

SITES RESERVOIR PROJECT -CALIFORNIA

<u>Group 15:</u>

Caroline Afonso, 63989 Alex Eriksson, 65660 Sara Ricklander, 64084 Marta Ricchi, 67713 Cecilia Serafino, 69712







- Socio-Economic Impact



PROJECT OVERVIEW

"Affordable and sustainably managed water for California's farms, cities and environment for generations to come": vision or illusion?





America's 8th biggest water reservoir, 1.5 million acre-feet large (=

Located in Sacramento Valley, California

Beginning in 2026, operational by 2032

Managed by the joint authority Sites Project Authority

Purpose: store water to ensure supply during drier periods, manage



IMPACT ON AIR

GHG Overview

Estimate:

• 362,000 metric tons of CO2 annually (equivalent to energy consumption of 45,679 homes)

Sources:

- Methane (CH4) from submerged organic material
- Carbon dioxide (CO2) from decaying vegetation.

Lifecycle

Construction:

• CO2 and Methane from vegetation decay; PM & ozone precursors

Operational:

Emissions from pumping; decreasing with renewables; 60% by 2030

Maintenance:

Emissions from vehicles, equipment, etc. •





Targets

Net-zero:

• Over the full project lifecycle, aim to achieve a net-zero emission target

Prioritization:

- Onsite > offsite > carbon credits
- Project's footprint > nearby communities • > Sacramento Valley Air Basin > California > U.S.



IMPACT ON EARTH

Primarily impacted counties: Colusa, Glenn, and Yolo

CONSTRUCTION PHASE

Land Use & Displacement

- Demolition of Structures
- Relocation of Residents
- Relocation of Cemeteries

Geological Impacts:

- Seismic Hazards
- Bear Fault Valley (6.8 Magnitude)
- Slope Instability
- Problematic Soil Conditions

Mitigation Strategy:

- Advanced Seismic Design Standards & Slope Stability
- Bridge construction to avoid physical division of communities



PHASE

Longterm Oversight Needed

- Slopes Destabilizing
- Road grading, vegetation trimming, excavation

Mitigation Strategy:

 Continuous Geotechnical Monitoring & Vegetation Restoration





Ongoing Geological Risks

- Seismic Activity
- Slope Instability
- Soil Expansion/Contraction

Mitigation Strategy:

• Scheduled Inspections (soil behavior)



IMPACT ON WATER



SURFACE HYDROLOGY

- No impact on water availability for other users
- No reduction in existing water supplies
- Direct flood control benefits in operational phase

WATER QUALITY

- Increase of mercury and methylmercury concentrations possibly causing health effects
- Risk of nutrient enrichment and bioaccumulation: development of harmful algal blooms (HABs), algae and invasive aquatic vegetation
- Risk of sediment and other pollutants release

- Mitigation Measures WQ-2.1 and WQ-2.2 to prevent effects of metals and pesticides
- Post-construction erosion control measures and Best Management Practices (BMP-11 to BMP-15)
- Reservoir Management Plan (RMP): continuous monitoring of key indicators



RECOMMENDED **MITIGATION STRATEGIES**

Mitigation Measure WQ-1.1 to prevent methylmercury generation and HABs development



SOCIOECONOMIC IMPACT

The Sites Reservoir project will have a range of socioeconomic impacts, including effects on employment, public health, and essential services



place additional pressure on

emergency services



MITIGATION

Implement long-term vector control and public health education

Enhance coordination with local emergency services, including seasonal staffing and mobile units



CONCLUSION



 AIR IMPACTS WILL BE MITIGATED THROUGH THE PROJECT'S CARBON NEUTRALITY GOALS: ON-SITE AND OFF-SITE STRATEGIES AND USE OF CARBON CREDITS



 SIGNIFICANT RISKS REMAIN TO GEOLOGICAL STABILITY AND SOIL INTEGRITY, PARTICULARLY DUE TO SEISMIC HAZARDS, EROSION, AND URBAN CONFLICTS



 UNAVOIDABLE NEGATIVE IMPACTS ON WATER MUST BE MONITORED CONTINUOUSLY



 DESPITE SOCIOECONOMIC BENEFITS, EQUITY CHALLENGES, LAND USE CONFLICTS, AND PUBLIC HEALTH RISKS COUNTERBALANCE THE ULTIMATE IMPACT The project carries
 significant direct and
 indirect, positive and
 negative impacts, making
 effective mitigation
 measures essential

 Development of recommendations and practical tools application are necessary for Sites Reservoir to become a community-benefiting, biodiversity-respecting, and socio-economically responsible project that delivers lasting value



THANK YOU FOR YOUR ATTENTION

We are happy to answer any questions you may have!







REFERENCES

About us. (n.d.-b). Sierra Club. https://www.sierraclub.org/california/about-us

California Department of Conservation. (2020). *Paleontological resource guidelines*. https://www.conservation.ca.gov/

California Department of Water Resources. (2020). Groundwater and hydrology reports. https://water.ca.gov/

California Geological Survey. (2020). Fault evaluation reports. https://www.conservation.ca.gov/cgs/

California's Water Supply Strategy: Adapting to a hotter, drier future - California Water Library. (n.d.). California's Water Supply Strategy: Adapting to a Hotter, Drier Future

California Water Commission advances two environmentally destructive water projects. (n.d.). Sierra Club. https://www.sierraclub.org/san-francisco-bay/blog/2022/02/california-watercommission-advances-two-environmentally-destructive

Downs, B. (2023b, November 19). Sites Project Authority certifies Sites Reservoir's final environmental report. CBS News. https://www.cbsnews.com/sacramento/news/sites-projectauthority-certifies-sites-reservoirs-final-environmental-report/

Environmental Protection Agency. (2021). Soil erosion and sediment control. https://www.epa.gov/

Federal Emergency Management Agency. (2021). *Guidelines for seismic design.* https://www.fema.gov/

Natural Resources Conservation Service. (2019). Soil survey manual. https://www.nrcs.usda.gov/

Sites Project Authority. (2021). Final environmental impact report/environmental impact statement (EIR/EIS). https://sitesproject.org/

U.S. Geological Survey. (2020). Engineering behavior of expansive soils. <u>https://www.usgs.gov/</u>

Friends of the River. (2023). Sites Reservoir Project Emissions Report. https://www.friendsoftheriver.org/wp-content/uploads/2023/08/Sites-Reservoir-Project-Emissions-Report.pdf





REFERENCES

Rogers, P. (2024c, June 20). Sites Reservoir: Environmental groups file appeal to try to stop California's largest new reservoir project in 50 years. The Mercury News. https://www.mercurynews.com/2024/06/18/sites-reservoir-environmental-groups-file-appeal-to-try-and-stop-californias-largest-new-reservoir-project-in-50-years/

Sites Project Authority. (2023, August 25). Sites Reservoir greenhouse gas emissions evaluation: Frequently asked questions (Version 2). https://sitesproject.org/wpcontent/uploads/2023/08/Sites Frequently-Asked-Questions-GHG-Analysis 8-25-2023v2.pdf​::contentReference[oaicite:0]{index=0}

Sites Reservoir Project. (2023). Chapter 30: Environmental Justice (Vol. 1). Sites and Socioeconomics. Reservoir Project. https://sitesreservoirproject.riptideweb.com/references/FINAL/Vol%201%20-%20Chapters/V1-035-Ch30 Env Just Socio Final 508.pdf?csf=1&web=1&e=K2a1aW

Sites Reservoir Project. (2021). Chapter 25: Population and Housing. (Vol. 1). Sites Reservoir Project. https://sitesproject.org/wp-content/uploads/2021/11/RDEIR-SDEIS-Ch25-Population-and-Housing.pdf

(2023). Public Health Project. Chapter Project. Sites Reservoir 27: Environmental Hazards. 1). Sites Reservoir and (Vol. https://sitesreservoirproject.riptideweb.com/references/FINAL/Vol%201%20-%20Chapters/V1-032-Ch27-Pub Health Env Haz Final 508.pdf?csf=1&web=1&e=LBMhpo

Sites Reservoir Project. (2023). Chapter 26: Public Services and Utilities. (Vol. 1). Sites Reservoir Project. https://sitesreservoirproject.riptideweb.com/references/FINAL/Vol%201%20-%20Chapters/V1-031-Ch26 Public Srvcs Final 508.pdf?csf=1&web=1&e=rUSzrR

Sites Reservoir Project. (2021). Chapter 14: Land Use. (Vol. 1). Sites Reservoir Project. https://sitesproject.org/wp-content/uploads/2021/11/RDEIR-SDEIS-Ch14-Land-Use.pdf

Sites Reservoir Project. (2021). Chapter 6: Surface water quality (Vol. 1) https://sitesreservoirproject.riptideweb.com/references/FINAL/Vol%201%20-%20Chapters/V1-011-Ch06 Surface H2O Qual Final 508.pdf?csf=1&web=1&e=HM0y7h

Sites Reservoir Project. (2021). Chapter 5: Surface hydrology (Vol. 1) https://sitesreservoirproject.riptideweb.com/references/FINAL/Vol%201%20-%20Chapters/V1-010-Ch05 Surface H2O Final 508.pdf?csf=1&web=1&e=sfwE4b



