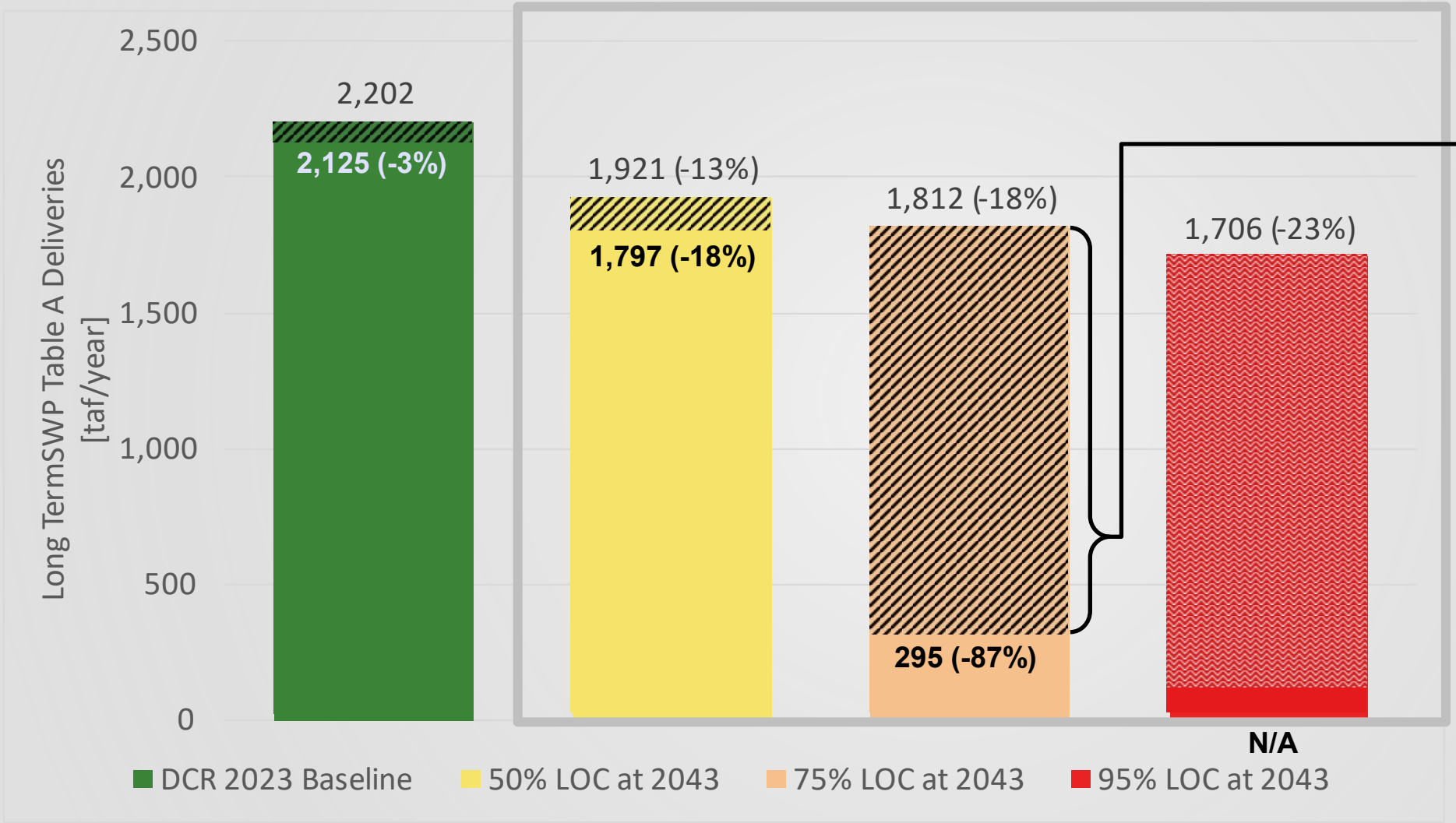


2043
75% NESP HCC w/ SOO

DCR 2023 Impacts with Subsidence

Average Annual SWP Table A Deliveries



Reductions due to subsidence.

Note: the 95% LOC Scenario could not be simulated due to operational infeasibilities in the Hydraulic Model.

The scenario is discussed qualitatively in the Addendum.

Some deliveries would still occur, but the total volume of those are small, around 140 taf/year, mostly from the North and South Bay Aqueducts.

CALIFORNIA DEPARTMENT OF WATER RESOURCES

All percentages are relative to DCR 2023 Baseline (2,202 taf/year)

What is CASP/SWP doing on SLC?

Actions to Stop/Minimize Harmful Subsidence (2024-2025)

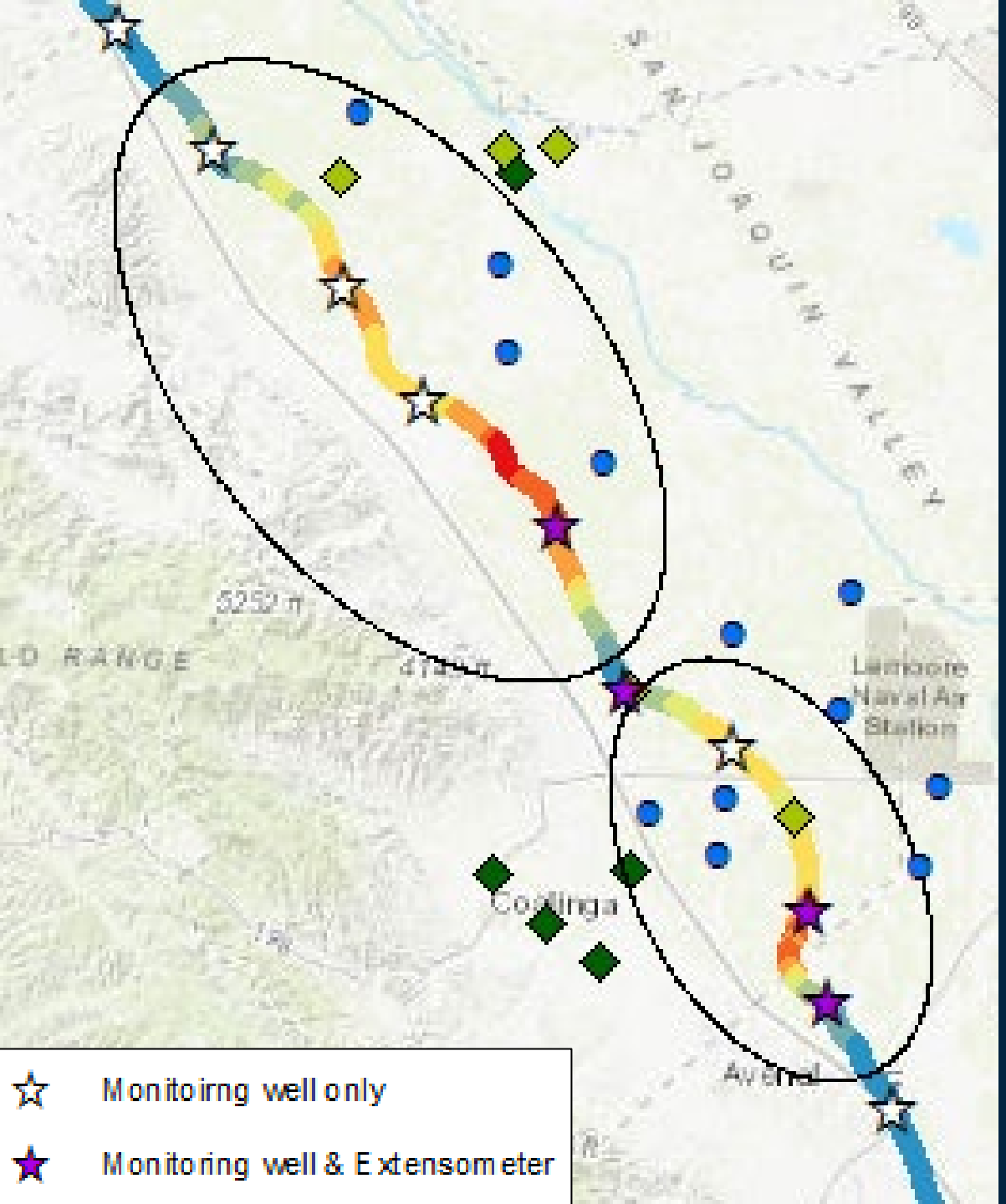
a. Installation of two continuous GPS stations (MP 143.4 and MP 160.5)

b. GSA technical and policy level meetings and data sharing

- Letters to 3 GSAs with survey information
- Public comment letters to GSA's on GSP and Annual Reports

c. SGMO/SWRCB – public comments and letters

d. Upcoming - Westlands GSP update – review and comment



CASP 2023-25 Monitoring Project Sites (San Luis Canal)

CASP has proposed 9 subsidence monitoring sites. Each site will consist of:

- Groundwater monitoring wells

- Continuous GPS (CGPS) & Weather Station

- 4 of the sites will also monitor ground compaction (extensometer)

Necessity of SLC "Interim Actions"

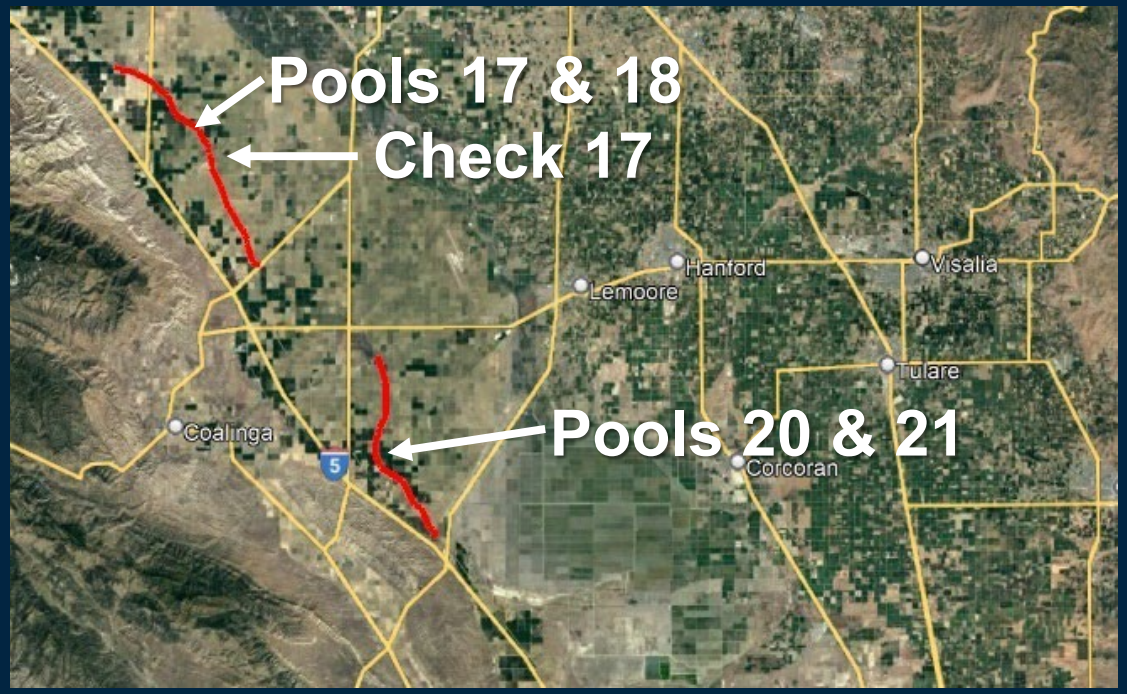
- Under the existing Standing Operating Order (SOO), predicted future subsidence will result in substantial additional water delivery impacts **before** long-term solutions can be implemented.

- The objective of "Interim Actions" is to ***reduce impact of subsidence on water deliveries and flexibility prior to implementation of long-term solutions:***

  Focused on non-structural and structural actions that can be implemented quickly without regrettable effects on the long-term solutions while:

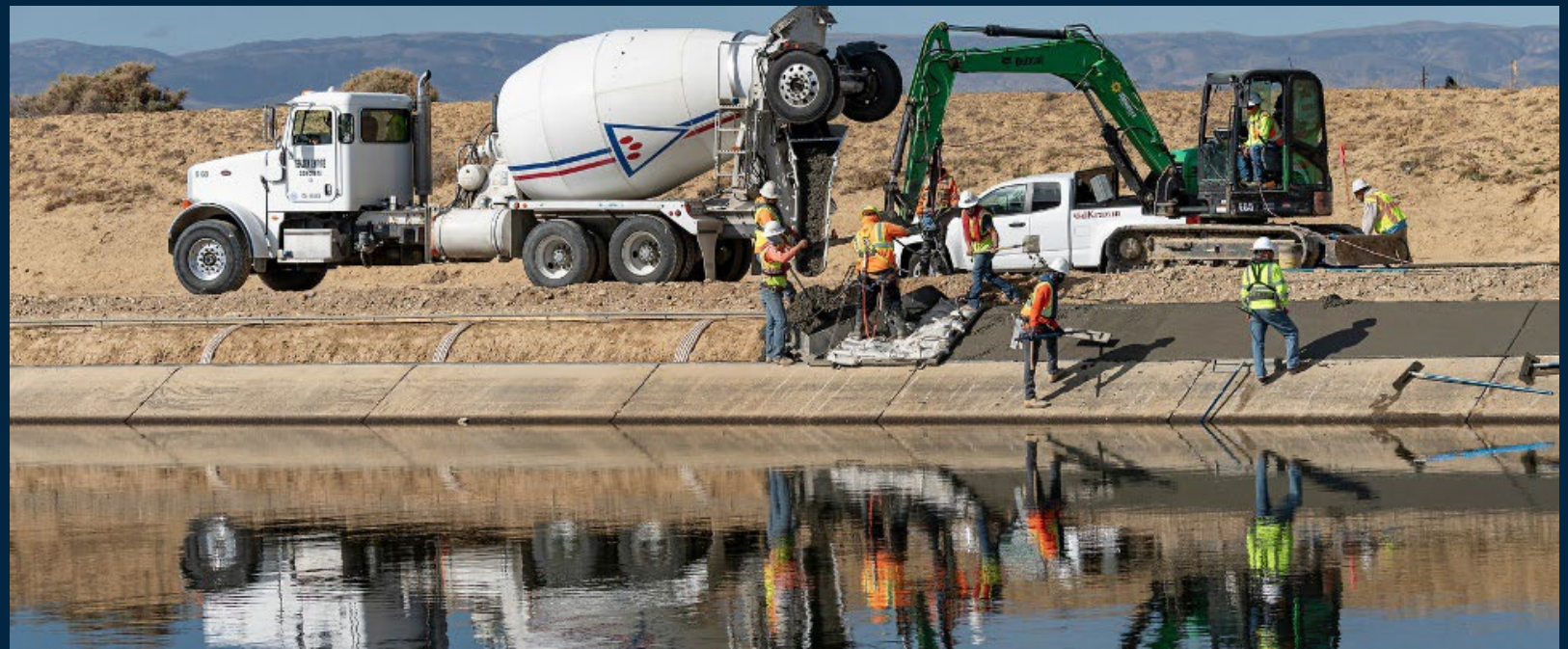
  - Defining individual projects as those actions which provide independent utility

“Interim Action” Projects (San Luis Canal)

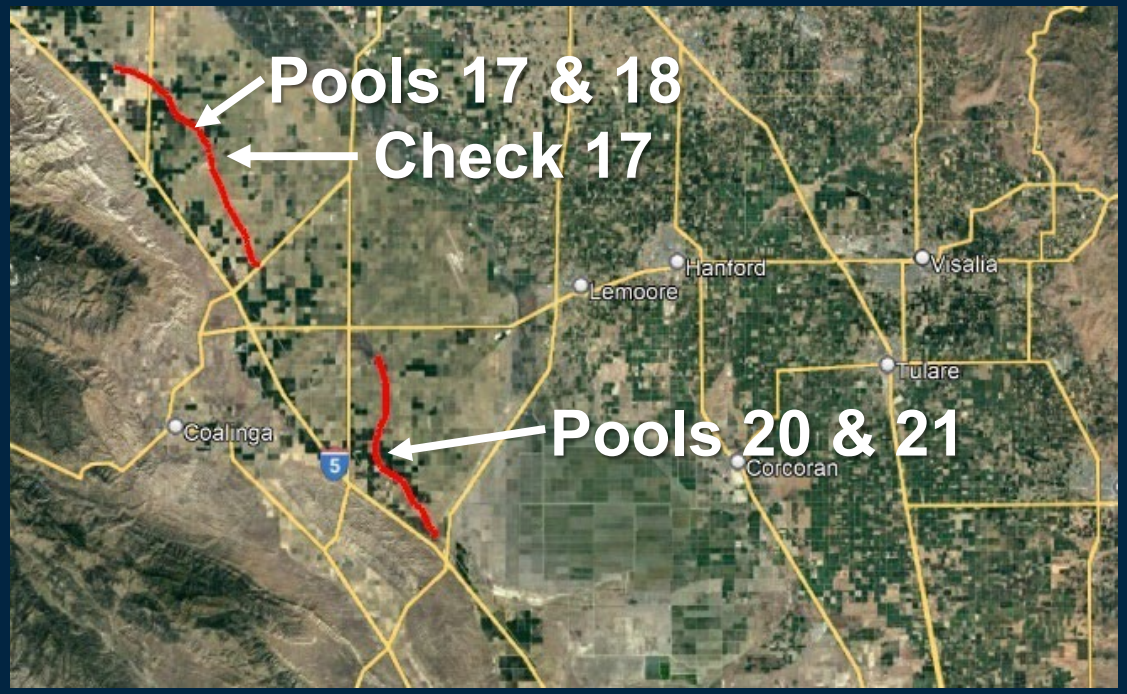


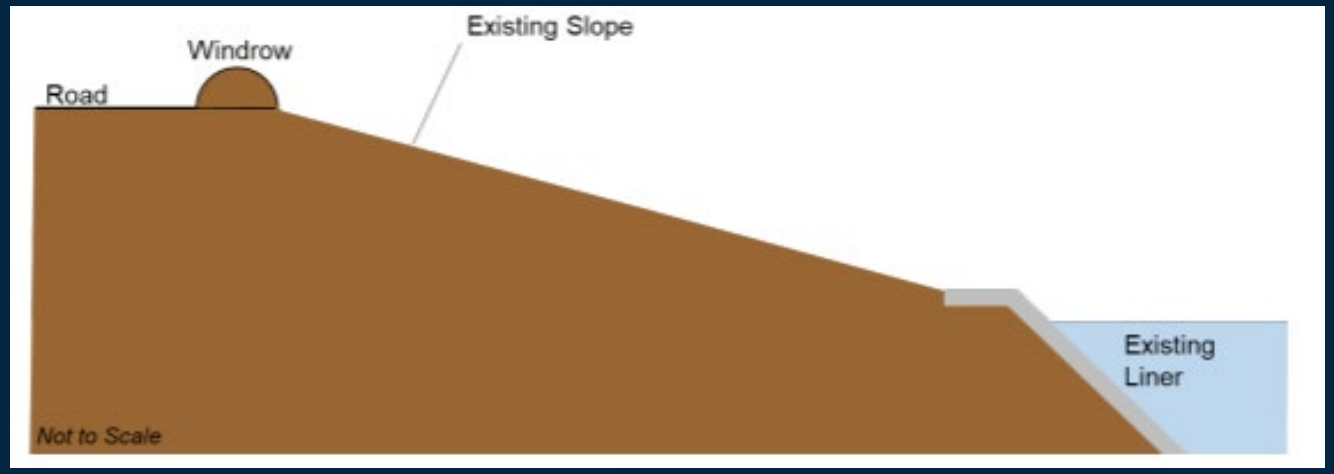
The “Interim Action” Projects include approximately 27 miles of liner raises in:

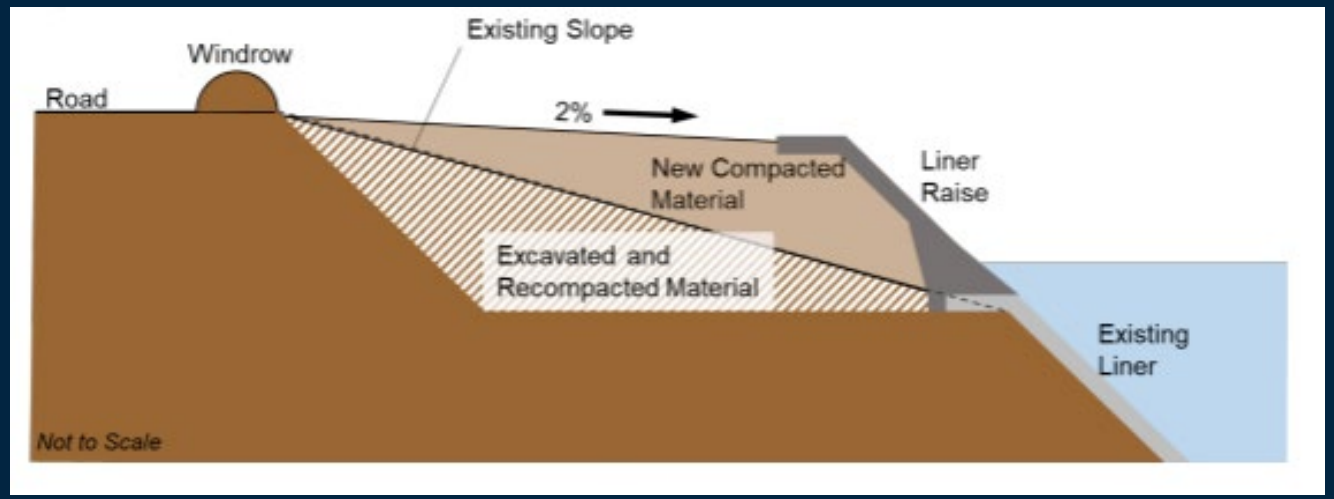
- Pools 17 & 18 (~9 mi)
- Pools 20 & 21 (~18 mi)
- The removal of the gates at Check 17



"Interim Action" Projects (San Luis Canal)



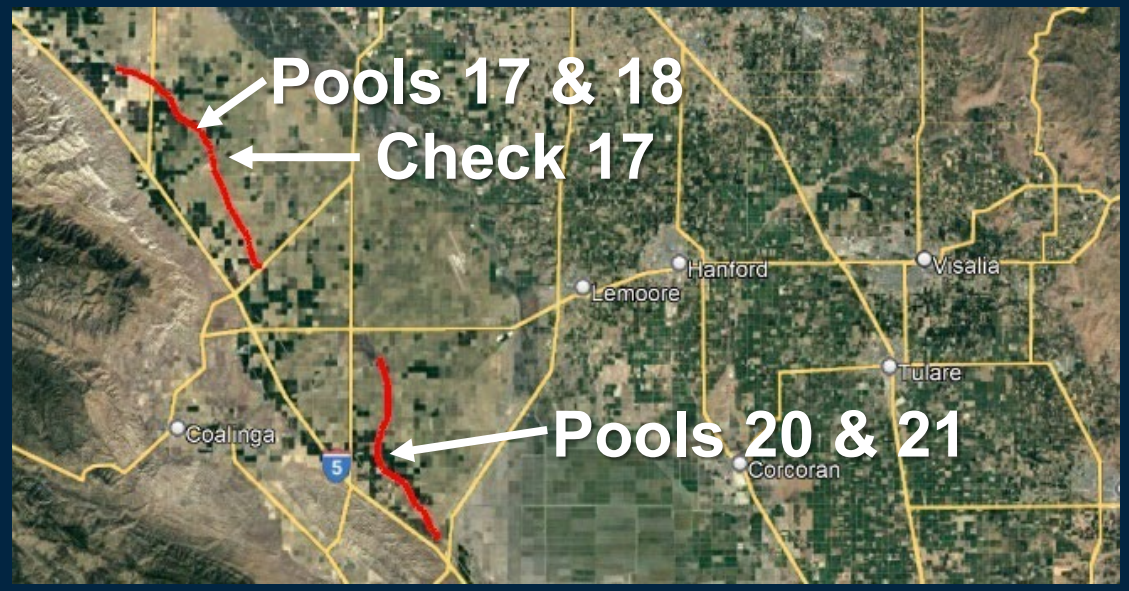




Estimated Budget:

- Pools 17 & 18 = $11.3M
- Pools 20 & 21 = $19.8M
- Check 17 = $1.2M

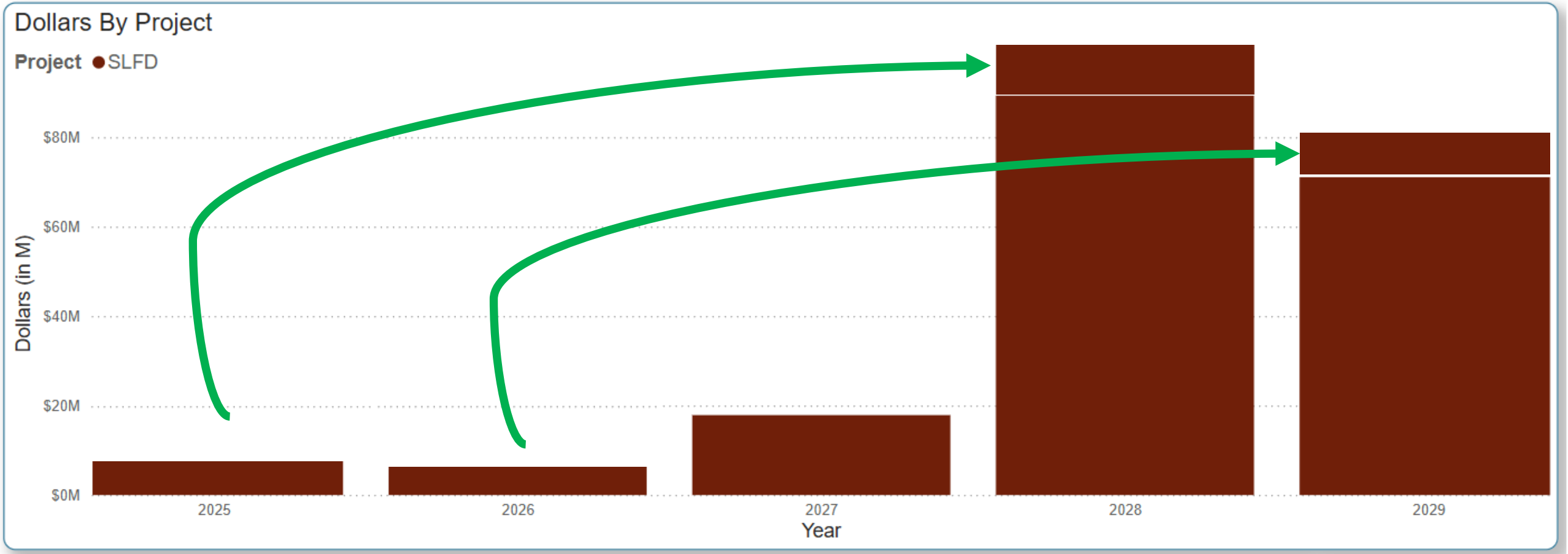
“Interim Action” Projects (San Luis Canal)



Design, permitting, and coordination efforts for “interim action” projects is on-going.

- **Check 17 Gate Removal** - Plan is that the project work to be issued as an MD to the existing DWR radial gate refurbishment contract (Spec. 20-03). Construction was scheduled to begin in May 2025.
- **Pools 17-18 Liner Raise** - 95% review expected in January 2025. Construction was expected to start in July 2025.
- **Pools 20-21 Liner Raise** - 95% review expected in January 2025. Construction was expected to start in May 2025.

CASP 5-yr Budget SLC:



Category	2025	2026	2027	2028	2029
Interim Actions	$250,000	$1,082,422	$16,010,080	$13,189,421	
Monitor	$1,064,375	$2,930,276	$13,207,818	$19,467,706	$3,140,496
Program	$3,300,047	$2,240,520	$2,054,596	$2,089,481	$2,089,623
Remediation	$3,550,910	$1,719,199	$2,612,967	$67,746,475	$65,840,000
Total	**$8,165,332**	**$7,972,417**	**$33,885,461**	**$102,493,083**	**$71,070,119**

What is CASP/SWP doing on SLC?

Long-Term Approach to Address Subsidence Impacts

a. Planning Study / Alternatives Analysis (XMJ)
b. Restoration of Original Operating Criteria – freeboard and WSE profile
c. Restoration of Original Design Capacity - starting place for planning
    i. Congressional Limits on Reclamation's authority for San Luis Canal
    ii. Hotter-dryer Future – necessity to take "bigger gulps" and move it

Opportunity for Participation: Alternatives Formulation Workshops → Q2 2025

- Includes Consequence of No Action (CoNA) Overview – "Problem Definition"
- Currently four "themes" for long-term solutions:
    1) Reconstruct – "raise it"
    2) By-pass subsided conveyance areas
    3) Adapt – "change the water surface profile"
    4) Incorporate in-line pumping plants

What is CASP/SWP doing?

Funding the Long-Term Solution

a. State General funding ($52M) supported work to date
   - Future opportunities for SGF ← SWP economics report/ benefits report

b. Grants – SLC monitoring instrumentation paid for by SGMO grant
   - Limited availability → exploration of transportation grants for bridge replacements

c. Partnership – Joint Use Facilities Agreement
   - SWP & CVP (Reclamation/SLDMWA/CVP Contractors) – XMJ / beneficiary pays cost allocation

d. Pursuit of new program for Long-Term non-reimbursable funding – without the assurance of sustainable conditions outside funding seems unlikely to materialize

e. Pursuit of cost recovery for damages

Questions / Additional Discussion