From: JP Robinette [jrobinette@sitesproject.org]
Sent: 3/1/2022 7:53:46 AM
To: Cheyanne Harris [charris@brwncald.com]
Subject: Fw: Draft Informational Board Letter Regarding Sites
Attachments: 03072022 WPS 9-3 Sites Reservoir.pdf; 02222022 Bay-Delta Sites Info Brd ltr.docx

Cheyanne, thought you may find these interesting. Also, can you attach these to the MWD line in Smartsheet?

From: Jerry Brown <jbrown@sitesproject.org>
Sent: Tuesday, March 1, 2022 6:01 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>; JP Robinette <jrobinette@sitesproject.org>; Kevin Spesert <kspesert@sitesproject.org>
Cc: Marcia Kivett <MKivett@sitesproject.org>
Subject: FW: Draft Informational Board Letter Regarding Sites

FYI – Here's MWD's final staff report and presentation. They've done a good job making a strong case for Sites for them.

Marcia – please save both docs on sharepoint.

Thanks everyone for your efforts on this. Make sure to check out the photo they used for the last slide.

From: "Neudeck,Randall D" <rneudeck@mwdh2o.com>
Date: Monday, February 28, 2022 at 3:51 PM
To: Jerry Brown <jbrown@sitesproject.org>
Cc: Steve Arakawa <sarakawa@mwdh2o.com>, "Hawk,Nina E" <NHawk@mwdh2o.com>
Subject: RE: Draft Informational Board Letter Regarding Sites

Jerry – We appreciate all the help you and your staff have given us. Attached is the final Board letter and a draft of the presentation (pdf attached and ppt link). I may call you later this week about a few questions I may get asked by the Board. – Randall N

03072022 WPS 9-3 Sites Reservoir.pptx

From: Jerry Brown <jbrown@sitesproject.org>
Sent: Monday, February 28, 2022 3:30 PM
To: Neudeck,Randall D <rneudeck@mwdh2o.com>
Cc: Arakawa,Stephen N <sarakawa@mwdh2o.com>; Hawk,Nina E <NHawk@mwdh2o.com>
Subject: Re: Draft Informational Board Letter Regarding Sites

I see that you all have this item scheduled for next week's board meeting. Is there anything else we can help with?

From: "Neudeck,Randall D" <rneudeck@mwdh2o.com>
Date: Tuesday, February 8, 2022 at 10:25 PM
To: Jerry Brown <jbrown@sitesproject.org>
Cc: Steve Arakawa <sarakawa@mwdh2o.com>, "Hawk,Nina E" <NHawk@mwdh2o.com>
Subject: FW: Draft Informational Board Letter Regarding Sites

Jerry – I appreciate your help. I attached a revised version (redlined) that includes a few edits from our attorneys. I also included a few sentences summarizing the modeling study you sent us related to the question "What If we had Sites operating in 2021?"

Looking forward to your comments. - Randall

From: Jerry Brown <jbrown@sitesproject.org>
Sent: Sunday, February 6, 2022 8:21 AM
To: Neudeck,Randall D <rneudeck@mwdh2o.com>
Cc: Hawk,Nina E <NHawk@mwdh2o.com>; Arakawa,Stephen N <sarakawa@mwdh2o.com>
Subject: Re: Draft Informational Board Letter Regarding Sites

Got it, thanks and will do. Will shoot for return of comments by COB Wed 2/9.

From: "Neudeck,Randall D" <rneudeck@mwdh2o.com>
Date: Friday, February 4, 2022 at 12:49 PM
To: Jerry Brown <jbrown@sitesproject.org>
Cc: "Hawk,Nina E" <NHawk@mwdh2o.com>, Steve Arakawa <sarakawa@mwdh2o.com>
Subject: Draft Informational Board Letter Regarding Sites

Jerry – Attached is an initial draft of our informational Board letter on Sites scheduled for our March 8, 2022 Board meeting. This would be followed up the next month with an action Board letter. Please review and edit as you see fit. I am sure there are a few errors in this draft. Also, there are two sections that need a few more details:

- The section titled "Tribal, Environmental, and Local Stakeholder Outreach" -- Could Kevin Spesert add some more details about the outreach effort? … How many public meetings? How many environmental interest groups have you met with? and other key points a board would want to know; and
- The section titled "Schedule" – Are there any high-level milestones in 2023 and 2024 that a Board should be aware of? I do not want to include everything, just the high-level key milestones

-- Randall

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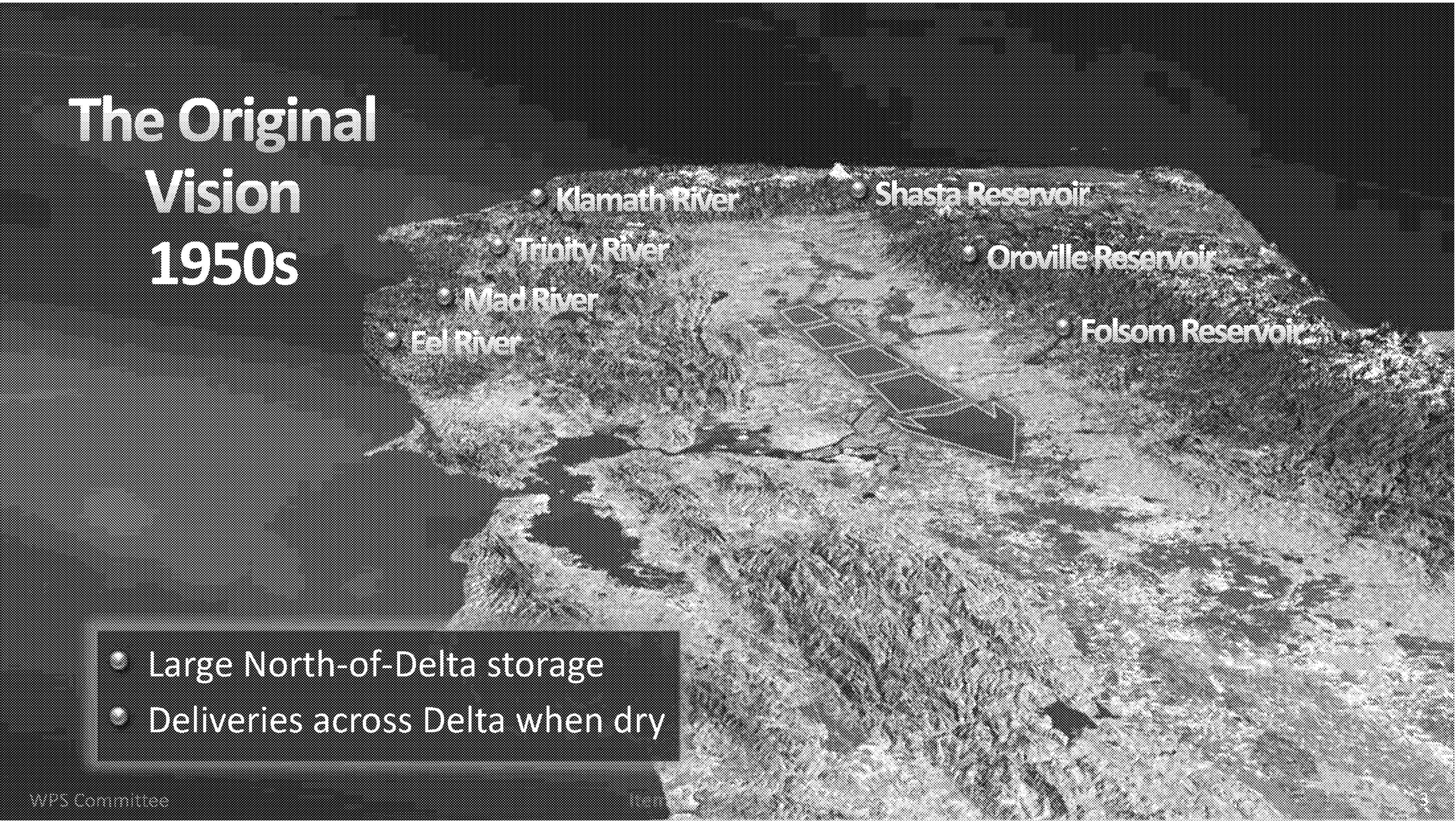
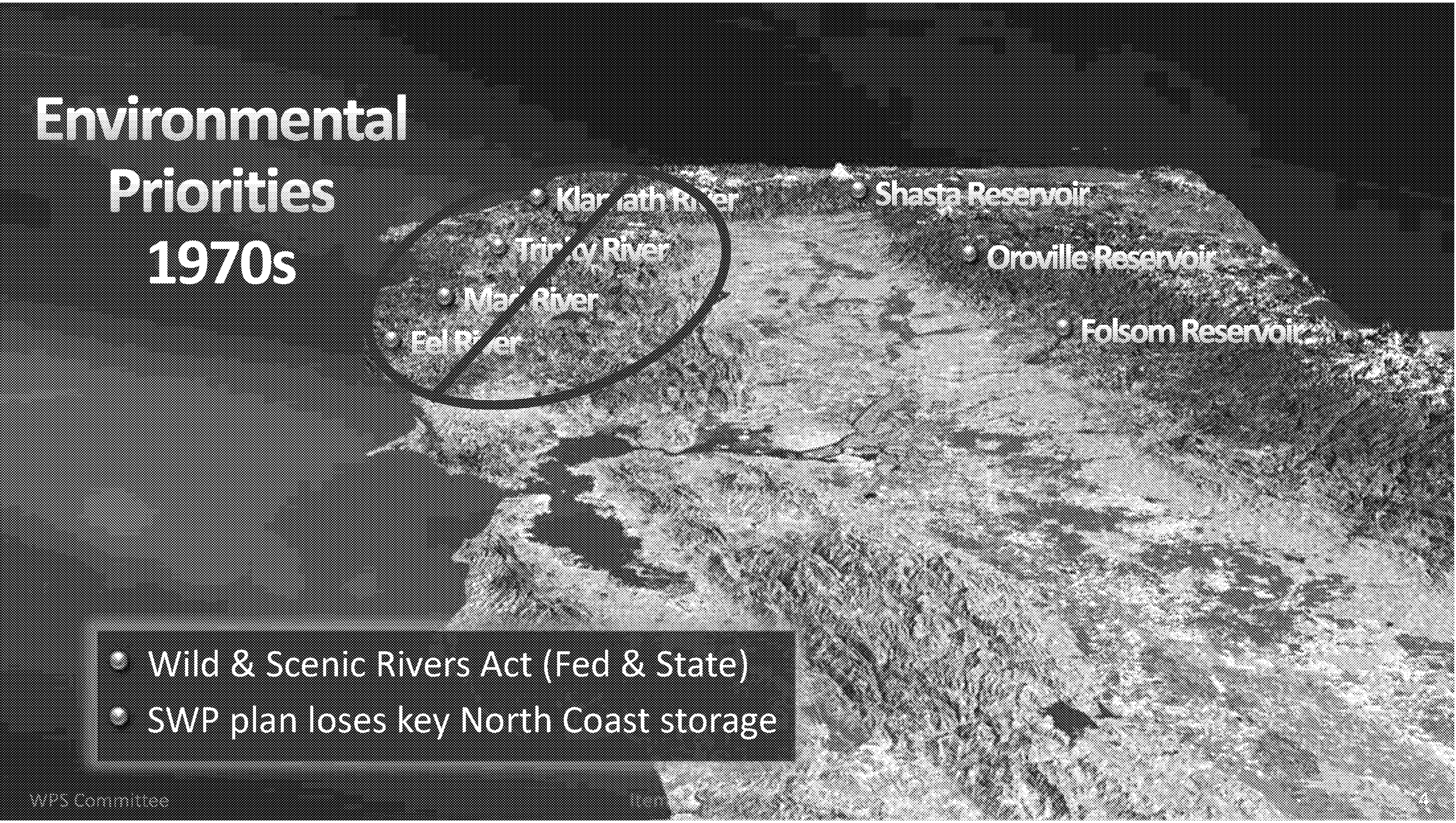
Review of the Remaining Planning Process and Funding Needs for Sites Reservoir Project

Water Planning & Stewardship Committee
Item 9-3
March 7, 2022


Topics
Storage Supplies & Lessons Learned
Integrated Groundwater & Surface Storage
Sites Reservoir Planning Status
Key Progress & 2022-2024 Workplan
Project Benefits
Statewide & Metropolitan Specific
Participation & Funding Consideration
Previous & Upcoming Decision
Next Steps
WPS Committee
Item #9-3 Slide 2
03-07-2022


The Original Vision 1950s
Klamath River
Shasta Reservoir
Trinity River
Oroville Reservoir
Mad River
Folsom Reservoir
Eel River
Large North-of-Delta storage
Deliveries across Delta when dry
WPS Committee
3



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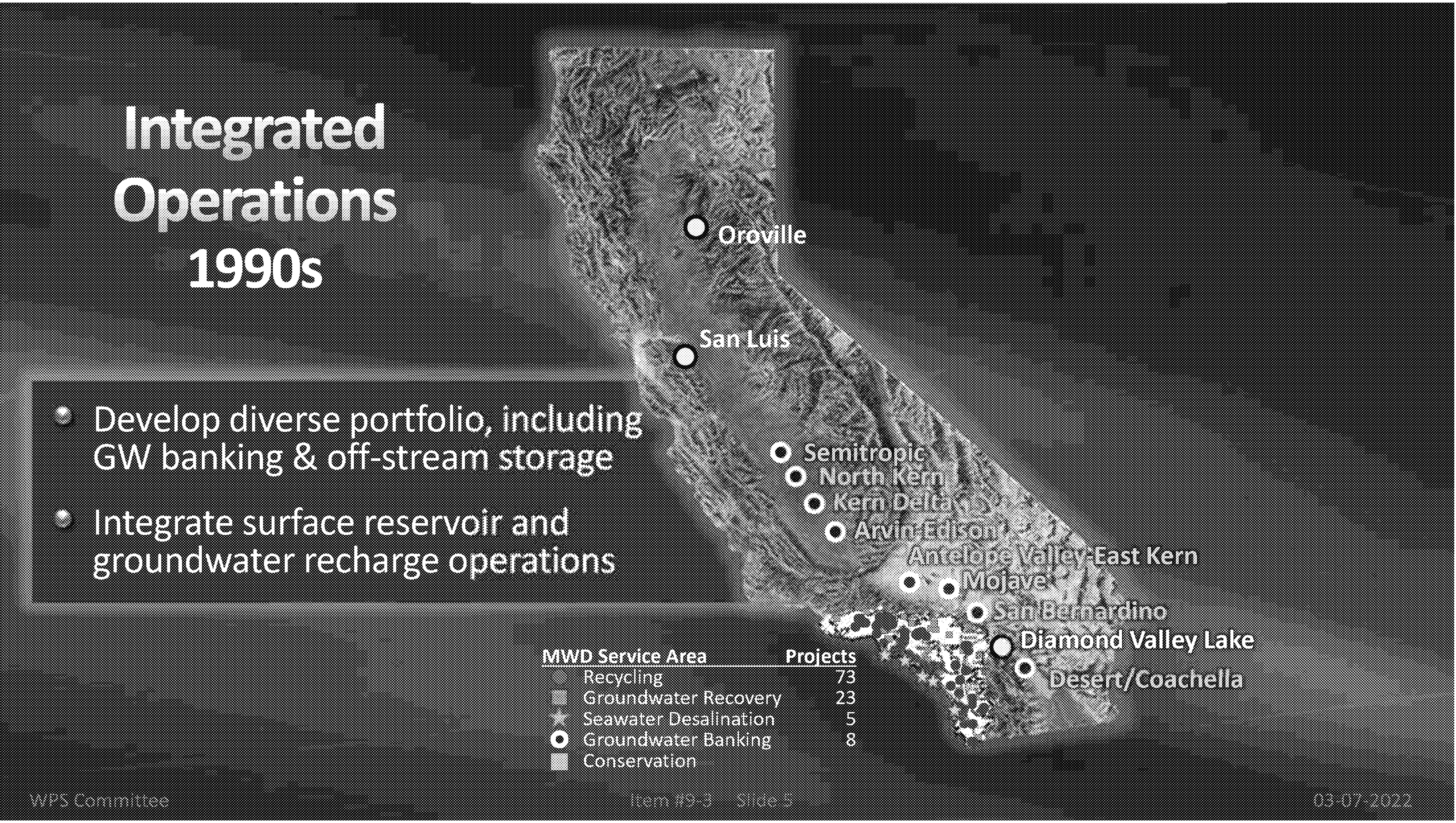
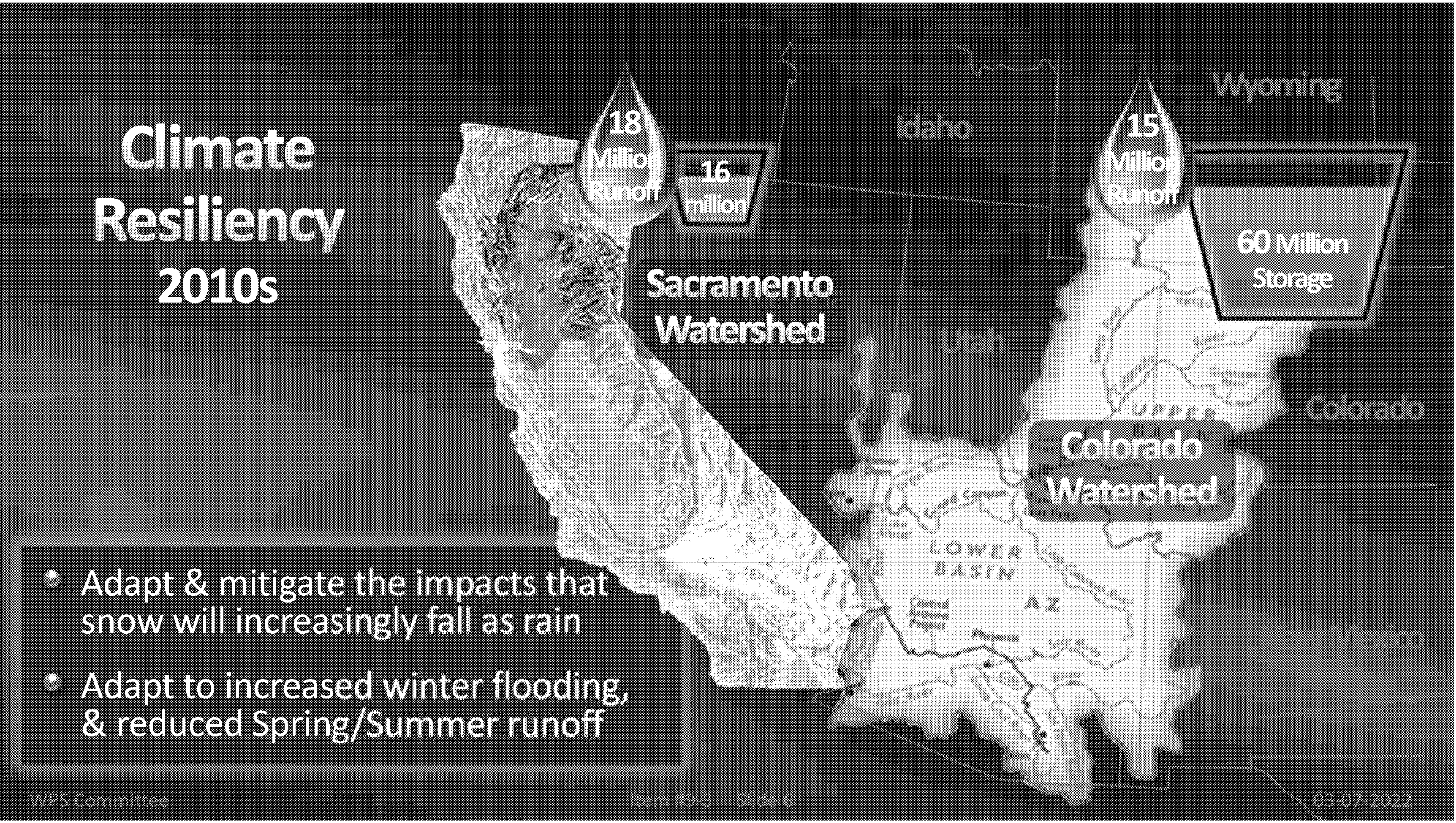
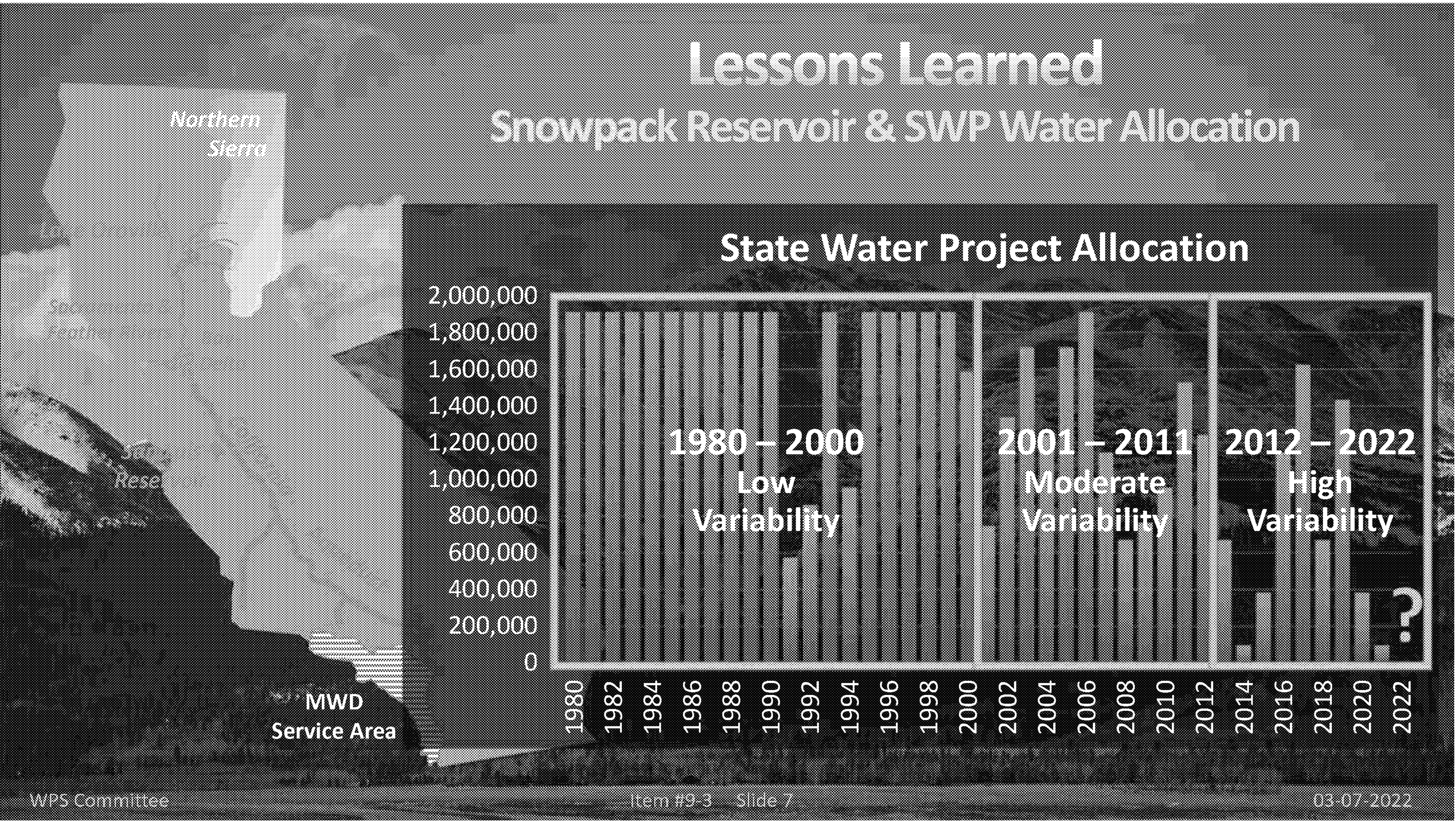
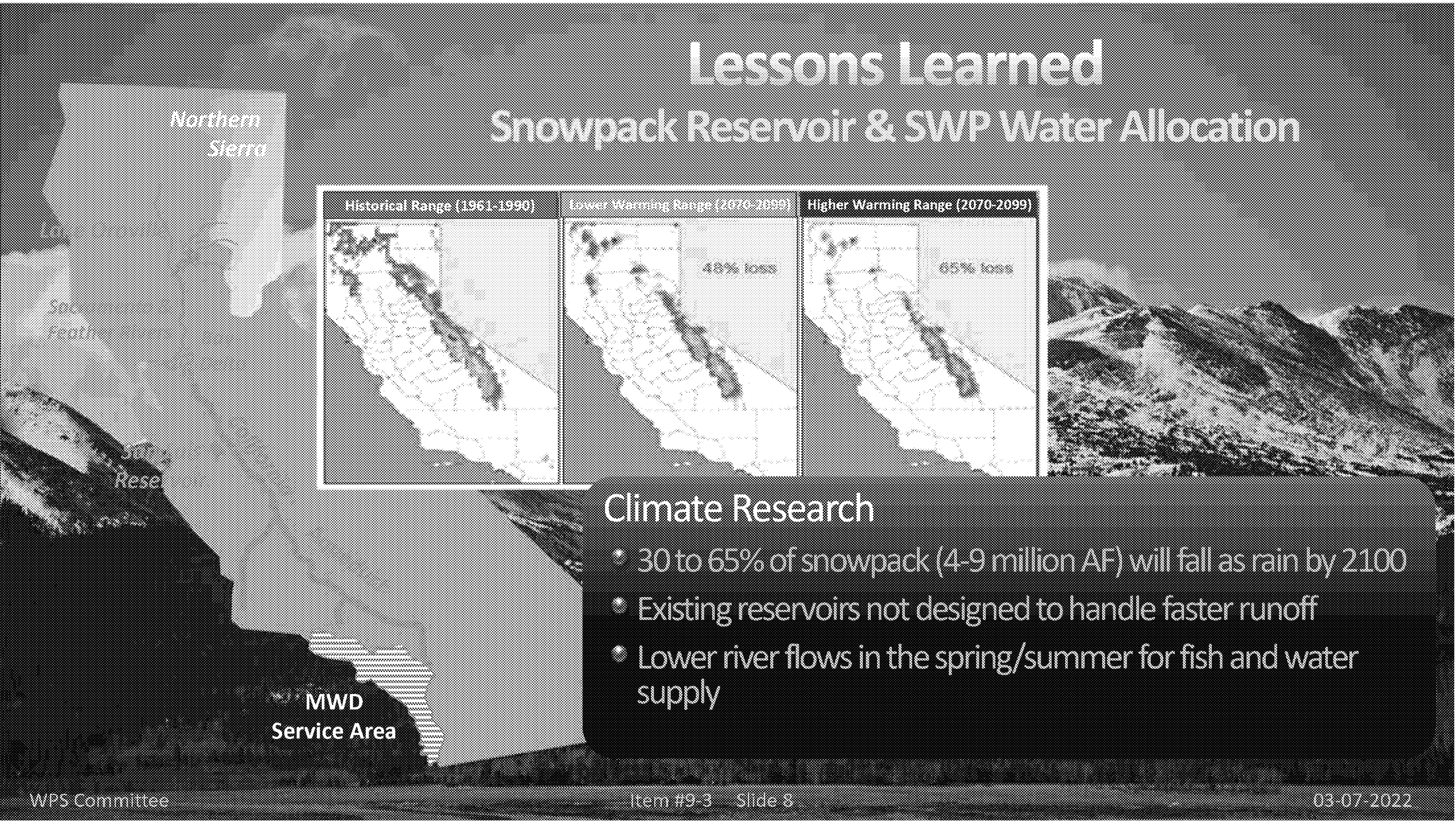

Integrated Operations 1990s
Develop diverse portfolio, including GW banking & off-stream storage
Integrate surface reservoir and groundwater recharge operations
Oroville
San Luis
Semitropic
North Kern
Kern Delta
Arvin-Edison
Antelope Valley-East Kern
Mojave
San Bernardino
Diamond Valley Lake
Desert/Coachella
MWD Service Area Projects
Recycling 73
Groundwater Recovery 23
Seawater Desalination 5
Groundwater Banking 8
Conservation
WPS Committee
Item #9-3 Slide 5
03-07-2022



Climate Resiliency 2010s
18 Million Runoff
16 million
Sacramento Watershed
Idaho
Wyoming
15 Million Runoff
60 Million Storage
Utah
Colorado
Colorado Watershed
LOWER BASIN
AZ
Adapt & mitigate the impacts that snow will increasingly fall as rain
Adapt to increased winter flooding, & reduced Spring/Summer runoff
WPS Committee
Item #9-3 Slide 6
03-07-2022



Lessons Learned
Snowpack Reservoir & SWP Water Allocation
Northern Sierra
MWD Service Area
State Water Project Allocation
2,000,000
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
1980 – 2000 Low Variability
2001 – 2011 Moderate Variability
2012 – 2022 High Variability
?
1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022
WPS Committee
Item #9-3 Slide 7
03-07-2022


Lessons Learned
Snowpack Reservoir & SWP Water Allocation
Northern Sierra
Historical Range (1961-1990)
Lower Warming Range (2070-2099)
Higher Warming Range (2070-2099)
48% loss
65% loss
Climate Research
30 to 65% of snowpack (4-9 million AF) will fall as rain by 2100
Existing reservoirs not designed to handle faster runoff
Lower river flows in the spring/summer for fish and water supply
MWD Service Area
WPS Committee
Item #9-3 Slide 8
03-07-2022

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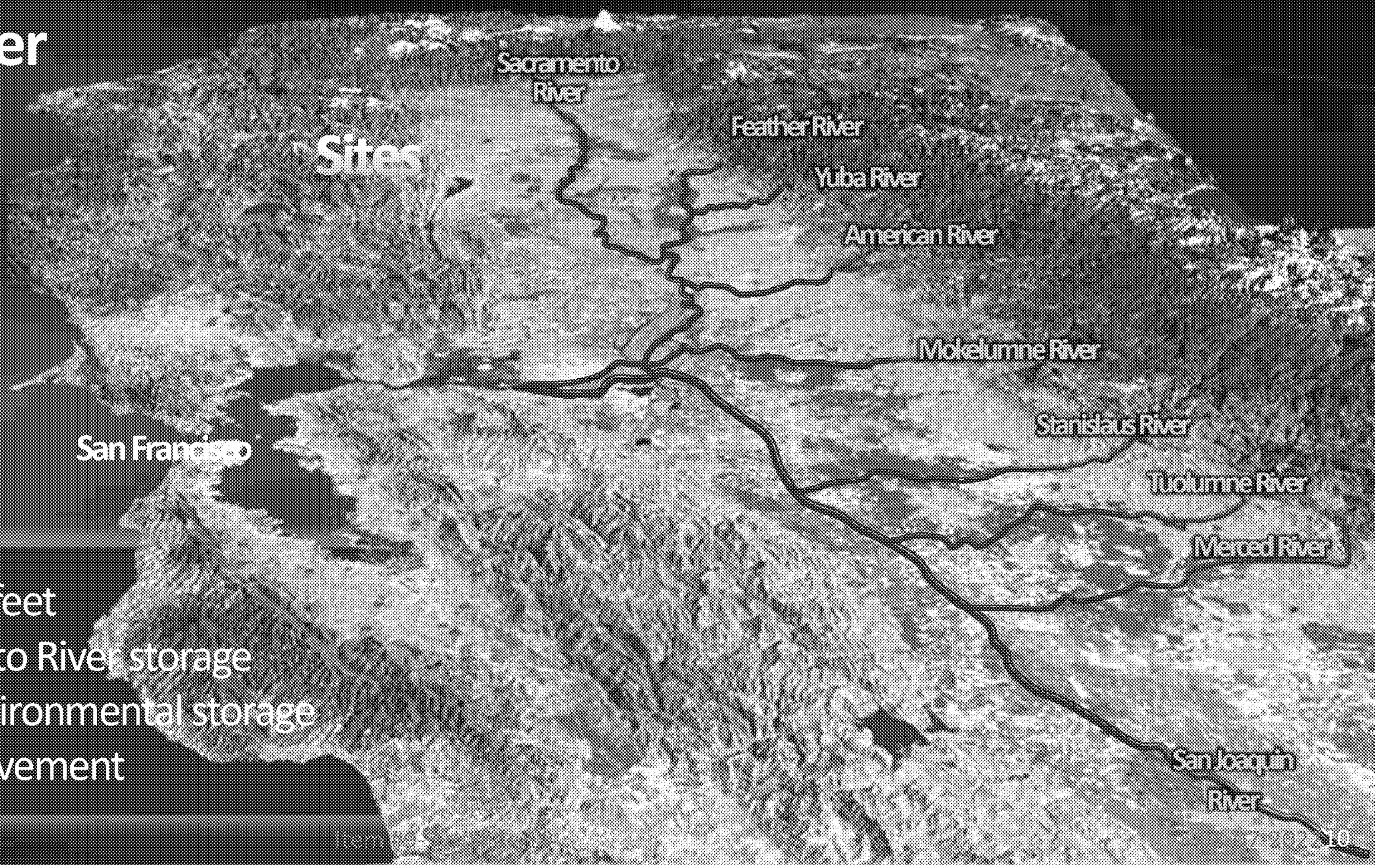
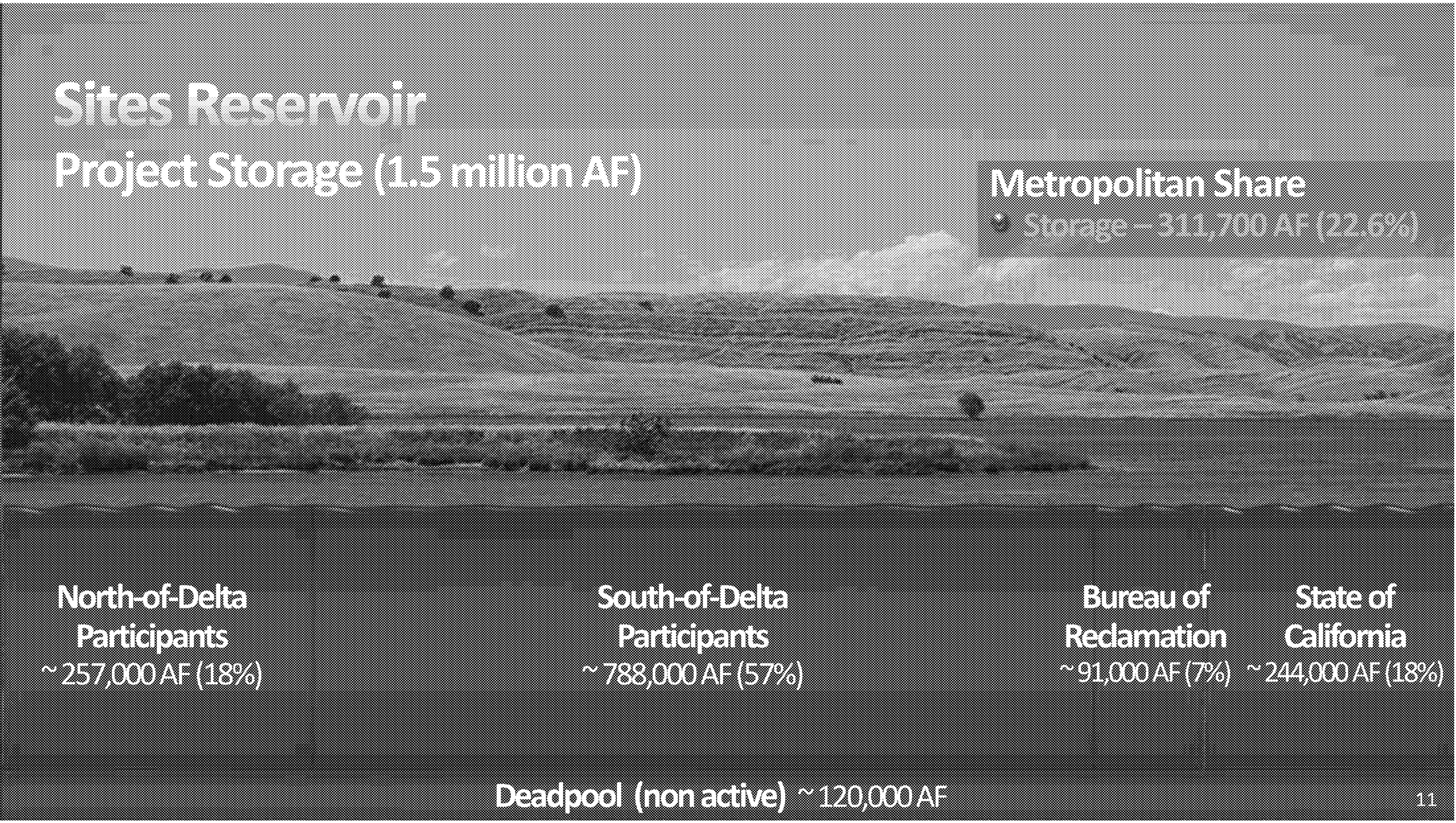
Sites Reservoir

Proposal Under Analysis



- 1.3 – 1.5 million acre-feet
- Off-stream Sacramento River storage
- Largest dedicated environmental storage
- Broad statewide involvement



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Sites Reservoir
Project Yield Estimate

State/Federal [1]
~ 66,380 AF/yr.

Water Users [1]
~ 167,620 AF/yr.

Annual Reservoir Release Estimate

- Average – 207,000 to 260,000 AF/yr. all participants
  (50,000 AF/yr. MWD's share)
- Dry/Critical – 348,000 to 427,000 AF/yr.

1. Federal share subject to appropriation; User share subject to Board authorization; State share subject to final approval by California Water Commission

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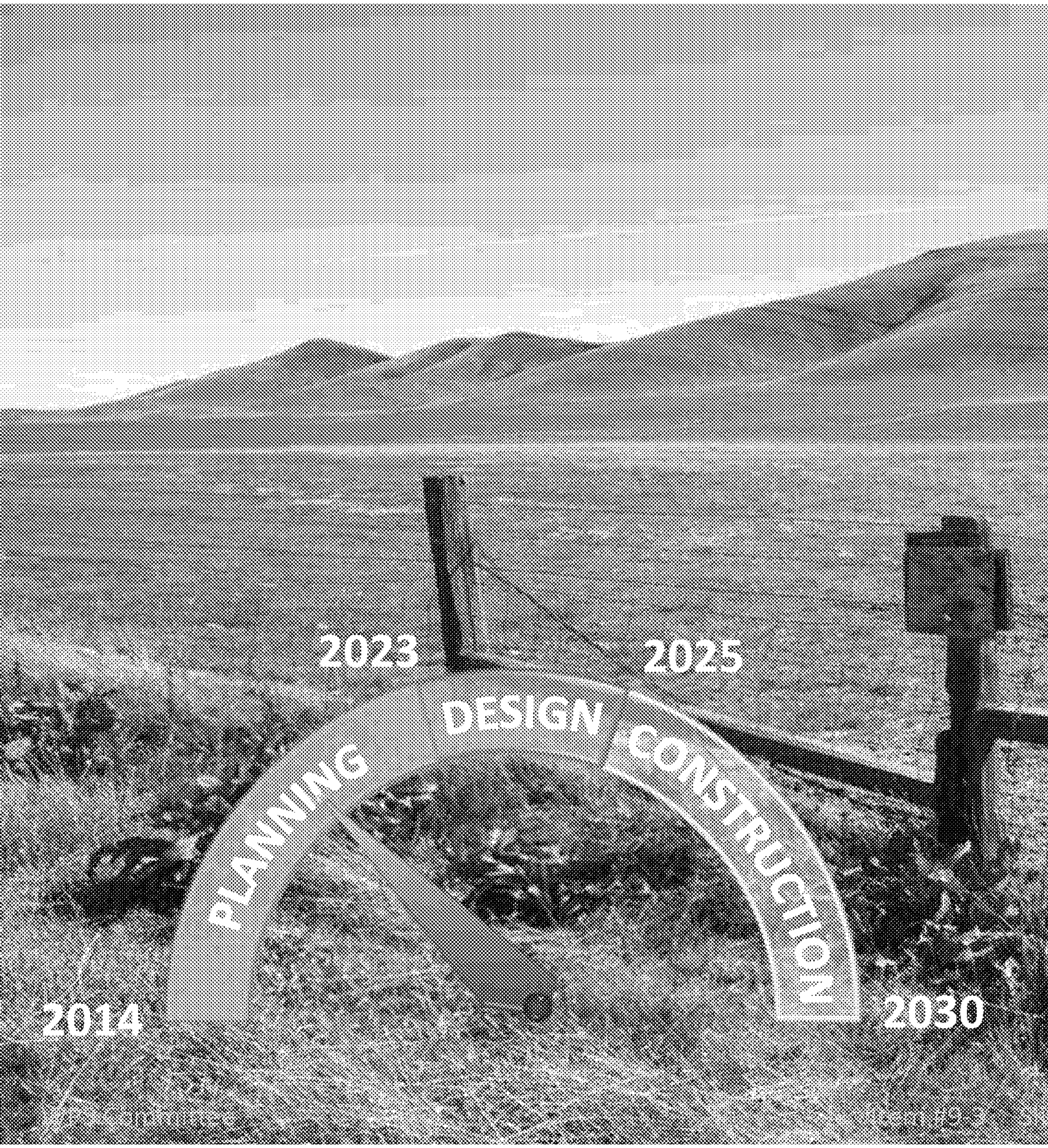


Key Progress

☑ Technical Analyses

- Initial water supply modeling & operations
- Initial engineering design & cost estimates
- Value Planning project improvements

☑ Regulatory/Environmental

- Revised Draft Environmental Impact Report/Statement
- Regulatory agency consultation & initial permit application development

☑ State/Federal Funding

- $836 million State Proposition 1 grant
- $104 million federal WIIN Act grant
- $449 million US Dept. of Agriculture loan
- $600 million federal WIFIA loan (application)

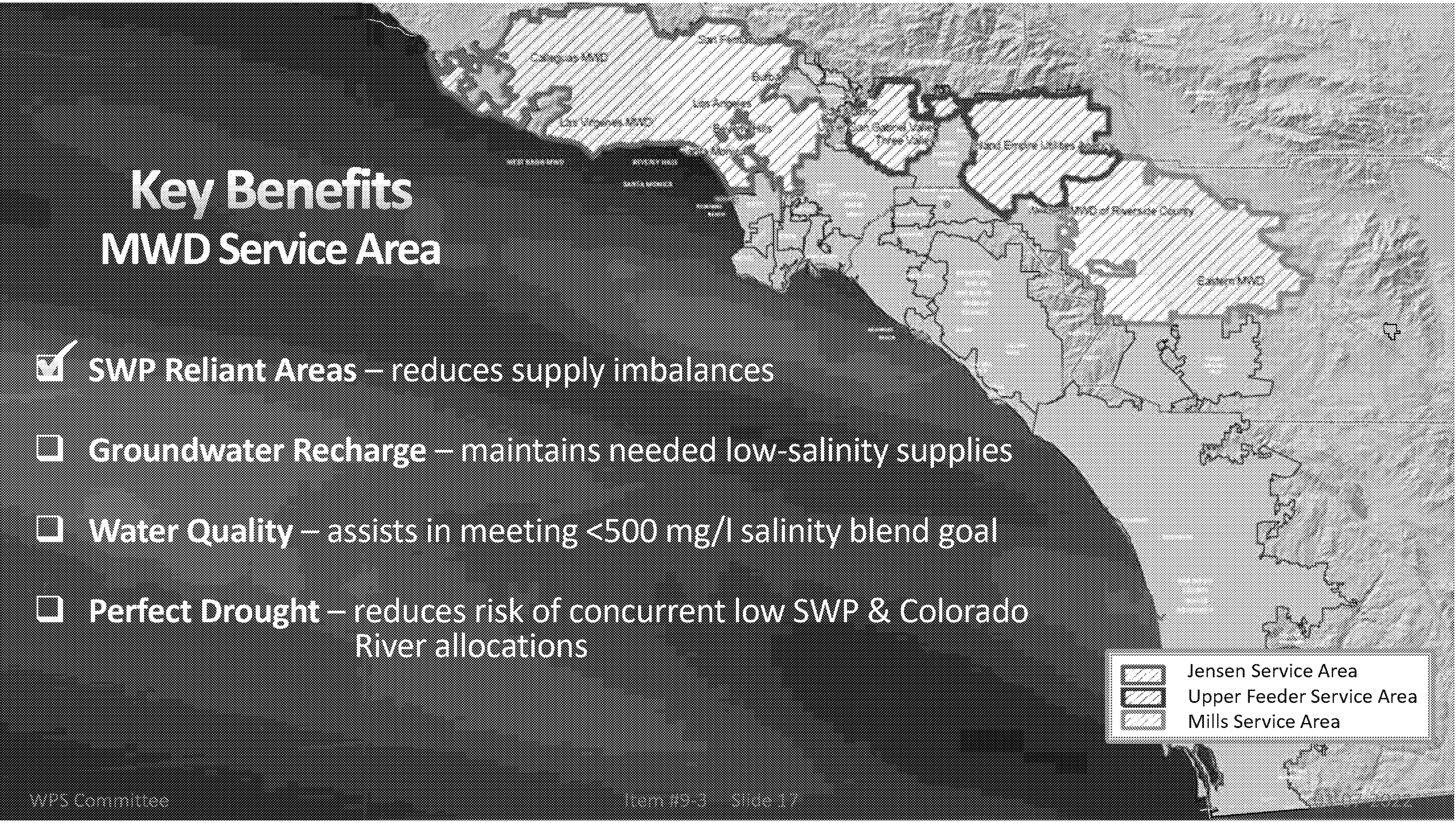
Topics

- Storage Supplies & Lessons Learned
  Integrated Groundwater & Surface Storage
- Sites Reservoir Planning Status
  Key Progress & 2022-2024 Workplan
- Project Benefits
  Statewide & Metropolitan Specific
- Participation & Funding Consideration
  Previous & Upcoming Decision
- Next Steps

Sites

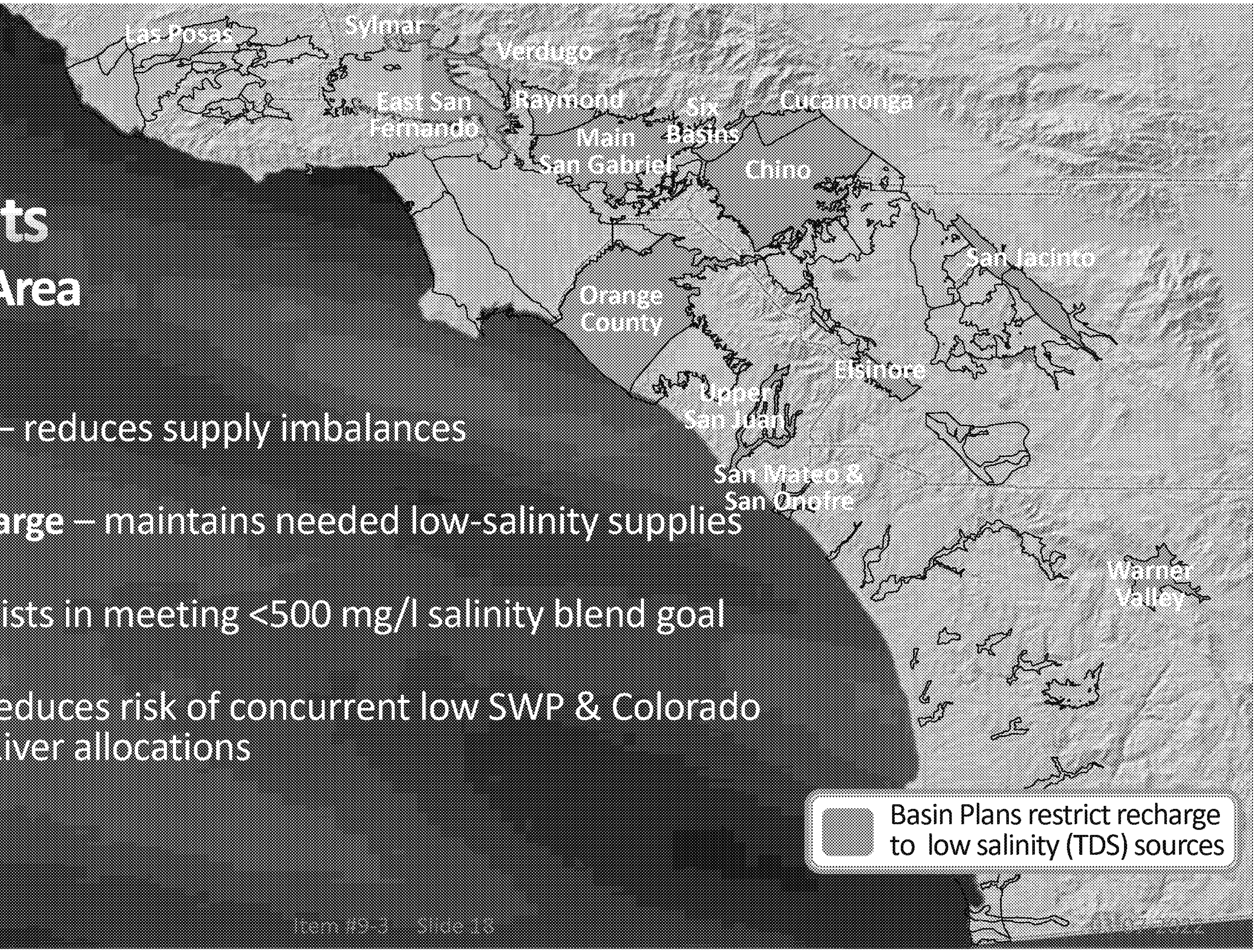
Key Benefits – Overall

- Improves ability in meeting future climate change challenges
- Mitigates for decreased snowpack and increased rainfall
- Dedicates portion of new storage for environmental use only
- Important collaborative approach among northern & southern California water agencies



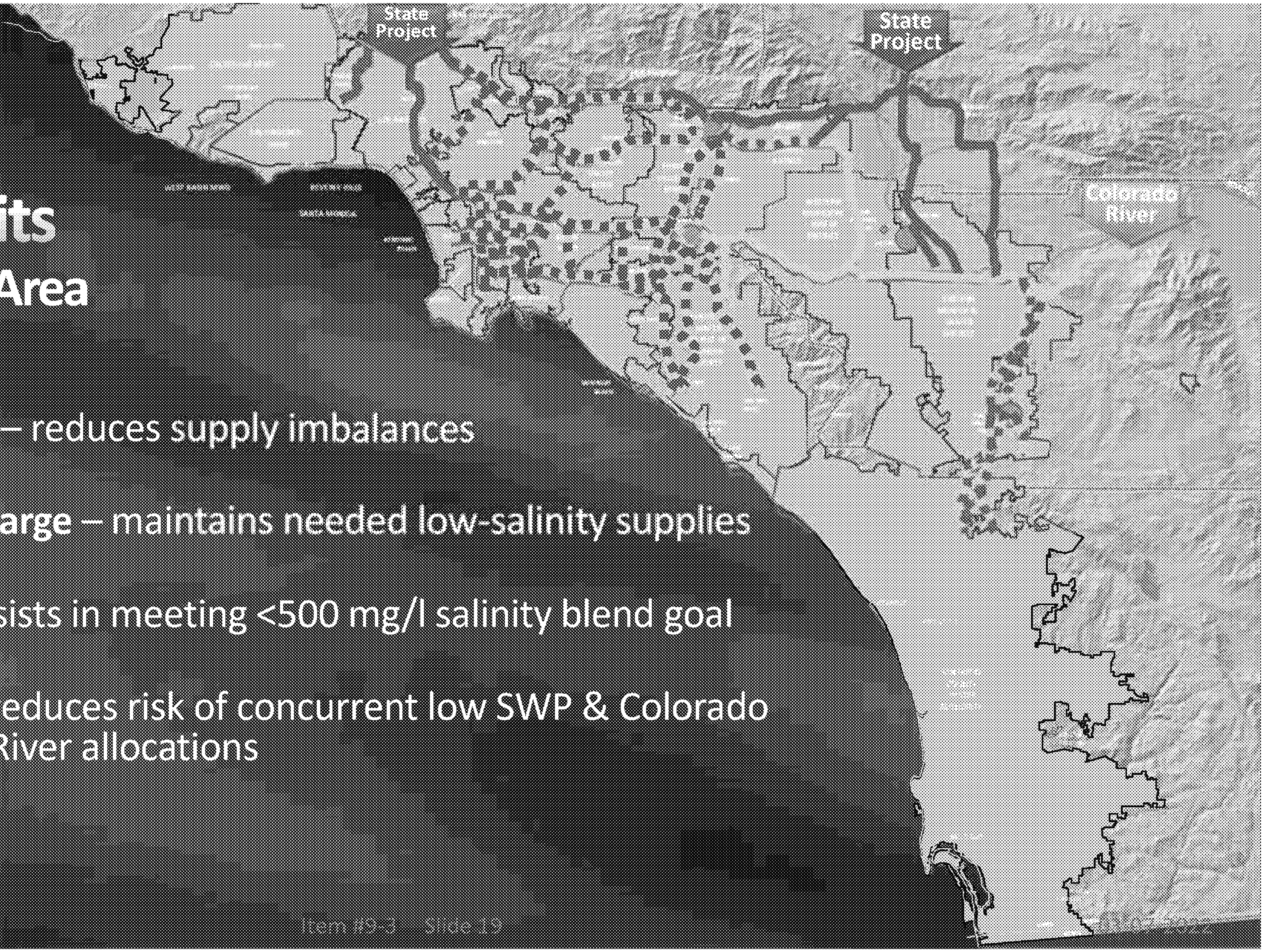
Key Benefits
MWD Service Area
SWP Reliant Areas – reduces supply imbalances
Groundwater Recharge – maintains needed low-salinity supplies
Water Quality – assists in meeting <500 mg/l salinity blend goal
Perfect Drought – reduces risk of concurrent low SWP & Colorado River allocations
Jensen Service Area
Upper Feeder Service Area
Mills Service Area
Los Angeles
Eastern MWD
WPS Committee
Item #9-3 Slide 17

Key Benefits
MWD Service Area



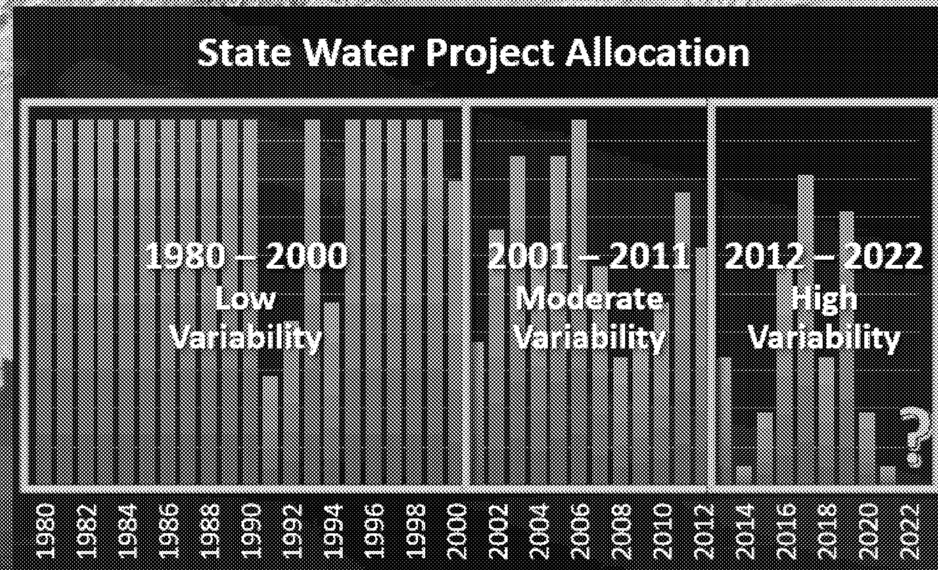
- ❑ **SWP Reliant Areas** – reduces supply imbalances
- ☑ **Groundwater Recharge** – maintains needed low-salinity supplies
- ❑ **Water Quality** – assists in meeting <500 mg/l salinity blend goal
- ❑ **Perfect Drought** – reduces risk of concurrent low SWP & Colorado River allocations

Key Benefits
MWD Service Area



- ❑ **SWP Reliant Areas** – reduces supply imbalances
- ❑ **Groundwater Recharge** – maintains needed low-salinity supplies
- ☑ **Water Quality** – assists in meeting <500 mg/l salinity blend goal
- ❑ **Perfect Drought** – reduces risk of concurrent low SWP & Colorado River allocations

Key Benefits
MWD Service Area



- ❑ **SWP Reliant Areas** – reduces supply imbalances
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- ❑ **Water Quality** – assists in meeting < 500 mg/l salinity blend goal
- ☑ **Perfect Drought** – reduces risk of concurrent low SWP & Colorado River allocations

Topics

- Storage Supplies & Lessons Learned
  Integrated Groundwater & Surface Storage
- Sites Reservoir Planning Status
  Key Progress & 2022-2024 Workplan
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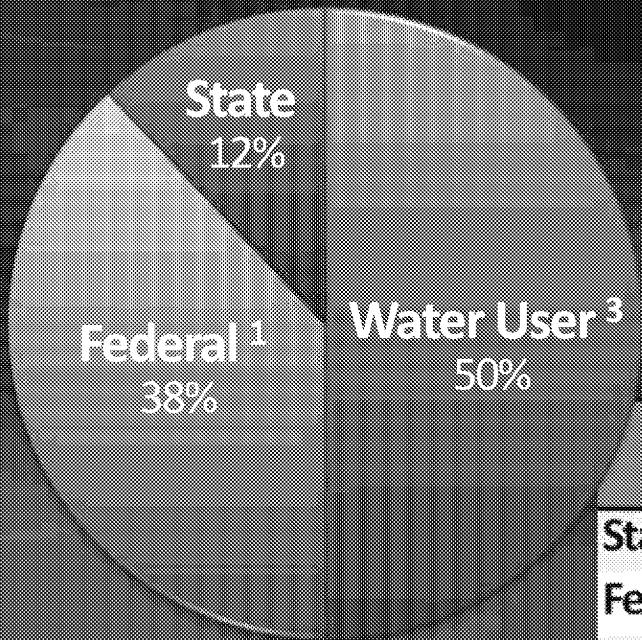
- Participation & Funding Consideration
  Previous & Upcoming Decision
- Next Steps

Metropolitan Board
Funding Considerations

- 2017
  - $1.5 million cost-share for 2017-18 Sites Reservoir workplan
- 2019
  - $4,212,500 cost-share for 2019-20 Sites Reservoir workplan
- 2020
  - $5 million cost-share for 2020-21 Sites Reservoir workplan
- 2022 (proposed)
  - $20 million cost-share for 2022-24 Sites Reservoir workplan



2022-24 Workplan

3-Year Budget[1]

Source	2022	2023	2024	Total
State (Prop 1 Grant)	$ 18,300,000	--	--	$ 18,300,000
Federal (WIIN Act)[2]	$ 10,000,000	$ 20,000,000	$ 20,000,000	$ 50,000,000
Water Users[3]	$ 17,267,000	$ 23,972,000	$ 27,324,000	$ 68,563,000
Carryover Funds	$ 6,000,000			$ 6,000,000
TOTAL[3]	**$ 51,567,000**	**$ 43,972,000**	**$ 47,324,000**	**$ 142,863,000**
MWD Share [4]	$ 5,000,000	$ 7,000,000	$ 8,000,000	**$20,000,000**

1. *2022-24 Workplan, also referred to as the Amendment 3 Workplan, is for the period of Jan. 1, 2022, through Dec. 31, 2024.*
2. *Subject to federal appropriation*
3. *Subject to individual participating agency Board approval*
4. *Assumes participation by Metropolitan based a 311,700 acre-ft of storage (also defined as an average yield of 50,000 AF/year)*

Reservoir overlook – Governor Brown (2018)

2022-24 Workplan
Focus & Key Deliverables

- Environmental
  - Final EIR/EIS & Record of Decision
- Permits/Agreements
  - Water rights permit
  - Environmental permits
  - Local agency agreements
- Project Operations
  - Final coordinated operations agreement with DWR/USBR
- Engineering
  - Advance 30% design & geotechnical investigations
- Develop mitigation & land acquisition master plan

1. 2022-24 Workplan, also referred to as the Amendment 3 Workplan

Broad Statewide Involvement

- **Bay Area**
  - Santa Clara Valley WD
  - Zone 7 Water Agency
- **San Joaquin Valley**
  - Rosedale-Rio Bravo WSD
  - Wheeler Ridge - Maricopa
- **Southern California**
  - Antelope Valley - East Kern WA
  - Coachella Valley WD
  - Desert Water Agency
  - Irvine Ranch Water District
  - Metropolitan Water District
  - San Bernardino Valley MWD
  - San Gorgonio Pass Water Agency
  - Santa Clarita Valley Water Agency
- **State/Federal**
  - California Dept. of Water Resources
  - U.S. Bureau of Reclamation

- **Sacramento Valley**
  - Carter Municipal Water Co.
  - City of American Canyon
  - Colusa County
  - Colusa County Water District
  - Cortina Water District
  - Davis Water District
  - Dunnigan Water District
  - Glenn County
  - Glenn-Colusa Irrigation District
  - La Grande Water District
  - Reclamation District 108
  - Rosedale-Rio Bravo WSD
  - City of Roseville
  - Sacramento County WA
  - City of Sacramento
  - Tehama Colusa Canal Authority
  - Westside Water District
  - Western Canal Water District


Topics
Storage Supplies & Lessons Learned
Integrated Groundwater & Surface Storage
Sites Reservoir Planning Status
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Previous & Upcoming Decision
Next Steps
WPS Committee
Item #9-3 Slide 26
03-07-2022

Metropolitan Board

Proposed Timeline [1]

1. Subject to change

Next Steps

- April 2022 Board letter on funding 2022-24 Workplan
- Final environmental documents by Oct 2022
- Decision on project implementation in 2024

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

- **Board of Directors**
  Water Planning and Stewardship Committee

3/8/2022 Board Meeting

9-3

Subject

Review of the remaining planning process and funding needs for Sites Reservoir Project

Executive Summary

This Board letter provides an update on the planning process for the proposed multi-benefit Sites Reservoir Project (Project), and the proposed three-year budget for completion of the planning, permitting and environmental review effort.

In 2017, 2019, and 2020, the Metropolitan Board (Board) authorized participation in the planning and environmental review/permitting effort for the proposed Project, which would be located in the Sacramento Valley in northern California, and appropriated $1,500,000, $4,212,500, and $5,000,000, respectively. In 2021, the Sites Project Authority proposed a workplan and budget for funding the remaining three-year planning effort through 2024.

The workplan, referred to as the Amendment 3 Workplan, will focus on finalizing the environmental planning documents, project construction/operation permits, and a coordinated operations plan with the federal and state water projects. The Amendment 3 Workplan would be implemented through an amendment to the 2019 Reservoir Project Agreement previously executed by Metropolitan and other project participants. The overall participant budget for this Amendment 3 Workplan is $142,863,000, which includes funding from the state of California, United States Bureau of Reclamation (USBR), and 23 public water agencies.

For Metropolitan to continue its participation and reserve 311,700 acre-feet (AF) of storage rights, which is equivalent to approximately 50,000 AF of annual water supply reservoir releases, the additional planning cost share would total $20 million. This cost-share amount is payable over a three-year period, $5 million in calendar year (CY) 2022, $7 million in CY 2023, and $8 million in CY 2024. The obligation of the proposed Project participants to make the second and third installments is conditioned upon the Sites Project Authority and the Sites Reservoir Committee members each annually reapproving the Amendment 3 Workplan by an affirmative vote of at least 75 percent.

Continued participation in planning, permitting and environmental review of the proposed Project will preserve the opportunity to work with the participants to jointly improve water supplies for both northern and southern California, enhance critical habitat and flows for native fish species, reduce the impacts of the frequent wet and dry hydrologic swings, and develop key analyses of project feasibility. The proposed Project is identified as one of only two priority surface water reservoir projects in the Governor's Water Resilience Portfolio and is one of the first multi-benefit reservoirs in California that would have dedicated water storage and yield to be used for fishery enhancement, instream flow releases in drier periods, and improved habitat for native species.

Metropolitan's agreement to participate in funding for the Amendment 3 Workplan does not commit Metropolitan to the proposed Project implementation.

Details

History

The proposed Project first emerged as part of a second stage of the State Water Project (SWP) proposed in the 1980s, which included multiple water-related projects in northern California. In 1996, the proposed Project was further analyzed by the California Department of Water Resources (DWR) and the USBR as part of the state and federal water cooperative effort called the CALFED Bay-Delta process. The CALFED environmental planning process resulted in a Programmatic Record of Decision that recommended implementation of the proposed Project as a component of the Preferred Program Alternative. In 2010, the Sites Project Authority was formed as a joint powers authority to continue moving forward with development of the proposed Project. There are 31 agencies participating in the planning phases of the proposed Project, including the state of California and the USBR. In 2020, the proposed Project was identified as a priority in the Governor's Water Resilience Portfolio.

Project Location

The proposed Project would be located in rural Glenn and Colusa counties, 60 miles north of Sacramento and about 10 miles west of the town of Maxwell in northern California (**Attachment 1**). The proposed Project location is separated from the greater Sacramento Valley by a foothill range to the east, making it suitable for off-stream storage of water from the Sacramento River.

Project Description

The proposed Project is currently being analyzed as a 1.3 million to 1.5 million AF off-stream surface water storage reservoir that would divert unregulated high-flow water from the Sacramento River. The proposed Project would require the construction of two dams up to 310 feet high and nine smaller saddle dams. Water to be stored in the proposed Project would be conveyed through existing intakes on the Sacramento River at Red Bluff Pumping Plant and Glenn-Colusa Diversion Dam. Water from these diversions would be conveyed through the existing Tehama-Colusa and the Glenn-Colusa canals to the proposed Project (**Attachment 2**). Combined, the diversions could deliver as much as 3,900 cubic feet per second of water from the Sacramento River to the proposed Project. Water diversions would only occur when conditions exist that are: (1) protective of aquatic resources; (2) after all other downstream senior water rights and conditions are met; and (3) only when excess flow conditions exist in the Delta. Water discharged from the proposed Project would flow through the existing Tehama-Colusa Canal, then into the Colusa Basin Drain before reaching the Sacramento River or the Upper Yolo Bypass. Project participants would divert their share of the water as it moves through the Tehama-Colusa Canal and river system, including Central Valley Project and SWP participating agencies south of the Delta. Dedicated environmental storage funded with State Proposition 1 monies would also utilize this system to convey supplies to enhance fishery flows, habitat, and water quality.

Key Benefits

For the Metropolitan service area, key benefits include improving drought-year supply reliability, securing additional sources for SWP dependent areas, providing low-salinity groundwater recharge, reducing risk of declining groundwater storage in the service area, and assisting in the Board's water quality blending salinity objective. Other key benefits of the proposed Project include providing:

- Off-Stream, Fish-Friendly Storage. The proposed Project would provide storage off-stream of the Sacramento River using existing modern-screened fish intakes designed to minimize fish losses and not block fish migration or spawning.
- California's Largest Dedicated Ecosystem Storage. Current methods of allocating water to support ecosystem health rely on minimum flow standards. The proposed Project will be one of the first reservoirs in California that will have dedicated ecosystem water and storage to enable more flexible and effective water management during dry times. This ecosystem water will be used to enhance instream fishery flows, water temperatures for spawning, pulse flows for out migrating fish, riparian/floodplain habitat, water quality, and other environmental purposes.
- Climate Change Resiliency to Shrinking Snowpack. The proposed Project is envisioned as a climate change adaptation measure to manage shrinking snowpack, to capture and manage the increased flood flows for use in dry times, to enhance upstream Sacramento River water temperature management for migrating salmon, and to augment flows for fishery protection. In 2021, if the proposed Project had been in operation, it is estimated that there could be close to one million AF of additional water supplies, previously stored during wet periods, available for release over a two to three-year period to farms, cities, and the environment.

- Enhance Statewide Depleted Groundwater Basins. The state estimates that approximately 50 percent of the water that could be used to replenish California's groundwater will need to come out of the Sacramento River. The proposed Project is well suited to staging and conveying water to areas where groundwater depletion is producing undesirable effects.
- Local Flood Control and Recreational Opportunities. The proposed Project will enhance flood control protection for small communities prone to flooding near the reservoir project and expand recreational opportunities in northern California.
- Diversion Only During High-Flow Events. The proposed Project will enhance the ability to store unregulated flows during high precipitation years and release those water supplies for environmental and water supply purposed during dry water years.
- Significant Local and Statewide Support. The proposed Project has significant local, statewide, and bipartisan support from more than 175 organizations, agencies, businesses, and elected officials.

Tribal, Environmental, and Local Stakeholder Outreach

Sites Project Authority has been conducting an extensive outreach process to meet with local stakeholders, including environmental, salmon fishing, and tribal interests. During the past 18 months, over 40 meetings and workshops have been conducted to communicate and listen to additional input. This includes reaching out to over a dozen Native American tribes. The Sites Project team has also been holding monthly meetings with two local tribes with known historic connection to the proposed Project area. In addition, the USBR has consulted with federally recognized tribes. The proposed Project does not occur in an area that would affect tribal hunting or water rights nor is the alternative on tribal trust lands.

These listening sessions and public input have been used by the Sites Project Authority to substantially modify the proposed Project facilities and operations to be more protective of the environmental and reduce local impacts.

Sites Project Authority Members

The Sites Project Authority was formed under California law in 2010 as a joint powers authority and currently consists of 11 public agencies: Colusa County, Glenn County, Tehama-Colusa Canal Authority, Colusa County Water District, Glenn-Colusa Irrigation District, Reclamation District 108, Westside Water District, Sacramento County Water Agency/City of Sacramento, Placer County Water Agency/City of Roseville, Western Canal Water District, and Maxwell Irrigation District. DWR and USBR also participate on the Authority as non-voting members.

For decision-making purposes, approval of at least 75 percent of the total weighted vote of both the Sites Project Authority and the Sites Reservoir Committee members is required for any material change actions, including changes to budget, schedule, and workplan. For non-material changes, an affirmative vote of a least a majority of the total weighted vote is required.

Current Participating Project Partners

Currently, there are 31 agencies participating in the proposed Project, including the state of California and the US Bureau of Reclamation, with 23 agencies reserving water supply storage in the reservoir. In 2021, Rosedale-Rio Bravo Water Storage District and Irvine Ranch Water District joined in funding the planning effort. A full list of participating agencies is attached (**Attachment 5**). Metropolitan is currently a member of the Sites Reservoir Committee, which has certain decision-making authority in carrying out the budget and workplan.

Participating agencies are currently in the process of reviewing the Amendment 3 Workplan with their governing boards to consider approving participation and funding. The Sites Project Authority is also in discussions with other water agencies that have expressed an interest in participating in the proposed Project.

Project Environmental Documentation

An initial feasibility study and Administrative Draft Environmental Impact Report (EIR) were completed in 2013 by DWR. A Public Draft EIR/ Environmental Impact Statement (EIS) for the proposed Project was released by the Sites Project Authority (state lead agency) and the USBR (federal lead agency) in August 2017.

However, with the completion of a Value Planning process in 2019, a Revised Draft EIR and Supplemental EIS was initiated due to modifications that included a smaller proposed Project footprint and operational changes to enhance environmental flows. The Revised Draft EIR and Supplemental EIS were released in November 2021, with a Final EIR/EIS scheduled for completion in the Fall 2022. The formal Notice of Determination and Record of Decision are scheduled for late 2022 or early 2023.

Responses to Common Questions about Potential Environmental Impacts

In November 2021, the Sites Project Authority released a fact sheet responding to common questions about the potential environmental impacts of the proposed Project (**Attachment 7**). In addition, the Revised Draft EIR/Supplemental Draft EIS includes more details related to the analysis of the proposed Project's potential impacts on a range of environmental resource areas.

In general, the proposed Project is an off-stream facility that does not dam a major river system or block fish migration or spawning. The proposed Project diverts water only during high-flow events. In addition, after discussions with state and federal fishery agencies, local stakeholder, environmental and Native American interests, the proposed Project operations were modified to be more protective of the environment. These modifications reduced the proposed Project diversions from the Sacramento River substantially, by almost 50 percent, as compared to the criteria proposed in 2017.

Storing water in Sites Reservoir during high-flow wet periods, is part of the statewide strategy for adapting to changing climate conditions and to return much needed flexibility to enhance environmental and water user needs.

Project Yield

The current operations model estimates the annual water yield of the proposed Project at approximately 207,000 to 260,000 AF per year. This model utilizes upstream Sacramento River flow and fishery regulatory criteria to protect instream river flows and water temperatures for salmon and other native species. Additional modeling analyses will continue to be conducted as further refinements are made to proposed Project operations.

Implementation of the proposed Delta Conveyance Project could allow for greater yields south of the Delta due to potential savings in Delta carriage water losses and south Delta regulatory restrictions. In 2021, if the proposed Project had been in operation, it is estimated that there would be close to one million AF of additional water supplies, previously stored during wet periods, and available for release over a two to three-year period to farms, cities, and the environment.

For Metropolitan, that additional storage in 2021 would amount to an approximate 230,000 AF share, which could have been used to secure water for our SWP exclusive areas, provide low-salinity supplies to reduce salt impacts and recharge our region's groundwater basins, and assist in meeting the Board's 500 mg/L water quality blending salinity objective.

Final Project formulation and annual operations will determine how the reservoir storage and yield will be divided between meeting water supply and environmental improvements funded by state Proposition 1 grant and federal Water Infrastructure Investment for the Nation (WIIN) Act appropriations.

Effect of Potential Climate Change Impacts

California's climate has always featured wide swings between drought and flood events. But being able to store that water in natural snowpack reservoirs in the winter, then slowly released through snowmelt into California's river system during the hotter spring/summer months is critical to our economy and natural ecosystem. In a warming world, the snowpack will become even more volatile, melting faster with more precipitation falling as rain. River flows will increase during the winter, causing more flooding, and less during the spring/summer months.

If the current climate change projections are right, the increasing temperature will require additional reservoirs to capture the more volatile runoff. Sites Reservoir helps provide more flexibility to water supply and fishery agencies to mitigate these climate change impact. In addition, as climate temperatures increase, the effectiveness of the reservoir increase, both from a water supply and environmental flow perspective.

Operations and Coordination with Other Regional Reservoirs

The proposed Project is designed to divert water from the Sacramento River through existing state-of-the-art fish screens, only when actual flows on the Sacramento River exceed that needed by more senior water right holders, the Delta is in excess conditions, and based on stringent criteria to protect aquatic resources. Releases from the reservoir will be based on environmental needs, water user participant requests, and regulatory permit conditions.

The proposed Project's unique location, south of Lake Shasta and Lake Oroville but north of the Delta, allows it to enhance the environmental, water quality, flood control, recreational, and water supply functions those existing reservoirs serve. Sites Reservoir allows the state and federal fishery agencies and water supply operators more flexibility to adapt to changing river, climate, Delta flow, and water quality conditions.

As an example, the proposed Project could be operated in coordination with Lake Shasta to preserve and enhance cold water for endangered salmon in the Sacramento River. The proposed Project could also contribute to the increased fresh-water flow into the Delta during drier periods to assist with salinity management of this critical estuary. The proposed Project would not compete for the water resources stored in these state and federal facilities but would increase the total amount of managed water in storage. With the uncertainty associated with California varying snowmelt runoff in the next century, having Sites Reservoir will enhance the conservation of our critical statewide water supplies.

Proposed Participant Budget and Metropolitan Cost Share

The proposed participant budget for the Amendment 3 Workplan is $142,863,000, which includes:

Revenue Source	2022	2023	2024	TOTAL
State (Proposition 1)	$ 18,300,000	--	--	$ 18,300,000
Federal (WIIN Act)	$ 10,000,000	$ 20,000,000	$ 20,000,000	$ 50,000,000
Water User Participants	$ 16,762,000	$ 23,467,000	$ 26,819,000	$ 67,048,000
Sites Joint Powers Authority	$ 505,000	$ 505,000	$ 505,000	$ 1,515,000
Carryover Funds	$ 6,000,000	--	--	$ 6,000,000
TOTAL	**$ 51,567,000**	**$ 43,972,000**	**$ 47,324,000**	**$ 142,863,000**
Metropolitan Share	**$ 5,000,000**	**$ 7,000,000**	**$ 8,000,000**	**$ 20,000,000**

For Metropolitan to continue its participation and reserve 311,700 AF of storage rights, which is equivalent to approximately 50,000 AF of average annual water supply reservoir releases, the cost share would total $20 million. This cost-share investment is payable over a three-year period, $5 million in 2022, $7 million in 2023, and $8 million in 2024. The obligation of the Project participants under the 2019 Reservoir Project Agreement and Third Amendment (**Attachment 3 and 4**) to make the second installment and third installment is conditioned upon the Sites Project Authority and the Sites Reservoir Committee members each annually reapproving the Amendment 3 Workplan by an affirmative vote of at least 75 percent.

The final amount of water supplies available to Metropolitan and other participants from the proposed Project, if it is implemented, and the unit costs will depend on state and federal participation levels, the total dollar amount that Metropolitan and others elect to contribute through future phases, and the final costs and yield for the proposed Project.

Estimated Overall Project Cost

In 2019, the Sites Project Authority and participating agencies conducted a value-planning effort to minimize potential Project costs and impacts. That effort resulted in an improved Project that reduced costs from $5.2 billion to approximately $3.9 billion (in 2021 dollars). Cost savings came primarily from the removal of the proposed 13.5-mile Delevan Diversion pipelines and intake facility on the Sacramento River. The annual costs for operations, maintenance, and power are estimated at $83 million to $100 million annually. The estimated average cost per AF of yield ranges from $700 to $900 per AF at the reservoir. For Metropolitan, it is estimated that an additional $300 to 400 per AF would be added to the yield cost to take care of conveyance losses in the Delta, SWP pumping costs, and Metropolitan water treatment costs. Efforts are underway by the Sites Project Authority to continue refining the proposed Project cost estimates as potential additional state and federal funding becomes available.

State and Federal Investment Funding

In 2017, the Sites Project Authority applied for state Proposition 1 grant funding to the California Water Commission. Proposition 1 included $2.7 billion for new storage projects. In 2018, the California Water Commission approved $816 million in state investment to advance the proposed Project, the largest grant award given to any project requesting Proposition 1 support. The State's Proposition 1 investment was increased in 2020 to $836 million. To date, the state has released approximately $40 million to the proposed Project for completion of the environmental documentation and permit process. This state investment will pay for a portion of the reservoir cost, and in return, the state will receive flood control and recreation benefits as well as a portion of the water and storage produced by the proposed Project to be dedicated to environmental benefits in the watershed and Delta.

On the federal side, the proposed Project has been awarded $104 million in WIIN Act grants by the US Environmental Protection Agency. In addition, the proposed Project was awarded a $449 million US Department of Agriculture loan that can be used to build the intertie between the Glen-Colusa Irrigation District and Tehama-Colusa Irrigation District canals to assist in water operations for the Project and its partners. The proposed Project has submitted a letter of interest for a Water Infrastructure Finance and Innovation Act loan of up to $600 million and is awaiting the results of EPA's review process.

Schedule

The proposed key milestones to be completed over the next three years include:

- Mar 2022 – Section 7 Biological Assessment for the US Fish & Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS)
- Oct 2022 – Final Revised EIR and Supplemental EIS issued
- Mar 2022 – CDFW Incidental Take Permit issued for Operations and Construction
- Oct 2022 – Section 106 – National Historic Preservation Act Final Programmatic Agreement
- Dec 2022 – Federal ESA – Receive Biological Opinions from USFWS & NMFS
- Dec 2022 – Execute State (DWR) and Federal (USBR) Coordinated Operations Agreements
- Apr 2023 – Section 408 US Army Corps of Engineers Levee & Flood Permit and Central Valley Flood Protection Board Encroachment Permit issues
- Jun 2023 – Section 401 and 404 US EPA Clean Water Act Permit issued
- Jun 2023 – Section 1602 CDFW Streambed Alteration Agreement issued
- Oct 2023 – State Water Resources Control Board Water Right Permit issued
- Dec 2023 – 30 percent engineering design completed
- Nov 2023 – Proposition 1 Water Storage Investment Program final award from California Water Commission

Final engineering design for the project is scheduled to be completed by 2026 with reservoir construction completed by 2030 (**Attachment 6**).

Previous Metropolitan Board Authorizations

In April 2017, the Metropolitan Board authorized appropriation of $1.5 million and participation in the Phase 1 Sites Reservoir Project Agreement. The $35 million budget for the 2017/18 Workplan includes funding from the state of California, USBR, and public water agencies.

On February 12, 2019, the Metropolitan Board authorized appropriation of $4,212,500, and participation in the 2019 Reservoir Project Agreement (**Attachment 3**) through December 31, 2019. The budget for the 2019 agreement was approximately $15 million.

On October 12, 2020 the Metropolitan Board authorized appropriation of $5 million and participation in the Phase 2 Workplan and the Second Amendment to the 2019 Reservoir Project Agreement. The budget for the Phase 2

Workplan was $31.75 million, and included funding from the state of California, USBR, and public water agencies.

Policy

By Minute Item 45753, dated May 11, 2004, the Board adopted refined Bay-Delta finance and cost allocation policy principles for communication with the California Bay-Delta Authority and interested parties, as set forth in the letter signed by the Chief Executive Officer on April 20, 2004.

By Minute Item 46637, dated April 11, 2006, the Board adopted the policy principles regarding long-term actions for the Sacramento-San Joaquin River Delta as described in the revised letter signed by the General Manager on April 4, 2006.

By Minute Item 47135, dated June 12, 2007, the Board supported, in principle, the proposed Delta Action Plan, as set forth in the letter signed by the General Manager on May 25, 2007.

Fiscal Impact

Funding for Metropolitan's cost-share amount of the Amendment 3 Workplan is payable over a three-year period, $5 million in CY 2022, $7 million in CY 2023, and $8 million in CY 2024. Payments due in CY 2023 and CY 2024 ($7 million and $8 million, respectively) was included in Metropolitan's proposed fiscal year 2022/23 and 2023/24 budget. Funding for CY 2022 ($5 million) is proposed to be funded out of Metropolitan's existing fiscal year 2021-22 budget. Staff is scheduled to bring this item for Board consideration in April 2022.

Stephen N. Arakawa *Date*
Manager, Bay-Delta Initiatives

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Sites Reservoir Location Map
Attachment 2 – Sites Reservoir Facilities Map
Attachment 3 – 2019 Reservoir Project Agreement
Attachment 4 – Third Amendment to the 2019 Reservoir Project Agreement
Attachment 5 – Sites Reservoir Project Participants
Attachment 6 – Sites Reservoir Schedule
Attachment 7 – Sites Reservoir RDEIR-SDEIR Common Questions & Responses

Ref# eo12685582

From: Jerry Brown [jbrown@sitesproject.org]
Sent: 3/1/2022 2:01:25 PM
To: Joe Trapasso [jtrapasso@sitesproject.org]
CC: Kevin Spesert [kspesert@sitesproject.org]; Marcia Kivett [MKivett@sitesproject.org]
Subject: Re: Yocha Dehe Tribe Monitoring Agreement for Signature
Attachments: Yocha Dehe Monitoring Agreement fully executed.pdf

Here you go. Good work.

From: Joe Trapasso <jtrapasso@sitesproject.org>
Date: Tuesday, March 1, 2022 at 1:49 PM
To: Jerry Brown <jbrown@sitesproject.org>
Cc: Kevin Spesert <kspesert@sitesproject.org>, Marcia Kivett <MKivett@sitesproject.org>
Subject: Yocha Dehe Tribe Monitoring Agreement for Signature

Jerry,

Attached for your signature on page 4 is the Yocha Dehe Tribe Monitoring Agreement. The Tribe provided the Authority a Draft Agreement for review. This Draft was based on the previous Colusa Indian Community Council Monitoring Agreement with the Authority. Alan, Kevin, and I reviewed and commented on the Draft. I provided the Tribe the Authority's comments on the Draft for their review. This morning the Tribe provided the attached signed Agreement that **includes the Authority's requested changes**.

Please let Kevin or me know if you have any questions or need clarification to the attached.

Thanks,

Joe

Joe Trapasso
Program Operations Manager
Sites Reservoir Project
Phone: 530.387.1102
Email: jtrapasso@sitesproject.org
Web: www.SitesProject.org
P.O. Box 517
122 Old Highway 99 West
Maxwell, CA 95955

Standard Monitoring Agreement
Between
Yocha Dehe Wintun Nation
And
Sites Project Authority

This MONITORING AGREEMENT ("Agreement") is made and entered into as of February 25, 2022, by and between the **Yocha Dehe Wintun Nation**, a federally recognized Indian tribe ("Yocha Dehe" or "Tribe") on the one hand, and **Sites Project Authority (hereinafter "Contractor")** on the other hand. Yocha Dehe and Contractor are collectively referenced hereinafter as the "Parties".

I. RECITALS

A. <u>Subject Matter</u>: This Agreement concerns the use and/or development of real property located within the areas of Glenn, Colusa, and Yolo Counties, and which is the subject of development by Contractor. The development is commonly known as Sites Reservoir Geotechnical Activities, hereinafter referenced as the Activities and is described in Attachment IA and IB of this Agreement. As used herein, the Area of Potential Effect includes approximately 500 geotechnical investigation areas throughout Glenn, Colusa, and Yolo Counties (see Attachment IA and IB).

B. <u>Purpose</u>: The purpose of this Agreement is to establish fee schedules and terms for the use of Yocha Dehe tribal monitors for the Project; establish protocols for the relationship between Yocha Dehe and the Contractor; formalize procedures for the treatment of Native American human remains, grave goods, ceremonial items and any cultural artifacts, in the event that any are found in conjunction with the Project's development, including archaeological studies, excavation, geotechnical investigations, grading and any ground disturbing activity. Some of this Agreement is entered into as mitigation under the California Environmental Quality Act ("CEQA") and/or the National Environmental Policy Act ("NEPA") and Section 106 of the National Historic Preservation Act ("Section 106"), and any such mitigation may be a condition of approval.

C. <u>Cultural Affiliation</u>: The Tribe traditionally occupied, and can trace its historical ties to, land in the Project's Area of Potential Effect ("APE" or "Project Area"). The Project is within the boundaries of the Yocha Dehe Linguistic Territory. Thus, cultural resources identified in the APE are related to the history and tradition of the Yocha Dehe Wintun Nation and Patwin speaking peoples. Yocha Dehe has designated its Cultural Resources Department to act on its behalf with respect to the provisions of this Agreement. Any Native American human remains, grave goods, ceremonial items, and cultural items or artifacts that are found in conjunction with the development of this Project shall be treated in accordance with the Provisions of this Agreement.

II. TERMS

A. <u>Incorporation of Recitals</u>: All of the foregoing recitals are accurate and are incorporated in this Agreement by reference.

B. **Term:** This Agreement shall be effective as of the date of execution and it shall remain in effect until December 31, 2024, which is the expected completion date for the Project's Phase 2, Amendment 3, and that amended date has been approved by the Authority Board.

C. **Scope of Services and Specifications:** Given the nature and sensitivity of archaeological sites and cultural resources that are or may be within the Project area (a map of which is shown and attached hereto as Attachments IA and IB). Yocha Dehe shall provide tribal monitoring and consultation for the Project during the archaeological investigations and all ground disturbing activities required for the Project. Yocha Dehe monitors will work in collaboration with the archaeologists, inspectors, project managers and other consultants hired/employed/retained by the Contractor.

D. **Fee Schedule:**

The fee schedule for the use of Yocha Dehe Wintun Nation monitors and staff is as follows:

Native American Monitoring	$75.00 hourly rate (per monitor)
Tribal Historic Preservation Officer/ Cultural Resources Director (4 hour minimum)	$200.00 (per hour)
Tribal Executives (4 hour minimum)	$200.00 (per hour)
Cultural Resources Manager (4 hour minimum)	$175.00 (per hour)
Overtime (over 8 hrs in a day)	$112.50 hourly rate (per monitor)
Weekend and Holiday Hours	$112.50 hourly rate Saturday; and $150.00 hourly rate Sunday and Holiday
Cultural Sensitivity Training	$250.00 one time charge
Administrative Fee	15% of Invoice

Yocha Dehe's monitors will bill for time spent traveling to and from any Project site. In addition, Yocha Dehe shall be reimbursed for all costs associated with travel to and from the Project. Eligible items for cost reimbursement shall include, but not be limited to, mileage (or fuel purchases, at the submitter's election), hotel, and per diem (GSA rate).

E. **Coordination with County Coroner's Office**. In the event human remains are discovered on or near the Project site during its development, Contractor shall immediately contact the Coroner, the Director of Cultural Resources, the Cultural Resources Committee Chairperson, and the Tribal Chairman. In order to facilitate this Agreement's implementation, the appropriate County Coroner's Office shall be provided a copy of this Agreement either before any earth disturbing activities or upon request of the Tribe. Yocha Dehe agrees to provide Contractor the needed contact information in order to comply with this provision. The Coroner shall be asked by the Contractor to determine if the remains are (1) human, (2) prehistoric, and further, the Contractor shall request that the Coroner notify the State of California's Native American Heritage Commission in the event the remains are determined to be Native American. The Contractor will compensate the Coroner for reasonable fees and costs, if applicable and required by the County Coroner's office.

F. Most Likely Descendant (MLD): The Yocha Dehe Wintun Nation is the MLD for any Human Remains, Associated Funerary Objects and Artifacts found within the exterior boundaries of the Yocha Dehe Wintun Nation Linguistic Territory. Human Remains have been discovered within the Yocha Dehe Wintun Nation Linguistic Territory on occasion and in all of those cases, the Native American Heritage Commission ("NAHC") designated the Yocha Dehe Wintun Nation as the Most Likely Descendent ("MLD") under California Public Resources Code section 5097.98.

G. Treatment and Disposition of Remains. Where Native American human remains are discovered during the Project's development, and where Yocha Dehe has been designated the Most Likely Descendant (MLD), the following provisions shall apply to the Parties:

I. The Tribe shall be allowed, under California Public Resources Code sections 5097.98 (a) and 21083.2 and State CEQA Guidelines section 15064.5 (e), to: (1) inspect the site of the discovery; and (2) make recommendations as to how the human remains and grave goods shall be treated and disposed of with appropriate dignity.

II. The Tribe shall complete its inspection within twenty-four (24) hours of receiving notification from either the Contractor or the NAHC, as required by California Public Resources Code section 5097.98 (a). The Parties agree to discuss, in good faith, what constitutes "appropriate dignity" as that term is used in the applicable statutes.

III. Reburial of human remains shall be accomplished in compliance with the California Public Resources Code sections 5097.98 (a) and (b) and 21083.2 and State CEQA Guidelines section 15064.5 (e).

IV. The Parties are aware that Yocha Dehe may wish to rebury the human remains and associated ceremonial and cultural items (artifacts) on or near the site of their discovery, in an area that shall not be subject to future subsurface disturbances. Should Yocha Dehe recommend reburial of the human remains and associated ceremonial and cultural items (artifacts) on or near the site of their discovery, the Contractor shall make good faith efforts to accommodate the Tribe's request.

V. The term "human remains" encompasses more than human bones because Yocha Dehe's traditions periodically necessitated the ceremonial burning of human remains, and monitors shall make recommendations for removal of cremations. Grave goods are those artifacts associated with any human remains. These items and the soil, in an area encompassing up to two (2) feet in diameter around the burial, and other funerary remnants and their ashes, are to be treated in the same manner as human bone fragments or bones that remain intact.

H. **Treatment and Disposition of Cultural Items (Artifacts).** Ceremonial items and items of cultural patrimony reflect traditional religious beliefs and practices of the Tribe. Contractor agrees to return all Native American ceremonial items and items of cultural patrimony that may be found on the Project site to the MLD for appropriate treatment, unless Contractor is ordered to do otherwise by a court or agency of competent jurisdiction. In addition, the Tribe requests the return of all other cultural items (artifacts) that are recovered during the course of archaeological investigations on or adjacent to the Project site. Where appropriate (from the perspective of Yocha Dehe), and agreed upon in advance by Yocha Dehe, certain analyses of certain artifact types will be permitted, which may include, but which may not necessarily be limited to, shell, bone, ceramic, stone and/or other artifacts.

I. **Ownership Relinquishment.** Contractor waives any and all claims to ownership of Native American ceremonial and cultural artifacts that may be found on the Project Area. If Contractor believes that examination of cultural artifacts by an entity or individual other than the MLD is necessary, Contractor shall require that the entity or individual return said artifacts to the MLD within thirty (30) days, or any other agreed upon time frame from the initial recovery of the items.

J. **The Description of Work.** Description of work for Yocha Dehe monitors for the grading and ground disturbing operations at the Project site is provided in **Attachment II** to this Agreement and incorporated herein by this reference. Section I of Attachment II specifies the duties and responsibilities of the identified tribal monitoring crew and other specified parties. Section II of Attachment II identifies the geographical area over which the tribal monitoring crew shall oversee cultural resource mitigation and monitoring in accordance with California Public Resources Code section 21083.2 (c) and (k). Sections III and IV of Attachment II mandate compensation of the tribal monitoring crew by the Contractor.

K. **Confidentiality.** Unless otherwise required by law, the site of any reburial of Native American human remains shall not be disclosed. The Contractor will request that the County Coroner withhold public disclosure of information related to such reburial pursuant to the specific exemption set forth in California Government Code Section 6254(r). Moreover, all records relative to consultation between the Parties shall be confidential and not subject to public disclosure as required by the California Public Records Act, Cal. Govt. Code § 6250 et seq, to the extent allowed by law.

Executed by:

Yocha Dehe Wintun Nation	**Sites Project Authority**
Signature: DocuSigned by: 5ED632FDB9C34EA...	Signature: Jerry Brown
Print Name: Yvonne Perkins	Print Name: JERRY BROWN
Title: Tribal Historic Preservation Officer	Title: EXECUTIVE DIRECTOR
Date: 02/25/2022	Date: MARCH 1, 2022

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ATTACHMENT IA

TRR Early Evaluation Geotechnical Investigations, Colusa County

Introduction

The Sites Project Authority (Authority) is proposing additional geotechnical investigations in Colusa County between the existing Tehama Colusa Canal and the Glenn Colusa Main Canal to assist with determining the location of the Terminal Regulating Reservoir (TRR) associated with the preferred alternative for the proposed Sites Reservoir Project. Proposed field investigations are focused in this area at this time so that a comparative engineering analysis can be conducted to inform the location of the TRR as part of the preferred alternative for the Sites Reservoir Project. Identification of the TRR location is critical to move forward with the Sites Reservoir Project planning, permitting, engineering design, and engineering cost estimate. Subsurface geotechnical investigations as part of the TRR Early Evaluation Geotechnical Investigations (proposed Project) include approximately 7 borings, 5 cone penetrations test probes, 2 seismic cone penetration test probes, and the installation of up to 4 piezometers. The proposed investigations are scheduled to take place in the first quarter of 2022.

The proposed Project constitutes a preparatory, investigatory action that is necessary to obtain requisite data to inform the proposed Sites Reservoir Project planning, permitting, engineering design, and engineering cost estimate. Previous geotechnical investigations were completed in 2019, 2020, and 2021. These investigations found more challenging foundation conditions at the then existing TRR location, located east of the Glenn Colusa Main Canal. This resulted in the Authority exploring new possible TRR locations. The geotechnical investigations proposed consist of preliminary explorations at this new TRR location. The proposed Project does not in any way commit the Authority or any other party to any definite course of action regarding the Sites Reservoir Project[1].

Project Location

The proposed Project consists of geotechnical field investigations within the proposed footprint of TRR West in Colusa County. **Figure 1** shows the area of the proposed geotechnical investigations and vicinity. The specific locations of the proposed geotechnical investigations and proposed access routes are shown in **Figure 2**. Proposed investigations would be located on a private property with access granted and locations coordinated with the landowner, and would be focused in areas where additional data are needed for engineering design. Access to the property would be coordinated with adjacent property owners.

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[1] One of the prerequisites that would need to be fulfilled before the Sites Reservoir Project could be approved and constructed is the completion of environmental review under the California Environmental Quality Act (CEQA). As part of that environmental review, the Authority, as the lead agency that is conducting the review, reserves all of its rights, responsibilities, obligations, powers, and discretion under the provisions of CEQA to: (i) evaluate the environmental impacts of the Sites Reservoir Project; (ii) deny and disapprove the Sites Reservoir Project if the environmental review reveals significant environmental impacts that cannot feasibly be mitigated; (iii) adopt feasible mitigation measures and/or an alternative to the Sites Reservoir Project to avoid or lessen significant environmental impacts; or (iv) determine that any significant environmental impacts that cannot feasibly be mitigated are outweighed by the economic, social or other benefits of the Sites Reservoir Project.


Proposed Geotechnical Investigations Area
Proposed Geotechnical Investigations and Access Route
Counties
PROPOSED TERMINAL REGULATING RESERVOIR EARLY EVALUATION GEOTECHNICAL INVESTIGATIONS
SITES RESERVOIR
FIGURE 1 - PROJECT AREA
Feet
Sites


CPT
Mud Rotary
Existing Road/Path
Proposed Overland Route
PROPOSED TERMINAL REGULATING RESERVOIR EARLY EVALUATION GEOTECHNICAL INVESTIGATIONS
SITES RESERVOIR
FIGURE 2 - PROPOSED LOCATIONS AND ACCESS
Feet
Sites

Description of Proposed Activities

The proposed geotechnical investigations for the TRR Early Evaluation effort include approximately 7 borings, 5 cone penetration test (CPT) probes, 2 seismic CPT probes, and installation of up to 4 piezometers, which are summarized in **Table 1.**

Table 1. Investigation Type, Number, and Depth

Investigation Type	Number of Investigations	Depth
Boring	7	90 feet below grade
CPT probes	5	70 to 90 feet below grade
Seismic CPT probes	2	70 to 90 feet below grade
Piezometers	4	20 to 100 feet below grade

Work is scheduled to occur in the first quarter of 2022 and be complete by the end of March 2022. Due to the time of year these activities would take place, along with the proximity of the activities to sensitive environmental resources, all of the subsurface geotechnical investigation work areas would require avoidance and minimization measures such as the use of temporary barrier fencing, biological monitoring, and pre-activity clearance assessments and/or surveys. Therefore, the Authority has developed and incorporated standard geotechnical project protocols and procedures into the proposed Project, as appropriate, to avoid potential environmental effects. To further avoid adverse effects on environmental resources and existing agricultural activities, geotechnical investigations would largely be confined to areas previously disturbed, used for grazing, and where specific access is granted by the landowner. Although proposed locations have been identified (**Figure 2**), slight adjustments in exact location may be required: 1) to avoid sensitive environmental resources; 2) if specific site conditions are different than anticipated; or 3) if additional locations are needed. If identified locations must be adjusted or additional locations are needed, coordination with resource experts to avoid sensitive resources, consistent with the Authority's standard geotechnical project protocols and procedures would be completed.

Subsurface Geotechnical Investigations

Subsurface geotechnical investigations would include exploratory auger and rotary wash borings, with downhole testing and rock coring, CPT probes, seismic CPT probes, and installation of piezometers to collect subsurface data and samples. Downhole testing and laboratory analysis would determine physical properties and conditions of the subsurface materials.

All subsurface geotechnical investigation techniques would require some degree of ground disturbance to gain necessary geotechnical information, including spot leveling of areas directly below truck leveling jacks and holes measuring 2 to 10 inches in diameter through which augers and sampling equipment would be lowered to collect subsurface data and samples. Work areas would be up to approximately 200 feet wide by 500 feet long for auger and rotary wash borings, and piezometers, and 50 feet wide by 100 feet long for CPTs, and seismic CPTs. Site preparation such as vegetation clearing or grading is not anticipated prior to commencement of activities at each of the geotechnical work areas.

Investigations would require up to ten personnel, including equipment operators and assistants, a utility locator, a geologist/engineer to document conditions encountered, biological, cultural and tribal monitors, project managers, and safety staff. Each geotechnical investigation site would be active for a period ranging from 1 day for CPT probes and up to 21 days for deep boreholes/piezometers. Below are descriptions for each type of subsurface geotechnical investigation for the proposed Project.

Borehole Drilling and Rock Coring

Borehole drilling (i.e., auger or rotary wash borings/corings) would be performed using a drill rig that utilizes a combination of pilot bit, hollow stem flight augers, rotary wash and diamond core drilling methods and equipment. The hollow stem augers would likely have 8.5-inch outer diameter, and 4.25-inch inner diameter. Once rock is encountered, the rig will be converted over to rotary wash drilling and coring methods. All drill cuttings and any drilling fluids would be contained onsite in drums or bins and removed from the site to an existing permitted landfill or waste treatment facility. At a given auger or rotary wash boring location, various downhole testing would be conducted either concurrently with drilling or following drilling. Downhole testing may include any combination of the following methods at frequencies determined by the engineering team and as conditions dictate in the field: optical televiewer, acoustic televiewer, suspension logging (seismic downhole), and others as deemed appropriate depending on the conditions encountered during field work.

Drilling equipment at select locations would need to be left onsite until drilling and downhole testing activities are completed. Boreholes would be covered overnight. Once work at each boring is complete, augers and testing equipment are removed, borings will either be grouted in accordance with California regulations and industry standards (Water Well Standards, DWR 74-81 and 74-90) or would be completed as a standpipe piezometer encased in a metal stove pipe riser as described below. The areas would then be cleared of work items. Duration of activities would range from 2-days to 21-days at each location.

Cone Penetration Tests

CPTs are minimally invasive and consist of a specialized vehicle that inserts a 1.7-inch-diameter cone (probe) into the ground with a hydraulic direct push system, with the probe being advanced out of the center of the truck box housed on a diesel truck. Seismic CPTs are also proposed and only differ in that they include a seismic cone for measuring downhole response to a shear wave. A shear wave source is induced into the ground by striking a steel beam at the ground surface with a hammer. Once each test is complete (typically 12 hours), the rod would be retracted, the hole would be grouted and capped with soil, and the area cleared of work items.

Piezometers

Four of the borings will be completed as standpipe piezometers in accordance with California regulations and industry standards (Water Well Standards, DWR 74-81 and 74-90). Installation of piezometers would not result in additional ground disturbance beyond the original boring area footprint. After construction of the piezometer, the riser pipe will extend 2 to 3 feet above grade and be protected in a metal, locking stovepipe. The piezometers will be instrumented with a data logger. The stove pipe will be encased at its base in concrete. If, through coordination with the property owner, other installation methods are needed, it is still expected that the ground disturbance would be limited to the original boring area footprint.

Investigation Equipment, Required Personnel, and Site Access

Access to the proposed investigation areas would include vehicle travel via existing roadways and new overland access routes. Vehicular access to the proposed investigation areas would be primarily provided by existing improved public and private roads, none of which would require additional improvements other than minor maintenance, such as repairing potholes or impassable portions of roads. All such maintenance would be completed according to the applicable county standards. Where investigation points are located beyond an existing travel path, short (less than 100 foot sections) of overland routes would be required through portions of the grasslands. Overland access routes would be as direct as possible and require no excavation or grubbing. Drainage crossings are not anticipated. All temporary access routes would be located outside of wetlands and other aquatic resources and adhere to species-specific buffer zones to the maximum extent feasible. The final access route will be determined in the field with biological, cultural, and tribal monitors present to avoid any sensitive resources including disturbances to bed, bank, and wetland/riparian habitats.

Vegetation removal is not anticipated, but if required either for access or to avoid hazards (e.g., wildland fire), would be performed at investigation sites and along access routes to the minimum extent feasible and with biological monitors present to avoid any sensitive resources including riparian and wetland habitats. Vegetation may be mowed and/or pruned in work areas using handheld gas- or battery-powered equipment.

Equipment, support vehicles, and materials would be staged on site. Equipment use would be planned to optimize onsite staging and reduce offsite traffic and travel. All staging areas would be located outside of wetlands and other aquatic resources and adhere to species-specific buffer zones to the maximum extent feasible. Workers in remote areas would be provided necessary onsite amenities (e.g., waste and sanitary facilities). Carpooling would be encouraged to the extent feasible. Table 2 lists the anticipated equipment required for the field investigations.

Crew vehicles and equipment would access the investigation areas daily throughout the investigation period. Adjacent property owners and managers of local canal roads would be notified prior to commencement of activities as necessary. Equipment used during geotechnical explorations would include, but is not limited to, the following: auger drill rig, CPT rig, downhole testing equipment, water truck, generators, pumps, hoses, pickup trucks, and sport utility vehicles.

Table 2. Proposed Action Equipment and Anticipated Duration of Use

Equipment	Estimated Number of Pieces of Equipment	Hours Per Day
Auger Drill Rig	1	12
Cone Penetration Testing Rig	1	12
Water Trucks	1 (included for dust suppression)	<12
ATV and trailers	1	<12
Pickup trucks/Sport Utility Vehicles	2-4	<12

Schedule

The proposed geotechnical investigations would occur in the first quarter of 2022 and would be completed by the end of March 2022. The duration of field sample collection and testing activities at each location would vary from 1 day to 4 weeks, depending on the conditions and activity. Activities would be temporary and short term. Piezometers would be left in the ground for up to 10 years and would be inspected and maintained periodically. All work would be completed during daylight hours.

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ATTACHMENT IB

2022 through 2024 Geotechnical Investigations, Glenn, Colusa, and Yolo Counties

Overview of Proposed Project

The Proposed Project would be implemented in various locations north, east, and south of Funks Reservoir in Colusa and Glenn Counties within, and in the vicinity of the proposed Sites Reservoir inundation area and south of Dunnigan in Yolo County (Figure 1) along the proposed Dunnigan Pipeline. There are also two locations on county roads north of Hamilton City near the origin of the Glenn-Colusa Irrigation District (GCID) Main Canal (Figure 2). The focus of the investigations would be areas for the proposed Sites Reservoir saddle dams, roads, bridges, pumping and generating plants, borrow areas, tunnels, pipelines, and transmission corridors. Geotechnical investigations would be located in areas where additional or updated data is needed to inform engineering cost projections, design, environmental documentation, and permitting requirements for the proposed Sites Reservoir.

The three types of field studies required include: geologic, geotechnical, and geophysical. Geologic mapping surveys are needed to map the existing geology of the proposed inundation area, proposed conveyance facilities, and roads (Figure 2). These surveys would be performed on foot within areas immediately surrounding Funks Reservoir and lands between the existing reservoir and the proposed Sites Reservoir inundation area including lands south of Hunters Creek, east and south of Funks Creek, adjacent to Maxwell Sites Road and Sites Ladoga Road, and throughout the Dunnigan Pipeline corridor (Figure 2).

The geotechnical investigations would include up to 70 pavement cores, 258 augers and borings, and 33 cone penetration test (CPT) probes (of these 11 are characterized as seismic CPTs [SCPT]) throughout the proposed Sites Reservoir inundation area and associated conveyance facilities in Colusa, Glenn and Yolo Counties. In addition, approximately 70 piezometers/wells are proposed at select auger or boring locations (Table 1 and Figure 2). The geophysical surveys would be comprised of up to 100 transect lines within the proposed Sites Reservoir inundation area. Up to 16 geologic pedestrian surveys are also proposed in the Project Area. Methods for carrying out the geotechnical and geophysical surveys would include one crew onsite. Additional methods for SCPTs, piezometers, and wells are described below in more detail. The anticipated number and types of geotechnical investigations are listed in Table 1.

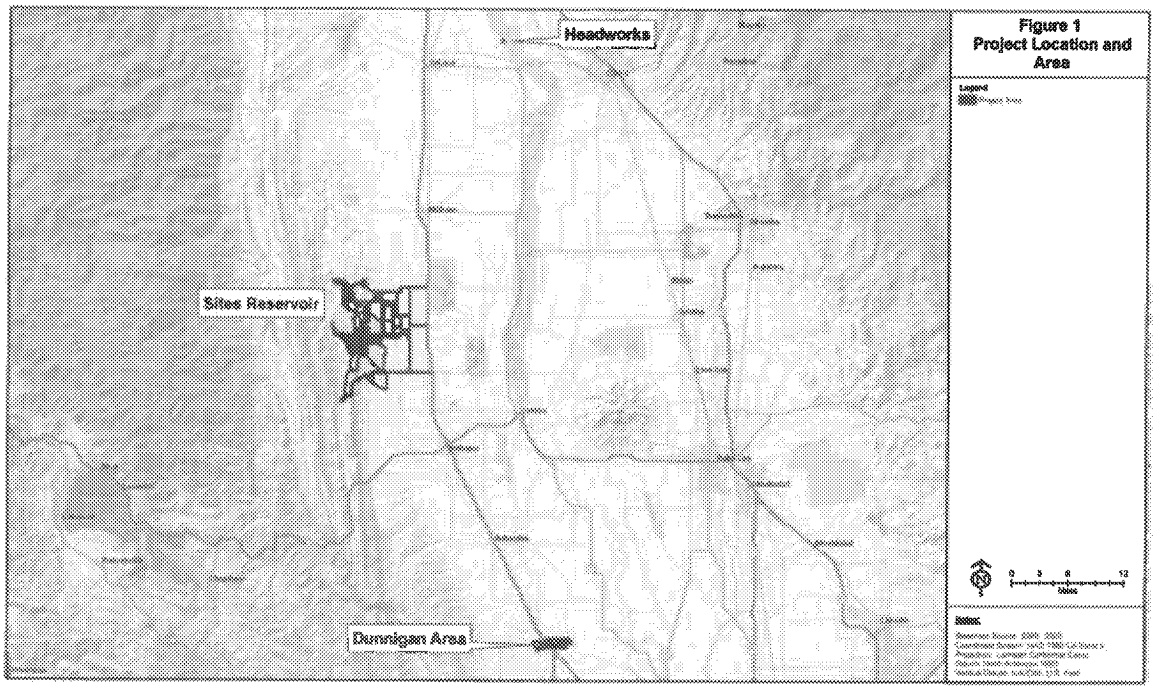
Figure 1
Project Location and Area
Headworks
Sites Reservoir
Dunnigan Area

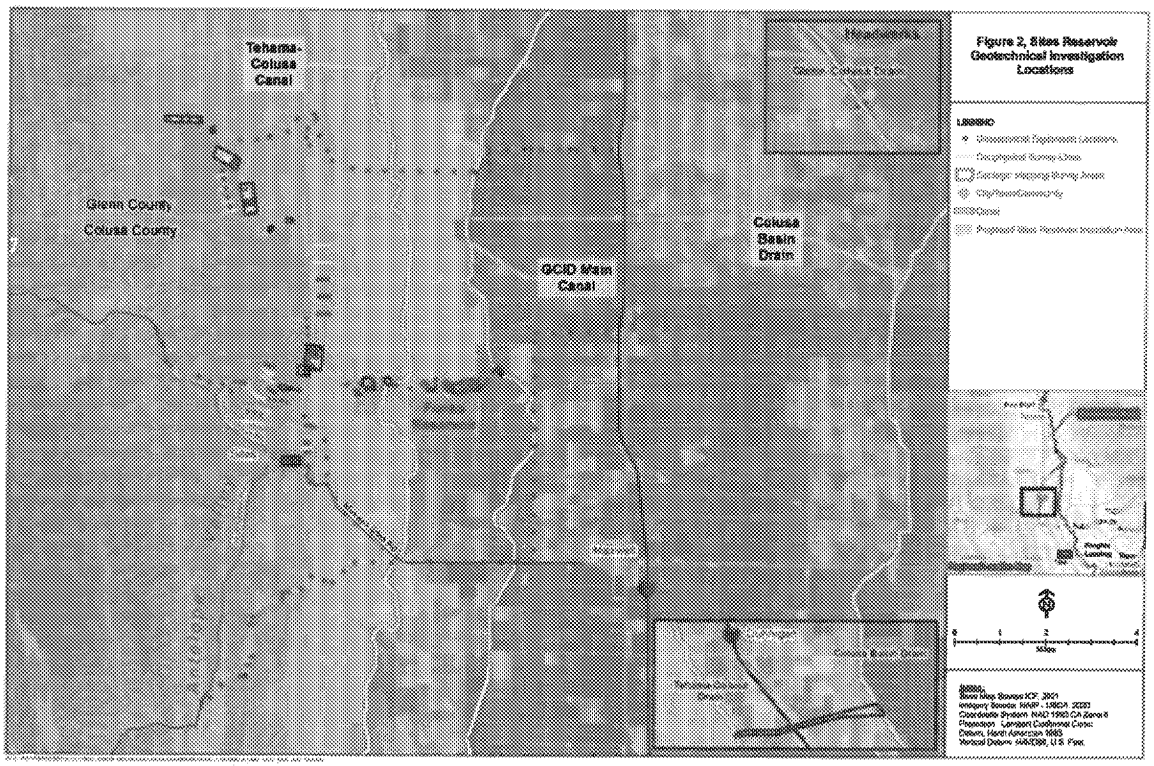
Figure 2, Sites Reservoir Geotechnical Investigation Locations
Tehama-Colusa Canal
Glenn County
Colusa County
GCID Main Canal
Colusa Basin Drain
Headworks

Table 1. Investigation Type and Approximate Number by Proposed Action Feature

Proposed Sites Reservoir Feature	Investigation Type and Approximate Number
Headworks	• 2 Borings, 75 feet below grades
Sites Reservoir Inundation Area	• 70 Pavement Cores, 3 feet below grades • 190 Borings, 30 to 550 feet below grades • 45 Piezometers, 100 to 350 feet below grades • 100 Geophysics Surveys, 700 to 3,000 feet in length, and at each investigation point, non-invasive • 10 Geologic Mapping Walking Surveys, non-invasive.
Funks Reservoir	• 10 Borings, 20 to 100 feet below grades • 2 Piezometers, 100 to 350 feet below grades • 1 Geologic Mapping Walking Surveys, non-invasive.
Terminal Regulating Reservoir Pipeline	• 36 Borings, 50 to 90 feet below grades • 16 Cone Penetration Test Probes, 70 to 90 feet below grades • 5 Seismic Cone Penetration Test Probes, 70 to 90 feet below grades • 15 Piezometers, 100 to 350 feet below grades • 1 Geologic Mapping Walking Surveys, non-invasive.
Dunnigan Pipeline	• 20 Borings, 35 to 80 feet below grades • 6 Cone Penetration Test Probes, 70 to 90 feet below grades • 6 Seismic Cone Penetration Test Probes, 70 to 90 feet below grades • 8 Piezometers, 50 to 80 feet below grades • 5. 4 Geologic Mapping Walking Surveys, non-invasive.
Total	• **70 Pavement Cores, 3 feet below grades** • **258 Borings, varying from 20 to 550 feet below grades** • **70 Piezometers, varying from 50 to 350 feet below grades** • **33 Cone Penetration Test Probes, varying from 70 to 90 feet below grades** • **16 Geologic Mapping Surveys, non-invasive** • **Geophysics Survey at each investigation point (348 total) in addition to 100 survey transects, varying in length from 700 to 3,000 feet, non-invasive.**

Up to 70 pavement core locations and 25 borings would be located in developed areas (e.g., existing roadways, areas of exposed soil in croplands or developed areas). The remaining augers and borings would be in grasslands and oak woodlands located north and south of the town of Sites, around Funks Reservoir, adjacent to Funks Creek, Stone Corral Creek, and Antelope Creek in Glenn and Colusa Counties (Figure 2).

The Project Area and investigation locations shown in Figures 1 and 2 include large parcels of land in some sections to allow for flexibility in accessing multiple investigation sites as access is subject to pending approval by the current landowners in the region. Slight adjustments in the exact location of the investigations may be required to avoid cultural, tribal, or biological resources, if specific site conditions are different than anticipated, or if additional borings or surface investigations are needed. These slight adjustments would be limited to work area locations shown in Figure 2 and identified in permit documents with the resources agencies.

Surface Geologic Investigations

Surface geologic investigations (pedestrian surveys) involve noninvasive physical methods of survey to determine soil and rock properties at the surface, including walking transects, soil mapping, and rock analyses using hand tools (i.e., small hammer). These standard investigation methods are commonly used and effects, if any, are typically localized and negligible. The specific walking investigations would be conducted immediately surrounding Funks Reservoir and lands between the existing reservoir and the proposed Sites Reservoir inundation area including lands south of Hunters Creek, east and south of Funks Creek, adjacent to Maxwell Sites Road, and throughout the Dunnigan Pipeline corridor (Figure 2).

Surface Geophysical Investigations

Geophysics surveys are limited linear survey transects. Geophysical investigations typically involve various noninvasive or minimally invasive physical methods, including seismic, gravitational, magnetic, electrical, and electromagnetic testing to determine the properties of the subsurface. These standard investigation methods are commonly used and effects if any, are typically localized and negligible. Two types of geophysical surveys are proposed: (1) surface seismic refraction testing; and (2) electrical resistivity imaging/tomography. Each linear survey test would typically be performed over a 1- or 5-day period of 10-12-hour days. Surveys are planned for both wet and dry weather conditions. No equipment would be left onsite overnight. Upon completion of the investigation, equipment would be removed to return the sites to their original condition to the extent practicable.

Surface seismic refraction testing would be used to determine the properties of the subsurface. This method consists of seismic recorders and receiver groups (geophones), a seismic source, and various cables. The geophones are placed in the ground on spikes that are approximately 4 to 6 inches long. The seismic source may include sledgehammer or weight drop. Approximately three to five personnel would lay the array of cables and geophones parallel and perpendicular to the axis of each proposed embankment and other proposed associated features. The arrays would vary in length between 100 to 500 feet at a time and can be viewed easily by the crew to ensure no disturbance of the equipment occurs during an array test. Typically, no other ground disturbance would be necessary, although loose soil may be removed by shovel to a depth of approximately 3 inches to provide adequate contact for the geophones.

Electrical resistivity imaging/tomography (ERI/ERT) is a geophysical survey method to determine geo-electrical properties of the subsurface. Field measurements commonly utilize half-inch diameter stainless steel electrodes, which are driven approximately 4 to 6 inches into the ground with a hand-sledge or other small sledgehammer. Electrodes are connected to the controller electronics by means of multi-channel resistivity cables that convey electrical current to a pair of electrodes and are used to measure voltages across other pairs of electrodes. The injected electrical current varies from tens of milliamps (10 mA) to about half an amp (500 mA) at approximately 400 volts DC. A single test takes approximately 45 to 90 minutes to complete, depending upon the data acquisition parameters required to properly complete resistivity imaging for a particular location. Electrodes and cables are then moved to the next setup location, and the process is repeated. All equipment is picked up at the end of each day. The test system is completely self-contained. The specific investigations would be conducted at designated locations.

Subsurface Geotechnical Investigations

Geotechnical exploratory pavement borings, auger and rotary wash borings with downhole testing and rock coring, and CPT probes would be used to collect subsurface data and samples, and to examine material processing requirements for the Proposed Project. Downhole testing and laboratory analysis would determine physical properties and conditions of the subsurface materials. Downhole testing would include permeability and aquifer testing, packer testing, dilatometer testing, pressure meter testing, seismic logging, televiewers, and caliper measurements.

All subsurface geotechnical investigation techniques would require some degree of ground disturbance to gain necessary geotechnical information, including spot leveling of areas directly below truck leveling jacks and holes measuring 2 to 10 inches in diameter through which augers and sampling equipment would be lowered to collect subsurface data and samples. Minor site surface grading may be necessary only at investigation areas with moderate to steep slopes or uneven terrain to stabilize equipment. Work areas would consist of the smallest footprint necessary to complete the investigations and avoid sensitive biological and cultural resources. Site preparation is not anticipated prior to commencement of activities at each of the geotechnical work areas.

Activities at each investigation location would require up to ten personnel, including equipment operators and assistants, a utility locator, a geologist/engineer to document conditions encountered, biological, cultural, and tribal monitors, project managers, and safety staff. Each geotechnical investigation site would be active for a period ranging from 1 day for pavement cores and CPT probes and up to 21 days for deep boreholes. Below are descriptions for each subsurface geotechnical investigation proposed for the Project.

Borehole Drilling

Borehole drilling (i.e., pavement, auger, or rotary wash borings) would be performed using a drill rig that utilizes a combination of pilot bit, hollow stem flight augers, and rotary diamond core drilling. The hollow stem augers would likely have 8.5-inch outer diameter, and 4.25-inch inner diameter, with a 5-foot-long split tube inner barrel for dry core sample collection. Standard Penetration Test samplers may also be used at 5-foot intervals. All drill cuttings and any drilling fluids would be contained onsite in drums or bins and removed from the site to an existing permitted landfill or waste treatment facility. At a given auger or rotary wash boring location, various downhole testing would be conducted either concurrently with drilling or following drilling. Downhole testing may include any combination of the following methods at frequencies by the engineering team and as conditions dictate in the field: dilatometer-pressure meter, optical televiewer, acoustic televiewer, suspension logging (seismic downhole), packer testing, dissipation testing, hydraulic profiling tools, mini-pump testing tools, and others as deemed appropriate depending on the conditions encountered during field work. Pavement coring equipment may also be required prior to drilling at locations within existing and proposed roadways.

Drilling equipment at select locations would need to be left onsite until drilling and downhole testing activities are completed. Boreholes would be covered overnight. Once work at each boring is complete, augers and testing equipment are removed, boring and probes would be grouted and resurfaced in accordance with California regulations and industry standards (Water Well Standards, DWR 74-81 and 74-90) or would be completed as a monitoring well/piezometer as described in a subsequent section. With respect to fill in two aquatic features (one seasonal wetland and Funks Reservoir) which could not be avoided, the top 12 inches of these bore holes would be backfilled with existing topsoil. The areas would then be cleared of work items. Duration of activities would range from 1-day to a three-week period at each location.

Cone Penetration Tests

CPTs are minimally invasive and consist of a specialized vehicle that inserts a 1.7-inch-diameter cone (probe) into the ground with a hydraulic direct push system, with the probe being advanced out of the center of the truck box housed on a diesel truck. Once each test is complete (typically 12 hours), the rod would be retracted, the hole is grouted and capped with soil, and the area cleared of work items.

Seismic CPTs are similar to CPTs and only differ in that they include a seismic cone for measuring downhole response to a shear wave. A shear wave source is induced into the ground by striking a steel beam at the ground surface with a hammer. Once each test is complete (typically 12 hours), the rod would be retracted, the hole is grouted and capped with soil, and the area cleared of work items.

Piezometers and Wells

Both temporary and longer-term wells and piezometers would be installed in selected boring locations in accordance with California regulations and industry standards (Water Well Standards, DWR 74-81 and 74-90). Installation of wells and piezometers would not result in additional ground disturbance beyond the original boring footprint. Aquifer tests would be performed at selected sites, mostly along the TRR and Dunnigan. Water levels in piezometers and wells would be periodically checked several times a year for up to 10 years. Up to two personnel in a pickup truck or sport utility vehicle would be required for each monitoring event. All work would be conducted within the area used to install the wells and piezometers.

Aquifer Testing

Aquifer testing is also planned at select boring locations including a bailing test and/or slug test. During a bailing test, water is pumped out to empty the casing rapidly (completely or partially) and then the water level recharge is monitored as it recovers to its original level. It is estimated that less than 60 gallons of water would be pumped out during a bailing test, and this water would be disposed of in 55-gallon drums. During a slug out test, a cylindrical solid slug is lowered into the well to displace several cubic feet of water out of the casing into the surrounding formation. After the water level has equilibrated with the water table, the slug is removed, and recovery is monitored. No water is pumped into or out of the well during a slug test.

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Investigation Equipment, Required Personnel, and Site Access

Access to the proposed investigation areas would include vehicle travel via existing roadways and proposed overland access routes. Vehicular access to the proposed investigation areas would be primarily provided by existing improved public and private roads, none of which would require additional improvements other than minor maintenance, such as repairing potholes or impassable portions of roads. All such maintenance would be completed according to the applicable county standards. However, most of the geotechnical work areas would require additional overland access through portions of grasslands and woodlands, where dirt roads do not exist. Overland access routes would be as direct as possible and require no excavation or grubbing. Drainage crossings are anticipated and would require the use of clean, contained, temporary fill such as steel plates or hard density plastic mats for temporary vehicular access. All other temporary access routes would be located outside of wetlands and other aquatic resources and adhere to species-specific buffer zones to the maximum extent feasible. Final routes would be determined in the field with biological, cultural, and tribal monitors present to avoid any sensitive resources including disturbances to bed, bank, and wetland/riparian habitats.

Vegetation removal is not anticipated, but if required either for access or to avoid hazards (e.g., wildland fire), would be performed at various geotechnical location areas and access routes to the minimum extent feasible and with biological monitors present to avoid any sensitive resources including riparian and wetland habitats. Vegetation may be mowed and/or pruned in work areas using handheld gas- or battery-powered equipment. With the exception of subsurface geotechnical investigations (i.e., borings), much of the proposed field work would be minimally invasive. Investigation areas would be returned to existing conditions upon completion of activities.

Equipment, vehicles, and materials would be temporarily staged at each designated work area. Equipment use would be planned to optimize onsite staging and reduce offsite traffic and travel. All staging areas would be located outside of wetlands and other aquatic resources and adhere to species-specific buffer zones to the maximum extent feasible. Workers in remote areas would be provided necessary onsite amenities (e.g., waste and sanitary facilities). Carpooling would be encouraged to the extent feasible.Crew vehicles and equipment would access the investigation areas daily throughout the investigation period. Flaggers, cones, and other measures would be used to control the flow of traffic near active roadways. Neighbors would be notified prior to commencement of activities as necessary.

Table 2 provides the estimated number of each type of equipment required to complete the Project.

Table 2. Project Equipment and Anticipated Duration of Use

Equipment	Estimated Maximum of Pieces of Equipment	Hours Per Day
Auger Drill Rig	1	12
Cone Penetration Testing Rig	1	12
Rock Coring Drill Rig	1	12
Skid Drill Rig	1	12

Equipment	Estimated Maximum of Pieces of Equipment	Hours Per Day
Backhoe	1	<12
Generator	2	12
Pump	2	12
Water Trucks	2 (included for dust suppression)	<12
ATV and trailers	2	<12
Pickup trucks/Sport Utility Vehicles	3	<12

Schedule

The proposed geotechnical sample collection and testing activities are scheduled between June 2022 and December 2024. Subsurface investigations proposed in Funks Reservoir are scheduled during the annual dry-down period between January and February 2023 and one bore location within a potential seasonal wetland would be conducted in the summer ensuring dry conditions for work activities. Surface geophysical investigations in areas with potential seasonal wetlands are also scheduled during the summer months. The duration of field sample collection and testing activities at each location would vary from 0.5 day to 3 weeks, depending on the conditions and activity. Piezometers and wells would be left in the ground for up to 10 years. All proposed investigations would be conducted during daylight hours. The sequence of field investigations would depend on site and seasonal conditions, as well as landowner access.

Attachment II

NATIVE AMERICAN MONITORING OF GRADING AND GROUND DISTURBING ACTIVITIES

I. **Specifications:** Given the nature and sensitivity of the archaeological sites and cultural resources that are in or may be within the Project area, the Yocha Dehe Wintun Nation, a federally recognized Indian tribe and the Most Likely Descendant as identified by the Native American Heritage Commission, shall provide the tribal monitoring, consultation and facilitation for this Project during the archeological investigations, and all ground disturbing activities for the Project. Yocha Dehe's monitors will work in concert with the archaeologists and Project engineers hired/employed/retained by Contractor. The tribal monitors or Project archaeologists will be empowered to halt all earthmoving equipment in the immediate area of discovery when cultural items or features are identified until further evaluation can be made in determining their significance. It is understood that all surface and subsurface artifacts of significance shall be collected and mapped during this operation following standard archaeological practices.

After discovery of cultural items or features, discussions between the tribal monitors and Project archaeologist will occur to determine the significance of the situation and best course of action for avoidance of resources, protection of resources, and/or data recovery, as applicable.

II. **Project to be Monitored:** Monitoring shall encompass the the Sites Reservoir Project and shall be known as the Project Area. It is agreed that monitoring shall be allowed for all archaeological studies, excavations, and groundbreaking activities occurring in conjunction with the development of the Project.

III. **Project Crew Size:** The Parties to this Agreement project the need for a tribal monitoring crew size to be determined by the Cultural Site Protection Manager, in accordance with Yocha Dehe Wintun Nation Cultural Law. If the scope of the work changes (*e.g.*, inadvertent discoveries of cultural resources or simultaneous grading of area that requires multiple tribal monitors), additional tribal monitors may be required. Contractor agrees to directly compensate Yocha Dehe for all of the work performed by the tribal monitors. The compensation rate shall be made directly from Contractor to the Tribe in accordance with Section II.D. of the Standard Monitoring Agreement. If human remains are found, the coordination of the reburial of those remains and any associated cultural and ceremonial items shall be conducted in accordance with Sections III and IV of the Standard Monitoring Agreement.

IV. **Insurance and Indemnity:** Yocha Dehe shall provide the tribal monitoring crew for the Project and shall be responsible for coordinating the tribal monitors' activities on the Project. The Tribe recognizes that dangerous conditions may exist on the work site, particularly during grading operations, and agrees to assume responsibility for the safety of the tribal monitoring crew while the crew remains in the Project Area. The Tribe possesses the necessary insurance to cover any bodily injury or property damage that may be suffered by the tribal monitors and proof of such insurance shall be made available to Contractor upon request.

V. **Compensation:** Contractor shall directly compensate the Tribe in accordance with the rates identified in Section II.D. of the Standard Monitoring Agreement and procedures. Invoices will be submitted on a monthly basis and shall be paid within 30 days of submittal to assure timely tribal monitor compensation and to further assure that tribal monitoring will not be terminated for the Project.

A minimum half-day charge ("show up" time) shall be charged to Contractor for unannounced work stoppages of the tribal monitors that are not due to actions by Yocha Dehe.

VI. **Rights of Access/Stoppage/Consultation Upon Discovery:** Contractor shall provide Yocha Dehe tribal monitors with unencumbered access to the Project Area as reasonably necessary for the monitors to effectively perform the services required by this Agreement. The tribal monitors and/or Project archaeologist will be empowered to halt all earthmoving equipment in the immediate area of discovery when cultural items or features are identified until further evaluation can be made in determining their significance. It is understood that all surface and subsurface artifacts, Native American human remains, funerary objects, items of cultural patrimony, and any other cultural items shall be treated in accordance with an agreed upon artifact treatment and disposition plan by the Tribe and Sites Team.

After discovery of cultural items or features, discussions between the tribal monitors and project archaeologist will occur to determine its significance and the best course of action for avoidance, protection of resources, and/or data recovery, as applicable. While determinations will be mostly in the field, Yocha Dehe's tribal monitors may need to seek further guidance from the Most Likely Descendent, Yocha Dehe Tribal Council and/or the Cultural Resources Committee. If this rare occurrence should arise, Yocha Dehe reserves the right to request a 30-day stoppage of work.

Where circumstances warrant, the Contractor may be required, at its sole expense, to provide security personnel or remove unnecessary persons from the Project Area. For example, where the safety of tribal monitors is at risk due to controversy or other circumstances surrounding a particular Project's development, security personnel would be provided at the Contractor's expense and members of the public excluded from the Project Area. Likewise, where the protocol for the treatment of Native American human remains, funerary objects, artifacts, or items of cultural patrimony deems culturally required or appropriate, Contractor agrees unnecessary personnel will leave the Project Area during the relevant time period.

From: Alicia Forsythe [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A6CDF06A7E904B65BAA21702A82AD329-AFORSYTHE]
Sent: 3/2/2022 8:45:21 AM
To: Heydinger, Erin [Erin.Heydinger@hdrinc.com]; Angela Bezzone [bezzone@mbkengineers.com]
CC: Spranza, John [john.spranza@hdrinc.com]; Wesley Walker [walker@mbkengineers.com]; Lee Bergfeld [Bergfeld@mbkengineers.com]
Subject: RE: CalSim Modeling

Hi all – If we do have both the historical hydrology and the 2035 CT, then it would be fabulous to use both in the WAA. Apparently there is a bill in the state legislature right now that WAA's need to consider climate change. We are going to get this question, so it would be great to just head this off and include it if we can.

Hopefully it would be a 4th methodology that would continue to show a reasonable likelihood of water available for the project.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Project Authority | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Tuesday, March 1, 2022 4:01 PM
To: Angela Bezzone <bezzone@mbkengineers.com>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>; Spranza, John <john.spranza@hdrinc.com>; Wesley Walker <walker@mbkengineers.com>; Lee Bergfeld <Bergfeld@mbkengineers.com>
Subject: RE: CalSim Modeling

Hi Angela,

Good question. The Jacobs team is wrapping up the BA CalSim modeling today (fingers crossed) which includes 2035 CT climate change condition. My understanding is that Jacobs may also be providing results on the historic hydrology at the same time, but I am not sure about that. As soon as I get the results for the BA I will get them over to you. Remind me, are you using 2035 CT or historic hydrology for the CalSim that has been included in the WAA to date? My understanding of the process, though I may be wrong (Wes and Lee may know better), is that they develop the model using historic and they add in the climate change hydrology, so they will have the historic complete anyway.

Erin

Erin Heydinger PE, PMP
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From: Angela Bezzone <bezzone@mbkengineers.com>
Sent: Tuesday, March 1, 2022 3:54 PM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>; Spranza, John <John.Spranza@hdrinc.com>; Wesley Walker

<walker@mbkengineers.com>; Lee Bergfeld <Bergfeld@mbkengineers.com>
Subject: CalSim Modeling

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Hi Erin –

The revised CalSim modeling was mentioned a few times during meetings today, so I would just like to follow up to understand the timing. It sounded like the modeling would likely be finished today. Also, during the meeting with Reclamation I believe that the climate change modeling was also mentioned and that it is on a different schedule. Can you please let us know when we can expect to receive the CalSim results for incorporation into the Water Availability Analysis?

Thanks!

Angela Bezzone, P.E.

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From: Heydinger, Erin [Erin.Heydinger@hdrinc.com]
Sent: 3/2/2022 10:56:00 AM
To: Wesley Walker [walker@mbkengineers.com]; Alicia Forsythe [aforsythe@sitesproject.org]; Angela Bezzone [bezzone@mbkengineers.com]
CC: Spranza, John [john.spranza@hdrinc.com]; Lee Bergfeld [Bergfeld@mbkengineers.com]
Subject: RE: CalSim Modeling

Thanks Wes. I also confirmed with Steve this morning that both historic and climate change will be delivered. Unfortunately they've hit another small snag in wrapping up the model so are now expecting to be done by Monday.

Erin

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From: Wesley Walker <walker@mbkengineers.com>
Sent: Wednesday, March 2, 2022 10:20 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>; Heydinger, Erin <erin.heydinger@hdrinc.com>; Angela Bezzone <bezzone@mbkengineers.com>
Cc: Spranza, John <john.spranza@hdrinc.com>; Lee Bergfeld <Bergfeld@mbkengineers.com>
Subject: RE: CalSim Modeling

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Ali and Erin,

The results we have been presenting are with historical hydrology. My understanding is the same as yours, Erin. So I would expect that they would be providing model runs with both sets of hydrology.

Ali --- we agree on including the results with both sets of hydrology. It will help head off that question and also give us another "side of the coin" to look at for availability.

Thanks,
Wes

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Wednesday, March 2, 2022 8:45 AM
To: Heydinger, Erin <erin.heydinger@hdrinc.com>; Angela Bezzone <bezzone@mbkengineers.com>
Cc: Spranza, John <john.spranza@hdrinc.com>; Wesley Walker <walker@mbkengineers.com>; Lee Bergfeld <Bergfeld@mbkengineers.com>
Subject: RE: CalSim Modeling

CAUTION - EXTERNAL SENDER: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi all – If we do have both the historical hydrology and the 2035 CT, then it would be fabulous to use both in the WAA. Apparently there is a bill in the state legislature right now that WAA's need to consider climate change. We are going to get this question, so it would be great to just head this off and include it if we can.

Hopefully it would be a 4th methodology that would continue to show a reasonable likelihood of water available for the project.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Project Authority | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Tuesday, March 1, 2022 4:01 PM
To: Angela Bezzone <bezzone@mbkengineers.com>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>; Spranza, John <john.spranza@hdrinc.com>; Wesley Walker <walker@mbkengineers.com>; Lee Bergfeld <Bergfeld@mbkengineers.com>
Subject: RE: CalSim Modeling

Hi Angela,

Good question. The Jacobs team is wrapping up the BA CalSim modeling today (fingers crossed) which includes 2035 CT climate change condition. My understanding is that Jacobs may also be providing results on the historic hydrology at the same time, but I am not sure about that. As soon as I get the results for the BA I will get them over to you. Remind me, are you using 2035 CT or historic hydrology for the CalSim that has been included in the WAA to date? My understanding of the process, though I may be wrong (Wes and Lee may know better), is that they develop the model using historic and they add in the climate change hydrology, so they will have the historic complete anyway.

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

hdrinc.com/follow-us

From: Angela Bezzone <bezzone@mbkengineers.com>
Sent: Tuesday, March 1, 2022 3:54 PM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>; Spranza, John <John.Spranza@hdrinc.com>; Wesley Walker <walker@mbkengineers.com>; Lee Bergfeld <Bergfeld@mbkengineers.com>
Subject: CalSim Modeling

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Erin –

The revised CalSim modeling was mentioned a few times during meetings today, so I would just like to follow up to understand the timing. It sounded like the modeling would likely be finished today. Also, during the meeting with Reclamation I believe that the climate change modeling was also mentioned and that it is on a different schedule. Can you please let us know when we can expect to receive the CalSim results for incorporation into the Water Availability Analysis?

Thanks!

Angela Bezzone, P.E.

MBK Engineers
455 University Ave Suite 100
Sacramento, CA 95825

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Valley Elderberry Longhorn Beetle

Valley elderberry longhorn beetle is completely dependent on its host plant, elderberry (*Sambucus* sp.) (Eng 1984; Barr 1991; Collinge et al. 2001). Elderberries are a component of riparian forests throughout the Central Valley. Although this shrub occurs outside riparian areas, shrubs supporting the greatest beetle densities are located in areas where the shrubs are abundant and interspersed among dense riparian forest. Associated dominant riparian species include Fremont cottonwood (*Populus fremontii*), box elder (*Acer negundo*), California sycamore (*Platanus racemosa*), black walnut (*Juglans* spp.), white alder (*Alnus rhombifolia*), willow (*Salix* spp.), button willow (*Cephalanthus occidentalis*), Oregon ash (*Fraxinus latifolia*), wild grape (*Vitis californica*), California hibiscus (*Hibiscus californica*), and poison oak (*Toxicodendron diversilobum*) (Barr 1991; U.S. Fish and Wildlife Service 2017 ; Collinge et al. 2001). Elderberry is the obligate larval host plant for the valley elderberry longhorn beetle. Adults have been described as feeding on the nectar, flowers, and leaves of elderberry plants. Eggs are laid on elderberry stems and leaves, and the larvae develops inside, feeds upon, and pupates in the stems of elderberry shrubs (U. S. Fish and Wildlife Service 2019: 1, 2).

Habitat Model Description

The parameters of modeled habitat for the valley elderberry longhorn beetle consist of riparian land cover types (upland riparian[1], scrub-shrub wetland, forested wetland), as well as other potential land cover types that provide suitable habitat such as blue oak woodland, oak savannah, annual grassland, and ruderal land cover types. The modeled habitat was also restricted to areas below 500 feet in elevation.

Assumptions and Rationales

The assumptions upon which the habitat model parameters were based, and rationale for each assumption, are described below.

Assumption: Suitable habitat for valley elderberry longhorn beetle consists of riparian land cover types (upland riparian, scrub-shrub wetland, forested wetland), as well as other potential land cover types that provide suitable habitat such as blue oak woodland, oak savannah, annual grassland, and ruderal land cover types.

Rationale: Valley elderberry longhorn beetle occurs only in association with its host plant, elderberry, which is commonly found in riparian forests and adjacent grasslands in the Central Valley (Barr 1991:4-5). Elderberry is an important component of riparian ecosystems in California (Vaghti et al. 2009). Elderberry shrubs can also be present in non-riparian valley oak and blue oak woodland habitats (U. S. Fish and Wildlife Service 2017, U. S. Fish and Wildlife Service 2019: 2). Occupancy of elderberry by the valley elderberry longhorn beetle is generally low but tends to be highest in riparian communities (Barr 1991, Collinge et al. 2001, Talley et al. 2007) and sites with high elderberry densities (Collinge et al. 2001: 1). Elderberry shrubs also occur in non-riparian

[1] The upland riparian land cover type consists of non-wetland riparian areas (i.e., located adjacent to but above the stream ordinary high-water mark) that include valley foothill riparian species as well as blue oak, foothill pine, ornamental trees, and other shrub and tree vegetation that were not identifiable from aerial imagery.

settings in valley oak and blue oak woodlands and annual grasslands (U.S. Fish and Wildlife Service 2017: 5). Elderberry shrubs that are located in isolated sites or drainages may not provide viable colonization habitat for valley elderberry longhorn beetle due to the beetles' limited dispersal abilities (Collinge et al. 2001: 110, U.S. Fish and Wildlife Service 2017: 7).

Assumption: Suitable habitat for valley elderberry longhorn beetle is restricted to areas below 500 feet in elevation.

Rationale: The current presumed historical range of valley elderberry longhorn beetle consists of the Central Valley (the valley floor and lower foothills) from approximately Shasta County south to Madera County (U. S. Fish and Wildlife Service 2019:1, 79 FR 55874). Most beetle observations recorded are from below 500 feet in elevation (U. S. Fish and Wildlife Service 2017).

Model Limitations

The model provides a conservative estimate of potentially suitable valley elderberry longhorn beetle habitat. The model is limited by the accuracy of aerial imagery interpretation and thedifficulty in ground truthing the land cover mapping (e.g., confirm presence of elderberry shrubs) at this time due to lack of property access. All mapped valley foothill riparian, blue oak woodland, and annual grassland are deemed to be equally suitable for the species and to contain elderberry shrubs. However, studies show that valley elderberry longhorn beetle occurs in widely dispersed metapopulations (Collinge et al. 2001, Talley et al. 2006) and that the beetle occupies elderberry plants in clumps at scales that vary with the watershed; within a watershed, local aggregations of groups also spatially vary (Talley 2007). The valley elderberry longhorn beetle has limited dispersal ability, so for habitat to be suitable, many elderberry plants in reasonably sized patches (32.8-164 feet patches; Talley 2007) that are in close proximity (656- 984 feet apart; Tally 2007), and without movement barriers are required to support a population of valley elderberry longhorn beetle (U. S. Fish and Wildlife Service 2019: 5). Research also suggests that the valley elderberry longhorn beetle is further constrained by being naturally rare within its habitat (U. S. Fish and Wildlife Service 2019: 2).

Additionally, other factors that affect habitat suitability cannot be determined through aerial photograph interpretation, such as the presence or absence of Argentine ant (*Linepithema humile*) and European earwig (*Forficula auricularia*), which are nonnative insects that have been identified as potential threats to valley elderberry longhorn beetle (Talley et al. 2006: 26; 77 FR 60259-60260). Species of understory plants may not be discernable via aerial interpretation alone. Nonnative invasive woody plant species such as black locust (*Robinia pseudoacacia*), giant reed (*Arundo donax*), red sesbania (*Sesbania punicea*), Himalayan blackberry (*Rubus armeniacus*), tree of heaven (*Ailanthus altissima*), and Spanish broom (*Spartium junceum*), may be growing under valley riparian overstory trees; these species may compete with or displace elderberry shrubs (Talley et al. 2006:45).

References[2]

Barr, C.B. 1991. The Distribution, Habitat, and Status of the Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* Fisher (Insecta: Coleoptera: Cerambycidae). U.S. Fish and Wildlife Service; Sacramento, California. 134 pp.

[2] References are in the process of being gathered and may need to be modified as models are refined.

Collinge, S.K., M. Holyoak, C.B. Barr, and T.J. Marty. 2001. Riparian habitat fragmentation and population persistence of the threatened valley elderberry longhorn beetle in central California. Biological Conservation 100:103–113.Eng 1984

Talley, T.S., E. Fleishman, M. Holyoak, D.D. Murphy, and A. Ballard. 2007. Rethinking a rare species conservation strategy in an urban landscape: The case of the valley elderberry longhorn beetle. Biological Conservation 135:21–32.

Talley, T.S., D. Wright, and M. Holyoak. 2006. Assistance with the 5-year review of the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). Report to the U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, California. 74 pp. + appendix.

U.S. Fish and Wildlife Service. 2017. Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*). U.S. Fish and Wildlife Service; Sacramento, California. 28 pp. May 2017. https://www.fws.gov/sacramento/documents/VELB_Framework.pdf

U.S. Fish and Wildlife Service. 2019. Revised Recovery Plan for Valley Elderberry Longhorn Beetle. U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. iii + 18 pp. https://www.fws.gov/endangered/species/recovery-plans.html

Vaghti, M.G., M. Holyoak, A. Williams, T.S. Talley, A.K. Fremier, and S.E. Greco. 2009. Understanding the ecology of blue elderberry to inform landscape restoration in semiarid river corridors. Environmental Management 43:28–37.

DRAFT

SITES RESERVOIR PROJECT
RESPONSE TO COMMENTS GUIDANCE
INTERNAL USE ONLY

PREPARED FOR:

Sites Reservoir Project Final EIR/EIS
Sites Project Authority
Bureau of Reclamation

PREPARED BY:

ICF
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916.737.3000

March 2022

Contents

Overview

This guidance manual provides guidance to authors preparing responses to comments (RTC) on the Sites Reservoir Project (Project) as part of the Final Environmental Impact Report/Environmental Impact Statement (Final EIR/EIS). This document is intended to: (1) guide the preparation of RTC and (2) standardize a complex process. Actual responses will be guided by the types and content of comments received and authors (i.e., technical specialists) will need to collaborate with other technical specialists and members of the project management team to think through and appropriately respond to comments.

The objective of the RTC and the preparation of the Administrative Final EIR/EIS, is to provide RTC on any significant environmental issues received on the Revised Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS).

The following sources describe the RTC requirements.

- California Environmental Quality Act (CEQA) Guidelines section 15088
- Council on Environmental Quality (CEQ), Title 40 of the Code of Federal Regulations, section 1503.4 (40 CFR 1503.4)
- Bureau of Reclamation, NEPA Handbook, sections 8.15.2, 8.15.2.1

The goal of the RTC process is to ensure that the following requirements are met.

- All comments are processed, accounted for, and responded to within the allotted time frame.
- All responses are technically sound and accurate.
- All responses meet legally established standards of adequacy.

The RTC will be read by the public and will also be part of the administrative record. Comments that are clear, responsive, factually supported, and neutral in tone provide essential support for the Project and help the public understand the agencies' reasoning and ultimate decision.

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Organization of Final EIR/EIS and the Team

The Administrative Final EIR/EIS will be organized into three main volumes. Volume 3 will contain the RTC. Table 1 identifies the volumes, contents, and locations of the working files on the internal ICF Final EIR/EIS Sharepoint library and the Working RTC Tables Sharepoint Library. As you prepare RTC, you will likely refer to different parts of the Final EIR/EIS.

Table 1. Volume and Contents of Administrative Final EIR/EIS

Volume	Contents	Location on ICF Internal Sharepoint Site
1	Executive Summary and Chapters 1 – 34 where modifications will be made for the Final EIR/EIS; modifications will be identified ultimately in vertical line in the left margin	Sites Reservoir Program - Vol 1 FEIR.EIS Chapters - All Documents (sharepoint.com)*
2	Appendices 1A – 33C where modifications will be made for the Final EIR/EIS; modifications will be identified ultimately in vertical line in the left margin	Sites Reservoir Program - Vol 2 FEIR.EIS Appendices - All Documents (sharepoint.com)*
3	Chapter 1, *Introduction and Approach* Chapter 2, *Commenter Indices and Form Letter Introduction* Generally organized by type of commenters including: • Federal Agencies, Federal Elected Officials, Tribal Governments • State Agencies and Elected Officials • Local Agencies and Local Elected Officials • Nongovernmental Organizations • Members of the Public, Form Plus letters, and Form Letter Commenters Chapter 3, *Master Responses Introduction and Master Responses* Chapter 4, *Responses to Comment Tables* Appendix A, *Response to 2017 Comments Required by NEPA*	Sites Reservoir Program - Vol 3 Response to Comments - All Documents (sharepoint.com)*
Working Comment Response Tables	Working Tables organized by Action Code for Authors – ultimately will be part of Volume 3, Chapter 4	Sites Reservoir Program - Working Tables Tracker - All Items (sharepoint.com)

* The ICF team will work with others (e.g., Janis and Steve) to ensure accessibility to needed files. This may mean including files in the Working Comment Response Tables Sharepoint library.

There is a large team preparing the Final EIR/EIS. Table 2a lists the members of project management and document production team. Table 2b lists members of the technical teams.

Table 2a. Final EIR/EIS Project Management and Document Production Team

Team Member	Role	Responsibilities	Contact Information
Alicia Forsythe	Sites Project Authority Environmental Planning and Permitting Manager	• Strategic guidance for overall Project • Reviewer (May also draft responses)	-
Laurie Warner Herson	Integration – CEQA/NEPA Task Lead – Sites Project Authority Agent	• Reviewer • Strategic guidance on overall impact analysis/effect evaluation • Coordinates between other Integration leads, Authority, and Reclamation	-
Linda Fisher	Integration – CEQA/NEPA Task Support – Sites Project Authority Agent	• Reviewer • Coordinates between other Integration leads, Authority, and Reclamation	-
Melissa Dekar	Reclamation NEPA Task Lead	• Reviewer • Strategic guidance on overall effect evaluation • Coordinates between Authority and Reclamation	-
Monique Briard	ICF Permitting and Planning Program Manager	• Reviewer • Strategic guidance for overall Sites Program with respect to permitting and planning	-
Nicole Williams	ICF CEQA/NEPA Project Manager	• Manages overall workflow of the team • Sets and adjusts priorities and strategic approach accordingly in response to external forces (e.g., modeling results) and to meet internal and external deadlines/schedules • Writes Master Responses and RTC • Provides QA/QC of RTC and Master Responses	Nicole.Williams@icf.com 916.231.9614
Lyna Black	Deputy Project Manager	• Develops and implements tactics to support strategic approach. • Manages workflow/development of Master Responses for Vol. 3, Ch. 3	Lyna.Black@jacobs.com 530.680.5276

Team Member	Role	Responsibilities	Contact Information
		• Works with authors on non-modeling dependent changes to chapters/appendices in Vols. 1 and 2 • Provides QA/QC of RTC and Master Responses	
Caitlyn Bishop	RTC Coordinator	• Coordinates workflow/process for responding to comments in RTC tables and coordinates directly with authors and Susan Davis's team • Provides QA/QC of chapters for changes based on RTC tables • Provides QA/QC of RTC tables by action code and comment letters based on output from database • Works with Susan Davis to generate the tables in Vol. 3, Ch. 2, Indices of Commenters, and Index of Form Masters	Caitlyn.Bishop@icf.com 415.300.7090
Susan Davis	Content Analysis Team Leader	• Leads the team of coders and database entry staff who are reviewing, coding, and entering comments and responses into the RTC database in Microsoft Access • Generates RTC tables first by action code and then by comment letter for insertion into Vol. 3, Ch. 4 • Coordinates with Caitlyn Bishop as needed regarding status of table generation	susan.davis@icf.com 1.916.752.0929
Anne Huber	Modeling Coordinator	• Coordinates author modifications to chapters and appendices in Vols. 1 and 2 related to modeling result changes • May involve editing chapters • May involve coordinating with authors so they understand how results have changed, when/where to find the results, and what the changes in the results might indicate	Anne.Huber@icf.com
Jessica Hughes	Lead Editor	• Edits Vols. 1 and 2, and Ch. 1 – 3 of Vol. 3 • Supports project management team with global changes/modifications/priorities for workflow • Provides QA/QC checks in Vol. 3, Ch. 4 • Coordinates with Jesse Cherry and supporting editors as needed	Jessica.Hughes@icf.com 916.752.0961
Tess Wenning	Administrative Record Lead	• Ensures all ICF-authored in-text citations have a full and complete reference and source data or information (e.g., pdf, Microsoft Excel file, geographic information system shapefile) • Manages Administrative Record tracking spreadsheets	Tess.Wenning@icf.com

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Team Member	Role	Responsibilities	Contact Information
		• Coordinates with ICF authors, and other technical authors if needed, when in-text citations, references, or sources are missing • Compiles ICF author references for Final EIR/EIS on portable hard drive/s • Coordinates with Jessica Hughes and Jesse Cherry as needed regarding the marking of in-text citations and generation of citation lists	
Stephen Unyi	Americans with Disabilities Act (ADA) Compliance Specialist	• Leads ADA compliance team • Ensures ADA compliance during formatting process (e.g., modifications to tables/figures to make them ADA compliant) • Ensures ADA compliance after pdfs are generated • Generates ADA accessibility reports on ICF-authored pdfs • Coordinates with Jesse Cherry as needed	Stephen.Unyi@icf.com
Jesse Cherry	Lead Publication Specialist	• Formats document consistently and correctly • Coordinates with Stephen Unyi, Jessica Hughes, and Tess Wenning as needed	Jesse.Cherry@icf.com

Table 2b. Final EIR/EIS Technical Team

Team Member	Role	Responsibilities
Vanessa King	Reclamation Project Manager	• Review responses/changes to chapters • Coordinate with Authority/Integration/Technical Team(s)
John Spranza	Integration – Permitting – Sites Project Authority Agent	• Review responses/changes to chapters • May also draft responses
Jelica Arsenijevic	Integration – Permitting – Sites Project Authority Agent	• Review responses/changes to chapters • May also draft responses
Erin Heydinger	Integration – Operations – Sites Project Authority Agent	• Review chapter/appendices revisions • Review responses • May also draft responses
Henry Luu	Integration – Engineering – Sites Project Authority Agent	• Review chapter/appendices revisions • Review responses • May also draft responses

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Team Member	Role	Responsibilities
Steve Micko	Jacobs – Operations – Modeling Specialist	• Re-run Models and Provide Results • Respond to comments • Revise Appendices • Review revisions to chapters with modeling result changes
Nicole Williams	Chapters 1, 2, and 3	• Respond to comments • Revise chapter(s)
Anne Huber; Jennifer MacAdoo; Jeff Peters	Chapters 5/6 Technical Specialist	• Respond to comments • Revise chapter(s)/appendices
Lesa Erecius	Chapters 6/27 Technical Specialist	• Respond to comments • Revise chapter(s)/appendices
Jeff Peters	Chapters 5/7 Technical Specialist	• Respond to comment • Revise chapter(s)
Ingrid Kimball	Chapter 8 Technical Specialist	• Respond to comments • Revise chapter
Lisa Webber	Chapter 9 Technical Specialist	• Respond to comments • Revise chapter
Jennifer Hale	Chapter 10 Technical Specialist	• Respond to comments • Revise chapter
Mike Hendrick Julien Moderan Jim Lecky Marin Greenwood Rick Wilder Sophie Unger Donna Maniscalco Jeff Kozlowski Jason Hassrick	Chapter 11 Technical Specialist	• Respond to comments • Revise chapter/appendices
Ellen Unsworth	Chapters 12 Technical Specialist	• Respond to comments • Revise chapter

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Team Member	Role	Responsibilities
Ingrid Kimball	Chapters 14/15 Technical Specialist	• Respond to comments • Revise chapter(s)
Diana Roberts	Chapter 15 Technical Specialist	• Respond to comments • Revise chapter
Lyna Black	Chapters 16/26 Technical Specialist	• Respond to comments • Revise chapter
Robert Lanza	Chapter 17 Technical Specialist	• Respond to comments • Revise chapter
Loren Bloomberg	Chapter 18 Technical Specialist	• Respond to comments • Revise chapter
Cory Matsui	Chapters 20/21 Technical Specialist	• Respond to comments • Revise chapter(s)
Susan Lassell Christiaan Havelaar Jenifer Rogers	Chapter 22 Technical Specialist	• Respond to comments • Revise chapter
Barbara Wolf Janis Offermann	Chapter 23 Technical Specialist	• Respond to comments • Revise chapter
Tina Sorvari	Chapter 27 (hazards/wildfire) Technical Specialists	• Respond to comments • Revise chapter
Maggie Messerschmidt Jamie Lui Anne Huber Mike Hendrick Jason Hassrick Jim Lecky	Chapter 28 Technical Specialist	• Respond to comments • Revise chapter
Lydia Dadd	Chapters 30/32 Technical Specialist	• Respond to comments • Revise chapter
Nicole Williams and all technical specialists	Chapter 31	• Respond to comments • Revise chapter

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Summary of Legal Requirements for Responding to Comments

We need to respond to comments made on any significant environmental issues. The RTC requirements are found in the sources listed below.

- CEQA Guidelines section 15088
- CEQ NEPA regulations, 40 CFR section 1503.4
- Bureau of Reclamation, NEPA Handbook, sections 8.15.2, 8.15.2.1 (https://www.usbr.gov/nepa/NEPA_Handbook.html)

Other legal guidance that discusses an agency's requirements in responding to comments include:

- NEPA Law and Litigation, 2nd ed. (2021), section 10:65
- Kostka, Practice Under the California Environmental Quality Act, sections 16.7, 16.9, 16.11, 16.12

Guidance from the CEQA Guidelines, CEQ NEPA regulations, Bureau of Reclamation NEPA Handbook, case law, and other legal guidance pertaining to RTC, is generally summarized below for ease of use (this summary is not exhaustive).

- Respond to and describe the disposition of all "comments raising significant environmental issues" (CEQA) and all "substantive comments" (NEPA). The CEQA and NEPA requirements should be harmonized for purposes of responding to the comments, such that one set of responses is provided that fulfills the requirements of both statutes.
- When a significant environmental issue is raised that objects to the analysis in the RDEIR, the response must be *detailed* and must provide ***a reasoned, good faith analysis***.
- ***Conclusory statements unsupported by factual information are not an adequate response***.
- It is not necessary to respond to general reference materials submitted in support of a comment, although responses should be provided when a reference material is used to support a specific comment or objection that is made with respect to the environmental analysis.
- A substantive response is not needed when the comment does not raise a significant environmental issue or is not germane to the environmental analysis. Instead, the response may state that the decision on the project will be made by the agency decision-makers, who will consider all of the comments received. The response may also state that no further response is required because the comment does not raise a significant environmental issue (i.e., "The comment does not raise issues regarding the adequacy, accuracy, or completeness of the RDEIR/SDEIS.")
- A response should contain a level of detail that matches the comment's level of detail. The response should be in proportion to the scope and scale of the environmental issues raised.
- When a comment raises questions about the evidence underlying the environmental analysis in the draft, the response should refer to specific information contained in the underlying technical and factual documents that supports the environmental analysis and findings.

- Responses need not address a list of general suggestions for mitigating an environmental impact that are not concrete or specific to the project; however, particular care should be taken in response to any specific proposal for mitigation or a project alternative.
- A generalized response may be appropriate when a comment does not explain the relevance of evidence submitted with it, or refers to information that is not readily available to the authors.
- A specific response is required when a comment raises a specific question about a significant environmental issue. For example, a site-specific comment warrants a site-specific response. Depending on the nature of the comment, a detailed, thorough analysis of the issue and references to support the analysis may be required in order to ensure that the response contains an adequate level of detail and specificity.
- The RTC must acknowledge conflicting opinions, and it should explain in detail why relevant suggestions made in the comments concerning a significant environmental issue have been rejected, and these explanations should be supported with relevant data. RTCs must identify opposing views where differences in opinion are readily apparent. Similarly, while disagreement among experts by itself does not create a legal inadequacy, the RTC should summarize the points of disagreement among the experts, and it should clearly and thoroughly explain the factual and technical data and basis to support the agency experts' conclusions and the environmental findings.
- The RTC should be objective, neutral in tone, and factually supported; they are opportunities to provide explanations for conclusions publicly reviewed in the RDEIR/SDEIS and carried into the Final EIR/EIS (this also strengthens the administrative record and helps the public understand the agencies' ultimate decision).
- If a response has adequately addressed an environmental issue in one comment, the RTC may refer to the prior response when addressing other comments.

For additional reference, the Bureau of Reclamation NEPA Handbook recommends the following with respect to responses to comments:

- Substantive comments must be specifically identified in and attached to the Final EIS, and a Reclamation response must be provided.
- Comments may be received in various media, and each missive received must be examined to determine the number and nature of substantive comments.
- Comments simply expressing support for or objection to the project do not require a substantive response.
- Responses to comments must be factual and nonargumentative and should clearly address the issue(s) raised.
- A commonly used format for comments and responses includes the comment and response are placed opposite each other on the same page. All comments should be addressed and a clear reference to each comment made so that an individual commenter could track individual comments.
- Any corrections to the body of the EIS should be referenced by section title and/or page number so the reviewer will be able to find the new material.

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- It may be helpful to provide a list of the commenters at the beginning of the RTC to aid in identifying the location of the comments.

Author Responses that May Require Authority Legal Team Review

The Authority's Legal team should review comments and responses that raise any issue which potentially could trigger recirculation or supplemental environmental analysis, or which potentially could be problematic from a CEQA or NEPA perspective in litigation. Here are some criteria to make this determination, although it is recommended that the Authority err on the side of caution and provide applicable comments and responses for legal review when there is any doubt:

- Commenter cites to court case(s) and is using the case(s) to make a legal argument.
- Commenter mentions recirculation or supplementation.
- Comment raises a specific, substantive issue alleging inadequacy of project description, inadequate range of alternatives, inadequacy of environmental impact analysis (including omission of an environmental topic), or inadequacy of mitigation measures.
- Author is adding new information to respond to the comment that:
  - **changes an impact determination**
  - **adds any new mitigation measure(s) or feasible alternative(s) that are considerably different from those considered in the draft**
  - **adds significant or wholly new information about the project that, unless offered again for public comment in draft form, would arguably deprive the public of a meaningful opportunity to comment**

Substantial/significant new information may include, but is not limited to:

- Changes in the project or setting that are relevant to the environmental analysis
- New analyses that are outside the range of what is described in the draft EIR/EIS or analyses that are significantly different from the analyses presented in the draft EIR/EIS.
- New mitigation measures or new environmental impact topics that were not discussed in the draft EIR/EIS
- A disclosure that a new significant environmental impact would result from the project or from a mitigation measure.
- A disclosure that a "substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance." (Id., subd. (a)(1)-(4).)
- A disclosure that a "feasible project alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the significant environmental impacts of the project, but the project's proponents decline to adopt it." (Id., subd. (a)(1)-(4).)

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Detailed Response to Comments Process, Instructions, and Examples of Comments and Responses

This section outlines our anticipated steps for preparing Master Responses (ultimately in Volume 3, Chapter 3) and individual responses in RTC tables (ultimately in Volume 3, Chapter 4). **Note:** this is a multi-step process with multiple authors and reviewers, including authors that are not ICF staff. Some of these steps will be iterative and may need to be modified as we proceed forward.

Coding & General vs. Not General Letters

All comment letters will be reviewed, processed, coded, and entered into a database by the ICF Content Analysis Team (CAT). The processing and coding of comment letters collects specific information from each letter and identifies comments within a letter with a unique action code. The codes allow queries of the MS Access database by action code topics to generate MS Word tables for specific individual (or a group of) authors. In other words, working versions of MS Word RTC tables will be uploaded to Sharepoint for authors to write their responses in based on their areas of expertise. This allows authors to see all comments in a topic area and provide consistent responses across that topic area. For the Final EIR/EIS, the database will be queried by letter and the RTC tables will be organized by letter in Volume 3, Chapter 4. This will facilitate commenters' abilities to easily find and review their original comments and responses to those comments.

As part of the processing and coding, letters are identified as either general (non-substantive) or substantive (not general). Comments are then coded within each designated letter using the action codes. Pursuant to Authority and Reclamation review in 2019 of the 2017 Draft EIR/DEIS public comment (and content prepared for the RTC effort at that time and consistent with ICFs executed TO3), letters identified as non-substantive are general comments and fit one or more of the following categories:

- Opposed or supported the Project but did not: (1) provide any rationale, or (2) raise any issues related to the adequacy of the environmental impact analysis.
- Raised an environmental issue in a vague, general manner but did not provide supporting information.
- Questioned the adequacy of the environmental impact analysis but did not provide any rationale or supporting information.
- Made other conclusory statements but did not provide any rationale or supporting information.
- Made recommendations entirely without explanation, supporting information, or rationale.

The Authority and Reclamation are erring on the side of caution by preparing Master Response 1 and providing responses to all comments, even if they are general (non-substantive). Therefore, if a commenter makes a recommendation or objection that is relevant to the environmental analysis they will be responded to, primarily through the use of a reference to Master Response 1, even if the comment is thinly supported.

Topics of all general letters will be addressed in Master Response 1, Responses to General Comments. All general letters will receive a batch entered response into the access database. This will allow efficiency in responses and ensure a consistent "level of response" across multiple general comments. The proposed boilerplate response will appear in Volume 3, Chapter 4 and is based on previous Authority and Reclamation input:

Please see Master Response 1, Responses to General Comments, for responses to general comments on the RDEIR/SDEIS or comments that do not raise significant environmental issues.

All substantive letters will receive individual responses in Volume 3, Chapter 4. The individual responses may reference a Master Response, be a unique response, or be a combination thereof. There may be non-substantive comments in a letter identified as "substantive", in which case, authors may use the boilerplate response to Master Response 1 as appropriate for the specific non-substantive comment. Authors may need to see the entire letter from which a comment originated (e.g., for contextual information or to view an attachment) during the RTC development process. Pdfs of coded letters are saved on the ICF internal Sharepoint site here: Numbered Letters.

Master Responses

Master Responses are broad technical or policy discussions that enable a specified range of issues to be addressed in a single concise fashion. Master Responses differ from individual responses in that a Master Response serves as a tool to address those comments that share a general theme or issue within a common framework.

When Do You Use a Master Response?

- When a comment or a portion of a comment fits within Master Response themes and subthemes
- When there is repetition of the same comment with a complex response and the author is unable to reference a specific section in the existing documentation
- When the comment pertains to the broader context or covers a big-ticket item (e.g., project description, analysis approach, baseline conditions, alternatives selection)

Steps for Writing Master Responses

1. Review the Master Response Topics list.
2. Review the existing Master Response outlines/drafts.
    a. You need to be aware of the content of each Master Response because there will be issues that come up in multiple Master Responses and you should know where there could be potential overlap. Throughout the writing process, issues that overlap will generally be reconciled. However, note that some Master Responses may address similar TYPES of issues but from different perspectives (e.g., the baseline Master Response and the modeling Master Response may both address baseline issues, but one might be from a baseline NEPA perspective and one might be from a "reasonableness of modeling assumptions" perspective). This is reasonable and probably needed as long as authors understand which Master Response to use for which type of comment and refer to the correct Master Response.
3. Skim through the RTC tables assigned to you and look for overarching themes (see Step 1 under *Screening Comments in RTC Tables*).

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4. Review comment letters if needed and look for overarching themes. Add notes or content to Master Response outlines as you review comment letters for themes and common issues.
5. If you discover that a topic should be added to an existing Master Response outline/shell and are the author of that Master Response, you may add it. If you believe it should be added to a Master Response that you have not been assigned to write, please let Lyna Black know ASAP.
6. If you believe that a new Master Response should be created to address a specific topic or suite of topics, please let Lyna Black know ASAP.

Where to Work for Master Responses

Volume 3, Chapter 3 will be the ultimate location for Master Responses. The internal ICF Sharepoint site is generally organized to mirror the organization of the Final EIR/EIS. Therefore, the subfolder for Volume 3, Chapter 3 contains additional subfolders for the actual Master Responses. Outlines for each Master Response have been created and need to be verified against the content of the RTC tables. In other words, are you as an author seeing comments about the topics outlined in the Master Response or not in your RTC tables?

Sites Reservoir Program - 03_MasterResponses - All Documents (sharepoint.com)

Initial Master Response List (as of March 9, 2022)

Master responses have been pre-identified based on our understanding of public comments received in January and February, previous comments, and information that needs to be conveyed in the Final EIR/EIS. Table 3 identifies the preliminary list of Master Responses, general topics, and primary authors. **THIS PRELIMINARY MASTER RESPONSE LIST WILL BE REFINED** as authors review RTC tables. We will communicate with the team when Master Responses have been added or modified.

Table 3. Preliminary Master Response List as of March 9, 2022

No.	Title	Topics	Primary Author(s)
1	Responses to General Comments	• Public review/outreach process specific to the RDEIR/SDEIS and beyond the purposes of CEQA/NEPA: including description of outreach to specific groups, such as Tribes, NGOs, etc. • CEQA/NEPA Process, Document Development, and Recirculation: description of Authority and Reclamation and their use of the document; description of why document was recirculated and supplemented, what recirculation and supplementation means • 2017 document: 2017 alternatives are NOT what the RDEIR/SDEIS evaluated • Relationship with Other Plans, Programs and Policies: California Water Commission process as it is different from CEQA/NEPA process; Federal feasibility process as it is different from CEQA/NEPA process; Trinity River activities; Delta Conveyance; other plans, processes, etc., that commenters may bring up	Caitlyn Bishop, ICF Sara Martin, ICF Lyna Black, Jacobs

No.	Title	Topics	Primary Author(s)
		• Merits of the Project and alternatives including "there is No Excess water in the system", and "the system is oversubscribed" • Approach to Analyses: adequacy of analyses, development of range of alternatives, study areas considered and "field work", general methods and modeling, baseline, mitigation measures • Permitting timeline and process(es) • Environmental Resources: May include short general responses about resource impact analysis, pointing to areas in chapters or appendices, to address general comments that might have been very general (e.g., the impact analysis is wrong; the terrestrial and vegetation impact analysis is inadequate with no reason as to why it is inadequate)	
2	Alternatives Description and Baseline	• Description of the Project and alternatives; changes between RDEIR/SDEIS and Final EIR/EIS • What is the preferred project, and what is included in the preferred project (including Appendix 2D parameters)? • Discussion of No Project Alternative and Baseline for NEPA/CEQA purposes	Nicole Williams, ICF Lyna Black, Jacobs Laurie Warner Herson, Integration Erin Heydinger, HDR Integration - Operations Henry Luu, HDR, Integration - Engineering
3	Hydrology & Hydrologic Modeling	• Modeling modifications between RDEIR/SDEIS and Final EIR/EIS, what these modeling modifications represent (i.e., operation of the alternatives) and why results are generally the same • Thread needle between comments on modeling performed for the RDEIR/SDEIS and revised results in the Final EIR/EIS • Description of hydrology as represented in model for baseline and alternatives • Description of the range of years presented in the model and why those years are appropriate for impact evaluation (in order to respond to "the years evaluated are not appropriate, represent a long enough timeframe, are the wrong years, etc.") • Description of hydrologic model: what it was used for, why it was used, parameters that individuals may have commented on, assumptions that individuals may have commented on • May need to address climate change modeling and then also non-modeling related comments regarding climate change in this Master	Erin Heydinger, HDR Integration-Operations Steve Micko, Jacobs Rob Leaf, Jacobs Anne Huber, ICF

No.	Title	Topics	Primary Author(s)
		Response; alternatively, may have a separate climate change master response.	
4	Water Quality	• May need water quality specific discussion about changes in modeling between RDEIR/SDEIS and Final EIR/EIS; will depend on Master Response 3. • Mitigation Measures • Appendix 2D	Anne Huber, ICF Lesa Erecius, ICF John Spranza, HDR, Integration
5	Aquatic Biological Resources	• May need aquatic biological resource specific discussion about changes in modeling between RDEIR/SDEIS and Final EIR/EIS; will depend on Master Response 3 and output from revised modeling. • This Master Response needs close coordination between the RTC tables, Chapter 11 content, and Master Response content. • Use of monthly model results to analyze impacts associated with river flow and temperature. • Use of/application of 5% or 10% thresholds/change in modeling results equaling "less than significant"; providing further explanation of why this change would not result in population effects and why it is okay to use different percent changes in different circumstances (if that is what we did because the commenters seemed to be indicating we indiscriminately applied thresholds). • Use of best available tools with respect to fisheries impacts and why we did not use commenter suggestions (or if we DID in a revision, include that). • Benefits, including discussing changes in results and identification of benefits based on the revised modeling with respect to various aspects (e.g., cold-water pool). • Mitigation Measures, including use of best available science and data when evaluating bypass flows and as related to MM FISH-2.1 (i.e., why 10,700 cfs?); discuss why MM FISH-2.1 is protective given the migration patterns and through-Delta survival circumstances. In other words, describe why MM FISH-2.1 is NOT inadequate and reduces impacts to levels that are less than significant. • Longfin smelt analysis regarding outflow and entrainment (lots of comments); will need to substantiate why analysis is scientifically sound and would result in less than significant impacts with implementation of the mitigation measure—and explain why the mitigation measure scientifically reduces effects.	Julien Moderan, ICF Mike Hendricks, ICF Jim Lecky, ICF Rick Wilder, ICF Marin Greenwood, ICF Jeff Kozlowski (construction), ICF Jeff Peters, ICF John Spranza, HDR, Integration

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No.	Title	Topics	Primary Author(s)
		• Appendix 2D; address uncertainty and comments regarding "How can you disclose impacts with uncertainty?" • May need some information about fluvial geomorphology as it relates to fish	
6	Trinity River	• Impacts not evaluated • Impacts not modeled • Project would affect Trinity River	Unknown
7	Alternatives Screening and Selection	• Additional information about the alternatives screening and selection	Nicole Williams, ICF
8	Other Analyses and/or OTHER modeling	• This Master Response could be a catch-all for comments on growth-inducement, cumulative impacts, socioeconomics, environmental justice, or Indian Trust Assets that may require a more "robust discussion" in Volume 3 than is currently anticipated. • Could also be a Master Response about "other modeling" that was done (outside of CALSIM, modeling for water quality, or modeling done for aquatic biological resources); this could include "using past modeling results to inform impact analysis" (e.g., fluvial or groundwater) or energy modeling or any other modeling that might be updated for the Final EIR/EIS that is not related to the alternatives description/representation in CALSIM.	Unknown

Completing Individual Responses

Individual comment responses are resource-specific technical discussions written to address a specific comment that will most likely be unique to the comment letter. Individual comment responses differ from Master Responses in that the comment being addressed raises a unique issue. Individual comment responses may refer to Master Responses for supporting explanation.

Screen Comments in RTC Tables

1. **Additional issues to be addressed in Master Responses**—do you see topics that should be folded into a Master Response? If so, look at the Master Response Topics list in Table 3 and then contact Lyna Black.
2. **Are there any comments that are very clearly miscoded?** For example, if you are looking at the code/resource for recreation and see a comment about groundwater resources. This is most likely a data entry error. If you see something that was miscoded, email Susan Davis.
3. **Are there any comments that span multiple topics?** You may see comments that could fall into multiple codes, or perhaps did not fit well into any particular code. Try to complete the response as best you can. You may be able to respond using an existing Master Response even if

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the comment is somewhat outside of your area of expertise. **OR, if it requires a unique response from another technical specialist,** please contact Caitlyn Bishop to get assistance in coordinating with the appropriate author.

4. **Are there potential legal issues?** Anything that looks like it raises an issue that could trigger recirculation/supplementation or be problematic from an alternative(s) point of view and meets any of the following criteria (described above in *Author Responses that May Require Authority Legal Team Review* section):
   a. Commenter cited to court case(s) and is using the case to make a legal argument. Authors do not need to flag comments where a case is cited simply for background/setting.
   b. Commenter mentions recirculation/supplementation.
   c. Author is adding new information to respond to the comment and believes the new information may:
      - change an impact determination
      - add any new mitigation measure(s) or feasible alternative(s) that are considerably different from those considered in the draft
      - add significant or wholly new information about the project that, unless offered again for public comment in draft form, would arguably deprive the public of a meaningful opportunity to comment.
   d. It may be difficult to determine comments that fall into the "Legal" category. If any of the criteria above are met or potentially met, add a comment bubble on the text of the comment/s that reads "Legal." and add note to Sharepoint library that says "Legal = #" (the number is the count of legal comments in your table). Email Nicole Williams to request client review.
5. **Are there potential policy issues?** Comments that seem to need decision made by Authority or Reclamation regarding their implementation of the Project or their respective approval processes. Flag as "Policy" in comment response table; add note to the Sharepoint library that says "Policy - #" (the number indicates the count of policy comments in your table); email Nicole Williams to request client review.

Steps to Craft Individual Responses:

1. **Is the comment general or specific?**
   a. If general, use boilerplate and/or Master Response to respond, where appropriate. See examples in **Table 7a** below. Move to Step 3.
   b. If specific, move to Step 2.
2. **Is the comment making an incorrect statement or requesting a change that would be incorrect or inaccurate?**
   a. Yes: Explain why the analysis is as it is in the EIR/EIS and why the comment does not warrant a change.
   b. No: Move to Step 3.
3. **Can it be responded to with a Master Response?**

a. Yes: Complete the response by directing the commenter to the appropriate Master Response. If you are using a Master Response anywhere in the response, enter "Yes" in the "Flag for Master Response" column.

- Refer to the Preliminary Master Response list and the draft of that Master Response to ensure the topic is covered. It is acceptable and appropriate to refer to multiple Master Responses as warranted by the comment. See examples in **Table 7a** in this guidance document. When you refer to a Master Response, please do not refer to a specific subsection title. The Master Responses are generally being developed concurrently with responding to comments in the RTC tables and subsection titles will likely change. ONLY reference the general topic or subtopics addressed by the Master Response. The convention is *"Please see Master Response <number>, <title> regarding…for information on…. etc."* For example:
    - Please see Master Response 2, Alternatives Description and Baseline, regarding the sufficiency and adequacy of the baseline.
    - Please see Master Response 5, Aquatic Biological Resources, for a description of the fish modeling tools and the application of the tools used in the impact analyses.
- While some topics may be subheadings in Master Responses, they are not the exact subheading and may not read the same during final production. If/when subheadings change, you will not have to revise your response because you referenced general topics instead of exact subheadings.

b. No: move to Step 4.

4. **Was the comment already responded to in the same letter?**

a. Yes: You can refer the commenter to the response to a comment within the *same* letter. Response can be "Please see response to comment [insert letter-comment number]". Also see example below in **Table 7b.**

- If you want to use a response you have already written (either for the same letter or in a different letter), just copy and paste and review carefully to make sure the response is sufficient. In most cases, some tailoring will be needed.
- **DO NOT REFER TO RTC ACROSS LETTERS**.

b. No: Move to Step 5.

5. **Is the comment on something that is discussed in the document and easily referenced?**

a. Yes: Direct the commenter to the appropriate section or subsections. See examples in **Table 7a** below. Summarize your response and be as specific as possible in referencing the analysis; there is no need to give a lengthy reiteration of what the analysis says. Do NOT refer to page numbers, table numbers, or figure numbers in your response. Use titles instead in subsections (e.g., As discussed in Chapter X, *title, subsection title, figure title*, more text, more text, more text…). Focus on the substance/subject and refer to the substance/subject rather than section numbers, table numbers, and figure numbers.

b. No: Move to Step 6.

6. **Does the comment warrant a response that is some combination of Steps 1–5 above?**

a. Yes: Craft a unique response using Master Responses, an explanation of why the comment does not warrant a change, a reference to response already given in the same letter, or a reference to Volume 1 or 2 using Chapter X, *title*, Appendix X, *title*, or *subsection title(s)* where the information is provided. However, **be clear about which part of the comment you are responding to with each response option**. See example of a hybrid response in **Table 7a** below.

b. No: Move to Step 7.

7. **Does the response require a totally unique response? If you have gotten this far, yes is really the only possibility.**

   a. Yes: Craft the response necessary to meet the legal criteria per the *Summary of Legal Requirements for Responding to Comments* section and direction provided in this guidance document.

   b. If you have added substantially new information or new results/data sources in the RTC in order to fully respond, please contact Nicole Williams to ensure any new clarifying information does not trigger a recirculation.

   c. If you have made modifications to Volume 1 or 2 that require a change to the analysis, added mitigation, or committed to doing additional analysis in the course of responding, call Nicole Williams. See Step 10 below for detailed instructions on how to make modifications to Volume 1 or 2.

   d. If you have included a citation in your response: fill out the "Full Reference of All Citations" columns with the full reference of all citation(s) in a RTC regardless of whether it is a NEW citation or a citation in Volume 1 or 2.

      - Authors need to put sources (e.g., pdfs) of ALL references cited into subfolders corresponded to the appropriate table/action code(s).
      - Tess Wenning will use the column in the RTC tables and the sources (e.g., pdfs) in the subfolders to populate her tracking table for Volume 3 and identify if there are any missing references or pdfs.
      - Tess Wenning will also identify in the Volume 3 tracker if the citation/reference/pdf already appears in Volume 1 and 2.

8. **Have you finished your responses? Are they sufficiently responsive? Have you filled in all columns in the RTC tables appropriately? (See Table 4 and Table 7a)**

   a. Yes: Indicate by entering "yes" in the "Response Complete."

      - Do not mark a comment response "complete" if you are requesting additional input/review from others or are reassigning the comment. If you need input or review, please contact the project management team.

   b. Yes: Indicate ready for senior review by writing "Ready for Internal Review" in the Status column of your comment response table.

   c. No: Keep working!! Some responses will take additional coordination with other technical specialists or the project management team.

9. **FOLLOW UP: Does the response you crafted to the comment raise any of these potential red flags?**

a. You as the author added new information that should trigger additional review and consideration. These triggers include:

   1) providing substantially/wholly new information that the public should have had an opportunity to review in order to comment on the RDEIR/SDEIS

   2) adding new mitigation measures or substantially modifying the mitigation measures proposed in the RDEIR/SDEIS

b. Substantial/significant new information may include:

   1) changes in the Project or its setting that are relevant to the environmental analysis

   2) new analyses that are outside the range described in the RDEIR/SDEIS

   3) new analyses that are significantly different for the analysis presented in the RDEIR/SDEIS, or

   4) modifying or adding new alternatives or mitigation measures.

   5) changes in the significance, or in the severity of the significance, of an environmental impact

c. If yes to any of the above, put a note in the Sharepoint library and email Nicole Williams.

10. **FOLLOW UP: Does the response you crafted require a revision to the Final EIR/EIS?**

   a. Yes: Step 1: Are you sure this is necessary for the accuracy and defensibility of the document? If the answer is still yes, indicate this by putting "Yes" in the column "Changes to EIS/EIS Needed?" and respond to the comment as if you had made the change. See **Table 4** and **Table 7a and Table 7b.**

   b. Yes: Step 2: Make the change in the Word version of the Final EIR/EIS in tracked changes on the internal ICF Sharepoint site.

      1) Volume 1 Chapters: Sites Reservoir Program - Vol 1 FEIR.EIS Chapters - All Documents (sharepoint.com)

      2) Volume 2 Appendices: Sites Reservoir Program - Vol 2 FEIR.EIS Appendices - All Documents (sharepoint.com)

   c. Yes: Step 3: Once you have made the changes to the Final EIR/EIS, indicate this by putting a "Complete" in the column, "Status of Needed EIR/EIS Changes."

   d. If you cannot fully implement the change (e.g., additional coordination with other authors is needed), craft the response as though the change has been made and write "In Progress" in the "Status of Needed EIR/EIS Changes" column.

Table 4. RTC Table Columns (Green columns to be filled in by Authors)

Action Code	Ltr#	Cmt#	Comment	Response	Status of Response	Response Complete?	Changes to EIR/EIS Needed?	Status of Needed EIR/EIS Changes	Flag for Master Response	References for ALL Citation(s) Included in Individual Response	Notes/Comments (this column is intended to facilitate internal review/review before draft response goes to the client for review)
Database generated	Database generated	Database generated	Database generated (comment exactly as it is in the comment letter)	Author craft response (see Tables 7a, 7b and 7c for example/boiler-plate responses)	Database generated: Awaiting Response Author Fill in: Ready for internal review Internal Reviewer Fill In: Ready for client review Revisions in progress Project Management Team fill in Final-Ready for data entry	Author fill in: Y/N	Author Fill in: Y/N	Author Fill in: In progress Complete N/A (if No in "change to EIS needed?" column)	Author Fill in: Y/N	Author Fill in: N/A if no citation was added. If you used a citation in the response column, include the FULL REFERENCE in this column. Click-and-type reference templates are provided in the *Citations, References, and Source Materials* section of this document	

Attachments and Exhibits

Attachments are materials appended to a comment letter. Examples include technical reports, studies, MS PowerPoint presentations, and newspaper articles. Attachments may or may not contain technical and substantive comments and they may or may not directly support comments made in the associated letter.

Exhibits include non-text visual aids such as maps, charts, tables, graphs, illustrations, and cartoons. Exhibits can be found embedded in the text of a comment letter or be in attachments to the letter. Exhibits may or may not contain technical and substantive comments and they may or may not directly support comments made in the main letter.

Table 5 provides example responses for how to respond to attachments and exhibits in an attachment. In these examples, we are trying to show the different ways an attachment might show up in the SAME letter. The idea is to show the progression of how an attachment could be used:

- Example 1 provides evidence to support a substantive comment made in the comment
- Example 2 is the entire piece of evidence provided in support of a substantive comment made elsewhere in the letter
- Example 3 is a substantive comment appearing in an attachment coded in its entirety
- Example 4 is a visual aid in the piece of evidence in support of a substantive comment.
- Example 5 is an attachment of 2017 comments

Each receives a slightly different response. Responses 2, 4, and 5 are example "boilerplate" language for attachments and exhibits that can be used.

Table 5. Example comments and Responses for Attachments and Exhibits

Comment	Purpose of the Attachment or Exhibit	Proposed Attachment or Exhibit Response
Example 1 Letter 20, Comment 25: As indicated in Attachment 1, Severity of Impacts Associated with Loss of Top Soil, June 2000, [Attachment 1] the analysis in the Draft EIS does not fully disclose or address the impacts associated with the loss of top soil. Despite the reduction in acres impacted, the impacts would....because....	Evidence to support an argument	**Response 1 Unique Response:** Impacts associated with loss of top soil are addressed in Chapter X, Title, specifically under Impact ABC-#. Please refer to Chapter X for a complete description of the impacts and proposed mitigation measures. The attachment provided by the commenter provides data for an area outside that of the study area. The EIR/EIS chapter relies on the most recent available data, Top Soil Loss: Severity of Impacts, January 2021 (Author et al., 2021) to support the analysis and conclusion in the document. This is considered the best available, peer-reviewed resource for the specific study are evaluated in the EIR/EIS.
Example 2 Letter 20, Comment 89: Attachment 1: Severity of Impacts Associated with Loss of Top Soil, June 2000. ABC Research Institute.	The attachment is not in and of itself a comment on the document; the entire attachment was appended to the comment letter, so we acknowledge that by including a comment that demonstrates we received the entire document and a respond indicating its purpose. Descriptions of Exhibits will appear similarly.	**Response 2 Standard Boilerplate:** The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to the commenter's letter.
Example 3: Letter 20, Comment 93: [ATTMT 2] The description of the flow regime under the alternatives is flawed and should have include the results from the SuperiorModel.	This is a comment that appears in Attachment 2, which was coded in its entirety.	**Response 3 Unique Response:** The description of river flows as represented by the modeled results is accurate and appropriate for the purposes of CEQA/NEPA impact analyses. As described in Master Response #, *modeling title*, the model used for the RDEIR/SDEIS was SupremeModel. The SupremeModel provides an accurate representation of the operations under alternative conditions. The Supreme model is the best available science and best available tool for describing changes under the alternatives and is used by many local, state (e.g., DWR), and federal agencies for water resource evaluations in the State of California.

Comment	Purpose of the Attachment or Exhibit	Proposed Attachment or Exhibit Response
Example 4 Letter 20, Comment 26 [ATTMT 1: EXHBT 1:] Before and after photographs of areas with loss of top soil.	Graphs, charts, maps and other visual aids included in a comment letter that by their very nature are included in support of text comments and do not constitute comments in and of themselves. However, authors must review the exhibit in order to provide a response.	**Response 4 Standard Boilerplate:** The commenter is providing this exhibit in support of their comments. Those comments are addressed in these responses to the commenter's letter.
Example 5 Letter 20, Comment 100 And I also attach my comments on the 2017 document as they are all relevant. [ATTMT 1: Comments on 2017 Draft EIR/EIS.]	The attachment wholesale attaches the comments that the commenter made on the 2017 draft EIR/EIS.	**Response 5 Standard Boilerplate:** The commenter provided an attachment of their previous comments on the 2017 draft EIR/EIS. As noted in Volume 3, Chapter 1, Introduction, the RDEIR/SDEIS completely revised the environmental analysis pursuant to CEQA and NEPA to reflect changes to the Project that have occurred since the issuance of the 2017 Draft EIR/EIS. Pursuant to CEQA and given the full recirculation of the EIR, the Authority is not responding to individual and unique comments on the 2017 draft EIR. Reclamation responses comments on the 2017 draft EIS can be found in Appendix 4A, *Reclamation Responses to 2017 Draft EIS Comments.*

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How Attachments Were Coded and How You should Respond to Attachments

- All supplemental materials are coded "Attachment" or [ATT: X] so they can be tracked and connected to the appropriate letter.
- All attachments are reviewed to see if they provide comments that are directly relevant to document or provide direct supporting evidence for points made in the comment letter (e.g., not just ancillary information).
- If an attachment provides comments on the RDEIR/SDEIS and was written by the respondent or their agent, the attachment is parsed and coded and included in RTC tables.
- If an attachment is a commenter's comment letter on the 2017 draft EIR/EIS the attachment was coded as ATT:# and given one code of 33000 - Relationship to Sites Reservoir Project 2017 RDEIR/DEIS.

Table 6 provides an example of how attachments will appear in your RTC tables—instructions follow the table.

Table 6 Example of Coded Attachments in Comment Response Tables

Action Code	Attachment / Exhibit	Ltr#	Cmt#	Comment
51600		38	42	Looking at Dam figures between 1987–1992 shows a net loss of 57,276 MWh, resulting in a loss of $3,952,044 in revenue. (Appendix A. ......[see ATT: 50]) Therefore, ...

An attachment that is referenced in the comment: If you have to respond to a comment by reviewing an attachment (as maybe the case of Example 1 above), please, please, please go to the attachment and review it. Green highlighted "Appendix A" is how the author of the comment letter referred to the appended material. Blue highlight "[see ATT:50]" is how we have captured that particular attachment in the database, and there should be a comment in your table referencing and describing the attachment. Your task is to locate, in the case of Example 1, Attachment 1 in the letter and respond accordingly. **Bottom line: check attachments in the real letter because we have to be able to say that our response to the comment in Table 6 addresses Attachment 50. The easiest way to locate an attachment in a letter is to open the pdf of the letter and search for the text of the comment.**

Steps for Responding to Attachments

1. RTC tables include those attachments that have been fully coded because they are germane to the Project. Authors should respond to these comments as they would any other comments on the EIR/EIS. Authors may want to review the attachment for context.
   - If the issue(s) raised in the attachment is relevant to the EIR/EIS and already addressed elsewhere in the letter, cross reference the appropriate comment number using the Letter Number-Comment Number convention (e.g., 123-12) or use appropriate boilerplate for responding to attachments presented in Table 5 (see responses in table 5).
   - If the issue(s) raised in the attachment is relevant to the EIR/EIS and *not* already addressed elsewhere in the letter, craft a unique response. See examples in Table 5.

2. If you have questions about attachments, contact Nicole Williams.

How Exhibits Are Coded and How You Should Respond to Exhibits

- Exhibits are identified by number in the order that they appear and are coded to the code category they are most closely associated with. For example, a graph on fish populations would be identified in brackets as [EXHBT 1: Salmonid Populations 1965–2016] and coded to aquatic resources.
- See example responses in Table 5 for possible text to respond to exhibits.

Steps for Responding to Exhibits

1. Review the attachment or the comment letter to determine if the exhibit requires a unique response.
    - If the issue(s) raised by the exhibit is relevant to the EIR/EIS and already addressed elsewhere in the letter, cross reference the appropriate comment number using the Letter Number-Comment Number convention (e.g., 123-12) or use appropriate response for responding to the exhibit as identified in Table 5.
    - If the issue(s) raised in the exhibit is relevant to the EIR/EIS and not already addressed elsewhere in the letter, summarize why the exhibit is relevant and craft a unique response (NOTE: this is VERY, VERY rare).
2. If you have questions about exhibits, contact Nicole Williams.

Where to Work for Individual Responses

Internal RTC tables were generated based on the action codes (i.e., topic areas). These are assigned to individual authors for drafting responses. Work in these tables on the internal ICF Sharepoint site. The internal ICF Sharepoint site has been set up to track the internal progress of all working RTC tables. Please work to meet your indicated deadlines and update the Sharepoint site frequently so that Caitlyn can see progress on RTC tables across the range of action codes.

Sites Reservoir Program - Working Tables Tracker - All Items (sharepoint.com)

Example Comments and Responses

Example comments and responses are included in Tables 7a, 7b, and 7c below. The content in these tables is:

- guidance for understanding the types of comments made and the type of information to consider including when crafting your response.
- NOT a one-size-fits-all and you'll need to READ the comments in your RTC tables in order to figure out if examples or boilerplate may apply.

You may need to tailor the examples we have provided for the specific comment to which you are responding. You may also need to augment your response to be sufficiently responsive. This is particularly relevant for the comments that seem like a "non-comment" or simply include factual information. If any part of the comment hints at environmental impacts, or they are the crux of the comment then you may not be able to use the standard boilerplate.

Table 7c provides examples of what is considered an appropriate response and why, and what is not an appropriate response.

Use the information in Tables 7a, 7b, and 7c to recognize TYPES of comments that commenters have made and the TYPES of responses that are appropriate and adequate.

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Table 7a. Comment Types and Response Examples

The text in this table is intended to provide examples and general guidance on crafting responses. Please review each comment in your RTC table carefully and use the general text in this table only as a starting point. You may need to include modifications/additions depending on whether the comment needs a unique response to constitute a complete response.

Note: the use of the term EIR/EIS in your responses encompasses the RDEIR/SDEIS, on which the public commented, AND the Final EIR/EIS. This is because in many instances in responses the response is applicable to both documents. If you need to distinguish between the RDEIR/SDEIS and the Final EIR/EIS for some reason, please do so; however, keep in mind, the Final EIR/EIS is ALL of Volumes 1, 2, and 3. This will be described in Volume 3, Chapter 1, Introduction and Approach.

Comment Type	Example Comments	Response Examples	Response Complete?	Changes to EIR/S Needed?	Status of Needed EIR/S Changes	Flag for Master Response
Example 1: Requires a change to the EIR/EIS (Example 1: Comment can be addressed with a simple change to the text)	Page 8 line 10 contains a typo, 'intial' should be correct to 'initial.' The text in Chapter 8, page15, lines 10-25 is confusing. You refer to Table 8-3 but then provide an explanation for the data in Table 8-13. Please correct the table reference or modify the text as necessary.	Changes in [chapter/appendix and section *title*] have been made to [describe changes]. The text has been revised per the comment. [section title or chapter number, *title*] has been revised per your comment. The suggested changes to [section *title* of document] have been made. A [item] has been added to the [appropriate document reference] per your comment. …revisions were made in the Chapter X, *title*, in response to the comments… *Consider including:* This modification does not change conclusions or impact determinations identified in the impact analysis.	Y	Y	Complete	N

Table 7a. Comment Types and Response Examples

The text in this table is intended to provide examples and general guidance on crafting responses. Please review each comment in your RTC table carefully and use the general text in this table only as a starting point. You may need to include modifications/additions depending on whether the comment needs a unique response to constitute a complete response.

Note: the use of the term EIR/EIS in your responses encompasses the RDEIR/SDEIS, on which the public commented, AND the Final EIR/EIS. This is because in many instances in responses the response is applicable to both documents. If you need to distinguish between the RDEIR/SDEIS and the Final EIR/EIS for some reason, please do so; however, keep in mind, the Final EIR/EIS is ALL of Volumes 1, 2, and 3. This will be described in Volume 3, Chapter 1, Introduction and Approach.

Comment Type	Example Comments	Response Examples	Response Complete?	Changes to EIR/S Needed?	Status of Needed EIR/S Changes	Flag for Master Response
Example 2: Requires a change to the EIR/EIS (Example 2: Comment requires more significant changes to the document and, thus, a more detailed explanation)	Chapter 10 mentions dams in the introduction but is unclear what this means. The narrative description of impacts to fish and aquatic resources makes it difficult to ascertain just what the impacts are compared to baseline conditions. The impact thresholds, variables, criteria and data or methods used are spread out across many pages of text making it difficult for the reader to ascertain any meaningful information.	Chapter 10, *title*, has been modified to include a footnote further clarifying what the term dam means. The EIR/EIS was written and organized consistent with CEQA and NEPA guidance and written in plain language with an emphasis on clearly and adequately disclosing the Project's potential environmental impacts to assist public, agencies and decision-maker review of the EIR/EIS. Consistent with NEPA Regulations, 40 CFR Section 1502.18, highly technical and specialized analysis and data were placed in appendices and summaries are provided in the chapters to facilitate review. In preparing the EIR/EIS, the Authority and Reclamation have made every effort to balance readability with the need for complete, accurate and thorough technical analysis of numerous complex issues. To provide further clarity, Chapter 7, *title*, has been updated." *[If appropriate, describe the changes made in the context of the comment. For example, "In response to this comment, Table title, has been added to provide a summary of the impact thresholds, variables, criteria, and data or methods used that are discussed in Chapter 7, Section title."]* *Consider including:* This modification does not change conclusions or impact determinations identified in the analysis.	Y	Y	Complete	N

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Table 7a. Comment Types and Response Examples

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Note: the use of the term EIR/EIS in your responses encompasses the RDEIR/SDEIS, on which the public commented, AND the Final EIR/EIS. This is because in many instances in responses the response is applicable to both documents. If you need to distinguish between the RDEIR/SDEIS and the Final EIR/EIS for some reason, please do so; however, keep in mind, the Final EIR/EIS is ALL of Volumes 1, 2, and 3. This will be described in Volume 3, Chapter 1, Introduction and Approach.

Comment Type	Example Comments	Response Examples	Response Complete?	Changes to EIR/S Needed?	Status of Needed EIR/S Changes	Flag for Master Response
General comment	"The proposed project will result in numerous environmental and community impacts that are not justified." "The alternatives evaluated are an inadequate range of alternatives. [no further evidence]." "The impact analysis is inadequate and the document should be revised, redo, recirculated. [no further evidence]" "This project is just for water down south." "Southern Californian's don't need swimming pools."	**Proposed text for general comments:** Please see Master Response 1, Responses to General Comments, for responses to general comments on the RDEIR/SDEIS or comments which do not raise significant environmental issues.	Y	N	N/A	Y

Table 7a. Comment Types and Response Examples

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Comment Type	Example Comments	Response Examples	Response Complete?	Changes to EIR/S Needed?	Status of Needed EIR/S Changes	Flag for Master Response
Comment can be responded to with a Master Response	"The analysis in the EIS should have considered new water quality objectives in the baseline for the following reasons: Reason A with evidence Reason B with evidence Reason C with evidence"	"Please refer to Master Response 2, Alternatives Description and Baseline, regarding the baseline used and Master Response 3, Hydrology and Hydrologic Modeling, regarding the modeled baseline."	Y	N	N/A	Y
Hybrid – Comment can be responded with by pointing to the EIS and Master Responses.	The RDEIR/SDEIS fails to examine the potential impacts related to X, Y and Z. Further, the modeling tools used were insufficient because.... We recommend using ACME modeling tools which will ensure that.....	A discussion of the potential impacts to X, Y and Z are found in Chapters XX, YY and ZZ. More specifically, Impact X-3 addresses impacts to *[summarize].* Impact Y-8 addresses impacts to *[summarize].* Impact Z-5 addresses impacts to *[summarize].* Please see Master Response 3, Hydrology and Hydrologic Modeling, for a discussion regarding the appropriate use of CALSIM to model operations and....Finally, please see Master Response 1, Responses to General Comments regarding the overall adequacy of analysis and the level of analysis in the impact analyses.				
Comment raises legal issue that should be reviewed by ICF Project Management Team	"The RDEIR/SDEIS failed to identify a preferred project as required by NEPA and counter to the following case law: list case law citations and evidence."	"Please refer to Master Response 2, Alternatives Description and Baseline, regarding the identification of the preferred project."	Y	N	N/A	Y

Table 7a. Comment Types and Response Examples

The text in this table is intended to provide examples and general guidance on crafting responses. Please review each comment in your RTC table carefully and use the general text in this table only as a starting point. You may need to include modifications/additions depending on whether the comment needs a unique response to constitute a complete response.

Note: the use of the term EIR/EIS in your responses encompasses the RDEIR/SDEIS, on which the public commented, AND the Final EIR/EIS. This is because in many instances in responses the response is applicable to both documents. If you need to distinguish between the RDEIR/SDEIS and the Final EIR/EIS for some reason, please do so; however, keep in mind, the Final EIR/EIS is ALL of Volumes 1, 2, and 3. This will be described in Volume 3, Chapter 1, Introduction and Approach.

Comment Type	Example Comments	Response Examples	Response Complete?	Changes to EIR/S Needed?	Status of Needed EIR/S Changes	Flag for Master Response
Comment can be addressed by pointing to a location in the document	Though the DEIS hydropower analysis appears to be performed correctly and consistently with standard practice using standard models, it fails to consider hydropower in the larger context of California's renewable energy portfolio and therefore overestimates the benefits.	"Please refer to Chapter X, *title*, for information regarding…." "The identified and disclosed these potential impacts and proposed mitigation in Chapter X, *title*." "The issue and impact raised by the commenter is identified as Impact XX-X in Chapter X, *title*." "Estimates of total change in hydropower, shown in Tables X-Y and A-B, and the discussion of renewables in section X.X.X, therefore the analysis considered both."	Y	N	N/A	N

Table 7a. Comment Types and Response Examples

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Comment Type	Example Comments	Response Examples	Response Complete?	Changes to EIR/S Needed?	Status of Needed EIR/S Changes	Flag for Master Response
Comment states information as fact	Environmental Baseline of Chinook Salmon and CCV Steelhead in California: NMFS continues to be concerned about the poor instream conditions in California that contribute to the low abundance of anadromous fish species. The Environmental Protection Agency will be requesting consultation from NMFS at a later time for the approval of the proposed project. NMFS will be required to ensure the proposed project will not jeopardize the continued existence of listed species under NMFS jurisdiction. In order to analyze the effects of this project, the current "baseline" condition is determined, and the current project effects as well as expected future effects, are analyzed.	*1. Summarize/paraphrase what the factual comment states—this demonstrates that you read the comment and understand the content* "This comment describes NMFS's consultation process but does not raise significant environmental issues related to the analysis of impacts discussed in the RDEIR/SDEIS." *OR* *2. If you cannot fully understand the factual comment, or believe the factual content is already identified in the EIR/EIS or a Master Response, then identify EIR/EIS chapter sections or the Master Response(s) that might hit buzzwords raised in the factual comment (e.g., "baseline"). Incorporate boilerplate response that states:* "The commenter does not raise significant environmental issues. Additional information regarding the baseline is provided in Master Response 2 and additional information regarding the fish analysis is provide in Master Response 5."	Y	N	N/A	Maybe - Depends

Table 7a. Comment Types and Response Examples

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Comment Type	Example Comments	Response Examples	Response Complete?	Changes to EIR/S Needed?	Status of Needed EIR/S Changes	Flag for Master Response
Comment tone is challenging	The RDEIR/SDEIS should not contain information which the Authority knows to be inaccurate, incomplete or false about fish.	*Responses should be direct, non-demonstrative, and neutral in tone.* Please see Master Response 5, Aquatic Biological Resources, for a description of the analysis conducted in Chapter Y, *title*.	Y	N	N/A	Y
Comment references attachments	[Att1:] The SDEIS must describe the hydrological impacts of project diversions on the Sacramento River and on Delta inflow and outflow and the effects on fish.	Please see Master Response 5, Aquatic Biological Resources, and Chapter X, *title*, regarding the impacts of diversions and …	Y	N	N/A	N

Table 7a. Comment Types and Response Examples

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Comment Type	Example Comments	Response Examples	Response Complete?	Changes to EIR/S Needed?	Status of Needed EIR/S Changes	Flag for Master Response
Comment cites erroneous information Example text related to commenters cited inaccuracies	[No example provided – see Comment Type cell.]	Please see Master Response 5, Aquatic Biological Resources, for a description of the models used in the fisheries analysis and how the results were interpreted. Please refer to Chapter X, *title*, Section *titles* X, Y, Z, for a description of the temperature data and results and floodplain inundation data and results that are used to support the preferred project. OR The comments are noted, however, some of the comments include inaccuracies. The following information further supports the analysis contained in Chapter X, *title*. For example, [*Identify/list examples, such as:* "Grimaldo et al. (2009) studied factors influencing entrainment of delta smelt (and other species), rather than attributing the pelagic organism decline to entrainment and predation as the commenter suggests; Maunder and Deriso (2011) found temperature of importance in relation to the larval and juvenile life stages, as opposed to spawning season; the paper by Sommer et al. (2007) proposed a conceptual model for the POD, based on a number of plausible hypotheses, as opposed to finding effects of these different factors on delta smelt; Miller et al. (2012; incorrectly cited by the commenter as Manly et al. 2012) found that winter and spring (as opposed to summer) entrainment of delta smelt adults, larvae, and juveniles (as opposed to juveniles) was negatively correlated with survival from the adult to juvenile life stages (although there was no such correlation when examining survival between the adult life stage in one year and the adult life stage in the subsequent year)."]	Y	N	N/A	Maybe - Depends

If adding a new reference, make sure to provide that reference in the references folder for your comment table. See "Citations, References, and Source Materials" in this Guidance Document for more information

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Table 7a. Comment Types and Response Examples

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Comment Type	Example Comments	Response Examples	Response Complete?	Changes to EIR/S Needed?	Status of Needed EIR/S Changes	Flag for Master Response
Commenter brings up an issue that is out of scope	[No example provided – see Comment Type cell.]	The issue of X and X are beyond the scope of the EIR/EIS *[describe why]*. Also, refer to Master Response X and XYZ for further information on XYZ.	Y	N	N/A	Maybe - depends
Comment calls for impact analysis that would be speculative	The proposed project will cause power outages and disruptions to power supplies which would negatively impact terrestrial species because….	The balancing authorities and utilities have responsibility for managing outages such that power is maintained on the grid even when a high-voltage line is out of service. The outage management process will be implemented pursuant to applicable tariffs. To the extent a widespread power outage unexpectedly results due to…, there is insufficient evidence to suggest that such an outage could affect environmental resources, so any resulting impacts are speculative because… *Note: when identifying something a commenter mentions is speculative, you need to explain why something is speculative.*	Y	N	N/A	No

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Table 7a. Comment Types and Response Examples

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Comment Type	Example Comments	Response Examples	Response Complete?	Changes to EIR/S Needed?	Status of Needed EIR/S Changes	Flag for Master Response
Comment refers to use (or non-use of) "best available science"	"You did not use best available science…" "You should have used best available science…" "If you had used best available science this would have shown…"	The Authority and Reclamation used the best available science to conduct impact analyses. A variety of data were obtained for the environmental review process: quantitative data from peer-reviewed published literature on topics specific to the Project area; peer-reviewed published literature outside the Project area but on topics relevant to alternatives analyzed; unpublished quantitative data from within the Project area and from outside of the Project area; qualitative data or personal communication with topical experts; and expert opinion if no other sources were available. Chapter 3, *title*, *subsection title*, describes the type of information used in the impact analysis. *You may also need an additional unique response or to reference a Master Response(s).*	Y	N	N/A	Maybe - depends

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Table 7a. Comment Types and Response Examples

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Comment Type	Example Comments	Response Examples	Response Complete?	Changes to EIR/S Needed?	Status of Needed EIR/S Changes	Flag for Master Response
Comment requires a response that cites scientific literature	[No example provided – see Comment Type cell.]	*Note to authors: the appropriate response may require a change in Volume 1 or 2 of the Final EIR/EIS or a reference be added to Volume 1 or 2 in the Final EIR/EIS. See possible example response below.* The population of overbite clam has persisted and extended its geographic range within the Delta (Kimmerer and Orsi 1996, Jassby et al. 2002). This increase in the population of overbite clam resulted in profound changes to the zooplankton community. Predation (i.e., filter feeding) of copepod nauplii by overbite clams has been documented and is implicated in the decline of several species. Within 1 year after the overbite clam invasion, the abundance of three common estuarine copepods declined by 53 to 91 Percent. (Kimmerer et al. 1994). Changes in nutrient ratios related to increased ammonia have also been linked to the changes in zooplankton species assemblages (Glibert 2010; Glibert et al. 2011). Prior to 1987, the mysid shrimp dominated the macrozooplankton community of the Bay-Delta and was an important food item for fish, including juvenile striped bass. Following the overbite clam invasion, mysid shrimp abundance decreased sharply. Additional mysid species (e.g., *Acanthomysis bowmani*) have invaded the Bay-Delta, and compete with native mysid shrimp for food. Nonnative amphipod crustaceans may substitute for a depressed mysid shrimp population and a food source for juvenile fish; however, the relative contribution of this substitution is not well understood (Feyrer et al. 2003; Toft et al. 2003).	Y	Maybe - depends	Maybe - depends	Maybe - depends

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Comment Type	Example Comments	Response Examples	Response Complete?	Changes to EIR/S Needed?	Status of Needed EIR/S Changes	Flag for Master Response
Comment refers to document adequacy, current reports, objectivity, uncertainty	Your document is wholly inadequate and fails to meet the basic CEQA or NEPA standards. The data and information used to reach the impact conclusions has been cherry picked to meet the goal of taking more water. Furthermore, there is so much uncertainty regarding the severity of these impacts and this document has sugar-coated those impacts. You need to revise this to accurately disclose the potential impacts.	The Authority and Reclamation wrote the EIR/EIS to evaluate the alternatives as objectively and completely as possible. In preparing the EIR/EIS, the Authority and Reclamation followed the appropriate legal process and are complying with CEQA and NEPA regulations. **AND/OR** The Authority and Reclamation acknowledge that uncertainty is inherent in any project of this geographic and temporal scale. Moreover, foreseeing the unforeseeable is not possible. The Authority and Reclamation, however, have strived to use the best available science to evaluate impacts, consistent with the requirements of CEQA and NEPA and, used their best efforts to find out and disclose what reasonably can be disclosed. Additionally, the official public review process for the RDEIR/SDEIS provides an opportunity for formal public comment on the alternatives and impact analysis.	Maybe - depends	Maybe - depends	Maybe - depends	Maybe - depends

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Comment Type	Example Comments	Response Examples	Response Complete?	Changes to EIR/S Needed?	Status of Needed EIR/S Changes	Flag for Master Response
Comment cites to sections of the RDEIR/SDEIS that do not exist and exist in the 2017 document. In other words: Beware the disguised 2017 comment!	Letter-Comment: 67-12 The RDEIR/SDEIS then identifies the significant and unavoidable impacts which alone should terminate consideration of Sites: ES.5.1 Identified Significant and Unavoidable Impacts As shown in Table ES-2, the proposed Project action alternatives would likely result in the following potentially significant and unavoidable direct and indirect impacts. ES.5.1.4 Land Use (Community of Sites and Existing Land Uses) Construction and filling of the proposed Sites Reservoir Inundation Area would result in the physical division and loss of the community of Sites, resulting in a significant and unavoidable impact.	There is no Section ES.5.1 or ES.1.4 in the Executive Summary of the RDEIR/SDEIS released in November 2021. The commenter is referring to content in the executive summary of the 2017 Draft EIR/EIS. Please refer to Master Response 1, Responses to General Comments, regarding the 2017 Draft EIR/EIS. Please also refer to Master Response 1 for information regarding the discretionary role of the Authority to approve the project, the determination of significant and unavoidable impacts, and the role of the Authority in developing findings and a statement of overriding considerations regarding the significant and unavoidable impacts. Land use impacts and agricultural resource impacts are discussed in two separate chapters in the RDEIR/SDEIS released in 2021. Chapter 14, Land Use, of the RDEIR/SDEIS identifies mitigation measures to reduce impacts associated with physical division of a community and explains if impacts remain significant and are unavoidable under Alternative 2. Chapter 15, Agricultural and Forestry Resources, of the RDEIR/SDEIS identifies applicable and feasible mitigation measures to reduce impacts on agricultural resources to less than significant levels and explains if impacts remain significant and are unavoidable under Alternatives 1, 2 or 3.	Yes	No	No	Yes

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Comment Type	Example Comments	Response Examples	Response Complete?	Changes to EIR/S Needed?	Status of Needed EIR/S Changes	Flag for Master Response
	Construction of the proposed Project facilities would result in conversion of Prime Farmland, Unique Farmland or Farmland of Statewide Importance to non-agricultural use, resulting in significant and unavoidable impacts. Implementation of mitigation measures would not reduce these impacts to less-than significant levels.					
Commenter quotes document	[The commenter quotes the EIS [(the State CEQA Guidelines, something else)].	The commenter quotes the RDEIR/SDEIS *[the State CEQA Guidelines, something else…]*. No response required. OR This comment quotes content from Chapter X, *title*, of the RDEIR/SDEIS. No response is required. The comment paraphrases content from Chapter X, *title*, of the RDEIR/SDEIS. No response is required.	Y	N	N/A	N

Table 7a. Comment Types and Response Examples

The text in this table is intended to provide examples and general guidance on crafting responses. Please review each comment in your RTC table carefully and use the general text in this table only as a starting point. You may need to include modifications/additions depending on whether the comment needs a unique response to constitute a complete response.

Note: the use of the term EIR/EIS in your responses encompasses the RDEIR/SDEIS, on which the public commented, AND the Final EIR/EIS. This is because in many instances in responses the response is applicable to both documents. If you need to distinguish between the RDEIR/SDEIS and the Final EIR/EIS for some reason, please do so; however, keep in mind, the Final EIR/EIS is ALL of Volumes 1, 2, and 3. This will be described in Volume 3, Chapter 1, Introduction and Approach.

Comment Type	Example Comments	Response Examples	Response Complete?	Changes to EIR/S Needed?	Status of Needed EIR/S Changes	Flag for Master Response
Commenter suggests discrepancies on and between maps, questions map accuracy	"The maps are not detailed enough to see…It looks like you included X and you should have also included Y and Z in this map."	Maps, figures, and graphics contained in chapters and appendices are designed to provide the level of detail appropriate to depict potential affects and orient readers to locational information. Accordingly, not all maps are all the same scale; rather, the scale was selected on the basis of the nature of the effects for a given resource area. Labeling in many map figures has been minimized to be consistent with discussions in the narrative in order to maintain clarity and ease of use in the maps.	Yes	No	No	No
Commenter incorporates comment letters from other entities by reference	I also agree with all of the comments submitted by X commenter, Y commenter and Z commenter. I hereby incorporate all of their comments by reference.	To review responses to comments submitted by other entities on the RDEIR/SDEIS, please refer to the index of commenters in Volume 3, Chapter 2, to locate the letter number(s) of interest.	Y	N	N/A	N

Table 7a. Comment Types and Response Examples

The text in this table is intended to provide examples and general guidance on crafting responses. Please review each comment in your RTC table carefully and use the general text in this table only as a starting point. You may need to include modifications/additions depending on whether the comment needs a unique response to constitute a complete response.

Note: the use of the term EIR/EIS in your responses encompasses the RDEIR/SDEIS, on which the public commented, AND the Final EIR/EIS. This is because in many instances in responses the response is applicable to both documents. If you need to distinguish between the RDEIR/SDEIS and the Final EIR/EIS for some reason, please do so; however, keep in mind, the Final EIR/EIS is ALL of Volumes 1, 2, and 3. This will be described in Volume 3, Chapter 1, Introduction and Approach.

Comment Type	Example Comments	Response Examples	Response Complete?	Changes to EIR/S Needed?	Status of Needed EIR/S Changes	Flag for Master Response
Comment(s) is/are very similar if not the same as in another letter	Letters 70 and 71 are almost the exact same letters that are authored by the same person – Ben King – but they are not duplicates. They have been coded the same. Letters 98 and 99 have duplicative content but are from different submitters. They have been coded the same. Letters 96 and 100 have duplicative content but are from different submitters. They have been coded the same. Letter 101 includes comments that appear in other letters but it is not a duplicate letter.	*Note to Authors: DO NOT CROSS REFERENCE BETWEEN LETTERS.* *If the letter incorporates other comments by references see example above and respond:* To review responses to comments submitted by other entities on the RDEIR/SDEIS, please refer to the index of commenters in Volume 3, Chapter 2, to locate the letter number(s) of interest.	Yes	No	None	Maybe

Table 7a. Comment Types and Response Examples

The text in this table is intended to provide examples and general guidance on crafting responses. Please review each comment in your RTC table carefully and use the general text in this table only as a starting point. You may need to include modifications/additions depending on whether the comment needs a unique response to constitute a complete response.

Note: the use of the term EIR/EIS in your responses encompasses the RDEIR/SDEIS, on which the public commented, AND the Final EIR/EIS. This is because in many instances in responses the response is applicable to both documents. If you need to distinguish between the RDEIR/SDEIS and the Final EIR/EIS for some reason, please do so; however, keep in mind, the Final EIR/EIS is ALL of Volumes 1, 2, and 3. This will be described in Volume 3, Chapter 1, Introduction and Approach.

Comment Type	Example Comments	Response Examples	Response Complete?	Changes to EIR/S Needed?	Status of Needed EIR/S Changes	Flag for Master Response
Commenter quotes select portions of other commenter letters or other hearing testimony.	The water quality impacts are undeniable. As explained by Water Quality Experts, Inc. the assertion that water quality in the south delta will not be harmed is rejected by the scientific community. ***Indeed, Dr. Scientific Science state in the August 19, 2019 letter that, "dilution is the solution to pollution". Similarly, Dr. Fish Out of Water stated in a letter to Entirely Different Agency that, "habitat doesn't equal wetted acre days," and Public Member: stated at the August 10, 2019 public meeting that "the document fails to demonstrate that South-delta pumping will not cause reverse flows."***	For the full context of the comments that are quoted and a complete response to those remarks, please refer to the index of commenters in Volume 3, Chapter 2, to locate the material from the XX, X, XXXX public meeting, which will be identified by the person's name and is assigned a letter number. Furthermore, comments submitted outside of the comment period for this RDEIR/SDEIS or regarding other projects are beyond the scope of the EIR/EIS. No response is required.	Y	N	N/A	N

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Table 7b. Additional Comment and Response Examples					
Comment Type	**Letter No**	**Comment No**	**Action Code**	**Example Comment**	**Response**
Comment can be responded to with a response already provided in the same letter	000	300	70000	Lastly, the analysis if impacts to fish is insufficient because… Furthermore, this commenter and its members request an extension on the Comment Period until XX, X, XXXX.	Please see response to comment 000-25 regarding the sufficiency of the fisheries analysis. Please see Master Response 1, Responses to General Comments, regarding the duration of the public comment period.

Can refer to another response but only within the SAME letter.

Table 7c Appropriate & Adequate and Inappropriate Responses to Comments		
Comment	**Response**	**Appropriate and Adequate Response (Y/N)? Why?**
[ACME Agency will] continue to develop our comments with our partners in the region to actively identify opportunities to develop recreational facilities in Antelope Valley. It's not going to be easy, but reaching agreement on where and how best to develop recreational facilities will be more successful. It'll be lasting. And it'll better for the environment and the community to reach agreement rather than having protracted litigation. So we're hopeful and we are willing to work with you, your staffs and all those other parties, to see if we can come up with a solution that we can all agree to across the board.	The commenter indicates that ACME Agency is coordinating with partners and is exploring opportunities to develop recreational facilities~~.~~ Please see Master Response 2, Alternatives Description and Baseline, as well as, Chapter 2, Project Description and Alternatives, for information regarding proposed recreational facilities and a description of the recreation facilities under each alternative evaluated. ~~The commenter does not raise make a general comment on the RDEIR/SDEIS or raise significant environmental issues.~~	NO. The use of the statement at the end of this response ~~(bold strikeout)~~ misses the mark because recreational facilities are included in the alternatives such that it would not be accurate (not to mention a little insulting in light of what the commenter is saying) to say that the comment is not making a comment about the RDEIR/SDEIS.
Let's talk a little bit about habitat. It has come up a number of times. And I myself and a number of us, certainly agree and thank you all that in your reports suggesting that we need habitat items. The salmon fishing industry itself has identified, we started with 110 habitat projects, boiled it down to 27 that we think are very, very key. And we have identified 53 predation locations where hot spots, where things can be changed and reduce predation. A number of us are also starting to work, as some of you have suggested, to find cooperative things that we can do. So we encourage you continue to talk about habitat. A lot of the things we propose are still sitting with -- a number of them have gone ahead and are good. A lot of them are sitting unfunded, unsupported and we know and understand you can't -- this isn't within your purview, but please bully pulpit and help us get some of these things going.	The commenter is generally identifying habitat restoration/creation projects to benefit fisheries, as well as predation locations. The commenter does not make a general comment on the RDEIR/SDEIS or raise significant environmental issues. *Consider adding: No further response is required.*	**YES.** The response summarizes what commenter is saying. Concludes with statement that this comment does not raise significant environmental issues (because it doesn't) and does not make a general comment on the RDEIR/SDEIS (because it does not). Where you're not referring to Master Response 1 when making the concluding statement, it may be appropriate to also say no further response is required because the commenter may not understand the relevance of the concluding statement by itself.

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Scope of Work and Workflow for Master Responses and Individual Responses

As identified above, the Master Response development process and individual RTC development process are somewhat iterative and concurrent. ICFs RTC scope of work commits the team to:

- Organize RTC in tables first by action code and then ultimately by comment letter and comment number.
- Author up to eight (8) Master Responses, which will be drafted to address recurring issues, including one Master Response for unsubstantiated claims and general project opposition unrelated to analysis in the RDEIR/SDEIS.
- Not prepare unique individual responses or other responses for comments received on the 2017 document as the Public RDEIR/SDEIS wholly replaced the document released in 2017.
- Provide Volume 3 introduction and annotated outline or draft Master Responses for Integration/Authority, Reclamation, and Authority Legal Team concurrent review prior to draft RTC tables.
- Provide RTC tables as either one deliverable or in batches depending on number of comments in each action code, in coordination with Integration/Other Service Providers, and the schedule.
- Draft RTC and Master Responses will generally be complete prior to the completion of modifications to the Final EIR/EIS chapters and appendices.

Based on the ICF RTC scope of work, our goals (in order of implementation) are to:

1. Draft the Master Response outlines and receive feedback from reviewers*
2. Complete all draft Master Responses incorporating feedback from reviewers*
3. Deliver our draft Master Responses to reviewers* prior to completing our individual RTC tables - the review team needs to see the complete content of the Master Responses before they see references to them in the RTC tables.
4. Complete and deliver draft RTC tables by action code to reviewers*; this may be done in batches and/or may overlap with the delivery of the Master Responses.

*Reviewers will include Authority, Integration, Authority Attorney Team, Reclamation, and may also include Reclamation Solicitor.

Response to Comments General Workflow

Process Letters

- Process the letters in database system
- Assign each letter an identifying number
- Letters that are petitions, form letters and form plus letters should be identified and logged accordingly

Implement Coding Structure & Code Comments

- Finalize coding structure
- ICF Content Analysis Team uses coding structure to delineate comments within each comment letter
- Authors will be assigned comments with codes specific to their area of expertise

Draft Master Responses & Individual Responses

Authors draft master responses in MS Word documents, draft individual responses in comment response tables, and make changes to the document as needed.

Authors include ICF, and Authority/ Integration, Jacobs-Operations, and potentially Engineering-HR and Engineering HC

Review/Revise Responses

Approved Master Reponses and Individual Responses Organized by Letter are Published in Final EIR/EIS

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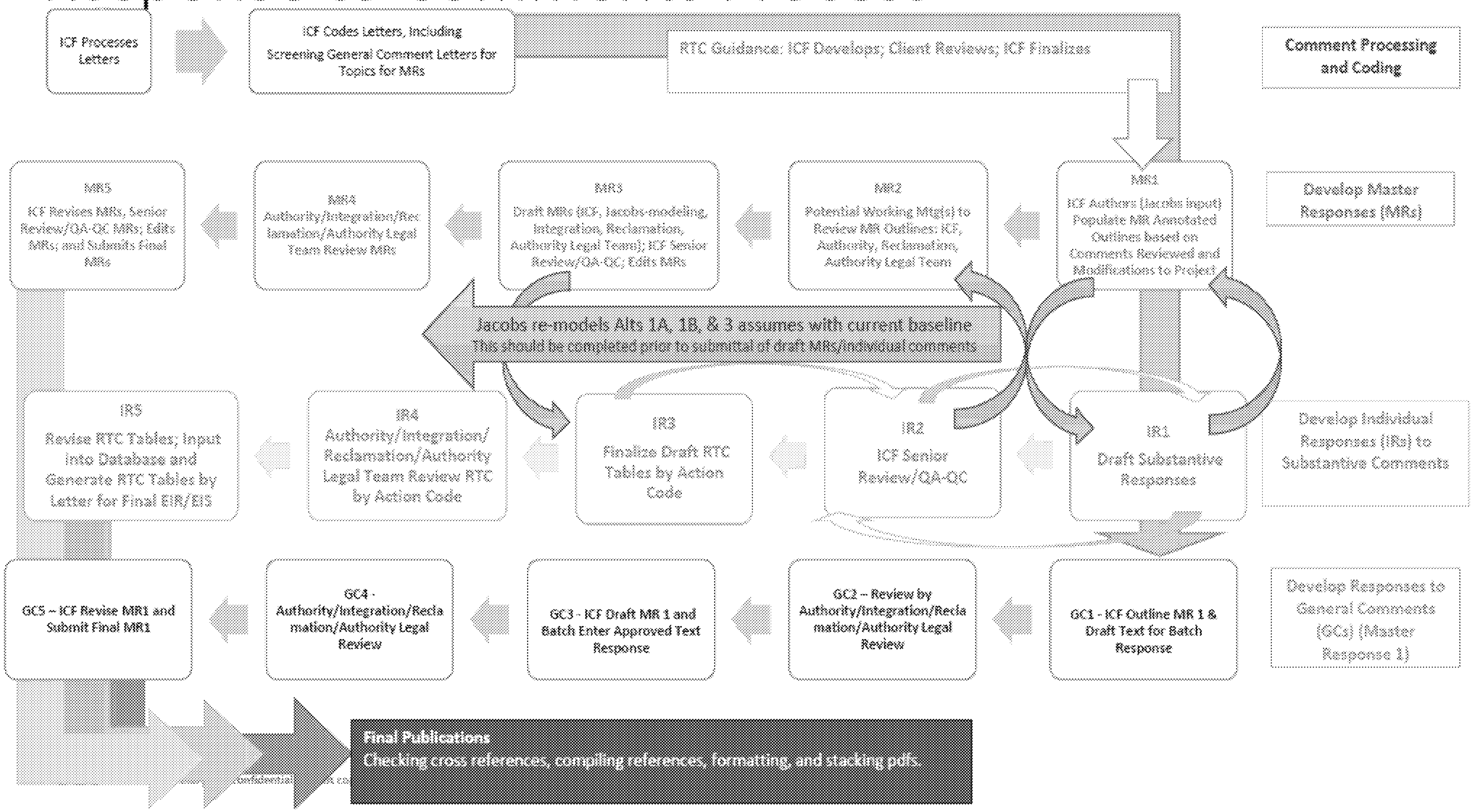
Response to Comments Process



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Citations and References in Master Responses

1. Insert citation as (author year).
2. Insert full reference in the References Cited section of the Master Response (refer to click-and-type templates at the end of this section).
3. Place copy of reference (e.g., pdf, MS Excel file, cvs file) in the Sharepoint subfolder for each Master Response; if the reference has multiple files create a subfolder with author_date and save all files related to that reference in the subfolder.

Citations and References in Individual Responses

Citations in individual responses in RTC tables are citations that:

- ARE cited in your unique response
- ARE NOT cited and attached by a commenter; HOWEVER, if a commenter cites to something but does not attach it and you look at that same document and you cite to it, you need to have an in-text citation, full reference in your RTC table, and pdf of it.

Follow these instructions for citations in an individual response:

1. Insert citation as (author year) as part of the response.
2. Insert the **full reference** in the column provided in the comment response table.
3. Place copy of the reference in the Sharepoint subfolder for individual responses following author-year-action code naming convention. For example: Smith_1998_53100
4. **YOUR COMMENT TABLE WILL NOT BE CONSIDERED READY FOR INTERNAL REVIEW UNTIL FULL REFERENCES AND COPIES OF REFERENCES HAVE BEEN PROVIDED FOR ANY NEW CITATIONS.**

ADDING Citations and References in the Final EIR/EIS

1. With Track Changes turned ON, insert citation as (author year).
2. With Track Changes turned ON, insert full reference in References Cited section at the end of the chapter/appendix. Follow the examples already in the reference sections at the end of chapters/appendices to know what information your reference should provide.
3. Place COPY OF REFERENCE (e.g., pdf) in the Sharepoint References folder for the Final EIR/EIS.

DELETING Citations and References in the Final EIR/EIS (Please Avoid if Possible)

1. If you think you must delete a citation and reference, email Tess Wenning first for guidance as she will need to update her tracker and the Admin Record subfolder to reflect the deletion.

Click-and-Type Reference Templates

[Author(s)]. [Year]. *[Report Title in Title Case and Italics]*. [Version (draft, final)]. [Internal report number]. [City], [STATE (two-letter abbrev.)]. [Prepared for or prepared by (include city and ST)].

[Author(s)]. [Year]. *[Book Title in Title Case and Italics]*. [Edition)]. [City], [STATE (two-letter abbrev.)]: [Publisher].

[Author(s)]. [Year]. [Journal Article Title in Title Case] . *[Journal Name in Title Case and Italics]* [Volume]([Issue]):[Page from]–[Page to].

[Author(s)]. [Year]. *[Website Title in Title Case and Italics]*. Last revised: [Date posted or last revised)]. Available: [URL, including http://]. Accessed: [Date].

[Author(s)]. [Year]. [Title in Title Case]. In [Editor(s) Name(s)] (ed(s).), *[Publication Title in Title Case and Italics]*. [City, ST]: [Publisher].

Author. Year. *"Title in Title Case and Italics"*. Type of document (e.g., MS thesis, PhD dissertation). University. City, ST.

[Author(s)]. [Year]. Letter from [First Name, Last Name, Job Title, Organization/Agency Name of sender] to [First Name, Last Name, Job Title, Organization/Agency Name of recipient(s)].

[Last name, first name]. [Job Title]. [Organization/agency name, city, state.]. [Date] — [Type of personal communication] to "[First and last name]", [Job Title], [Organization/agency name, city, state.]

Producer Name. Year. *Database Name* [type of medium]. Producer location, province/state: Full date of resource used.

Producer Name. Year. Database Name [type of medium]. Producer location, province/state. Available: Supplier/Database identifier or number. Accessed: date.

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Changes to Final EIR/EIS

You may need to make changes to the Final EIR/EIS; however, these changes could be driven by one of two things:

1. A comment to which you are responding.

2. A modification to the Project description.

If you are making a change as a result of responding to a comment, follow the steps outlined in the *Completing Individual Responses* section of this guidance (Step 10) and fill out your RTC table appropriately.

ANY change being made to a chapter or appendix MUST be made in tracked changes.

Please DO NOT track deletions of tables or figures, include only the NEW table or figure in tracked changes. In other words, if a table or figure needs to be replaced, delete the existing table or figure with tracks off, then turn tracks on and insert the new table or figure. This will make MS Word (and our production team) happy.

If you ADD a figure or table and therefore MODIFY the numbering of the tables and figures in a chapter or appendix, please flag with a comment bubble so that the production team knows and can renumber accordingly (if you do not do that).

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Response to Comments Dos and Don'ts

1. **DO be mindful of your tone in responses and how it may be perceived by the commenter and the general public.** Public comments were made seriously and the concerns raised are serious to the commenters. Achieving a neutral tone in responses can be as simple as rearranging sentences to temper your tone and being cognizant of word choices (e.g., avoiding the use of value-laden or subjective terms that are open to interpretation). We can (and should) clear up misconceptions or misinformed views, but not in a confrontational way.
2. **DO NOT use the phrases, "Comment noted.", "Comment is acknowledged." or similar.**
3. **DO look for parity between the length of the comment and the length of the response.** Length of the response should be somewhat equivalent to the comment. Responses that refer only to a Master Response without identifying the topics addressed seem dismissive of the commenter's concerns.
4. **DO NOT over respond to comments;** respond only to what the commenter wrote.
5. **DO NOT reference to comment responses between different letters.** In other words, response to comment 121-1 should not be "Please also see response to comment 50-2" because letter 121 and letter 50 are two different letters. However, you may refer to the response to another comment from the same letter (i.e., response to comment 121-5 can be "Please also see response to comment 121-1"). You may also copy/modify responses that you wrote for one letter into the response field of another letter to ensure consistency across letters and between multiple responses.
6. **DO double check copy and pasting references to comment numbers within the same letter.** Using the same response for multiple comments is fine but make sure you refer to the correct comment response number and make sure all issues are adequately addressed in the initial response.
7. **DO refer to Master Responses by the correct number, by "Master Response", and by their correct title.** e.g., Master Response 1, Responses to General Comments; NOT MR1 or mr1 or M.R. #1.
8. **DO NOT leave notes or placeholders in the response column.** Assume that what you put in the response column will be made public. Use comment bubbles if in MS Word or the notes column if in the MS Access database to leave notes or reminders.
9. **DO craft responses from the perspective of the Final EIR/EIS.** This may mean that you use different tenses in a response and that is okay.
10. **DO cite to the EIR/EIS content and all other reference materials already issued to the public for review.** Examples:
    a. "Chapter X, title, identifies and discloses these potential impacts and proposed mitigation…"
    b. "…revisions were made in Chapter X, title, Impact Blah-#, in response to the comments…"
    c. "….Appendix X, title, subsection, subtitle, describes…."
11. **DO provide the complete citation and reference entry when citing to a source and place a copy in the appropriate folder on the ICF internal Sharepoint site for your references.**

12. **DO use chapter/section titles/table titles, or figure titles when cross referencing material** e.g., “As shown Chapter 7, title, Distribution of February–May Monthly Floodplain Area…”.
13. **Do NOT use page numbers**. Page numbers in “in-progress” documents are likely to shift during final editing and formatting, see #11 above.
14. **DO fill out all your columns in your comment response table(s) and DO update the “progress status” column on Sharepoint**.
15. **DO NOT italicize, bold, highlight, or underline words in your comment response table(s)**. Formatting is not retained when exporting from the MS Access database into the final MS Word files.

Attachment 1: Action Codes

SITES RESERVOIR PROJECT

DRAFT RESPONSE TO COMMENTS ACTION CODES

(SRP_RSD)

Process

PRCSS 10000-19999

10000 – Public Involvement/Agency & Stakeholder coordination (Chapter 33 and 34, Appendices 33A, 33B, and 33C; Note: this code would include general information requests, landowner requests, complaints about availability for library, requests for hard copies)

10100 – Coordination with Tribes

11000 – Relationship to other plans/programs (Note: includes mentions of State Water Board Bay-Delta Plan Updates or Phase I/Phase II/Water Quality Objectives or SWB flow requirements, ROC ON LTO)

11100 – BDCP or California WaterFix or Delta Conveyance

11200 – Delta Plan, Delta Reform Act, or Co-Equal Goals

11300 – North of Delta Off Stream Storage (NODOS)

11400 – Feasibility plans from Reclamation, DWR, Other

11500 – California Water Commission

12000 – Sites Project Authority authority vs. Reclamation authority (is this a federally owned operated reservoir or not?)

13000 – Water Rights

14000 – Permits (Chapter 4 and Appendix 4A)

15000 – Funding

15100 – Water Storage Investment Program (WSIP)

15200 – Water Infrastructure Improvements for the Nation Act (WIIN)

General

GENRL 20000-29999

20000 – General Technical or Editorial (includes comments on format e.g., "missing impacts", headers)

21000 – General Approach to Analysis (Chapter 3 and Appendix 1A)

21100 – General Baseline

21200 – Piecemealing

21300 – Impact Conclusions (general as it relates to entire document – issue specific comments to the resource code)

21400 – Mitigation Measures (general – for issue/resource specific comments code to the resource code)

21500 – Adequacy of Analysis or CEQA Process (Note: would include mention of needing to recirculate or needing a supplemental EIR/EIS)

21600 – Organization of the Document

22000 – Merits of the Project and General Information (Note to coders: example comments are: "there is NO excess water in the Sacramento River", "This is a bad project"; "This project would send water to the south"; "I oppose this project"; "I love this project"; "The project should be bigger/smaller/different and with no further information/details/evidence regarding alternatives". This is also the **"dump code"** to code comments that have many, many facts about some topic (e.g., fish) not connected to impact analyses or significant environmental impact; in other words, comments with facts not tied to analyses. Example comments include: "I was raised on a farm in northern CA where we raised sheep and water quality was good…")

Alternatives

Alts 30000-39999

30000 – Project Objectives/Purpose and Need (Chapter 1)

31000 – Range and Scope of alternatives considered (Chapter 2, Appendix 2A and 2B)

31100 – Methodology for determining Alternatives evaluated (Appendix 2A and 2B)

31200 – Suggestions by Commenters for New or Different Alternatives

32000 – Project Description/Alternatives Description (Chapter 2, Appendix 2C and Appendix 2D; Note: would include mentions/requests for description of operations plan, or "how would the reservoir be operated?", or general project description comments)

32100 - Preferred Project

32200 – Other Alternatives

32300 – No Project Alternative/No Action Alternative

33000 - Relationship to Sites Reservoir Project 2017 RDEIR/DEIS (Note to coders: look at the power point training as your cheat sheet of major differences between the 2017 Sites DEIR/DEIS and the 2021 RDEIR/SDEIS to help you know what to code to this number.)

HYDROMODEL 40000-49999 (Note: code here for comments on the models, the model assumptions, or the modeled results not referenced or related to the impact analysis; if a comment connects the results to the impact analysis it should probably be coded in the appropriate RESRC code)

40000 – Hydrologic model general (Appendices 5A, 5A1, 5A6)

41000 – Modeling baseline (Appendices 5A1, 5A2, 5A3)

43000 – Project Operations and Reservoir Modeling (Appendices 5B and 5B1)

44000 - River Flow modeling (Appendices 5A7, 5B2, 5C)

45000 – Delta Operations (Appendix 5B3)

46000 – Water supply modeling (Appendices 5A5, 5B4 and 5B5)

47000 – Water quality modeling (Appendices 6B1, 6B2, 6B3)

48000 – Water temperature modeling (Appendix 6C and 6D)

Resources (Note: these are comments on the analysis of the Alternatives' impacts on resources; If there is a comment related to the methodology of evaluating a resource and there is no specific methodology subcode, please code up.)

RESRC 50000-59999

50000 – Resources multiple

50100 – Trinity River (Coder Note: code here if comment mentions Trinity River so we can have them all in one location; example comments include: There will be impacts to Trinity River; Impacts were not sufficiently analyzed with respect to the Trinity River; recreation and fisheries on the Trinity River will be impacted because…; of course the modeling shows no impacts to the Trinity River, the flows in the Trinity River are held constant in the model; there are Indian Trust Assets on the Trinity River; there are Tribal Cultural Resources on the Trinity River)

51000 – Surface Water Resources (Chapter 5)

51010 – Impacts/Mitigation Measures

51020 – Changes to CVP/SWP Operations

51100 – Surface Water Quality (Chapter 6, Appendices 6A and 6E)

51110 – mercury and methylmercury (Chapter 6 and Appendix 6F)

51120 – Impacts/mitigation measures

51200 – Fluvial Geomorphology (Chapter 7 and Appendices 7A and 7B)

51300 – Groundwater Resources (Chapter 8 and Appendices 8A and 8B)

51400 – Vegetation, Wetlands, Botany Resources (Chapter 9 and Appendices 9A and 9B)

51500 – Wildlife (Chapter 10 and Appendices 10A, 10B, and 10C)

51600– Aquatic Biological Resources (Chapter 11 and all chapter 11 appendices; Note: this is the catch all category related to aquatic

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biological resources you code here if a comment does not fit anywhere else)

51610 – Impact Analysis (Note: code here if general comment related to aquatic biological resource impact analysis not fitting in any impact subcodes below; Appendices 11A, 11B, 11F)

51620 – Construction Impacts

51630 – Near-field Impacts of RBPP and GCID Intakes (Note: will include comments regarding entrainment, impingement, predation on the Sacramento River at the RBPP and GCID Main Canal Headgate; Appendices 11B and 11J)

51640 – Temperature Impacts (Appendices 11D, 11H and 11O; Note: code here if comment is specific about aquatic resources temperature impacts; comments related to temperature modeling should be coded to either Modeling codes [40000 or 48000] or water quality code [51100])

51650- River Flow Impacts (Appendices 11H, 11I, 11N, and 11P; Note: the appearance of 11H in both River Flows and Temperature Impacts will be down to the coder to determine if a comment pertains to either temperature or other flow-related effects and choose accordingly)

51660 – Reservoir Impacts (Appendix 11E)

51670 – Floodplain Impacts (Appendices 11K and 11M)

51680 - Delta Fish Impacts (Note: will include comments regarding entrainment in the Delta at exports; Appendices 11F, 11J, 11L, and 11Q)

51690 - Mitigation Measures (Note: code here if comment is general and about aquatic biological resource mitigation that does not fit in any of the codes above)

51700 – Geology and Soils (Chapter 12 and Appendices 12A and 12B)

51800 – Minerals (Chapter 13)

51900 – Land Use (Chapter 14)

52000 – Agriculture (Chapter 15)

52100 – Recreation (Chapter 16)

52200 – Energy (Chapter 17)

52210 – Energy modeling (Appendix 17A)

52300 – Transportation, Traffic, Navigation (Chapter 18)

52400 – Noise (Chapter 19 and Appendix 19A)

52500– Air Quality, Health Risk Assessment, (Chapter 20 and Appendix 20A)

52510 – photochemical modeling, health risk modeling, and ambient air quality modeling (Appendices 20C and 20D)

52600 – GHG (Chapter 21)

52700 – Cultural Resources (Chapter 22 and Appendix 22A)

52800 – Tribal Cultural Resources (Chapter 23)

52900 – Visual Resources (Chapter 24 and Appendices 24A and 24C)

53000 – Population and Housing (Chapter 25)

53100 – Public Services and Utilities (Chapter 26)

53200 – Public Health and Environmental Hazards (Chapter 27 and Appendix 27A)

53300 – Climate Change (Chapter 28 and Appendix 28A)

53310 – climate change modeling (Appendix 28A)

53400 – Indian Trust Assets (Chapter 29)

53500 – Environmental Justice (Chapter 30)

Cumulative and Growth

CUMGR 60000 – 69999

60000 – Cumulative Impacts (Chapter 31)

60100 – Projects Considered

60200 – Cumulative Impact Analysis/Mitigation Measures

61000 – Growth-Inducing Effects (Chapter 32)

62000 – Relationship between Short-term and Long-term productivity (Chapter 32)

63000 – Irreversible or irretrievable resource commitments (Chapter 33)

Socioeconomics

SOCIOECON 70000-79999

70000 – Socioeconomics (Chapter 30, Appendices 30A and 30B)

70100 - Economic agricultural modeling

Attachment 2: Respondent List

The table below lists all letter numbers and respondent names and organizations (if appropriate). If a letter number is listed twice, it means there were multiple signatures on a single letter. The letter numbers correspond to the letter numbers in comment response tables. The table below does not include all signatures on the petition/form.

Note:

- Letters 70 and 71 are almost the exact same letters that are authored by the same person – Ben King – but they are not duplicates. They have been coded the same. In other words, if you see a comment from Letter 70 in your table you may see almost an identical comment from Letter 71 in your table.
- Letters 98 and 99 have duplicative content but are from different submitters. They have been coded the same.
- Letters 96 and 100 have duplicative content but are from different submitters. They have been coded the same.
- Letter 101 includes comments that appear in other letters but it is not a duplicate letter.

Respondent_ID	Letter_Number	First_Name	Last_Name	Title	Organization_Name
17046	1	Mal	Gaff		
63573	2	John	Armstrong		
64042	3	Frank	Treadway		
64043	4	Jim	Copeland		
64044	5	Claudia	Miller		
20528	6	Leland	Frayseth		
64053	7	Alison	Penny		
64070	8	Ashley	Overhouse	Reslient Rivers Director	Friends of the River
64106	9	Francis	Coats		
630	10	Fred	Rinne		
64052	11	Dan	Dougherty		
64083	12	Karinne	Dadigan		
64050	13	Anna	Starkey	Cultural Regulatory Specialist	United Auburn Indian Community
64046	14	Amanda	Moncada		
64048	15	Robert	Zatkin		
64054	16	Richard	Kangas		
64049	17	Kenny	Cohen	Fire Chief	Maxwell Fire Protection District
64051	18	Kurt	Chambers	General Manager	Maxwelll Public Utility District
64063	19	Jerry	Boles		
64057	20	Linda	Lucero		
64064	21	Erin	Huang		
64039	22	Steve	Evans	Wild Rivers Director	California Wilderness Coalition
63632	23	Isaac	Kinney		
34710	24	Regina	Chichizola	Co-Director	Save California's Salmon
64056	25	Ashley	Overhouse	Resilient Rivers Director	Friends of the River
64055	25	Ashley	Overshouse	Resilient Rivers Director	Friends of the River

Predecisional Working Document—For Discussion Purposes Only

Draft_0015752

Respondent_ID	Letter_Number	First_Name	Last_Name	Title	Organization_Name
64058	26	Grant	Preheim		
64059	27	Max	Steiner		
63632	28	Isaac	Kinney		
64062	29	Sheridan Noelani	Enomoto		
34710	30	Regina	Chichizola	Co-Director	Save California's Salmon
64060	31	Amanda	Moore		
2407	32	Robert	Kunde	Engineer-Manager	Wheeler Ridge-Maricopa Water Storage District
64068	33	Meredith	Hacklemar		
63748	34	Malissa	Tayaba		
64065	35	Nicole	Panditi		
64077	36	Ben	King		T & M King Farms
34710	37	Regina	Chichizola	Co-Director	Save California's Salmon
64066	38	Melissa	Tomlinson		
33299	39	Dan	Bacher		
64077	40	Ben	King		T & M King Farms
64076	41	Greg	Reis		Advance Team
64074	42	/	Garbin		
64069	43	Danielle	Frank		
64067	44	Benjamin	Lord		
11390	45	Dan	Bacher	Editor	Fish Sniffer Magazine
64075	46	Shannon	Wittgen		
64074	47	/	Garbin		
64079	48	Delores	Brannigan		
63353	49	Tryg	Sletteland	Founding Director	Sacramento River Council
17563	50	Janet and Mark	Thew		
20528	51	Leland	Frayseth		
54641	52	Angela	Rex		
64071	53	Zoe	McBeth		
64072	54	Henry	Roller		
64073	55	Katya	Forsyth		
64061	56	Alicia	Trider		

Predecisional Working Document—For Discussion Purposes Only

Draft_0015753

Respondent_ID	Letter_Number	First_Name	Last_Name	Title	Organization_Name
64049	58	Kenny	Cohen	Fire Chief	Maxwell Fire Protection District
64080	59	Josh	Cozine		
14177	60	Richard	Spotts		
2658	61	Christopher	Lish		
64078	62	Chris	Nelson		
64081	63	Glen	Spain	NW Regional Director	Pacific Coast Federation of Fishermen's Assns
64093	64	Beckye	Stanton	Staff Toxicologist	CA Enviromental Protection Agency
64084	65	David	Guy	President	Northern California Water Association
1106	66	Barbara	Barrigan-Parrilla	Executive Director	Restore the Delta
34710	66	Regina	Chichizola	Co-Director	Save California's Salmon
64096	66	Erin	Woolley	Policy Advocate	Sierra Club California
64104	66	Mike	Conroy		Pacific Coast Federation of Fishermen's Associatio
613	66	Cindy	Charles	Conservation Chair	Golden West Fly Fishers
62982	66	Ronald	Stork	Senior Policy Staff	Friends of the River
34281	66	Chris	Shutes	Water Rights Advocate and FERC Projects Director	California Sportfishing Protection Alliance
63358	66	Jonas	Minton	Senior Water Policy Advisor	Planning and Conservation League
34076	66	Gary	Bobker	Program Director	The Bay Institute
2337	66	John	McManus	President	Golden Gate Salmon Association
63396	66	Jon	Rosenfield	Senior Scientist	San Francisco Baykeeper
20945	66	Rachel	Zwillinger		Defenders of Wildlife
2356	66	Doug	Obegi	Senior Attorney, Water Program	Natural Resources Defense Council
63354	66	Mark	Rockwell	President	Fly Fishers International, Northern California

Predecisional Working Document—For Discussion Purposes Only

Draft_0015754

Respondent_ID	Letter_Number	First_Name	Last_Name	Title	Organization_Name
12454	67	Frank	Egger	President	North Coast Rivers Alliance
2405	68	Richard	Morat		
64086	69	Gary	Evans	Colusa County Board of Supervisors	
64077	70	Ben	King		T & M King Farms
64077	71	Ben	King		T & M King Farms
34710	72	Regina	Chichizola	Co-Director	Save California's Salmon
64070	72	Ashley	Overhouse	Reslient Rivers Director	Friends of the River
1541	72	Caleen	Sisk	Chief and Spiritual Leader	
62982	72	Ronald	Stork	Senior Policy Staff	Friends of the River
63353	72	Tryg	Sletteland	Founding Director	Sacramento River Council
63245	72	Sherri	Norris	Executive Director	California Indian Environmental Alliance (CIEA)
64027	72	Ross	Middlemiss	Staff Attorney	Center for Biological Diversity
64096	72	Erin	Woolley	Policy Advocate	Sierra Club California
63358	72	Jonas	Minton	Senior Water Policy Advisor	Planning and Conservation League
64028	72	Isabella	Langone	Conservation Analyst	California Native Plant Society
64039	72	Steve	Evans	Wild Rivers Director	California Wilderness Coalition
34281	72	Chris	Shutes	Water Rights Advocate and FERC Projects Director	California Sportfishing Protection Alliance
63354	72	Mark	Rockwell	President	Fly Fishers International, Northern California
63375	72	James	Brobeck	Water Policy Analyst	AquAlliance

Predecisional Working Document—For Discussion Purposes Only

Draft_0015755

Respondent_ID	Letter_Number	First_Name	Last_Name	Title	Organization_Name
2434	73	Osha	Meserve	Legal representative for	Local Agencies of the North Delta
63245	74	Sherri	Norris	Executive Director	California Indian Environmental Alliance (CIEA)
34654	75	Jennifer	Pierre	General Manager	State Water Contractors
64094	76	Peter	Minkel	Engineering Geologist	Central Valley Regl WQ Control Board
63361	77	Joshua	Grover	Water Branch Chief	California Dept. of Fish and Wildlife
64090	78	Erik	Ekdahl	Deputy Director	California State Water Board, Div of Water Rights
64091	78	Patrick	Pulupa	Executive Officer	Central Valley Regl WQ Control Board
64001	79	Jean	Prijatel	Manager, Environmental Review Branch	US Environmental Protection Agency
64082	80	Pat	McCaslin		
20410	81	Cathy	Marcinkevage		National Marine Fisheries Service
63604	82	Jose	Setka	Environmental Affairs Officer	East Bay Municipal Utility District
64087	83	John	Koeppen		
64092	84	Donna	Mallen		
64103	85	Martha	C		
64088	87	Bruce	Campbell		
34710	88	Regina	Chichizola	Co-Director	Save California's Salmon
64105	89	Ronda	Lucas		
64085	90	Lucinda	Shih		Contra Costa Water District
64089	91	Arthur	Fabre Jr		
14177	92	Richard	Spotts		
64095	93	Anthony	Roberts	Tribal Chairman	Yocha Dehe Wintun Nation
64101	94	Kerry	Wicker		
64102	95	Susan	Worden		

Respondent_ID	Letter_Number	First_Name	Last_Name	Title	Organization_Name
19470	96	Ralph	Bocchetti		
14177	97	Richard	Spotts		
64099	98	Gary	Imlay		
64100	99	Sherry	Reisch		
24837	100	Genette	Foster		
64097	101	Karen	Rubio		
64098	102	Susan	Strauss		

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BOARD OF SUPERVISORS
200 W. 4TH STREET, 4TH FLOOR
MADERA, CA 93637
(559) 675-7700 / FAX (559) 673-3302
TDD (559) 675-8970
www.MaderaCounty.com

MADERA COUNTY

MEMBERS OF THE BOARD
BRETT FRAZIER
DAVID ROGERS
ROBERT L. POYTHRESS
LETICIA GONZALEZ
TOM WHEELER

Karen Scrivner, Chief Clerk of the Board

ANY INDIVIDUAL WITH A DISABILITY MAY REQUEST SPECIAL ASSISTANCE BY CONTACTING THE CHIEF CLERK TO THE BOARD OF SUPERVISORS

AGENDA
for Special Meeting of the
Madera County Board of Supervisors
Wednesday, March 9, 2022

MEETING LOCATION
Madera County Government Center
200 W. 4th Street, Madera CA 93637
Board of Supervisors Chambers

OR VIA WEBEX
https://madera.webex.com/meet/Public
Meeting ID: 146.589.3861

9:00 A.M. – Closed Session
10:00 A.M. – GSA Reports

Meetings of the Board of Supervisors shall convene in the Board of Supervisors Chambers, Madera County Government Center, 200 West 4th Street, Madera, California. The Board of Supervisors meets simultaneously as the Board of Supervisors, the Board of Directors of all Dependent Special Districts governed by the Board, the Board of Directors of County Groundwater Sustainability Agencies, the County Public Financing Authority, the Flood Control and Water Conservation Agency, and the Governing Body of each and every other public entity for which the Board of Supervisors serves as the Governing Body.

Supporting documents relating to the items on this agenda that are not listed as 'Closed Session' are available through the County of Madera website at www.maderacounty.com. These documents are also available at the Office of the Clerk of the Board of Supervisors, 200 West 4th Street, 4th Floor, Madera, CA 93637. Supporting documents relating to the items on this agenda that are not listed as 'Closed Session' may be submitted after the posting of the agenda and are available at the Office of the Clerk of the Board of Supervisors. Please visit the Office of the Clerk of the Board of Supervisors for updates.

9:00 A.M.

CALL TO ORDER

1. INVOCATION AND PLEDGE OF ALLEGIANCE

2. CLOSED SESSION:

2.a. 8346: **Request for Closed Session:**
Government Code Section 54956.9 (d)(1)
CONFERENCE WITH LEGAL COUNSEL - **EXISTING LITIGATION**
Name of Case: Madera Irrigation District and Madera Irrigation District Groundwater Sustainability Agency vs. Madera County Groundwater Sustainability Agency, Madera County Board of Supervisors, and County of Madera
(Madera County Superior Court Case Number MCV086277)

2.b. 8347: **Request for Closed Session:**
Government Code Section 54956.9 (d)(1)
CONFERENCE WITH LEGAL COUNSEL - **EXISTING LITIGATION**
Name of Case: Elizabeth Cardoza; Clay Daulton; David Gill; Landon Gill; Michele Lasgoity; Monica Lasgoity; Rosemary Lasgoity; Jeff Lefors; Mark Peters; Sally Roberts; Candace Khanna; Rakesh Khanna; Taisto Smith; SWD Investments, Inc.; SWD Investments - Fulton Ranch, Inc. vs. The Madera County Groundwater Sustainability Agency (Madera County Superior Court Case Number MCV06218)

3. PUBLIC COMMENT: The first 15 minutes of each regular session are set aside for members of the public to address the Board on any matter under the jurisdiction of the Board, but not appearing on the agenda. The Board will not take action on any items presented under public comment. Speakers are limited to 3 minutes. Anyone addressing the Board is asked to print their name clearly on the "Speaker" sheet at the podium and state their name and county of residence for the record.

10:00 A.M.

4. GSA REPORTS

4.a. 8322: **BOARD OF DIRECTORS GROUNDWATER SUSTAINABILITY AGENCY/WATER & NATURAL RESOURCES DEPARTMENT**
Presentation and update on Madera County Groundwater Sustainability Agencies Rate Study.

5. ADJOURN

BOARD OF SUPERVISORS
COUNTY OF MADERA

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Members of the Board
, District 1
, District 2
, District 3
, District 4
, District 5

AGENDA ITEM SUBMITTAL

March 9, 2022
Chairman Tom Wheeler

DEPARTMENT	DEPARTMENT CONTACT	AGENDA ITEM
County Counsel Department	Regina Garza 559-675-7700	2.a CLOSED SESSION:

SUBJECT:	REQUIRED VOTE:	DOC. ID NUMBER	DATE REC'D
Closed Session: Existing Litigation - MID		8346	3/4/2022

STRATEGIC FOCUS AREA(S):

For Clerk of the Board's Office Use Only

Is this item Budgeted? Will this item require additional personnel? Previous Relevant Board Actions: PowerPoint/Supporting Documents:	DOCUMENT NO(S).

RECOMMENDED ACTIONS:

Government Code Section 54956.9 (d)(1)
CONFERENCE WITH LEGAL COUNSEL - **EXISTING LITIGATION**
Name of Case: Madera Irrigation District and Madera Irrigation District Groundwater Sustainability Agency vs. Madera County Groundwater Sustainability Agency, Madera County Board of Supervisors, and County of Madera
(Madera County Superior Court Case Number MCV086277)

Processed by BOS Clerk:

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, District 5

AGENDA ITEM SUBMITTAL

March 9, 2022
Chairman Tom Wheeler

DEPARTMENT	DEPARTMENT CONTACT	AGENDA ITEM
County Counsel Department	Regina Garza 559-675-7700	2.b CLOSED SESSION:

SUBJECT:	REQUIRED VOTE:	DOC. ID NUMBER	DATE REC'D
Closed Session: Existing Litigation - GIP		8347	2/15/2022

STRATEGIC FOCUS AREA(S):

For Clerk of the Board's Office Use Only

Is this item Budgeted? Will this item require additional personnel? Previous Relevant Board Actions: PowerPoint/Supporting Documents:	DOCUMENT NO(S).

RECOMMENDED ACTIONS:

Government Code Section 54956.9 (d)(1)
CONFERENCE WITH LEGAL COUNSEL - **EXISTING LITIGATION**
Name of Case: Elizabeth Cardoza; Clay Daulton; David Gill; Landon Gill; Michele Lasgoity; Monica Lasgoity; Rosemary Lasgoity; Jeff Lefors; Mark Peters; Sally Roberts; Candace Khanna; Rakesh Khanna; Taisto Smith; SWD Investments, Inc.; SWD Investments - Fulton Ranch, Inc. vs. The Madera County Groundwater Sustainability Agency (Madera County Superior Court Case Number MCV06218)

Processed by BOS Clerk:

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, District 3
, District 4
, District 5

AGENDA ITEM SUBMITTAL
BOARD OF DIRECTORS GROUNDWATER SUSTAINABILITY AGENCY

March 9, 2022
Chairman Tom Wheeler

DEPARTMENT	DEPARTMENT CONTACT	AGENDA ITEM
Department of Water and Natural Resources	Emily Garcia 559-675-7893	4.a GSA REPORTS:

SUBJECT:	REQUIRED VOTE:	DOC. ID NUMBER	DATE REC'D
Update for County GSA Rate Study	N/A	8322	

STRATEGIC FOCUS AREA(S):
Infrastructure

For Clerk of the Board's Office Use Only

Is this item Budgeted? Yes Will this item require additional personnel? No Previous Relevant Board Actions: 8/17/2021; 12/9/2021; 2/8/2022; 3/1/2022 PowerPoint/Supporting Documents: PowerPoint Presentation	DOCUMENT NO(S).

RECOMMENDED ACTIONS:

Presentation and update on Madera County Groundwater Sustainability Agencies Rate Study.

DISCUSSION / FISCAL IMPACT / STRATEGIC FOCUS:

DISCUSSION:

This is an update on the Madera County GSA Rate Study to fund projects. While administration and planning are covered by the County GSA Admin Fee of approximately $24/irrigated acre, projects are not included in this fee and need to go through a Proposition 218 proceeding.

In order to implement groundwater sustainability plans that are acceptable to the State, the County GSA must implement a fee for projects quickly to stay on project implementation schedule. The projects are currently in development and programmatic details will be determined by board action at a later date.

The rate study consists of four main components:

1. The County of Madera Groundwater Sustainability Agency (GSA) is implementing a

phased flood water recharge program to divert and recharge flood flows available as Section 215 water from the Bureau of Reclamation Friant Division and flood flows from the Eastside Chowchilla Bypass to provide an estimated 190,000 acre-feet (AF) of groundwater recharge in years when flood water and Section 215 water are available. Recharge projects are anticipated to be both on-farm and in dedicated basins.

2. Sites Reservoir is a proposed off-stream reservoir north of the Delta that diverts excess Sacramento River flood flows. Construction is anticipated from 2024-2030 with first deliveries estimated in 2032-33. For participation, cash needs include buy-in to participate as well as annual future debt service and annual future operations costs.

3. Domestic well mitigation was anticipated in the groundwater sustainability plans in the Madera and Chowchilla Subbasins. The GSPs recognized the likely significant and unreasonable impacts to domestic well beneficial users during the implementation period. The proposed program will assist domestic well users with obtaining a water supply when wells go dry during the implementation period. Based on initial consultations with the state Department of Water Resources, it will be necessary to either avoid adverse domestic well impacts or implement a program to mitigate for these impacts.

4. Land repurposing would achieve approximately 50% of the total demand management target, over time through voluntary retirement of irrigated land through annual payments.

Rates are dependent on the subbasin and on the year. Fixed rates are advised for the first two years to achieve revenue stability and then a hybrid rate with a fixed and volumetric component is advised for the remaining three years.

FISCAL IMPACT:

GSA-related planning and administration are paid for by the GSA Admin Fee adopted in November of 2019 by the Board of Supervisors acting as the Board of Directors for the County GSAs as well as by grants from the Bureau of Reclamation and state Department of Water Resources.

CONNECTION TO THE COUNTY OF MADERA STRATEGIC PLAN: MISSION 2023:

Focus Area 6 - Infrastructure - Typically, groundwater resources planning, including aquifers, are considered "natural infrastructure."

ATTACHMENTS

1. Rate Study Special Meeting

RAFTELIS

Madera County GSAs – Rate Studies

Board of Supervisors Meeting

March 9, 2022

Attachment: Rate Study Special Meeting (8322 : Update for County GSA Rate Study)

Outline

1. **Overview**
2. **Projects and Costs**
   - Recharge
   - Sites Reservoir
   - Domestic Well Mitigation
   - Land Repurposing
3. **Rates**

Attachment: Rate Study Special Meeting (8322 : Update for County GSA Rate Study)

Overview

Attachment: Rate Study Special Meeting (8322 : Update for County GSA Rate Study)

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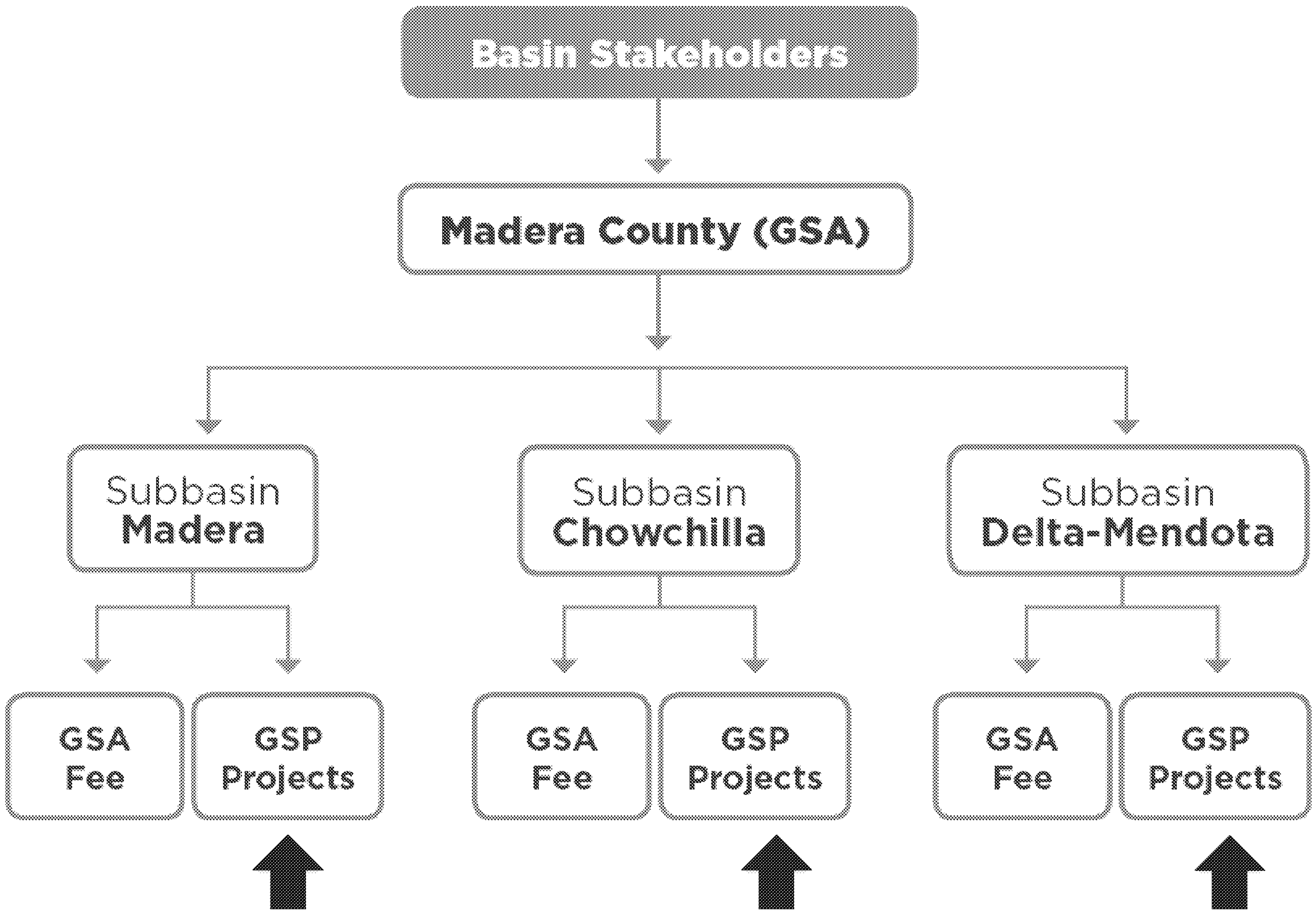
What We Have Done

- Extensive public outreach to develop an allocation and key project details to develop costs
- Developed flexibility with farm unit concept to manage water as a larger economic unit rather than by the acre
- Been aggressive about water supply augmentation before demand reduction

What We Heard

- Board understands the necessity of the fixed rate for years one and two
- Board prefers project-based hybrid rate in years three, four, and five
- Board would like more project information
- Board would like to talk through what happens when acres come out of irrigated production

GSAs Organizational Structure



FAQs on Rates & Allocations in the County GSA

- What is being measured as the basis of the rate?
  - Enrolled acreage in the farm unit is subject to the fixed rate; and ETAW of the farm unit is measured as the basis for a volumetric component
- Is the penalty part of the rate?
  - No, this is a separate but parallel process
- When would the appeals process start?
  - Appealing a potential penalty could start at the end of the calendar year (2022 ETAW)
- Is the money shared between subbasins?
  - No
- Is the allocation optional?
  - No

2021/2022 Workshops & Outreach

Groundwater Recharge

- Workshop – February 4, 2021
- Workshop – May 3, 2021
- Madera County GSAs Hybrid Workshop – June 16, 2021
- Public Workshop on February 25, 2022

Sites Reservoir

- Presentation at GSA Update at Board of Supervisors – November 2, 2021
- Public Workshop on February 25, 2022

Domestic Well Mitigation

- Madera County GSAs Workshop – June 16, 2021
- Regional Water Management Group – June 28 and September 27, 2021
- Public Workshop on February 25, 2022

Sustainable Agriculture Land

- Public Workshop – January 14, 2021
- Public Workshop – March 23, 2021
- Public Workshop – June 16, 2021
- Public Workshop on February 25, 2022

Rate Study

- Board of Supervisors Update – August 17, 2021
- Public Workshop – November 30, 2021
- Board of Supervisors Update – December 9, 2021
- Board of Supervisors Update – February 8, 2022
- Public Workshop – February 25, 2022
- Board of Supervisors Update – March 1, 2021

Projects and Costs

Attachment: Rate Study Special Meeting (8322 : Update for County GSA Rate Study)

Recharge

Attachment: Rate Study Special Meeting (8322 : Update for County GSA Rate Study)

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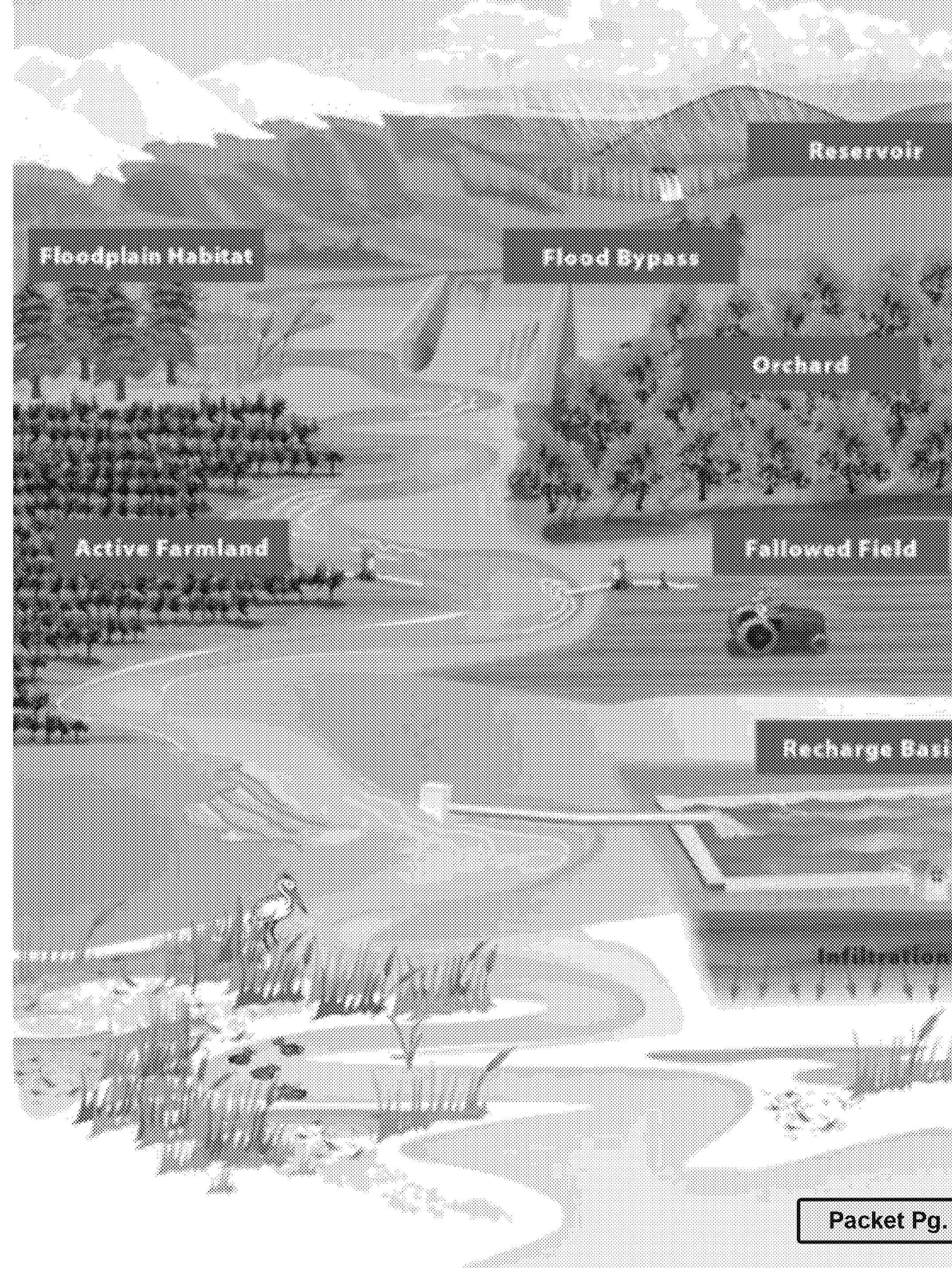
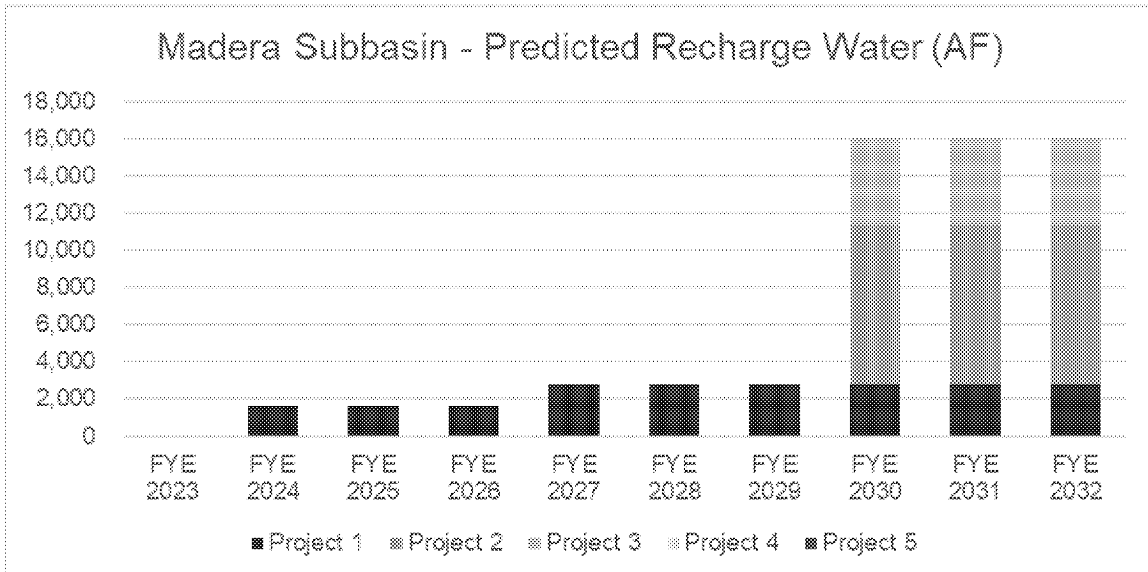
Recharge Facilities

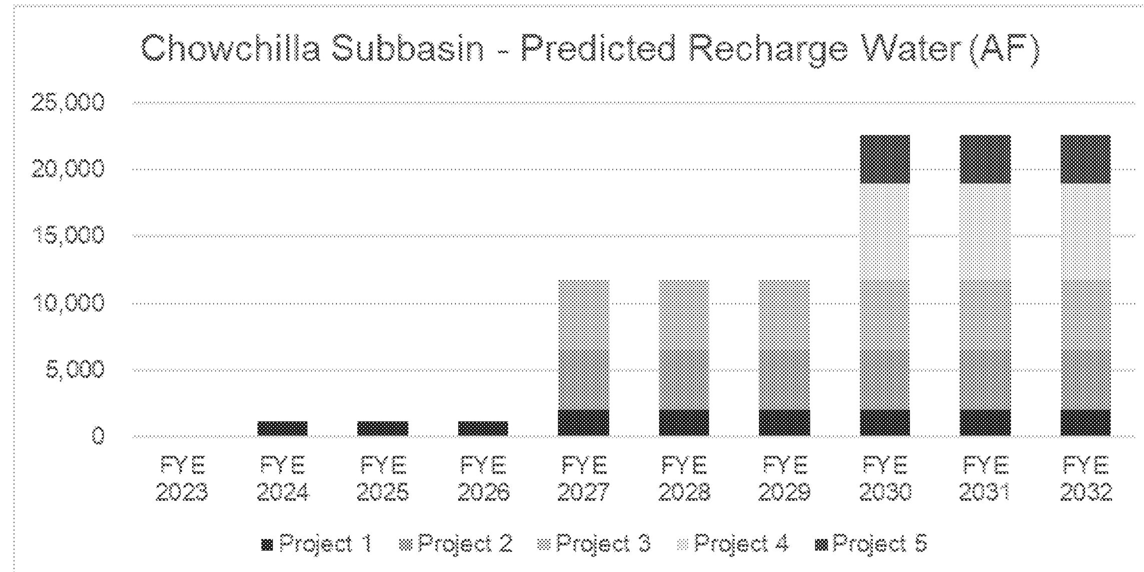
- Recharge could be conducted on-farm or in dedicated basins
- Flood flows for recharge estimated at approx. three years on average (35% annual chance)
- Individual recharge projects schedule dependent on water rights acquisition and design timeline
- Financing assumptions for planning purposes from County's Municipal Advisors:
  - 5% interest rate, 30-year term, level payments, minimum coverage requirement of 1.50



Attachment: Rate Study Special Meeting (8322 : Update for County GSA Rate Study)

Recharge Facilities – Predicted Annual Water Yields





Attachment: Rate Study Special Meeting (8322 : Update for County GSA Rate Study)

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Recharge Facilities
Capital Costs and Annual Cash Needs

Recharge Project Costs	Design and Construction	Grants	Landowner Contribution	Net Cost
Madera Subbasin				
Project 1	$6,570,000	($4,197,600)	($1,665,600)	**$706,800**
Project 2	$26,550,000	($4,000,000)	($2,139,789)	**$20,410,211**
Project 3	$26,580,000	($4,000,000)	($2,139,789)	**$20,440,211**
Project 4	$25,620,000	($4,000,000)	($2,139,789)	**$19,480,211**
Project 5	$24,910,000	($4,000,000)	($2,057,490)	**$18,852,510**
Total	**$110,230,000**	**($20,197,600)**	**($10,142,457)**	**$79,889,943**
Chowchilla Subbasin				
Project 1	$6,900,000	($4,197,600)	($1,912,581)	**$789,819**
Project 2	$17,300,000	($4,000,000)	($720,000)	**$12,580,000**
Project 3	$14,090,000	($4,000,000)	($360,000)	**$9,730,000**
Project 4	$22,930,000	($4,000,000)	($360,000)	**$18,570,000**
Project 5	$14,260,000	($4,000,000)	($600,000)	**$9,660,000**
Total	**$75,480,000**	**($20,197,600)**	**($3,952,581)**	**$51,329,819**

Recharge Costs	FYE 2023	FYE 2024	FYE 2025	FYE 2026	FYE 2027	FYE 2028	FYE 2029	FYE 2030	FYE 2031	FYE 2032
Madera Subbasin	$730,140	$1,388,365	$1,158,147	$1,002,067	$1,034,566	$3,413,902	$3,761,116	$7,298,056	$7,779,376	$7,853,778
Chowchilla Subbasin	$844,672	$662,126	$1,979,184	$2,382,472	$2,417,006	$4,162,669	$4,222,598	$5,195,208	$5,159,573	$5,214,504
Delta Mendota Subbasin	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$1,574,812**	**$2,050,491**	**$3,137,331**	**$3,384,539**	**$3,451,572**	**$7,576,570**	**$7,983,714**	**$12,493,264**	**$12,938,949**	**$13,068,282**

Recharge Facilities – What is the goal?

- The County of Madera Groundwater Sustainability Agency (GSA) is implementing a phased flood water recharge program to divert and recharge flood flows available as Section 215 water from the Bureau of Reclamation Friant Division and flood flows from the Chowchilla Bypass to provide an estimated 190,000 acre-feet (AF) of groundwater recharge in years when flood water and Section 215 water are available.
- Key goals of the recharge program are to mitigate and prevent undesirable results associated with:
  - Chronic lowering of groundwater levels
  - Depletion in groundwater storage
  - Land subsidence

Recharge Facilities FAQ's

- Are designs completed for all projects?
  - No, designs for the first two projects are underway now and future designs will be initiated once funding is available
- Are water rights in place?
  - The County is currently working with the State Water Board and the Bureau of Reclamation to secure water rights
- What kind of facilities are being contemplated?
  - FloodMAR
  - Dedicated recharge basins
  - Other?
- Are any of these projects under way now?
  - Yes, the County has received two Prop 68 grants ($4.6M) and is proceeding with the first project in both the Madera and Chowchilla Subbasin

Attachment: Rate Study Special Meeting (8322 : Update for County GSA Rate Study)

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Recharge Facilities FAQ's (Continued)

- How can I participate?
  - Submit a Recharge Interest Form
  - Talk to the County
- Is participation voluntary?
  - Yes, participation is voluntary.
- How many projects are contemplated?
  - Currently, there are 10 Madera County recharge projects contemplated – 5 in the Madera Subbasin and 5 Chowchilla Subbasin.

Attachment: Rate Study Special Meeting (8322 : Update for County GSA Rate Study)

Sites Reservoir

Attachment: Rate Study Special Meeting (8322 : Update for County GSA Rate Study)

Water Supplies (Sites Reservoir) Assumptions

- Participation and Annual Water Yield at 10,000-acre feet per year (AFY)
- Construction from 2024-2030 with first deliveries estimated in 2032-33
- Cash needs include buy-in to participation, annual future debt service, and annual future operations costs
- County GSAs cost share based on annual average yield participation: 6% of total costs
  - Costs then allocated between Madera and Chowchilla subbasins

Sites Reservoir

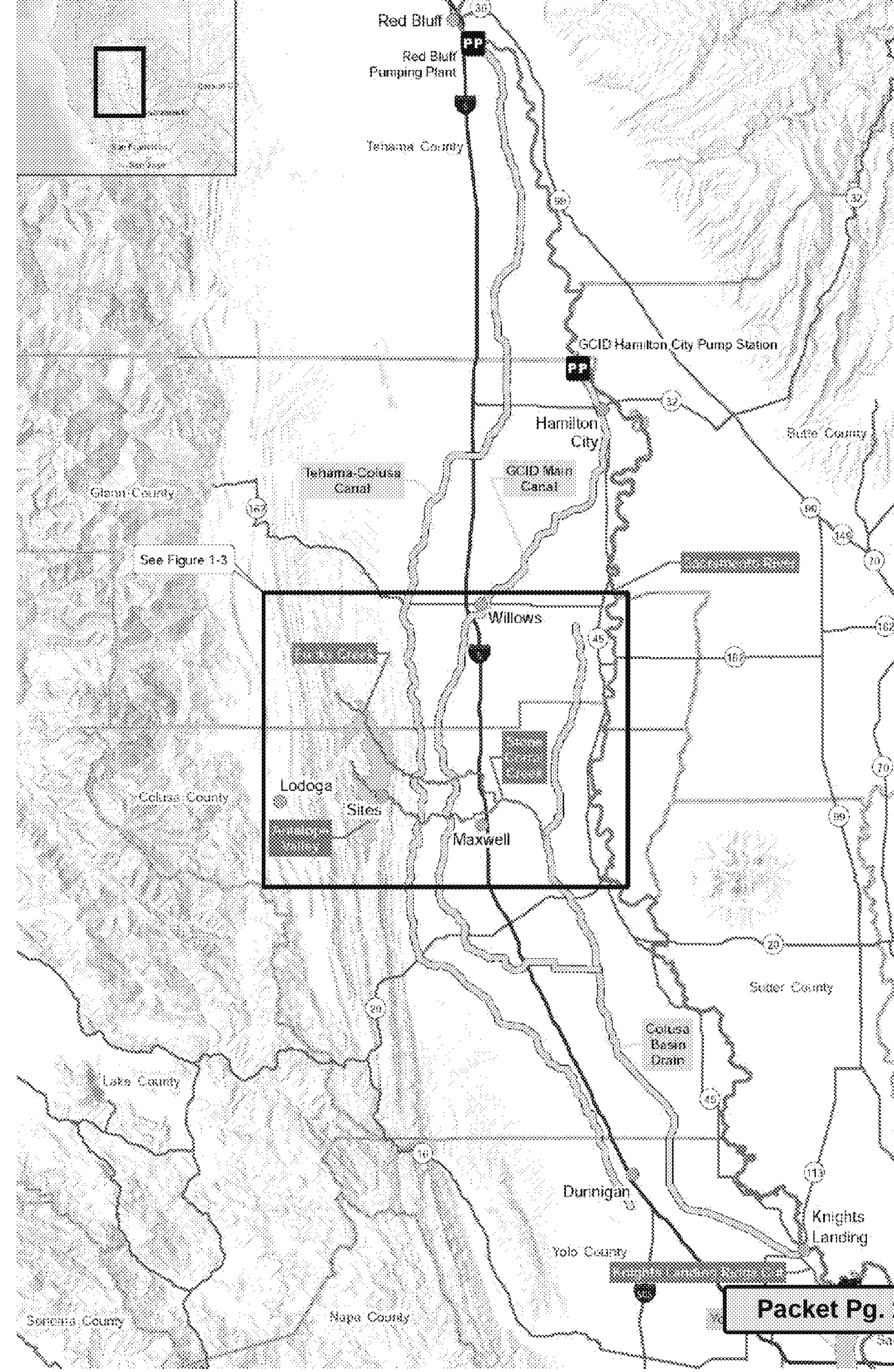
Financing Scenarios for Identifying Cash Needs

- Sites Reservoir internally modeled five financing scenarios for funding design and construction from best case to worst case
- Raftelis' cash flow models the second most conservative scenario, consistent with recharge facilities financing assumptions
- Estimated annual cash requirement when operations begin: $9.6M

Sites Costs	FYE 2023	FYE 2024	FYE 2025	FYE 2026	FYE 2027	FYE 2028	FYE 2029	FYE 2030	FYE 2031	FYE 2032
Madera Subbasin	$2,131,911	$967,480	$1,105,691	$112,654	$1,480,654	$3,499,787	$5,321,762	$5,502,993	$6,150,591	$6,649,37
Chowchilla Subbasin	$953,089	$432,520	$494,309	$50,363	$661,940	$1,564,611	$2,379,141	$2,460,161	$2,749,676	$2,972,66
Delta Mendota Subbasin	$0	$0	$0	$0	$0	$0	$0	$0	$0	$
Total	**$3,085,000**	**$1,400,000**	**$1,600,000**	**$163,017**	**$2,142,594**	**$5,064,398**	**$7,700,902**	**$7,963,154**	**$8,900,267**	**$9,622,03**

Sites Reservoir

- Proposed off-stream reservoir west of Maxwell, CA (North of the Delta)
- Divert “excess” water from the Sacramento River in higher flow conditions
- Store water in the new Sites Reservoir for later use by farms, cities, and the environment
- Locally led – includes public water agencies, State, Federal governments
- A tool to help the state restore flexibility, reliability, and resilience to our statewide water supply



Attachment: Rate Study Special Meeting (8322 : Update for County GSA Rate Study)

Frequently Asked Questions

- **What does the County get for its buy-in to the project?**
  - As a Sites participant, the County would receive i) a proportionate share of any water diverted to storage ii) a proportionate share of the storage space. The County would have the ability manage its account to use, save, or lease/sell its share of the water or space to other participants in the project or others outside of the project.
- **How can member agencies be assured that there will be water in Sites Reservoir if they are paying for storage?**
  - Sites Reservoir is a beneficiary pays project, which means that the benefits of the project go to those paying. Each participant (including environmental uses) has control over their portion of the storage space and a proportionate share of the water diverted into Sites Reservoir. There is flexibility in the timing and uses of the water, including for the environment. The assuranc of water being in the reservoir is largely the result of the individual participant decisions in their operations of their portion of the facility. This way, each member is assured to receive what they pay for in a way that works within and complements that member's water supply portfolio.
- **How would water get from Sites to Madera County?**
  - As a north of Delta facility, Sites water would be exported as transfer water through the State or Federal pumps. Once south of delta, the County would purchase rights to use existing conveyance capacity to wheel Sites water to the County's place of use for direct use or recharge of the groundwater basin.
- **Is Sites Reservoir compliant with Proposition 1?**
  - Even with the Project changes that have occurred since the original award in 2018, the Sites Reservoir Project continues to provide the public benefits the California Water Commission conditionally approved for the Project in State Proposition 1 fundin in 2018. The Project meets the Proposition 1 conditions and continues to meet all the feasibility requirements for investment by the State. In December 2021, the California Water Commission deemed the Project feasible.

Attachment: Rate Study Special Meeting (8322 : Update for County GSA Rate Study)

Frequently Asked Questions (Continued)

- **How does the cost of water from Sites compare to other sources during dry years?**
  - The Sites Reservoir compares favorably to other dry year water supply alternatives due to economy of scale. With water being one of California's most scarce and valuable resources, it is essential to develop a diverse portfolio of sustainable water supply solutions. But it is equally important for decision-makers and stakeholders to evaluate the most cost-effective options available to maximize the value of these investments. The Project has been designed to put the state's limited water resources to the best use in an affordable, flexible, and sustainable way.
- **Why has it taken so much time to get Sites to the finish line?**
  - Sites has been around for decades with efforts originally being led by the California Department of Water Resources and the Bureau of Reclamation. The Project had starts and stops, as is typically seen in large projects led by the state or federal government. The Sites Project Authority was formed in 2010 to move the Project more expeditiously. The Authority has made great strides over the last two years to "right-size" the Project for affordability and permitability, two critical success factors. This represents a huge milestone for Project advancement and sets a turning point that makes the Project more feasible and more likely to be built than ever before.
- **How much would have been diverted in 2021 had Sites been in place?**
  - Zero diversions into the reservoir in 2021 would have occurred if Sites Reservoir would have been in place. This is in accordance with the highly protective operating conditions that are currently being proposed for the Project. However, the one million acre-feet estimate that would have already been stored as result of the wetter years in 2017 and 2019 is the water that would be available. And if 2022 is another dry year it is estimated there could be approximately 400,000 acre-feet of that left in Sites.

Domestic Well Mitigation

Attachment: Rate Study Special Meeting (8322 : Update for County GSA Rate Study)

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Domestic Well Mitigation

- Joint GSP in Madera Subbasin and GSP in Chowchilla Subbasins funding would pay for deeper replacement wells for homeowners
- Estimated dry wells based on hydrologic modeling
- Local cost estimates of well replacement: $30k per well
- Equal number of wells each year
- Assumes Domestic Well Mitigation programs are cash funded from rates, not debt financed

Domestic Well Mitigation
Total Cash Needs

Domestic Wells Costs	FYE 2023	FYE 2024	FYE 2025	FYE 2026	FYE 2027	FYE 2028	FYE 2029	FYE 2030	FYE 2031	FYE 2032
Dry Wells (MC GSA)										
Madera Subbasin	104	104	104	149	149	149	149	149	20	20
Chowchilla Subbasin	17	17	17	7	7	7	7	7	0	0
Delta Mendota Subbasin	0	0	0	0	0	0	0	0	0	0
Total	**121**	**121**	**121**	**156**	**156**	**156**	**156**	**156**	**20**	**20**
Cost to Replace a Well	**$30,960**	**$31,951**	**$32,973**	**$34,028**	**$35,117**	**$36,241**	**$37,401**	**$38,597**	**$39,833**	**$41,107**
Replacement Costs										
Madera Subbasin	$3,229,074	$3,332,405	$3,439,042	$5,071,792	$5,234,089	$5,401,580	$5,574,431	$5,752,813	$782,247	$807,279
Chowchilla Subbasin	$532,507	$549,547	$567,132	$250,834	$258,861	$267,145	$275,693	$284,516	$4,195	$4,329
Delta Mendota Subbasin	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$3,761,581**	**$3,881,951**	**$4,006,174**	**$5,322,627**	**$5,492,951**	**$5,668,725**	**$5,850,124**	**$6,037,328**	**$786,441**	**$811,607**
Program Management Costs										
Madera Subbasin	$322,907	$333,240	$343,904	$507,179	$523,409	$540,158	$557,443	$575,281	$78,225	$80,728
Chowchilla Subbasin	$53,251	$54,955	$56,713	$25,083	$25,886	$26,714	$27,569	$28,452	$419	$433
Delta Mendota Subbasin	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$376,158**	**$388,195**	**$400,617**	**$532,263**	**$549,295**	**$566,873**	**$585,012**	**$603,733**	**$78,644**	**$81,161**

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Domestic Well Mitigation Program – What is it?

- The GSPs recognized the likely significant and unreasonable impacts to domestic well beneficial users during the implementation period.
- To avoid significant and unreasonable impacts on domestic well users, the GSPs included plans to develop a Domestic Well Mitigation Program.
- The proposed program will assist domestic well users with obtaining a water supply when wells go dry during the implementation period.
- Based on initial consultations with DWR, it will be necessary to either avoid adverse domestic well impacts or implement a program to mitigate for these impacts.

Domestic Well Mitigation Program FAQs

- How were the numbers of dry wells estimated?
  - The estimated numbers, locations, and depths of domestic wells (based on Prop 68 Well Inventory Study) were compared to projected future groundwater level conditions from hydrologic modeling.
- Why are we paying/mitigating for dry domestic wells?
  - This program balances the economic benefits/consequences (across all groundwater beneficial users) of continued (but gradually declining) groundwater overdraft prior to achieving sustainability by 2040.
- Where can I find out more about the well inventory?
  - Technical Memoranda are being prepared (for Chowchilla and Madera Subbasins) and will be made available.

Domestic Well Mitigation Program FAQs (Continued)

- How is the program being funded?
  - The County GSA is funding a portion of the program through this rate study; funding from other GSAs is being discussed.
- How can I participate or be eligible for assistance under this program?
  - Details of the program are still being developed and will be forthcoming.
- What kind of assistance is included?
  - While the program is still under development, it is anticipated assistance would focus on well replacement (or alternative solutions) for wells that go dry as a result of lowered groundwater levels during the implementation period. Wells that stop producing due to pump or well structure failure (unrelated to lowering groundwater levels) will not be included.

Land Repurposing (SALC)

Attachment: Rate Study Special Meeting (8322 : Update for County GSA Rate Study)

Land Repurposing (SALC) Program and Assumptions

- SALC would achieve approximately 50% of the total demand management target, over time
- Voluntary program to:
  - Reduce demand from participating irrigated lands
    - Initial incentive payment of $600 - $760 per acre
- Annual term for enrollment and participation
- Program is cash funded from rates, not debt financed
- Staff costs split between % share of enrolled acreage within each subbasin

SALC reduces demand (+ other benefits) from participating lands	$ Landowner charges to pay for the SALC program

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Land Repurposing (SALC)
Total Cost Detail (Program continues to at least 2040)

SALC Costs	FYE 2023	FYE 2024	FYE 2025	FYE 2026	FYE 2027	FYE 2028	FYE 2029	FYE 2030	FYE 2031	FYE 2032
Operating Costs										
Madera Subbasin	$393,257	$413,479	$437,475	$459,463	$477,226	$476,608	$488,022	$508,865	$535,323	$562,880
Chowchilla Subbasin	$100,424	$102,691	$104,154	$107,789	$118,133	$143,768	$164,723	$176,661	$186,376	$195,203
Delta Mendota Subbasin	$9,519	$12,190	$13,149	$15,265	$16,284	$21,849	$21,592	$22,527	$21,756	$22,545
Total	**$503,200**	**$528,360**	**$554,778**	**$582,517**	**$611,643**	**$642,225**	**$674,336**	**$708,053**	**$743,456**	**$780,628**
Irrigated Lands Costs										
Madera Subbasin	$4,411,586	$5,175,588	$6,004,443	$6,858,845	$7,729,479	$7,039,022	$7,293,523	$8,092,584	$8,984,382	$9,943,605
Chowchilla Subbasin	$1,126,567	$1,285,402	$1,429,532	$1,609,069	$1,913,355	$2,123,305	$2,461,793	$2,809,470	$3,127,965	$3,448,380
Delta Mendota Subbasin	$106,785	$152,585	$180,475	$227,871	$263,746	$322,690	$322,690	$358,251	$365,141	$398,276
Total	**$5,644,938**	**$6,613,575**	**$7,614,450**	**$8,695,785**	**$9,906,580**	**$9,485,017**	**$10,078,006**	**$11,260,305**	**$12,477,488**	**$13,790,261**
Estimated Participating Acreage										
Madera Subbasin	6,724	8,079	9,444	10,863	12,595	14,482	15,625	16,837	18,180	19,615
Chowchilla Subbasin	1,869	2,176	2,492	2,794	3,235	3,723	4,210	4,784	5,398	6,128
Delta Mendota Subbasin	154	217	251	318	363	446	464	521	544	610
Total	**8,746**	**10,472**	**12,187**	**13,976**	**16,193**	**18,651**	**20,299**	**22,142**	**24,122**	**26,354**

Land Repurposing– What is the goal?

- The County of Madera GSA is implementing a phased land repurposing program to achieve approximately 50 percent of the planned demand management (groundwater pumping reduction) specified in its GSP for each subbasin.
  - The land repurposing program offer growers incentive payments to participate, forgo irrigation, and repurpose lands to other uses.
  - Initial program development was funded under a Sustainable Agricultural Lands Conservation (SALC) program grant; the short-hand name for the program is SALC.
- The land repurposing program would:
  - Be a voluntary program
  - Initially offer annual enrollment, with potential longer-term enrollment options
  - Achieve demand management equal to Sustainable Yield (SY) + Transitional Water (TW) for lands entered into the program

Land Repurposing FAQ's

- What are the incentive payments for the SALC program?
  - SALC program incentive payments are initially between $650 and $750 per acre.
    - SALC program incentive payments vary due to crop returns, the scale of the program, and the annual allocation of groundwater (SY and TW).
    - SALC program incentive payments are funded by GSA landowner assessments.
- Why are initial incentive payments less than my current net returns?
  - Incentive payments account for groundwater allocation (SY + TW), not the full irrigation demand of the existing crop.
  - To keep program costs low, the program would initially focus on the lower-profit farming activities in the GSA.
- Will lands entered in SALC be required to pay other GSA fees?
  - Yes. As a matter of fairness, all Enrolled Acres must pay GSA fees.

Attachment: Rate Study Special Meeting (8322 : Update for County GSA Rate Study)

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Land Repurposing FAQ's (Continued)

- What is the anticipated scale of the SALC program?
  - It will be phased in to achieve approximately 45,000 AFY, 13,500 AFY, and 1,000 AFY in the Madera, Chowchilla, and Delta Mendota subbasins portions of the GSA
- Is participation voluntary?
  - Yes, participation is voluntary.
- How can I participate?
  - Program details will be developed as funds are secured, but the GSA initially expects to offer enrollment based on a fixed annual incentive payment that will be adjusted over time as conditions change.

Attachment: Rate Study Special Meeting (8322 : Update for County GSA Rate Study)

Options for Farmers in County GSA

- The proposed approach maximizes flexibility to growers in three primary ways:
  - The farm unit concept as a management area greater than a parcel or acre
  - Maximizing a volumetric component to the rates to avoid GSA charges
  - Incentive payments to growers for demand management via SALC (land repurposing)
- Allocations and therefore rates are designed on a farm unit basis even though the fixed component is charged per enrolled acre
- This flexibility only works when a farm unit pays the fixed component on their total enrolled acreage (see next slide)

What does a No Vote Mean?

- No participation and new water from Sites Reservoir
- No recharge water
- No help for domestic wells
- No funds to retire land
- Grant funds?
- Potential state intervention / loss of local control if failing the GSP
- Potentially worse allocations in the future

Rates

Attachment: Rate Study Special Meeting (8322 : Update for County GSA Rate Study)

Five Year Rate Schedule – Madera Subbasin

Fixed + Volumetric (Project-based)	FY 2022-23 (2022 Allocation)	FY 2023-24 (2023 Allocation)	FY 2024-25 (2024 Allocation)	FY 2025-26 (2025 Allocation)	FY 2026-27 (2026 Allocatio
Fixed ($/enrolled acre)	$179	$196	$132	$156	$175
Volumetric ($/AF of transitional water)	N/A	N/A	$97	$116	$157

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Five Year Rate Schedule – Chowchilla Subbasin

Fixed + Volumetric (Project-based)	FY 2022-23 (2022 Allocation)	FY 2023-24 (2023 Allocation)	FY 2024-25 (2024 Allocation)	FY 2025-26 (2025 Allocation)	FY 2026-27 (2026 Allocatio
Fixed ($/enrolled acre)	$189	$193	$77	$92	$92
Volumetric ($/AF of transitional water)	N/A	N/A	$91	$88	$101

Five Year Rate Schedule – Delta-Mendota Subbasin

Fixed + Volumetric (Project-based)	FY 2022-23 (2022 Allocation)	FY 2023-24 (2023 Allocation)	FY 2024-25 (2024 Allocation)	FY 2025-26 (2025 Allocation)	FY 2026-27 (2026 Allocatio
Fixed ($/enrolled acre)	**$92**	**$104**	**$129**	**$162**	**$202**
Volumetric ($/AF of transitional water)	**N/A**	**N/A**	**$0**	**$0**	**$0**

Highly Simplified Irrigation District Comparison

Chowchilla Water District

- $62/acre
- $100/acre-foot

Madera Irrigation District

- $50/acre
- $110/acre-foot

Penalties (Exceeding Allocation)

- Charges for a Farm Unit exceeding the annual allocation are penalties, not rates
- The penalties are a separate policy decision of the GSAs Board
- Currently considering two distinct charges to be levied:
  - Replacement Water Charge:
    - Current estimate of $600-650 per acre foot
  - Penalty per SGMA statute:
    - Maximum of $500 per acre foot
- Total charge = Penalty + Replacement Water Rate

Attachment: Rate Study Special Meeting (8322 : Update for County GSA Rate Study)

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Rate Study Questions

Attachment: Rate Study Special Meeting (8322 : Update for County GSA Rate Study)

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From: JP Robinette [jrobinette@sitesproject.org]
Sent: 3/3/2022 9:48:02 AM
To: Marcia Kivett [MKivett@sitesproject.org]
Subject: Re: Leadership Meeting Notes

Thanks Marcia, very helpful.

From: Marcia Kivett <MKivett@sitesproject.org>
Sent: Thursday, March 3, 2022 8:01 AM
To: JP Robinette <jrobinette@sitesproject.org>
Subject: Fw: Leadership Meeting Notes

From: Marcia Kivett <MKivett@sitesproject.org>
Sent: Monday, February 28, 2022 10:42 AM
To: Jerry Brown <jbrown@sitesproject.org>
Subject: Leadership Meeting Notes

60,000 AF of Deadpool.
Working with MET and their legal counsel.
NGO meeting on water rights this Friday. Overview of the water availability analysis.

We will discuss "What If" scenarios to discuss at the scheduling meeting.

CWC quarterly report regarding meeting deadlines. Review all deadlines.

Geotech starts this week.
Surveying going on with access agreements.
Placing several landowner checks requests Mid-March.

Erin shared the Jacobs team modeling deliverables. (historic, climate change, WSIP, etc)
Ali/Erin meeting with SWC on Wednesday.

E&O - Contract strategies delivery process.
P1A occurs around summertime.

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Factors affecting spatiotemporal variation in survival of endangered winter-run Chinook Salmon outmigrating from the Sacramento River

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Suggested running head: Spatiotemporal variation in survival of outmigrating winter-run

Key words: Sacramento River, winter-run Chinook Salmon, mark-recapture, acoustic telemetry, flow, juveniles

[A]Abstract

Among four extant and declining Chinook salmon (*Oncorhynchus tshawytscha)* runs in California's Central Valley, none have declined as precipitously as Sacramento River winter-run Chinook Salmon. Migratory winter-run on their way from freshwaters to the ocean, employ a life history strategy to reside and feed in stopover habitats that have been affected by anthropogenic disturbance. This life history strategy is widely considered to be a key factor in the continued decline of winter-run. Using acoustic telemetry, we examined conditions that influenced reach-specific movement and survival of outmigrating juveniles during a prolonged, multi-year drought from 2013-2016, followed by one of the wettest years on record in 2017. We modeled how time-varying individual riverine covariates and reach-specific habitat features influenced smolt survival. Model selection favored a model with mean annual flow, intra-annual deviations from the mean flow at the reach scale, reach-specific channel characteristics, and travel time. Mean annual flow had the strongest positive effect on survival. A negative interaction between mean annual flow and intra-annual reach flow indicated that within-year deviations at the reach scale from annual mean flow had larger effects on survival in low flow years. These factors resulted in higher survival in years with pulse flows or high flows. Changes in movement behavior in response to small scale changes in velocity were negatively associated with survival. Covariates of revetment and wooded bank habitat were positively associated with survival but the effect of these fixed habitat features changed depending on whether they were situated in the upper or lower part of the river. Fish exhibited density dependent stopover behavior, with slowed downstream migration in the upper river in the wet years and extending to the lower river in the most critically dry year. This paper contributes two key findings for natural resource managers interested in flow management and targeted habitat restoration. The first is new insight to how

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the magnitude of pulse flows in dry and wet years affects survival of winter-run. The second is that density dependence influences where stopover habitat is used. Despite this, we identified an area of the river where fish consistently exhibited stopover behavior in all years.

[A]Introduction

Migration is a fundamentally important ecological process for animals that reproduce and forage in different places. Environmental decision making is challenging for migrating species because management approaches must span a vast range of distant and distinct habitats (Runge et al. 2014). Stopover behavior is an important component of migration for animals that must refuel along the migration path before continuing towards their ultimate destination. Studies of birds have found that migrants will select stopover habitats that allow refueling with maximum efficiency to remain on schedule (Alerstam and Lindström 1992). Loss of even a small amount of stopover habitat can have disproportionately large impacts on migratory populations (Iwamura et al. 2014). Effective management of migratory species therefore depends on accurate characterization of habitat use.

In diadromous fishes, migration can be long and complex (Thorstad et al. 2012) but little is known about how stopover habitats vary in quality and how they are used. Juvenile Chinook salmon *Oncorhynchus tshawytscha* are a suitable species to examine this behavior in because they migrate through entire watersheds, from inland freshwater streams where they are born to productive coastal estuaries (Moore et al. 2016). Accordingly, rivers function as a migratory corridor during the smolt migration phase, which is considered one of the most vulnerable periods in their anadromous life history (Quinn 2005). Alternatively, juvenile salmon may stop over during transit to capitalize on foraging opportunities, seek refuge from predators, or simply rest. Quantifying how juvenile salmon allocate their time across the riverscape is foundational to

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understanding the relative importance of different riverine habitats (Moore et al. 2016; Thorpe 1994).

California's Central Valley represents the southern extent of the range for Chinook Salmon where they are confronted with a number of stressors (Fisher 1994; Yoshiyama et al. 1998). Mild winters with a receding snowpack and dry summers frequently result in a hydrologic system where water availability and demand are mismatched (Berg and Hall 2017). Dams on the major rivers block access to historical habitat, and water storage and managed releases to meet human demands throughout the year result in a flattened hydrograph relative to natural flows (Kondolf and Batalla 2005). Muted peak flows in winter and increased summer flows can mask cues that salmon use to initiate migration (Bunn and Arthington 2002). Finally, climate change projections of rising temperatures in the Sacramento River (Cloern et al. 2011) show increased likelihood and duration of drought conditions that are being experienced in California with increasing frequency over the last two decades (Diffenbaugh et al. 2015).

All four populations of extant Chinook salmon races in California's Central Valley have declined over past decades, and have experienced precipitous declines since the onset of the latest megadrought in the early 2000s (Johnson and Lindley 2016), which was the second driest 20-year period since 800 CE (Williams et al. 2020). Sacramento River winter-run Chinook Salmon (winter-run) are the most critically endangered of the four Chinook runs in the Central Valley. The spawning population crashed from 87,000 in the late 1960s to fewer than 200 in the early 1990s (Fisher 1994), and remains at risk of extinction (Lindley et al. 2009; Poytress et al. 2014).

Historically, winter-run adapted to California's dry and variable climate by holding in the coldest, upper reaches of headwater tributaries of the Sacramento River during summer months when temperatures in the Central Valley were unsuitable for spawning and rearing (Yoshiyama et al. 1998). Fry reared in thermal refuges of these tributaries throughout summer (5-10 months) and migrated as smolts during the first freshets of the following autumn (Williams 2006). For the past seventy-five years, access to historic spawning tributaries has been eliminated by construction of Shasta and Keswick dams, forcing three populations to mix and spawn as one in the mainstem of the Sacramento River downstream of Keswick Dam (Williams 2006). In the post-dam era, otolith geochemistry provides some evidence that winter-run continue to rear in non-natal tributaries extending as far downstream as the San Francisco Estuary (Phillis et al. 2018).

Hatchery releases of juvenile winter-run "pre-smolts" into the river are timed to maximize survival and occur during storm events when high instream flows can facilitate rapid emigration. However, the mechanism for how survival per unit time is related to flows is not well understood. On one hand, high flows could move fish rapidly through hazardous habitat. Alternatively, if fish move in response to density dependent habitat availability, high flows could reduce pressure to move by creating more stopover habitat. Furthermore, it is unknown whether flows affect survival the same way across all reaches. Understanding which mechanisms most influence survival and in which reaches juvenile salmon experience particularly high or low mortality can therefore help managers find ways to focus on specific, targeted actions to improve survival.

Without this information, the National Marine Fisheries Service has had to rely on outmigration information from larger, yearling hatchery late-fall run fish as surrogates to fill data gaps in their winter-run recovery plans (Johnson and Lindley 2016; Johnson et al. 2017). However, a growing body of scientific literature cautions against inferring too much from surrogates because they often do not respond in the same way as targeted taxa to similar environmental conditions (Andelman and Fagan 2000; Caro and O'Doherty 1999). Even within a salmon run, responses of hatchery and wild Chinook Salmon to environmental conditions may differ, resulting in differences in mortality during outmigration (Buchanan et al. 2010).

Be that as it may, research using acoustic telemetry primarily on late-fall Chinook Salmon has yielded some important insights to some of the immediate challenges confronted by migrating salmon smolts in general, such as disorienting structures with magnetic fields that influence seaward orientation (Klimley et al. 2017), predation dynamics (Sabal et al. 2016; Sabal et al. 2021), entrainment into the south Delta (Perry et al. 2015), and loss of habitat and limited food resources (Donaldson et al. 2014). This study builds upon earlier work on flow-mediated survival relationships that are gaining prominence in the field. Flow-mediated survival during the outmigration phase of the life cycle has been shown to have a greater effect on smolt-to-adult returns than marine survival (Michel 2019). The magnitude of bi-directional, tidally influenced flows has also been recognized as an important determinant of migration routing and survival in the Delta (Perry et al. 2018; Singer et al. 2020), and intra- and interannual reach flow has a greater impact on late-fall run survival than other riverine and predation-related covariates (Henderson et al. 2018).

This study was designed to evaluate the effects of flow on winter-run survival at multiple scales and in the presence of other habitat covariates by directly evaluating outmigrant survival of hatchery-origin winter-run using the juvenile salmon acoustic telemetry system (JSATS). Due to their scarcity, it was not feasible to obtain natural-origin fish (i.e., offspring of adults spawned in the river), therefore extrapolation of our findings to natural-origin fish should be considered with caution (Buchanan et al. 2010). Furthermore, because our study used smolt-sized fish

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released in the upper river, our understanding of movement rates will be skewed to fish that would have reared in natal habitat and then initiated their smolt outmigration rather than rearing downstream. Evidence of downstream rearing is therefore likely to be conservative.

Within this framework, we developed a suite of mark-recapture models following the approach developed for late-fall run by Henderson et al. (2018). We examined how individual features of the fish themselves (i.e., fish size); temporal, reach-constant riparian habitat features; and spatial, time-varying hydrologic conditions affected survival of outmigrating hatchery-origin juvenile winter-run. The study was carried out during a five-year period under extremely variable climate conditions, from a prolonged, multi-year drought (2013-2016), followed by one of the wettest years on record in 2017. Although only one wet year was represented in our study, it allowed us to contrast movement behavior and survival outside of the drought conditions that characterized all other years in this study. To quantify relationships between covariates and survival, we used mark-recapture models and information-theoretic model selection criteria to rank alternative models. Our goals were [1] to examine spatial and temporal patterns in outmigration movement and survival in the river, and [2] to identify which combination of environmental covariates had the greatest influence on survival.

[A]Methods

[C]*Study site.*—The Sacramento River is the largest river in California, flowing south from Mount Shasta 410 km before reaching the Sacramento-San Joaquin River Delta. Mean daily discharge from the Sacramento River (1955-2019) is 656 m^3 s^{-1} (California Department of Water Resources Dayflow database), draining about 68,635 km^2 of the Central Valley. Keswick Dam (rkm 557 from the Golden Gate Bridge) is the upper limit to anadromy on the Sacramento River. For this study we focused on movement and survival in the Sacramento River, ending 387 rkm downstream at the city of Sacramento, prior to entering the branching Delta and tidal estuary (Fig. 1).

[C]*Acoustic-tagged fish.*— The acoustic JSATS tags used in this study were manufactured by Advanced Telemetry Systems (Isanti, MN). The model used in 2013 weighed 430 mg with dimensions of 11.9 x 5.3 x 3.8 mm and a pulse rate interval of 7 seconds, while the model used in 2014-2017 weighed 310 mg with dimensions of 10.8 x 5.3 x 3 mm and a pulse rate interval of 10 seconds. Each year, five percent of tags were randomly sampled and used to verify tag life, which ranged from 43 to 90 days, with an average of 70 days. This satisfied the assumption of closure in the mark-recapture models because the longest duration travel times occurred early in the upper to middle river and did not exceed this value over the course of migrating through the study area.

Fish selected for acoustic tagging were taken from tanks at the hatchery that contained the largest fish (one to eight tanks depending on year) to keep individual tag burden below 5.9% (Brown et al. 2010). Prior to tag implantation, each fish was anesthetized to stage IV (i.e., fish were observed to have lost equilibrium and exhibited minimal response to touch, average time to stage IV was 141 seconds). Anesthetized fish were weighed to the nearest 0.1 g and fork length was measured to the nearest millimeter. Fish were placed ventral side up on a V-shaped foam surgery cradle. Anesthesia was maintained during surgery with dilute anesthetic solution pumped through a small plastic tube leading into the mouth. An incision was made between the pelvic and pectoral fins about 7mm long and 3mm off the ventral midline using a 3mm scalpel (Sharpoint™ 15° stab point). A disinfected acoustic tag was inserted battery-first into the coelom through the incision and the incision was closed with one or two sutures of absorbable monofilament (6/0 Monoswift™). Surgery time averaged 142 seconds. Fish were observed to resume normal swimming behavior after an average of 236 seconds. Mean tag burden (percent of tag weight/fish weight) by year ranged from 3.2 to 4.3 %.

Following surgery, tagged fish were returned to tanks and held for 1-3 days until the hatchery production fish were loaded into transport trucks. Acoustic-tagged fish were transferred into portable PVC/mesh holding pens and placed within the tank of a transport truck. Transport time from the hatchery to release into the Sacramento River at Caldwell Park, Redding was approximately 45 minutes, or in 2016 at Bonnyview Bridge transport time was approximately 60 minutes. Acoustic-tagged fish were released simultaneously with the release of the rest of the hatchery-origin fish, which occurred after sunset. In 2015, when hatchery fish were released over three consecutive days, acoustic-tagged fish were released on the first and third day. The number of fish acoustic-tagged and the number of hatchery-fish released varied substantially among the five years of this study; in particular, hatchery releases were much higher in 2014 and 2015 to compensate for anticipated severe losses of naturally produced fish due to drought, with elevated river temperatures and associated critically dry conditions (Table 1).

[C]*Acoustic receivers*.— As part of the California Fish Tracking Consortium, we tracked fish using an array of acoustic receivers beginning 3 km below the release location in Redding and extending down the Sacramento River, Delta, and San Francisco Bay, to end at a dual line of receivers at the Golden Gate Bridge. However, for this study we were interested in examining riverine survival using outputs from the River Assessment for Forecasting Temperature (RAFT) model which terminates at the tidal Delta, so we restricted this analysis to only receiver locations in the Sacramento River, ending at the city of Sacramento, to estimate survival and movement over 379 km (Fig. 1). Receivers positioned downstream in the Delta to the point of ocean entry at

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the Golden Gate Bridge were therefore pooled into a single site and used to improve estimates of detection probability and survival for all reaches upstream of the final line.

Three different types of JSATS receivers were used in this study: Advanced Telemetry Systems, Inc. (ATS; Isanti, Minnesota, USA) model SR3000, Lotek Wireless Inc. (Newmarket, Ontario, Canada) model WHS4000, and Teknologic Engineering (Edmonds, Washington, USA) model LER. Detection range varied from 50 to 300 m, depending on river conditions (Ammann unpublished data) with an 85% probability of recording at least four valid transmissions from a distance of 135 m (Ammann 2020). We deployed 40 receivers at 18 locations demarcating 17 river reaches (Fig. 1). At most receiver locations, two receivers were deployed across the river to improve cross-sectional detection coverage. Receivers were held in position with a bottom anchor that was either attached to a shore cable or suspended from a bridge structure.

[C]*Post processing.*— All receiver files contain some amount of invalid or false positive detections. These must be distinguished from true detections and removed to prevent biased interpretation of fish movement and survival (Beeman and Perry 2012). Therefore, each raw receiver file was processed using a set of algorithms to remove false detections (Deng et al. 2017), and to add location information and a unique fish identifier. The filtering algorithm was customized for each of the three receiver models. Briefly, the filtering algorithm used criteria that included the following constraints: [i] the detection code had to match that of a released fish; [ii] detection time had to occur after the release time and before the tag was expected to expire; [iii] detections that occurred less than 0.3 seconds after the previous detection (multipath) were removed; and [iv] detections had to have occurred within a time window and within the tag's pulse rate interval (PRI) that was specified depending on receiver make. Lotek receivers required a minimum of four detections within 16.6 times the PRI, and the observed PRIs among these

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detections had to be within 20% of the nominal PRI. Additionally, the standard deviation of these PRIs had to be less than 0.025. Teknologic receivers required at least two detections within four times the PRI, the observed PRI had to be within 10% of the nominal PRI, and the difference in frequency of the two detections had to be less than 55 kHz. ATS receivers required at least two detections within four times the PRI, the observed PRI had to be within 10% of the nominal PRI, frequencies of the two detections had to be between 416.30 and 418.75 kHz, and the difference in frequency of the two detections had to be less than 0.505 kHz. Separate receiver files were then compiled into a single table. Plots of time of detection versus river kilometer were created for each fish and visually inspected for detections that were not spatially and temporally congruent with the remaining detections. We considered any upstream movements as those of predators having ingested a tagged fish. Where predation was inferred, we ended a detection history at the furthest downstream detection.

[C]*Mark-recapture analysis.—*

We used a Cormack-Jolly-Seber (CJS) survival model (Cormack 1964; Jolly 1965; Seber 1965) to analyze capture histories and estimate the effects of covariates on survival (ϕ) and detection (p). The CJS model was adapted from its original intended function to estimate survival over time into a spatial form of the model that could be used for animals that migrate unidirectionally (Burham et al. 1987) and could be "recaptured" in the form of acoustic detections along the migratory corridor. River reaches were bounded by receivers positioned at approximately 7-38 km intervals along the Sacramento River to the beginning of the Delta at the I80/I50 Bridge. In three locations where receiver positions were adjusted slightly among years, Butte City, Knights Landing and Tower Bridge were moved 6, 2 and 2 rkm from their original locations, respectively. For this analysis, these sites were assigned the rkm of the most upstream

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of the receivers at that location. A capture history for each fish was created by assigning a “1” (detected) or a “0” (not detected) at each receiver location.

Survival was modeled in Program MARK (White and Burnham 1999) through the RMark package (Laake 2013) within the R program (R Core Team 2020). By substituting space for time, we modeled reach-specific survival (*S*) as a logistic function using a linear structure,

$$logit\left(S_{i,j}\right) = \sum_{k=0}^{K} \beta_{j,k} x_{i,j,k} \qquad \text{eq. 1}$$

where logit () is the logit link function, $S_{i,j}$ is the survival probability for the *i*th individual in the *j*th reach, and $\beta_{j,k}$ is the slope coefficient of the *k*th covariate, $x_{i,j,k}$.

This model structure allowed for a mixture of spatially and time-varying covariates (e.g., water temperature), spatially and time-constant individual covariates (e.g., fork length), spatially varying but time-constant covariates (e.g., reach length), and time-varying but spatially constant covariates (e.g., mean annual river flow). Each of the covariates we included in the analysis had an *a priori* hypothesized effect on smolt survival (Table 2). Fish size, as measured by fork length was the only covariate unique to each individual but constant across reaches and time. The time-varying, reach-constant covariate was annual mean flow at Bend Bridge confined to the period spanning the date that fish were released to when the last fish was detected in the river. Bend Bridge was chosen because it was upstream of major tributaries and diversions, and therefore representative of flow in the Sacramento River watershed.

For each of the reaches, we derived spatially-varying, time-constant covariates to define habitat features, many of which did not change between years and represented the best available approximation of reach-specific physical habitat for the Sacramento River (Fig. 1). Each of the habitat features was mapped using ArcGIS 10.4.1™ (Esri, 2015). River area and off channel habitat were calculated as area per reach. Off channel habitat was summarized as an annual mean from Landsat scenes corresponding to January-April, when fish were in the river. Median travel time was calculated from all observed travel times on a per reach basis for each year. All other habitat features did not vary temporally across the study period. Shaded riverine aquatic cover (wooded bank) was defined as the nearshore aquatic area at the interface of the river and adjacent woody riparian habitat. This measure does not quantify instream cover. Specifically, to be designated as shaded riverine cover, the adjacent bank must have been composed of natural, eroding substrates supporting riparian vegetation that overhangs or protrudes into the water and the water contains variable amounts of woody debris, such as leaves, logs, branches, and roots. Wooded bank and revetment were summarized as percent of the length of the riverbank per reach. Remaining riverbank that was not classified as revetment or shaded was designated as bare bank. Other reach-specific covariates included the number of diversions, number of tributaries, and river sinuosity (Table 2).

A time-varying individual covariate was defined as the mean of the daily covariate (e.g., water flow, velocity, or temperature) over an individual's travel time through a reach. For the purposes of defining covariate values for each fish, individuals that were undetected at a given receiver location but subsequently detected at a location further downstream, had that missing arrival time imputed by using the observed arrival time at the upstream location, the observed arrival time at the next downstream location, the distance between these two locations, and the reach length between the upstream location and the missed location,

$$A_{missed} = A_{upstream} + \frac{RL_{[upstream\rightarrow missed]} \times (A_{[downstream]} - A_{[upstream]})}{RL_{[upstream\rightarrow downstream]}} \qquad \text{eq. 2}$$

where A is arrival time and RL is reach length (km) between locations.

There were many more reaches defined by acoustic receivers than there were flow stations in the river. Therefore, to more closely match fish presence with environmental covariates, we used the River Assessment for Forecasting Temperature model (Pike et al. 2013), which is a 1-dimensional physical hydrodynamic model that estimates laterally and vertically averaged channel water temperature, flow, depth, and velocity every 10-minutes at a 2 km spatial resolution. We included temperature because metabolic rates and predation rates increase at higher temperatures (Killen et al. 2010; Vigg et al. 1991).

We considered flow at the reach and at the watershed scale because flow dynamics have been shown to be important to survival (Henderson et al. 2018; Michel 2018; Perry et al. 2018). In addition to mean annual flow at Bend Bridge, we included flow variables that measured variation from each reach's mean flow and variation relative to the mean flow in each year. We refer to these covariates as 'interannual reach flow' and 'intra-annual reach flow', respectively, following the methods of Henderson et al. 2018. Interannual reach flow was calculated by standardizing flow to each reach's mean flow:

$$z_{\text{inter},d,y,k} = \frac{Q_{d,y,k} - \mu_k}{\sigma_k} \qquad \text{eq. 3}$$

whereas intra-annual flow was calculated by standardizing daily flow within each reach and year:

$$z_{\text{intra},d,y,k} = \frac{Q_{d,y,k} - \mu_{y,k}}{\sigma_{y,k}} \qquad \text{eq. 4}$$

where $z_{\text{inter},d,y,k}$ and $z_{\text{intra},d,y,k}$ are the inter- and intra-annual reach flows on day d in year y and reach k, $Q_{d,y,k}$ is discharge, μ_k and $\mu_{y,k}$ are the means of $Q_{d,y,k}$ for each reach and each reach and year, and σ_k and $\sigma_{y,k}$ are standard deviation of $Q_{d,y,k}$ for each reach and each reach and year, respectively. Including intra-annual reach flow let us examine whether large freshet events within a reach would increase survival relative to the mean flow for that year (Cavallo et al. 2013; Courter et al. 2016). We included intra-annual reach flow in models with mean annual flow at Bend Bridge because scaling intra-annual flow by both year and reach removes the effect of annual differences in intra-annual reach flow, eliminating correlation between these variables. We also included an interaction term between mean annual flow and intra-annual reach flow, which tests whether within-year deviations from the mean annual flow had a different effect in high- and low-flow years.

Before fitting mark-recapture models, we conducted pairwise comparisons of all covariates to evaluate collinearity. If the correlation coefficients between any two variables exceeded 0.7 (Dormann et al. 2012) or had a variance inflation factor that exceeded 10 (Kutner et al. 2004), we retained only the covariate with a greater hypothesized effect on survival (supplementary material). All continuous variables were standardized to zero mean and unit standard deviation so that changes in survival could be predicted by a single standard deviation change in each covariate value.

[C]*Model Selection.*— We used Akaike's information criterion (AIC) to rank alternative models based on the best tradeoff between improved fit and model complexity (Burnham and Anderson 2002). Models with lower AIC values are considered better fitting models in the model set. Our model selection process consisted of first identifying the best fitting model for detection probability, then assessing goodness of fit, and finally fitting alternative survival models using the best fitting detection model. We evaluated goodness of fit by estimating the degree of overdispersion using two different parameters in Program MARK, the median $\hat{c}$ procedure and the bootstrap goodness of fit procedure. Goodness of fit was evaluated using a model that allowed both survival and detection to vary independently among reaches and years (i.e., a reach*year interaction). Estimates of $\hat{c} \leq 4$ indicate variability in the data was more than expected given the multinomial likelihood structure of the mark-recapture model. Values of $\hat{c} > 1$ indicate overdispersion, with more variability in the data than expected given the multinomial structure of the mark-recapture model, while values much greater than 1 (e.g. >4) indicate fundamental lack of fit, whereby the model structure poorly describes variation in the data (Burnham and Anderson 2002). We estimated $\hat{c}$ to be 1.54, indicating that our model structure was appropriate, but that our data were slightly overdispersed. We therefore used quasi-Akaike's information criterion (QAICc), which adjusts the AIC value based on $\hat{c}$, to select the model that was most supported by the data and ranked with the lowest QAICc score. In addition, $\hat{c}$ was used to inflate standard errors of parameter estimates in the model selected for inference.

The relative importance of covariates in the selected model (lowest QAICc score) was evaluated graphically and by examining point estimates of beta coefficients with 95% confidence intervals (CI). Covariates having beta coefficients with large absolute values were interpreted to have a larger effect on survival. Covariates having beta coefficients with CIs that overlapped zero were interpreted as not being significantly different from zero (i.e., no detectable effect). Covariates that did not contribute significantly to explaining the data were still retained in the selected model because they were chosen *a priori* to be important for their potential effect on survival (Burnham et al. 2011).

To identify the most parsimonious detection model, we fit a series of models of increasing complexity while holding the survival model structure fixed using the reach by year interaction model. Like survival, we modeled the effect of covariates on detection as linear on the logit scale (eq. 1). The simplest model included only sampling occasion (i.e., receiver site) as

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a main effect on detection probability (supplementary material). Next, we added year as a categorical factor to the reach model. The third model added an interaction between year and receiver site because the number of receivers and/or receiver model at each location varied among years. Finally, the mean reach-specific velocity for each individual was added to each of the three models above, for a total of six models in the model set. We hypothesized that river velocity, and the ambient noise associated with it, impacts the attenuation of acoustic signals in water, thereby affecting detection probability. For all models, detection probabilities were set to zero when receivers were not deployed below Paynes Creek (location 6) and at Mill Creek confluence (location 8) in 2013, below Cypress (location 2) when fish were released downstream of this location in 2016, and below China Bend (location 15) in 2017. We found that the model with water velocity and a site by year interaction had the lowest QAIC and was considerably lower than the second best model that included just a site by year interaction (ΔQAIC = 66; suppl. materials). Therefore, this model was used for all survival models.

Using a similar approach described above for the detection models, we fit a set of eight survival models (Table 4) of increasing complexity and used QAIC model selection criterion to rank each model. Subsets of the more parameterized models were evaluated using the same model selection criteria. As a basis of comparison with more parameterized covariate models, the models with the fewest variables only estimated survival separately for each reach or for each reach and year. From there, we included a model to test the effect of reach length (i.e., travel distance) and travel time on survival, with an intercept offset for each year. This model tested whether reaches with longer travel times and reach length, which increases exposure to predators (Anderson et al. 2005), could better explain variation in survival among reaches and years. Third, we added RAFT model's flow variables (e.g., flow and velocity) to models that included reach

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length and travel time to test whether river flows affected survival after accounting for effects of travel time and reach length. Fourth, we evaluated models that only included time-constant habitat covariates (e.g., wooded bank habitat, number of tributaries, etc.; see Table 2 for full list) or time-varying covariates (e.g., temperature and depth) that excluded flow variables. Finally, the most complex models combined all covariates from the preceding models, fitting one full model with interannual reach flow and another with intra-annual reach flow.

[A]Results

[B]Spatiotemporal conditions

Water temperatures ranged from 8 to 16 °C throughout the study period and varied among years, but always had an increasing trend from February to April, as measured at Bend Bridge (Fig. 2). Drought years 2014 and 2015 had the warmest mean February – March whole river temperatures, 12.2°C and 13.6°C, respectively. Peak flows in the Sacramento River varied temporally between years in response to storm events, from no pulses in 2013, a few weak pulses in 2014, a single large pulse in 2015, two moderate pulses in 2016, and many large pulses on top of extremely high sustained flows in 2017 (Fig. 2).

Riparian channel features varied spatially across the study area, with a greater number of tributaries upstream and greater percentage of revetment, diversions, and a smaller width-to-depth ratio downstream (Fig. 1). Bank type characteristics were distributed in distinct sections of the Sacramento River (Fig. 3). The upper section (reaches 1-6) contained mostly wooded bank, with some bare bank and lesser amounts of revetment. The middle section (reaches 7-12) was predominantly bare bank with some wooded bank and lesser amounts of revetment. The area with the highest proportion of bare bank was associated with off channel habitat (Fig. 1) in drought years (r = 0.8). The lower river section (reaches 13-17) was predominantly revetment, with some wooded bank and a lesser amount of bare bank.

[B]Travel time

The time it took fish to travel downstream varied by reach and across years with different flow, velocity, and temperature profiles (Fig. 4). Fish slowed down through the upper and middle reaches of the river in high flow years, through the middle reaches in all years, and in the lower reaches in the most critically dry year (Fig. 5). Travel times were the longest in the wettest and driest years. In the wettest year of 2017, median travel time in the upper Sacramento River (Fig. 1) was 24 days, ranging up to 70 days, while in the critically dry year of 2013, median travel time in the middle Sacramento River was 33 days, ranging up to 54 days (Table 3). The most consistent slow travel times occurred in the middle Sacramento River, in a 55 km stretch of the river between Woodson Bridge and Tisdale (Fig. 1; reaches 9 to 13, Fig. 5). This part of the river coincides with the greatest extent of connected off-channel habitat that was visible in the wet year between Red Bluff and Colusa (Fig. 1).

[B]Reach-specific patterns in survival

Reach-specific survival scaled by distance and time (per 10km d^{-1}) was consistently high (98-100%) in the upper reaches (1-4) and lower reaches (13-17) of the Sacramento River (Fig. 6a). Reach-specific survival was lowest (96%) at reach 7 and intermediate (97-98%) through reaches 8-12, between Red Bluff and Colusa.

[B]Factors that affect survival

Survival models with flow and habitat covariates received more support than the models with just reach or reach and year, indicating that we had identified features that were important for juvenile salmon survival. The top-ranked survival model by AIC criteria was the full intra-

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annual reach flow and habitat model (Table 5), characterized by an interaction between mean annual flow and intra-annual reach flow, and a combination of time-constant, reach-specific habitat features, reach water velocity, travel time, and fish length (Table 4). Among covariates with significant coefficients, as judged by 95% confidence intervals that did not overlap zero, variation in annual flow had the strongest positive association with survival. These findings indicate that a one standard deviation change in annual flow had a stronger effect on survival than a one standard deviation change in any of the other covariates in the top-ranked model. However, the effect of annual flow was dampened by the negative effect of an intra-annual reach flow by the annual flow interaction term. Other covariates with a significant positive effect on survival (i.e., confidence intervals that did not overlap zero) included percent of revetment and wooded bank, fish length, and reach-specific intra-annual flow (Fig. 7). Channel width-to-depth ratio, reach-specific velocity, depth, and reach length all had negative associations with survival, along with travel time, river temperature, and an intra-annual reach flow by annual flow interaction term. River sinuosity, diversion density, off channel habitat, slope, and number of tributaries had negligible effects on survival, indicating the covariates included in the selected model sufficiently explained differences in survival among years and reaches. Time-constant covariates like river sinuosity, slope, and wooded bank acted to increase estimates of survival in the upper reaches but decrease survival in lower reaches, relative to mean covariate values (Fig. 6b). In contrast, the width-to-depth ratio decreased estimates of survival through the middle river (reaches 7 and 8), and increased estimates of survival relative to mean covariate values from reach 13 downstream where the river becomes more channelized with revetment along the bank.

Mean annual flow, intra-annual reach flow, and their interaction had contrasting effects on predicted survival (Fig. 8). Predicted survival per 10 km per day increased as a function of mean annual flow, with intra-annual reach flow and all other covariates set to mean values (Fig. 8A). Due to the negative interaction between annual and intra-annual reach flow, the slope coefficient for intra-annual reach flow declines with annual flow such that reach effects were more positively associated with survival in low flow years (Fig. 8B). The combined effect of mean annual flow and intra-annual reach flow leads to a positive relationship in low-flow years but a flat relationship in high-flow years (Fig. 8C). These findings suggest that variation in daily reach-specific flows affect survival more in years when mean annual flow is low, relative to high-flow years.

[A]Discussion

The Sacramento River is the main source of California's water conveyance system and as a key migration corridor for anadromous fishes moving from freshwater to ocean environments. Therefore, how reservoir releases are managed directly affects conditions juvenile salmon encounter as they migrate to the ocean as smolts. Because of their small size, smolts are vulnerable to how these conditions affect exposure to predators during the downstream emigration phase of their life history (Sabal et al. 2021). Additionally, they may be vulnerable to delayed mortality in the ocean from associated migration duress (Michel 2018).

The decline of winter-run, as the most critically imperiled Chinook salmon run, remains one of the most important issues confronting water management in the Sacramento River. In this study, we observed that mean annual flow over the time fish were in the river had the most positive effect on their survival out of all the covariates modeled. Moreover, we observed that higher flow at the reach scale had a more positive effect on survival in dry years with low flow than it did in wet years with high flow. Although the interaction between annual flow and intra-annual reach flow occurs with one high flow year observed in 2017 (Fig. 5), similar observations have been made in previous work on late-fall Chinook Salmon (Courter et al. 2016; Henderson et al. 2018; Perry et al. 2018). Anomalous wet years like 2017 are important to consider because California remains in a state of extended drought and years like this are likely to be difficult to obtain data for, given their importance for fish survival. While it has long been known that freshwater flow is connected to variation in survival of juvenile salmon migrating to sea (Kjelson and Brandes 1989; Michel 2018; Newman and Rice 2002; Notch et al. 2020), our findings suggest that while it may not be possible to create wet year flow conditions like 2017, increasing flow through managed flow pulses can benefit salmon survival. Our results also improve current understanding of how annual changes in flow can affect survival rates and spatially-varying changes in habitat features known to be important for rearing (Zeug et al. 2019; Zeug and Winemiller 2008) with time-varying features of the river (i.e., reach flow, temperature, and depth) (Henderson et al. 2018). Considering these factors together in a novel framework that scales survival by the amount of time fish are spending in a given part of the river provides a clearer way to examine spatial variation in migration survival.

In some ways, our results differed from previous studies on late-fall (Henderson et al. 2018; Michel et al. 2015; Perry et al. 2010) and spring runs (Cordoleani et al. 2018; Notch et al. 2020) of Chinook Salmon. We observed stopover behavior in all years, but the region of the river where stopover behavior occurred appeared to depend on density dependent habitat availability, with fish exhibiting increased stopover behavior in the upper river in the wettest year and in the lower river in the driest year (Fig. 5). During dry years with lower flow, salmon that delay migration tend to experience higher mortality (Sturrock et al. 2020). In 2013, a year that was characterized by low flows and a nearly flat hydrograph (Fig. 2), stopover behavior lower in the river and corresponding low survival suggests that fish may not initiate downstream migration

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without an appropriate migration cue, which usually arrives as a pulse in flow (del Rosario et al. 2013) or ultimately as warming temperatures (Fig. 4). Salmon are known to avoid high temperatures by timing migration to occur before or after peak river temperatures (Hodgson and Quinn 2002). Therefore, we might expect that fish migrating in response to high temperatures could suffer indirect effects such as a reduction in aerobic scope (Eliason and Farrell 2016).

The tradeoff between increased exposure to predators and access to good foraging habitat is indirectly supported with a positive association between annual flow and survival (Henderson et al. 2018; Michel et al. 2015; Perry et al. 2018; Zeug et al. 2020). High flows can benefit survival by increasing water turbidity, providing cover for juveniles to evade predators (Gregory and Levings 1998), and by providing access to a greater diversity of foraging and refuge habitat that allows fish to slow down higher in the watershed. A positive association in body size with survival is consistent with previous work on other runs (Cordoleani et al. 2018; Henderson et al. 2018; Notch et al. 2020), which suggests that a fish's size can reduce predation by growing beyond the gape limitation of some predators (Nowlin et al. 2006). A caveat is that the increased tag burden of fish in the smaller size range could disproportionately affect the survival of acoustic-tagged fish (Brown et al. 2010; Liss et al. 2016). Although we did not detect a fish size effect for tag shedding or survival rates in the portion of tagged fish held and monitored for 60 days, tag burden will disproportionally affect performance of smaller fish and may contribute to the observed higher survival for larger fish.

Some relationships between other covariates and survival ran counter to our working hypotheses and revealed interesting patterns upon further investigation. First, increased survival was associated with a higher proportion of revetment along the riverbank (Fig. 7). However, the positive effect of revetment was only observed where it was predominant along the riverbank in

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the last five reaches (Fig 6b, 13-17), which had similar habitat and morphology (e.g. deep, narrow, low gradient channels; supplementary materials), and downstream of reaches where fish were observed exhibiting slow travel. Fish surviving to these lower reaches are likely larger because of longer feeding durations or upstream size-selective mortality that removed smaller fish. Moreover, fish holding upstream that survived to these lower reaches are more likely to be actively outmigrating, which decreases travel time (Fig. 5) and exposure to predators. Future work that compares the spatial survival of other runs that emigrate at other times may shed some light on the role of revetment, predation, and survival in this part of the river.

Second, while more rapid downstream movement may appear to result in better in-river survival for outmigrating smolts, the negative association between reach velocity and survival suggests that volitional downstream movement may be compromised. Inflection points that indicate a change to downstream migration behavior appear to correspond to sudden changes in the velocity profile of the river (Fig. 4). As instream rearing is known to occur for winter-run in the mainstem river (Freeman et al. 2001) and tributaries (Phillis et al. 2018), we may be observing a switch from resting and feeding to migration behavior in which vulnerability to mortality is higher, at least initially. During the high-water year of 2017, when water velocities were high throughout the main channel, better access to low velocity off-channel and ephemeral tributary habitat throughout the upper and middle Sacramento River may have been key for fish to improve foraging opportunities on prey (e.g., drift) that would otherwise have been advected in the mainstem throughout the largest pulse flow periods.

Limitations of observational studies of hatchery-raised salmon in the field can make it difficult to infer how variables might affect wild fish, which initiate their smolt migration earlier in the fall. Natural-origin winter-run initiate their downstream migration beginning in July and into autumn around the time when the first storms of the year arrive in California, following several months of summer conditions characterized by low flows and warm temperatures. These early storms create unique conditions, known colloquially as a first flush, when accumulated debris and sediment are carried downstream, creating turbid conditions and cover that wild fish could use as refugia from predators. In contrast, our study fish were released in the peak of winter on a single synchronized event with the entire hatchery production of winter-run to provide a swamping effect and improve survival. Studies on sockeye salmon using a combination of PIT and acoustic tags have shown that survival probabilities of migrating with 2000 conspecifics increase from 50% to 95% if salmon migrate with 350,000 conspecifics (Furey et al. 2016). As density dependence spreads fish out as they migrate downriver through rearing habitat along channel margins, a predator swamping effect will attenuate at an unknown rate and will likely have different characteristics than natural-origin fish experience. In addition, if density dependent habitat availability is indeed the primary mechanism that predicts where fish will slow down, natural origin fish that are not confronted with as many conspecifics at a given time are more likely to exhibit slower travel times in the upper reaches of the river than that of our study fish. Future studies that release similar numbers of fish at different locations along the river may be able to control for a swamping effect and more closely approximate how natural-origin fish behave.

[B]Management Implications

Flow management is often used as a primary tool for mitigating impacts to fish. When high flows are not available, maintaining functional flows through pulse flows offers managers another way to improve survival under low flow conditions (Michel et al. 2021). Figure 8b describes how the slope of the intra-annual reach flow-survival relationship changes with mean annual flow. This relationship can be used by managers to determine at a given level of annual flow, whether a flow pulse is likely to produce a measurable effect on survival. For example, when flow is less than about 700 $m^3 s^{-1}$, given the confidence interval, pulse flows will have a high probability of having a positive effect on survival. The relationship also indicates what the magnitude of the effect may be. For example, when mean annual flow is 600 $m^3 s^{-1}$, a pulse flow is going to have half the effect of a pulse event than when mean annual flow is 200 $m^3 s^{-1}$. Of course, there are no observations between 300 and 1300 $m^3 s^{-1}$ and collecting these data in a targeted way is recommended to determine whether the relationship at higher flows is non-linear.

As climate change induces more variability and a higher frequency of hot and dry conditions, facilitating migration with pulse flows is likely to become harder to achieve due to water scarcity and lack of habitat diversity throughout the watershed (Lindley et al. 2007). This means that resilience of declining salmon populations will increasingly depend on habitat restoration (Herbold et al. 2018). While habitat restoration can take months or years to achieve, depending on the scale of the activity, more information is needed to understand what characteristics of holding habitat cause fish to alter emigration. Some of the ways that fish interacted with spatial covariates appeared to change as they moved downstream, possibly because of selection, given that hatcheries release naive juveniles in the upper river, or because of switching from holding to outmigration behavior. It is therefore important for resource managers to consider that how fish perceive the value of habitat variables can change in response to density dependent effects and as they develop and mature, exhibiting behavioral and physiological plasticity as they smolt.

In this study, off-channel habitat was inaccessible in all years except 2017, which is likely why we were unable to detect an effect of access to off-channel habitat on survival.

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Natural-origin winter-run, which begin to rear and outmigrate in late-fall and winter when natural flows are more variable, may have better access to ephemeral off-channel habitat (Bellido-Leiva et al. 2021). We detected low survival and slow travel times in a middle section of the river with a large extent of potential off-channel habitat (Fig. 1) where bare banks predominated (Fig. 3), suggesting a location where juveniles may be responsive to targeted restoration efforts (around reaches 7 to 12), such as connecting off-channel habitat at lower flow thresholds.

The positive effect of wooded bank habitat on survival throughout the study area suggests that restoration activities that increase cover and bank complexity along the shoreline of the mainstem river could improve foraging and resting habitat (Zajanc et al. 2013). Indeed, vegetation has been shown to have the largest effect on smolt movement rates in the Sacramento River, with fish slowing down in areas with increased cover (McNair 2015; Zajanc et al. 2013). Wooded bank habitat on the Sacramento River has been lost over the last 50 years, primarily to bank protection projects like the Sacramento Riverbank Protection Project. Since 1961, over 140 miles of revetment (riprap) have been constructed on the riverbank, with only seven percent shaded riparian cover remaining in the lower Sacramento River (USFWS 2004). In our study, fish moved quickly through areas with heavy revetment and they moved slower in areas with wooded habitat. Moving slowly allows fish time to rest and feed on their journey to sea.

In conclusion, outmigration survival on the Sacramento River was best described by an intra-annual flow model with a mix of time-varying spatial covariates, reach-specific habitat features, and individual effects. Years with higher flow showed a strong association with increased survival, and years with lower flow showed a more positive flow-survival relationship at the reach scale. Wooded bank habitat had a positive association with survival, despite having been replaced by revetment along more than 90 percent of the Sacramento's riverbank. Evidence for instream holding behavior, which is known to be an important life history trait in juvenile winter-run, was indicated by slow travel times that appeared to respond to density dependent habitat availability. Consistent slow travel times were observed in a section of the river between Red Bluff and Colusa that coincided with the greatest extent of potential off-channel habitat that was connected during the high flows of 2017. There were other habitat features that did not have a consistent effect on survival across the migration corridor, with either a positive association with survival in the upper river and a negative association with survival in the lower part of the river, or vice versa, indicating a dynamic relationship between physiological and behavioral developmental characteristics of the fish with their environment. With increased variability in drought and flood severity associated with climate change, it will become more important to disentangle the behavioral factors that affect outmigration timing (Munsch et al. 2019) and survival (Johnson et al. 2017), particularly as demands for freshwater put additional pressure on native fishes like Central Valley Chinook Salmon at the southern extent of their range.

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Care and Use Committee at the University of California at Santa Cruz. Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

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[A] Figure captions

Figure 1. Extent of the study area from Redding to Sacramento (left panel). River reaches are numbered between acoustic receiver sites. Time-constant habitat features are mapped over the study area for the upper (A), middle (B) and lower (C) sections of the river. The inset map magnifies wooded bank habitat, revetment, and off-channel habitat that was connected within 1 km of the mainstem Sacramento River in the wet year. World topographic base map source: Esri, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, and the GIS User Community.

Figure 2. Percent of acoustic tagged fish (A) in the Sacramento River from date of release to last fish detected at Tower Bridge in city of Sacramento for each year. Flow (B) and water temperature (C) at Bend Bridge for each year (USGS 2021).

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Figure 3. Percent revetment, wooded bank, and bare bank shoreline habitat types from upstream reaches on the top to downstream reaches on the bottom. The area with the highest proportion of bare bank is associated with off channel habitat (Fig. 1) in drought years (r = 0.8).

Figure 4. Downstream detections of juvenile winter-run Chinook salmon (black lines) and interpolated tracks (grey dashed lines) from Redding to Sacramento CA. Detections overlay RAFT model outputs for temperature (left), flow (middle), and velocity (right) for water years 2013 (top) to 2017 (bottom).

Figure 5. Travel time in days by reach for each year for juvenile winter-run Chinook Salmon migrating down the Sacramento River. Each point represents the median number of days it took tagged fish to transit through a reach bounded upstream and downstream by acoustic receivers.

Figure 6. Effect of time-constant reach-specific covariates on survival. Panel A shows predicted survival per 10 km per day (with 95% confidence intervals) when all covariates are set to mean values except the reach-specific covariates shown in panel B (dashed line shows the mean survival over all reaches). Panel B illustrates the effect of each reach-specific covariate on the linear predictor (see eq. 1). Covariate effects represented as stacked bars were calculated as the product of the standardized covariate and its corresponding slope coefficient (i.e., beta). Habitat features associated with the riverbank also varied across the migration corridor (see Fig. 3).

Figure 7. Parameter estimates (± 95% confidence intervals) of slope coefficients (i.e., beta estimates) for each covariate in the selected model. Confidence intervals that overlap zero indicate no significant effect.

Figure 8. Effects of mean annual flow, interannual reach flow, and their interaction on predicted survival. Panel A shows predicted survival per 10 km per day as a function of mean annual flow with intra-annual reach flow and all other covariates set to mean values other than travel time,

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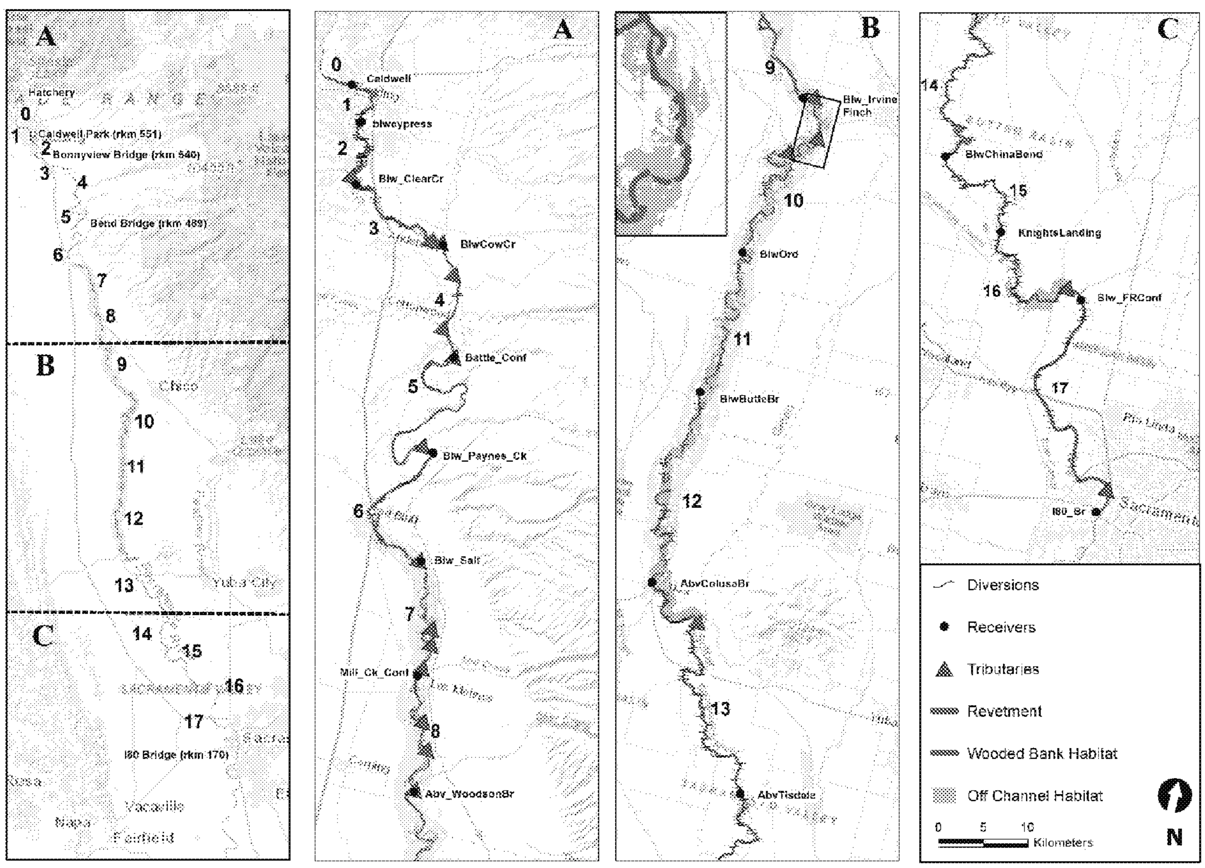
which was set to one day, and reach length, which was set to 10 km. Panel B illustrates the effect of the interaction between mean annual flow and intra-annual reach flow, showing the slope coefficient for intra-annual reach flow as a function of mean annual flow. Symbols in panel B show the slope for intra-annual reach flow for each value of mean annual flow (symbols jittered vertically slightly to reduce overlap). Panel C shows the combined effect of mean annual flow and interannual reach flow on predicted survival per 10 km per day. Shaded regions in panels A and B show 95% confidence intervals.

[A]Figures



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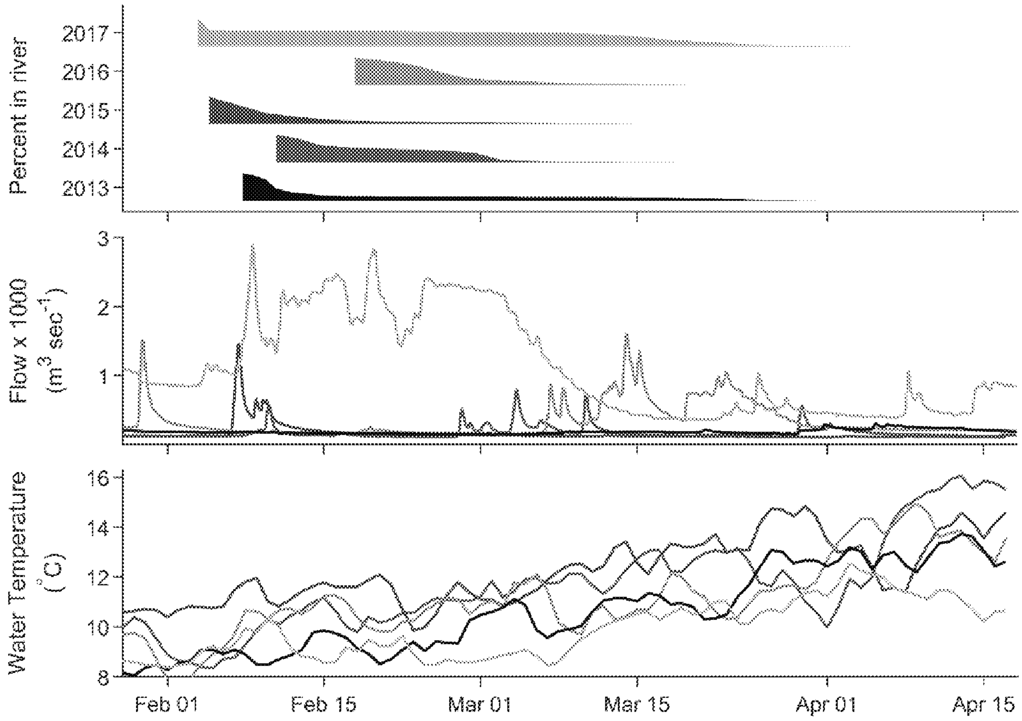
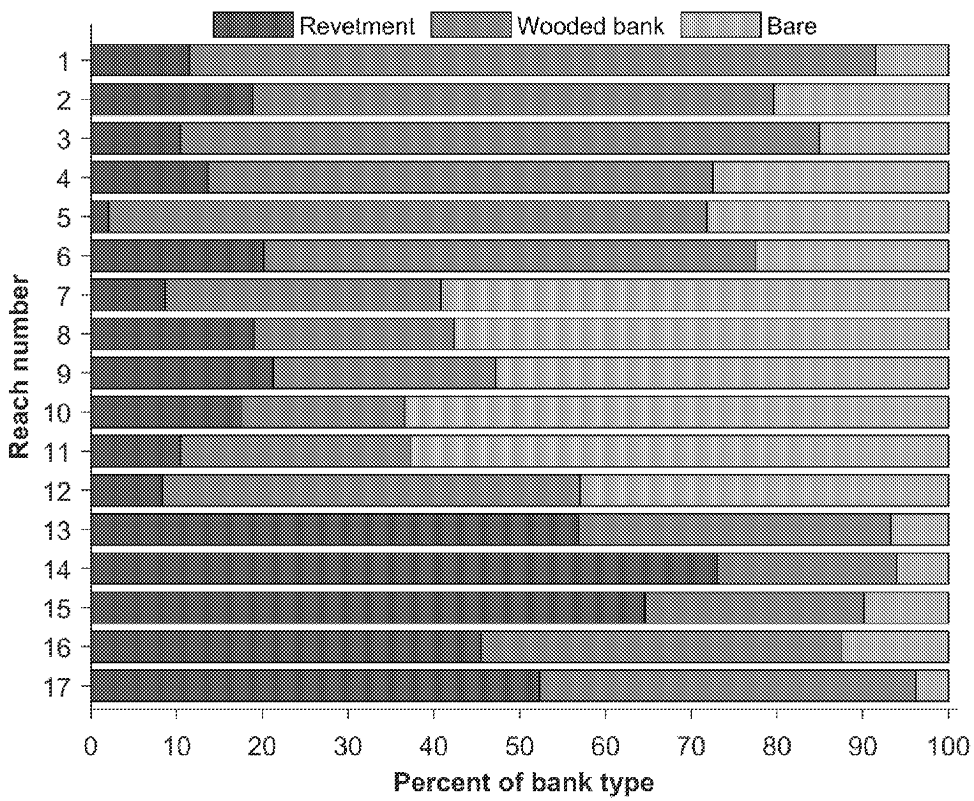

Percent in river
2017
2016
2015
2014
2013
Flow x 1000
(m^3 sec^{-1})
3
2
1
Water Temperature
($^{\circ}C$)
16
14
12
10
8
Feb 01
Feb 15
Mar 01
Mar 15
Apr 01
Apr 15

891


Revetment
Wooded bank
Bare
Reach number
1
2
3
4
5
6
7
8
9
10
11
12
13
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17
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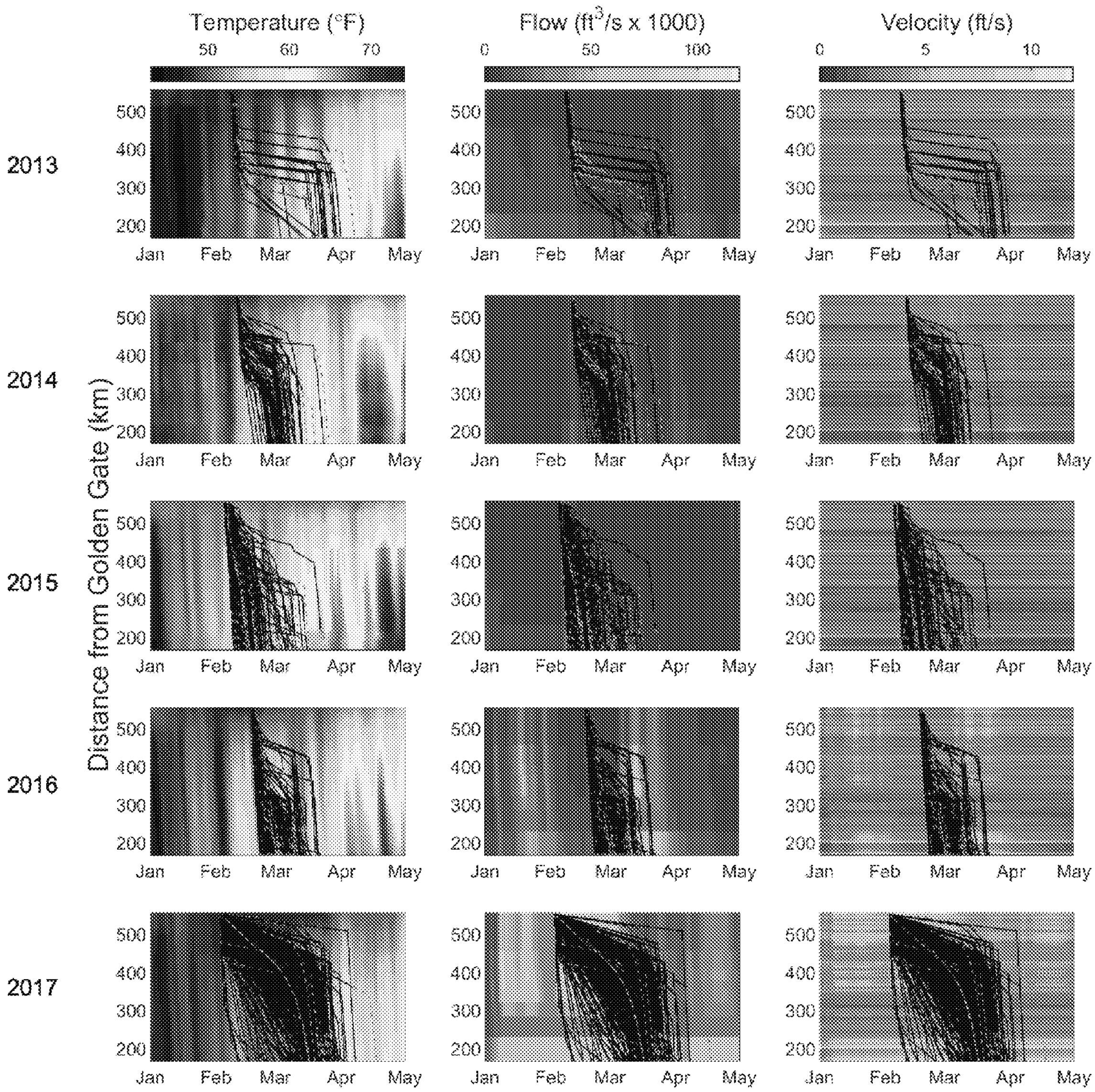
10
20
30
40
50
60
70
80
90
100
Percent of bank type

892

893



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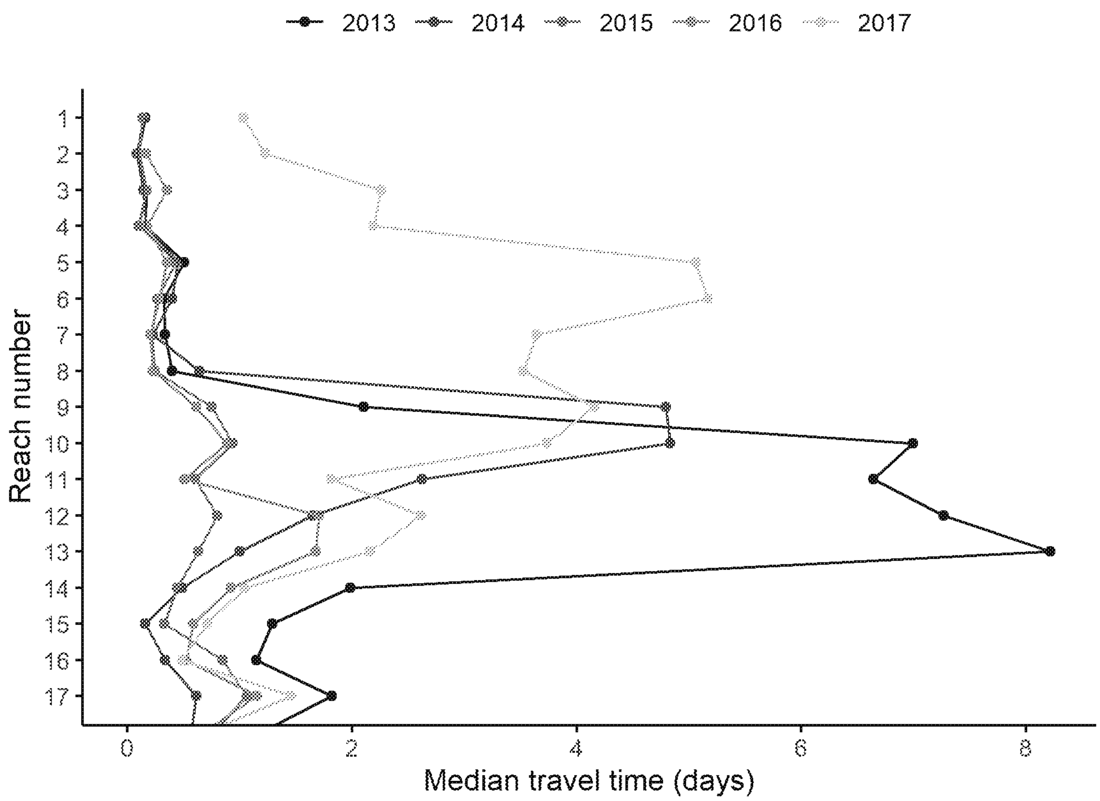
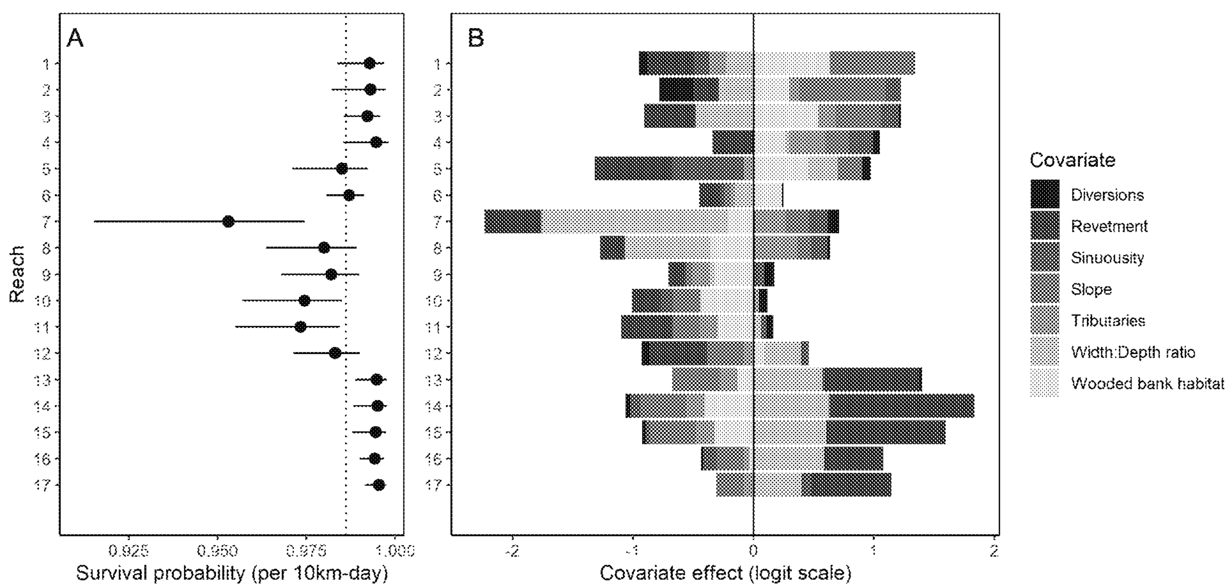
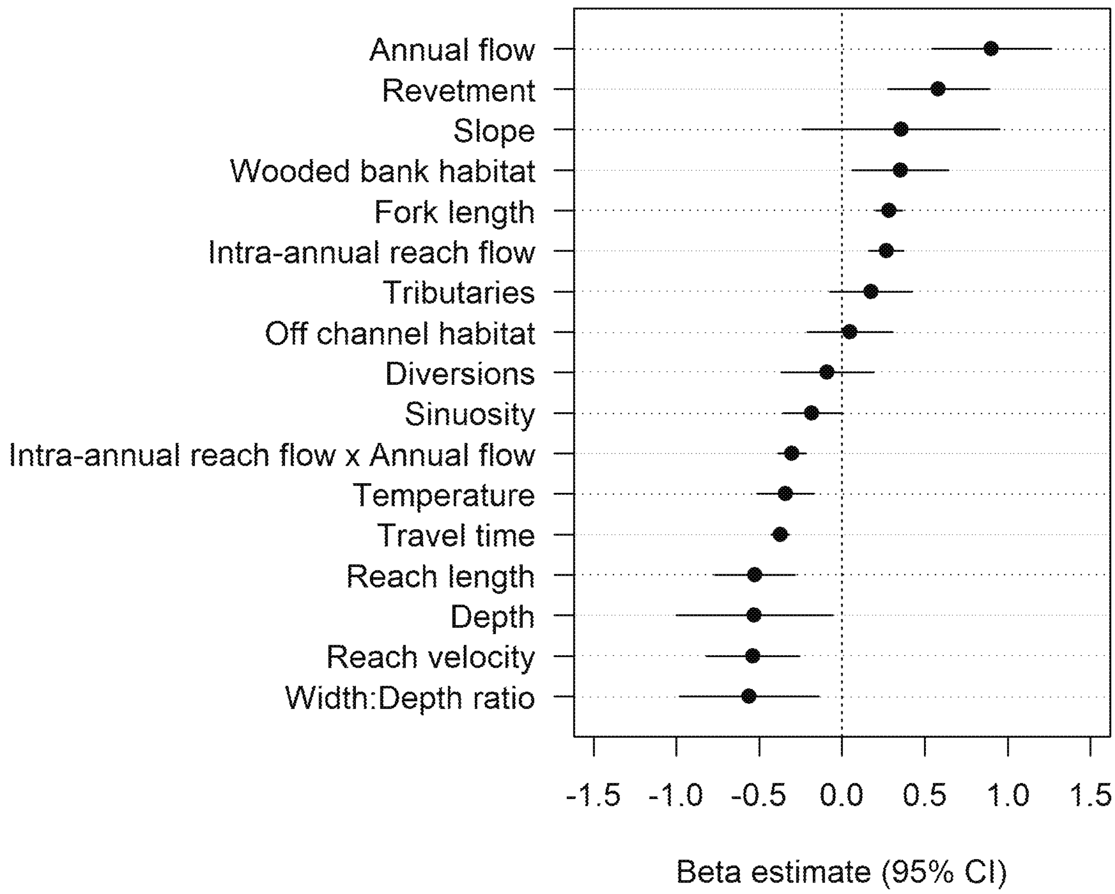
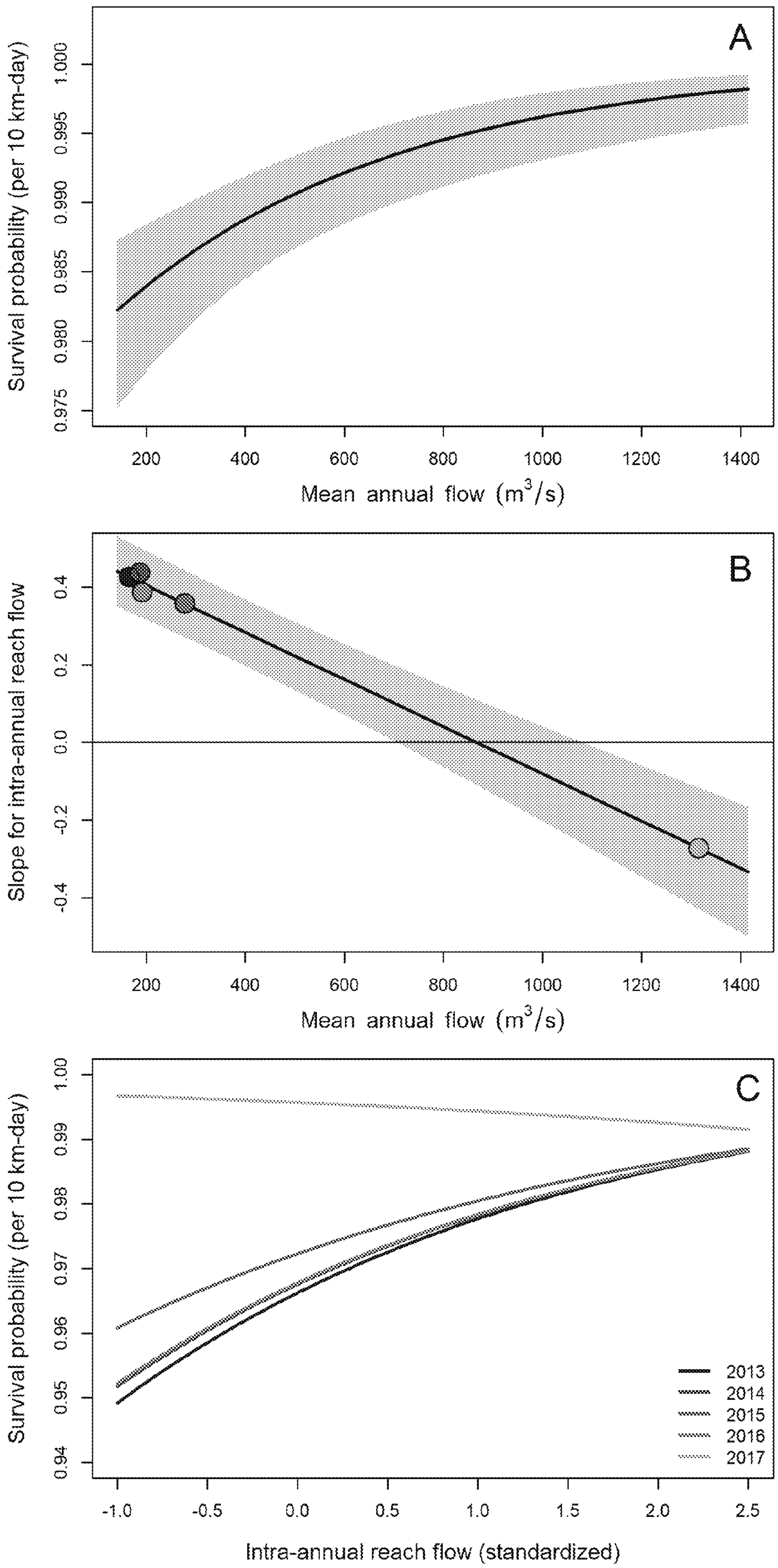

2013
2014
2015
2016
2017
Reach number
Median travel time (days)


A
Reach
Survival probability (per 10km-day)
B
Covariate effect (logit scale)
Covariate
Diversions
Revetment
Sinuousity
Slope
Tributaries
Width:Depth ratio
Wooded bank habitat


Annual flow
Revetment
Slope
Wooded bank habitat
Fork length
Intra-annual reach flow
Tributaries
Off channel habitat
Diversions
Sinuosity
Intra-annual reach flow x Annual flow
Temperature
Travel time
Reach length
Depth
Reach velocity
Width:Depth ratio
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Beta estimate (95% CI)

898



Draft_0015847

[A]Tables

Table 1. Number and size of acoustic tagged Livingston Stone National Fish Hatchery raised winter-run Chinook salmon juveniles released each year. Release location was Caldwell Park, Redding at rkm 551, except in 2016 when location was Bonnyview Bridge, Redding at rkm 540. Tag burden calculated as tag weight divided by fish weight. Flow at Bend Bridge calculated from date of release to date of last fish detected at Tower Bridge in Sacramento.

Release date	Number fish acoustic tagged	Weight in grams (mean ± SD)	Fork length in mm (mean ± SD)	Tag burden in % (mean, range)	Hatchery winter-run released	Flow at Bend Bridge in $m^3 sec^{-1}$ (mean, range)
7 Feb 2013	148	10.3 ± 1.7	98 ± 5.0	4.3 (2.5-5.4)	166,967	168 (127-289)
14 Feb 2014	358	9.4 ± 2.4	95 ± 7.7	3.9 (2.0-5.8)	190,905	187 (108-790)
4, 6 Feb 2015	249, 318	10.5 ± 2.0	100 ± 6.1	3.2 (2.0-5.9)	590,623	197 (105-1,453)
17-18 Feb 2016	285, 285	9.3 ± 1.6	96 ± 5.1	3.6 (2.3-5.3)	415,865	432 (151-1,603)
2 Feb 2017	569	9.1 ± 2.4	93 ± 7.5	3.7 (1.7-5.7)	141,388	1,315 (385-2,832)

* Bend Bridge hydrologic station (USGS 2021)

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Table 2. Hypothesized effects of covariates on survival included in the top mark-recapture survival model.

Category	Covariate	Definition	Prediction	Hypothesis
Individual	Length[a]	Fork length	Positive	Larger fish have higher survival due to improved predator avoidance and gape limitation
Temporal	Annual flow[b]	Mean flow at Bend Bridge (January-April)	Positive	Higher flows produce more habitat, facilitate downstream migration, and increase turbidity which reduces predator exposure
Spatial	Reach length	Distance between upstream and downstream receivers	Negative	Longer migration distance increases exposure to predators
	Off channel habitat[c]	Connected wetted area per reach within 1km of river edge	Positive	Increased off-channel habitat produces more refuge and forage habitat
	Travel time	Median travel time	Negative	Longer travel time will decrease survival because increased exposure to predators
	Sinuosity[d]	deviation of reach length from shortest path	Positive	Increased sinuosity creates more instream habitat
	Revetment[e]	% revetment	Negative	Increased revetment reduces habitat refugia
	Diversions[f]	Number of diversions per km for each reach	Negative	Increased habitat structure for predators

Draft_0015849

	Tributaries[g]	Number of tributaries exceeding Strahler stream order of 3 per km.	Positive	Increased access to non-natal habitat
	Wooded bank habitat[h]	% non-riprapped bank with adjacent woody vegetation	Positive	Increased cover produces more refuge habitat
	Width:Depth ratio[i]	Mean ratio of wetted channel width to depth	Positive	Wider, shallow channels increase refuge habitat
	Slope[i]	Mean elevation gradient of a reach	Positive	Steeper gradients will decrease travel time
Time-varying individual[i]	Temperature	Mean river temperature per reach	Negative	Increased temperature increases predator activity and reduces aerobic scope, potentially impacting locomotion.
	Depth	Mean river depth per reach	Positive	Favors avoidance of bottom oriented predators (catfish) and surface oriented predators (birds)
	Interannual reach flow	Mean river flow per reach	Positive	Higher flows within a reach produce more habitat in that reach
	Intra-annual reach flow	Mean river flow per reach and year	Positive	Higher flows will be associated with increased turbidity and refugia
	Reach velocity	Mean river velocity per reach	Positive	Higher velocities will shorten travel time and reduce predator exposure

[a]Measured at tagging

[b]U.S. Geological Survey (USGS 2021)

[c]Normalized difference water index using two-week conglomerates in Landsat https://landsatlook.usgs.gov, 4/9-4/23 2013, 2/21-3/18 2014, 2/24-3/5

[d]Sinuosity toolbox in ArcGIS

[e]California Department of Water Resources

[f]California Department of Fish and Wildlife Passage Assessment Database and NOAA Southwest Fisheries Science Center

[g]National Hydrography Database plus with Strahler stream order of three

[h]California Department of Water Resources and Google Earth imagery

[i]Produced by authors using the River Assessment for Forecasting Temperature (RAFT) model

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Table 3. Yearly variation in median travel time (days) of juvenile winter-run Chinook (Count) moving down the Sacramento River, with minimum (Min.) and maximum (Max.) ranges for the upper, middle, and lower sections (Fig. 1) of the river.

Year	Section	Count	Median	Min.	Max.
2013	upper	118	3	1	44
	middle	23	33	4	54
	lower	22	14	2	35
2014	upper	288	3	1	36
	middle	146	17	2	36
	lower	135	3	2	13
2015	upper	446	2	1	31
	middle	310	5	1	36
	lower	233	3	1	32
2016	upper	531	2	1	28
	middle	362	6	2	28
	lower	285	5	1	28
2017	upper	335	24	1	70
	middle	293	18	2	44
	lower	234	6	2	39

Table 4. Covariates included in each of the candidate mark-recapture survival models.

Covariate name	Reach	Distance-travel time	Interannual flow	Habitat	Intraannual flow	Reach and year	Full interannual	Full intra-annual
Reach Distance per km		x	x	x	x		x	x
Fish fork length				x			x	x
Proportion of revetment				x			x	x
River sinuosity				x			x	x
Diversions per km				x			x	x
Proportion of shaded riparian area				x			x	x
Tributaries per km				x			x	x
Channel width:depth ratio				x			x	x
Mean slope of reach				x			x	x
Median travel time per reach		x	x	x	x		x	x
Reach	x					x		
Calendar year		x	x		x	x		

Reach by year interaction			x		
Reach velocity for detections					
Flow standardized by reach	x			x	
Mean water temperature per reach				x	x
Mean water depth per reach				x	x
Mean water velocity per reach				x	x
Off-channel habitat per km				x	x
Flow standardized by reach and year		x			x
Annual flow at Bend Bridge		x			x
Yearly reach flow by annual flow interaction					x

Table 5. Survival (Phi) model selection based on QAIC ranks with a ĉ of 1.54. Models are shown with number of parameters (npar) and calculated quasi-Akaike information criteria (QAICc).

Phi model	npar	QAICc	Delta QAICc	QDeviance
Full intra-annual	108	13320.53	0.00	13103.37
Full interannual	106	13415.67	95.15	13202.56
Separate survival for reach and year	175	13438.75	118.23	13085.71
Intra-annual reach flow	100	13488.73	168.20	13287.73
Habitat	102	13508.79	188.26	13303.76
Interannual reach flow	98	13544.11	223.58	13347.15
Distance-travel time model	97	13547.31	226.78	13352.37
Reach	107	13576.39	255.86	13361.25

File Provided Natively

File Provided Natively

Ladies and Gentlemen:

My name is Robert Kunde. I retired as the General Manager of Wheeler Ridge-Maricopa Water Storage District in 2019 and have 39 years of experience managing water supplies in California. I represent Wheeler Ridge-Maricopa Water Storage District which serves 89,000 acres of farmland south of Bakersfield. SB 890 is important to the District because it receives irrigation water from the California Aqueduct and Friant-Kern Canal, and is providing 1.8% of the public water agency funding for the Sites Reservoir Project. Wheeler Ridge~~e~~ thanks Senator Nielsen and Borgeas for introducing this bill and for their~~his~~ leadership on California water issues ~~including the Sites Reservoir Project~~.

As you know, SB 890 would provide a mechanism for appropriating and disbursing~~ement of~~ funds decided on~~allocated~~ by the Legislature in the future to make repairs to critical canal infrastructure made necessary due to subsidence, and to increase state funding toward~~support~~ the Sites Reservoir Project.

Public funding for canal subsidence repairs is critical for managing California's water supplies and responding to climate change. The canals identified in SB890 provide irrigation water to grow food in the San Joaquin Valley. The SJV provides a large portion of the nation's fruits, nuts and vegetables. Decreased canal deliveries reduce water supplies available to grow this food, and therefore affect every Californian. Irrigation water deliveries and associated agricutural production is also critical to provide economic activity and jobs for many SJV rural communities including disadvantaged communities. Restoration of canal capacities is also necessary to allow increased flood flows due to climate change to be delivered to these same communities in order to offset decreased groundwater pumping under the state mandated Sustainable Groundwater Management Act.

The Sites Reservoir Project is critical for sustainably augmenting~~managing~~ California's future water supplies and responding to climate change. This Project will provide dry year water supplies for ~~agricultural~~ food security, ~~production for the same purposes described a moment ago, and~~ for municipalities and the environment ~~as well~~. The Project provides flexibility to store increased flood flows due to climate change and release this water in dry years when its badly needed as evidenced by the last 2 years~~for food production, urban uses and environmental uses~~. If we would have had Sites Reservoir in 2021, it is estimated that there would have been approx. 1 MAF of additional, stored water supplies for farms, cities and the environment. A good portion of this water would have been available for this year too. With all of the chaos in water management over the past 2 years, I think we can all agree all of California would be well served to have this resource.~~This improved water management flexibility is the reason the Project has received wide public support as well as inclusion in the Governor's Water Resiliency Portfolio.~~

While I agree in large part with your consultant's report to the Committee on SB890, I submit for your consideration the following points:

1. Affordability is one of our key considerations when deciding on our investment in Sites Reservoir. ~~The NRDC comments are erroneous.~~ SB890 does not earmark or appropriate any funds. It establishes a Fund for future legislative appropriations. ~~The Sites Project is environmentally friendly, not environmentally destructive. It does not "divert funding~~

~~away from projects needed to ensure safe and affordable drinking water".~~ We would envision SB890 serving as a possible backstop to fill any final gaps, should they exist, and only be operative with legislative appropriating actions based on strong, publicly vetted, rationale.

2. The consultant's report states it "would shift away from beneficiaries pay". I note this principle does not apply to all state funds applied to water projects. A good example is the state's longstanding loan and grant program to fund drinking water supply and treatment facilities particularly for disadvantaged communities. Furthermore, every Senator on this Committee, and every constituent of every Senator, is a beneficiary of the food grown by California farmers many of whom receive or will receive water from the canals or Project described in SB890. When we think of beneficiaries, it is important to remind ourselves of the rural residents, some in disadvantaged communities, and every Californian who eats California grown food.

Wheeler Ridge supports SB890 and urges you to vote in favor of it.

(Filename C:\Users\rkund\Documents_WRM\SB890 Kunde testimony_1st Draft.wpd)

From: JP Robinette [jrobinette@sitesproject.org]
Sent: 3/4/2022 7:54:57 AM
To: Alicia Forsythe [aforsythe@sitesproject.org]; Jerry Brown [jbrown@sitesproject.org]
CC: Kevin Spesert [kspesert@sitesproject.org]; Marcia Kivett [MKivett@sitesproject.org]; Cheyanne Harris [charris@brwncald.com]
Subject: Re: Sites - Estimated Sales Tax Information and Colusa County BOS March Meeting Support

Thank you both. Jerry, I will circle back with you on what we want to include in a presentation on the 15th.

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Friday, March 4, 2022 6:34 AM
To: Jerry Brown <jbrown@sitesproject.org>; JP Robinette <jrobinette@sitesproject.org>
Cc: Kevin Spesert <kspesert@sitesproject.org>; Marcia Kivett <MKivett@sitesproject.org>; Cheyanne Harris <charris@brwncald.com>
Subject: RE: Sites - Estimated Sales Tax Information and Colusa County BOS March Meeting Support

I have nothing to add beyond what Jerry has provided. Let me know if you want a copy of the MOU of the MOU slides.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Project Authority | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Jerry Brown <jbrown@sitesproject.org>
Sent: Thursday, March 3, 2022 3:20 PM
To: JP Robinette <jrobinette@sitesproject.org>; Alicia Forsythe <aforsythe@sitesproject.org>
Cc: Kevin Spesert <kspesert@sitesproject.org>; Marcia Kivett <MKivett@sitesproject.org>; Cheyanne Harris <charris@brwncald.com>
Subject: Re: Sites - Estimated Sales Tax Information and Colusa County BOS March Meeting Support

I'll weigh in with what I know since the issue as stated (no offense to Wendy) is vague.

The area of origin issue pertains to how much space does the County need to store either all or a calculated portion of the net of inflow (after 5937) from Funks and Stone Corral the County expects to have claim to under the MOU. The range of supply I provided to Gary based on the premise that 25% of the measured inflow (~15 years of data) could be retained as net supply from both creeks was ~3300AF of supply. He and Mike had one of the County engineers do a calculation of expected inflow from both creeks and that estimate came to 17,000AF. This would assume no 5937 release. Coincidentally their current 10,000AF participation is right in the middle so I suggested they stay where they are based on this review.

Additionally and more critically, I suggested they review their participation in the context of the risk to the county's finances. I suggested they make some relatively conservative assumptions about revenue they would generate from water transfers plus other conservative assumptions about unallocated county revenues that could be available to pay debt service on Sites. This would give them a sense of how much they can afford which may or may not be greater than how much water they can expect to claim under the MOU. They should avoid getting into a situation where they've bought into such a high level of fixed costs that the County's finances are put at too great of risk.

I'll call Mike and see if he is aware of anything else they need from Sites on this issue and will let you know.

From: JP Robinette <jrobinette@sitesproject.org>
Date: Thursday, March 3, 2022 at 2:08 PM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Cc: Kevin Spesert <kspesert@sitesproject.org>, Jerry Brown <jbrown@sitesproject.org>, Marcia Kivett <MKivett@sitesproject.org>, Cheyanne Harris <charris@brwncald.com>
Subject: Fw: Sites - Estimated Sales Tax Information and Colusa County BOS March Meeting Support

Hello Ali,

Are we ready to provide an update on the area of origin question posed by Colusa County? I am presenting to the Board of Supervisors on the 15th at Wendy's request (presentation needs to be ready by the 9th).

Kevin, I thought you were cc'd, but I guess it was missed. Adding you now.

Thanks,
JP

From: JP Robinette <jrobinette@sitesproject.org>
Sent: Thursday, March 3, 2022 2:04 PM
To: Wendy Tyler <wtyler@countyofcolusa.com>
Cc: Jerry Brown <jbrown@sitesproject.org>; Marcia Kivett <MKivett@sitesproject.org>; Cheyanne Harris <charris@brwncald.com>
Subject: Re: Sites - Estimated Sales Tax Information and Colusa County BOS March Meeting Support

Understood, thank you Wendy. I will do some coordination on our side and see if I can get a status for the presentation.

Thanks,
JP

From: Wendy Tyler <wtyler@countyofcolusa.com>
Sent: Thursday, March 3, 2022 1:56 PM
To: JP Robinette <jrobinette@sitesproject.org>
Cc: Jerry Brown <jbrown@sitesproject.org>; Marcia Kivett <MKivett@sitesproject.org>; Cheyanne Harris <charris@brwncald.com>
Subject: RE: Sites - Estimated Sales Tax Information and Colusa County BOS March Meeting Support

Hi JP,
One thing that Gary did mention after I had already emailed you was that it would be helpful for us to know where the Authority is going to land with regard to our area of origin issue. That is going to be instrumental in the decision we make going forward. Not sure if that information will be provided to Gary and Mike prior to the 15th, or what the timeframe is going to be.

Ideally, we do like to have your presentation in advance so we can distribute it with the Board packet. If you can have it to us by 9:00 a.m. on the 10th, that would be great. If you can't, no worries, just get it to us by noon on the 14th, and we will have it loaded and ready for use on Tuesday.

Thanks,

Wendy

Wendy G. Tyler
County of Colusa
County Administrative Officer

(530) 458-0737

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From: JP Robinette [mailto:jrobinette@sitesproject.org]
Sent: Wednesday, March 2, 2022 5:14 PM
To: Wendy Tyler <wtyler@countyofcolusa.com>
Cc: Jerry Brown <jbrown@sitesproject.org>; Marcia Kivett <MKivett@sitesproject.org>; Cheyanne Harris <charris@brwncald.com>
Subject: Re: Sites - Estimated Sales Tax Information and Colusa County BOS March Meeting Support

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Thanks Wendy, we will plan on just me for now. Do you need the presentation file to be sent out in advance? If so, when do you need the file?

Thanks!
JP

From: Wendy Tyler <wtyler@countyofcolusa.com>
Sent: Wednesday, March 2, 2022 11:10 AM
To: JP Robinette <jrobinette@sitesproject.org>
Cc: Jerry Brown <jbrown@sitesproject.org>; Marcia Kivett <MKivett@sitesproject.org>; Cheyanne Harris <charris@brwncald.com>
Subject: RE: Sites - Estimated Sales Tax Information and Colusa County BOS March Meeting Support

Good Morning JP,
Thank you for the information. I will pass it along to Gary. My thoughts are if you could just give a short project status report, and then get into the financial aspects that would be great. We are happy to have you alone, but if Jerry wants to attend we certainly have no objections. Looking forward to the presentation on the 15th.
Thanks,
Wendy

Wendy G. Tyler
County of Colusa
County Administrative Officer

(530) 458-0737

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information. It is solely for the use of the intended recipient(s). Unauthorized interception, review, use or disclosure is prohibited and may violate the law. If you are not the intended recipient, please contact the sender and destroy or delete all copies of the communication from your computer.

From: JP Robinette [mailto:jrobinette@sitesproject.org]
Sent: Wednesday, March 2, 2022 9:03 AM
To: Wendy Tyler <wtyler@countyofcolusa.com>
Cc: Jerry Brown <jbrown@sitesproject.org>; Marcia Kivett <MKivett@sitesproject.org>; Cheyanne Harris <charris@brwncald.com>
Subject: Sites - Estimated Sales Tax Information and Colusa County BOS March Meeting Support

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Hello Wendy,

I wanted to share with you the sales tax information we are able to pull out of our Class 4 cost estimate. The total sales tax is approximately **$57M** for alternative 1 and should be roughly the same for the other alternatives. If you are interested, there is table below showing the breakdown. We don't have granular information by County, and I know Gary was interested in fabrication but the sales tax is assumed to come from materials (fuel, steel, cement, aggregate, etc.) in the below analysis. Can you please share this information with Gary?

I also wanted to circle back with you and let you know that both Jerry and/or I can be available to support the discussion on March 15th. I am planning on presenting, but if you want Jerry there just let us know. You mentioned wanting a presentation that includes the long-term costs, which we can do. Please let me know if there are other topics you would like us to cover.

Best Regards,

JP Robinette, P.E.
Engineering and Construction Manager | Sites Reservoir Project
801-819-4306

Table 1 - Estimated Sales Tax by Facility

Facility	Alt 1 Feasibility Cost Estimate	Alt 1 Estimated Sales Tax
Develop Sites Reservoir, including Land and Project Roads, Clearing and Demolition	$227,400,000	$2,720,000
Other Roads (Project and Recreation)	$70,900,000	$1,340,000
South Road to Residents	$45,500,000	$600,000
Bridge	$172,700,000	$3,980,000
North Construction Access Road (Paved)	$29,300,000	$360,000
Construct Sites Dam and Golden Gate Dam	$1,056,800,000	$15,820,000
Construct Saddle Dams	$484,800,000	$8,540,000
Construct TRR	$212,000,000	$1,580,000

Funks Reservoir Dredging/Structures	$40,000,000	$160,000
Hunters Creek Release Structures	-	-
Construct I/O Structure and Tunnels for Reservoir	$263,600,000	$4,370,000
Construct TRR Pumping/Generating Plant	$112,700,000	$1,730,000
Construct Funks Pumping/Generating Plant	$114,400,000	$1,740,000
Construct Funks Release Channel	-	-
Red Bluff Pump Addition	$4,900,000	$170,000
Construct TRR Pipeline	$226,900,000	$5,960,000
Construction Dunnigan Pipeline to CBD (1,000 cfs)	$96,700,000	$2,160,000
Release Structure	-	-
Transmission Lines, Substations, Switchyards	$156,600,000	$3,480,000
General Property, including Recreation Areas and OM&R Facilities	$33,000,000	$2,370,000
Mitigation	$579,351,619	-
GCID Improvements	$6,600,000	$120,000
Total (2021$)	**$3,930,000,000**	**$57,000,000**

From: Briard, Monique [Monique.Briard@icf.com]
Sent: 3/8/2022 7:48:57 AM
To: Alicia Forsythe [aforsythe@sitesproject.org]; Lassell, Susan [Susan.Lassell@icf.com]; janis@horizonh2o.com
CC: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]; Kevin Spesert [kspesert@sitesproject.org]; Risse, Danielle [Danielle.Risse@hdrinc.com]; Havelaar, Christiaan [Christiaan.Havelaar@icf.com]
Subject: RE: Sites Project - Site Records

Hi Ali,

Yes, this will fit under our AB52 task that we have scope and budget to support AB52 work for the Authority. I will coordinate with the ICF team and Janis to get the work started.

Thanks,
Monique

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Monday, February 28, 2022 2:33 PM
To: Lassell, Susan <Susan.Lassell@icf.com>; janis@horizonh2o.com; Briard, Monique <Monique.Briard@icf.com>
Cc: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>; Kevin Spesert <kspesert@sitesproject.org>; Risse, Danielle <Danielle.Risse@hdrinc.com>; Havelaar, Christiaan <Christiaan.Havelaar@icf.com>
Subject: RE: Sites Project - Site Records

Thanks Janis.

Yes, lets proceed with this effort. I do wonder if a call with the ICF folks, yourself, and Andrew would be of value to make sure we are getting what he is asking for. Just want to make sure that we are meeting their needs.

Monique – I assume that this would fit within your current contract scope and budget. I could see this fitting under the EIR/EIS response to comments, AB 52, or Implementation of Cultural Compliance tasks. I am flexible on where this goes as it could fit in a few spots. Please let me know if you don't think this fits within your current scope and budget.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Project Authority | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Lassell, Susan <Susan.Lassell@icf.com>
Sent: Monday, February 28, 2022 2:13 PM
To: janis@horizonh2o.com; Alicia Forsythe <aforsythe@sitesproject.org>
Cc: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>; Kevin Spesert <kspesert@sitesproject.org>; Risse, Danielle <Danielle.Risse@hdrinc.com>; Havelaar, Christiaan <Christiaan.Havelaar@icf.com>; Briard, Monique <Monique.Briard@icf.com>
Subject: RE: Sites Project - Site Records

Looping Monique in for awareness

SUSAN LASSELL | +1.916.231.7612 direct | +1.415.238.9086 mobile

---

From: Janis Offermann <janis@horizonh2o.com>
Sent: Monday, February 28, 2022 1:20 PM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Cc: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>; Kevin Spesert <kspesert@sitesproject.org>; Lassell, Susan <Susan.Lassell@icf.com>; Risse, Danielle <Danielle.Risse@hdrinc.com>; Havelaar, Christiaan <Christiaan.Havelaar@icf.com>
Subject: RE: Sites Project - Site Records

Hi, Ali
We heard from Andrew, Yocha Dehe's GIS person last week, saying that he still didn't have sufficient GIS data to do their analysis. I had a very enlightening conversation with him about this and apparently he needs specific data listed in the meta data for each shape file so that he can query certain site characteristics (such as human remains). There are a number of blank fields in the meta data, but he was most concerned about the "notes" field, which would contain a list of the site attributes. I discussed this with the cultural team (ICF and HDR) at our biweekly call and we thought perhaps we could add data for specific elements (i.e., human remains) where we know that only a handful of sites would be involved. I followed up with another call to Andrew, and he really didn't like that idea, as it would continue to limit his ability to conduct a full analysis. He did say that he would be fine with just having the notes field filled in, and that he didn't have a preference for terminology, as long as it was consistent. He also noted that the tribe was not interested in the historic sites.

There are 105 sites that contain Native American resources. In order to fill in the notes data, we would need to come up with a nomenclature that would provide for consistency and then translate the site descriptions for use in the notes. I would be happy to fill in the notes to keep this moving, but I just chatted with Christiaan, who has led the effort at ICF to get Yocha Dehe the site records, and he thinks the GIS group would be involved since they are in charge of those kind of data. That works for me. We think the effort would take about 24 hours of time.

If you think this is a good approach, we would like your approval to move forward. Let me know if you have any questions.
Thanks!
Janis

Janis Offermann, MA, RPA
Cultural Resources Practice Leader
Horizon Water and Environment
1801 7th Street, Suite 100
Sacramento, CA 95811
530.220.4918 (cell)

From: Laverne Bill <LBill@yochadehe-nsn.gov>
Sent: Friday, February 18, 2022 10:38 AM
To: 'Alicia Forsythe' <aforsythe@sitesproject.org>; Victoria Delgado <VDelgado@yochadehe-nsn.gov>
Cc: 'Laurie Warner Herson' <laurie.warner.herson@phenixenv.com>; 'Kevin Spesert' <kspesert@sitesproject.org>; 'Janis Offermann' <janis@horizonh2o.com>
Subject: RE: Sites Project - Site Records

Alicia, thank you for all your help on this issue.

Laverne Bill
Director of Cultural Resources

Yocha Dehe Wintun Nation
PO Box 18 | Brooks, CA 95606
p 530.796.3400 | c 530.723.3891
f 530.796.2143
lbill@yochadehe-nsn.gov
www.yochadehe.org

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Thursday, February 17, 2022 11:29 AM
To: Laverne Bill <LBill@yochadehe-nsn.gov>; Victoria Delgado <VDelgado@yochadehe-nsn.gov>
Cc: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>; Kevin Spesert <kspesert@sitesproject.org>; Janis Offermann <janis@horizonh2o.com>
Subject: Sites Project - Site Records

[Warning External Sender]

Laverne – We have clearance from DWR to send you the site records! Thank you so much for your patience on this! We really appreciate it.

Janis – Can you work with ICF to transfer the files to Laverne?

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Project Authority | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Janis Offermann <janis@horizonh2o.com>
Sent: Thursday, February 17, 2022 8:58 AM
To: Laverne Bill <LBill@yochadehe-nsn.gov>; Kevin Spesert <kspesert@sitesproject.org>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>; Laurie Warner Herson <laurie.warner.herson@phenixenv.com>; Victoria Delgado <VDelgado@yochadehe-nsn.gov>
Subject: RE: Sites Reservoir monthly meeting today

OK . So let's cancel today, but hope for a good outcome at the meeting with DWR today and a reason to meet next week.
Thanks, everyone!
janis

From: Laverne Bill <LBill@yochadehe-nsn.gov>
Sent: Thursday, February 17, 2022 8:47 AM
To: Kevin Spesert <kspesert@sitesproject.org>
Cc: Janis Offermann <janis@horizonh2o.com>; Alicia Forsythe <aforsythe@sitesproject.org>; Laurie Warner Herson <laurie.warner.herson@phenixenv.com>; Victoria Delgado <VDelgado@yochadehe-nsn.gov>
Subject: Re: Sites Reservoir monthly meeting today

Good morning everyone. That works for me

Laverne Bill
Cultural Resources Department Manager
Tewe Kewe Cultural Center
PO Box 18, Brooks, CA 95606
c 530-723-3891
f 530-796-2143

Sent from my iPhone

On Feb 17, 2022, at 7:52 AM, Kevin Spesert <kspesert@sitesproject.org> wrote:

[Warning External Sender]

I recommend that we cancel today and reschedule pending the DWR meeting...maybe reschedule for the middle of next week if that works for the group.

Thanks!

Kevin

From: Janis Offermann <janis@horizonh2o.com>
Sent: Thursday, February 17, 2022 7:42 AM
To: Laverne Bill; Alicia Forsythe; Kevin Spesert; Laurie Warner Herson
Cc: Victoria Delgado
Subject: Sites Reservoir monthly meeting today

Good morning, everyone
Our monthly meeting is scheduled for today.

Laverne, Ali learned yesterday that there is to be a meeting this morning among DWR legal and management, including Anecita, to discuss getting the site information to you.
Ali, do you think we will have heard the results of that meeting by the time our meeting occurs at 2pm?

I wanted to bring this to everyone's attention, so we can decide whether we want to go ahead with the call, or cancel.

Also, FYI, I am scheduled to participate in an interview for a project with Horizon today at 1pm. Those interviews tend to only be an hour, but I might jump into our meeting a little late, if we choose to continue to have our meeting.

What does everyone think about continuing with the meeting today?

Thanks
janis

Janis Offermann
Cultural Resources Practice Leader
Horizon Water and Environment
1801 Seventh Street, Suite 100
Sacramento, CA 95811
530.220.4918 (cell)

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THIRD AMENDMENT TO 2019 RESERVOIR PROJECT AGREEMENT

BY AND AMONG

SITES PROJECT AUTHORITY

and

THE PROJECT AGREEMENT MEMBERS LISTED HEREIN

Dated as of January 1, 2022

THIS THIRD AMENDMENT TO 2019 RESERVOIR PROJECT AGREEMENT (this "Third Amendment"), dated as of January 1, 2022, by and among SITES PROJECT AUTHORITY, a joint powers authority duly organized and existing under the laws of the State of California (the "Authority"), and the project agreement members listed in the Agreement referenced below (the "Project Agreement Members") amends that certain 2019 Reservoir Project Agreement dated as of April 1, 2019 (the "Original Agreement"), as previously amended by the First Amendment to 2019 Reservoir Project Agreement dated as of January 1, 2020 (the "First Amendment") and by the Second Amendment to 2019 Reservoir Project Agreement dated as of July 1, 2020 (the "Second Amendment" and, together with the Original Agreement, the First Amendment and the Second Amendment, the "Agreement"), each by and among the Authority and the Project Agreement Members;

WITNESSETH:

WHEREAS, Authority and the Project Agreement Members have determined to approve an Amendment 3 Work Plan and to extend the term of the Agreement to December 31, 2024; and

WHEREAS, under Section 11 of the Agreement, the Agreement may be amended by a writing executed by the Authority and at least 75% of the total weighted vote of the then current Committee members as provided in Subsection 3(g); and

WHEREAS, except as provided below in Section 2.07 below, all acts, conditions and things required by law to exist, to have happened and to have been performed precedent to and in connection with the execution and the entering into of this Third Amendment do exist, have happened and have been performed in regular and due time, form and manner as required by law, and the parties hereto are now duly authorized to execute and enter into this Third Amendment;

NOW, THEREFORE, THIS THIRD AMENDMENT WITNESSETH, the Authority and the Project Agreement Members agree, as follows:

ARTICLE I

DEFINITIONS

Section 1.01. Definitions. All capitalized terms not otherwise defined herein shall have the meaning set forth in the Agreement.

ARTICLE II

AMENDMENTS TO AGREEMENT

Section 2.01. Project Agreement Members.

(a) Effective January 1, 2022, Exhibit A to the Agreement titled "Project Agreement Members" shall be removed and replaced with Exhibit A to this Third Amendment titled "Project Agreement Members."

Section 2.02. <u>Work Plan</u>.

(a) Effective January 1, 2022, the Amendment 2 Work Plan attached as Exhibit B to the Second Agreement shall be supplemented by the Work Plan attached hereto as Exhibit B (the "Amendment 3 Work Plan").

Section 2.03. <u>Funding</u>.

The Agreement is hereby amended to remove Section 4(a) in its entirety and replace it with the following:

"(a) <u>Budget</u>. The Committee shall, in cooperation with the Authority's Board, provide and approve both a Fiscal Year operating budget and reestablish a Phase 2 budget target, annually or more frequently as needed. The Project Agreement Members shall contribute their respective pro-rata share of the budgeted sums reflected in the Amendment 3 Work Plan in accordance with Section 5 of this Project Agreement. The contribution with respect to the pro-rata budgeted sums reflected in the Amendment 3 Work Plan shall be payable by each Project Agreement Member in three installments. The first installment shall be in an amount equal to $100 per acre-foot and shall be payable by no later than May 1, 2022. The second installment shall be in an amount equal to up to $140 per acre-foot and shall be payable by no later than January 1, 2023. The third installment shall be in an amount equal to up to $160 per acre-foot and shall be payable by no later than January 1, 2024. The obligation of the Project Agreement Members to make the second installment and third installment shall be conditioned upon the Authority and the Committee reapproving the Amendment 3 Work Plan or approving an amendment thereto by (i) an affirmative vote of at least 75% of the total number of Directors of the Authority Board and (ii) an affirmative vote of at least 75% of the total weighted vote as provided at Subsection 3(g) of the then-current Committee members, prior to January 1, 2023 or January 1, 2024, as applicable."

Section 2.04. <u>Future Development of the Proposed Sites Reservoir Project</u>.

The Agreement is hereby amended to add the below Sections 6(c), 6(d) and 6(e):

"(c) On or prior to March 31, 2022, each Project Agreement Member shall provide the Authority with a completed Project Agreement Member Project Payment Annex in the form attached hereto as Exhibit C. The Project Agreement Members, upon written request of the Authority, will meet with Authority staff from time to time, but not more often than once per calendar quarter, at which meeting, Authority staff will provide such Project Agreement Members with information regarding the then-current financing options being considered by the Authority and the expected terms of such financing options and the Project Agreement Member will provide updates regarding the status of the items identified in the Project Agreement Member Project Payment Annex.

(d) On or prior to June 30, 2023, each Project Agreement Member shall provide the Authority with a written update (the "Project Agreement Member Update") with respect to the progress in the implementation of such repayment option, the remaining actions to be taken and the estimated completion dates.

For those Project Agreement Members that identified special benefit assessments or land based charges imposed in an improvement district as a source of repayment for an Authority

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financing in its Project Agreement Member Payment Annex, the Project Agreement Member Update will also include a confirmation that such Project Agreement Member has the legal or contractual authority to discontinue water service to a water user that is delinquent in the payment of such special benefit assessment or land based charge, as applicable.

The Project Agreement Member Update will also include a confirmation that the Project Agreement Member has adopted a debt management policy that is compliant with California Government Code Section 8855(i), or, if such Project Agreement Member has not adopted such a debt management policy, the Project Agreement Member Update will include a statement that such Project Agreement Member expects to adopt such a debt management policy or an opinion from the general counsel to such Project Agreement Member to the effect that such a debt management policy is not required to be adopted by the Project Agreement Member to finance its share of the Project.

The Project Agreement Member Update shall also identify any change in the proposed source of repayment from the source identified in the Project Agreement Member Payment Annex previously submitted to the Authority.

(e) The Project Agreement Members that identified the repayment options of either special benefit assessments or land based charges imposed in an improvement district in their respective Project Agreement Member Payment Annexes agree to use best efforts to complete the necessary procedures to comply with the applicable requirements of Proposition 218 by no later than June 30, 2023."

Section 2.05. **Term**. The Agreement is hereby amended to remove Section 8(b) in its entirety and replace it with the following:

"(b) The term of this Project Agreement shall continue until December 31, 2024. In the event that this Third Amendment is not approved by Project Agreement Members with the requisite percentage of the total weighted vote as set forth in the Agreement by March 31, 2022, the Agreement shall be revived immediately upon approval by such requisite percentage, without any additional approval of the Project Agreement Members, and this Third Amendment shall become effective."

Section 2.06. **Admission of New Project Agreement Members**. The Agreement is hereby amended to add the following sentence to end of the paragraph included under Section 10 of the Agreement:

"The Authority shall have the right to charge Project Agreement Members executing the Agreement after a date determined by the Board a fee, which such fee shall be established by the Board, to compensate Project Agreement Members who executed the Agreement prior to a date determined by the Board, for providing funding for the initial phases of the Project."

Section 2.07. **California Environmental Quality Act**. The Agreement is hereby amended to add the following Section 18:

"Section 18 California Environmental Quality Act

Notwithstanding any provision of this Agreement, the Authority and the Project Agreement Members fully reserve all of their respective rights, powers, authority and discretion with respect to

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the proposed Project pursuant to the agencies' respective obligations and responsibilities under the California Environmental Quality Act ("CEQA"). This includes: (A) the power and discretion of the Authority as the lead agency, upon the completion of its CEQA review, to adopt feasible mitigation measures or a feasible project alternative, to approve the proposed Project based on the requisite CEQA findings, or to disapprove the proposed Project; and (B) the powers and discretion of the Project Agreement Members concerning the specific matters within their respective jurisdiction and authority acting as responsible agencies under CEQA. Any future decisions on whether to issue an approval of the proposed Project, and if so, how to issue such approval, will not be made until the agency making the decision has first completed its CEQA review of the proposed Project."

ARTICLE III

PROJECT AGREEMENT MEMBER PARTICIPATION

Section 3.01. **Project Agreement Participation**. Each Project Agreement Member shall specify its participation in the Sites Reservoir Project by indicating its storage amount in the Sites Reservoir Project on the signature page to this Third Amendment. Based upon the respective participation elections of the Project Agreement Members, the Authority shall update Exhibit A pursuant to Section 5 of the Agreement.

ARTICLE IV

MISCELLANEOUS

Section 4.01. **Effectiveness of Agreement**. Except as expressly amended by this Third Amendment, the Agreement is hereby ratified and confirmed and shall continue in full force and effect in accordance with the terms and provisions thereof. The amendments set forth in this Third Amendment shall be incorporated as part of the Agreement upon their effectiveness in accordance with Section 11 of the Agreement.

Section 4.02. **Execution in Several Counterparts**. This Third Amendment may be executed in any number of counterparts and each of such counterparts shall for all purposes be deemed to be an original; and all such counterparts, or as many of them as the Authority and the Project Agreement Members shall preserve undestroyed, shall together constitute but one and the same instrument.

Section 4.03. **Laws Governing Third Amendment**. The effect and meaning of this Third Amendment and the rights of all parties hereunder shall be governed by, and construed according to, the laws of the State.

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IN WITNESS WHEREOF, the Authority and Project Agreement Members hereto, pursuant to resolutions duly and regularly adopted by their respective governing bodies, have caused their names to be affixed by their proper and respective officers on the date shown below:

Dated: MARCH 8, 2022

SITES PROJECT AUTHORITY

By:
Name: JERRY BROWN
Title: EXECUTIVE DIRECTOR

ZONE 7 WATER AGENCY

Dated: 3/8/2022

DocuSigned by:
Valerie Pryor

(Project Agreement Member)

Name: Valerie Pryor
Title: General Manager

ZONE 7 WATER AGENCY
<u>REPRESENTATIVES</u>

The primary and alternate representatives of the ZONE 7 WATER AGENCY are identified below.

Primary Representative: Valerie Pryor

Alternate Representative: Amparo Flores

<u>ELECTION OF PARTICIPATION AMOUNT</u>

ZONE 7 WATER AGENCY hereby elects to participate in the Sites Reservoir Project in the below amount.

a) Annualized Acre-Foot (acre-feet of releases)	10,000
b) Storage Allocation (acre-feet of storage) ***Box "a" * 6.234***	62,340
c) Total Budget Authorization ***Box "a" * $400 per acre-foot***	$4,000,000

PARTICIPATION LEVELS ARE PRELIMINARY AND MAY BE ADJUSTED FOLLOWING REBALANCING

EXHIBIT A

PROJECT AGREEMENT MEMBERS

	Third Amendment Participation		
Participant	**Annualized Acre-Foot (Box "a")**	**Storage Allocation (Box "b")**	**Percent**
American Canyon, City of	4,000	24,936	2.4%
Antelope Valley-East Kern Water Agency	500	3,117	0.3
Carter Mutual Water Company #	300	1,870	0.2
Coachella Valley Water District	10,000	62,340	6.0
Colusa County	10,000	62,340	6.0
Colusa County Water District	10,073	62,795	6.0
Cortina Water District	450	2,805	0.3
Davis Water District	2,000	12,468	1.2
Desert Water Agency	6,500	40,521	3.9
Dunnigan Water District	2,972	18,527	1.8
Glenn-Colusa Irrigation District	5,000	31,170	3.0
Irvine Ranch Water District	1,000	6,234	0.6
LaGrande Water District	1,000	6,234	0.6
Metropolitan Water District of S. CA	50,000	311,700	29.8
Reclamation District 108	4,000	24,936	2.4
Rosedale-Rio Bravo Water Storage District	500	3,117	0.3
San Bernardino Valley Municipal Water District	21,400	133,408	12.8
San Gorgonio Pass Water Agency	14,000	87,276	8.4
Santa Clara Valley Water District	500	3,117	0.3
Santa Clarita Valley Water Agency	5,000	31,170	3.0
Westside Water District	5,375	33,508	3.2
Wheeler Ridge-Maricopa Water Storage District	3,050	19,014	1.8
Zone 7 Water Agency	10,000	62,340	6.0
Total:	**167,620**	**1,044,943**	**100.0**

Participation Percentages exclude State of California and United States Bureau of Reclamation share of the Project.

\# Denotes a non-public agency. Refer to California Corporations Code Section 14300 et. seq. with additional requirements provided in both the Public Utilities Code and Water Code.

EXHIBIT B

AMENDMENT 3 WORK PLAN

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Exhibit B
Reservoir Committee
2022, 2023 and 2024 Work Plan Summary

Reservoir Committee and Authority Board Annual Budget for FY 2022, FY 2023 and FY 2024 ($000)

Work Plan	Subject Area	2022	2023	2024	Total
Revenue	Participation Revenue	$16,762	$23,467	$26,819	**$67,048**
	Authority Board Seats	$505	$505	$505	**$1,515**
	Federal Revenue	$10,000	$20,000	$20,000	**$50,000**
	State Revenue	$18,300	$0	$0	**$18,300**
	Carry-over Funds	$6,000	$0	$0	**$6,000**
Revenue Total		$51,567	$43,972	$47,324	$142,863
Expenses	Communications	($477)	($477)	($495)	**($1,449)**
	Engineering	($18,715)	($30,516)	($20,485)	**($69,716)**
	External Affairs	($273)	($273)	($282)	**($828)**
	General Project Activities	($620)	($545)	($565)	**($1,730)**
	Permitting	($7,503)	($4,731)	($2595)	**($14,829)**
	Planning	($5,092)	($1,212)	($278)	**($6,582)**
	Program Operations	($8,594)	($7,440)	($5690)	**($21,724)**
	Real Estate	($902)	($903)	($935)	**($2,740)**
Expenses Total		($42,176)	($46,097)	($31,325)	($119,598)
Grand Total		**$9,391**	**($2,125)**	**$15,999**	**$23,265**

EXHIBIT C

FORM OF PROJECT AGREEMENT MEMBER
PROJECT PAYMENT ANNEX

Project Agreement Member: Zone 7 Water Agency

Date: 3/7/2022

Expected Source(s) of Repayment For Authority Financing (Check Each Box That Applies):	☐ Amounts Collected Through Department of Water Resources State Water Project Annual Statement of Charges	☐ Water Rates and Charges (Proposition 218 Compliance Required)	☑ Water Rates and Charges (Proposition 218 Compliance Not Required)	☐ Special Benefit Assessment-Districtwide	☐ Special Benefit Assessment Levied by District on Certain Lands	☐ Land-Based Charges Imposed Within an Improvement District
If An Improvement District, Has It Been Formed?	☐ Yes	☐ No	**If no, is it anticipated to be formed by June 30, 2023?** ☐ Yes ☐ No			
If A Special Benefit Assessment, Has the Special Benefit Been Approved In An Amount To Pay Debt Service On The Authority Financing?	☐ Yes	☐ No	**If no, is it anticipated to be presented for landowner approval by June 30, 2023?** ☐ Yes ☐ No			
Does the District Have A Debt Management Policy Compliant With Section 8855(i) of the California Government Code?	☑ Yes	☐ No				

From: Alicia Forsythe [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A6CDF06A7E904B65BAA21702A82AD329-AFORSYTHE]
Sent: 3/8/2022 11:52:42 AM
To: Kevin Spesert [kspesert@sitesproject.org]; Risse, Danielle [Danielle.Risse@hdrinc.com]; Arsenijevic, Jelica [Jelica.Arsenijevic@hdrinc.com]; Fisher, Linda [linda.fisher@hdrinc.com]; Janis Offermann (Janis@Horizonh2o.com) [Janis@Horizonh2o.com]; Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Subject: FW: Sites Reservoir Project YD-04142017-03
Attachments: Sites Reservoir Project YD-04142017-03 - Monitors Needed and Continue Updates.pdf

AB 52 response from Yocha Dehe on geotech. They request Tribal monitoring, which we will of course do.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Project Authority | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Victoria Delgado <VDelgado@yochadehe-nsn.gov>
Sent: Tuesday, March 8, 2022 11:24 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Cc: Rebekah Canavesio <RCanavesio@yochadehe-nsn.gov>; Marisela Hernandez <MHernandez@yochadehe-nsn.gov>
Subject: Sites Reservoir Project YD-04142017-03

Hello Alicia;

Please see the attached letter for Yocha Dehe Wintun Nation's response in regards to the Sites Reservoir Project. Additionally, a hardcopy of the response will be mailed for your records.

If you have any questions, please let us know.

Kind Regards,
Victoria Delgado
CRD Administrative Assistant

Yocha Dehe Wintun Nation
PO Box 18 | Brooks, CA 95606
p 530.796.0118 | c 530.419.9152 | f 530.796.2143
vdelgado@yochadehe-nsn.gov
www.yochadehe.org

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YOCHA DEHE
CULTURAL RESOURCES

March 7, 2022

Sites Project Authority
Attn: Alicia Forsythe, Environmental Planning & Permitting Manager
P.O. Box 517
Maxwell, CA 95955

RE: Sites Reservoir Project YD-04142017-03

Dear Ms. Forsythe:

Thank you for the project notification dated, February 7, 2022, regarding cultural information on or near the proposed Sites Reservoir Project. We appreciate your effort to contact us and wish to respond.

The Cultural Resources Department has reviewed the study and concluded that the project is within the aboriginal territories of the Yocha Dehe Wintun Nation. Therefore, we have a cultural interest and authority in the proposed project area.

Based on the information provided, the Tribe has concerns that the project could impact known cultural resources. Yocha Dehe Wintun Nation highly recommends including cultural monitors during the geotechnical work. Additionally, we would like to continue to receive updates on the project.

To setup a monitoring agreement, please contact:

Laverne Bill, Director of Cultural Resources
Yocha Dehe Wintun Nation
Phone: (530) 723-3891
Email: lbill@yochadehe-nsn.gov

Please refer to identification number YD–04142017-03 in any correspondence concerning this project.

Thank you for providing us the opportunity to comment.

Sincerely,

DocuSigned by:

5FD632FDB9C34EA...

Tribal Historic Preservation Officer

From: JP Robinette [jrobinette@sitesproject.org]
Sent: 3/8/2022 1:19:54 PM
To: Alicia Forsythe [aforsythe@sitesproject.org]; Luu, Henry [Henry.Luu@hdrinc.com]; Heydinger, Erin [erin.heydinger@hdrinc.com]; Jerry Brown [jbrown@sitesproject.org]
CC: Spranza, John [john.spranza@hdrinc.com]
Subject: Re: O&E WG - Deadpool

Same Henry, looks good to me.

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Tuesday, March 8, 2022 1:15 PM
To: Luu, Henry <Henry.Luu@hdrinc.com>; Heydinger, Erin <erin.heydinger@hdrinc.com>; Jerry Brown <jbrown@sitesproject.org>; JP Robinette <jrobinette@sitesproject.org>
Cc: Spranza, John <john.spranza@hdrinc.com>
Subject: RE: O&E WG - Deadpool

I am good with this Henry. I don't have any suggestions.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Project Authority | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Luu, Henry <Henry.Luu@hdrinc.com>
Sent: Tuesday, March 8, 2022 1:10 PM
To: Heydinger, Erin <erin.heydinger@hdrinc.com>; Alicia Forsythe <aforsythe@sitesproject.org>; Jerry Brown <jbrown@sitesproject.org>; JP Robinette <jrobinette@sitesproject.org>
Cc: Spranza, John <john.spranza@hdrinc.com>
Subject: RE: O&E WG - Deadpool

All, I drafted and placed an agenda for tomorrow's O&E meeting on SharePoint at INT-Ad Hoc Ops and Eng WG-AGN-20220309.docx. There are only two items to be discussed, and will probably keep us within an hour:

1. Geotech Priority P1A and P1B – Goals and Objectives (25 mins)
2. Considerations for Reducing Reservoir Deadpool (20 mins)

Can you review and let me know if any edits are required? I plan to send this agenda to the members by COB today.

Thank you,
Henry H. Luu, PE
D 916.679.8857 M 916.754.7566

hdrinc.com/follow-us

From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Monday, March 7, 2022 8:14 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>; Jerry Brown <jbrown@sitesproject.org>; JP Robinette <jrobinette@sitesproject.org>

Cc: Spranza, John <John.Spranza@hdrinc.com>; Luu, Henry <henry.luu@hdrinc.com>
Subject: RE: O&E WG - Deadpool

Will do!

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

hdrinc.com/follow-us

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Monday, March 7, 2022 6:31 AM
To: Jerry Brown <jbrown@sitesproject.org>; Heydinger, Erin <erin.heydinger@hdrinc.com>; JP Robinette <jrobinette@sitesproject.org>
Cc: Spranza, John <john.spranza@hdrinc.com>; Luu, Henry <henry.luu@hdrinc.com>
Subject: RE: O&E WG - Deadpool

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Erin – Can you do some work with Henry and team on the lowest of the low number? This would be both the I/O Tower releases but also Stone Corral Creek releases. John can point you to the mitigation measure in the RDEIR/SDEIS that identifies some possible engineering solutions to the potentially high metal concentrations in releases in Stone Corral creek.

Jerry – We have a number of factors in play on picking the physical lowest. These include both the I/O tower released but also the releases into Stone Corral creek. We expect to need to design a higher intake for releases into Stone Corral creek to avoid higher metal concentrations in the bottom of the reservoir (which are still uncertain, but ICF has cautioned us that they are possible). We also want to be cautious to pick the lowest of the low as we need to have water to continue to release into the creeks. So with all of these things, we went with 60 TAF as something lower, but not driving the reservoir all the way to the bottom and then not having water to release into Stone Corral creek to meet our environmental requirements. I think we can get an estimate now, but will be able to get a better sense of the lowest possible level with new LiDAR and a little more design work next year and have this ready in time to make final investment decisions.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Project Authority | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Jerry Brown <jbrown@sitesproject.org>
Sent: Friday, March 4, 2022 4:43 PM
To: Heydinger, Erin <erin.heydinger@hdrinc.com>; JP Robinette <jrobinette@sitesproject.org>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>; Spranza, John <john.spranza@hdrinc.com>; Luu, Henry <henry.luu@hdrinc.com>
Subject: Re: O&E WG - Deadpool

Two things:

1. I added a comment that the 120TAF was for consideration of reservoir WQ and receiving water WQ effects. I'm guessing the bigger concern is with the ability to discharge this water to another water body and the effect its composition would have on that water body.
2. Why 60 TAF? Is that the physical low point at which we will be able to cost effectively place the lowest port on our I/O? I say we use whatever is the physical constraint for lowest point. Since water is released from the reservoir by gravity we should know what elevation is the lowest that the lowest most port on the I/O can be located and we should be able to assess how much pooled water there would be in the reservoir when the level is at that elevation. We need to get away WQ being the driver because of the TC Canal/CBD dilution/mixing effect over the 40 miles of conveyance.

From: "Heydinger, Erin" <Erin.Heydinger@hdrinc.com>
Date: Friday, March 4, 2022 at 2:43 PM
To: JP Robinette <jrobinette@sitesproject.org>, Jerry Brown <jbrown@sitesproject.org>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>, "Spranza, John" <john.spranza@hdrinc.com>, "Luu, Henry" <henry.luu@hdrinc.com>
Subject: RE: O&E WG - Deadpool

Hi all,

I started a draft presentation for the O&E WG and I drafted slides on deadpool. Henry – I have one slide in there on engineering implications I'm hoping you can help with.

Link: OpsEngWG-20220309.pptx

Thanks!
Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: JP Robinette <jrobinette@sitesproject.org>
Sent: Tuesday, March 1, 2022 1:51 PM
To: Jerry Brown <jbrown@sitesproject.org>; Heydinger, Erin <erin.heydinger@hdrinc.com>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>; Spranza, John <john.spranza@hdrinc.com>; Luu, Henry <Henry.Luu@hdrinc.com>
Subject: Re: O&E WG - Deadpool

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1. No reason to wait if we are sure we can offer the storage. It is unclear to me if this would be offered to new participants now or held for Reclamation, but we can discuss that.
2. Yes, that would be the same thing, what I was looking for was the 60taf estimate (missed the meeting/behind on emails). That is excellent news.

From: Jerry Brown <jbrown@sitesproject.org>
Sent: Tuesday, March 1, 2022 1:46 PM
To: JP Robinette <jrobinette@sitesproject.org>; Heydinger, Erin <erin.heydinger@hdrinc.com>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>; Spranza, John <john.spranza@hdrinc.com>; Luu, Henry

<Henry.Luu@hdrinc.com>
Subject: Re: O&E WG - Deadpool

1. Why wait?
2. Isn't a reduction to 60taf deadpool from the current 120taf deadpool equal to gaining 60taf additional storage capacity? Am I missing something?

From: JP Robinette <jrobinette@sitesproject.org>
Date: Tuesday, March 1, 2022 at 1:23 PM
To: Jerry Brown <jbrown@sitesproject.org>, "Heydinger, Erin" <erin.heydinger@hdrinc.com>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>, "Spranza, John" <john.spranza@hdrinc.com>, "Luu, Henry" <Henry.Luu@hdrinc.com>
Subject: Re: O&E WG - Deadpool

A couple of questions:
1. I assume the deadpool assumption would be finalized during the next rebalancing, not the current round?
2. Have we estimated a range of storage capacity that could be made available by this analysis?

Thanks,
JP

From: Jerry Brown <jbrown@sitesproject.org>
Sent: Tuesday, March 1, 2022 12:34 PM
To: Heydinger, Erin <erin.heydinger@hdrinc.com>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>; Spranza, John <john.spranza@hdrinc.com>; Luu, Henry <Henry.Luu@hdrinc.com>; JP Robinette <jrobinette@sitesproject.org>
Subject: Re: O&E WG - Deadpool

Ok, sounds good except let's ask the O&E for their concurrence with the technical soundness of moving ahead with incorporating a smaller deadpool in conjunction with the other changes being implemented in the updated modeling.

Technical basis is:
1. Infrequent occurrence
2. Dilution power of TCC vs direct discharge from Delevan pipeline
3. No difference in facilities

The policy/risk evaluation can occur once we have a total picture of all the effects from the updated modeling.

From: "Heydinger, Erin" <Erin.Heydinger@hdrinc.com>
Date: Tuesday, March 1, 2022 at 11:17 AM
To: Jerry Brown <jbrown@sitesproject.org>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>, "Spranza, John" <john.spranza@hdrinc.com>, "Luu, Henry" <Henry.Luu@hdrinc.com>, JP Robinette <jrobinette@sitesproject.org>
Subject: O&E WG - Deadpool

Hi Jerry,

I had a chance to talk to Ali about bringing some of the considerations for dead pool reduction to next week's WG meeting and she agreed now is a good time for this. I am thinking we would have ~3-5 slides on considerations and open it up to discussion for the participants – we wouldn't be asking for any formal recommendation.

If this works for you, I will add it to Smartsheet.

Henry and JP – FYI.

Thanks!
Erin

Erin Heydinger, PE, PMP
Project Manager - Water

HDR
2379 Gateway Oaks Dr, #200
Sacramento, CA 95833
D 916.679.8863 M 651.307.9758

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From: Micko, Steve/SAC [Steve.Micko@jacobs.com]
Sent: 3/10/2022 8:12:28 AM
To: Alicia Forsythe [aforsythe@sitesproject.org]; Heydinger, Erin [erin.heydinger@hdrinc.com]
CC: Leaf, Rob/SAC [Rob.Leaf@jacobs.com]; Winslow, Kyle/COS [Kyle.Winslow@jacobs.com]
Subject: Sites Reservoir Water Quality Model

Hi Ali and Erin,

Kyle Winslow (cc'd) and I discussed the potential for a Sites Reservoir water quality model that simulates full nutrient and algal kinetics, DO, pH, etc.
With respect to needs, streamflow water quality data is the highest priority. I believe most of this is already available (from our water quality effects analysis).
Once we have all streamflow water quality data, a quasi-validated reservoir water quality model could be developed in roughly six months, pending model assumptions and schedules.

Let us know if you have any questions.

Best,
Steve

Steve Micko, PE | Jacobs | Project Manager and Water Group Leader
O:916.286.0358 | M:408.834.6614 | Steve.Micko@jacobs.com
2485 Natomas Park Drive Suite 600 | Sacramento, CA 95833

Upcoming PTO: Mar 30 – Apr 3

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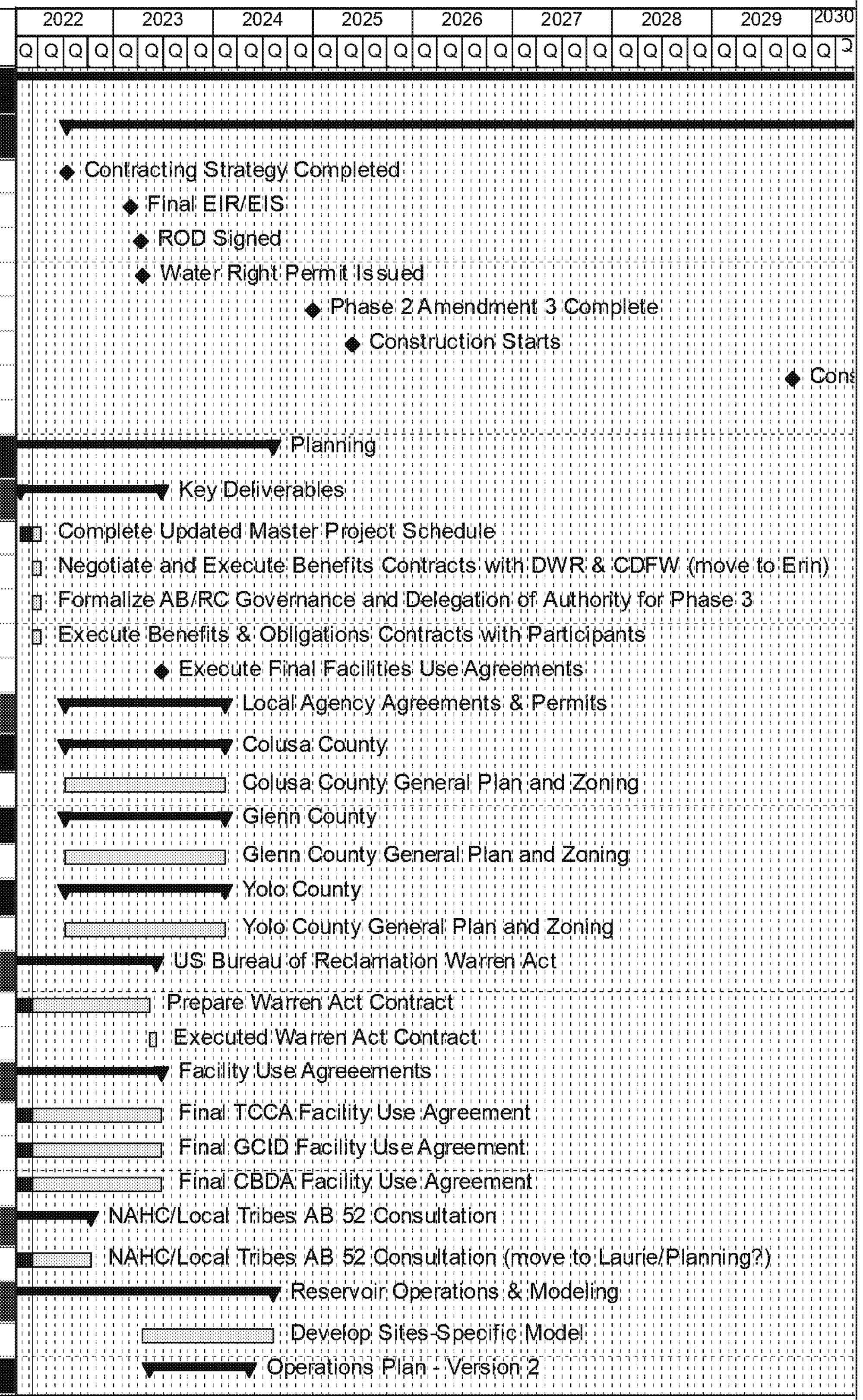
Sites Reservoir Project

Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
1		**Sites Reservoir Project**	2188	02-Jan-20 A	03-Sep-30
2		**Project Milestones**	2103	13-Jul-22	03-Sep-30
3	WP3-015	Contracting Strategy Completed	0		13-Jul-22
4	MS-250-FE	Final EIR/EIS	0		02-Mar-23
5	MS-450-RD	ROD Signed	0		10-Apr-23
6	WR-185	Water Right Permit Issued	0		17-Apr-23
7	WP3-010	Phase 2 Amendment 3 Complete	0		31-Dec-24*
8	MS-500-CS	Construction Starts	0	23-May-25	
9	MS-510-CC	Construction Complete	0		25-Oct-29
10	MS-600-PB	Public Beneficial Occupancy - Sites Program	0		03-Sep-30
11		**Planning**	606	01-Sep-20 A	09-Aug-24
12		**Key Deliverables**	325	24-Jan-22 A	28-Jun-23
13	KD-1130	Complete Updated Master Project Schedule	21	24-Jan-22 A	12-Apr-22
14	KD-1220	Negotiate and Execute Benefits Contracts with DWR & CDFW (move to Erin)	21	14-Mar-22	12-Apr-22
15	KD-1290	Formalize AB/RC Governance and Delegation of Authority for Phase 3	21	14-Mar-22	12-Apr-22
16	KD-1300	Execute Benefits & Obligations Contracts with Participants	21	14-Mar-22	12-Apr-22
17	KD-1230	Execute Final Facilities Use Agreements	0		28-Jun-23
18		**Local Agency Agreements & Permits**	400	08-Jul-22	14-Feb-24
19		**Colusa County**	400	08-Jul-22	14-Feb-24
20	LOC-050	Colusa County General Plan and Zoning	400	08-Jul-22	14-Feb-24
21		**Glenn County**	400	08-Jul-22	14-Feb-24
22	LOC-140	Glenn County General Plan and Zoning	400	08-Jul-22	14-Feb-24
23		**Yolo County**	400	08-Jul-22	14-Feb-24
24	LOC-90	Yolo County General Plan and Zoning	400	08-Jul-22	14-Feb-24
25		**US Bureau of Reclamation Warren Act**	311	01-Jun-21 A	08-Jun-23
26	FED-090	Prepare Warren Act Contract	291	01-Jun-21 A	10-May-23
27	FED-110	Executed Warren Act Contract	20	11-May-23	08-Jun-23
28		**Facility Use Agreements**	325	27-Aug-21 A	28-Jun-23
29	FO-1020	Final TCCA Facility Use Agreement	325	27-Aug-21 A	28-Jun-23
30	FO-1030	Final GCID Facility Use Agreement	325	27-Aug-21 A	28-Jun-23
31	FO-1040	Final CBDA Facility Use Agreement	325	27-Aug-21 A	28-Jun-23
32		**NAHC/Local Tribes AB 52 Consultation**	148	01-Sep-20 A	12-Oct-22
33	STA-120	NAHC/Local Tribes AB 52 Consultation (move to Laurie/Planning?)	148	01-Sep-20 A	12-Oct-22
34		**Reservoir Operations & Modeling**	606	01-Nov-20 A	09-Aug-24
35	OS-1150	Develop Sites-Specific Model	344	18-Apr-23	09-Aug-24
36		**Operations Plan - Version 2**	260	12-May-23	09-May-24



Remaining Level of Effort | Remaining Work | Summary
Actual Level of Effort | Critical Remaining Work
Actual Work | Milestone

Project ID: Sites / Project Name: Sites Reservoir Project
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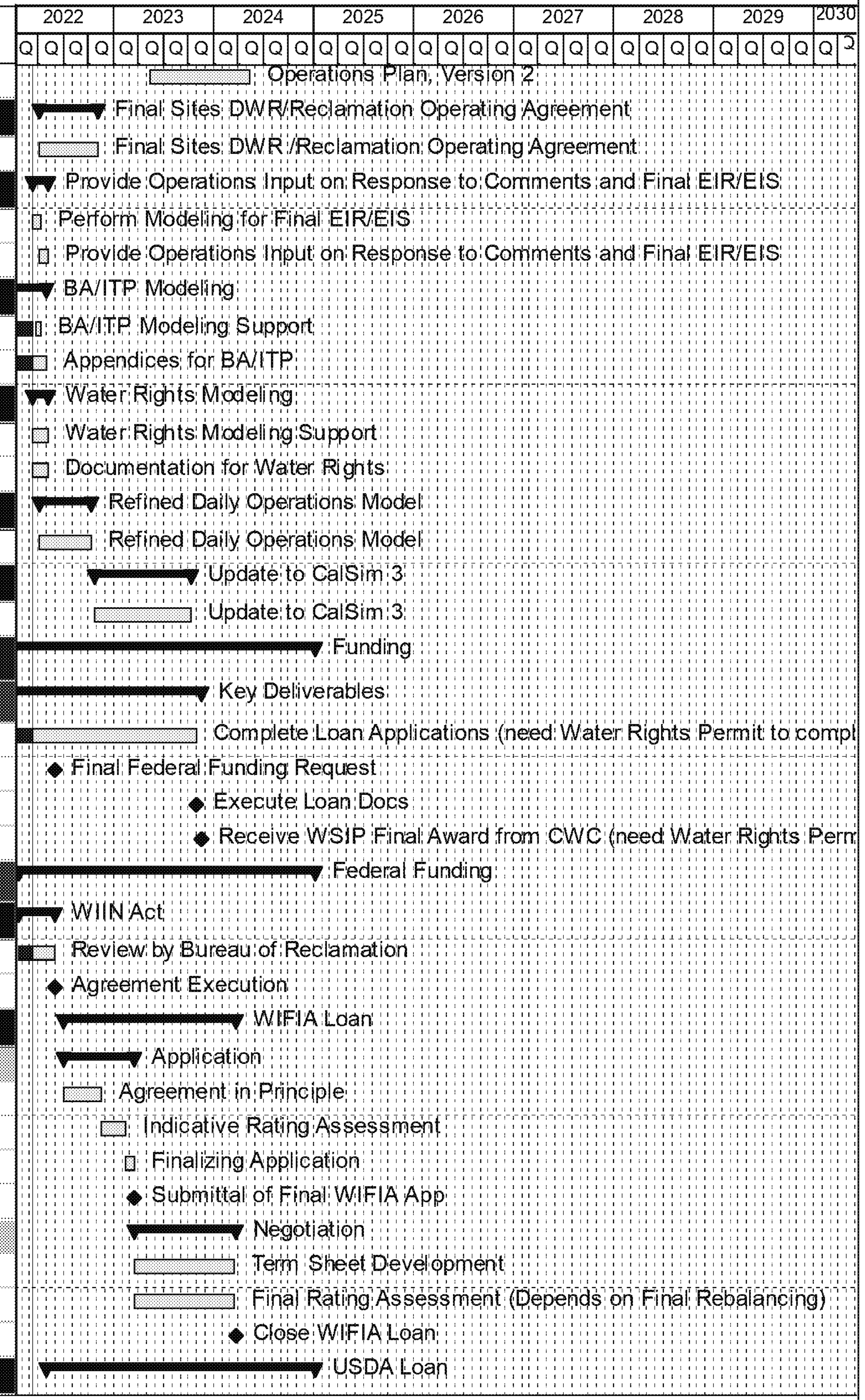
Sites Reservoir Project

Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
37	KD-1510	Operations Plan, Version 2	260	12-May-23	09-May-24
38	Final Sites DWR/Reclamation Operating Agreement		151	04-Apr-22	04-Nov-22
39	OP-1005	Final Sites DWR /Reclamation Operating Agreement	151	04-Apr-22	04-Nov-22
40	Provide Operations Input on Response to Comments and Final EIR/EIS		37	14-Mar-22	04-May-22
41	FO-1110	Perform Modeling for Final EIR/EIS	21	14-Mar-22	12-Apr-22
42	FO-1080	Provide Operations Input on Response to Comments and Final EIR/EIS	20	07-Apr-22	04-May-22
43	BA/ITP Modeling		34	01-Nov-20 A	29-Apr-22
44	OP-450	BA/ITP Modeling Support	13	01-Nov-20 A	11-Apr-22
45	OP-360	Appendices for BA/ITP	34	01-Apr-21 A	29-Apr-22
46	Water Rights Modeling		40	14-Mar-22	09-May-22
47	A1200	Water Rights Modeling Support	40	14-Mar-22	09-May-22
48	A1210	Documentation for Water Rights	40	14-Mar-22	09-May-22
49	Refined Daily Operations Model		130	07-Apr-22	11-Oct-22
50	A1220	Refined Daily Operations Model	130	07-Apr-22	11-Oct-22
51	Update to CalSim 3		240	26-Oct-22	11-Oct-23
52	A1230	Update to CalSim 3	240	26-Oct-22	11-Oct-23
53	Funding		713	03-Jan-22 A	07-Jan-25
54	Key Deliverables		423	03-Jan-22 A	17-Nov-23
55	KD-1270	Complete Loan Applications (need Water Rights Permit to complete)	411	03-Jan-22 A	31-Oct-23
56	KD-1260	Final Federal Funding Request	0		31-May-22
57	KD-1280	Execute Loan Docs	0		31-Oct-23
58	KD-1310	Receive WSIP Final Award from CWC (need Water Rights Permit to complete)	0		17-Nov-23
59	Federal Funding		713	17-Jan-22 A	07-Jan-25
60	WIIN Act		55	17-Jan-22 A	31-May-22
61	WIIN-1120	Review by Bureau of Reclamation	55	17-Jan-22 A	31-May-22
62	WIIN-1140	Agreement Execution	0		31-May-22
63	WIFIA Loan		431	01-Jul-22	25-Mar-24
64	Application		176	01-Jul-22	20-Mar-23
65	WIFIA-110	Agreement in Principle	95	01-Jul-22	16-Nov-22
66	WIFIA-120	Indicative Rating Assessment	60	17-Nov-22	15-Feb-23
67	WIFIA-130	Finalizing Application	30	16-Feb-23	17-Mar-23
68	WIFIA-140	Submittal of Final WIFIA App	0		20-Mar-23
69	Negotiation		255	20-Mar-23	25-Mar-24
70	WIFIA-210	Term Sheet Development	250	20-Mar-23	18-Mar-24
71	WIFIA-220	Final Rating Assessment (Depends on Final Rebalancing)	250	20-Mar-23	18-Mar-24
72	WIFIA-230	Close WIFIA Loan	0		25-Mar-24
73	USDA Loan		679	02-May-22	07-Jan-25



Remaining Level of Effort
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Summary

Project ID: Sites / Project Name: Sites Reservoir Project
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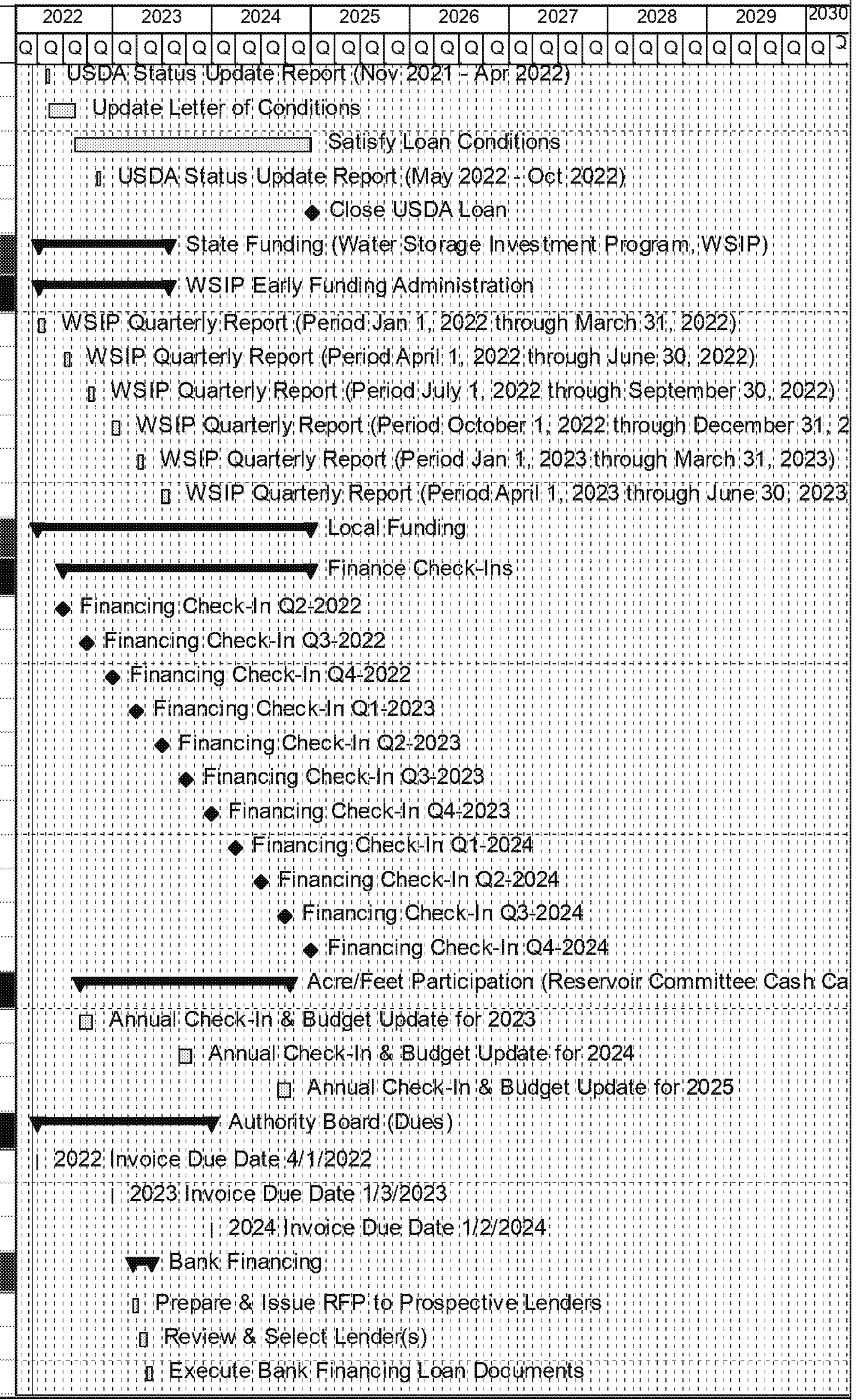
Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
74	USDA-1030	USDA Status Update Report (Nov 2021 - Apr 2022)	10	02-May-22	13-May-22
75	USDA-1050	Update Letter of Conditions	65	16-May-22	16-Aug-22
76	USDA-1060	Satisfy Loan Conditions	599	17-Aug-22	31-Dec-24
77	USDA-1040	USDA Status Update Report (May 2022 - Oct 2022)	10	04-Nov-22	18-Nov-22
78	USDA-1070	Close USDA Loan	0		07-Jan-25
79	**State Funding (Water Storage Investment Program, WSIP)**		329	04-Apr-22	25-Jul-23
80	**WSIP Early Funding Administration**		329	04-Apr-22	25-Jul-23
81	WSIP-1210	WSIP Quarterly Report (Period Jan 1, 2022 through March 31, 2022)	15	04-Apr-22	22-Apr-22
82	WSIP-1220	WSIP Quarterly Report (Period April 1, 2022 through June 30, 2022)	15	06-Jul-22	26-Jul-22
83	WSIP-1230	WSIP Quarterly Report (Period July 1, 2022 through September 30, 2022)	15	03-Oct-22	24-Oct-22
84	WSIP-1240	WSIP Quarterly Report (Period October 1, 2022 through December 31, 2022)	15	03-Jan-23	24-Jan-23
85	WSIP-1250	WSIP Quarterly Report (Period Jan 1, 2023 through March 31, 2023)	15	03-Apr-23	21-Apr-23
86	WSIP-1260	WSIP Quarterly Report (Period April 1, 2023 through June 30, 2023)	15	05-Jul-23	25-Jul-23
87	**Local Funding**		695	01-Apr-22	31-Dec-24
88	**Finance Check-Ins**		631	30-Jun-22	31-Dec-24
89	FC-1250	Financing Check-In Q2-2022	0		30-Jun-22*
90	FC-1260	Financing Check-In Q3-2022	0		30-Sep-22
91	FC-1270	Financing Check-In Q4-2022	0		30-Dec-22
92	FC-1280	Financing Check-In Q1-2023	0		31-Mar-23
93	FC-1290	Financing Check-In Q2-2023	0		30-Jun-23
94	FC-1300	Financing Check-In Q3-2023	0		29-Sep-23
95	FC-1310	Financing Check-In Q4-2023	0		29-Dec-23
96	FC-1320	Financing Check-In Q1-2024	0		29-Mar-24
97	FC-1330	Financing Check-In Q2-2024	0		28-Jun-24
98	FC-1340	Financing Check-In Q3-2024	0		30-Sep-24
99	FC-1350	Financing Check-In Q4-2024	0		31-Dec-24
100	**Acre/Feet Participation (Reservoir Committee Cash Calls)**		530	06-Sep-22	14-Oct-24
101	LF-1100	Annual Check-In & Budget Update for 2023	30	06-Sep-22	18-Oct-22
102	LF-1120	Annual Check-In & Budget Update for 2024	30	06-Sep-23	18-Oct-23
103	LF-1140	Annual Check-In & Budget Update for 2025	30	03-Sep-24	14-Oct-24
104	**Authority Board (Dues)**		438	01-Apr-22	02-Jan-24
105	LF-2100	2022 Invoice Due Date 4/1/2022	1	01-Apr-22	01-Apr-22*
106	LF-2120	2023 Invoice Due Date 1/3/2023	1	03-Jan-23	03-Jan-23*
107	LF-2140	2024 Invoice Due Date 1/2/2024	1	02-Jan-24	02-Jan-24*
108	**Bank Financing**		50	20-Mar-23	26-May-23
109	BF-1100	Prepare & Issue RFP to Prospective Lenders	15	20-Mar-23	07-Apr-23
110	BF-1120	Review & Select Lender(s)	20	10-Apr-23	05-May-23
111	BF-1140	Execute Bank Financing Loan Documents	15	08-May-23	26-May-23



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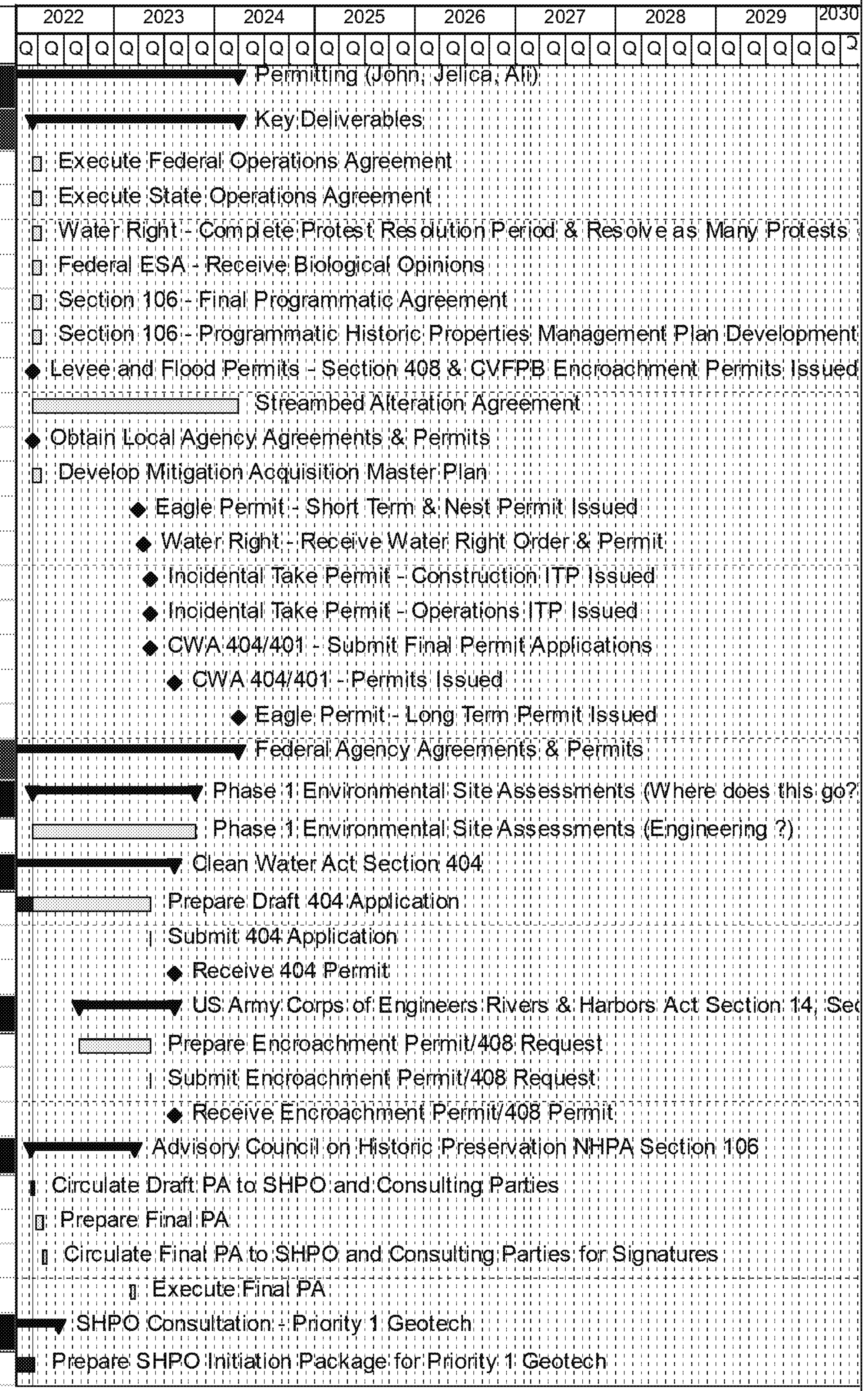
Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
112		**Permitting (John, Jelica, Ali)**	509	04-Jan-21 A	26-Mar-24
113		**Key Deliverables**	509	14-Mar-22	26-Mar-24
114	KD-1240	Execute Federal Operations Agreement	21	14-Mar-22	12-Apr-22
115	KD-1250	Execute State Operations Agreement	21	14-Mar-22	12-Apr-22
116	KD-1320	Water Right - Complete Protest Resolution Period & Resolve as Many Protests as Possible	21	14-Mar-22	12-Apr-22
117	KD-1340	Federal ESA - Receive Biological Opinions	21	14-Mar-22	12-Apr-22
118	KD-1350	Section 106 - Final Programmatic Agreement	21	14-Mar-22	12-Apr-22
119	KD-1360	Section 106 - Programmatic Historic Properties Management Plan Development	21	14-Mar-22	12-Apr-22
120	KD-1410	Levee and Flood Permits - Section 408 & CVFPB Encroachment Permits Issued	0		14-Mar-22
121	KD-1420	Streambed Alteration Agreement	509	14-Mar-22	26-Mar-24
122	KD-1450	Obtain Local Agency Agreements & Permits	0		14-Mar-22
123	KD-1460	Develop Mitigation Acquisition Master Plan	21	14-Mar-22	12-Apr-22
124	KD-1430	Eagle Permit - Short Term & Nest Permit Issued	0		31-Mar-23
125	KD-1330	Water Right - Receive Water Right Order & Permit	0		17-Apr-23
126	KD-1370	Incidental Take Permit - Construction ITP Issued	0		11-May-23
127	KD-1380	Incidental Take Permit - Operations ITP Issued	0		11-May-23
128	KD-1390	CWA 404/401 - Submit Final Permit Applications	0		11-May-23
129	KD-1400	CWA 404/401 - Permits Issued	0		07-Aug-23
130	KD-1440	Eagle Permit - Long Term Permit Issued	0		26-Mar-24
131		**Federal Agency Agreements & Permits**	509	11-Jan-21 A	26-Mar-24
132		**Phase 1 Environmental Site Assessments (Where does this go?)**	421	14-Mar-22	23-Oct-23
133	FED-010	Phase 1 Environmental Site Assessments (Engineering ?)	421	14-Mar-22	23-Oct-23
134		**Clean Water Act Section 404**	352	04-Feb-21 A	07-Aug-23
135	404-050	Prepare Draft 404 Application	291	04-Feb-21 A	10-May-23
136	404-120	Submit 404 Application	1	11-May-23	11-May-23
137	404-130	Receive 404 Permit	0		07-Aug-23
138		**US Army Corps of Engineers Rivers & Harbors Act Section 14, Section 408**	233	31-Aug-22	07-Aug-23
139	408-150	Prepare Encroachment Permit/408 Request	172	31-Aug-22	10-May-23
140	408-160	Submit Encroachment Permit/408 Request	1	11-May-23	11-May-23
141	408-170	Receive Encroachment Permit/408 Permit	0		07-Aug-23
142		**Advisory Council on Historic Preservation NHPA Section 106**	252	07-Mar-22 A	16-Mar-23
143	106-072	Circulate Draft PA to SHPO and Consulting Parties	5	07-Mar-22 A	18-Mar-22
144	106-081	Prepare Final PA	20	21-Mar-22	18-Apr-22
145	106-092	Circulate Final PA to SHPO and Consulting Parties for Signatures	10	19-Apr-22	02-May-22
146	106-102	Execute Final PA	10	03-Mar-23	16-Mar-23
147		**SHPO Consultation - Priority 1 Geotech**	66	02-Aug-21 A	15-Jun-22
148	SHPO-240	Prepare SHPO Initiation Package for Priority 1 Geotech	5	02-Aug-21 A	18-Mar-22



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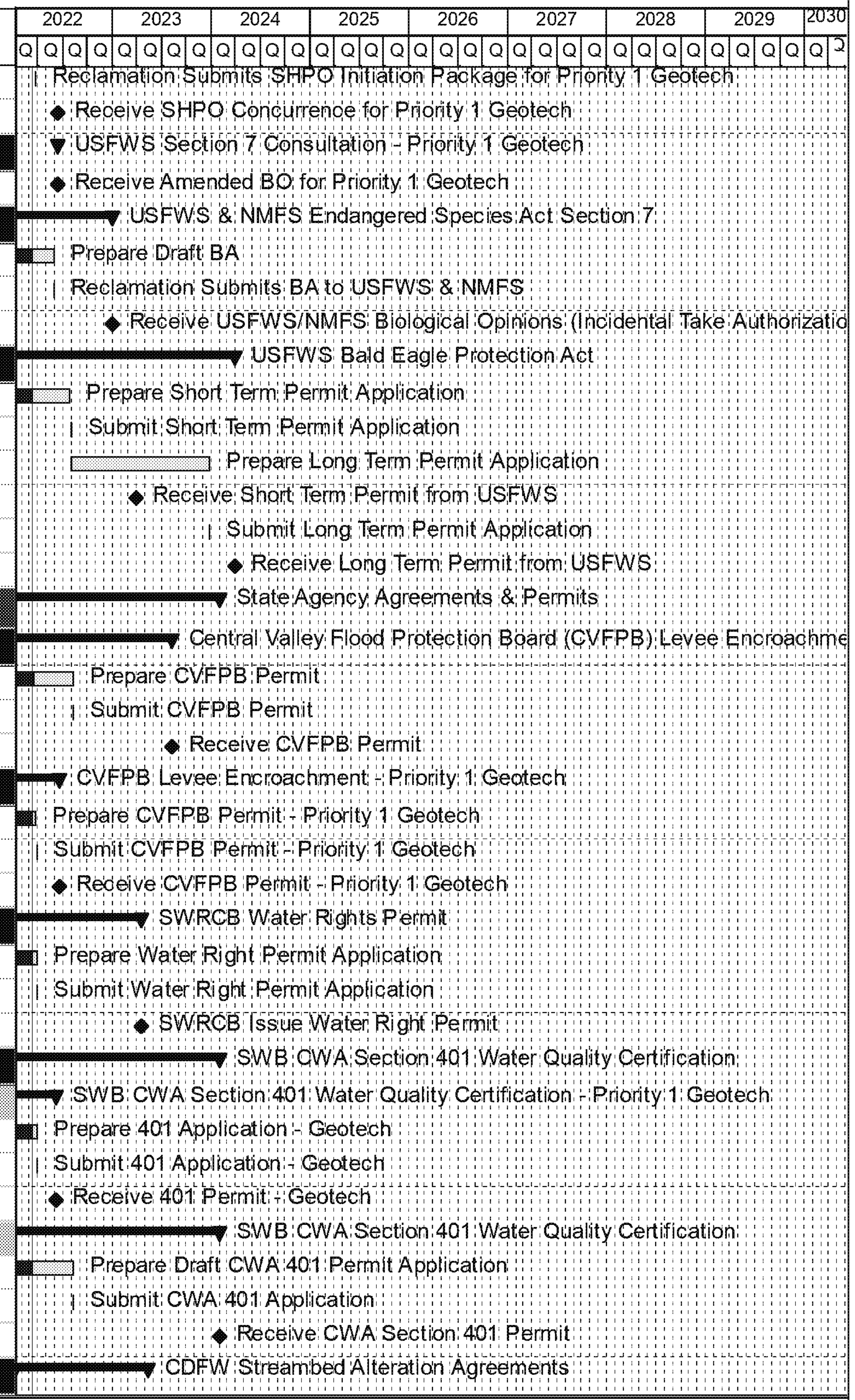
Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
149	SHPO-250	Reclamation Submits SHPO Initiation Package for Priority 1 Geotech	1	21-Mar-22	21-Mar-22
150	SHPO-260	Receive SHPO Concurrence for Priority 1 Geotech	0		15-Jun-22
151	**USFWS Section 7 Consultation - Priority 1 Geotech**		0	16-Jun-22	16-Jun-22
152	BA-120	Receive Amended BO for Priority 1 Geotech	0		16-Jun-22
153	**USFWS & NMFS Endangered Species Act Section 7**		201	11-Jan-21 A	30-Dec-22
154	BA-200	Prepare Draft BA	57	11-Jan-21 A	02-Jun-22
155	BA-210	Reclamation Submits BA to USFWS & NMFS	1	03-Jun-22	03-Jun-22
156	BA-220	Receive USFWS/NMFS Biological Opinions (Incidental Take Authorizations)	0		30-Dec-22
157	**USFWS Bald Eagle Protection Act**		509	03-Jan-22 A	26-Mar-24
158	USFWS-110	Prepare Short Term Permit Application	97	03-Jan-22 A	29-Jul-22
159	USFWS-120	Submit Short Term Permit Application	1	01-Aug-22	01-Aug-22
160	USFWS-140	Prepare Long Term Permit Application	350	02-Aug-22	27-Dec-23
161	USFWS-130	Receive Short Term Permit from USFWS	0		31-Mar-23
162	USFWS-150	Submit Long Term Permit Application	1	28-Dec-23	28-Dec-23
163	USFWS-160	Receive Long Term Permit from USFWS	0		26-Mar-24
164	**State Agency Agreements & Permits**		469	04-Jan-21 A	29-Jan-24
165	**Central Valley Flood Protection Board (CVFPB) Levee Encroachment**		351	13-Dec-21 A	10-Aug-23
166	CVFPB-100	Prepare CVFPB Permit	100	13-Dec-21 A	09-Aug-22
167	CVFPB-110	Submit CVFPB Permit	1	10-Aug-22	10-Aug-22
168	CVFPB-120	Receive CVFPB Permit	0		10-Aug-23
169	**CVFPB Levee Encroachment - Priority 1 Geotech**		71	01-Nov-21 A	22-Jun-22
170	CVFPB-200	Prepare CVFPB Permit - Priority 1 Geotech	10	01-Nov-21 A	25-Mar-22
171	CVFPB-210	Submit CVFPB Permit - Priority 1 Geotech	1	28-Mar-22	28-Mar-22
172	CVFPB-220	Receive CVFPB Permit - Priority 1 Geotech	0		22-Jun-22
173	**SWRCB Water Rights Permit**		274	01-Feb-21 A	17-Apr-23
174	WRP-100	Prepare Water Right Permit Application	13	01-Feb-21 A	30-Mar-22
175	WRP-110	Submit Water Right Permit Application	1	01-Apr-22	01-Apr-22
176	WRP-120	SWRCB Issue Water Right Permit	0		17-Apr-23
177	**SWB CWA Section 401 Water Quality Certification**		469	04-Jan-21 A	29-Jan-24
178	**SWB CWA Section 401 Water Quality Certification - Priority 1 Geotech**		59	01-Mar-21 A	06-Jun-22
179	401-100	Prepare 401 Application - Geotech	13	01-Mar-21 A	30-Mar-22
180	401-110	Submit 401 Application - Geotech	1	01-Apr-22	01-Apr-22
181	401-120	Receive 401 Permit - Geotech	0		06-Jun-22
182	**SWB CWA Section 401 Water Quality Certification**		469	04-Jan-21 A	29-Jan-24
183	401-200	Prepare Draft CWA 401 Permit Application	103	04-Jan-21 A	08-Aug-22
184	401-210	Submit CWA 401 Application	1	09-Aug-22	09-Aug-22
185	401-220	Receive CWA Section 401 Permit	0		29-Jan-24
186	**CDFW Streambed Alteration Agreements**		292	10-Jan-22 A	11-May-23



Remaining Level of Effort — Remaining Work — Summary
Actual Level of Effort — Critical Remaining Work
Actual Work — Milestone

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#	Activity ID	Activity Name	Remaining Duration	Start	Finish
187		**CDFW Streambed Alteration Agreements - Priority 1 Geotech**	69	21-Mar-22	27-Jun-22
188	1600-100	Prepare LSAA Application - Geotech	8	21-Mar-22*	30-Mar-22
189	1600-110	Submit LSAA Application - Geotech	1	01-Apr-22	01-Apr-22
190	1600-120	Receive LSAA Permit - Geotech	0		27-Jun-22
191		**CDFW Streambed Alteration Agreements**	292	10-Jan-22 A	11-May-23
192	1600-200	Prepare LSAA Application	170	10-Jan-22 A	14-Nov-22
193	1600-210	Submit LSAA Application	1	15-Nov-22	15-Nov-22
194	1600-220	Receive LSAA Permit	0		11-May-23
195		**CDFW Incidental Take Permits**	292	11-Jan-21 A	11-May-23
196		**ITP - CESA (Se 2081) Operations**	292	11-Jan-21 A	11-May-23
197	2081-100	Prepare ITP Application - Operations	64	11-Jan-21 A	13-Jun-22
198	2081-110	Submit ITP Application - Operations	1	14-Jun-22	14-Jun-22
199	2081-120	Receive ITP Permit - Operations	0		11-May-23
200		**ITP - CESA (Se 2081) Construction**	0	11-May-23	11-May-23
201	2081-220	Receive ITP Permit - Construction	0		11-May-23
202		**Environmental (Ali, Laurie)**	287	03-Jan-22 A	04-May-23
203		**Key Deliverables**	45	02-Mar-23	04-May-23
204	KD-1470	Final EIR/EIS - Complete	0		02-Mar-23
205	KD-1480	Certify Final EIR/EIS & Approve Preferred Project & MMRP (30 day period for legal challenge)	45	03-Mar-23	04-May-23
206		**EIR/EIS**	269	03-Jan-22 A	10-Apr-23
207		**Final EIR/Final EIS**	242	03-Jan-22 A	02-Mar-23
208	EIR-210	Preparation of Admin Final EIR/EIS	158	03-Jan-22 A	26-Oct-22
209	EIR-220	Analyze & Review New Model Output (May 9-27)	15	09-May-22	27-May-22
210	EIR-250	Complete Final EIR/EIS	84	27-Oct-22	02-Mar-23
211		**Authority Certifies EIR & Approves Project & File NOD**	5	23-Mar-23	30-Mar-23
212	EIR-370	Authority Certifies EIR and Approves Project	0		23-Mar-23
213	EIR-380	File NOD	5	24-Mar-23	30-Mar-23
214		**ROD**	22	09-Mar-23	10-Apr-23
215	EIR-440	NEPA Publication	0		09-Mar-23
216	EIR-450	ROD Signed	0		10-Apr-23
217		**Real Estate**	1950	02-Nov-20 A	04-Oct-29
218		**Key Deliverables**	450	03-Jan-22 A	29-Dec-23
219	KD-1490	Complete Land Acquisition Master Plan	201	03-Jan-22 A	30-Dec-22
220	KD-1495	Complete ROW Manual	201	03-Jan-22 A	30-Dec-22
221	KD-1500	Complete Landowner Negotiations with Willing Seller Properties	249	03-Jan-23	29-Dec-23
222		**Temporary Rights of Entry**	756	14-Mar-22	07-Mar-25
223	RE-1010	Engineering Support	756	14-Mar-22	07-Mar-25

Remaining Level of Effort · Remaining Work · Summary
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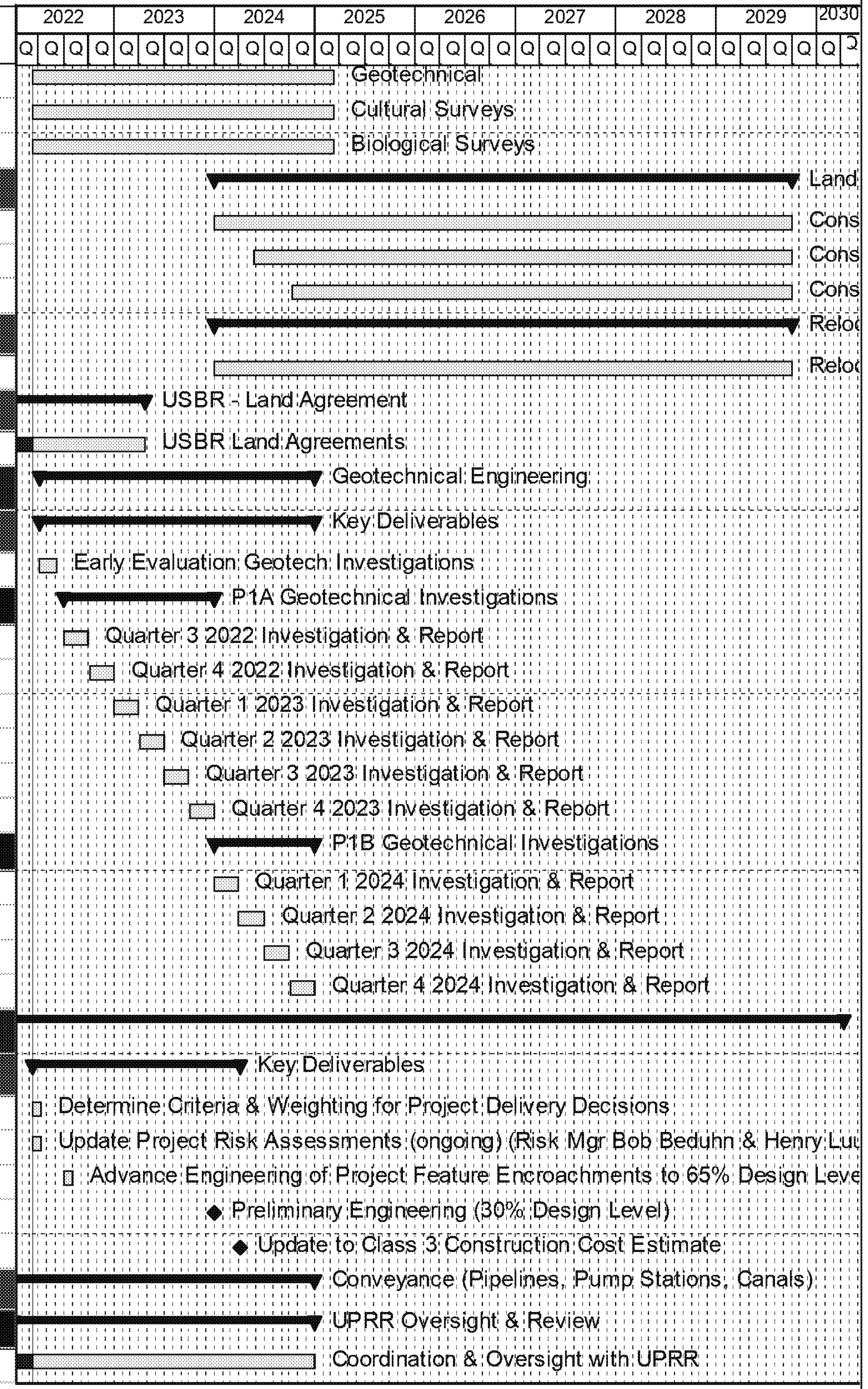
#	Activity ID	Activity Name	Remaining Duration	Start	Finish
224	RE-1020	Geotechnical	756	14-Mar-22	07-Mar-25
225	RE-1030	Cultural Surveys	756	14-Mar-22	07-Mar-25
226	RE-1040	Biological Surveys	756	14-Mar-22	07-Mar-25
227		**Land Acquisition**	1500	02-Jan-24	04-Oct-29
228	RE-1050	Construction Package 1 - Land Acquisition	1500	02-Jan-24	04-Oct-29
229	RE-1060	Construction Package 2 - Land Acquisition	1400	23-May-24	04-Oct-29
230	RE-1070	Construction Package 3 - Land Acquisition	1300	11-Oct-24	04-Oct-29
231		**Relocation**	1500	02-Jan-24	01-Oct-29
232	RE-1100	Relocation Assistance, as Needed	1500	02-Jan-24	01-Oct-29
233		**USBR - Land Agreement**	278	02-Nov-20 A	21-Apr-23
234	FED-100	USBR Land Agreements	278	02-Nov-20 A	21-Apr-23
235		**Geotechnical Engineering**	690	08-Apr-22	31-Dec-24
236		**Key Deliverables**	690	08-Apr-22	31-Dec-24
237	KD-2000	Early Evaluation Geotech Investigations	44	08-Apr-22	09-Jun-22
238		**P1A Geotechnical Investigations**	373	01-Jul-22	29-Dec-23
239	KD-1160	Quarter 3 2022 Investigation & Report	64	01-Jul-22	30-Sep-22
240	KD-1520	Quarter 4 2022 Investigation & Report	60	03-Oct-22	30-Dec-22
241	KD-1530	Quarter 1 2023 Investigation & Report	62	03-Jan-23	31-Mar-23
242	KD-1540	Quarter 2 2023 Investigation & Report	64	03-Apr-23	30-Jun-23
243	KD-1550	Quarter 3 2023 Investigation & Report	63	03-Jul-23	29-Sep-23
244	KD-1560	Quarter 4 2023 Investigation & Report	60	02-Oct-23	29-Dec-23
245		**P1B Geotechnical Investigations**	258	02-Jan-24	31-Dec-24
246	KD-1590	Quarter 1 2024 Investigation & Report	62	02-Jan-24	29-Mar-24
247	KD-1600	Quarter 2 2024 Investigation & Report	64	01-Apr-24	28-Jun-24
248	KD-1610	Quarter 3 2024 Investigation & Report	66	01-Jul-24	30-Sep-24
249	KD-1620	Quarter 4 2024 Investigation & Report	66	01-Oct-24	31-Dec-24
250		**Preliminary Engineering**	2086	14-Oct-20 A	12-Apr-30
251		**Key Deliverables**	515	14-Mar-22	03-Apr-24
252	KD-1120	Determine Criteria & Weighting for Project Delivery Decisions	21	14-Mar-22	12-Apr-22
253	KD-1210	Update Project Risk Assessments (ongoing) (Risk Mgr Bob Beduhn & Henry Luu)	21	14-Mar-22	12-Apr-22
254	KD-1110	Advance Engineering of Project Feature Encroachments to 65% Design Level in Support of Permitting	21	05-Jul-22	02-Aug-22
255	KD-1180	Preliminary Engineering (30% Design Level)	0		29-Dec-23
256	KD-1190	Update to Class 3 Construction Cost Estimate	0		03-Apr-24
257		**Conveyance (Pipelines, Pump Stations, Canals)**	708	03-Jan-22 A	31-Dec-24
258		**UPRR Oversight & Review**	708	03-Jan-22 A	31-Dec-24
259	A1110	Coordination & Oversight with UPRR	708	03-Jan-22 A	31-Dec-24



Remaining Level of Effort | Remaining Work | Summary
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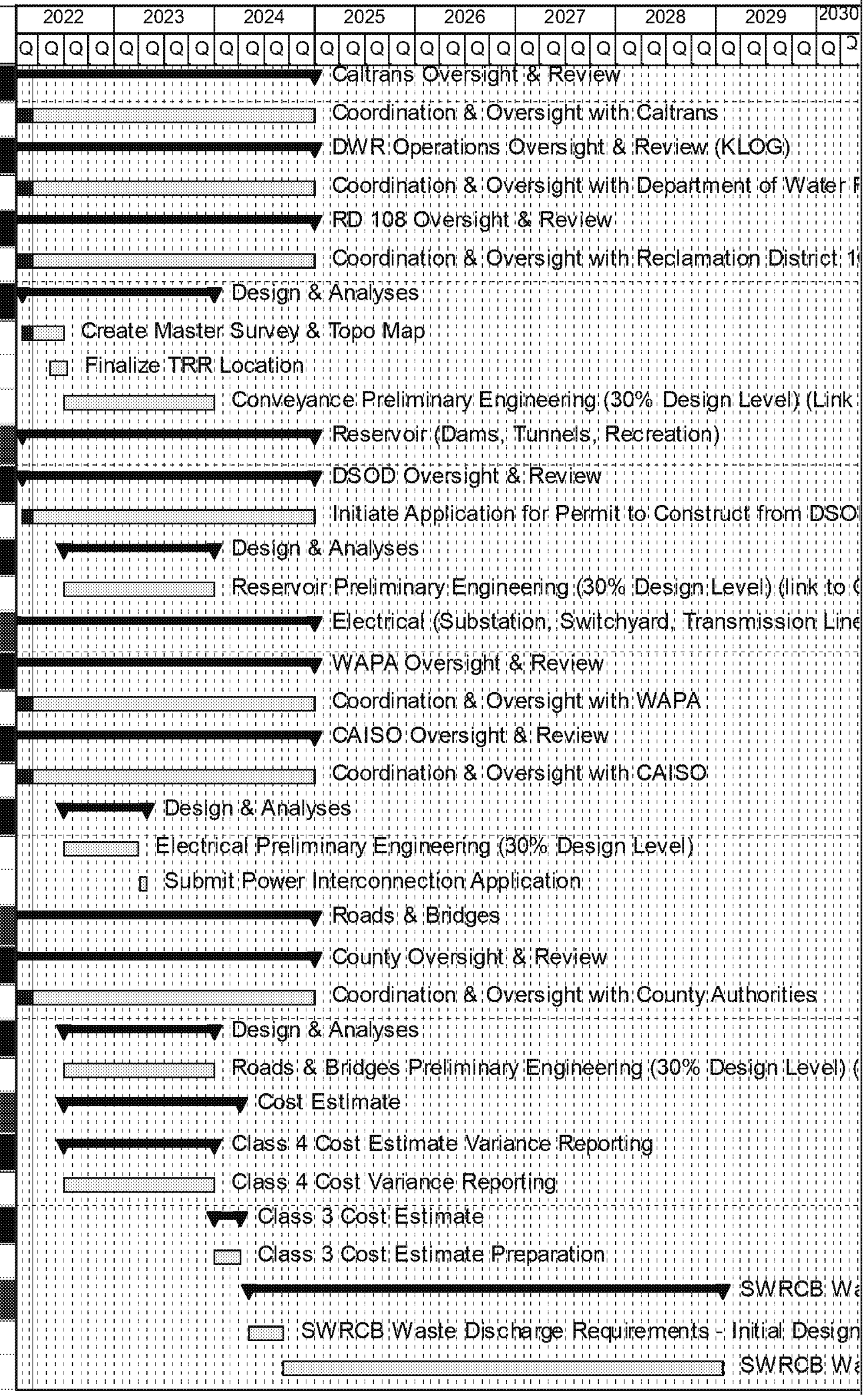
#	Activity ID	Activity Name	Remaining Duration	Start	Finish
260		**Caltrans Oversight & Review**	708	03-Jan-22 A	31-Dec-24
261	A1120	Coordination & Oversight with Caltrans	708	03-Jan-22 A	31-Dec-24
262		**DWR Operations Oversight & Review (KLOG)**	708	03-Jan-22 A	31-Dec-24
263	A1130	Coordination & Oversight with Department of Water Resources	708	03-Jan-22 A	31-Dec-24
264		**RD 108 Oversight & Review**	708	03-Jan-22 A	31-Dec-24
265	A1140	Coordination & Oversight with Reclamation District 108	708	03-Jan-22 A	31-Dec-24
266		**Design & Analyses**	450	01-Feb-22 A	29-Dec-23
267	KD-1140	Create Master Survey & Topo Map	78	01-Feb-22 A	01-Jul-22
268	KD-1150	Finalize TRR Location	46	10-May-22	14-Jul-22
269	KD-1630	Conveyance Preliminary Engineering (30% Design Level) (Link to Geotech)	372	05-Jul-22	29-Dec-23
270		**Reservoir (Dams, Tunnels, Recreation)**	708	01-Feb-22 A	31-Dec-24
271		**DSOD Oversight & Review**	708	01-Feb-22 A	31-Dec-24
272	KD-1100	Initiate Application for Permit to Construct from DSOD	708	01-Feb-22 A	31-Dec-24
273		**Design & Analyses**	372	05-Jul-22	29-Dec-23
274	KD-1660	Reservoir Preliminary Engineering (30% Design Level) (link to Geotech)	372	05-Jul-22	29-Dec-23
275		**Electrical (Substation, Switchyard, Transmission Line)**	708	03-Jan-22 A	31-Dec-24
276		**WAPA Oversight & Review**	708	03-Jan-22 A	31-Dec-24
277	A1150	Coordination & Oversight with WAPA	708	03-Jan-22 A	31-Dec-24
278		**CAISO Oversight & Review**	708	03-Jan-22 A	31-Dec-24
279	A1160	Coordination & Oversight with CAISO	708	03-Jan-22 A	31-Dec-24
280		**Design & Analyses**	205	05-Jul-22	28-Apr-23
281	KD-1640	Electrical Preliminary Engineering (30% Design Level)	185	05-Jul-22	31-Mar-23
282	KD-1200	Submit Power Interconnection Application	20	03-Apr-23	28-Apr-23
283		**Roads & Bridges**	708	03-Jan-22 A	31-Dec-24
284		**County Oversight & Review**	708	03-Jan-22 A	31-Dec-24
285	A1170	Coordination & Oversight with County Authorities	708	03-Jan-22 A	31-Dec-24
286		**Design & Analyses**	372	05-Jul-22	29-Dec-23
287	KD-1650	Roads & Bridges Preliminary Engineering (30% Design Level) (link to Geotech)	372	05-Jul-22	29-Dec-23
288		**Cost Estimate**	437	05-Jul-22	03-Apr-24
289		**Class 4 Cost Estimate Variance Reporting**	372	05-Jul-22	29-Dec-23
290	A1180	Class 4 Cost Variance Reporting	372	05-Jul-22	29-Dec-23
291		**Class 3 Cost Estimate**	65	02-Jan-24	03-Apr-24
292	A1190	Class 3 Cost Estimate Preparation	65	02-Jan-24	03-Apr-24
293		**SWRCB Waste Discharge Requirements (Multiple permits based on constr. packages and/or ROW acce**	1234	03-May-24	25-Jan-29
294	STA-160	SWRCB Waste Discharge Requirements - Initial Design Review	90	03-May-24	06-Sep-24
295	STA-060	SWRCB Waste Discharge Requirements - Implementation	1144	09-Sep-24	25-Jan-29



Remaining Level of Effort | Actual Level of Effort | Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

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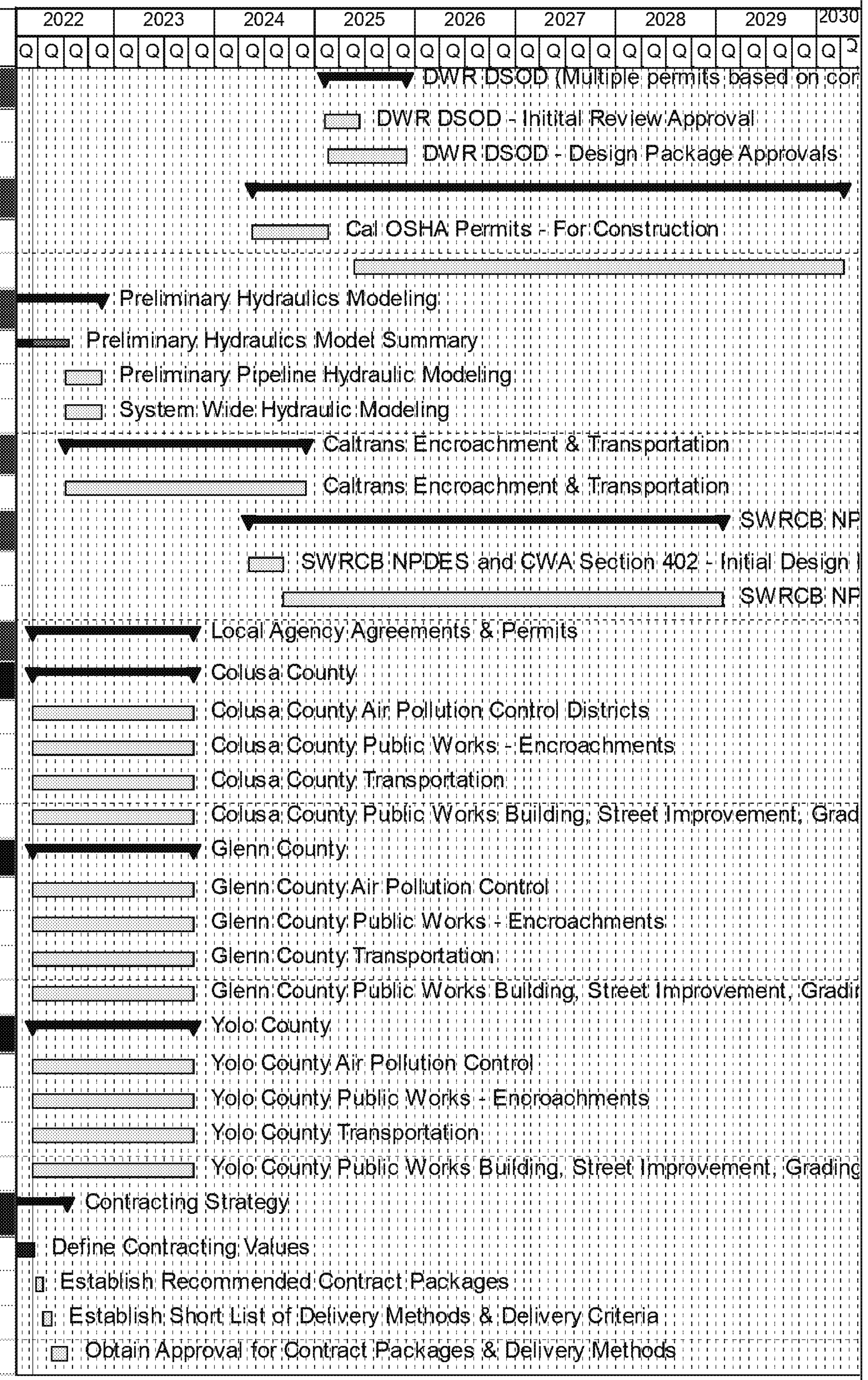
#	Activity ID	Activity Name	Remaining Duration	Start	Finish
296		DWR DSOD (Multiple permits based on construction packages and/or ROW access) - Engineering?	210	07-Feb-25	27-Nov-25
297	STA-130	DWR DSOD - Initital Review Approval	90	07-Feb-25	12-Jun-25
298	STA-080	DWR DSOD - Design Package Approvals	200	21-Feb-25	27-Nov-25
299		Cal OSHA Permits (Multiple permits based on construction packages and/or ROW access) -Engineering	1541	16-May-24	12-Apr-30
300	STA-170	Cal OSHA Permits - For Construction	200	16-May-24	20-Feb-25
301	STA-090	Cal OSHA Implementation	1276	23-May-25	12-Apr-30
302		Preliminary Hydraulics Modeling	171	14-Oct-20 A	15-Nov-22
303	ENG-420	Preliminary Hydraulics Model Summary	90	14-Oct-20 A	20-Jul-22
304	ENG-470	Preliminary Pipeline Hydraulic Modeling	90	08-Jul-22	15-Nov-22
305	ENG-480	System Wide Hydraulic Modeling	90	08-Jul-22	15-Nov-22
306		Caltrans Encroachment & Transportation	605	08-Jul-22	29-Nov-24
307	STA-010	Caltrans Encroachment & Transportation	605	08-Jul-22	29-Nov-24
308		SWRCB NPDES and CWA Section 402 (Multiple permits based on construction packages and/or ROW a	1234	03-May-24	25-Jan-29
309	STA-150	SWRCB NPDES and CWA Section 402 - Initial Design Review	90	03-May-24	06-Sep-24
310	STA-050	SWRCB NPDES and CWA Section 402 - Implementation	1144	09-Sep-24	25-Jan-29
311		Local Agency Agreements & Permits	400	14-Mar-22	16-Oct-23
312		Colusa County	400	14-Mar-22	16-Oct-23
313	LOC-150	Colusa County Air Pollution Control Districts	400	14-Mar-22	16-Oct-23
314	LOC-160	Colusa County Public Works - Encroachments	400	14-Mar-22	16-Oct-23
315	LOC-170	Colusa County Transportation	400	14-Mar-22	16-Oct-23
316	LOC-180	Colusa County Public Works Building, Street Improvement, Grading Permits	400	14-Mar-22	16-Oct-23
317		Glenn County	400	14-Mar-22	16-Oct-23
318	LOC-250	Glenn County Air Pollution Control	400	14-Mar-22	16-Oct-23
319	LOC-260	Glenn County Public Works - Encroachments	400	14-Mar-22	16-Oct-23
320	LOC-270	Glenn County Transportation	400	14-Mar-22	16-Oct-23
321	LOC-280	Glenn County Public Works Building, Street Improvement, Grading Permits	400	14-Mar-22	16-Oct-23
322		Yolo County	400	14-Mar-22	16-Oct-23
323	LOC-200	Yolo County Air Pollution Control	400	14-Mar-22	16-Oct-23
324	LOC-210	Yolo County Public Works - Encroachments	400	14-Mar-22	16-Oct-23
325	LOC-220	Yolo County Transportation	400	14-Mar-22	16-Oct-23
326	LOC-230	Yolo County Public Works Building, Street Improvement, Grading Permits	400	14-Mar-22	16-Oct-23
327		Contracting Strategy	85	03-Jan-22 A	13-Jul-22
328	A1070	Define Contracting Values	5	03-Jan-22 A	18-Mar-22
329	A1080	Establish Recommended Contract Packages	20	21-Mar-22	18-Apr-22
330	A1090	Establish Short List of Delivery Methods & Delivery Criteria	20	19-Apr-22	16-May-22
331	A1100	Obtain Approval for Contract Packages & Delivery Methods	40	17-May-22	13-Jul-22



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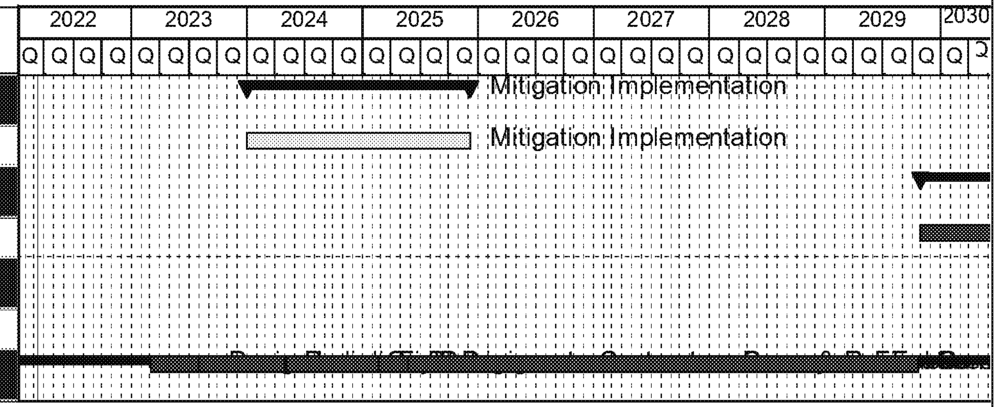
332	**Mitigation Implementation**		500	02-Jan-24	04-Dec-25
333	MI-1100	Mitigation Implementation	500	02-Jan-24	04-Dec-25
334	**Commissioning**		222	26-Oct-29	02-Sep-30
335	COM-1100	Commissioning	222	26-Oct-29	02-Sep-30
336	**Operations**		0	03-Sep-30	03-Sep-30
337	OPR-1100	Full Operations Begins	0		03-Sep-30
338	**COMPLETED / MARK FOR DELETE**		2188	02-Jan-20 A	03-Sep-30



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Key Deliverables

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#	Activity ID	Activity Name	Remaining Duration	Start	Finish
1		**Key Deliverables**	708	03-Jan-22 A	31-Dec-24
2		**Engineering**	708	01-Feb-22 A	31-Dec-24
3		**Geotechnical Engineering**	690	08-Apr-22	31-Dec-24
4	KD-2000	Early Evaluation Geotech Investigations	44	08-Apr-22	09-Jun-22
5	KD-1160	Quarter 3 2022 Investigation & Report	64	01-Jul-22	30-Sep-22
6	KD-1520	Quarter 4 2022 Investigation & Report	60	03-Oct-22	30-Dec-22
7	KD-1530	Quarter 1 2023 Investigation & Report	62	03-Jan-23	31-Mar-23
8	KD-1540	Quarter 2 2023 Investigation & Report	64	03-Apr-23	30-Jun-23
9	KD-1550	Quarter 3 2023 Investigation & Report	63	03-Jul-23	29-Sep-23
10	KD-1560	Quarter 4 2023 Investigation & Report	60	02-Oct-23	29-Dec-23
11	KD-1590	Quarter 1 2024 Investigation & Report	62	02-Jan-24	29-Mar-24
12	KD-1600	Quarter 2 2024 Investigation & Report	64	01-Apr-24	28-Jun-24
13	KD-1610	Quarter 3 2024 Investigation & Report	66	01-Jul-24	30-Sep-24
14	KD-1620	Quarter 4 2024 Investigation & Report	66	01-Oct-24	31-Dec-24
15		**Preliminary Engineering**	708	01-Feb-22 A	31-Dec-24
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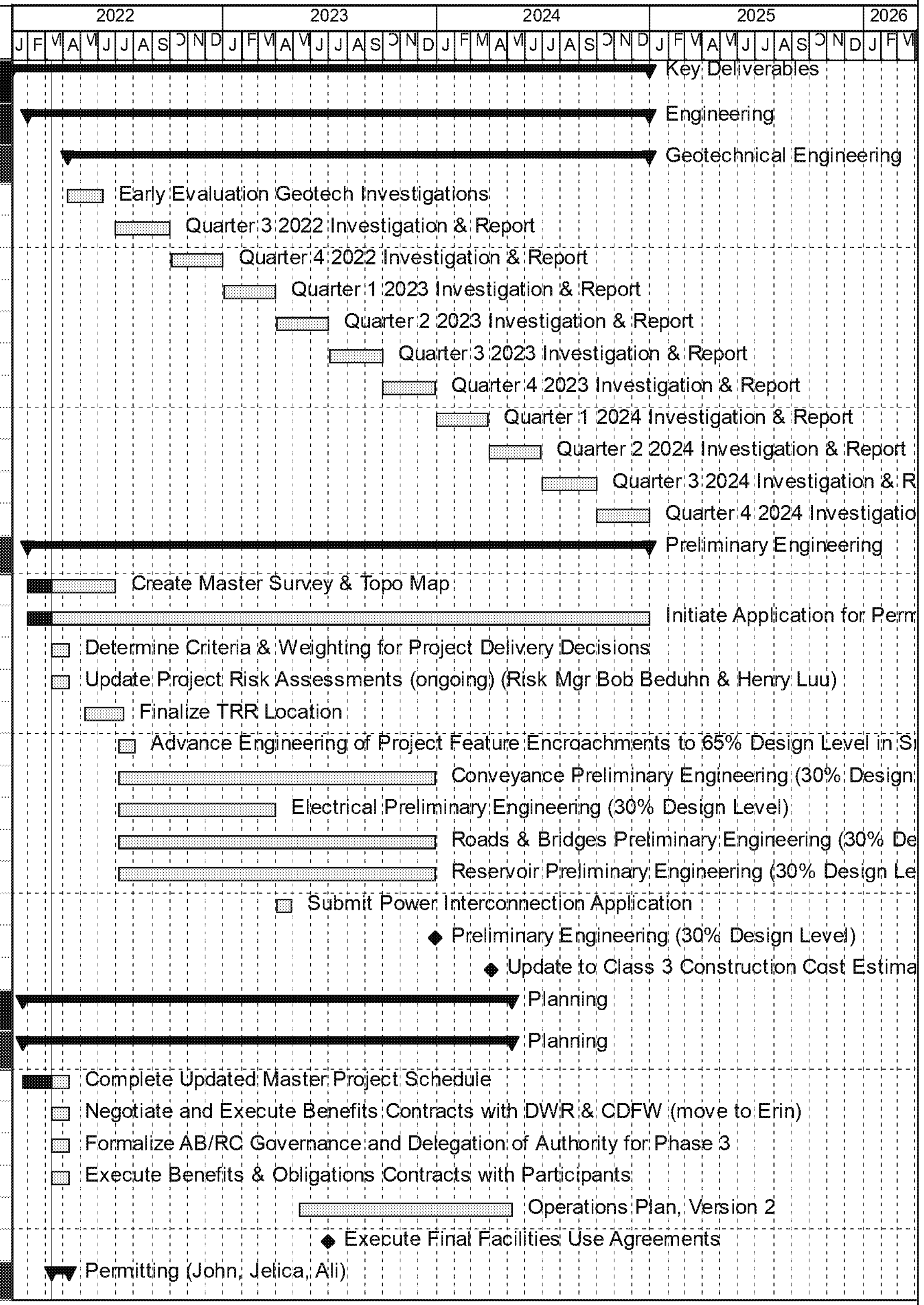
19	KD-1210	Update Project Risk Assessments (ongoing) (Risk Mgr Bob Beduhn & Henry Luu)	21	14-Mar-22	12-Apr-22
20	KD-1150	Finalize TRR Location	46	10-May-22	14-Jul-22
21	KD-1110	Advance Engineering of Project Feature Encroachments to 65% Design Level in Support of Permitting	21	05-Jul-22	02-Aug-22
22	KD-1630	Conveyance Preliminary Engineering (30% Design Level) (Link to Geotech)	372	05-Jul-22	29-Dec-23
23	KD-1640	Electrical Preliminary Engineering (30% Design Level)	185	05-Jul-22	31-Mar-23
24	KD-1650	Roads & Bridges Preliminary Engineering (30% Design Level) (link to Geotech)	372	05-Jul-22	29-Dec-23
25	KD-1660	Reservoir Preliminary Engineering (30% Design Level) (link to Geotech)	372	05-Jul-22	29-Dec-23
26	KD-1200	Submit Power Interconnection Application	20	03-Apr-23	28-Apr-23
27	KD-1180	Preliminary Engineering (30% Design Level)	0		29-Dec-23
28	KD-1190	Update to Class 3 Construction Cost Estimate	0		03-Apr-24
29		**Planning**	541	24-Jan-22 A	09-May-24
30		**Planning**	541	24-Jan-22 A	09-May-24
31	KD-1130	Complete Updated Master Project Schedule	21	24-Jan-22 A	12-Apr-22
32	KD-1220	Negotiate and Execute Benefits Contracts with DWR & CDFW (move to Erin)	21	14-Mar-22	12-Apr-22
33	KD-1290	Formalize AB/RC Governance and Delegation of Authority for Phase 3	21	14-Mar-22	12-Apr-22
34	KD-1300	Execute Benefits & Obligations Contracts with Participants	21	14-Mar-22	12-Apr-22
35	KD-1510	Operations Plan, Version 2	260	12-May-23	09-May-24
36	KD-1230	Execute Final Facilities Use Agreements	0		28-Jun-23
37		**Permitting (John, Jelica, Ali)**	21	14-Mar-22	12-Apr-22



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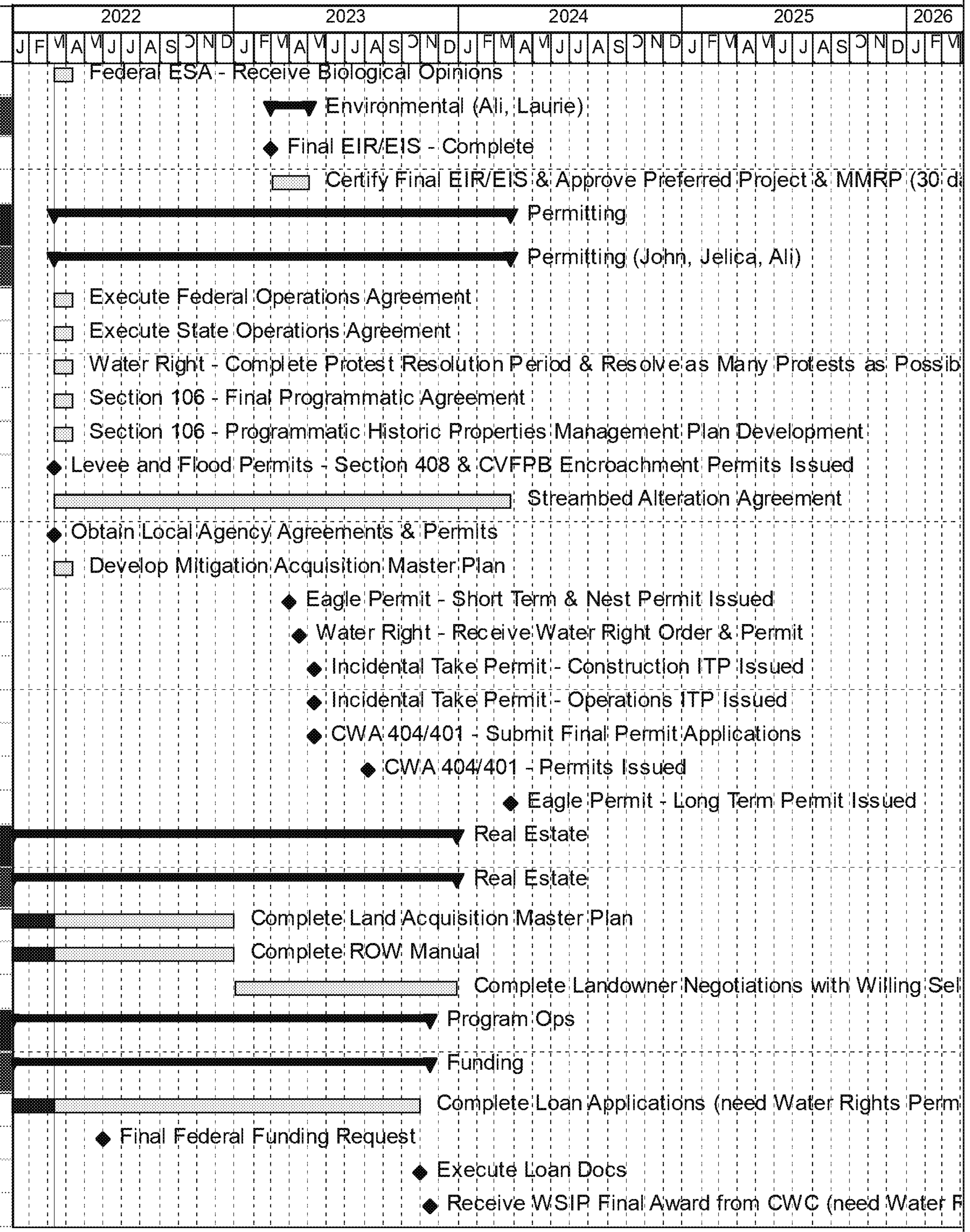
Sites Reservoir Project

Key Deliverables

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
38	KD-1340	Federal ESA - Receive Biological Opinions	21	14-Mar-22	12-Apr-22
39		**Environmental (Ali, Laurie)**	45	02-Mar-23	04-May-23
40	KD-1470	Final EIR/EIS - Complete	0		02-Mar-23
41	KD-1480	Certify Final EIR/EIS & Approve Preferred Project & MMRP (30 day period for legal challenge)	45	03-Mar-23	04-May-23
42		**Permitting**	509	14-Mar-22	26-Mar-24
43		**Permitting (John, Jelica, Ali)**	509	14-Mar-22	26-Mar-24
44	KD-1240	Execute Federal Operations Agreement	21	14-Mar-22	12-Apr-22
45	KD-1250	Execute State Operations Agreement	21	14-Mar-22	12-Apr-22
46	KD-1320	Water Right - Complete Protest Resolution Period & Resolve as Many Protests as Possible	21	14-Mar-22	12-Apr-22
47	KD-1350	Section 106 - Final Programmatic Agreement	21	14-Mar-22	12-Apr-22
48	KD-1360	Section 106 - Programmatic Historic Properties Management Plan Development	21	14-Mar-22	12-Apr-22
49	KD-1410	Levee and Flood Permits - Section 408 & CVFPB Encroachment Permits Issued	0		14-Mar-22
50	KD-1420	Streambed Alteration Agreement	509	14-Mar-22	26-Mar-24
51	KD-1450	Obtain Local Agency Agreements & Permits	0		14-Mar-22
52	KD-1460	Develop Mitigation Acquisition Master Plan	21	14-Mar-22	12-Apr-22
53	KD-1430	Eagle Permit - Short Term & Nest Permit Issued	0		31-Mar-23
54	KD-1330	Water Right - Receive Water Right Order & Permit	0		17-Apr-23
55	KD-1370	Incidental Take Permit - Construction ITP Issued	0		11-May-23
56	KD-1380	Incidental Take Permit - Operations ITP Issued	0		11-May-23
57	KD-1390	CWA 404/401 - Submit Final Permit Applications	0		11-May-23
58	KD-1400	CWA 404/401 - Permits Issued	0		07-Aug-23
59	KD-1440	Eagle Permit - Long Term Permit Issued	0		26-Mar-24
60		**Real Estate**	450	03-Jan-22 A	29-Dec-23
61		**Real Estate**	450	03-Jan-22 A	29-Dec-23
62	KD-1490	Complete Land Acquisition Master Plan	201	03-Jan-22 A	30-Dec-22
63	KD-1495	Complete ROW Manual	201	03-Jan-22 A	30-Dec-22
64	KD-1500	Complete Landowner Negotiations with Willing Seller Properties	249	03-Jan-23	29-Dec-23
65		**Program Ops**	423	03-Jan-22 A	17-Nov-23
66		**Funding**	423	03-Jan-22 A	17-Nov-23
67	KD-1270	Complete Loan Applications (need Water Rights Permit to complete)	411	03-Jan-22 A	31-Oct-23
68	KD-1260	Final Federal Funding Request	0		31-May-22
69	KD-1280	Execute Loan Docs	0		31-Oct-23
70	KD-1310	Receive WSIP Final Award from CWC (need Water Rights Permit to complete)	0		17-Nov-23



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Project ID: Sites / Project Name: Sites Reservoir Project / Layout Name: Sites Key Deliverables / TASK filter: Key Deliverables.
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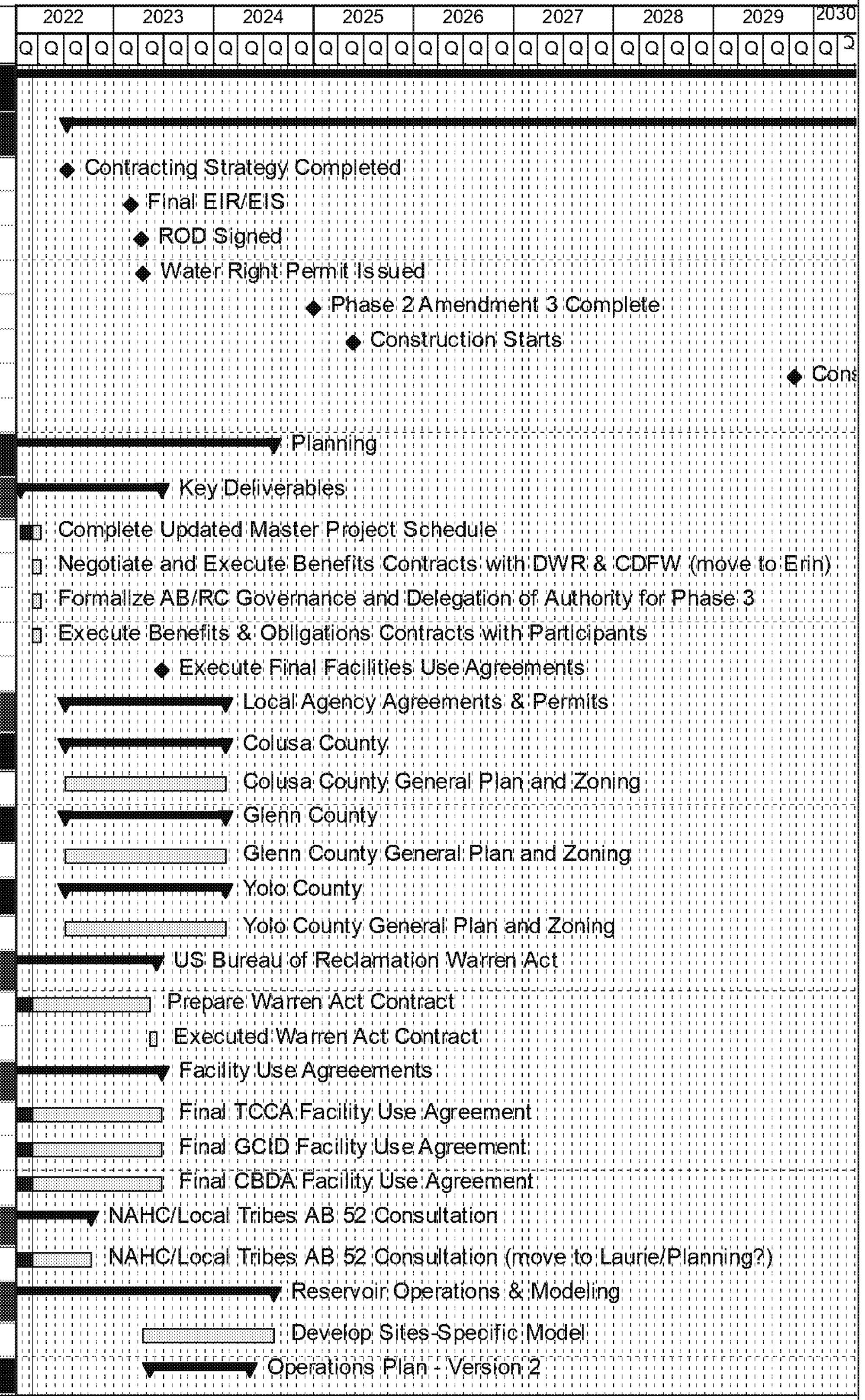
Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
1		**Sites Reservoir Project**	2188	02-Jan-20 A	03-Sep-30
2		**Project Milestones**	2103	13-Jul-22	03-Sep-30
3	WP3-015	Contracting Strategy Completed	0		13-Jul-22
4	MS-250-FE	Final EIR/EIS	0		02-Mar-23
5	MS-450-RD	ROD Signed	0		10-Apr-23
6	WR-185	Water Right Permit Issued	0		17-Apr-23
7	WP3-010	Phase 2 Amendment 3 Complete	0		31-Dec-24*
8	MS-500-CS	Construction Starts	0	23-May-25	
9	MS-510-CC	Construction Complete	0		25-Oct-29
10	MS-600-PB	Public Beneficial Occupancy - Sites Program	0		03-Sep-30
11		**Planning**	606	01-Sep-20 A	09-Aug-24
12		**Key Deliverables**	325	24-Jan-22 A	28-Jun-23
13	KD-1130	Complete Updated Master Project Schedule	21	24-Jan-22 A	12-Apr-22
14	KD-1220	Negotiate and Execute Benefits Contracts with DWR & CDFW (move to Erin)	21	14-Mar-22	12-Apr-22
15	KD-1290	Formalize AB/RC Governance and Delegation of Authority for Phase 3	21	14-Mar-22	12-Apr-22
16	KD-1300	Execute Benefits & Obligations Contracts with Participants	21	14-Mar-22	12-Apr-22
17	KD-1230	Execute Final Facilities Use Agreements	0		28-Jun-23
18		**Local Agency Agreements & Permits**	400	08-Jul-22	14-Feb-24
19		**Colusa County**	400	08-Jul-22	14-Feb-24
20	LOC-050	Colusa County General Plan and Zoning	400	08-Jul-22	14-Feb-24
21		**Glenn County**	400	08-Jul-22	14-Feb-24
22	LOC-140	Glenn County General Plan and Zoning	400	08-Jul-22	14-Feb-24
23		**Yolo County**	400	08-Jul-22	14-Feb-24
24	LOC-90	Yolo County General Plan and Zoning	400	08-Jul-22	14-Feb-24
25		**US Bureau of Reclamation Warren Act**	311	01-Jun-21 A	08-Jun-23
26	FED-090	Prepare Warren Act Contract	291	01-Jun-21 A	10-May-23
27	FED-110	Executed Warren Act Contract	20	11-May-23	08-Jun-23
28		**Facility Use Agreements**	325	27-Aug-21 A	28-Jun-23
29	FO-1020	Final TCCA Facility Use Agreement	325	27-Aug-21 A	28-Jun-23
30	FO-1030	Final GCID Facility Use Agreement	325	27-Aug-21 A	28-Jun-23
31	FO-1040	Final CBDA Facility Use Agreement	325	27-Aug-21 A	28-Jun-23
32		**NAHC/Local Tribes AB 52 Consultation**	148	01-Sep-20 A	12-Oct-22
33	STA-120	NAHC/Local Tribes AB 52 Consultation (move to Laurie/Planning?)	148	01-Sep-20 A	12-Oct-22
34		**Reservoir Operations & Modeling**	606	01-Nov-20 A	09-Aug-24
35	OS-1150	Develop Sites-Specific Model	344	18-Apr-23	09-Aug-24
36		**Operations Plan - Version 2**	260	12-May-23	09-May-24



Remaining Level of Effort | Remaining Work | Summary
Actual Level of Effort | Critical Remaining Work
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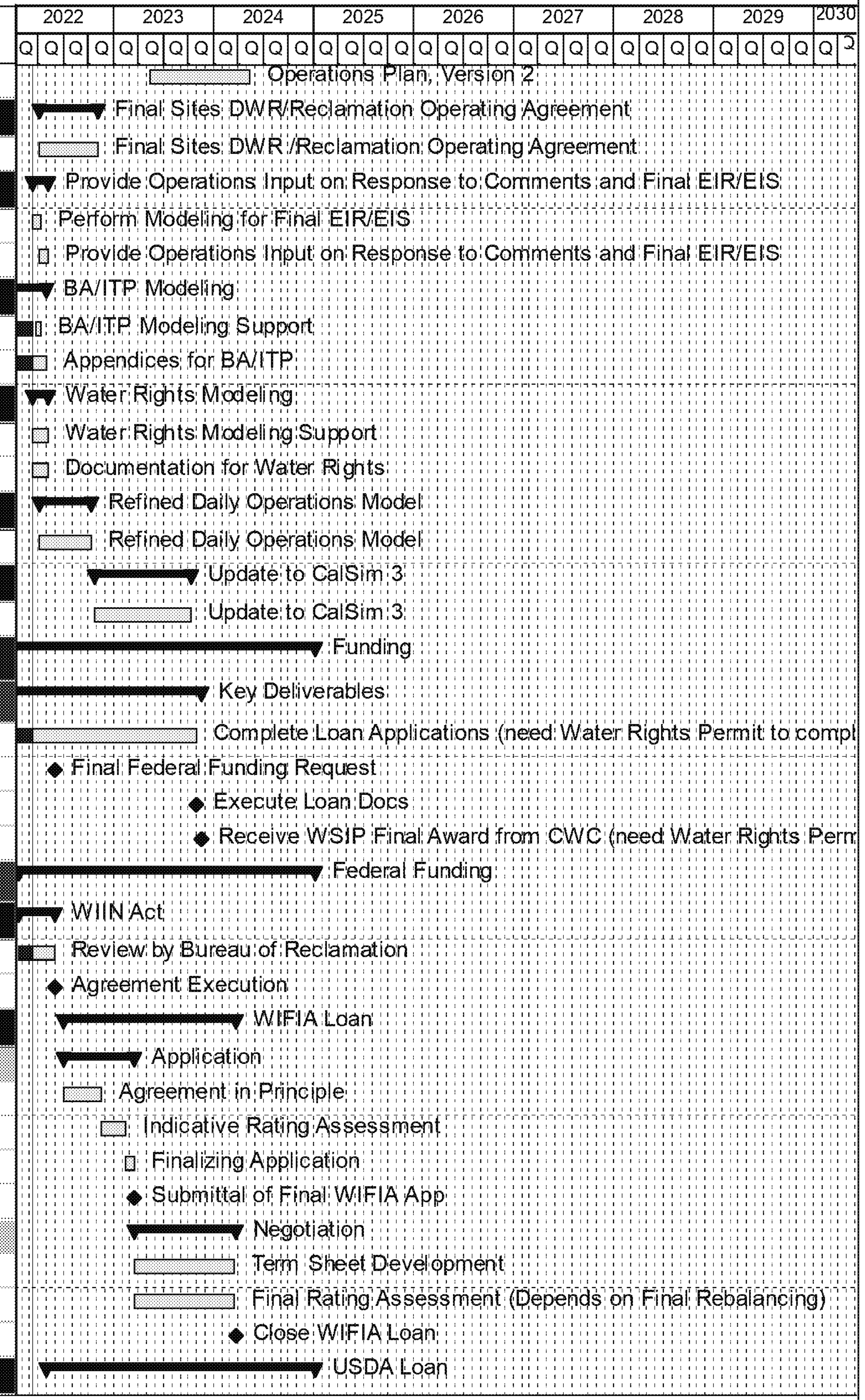
#	Activity ID	Activity Name	Remaining Duration	Start	Finish
37	KD-1510	Operations Plan, Version 2	260	12-May-23	09-May-24
38	**Final Sites DWR/Reclamation Operating Agreement**		151	04-Apr-22	04-Nov-22
39	OP-1005	Final Sites DWR /Reclamation Operating Agreement	151	04-Apr-22	04-Nov-22
40	**Provide Operations Input on Response to Comments and Final EIR/EIS**		37	14-Mar-22	04-May-22
41	FO-1110	Perform Modeling for Final EIR/EIS	21	14-Mar-22	12-Apr-22
42	FO-1080	Provide Operations Input on Response to Comments and Final EIR/EIS	20	07-Apr-22	04-May-22
43	**BA/ITP Modeling**		34	01-Nov-20 A	29-Apr-22
44	OP-450	BA/ITP Modeling Support	13	01-Nov-20 A	11-Apr-22
45	OP-360	Appendices for BA/ITP	34	01-Apr-21 A	29-Apr-22
46	**Water Rights Modeling**		40	14-Mar-22	09-May-22
47	A1200	Water Rights Modeling Support	40	14-Mar-22	09-May-22
48	A1210	Documentation for Water Rights	40	14-Mar-22	09-May-22
49	**Refined Daily Operations Model**		130	07-Apr-22	11-Oct-22
50	A1220	Refined Daily Operations Model	130	07-Apr-22	11-Oct-22
51	**Update to CalSim 3**		240	26-Oct-22	11-Oct-23
52	A1230	Update to CalSim 3	240	26-Oct-22	11-Oct-23
53	**Funding**		713	03-Jan-22 A	07-Jan-25
54	**Key Deliverables**		423	03-Jan-22 A	17-Nov-23
55	KD-1270	Complete Loan Applications (need Water Rights Permit to complete)	411	03-Jan-22 A	31-Oct-23
56	KD-1260	Final Federal Funding Request	0		31-May-22
57	KD-1280	Execute Loan Docs	0		31-Oct-23
58	KD-1310	Receive WSIP Final Award from CWC (need Water Rights Permit to complete)	0		17-Nov-23
59	**Federal Funding**		713	17-Jan-22 A	07-Jan-25
60	**WIIN Act**		55	17-Jan-22 A	31-May-22
61	WIIN-1120	Review by Bureau of Reclamation	55	17-Jan-22 A	31-May-22
62	WIIN-1140	Agreement Execution	0		31-May-22
63	**WIFIA Loan**		431	01-Jul-22	25-Mar-24
64	**Application**		176	01-Jul-22	20-Mar-23
65	WIFIA-110	Agreement in Principle	95	01-Jul-22	16-Nov-22
66	WIFIA-120	Indicative Rating Assessment	60	17-Nov-22	15-Feb-23
67	WIFIA-130	Finalizing Application	30	16-Feb-23	17-Mar-23
68	WIFIA-140	Submittal of Final WIFIA App	0		20-Mar-23
69	**Negotiation**		255	20-Mar-23	25-Mar-24
70	WIFIA-210	Term Sheet Development	250	20-Mar-23	18-Mar-24
71	WIFIA-220	Final Rating Assessment (Depends on Final Rebalancing)	250	20-Mar-23	18-Mar-24
72	WIFIA-230	Close WIFIA Loan	0		25-Mar-24
73	**USDA Loan**		679	02-May-22	07-Jan-25



Remaining Level of Effort | Remaining Work | Summary
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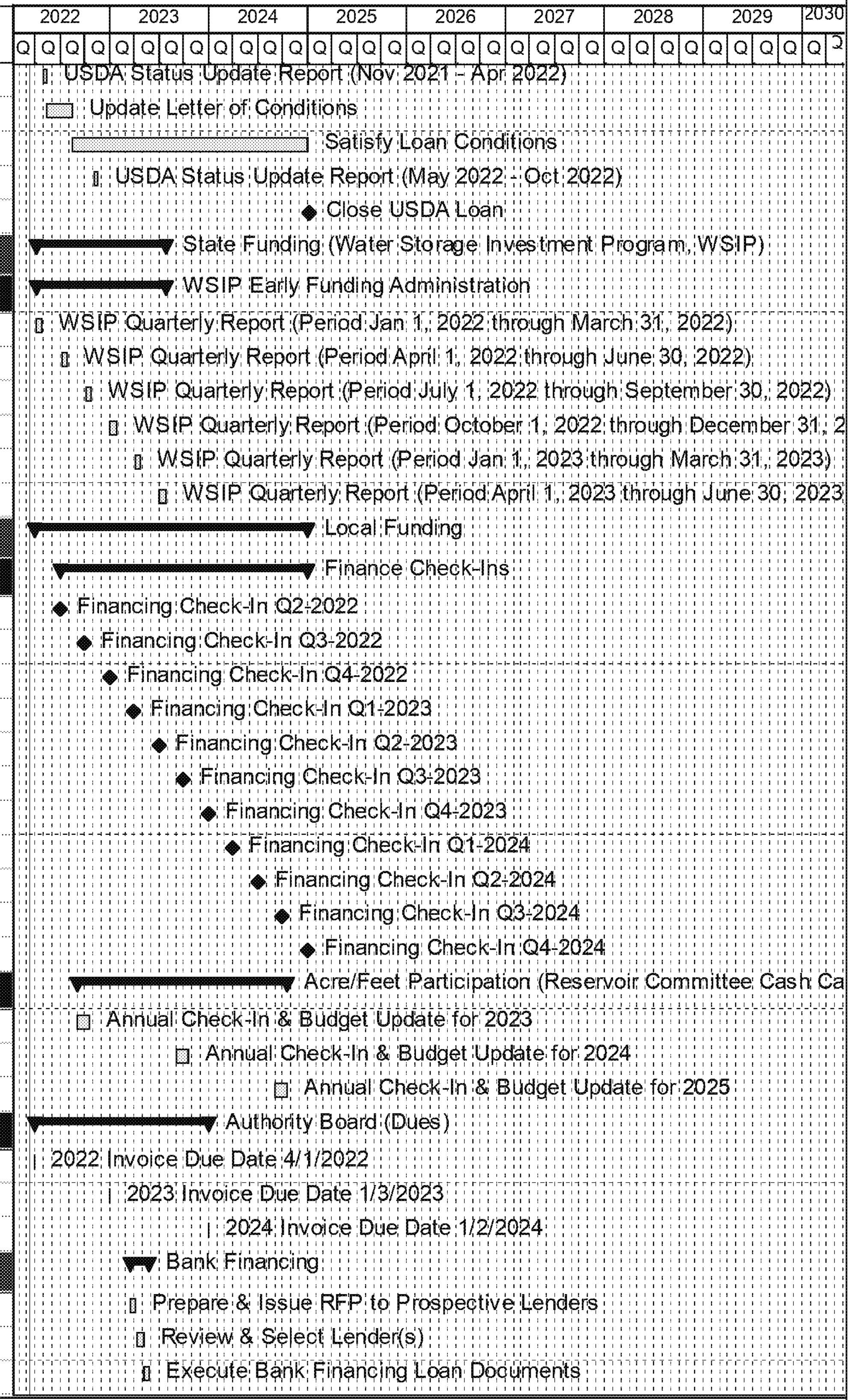
#	Activity ID	Activity Name	Remaining Duration	Start	Finish
74	USDA-1030	USDA Status Update Report (Nov 2021 - Apr 2022)	10	02-May-22	13-May-22
75	USDA-1050	Update Letter of Conditions	65	16-May-22	16-Aug-22
76	USDA-1060	Satisfy Loan Conditions	599	17-Aug-22	31-Dec-24
77	USDA-1040	USDA Status Update Report (May 2022 - Oct 2022)	10	04-Nov-22	18-Nov-22
78	USDA-1070	Close USDA Loan	0		07-Jan-25
79		**State Funding (Water Storage Investment Program, WSIP)**	329	04-Apr-22	25-Jul-23
80		**WSIP Early Funding Administration**	329	04-Apr-22	25-Jul-23
81	WSIP-1210	WSIP Quarterly Report (Period Jan 1, 2022 through March 31, 2022)	15	04-Apr-22	22-Apr-22
82	WSIP-1220	WSIP Quarterly Report (Period April 1, 2022 through June 30, 2022)	15	06-Jul-22	26-Jul-22
83	WSIP-1230	WSIP Quarterly Report (Period July 1, 2022 through September 30, 2022)	15	03-Oct-22	24-Oct-22
84	WSIP-1240	WSIP Quarterly Report (Period October 1, 2022 through December 31, 2022)	15	03-Jan-23	24-Jan-23
85	WSIP-1250	WSIP Quarterly Report (Period Jan 1, 2023 through March 31, 2023)	15	03-Apr-23	21-Apr-23
86	WSIP-1260	WSIP Quarterly Report (Period April 1, 2023 through June 30, 2023)	15	05-Jul-23	25-Jul-23
87		**Local Funding**	695	01-Apr-22	31-Dec-24
88		**Finance Check-Ins**	631	30-Jun-22	31-Dec-24
89	FC-1250	Financing Check-In Q2-2022	0		30-Jun-22*
90	FC-1260	Financing Check-In Q3-2022	0		30-Sep-22
91	FC-1270	Financing Check-In Q4-2022	0		30-Dec-22
92	FC-1280	Financing Check-In Q1-2023	0		31-Mar-23
93	FC-1290	Financing Check-In Q2-2023	0		30-Jun-23
94	FC-1300	Financing Check-In Q3-2023	0		29-Sep-23
95	FC-1310	Financing Check-In Q4-2023	0		29-Dec-23
96	FC-1320	Financing Check-In Q1-2024	0		29-Mar-24
97	FC-1330	Financing Check-In Q2-2024	0		28-Jun-24
98	FC-1340	Financing Check-In Q3-2024	0		30-Sep-24
99	FC-1350	Financing Check-In Q4-2024	0		31-Dec-24
100		**Acre/Feet Participation (Reservoir Committee Cash Calls)**	530	06-Sep-22	14-Oct-24
101	LF-1100	Annual Check-In & Budget Update for 2023	30	06-Sep-22	18-Oct-22
102	LF-1120	Annual Check-In & Budget Update for 2024	30	06-Sep-23	18-Oct-23
103	LF-1140	Annual Check-In & Budget Update for 2025	30	03-Sep-24	14-Oct-24
104		**Authority Board (Dues)**	438	01-Apr-22	02-Jan-24
105	LF-2100	2022 Invoice Due Date 4/1/2022	1	01-Apr-22	01-Apr-22*
106	LF-2120	2023 Invoice Due Date 1/3/2023	1	03-Jan-23	03-Jan-23*
107	LF-2140	2024 Invoice Due Date 1/2/2024	1	02-Jan-24	02-Jan-24*
108		**Bank Financing**	50	20-Mar-23	26-May-23
109	BF-1100	Prepare & Issue RFP to Prospective Lenders	15	20-Mar-23	07-Apr-23
110	BF-1120	Review & Select Lender(s)	20	10-Apr-23	05-May-23
111	BF-1140	Execute Bank Financing Loan Documents	15	08-May-23	26-May-23



Remaining Level of Effort — Remaining Work — Summary
Actual Level of Effort — Critical Remaining Work
Actual Work — Milestone

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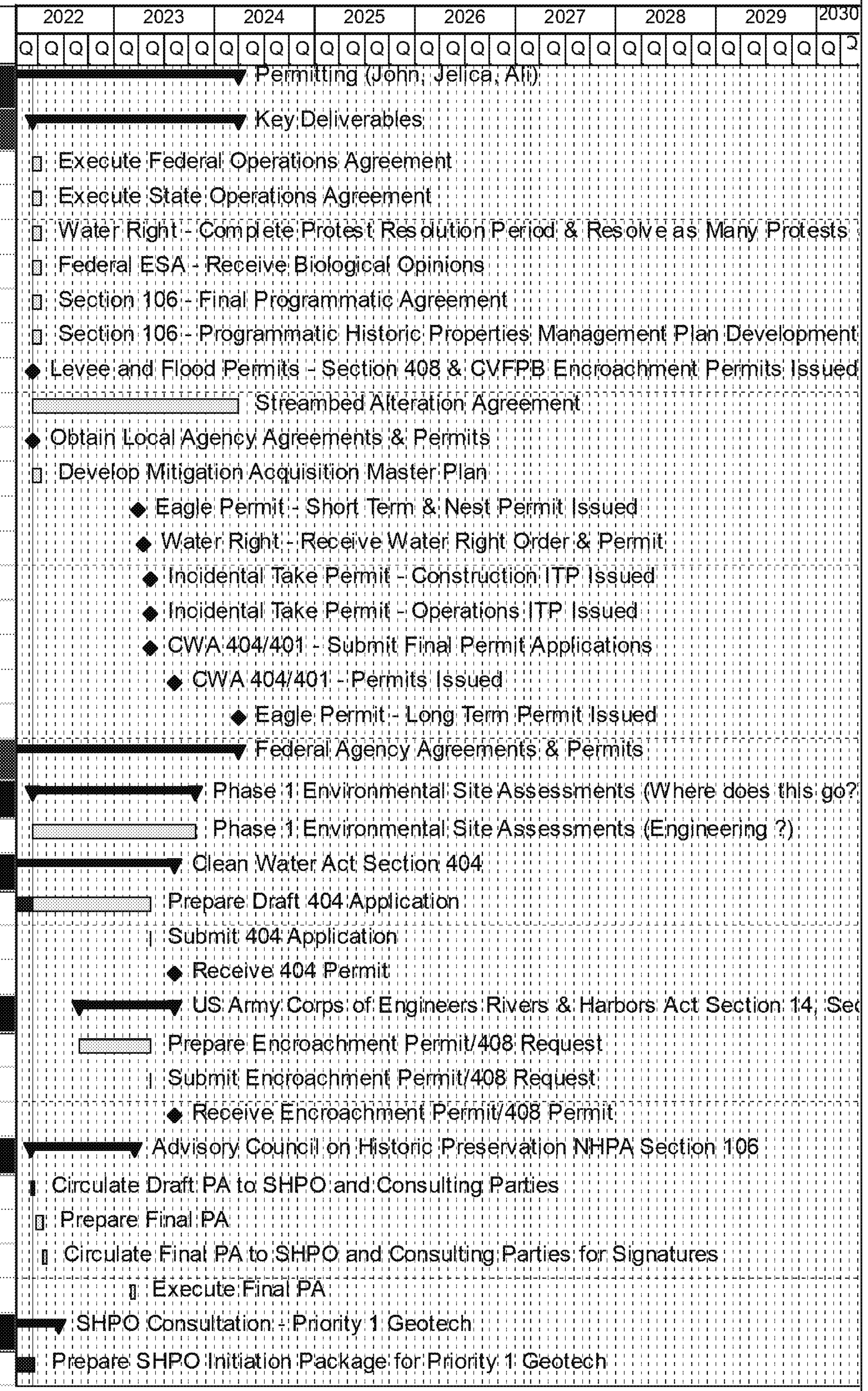
Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
112		**Permitting (John, Jelica, Ali)**	509	04-Jan-21 A	26-Mar-24
113		**Key Deliverables**	509	14-Mar-22	26-Mar-24
114	KD-1240	Execute Federal Operations Agreement	21	14-Mar-22	12-Apr-22
115	KD-1250	Execute State Operations Agreement	21	14-Mar-22	12-Apr-22
116	KD-1320	Water Right - Complete Protest Resolution Period & Resolve as Many Protests as Possible	21	14-Mar-22	12-Apr-22
117	KD-1340	Federal ESA - Receive Biological Opinions	21	14-Mar-22	12-Apr-22
118	KD-1350	Section 106 - Final Programmatic Agreement	21	14-Mar-22	12-Apr-22
119	KD-1360	Section 106 - Programmatic Historic Properties Management Plan Development	21	14-Mar-22	12-Apr-22
120	KD-1410	Levee and Flood Permits - Section 408 & CVFPB Encroachment Permits Issued	0		14-Mar-22
121	KD-1420	Streambed Alteration Agreement	509	14-Mar-22	26-Mar-24
122	KD-1450	Obtain Local Agency Agreements & Permits	0		14-Mar-22
123	KD-1460	Develop Mitigation Acquisition Master Plan	21	14-Mar-22	12-Apr-22
124	KD-1430	Eagle Permit - Short Term & Nest Permit Issued	0		31-Mar-23
125	KD-1330	Water Right - Receive Water Right Order & Permit	0		17-Apr-23
126	KD-1370	Incidental Take Permit - Construction ITP Issued	0		11-May-23
127	KD-1380	Incidental Take Permit - Operations ITP Issued	0		11-May-23
128	KD-1390	CWA 404/401 - Submit Final Permit Applications	0		11-May-23
129	KD-1400	CWA 404/401 - Permits Issued	0		07-Aug-23
130	KD-1440	Eagle Permit - Long Term Permit Issued	0		26-Mar-24
131		**Federal Agency Agreements & Permits**	509	11-Jan-21 A	26-Mar-24
132		**Phase 1 Environmental Site Assessments (Where does this go?)**	421	14-Mar-22	23-Oct-23
133	FED-010	Phase 1 Environmental Site Assessments (Engineering ?)	421	14-Mar-22	23-Oct-23
134		**Clean Water Act Section 404**	352	04-Feb-21 A	07-Aug-23
135	404-050	Prepare Draft 404 Application	291	04-Feb-21 A	10-May-23
136	404-120	Submit 404 Application	1	11-May-23	11-May-23
137	404-130	Receive 404 Permit	0		07-Aug-23
138		**US Army Corps of Engineers Rivers & Harbors Act Section 14, Section 408**	233	31-Aug-22	07-Aug-23
139	408-150	Prepare Encroachment Permit/408 Request	172	31-Aug-22	10-May-23
140	408-160	Submit Encroachment Permit/408 Request	1	11-May-23	11-May-23
141	408-170	Receive Encroachment Permit/408 Permit	0		07-Aug-23
142		**Advisory Council on Historic Preservation NHPA Section 106**	252	07-Mar-22 A	16-Mar-23
143	106-072	Circulate Draft PA to SHPO and Consulting Parties	5	07-Mar-22 A	18-Mar-22
144	106-081	Prepare Final PA	20	21-Mar-22	18-Apr-22
145	106-092	Circulate Final PA to SHPO and Consulting Parties for Signatures	10	19-Apr-22	02-May-22
146	106-102	Execute Final PA	10	03-Mar-23	16-Mar-23
147		**SHPO Consultation - Priority 1 Geotech**	66	02-Aug-21 A	15-Jun-22
148	SHPO-240	Prepare SHPO Initiation Package for Priority 1 Geotech	5	02-Aug-21 A	18-Mar-22



Remaining Level of Effort — Remaining Work — Summary
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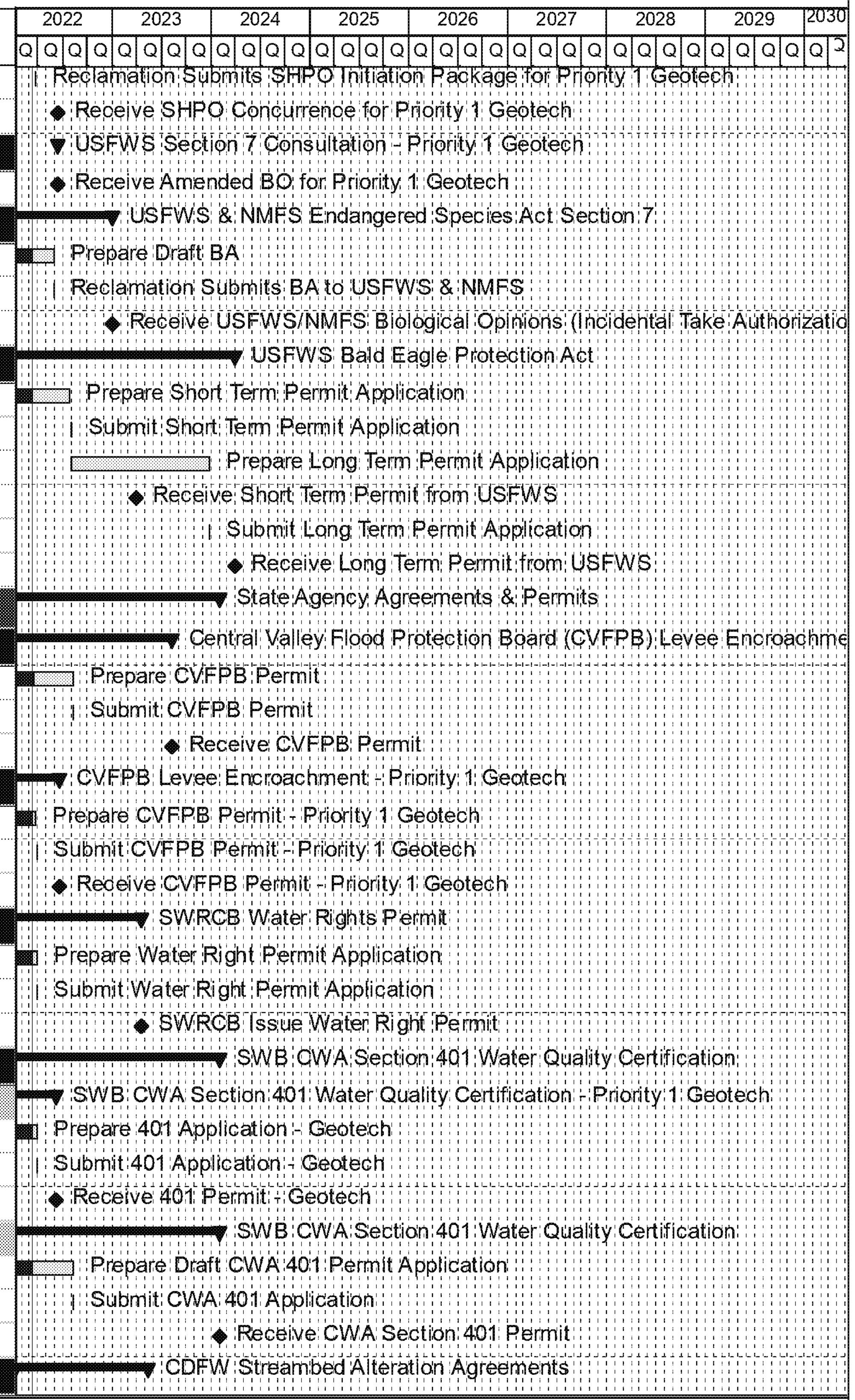
Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
149	SHPO-250	Reclamation Submits SHPO Initiation Package for Priority 1 Geotech	1	21-Mar-22	21-Mar-22
150	SHPO-260	Receive SHPO Concurrence for Priority 1 Geotech	0		15-Jun-22
151		**USFWS Section 7 Consultation - Priority 1 Geotech**	0	16-Jun-22	16-Jun-22
152	BA-120	Receive Amended BO for Priority 1 Geotech	0		16-Jun-22
153		**USFWS & NMFS Endangered Species Act Section 7**	201	11-Jan-21 A	30-Dec-22
154	BA-200	Prepare Draft BA	57	11-Jan-21 A	02-Jun-22
155	BA-210	Reclamation Submits BA to USFWS & NMFS	1	03-Jun-22	03-Jun-22
156	BA-220	Receive USFWS/NMFS Biological Opinions (Incidental Take Authorizations)	0		30-Dec-22
157		**USFWS Bald Eagle Protection Act**	509	03-Jan-22 A	26-Mar-24
158	USFWS-110	Prepare Short Term Permit Application	97	03-Jan-22 A	29-Jul-22
159	USFWS-120	Submit Short Term Permit Application	1	01-Aug-22	01-Aug-22
160	USFWS-140	Prepare Long Term Permit Application	350	02-Aug-22	27-Dec-23
161	USFWS-130	Receive Short Term Permit from USFWS	0		31-Mar-23
162	USFWS-150	Submit Long Term Permit Application	1	28-Dec-23	28-Dec-23
163	USFWS-160	Receive Long Term Permit from USFWS	0		26-Mar-24
164		**State Agency Agreements & Permits**	469	04-Jan-21 A	29-Jan-24
165		**Central Valley Flood Protection Board (CVFPB) Levee Encroachment**	351	13-Dec-21 A	10-Aug-23
166	CVFPB-100	Prepare CVFPB Permit	100	13-Dec-21 A	09-Aug-22
167	CVFPB-110	Submit CVFPB Permit	1	10-Aug-22	10-Aug-22
168	CVFPB-120	Receive CVFPB Permit	0		10-Aug-23
169		**CVFPB Levee Encroachment - Priority 1 Geotech**	71	01-Nov-21 A	22-Jun-22
170	CVFPB-200	Prepare CVFPB Permit - Priority 1 Geotech	10	01-Nov-21 A	25-Mar-22
171	CVFPB-210	Submit CVFPB Permit - Priority 1 Geotech	1	28-Mar-22	28-Mar-22
172	CVFPB-220	Receive CVFPB Permit - Priority 1 Geotech	0		22-Jun-22
173		**SWRCB Water Rights Permit**	274	01-Feb-21 A	17-Apr-23
174	WRP-100	Prepare Water Right Permit Application	13	01-Feb-21 A	30-Mar-22
175	WRP-110	Submit Water Right Permit Application	1	01-Apr-22	01-Apr-22
176	WRP-120	SWRCB Issue Water Right Permit	0		17-Apr-23
177		**SWB CWA Section 401 Water Quality Certification**	469	04-Jan-21 A	29-Jan-24
178		**SWB CWA Section 401 Water Quality Certification - Priority 1 Geotech**	59	01-Mar-21 A	06-Jun-22
179	401-100	Prepare 401 Application - Geotech	13	01-Mar-21 A	30-Mar-22
180	401-110	Submit 401 Application - Geotech	1	01-Apr-22	01-Apr-22
181	401-120	Receive 401 Permit - Geotech	0		06-Jun-22
182		**SWB CWA Section 401 Water Quality Certification**	469	04-Jan-21 A	29-Jan-24
183	401-200	Prepare Draft CWA 401 Permit Application	103	04-Jan-21 A	08-Aug-22
184	401-210	Submit CWA 401 Application	1	09-Aug-22	09-Aug-22
185	401-220	Receive CWA Section 401 Permit	0		29-Jan-24
186		**CDFW Streambed Alteration Agreements**	292	10-Jan-22 A	11-May-23



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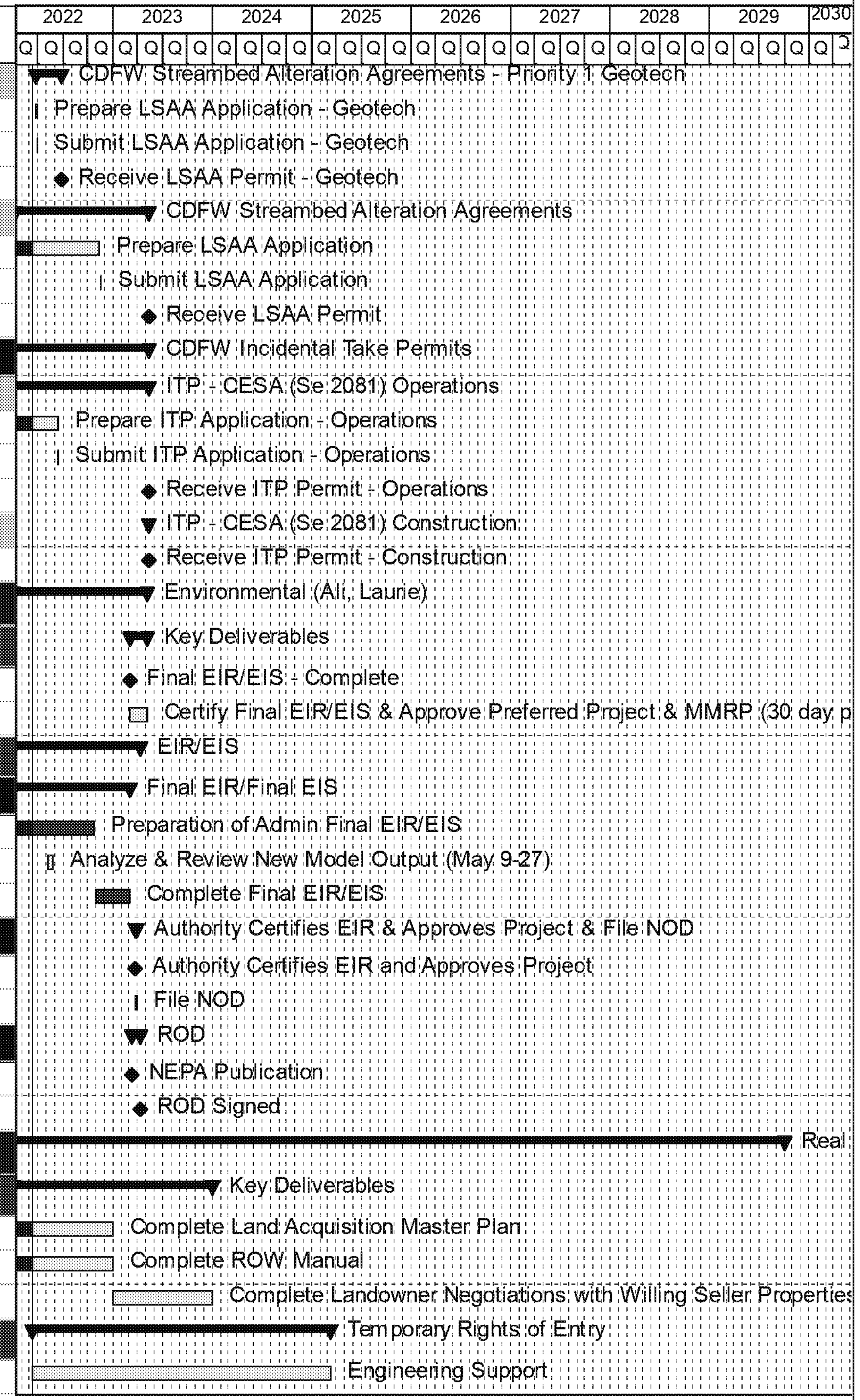
#	Activity ID	Activity Name	Remaining Duration	Start	Finish
187		CDFW Streambed Alteration Agreements - Priority 1 Geotech	69	21-Mar-22	27-Jun-22
188	1600-100	Prepare LSAA Application - Geotech	8	21-Mar-22*	30-Mar-22
189	1600-110	Submit LSAA Application - Geotech	1	01-Apr-22	01-Apr-22
190	1600-120	Receive LSAA Permit - Geotech	0		27-Jun-22
191		CDFW Streambed Alteration Agreements	292	10-Jan-22 A	11-May-23
192	1600-200	Prepare LSAA Application	170	10-Jan-22 A	14-Nov-22
193	1600-210	Submit LSAA Application	1	15-Nov-22	15-Nov-22
194	1600-220	Receive LSAA Permit	0		11-May-23
195		CDFW Incidental Take Permits	292	11-Jan-21 A	11-May-23
196		ITP - CESA (Se 2081) Operations	292	11-Jan-21 A	11-May-23
197	2081-100	Prepare ITP Application - Operations	64	11-Jan-21 A	13-Jun-22
198	2081-110	Submit ITP Application - Operations	1	14-Jun-22	14-Jun-22
199	2081-120	Receive ITP Permit - Operations	0		11-May-23
200		ITP - CESA (Se 2081) Construction	0	11-May-23	11-May-23
201	2081-220	Receive ITP Permit - Construction	0		11-May-23
202		Environmental (Ali, Laurie)	287	03-Jan-22 A	04-May-23
203		Key Deliverables	45	02-Mar-23	04-May-23
204	KD-1470	Final EIR/EIS - Complete	0		02-Mar-23
205	KD-1480	Certify Final EIR/EIS & Approve Preferred Project & MMRP (30 day period for legal challenge)	45	03-Mar-23	04-May-23
206		EIR/EIS	269	03-Jan-22 A	10-Apr-23
207		Final EIR/Final EIS	242	03-Jan-22 A	02-Mar-23
208	EIR-210	Preparation of Admin Final EIR/EIS	158	03-Jan-22 A	26-Oct-22
209	EIR-220	Analyze & Review New Model Output (May 9-27)	15	09-May-22	27-May-22
210	EIR-250	Complete Final EIR/EIS	84	27-Oct-22	02-Mar-23
211		Authority Certifies EIR & Approves Project & File NOD	5	23-Mar-23	30-Mar-23
212	EIR-370	Authority Certifies EIR and Approves Project	0		23-Mar-23
213	EIR-380	File NOD	5	24-Mar-23	30-Mar-23
214		ROD	22	09-Mar-23	10-Apr-23
215	EIR-440	NEPA Publication	0		09-Mar-23
216	EIR-450	ROD Signed	0		10-Apr-23
217		Real Estate	1950	02-Nov-20 A	04-Oct-29
218		Key Deliverables	450	03-Jan-22 A	29-Dec-23
219	KD-1490	Complete Land Acquisition Master Plan	201	03-Jan-22 A	30-Dec-22
220	KD-1495	Complete ROW Manual	201	03-Jan-22 A	30-Dec-22
221	KD-1500	Complete Landowner Negotiations with Willing Seller Properties	249	03-Jan-23	29-Dec-23
222		Temporary Rights of Entry	756	14-Mar-22	07-Mar-25
223	RE-1010	Engineering Support	756	14-Mar-22	07-Mar-25



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filter: Incomplete.
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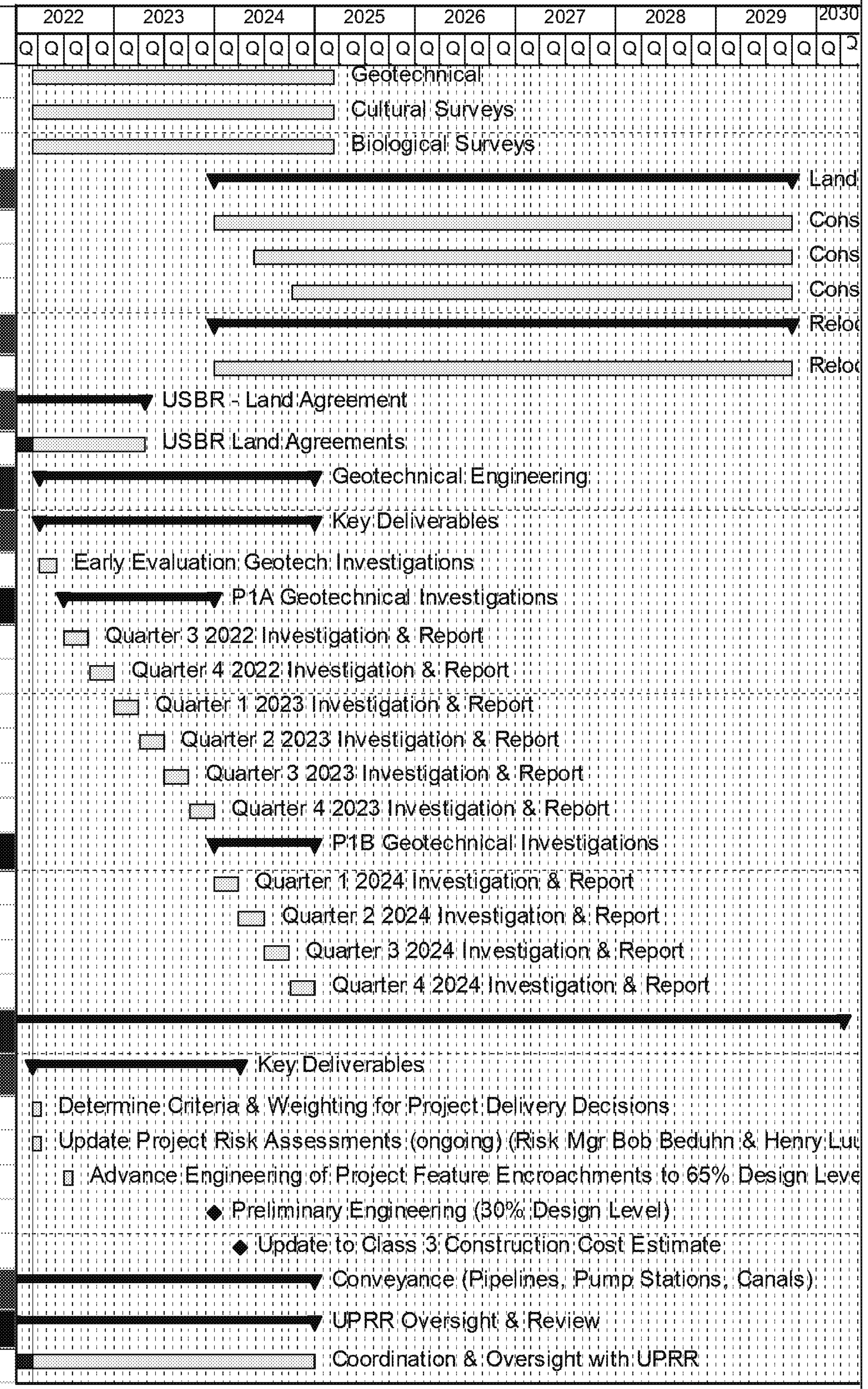
#	Activity ID	Activity Name	Remaining Duration	Start	Finish
224	RE-1020	Geotechnical	756	14-Mar-22	07-Mar-25
225	RE-1030	Cultural Surveys	756	14-Mar-22	07-Mar-25
226	RE-1040	Biological Surveys	756	14-Mar-22	07-Mar-25
227	**Land Acquisition**		1500	02-Jan-24	04-Oct-29
228	RE-1050	Construction Package 1 - Land Acquisition	1500	02-Jan-24	04-Oct-29
229	RE-1060	Construction Package 2 - Land Acquisition	1400	23-May-24	04-Oct-29
230	RE-1070	Construction Package 3 - Land Acquisition	1300	11-Oct-24	04-Oct-29
231	**Relocation**		1500	02-Jan-24	01-Oct-29
232	RE-1100	Relocation Assistance, as Needed	1500	02-Jan-24	01-Oct-29
233	**USBR - Land Agreement**		278	02-Nov-20 A	21-Apr-23
234	FED-100	USBR Land Agreements	278	02-Nov-20 A	21-Apr-23
235	**Geotechnical Engineering**		690	08-Apr-22	31-Dec-24
236	**Key Deliverables**		690	08-Apr-22	31-Dec-24
237	KD-2000	Early Evaluation Geotech Investigations	44	08-Apr-22	09-Jun-22
238	**P1A Geotechnical Investigations**		373	01-Jul-22	29-Dec-23
239	KD-1160	Quarter 3 2022 Investigation & Report	64	01-Jul-22	30-Sep-22
240	KD-1520	Quarter 4 2022 Investigation & Report	60	03-Oct-22	30-Dec-22
241	KD-1530	Quarter 1 2023 Investigation & Report	62	03-Jan-23	31-Mar-23
242	KD-1540	Quarter 2 2023 Investigation & Report	64	03-Apr-23	30-Jun-23
243	KD-1550	Quarter 3 2023 Investigation & Report	63	03-Jul-23	29-Sep-23
244	KD-1560	Quarter 4 2023 Investigation & Report	60	02-Oct-23	29-Dec-23
245	**P1B Geotechnical Investigations**		258	02-Jan-24	31-Dec-24
246	KD-1590	Quarter 1 2024 Investigation & Report	62	02-Jan-24	29-Mar-24
247	KD-1600	Quarter 2 2024 Investigation & Report	64	01-Apr-24	28-Jun-24
248	KD-1610	Quarter 3 2024 Investigation & Report	66	01-Jul-24	30-Sep-24
249	KD-1620	Quarter 4 2024 Investigation & Report	66	01-Oct-24	31-Dec-24
250	**Preliminary Engineering**		2086	14-Oct-20 A	12-Apr-30
251	**Key Deliverables**		515	14-Mar-22	03-Apr-24
252	KD-1120	Determine Criteria & Weighting for Project Delivery Decisions	21	14-Mar-22	12-Apr-22
253	KD-1210	Update Project Risk Assessments (ongoing) (Risk Mgr Bob Beduhn & Henry Luu)	21	14-Mar-22	12-Apr-22
254	KD-1110	Advance Engineering of Project Feature Encroachments to 65% Design Level in Support of Permitting	21	05-Jul-22	02-Aug-22
255	KD-1180	Preliminary Engineering (30% Design Level)	0		29-Dec-23
256	KD-1190	Update to Class 3 Construction Cost Estimate	0		03-Apr-24
257	**Conveyance (Pipelines, Pump Stations, Canals)**		708	03-Jan-22 A	31-Dec-24
258	**UPRR Oversight & Review**		708	03-Jan-22 A	31-Dec-24
259	A1110	Coordination & Oversight with UPRR	708	03-Jan-22 A	31-Dec-24



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

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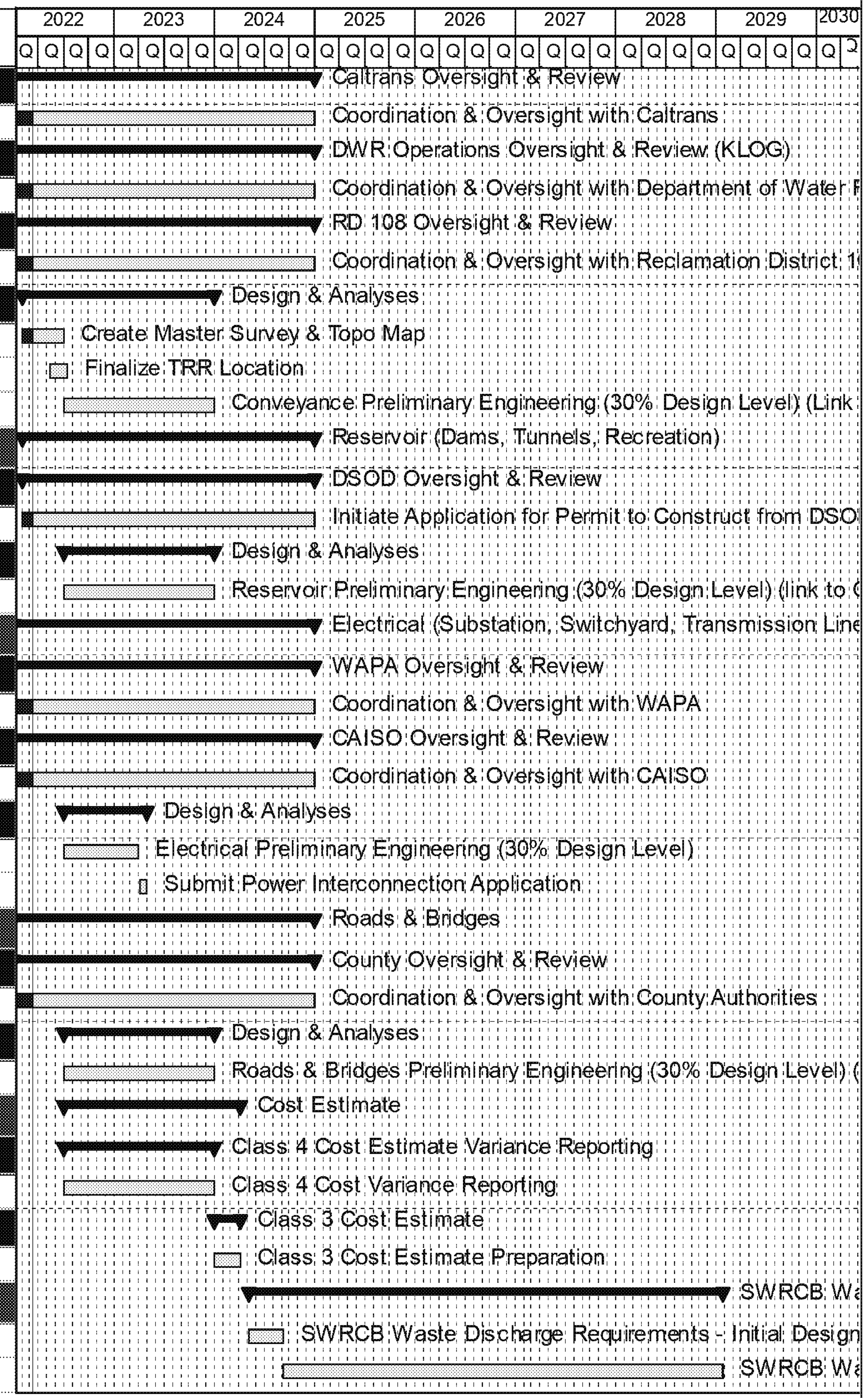
#	Activity ID	Activity Name	Remaining Duration	Start	Finish
260		**Caltrans Oversight & Review**	708	03-Jan-22 A	31-Dec-24
261	A1120	Coordination & Oversight with Caltrans	708	03-Jan-22 A	31-Dec-24
262		**DWR Operations Oversight & Review (KLOG)**	708	03-Jan-22 A	31-Dec-24
263	A1130	Coordination & Oversight with Department of Water Resources	708	03-Jan-22 A	31-Dec-24
264		**RD 108 Oversight & Review**	708	03-Jan-22 A	31-Dec-24
265	A1140	Coordination & Oversight with Reclamation District 108	708	03-Jan-22 A	31-Dec-24
266		**Design & Analyses**	450	01-Feb-22 A	29-Dec-23
267	KD-1140	Create Master Survey & Topo Map	78	01-Feb-22 A	01-Jul-22
268	KD-1150	Finalize TRR Location	46	10-May-22	14-Jul-22
269	KD-1630	Conveyance Preliminary Engineering (30% Design Level) (Link to Geotech)	372	05-Jul-22	29-Dec-23
270		**Reservoir (Dams, Tunnels, Recreation)**	708	01-Feb-22 A	31-Dec-24
271		**DSOD Oversight & Review**	708	01-Feb-22 A	31-Dec-24
272	KD-1100	Initiate Application for Permit to Construct from DSOD	708	01-Feb-22 A	31-Dec-24
273		**Design & Analyses**	372	05-Jul-22	29-Dec-23
274	KD-1660	Reservoir Preliminary Engineering (30% Design Level) (link to Geotech)	372	05-Jul-22	29-Dec-23
275		**Electrical (Substation, Switchyard, Transmission Line)**	708	03-Jan-22 A	31-Dec-24
276		**WAPA Oversight & Review**	708	03-Jan-22 A	31-Dec-24
277	A1150	Coordination & Oversight with WAPA	708	03-Jan-22 A	31-Dec-24
278		**CAISO Oversight & Review**	708	03-Jan-22 A	31-Dec-24
279	A1160	Coordination & Oversight with CAISO	708	03-Jan-22 A	31-Dec-24
280		**Design & Analyses**	205	05-Jul-22	28-Apr-23
281	KD-1640	Electrical Preliminary Engineering (30% Design Level)	185	05-Jul-22	31-Mar-23
282	KD-1200	Submit Power Interconnection Application	20	03-Apr-23	28-Apr-23
283		**Roads & Bridges**	708	03-Jan-22 A	31-Dec-24
284		**County Oversight & Review**	708	03-Jan-22 A	31-Dec-24
285	A1170	Coordination & Oversight with County Authorities	708	03-Jan-22 A	31-Dec-24
286		**Design & Analyses**	372	05-Jul-22	29-Dec-23
287	KD-1650	Roads & Bridges Preliminary Engineering (30% Design Level) (link to Geotech)	372	05-Jul-22	29-Dec-23
288		**Cost Estimate**	437	05-Jul-22	03-Apr-24
289		**Class 4 Cost Estimate Variance Reporting**	372	05-Jul-22	29-Dec-23
290	A1180	Class 4 Cost Variance Reporting	372	05-Jul-22	29-Dec-23
291		**Class 3 Cost Estimate**	65	02-Jan-24	03-Apr-24
292	A1190	Class 3 Cost Estimate Preparation	65	02-Jan-24	03-Apr-24
293		**SWRCB Waste Discharge Requirements (Multiple permits based on constr. packages and/or ROW acce:**	1234	03-May-24	25-Jan-29
294	STA-160	SWRCB Waste Discharge Requirements - Initial Design Review	90	03-May-24	06-Sep-24
295	STA-060	SWRCB Waste Discharge Requirements - Implementation	1144	09-Sep-24	25-Jan-29



Remaining Level of Effort — Remaining Work — Summary
Actual Level of Effort — Critical Remaining Work
Actual Work — Milestone

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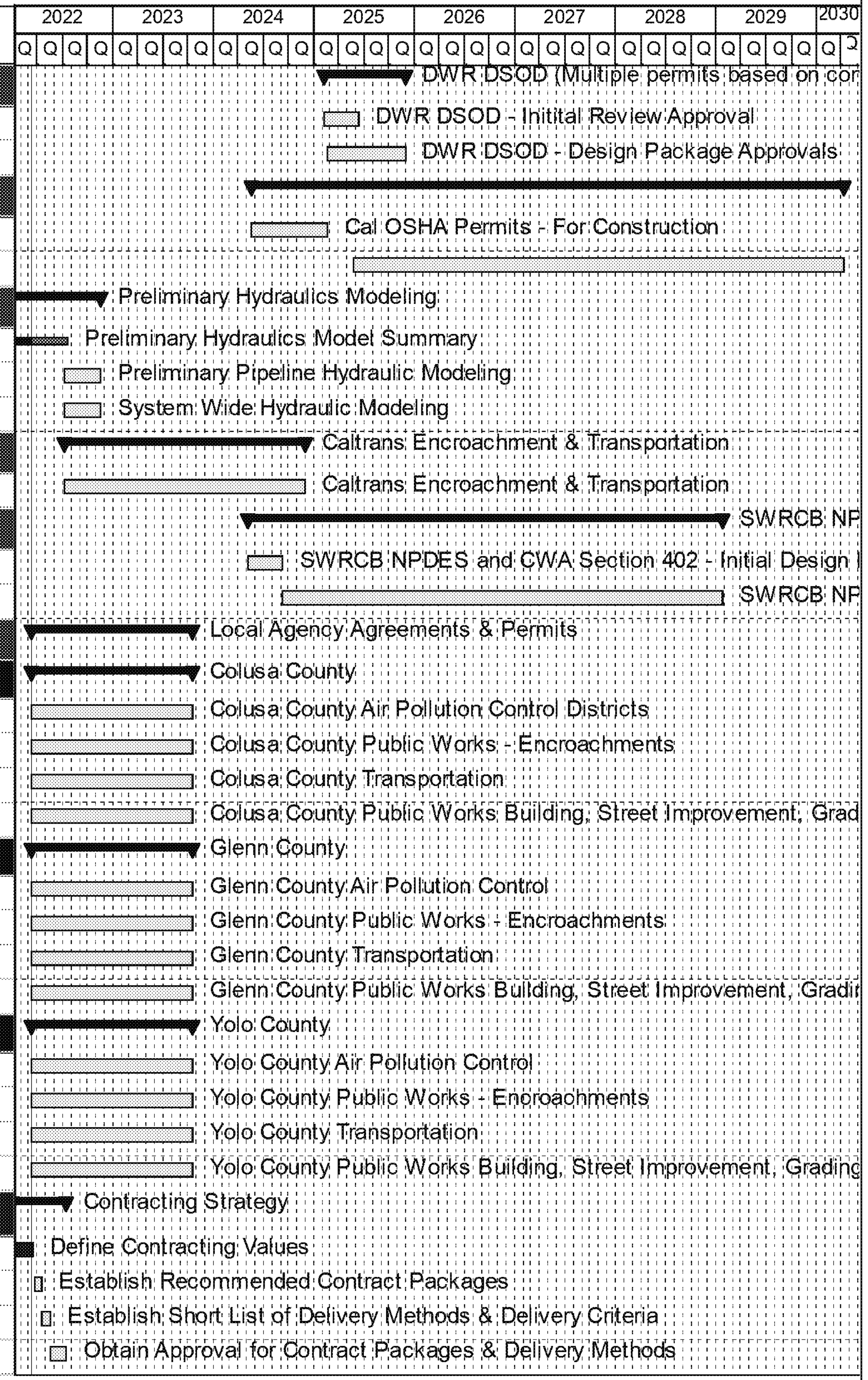
#	Activity ID	Activity Name	Remaining Duration	Start	Finish
296	DWR DSOD (Multiple permits based on construction packages and/or ROW access) - Engineering?		210	07-Feb-25	27-Nov-25
297	STA-130	DWR DSOD - Initital Review Approval	90	07-Feb-25	12-Jun-25
298	STA-080	DWR DSOD - Design Package Approvals	200	21-Feb-25	27-Nov-25
299	Cal OSHA Permits (Multiple permits based on construction packages and/or ROW access) -Engineering		1541	16-May-24	12-Apr-30
300	STA-170	Cal OSHA Permits - For Construction	200	16-May-24	20-Feb-25
301	STA-090	Cal OSHA Implementation	1276	23-May-25	12-Apr-30
302	Preliminary Hydraulics Modeling		171	14-Oct-20 A	15-Nov-22
303	ENG-420	Preliminary Hydraulics Model Summary	90	14-Oct-20 A	20-Jul-22
304	ENG-470	Preliminary Pipeline Hydraulic Modeling	90	08-Jul-22	15-Nov-22
305	ENG-480	System Wide Hydraulic Modeling	90	08-Jul-22	15-Nov-22
306	Caltrans Encroachment & Transportation		605	08-Jul-22	29-Nov-24
307	STA-010	Caltrans Encroachment & Transportation	605	08-Jul-22	29-Nov-24
308	SWRCB NPDES and CWA Section 402 (Multiple permits based on construction packages and/or ROW a		1234	03-May-24	25-Jan-29
309	STA-150	SWRCB NPDES and CWA Section 402 - Initial Design Review	90	03-May-24	06-Sep-24
310	STA-050	SWRCB NPDES and CWA Section 402 - Implementation	1144	09-Sep-24	25-Jan-29
311	Local Agency Agreements & Permits		400	14-Mar-22	16-Oct-23
312	Colusa County		400	14-Mar-22	16-Oct-23
313	LOC-150	Colusa County Air Pollution Control Districts	400	14-Mar-22	16-Oct-23
314	LOC-160	Colusa County Public Works - Encroachments	400	14-Mar-22	16-Oct-23
315	LOC-170	Colusa County Transportation	400	14-Mar-22	16-Oct-23
316	LOC-180	Colusa County Public Works Building, Street Improvement, Grading Permits	400	14-Mar-22	16-Oct-23
317	Glenn County		400	14-Mar-22	16-Oct-23
318	LOC-250	Glenn County Air Pollution Control	400	14-Mar-22	16-Oct-23
319	LOC-260	Glenn County Public Works - Encroachments	400	14-Mar-22	16-Oct-23
320	LOC-270	Glenn County Transportation	400	14-Mar-22	16-Oct-23
321	LOC-280	Glenn County Public Works Building, Street Improvement, Grading Permits	400	14-Mar-22	16-Oct-23
322	Yolo County		400	14-Mar-22	16-Oct-23
323	LOC-200	Yolo County Air Pollution Control	400	14-Mar-22	16-Oct-23
324	LOC-210	Yolo County Public Works - Encroachments	400	14-Mar-22	16-Oct-23
325	LOC-220	Yolo County Transportation	400	14-Mar-22	16-Oct-23
326	LOC-230	Yolo County Public Works Building, Street Improvement, Grading Permits	400	14-Mar-22	16-Oct-23
327	Contracting Strategy		85	03-Jan-22 A	13-Jul-22
328	A1070	Define Contracting Values	5	03-Jan-22 A	18-Mar-22
329	A1080	Establish Recommended Contract Packages	20	21-Mar-22	18-Apr-22
330	A1090	Establish Short List of Delivery Methods & Delivery Criteria	20	19-Apr-22	16-May-22
331	A1100	Obtain Approval for Contract Packages & Delivery Methods	40	17-May-22	13-Jul-22



Remaining Level of Effort | Remaining Work | Summary
Actual Level of Effort | Critical Remaining Work
Actual Work | Milestone

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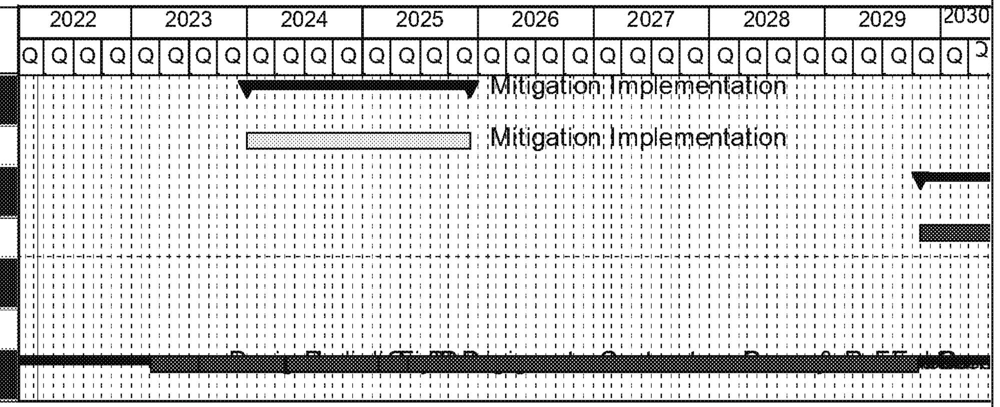
#	Activity ID	Activity Name	Remaining Duration	Start	Finish
332	Mitigation Implementation		500	02-Jan-24	04-Dec-25
333	MI-1100	Mitigation Implementation	500	02-Jan-24	04-Dec-25
334	Commissioning		222	26-Oct-29	02-Sep-30
335	COM-1100	Commissioning	222	26-Oct-29	02-Sep-30
336	Operations		0	03-Sep-30	03-Sep-30
337	OPR-1100	Full Operations Begins	0		03-Sep-30
338	COMPLETED / MARK FOR DELETE		2188	02-Jan-20 A	03-Sep-30



Remaining Level of Effort
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Summary

Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filter: Incomplete.
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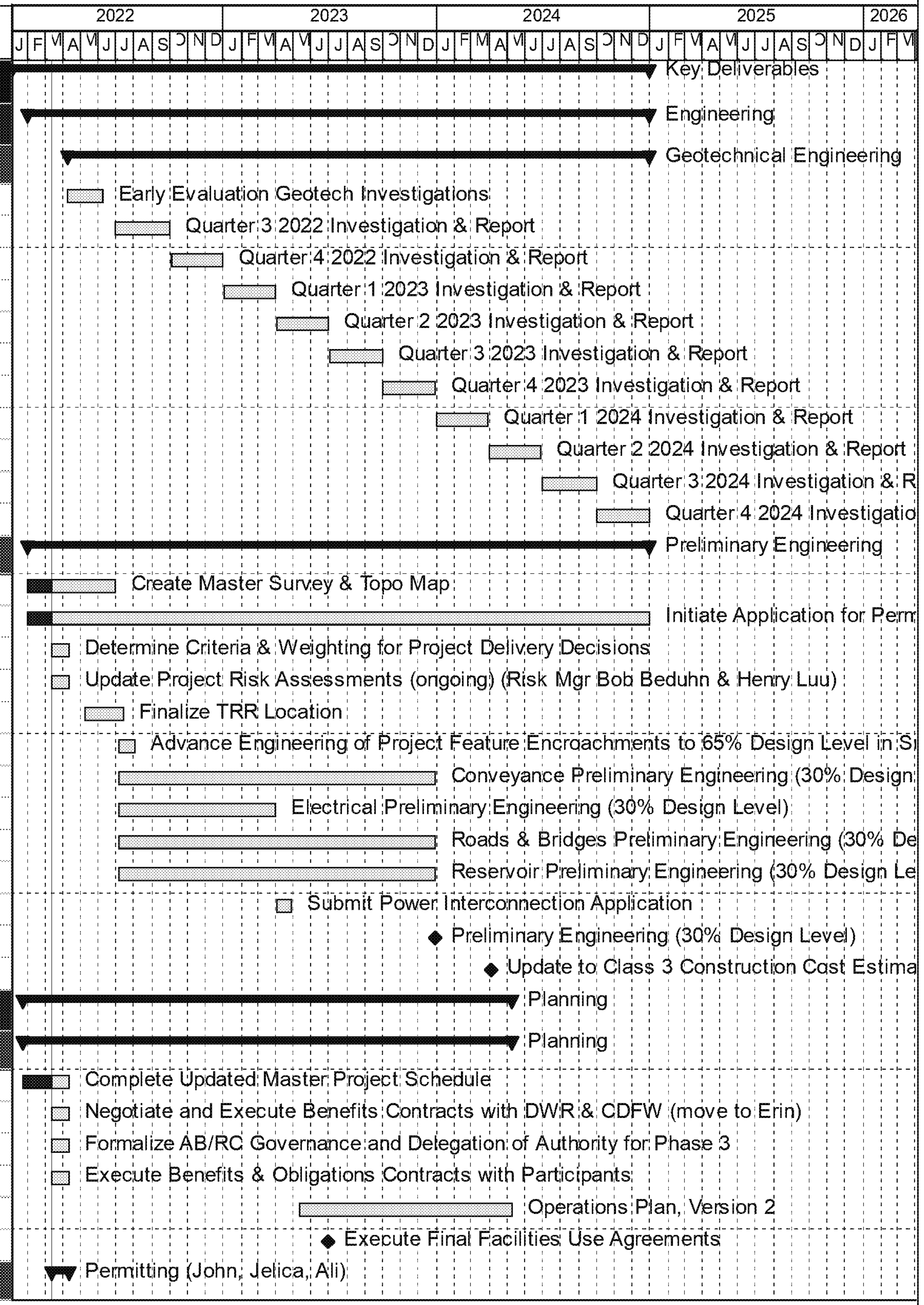
Key Deliverables

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
1	**Key Deliverables**		708	03-Jan-22 A	31-Dec-24
2	**Engineering**		708	01-Feb-22 A	31-Dec-24
3	**Geotechnical Engineering**		690	08-Apr-22	31-Dec-24
4	KD-2000	Early Evaluation Geotech Investigations	44	08-Apr-22	09-Jun-22
5	KD-1160	Quarter 3 2022 Investigation & Report	64	01-Jul-22	30-Sep-22
6	KD-1520	Quarter 4 2022 Investigation & Report	60	03-Oct-22	30-Dec-22
7	KD-1530	Quarter 1 2023 Investigation & Report	62	03-Jan-23	31-Mar-23
8	KD-1540	Quarter 2 2023 Investigation & Report	64	03-Apr-23	30-Jun-23
9	KD-1550	Quarter 3 2023 Investigation & Report	63	03-Jul-23	29-Sep-23
10	KD-1560	Quarter 4 2023 Investigation & Report	60	02-Oct-23	29-Dec-23
11	KD-1590	Quarter 1 2024 Investigation & Report	62	02-Jan-24	29-Mar-24
12	KD-1600	Quarter 2 2024 Investigation & Report	64	01-Apr-24	28-Jun-24
13	KD-1610	Quarter 3 2024 Investigation & Report	66	01-Jul-24	30-Sep-24
14	KD-1620	Quarter 4 2024 Investigation & Report	66	01-Oct-24	31-Dec-24
15	**Preliminary Engineering**		708	01-Feb-22 A	31-Dec-24
16	KD-1140	Create Master Survey & Topo Map	78	01-Feb-22 A	01-Jul-22
17	KD-1100	Initiate Application for Permit to Construct from DSOD	708	01-Feb-22 A	31-Dec-24
18	KD-1120	Determine Criteria & Weighting for Project Delivery Decisions	21	14-Mar-22	12-Apr-22
19	KD-1210	Update Project Risk Assessments (ongoing) (Risk Mgr Bob Beduhn & Henry Luu)	21	14-Mar-22	12-Apr-22
20	KD-1150	Finalize TRR Location	46	10-May-22	14-Jul-22
21	KD-1110	Advance Engineering of Project Feature Encroachments to 65% Design Level in Support of Permitting	21	05-Jul-22	02-Aug-22
22	KD-1630	Conveyance Preliminary Engineering (30% Design Level) (Link to Geotech)	372	05-Jul-22	29-Dec-23
23	KD-1640	Electrical Preliminary Engineering (30% Design Level)	185	05-Jul-22	31-Mar-23
24	KD-1650	Roads & Bridges Preliminary Engineering (30% Design Level) (link to Geotech)	372	05-Jul-22	29-Dec-23
25	KD-1660	Reservoir Preliminary Engineering (30% Design Level) (link to Geotech)	372	05-Jul-22	29-Dec-23
26	KD-1200	Submit Power Interconnection Application	20	03-Apr-23	28-Apr-23
27	KD-1180	Preliminary Engineering (30% Design Level)	0		29-Dec-23
28	KD-1190	Update to Class 3 Construction Cost Estimate	0		03-Apr-24
29	**Planning**		541	24-Jan-22 A	09-May-24
30	**Planning**		541	24-Jan-22 A	09-May-24
31	KD-1130	Complete Updated Master Project Schedule	21	24-Jan-22 A	12-Apr-22
32	KD-1220	Negotiate and Execute Benefits Contracts with DWR & CDFW (move to Erin)	21	14-Mar-22	12-Apr-22
33	KD-1290	Formalize AB/RC Governance and Delegation of Authority for Phase 3	21	14-Mar-22	12-Apr-22
34	KD-1300	Execute Benefits & Obligations Contracts with Participants	21	14-Mar-22	12-Apr-22
35	KD-1510	Operations Plan, Version 2	260	12-May-23	09-May-24
36	KD-1230	Execute Final Facilities Use Agreements	0		28-Jun-23
37	**Permitting (John, Jelica, Ali)**		21	14-Mar-22	12-Apr-22



Remaining Level of Effort — Actual Level of Effort — Actual Work — Remaining Work — Critical Remaining Work — Milestone — Summary

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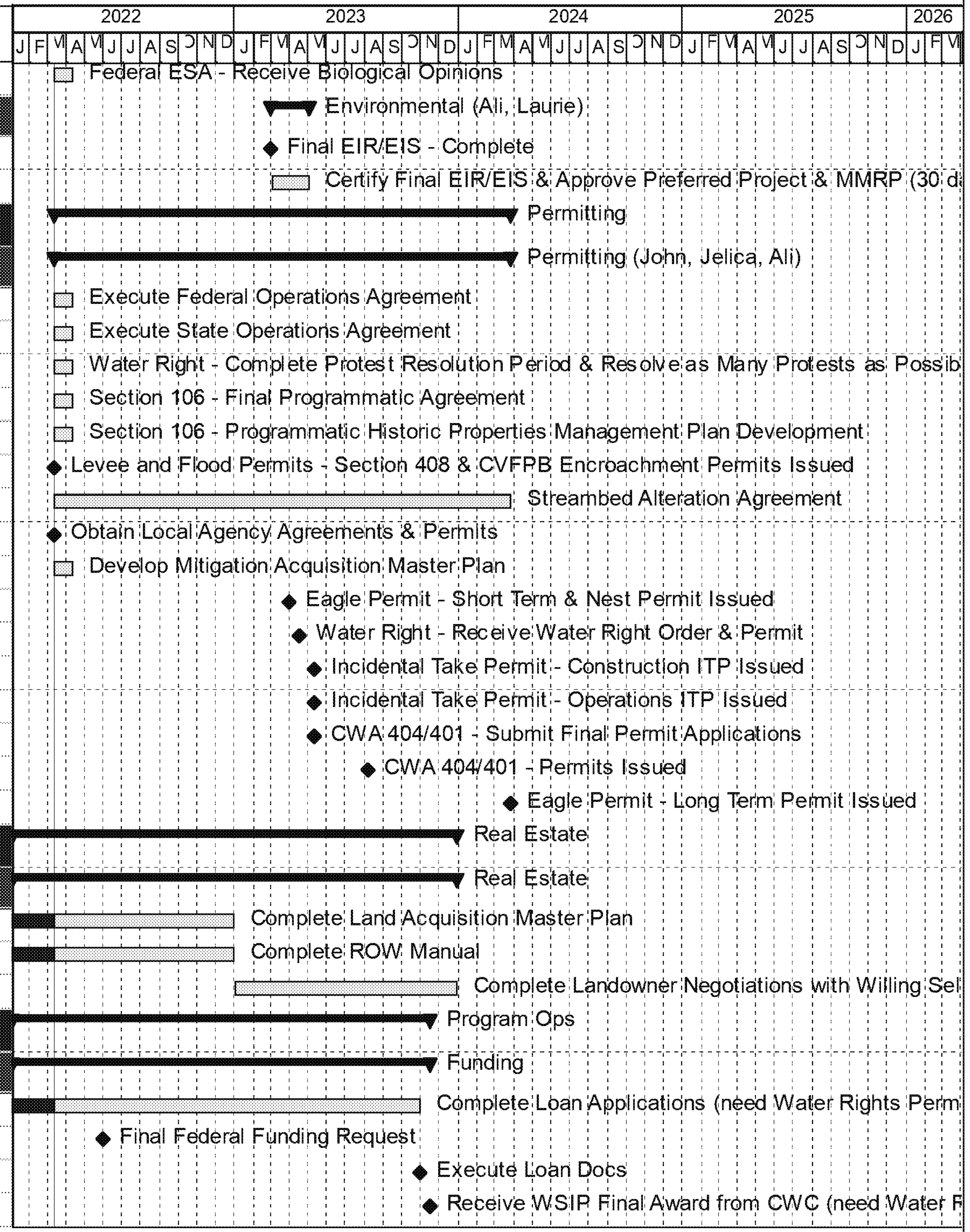
Key Deliverables

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
38	KD-1340	Federal ESA - Receive Biological Opinions	21	14-Mar-22	12-Apr-22
39		**Environmental (Ali, Laurie)**	45	02-Mar-23	04-May-23
40	KD-1470	Final EIR/EIS - Complete	0		02-Mar-23
41	KD-1480	Certify Final EIR/EIS & Approve Preferred Project & MMRP (30 day period for legal challenge)	45	03-Mar-23	04-May-23
42		**Permitting**	509	14-Mar-22	26-Mar-24
43		**Permitting (John, Jelica, Ali)**	509	14-Mar-22	26-Mar-24
44	KD-1240	Execute Federal Operations Agreement	21	14-Mar-22	12-Apr-22
45	KD-1250	Execute State Operations Agreement	21	14-Mar-22	12-Apr-22
46	KD-1320	Water Right - Complete Protest Resolution Period & Resolve as Many Protests as Possible	21	14-Mar-22	12-Apr-22
47	KD-1350	Section 106 - Final Programmatic Agreement	21	14-Mar-22	12-Apr-22
48	KD-1360	Section 106 - Programmatic Historic Properties Management Plan Development	21	14-Mar-22	12-Apr-22
49	KD-1410	Levee and Flood Permits - Section 408 & CVFPB Encroachment Permits Issued	0		14-Mar-22
50	KD-1420	Streambed Alteration Agreement	509	14-Mar-22	26-Mar-24
51	KD-1450	Obtain Local Agency Agreements & Permits	0		14-Mar-22
52	KD-1460	Develop Mitigation Acquisition Master Plan	21	14-Mar-22	12-Apr-22
53	KD-1430	Eagle Permit - Short Term & Nest Permit Issued	0		31-Mar-23
54	KD-1330	Water Right - Receive Water Right Order & Permit	0		17-Apr-23
55	KD-1370	Incidental Take Permit - Construction ITP Issued	0		11-May-23
56	KD-1380	Incidental Take Permit - Operations ITP Issued	0		11-May-23
57	KD-1390	CWA 404/401 - Submit Final Permit Applications	0		11-May-23
58	KD-1400	CWA 404/401 - Permits Issued	0		07-Aug-23
59	KD-1440	Eagle Permit - Long Term Permit Issued	0		26-Mar-24
60		**Real Estate**	450	03-Jan-22 A	29-Dec-23
61		**Real Estate**	450	03-Jan-22 A	29-Dec-23
62	KD-1490	Complete Land Acquisition Master Plan	201	03-Jan-22 A	30-Dec-22
63	KD-1495	Complete ROW Manual	201	03-Jan-22 A	30-Dec-22
64	KD-1500	Complete Landowner Negotiations with Willing Seller Properties	249	03-Jan-23	29-Dec-23
65		**Program Ops**	423	03-Jan-22 A	17-Nov-23
66		**Funding**	423	03-Jan-22 A	17-Nov-23
67	KD-1270	Complete Loan Applications (need Water Rights Permit to complete)	411	03-Jan-22 A	31-Oct-23
68	KD-1260	Final Federal Funding Request	0		31-May-22
69	KD-1280	Execute Loan Docs	0		31-Oct-23
70	KD-1310	Receive WSIP Final Award from CWC (need Water Rights Permit to complete)	0		17-Nov-23



Remaining Level of Effort | Remaining Work | Summary
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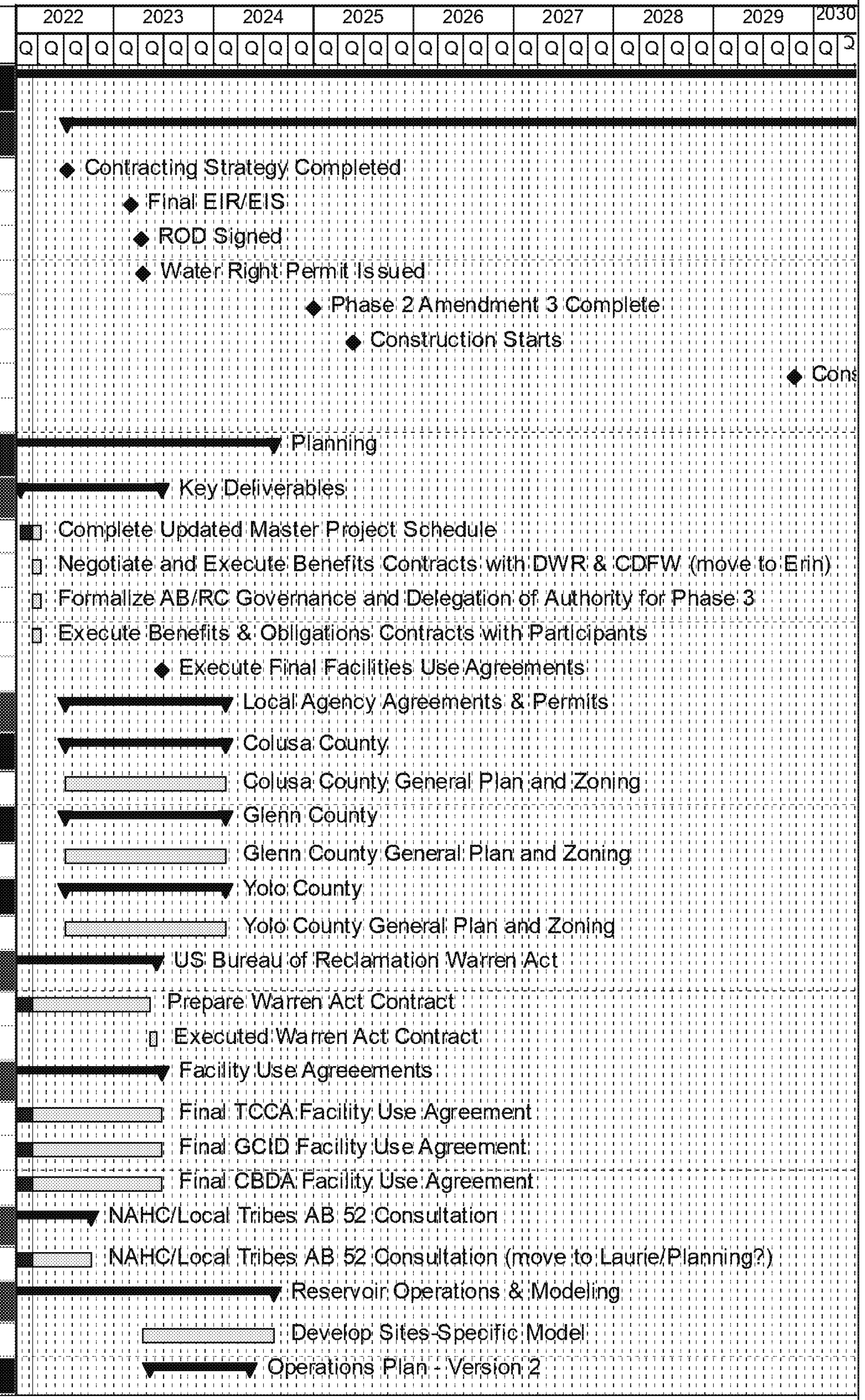
Sites Reservoir Project

Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
1		**Sites Reservoir Project**	2188	02-Jan-20 A	03-Sep-30
2		**Project Milestones**	2103	13-Jul-22	03-Sep-30
3	WP3-015	Contracting Strategy Completed	0		13-Jul-22
4	MS-250-FE	Final EIR/EIS	0		02-Mar-23
5	MS-450-RD	ROD Signed	0		10-Apr-23
6	WR-185	Water Right Permit Issued	0		17-Apr-23
7	WP3-010	Phase 2 Amendment 3 Complete	0		31-Dec-24*
8	MS-500-CS	Construction Starts	0	23-May-25	
9	MS-510-CC	Construction Complete	0		25-Oct-29
10	MS-600-PB	Public Beneficial Occupancy - Sites Program	0		03-Sep-30
11		**Planning**	606	01-Sep-20 A	09-Aug-24
12		**Key Deliverables**	325	24-Jan-22 A	28-Jun-23
13	KD-1130	Complete Updated Master Project Schedule	21	24-Jan-22 A	12-Apr-22
14	KD-1220	Negotiate and Execute Benefits Contracts with DWR & CDFW (move to Erin)	21	14-Mar-22	12-Apr-22
15	KD-1290	Formalize AB/RC Governance and Delegation of Authority for Phase 3	21	14-Mar-22	12-Apr-22
16	KD-1300	Execute Benefits & Obligations Contracts with Participants	21	14-Mar-22	12-Apr-22
17	KD-1230	Execute Final Facilities Use Agreements	0		28-Jun-23
18		**Local Agency Agreements & Permits**	400	08-Jul-22	14-Feb-24
19		**Colusa County**	400	08-Jul-22	14-Feb-24
20	LOC-050	Colusa County General Plan and Zoning	400	08-Jul-22	14-Feb-24
21		**Glenn County**	400	08-Jul-22	14-Feb-24
22	LOC-140	Glenn County General Plan and Zoning	400	08-Jul-22	14-Feb-24
23		**Yolo County**	400	08-Jul-22	14-Feb-24
24	LOC-90	Yolo County General Plan and Zoning	400	08-Jul-22	14-Feb-24
25		**US Bureau of Reclamation Warren Act**	311	01-Jun-21 A	08-Jun-23
26	FED-090	Prepare Warren Act Contract	291	01-Jun-21 A	10-May-23
27	FED-110	Executed Warren Act Contract	20	11-May-23	08-Jun-23
28		**Facility Use Agreeements**	325	27-Aug-21 A	28-Jun-23
29	FO-1020	Final TCCA Facility Use Agreement	325	27-Aug-21 A	28-Jun-23
30	FO-1030	Final GCID Facility Use Agreement	325	27-Aug-21 A	28-Jun-23
31	FO-1040	Final CBDA Facility Use Agreement	325	27-Aug-21 A	28-Jun-23
32		**NAHC/Local Tribes AB 52 Consultation**	148	01-Sep-20 A	12-Oct-22
33	STA-120	NAHC/Local Tribes AB 52 Consultation (move to Laurie/Planning?)	148	01-Sep-20 A	12-Oct-22
34		**Reservoir Operations & Modeling**	606	01-Nov-20 A	09-Aug-24
35	OS-1150	Develop Sites-Specific Model	344	18-Apr-23	09-Aug-24
36		**Operations Plan - Version 2**	260	12-May-23	09-May-24



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Project ID: Sites / Project Name: Sites Reservoir Project
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Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
37	KD-1510	Operations Plan, Version 2	260	12-May-23	09-May-24
38	**Final Sites DWR/Reclamation Operating Agreement**		151	04-Apr-22	04-Nov-22
39	OP-1005	Final Sites DWR /Reclamation Operating Agreement	151	04-Apr-22	04-Nov-22
40	**Provide Operations Input on Response to Comments and Final EIR/EIS**		37	14-Mar-22	04-May-22
41	FO-1110	Perform Modeling for Final EIR/EIS	21	14-Mar-22	12-Apr-22
42	FO-1080	Provide Operations Input on Response to Comments and Final EIR/EIS	20	07-Apr-22	04-May-22
43	**BA/ITP Modeling**		34	01-Nov-20 A	29-Apr-22
44	OP-450	BA/ITP Modeling Support	13	01-Nov-20 A	11-Apr-22
45	OP-360	Appendices for BA/ITP	34	01-Apr-21 A	29-Apr-22
46	**Water Rights Modeling**		40	14-Mar-22	09-May-22
47	A1200	Water Rights Modeling Support	40	14-Mar-22	09-May-22
48	A1210	Documentation for Water Rights	40	14-Mar-22	09-May-22
49	**Refined Daily Operations Model**		130	07-Apr-22	11-Oct-22
50	A1220	Refined Daily Operations Model	130	07-Apr-22	11-Oct-22
51	**Update to CalSim 3**		240	26-Oct-22	11-Oct-23
52	A1230	Update to CalSim 3	240	26-Oct-22	11-Oct-23
53	**Funding**		713	03-Jan-22 A	07-Jan-25
54	**Key Deliverables**		423	03-Jan-22 A	17-Nov-23
55	KD-1270	Complete Loan Applications (need Water Rights Permit to complete)	411	03-Jan-22 A	31-Oct-23
56	KD-1260	Final Federal Funding Request	0		31-May-22
57	KD-1280	Execute Loan Docs	0		31-Oct-23
58	KD-1310	Receive WSIP Final Award from CWC (need Water Rights Permit to complete)	0		17-Nov-23
59	**Federal Funding**		713	17-Jan-22 A	07-Jan-25
60	**WIIN Act**		55	17-Jan-22 A	31-May-22
61	WIIN-1120	Review by Bureau of Reclamation	55	17-Jan-22 A	31-May-22
62	WIIN-1140	Agreement Execution	0		31-May-22
63	**WIFIA Loan**		431	01-Jul-22	25-Mar-24
64	**Application**		176	01-Jul-22	20-Mar-23
65	WIFIA-110	Agreement in Principle	95	01-Jul-22	16-Nov-22
66	WIFIA-120	Indicative Rating Assessment	60	17-Nov-22	15-Feb-23
67	WIFIA-130	Finalizing Application	30	16-Feb-23	17-Mar-23
68	WIFIA-140	Submittal of Final WIFIA App	0		20-Mar-23
69	**Negotiation**		255	20-Mar-23	25-Mar-24
70	WIFIA-210	Term Sheet Development	250	20-Mar-23	18-Mar-24
71	WIFIA-220	Final Rating Assessment (Depends on Final Rebalancing)	250	20-Mar-23	18-Mar-24
72	WIFIA-230	Close WIFIA Loan	0		25-Mar-24
73	**USDA Loan**		679	02-May-22	07-Jan-25

Remaining Level of Effort | Remaining Work | Summary
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Schedule

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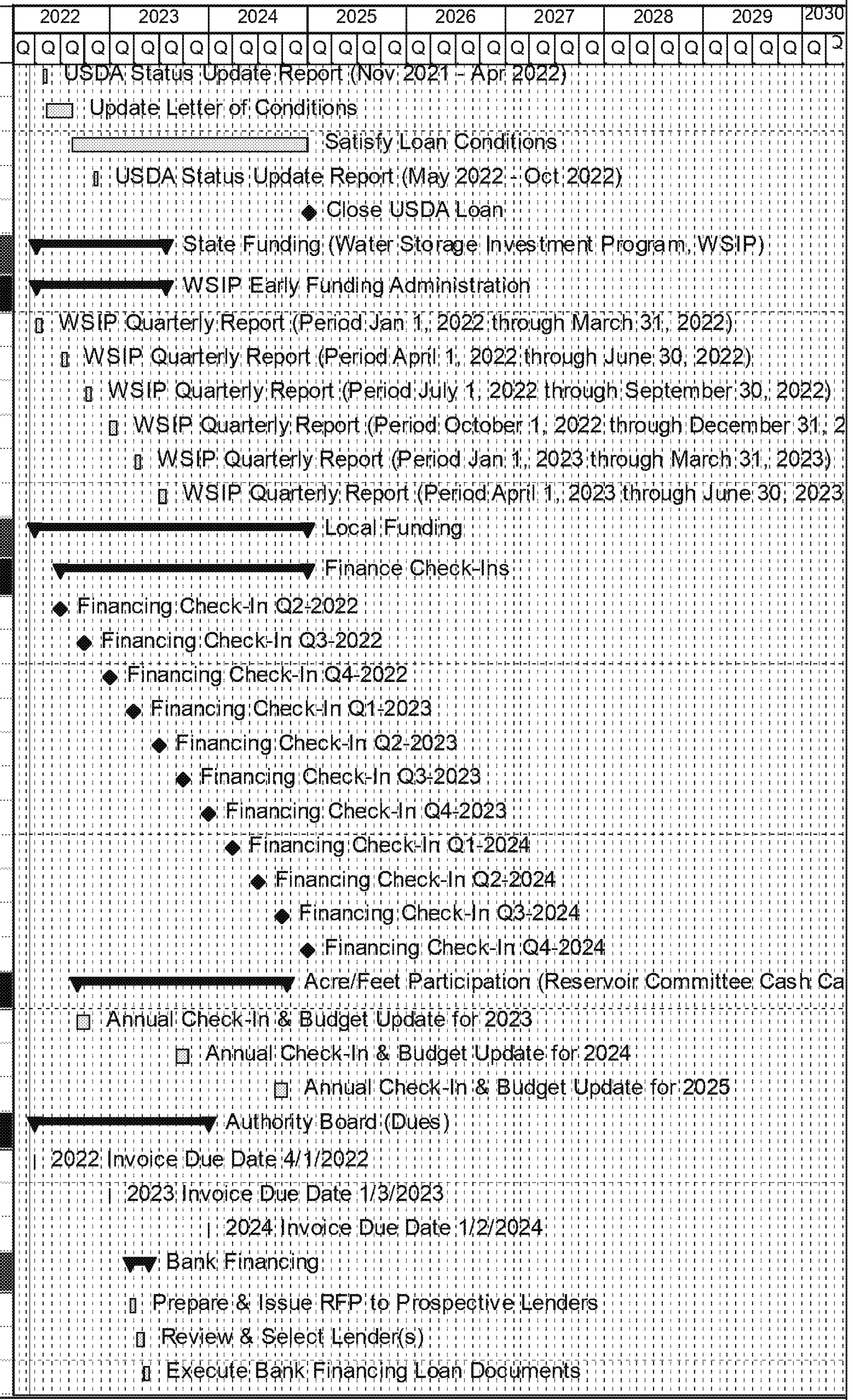
74	USDA-1030	USDA Status Update Report (Nov 2021 - Apr 2022)	10	02-May-22	13-May-22
75	USDA-1050	Update Letter of Conditions	65	16-May-22	16-Aug-22
76	USDA-1060	Satisfy Loan Conditions	599	17-Aug-22	31-Dec-24
77	USDA-1040	USDA Status Update Report (May 2022 - Oct 2022)	10	04-Nov-22	18-Nov-22
78	USDA-1070	Close USDA Loan	0		07-Jan-25
79	**State Funding (Water Storage Investment Program, WSIP)**		329	04-Apr-22	25-Jul-23
80	**WSIP Early Funding Administration**		329	04-Apr-22	25-Jul-23
81	WSIP-1210	WSIP Quarterly Report (Period Jan 1, 2022 through March 31, 2022)	15	04-Apr-22	22-Apr-22
82	WSIP-1220	WSIP Quarterly Report (Period April 1, 2022 through June 30, 2022)	15	06-Jul-22	26-Jul-22
83	WSIP-1230	WSIP Quarterly Report (Period July 1, 2022 through September 30, 2022)	15	03-Oct-22	24-Oct-22
84	WSIP-1240	WSIP Quarterly Report (Period October 1, 2022 through December 31, 2022)	15	03-Jan-23	24-Jan-23
85	WSIP-1250	WSIP Quarterly Report (Period Jan 1, 2023 through March 31, 2023)	15	03-Apr-23	21-Apr-23
86	WSIP-1260	WSIP Quarterly Report (Period April 1, 2023 through June 30, 2023)	15	05-Jul-23	25-Jul-23
87	**Local Funding**		695	01-Apr-22	31-Dec-24
88	**Finance Check-Ins**		631	30-Jun-22	31-Dec-24
89	FC-1250	Financing Check-In Q2-2022	0		30-Jun-22*
90	FC-1260	Financing Check-In Q3-2022	0		30-Sep-22
91	FC-1270	Financing Check-In Q4-2022	0		30-Dec-22
92	FC-1280	Financing Check-In Q1-2023	0		31-Mar-23
93	FC-1290	Financing Check-In Q2-2023	0		30-Jun-23
94	FC-1300	Financing Check-In Q3-2023	0		29-Sep-23
95	FC-1310	Financing Check-In Q4-2023	0		29-Dec-23
96	FC-1320	Financing Check-In Q1-2024	0		29-Mar-24
97	FC-1330	Financing Check-In Q2-2024	0		28-Jun-24
98	FC-1340	Financing Check-In Q3-2024	0		30-Sep-24
99	FC-1350	Financing Check-In Q4-2024	0		31-Dec-24
100	**Acre/Feet Participation (Reservoir Committee Cash Calls)**		530	06-Sep-22	14-Oct-24
101	LF-1100	Annual Check-In & Budget Update for 2023	30	06-Sep-22	18-Oct-22
102	LF-1120	Annual Check-In & Budget Update for 2024	30	06-Sep-23	18-Oct-23
103	LF-1140	Annual Check-In & Budget Update for 2025	30	03-Sep-24	14-Oct-24
104	**Authority Board (Dues)**		438	01-Apr-22	02-Jan-24
105	LF-2100	2022 Invoice Due Date 4/1/2022	1	01-Apr-22	01-Apr-22*
106	LF-2120	2023 Invoice Due Date 1/3/2023	1	03-Jan-23	03-Jan-23*
107	LF-2140	2024 Invoice Due Date 1/2/2024	1	02-Jan-24	02-Jan-24*
108	**Bank Financing**		50	20-Mar-23	26-May-23
109	BF-1100	Prepare & Issue RFP to Prospective Lenders	15	20-Mar-23	07-Apr-23
110	BF-1120	Review & Select Lender(s)	20	10-Apr-23	05-May-23
111	BF-1140	Execute Bank Financing Loan Documents	15	08-May-23	26-May-23



Remaining Level of Effort
Actual Level of Effort
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Milestone
Summary

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Schedule

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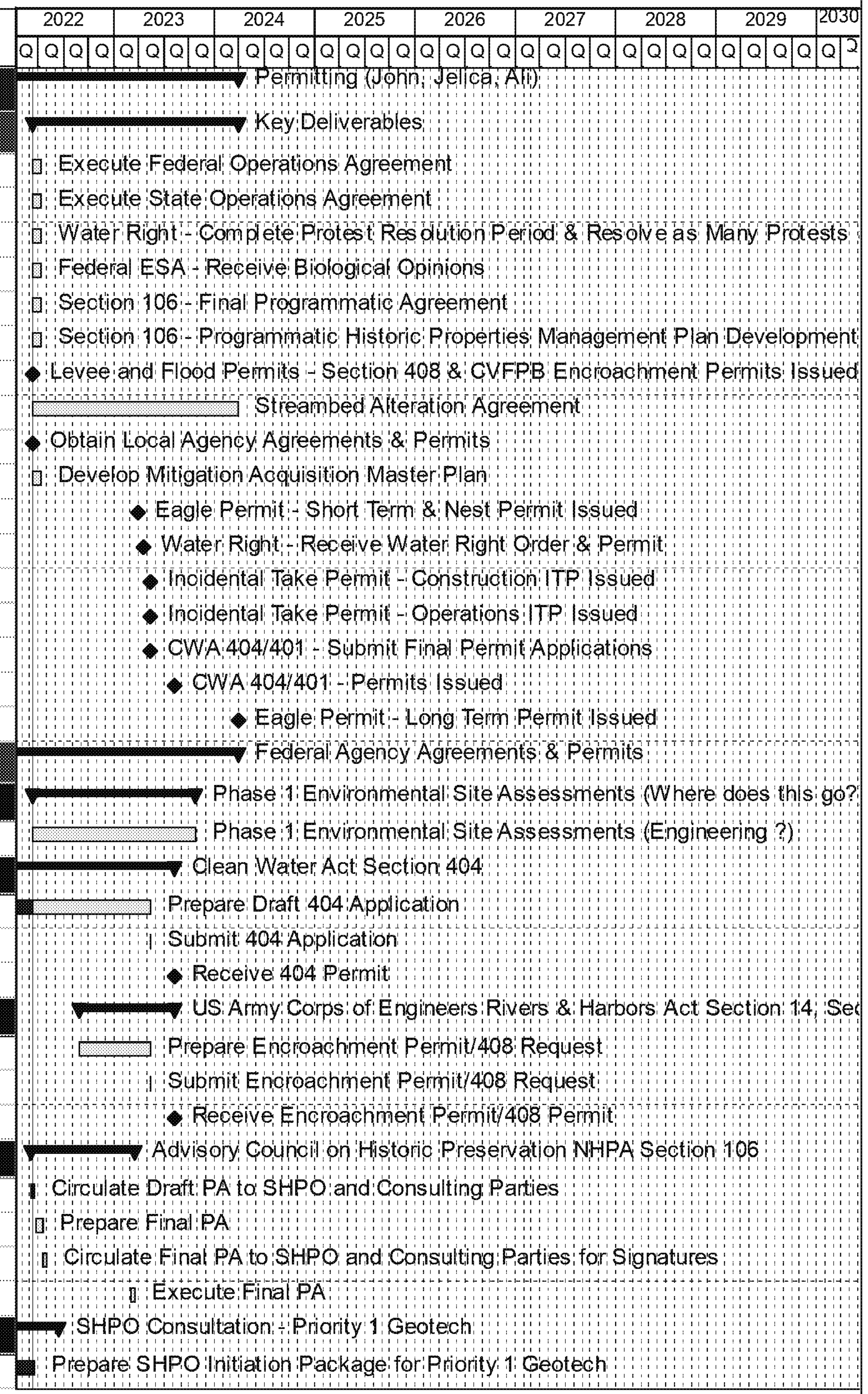
112		**Permitting (John, Jelica, Ali)**	509	04-Jan-21 A	26-Mar-24
113		**Key Deliverables**	509	14-Mar-22	26-Mar-24
114	KD-1240	Execute Federal Operations Agreement	21	14-Mar-22	12-Apr-22
115	KD-1250	Execute State Operations Agreement	21	14-Mar-22	12-Apr-22
116	KD-1320	Water Right - Complete Protest Resolution Period & Resolve as Many Protests as Possible	21	14-Mar-22	12-Apr-22
117	KD-1340	Federal ESA - Receive Biological Opinions	21	14-Mar-22	12-Apr-22
118	KD-1350	Section 106 - Final Programmatic Agreement	21	14-Mar-22	12-Apr-22
119	KD-1360	Section 106 - Programmatic Historic Properties Management Plan Development	21	14-Mar-22	12-Apr-22
120	KD-1410	Levee and Flood Permits - Section 408 & CVFPB Encroachment Permits Issued	0		14-Mar-22
121	KD-1420	Streambed Alteration Agreement	509	14-Mar-22	26-Mar-24
122	KD-1450	Obtain Local Agency Agreements & Permits	0		14-Mar-22
123	KD-1460	Develop Mitigation Acquisition Master Plan	21	14-Mar-22	12-Apr-22
124	KD-1430	Eagle Permit - Short Term & Nest Permit Issued	0		31-Mar-23
125	KD-1330	Water Right - Receive Water Right Order & Permit	0		17-Apr-23
126	KD-1370	Incidental Take Permit - Construction ITP Issued	0		11-May-23
127	KD-1380	Incidental Take Permit - Operations ITP Issued	0		11-May-23
128	KD-1390	CWA 404/401 - Submit Final Permit Applications	0		11-May-23
129	KD-1400	CWA 404/401 - Permits Issued	0		07-Aug-23
130	KD-1440	Eagle Permit - Long Term Permit Issued	0		26-Mar-24
131		**Federal Agency Agreements & Permits**	509	11-Jan-21 A	26-Mar-24
132		**Phase 1 Environmental Site Assessments (Where does this go?)**	421	14-Mar-22	23-Oct-23
133	FED-010	Phase 1 Environmental Site Assessments (Engineering ?)	421	14-Mar-22	23-Oct-23
134		**Clean Water Act Section 404**	352	04-Feb-21 A	07-Aug-23
135	404-050	Prepare Draft 404 Application	291	04-Feb-21 A	10-May-23
136	404-120	Submit 404 Application	1	11-May-23	11-May-23
137	404-130	Receive 404 Permit	0		07-Aug-23
138		**US Army Corps of Engineers Rivers & Harbors Act Section 14, Section 408**	233	31-Aug-22	07-Aug-23
139	408-150	Prepare Encroachment Permit/408 Request	172	31-Aug-22	10-May-23
140	408-160	Submit Encroachment Permit/408 Request	1	11-May-23	11-May-23
141	408-170	Receive Encroachment Permit/408 Permit	0		07-Aug-23
142		**Advisory Council on Historic Preservation NHPA Section 106**	252	07-Mar-22 A	16-Mar-23
143	106-072	Circulate Draft PA to SHPO and Consulting Parties	5	07-Mar-22 A	18-Mar-22
144	106-081	Prepare Final PA	20	21-Mar-22	18-Apr-22
145	106-092	Circulate Final PA to SHPO and Consulting Parties for Signatures	10	19-Apr-22	02-May-22
146	106-102	Execute Final PA	10	03-Mar-23	16-Mar-23
147		**SHPO Consultation - Priority 1 Geotech**	66	02-Aug-21 A	15-Jun-22
148	SHPO-240	Prepare SHPO Initiation Package for Priority 1 Geotech	5	02-Aug-21 A	18-Mar-22



Remaining Level of Effort
Actual Level of Effort
Actual Work
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Milestone
Summary

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#	Activity ID	Activity Name	Remaining Duration	Start	Finish
149	SHPO-250	Reclamation Submits SHPO Initiation Package for Priority 1 Geotech	1	21-Mar-22	21-Mar-22
150	SHPO-260	Receive SHPO Concurrence for Priority 1 Geotech	0		15-Jun-22
151		**USFWS Section 7 Consultation - Priority 1 Geotech**	0	16-Jun-22	16-Jun-22
152	BA-120	Receive Amended BO for Priority 1 Geotech	0		16-Jun-22
153		**USFWS & NMFS Endangered Species Act Section 7**	201	11-Jan-21 A	30-Dec-22
154	BA-200	Prepare Draft BA	57	11-Jan-21 A	02-Jun-22
155	BA-210	Reclamation Submits BA to USFWS & NMFS	1	03-Jun-22	03-Jun-22
156	BA-220	Receive USFWS/NMFS Biological Opinions (Incidental Take Authorizations)	0		30-Dec-22
157		**USFWS Bald Eagle Protection Act**	509	03-Jan-22 A	26-Mar-24
158	USFWS-110	Prepare Short Term Permit Application	97	03-Jan-22 A	29-Jul-22
159	USFWS-120	Submit Short Term Permit Application	1	01-Aug-22	01-Aug-22
160	USFWS-140	Prepare Long Term Permit Application	350	02-Aug-22	27-Dec-23
161	USFWS-130	Receive Short Term Permit from USFWS	0		31-Mar-23
162	USFWS-150	Submit Long Term Permit Application	1	28-Dec-23	28-Dec-23
163	USFWS-160	Receive Long Term Permit from USFWS	0		26-Mar-24
164		**State Agency Agreements & Permits**	469	04-Jan-21 A	29-Jan-24
165		**Central Valley Flood Protection Board (CVFPB) Levee Encroachment**	351	13-Dec-21 A	10-Aug-23
166	CVFPB-100	Prepare CVFPB Permit	100	13-Dec-21 A	09-Aug-22
167	CVFPB-110	Submit CVFPB Permit	1	10-Aug-22	10-Aug-22
168	CVFPB-120	Receive CVFPB Permit	0		10-Aug-23
169		**CVFPB Levee Encroachment - Priority 1 Geotech**	71	01-Nov-21 A	22-Jun-22
170	CVFPB-200	Prepare CVFPB Permit - Priority 1 Geotech	10	01-Nov-21 A	25-Mar-22
171	CVFPB-210	Submit CVFPB Permit - Priority 1 Geotech	1	28-Mar-22	28-Mar-22
172	CVFPB-220	Receive CVFPB Permit - Priority 1 Geotech	0		22-Jun-22
173		**SWRCB Water Rights Permit**	274	01-Feb-21 A	17-Apr-23
174	WRP-100	Prepare Water Right Permit Application	13	01-Feb-21 A	30-Mar-22
175	WRP-110	Submit Water Right Permit Application	1	01-Apr-22	01-Apr-22
176	WRP-120	SWRCB Issue Water Right Permit	0		17-Apr-23
177		**SWB CWA Section 401 Water Quality Certification**	469	04-Jan-21 A	29-Jan-24
178		**SWB CWA Section 401 Water Quality Certification - Priority 1 Geotech**	59	01-Mar-21 A	06-Jun-22
179	401-100	Prepare 401 Application - Geotech	13	01-Mar-21 A	30-Mar-22
180	401-110	Submit 401 Application - Geotech	1	01-Apr-22	01-Apr-22
181	401-120	Receive 401 Permit - Geotech	0		06-Jun-22
182		**SWB CWA Section 401 Water Quality Certification**	469	04-Jan-21 A	29-Jan-24
183	401-200	Prepare Draft CWA 401 Permit Application	103	04-Jan-21 A	08-Aug-22
184	401-210	Submit CWA 401 Application	1	09-Aug-22	09-Aug-22
185	401-220	Receive CWA Section 401 Permit	0		29-Jan-24
186		**CDFW Streambed Alteration Agreements**	292	10-Jan-22 A	11-May-23

Remaining Level of Effort | Remaining Work | Summary
Actual Level of Effort | Critical Remaining Work
Actual Work | Milestone

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#	Activity ID	Activity Name	Remaining Duration	Start	Finish
187		CDFW Streambed Alteration Agreements - Priority 1 Geotech	69	21-Mar-22	27-Jun-22
188	1600-100	Prepare LSAA Application - Geotech	8	21-Mar-22*	30-Mar-22
189	1600-110	Submit LSAA Application - Geotech	1	01-Apr-22	01-Apr-22
190	1600-120	Receive LSAA Permit - Geotech	0		27-Jun-22
191		CDFW Streambed Alteration Agreements	292	10-Jan-22 A	11-May-23
192	1600-200	Prepare LSAA Application	170	10-Jan-22 A	14-Nov-22
193	1600-210	Submit LSAA Application	1	15-Nov-22	15-Nov-22
194	1600-220	Receive LSAA Permit	0		11-May-23
195		CDFW Incidental Take Permits	292	11-Jan-21 A	11-May-23
196		ITP - CESA (Se 2081) Operations	292	11-Jan-21 A	11-May-23
197	2081-100	Prepare ITP Application - Operations	64	11-Jan-21 A	13-Jun-22
198	2081-110	Submit ITP Application - Operations	1	14-Jun-22	14-Jun-22
199	2081-120	Receive ITP Permit - Operations	0		11-May-23
200		ITP - CESA (Se 2081) Construction	0	11-May-23	11-May-23
201	2081-220	Receive ITP Permit - Construction	0		11-May-23
202		Environmental (Ali, Laurie)	287	03-Jan-22 A	04-May-23
203		Key Deliverables	45	02-Mar-23	04-May-23
204	KD-1470	Final EIR/EIS - Complete	0		02-Mar-23
205	KD-1480	Certify Final EIR/EIS & Approve Preferred Project & MMRP (30 day period for legal challenge)	45	03-Mar-23	04-May-23
206		EIR/EIS	269	03-Jan-22 A	10-Apr-23
207		Final EIR/Final EIS	242	03-Jan-22 A	02-Mar-23
208	EIR-210	Preparation of Admin Final EIR/EIS	158	03-Jan-22 A	26-Oct-22
209	EIR-220	Analyze & Review New Model Output (May 9-27)	15	09-May-22	27-May-22
210	EIR-250	Complete Final EIR/EIS	84	27-Oct-22	02-Mar-23
211		Authority Certifies EIR & Approves Project & File NOD	5	23-Mar-23	30-Mar-23
212	EIR-370	Authority Certifies EIR and Approves Project	0		23-Mar-23
213	EIR-380	File NOD	5	24-Mar-23	30-Mar-23
214		ROD	22	09-Mar-23	10-Apr-23
215	EIR-440	NEPA Publication	0		09-Mar-23
216	EIR-450	ROD Signed	0		10-Apr-23
217		Real Estate	1950	02-Nov-20 A	04-Oct-29
218		Key Deliverables	450	03-Jan-22 A	29-Dec-23
219	KD-1490	Complete Land Acquisition Master Plan	201	03-Jan-22 A	30-Dec-22
220	KD-1495	Complete ROW Manual	201	03-Jan-22 A	30-Dec-22
221	KD-1500	Complete Landowner Negotiations with Willing Seller Properties	249	03-Jan-23	29-Dec-23
222		Temporary Rights of Entry	756	14-Mar-22	07-Mar-25
223	RE-1010	Engineering Support	756	14-Mar-22	07-Mar-25

Remaining Level of Effort · Actual Level of Effort · Actual Work · Remaining Work · Critical Remaining Work · Milestone · Summary

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Schedule

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224	RE-1020	Geotechnical	756	14-Mar-22	07-Mar-25
225	RE-1030	Cultural Surveys	756	14-Mar-22	07-Mar-25
226	RE-1040	Biological Surveys	756	14-Mar-22	07-Mar-25
227	Land Acquisition		1500	02-Jan-24	04-Oct-29
228	RE-1050	Construction Package 1 - Land Acquisition	1500	02-Jan-24	04-Oct-29
229	RE-1060	Construction Package 2 - Land Acquisition	1400	23-May-24	04-Oct-29
230	RE-1070	Construction Package 3 - Land Acquisition	1300	11-Oct-24	04-Oct-29
231	Relocation		1500	02-Jan-24	01-Oct-29
232	RE-1100	Relocation Assistance, as Needed	1500	02-Jan-24	01-Oct-29
233	USBR - Land Agreement		278	02-Nov-20 A	21-Apr-23
234	FED-100	USBR Land Agreements	278	02-Nov-20 A	21-Apr-23
235	Geotechnical Engineering		690	08-Apr-22	31-Dec-24
236	Key Deliverables		690	08-Apr-22	31-Dec-24
237	KD-2000	Early Evaluation Geotech Investigations	44	08-Apr-22	09-Jun-22
238	P1A Geotechnical Investigations		373	01-Jul-22	29-Dec-23
239	KD-1160	Quarter 3 2022 Investigation & Report	64	01-Jul-22	30-Sep-22
240	KD-1520	Quarter 4 2022 Investigation & Report	60	03-Oct-22	30-Dec-22
241	KD-1530	Quarter 1 2023 Investigation & Report	62	03-Jan-23	31-Mar-23
242	KD-1540	Quarter 2 2023 Investigation & Report	64	03-Apr-23	30-Jun-23
243	KD-1550	Quarter 3 2023 Investigation & Report	63	03-Jul-23	29-Sep-23
244	KD-1560	Quarter 4 2023 Investigation & Report	60	02-Oct-23	29-Dec-23
245	P1B Geotechnical Investigations		258	02-Jan-24	31-Dec-24
246	KD-1590	Quarter 1 2024 Investigation & Report	62	02-Jan-24	29-Mar-24
247	KD-1600	Quarter 2 2024 Investigation & Report	64	01-Apr-24	28-Jun-24
248	KD-1610	Quarter 3 2024 Investigation & Report	66	01-Jul-24	30-Sep-24
249	KD-1620	Quarter 4 2024 Investigation & Report	66	01-Oct-24	31-Dec-24
250	Preliminary Engineering		2086	14-Oct-20 A	12-Apr-30
251	Key Deliverables		515	14-Mar-22	03-Apr-24
252	KD-1120	Determine Criteria & Weighting for Project Delivery Decisions	21	14-Mar-22	12-Apr-22
253	KD-1210	Update Project Risk Assessments (ongoing) (Risk Mgr Bob Beduhn & Henry Luu)	21	14-Mar-22	12-Apr-22
254	KD-1110	Advance Engineering of Project Feature Encroachments to 65% Design Level in Support of Permitting	21	05-Jul-22	02-Aug-22
255	KD-1180	Preliminary Engineering (30% Design Level)	0		29-Dec-23
256	KD-1190	Update to Class 3 Construction Cost Estimate	0		03-Apr-24
257	Conveyance (Pipelines, Pump Stations, Canals)		708	03-Jan-22 A	31-Dec-24
258	UPRR Oversight & Review		708	03-Jan-22 A	31-Dec-24
259	A1110	Coordination & Oversight with UPRR	708	03-Jan-22 A	31-Dec-24

Remaining Level of Effort | Remaining Work | Summary
Actual Level of Effort | Critical Remaining Work
Actual Work | Milestone

Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filter: Incomplete.
Data Date: 13-Mar-22 / Print Date: 11-Mar-22

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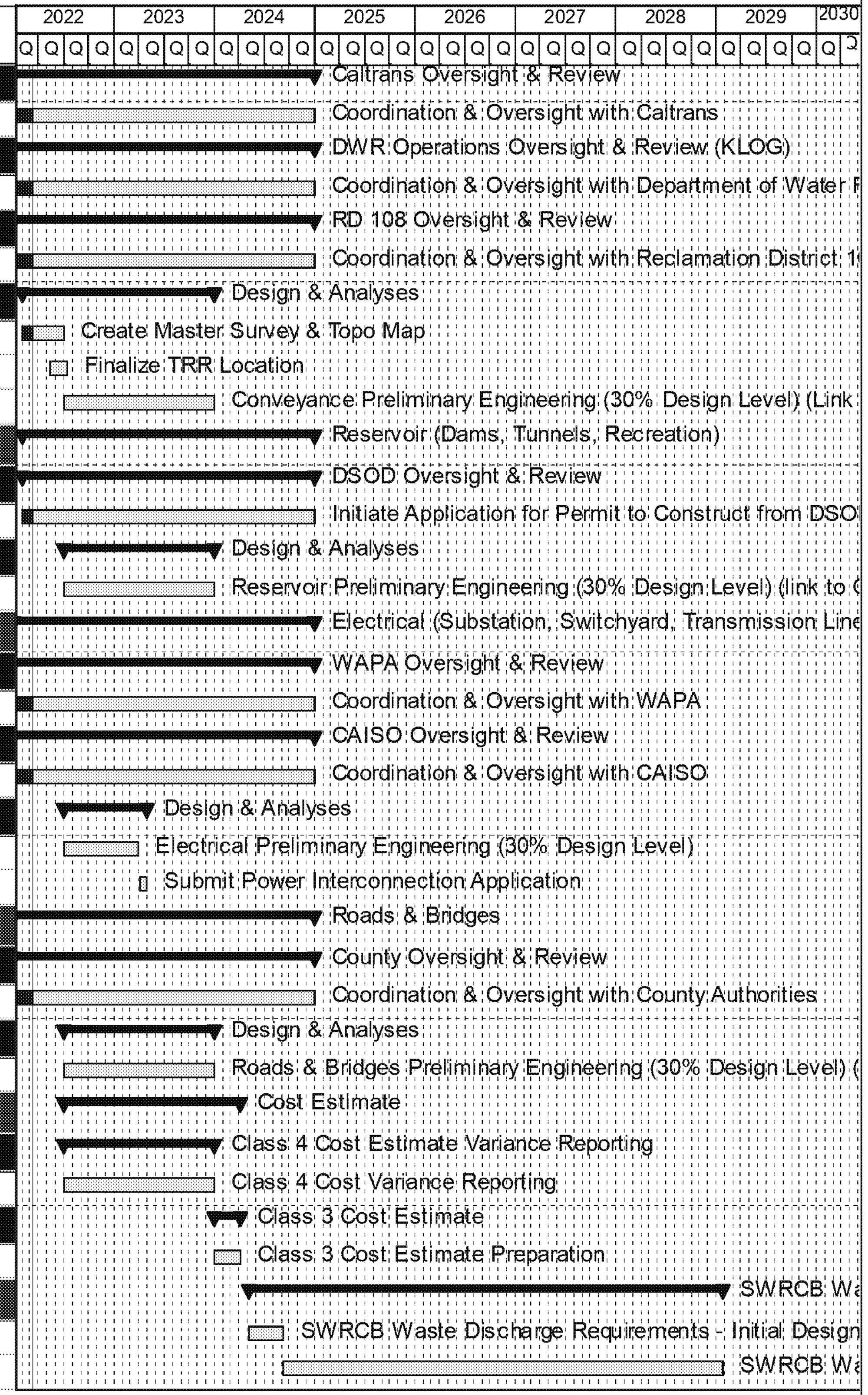
Sites Reservoir Project

Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
260		**Caltrans Oversight & Review**	708	03-Jan-22 A	31-Dec-24
261	A1120	Coordination & Oversight with Caltrans	708	03-Jan-22 A	31-Dec-24
262		**DWR Operations Oversight & Review (KLOG)**	708	03-Jan-22 A	31-Dec-24
263	A1130	Coordination & Oversight with Department of Water Resources	708	03-Jan-22 A	31-Dec-24
264		**RD 108 Oversight & Review**	708	03-Jan-22 A	31-Dec-24
265	A1140	Coordination & Oversight with Reclamation District 108	708	03-Jan-22 A	31-Dec-24
266		**Design & Analyses**	450	01-Feb-22 A	29-Dec-23
267	KD-1140	Create Master Survey & Topo Map	78	01-Feb-22 A	01-Jul-22
268	KD-1150	Finalize TRR Location	46	10-May-22	14-Jul-22
269	KD-1630	Conveyance Preliminary Engineering (30% Design Level) (Link to Geotech)	372	05-Jul-22	29-Dec-23
270		**Reservoir (Dams, Tunnels, Recreation)**	708	01-Feb-22 A	31-Dec-24
271		**DSOD Oversight & Review**	708	01-Feb-22 A	31-Dec-24
272	KD-1100	Initiate Application for Permit to Construct from DSOD	708	01-Feb-22 A	31-Dec-24
273		**Design & Analyses**	372	05-Jul-22	29-Dec-23
274	KD-1660	Reservoir Preliminary Engineering (30% Design Level) (link to Geotech)	372	05-Jul-22	29-Dec-23
275		**Electrical (Substation, Switchyard, Transmission Line)**	708	03-Jan-22 A	31-Dec-24
276		**WAPA Oversight & Review**	708	03-Jan-22 A	31-Dec-24
277	A1150	Coordination & Oversight with WAPA	708	03-Jan-22 A	31-Dec-24
278		**CAISO Oversight & Review**	708	03-Jan-22 A	31-Dec-24
279	A1160	Coordination & Oversight with CAISO	708	03-Jan-22 A	31-Dec-24
280		**Design & Analyses**	205	05-Jul-22	28-Apr-23
281	KD-1640	Electrical Preliminary Engineering (30% Design Level)	185	05-Jul-22	31-Mar-23
282	KD-1200	Submit Power Interconnection Application	20	03-Apr-23	28-Apr-23
283		**Roads & Bridges**	708	03-Jan-22 A	31-Dec-24
284		**County Oversight & Review**	708	03-Jan-22 A	31-Dec-24
285	A1170	Coordination & Oversight with County Authorities	708	03-Jan-22 A	31-Dec-24
286		**Design & Analyses**	372	05-Jul-22	29-Dec-23
287	KD-1650	Roads & Bridges Preliminary Engineering (30% Design Level) (link to Geotech)	372	05-Jul-22	29-Dec-23
288		**Cost Estimate**	437	05-Jul-22	03-Apr-24
289		**Class 4 Cost Estimate Variance Reporting**	372	05-Jul-22	29-Dec-23
290	A1180	Class 4 Cost Variance Reporting	372	05-Jul-22	29-Dec-23
291		**Class 3 Cost Estimate**	65	02-Jan-24	03-Apr-24
292	A1190	Class 3 Cost Estimate Preparation	65	02-Jan-24	03-Apr-24
293		**SWRCB Waste Discharge Requirements (Multiple permits based on constr. packages and/or ROW acce:**	1234	03-May-24	25-Jan-29
294	STA-160	SWRCB Waste Discharge Requirements - Initial Design Review	90	03-May-24	06-Sep-24
295	STA-060	SWRCB Waste Discharge Requirements - Implementation	1144	09-Sep-24	25-Jan-29



Remaining Level of Effort — Remaining Work — Summary
Actual Level of Effort — Critical Remaining Work
Actual Work — Milestone

Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filter: Incomplete.
Data Date: 13-Mar-22 / Print Date: 11-Mar-22

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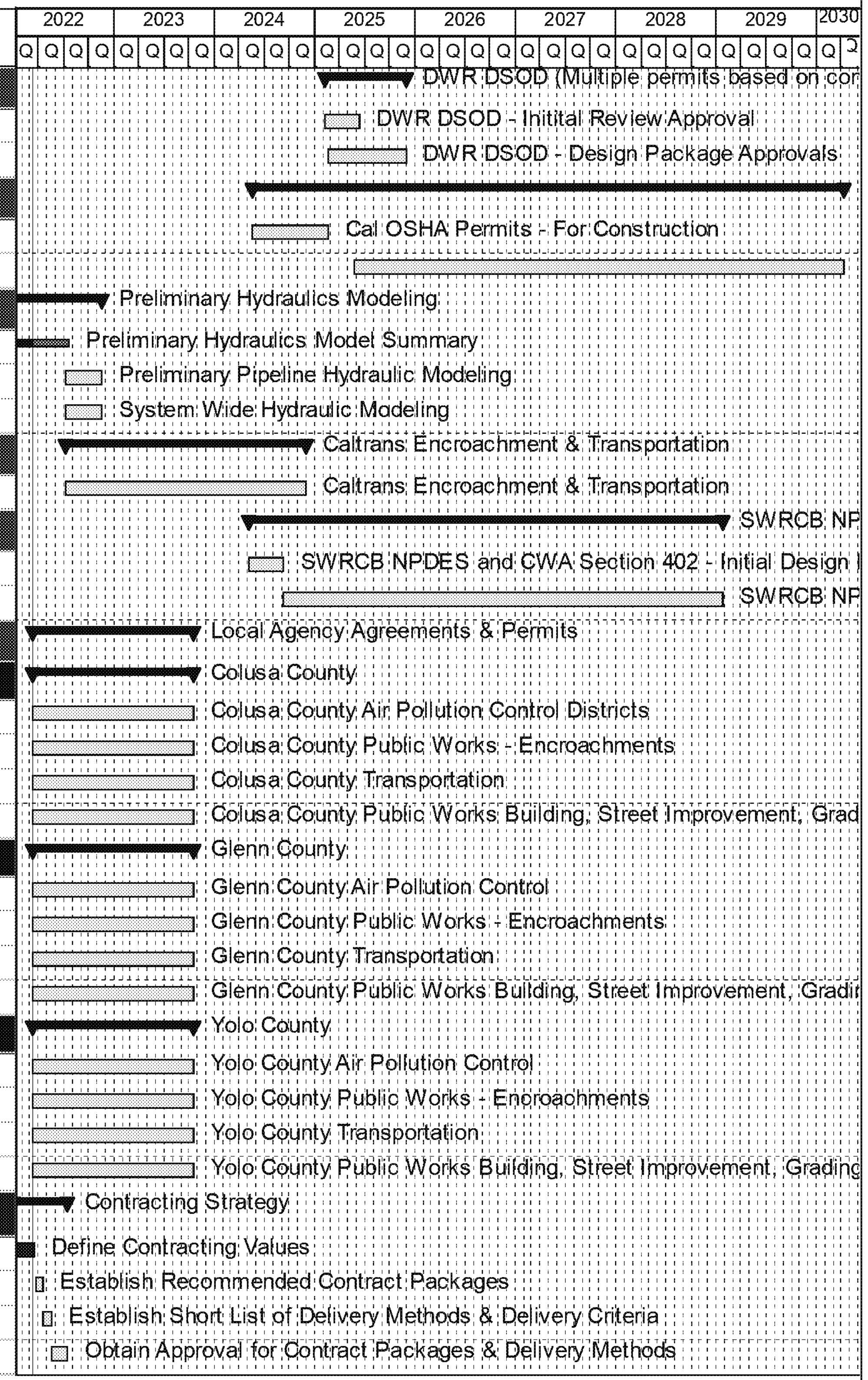
Sites Reservoir Project

Sites
Build Sites Now
sitesproject.org

Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
296		DWR DSOD (Multiple permits based on construction packages and/or ROW access) - Engineering?	210	07-Feb-25	27-Nov-25
297	STA-130	DWR DSOD - Initital Review Approval	90	07-Feb-25	12-Jun-25
298	STA-080	DWR DSOD - Design Package Approvals	200	21-Feb-25	27-Nov-25
299		Cal OSHA Permits (Multiple permits based on construction packages and/or ROW access) -Engineering	1541	16-May-24	12-Apr-30
300	STA-170	Cal OSHA Permits - For Construction	200	16-May-24	20-Feb-25
301	STA-090	Cal OSHA Implementation	1276	23-May-25	12-Apr-30
302		Preliminary Hydraulics Modeling	171	14-Oct-20 A	15-Nov-22
303	ENG-420	Preliminary Hydraulics Model Summary	90	14-Oct-20 A	20-Jul-22
304	ENG-470	Preliminary Pipeline Hydraulic Modeling	90	08-Jul-22	15-Nov-22
305	ENG-480	System Wide Hydraulic Modeling	90	08-Jul-22	15-Nov-22
306		Caltrans Encroachment & Transportation	605	08-Jul-22	29-Nov-24
307	STA-010	Caltrans Encroachment & Transportation	605	08-Jul-22	29-Nov-24
308		SWRCB NPDES and CWA Section 402 (Multiple permits based on construction packages and/or ROW a	1234	03-May-24	25-Jan-29
309	STA-150	SWRCB NPDES and CWA Section 402 - Initial Design Review	90	03-May-24	06-Sep-24
310	STA-050	SWRCB NPDES and CWA Section 402 - Implementation	1144	09-Sep-24	25-Jan-29
311		Local Agency Agreements & Permits	400	14-Mar-22	16-Oct-23
312		Colusa County	400	14-Mar-22	16-Oct-23
313	LOC-150	Colusa County Air Pollution Control Districts	400	14-Mar-22	16-Oct-23
314	LOC-160	Colusa County Public Works - Encroachments	400	14-Mar-22	16-Oct-23
315	LOC-170	Colusa County Transportation	400	14-Mar-22	16-Oct-23
316	LOC-180	Colusa County Public Works Building, Street Improvement, Grading Permits	400	14-Mar-22	16-Oct-23
317		Glenn County	400	14-Mar-22	16-Oct-23
318	LOC-250	Glenn County Air Pollution Control	400	14-Mar-22	16-Oct-23
319	LOC-260	Glenn County Public Works - Encroachments	400	14-Mar-22	16-Oct-23
320	LOC-270	Glenn County Transportation	400	14-Mar-22	16-Oct-23
321	LOC-280	Glenn County Public Works Building, Street Improvement, Grading Permits	400	14-Mar-22	16-Oct-23
322		Yolo County	400	14-Mar-22	16-Oct-23
323	LOC-200	Yolo County Air Pollution Control	400	14-Mar-22	16-Oct-23
324	LOC-210	Yolo County Public Works - Encroachments	400	14-Mar-22	16-Oct-23
325	LOC-220	Yolo County Transportation	400	14-Mar-22	16-Oct-23
326	LOC-230	Yolo County Public Works Building, Street Improvement, Grading Permits	400	14-Mar-22	16-Oct-23
327		Contracting Strategy	85	03-Jan-22 A	13-Jul-22
328	A1070	Define Contracting Values	5	03-Jan-22 A	18-Mar-22
329	A1080	Establish Recommended Contract Packages	20	21-Mar-22	18-Apr-22
330	A1090	Establish Short List of Delivery Methods & Delivery Criteria	20	19-Apr-22	16-May-22
331	A1100	Obtain Approval for Contract Packages & Delivery Methods	40	17-May-22	13-Jul-22



Remaining Level of Effort
Actual Level of Effort
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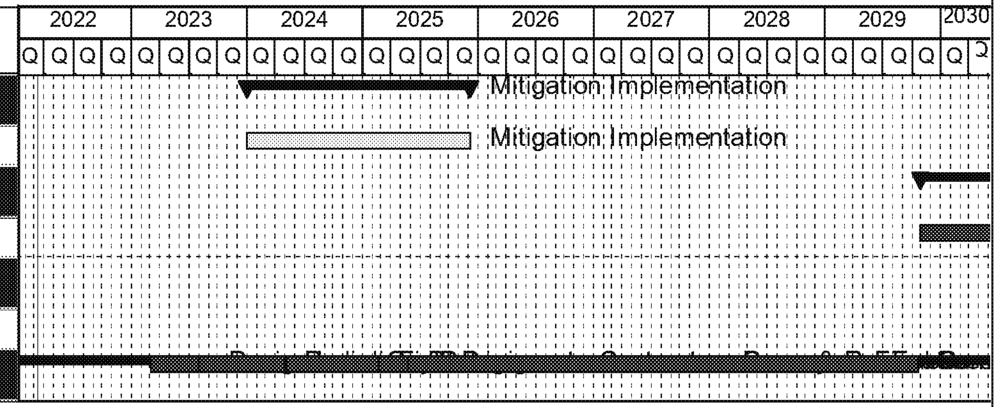
Sites Reservoir Project

Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
332	Mitigation Implementation		500	02-Jan-24	04-Dec-25
333	MI-1100	Mitigation Implementation	500	02-Jan-24	04-Dec-25
334	Commissioning		222	26-Oct-29	02-Sep-30
335	COM-1100	Commissioning	222	26-Oct-29	02-Sep-30
336	Operations		0	03-Sep-30	03-Sep-30
337	OPR-1100	Full Operations Begins	0		03-Sep-30
338	COMPLETED / MARK FOR DELETE		2188	02-Jan-20 A	03-Sep-30



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filter: Incomplete.
Data Date: 13-Mar-22 / Print Date: 11-Mar-22

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From: Alicia Forsythe [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A6CDF06A7E904B65BAA21702A82AD329-AFORSYTHE]
Sent: 3/14/2022 9:08:45 AM
To: Heydinger, Erin [erin.heydinger@hdrinc.com]
Subject: Sites - Variability in Diversions and Releases for NGO Water Right Group

Hi Erin – I had an action item from the NGO Water Right Small Group meeting about sending out some graphics on the variability on diversions and releases. I think you may remember this – it was when we showed the diversion and release graphics and someone stated that those are averages and doesn't show the highs and lows. Do we have a graphic(s) that would show the variability? Something simple for diversions and releases.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Project Authority | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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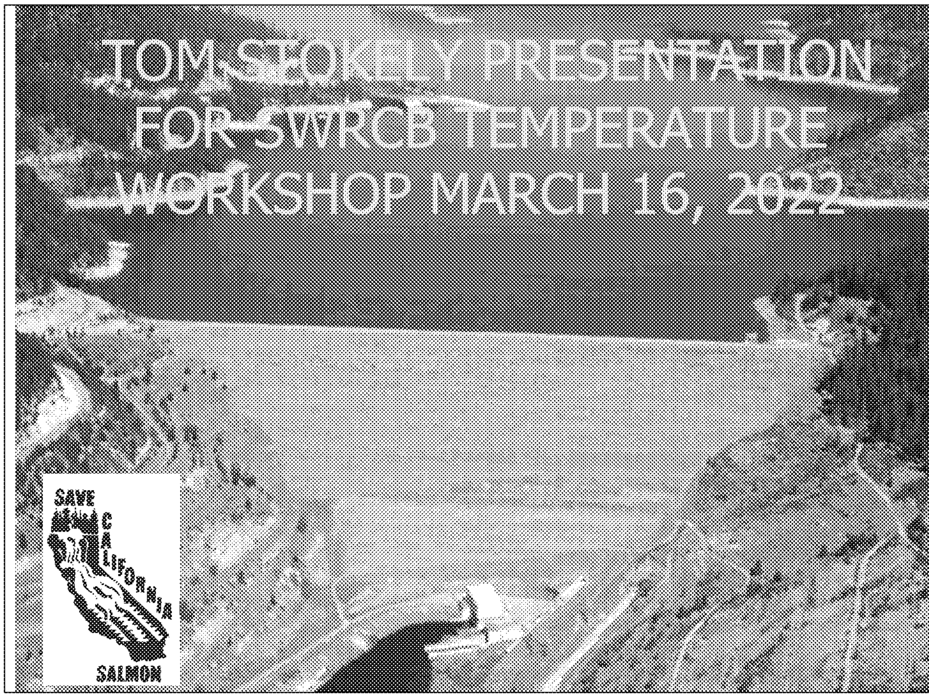
TOM STOKELY PRESENTATION FOR SWRCB TEMPERATURE WORKSHOP MARCH 16, 2022



DON'T FORGET THE TRINITY RIVER! IT IS PART OF WATER RIGHT ORDER 90-5!

WATER RIGHT ORDER 90-5 INCLUDES TRINITY RIVER PROTECTIONS THAT ARE IGNORED IN ANNUAL TEMP MGMT PLAN

"Permittee shall not operate its Trinity River Division for water temperature control on the Sacramento River in such a manner as to adversely affect salmonid spawning and egg incubation in the Trinity River. Adverse effects shall be deemed to occur when average daily water temperature exceeds 56F at the Douglas City Bridge between September 15 and October 1, or at the confluence of the North Fork Trinity River between October 1 and December 31 due to factors which are

(a) controllable by permittee and

(b) are a result of modification of Trinity River operations for temperature control on the Sacramento River.

If the temperatures in the Trinity River exceed 56F at the specified locations during the specified periods, Permittee shall immediately file with the Chief of the Division of Water Rights a report containing project operational data sufficient to demonstrate that the exceedance was not due to modifications of Trinity River operations for water temperature control on the Sacramento River. If, within fifteen days, the Chief of the Division of Water Rights does not advise Permittee that it is violating this condition of its water right, Permittee shall be deemed not to have caused the exceedance in order to control temperature on the Sacramento River.

This term is not to be construed as interfering with the U. S. Department of Interior Andrus Decision dated January 14, 1981 relative to Trinity River releases."

Water Right Order 90-5, Pages 61-62

TRINITY RIVER WATER QUALITY OBJECTIVES FROM THE
Water Quality Control Plan for the North Coast Region (1991)
North Coast Regional Water Quality Control Board*

Daily Average Not to Exceed	Period	River Reach
60°F	July 1- Sept 15	Lewiston to Douglas City Bridge
56°F **	Sept 15-Oct 1	Lewiston to Douglas City Bridge
56°F **	Oct 1- Dec 31	Lewiston to North Fork Confluence

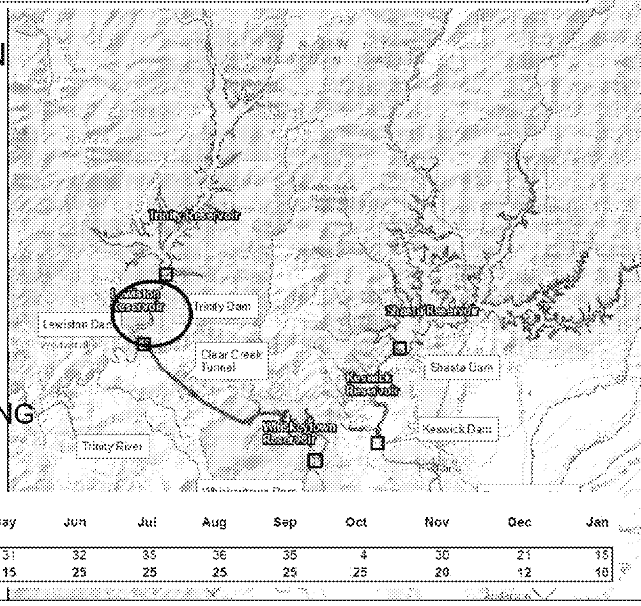
*ALSO APPROVED BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY in 1992 AS CLEAN WATER ACT STANDARDS
**Included in Water Right Order 90-5 as water permit condition for operations related to Sacramento River temperature control.
***Douglas City temperature probe non-functional in 2021

Trinity Diversions (TAF)

	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Carr PP	9	3	44	31	32	35	36	35	4	30	21	15
Spring Crk. PP	10	10	15	15	25	25	25	25	25	20	12	10

RIVER TEMPERATURE OBJECTIVES IS DEPENDENT ON KEEPING LEWISTON RESERVOIR COLD BY MOVING WATER THROUGH THE CLEAR CREEK TUNNEL

BUREAU OF RECLAMATION PLANNED OPERATIONS WILL COOK THE TRINITY RIVER IN OCTOBER DUE TO MINIMAL CLEAR CREEK TUNNEL EXPORTS (4,000 AF) DURING SPRING AND FALL CHINOOK SPAWNING



Trinity Diversions (TAF)

	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Carr PP	9	3	44	31	32	35	36	35	4	30	21	15
Spring Crk. PP	10	10	15	15	25	25	25	25	25	20	12	10

HOW BAD IS THE SNOPACK? REALLY BAD! EXPECT 99% EXCEEDANCE RUNOFF

Sacramento, Shasta and Trinity River Watersheds*

Course	Elevation(ft)	Last Month Snow(in)	2022 Snow(in)	2022 Water(in)	2021 Snow(in)	2021 Water(in)	Hist. Average Snow(in)	Hist. Average Water(in)
Horse Camp	7900	42.5	31	9	61	23	106.1	43.4
Sand Flat	6800	33	25.8	8.5	63	24	88.78	34.22
Sweetwater	5850	33	21.5	6.5	43.8	12	37.21	12.35
Parks Creek	6700	27	41	14	84	21	78.8	28.42
Deadfall Lakes	7200	27	27	11.5	45	13	69.36	25.5

	2022 Snow(in)	2022 Water(in)	2021 Snow(in)	2021 Water(in)	Hist. Average Snow(in)	Hist. Average Water(in)
Averages of Courses Sampled	29	9.8	66.3	19.8	75.5	28.8
Percent (%) of Historic Average	39	34	73	69		

McCloud River Watershed*

Course	Elevation(ft)	Last Month Snow(in)	2022 Snow(in)	2022 Water(in)	2021 Snow(in)	2021 Water(in)	Hist. Average Snow(in)	Hist. Average Water(in)
Brewer Creek	6250	33.5	27.5	13.5	53.5	18.6	67.23	25.86
Stouts Meadow	5400	51.5	41	18.5	50	13	71.38	29.17

	2022 Snow(in)	2022 Water(in)	2021 Snow(in)	2021 Water(in)	Hist. Average Snow(in)	Hist. Average Water(in)
Averages of Courses Sampled	34	16.0	51.75	15.8	69.3	27.5
Percent (%) of Historic Average	49	58	75	68		

SHASTA-TRINITY AREA DIDN'T GET 17' OF SNOW FOR NEW YEAR'S 2022-

- MT SHASTA SKI PARK CLOSED MARCH 20, 2020
- MT SHASTA SKI PARK CLOSED APRIL 16, 2021
- MT SHASTA SKI PARK CLOSED MARCH 12, 2022

Coyote Butte, 6,880'
Mt. Shasta Ski Park
March 11, 2022

RECOMMENDATIONS/SOLUTIONS

- Require Reclamation to include modeled Trinity temps in Temp plan
- Limit Shasta release to 3250 cfs in April, 5000 cfs May-November
- Limit Trinity exports to Sacramento April-November; increase Trinity release to Trinity River as needed to manage for Trinity salmon
- Limit deliveries to Sacramento River Settlement Contractors and San Joaquin Exchange Contractors to water available under these constraints
- Ensure Lewiston Reservoir has adequate flushing to meet Trinity Basin Plan objectives- change October operations

Sites Reservoir Project

Colusa County
Board of Supervisors Meeting

March 15, 2022

Sites

Predecisional Working Document – For Discussion Purposes Only

Outline

Project Overview and Investment to Date

The “Three Big Questions”

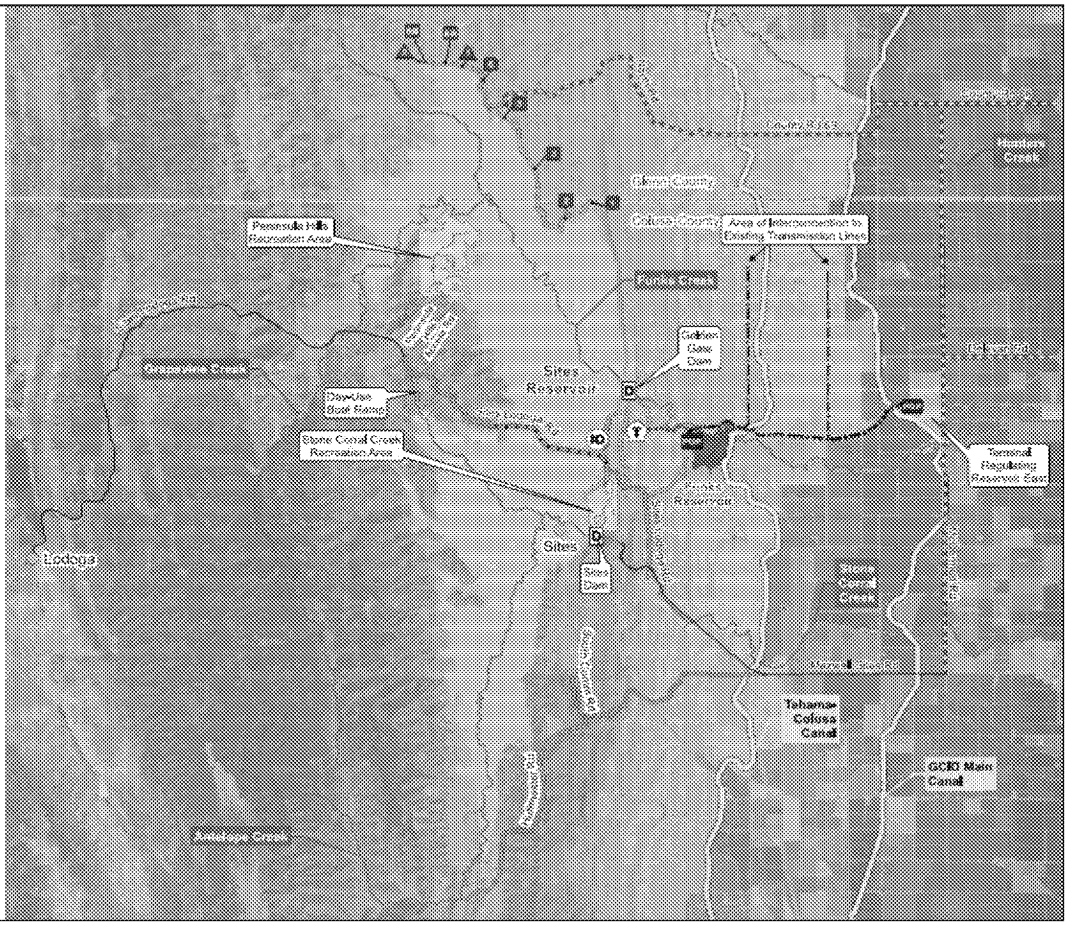
- What does it cost? Feasibility Project Cost Estimate
- What do we get? Affordability, Storage, and Benefits
- How do we pay for it? Project Funding, Plan of Finance

Next Steps

Project Overview

Overview and Investment to Date

Project Map



Peninsula Hills Recreation Area
Glenn County
Colusa County
Area of Interconnection to Existing Transmission Lines
Funks Creek
Hunters Creek
Golden Gate Dam
Sites Reservoir
Grapevine Creek
Day-Use Boat Ramp
Stone Corral Creek Recreation Area
Terminal Regulating Reservoir East
Funks Reservoir
Sites
Sites Dam
Lodoga
Stone Corral Creek
Tehama-Colusa Canal
GCID Main Canal
Antelope Creek

Investment to Date

Phase 1: Apr 2016 – Mar 2019 (Complete)

- $60/AF initial cash call ($48.50 actual)
- Funded State Prop 1 Application
- Successful application award $816 million

Phase 2A: Apr 2019 – June 2020 (Complete)

- $60/AF cash call
- Value Planning resulting in smaller reservoir size and new “foot-print” with anticipated cost savings

Phase 2B: July 2020 – Dec 2021 (Complete)

- $100/AF cash call
- Updated environmental documents, feasibility study; permitting and water right; remained eligible for $836M in state funding

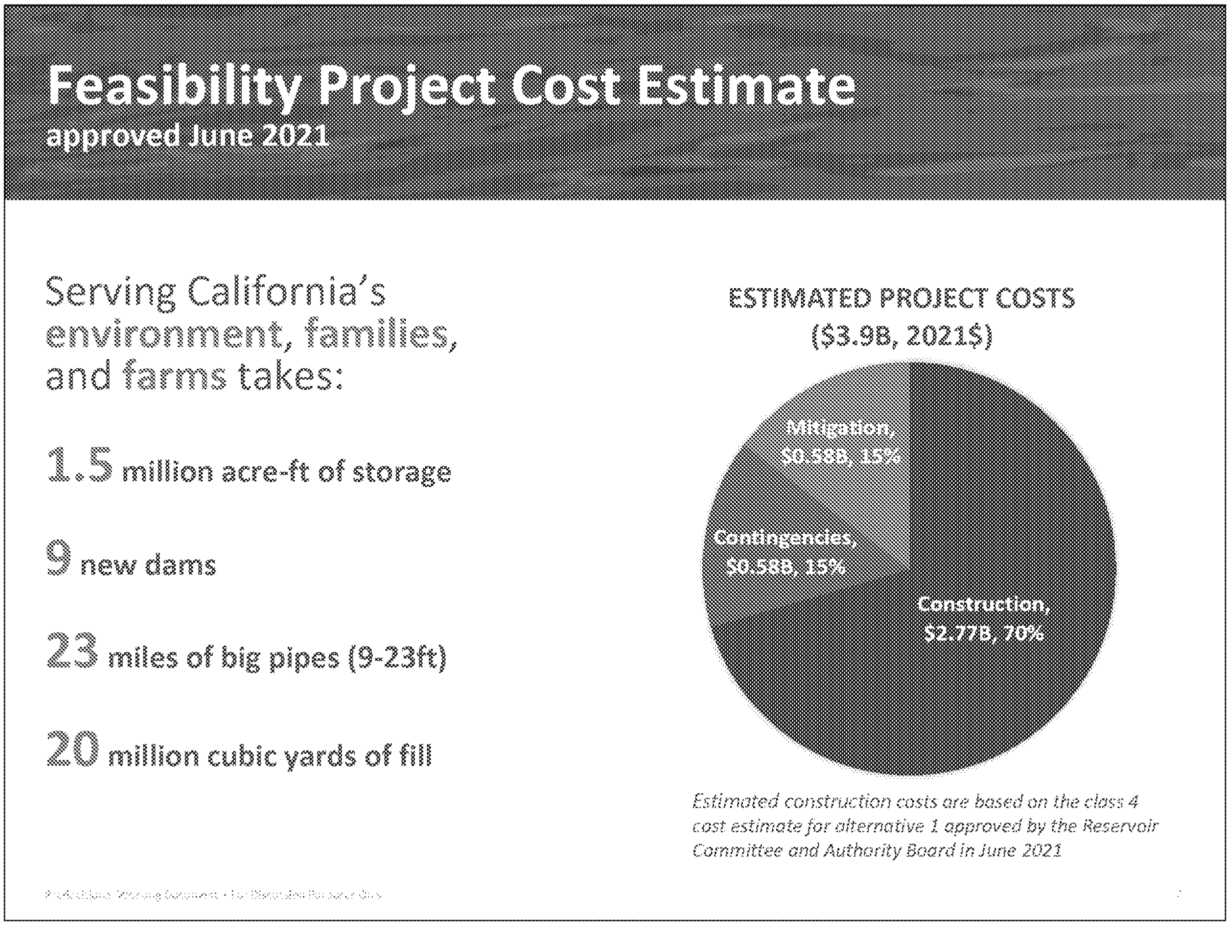
Amendment 3/Phase 2C: Jan 2022 – Dec 2024 (In Progress)

- Up to $400/AF cash call ($100/AF in 2022; $140/AF in 2023; $160/AF in 2023)
- Secure critical permits/water rights
- Complete Environmental review
- Advance design & pre-construction
- Ready to Finance

A3 Costs: up to $400/AF *releases*

What does it cost?

Feasibility Project Cost Estimate



To state the obvious, this is a big project. The June approved class 4 estimate of $3.9B in 2021 dollars 70% for construction, and 15% for both contingencies and mitigation. I like to think in terms of concrete, steel, and copper, so I have provided some of the facility stats to remind us that while there are things we can change, for the purpose of this exercise today we should assume these are the project costs we can expect. Some fun stats.
1.5 million acre-ft is 65 billion cubic feet, or the volume of an almost mile diameter sphere, or 75% of the volume of mount Everest
20 million cubic yards of fill is 55% of the concrete used on the three gorges dam

Explain the difference between the costs in 2021 dollars vs the cost in future dollars. Future dollars vs. 2021 dollars is simply just a matter of adjusting for inflation over a specific period of time. A dollar today will not be worth a dollar in 10 years. It is pretty much like interest earned on money in the bank, but for future dollar of expenses you are dealing with inflation instead. Expenses in todays money is less than expenses in the future because you adjust for inflation

Sites cost components

Fixed Costs

Every year, regardless of water supply benefits ($/yr)

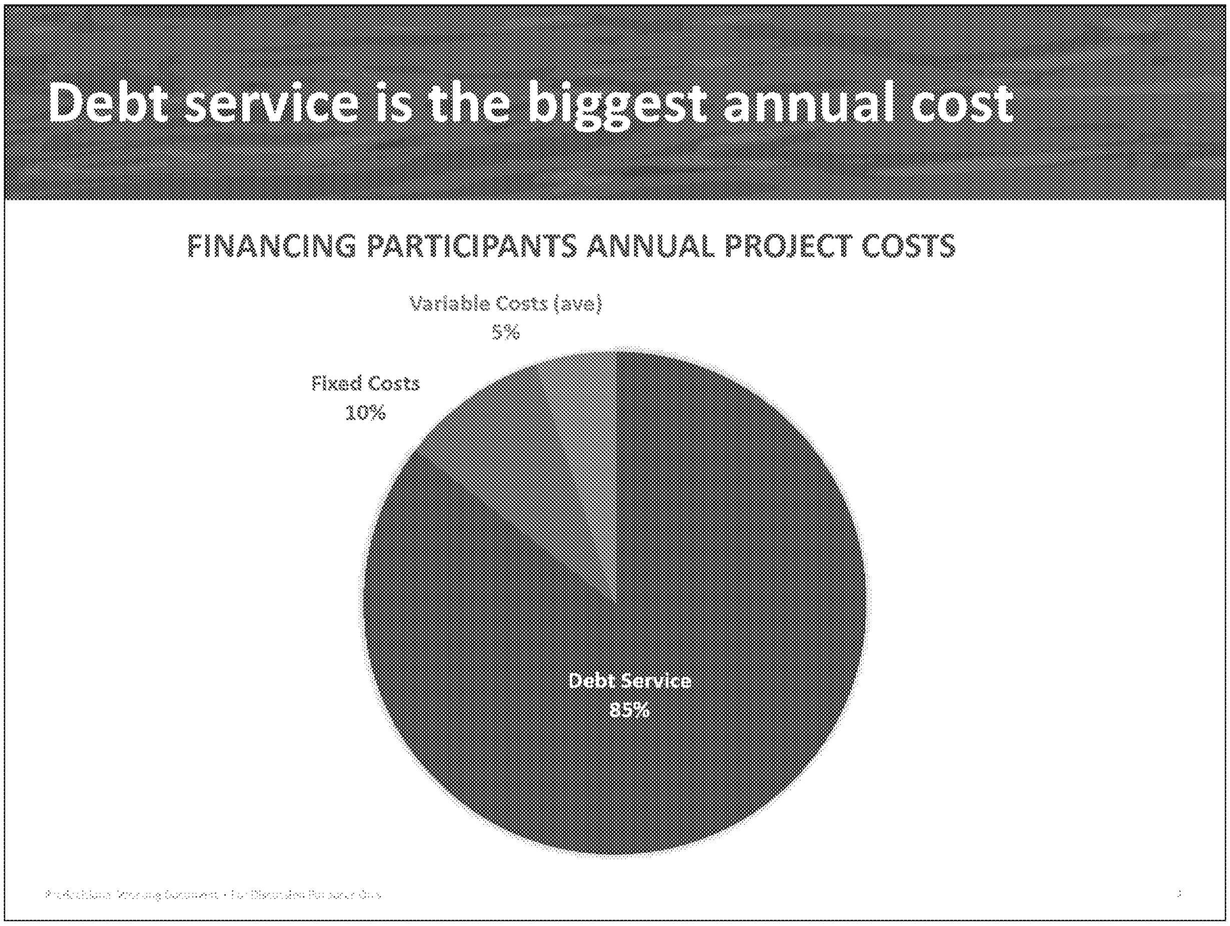
- Debt service (finance participants)
- Admin and General
- Operations and Maintenance
- Replacements
- Sufficiency reserves

Variable Costs

Varies based on water supply benefits ($/AF)

- Power consumption (pumping)
- Power generation (releasing, revenue)
- Wheeling costs

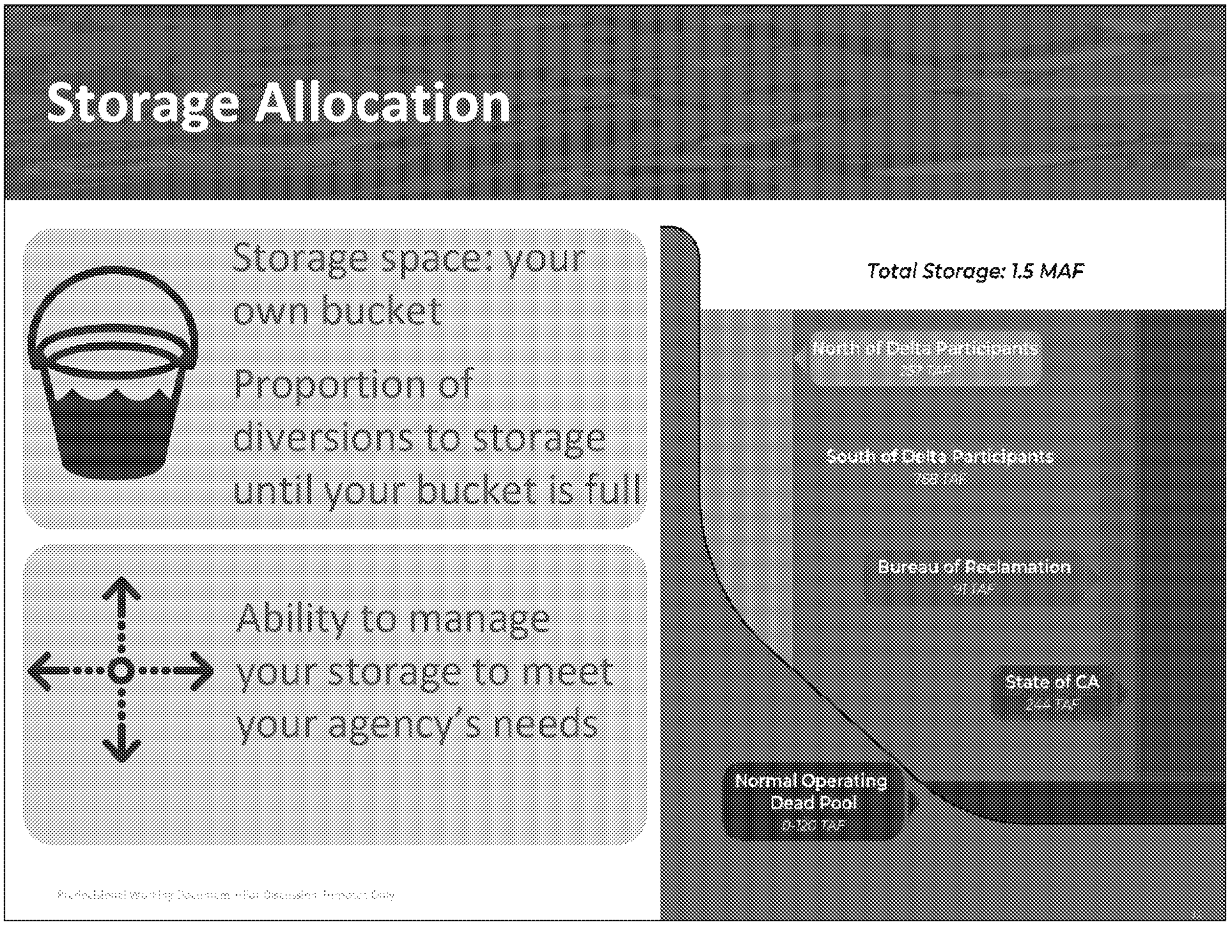
As we have discussed, annual costs during operations include fixed and variable costs. Discuss components.



Debt service makes up the largest share of fixed costs for finance participants, by far, at 85%. This is driven by two key factors, the capital cost of the project and the interest rate on the financing.

What do we get?

Storage, Benefits, and Affordability



This graphic reinforces that you are buying storage and a proportion of diversions from the river. The total north of delta storage is currently 257,000 acre-feet, a good-sized reservoir. I wanted to mention here that our participation basis in the past has been yield. This year, we have transitioned to storage-based participation, which means that you get just over 6 acre feet of storage per 1 acre foot of deliveries. For example, Westside participates at 5,375 acre feet on a yield basis, so their storage account would be about 33,500 acre-foot. Each storage account owner has the ability to manage the storage, their asset, to meet your goals.

A key element of the project is the environmental storage, which will be operated by the state.

Building facility doesn't guarantee water supply – dependent on "mother nature"
Cost of Construction must be repaid regardless of whether water is able to be diverted and/or delivered to participant
Potential to divert more in good years and hold in storage for use or sale later.

County of Origin Discussion

Memorandum of Understanding (MOU) developed in 2021

General terms:

- "The Sites Project Authority and the County will develop a mutually agreeable method for determining and measuring the annual amount of water from Funks Creek and Stone Corral Creek that is diverted to storage and impounded by the Project"
- "The Sites Project Authority will coordinate and collaborate with Colusa County in developing the proposed downstream conditions in those creeks pursuant to the Authority's expected water right"
- "The County and the Sites Project Authority desire to cooperate…and demonstrate the County's support for the Project.

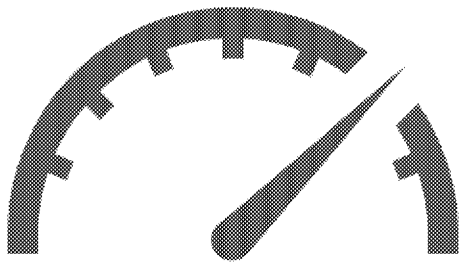
What moves the needle on benefits?

Amount of Storage

- Storage allocated to your agency determines proportion of diversions you receive

Operating Decisions

- Operating for long-term average versus dry-year supply
- Finding ways to use or sell water in wet and above normal years



Agency way of looking at affordability

Annual costs

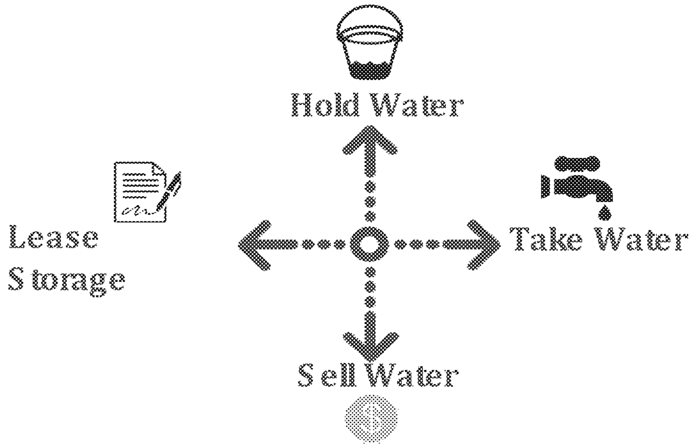
- Fixed costs
- Variable costs

Annual revenues

- Water sales
- Storage leasing
- Avoided costs

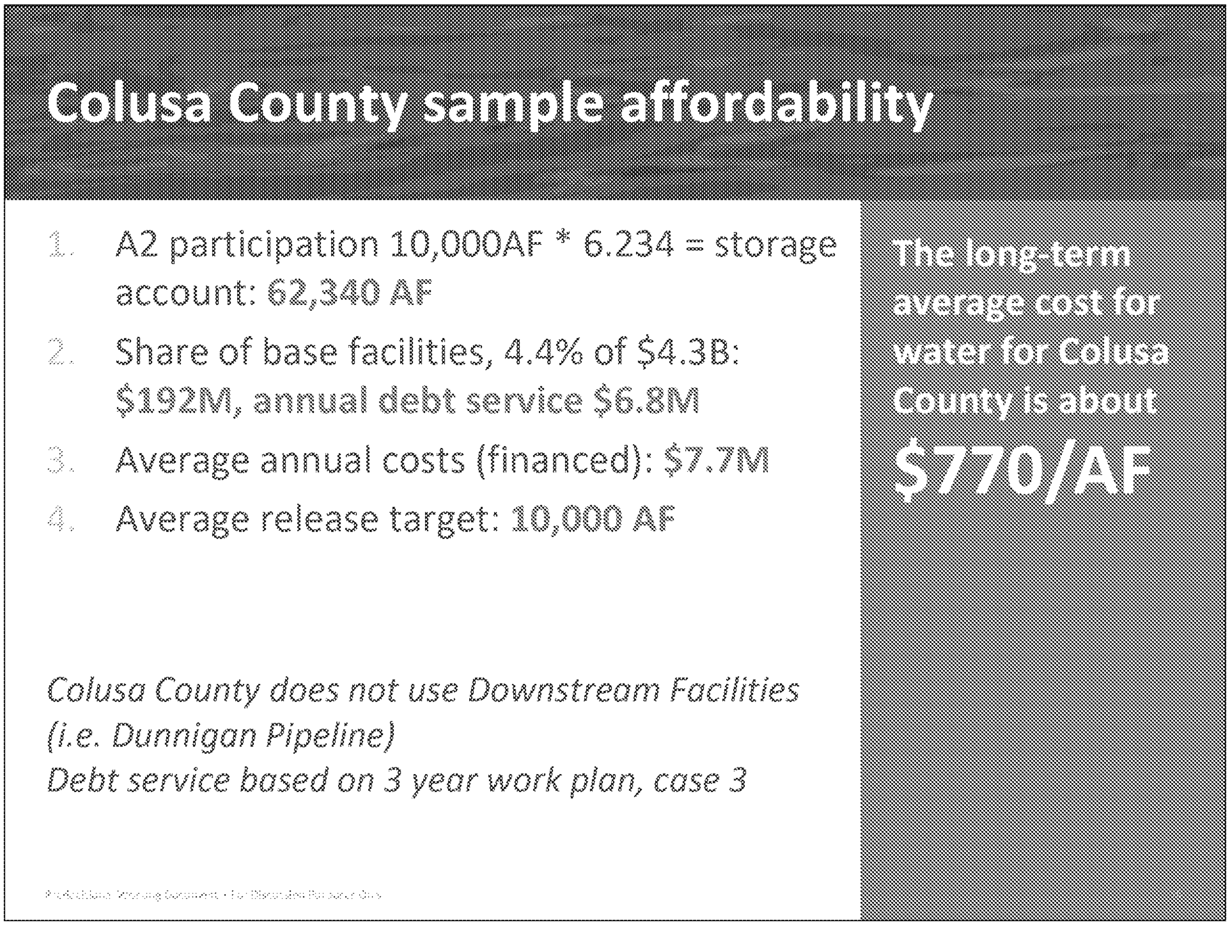
Annual benefits

- Storage: hydrology-based
- Deliveries: operating decisions-based



You decide.

A bit more on the agency way of looking at affordability – participants are in the driver's seat with tools including water sales and storage leases



JP

Costs come from 3 year work plan table 5, picked a middle-of-the-road financial case ($2021)

Share of base facilities is in future $

Colusa County affordability “optimized”

1. Average annual costs (financed): **$7.7M**
2. Average annual release (use): **10,000 AF**
3. High-end annual wet year NOD transfer water: **8,500 AF**
4. Price (net of variable costs) for NOD transfer wet year water: **$200/AF**
5. Cost offset: **$1.7M/yr, Colusa County out of pocket cost $6M**

Higher risk of running out of water in storage!

The long-term average cost for water for Colusa County is about

$600/AF

Important to note:
10,000 AF base supply is at risk in this scenario
Highly sensitive to quantity of water and the price. Interesting

Saves $170/AF

Ability to offset costs varies by water year type

Recent Examples - SOD transfers:

- 2021 State Water Contractors Dry Year Water Transfers Program: $600 – 675/AF
  - 2022 negotiations forthcoming
- 2022 San Luis Delta Mendota Water Agency - $625/AF

State Feasibility Report (2021) also includes representative SOD unit benefit values: ~$1300/AF

What moves the needle on affordability?

Operating Decisions: Increased Demand

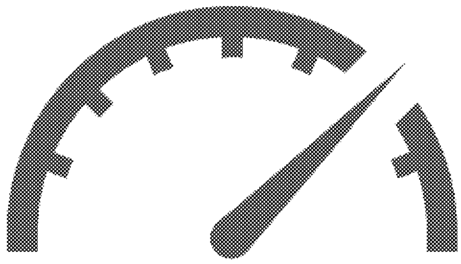
- Transfers: delivered and within reservoir
- Use of water in wetter year types

Costs

- Debt service
- Avoided costs

Revenues

- Transfer pricing
- Leasing storage

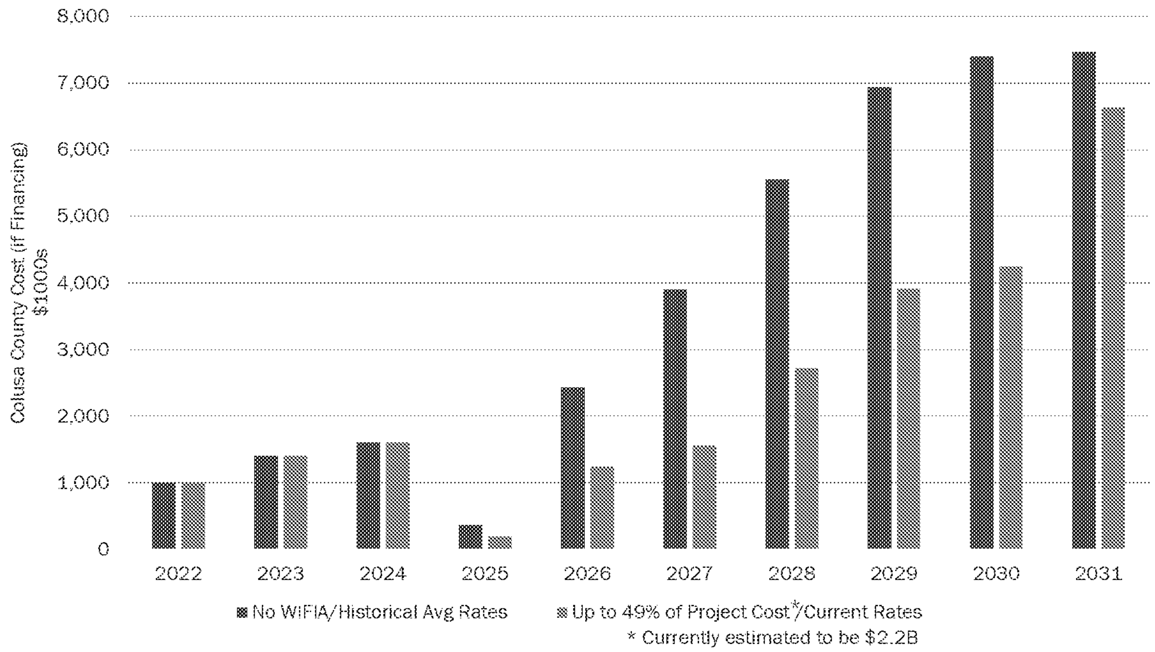


JP

As a policy-making body, it is very important that we start to understand what materially impacts project costs, and what is a distraction. We are going to discuss these fixed cost components in more detail, but I did want to touch on these variable costs for a second. Variable costs are a small component, but none-the-less present opportunies.

The cost of Power is important for an off-stream reservoir. It takes kilowatt hours to get water into Sites Reservoir, so the price you pay for that energy is important to understand. Our project does generate a small amount of power on release, but that doesn't cover the cost of pumping into the reservoir, and importantly could occur in a different year; we have filling years and release years
Losses will be better defined in the coming months, but include losses due to evaporation and seepage in both the conveyance and storage of sites water.

Construction Cash Flow
Range of Costs by Year



How do we pay for it?

Funding and Plan of Finance

Future of Funding & Plan of Finance

State and Federal

State

- $836M in Prop 1 Funding ($40.8M Early Funding)

Federal

- WIIN Act – over $100M committed to date ($80M appropriation for FY 2022)
- Infrastructure Bill - $1.15B for western water storage

Participants

Short Term

- Cash Calls: $608.50/AF (2016-2024)
- Possibility of early financing if permitting & water right application are complete

Long Term (Phases 3-5)

- WIFIA Loan - up to 49% of project cost (currently estimated to be $2.2B)
- USDA Loan ($449M)
- Fixed Rate Bonds
- Pay-Go

Next Steps

Next Steps

Complete Amendment 3 Sites Participation Agreement

- ❑ Committing to AF of water @ $400/AF

Rebalancing –

- Decreasing AF can happen now or before entering financing agreement (Phase 3).
- Increasing AF is dependent on decreases made by others, active participants will have "first right of refusal" before new participants are given opportunity.

Questions?

Predecisional Working Document – For Discussion Purposes Only

From: Heydinger, Erin [Erin.Heydinger@hdrinc.com]
Sent: 3/14/2022 4:07:52 PM
To: Alicia Forsythe [aforsythe@sitesproject.org]
Subject: RE: Sites - Variability in Diversions and Releases for NGO Water Right Group
Attachments: Sites-RDEIRSDEIS-DiversionsReleases-2021.pdf

Hi Ali,

See attached and let me know if you'd like any changes or other charts shown.

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

hdrinc.com/follow-us

From: Heydinger, Erin
Sent: Monday, March 14, 2022 9:25 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Subject: RE: Sites - Variability in Diversions and Releases for NGO Water Right Group

Yep – I was thinking graphs showing diversions and releases by water year type. Does that sound like what's needed?

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Monday, March 14, 2022 9:09 AM
To: Heydinger, Erin <erin.heydinger@hdrinc.com>
Subject: Sites - Variability in Diversions and Releases for NGO Water Right Group

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Erin – I had an action item from the NGO Water Right Small Group meeting about sending out some graphics on the variability on diversions and releases. I think you may remember this – it was when we showed the diversion and release graphics and someone stated that those are averages and doesn't show the highs and lows. Do we have a graphic(s) that would show the variability? Something simple for diversions and releases.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Project Authority | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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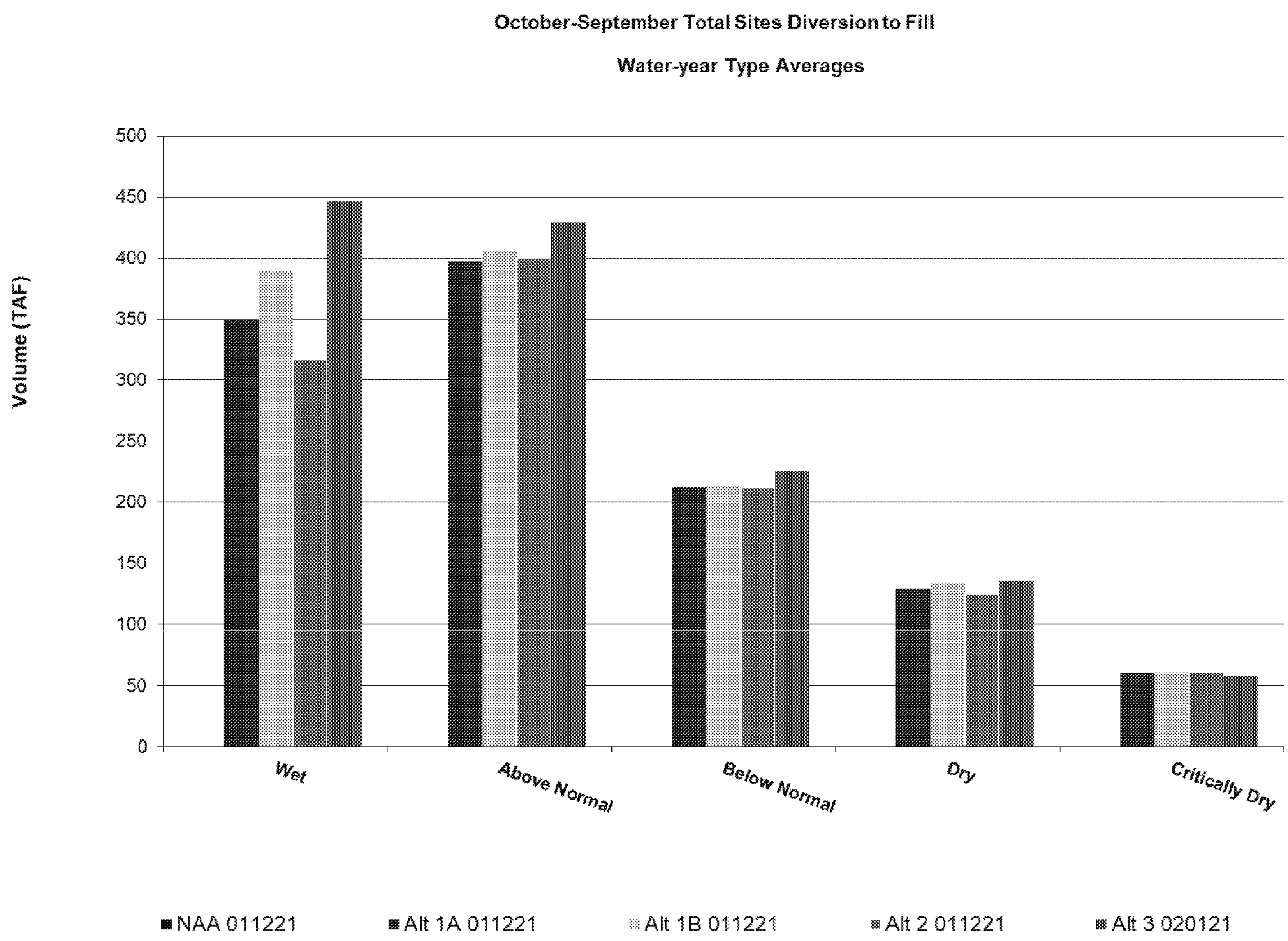
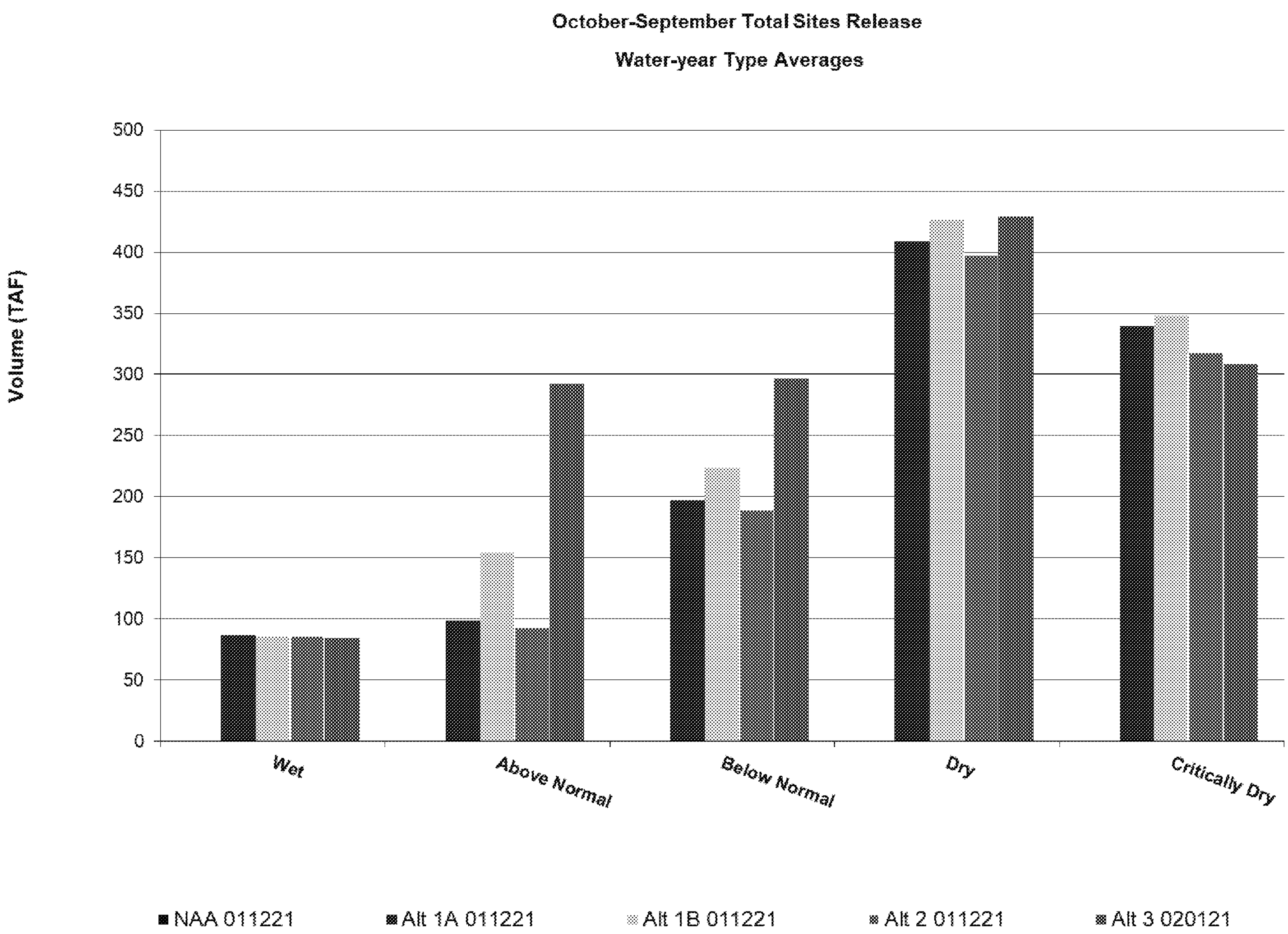


Based on 2021 Revised Draft EIR/Supplemental Draft EIS
Water year-type based on Sacramento Valley 40-30-30 Index



Based on 2021 Revised Draft EIR/Supplemental Draft EIS
Water year-type based on Sacramento Valley 40-30-30 Index

From: Heydinger, Erin [Erin.Heydinger@hdrinc.com]
Sent: 3/15/2022 3:22:15 PM
To: steve.micko@jacobs.com; Alicia Forsythe [aforsythe@sitesproject.org]
CC: Leaf, Rob/SAC [Rob.Leaf@jacobs.com]; Winslow, Kyle/COS [Kyle.Winslow@jacobs.com]; Spranza, John [john.spranza@hdrinc.com]
Subject: RE: Sites Reservoir Water Quality Model

Thanks Steve! We will hold off on this effort for now but this is helpful information.

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: Micko, Steve/SAC <Steve.Micko@jacobs.com>
Sent: Thursday, March 10, 2022 8:12 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>; Heydinger, Erin <erin.heydinger@hdrinc.com>
Cc: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Winslow, Kyle/COS <Kyle.Winslow@jacobs.com>
Subject: Sites Reservoir Water Quality Model

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Ali and Erin,

Kyle Winslow (cc'd) and I discussed the potential for a Sites Reservoir water quality model that simulates full nutrient and algal kinetics, DO, pH, etc.
With respect to needs, streamflow water quality data is the highest priority. I believe most of this is already available (from our water quality effects analysis).
Once we have all streamflow water quality data, a quasi-validated reservoir water quality model could be developed in roughly six months, pending model assumptions and schedules.

Let us know if you have any questions.

Best,
Steve

Steve Micko, PE | Jacobs | Project Manager and Water Group Leader
O:916.286.0358 | M:408.834.6614 | Steve.Micko@jacobs.com
2485 Natomas Park Drive Suite 600 | Sacramento, CA 95833

Upcoming PTO: Mar 30 – Apr 3

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Reservoir Operations Plan

Version 1.0

January 2022

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Attachments

Attachment A. Sites Storage Partners
Attachment B. Principles for the Storage, Delivery and Sale of Sites Reservoir Project Water
Attachment C. Methodology for Allocating Reservoir Storage
Attachment D. Modeling Assumptions for Participant Demands and Deliveries by Year Type
Attachment E. Memorandum Identifying Modeled Criteria for Shasta Exchanges
Attachment F. Memorandum Identifying Modeled Criteria for Oroville Exchanges

Version History

Version	Description	Date of Revision
1	Final	1/17/22

Acronyms and Abbreviations

Authority	Sites Project Authority
BiOp	Biological Opinion
CBD	Colusa Basin Drain
CDFW	California Department of Fish and Wildlife
cfs	cubic feet per second
COA	Coordinated Operation Agreement
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
D-1641	Decision 1641
Delta	Sacramento-San Joaquin River Delta
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
GCID	Glenn-Colusa Irrigation District
HCPP	Hamilton City Pumping Plant
I/O	intake/outlet
MAF	million acre-feet
NMFS	National Marine Fisheries Service
NOD	North of Delta
O&M	Operations and Maintenance
PGP	Pumping Generating Plant
RBPP	Red Bluff Pumping Plant
Reclamation	Bureau of Reclamation
ROC on LTO	Reinitiation of Consultation on Long-Term Operations of the Central Valley Project and State Water Project
SCADA	Supervisory Control and Data Acquisition
SOD	South of Delta
SWP	State Water Project
SWRCB	State Water Resources Control Board
TAF	thousand acre-feet
TC Canal	Tehama-Colusa Canal
TCCA	Tehama-Colusa Canal Authority
TRR	Terminal Regulating Reservoir
WIIN	Water Infrastructure Improvements for the Nation
WSIP	Water Storage Investment Program

1.0 Definition of Terms

Key terms used in this Reservoir Operations Plan are defined below:

- **Active Storage** – That portion of Sites Reservoir above dead pool that can be exercised to create water supply-related benefits. The total maximum storage in Sites Reservoir is expected to be 1.5 million acre-feet (MAF). Firm dead pool storage, or the amount of water that cannot be effectively used, is expected to be about 60 thousand acre-feet (TAF). However, operationally another 60 TAF would likely be needed to prevent water quality issues in the storage releases. Therefore, the operational dead pool, or the minimum amount of water needed to maintain operational standards, is considered to be 120 TAF. For this plan, the active storage for Sites Reservoir is considered to be about 1.38 MAF.
- **CalSim II (CalSim) –** A generalized reservoir-river basin simulation model. The model used and presented in this document is the Reclamation/California Department of Water Resources CalSim II planning model that simulates the coordinated operation of the CVP and SWP over a range of hydrologic conditions. The model is run on a monthly timestep.
- **Contract Year** – Period from, and including, January 1 of each calendar year through December 31 of the same year.
- **No Action Alternative (NAA)** – The system modeled without construction of the Project. The modeled results for the NAA include the same regulatory environment/baseline as that included in the with-project modeling.
- **Sites Project Authority (Authority)** – A joint powers authority established to exercise powers common to the Authority Members to, among other things, effectively study, promote, develop, design, finance, acquire, construct, manage, and operate Sites Reservoir and related facilities such as recreation and power generation.
- **Sites Reservoir Project (Project)** – Dams, reservoirs, certain associated diversion and conveyance facilities, and other associated facilities, mitigation lands, and water right owned and operated by the Authority.
- **Project Releases versus Deliveries** – Project releases are defined as the amount of water that is released from storage. Project deliveries include estimated carriage losses in the Sacramento-San Joaquin River Delta and Yolo Bypass. No losses are calculated for local participant deliveries north of the Delta, thus releases are equal to deliveries for those Storage Partners.
- **Storage Allocation** – Amount of storage space (storage volume) in Sites Reservoir allocated to a Storage Partner, as agreed upon in that Storage Partner's Sites Reservoir Benefits and Obligations Contract. Dead storage is not allocated to any Storage Partner.
- **Storage Partner** - The governmental agencies, water organizations and others who have funded and received a Storage Allocation in Sites Reservoir and the resulting water supply or water supply related environmental benefits from the Project. Storage Partners could include local agencies, the State of California, and the Federal Government (see Attachment A for a full list based on 2021 participation).
- **Water Year** – Period from October 1 through September 30.
- **Water Year Type** – Classified water year based on the Sacramento Valley 40-30-30 Water Year Hydrological Classification Index, in accordance with the State Water Resources Control Board (SWRCB) Water Year Hydrologic Classification, presented in D-1641.

2.0 Introduction and Approach

The Sites Reservoir Project (Project) is a proposed 1.5 million acre-feet (MAF) offstream reservoir located west of the community of Maxwell, California. The Project would use existing infrastructure to divert unregulated and unappropriated flow from the Sacramento River at Red Bluff and Hamilton City and would convey water to the reservoir. New and existing facilities would move water into and out of the reservoir. Releases from Sites Reservoir would be made to the Glenn Colusa Irrigation District (GCID) Main Canal and the Tehama-Colusa (TC) Canal. Releases to the TC Canal could be diverted for use or could flow farther downstream to either the Yolo Bypass via the Knights Landing Ridge Cut or back to the Sacramento River via the Knights Landing Outfall Gates and ultimately be exported through the Sacramento-San Joaquin River Delta (Delta) for use in and south of the Delta. Figure 1 and Figure 2 show the location of the Project and its facilities.

The Sites Project Authority (Authority) would own, govern, manage, and operate Sites Reservoir and related facilities. Organizationally, the Authority has established the Reservoir Committee to develop, through a partnership, both long-term and annual operational plans. The Reservoir Committee consists of Sites' Storage Partners, those entities and organizations that are funding and would receive water supply or water supply-related environmental benefits from the Project. For the purposes of this document, the term "Authority" collectively refers to the Sites Project Authority and the Reservoir Committee. The final roles and responsibilities of the Authority and the Reservoir Committee in the day-to-day operations of the Project have not been defined.

As defined in the Project's Revised Draft Environmental Impact Report (EIR)/Supplemental Draft Environmental Impact Statement (EIS) (November 2021), the objectives of the Project are as follows:

- Improve water supply reliability and resiliency to meet Storage Partners' agricultural and municipal long-term average annual water demand in a cost-effective manner for all Storage Partners, including those that are the most cost-sensitive.
- Provide public benefits consistent with Proposition 1 of 2014 and use Water Storage Investment Program (WSIP) funds to improve statewide surface water supply reliability and flexibility to enhance opportunities for habitat and fisheries management for the public benefit through a designated long-term average annual water supply.
- Provide public benefits consistent with the Water Infrastructure Improvements for the Nation (WIIN) Act of 2016 by using federal funds, if available, provided by the Bureau of Reclamation (Reclamation) to improve CVP operational flexibility in meeting CVP environmental and contractual water supply needs and improving cold pool management in Shasta Lake to benefit anadromous fish.
- Provide surface water to convey biomass from the floodplain to the Delta to enhance the Delta ecosystem for the benefit of pelagic fishes in the north Delta (e.g., Cache Slough).
- Provide local and regional amenities, such as developing recreational facilities, reducing local flood damage, and maintaining transportation connectivity through roadway modifications.

This document provides a detailed description of the operations of Sites Reservoir (or Sites). Operations of the Project would be flexible and adaptable to meet a wide range of water supply and environmental needs. Version 1 of this Operations Plan includes the operations as they have been identified as of December 2021. All project facilities and modeling results included in this document refer to Alternative 1B, as identified in the Revised Draft EIR/Supplemental Draft EIS. As permitting and water right conditions are finalized, this Plan will be revised and expanded.

It is important to note the following for the reader:

1. This Version 1.0 of the Operations Plan is framed around Alternative 1B, the Authority's Preferred Project in the Revised Draft EIR/Supplemental Draft EIS. As the environmental review process has not yet been completed, the Preferred Project, mitigation measures that may be relevant to water operations, and the selection of the Preferred Project itself may change. This Operations Plan in no way binds the Authority to certain operations, mitigation measures, or the selection of the Preferred Alternative itself. This Plan will be adjusted and revised to reflect the final outcomes of the environmental review process in future versions.
2. The results of the modeling for Alternative 1B conducted for the Revised Draft EIR/Supplemental Draft EIS are used in this Operations Plan and are based on CalSim modeling and are included for illustrative purposes only. While these are valuable building understanding of the operations of the project, it is important for the reader to remember that CalSim modeling is based on monthly timesteps and historic hydrology. Actual daily operations may vary. Daily modeling will be developed in the future, and future versions of this Plan will be modified accordingly.

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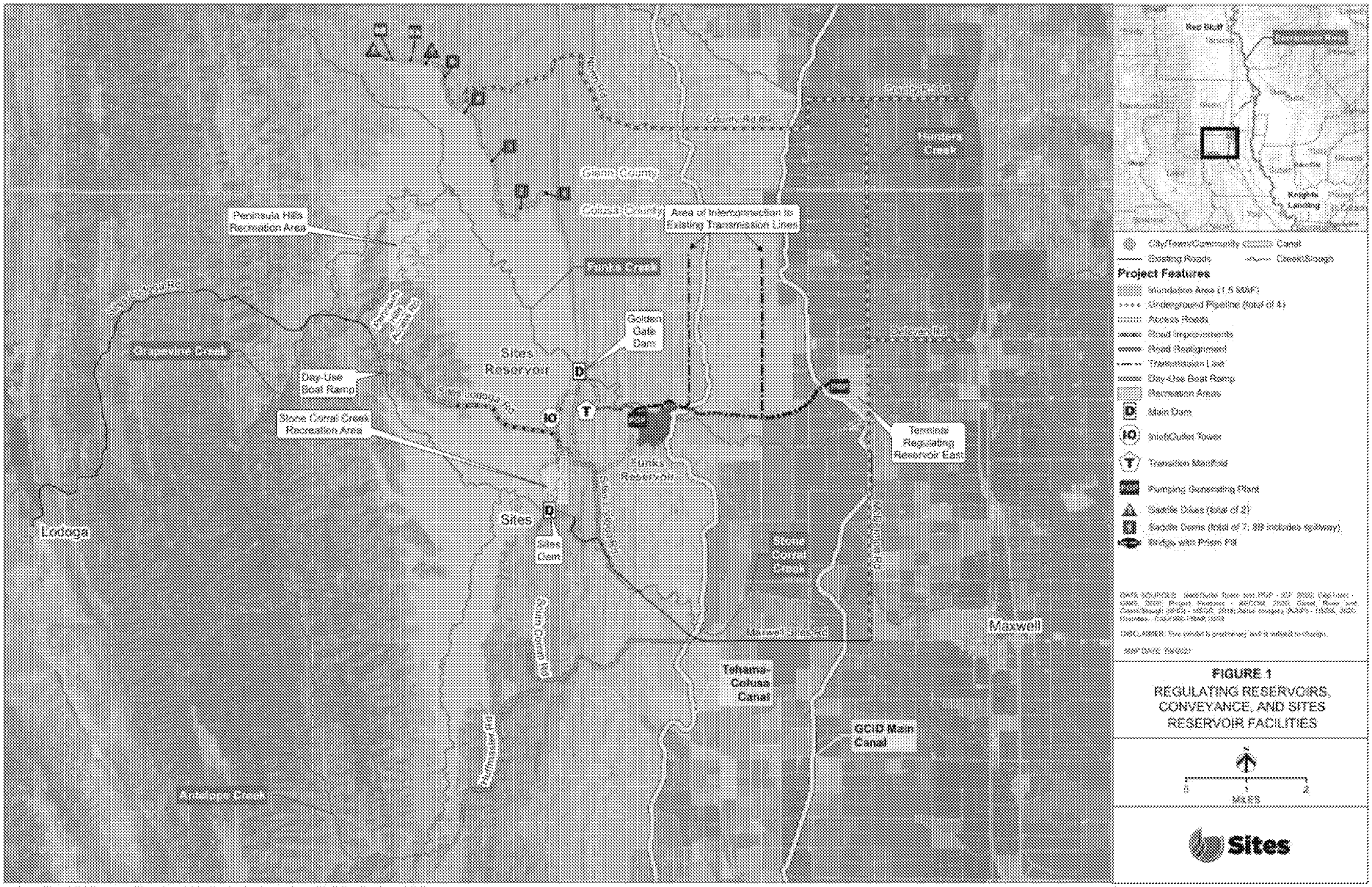

Figure 1. Regulating Reservoirs, Conveyance, and Sites Reservoir Facilities

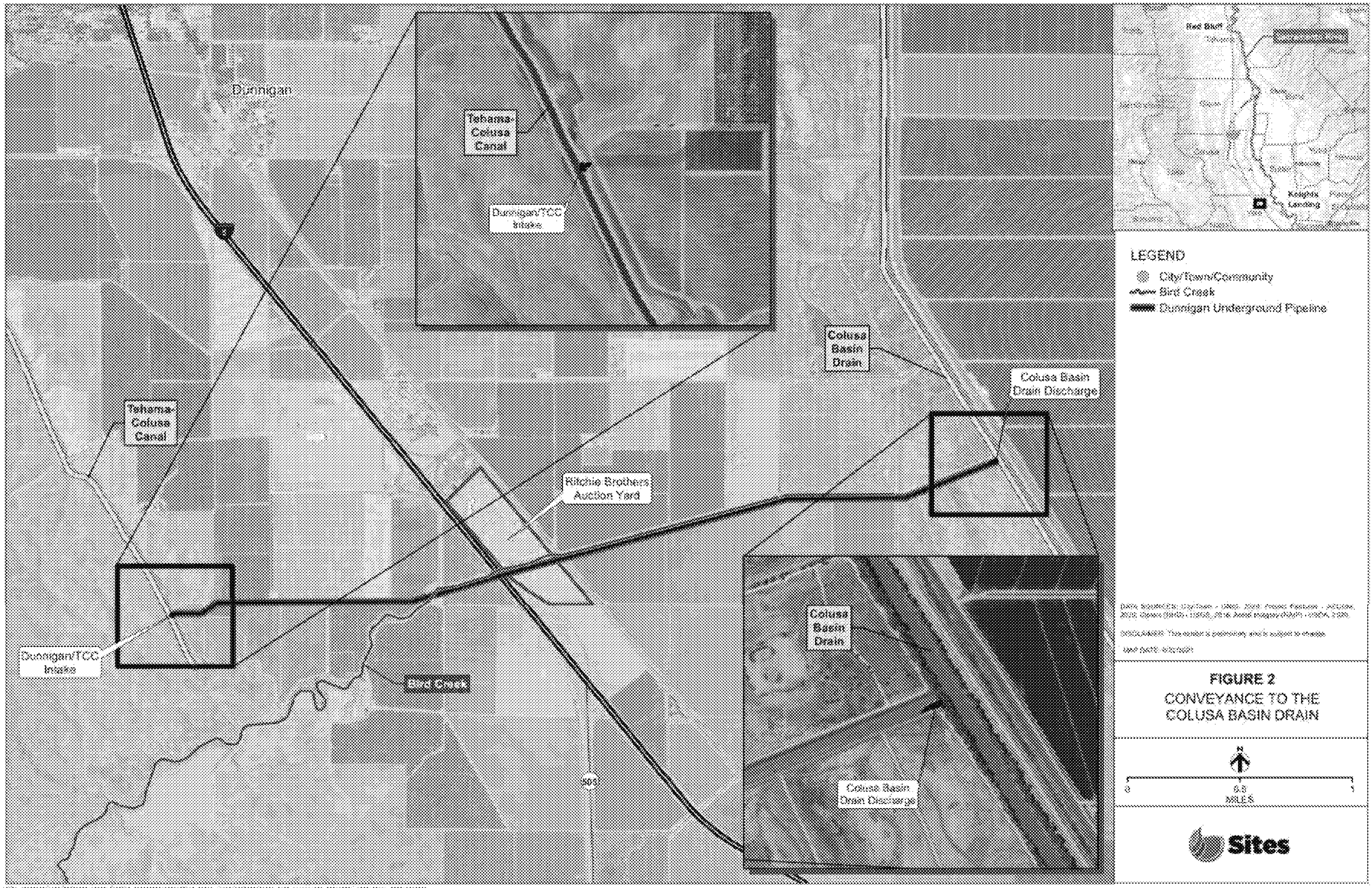

Figure 2. Conveyance to the Colusa Basin Drain

3.0 Operations Planning, Forecasting, and Accounting

3.1 Annual Operating Cycle

Figure 3 summarizes the annual operating cycle. The annual operating cycle depicts the timeline and requirements of components important to operations:

- Initial and final requests for releases from Storage Partners
- Timing of releases for north-of-Delta (NOD) and south-of-Delta (SOD) uses
- Timing of exchanges with DWR and Reclamation
- Coordination with TCCA, GCID, CDFW, and CBD entities

The annual operating cycle can be broadly divided into those times when the Project is diverting water, exchanging water (and releasing for NOD purposes), and releasing water SOD during the transfer window.

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January
- Initial requests for Sites water provided by participants for delivery or transfer
- Coordination with GCID and TCCA on diversions

February
- Coordination with GCID and TCCA on diversions
- Final requests for Sites water releases before transfer window (further requests accommodated when possible)

March
- Sites begins releasing water for DWR and Reclamation exchanges
- Coordination with GCID and TCCA on diversions
- Coordination with CDFW on Prop 1 water deliveries
- Some releases for NOD use

April
- Final requests for Sites water releases to SOD (further requests accommodated when possible)
- Releases for NOD purposes
- Coordination with CDFW on Prop 1 water deliveries

May
- SOD participants notify DWR of final Sites requests for season
- Peak release month for exchange water
- Releases for NOD purposes
- Prop 1 water schedule finalized with CDFW

June
- Peak month for water backed into Oroville and Shasta
- Releases for NOD use
- Carriage water costs determined (proposed)

July
- Transfer window opens, SOD deliveries begin
- Water exchanged into Shasta and Oroville begins to release
- Key month: Coordination with TCCA, CBD, DWR on releases to river
- Coordination with Reclamation and DWR on exports
- Releases for NOD use

August
- Exports for SOD use
- Yolo Bypass Prop 1 deliveries
- Key month: Coordination with TCCA, CBD, DWR on releases to river
- Coordination with Reclamation and DWR on exports
- Releases for NOD use

September
- Exports for SOD use
- Key month: Coordination with TCCA, CBD, DWR on releases to river
- Yolo Bypass Prop 1 deliveries
- Coordination with Reclamation and DWR on exports
- Releases for NOD use

October
- Exports for SOD use
- Continued coordination with TCCA, CBD, DWR, Reclamation on releases and deliveries
- Releases for NOD use

November
- Last month for SOD exports
- Coordination with GCID and TCCA on diversions
- Releases for NOD use

December
- Coordination with GCID and TCCA on diversions

Figure 3. Annual Operating Cycle

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3.2 Forecasting

Forecasting will be used to estimate the amount of water available to each Storage Partner in a given year. Project-specific forecasts will initiate in February and will be updated weekly. Forecasts will use the best available technology at the time of operations. This could include the California Department of Water Resources' (DWR's) 50 and 90 percent exceedances for Sacramento River flows. Forecasting for diversions is discussed in Section 4.3. Forecasts for Project operations will also include coordination with the CVP and SWP.

3.3 Real-time Tracking and Accounting

A Project dashboard will be developed that will allow the Authority, its operators, and the Storage Partners to track real-time Project operations and accounting. The dashboard will include the following metrics:

- Project diversions at Red Bluff and Hamilton City
- pumping into Sites Reservoir from Funks Reservoir and the Terminal Regulating Reservoir (TRR)
- local inflows and outflows from Stone Corral and Funks Creeks
- storage account levels, including transferred or leased storage
- reservoir levels
- requested releases
- actual releases
- power use and generation
- deliveries to turnout or export facilities
- exchanged water and location (including spill or carryover of exchange water)
- estimated losses, including conveyance, evaporation, and carriage water

The real-time dashboard will have the ability to summarize data at various timesteps (e.g., instantaneous data, prior week, prior month, year-to-date).

3.4 Year-end Accounting

Following the final deliveries, year-end accounting and true-up will be prepared. Metrics will be provided to Storage Partners and may also be used in the annual water right report. It is anticipated that this report will include a summary of requested releases from storage, actual deliveries, and estimated losses, including spills (or carryover, if allowable) of exchange water in either Shasta or Oroville. The year-end accounting will be available to Sites Storage Partners as they make their requests for Project water the following year.

3.5 Periodic Synthesis Reporting

A synthesis report will be prepared by the Authority staff every 5 years, starting 5 years after initial operations of the Project. The synthesis report will evaluate the efficiency and effectiveness of Project operations, describe, at a minimum, challenges and opportunities that occurred over the prior 5 years of operations, and identify improvements to be implemented in the future, including potential changes to this Operations Plan. The Periodic Synthesis Report will incorporate feedback and assess satisfaction of the Storage Partners and operating partners (GCID, TCCA, CBD, DWR and Reclamation) with Project operations.

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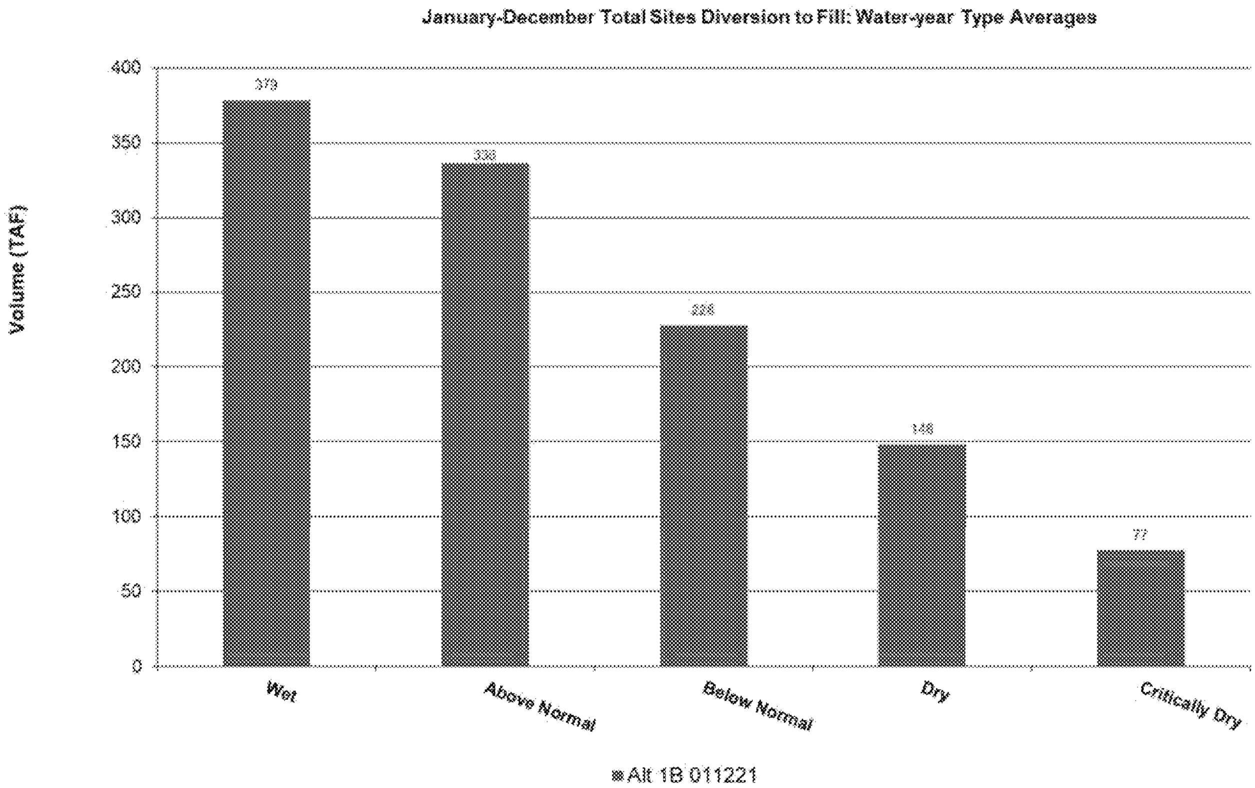
4.0 Diversions and Conveyance to Sites Reservoir

4.1 Overall Project Diversions

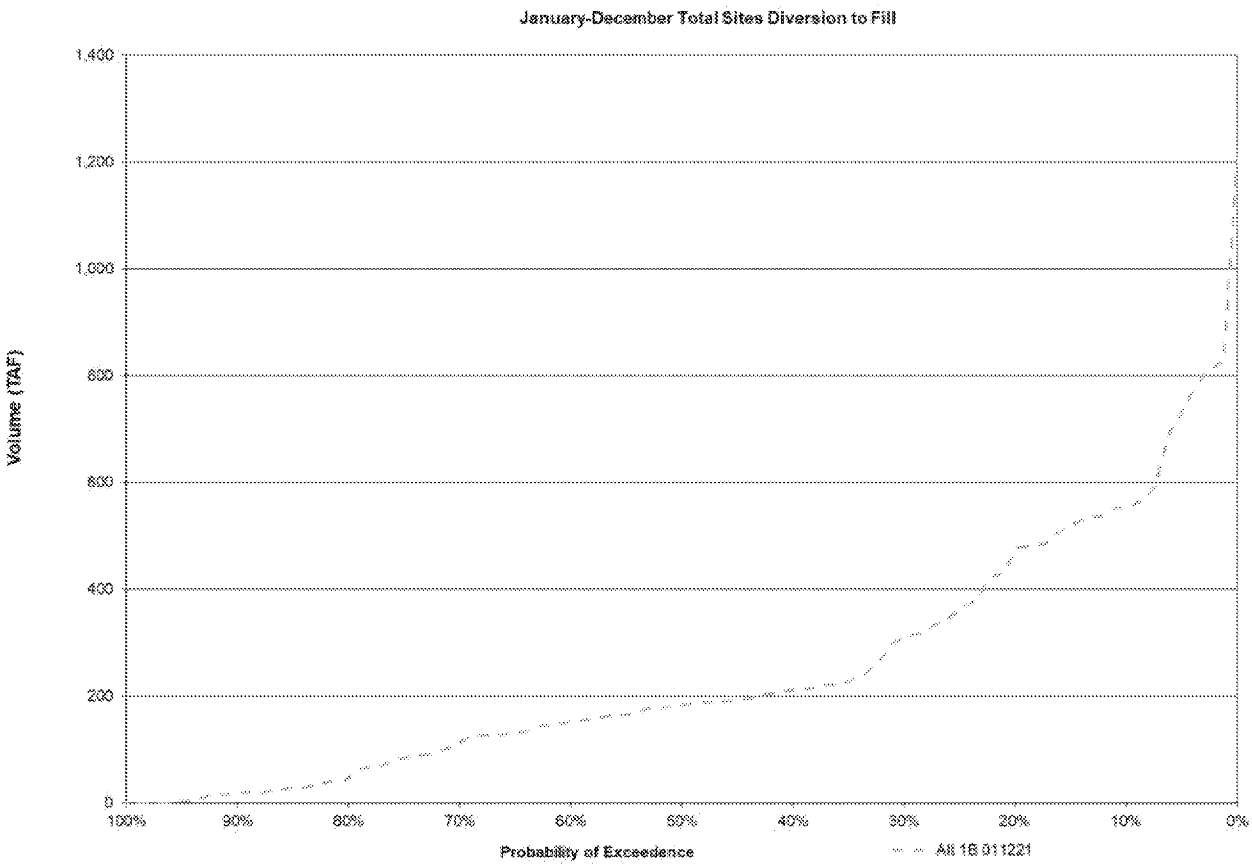
Project diversions would generally occur in the winter and early spring but could occur any time from October 1 through June 14. Project facilities can only be used to divert/fill or release from the Reservoir; simultaneous fill and release is not possible. In addition, and consistent with the expected Project water right, all water diverted under the Project water right must be placed into storage in Sites Reservoir and cannot be directly used (used for a beneficial purpose prior to being stored in Sites Reservoir).

The total diversions and timing for diversions based on the CalSim modeling conducted for the Revised Draft EIR/Supplemental Draft EIS are shown in Figure 4 to Figure 6. Figure 4 shows the total average diversions to Sites from the Sacramento River over the 82-year CalSim hydrology by water year type. Figure 6 depicts monthly averages; actual within-month diversions at the daily or weekly timescale are expected to vary. Daily modeling will be developed in the future, and future versions of this Plan will be modified accordingly.



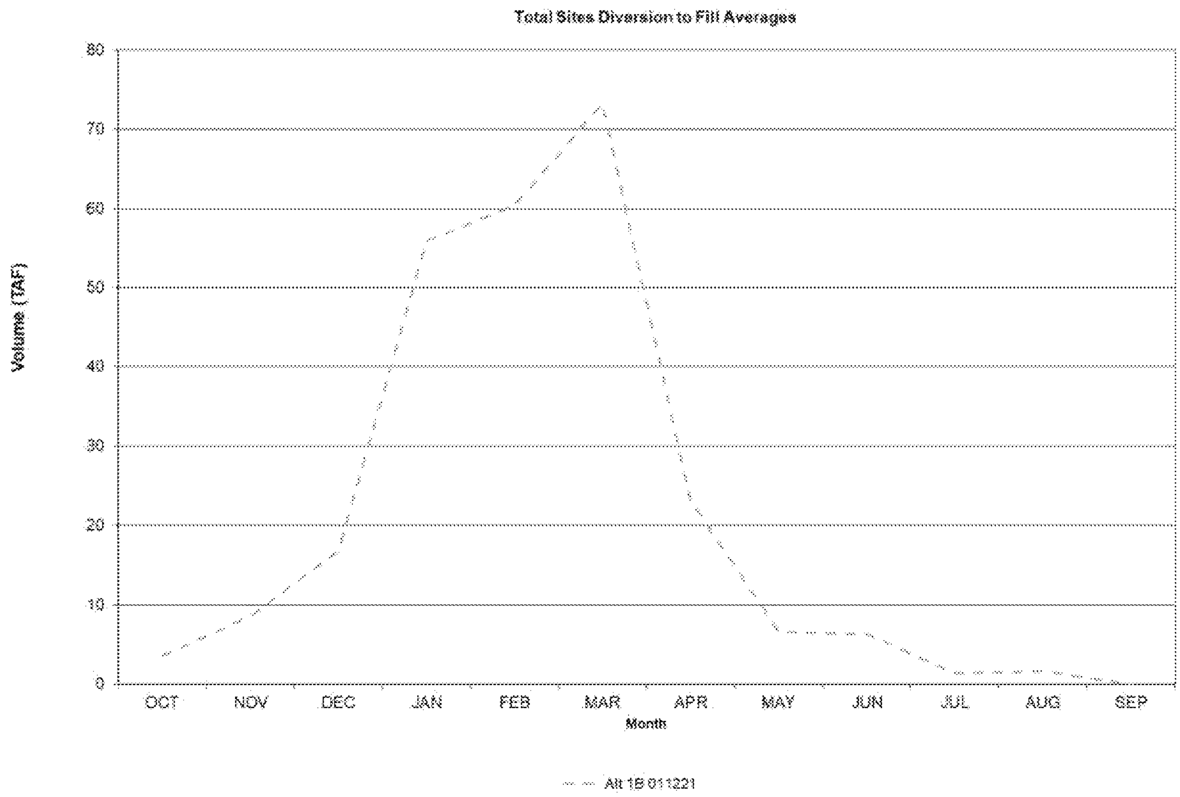
Water year type based on the Sacramento Valley 40-30-30 Water Year Hydrological Classification Index
Source: CalSim II modeling for Alternative 1B (Alt 1B 011221) in the Revised Draft EIR/Supplemental Draft EIS

Figure 4. January to December Total Sites Diversion to Fill: Water-year Type Averages



Source: CalSim II modeling for Alternative 1B (Alt 1B 011221) in the Revised Draft EIR/Supplemental Draft EIS

Figure 5. Exceedance plot of January to December Total Sites Diversion to Fill



Source: CalSim II modeling for Alternative 1B (Alt 1B 011221) in the Revised Draft EIR/Supplemental Draft EIS

Figure 6. Long-term Monthly Average of Total Sites Diversion to Fill

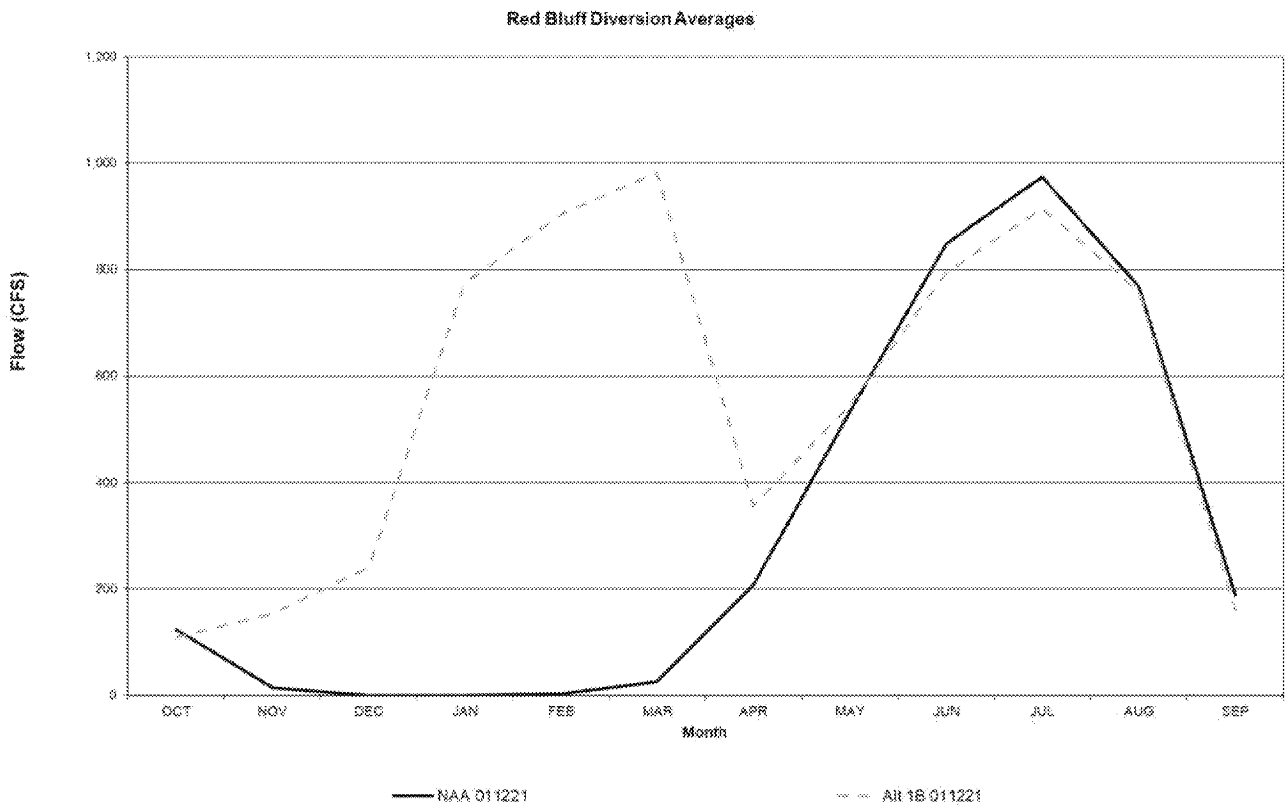
4.2 Diversion and Conveyance Facilities

The following sections describe the diversion and conveyance facilities that may be used in the operation of the Project. The location of these facilities is shown in Figure 1. Facilities are described below in order of operational process (i.e., diversion, storage, release).

4.2.1 Red Bluff Pumping Plant, Tehama-Colusa Canal, and Funks Reservoir

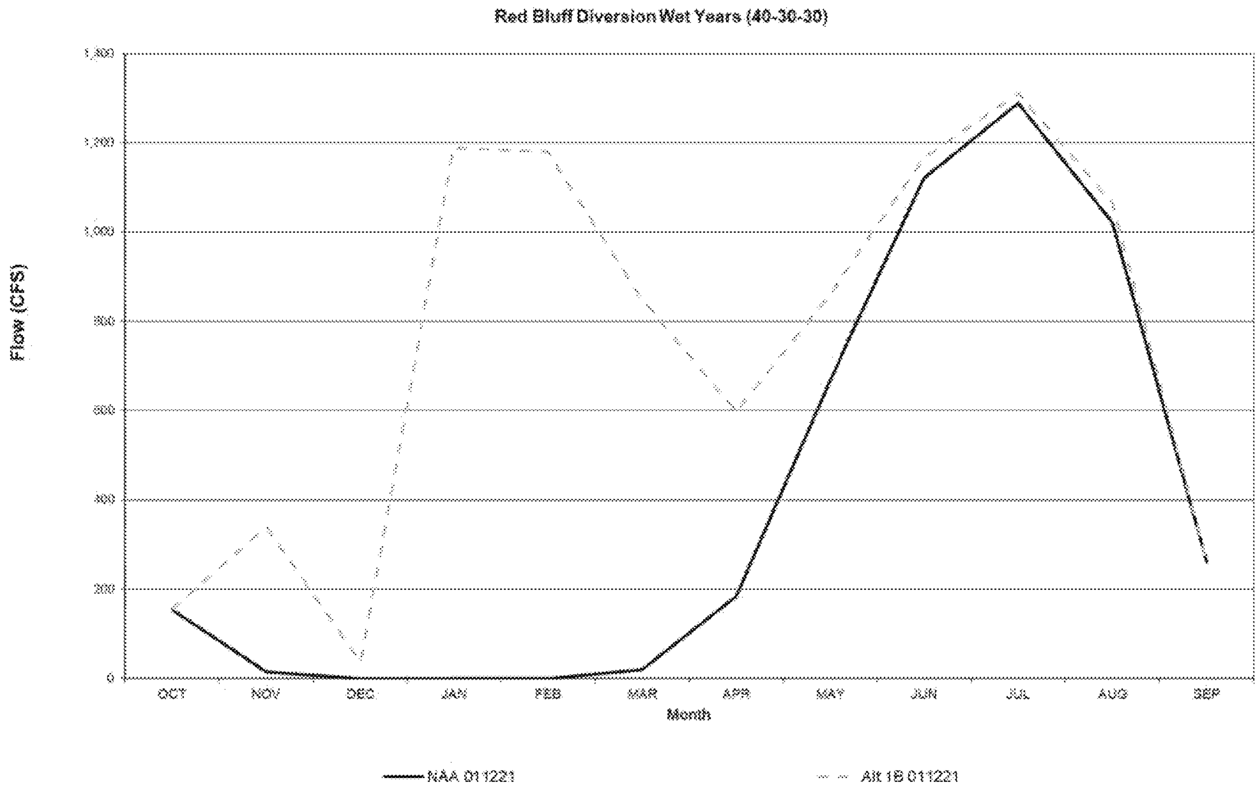
The Project would divert water from the Sacramento River at the existing Red Bluff Pumping Plant (RBPP) and Hamilton City Pump Station (described below). Water diverted at the RBPP enters the TC Canal to be conveyed to Sites Reservoir. The RBPP and TC Canal are owned by Reclamation and operated by the Tehama-Colusa Canal Authority (TCCA). Diversions at the RBPP will be in addition to those occurring for TCCA members as part of their CVP contracts. The RBPP will have a capacity of 2,500 cubic feet per second (cfs) after capacity improvements are made to serve the Project. The facility has a fish screen that meets National Marine Fisheries Service (NMFS) and California Department of Fish and Wildlife (CDFW) criteria.

The total conveyance capacity of the TC Canal at the upstream end of the canal is 2,530 cfs and 2,100 cfs at Funks Reservoir (described below). Figure 7 shows average monthly diversions for all water year types at the RBPP with and without the Project. Figure 8 shows average monthly diversions in wet years when diversions are highest. The figures depict the total diversions at the pumping facility for both TCCA and Sites purposes. The total diversions at Red Bluff in the summer months are modeled as decreasing slightly between the No Action Alternative (NAA 011221) and the with-project alternative (Alt 1B 011221) due to exchanges (e.g. TCCA members receiving CVP water from Sites rather than pumping it from the Sacramento River). Note that the figures show monthly averages; actual within-month diversions at the daily or weekly timescale are expected to vary. Daily modeling will be developed in the future, and future versions of this Plan will be modified accordingly.



Source: CalSim II modeling for Alternative 1B (Alt 1B 011221) in the Revised Draft EIR/Supplemental Draft EIS

Figure 7. Red Bluff Diversion Averages



Water year type based on the Sacramento Valley 40-30-30 Water Year Hydrological Classification Index
Source: CalSim II modeling for Alternative 1B (Alt 1B 011221) in the Revised Draft EIR/Supplemental Draft EIS

Figure 8. Red Bluff Diversions in Wet Years

The TC Canal is concrete-lined, resulting in a relatively minor seepage losses during the conveyance of Sites water. Losses occurring between the RBPP and Sites Reservoir are estimated to be 1 percent. However, the actual losses incurred will be estimated by TCCA during Project operations. Losses in the TC Canal will be allocated on a daily basis proportionally to Storage Partners receiving diversions. The TC Canal is currently out of service for maintenance from mid-December to mid-February each year. This maintenance window is expected to be reduced once Sites Reservoir is constructed.

The existing Funks Reservoir will be used as a regulating reservoir to store water from the TC Canal for pumping to, and for release from, Sites Reservoir. Funks Reservoir will have an estimated storage capacity of 2,250 acre-feet following dredging to restore the regulating reservoir's original design capacity. Funks Reservoir is currently drained from mid-December to mid-February during the canal maintenance period. It is not anticipated that Funks would be drained annually while Sites Reservoir is operational, besides potentially during the shortened canal maintenance window. Funks Reservoir operates at a water surface elevation of 200 to 205 feet, with a preferred operational water surface elevation range of 202 to 204 feet.

The newly constructed Funks Pumping Generating Plant (PGP) will be used to pump water from Funks Reservoir to Sites Reservoir with a pumping capacity of 2,100 cfs and a generating capacity of up to 2,000 cfs. The pumping generating plant will require a substation to provide electricity to the associated facilities. Two 12-foot-diameter underground Funks pipelines will convey water approximately 1 mile between the pumping generating plant and Sites Reservoir.

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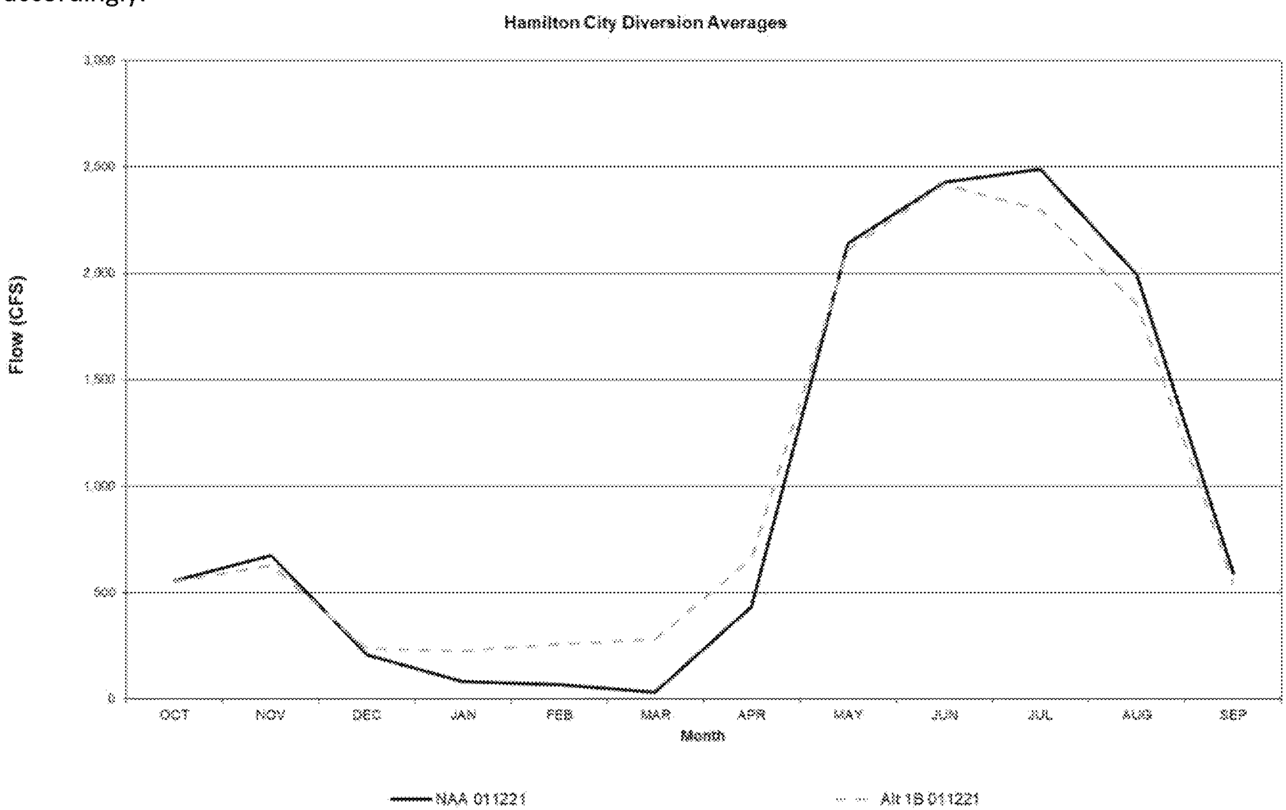
4.2.2 Hamilton City Pumping Plant, Glenn-Colusa Irrigation District Main Canal, and Terminal Regulating Reservoir

Water diverted from the Sacramento River at the existing Hamilton City Pumping Plant (HCPP) enters the GCID Main Canal. The HCPP and the GCID Main Canal are owned and operated by GCID. Diversions at the HCPP will be in addition to those occurring for uses in the GCID system but may be modified to accommodate exchanges with the Project when mutually agreed upon by GCID and the Authority (see Section 7.2 for further discussion on exchanges). The HCPP has a diversion capacity of approximately 3,000 cfs at the Sacramento River intake. The facility has a fish screen that meets NMFS and CDFW criteria.

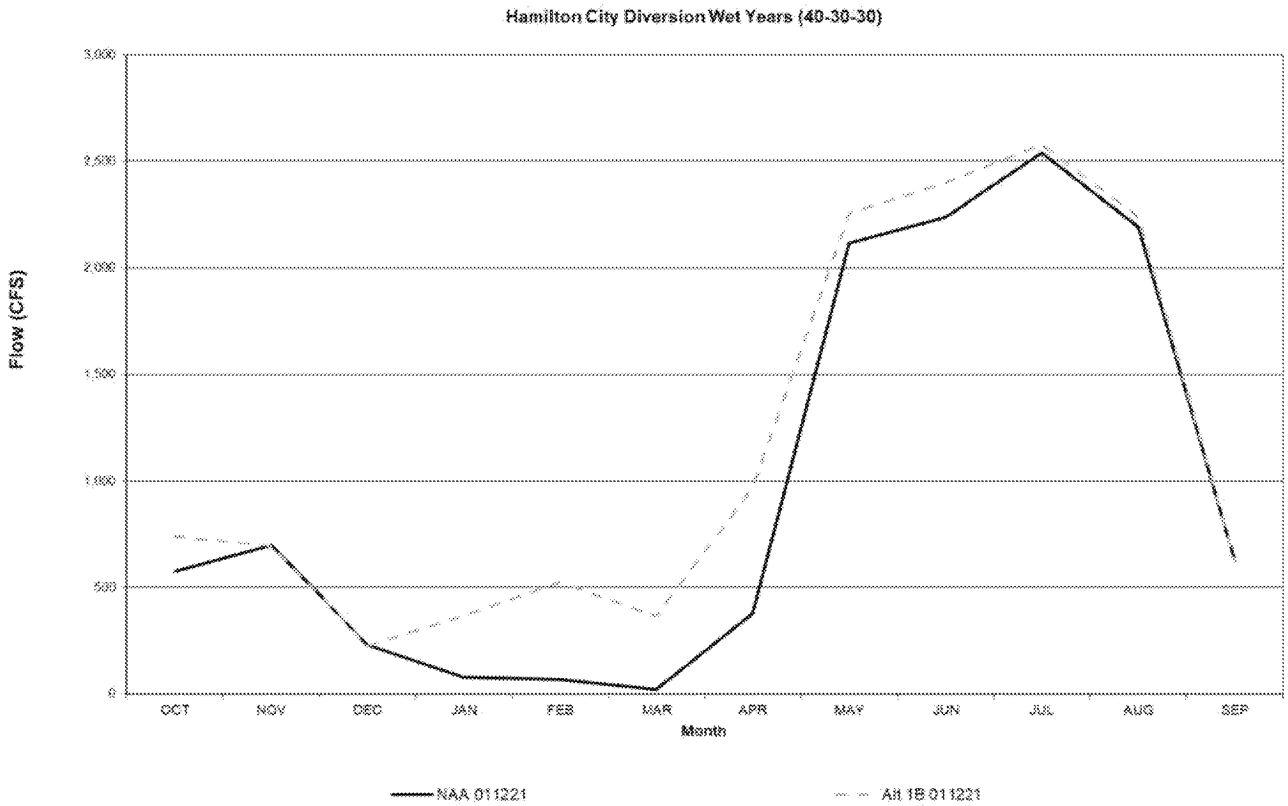
The total conveyance capacity of the GCID Main Canal is assumed to be 1,800 cfs at the Terminal Regulating Reservoir (TRR, described below). Figure 9 shows average monthly diversions for all water year types at the HCPP with and without the Project.

Figure 10 shows average monthly diversions in wet years when diversions are highest. The figures depict the total diversions at the pumping facility for both GCID and Sites purposes. The total diversions at the HCPP in the summer months are modeled as decreasing slightly between the NAA (NAA 011221) and the Alternative 1B (Alt 1B 011221) due to exchanges (e.g. GCID receiving water from Reclamation's storage account in Sites rather than pumping from the Sacramento River). The figures depict monthly averages; actual within-month diversions at the daily or weekly timescale are expected to vary. Daily modeling will be developed in the future, and future versions of this Reservoir Operations Plan will be modified accordingly.



Source: CalSim II modeling for Alternative 1B (Alt 1B 011221) in the Revised Draft EIR/Supplemental Draft EIS

Figure 9. Hamilton City Diversion Averages



Water year type based on the Sacramento Valley 40-30-30 Water Year Hydrological Classification Index
Source: CalSim II modeling for Alternative 1B (Alt 1B 011221) in the Revised Draft EIR/Supplemental Draft EIS

Figure 10. Hamilton City Diversion Wet Years (40-30-30)

The GCID Main Canal is unlined, resulting in larger seepage losses than the TC Canal during the conveyance of Sites water. Losses from the HCPP to Sites Reservoir are estimated to be 2 percent from November to March and 13 percent from April to October. However, the actual losses incurred from the HCPP to Sites Reservoir will be estimated by GCID during Project operations. Losses in the GCID Main Canal will be allocated on a daily basis proportionally to Storage Partners receiving diversions. Because the GCID Main Canal is unlined, it requires regular annual maintenance—during which time water cannot be conveyed using the canal. The assumed annual maintenance time is 2 weeks in late January or early February.

The newly constructed TRR will be a regulating reservoir up to 600 acre-feet constructed adjacent to the GCID Main Canal, approximately 3 miles northeast of Funks Reservoir. Two options for the TRR are being considered: TRR East and TRR West. Regardless of the alternative selected, the footprint of TRR would be approximately 100 acres. The TRR would have earthen embankments at the perimeter with impermeable lining consisting of a geomembrane overlying geocomposite placed over compacted earth. The TRR would be hydraulically connected to the GCID Main Canal to allow water to be conveyed to and from Sites Reservoir. The TRR would accommodate inflows of up to 1,800 cfs.

The newly constructed TRR Pumping Generating Plant (PGP) will be used to pump water from the TRR to Sites Reservoir with a pumping capacity of 1,800 cfs. The generating plant will have a capacity of 1,000 cfs.

Two 12-foot-diameter underground pipelines would convey water approximately 4 to 4.5 miles between the TRR PGP and Sites Reservoir.

4.3 Diversion Criteria

Sites Reservoir would be filled primarily through the diversion of Sacramento River flows that originate primarily from unregulated tributaries to the Sacramento River downstream from Keswick Dam. A relatively small amount of flow is assumed to be provided by flood releases or spills in wet years from Shasta Lake. Similarly, a small amount of water from Stone Corral and Funks Creeks will be impounded in Sites Reservoir. Sacramento River flows would be diverted at two locations on the Sacramento River, as described above. The following sections describe the existing regulatory environment under which the Project would operate, and the Project-specific diversion criteria that would be finalized through the permitting and water right process. It should be noted that the regulatory environment is not static and Project operations will be adjusted as needed to meet regulatory requirements that are in place during the time of operations.

4.3.1 System-wide Criteria and Regulations

The primary regulatory requirements that must be met prior to diversions are summarized below, at a high level. The requirements listed are those expected to regularly influence Project operations, but the list is not comprehensive. All diversion criteria, both system-wide and Project-specific, must be met for Project diversions.

- **Sacramento River is not fully appropriated:** The Sacramento River is considered to be fully appropriated from June 15 to August 31. Therefore, the Project will not divert during this window, regardless of river conditions or flows.
- **Excess conditions in the Delta:** The Delta is considered to be "in excess" when the sum of releases from upstream reservoirs plus unregulated flows are greater than Sacramento Valley in-basin uses plus exports. Excess conditions are determined by DWR and Reclamation; the Project can divert only when the Delta is in excess.
- **Senior Water Rights:** Existing CVP and SWP and other water right diversions, including other more senior excess flow priorities would take priority over the diversion of Sites water.
- **SWP Article 21, Reclamation Article 6F and 215:** The SWP contract and CVP contracts include provisions for deliveries above contract amounts in certain conditions. This water is generally available in wetter water year types or in higher flow conditions. The delivery of SWP Article 21 water, CVP Article 3(f), and CVP 215 water is senior to Project diversions and deliveries and would take priority over the movement of Project water.
- **SWRCB Decision 1641 (D-1641):** D-1641 and its amendment identify the implementation of water quality and flow objectives for the San Francisco Bay and Sacramento-San Joaquin Delta Estuary. Components of D-1641 expected to have the largest influence on Project operations include requirements for the Net Delta Outflow Index, operations of the CVP and SWP related to salinity and X2, and Delta water quality requirements.
- **SWP Incidental Take Permit:** The Project will operate so as to avoid affecting DWR's ability to operate to the SWP Incidental Take Permit. In particular, the Authority will not impinge on DWR's ability to conduct export curtailments for Spring outflow, provide 100 TAF for Delta outflow, or operate to the Delta Smelt Summer-Fall Habitat Action.
- **2019 Biological Opinions (2019 BiOps) for CVP and SWP:** The Project will operate so as to avoid affecting Reclamation's ability to operate to the 2019 BiOps. The Authority will coordinate with Reclamation on exchanges to enhance Reclamation's ability to operate to the 2019 BiOps. In

particular, the Authority will not impinge on Reclamation's ability to provide spring pulse flows, cold water pool preservation in Shasta, and fall flow stability in the Sacramento River downstream of Shasta Lake. The 2019 BiOps are currently under reconsultation. The outcome of this reconsultation will inform the Project's operations and will change the baseline operations of the system.

The Project will also be required to operate under any temporary restrictions on pumping put into place by SWRCB. One example of such a restriction is Term 91, when those holding certain permits and licenses must cease diverting water because water in excess of CVP and SWP storage releases is not available in the system. Term 91 is often implemented under drought conditions, when Project diversions are unlikely to occur due to other requirements such as bypass flows.

As noted above, the regulatory environment is not static. As such, Project operations will adjust as needed to meet regulatory requirements that are in place during the time of operations.

4.3.2 Project-specific Diversion Criteria

Bend Bridge Pulse Protection

Project implementation would include a pulse flow protection measure to be applied to all qualified precipitation-generated peaks in the hydrograph that originate primarily from tributaries to the Sacramento River that flow into the mainstem Sacramento River downstream of Keswick Dam from October through May. Project diversions from the Sacramento River would not occur during a qualified pulse event. Diversions are otherwise unrestricted by the Bend Bridge Pulse Flow protection criteria.

For modeling included in the Revised Draft EIR/Supplement Draft EIS, a qualified pulse flow is defined as follows:

1. Outmigration of anadromous fish is detected based on the Adaptive Management Plan and fish monitoring program; and,
2. The 3-day trailing average of Sacramento River flow at Bend Bridge exceeds 8,000 cfs, the 3-day trailing average tributary flow upstream of Bend Bridge (Cow, Cottonwood, and Battle Creeks) exceeds 2,500 cfs, and a pulse event the previous day was not already in a pulse event.

A pulse event terminates 7 days after initiation. After completion of a pulse event, the following conditions must occur before another pulse event is triggered:

1. The 3-day trailing average of Sacramento River flow at Bend Bridge was less than 7,500 cfs for 7 consecutive days, and,
2. The 3-day trailing average of tributary flow upstream of Bend Bridge (Cow, Cottonwood, and Battle Creeks) was less than 2,500 cfs for 7 consecutive days.

Figure 11 depicts the pulse flow protection criteria.

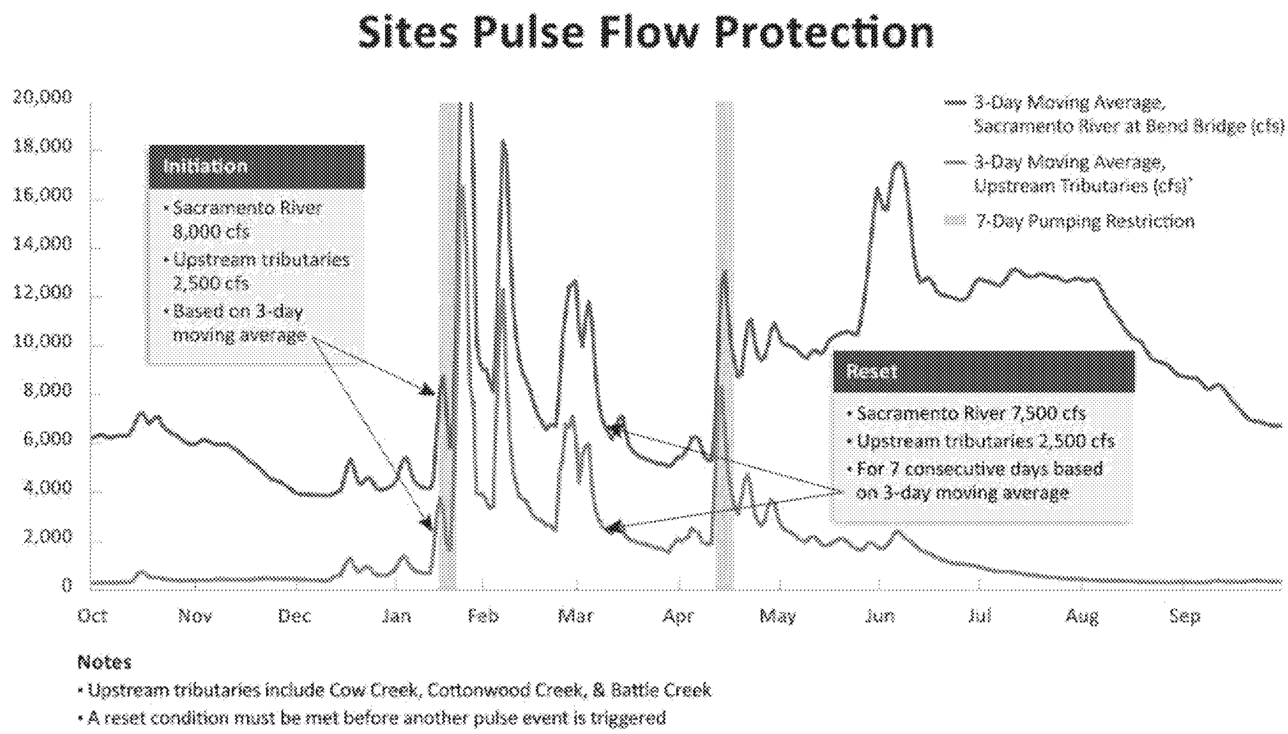


Figure 11. Sites Pulse Flow Protection

The pulse flow criteria described above align with those included in Project modeling for the RDEIR/SDEIS. Final pulse flow criteria are under development and will be revised as necessary in future versions of this Reservoir Operations Plan.

Wilkins Slough Bypass Criteria

A minimum bypass flow of 10,700 cfs in the Sacramento River at Wilkins Slough would be in place from March to May and 5,000 cfs during the rest of the Project diversion season (June, and September through February). The current flows at Wilkins Slough will be determined using information available on the California Data Exchange Center for the Sacramento River below Wilkins Slough (WLK) gage. Projected flows/forecasts will be determined either by using correlation between Colusa Bridge forecasts and Wilkins Slough flows or by working with the Sacramento River Forecast Center to develop projections specific to Wilkins Slough. Additional information on flow forecasting will be included in future versions of this Operations Plan.

Fremont Weir Notch Protections

The Project's diversion criteria have been formulated to avoid impacts on Reclamation's ability to meet its obligations in the 2019 NMFS BiOp to implement the Yolo Bypass Restoration Salmonid Habitat Restoration and Fish Passage Implementation Plan and inundate over 17,000 acres in the Yolo Bypass from December to April (NMFS 2019). For the purposes of modeling, diversions to Sites Reservoir may occur if no more than a 1 percent reduction in flow through the Fremont Weir Notch would result when flows through the Notch are less than 600 cfs. Project diversions may occur if no more than a 10 percent reduction in flow through the Fremont Weir Notch would occur when flows through the Notch are between 600 cfs and 6,000 cfs. When flows through the Fremont Weir Notch are greater than 6,000 cfs (when flows are over the Fremont Weir), there would be no restriction on Project diversions. These

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limitations are intended to reduce changes to spill frequency and duration. The actual criteria used in operations related to the Fremont Weir Notch are being developed.

Red Bluff Pumping Plant

Diversions at the RBPP can occur only when flows in the Sacramento River are 3,300 cfs or higher, as measured at Bend Bridge. Diversions are limited because of the fish screen function to prevent entrainment of fish when diverting. Therefore, pumping ramps up as river flows increase, as shown in Figure 12. The minimum pumping rate is 80 cfs, which occurs when river flows are 3,300 cfs. The fish screen at RBPP is designed for 2,500 cfs, however the maximum pumping rate at Funks PGP into Sites Reservoir is 2,100 cfs. Therefore, the maximum diversions for the Project are 2,100 cfs plus losses. Pumping 2,100 cfs at Red Bluff requires a minimum river flow of 7,860 cfs.

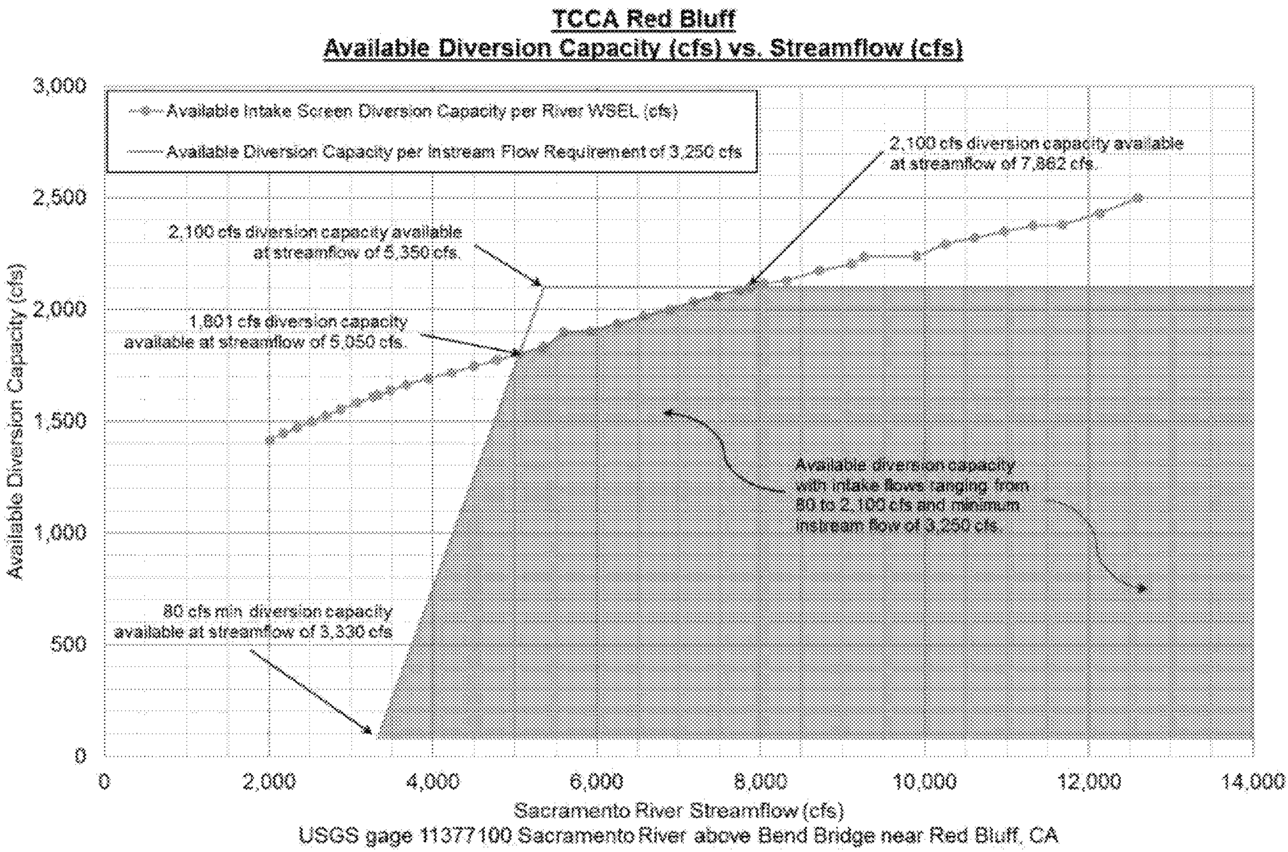

Figure 12. TCCA Red Bluff Available Diversion Capacity (cfs) vs. Streamflow (cfs)

Hamilton City Pumping Plant

Diversions at the HCPP can occur only when flows in the river are 4,150 cfs or higher, as measured at Bend Bridge. Diversions are limited on account of the fish screen function to prevent entrainment of fish when diverting. Therefore, pumping ramps up as river flows increase, as shown in Figure 13. The minimum pumping rate is 150 cfs, which occurs when river flows are 4,150 cfs. The maximum pumping rate at Hamilton City is 3,000 cfs, which requires a minimum river flow of 7,000 cfs. However, the pumping plant at the TRR has a capacity of 1,800 cfs. Therefore, it is unlikely that the full pumping capacity would be used to divert Project water alone.

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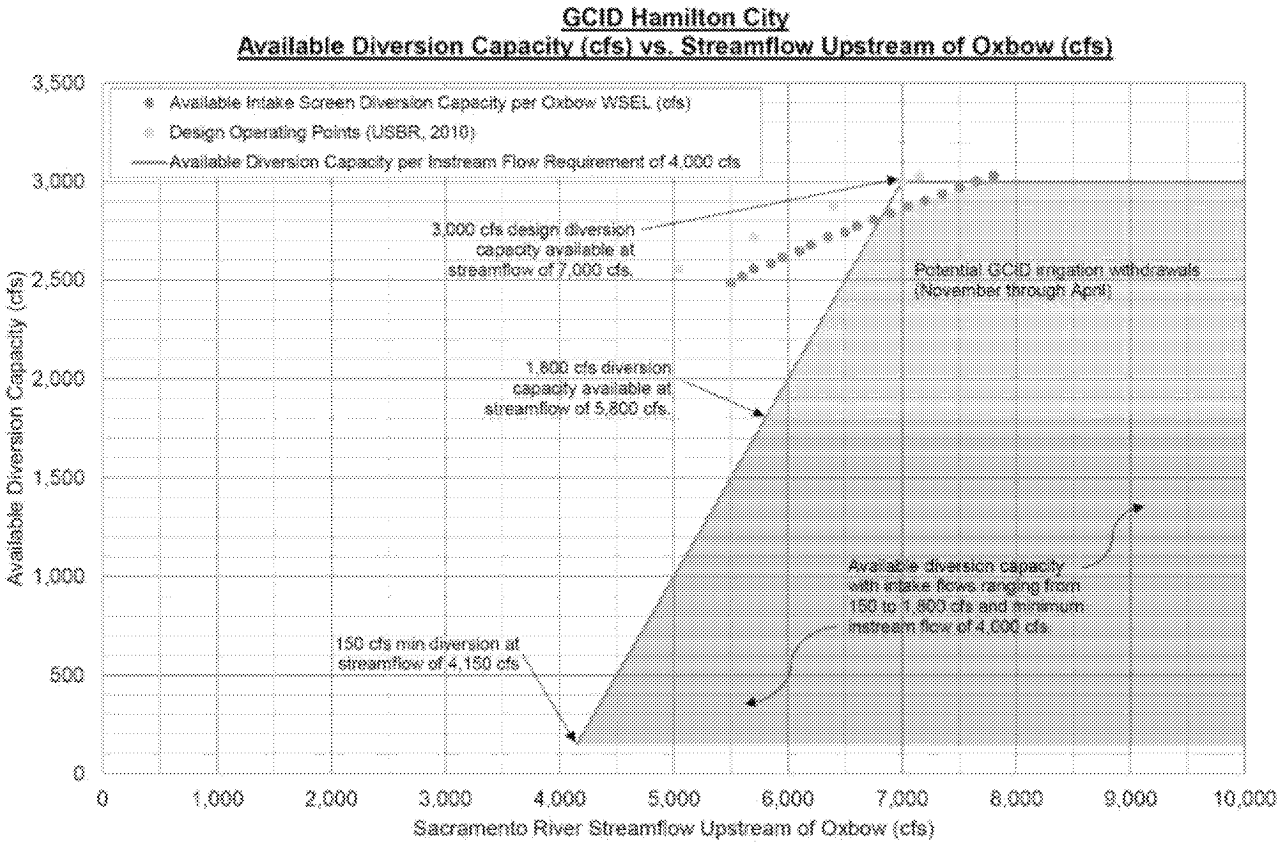

Figure 13. GCID Hamilton City Available Diversion Capacity (cfs) vs. Streamflow Upstream of Oxbow (cfs)

4.4 Diversion Orders

In accordance with the Principles for the Storage, Delivery and Sale of Sites Reservoir Project Water (Storage Principles, Attachment B), the Authority will attempt to maximize the appropriation of water into storage consistent with the regulatory requirements, physical constraints, and hydrologic conditions. The Authority will be responsible for compliance with water right provisions and other conditions that control the appropriation of water into storage in Sites Reservoir. Appropriated water from the Sacramento River will be placed into Sites Reservoir and then allocated into each Storage Partner's Storage Allocation proportional to their Storage Allocation. For example, if 340 TAF of water is appropriated into Sites in any one year, this represents 25 percent of the total allocated storage. In that year, each Storage Partner will receive an amount equal to 25 percent of their Storage Allocation, assuming their Storage Allocation space has at least 25 percent available/empty. Once a Storage Partners Storage Allocation is full, the remainder of the diversions will be allocated to the other Storage Partners.

Storage Partners may opt out of receiving diversions into their Storage Allocation. They can notify the Authority they wish to opt out at any time. Any diversions that occur within 1 week of notification (and the associated variable costs) will be allocated to other Storage Partners, if possible, but may be allocated to the Storage Partner who is opting out if the reservoir is otherwise full. If a Storage Partner

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opts out of receiving diversions—assuming they have not leased their storage to another entity—all diversions will be allocated to other Storage Partners and the amount of unused storage space will remain empty until the Storage Partner notifies the Authority that they wish to receive diversions again.

4.4.1 Priority of Diversions

At this time, it is not anticipated that diversions will be prioritized to a specific Storage Partner or Storage Partner type. All diversions will be allocated proportionate to Storage Partners based on their Storage Allocation until that allocation is full. If a Storage Partner has no available Storage Allocation, the diversions will be proportionally allocated to those Storage Partners who do have storage capacity remaining in their Storage Allocation.

4.4.2 Diversions of Non-Sites Water

There are opportunities for Storage Partners to request non-Sites water (water not appropriated under the Project's water rights) be diverted and placed into their Storage Allocation. These other sources could include the following: the re-diversion of previously stored water, water transfers, exchange water, etc. The Authority will take all reasonable steps to facilitate these requests. The Storage Partner requesting such diversions will be responsible for the costs of obtaining/storing these other sources of water, including any costs associated with water right changes, environmental compliance, and Authority costs associated with reviews. In accordance with the Storage Principles, the Storage Partner requesting such diversions is responsible for all operations and maintenance (O&M) costs of placing this water into their Storage Allocation. Placing water into storage under the Project's water right will take priority over storing water from other sources.

5.0 Storage in Sites Reservoir

5.1 Losses from Storage

Losses from storage are expected to result from evaporation and seepage. The approach to assessing losses is yet to be determined; however, a mass balance or pan evaporation rate may be used. A mass balance estimate would include daily records of reservoir storage, diversions, rainfall, and spills (if applicable) to estimate daily losses. Pan evaporation uses temperature, humidity, rainfall, and wind to estimate the level of evaporation based on surface area. A combination of both methods could also be used.

Using the decided-upon methodology, losses of water held in Sites Reservoir storage—including evaporation and seepage—will be estimated on a daily basis. These losses will be allocated to each Storage Partner based proportionally on the amount of water in storage that day.

Sites CalSim modeling includes an estimate of net evaporation (precipitation minus evaporation) based on evaporation experienced in nearby reservoirs. Modeling shows an annual net evaporation rate of approximately 37 TAF.

5.2 Dead Pool

Sites Reservoir will have a dead pool of approximately 17,700 acre-feet, below which water cannot physically be removed from the reservoir using the intake/outlet (I/O) works. However, the Authority is currently planning to operate to a dead pool of up to 120 TAF under normal conditions to accommodate water quality considerations. Current operations modeling assumes that the dead pool could be drawn down a further 60 TAF if the water does not return to the Sacramento River. The operational dead pool amount may be revised and reduced in final design and in real-time operations with water quality measurements over time.

5.3 Storage Allocation, Leasing, and Transfers

5.3.1 Storage Allocation

Sites Reservoir is allocated to each Storage Partner proportionate to their annualized acre-feet per year subscription. Because the State of California (State), through Proposition 1, and Reclamation, through the WIIN Act, participate based on available funding versus annualized acre-feet per year, the Storage Allocation for the State and Reclamation are calculated using a different methodology. The State is allocated the storage required to meet Proposition 1 benefits. At this time, the methodology for allocating storage to Reclamation is being developed, but the modeling to date assumes that Reclamation receives a Storage Allocation that is approximately commensurate with its proportionate cost-share in the Project. Based on the Authority's Preferred Project in the Revised Draft EIR/Supplemental Draft EIS, this results in assumed federal funding of 7 percent of Project costs. The modeling for this alternative assumes 6.6 percent of active storage in the reservoir is allocated to Reclamation. Figure 14 depicts the current Storage Allocation based on the Storage Partners participating in the Project as of December 2021 and aligned with the CalSim modeling developed for Alternative 1B in the Revised Draft EIR/Supplemental Draft EIS.

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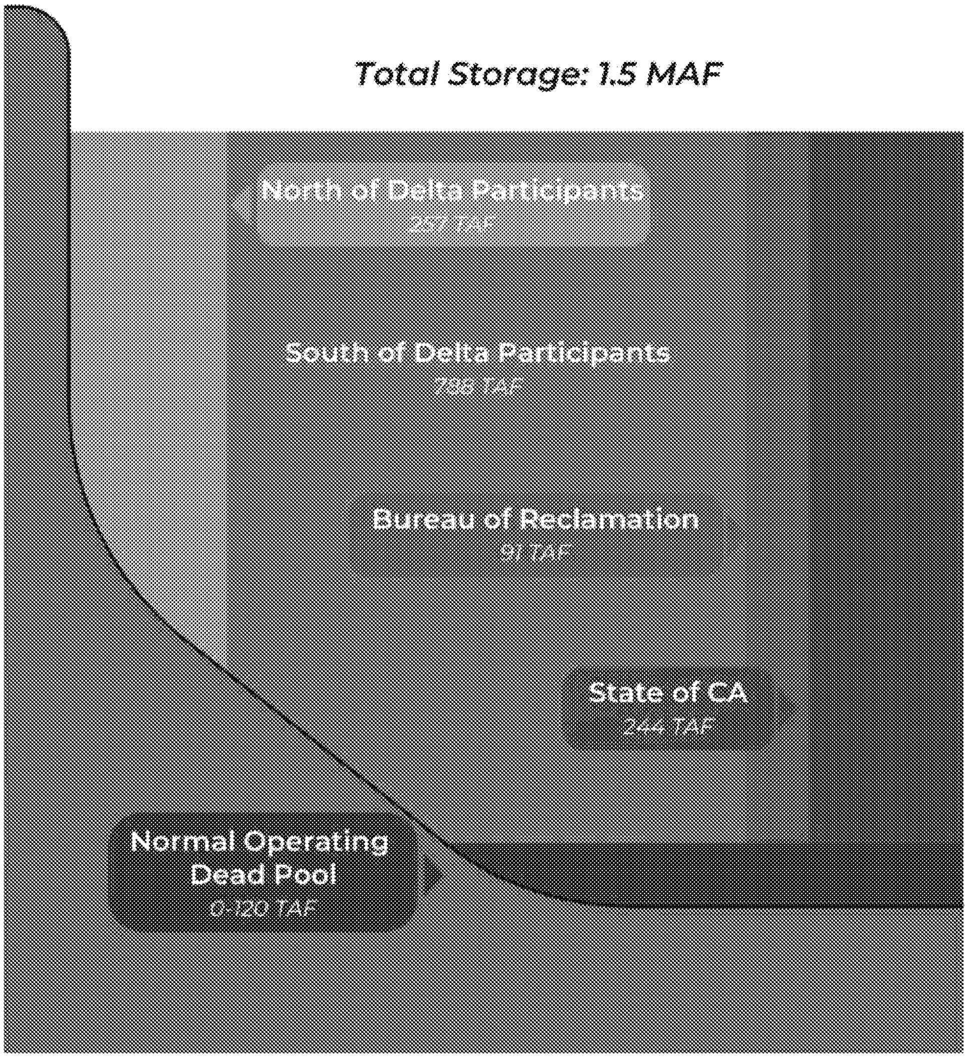

Figure 14. Sites Reservoir Storage Allocation

The methodology for allocating reservoir storage is described in Attachment C. The Storage Allocation is likely to change depending on annualized acre-feet per year requested by Storage Partners and final levels of local, state, and federal funding. The reservoir allocation will be updated in future versions of this Operations Plan.

5.3.2 Storage Leasing and Transfers

The Storage Principles allow Storage Partners lease storage space or to exchange and transfer stored water to other Storage Partners and water users who are not Storage Partners. Such leasing and transfer agreements can span multiple years or occur within a given contract year. The Authority will account for and track storage leased and transferred in its real-time accounting system. In accordance with the Storage Principles, the Storage Partner whose Storage Allocation is being leased or transferred is responsible for the payment of all allocated capital, fixed O&M, and variable O&M costs, as well as obtaining all environmental permits and water right agreements required.

The methods for notifying the Authority of leases or transfers of Storage Allocations will be developed further in a future version of this Operations Plan.

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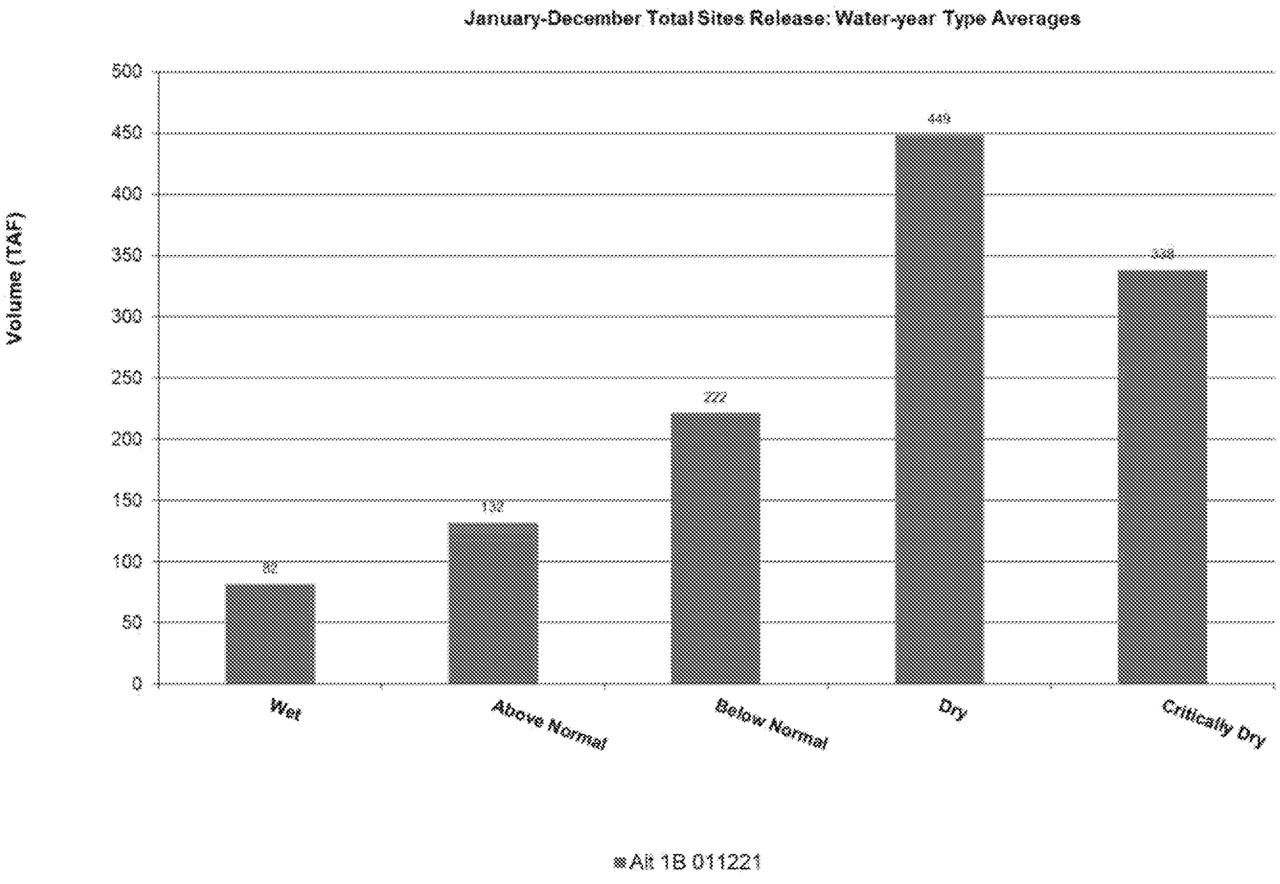
6.0 Releases from Sites Reservoir

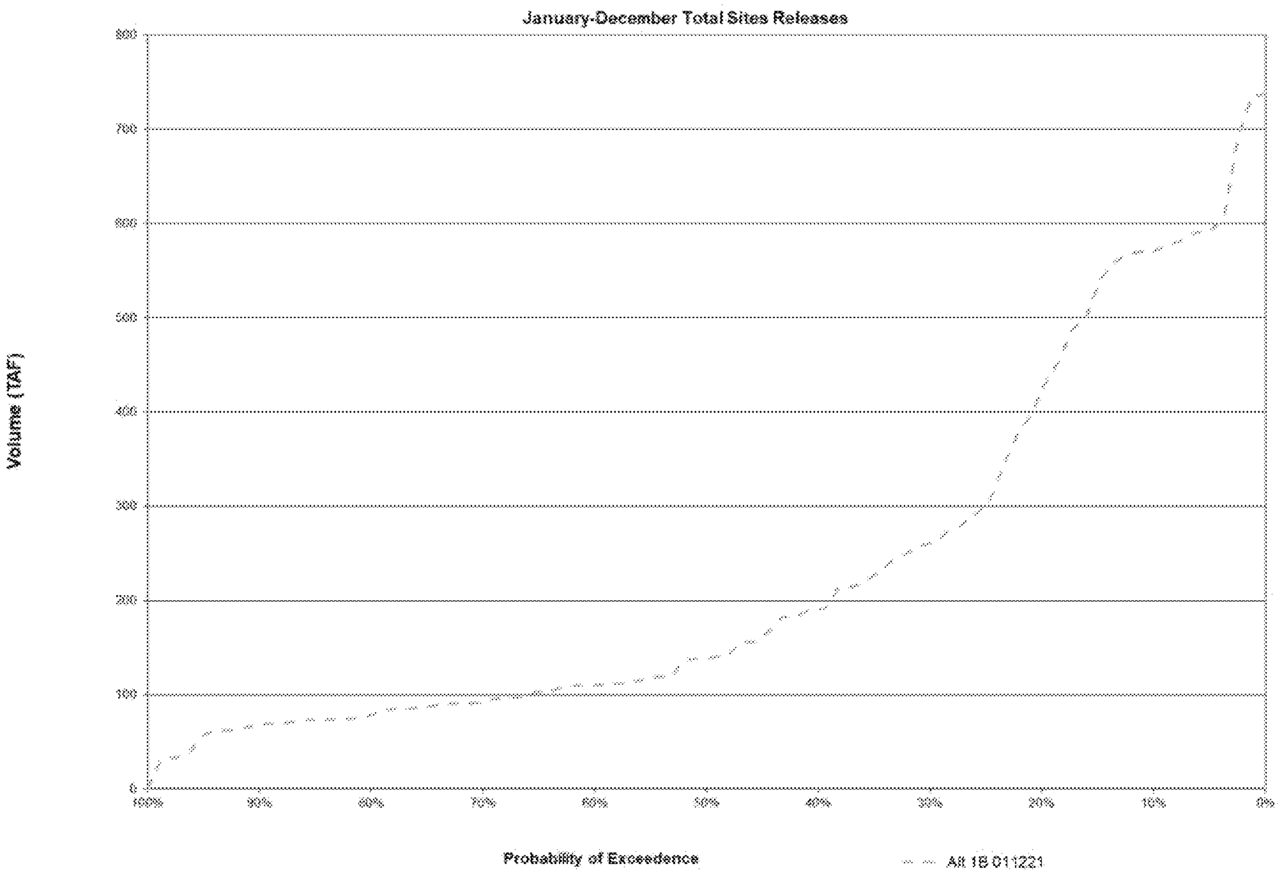
6.1 Overall Project Releases

Project releases would generally occur in the late spring, summer, and fall months but could happen throughout the year. Project exports to Storage Partners south-of-Delta must occur during the transfer window (July through November) of each year. Project deliveries to Storage Partners in the Delta and north of the Delta, including Reclamation (as an exchange partner or investor) and DWR (as an exchange partner), can occur outside the transfer window. The total Project releases by water year type, an exceedance plot of project release, and the timing for releases are shown in Figure 15 to Figure 17. Figure 17 includes all releases from the reservoir, including those used for exchanges with DWR and Reclamation. Further discussions of exchanges are included in Section 8. Note that the figures show monthly averages; actual within-month releases at the daily or weekly timescale are expected to vary. Daily modeling will be developed in the future, and future versions of this Plan will be modified accordingly.



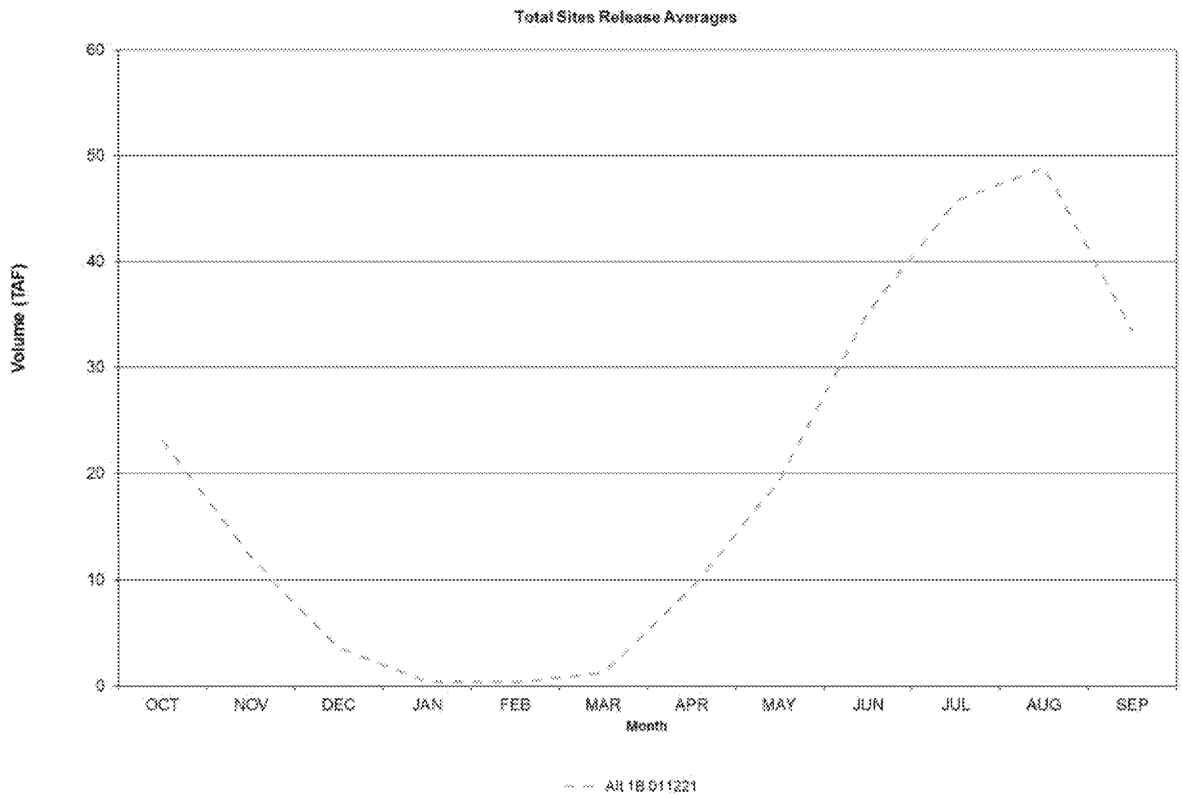
Water year type based on the Sacramento Valley 40-30-30 Water Year Hydrological Classification Index
Source: CalSim II modeling for Alternative 1B (Alt 1B 011221) in the Revised Draft EIR/Supplemental Draft EIS

Figure 15. January to December Total Sites Release: Water-year Type Averages



Source: CalSim II modeling for Alternative 1B (Alt 1B 011221) in the Revised Draft EIR/Supplemental Draft EIS

Figure 16. January to December Total Sites Releases



Source: CalSim II modeling for Alternative 1B (Alt 1B 011221) in the Revised Draft EIR/Supplemental Draft EIS

Figure 17. Total Sites Release Averages

The assumptions used in the CalSim modeling for the Revised Draft EIR/Supplemental Draft EIS for releases, or demands, for specific Storage Partners and deliveries by year type are included as Attachment D.

6.2 Release and Conveyance Facilities

The following sections provide a general description of the release and conveyance facilities that may be used in the operation of Sites Reservoir. The location of these facilities is shown in Figure 1 and Figure 2.

6.2.1 Tehama-Colusa Canal

Most releases from Sites Reservoir would flow into the existing Funks Reservoir (as described in Section 4.2) and into the existing TC Canal. Water would flow within the TC Canal and would either be diverted for delivery of Project water to local Storage Partners or would flow 40 miles south to the new Dunnigan Pipeline. The TC Canal will be used for the release of water to all TC Canal members who are Sites Storage Partners, Delta and south-of-Delta Storage Partners, federal water (with the exception of water delivered to GCID), and environmental water for Proposition 1 for Yolo Bypass and south-of-Delta refuges. Releases to the TC Canal would be limited by available capacity in the TC Canal and the available capacity in the Dunnigan Pipeline. Water would be released from the TC Canal into the Dunnigan Pipeline through a gravity outlet structure.

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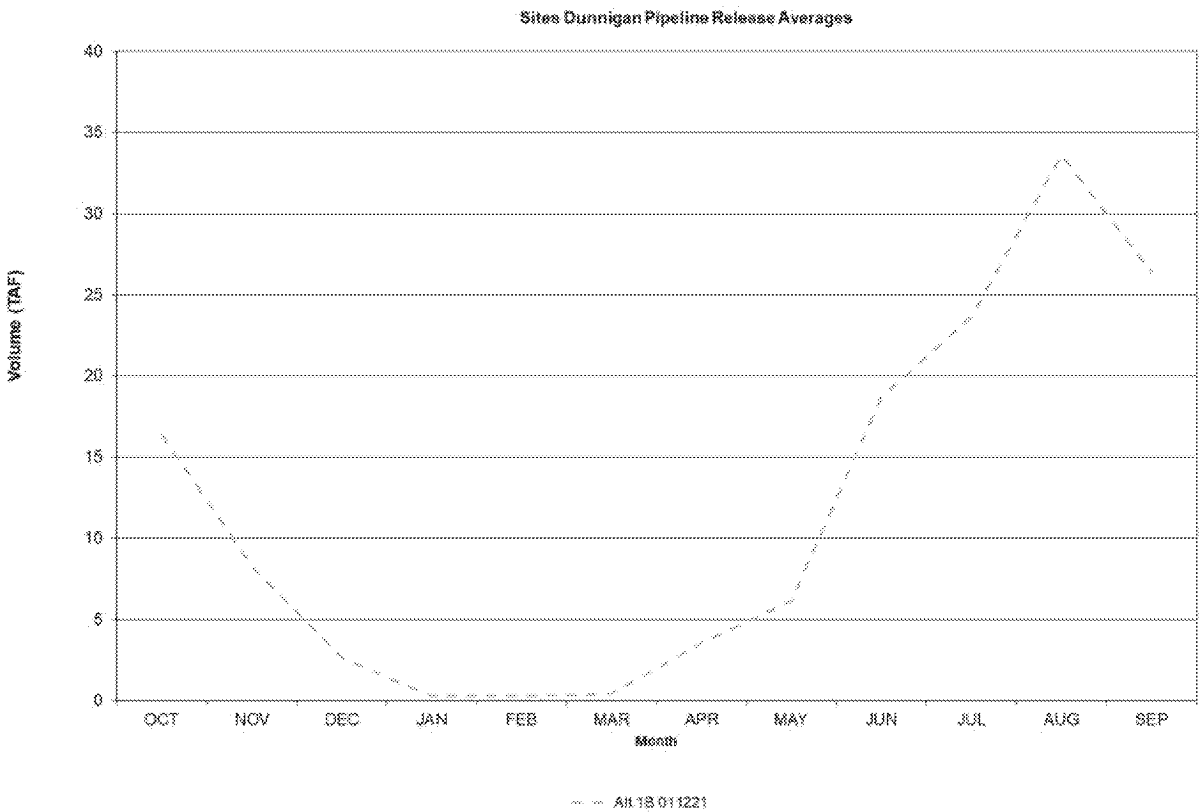
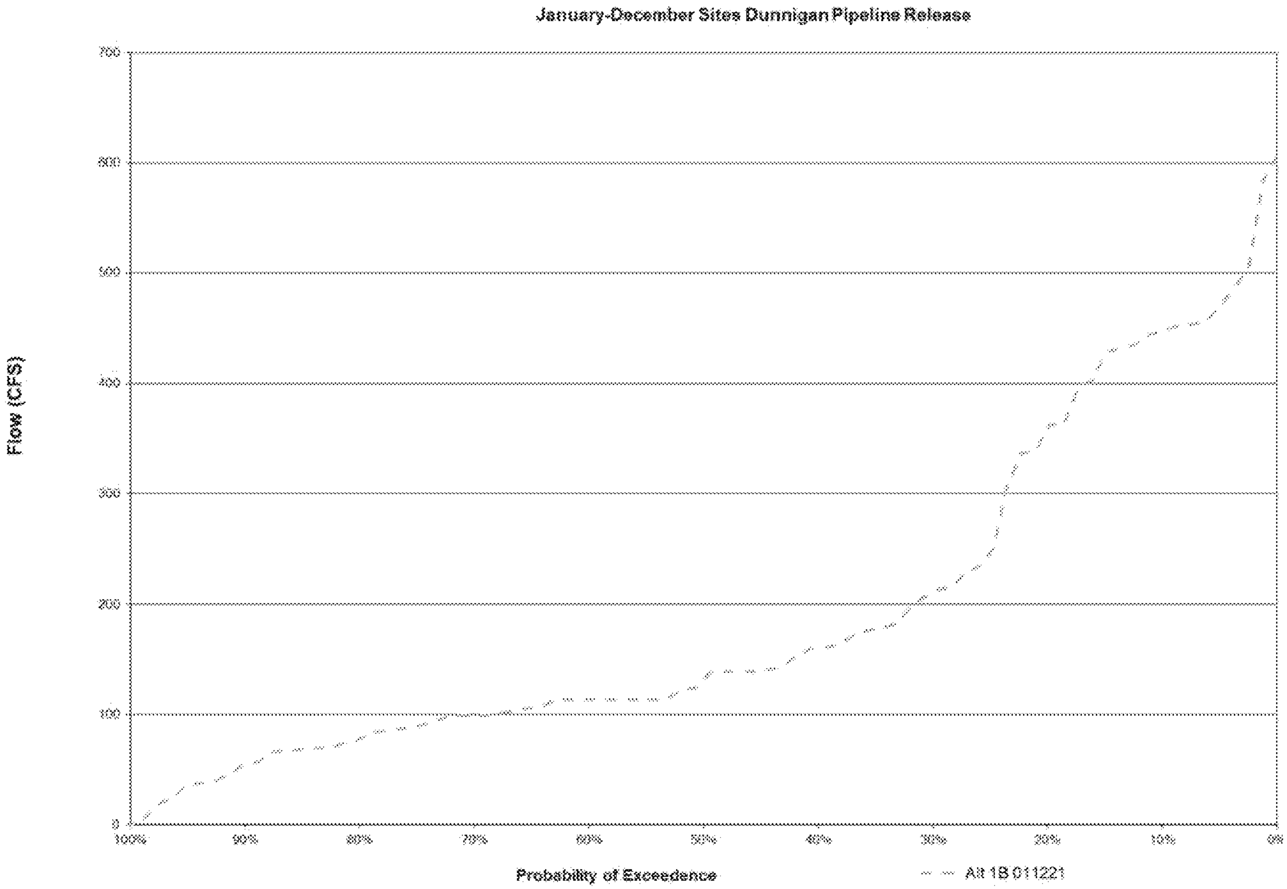
6.2.2 Dunnigan Pipeline

The Dunnigan Pipeline will convey water released from the TC Canal to the Colusa Basin Drain (CBD). The Dunnigan Pipeline will be approximately 4 miles in length and have an inner diameter of approximately 9 feet. A CBD outlet with an energy dissipation structure will be constructed at the downstream end of the pipeline to allow water to discharge into the CBD. Two 60-inch-diameter, fixed-cone valves would be placed at the discharge stilling basin to dissipate energy and adjust the flow being released into the CBD. The conveyance through the Dunnigan Pipeline to the CBD would use gravity and have a flow up to 1,000 cfs. Figure 18 and Figure 19 show the modeled flow through the Dunnigan Pipeline. Note that the figures show monthly averages; actual within-month releases through the Dunnigan Pipeline at the daily or weekly timescale are expected to vary. Daily modeling will be developed in the future, and future versions of this Plan will be modified accordingly.



Source: CalSim II modeling for Alternative 1B (Alt 1B 011221) in the Revised Draft EIR/Supplemental Draft EIS

Figure 18. Sites Dunnigan Pipeline Release Averages



Source: CalSim II modeling for Alternative 1B (Alt 1B 011221) in the Revised Draft EIR/Supplemental Draft EIS

Figure 19. January to December Sites Dunnigan Pipeline Release

6.2.3 Colusa Basin Drain

The Dunnigan Pipeline will convey water to the existing CBD at a maximum flow of 1,000 cfs. From the CBD, water may either be discharged into the Yolo Bypass or back into the Sacramento River. Water discharged into the Yolo Bypass/Cache Slough Complex will flow through the Knights Landing Ridgecut. This water will be used for Proposition 1 benefits or for diversion into the North Bay Aqueduct. Water can also flow back to the Sacramento River via the Knights Landing Outfall Gates. Water conveyed back to the Sacramento River may be used by DWR (as an exchange partner) or Reclamation or be conveyed south of the Delta through the Banks or Jones pumping facilities for south-of-Delta Storage Partners or wildlife refuges.

6.2.4 Glenn-Colusa Main Canal

Some Project water is not released through Funks Reservoir and the TC Canal, but instead released back into the TRR and into the GCID Main Canal. Water released into the TRR and the GCID Main Canal would be used by GCID or wildlife refuges as environmental water for Proposition 1. Water is expected to be released to GCID for wildlife refuges north of the Delta in all water year types but is generally not needed in wet year types. The water could be delivered any time of the year, although it is expected that it rarely would be released for this purpose from January through March during the Project's primary diversion season. The long-term average releases to GCID for wildlife refuges is expected to be 5 TAF under historic hydrology.

6.3 Release Criteria

Project water may be released to local users any time the pumping facilities are not diverting water to storage. Water may be exported south of the Delta to refuges or Storage Partners only during the transfer window (July through November) and will, therefore, only be released from the reservoir during that timeframe. The Project can also only release water for exports when the Delta is in balanced conditions, as defined in the Coordinated Operation Agreement (COA) and determined by DWR and Reclamation.

Project releases to the CBD are constrained by capacity in both the Dunnigan Pipeline and the CBD. If it is anticipated that releases are constrained, the Authority will coordinate closely with Storage Partners, DWR, Reclamation, TCCA, GCID, and entities along the CBD in an attempt to meet the requested water release schedules. If there is a release constraint that will affect the ability to meet the requested schedules, the Authority will work with the conflicted Storage Partners to determine whether accommodations can be made. If the conflict cannot be resolved, releases will be made in proportion to the Storage Allocation attributable to the conflicted Storage Partners.

6.3.1 Release Orders

To the extent allowed by the Project's permits, approvals, and agreements and its physical and operational capabilities, Storage Partners have total discretion regarding the amount of water held in their Storage Allocation that they request to be scheduled for release for their use and will have control over the use of their Storage Allocation based on the conditions outlined in the Storage Principles.

In January, Storage Partners will provide initial requests for Project water. Final requests for Project water to be released prior to the transfer window (before July 1) will be provided by the Storage Partners in February. Final requests for Project water to be released in the transfer window (July through November) will be provided by the Storage Partners in April. See Figure 3 for a full description of the annual operational needs and information provided by Storage Partners.

The Authority will work with DWR and Reclamation to schedule deliveries south of the Delta. Beginning in February, operations of the reservoir, along with conditions in the Delta, will be reevaluated at least weekly. From such analysis, the Authority will update release and delivery schedules and will coordinate with Storage Partners should any conflicts arise.

6.3.2 Release Order Adjustments

The Authority will provide regular updates on the scheduling of releases and deliveries. Storage Partners may request additional releases beyond those initially requested, as defined in the annual operations cycle. The Authority will prioritize releases requested by February for water released before the transfer window (for north of Delta deliveries) and by April for water released during the transfer window (for north or south of Delta deliveries). However, the Authority will accommodate later requests for releases to the extent possible.

6.3.3 Weekly Release Order Adjustments

Weekly releases, particularly for those deliveries that must be exported through the Delta, are highly dependent on coordination with DWR and Reclamation. The Authority may shift weekly deliveries as needed to maximize exports. The Authority will notify Storage Partners of any shifts, should they occur.

7.0 GCID and TCCA Coordination

7.1 Facilities Use Agreements and Annual Coordination

The Authority intends to enter into Facility Use Agreements with GCID and TCCA. Because the RBPP and TC Canal are owned by Reclamation, the agreement with TCCA will be in addition to a Warren Act Contract required for the use of federal facilities. Close coordination will be required between the Authority and operators at TCCA and GCID.

7.1.1 TCCA Coordination

Daily operations will be coordinated closely with the Red Bluff and Willows Offices of TCCA. In particular, operations will be closely coordinated in the shoulder and transition seasons, when diversions for the Project are occurring at the same time as deliveries for TCCA contractors. Close operations will also be necessary for frost water, which could occur when the Project is diverting and may require releases from Funks for users on the downstream portion of the TC Canal. TCCA will remain the lead operator for the RBPP and the TC Canal. The Authority will have an operator responsible for the diversions into Sites Reservoir at Funks via the Funks PGP. TCCA operations will take priority over Project operations, although the two entities will coordinate closely to adjust operations to achieve operating objectives.

It is anticipated that the Project's Supervisory Control and Data Acquisition (SCADA) system will also duplicate some of the TCCA system. This will allow logic and alarms to respond appropriately to changing conditions along the canal and in Funks Reservoir. The Authority will work with TCCA in responding to any emergency operations required, and coordination with TCCA will be included in Project's Emergency Action Plan.

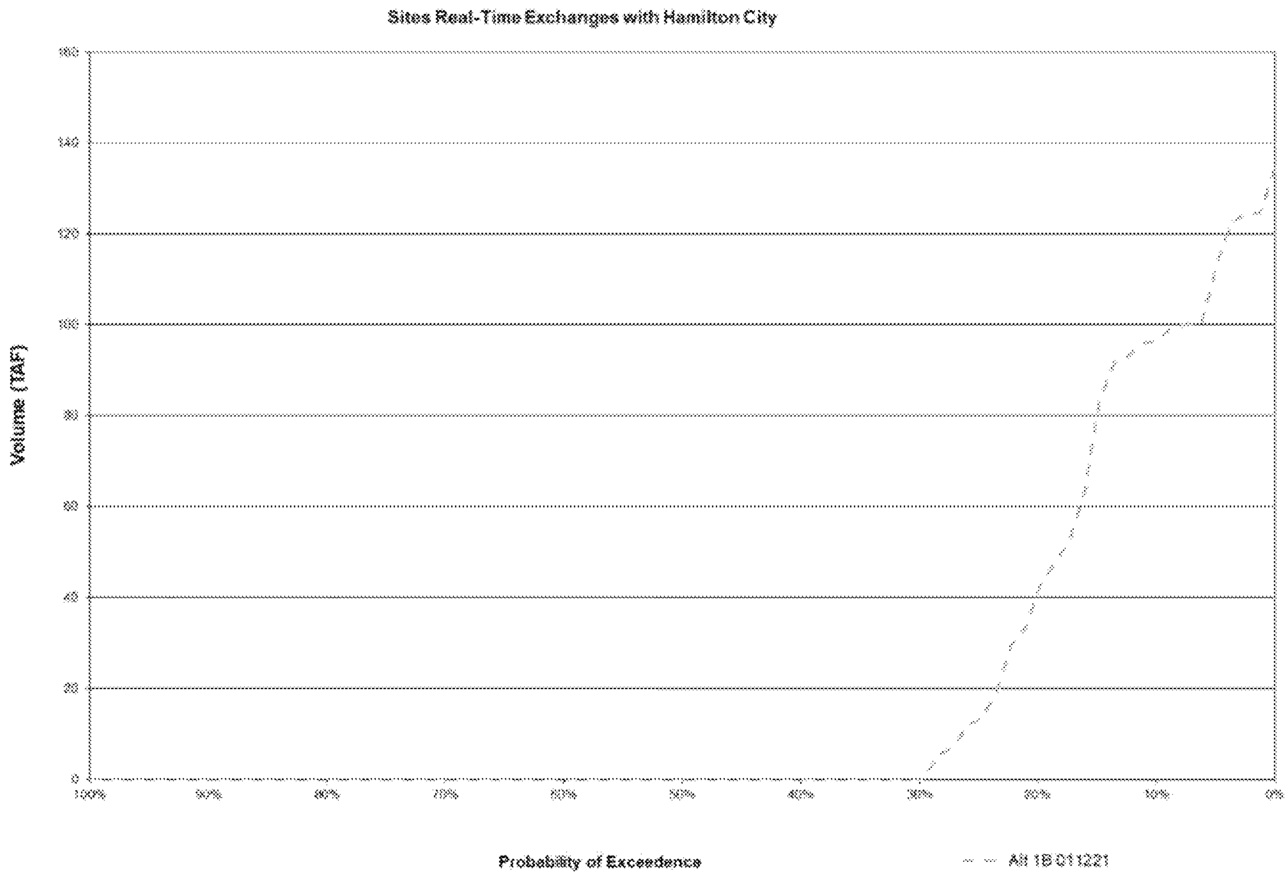
7.1.2 GCID Coordination

Daily operations will be coordinated closely with the GCID's operations in Hamilton City. In particular, operations will be coordinated during the shoulder and transition seasons, when diversions for the Project are occurring at the same time as deliveries for GCID. Close operations will also be necessary for real-time exchanges, when GCID will receive water from the Project in lieu of diversions from the Sacramento River. GCID will remain the lead operator of the HCPP and the GCID Main Canal. The Authority will have an operator responsible for the diversions into the Sites Reservoir at TRR via the TRR PGP. GCID operations will take priority over Project operations, although the two entities will coordinate closely to adjust operations to achieve operating objectives.

It is anticipated that the Project's SCADA system will also duplicate some of the GCID system. This will allow logic and alarms to respond appropriately to changing conditions along the canal and in the TRR. The Authority will work with GCID in responding to any emergency operations required, and coordination with GCID will be included in Project's Emergency Action Plan.

7.2 Real-time Exchanges

To support timing of releases and deliveries to Storage Partners north and south of the Delta, in-lieu exchanges with local Storage Partners may occur. This type of exchange is most likely to occur with GCID but could also occur with TCCA or other Sacramento River Settlement Contractors and likely would require close coordination with Reclamation. Instead of diverting all of its supply from the Sacramento River, the local Storage Partner would receive a portion of its water from Sites Reservoir. A portion of the water released from Shasta Lake to meet the local Storage Partner's supply would be left in the Sacramento River (i.e., not diverted by that contractor or agency) and used for other Storage Partners. This exchange is expected to occur to minimize capacity constraints along the Dunnigan Pipeline as well as the delivery of water to Storage Partners upstream of the release facilities (e.g., Carter Mutual and Reclamation District 108). Figure 20 depicts the exceedance curve associated with the real-time exchanges at Hamilton City. On average, 21 TAF are exchanged through this process.



Source: CalSim II modeling for Alternative 1B (Alt 1B 011221) in the Revised Draft EIR/Supplemental Draft EIS

Figure 20. Sites Real-time Exchanges with Hamilton City

8.0 Central Valley Project and State Water Project Cooperative Operations and Exchanges

8.1 Operational Agreement and Annual Coordination

Success of the Project requires close coordination with Reclamation and DWR. The Authority is currently developing an operational agreement with these agencies to address issues related to operations of the Project. Through the implementation of this agreement, it is expected that the Project will cooperatively interface with the existing and ongoing real-time decision-making processes while working to avoid and minimize adverse effects and, potentially, provide benefit to CVP and SWP facilities, operational plans, listed species, public health, safety, and water supply reliability.

The operational agreement is expected to describe the use of State and federal facilities, seasonal operating goals, use of power and energy, and exchanges of water between Sites Reservoir, the CVP, and the SWP.

It is anticipated that the accounting for exchanges between the Authority, DWR, and Reclamation can occur within the framework of the COA because of mutual places of use, particularly south of the Delta. The parties have discussed COA accounting, and DWR and Reclamation will coordinate on COA issues that will need to be addressed as the Project develops to facilitate the ability of the Project to function as described here and in the Revised Draft EIR/Supplemental Draft EIS. COA administrative actions between Reclamation and DWR will be coordinated with the Authority and are not expected to affect the construction schedule or ongoing Project operations.

8.2 Exchanges with Reclamation

Exchanges with Shasta Lake would be formulated to target cold water pool preservation and anadromous fish benefits. Shasta Lake exchanges would occur in years when forecast temperature-based mortality of early life stage winter-run Chinook salmon would be reduced if the exchange is in place. Under a Shasta Lake exchange, water would be released from the Sites Reservoir in the spring to meet CVP purposes, including CVP water service and/or repayment contractors or Central Valley Project Improvement Act (CVPIA) refuge needs in the Sacramento Valley that could physically receive water from Sites Reservoir. By reducing releases from Shasta Lake in the spring, the storage and cold water pool in Shasta Lake would be preserved for use later in the year, typically during critical months of the cold water pool management season (August and September). In late summer and fall (i.e., August through November), Reclamation would release an equivalent amount of water from Shasta Lake for Storage Partners. A memorandum identifying the modeled criteria for Shasta Exchanges is included as Attachment E. Figure 21 depicts the exceedance plot from models demonstrating volume exchanged with Shasta. As shown, exchanges do not occur frequently but can be sizeable when they do occur. As with other modeling presented in this Reservoir Operations Plan, actual exchange volumes could vary beyond modeled amounts.

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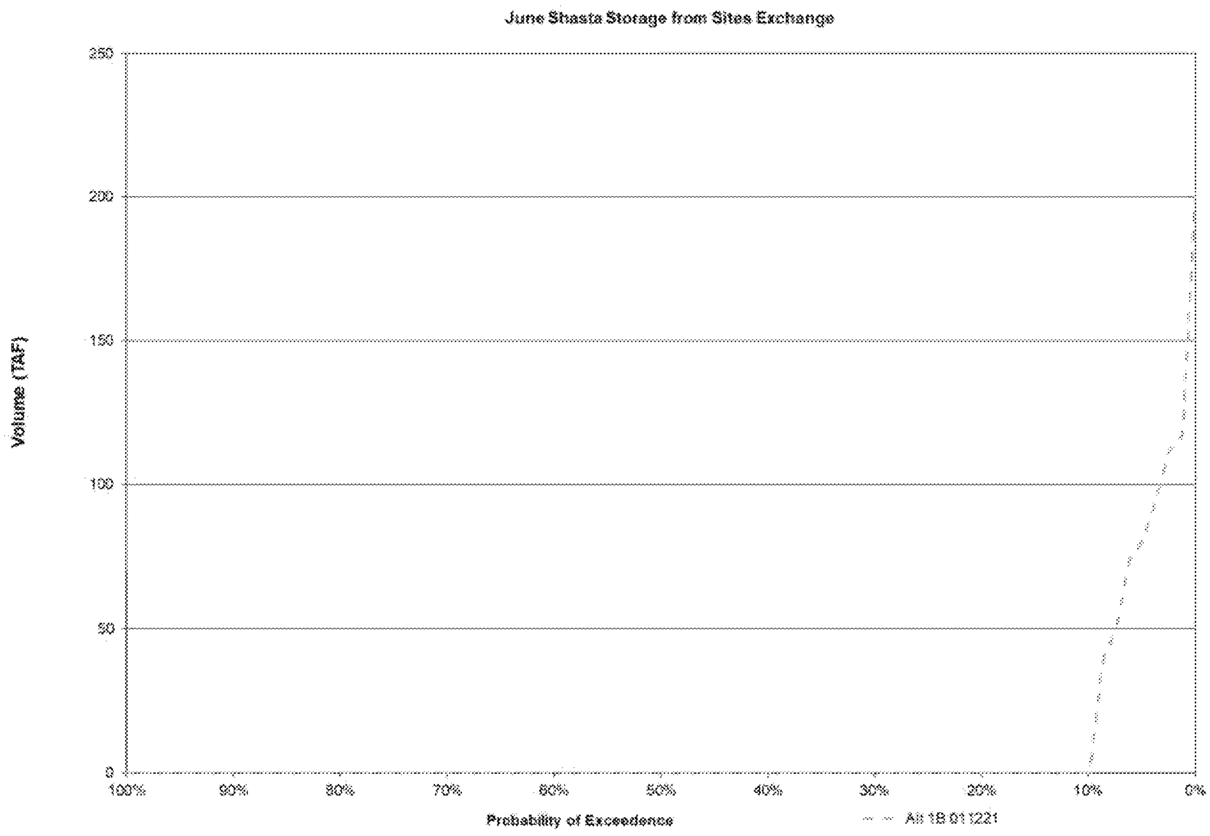

Source: CalSim II modeling for Alternative 1B (Alt 1B 011221) in the Revised Draft EIR/Supplemental Draft EIS

Figure 21. January to December Shasta Storage from Sites Exchange

Exchanges could also occur with Folsom Lake, but these exchanges are not modeled. If they occur, Folsom Lake exchanges would be operated similarly to exchanges with Shasta Lake. Sites Reservoir would release water in the spring and early summer to meet CVP purposes in lieu of Reclamation releases at Folsom Lake. An equivalent amount of water would then be released from Folsom Lake in the late summer and fall for Storage Partners. All exchange water would be released from Folsom Lake in late summer and fall and no exchanged water would be carried over from year to year.

Discussions with Reclamation on expanded exchanges are currently underway and are anticipated to be included in the Project's Biological Assessment and Final EIR/EIS. Exchanges may be expanded such that greater volumes would be held in Shasta Lake. Other options include changes in Project operations to allow for greater spring pulse flow actions or improved fall flow stability downstream of Keswick on the Sacramento River.

8.3 Reclamation as an Investor

Reclamation is anticipated to be a Storage Partner. This Operations Plan and all modeling results shown assume a federal cost-share of up to 7 percent, resulting in approximately 91 TAF of active storage allocated to Reclamation in accordance with Alternative 1B in the Revised Draft EIR/Supplemental Draft EIS. The federal cost share could be as high as 25 percent. In accordance with Reclamation's Federal Feasibility Study for the Project, Reclamation's storage in Sites Reservoir could be used for the purpose of CVP Operational Flexibility. Operational Flexibility is defined in the Federal Feasibility Study as follows:

> The operational flexibility purpose is defined as the benefit accruing to the Federal government from an increased ability to allocate additional water supplies through an investment by the United States in a water supply project. The water supply project would be functionally integrated with the CVP from a water rights and/or contractual basis. The investment would enable the Federal Government to deliver water for beneficial use and better meet authorized project purposes by increasing the efficiency, reuse, or multiple use of existing supplies or by reducing impacts of regulatory or capacity constraints on an existing Reclamation project.

The Project would provide Reclamation an additional water source that could allow for higher allocations in accordance with CVP contracts or releases for environmental restoration, CVPIA refuges, or anadromous fish water quality.

The Authority expects to enter into an agreement with Reclamation relative to the Federal investment in the project. The use of Reclamation's storage in Sites Reservoir may vary, and this Reservoir Operations Plan will be updated accordingly.

8.4 Exchanges with DWR

Exchanges with Lake Oroville would be formulated primarily to facilitate Project deliveries to Storage Partners. The exchanges may also improve cold water pool conditions at Lake Oroville. Exchanges with Lake Oroville are expected to happen more frequently and would be driven by a variety of factors. Under a Lake Oroville exchange, water would be released from the Sites Reservoir primarily in June and July to meet SWP purposes. By reducing releases from Lake Oroville in these months, the storage in Lake Oroville would be preserved for use later in the year. In late summer and fall (i.e., August through November), DWR would release an equivalent amount of water from Lake Oroville for Storage Partners. All exchange water would be released from Lake Oroville in late summer and fall and no exchanged water would be carried over from year to year. A memorandum identifying the modeled criteria for Oroville exchanges is included as Attachment F.

Figure 22 depicts the exceedance plot from models demonstrating volume exchanged with Oroville. As shown, exchanges occur more frequently than those with Shasta, although the peak exchange volumes are not as great. Actual volumes in real-time operations are expected to vary.

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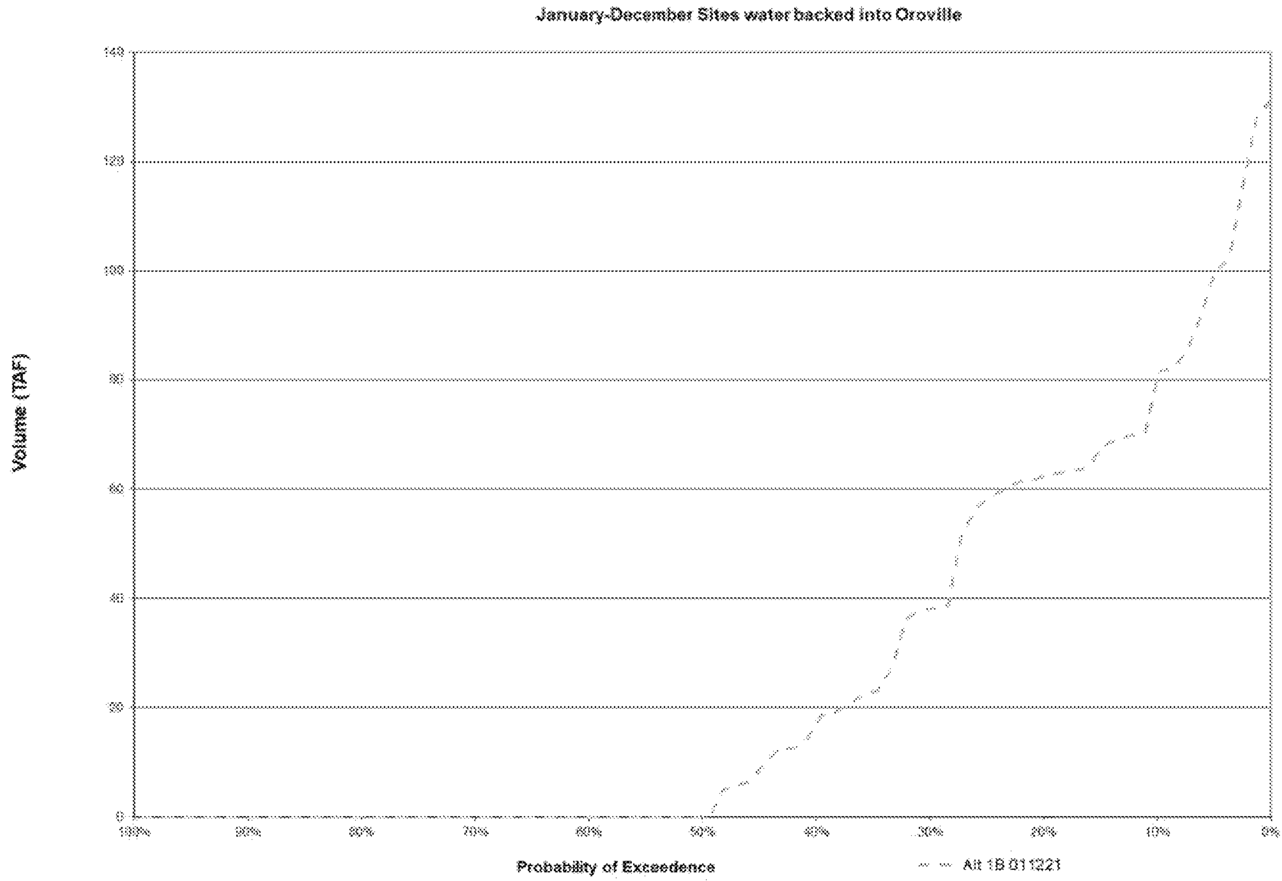


Source: CalSim II modeling for Alternative 1B (Alt 1B 011221) in the Revised Draft EIR/Supplemental Draft EIS

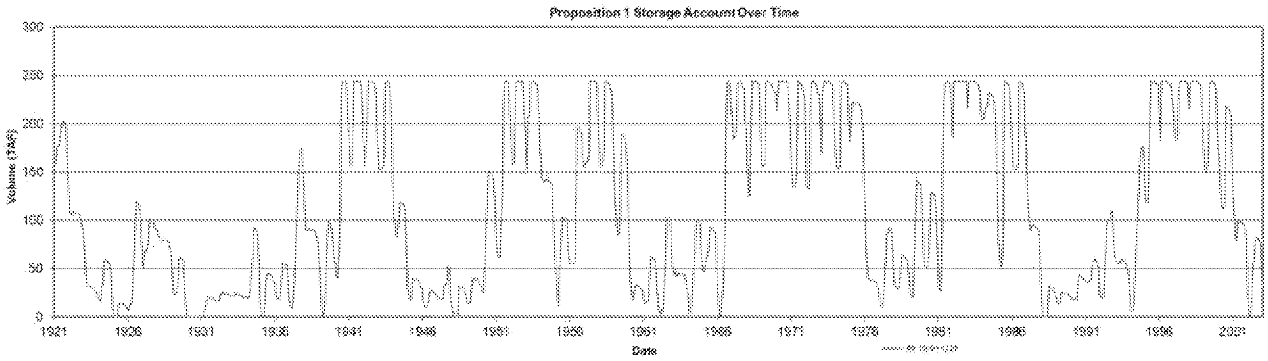
Figure 22. January to December Sites Water Backed into Oroville

8.5 Operations for Proposition 1 Benefits

A defined Proposition 1 public benefits storage account will be established in Sites Reservoir to be managed by the State to provide water for ecosystem purposes. The Storage Allocation assumed for Proposition 1 purposes is 244 TAF. This amount is comparable to the cost-share paid by the State for environmental benefits (does not include funding for recreation or flood). There are two benefits funded by the State through Proposition 1: flows through the Yolo Bypass/Cache Slough Complex and delivery of Incremental Level 4 water north and south of the Delta.

Flows to the Yolo Bypass will be conveyed through the Knights Landing Ridge Cut via Funks Reservoir, the TC Canal, the Dunnigan Pipeline, and the CBD (described in Section 6.2). Project water will be released in the summer and fall (i.e., August through October) to help increase productivity in the lower Cache Slough and lower Sacramento River areas. This flow is intended to increase desirable food sources for Delta smelt in the late summer and early fall. Sites Reservoir average annual releases to the Yolo Bypass under historic hydrology range from 14 to 63 TAF, depending on water year type. Long-term average releases for the Yolo Bypass are estimated to be 41 TAF.

Project water will also be provided to supplement supply for Incremental Level 4 water north and south of the Delta to provide improvements to managed wetlands. Most water released for this purpose will be exported to managed wetlands south of the Delta. Sites Reservoir average annual releases for Incremental Level 4 water supply under historic hydrology range from 2 to 40 TAF, depending on year type, with long-term average releases for this purpose of 19 TAF. Approximately 5 TAF over the long-term average is expected to go north of the Delta. Figure 23 shows the level of the Proposition 1 storage account in Sites Reservoir based on historic hydrology, assuming Sites Reservoir is built and today's regulatory environment is in place.



Source: CalSim II modeling for Alternative 1B (Alt 1B 011221) in the Revised Draft EIR/Supplemental Draft EIS

Figure 23. Proposition 1 Storage Account Over Time

The values provided in this section assume all environmental water for Proposition 1 goes to the funded benefits in accordance with the Authority's Feasibility Study developed for the California Water Commission. However, it is the Authority's intent that this account be flexibly managed so that water could potentially go to other sources to maximize the environmental benefits. The Authority is working with CDFW and other stakeholders on how this account will be managed and the way the benefits are realized. The management of storage and deliveries for benefits will be finalized through an agreement with CDFW that will be developed in 2022/2023.

9.0 Funks and Stone Corral Creeks

In the construction of Sites Reservoir, Funks and Stone Corral Creeks would be impounded in the inundation area by the construction of the Golden Gate Dam and the Sites Dam, respectively. During Project operations, releases would be made from Sites Reservoir into Funks and Stone Corral Creeks. These releases would be made to comply with California Fish and Game Code Section 5937 and to ensure no harm to downstream water right holders on these creeks.

Detailed release schedules for releases into Funks and Stone Corral Creeks have not been developed due to lack of information on the conditions in these creeks. Field studies would be conducted once access is obtained and before final designs for Sites Dam and Golden Gate Dam are completed to determine the following:

- Existing fish assemblage in these creeks, including fish species presence and habitat use;
- Characterization of habitats available (e.g., spawning, rearing, foraging, and sheltering habitats) at varying flow levels;
- Characterization of flows, including assessing the base flow during the summer months;
- Conducting a fluvial geomorphologic study to characterize bed load and flow levels necessary for mobilization;
- Surface Water Ambient Monitoring Program technical study (i.e., bioassessment) that focuses on relationships between physical habitat, water quality, and benthic macroinvertebrates; and

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- Hydrological studies to define flow temperature relationships.

Using information from these field studies, along with currently available information on water right holders downstream of the reservoir in both creeks, the Authority will prepare a Funks and Stone Corral Creeks flow schedule that will be incorporated into this Operations Plan that would identify the approach for releases, including release schedules and volumes, a monitoring plan, and an adaptive management plan. Releases into these creeks would be made in consideration of the flood control benefits of the Project and would not overtop the stream banks and flood downstream areas.

Releases into Funks Creek would be made through a new pipeline that terminates at Funks Creek below the dam. These facilities would have a normal operating release range of 0 to 100 cfs into Funks Creek. Releases into Stone Corral Creek would be made through the permanent outlet at Sites Dam. This outlet would normally release 0 to 100 cfs, with an emergency release capacity of up to 4,700 cfs.

The Authority has also entered into a Memorandum of Understanding with Colusa County that would allocate net flows from Stone Corral and Funks creeks to the County's Storage Allocation in the reservoir, where net flow equals inflow from the creek minus any required releases into the creeks downstream. The evaporation and seepage losses would also be allocated to the County's Storage Allocation consistent with all other water stored in the reservoir. Future versions of this Operations Plan will include more detail on how inflows from Funks and Stone Corral Creeks will be determined.

10.0 Recreation, Flood Control, and Health and Safety Considerations

10.1 Emergencies

The Project includes the design and operation of facilities to meet California Division of Safety of Dams criteria and requirements for emergency reservoir drawdown. During an emergency release event, Saddle Dam 8B, the I/O works, and Sites Dam may operate simultaneously to release water. Once the water surface elevation falls below the levels of the saddle dam spillway elevation, the I/O works and Sites Dam would operate solely to release the remaining water. The emergency releases would be in accordance with Division of Safety of Dams requirements and would occur as follows:

- Under Alternatives 1, 2, and 3, the spillway on Saddle Dam 8B would release to Hunters Creek. The size of the spillway would accommodate the peak outflow of a probable maximum flood event or the steady-state flow if an over-pumping event occurred. The design and size of the spillway were developed with the assumption that a probable maximum flood overflow event and an over-pumping event have a very low probability of occurring simultaneously.
- The permanent outlet on Sites Dam would release to Stone Corral Creek at a maximum rate of approximately 4,700 cfs.
- The I/O tunnels would release to Funks Reservoir and the TRR at a rate of approximately 16,000 cfs, with 9,000 cfs being discharged to Funks Reservoir and 7,000 cfs to the TRR with a maximum velocity of 40 cfs in the pipelines.

An Emergency Action Plan will be developed and implemented for Project construction and operation. The Emergency Action Plan will include (1) a summary of responsibilities, (2) notification procedures and flowchart, (3) emergency response process, (4) preparedness for different emergencies, and

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(5) potential inundation mapping. The Emergency Action Plan will also identify the frequency for desktop and full exercises to prepare for emergencies.

10.2 Flood Damage Reduction

In addition to the emergency drawdown requirements described above, the Project will provide flood damage reduction benefits to portions of Colusa County, including Maxwell and the surrounding agricultural areas. Incidental storage in Sites Reservoir would capture and store flood flows from the Funks Creek and Stone Corral Creek watersheds. These flood damage reduction benefits are inherent to the Project design and would occur regardless of the Project's operations for water supply and water-related environmental benefits. While the reservoir would not be operated with flood reduction as a primary objective, the Authority may consider adjusting operations to reduce flood damage as requested by local, state, or federal entities.

10.3 Recreation Considerations

In accordance with the Storage Principles, Sites Reservoir will provide water supply and water supply related environmental benefits, including water quality benefits ("Primary Benefits") and flood control, recreation, and power generation benefits ("Secondary Benefits"). Sites Reservoir will be operated so as to maximize the Primary Benefits for the Storage Partners. Secondary Benefits are considered incidental to the Project and will be subordinate to the provision of Primary Benefits.

The Authority will develop a Recreation Management Plan. The Recreation Management Plan will discuss the operation of the Recreation facilities, including how those operations may change depending on storage volume in the reservoir.

11.0 Changes to this Operations Plan

This Operations Plan will be updated as details surrounding Project permits, including the water right, are further defined. Version 1 of this Operation Plan may be updated with editorial or minor corrections and additions as requested by Project Storage Partners or Authority's Agents. All changes to this plan will be routed through the Ad Hoc Operations and Engineering Workgroup.

Attachment A

Sites Storage Partners as of December 2021

American Canyon, City of
Antelope Valley - East Kern Water Agency
Carter Mutual Water Company
Coachella Valley Water District
Colusa County
Colusa County Water District
Cortina Water District
Davis Water District
Desert Water Agency
Dunnigan Water District
Glenn-Colusa Irrigation District
Irvine Ranch Water District
LaGrande Water District
Metropolitan Water
Reclamation District 108
Rosedale-Rio Bravo Water Storage District
San Bernardino Valley Municipal Water District
San Gorgonio Pass Water Agency
Santa Clara Valley Water District
Santa Clarita Valley Water District
Westside Water District
Wheeler Ridge-Maricopa Water Storage District
Zone 7 Water Agency
State of California
United States Bureau of Reclamation

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Attachment B

Principles for the Storage, Delivery and Sale of Sites Reservoir Project Water

PRINCIPLES FOR THE STORAGE, DELIVERY AND SALE
OF SITES RESERVOIR PROJECT WATER

APPLICABILITY

(1) These Principles For The Storage, Delivery And Sale of Sites Reservoir Project Water ("Principles") adopted by the Sites Project Authority ("Authority") on April 21, 2021, supersede the Storage Policy adopted by the Authority on August 26, 2019.

PURPOSE AND SCOPE

(2) These Principles are intended to guide and assist the Authority as it moves forward with the Sites Reservoir Project ("Project"). To that end, these Principles will serve as the basic framework for development, adoption and/or execution of additional or more formal agreements, policies and procedures related to the storage, delivery and sale of Sites Project water, as needed.

DEFINITIONS

(3) Authority – For the purposes of these Principles, the term Authority collectively refers to the Sites Project Authority and its standing Reservoir Committee. The final roles and responsibilities of the Authority and the Reservoir Committee in the day-to-day operations of Sites Reservoir have not yet been defined and the term Authority is used to refer to both entities collectively.

(4) Available Storage – That portion of Sites Reservoir that can be filled, minus dead storage and any storage space intentionally left unfilled at the direction of the Storage Partner who has contracted for that storage space.

(5) Beneficiary Pays Principle – The principle for allocating all costs associated with delivering certain Project benefits, including public and non-public benefits, to the party receiving such benefits.

(6) OM&R – Those costs associated with the operation, maintenance and repair/replacement of Project facilities. These can be broken down into: (a) Fixed OM&R costs that are more predictable year-to-year and that are not significantly influenced by varying diversions or releases of water; and (b) Variable OM&R costs that vary based on actual operations each year, including costs associated with water transfers or exchanges.

(7) Sites Reservoir Project (Project) – Sites Reservoir and associated diversion and conveyance facilities.

(8) Sites Water – Water that is appropriated under the Authority's water right.

(9) Storage Allocation – The amount of storage space (storage volume) in Sites Reservoir allocated to a Storage Partner, as agreed upon in that Storage Partner's Water Storage and Supply Services Contract and the amount of storage space shared or leased, if any, pursuant to Paragraph 25 of these Principles. Dead storage is not allocated to any Storage Partner.

(10) Storage Partners – The governmental agencies, water organizations and others who have funded and received a Storage Allocation in Sites Reservoir and the resulting water supply or water supply related environmental benefits from the Project. Storage Partners could include local agencies, the State of California, and the Federal Government.

(11) Water Storage and Supply Services Contract – That agreement, by whatever name, between the Authority and a Storage Partner that provides for the Storage Partner to obtain the Primary Benefits of the Project provided the Storage Partner meets the funding and other obligations of that agreement.

PRIORITY OF OPERATION

(12) Sites Reservoir will provide water supply and water supply related environmental benefits, including water quality benefits ("Primary Benefits"), as well as flood control, recreation, and power generation benefits ("Secondary Benefits"). Sites Reservoir will be operated so as to maximize the Primary Benefits for the Storage Partners. Secondary Benefits are considered incidental to the Project and will be subordinate to the provision of Primary Benefits.

ROLES

(13) Authority - The Authority will develop, own, operate, and maintain the Project. The Authority will obtain and comply with all permits, approvals and agreements needed to construct, operate and maintain the Project. The Authority will oversee the planning, permitting, and day-to-day operations and accounting of Sites Reservoir storage, releases and losses and related activities, including coordination with each Storage Partner. This will be done in a way that is open and transparent to all Storage Partners.

(14) Storage Partners – The Storage Partners are responsible for managing their Storage Allocation and for paying their allocated capital, fixed OM&R, and variable OM&R costs.

WATER STORAGE AND SUPPLY SERVICES CONTRACTS

(15) The Authority will enter into Water Storage and Supply Services Contracts with individual Storage Partners for the use of Project facilities. Each Water Storage and Supply Services Contract will be based on a Storage Partner's Storage Allocation.

WATER RIGHT AND POINT OF DELIVERY

(16) The Authority will apply for and hold the water right for the Project. In developing the Project and its operations, the Authority will divert water to maximize beneficial use and perfect the water right. The Authority will be responsible for compliance with the terms and conditions in the water right and any other permits, approvals, and agreements that control diversion of water to storage for the Project. The Storage Partners will be responsible for using Sites Water within the terms and conditions allowed in the Authority's water right and for providing the Authority with any information it may need to comply with reporting or other requirements. To the extent permitted by applicable law and with the cooperation of the Storage Partners, the Authority will undertake all reasonable measures to manage, control and protect Sites Water, including initiating any appropriate enforcement proceedings to prevent unlawful diversion of or interference with Sites Water.

(17) The Authority will manage Sites Water from the points of diversion to the primary point of delivery. The primary point of delivery for each Storage Partner will be Funks Reservoir or the Terminal Regulating Reservoir. For Sites Water delivered to Storage Partners not served by the Tehama-Colusa Canal or the Glenn Colusa Irrigation District's distribution system, the Authority may retain control of Sites Water to a secondary point of delivery, as agreed upon by the Authority and the Storage Partner in the respective Water Storage and Supply Services Contract. Storage Partners will be responsible for all losses after the primary point of delivery.

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STORAGE OF WATER BY DIVERSION

(18) The Authority will take all actions practicable to maximize the diversion of water into Available Storage consistent with regulatory requirements, physical and operational constraints, and hydrologic conditions. Water diverted will be allocated to each Storage Partner's contractual storage space proportional to its Storage Allocation.[1] If a Storage Partner's Storage Allocation is not available, the available water will be allocated to the remaining Storage Partners who have available Storage Allocation space proportional to their Storage Allocation.

(19) The Authority will establish a process, including schedule, that allows for a Storage Partner to determine the maximum amount of water allocated to the Storage Partner's Storage Allocation each year along with a process to make changes to this amount. A Storage Partner may opt out of having water allocated to their Storage Allocation if they so inform the Authority through the process established by the Authority.

(20) The diversion of water to storage will take priority over the release of stored water. The diversion of Sites Water to storage will take priority over the diversion of water from other sources to storage.

STORAGE OF WATER FROM OTHER SOURCES

(21) Storage Partners may request that the Authority place water from sources other than Sites Water into storage and allocate that water to their Storage Allocation. The Authority will take all reasonable steps to facilitate these requests, subject to the Beneficiary Pays Principle. Placing water into storage from other sources must not negatively impact other Storage Partners, Project operations or financing.

(22) If there is a conflict between placing water into storage in Sites Reservoir from other sources of water and the release of water from Sites Reservoir at the same time, the Authority will prioritize diversions but take reasonable measures to accommodate both Storage Partners' requests.

ACCOUNTING FOR LOSSES

(23) Losses of water held in Sites Reservoir storage – including but not limited to evaporation, seepage, and any releases for dam safety or emergency conditions – will be allocated proportionally to each Storage Partner based on the amount of its water in storage.

SHARING OR LEASING OF STORAGE ALLOCATION

(24) Storage Partners are allowed to share or lease their Storage Allocation with other Storage Partners or other entities. The terms of sharing or leasing are at the discretion of the Storage Partners who are parties to a storage or lease agreement but must not negatively impact other Storage Partners, Project operations or financing. Any sharing or leasing of Storage Allocation must

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[1] *For example, if 275,000 acre-feet of water is able to be diverted to Sites Reservoir in any one year, this represents 20% of the total allocated storage space in Sites Reservoir (275,000/1.38 million acre-feet = 20%). In that year, each Storage Partner would receive an amount of water equal to 20% of their Storage Allocation, unless the Storage Partner has opted out of having water allocated to their Storage Allocation or their Storage Allocation is full. This example assumes a 1.5 million acre-foot reservoir with about 120,000 acre-feet allocated to dead pool.*

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be coordinated with the Authority. A Storage Partner may not transfer or assign any of its rights or obligations as part of any sharing or leasing agreement.

SALE OF SITES WATER

(25) Storage Partners are allowed to sell water held in their Storage Allocation to other Storage Partners or other entities. The terms of sales of water held in a Storage Allocation are at the discretion of the Storage Partners who are parties to the sale but must not negatively impact other Storage Partners, Project operations or financing. Any sale of water held in a Storage Allocation must be coordinated with the Authority. A Storage Partner may not transfer or assign any of its rights or obligations as part of any sale of water. The receiving Storage Partner or other entity must have sufficient available Storage Allocation to store the water or release the water upon purchase.

RELEASES OF WATER FROM STORAGE

(26) To the extent allowed by the Project's permits, approvals and agreements and its physical and operational capabilities, Storage Partners have total discretion on the amount of water held in their Storage Allocation that they request to be scheduled for release for their use, and will have control over the use of their Storage Allocation space based on the conditions set forth in these Principles.

(27) Each year, the Authority will make a water storage forecast for each Storage Partner. Each Storage Partner will provide the schedule and amounts of the water they wish to be released in that year. The Authority will establish a process, including schedule, that allows for the Storage Partner to make changes to its water schedule and amounts for release throughout the year.

(28) The Authority will work with each Storage Partner, the State Water Project, Central Valley Project, Tehama Colusa Canal Authority, the Glenn Colusa Irrigation District, entities along the Colusa Basin Drain, and regulatory agencies and make all reasonable efforts to satisfy the water release schedules requested by each Storage Partner. If there is a release constraint affecting the ability of the Authority to meet the requested water release schedules, the Authority will work with those conflicted Storage Partners to see if accommodations can be made. If the conflict cannot be resolved, releases will be made in proportion to the Storage Allocation attributable to the conflicted Storage Partners.

UNIFORM STANDARDS FOR ALL STORAGE PARTNERS

(29) All Storage Partners are subject to uniform standards in the operation of the Project. Uniform standards include, but are not limited to, priority of diversions, storage, releases, and conveyance of Sites Water through Project facilities and utilization of their respective Storage Allocation.

CONFLICT RESOLUTION

(30) The Authority will develop a conflict resolution mechanism to resolve conflicts that may arise in Project operations. This conflict resolution process will be included in the Water Storage and Supply Services Contract.

FUTURE CHANGES

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(31) It is anticipated that these Principles will evolve and change as the Project develops and as permits, approvals, and agreements are obtained and executed. These Principles may be modified in the future by the Authority.

DATE

April 21, 2021

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Attachment C

Methodology for Allocating Reservoir Storage

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Sites

Topic: **Reservoir Committee Meeting Agenda Item 2.2** **2021 April 16**

Subject: **Approach for Allocating Storage Space in the Reservoir**

Requested Action:

Approve the recommended methodology for allocating storage space in Sites Reservoir to each local Storage Partner using the final proposed formulaic approach of 1 acre-foot Amendment 2 participation to 6.234 acre-feet of storage space.

Detailed Description/Background:

An important component of the Principles for the Storage, Delivery and Sale of Sites Reservoir Project Water (Storage Principles), and a foundational principle of the Sites Project, is that each Storage Partner has allocated storage space in Sites Reservoir (termed "Storage Allocation" in the Storage Principles discussed in Item 2.1 of today's agenda). This Storage Allocation is managed by the Storage Partner to optimize the benefits received from the Sites Project and is used to determine the proportion of diverted water provided to each Storage Partner.

If approved, the recommended method would identify the amount of storage allocation to each Storage Partner. Future documents and contracts would include the amount of storage allocated to the respective Storage Partner.

In February 2021, staff reviewed principles and objectives of allocating reservoir storage with the Reservoir Committee and Authority Board. Principles included equitable treatment between local participants, confirming neither the State nor Reclamation receive disproportionate benefits when compared to local participants, and considerations of the Credit Reimbursement Policy. Staff reviewed the proposed allocation again in March 2021 to provide participants a second opportunity to review and ask questions.

The proposed allocation for local, State and Federal Storage Partners, based on a 1.5 million acre-foot reservoir, is shown in Table 1 below.

Table 1. Summary of Storage Allocation for Local, State and Federal Storage Partners

Storage Type	Storage Allocation (thousand acre-feet)	Percent Active Storage
Dead Pool	120	N/A
State – CDFW	244	17.7%
Federal - Reclamation (low end of range)	91	6.6%
Local Storage Partners	1,045	75.7%
Total	1,500	100%

The State Storage Allocation is estimated based on the amount of storage required to meet ecosystem benefits awarded through Proposition 1 which is to be "trued up" later this year through the State's feasibility evaluation.

The Federal Storage Allocation is based on assumptions consistent with Alternative 1B, the Authority's preferred alternative in the Revised Draft EIR/Supplemental Draft EIS. Up to 25% cost share was found to be feasible by the Secretary of Interior and could be accommodated with voluntary reductions in the local agency participation consistent with Alternative 3 in the Revised Draft EIR/Supplemental Draft EIS if funding is available. Increasing the reservoir size beyond 1.5 million acre-feet is not being contemplated at this time.

A recommended methodology for allocating storage to local Storage Partners was provided in February and March 2021 and remains unchanged. The recommended method is the following mathematical conversion based on a 1.5 million-acre-foot reservoir:

Existing participation x 6.234 = Storage Allocation

Example: 1,000 acre-feet per year Amendment 2 participation = 6,234 acre-feet Storage Allocation

The recommended methodology allocates all available storage based on existing participation and after accounting for estimated storage for the State and Federal government along with the dead pool. The State and Federal estimates are expected to be finalized over the next six to nine months. The final State and Federal numbers can affect the local storage amounts but the proportionate shares of the local storage among the participants would remain unchanged. Similarly, using the Alternative 2 reservoir size of 1.3 million-acre-feet would have an effect on the local storage amount allocated to each participant but the proportionate share of space among participants would remain the same.

The recommended methodology was reviewed and recommended for approval by the Storage Policy Small Group and the Ad Hoc Reservoir Operations and Engineering Workgroup. Staff recommends that the Reservoir Committee approve the recommended methodology for allocating storage space in Sites Reservoir to each local Storage Partner using the final proposed formulaic approach of 1 acre-foot Amendment 2 participation to 6.234 acre-feet of storage space.

Prior Action:

March Meetings & February 19, 2021: Reviewed and commented on the approach for allocating storage space in the reservoir.

Fiscal Impact/Funding Source:

None.

Staff Contact:

Ali Forsythe

Attachments:

Attachment A - Storage Allocation Based on Amendment 2 Participation

Draft_0016014

Storage Allocation Based on Amendment 2 Participation Levels
April 16, 2021

Participant Name	Storage (AF)	% Active Storage
Antelope Valley-East Kern WA	3,117	0.2%
Carter MWC	1,870	0.1%
City of American Canyon	24,937	1.8%
Coachella Valley WD	62,343	4.5%
Colusa County	62,343	4.5%
Colusa County WD	62,799	4.6%
Cortina WD	2,805	0.2%
Davis WD	12,469	0.9%
Desert WA	40,523	2.9%
Dunnigan WD	18,528	1.3%
Glenn-Colusa ID	31,172	2.3%
Irvine Ranch WD	6,234	0.5%
LaGrande WD	6,234	0.5%
Metropolitan Water District of SC	311,717	22.6%
Reclamation District 108	24,937	1.8%
Rosedale-Rio Bravo WD	3,117	0.2%
San Bernardino Valley Municipal WD	133,415	9.7%
San Gorgonio Pass WA	87,281	6.3%
Santa Clara Valley WD	3,117	0.2%
Santa Clarita Valley WA	31,172	2.3%
Westside WD	33,510	2.4%
Wheeler Ridge - Maricopa WSD	19,015	1.4%
Zone 7 WA	62,343	4.5%
Reclamation	91,000	6.6%
State of California - Ecosystem	244,000	17.7%
Dead Pool	120,000	N/A
Total	1,500,000	100%

Attachment D

Assumptions for Releases or Demands and Deliveries by Year Type

Draft_0016016

Draft – Subject to Revision
Sites Project: Participant Delivery Reports

This document summarizes Sites Project Participants Delivery Reports that have been prepared for Alternative 1A 011221, Alternative 1B 011221, Alternative 2 011221, and Alternative 3 020121. These reports allow each participant to see their long-term and water year-type average Sites Project deliveries as modeled in CalSim II.

Summary of Reports

This document consists of a summary table and individual reports for each participant. The summary table reports the modeled end-point deliveries of Sites Project water to participants for each alternative. Participants are listed alphabetically, grouped by North of Delta and South of Delta.

The individual participants reports display long-term, dry, and critically dry water year, and water year type average end-point deliveries for each Sites Project participant. Water year types are assigned using the D-1641 Sacramento Valley 40-30-30 water year type calculation and annual averages are calculated on a March-February CVP contract year for North of Delta participants and a January-December SWP contract year for South of Delta participants.

Assumptions

End-point deliveries of Sites Project water to each region was assigned proportionally to each participant based on their participation level in Amendment 2 on November 20, 2020.

The following assumptions apply to deliveries to each participant group:

Tehama-Colusa Canal Authority (TCCA)

Water is released from the TCCA Sites account with the intention of meeting up to 100% of participants' CVP contract amount. When water is not needed to meet TCCA participants contract amounts, water may be transferred to the South of Delta Participants account during May of Above Normal and Below Normal water years when account storage is over two-thirds of capacity. Releases are made directly to the Tehama-Colusa Canal. Deliveries are equal to these releases; no conveyance losses are assumed.

Glenn-Colusa Irrigation District (GCID)

Water is released from the GCID Sites account in April and May when CVP Settlement Contract deliveries are reduced to 75% in Shasta critical years. In all other years, except for wet years, water is transferred to the South of Delta Participants account. Releases are made directly to the Glenn-Colusa Canal. Deliveries are equal to these releases; no conveyance losses are assumed.

Reclamation District 108 (RD-108) and Carter MWC

Water is released from the RD-108 and Carter MWC Sites account in April and May when CVP Settlement Contract deliveries are reduced to 75% in Shasta critical years. In all other years, except for wet years, water is transferred to the South of Delta Participants account. Releases are made through the Tehama-Colusa Canal to the Dunnigan Pipeline to facilitate an exchange with the Sacramento River. Deliveries are equal to these releases; no conveyance losses are assumed.

County of Colusa

Water is released from the County of Colusa Sites account for groundwater replenishment. Releases are limited to 10 TAF per year from June through September. Releases are made directly to the Tehama-Colusa Canal. Deliveries are equal to these releases; no conveyance losses are assumed.

South of Delta Participants

Water may be released from the South of Delta Participants Sites account in all but wet water years. There are four ways that water may be delivered to South of Delta Participants: direct release to the Sacramento River through the Dunnigan Pipeline, exchanges with Sacramento River at Hamilton City by replacing CVP diversions to GCID with releases from Sites, exchanges with Shasta Lake, and exchanges with the SWP at Lake Oroville. Releases are then exported from the Delta through Banks Pumping Plant. Exports of releases of South of Delta Participants water are limited to July through November.

Deliveries to South of Delta participants are based on the export at the Banks Pumping Plant. In these reports, deliveries are allocated based on Sites Project participation levels. The difference between the release from Sites Reservoir and Delta Exports accounts for carriage water and other losses. Exports to South of Delta Participants are subject to export availability. It is assumed that all South of Delta participants proportionally share exported water regardless of the pattern of exports.

Limitations

These reports only include deliveries to Sites Project participants from the Sites PWA accounts. It does not report incidental changes in SWP and CVP deliveries or additional CVP deliveries due to CVP Operational Flexibility from federal investment in the Sites Project.

Sites Project Deliveries

DRAFT-Subject to Revision

Participant	Long Term Average Deliveries (TAF/year)			
	ALT 1A 011221	**ALT 1B 011221**	**ALT 2 011221**	**ALT 3 020121**
North of Delta Participants				
Carter Mutual Water Company	0.03	0.03	0.03	0.02
Colusa County WD	10.4	9.7	9.9	8.2
Cortina WD	0.5	0.4	0.4	0.4
County of Colusa	7.0	6.9	7.0	6.7
Davis Water District	2.1	1.9	2.0	1.6
Dunnigan WD	3.1	2.9	2.9	2.4
Glenn Colusa Irrigation District	0.5	0.5	0.5	0.4
LaGrande Water District	1.0	1.0	1.0	0.8
RD-108	0.4	0.4	0.4	0.3
Westside W.D.	5.6	5.2	5.3	4.4
Total NOD Delivery	30.5	28.9	29.3	25.2
South of Delta Participants				
Antelope Valley East Kern WA	0.4	0.4	0.3	0.3
City of American Canyon	2.1	2.1	2.1	2.1
Coachella Valley Water District	7.8	7.2	7.0	5.6
Desert WA	5.1	4.7	4.5	3.7
Irvine Ranch Water District	0.8	0.7	0.7	0.6
Metropolitan Water District of Southern California	38.9	36.1	34.8	28.2
Rosedale-Rio Bravo Water District	0.4	0.4	0.3	0.3
San Bernardino Valley Municipal Water District	16.6	15.4	14.9	12.1
San Gorgonio Pass Water Agency	10.9	10.1	9.7	7.9
Santa Clara Valley WD	0.4	0.4	0.3	0.3
Santa Clarita Valley Water Agency	3.9	3.6	3.5	2.8
Wheeler Ridge-Maricopa WSD	2.4	2.2	2.1	1.7
Zone 7 Water Agency	7.8	7.2	7.0	5.6
Total SOD Delivery	97.4	90.5	87.3	71.3
Total Sites PWA Delivery	127.9	119.4	116.6	96.5

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Mar-Feb CVP contract year for North of Delta participants
4. Annual average deliveries are calculated on a Jan-Dec SWP contract year for South of Delta participants
5. South of Delta deliveries are based on Authority exports modeled in CalSim II
6. Deliveries do not include any San Luis reoperation or south of Delta storage agreements
7. South of Delta delivery arcs were combined and then deliveries were distributed proportional to participation

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: Carter Mutual Water Company

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**0.0**	**0.0**	**0.0**	**0.0**
Dry and Critically Dry Years	**0.1**	**0.1**	**0.1**	**0.1**
Wet Years	0.0	0.0	0.0	0.0
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	0.0	0.0	0.0	0.0
Dry Years	0.0	0.0	0.0	0.0
Critically Dry Years	0.2	0.2	0.2	0.1

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Mar-Feb CVP contract year for NOD participants

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: Colusa County WD

	Deliveries (TAF/year)			
	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**10.4**	**9.7**	**9.9**	**8.2**
Dry and Critically Dry Years	**24.3**	**22.6**	**23.3**	**19.4**
Wet Years	0.8	0.8	0.8	0.8
Above Normal Years	0.3	0.3	0.3	0.3
Below Normal Years	6.5	6.3	5.5	4.0
Dry Years	21.7	20.8	21.2	17.7
Critically Dry Years	28.3	25.2	26.4	22.0

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Mar-Feb CVP contract year for NOD participants

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: Cortina WD

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**0.5**	**0.4**	**0.4**	**0.4**
Dry and Critically Dry Years	**1.1**	**1.0**	**1.0**	**0.9**
Wet Years	0.0	0.0	0.0	0.0
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	0.3	0.3	0.2	0.2
Dry Years	1.0	0.9	0.9	0.8
Critically Dry Years	1.3	1.1	1.2	1.0

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Mar-Feb CVP contract year for NOD participants

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: County of Colusa

	Deliveries (TAF/year)			
	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**7.0**	**6.9**	**7.0**	**6.7**
Dry and Critically Dry Years	**8.7**	**8.5**	**8.7**	**7.8**
Wet Years	5.1	5.1	5.1	5.1
Above Normal Years	5.7	5.7	5.7	5.7
Below Normal Years	8.0	8.0	8.1	8.1
Dry Years	8.4	8.6	8.6	8.7
Critically Dry Years	9.1	8.3	8.7	6.5

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. Annual average deliveries are calculated on a Mar-Feb CVP contract year for NOD participants

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: Davis Water District

	Deliveries (TAF/year)			
	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**2.1**	**1.9**	**2.0**	**1.6**
Dry and Critically Dry Years	**4.8**	**4.5**	**4.6**	**3.9**
Wet Years	0.2	0.2	0.2	0.2
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	1.3	1.3	1.1	0.8
Dry Years	4.3	4.1	4.2	3.5
Critically Dry Years	5.6	5.0	5.2	4.4

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Mar-Feb CVP contract year for NOD participants

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: Dunnigan WD

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**3.1**	**2.9**	**2.9**	**2.4**
Dry and Critically Dry Years	**7.2**	**6.7**	**6.9**	**5.7**
Wet Years	0.2	0.2	0.2	0.2
Above Normal Years	0.1	0.1	0.1	0.1
Below Normal Years	1.9	1.9	1.6	1.2
Dry Years	6.4	6.1	6.3	5.2
Critically Dry Years	8.4	7.4	7.8	6.5

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Mar-Feb CVP contract year for NOD participants

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: Glenn Colusa Irrigation District

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**0.5**	**0.5**	**0.5**	**0.4**
Dry and Critically Dry Years	**1.4**	**1.2**	**1.4**	**1.2**
Wet Years	0.0	0.0	0.0	0.0
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	0.0	0.0	0.0	0.0
Dry Years	0.3	0.2	0.3	0.2
Critically Dry Years	3.0	2.8	3.0	2.6

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Mar-Feb CVP contract year for NOD participants

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: LaGrande Water District

	Deliveries (TAF/year)			
	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**1.0**	**1.0**	**1.0**	**0.8**
Dry and Critically Dry Years	**2.4**	**2.2**	**2.3**	**1.9**
Wet Years	0.1	0.1	0.1	0.1
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	0.6	0.6	0.5	0.4
Dry Years	2.1	2.1	2.1	1.8
Critically Dry Years	2.8	2.5	2.6	2.2

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Mar-Feb CVP contract year for NOD participants

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: RD-108

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**0.4**	**0.4**	**0.4**	**0.3**
Dry and Critically Dry Years	**1.0**	**1.0**	**1.0**	**0.9**
Wet Years	0.0	0.0	0.0	0.0
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	0.0	0.0	0.0	0.0
Dry Years	0.1	0.1	0.1	0.1
Critically Dry Years	2.3	2.2	2.3	2.0

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Mar-Feb CVP contract year for NOD participants

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: Westside W.D.

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**5.6**	**5.2**	**5.3**	**4.4**
Dry and Critically Dry Years	**13.0**	**12.0**	**12.4**	**10.4**
Wet Years	0.4	0.4	0.4	0.4
Above Normal Years	0.1	0.1	0.1	0.1
Below Normal Years	3.5	3.4	2.9	2.2
Dry Years	11.6	11.1	11.3	9.4
Critically Dry Years	15.1	13.5	14.1	11.7

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Mar-Feb CVP contract year for NOD participants

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: Total NOD Delivery

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**30.5**	**28.9**	**29.3**	**25.2**
Dry and Critically Dry Years	**63.9**	**59.8**	**61.7**	**52.0**
Wet Years	6.8	6.8	6.8	6.8
Above Normal Years	6.2	6.2	6.2	6.2
Below Normal Years	22.0	21.7	20.0	16.8
Dry Years	55.8	54.1	55.1	47.4
Critically Dry Years	76.0	68.2	71.5	59.0

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Mar-Feb CVP contract year for NOD participants

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: Antelope Valley East Kern WA

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**0.4**	**0.4**	**0.3**	**0.3**
Dry and Critically Dry Years	**1.0**	**0.9**	**0.9**	**0.7**
Wet Years	0.0	0.0	0.0	0.0
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	0.2	0.1	0.2	0.1
Dry Years	1.0	0.9	0.9	0.7
Critically Dry Years	0.9	0.9	0.8	0.7

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Jan-Dec SWP contract year for SOD participants
4. South of Delta deliveries are based on Authority exports modeled in CalSim II
5. Deliveries do not include any San Luis reoperation or south of Delta storage agreements
6. South of Delta delivery arcs were combined and then deliveries were distributed proportional to participation

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: City of American Canyon

	Deliveries (TAF/year)			
	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**2.1**	**2.1**	**2.1**	**2.1**
Dry and Critically Dry Years	**3.9**	**3.9**	**3.9**	**3.9**
Wet Years	0.0	0.0	0.0	0.0
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	4.0	4.0	4.0	4.0
Dry Years	4.0	4.0	4.0	4.0
Critically Dry Years	3.7	3.7	3.7	3.7

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Jan-Dec SWP contract year for SOD participants
4. South of Delta deliveries are based on Authority exports modeled in CalSim II
5. Deliveries do not include any San Luis reoperation or south of Delta storage agreements
6. South of Delta delivery arcs were combined and then deliveries were distributed proportional to participation

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: Coachella Valley Water District

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**7.8**	**7.2**	**7.0**	**5.6**
Dry and Critically Dry Years	**19.5**	**18.2**	**17.3**	**14.2**
Wet Years	0.0	0.0	0.0	0.0
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	3.1	2.8	3.2	2.2
Dry Years	20.8	18.9	18.6	14.6
Critically Dry Years	17.7	17.0	15.3	13.5

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Jan-Dec SWP contract year for SOD participants
4. South of Delta deliveries are based on Authority exports modeled in CalSim II
5. Deliveries do not include any San Luis reoperation or south of Delta storage agreements
6. South of Delta delivery arcs were combined and then deliveries were distributed proportional to participation

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: Desert WA

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**5.1**	**4.7**	**4.5**	**3.7**
Dry and Critically Dry Years	**12.7**	**11.8**	**11.2**	**9.2**
Wet Years	0.0	0.0	0.0	0.0
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	2.0	1.9	2.1	1.5
Dry Years	13.5	12.3	12.1	9.5
Critically Dry Years	11.5	11.1	9.9	8.8

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Jan-Dec SWP contract year for SOD participants
4. South of Delta deliveries are based on Authority exports modeled in CalSim II
5. Deliveries do not include any San Luis reoperation or south of Delta storage agreements
6. South of Delta delivery arcs were combined and then deliveries were distributed proportional to participation

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: Irvine Ranch Water District

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**0.8**	**0.7**	**0.7**	**0.6**
Dry and Critically Dry Years	**2.0**	**1.8**	**1.7**	**1.4**
Wet Years	0.0	0.0	0.0	0.0
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	0.3	0.3	0.3	0.2
Dry Years	2.1	1.9	1.9	1.5
Critically Dry Years	1.8	1.7	1.5	1.4

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Jan-Dec SWP contract year for SOD participants
4. South of Delta deliveries are based on Authority exports modeled in CalSim II
5. Deliveries do not include any San Luis reoperation or south of Delta storage agreements
6. South of Delta delivery arcs were combined and then deliveries were distributed proportional to participation

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: Metropolitan Water District of Southern California

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**38.9**	**36.1**	**34.8**	**28.2**
Dry and Critically Dry Years	**97.7**	**90.8**	**86.3**	**71.0**
Wet Years	0.0	0.0	0.0	0.0
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	15.6	14.2	16.1	11.2
Dry Years	103.9	94.5	92.9	73.2
Critically Dry Years	88.4	85.2	76.4	67.7

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Jan-Dec SWP contract year for SOD participants
4. South of Delta deliveries are based on Authority exports modeled in CalSim II
5. Deliveries do not include any San Luis reoperation or south of Delta storage agreements
6. South of Delta delivery arcs were combined and then deliveries were distributed proportional to participation

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: Rosedale-Rio Bravo Water District

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**0.4**	**0.4**	**0.3**	**0.3**
Dry and Critically Dry Years	**1.0**	**0.9**	**0.9**	**0.7**
Wet Years	0.0	0.0	0.0	0.0
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	0.2	0.1	0.2	0.1
Dry Years	1.0	0.9	0.9	0.7
Critically Dry Years	0.9	0.9	0.8	0.7

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Jan-Dec SWP contract year for SOD participants
4. South of Delta deliveries are based on Authority exports modeled in CalSim II
5. Deliveries do not include any San Luis reoperation or south of Delta storage agreements
6. South of Delta delivery arcs were combined and then deliveries were distributed proportional to participation

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: San Bernardino Valley Municipal Water District

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**16.6**	**15.4**	**14.9**	**12.1**
Dry and Critically Dry Years	**41.8**	**38.9**	**37.0**	**30.4**
Wet Years	0.0	0.0	0.0	0.0
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	6.7	6.1	6.9	4.8
Dry Years	44.5	40.5	39.8	31.3
Critically Dry Years	37.8	36.5	32.7	29.0

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Jan-Dec SWP contract year for SOD participants
4. South of Delta deliveries are based on Authority exports modeled in CalSim II
5. Deliveries do not include any San Luis reoperation or south of Delta storage agreements
6. South of Delta delivery arcs were combined and then deliveries were distributed proportional to participation

Sites Project Deliveries **DRAFT-Subject to Revision**

Sites Participant: San Gorgonio Pass Water Agency

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**10.9**	**10.1**	**9.7**	**7.9**
Dry and Critically Dry Years	**27.4**	**25.4**	**24.2**	**19.9**
Wet Years	0.0	0.0	0.0	0.0
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	4.4	4.0	4.5	3.1
Dry Years	29.1	26.5	26.0	20.5
Critically Dry Years	24.7	23.9	21.4	19.0

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Jan-Dec SWP contract year for SOD participants
4. South of Delta deliveries are based on Authority exports modeled in CalSim II
5. Deliveries do not include any San Luis reoperation or south of Delta storage agreements
6. South of Delta delivery arcs were combined and then deliveries were distributed proportional to participation

Sites Project Deliveries DRAFT-Subject to Revision

Sites Participant: Santa Clara Valley WD

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**0.4**	**0.4**	**0.3**	**0.3**
Dry and Critically Dry Years	**1.0**	**0.9**	**0.9**	**0.7**
Wet Years	0.0	0.0	0.0	0.0
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	0.2	0.1	0.2	0.1
Dry Years	1.0	0.9	0.9	0.7
Critically Dry Years	0.9	0.9	0.8	0.7

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Jan-Dec SWP contract year for SOD participants
4. South of Delta deliveries are based on Authority exports modeled in CalSim II
5. Deliveries do not include any San Luis reoperation or south of Delta storage agreements
6. South of Delta delivery arcs were combined and then deliveries were distributed proportional to participation

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: Santa Clarita Valley Water Agency

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**3.9**	**3.6**	**3.5**	**2.8**
Dry and Critically Dry Years	**9.8**	**9.1**	**8.6**	**7.1**
Wet Years	0.0	0.0	0.0	0.0
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	1.6	1.4	1.6	1.1
Dry Years	10.4	9.5	9.3	7.3
Critically Dry Years	8.8	8.5	7.6	6.8

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Jan-Dec SWP contract year for SOD participants
4. South of Delta deliveries are based on Authority exports modeled in CalSim II
5. Deliveries do not include any San Luis reoperation or south of Delta storage agreements
6. South of Delta delivery arcs were combined and then deliveries were distributed proportional to participation

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: Wheeler Ridge-Maricopa WSD

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**2.4**	**2.2**	**2.1**	**1.7**
Dry and Critically Dry Years	**6.0**	**5.5**	**5.3**	**4.3**
Wet Years	0.0	0.0	0.0	0.0
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	1.0	0.9	1.0	0.7
Dry Years	6.3	5.8	5.7	4.5
Critically Dry Years	5.4	5.2	4.7	4.1

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Jan-Dec SWP contract year for SOD participants
4. South of Delta deliveries are based on Authority exports modeled in CalSim II
5. Deliveries do not include any San Luis reoperation or south of Delta storage agreements
6. South of Delta delivery arcs were combined and then deliveries were distributed proportional to participation

Sites Project Deliveries **DRAFT-Subject to Revision**

Sites Participant: Zone 7 Water Agency

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**7.8**	**7.2**	**7.0**	**5.6**
Dry and Critically Dry Years	**19.5**	**18.2**	**17.3**	**14.2**
Wet Years	0.0	0.0	0.0	0.0
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	3.1	2.8	3.2	2.2
Dry Years	20.8	18.9	18.6	14.6
Critically Dry Years	17.7	17.0	15.3	13.5

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Jan-Dec SWP contract year for SOD participants
4. South of Delta deliveries are based on Authority exports modeled in CalSim II
5. Deliveries do not include any San Luis reoperation or south of Delta storage agreements
6. South of Delta delivery arcs were combined and then deliveries were distributed proportional to participation

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: Total SOD Delivery

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**97.4**	**90.5**	**87.3**	**71.3**
Dry and Critically Dry Years	**243.2**	**226.2**	**215.3**	**177.7**
Wet Years	0.0	0.0	0.0	0.0
Above Normal Years	0.0	0.0	0.0	0.0
Below Normal Years	42.2	38.9	43.5	31.5
Dry Years	258.5	235.5	231.6	183.2
Critically Dry Years	220.1	212.3	190.8	169.6

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Jan-Dec SWP contract year for SOD participants
4. South of Delta deliveries are based on Authority exports modeled in CalSim II
5. Deliveries do not include any San Luis reoperation or south of Delta storage agreements
6. South of Delta delivery arcs were combined and then deliveries were distributed proportional to participation

Sites Project Deliveries

DRAFT-Subject to Revision

Sites Participant: Total Sites PWA Delivery

Deliveries (TAF/year)

	ALT 1A 011221	ALT 1B 011221	ALT 2 011221	ALT 3 020121
Long-term Average	**127.9**	**119.4**	**116.6**	**96.5**
Dry and Critically Dry Years	**307.1**	**286.0**	**277.0**	**229.8**
Wet Years	6.8	6.8	6.8	6.8
Above Normal Years	6.2	6.2	6.2	6.2
Below Normal Years	64.2	60.6	63.6	48.3
Dry Years	314.4	289.6	286.7	230.5
Critically Dry Years	296.1	280.5	262.3	228.6

Notes:

1. Water year types are calculated using the D-1641 Sacramento Valley 40-30-30 water year type calculation
2. End-point deliveries assume the NOD to SOD transfer operation as defined in the assumptions
3. Annual average deliveries are calculated on a Mar-Feb CVP contract year for NOD participants and on a Jan-Dec SWP contract year for SOD participants
4. South of Delta deliveries are based on Authority exports modeled in CalSim II
5. Deliveries do not include any San Luis reoperation or south of Delta storage agreements
6. South of Delta delivery arcs were combined and then deliveries were distributed proportional to participation

Attachment E

Memorandum Identifying Modeled Criteria for Shasta Exchanges

Draft_0016046

Draft – Subject to Revision
Sites Project: Shasta Lake Exchange Modeling Assumptions

This document summarizes Sites Reservoir exchange operations with Shasta Lake. Then, details Reclamation's Cold Water Pool management at Shasta, as described in ROC on LTO. Finally, modeling assumptions are tabulated and expected benefits of the Shasta Exchange operation are highlighted.

Summary of Shasta Exchange Operation

Shasta Exchange is designed to support the Cold Water Pool Management and Fall and Winter Refill and Redd Maintenance Actions in the 2019 BiOps. In the Spring of Shasta Exchange years, Sacramento River Settlement Contractors (SRSC) and Tehama-Colusa Canal Authority (TCCA) members would receive water from Sites in lieu of Shasta. As Shasta is not delivering water to the SRSC and TCCA members, its releases would be reduced. Therefore, Shasta storage and cold water pool would be preserved through the Spring.

At the end of Spring, Sites has delivered CVP water instead of Shasta. The volume of delivered water is equivalent to the exchange volume preserved in Shasta. The exchange volume sustains Shasta cold water pool for use during the critical months of the cold water pool management season (August and September). In Late-Summer and Fall (August – November), the exchange volume augments releases from Shasta with cooler water and provides deliveries to Sites participants.

All exchange water must be released in the August through November period. Release of exchange water shall support the Cold Water Pool Management Action and Fall stability flows aspect of the Fall and Winter Refill and Redd Maintenance Action in the 2019 BiOps. As such, Shasta Exchanges would occur in years when forecasted temperature-based mortality of early life stage winter-run Chinook salmon would be reduced by a Shasta Exchange.

Summary of ROC on LTO Cold Water Pool Management

In the ROC on LTO Alternative 1 description, Reclamation proposes changes to cold water pool management during the temperature management period: May 15th to October 31st or when 95% of Winter-Run Chinook Salmon eggs have hatched and alevin have emerged, whichever is earlier. During the temperature management period, Reclamation will implement a tiered strategy based on Shasta cold water pool or total Shasta storage:

- Tier 1: May 1st cold water pool > 2.8 MAF (total Shasta storage > 4.1 MAF)
  - Daily average temperature of 53.5 deg F at Sacramento River below Clear Creek (CCR) throughout temperature management period
- Tier 2: May 1st cold water pool > 2.3 MAF (total Shasta storage > 3.5 MAF)
  - Daily average temperature of 53.5 deg F at CCR during hatch period (when highest concentration of hatching occurs; estimated as 2 months centered on August 7th)
  - Daily average temperature of 56 deg F at CCR for the rest of the temperature management period (before and after hatch period)
- Tier 3: May 1st total Shasta storage > 2.5 MAF
  - Allow daily average temperature above 53.5 deg F (up to 56 deg F) at CCR during hatch period
  - Attempt to maintain daily average temperature of 56 deg F at CCR for rest of temperature management period (before and after hatch period)
- Tier 4: May 1st total Shasta storage < 2.5 MAF
  - Discuss following intervention measures with USFWS and NMFS:
    - Reclamation would work with USFWS to increase hatchery production of Winter-Run Chinook Salmon
    - Reclamation would implement a downstream trap and haul strategy for the capture and transport of juvenile Chinook Salmon and Steelhead in the Sacramento River watershed.
    - In the event of two successive years with total egg-to-fry survival less than 15% in each year, Reclamation would convene a meeting of the Regional Directors of DWR, NMFS, USFWS, and CDFW to identify and implement actions to address the potential for a third year of low survival.

A decision tree of the tiered strategy is shown on page 5 (Figure 3.4-3 from the ROC on LTO FEIS).

Shasta Exchange Criteria

	Modeled Criteria	**Notes**
Exchange Period	**Dry:** Apr – Jun **Critical:** Apr - May	
Exchange Constraints		
Water year types	Dry and Critically Dry water years	
Temperature Management Tier	Tier 2, 3 and 4 years	
Minimum flow at Sacramento River at Keswick	Apr – May: 6,000 cfs Jun: 10,000 cfs	Exchanges in Dry and Critically Dry water years will not likely impact ROC on LTO Spring Pulse Flows action
Maximum allowable temperature at Sacramento River below Clear Creek	Apr – Jun: Tiers 2 and 3 years: 53.5 deg F Tier 4 years: 56 deg F	Per ROC on LTO FEIS
Sacramento Valley Conditions	Only during Excess conditions	
Release Period	Aug – Nov	Releases are prioritized in August through October.
Release Constraints		
Preferred flow at Sacramento River at Keswick	Aug: 12,000 cfs Sep: 10,000 cfs Oct: 5,000 cfs Nov: 5,000 cfs	Not explicitly modeled
Maximum volume	Limited to Banks Pumping Plant Capacity	Not an explicit constraint; model accounts for mass balance

[1]Several assumptions are required to assume exchange operation criteria per ROC on LTO operations. Main assumptions are provided in "Notes" column.

Shasta Exchange Benefits to ROC on LTO Cold Water Pool Management

- Tier 1 years:
  - No benefit
- Tier 2 years:
  - Decreasing releases in April through June could preserve Shasta cold water pool for more targeted release in the hatching period (described above).
- Tier 3 years:
  - Decreasing releases in April through June could preserve Shasta cold water pool for more targeted release in the hatching period (described above).
- Tier 4 years:
  - Little benefit – On its own, Sites could not benefit Shasta cold water pool in an appreciable manner. In combination with intervention measures, Sites may prove beneficial.

Attachment from ROC on LTO FEIS

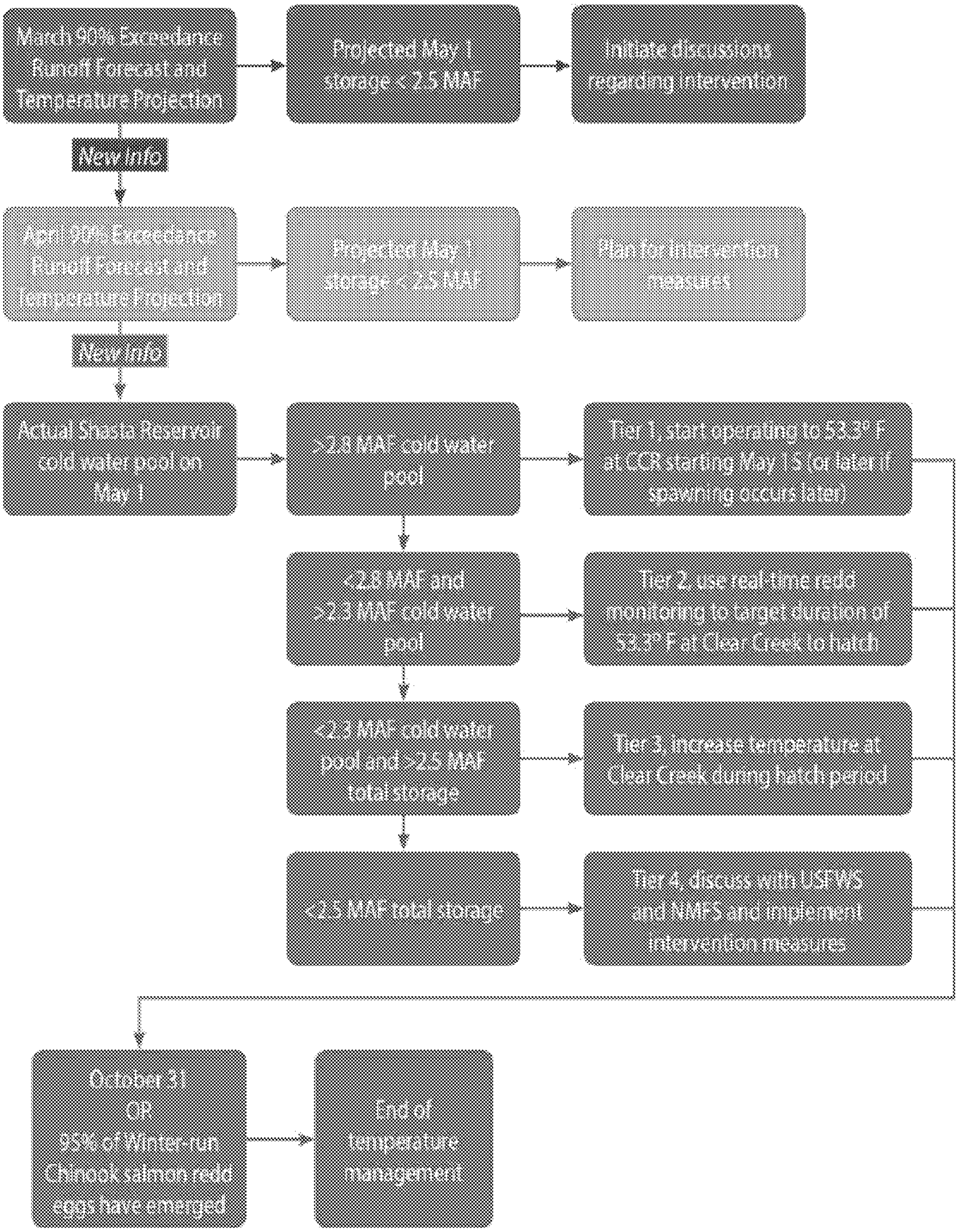

Figure 3.4-3. Decision Tree for Shasta Reservoir Temperature Management

Attachment F

Memorandum Identifying Modeled Criteria for Oroville Exchanges

Draft_0016052

Draft – Subject to Revision
Sites Project: Lake Oroville Exchange Modeling Assumptions

This document summarizes Sites Reservoir exchange operations with Lake Oroville. Then, details and tabulates modeling assumptions.

Summary of Oroville Exchange Operation

The Oroville exchange is designed to support cold water pool management of Oroville and augment delivery of Sites water to Delta Participants during the transfer window. In June and July of Oroville exchange years, a portion of SWP obligated releases would come from Sites in lieu of Oroville, reducing releases from Oroville. Therefore, Oroville storage and cold water pool would be preserved through the end of July.

At the end of July, Sites has released SWP water instead of Oroville. The volume of released water is equivalent to the exchange volume preserved in Oroville. In the late-Summer and Fall (August – November), the exchange volume augments Oroville releases, provides deliveries to Sites participants, and supports Oroville cold water pool management.

Oroville Exchange Operational Criteria

Assumptions of Oroville exchange operational criteria are detailed below. These criteria are also summarized in Table 1.

Exchange Period

In terms of physical Oroville storage capacity for an exchange, there is no assumed limit. Instead, the Oroville exchange volume is estimated in June and July based on Sites' forecasted transfer volume to south of Delta Storage Partners in August through November. If the Oroville exchange volume overestimates Sites' ability to transfer water south of the Delta, a portion of Sites exchange water remains in Oroville. This remaining exchange water is subject to spill.

The Oroville exchange period is limited to June and July. The Oroville exchange period starts in June due to the high degree of uncertainty in forecasting south of Delta transfers. Forecasting south of Delta transfers any earlier than June would pose a significant risk to losing Sites water, via spills from Oroville. Additionally, to protect Green Sturgeon habitat, Feather River flows must not decrease in August.

In Wet and Above Normal water years, Sites transfers to south of Delta Storage Partners are limited. As such, Oroville exchanges occur in Below Normal, Dry and Critically Dry water year types.

Release Period

The majority of exchange water is released in August and September, as October and November must consider Feather River fall stability flow targets. Per fall stability flow requirements, total Oroville releases are limited to 2,500 cfs from October 16^{th} through November.

All exchange water must be released in the August through November period. If exchange water is not released by the end of November, it is subject to spill.

Table 1. Oroville Exchange Criteria

	Modeled Criteria	**Notes**
Exchange Period	June – July	Estimating volume of exchange water before June poses risk of losing Sites water to spill; Per Green Sturgeon requirements, Sites may not decrease Feather River flows in August
Exchange Constraints		
Water year types	Below Normal, Dry and Critically Dry water years	Oroville exchange not necessary in Wet and Above Normal water year types
Exchange Volume		Limited to minimize potential for spills of Sites water from Oroville
Release Period	August – November	
Release Constraints		
Delta Export Capacity		Considers conveyance capacity based on Feather River, Sacramento River and Delta regulatory requirements, and Banks Pumping Plant capacity
Max Feather River Flow	Oct: 4,000 cfs Nov: 2,250 cfs	Feather River fall stability flow requirements. October average flow of 4,000 cfs assumes flow requirement of 2,500 cfs for the 16^{th} through 31^{st}. November average of 2,250 cfs to protect fall stability flow requirement.
Spills	Spill Sites water in December	Unused Sites water in Oroville is subject to spill

PRINCIPLES FOR THE STORAGE, DELIVERY AND SALE OF SITES RESERVOIR PROJECT WATER

APPLICABILITY

(1) These Principles For The Storage, Delivery And Sale of Sites Reservoir Project Water ("Principles") adopted by the Sites Project Authority ("Authority") on _____________, 2021, supersede the Storage Policy adopted by the Authority on August 26, 2019.

PURPOSE AND SCOPE

(2) These Principles are intended to guide and assist the Authority as it moves forward with the Sites Reservoir Project ("Project"). To that end, these Principles will serve as the basic framework for development, adoption and/or execution of additional or more formal agreements, policies and procedures related to the storage, delivery and sale of Sites Project water, as needed.

DEFINITIONS

(3) Authority – For the purposes of these Principles, the term Authority collectively refers to the Sites Project Authority and its standing Reservoir Committee. The final roles and responsibilities of the Authority and the Reservoir Committee in the day-to-day operations of Sites Reservoir have not yet been defined and the term Authority is used to refer to both entities collectively.

(4) Available Storage – That portion of Sites Reservoir that can be filled, minus dead storage and any storage space intentionally left unfilled at the direction of the Storage Partner who has contracted for that storage space.

(5) Beneficiary Pays Principle – The principle for allocating all costs associated with delivering certain Project benefits, including public and non-public benefits, to the party receiving such benefits.

(6) OM&R – Those costs associated with the operation, maintenance and repair/replacement of Project facilities. These can be broken down into: (a) Fixed OM&R costs that are more predictable year-to-year and that are not significantly influenced by varying diversions or releases of water; and (b) Variable OM&R costs that vary based on actual operations each year, including costs associated with water transfers or exchanges.

(7) Sites Reservoir Project (Project) – Sites Reservoir and associated diversion and conveyance facilities.

(8) Sites Water – Water that is appropriated under the Authority's water right.

(9) Storage Allocation – The amount of storage space (storage volume) in Sites Reservoir allocated to a Storage Partner, as agreed upon in that Storage Partner's Water Storage and Supply Services Contract and the amount of storage space shared or leased, if any, pursuant to Paragraph 25 of these Principles. Dead storage is not allocated to any Storage Partner.

(10) Storage Partners – The governmental agencies, water organizations and others who have funded and received a Storage Allocation in Sites Reservoir and the resulting water supply or water supply related environmental benefits from the Project. Storage Partners could include local agencies, the State of California, and the Federal Government.

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(11) Water Storage and Supply Services Contract – That agreement, by whatever name, between the Authority and a Storage Partner that provides for the Storage Partner to obtain the Primary Benefits of the Project provided the Storage Partner meets the funding and other obligations of that agreement.

PRIORITY OF OPERATION

(12) Sites Reservoir will provide water supply and water supply related environmental benefits, including water quality benefits ("Primary Benefits"), as well as flood control, recreation, and power generation benefits ("Secondary Benefits"). Sites Reservoir will be operated so as to maximize the Primary Benefits for the Storage Partners. Secondary Benefits are considered incidental to the Project and will be subordinate to the provision of Primary Benefits.

ROLES

(13) Authority - The Authority will develop, own, operate, and maintain the Project. The Authority will obtain and comply with all permits, approvals and agreements needed to construct, operate and maintain the Project. The Authority will oversee the planning, permitting, and day-to-day operations and accounting of Sites Reservoir storage, releases and losses and related activities, including coordination with each Storage Partner. This will be done in a way that is open and transparent to all Storage Partners.

(14) Storage Partners – The Storage Partners are responsible for managing their Storage Allocation and for paying their allocated capital, fixed OM&R, and variable OM&R costs.

WATER STORAGE AND SUPPLY SERVICES CONTRACTS

(15) The Authority will enter into Water Storage and Supply Services Contracts with individual Storage Partners for the use of Project facilities. Each Water Storage and Supply Services Contract will be based on a Storage Partner's Storage Allocation.

WATER RIGHT AND POINT OF DELIVERY

(16) The Authority will apply for and hold the water right for the Project. In developing the Project and its operations, the Authority will divert water to maximize beneficial use and perfect the water right. The Authority will be responsible for compliance with the terms and conditions in the water right and any other permits, approvals, and agreements that control diversion of water to storage for the Project. The Storage Partners will be responsible for using Sites Water within the terms and conditions allowed in the Authority's water right and for providing the Authority with any information it may need to comply with reporting or other requirements. To the extent permitted by applicable law and with the cooperation of the Storage Partners, the Authority will undertake all reasonable measures to manage, control and protect Sites Water, including initiating any appropriate enforcement proceedings to prevent unlawful diversion of or interference with Sites Water.

(17) The Authority will manage Sites Water from the points of diversion to the primary point of delivery. The primary point of delivery for each Storage Partner will be Funks Reservoir or the Terminal Regulating Reservoir. For Sites Water delivered to Storage Partners not served by the Tehama-Colusa Canal or the Glenn Colusa Irrigation District's distribution system, the Authority may retain control of Sites Water to a secondary point of delivery, as agreed upon by the Authority and the Storage Partner in the respective Water Storage and Supply Services Contract. Storage Partners will be responsible for all losses after the primary point of delivery.

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STORAGE OF WATER BY DIVERSION

(18) The Authority will take all actions practicable to maximize the diversion of water into Available Storage consistent with regulatory requirements, physical and operational constraints, and hydrologic conditions. Water diverted will be allocated to each Storage Partner's contractual storage space proportional to its Storage Allocation.[1] If a Storage Partner's Storage Allocation is not available, the available water will be allocated to the remaining Storage Partners who have available Storage Allocation space proportional to their Storage Allocation.

(19) The Authority will establish a process, including schedule, that allows for a Storage Partner to determine the maximum amount of water allocated to the Storage Partner's Storage Allocation each year along with a process to make changes to this amount. A Storage Partner may opt out of having water allocated to their Storage Allocation if they so inform the Authority through the process established by the Authority.

(20) The diversion of water to storage will take priority over the release of stored water. The diversion of Sites Water to storage will take priority over the diversion of water from other sources to storage.

STORAGE OF WATER FROM OTHER SOURCES

(21) Storage Partners may request that the Authority place water from sources other than Sites Water into storage and allocate that water to their Storage Allocation. The Authority will take all reasonable steps to facilitate these requests, subject to the Beneficiary Pays Principle. Placing water into storage from other sources must not negatively impact other Storage Partners, Project operations or financing.

(22) If there is a conflict between placing water into storage in Sites Reservoir from other sources of water and the release of water from Sites Reservoir at the same time, the Authority will prioritize diversions but take reasonable measures to accommodate both Storage Partners' requests.

ACCOUNTING FOR LOSSES

(23) Losses of water held in Sites Reservoir storage – including but not limited to evaporation, seepage, and any releases for dam safety or emergency conditions – will be allocated proportionally to each Storage Partner based on the amount of its water in storage.

SHARING OR LEASING OF STORAGE ALLOCATION

(24) Storage Partners are allowed to share or lease their Storage Allocation with other Storage Partners or other entities. The terms of sharing or leasing are at the discretion of the Storage Partners who are parties to a storage or lease agreement but must not negatively impact other Storage Partners, Project operations or financing. Any sharing or leasing of Storage Allocation must

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[1] *For example, if 275,000 acre-feet of water is able to be diverted to Sites Reservoir in any one year, this represents 20% of the total allocated storage space in Sites Reservoir (275,000/1.38 million acre-feet = 20%). In that year, each Storage Partner would receive an amount of water equal to 20% of their Storage Allocation, unless the Storage Partner has opted out of having water allocated to their Storage Allocation or their Storage Allocation is full. This example assumes a 1.5 million acre-foot reservoir with about 120,000 acre-feet allocated to dead pool.*

Draft_0016057

be coordinated with the Authority. A Storage Partner may not transfer or assign any of its rights or obligations as part of any sharing or leasing agreement.

SALE OF SITES WATER

(25) Storage Partners are allowed to sell water held in their Storage Allocation to other Storage Partners or other entities. The terms of sales of water held in a Storage Allocation are at the discretion of the Storage Partners who are parties to the sale but must not negatively impact other Storage Partners, Project operations or financing. Any sale of water held in a Storage Allocation must be coordinated with the Authority. A Storage Partner may not transfer or assign any of its rights or obligations as part of any sale of water. The receiving Storage Partner or other entity must have sufficient available Storage Allocation to store the water or release the water upon purchase.

RELEASES OF WATER FROM STORAGE

(26) To the extent allowed by the Project's permits, approvals and agreements and its physical and operational capabilities, Storage Partners have total discretion on the amount of water held in their Storage Allocation that they request to be scheduled for release for their use, and will have control over the use of their Storage Allocation space based on the conditions set forth in these Principles.

(27) Each year, the Authority will make a water storage forecast for each Storage Partner. Each Storage Partner will provide the schedule and amounts of the water they wish to be released in that year. The Authority will establish a process, including schedule, that allows for the Storage Partner to make changes to its water schedule and amounts for release throughout the year.

(28) The Authority will work with each Storage Partner, the State Water Project, Central Valley Project, Tehama Colusa Canal Authority, the Glenn Colusa Irrigation District, entities along the Colusa Basin Drain, and regulatory agencies and make all reasonable efforts to satisfy the water release schedules requested by each Storage Partner. If there is a release constraint affecting the ability of the Authority to meet the requested water release schedules, the Authority will work with those conflicted Storage Partners to see if accommodations can be made. If the conflict cannot be resolved, releases will be made in proportion to the Storage Allocation attributable to the conflicted Storage Partners.

UNIFORM STANDARDS FOR ALL STORAGE PARTNERS

(29) All Storage Partners are subject to uniform standards in the operation of the Project. Uniform standards include, but are not limited to, priority of diversions, storage, releases, and conveyance of Sites Water through Project facilities and utilization of their respective Storage Allocation.

CONFLICT RESOLUTION

(30) The Authority will develop a conflict resolution mechanism to resolve conflicts that may arise in Project operations. This conflict resolution process will be included in the Water Storage and Supply Services Contract.

FUTURE CHANGES

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(31) It is anticipated that these Principles will evolve and change as the Project develops and as permits, approvals, and agreements are obtained and executed. These Principles may be modified in the future by the Authority.

DATE

______________________________, 2021

Draft_0016059

From: Sites Project [info@sitesproject.org]
Sent: 3/17/2022 9:31:49 AM
To: Sites Project [info@sitesproject.org]; sconway@katzandassociates.com
BCC: kclunews@aol.com; reception@kprl.com; jd@kusp.org; jjohnson@montereyherald.com; jtarica@thetribunenews.com; sfinucane@thetribunenews.com; cboechler@newspress.com; chris.bowman@vcstar.com; news@vcstar.com; cpeterson@bakersfield.com; psmith@bakersfield.com; jcox@bakersfield.com; johnwhitaker@midvalleypub.com; aflores@americangeneralmedia.com; cwhisnand@portervillerecorder.com; jkieta@fresnobee.com; tweber@fresnobee.com; pbowman@hanfordsentinel.com; egill@hanfordsentinel.com; jkieta@fresnobee.com; bclark@modbee.com; gstapley@modbee.com; sjlyons@gannett.com; jmward@visaliatimesdelta.com; jmoore@kvpr.org; shok@kvpr.org; susan@colusacountynews.com; kabcpress@gmail.com; info@kcaaradio.com; avishay.artsy@kcrw.com; kfinewsdirector@kfi640.com; dax.davis@alphamediausa.com; knxnews@cbsradio.com; lmantle@kpcc.org; feedback@scpr.org; pd@kpfk.org; Gene@rrbroadcasting.com; info@kvcr.org; gabriel.lerner@impremedia.com; rachbold@scng.com; hfine@labusinessjournal.com; harrison.sheppard@dailynews.com; sscauzillo@scng.com; leosmith@scng.com; kmodesti@scng.com; salrodriguez@scng.com; lwilson@scng.com; ian.james@latimes.com; john.myers@latimes.com; louis.sahagun@latimes.com; allison.wisk@latimes.com; rosanna.xia@latimes.com; tony.barboza@latimes.com; phil.willon@latimes.com; george.skelton@latimes.com; nicholas.goldberg@latimes.com; monte.morin@latimes.com; robert.greene@latimes.com; ben.muessig@latimes.com; patt.morrison@latimes.com; melody.gutierrez@latimes.com; tbray@scng.com; editor@scng.com; jhorseman@scng.com; mwisckol@scng.com; macosta@scng.com; salrodriguez@scng.com; clunetta@signalscv.com; ealvarenga@signalscv.com; Susan@SusanShelley.com; msprague@scng.com; julie.makinen@desertsun.com; janet.wilson@desertsun.com; thomas.coulter@desertsun.com; jdearen@ap.org; journal@awwa.org; lbliss2@bloomberg.net; kpixnewsmanagers@cbs.com; readers@forbes.com; joe.rosato@nbc.com; jim.christie@thomsonreuters.com; jeffrey_goldberg@theatlantic.com; letters@time.com; jculver@usatoday.com; npenz@usatoday.com; chayes@usatoday.com; allysia.finley@wsj.com; jim.carlton@wsj.com; jim.carlton@wsj.com; magazine@wef.org; jwolfe@endeavorb2b.com; info@aztecanews.com; sraymundo@picketfencemedia.com; sara.cardine@latimes.com; carol.cormaci@latimes.com; sraymundo@picketfencemedia.com; jfuentes@scng.com; hbindy@latimes.com; daniel@firebrandmediainc.com; ann@ac-la.com; weitzner@ocbj.com; brennan@ocbj.com; caviles@scng.com; jfuentes@scng.com; mwisckol@scng.com; sraymundo@picketfencemedia.com; editor@sunnews.org; agalert@cfbf.com; agalert@cfbf.com; john@capitolmr.com; csampson@capitalpress.com; nicole.nixon@capradio.org; john.howard@capitolweekly.net; mwolcott@chicoer.com; dreidel@chicoer.com; editor@bayareanewsgroup.com; jhrobinson@bayareanewsgroup.com; progers@bayareanewsgroup.com; eclendaniel@bayareanewsgroup.com; mdianda@bayareanewsgroup.com; sonate@davisenterprise.net; korendor@davisenterprise.net; champton@davidenterprise.net; aternus@davidenterprise.net; gfaison@dailyrepublic.net; thansen@dailyrepublic.net; bills@goldcountrymedia.com; rsumma@appealdemocrat.com; dwilson@appealdemocrat.com; llowe@appealdemocrat.com; kfbknews@clearchannel.com; mathers84@yahoo.com; info@winedownmedia.com; marty@kzyx.org; dwyatt@mantecabulletin.com; jcampbell@mantecabulletin.com; rsumma@appealdemocrat.com; acreasey@appealdemocrat.com; ; mwolcott@chicoer.com; news@orovillemr.com; silas.lyons@redding.com; damon.arthur@redding.com; jenny.espino@redding.com; carolf@goldcountrymedia.com; lkorte@sacbee.com; cnelson@sacbee.com; mbreton@sacbee.com; sacramento@bizjournals.com; bvandermeer@bizjournals.com; newsroom@sacobserver.com; dblount@recordnet.com; gbrookshire@recordnet.com; abreitler@recordnet.com; jbungart@timesheraldonline.com; kfu@thereporter.com; news@dailydemocrat.com; rdobsonn@dailydemocrat.com; asianjournal@aol.com; carlos@thestarnews.com; jordan@coastnewsgroup.com; editor@eaglenewsca.com; eic@sdnnewspapers.com; cliffalbert@clearchannel.com; rhuard@sdbj.com; bradg@sdbj.com; kendra@sdnews.com; jeff.light@sduniontribune.com; matthew.hall@sduniontribune.com; diana.mccabe@sduniontribune.com; charles.clark@sduniontribune.com; jennifer.vangrove@sduniontribune.com; joshua.smith@sduniontribune.com; deborah.brennan@sduniontribune.com; mlee@sdcwa.org; scott.lewis@voiceofsandiego.org; williamb@timesmediainc.com; echalhoub@newsvmedia.com; bruceb@latc.com; dsparrer@barareanewsgroup.com; jgeha@bayareanewsgroup.com; mmoore@newsvmedia.com; editor@mv-voice.com; eventsandnews@dailynewsgroup.com; mangst@bayareanewsgroup.com; eclendaniel@bayareanewsgroup.com; progers@bayareanewsgroup.com; David_Houston@dailyjournal.com; info@santaclaraweekly.com; dsparrer@barareanewsgroup.com; twolverton@bizjournals.com; rfernandez@bizjournals.com; cvongsarath@community-newspapers.com; dbryant@community-newspapers.com; jeanne@timesmediainc.com; newsroom@baycitynews.com; info@bilingualweeklynews.com; dborenstein@bayareanewsgroup.com; progers@bayareanewsgroup.com; asciacca@bayareanewsgroup.com;

kalw@kalw.org; news@kalx.berkeley.edu; producers@kgoradio.com; jim.hampton@alphamediausa.com; ccabreralomeli@kqed.org; tlaurberg@KQED.org; fm@kqed.org; progers@bayareanewsgroup.com; jswartz@marinij.com; whouston@marinij.com; rhalstead@marinij.com; mary@sfbayview.com; sanfrancisco@bizjournals.com; sarah.libby@sfchronicle.com; kalexander@sfchronicle.com; matt.fleischer@sfchronicle.com; roland.li@sfchronicle.com; emilio.garcia-ruiz@sfchronicle.com; dustin.gardiner@sfchronicle.com; editor@richmondsunsetnews.com; cschwartz@sfexaminermediaco.com; letters@sfexaminer.com; pfimrite@sfchronicle.com; editor@scng.com; amouchard@scng.com; tsciacqua@scng.com; salrodriguez@scng.com; sgowen@scng.com; Susan@SusanShelley.com; snaishadam@ap.org; Tdelias@aol.com; julie@calmatters.org; ben@calmatters.org; dave@calmatters.org; dan@calmatters.org; scott_blair@mcgraw-hill.com; emartinson@eenews.net; maven@mavensnotebook.com; joviatt@calcities.org; journaleditor@awwa.org; lynn@majesticcontent.la; bcwaternews@brwncald.com; kedeleon@sbgtv.com

Subject: For Immediate Release: Sites Reservoir to Pursue Loan Through the Water Infrastructure Finance and Innovation Act

Attachments: Sites_Frequently Asked Questions - WIFIA Loan_3.15.22 Final.pdf; Sites Reservoir_Final WIFIA Release_March2022.docx

Good morning,

Please see the attached news release for Sites Reservoir, and reach out with any questions.

Sites

For Immediate Release:
March 17, 2022

Contact:
Sara M Katz
619-813-9551

Sites Reservoir to Pursue Loan Through the Water Infrastructure Finance and Innovation Act

Sacramento, Calif. – The United States Environmental Protection Agency (US EPA) formally invited the Sites Project Authority to apply for a $2.2 billion low-interest loan through the Water Infrastructure Finance and Innovation Act (WIFIA), which would bring the project significantly closer to construction and completion.

A loan through the WIFIA program could dramatically reduce the costs to participants, making it more affordable for cities, farms, and resource managers to have access to more water in dry years. Sites Reservoir is significant for California and the nation, and a substantial loan through the WIFIA program will help us realize the many environmental and water supply benefits of this project. Sites Reservoir is a beneficiary pays project, which means that the loan will be repaid by project participants.

"The significance of this opportunity cannot be overstated," said Fritz Durst, chairman of the Sites Project Authority. "We thank our federal partners and the Biden Administration for supporting Sites Reservoir in such a meaningful way."

Established by the Water Infrastructure Finance and Innovation Act of 2014, the WIFIA program is a federal loan and guarantee program administered by the US EPA. WIFIA's aim is to accelerate investment in the nation's water infrastructure by providing long-term, low-cost federal loans for regionally and nationally significant projects. The Sites Project Authority submitted a letter of intent to apply in July 2021. WIFIA funding helps finance drought resiliency projects as well as clean water and safe drinking water infrastructure projects across the United States. After a robust statutorily required review process, the WIFIA Selection Committee selected Sites Reservoir to apply for a loan.

“For Sites Reservoir to be built – bringing substantial and critical environmental benefits to California – it has to be affordable for our participants. This loan can get us there,” added Durst.

Sites Reservoir is an off-stream water storage facility that will create resiliency against the impacts of climate change. The reservoir does not dam a major river system and would not block fish migration or spawning. Sites Reservoir captures and stores stormwater flows from the Sacramento River —after all other water rights and regulatory requirements are met—for release primarily in dry and critical years for environmental use and for California communities, farms, and businesses when it is so desperately needed. One of Sites Reservoir’s greatest strengths is in its broad statewide representation including cities, counties, water, and irrigation districts throughout the Sacramento Valley, San Joaquin Valley, Bay Area, and Southern California.

For more information, visit our FAQ. For project-related images, visit our photo library.

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From: Kevin Spesert [kspesert@sitesproject.org]
Sent: 3/17/2022 10:00:03 AM
To: Nadine Bailey [Nadine@FamilyWaterAlliance.com]
Subject: Fwd: For Immediate Release: Sites Reservoir to Pursue Loan Through the Water Infrastructure Finance and Innovation Act
Attachments: Sites_Frequently Asked Questions - WIFIA Loan_3.15.22 Final.pdf

Here you go

Kevin Spesert
External Affairs Manager
Sites Project Authority
Phone (530) 632-4071

From: Ann Newton <anewton@katzandassociates.com>
Sent: Thursday, March 17, 2022 9:58 AM
To: Kevin Spesert <kspesert@sitesproject.org>
Subject: FW: For Immediate Release: Sites Reservoir to Pursue Loan Through the Water Infrastructure Finance and Innovation Act

Sites

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March 17, 2022

Contact:
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###

From: Kevin Spesert [kspesert@sitesproject.org]
Sent: 3/17/2022 10:05:11 AM
To: David Guy [dguy@norcalwater.org]
Subject: Fwd: For Immediate Release: Sites Reservoir to Pursue Loan Through the Water Infrastructure Finance and Innovation Act
Attachments: Sites_Frequently Asked Questions - WIFIA Loan_3.15.22 Final.pdf

Some good news for your Thursday...thanks for all your hard work supporting this project thru the years...we are here in a large part due to your efforts.

Thanks!

Kevin

From: Ann Newton <anewton@katzandassociates.com>
Sent: Thursday, March 17, 2022 9:58 AM
To: Kevin Spesert <kspesert@sitesproject.org>
Subject: FW: For Immediate Release: Sites Reservoir to Pursue Loan Through the Water Infrastructure Finance and Innovation Act

For Immediate Release:
March 17, 2022

Contact:
Sara M Katz
619-813-9551

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From: Jerry Brown [jbrown@sitesproject.org]
Sent: 3/17/2022 11:08:03 AM
To: Ann Newton [anewton@katzandassociates.com]; Kevin Spesert [kspesert@sitesproject.org]; Sara M. Katz [skatz@katzandassociates.com]
Subject: Re: Appeal Democrat Questions

See below

From: Ann Newton <anewton@katzandassociates.com>
Date: Thursday, March 17, 2022 at 10:15 AM
To: Jerry Brown <jbrown@sitesproject.org>, Kevin Spesert <kspesert@sitesproject.org>, "Sara M. Katz" <skatz@katzandassociates.com>
Subject: Appeal Democrat Questions

Hi All,

Please see my draft answers below to Robert Summa from the Appeal Democrat. I've highlighted the two I need help answering. Please make additions/corrections in the other answers where you see fit. Thanks!

Ann

K&A
KATZ & ASSOCIATES

Ann Newton
Director, Los Angeles
d: 310.774.7639
San Diego · Los Angeles · San Francisco

From: Robert Summa rsumma@appealdemocrat.com
Sent: Thursday, March 17, 2022 9:59 AM
To: Ann Newton anewton@katzandassociates.com
Subject: Re: For Immediate Release: Sites Reservoir to Pursue Loan Through the Water Infrastructure Finance and Innovation Act
Importance: Low

Hi Ann,

Thank you. Here are some related questions that I would want answered in order to do a much more detailed story about this news:

Is there an estimate for the total projected cost of the project? Roughly $4.4 billion. EPA uses "a financed cost estimate" to determine loan amount eligibility. This amount is derived from the published $3.93B total project cost estimate in 2021 dollars.
How much would this $2.2 billion help with that? WIFIA loans cover up to 49% of the project cost. This loan would cover a large portion of the local cost share. The state and federal cost share is separate and apart from the WIFIA loan.
Will the authority apply for the loan? Yes
If yes, then when is the authority going to apply for the loan? Within a year. It's an 18-24 process to close on the loan and start receiving funds to pay project costs. The loan interest rate is established as close so given the current interest rate environment there is a strong desire to act quickly to limit interest rate risk.
When would the money be received? Mid 2024 which is also the approximate start of field construction.

How long will it take for the money to make an impact if it is received? The impact is immediate because this loan a significant portion of the local dollars needed to support the project. it makes the project more affordable for our participating agencies.
How exactly will this money help with funding or help with getting the Sites project completed? It equates to a ~10 percent cost savings, which for a project this size, is hundreds of millions of dollars. Affordability is critical to advancing Sites.
Will this loan speed up the process for getting Sites construction started? Yes, because it provides the financing we need to get started.
If Sites is not approved for the loan or doesn't apply, how much longer would it take to start the project or get it completed? Most likely this would set the project back 18-24 months. The WIFIA process to get to this point is like a pre-qualification which means the loan approval is more a function of "when" not "if". That being said, if the WIFIA loan does not come to pass then the local cost share would need to be financed through the municipal bond market at higher interest rates which increases project costs to local agencies and jeopardizes affordability.
Just to be clear, what has actually been completed for the Sites project so far and what is the next big step? The next key steps will be submitting our water right applications next month and receiving the water right approval before the end of 2023, completing the environmental review process by the end of the year and receiving the final biological opinion and associated permits at about the same time we get the water rights completed.

Thanks, Robert

Robert Summa
Editor
Appeal-Democrat
Work: 530-749-4767
Mobile: 646-491-2900
rsumma@appealdemocrat.com

On Thu, Mar 17, 2022 at 9:49 AM Ann Newton <anewton@katzandassociates.com> wrote:

Robert—passing along this release to ensure you see it. Big news for Sites today. Please let me know if you're interested in connecting with anyone from the Sites team on this.

K&A
KATZ & ASSOCIATES
Ann Newton
Director, Los Angeles
d: 310.774.7639
San Diego · Los Angeles · San Francisco

From: Mariah Janelle Hugo <mariahjhugo@gmail.com>
Sent: Thursday, March 17, 2022 9:38 AM
To: Mariah Hugo <mhugo@katzandassociates.com>
Subject: For Immediate Release: Sites Reservoir to Pursue Loan Through the Water Infrastructure Finance and Innovation Act
Importance: Low

Good morning,

Please see the attached news release for Sites Reservoir, and reach out with any questions.

Sites

<u>For Immediate Release:</u>
March 17, 2022

<u>Contact:</u>

Sara M Katz

619-813-9551

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Mariah Hugo

She/Hers | Public Relations

Katz & Associates

KATZ & ASSOCIATES

Ann Newton

Director, Los Angeles

d: 310.774.7639

San Diego · Los Angeles · San Francisco

From: Marcia Kivett [MKivett@sitesproject.org]
Sent: 3/17/2022 12:39:15 PM
To: Randal Neudexk [rneudeck@mwdh2o.com]; Wolder, Natalie L [ntaylor@usbr.gov]; aaron.miller@water.ca.gov; molly.white@water.ca.gov; WELSH, RICHARD A. [rwelsh@usbr.gov]; King, Vanessa M [vking@usbr.gov]; Leahigh, John@DWR [John.Leahigh@water.ca.gov]; Dhillon, Devinder@DWR [Devinder.Dhillon@water.ca.gov]; 'druiz@westsidewd.com' [druiz@westsidewd.com]; White, Kristin N [knwhite@usbr.gov]; Okita, David@DWR [David.Okita@water.ca.gov]; Johnson, Levi E [lejohnson@usbr.gov]; Heydinger, Erin [erin.heydinger@hdrinc.com]; 'WVanderwaal@rd108.org' [wvanderwaal@rd108.org]; Cooke, Robert@DWR [Robert.Cooke@water.ca.gov]; Jeff Sutton [jsutton@tccanal.com]; Rob Kunde [rkunde@wrmwsd.com]; Maroney, Jagruti@DWR [Jagruti.Maroney@water.ca.gov]; DBader@usbr.gov; Jerry Brown [jbrown@sitesproject.org]
CC: Stroup, Duane [DStroup@usbr.gov]

Subject: Operations Agreement Technical Team
Attachments: 04.21.22 DWR-USBR-Sites Ops Tech Discusssions-AGN.docx; Sites-Reclamation-DWR Draft Term Sheet 10-18-21.docx; Power Annex-20210705[1].docx; Sites Close Excess - term sheet - 20220307.docx; FromUSBR-Clean-Draft_Sites_CarriageWaterAnnex_202108201 (1).docx

Start: 4/21/2022 3:00:00 PM
End: 4/21/2022 4:30:00 PM
Show Time As: Busy

Recurrence: (none)

Required Attendees: Randal Neudexk; Wolder, Natalie L; aaron.miller@water.ca.gov; molly.white@water.ca.gov; WELSH, RICHARD A.; King, Vanessa M; Leahigh, John@DWR; Dhillon, Devinder@DWR; 'druiz@westsidewd.com'; White, Kristin N; Okita, David@DWR; Johnson, Levi E; Heydinger, Erin; 'WVanderwaal@rd108.org'; Cooke, Robert@DWR; Jeff Sutton; Rob Kunde; Maroney, Jagruti@DWR; DBader@usbr.gov; Jerry Brown
Optional Attendees: Stroup, Duane

Attached is the proposed agenda for Thursday's meeting. The objectives for the meeting are as follows:

- Agree that the term sheet and annexes as developed last year will be used as a starting point for this year's discussions and ultimate operating agreement
- Develop and prioritize/order a complete list of topics that need to be further discussed over the course of the year. As noted in the agenda, here is a starter list the Sites team developed:
  - Close excess
  - Annual process for exchanges
  - Accounting for exchanges (within COA or otherwise)
  - Carriage water
  - Scheduling deliveries for export within Transfer Window

We hope to discuss this list and add any other topics that DWR and Reclamation think should be considered for inclusion in the operating agreement.

I've also attached the latest version of the term sheet along with the annexes. I did not include the water rights annex because I think it is superseded by the sections of the water right application that both DWR and Reclamation's water rights team have reviewed.

Thanks and looking forward to our discussion,

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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Sites-DWR-Reclamation Operations Agreement Technical Discussions Agenda

Affordable Water, Sustainably Managed

Our Core Values – Safety, Trust and Integrity, Respect for Local Communities, Environmental Stewardship, Shared Responsibility and Shared Benefits, Accountability and Transparency, Proactive Innovation, Diversity and Inclusivity
Our Commitment – To live up to these values in everything we do

Meeting Information:

Date: April 18, 2022 **Location:** Microsoft Teams

Start Time: 3:00 p.m. **Finish Time:** 4:30 p.m.

Purpose: Kickoff 2022 discussions on developing an operating agreement between the Sites JPA, Bureau of Reclamation, and California Department of Water Resources

Meeting Participants:

Jerry Brown, Executive Director	Robert Cooke, DWR	Natalie Taylor, Reclamation
Robert Kunde, Member (WRMWSD)	John Leahigh, DWR	Richard Welsh, Reclamation
Randall Neudeck, Member (MWD)	Aaron Miller, DWR	Vanessa King, Reclamation
Bill Vanderwaal, Member (RD108)	David Okita, DWR	Kristin White, Reclamation
Jeff Sutton, Member (TCCA)	Devinder Dhillon, DWR	Levi Johnson, Reclamation
Dan Ruiz, Member (WWD)	Jagruti Maroney, DWR	Don Bader, Reclamation
Erin Heydinger, HDR, Integration Lead	Molly White, DWR	Duane Stroup, Reclamation

Agenda:

Discussion Topic	Topic Leader	Time Allotted
1. Overview a. Introductions b. Objectives	Brown	10 min
2. Review Status of Term Sheets Objective: agree that term sheets from Nov. 2021 represent starting point for 2022 discussions	Heydinger	15 min
3. Brainstorm topics and focus areas for coming months Objective: develop full list of all topics to be covered from which a schedule/process can be developed.	All	45 min

Initial list:

- Close excess
- Annual process for exchanges
- Accounting for exchanges (within COA or otherwise)

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	• Carriage water • Scheduling deliveries for export within Transfer Window		
4.	Discuss Priorities or Logical Order of Topics Objective: determine an order that makes sense to approach list developed under agenda item no. 3	All	15 min
5.	Action Items & Next Steps	Heydinger	5 min

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Annex to the Operations Term Sheet
Between Reclamation and the Sites Project Authority

POWER GENERATION AND USE
Dated July 5, 2021

Covering the Coordinated Operations of the Central Valley Project and Sites Reservoir Project

The following table (Table 1) describes each of the locations upstream of the Delta where Sites water will be conveyed by the Sites Project Authority. For the purposes of this document, Sites water refers to water pumped, conveyed, and put to beneficial use under the Sites Project Authority's water right. Reclamation also continues to explore additional Federal involvement, including the use of Sites Reservoir to re-divert CVP water. Using Sites to re-divert CVP water would require an amendment to this annex. The table summarizes which types of power may be used based on the ownership of the facility. The table also identifies the season in which the facility would primarily be used.

Table 1. Description of power use by type of water and season.

Season of Use*	Condition	Location (attached flow chart)	Key terms of Agreement
Excess Conditions (late winter/spring)	1. Power use pumping *Sites water* into the TC and GC canals.	① ②	a. Red Bluff Pumping Plant (RBPP) – Current WAPA power service to be used to pump Sites water to all Sites Participants. If required by WAPA, pumping related to Sites water supplied with market power through separate PLOA with WAPA. PLOA with WAPA would cover Warren Act requirements. b. Hamilton City Pumping Plant (HCPP) – Current PG&E service to be used to pump Sites water for all Sites Participants. Power supply would come through GCID's participation in the Power and Water Resources Pooling Authority (PWRPA). This power use would be covered under Facilities Use Agreement

			between Sites Authority and GCID. c. Scheduling Power - WAPA is scheduling coordinator through Cal-ISO for power deliveries to RBPP. PWRPA is scheduling coordinator through Cal-ISO for power deliveries to HCPP. Sites Authority agreement with WAPA and GCID/PWRPA to cover use of facilities and scheduling services with an acceptable accounting procedure.
Excess Conditions (late winter/spring)	2. Power use conveying *Sites Water* within TC and GC canals to the Sites Reservoir	③ ④	a. TC Canal – Current WAPA power service to be used. Sites Authority agreement with WAPA to cover any power use above baseline without Sites project conditions. This power use would be covered under PLOA between Sites Authority and WAPA for pumping. b. GC Canal – Current PG&E service to be used with power supply provided through GCID's participation in PWRPA and under Facility Use Agreement between Sites Authority and GCID.
Excess Conditions (late winter/spring)	3. Power use related to pumping *Sites water* from the TC and GC canals into the Sites Reservoir	⑤	a. Funks PGP and Terminal Regulating Reservoir PGP – New power service from PGE or WAPA (tbd) with the Sites Authority. b. Administration and Maintenance Buildings - New power service from P&GE or WAPA (tbd) with the Sites Authority. c. Dam and Recreation Facilities - New power service from P&GE

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		⑥	or WAPA (tbd) with the Sites Authority.
Balanced conditions with available export capacity/reservoirs operating for exports and other demands (summer/early fall)	4. Power generation related to releasing *Sites water* to the TC and GC Canals.	⑦	a. Funks PGP Generator – Generated power wheeled to Sites power provider via reverse metering (assumed) through PG&E or WAPA (tbd) power service provider. b. TRR Generator - Generated power wheeled to Sites power provider via reverse metering (assumed) through power service through PG&E or WAPA (tbd) power service provider.
Balanced conditions with available export capacity/reservoirs operating for exports or conservation (fall/early winter)	5. Power use related to conveying *Sites water* to water users on the TC and GC Canals.	⑧ ⑨	a. TC Canal – Current WAPA power service to be used. Sites Authority agreement with WAPA to cover any power use above baseline without Sites project conditions. This power use would be covered under PLOA between Sites Authority and WAPA for pumping. b. GC Canal – Current PG&E service to be used with power supply provided through GCIDs participation in PWRPA and under Facility Use Agreement between Sites Authority and GCID. c. To NOD Refuges – Conveyance and power supply provided under current wheeling agreement between GCID and Reclamation. d. Reclamation payment for its share of power use could occur through an energy

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			exchange at federal facilities or O&M cost reimbursement.
	6. Power use related to conveying *CVP water* to water users on the TC and GC Canals.		a. Use of project use power directly at the TC Canal and through energy exchange at the GC Canal.
Balanced conditions with available export capacity/reservoirs operating for exports or conservation (fall/early winter)	7. Power use related to conveying *Sites water* from the Dunnigan Pipeline turnout at the TC Canal to the Knights Land Outfall Gate.	⑩	a. Metering and monitoring – New power service from PG&E by the Sites Authority. b. Reclamation payment for its share of power use could occur through an energy exchange at federal facilities or O&M cost reimbursement.
	8. Power use related to conveying *CVP water* from the Dunnigan Pipeline turnout at the TC Canal to the Knights Land Outfall Gate.		a. Metering and monitoring – Energy exchange with Reclamation to offset market power use at federal facilities.
Balanced conditions with available export capacity/reservoirs operating for exports or conservation (fall/early winter)	9. Power use related to conveying *Sites water* through the Delta and export pumping through the Jones Pumping Plant		a. To CVP and SWP Contractor – Power provided under Warren Act contract between Sites Participant and Reclamation. b. To IL4 Refuge – To be determined
	10. Effects of water exchange between Sites Authority and		a. To be considered, evaluated, and resolved on a case-by-case basis and incorporated as appropriate in terms and

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	Reclamation on power generation at CVP facilities.		conditions of exchange agreement.

*Shown for reference only. Power Usage in the shoulder periods is possible but not shown here.

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Sites Reservoir Project Diversions in Close Excess Conditions

The Sites Project will divert when the Delta is in excess conditions as defined under COA[1]. However, there are occurrences when excess conditions is specified in hindsight. For the purposes of this term sheet, “close excess” conditions occur when it’s unclear that the Delta is currently in excess conditions. The Sites Project may divert under close excess conditions if: 1) all other diversion criteria, as identified in the Authority’s permits and water right, are met; 2) there is a reasonable likelihood that the Delta is in excess; 3) it is anticipated that excess conditions are preserved after Sites Project diversions. If it is determined that the Authority diverted water under its water right when the Delta was not in excess, the quantity of water diverted will be estimated and returned to DWR and/or Reclamation either via exchange or through transfer into Reclamation’s storage allocation in Sites Reservoir. The method by which water is returned is to be determined jointly by DWR and Reclamation.

[1]COA defines excess conditions as follows (article 3(c)): “Excess water conditions” are period when it is agreed [by DWR and Reclamation] that releases from upstream reservoirs plus unregulated flow exceed Sacramento Valley in-basin uses, plus exports.

Sites Carriage Water Annex
(Proposed by DWR and Reclamation)

Background

Carriage water is the additional water needed for Delta outflow to compensate for the additional exports made in support of a non-Project water transfer to assure compliance with the water quality requirements of the SWP and CVP (no harm to the SWP and CVP). DWR and Reclamation perform water quality analyses to determine carriage water cost using refined methods and tools[1]. This approach is updated as new tools and methods are developed.

Sites Reservoir, as a new facility, intends to provide among other things (1) Releases to the Sacramento River that are to be exported in accordance with the procedures for Non-Project Transfer for South-of-Delta (SOD) water users and (2) Releases to the Yolo Bypass for ecosystem purposes. Sites releases to the Sacramento River would typically be provided with the expectation that those additional flows be exported for SOD participants using unused export capacity at Banks and Jones Pumping Plants. Sites releases to the Yolo Bypass are expected to occur in most years, and incidental salinity benefits as a result of the Yolo Bypass releases may be available to offset carriage water cost associated with exporting Sites Non-Project Transfers for SOD participants. The ability to use incidental salinity benefits to offset carriage water costs will ultimately be dependent on the structure and requirements of the Prop 1 benefit agreement between Sites and CDFW and the Sites water right terms.

Approach to Carriage Water for Sites

Absent the Sites releases for enhanced Yolo Bypass flows for Delta Outflow, DWR and Reclamation would calculate the carriage water for the Sites releases to the Sacramento River for SOD water users likely in a similar manner as DWR and Reclamation calculate carriage water for other non-project water transfers originating from the Sacramento River[1].

DWR and Reclamation recognize that if the Sites releases into the Yolo Bypass for Delta Outflow improve Delta water quality (and pending determination on how this Sites Yolo bypass water is classified as Delta Outflow dedication), the Sites carriage water may be adjusted (credit given) to reflect the improvement of the Delta water quality. However, if a carriage water credit is given, it would occur when the Sites releases to the Yolo Bypass occur during (1) the same year and (2) the same season as the Sites releases to the Sacramento River for SOD water users. Therefore, no such credit would be considered if the Sites releases to the Yolo Bypass occur when there are no Sites releases to the Sacramento River for SOD water users. Furthermore, there would be no carryover of the carriage water credit from one year to another and the

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[1] Description of carriage water for non-project water transfers can be found at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/State-Water-Project/Management/Water-Transfers/Files/Draft_CarriageWaterOverview_20191101_ADA.pdf. Please note that this document may be updated periodically to reflect the latest and greatest information and tools used by DWR and Reclamation.

carriage water credit shall not exceed the carriage water cost of the Sites water for SOD water users.

Due to the unique nature of the Sites facility and releases, the carriage water credit methodology will need to be determined during the first years of implementation of such flows from Sites and may be revised periodically based on additional information and improved tools and methodologies. The methodology will likely follow similar principles as described in the Draft Carriage Water Overview for Non-Project Water Transfers. Given that carriage water is intended to protect SWP and CVP from harm, DWR and Reclamation will maintain sole authority in determining carriage water costs and any potential carriage water credits associated with other Sites releases. However, DWR and Reclamation will solicit input from Sites prior to finalizing said determination and will subsequently advise Sites of said determination and the rationale for it.

This section shall not be considered as a precedent for future agreements or any DWR or Reclamation activities.

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SITES RESERVOIR

Frequently Asked Questions: **Operations**

Is Sites being built to send more water South?

Sites is being built to provide resiliency, reliability and flexibility to the statewide water supplies for all of California to adapt to the impacts of climate change to the state's water management infrastructure. The new water created by the Project and the added flexibility that comes from being able to store water will improve and enhance water management throughout California.

Is this reservoir a stand-alone, or does it work with other regional reservoirs?

Sites Reservoir is uniquely located in relation to other major components of the state and federal water projects like Shasta Lake, Lake Oroville and Folsom Lake. Sites is complementary to these existing crucial elements of statewide water management and could act to extend the functions they serve by creating flexibility to adapt to changing river and Delta management conditions. For example, Sites can be operated in coordination with Shasta Lake to preserve and enhance cold water for endangered salmon in the Sacramento River. Or Sites could contribute to the increased fresh-water flow into the Delta during drier periods to assist with salinity management of this critical estuary. Sites would not compete for the water resources stored in these state and federal facilities but would increase the total amount of managed water in storage. With the uncertainty California water managers face in the next century, having the Sites Reservoir is a necessity for statewide water management.

Does Sites Reservoir need new Delta conveyance?

No. The project is not dependent on the construction of Delta tunnels. Sites Reservoir will function independently, with or without a new Delta conveyance system. The Draft Environmental Impact Report/Statement evaluates Sites Reservoir as a standalone project.

Since Sites only receives water when there is "surplus" flow in the Sacramento River, how long is it projected now before the reservoir is full under "normal" precipitation patterns?

In California water there is no "normal" water year. Based on 82 years of past hydrology analyzed using standard models and methods, it would take, on average, approximately five to seven years for the reservoir to fill completely on first fill. In contrast, in a single water year like 2016-2017 it would have been possible to fill the reservoir in one year. Similarly, if a string of dry years was to occur, it would take longer to fill, maybe as much 10 years. Surprisingly, there tends to be "surplus" flow in the river in all years. Even in dry and critically dry years, there would be filling opportunities, albeit fairly limited.

The original construction of Los Vaqueros Reservoir in Contra Costa County provides a real-life example of the possible variability in fill rates. The first fill of the 100,000 acre-foot reservoir was expected to take five to seven years. However, the first year of operation was 1997-1998, a fairly wet year of high-quality water being available at the intakes, which allowed the reservoir first fill to be completed in just two years.

How much above the statistical normal for rainfall in the region does rainfall have to be for Sites to receive "surplus" water from the Sacramento River?

Sites is designed to divert water through existing state-of-the-art fish screens only when actual flows on the Sacramento River exceed that needed by more senior water right holders, the Delta is in "excess" conditions, and based on stringent criteria to protect aquatic resources. Sites primarily diverts flows into the Sacramento River from streams and creeks downstream of Shasta/Keswick Dams. The exception is that Sites could pick up water that gets released from these dams under flood control conditions. The operations modeling typically conducted for water projects does not rely on rainfall statistics. Instead, model simulations (CalSim) calibrated to actual flow conditions for an 82-year period covering 1921-2003 are overlayed with current permit and operating constraints to evaluate with project conditions.

How much above the statistical normal for rainfall in the region does rainfall have to be for Sites to receive "surplus" water from the Sacramento River? *(continued)*

The beneficial thing about this approach is that you can simulate future with climate change conditions which has been done for the Sites Project. The results of these with climate change simulations demonstrate that the performance of the project actually improves 5 to 10 percent with climate change. This is good for all of the project partners including the state and federal governments which are approximately 25 percent shareholders for environmental purposes.

How will this project utilize and capitalize on existing infrastructure and what does that mean for the project footprint?

Extending the performance of existing infrastructure is good public policy, good business practice and makes for a more sustainable footprint by reducing the environmental impact of the constructed work. The Project will utilize existing facilities and infrastructure to a great extent and the existing topography of the reservoir site itself is a natural bowl perfectly situated to accommodate a water reservoir. A significant portion of the 100+ miles of conveyance (canals and pipelines) involved in the Project will be existing facilities. The only new conveyance envisioned is the inlet/outlet works for the reservoir and the four miles of 10-foot diameter pipeline to convey water back to the Sacramento River between the Tehama-Colusa Canal and the Colusa Basin Drain.

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2D.1 Technical Studies Plan and Adaptive Management for Funks and Stone Corral Creeks

The Authority will prepare a Technical Studies Plan prior to construction activities to guide fisheries technical studies to be conducted prior to and during construction activities, as well as ongoing monitoring during operations. Using information from these field studies, along with currently available information, the Authority will prepare a Funks and Stone Corral Creeks flow schedule that could be incorporated into the Reservoir Operations Plan that will identify the approach for releases, including release schedules and volumes, a monitoring plan, and an adaptive management plan to maintain fish in good condition consistent with California Fish and Game Code Section 5937 in Funks and Stone Corral Creeks. Releases into Funks Creek will be made through the transition manifold at the base of Golden Gate Dam and a new pipeline that terminates at Funks Creek below the dam. These facilities will carry up to 100 cubic feet per second (cfs) with a release range of 0 to 100 cfs into Funks Creek. Releases into Stone Corral Creek will be made through the permanent outlet at Sites Dam. This outlet will have a release range of 0 to 100 cfs, with an emergency release capacity of up to 2,500 cfs.

The technical studies plan will be developed during the permitting and design process and will be adopted prior to land acquisition. Preparers of the plan will be technical experts in consultation with fisheries experts from CDFW, NMFS, and USFWS. The contents of the technical studies, which will gather data ultimately used to adaptively manage flows released into Funks and Stone Corral Creek, are described below.

2D.1.1 Fish Assemblage and Available Habitats

Purpose: Maintain fish populations below the dam in good condition in compliance with Fish and Game Code 5937. Identify and document existing fish assemblage in Stone Corral and Funks Creeks, including fish species presence and habitat use and characterization of habitats available (e.g., spawning, rearing, foraging, and sheltering habitats) at varying flow levels.

Outcomes: Quantitative and qualitative monitoring data to fully characterize the type of fish and habitat available to inform the type of releases that should be made to Funks and Stone Corral Creeks under operating conditions.

Content: Describe and enumerate existing fish assemblages in Stone Corral and Funks creeks. Characterize available spawning, rearing, foraging, and refuge habitat for native fishes following methods described in Meador et al. (1993).

Timing: Monitoring will begin a minimum of 5 years before start of operations and will continue for 5 years after start of operations. The Authority and the permitting fish agencies (NMFS, USFWS, and CDFW) will determine the frequency of the adaptive management report and timing of any adaptive management actions.

2D.1.2 Flow Characterization and Geomorphic Study

Purpose: The purpose of the flow characterization and geomorphic studies will be to characterize historic flows, including baseflow during the summer months, on Funks and Stone Corral Creeks; substrate composition; and flow levels necessary for channel maintenance.

Outcomes: A hydrogeomorphic technical study with quantitative and qualitative monitoring data to fully characterizing the existing hydrologic regime of Funks and Stone Corral Creeks, as well as the overall type and abundance of sediment available for aquatic organisms, will be developed. The study results will inform the type of releases that should be made under operating conditions, as well as potential gravel deficiencies as a result of Project operations.

Content: In order to inform the appropriate streamflows for the creeks under inquiry, a geomorphic assessment of the reaches of interest (i.e., the stream reaches below the dams) will constitute the first step in the analysis. The channel segments upstream of the dams will also be examined to provide a greater understanding of the local watershed geomorphic characteristics. The focus of the geomorphic assessment will be to determine the dominant geomorphic processes, document the landforms, and determine how the observed morphology of each creek is influenced by the hydrologic regime and the surrounding land uses. Likewise, collection of geomorphic information will aid in the determination of overall channel stability for each creek. Geomorphic indicators that will be collected could include the following:

- Channel Classification (determining if the reaches of interest are transport-limited or supply-limited)
- Local Watershed Inputs (determining any major inputs of sediment and runoff; identifying any land use changes that could alter the balance of sediment supply and runoff that could lead to future instability; and documenting any other anthropogenic features [such as pipe outfalls, rock slope protection, grade control structures, etc.])
- Hydrologic and Flow Patterns (identifying whether streamflow is perennial, intermittent, or ephemeral)
- Riparian Vegetation Condition (describing the general health of the riparian area, focusing on the amount and type of vegetative cover)
- Bankfull Width and Depth and Wetted Width (determining the hydraulic capacity of the channels by recording the geomorphic or "effective" bankfull surface)
- Bank Instability and Bank Characteristics (identifying areas fluvial erosion [erosion associated with flowing water] and bank failure [erosion associated with gravitational forces and weakening processes], as well as characteristics such as bank height, bank angle, and bank composition).
- Channel Bed Substrate Composition and Embeddedness (determining the size of the substrate materials on the channel bed, and the degree to which these materials are embedded—these conditions indicate how frequently the channel substrate is mobilized)
- Channel Complexity (determining the presence or absence of gravel bar development and evidence of scour and/or deposition; pool and riffle habitats containing in-channel structures [e.g., instream woody material] that create complexity and habitat niches for aquatic organisms)

- Degree of Channel Incision and Stage of Channel Evolution (determining how incised the channels are, providing a template for understanding geomorphic responses and processes within the immediate watershed, and identifying the evolutionary stage of the channels in order to predict future channel change)
- Cross Section and Longitudinal Profile Surveys (conducting topographic surveying as necessary to document existing conditions)

The hydrogeomorphic technical study will also examine the current hydrologic regime of Funks and Stone Corral Creeks. Consideration will be given to when and how flows will be released, whether a portion of these flows are needed to maintain fluvial geomorphic processes (based on the findings from the geomorphic assessment), and what level of variability in base flows will satisfy California Fish and Game Code Section 5937 goals consistent with the goals and objectives of the Project. Various approaches to estimate minimum streamflows to maintain ecosystem and geomorphic function, such as "the functional flow" approach suggested by Yarnell et al. (2015), the Instream Flow Incremental Methodology (IFIM) (National Biological Service, U.S. Department of the Interior 1995), and the CDFW Instream Flow Program[1] (IFP), will be investigated for their applicability to determine appropriate streamflows on Funks and Stone Corral Creeks. Coordination with the permitting agencies will be required before a chosen method is selected.

Timing: The fieldwork required to complete the hydrogeomorphic surveys will occur prior to construction of dams on Funks and Stone Corral Creeks to establish the unaltered hydraulic regime and unaltered geomorphic conditions. Post-construction monitoring will occur for 5 to 10 years after start of operations. The Authority and the relevant permitting agencies (CDFW and the Central Valley RWQCB) will determine if the frequency of monitoring can be shortened after 5 years. The specialists responsible for conducting the hydrogeomorphic surveys will coordinate directly with the permitting agencies to develop appropriate performance standards and success criteria for the hydrologic conditions (i.e., flow releases) and geomorphic conditions on both Funks and Stone Corral Creeks. The Authority and the permitting agencies will determine the timing of any adaptive management actions.

2D.1.3 Surface Water Ambient Monitoring Program Technical Study

Purpose: Stream bioassessment monitoring is a method of evaluating and monitoring the environmental health and integrity of freshwater wadeable streams by using benthic macroinvertebrates (BMI), water quality parameters, and physical habitat (PHAB) conditions indicators of stream condition. Bioassessments are especially useful in tracking the aquatic conditions before and after a project is implemented to determine the post-project effects on aquatic communities.

Outcomes: A Surface Water Ambient Monitoring Program (SWAMP) technical study (i.e., bioassessment) that focuses on the relationships between physical habitat, water quality, and benthic macroinvertebrates. The quantitative monitoring data will be used to characterize the relationships between physical habitat, water quality, and benthic macroinvertebrates to inform

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[1] https://wildlife.ca.gov/Conservation/Watersheds/Instream-Flow

the type of releases that should be made to Funks and Stone Corral Creeks under operating conditions.

Content: Stream bioassessment monitoring will be conducted using the methods described in the 2016 version of the SWAMP Standard Operating Procedures for the Collection of Field Data for Bioassessments of California Wadeable Streams: Benthic Macroinvertebrates, Algae, and Physical Habitat (Ode et al. 2016a) and SWAMP's Supplemental Guidance for the SWAMP Bioassessment Field Protocol (Ode et al. 2016b).

Various metrics are available for scoring the health of both the BMI communities (e.g., the California Stream Condition Index or CSCI) and overall PHAB (e.g., the PHAB Index of Physical Integrity or IPI). The CSCI is a statewide biological scoring tool that translates BMI data into an overall measure of stream health (Rehn et al. 2015). The IPI combines eight Geographic Information Systems-calculated metrics with 12 PHAB metrics to produce one overall IPI value (Rehn et al. 2018).

CSCI and PHAB IPI scores will be included in the reporting effort, as well as a discussion of other relevant BMI metrics (e.g., taxa richness, composition, tolerance, functional feeding groups, and habit measures). A synthesis of BMI, water quality, and PHAB data will be included in the reporting process. The SWAMP Stream Habitat Characterization Form, Full Version field forms, as well as all output data, will be provided in appendix format, along with representative photography of the sampling reaches.

The ultimate goal of the bioassessment study is to evaluate the environmental condition of both Funks Creek and Stone Corral Creek by using the indicators of stream condition, as described above. This information, along with the other studies described above, will inform the type of releases that should be made to Funks and Stone Corral Creeks under operating conditions.

Timing: The fieldwork required to complete the bioassessment surveys will occur prior to construction of dams on Funks and Stone Corral Creeks. Post-construction monitoring will occur for 5 to 10 years after start of Project operations. The Authority and the relevant permitting agencies (CDFW and the Central Valley RWQCB) will determine if the frequency of monitoring can be shortened after 5 years. The bioassessment specialists responsible for conducting the bioassessment surveys will coordinate directly with the permitting agencies to develop appropriate performance standards and success criteria for the BMI communities and PHAB conditions on both Funks and Stone Corral Creeks.

2D.1.4 Temperature Study

Purpose: To define temperatures under existing conditions and flow and storage effects on temperature in Stone Corral and Funks Creeks under post-construction conditions.

Outcomes: Temperature measurements before and after construction will be evaluated in combination with the flow characterization study (Section 2D.4.2) and Sites Reservoir storage data to evaluate:

- The temperatures that support the aquatic community under existing conditions, and

- Reservoir discharge needed to establish suitable temperatures in Stone Corral Creek downstream of Sites Dam and Funks Creek downstream of Golden Gate Dam after construction.

Content:

Once access to Stone Corral Creek is obtained, a temperature probe will be installed in Stone Corral Creek at the location of Sites Dam release, and 4 additional probes will be installed downstream from there by approximately 0.5 mile, 1 mile, 2.4 miles (near where Stone Corral Creek goes under Maxwell Sites Road), and 4.4 miles (near where TC Canal goes under Stone Corral Creek).

Once access to Funks Creek is obtained, a temperature probe will be installed in Funks Creek at the location of the I/O tower release to Funks Creek, and 2 additional probes will be installed downstream from there by approximately 0.5 mile and 1 mile (far enough upstream of Funks Reservoir to not be affected it). In addition, probes will be installed at the TC Canal inlet to Funks Reservoir, at the TC Canal outlet from Funks Reservoir, and at the Funks Creek outlet from Funks Reservoir.

As described in the RMP, once construction is complete, water temperature profiles will be measured near Golden Gate Dam once every 2 weeks at 5-foot depth intervals to inform decisions about which ports of the I/O tower to use during March through October.

The temperature probes in the creeks will continuously record hourly temperatures. Temperatures recorded prior to reservoir construction will likely be close to the equilibrium values that will be expected based on ambient meteorological conditions. These temperatures will be used along with specific fish requirements to develop target temperature ranges for post-construction conditions.

Temperatures recorded after reservoir construction will be used along with flow and storage data to determine flow and storage effects on creek temperatures. If creek temperatures cannot be accurately estimated with flow, storage, and the reservoir temperature profiles, water temperature modeling will be performed for both Sites Reservoir and Funks and Stone Corral Creeks. If modeling is necessary, models will be calibrated with the measured flow, storage, and temperature data.

Water released into Stone Corral Creek will originate from the bottom of Sites Reservoir and will likely be cooler than equilibrium values during months when the reservoir is stratified. The biggest differential between release temperatures and equilibrium values will occur when the reservoir is full and ambient conditions are hot. If it is determined that flow should be maintained in Stone Corral Creek at times when releases will be relatively cool compared to temperatures under existing conditions, lower flows will allow the water to warm farther upstream than higher flows.

Water released to Funks Creek will originate from the I/O tower and, when the reservoir is stratified, will be warmer than the water released to Stone Corral Creek. The temperatures will be warmer because the withdrawals will come from higher in the reservoir and, as described in the RMP, the I/O tower port openings will be chosen to provide 65°F or higher water temperatures during the rice growing season (May to September).

Timing: Water temperature measurements will occur before, during, and after construction. Measurements during the initial fill period will be useful for evaluating water temperature under low-storage conditions. Reservoir profile measurements and measurements at the Stone Corral Creek and Funks Creek releases may need to continue long term. Measurements downstream of the release locations could be discontinued if the following conditions are met:

- Sites Reservoir has made releases for at least 2 years when the reservoir was at least 75% full.
- Flow and storage effects on creek temperatures are understood well enough that creek temperatures can be estimated within 3°F based on meteorological conditions, flow, reservoir storage, and reservoir temperature profiles.

2D.1 Technical Studies Plan and Adaptive Management for Funks and Stone Corral Creeks

The Authority will prepare a Technical Studies Plan prior to construction activities to guide fisheries technical studies to be conducted prior to and during construction activities, as well as ongoing monitoring during operations. Using information from these field studies, along with currently available information, the Authority will prepare a Funks and Stone Corral Creeks flow schedule that could be incorporated into the Reservoir Operations Plan that will identify the approach for releases, including release schedules and volumes, a monitoring plan, and an adaptive management plan to maintain fish in good condition consistent with California Fish and Game Code Section 5937 in Funks and Stone Corral Creeks. Releases into Funks Creek will be made through the transition manifold at the base of Golden Gate Dam and a new pipeline that terminates at Funks Creek below the dam. These facilities will carry up to 100 cubic feet per second (cfs) with a release range of 0 to 100 cfs into Funks Creek. Releases into Stone Corral Creek will be made through the permanent outlet at Sites Dam. This outlet will have a release range of 0 to 100 cfs, with an emergency release capacity of up to 2,500 cfs.

The technical studies plan will be developed during the permitting and design process and will be adopted prior to land acquisition. Preparers of the plan will be technical experts in consultation with fisheries experts from CDFW, NMFS, and USFWS. The contents of the technical studies, which will gather data ultimately used to adaptively manage flows released into Funks and Stone Corral Creek, are described below.

2D.1.1 Fish Assemblage and Available Habitats

Purpose: Maintain fish populations below the dam in good condition in compliance with Fish and Game Code 5937. Identify and document existing fish assemblage in Stone Corral and Funks Creeks, including fish species presence and habitat use and characterization of habitats available (e.g., spawning, rearing, foraging, and sheltering habitats) at varying flow levels.

Outcomes: Quantitative and qualitative monitoring data to fully characterize the type of fish and habitat available to inform the type of releases that should be made to Funks and Stone Corral Creeks under operating conditions.

Content: Describe and enumerate existing fish assemblages in Stone Corral and Funks creeks. Characterize available spawning, rearing, foraging, and refuge habitat for native fishes following methods described in Meador et al. (1993).

Timing: Monitoring will begin a minimum of 5 years before start of operations and will continue for 5 years after start of operations. The Authority and the permitting fish agencies (NMFS, USFWS, and CDFW) will determine the frequency of the adaptive management report and timing of any adaptive management actions.

2D.1.2 Flow Characterization and Geomorphic Study

Purpose: The purpose of the flow characterization and geomorphic studies will be to characterize historic flows, including baseflow during the summer months, on Funks and Stone Corral Creeks; substrate composition; and flow levels necessary for channel maintenance.

Outcomes: A hydrogeomorphic technical study with quantitative and qualitative monitoring data to fully characterizing the existing hydrologic regime of Funks and Stone Corral Creeks, as well as the overall type and abundance of sediment available for aquatic organisms, will be developed. The study results will inform the type of releases that should be made under operating conditions, as well as potential gravel deficiencies as a result of Project operations.

Content: In order to inform the appropriate streamflows for the creeks under inquiry, a geomorphic assessment of the reaches of interest (i.e., the stream reaches below the dams) will constitute the first step in the analysis. The channel segments upstream of the dams will also be examined to provide a greater understanding of the local watershed geomorphic characteristics. The focus of the geomorphic assessment will be to determine the dominant geomorphic processes, document the landforms, and determine how the observed morphology of each creek is influenced by the hydrologic regime and the surrounding land uses. Likewise, collection of geomorphic information will aid in the determination of overall channel stability for each creek. Geomorphic indicators that will be collected could include the following:

- Channel Classification (determining if the reaches of interest are transport-limited or supply-limited)
- Local Watershed Inputs (determining any major inputs of sediment and runoff; identifying any land use changes that could alter the balance of sediment supply and runoff that could lead to future instability; and documenting any other anthropogenic features [such as pipe outfalls, rock slope protection, grade control structures, etc.])
- Hydrologic and Flow Patterns (identifying whether streamflow is perennial, intermittent, or ephemeral)
- Riparian Vegetation Condition (describing the general health of the riparian area, focusing on the amount and type of vegetative cover)
- Bankfull Width and Depth and Wetted Width (determining the hydraulic capacity of the channels by recording the geomorphic or "effective" bankfull surface)
- Bank Instability and Bank Characteristics (identifying areas fluvial erosion [erosion associated with flowing water] and bank failure [erosion associated with gravitational forces and weakening processes], as well as characteristics such as bank height, bank angle, and bank composition).
- Channel Bed Substrate Composition and Embeddedness (determining the size of the substrate materials on the channel bed, and the degree to which these materials are embedded—these conditions indicate how frequently the channel substrate is mobilized)
- Channel Complexity (determining the presence or absence of gravel bar development and evidence of scour and/or deposition; pool and riffle habitats containing in-channel structures [e.g., instream woody material] that create complexity and habitat niches for aquatic organisms)

- Degree of Channel Incision and Stage of Channel Evolution (determining how incised the channels are, providing a template for understanding geomorphic responses and processes within the immediate watershed, and identifying the evolutionary stage of the channels in order to predict future channel change)
- Cross Section and Longitudinal Profile Surveys (conducting topographic surveying as necessary to document existing conditions)

The hydrogeomorphic technical study will also examine the current hydrologic regime of Funks and Stone Corral Creeks. Consideration will be given to when and how flows will be released, whether a portion of these flows are needed to maintain fluvial geomorphic processes (based on the findings from the geomorphic assessment), and what level of variability in base flows will satisfy California Fish and Game Code Section 5937 goals consistent with the goals and objectives of the Project. Various approaches to estimate minimum streamflows to maintain ecosystem and geomorphic function, such as "the functional flow" approach suggested by Yarnell et al. (2015), the Instream Flow Incremental Methodology (IFIM) (National Biological Service, U.S. Department of the Interior 1995), and the CDFW Instream Flow Program[1] (IFP), will be investigated for their applicability to determine appropriate streamflows on Funks and Stone Corral Creeks. Coordination with the permitting agencies will be required before a chosen method is selected.

Timing: The fieldwork required to complete the hydrogeomorphic surveys will occur prior to construction of dams on Funks and Stone Corral Creeks to establish the unaltered hydraulic regime and unaltered geomorphic conditions. Post-construction monitoring will occur for 5 to 10 years after start of operations. The Authority and the relevant permitting agencies (CDFW and the Central Valley RWQCB) will determine if the frequency of monitoring can be shortened after 5 years. The specialists responsible for conducting the hydrogeomorphic surveys will coordinate directly with the permitting agencies to develop appropriate performance standards and success criteria for the hydrologic conditions (i.e., flow releases) and geomorphic conditions on both Funks and Stone Corral Creeks. The Authority and the permitting agencies will determine the timing of any adaptive management actions.

2D.1.3 Surface Water Ambient Monitoring Program Technical Study

Purpose: Stream bioassessment monitoring is a method of evaluating and monitoring the environmental health and integrity of freshwater wadeable streams by using benthic macroinvertebrates (BMI), water quality parameters, and physical habitat (PHAB) conditions indicators of stream condition. Bioassessments are especially useful in tracking the aquatic conditions before and after a project is implemented to determine the post-project effects on aquatic communities.

Outcomes: A Surface Water Ambient Monitoring Program (SWAMP) technical study (i.e., bioassessment) that focuses on the relationships between physical habitat, water quality, and benthic macroinvertebrates. The quantitative monitoring data will be used to characterize the relationships between physical habitat, water quality, and benthic macroinvertebrates to inform

[1] https://wildlife.ca.gov/Conservation/Watersheds/Instream-Flow

the type of releases that should be made to Funks and Stone Corral Creeks under operating conditions.

Content: Stream bioassessment monitoring will be conducted using the methods described in the 2016 version of the SWAMP Standard Operating Procedures for the Collection of Field Data for Bioassessments of California Wadeable Streams: Benthic Macroinvertebrates, Algae, and Physical Habitat (Ode et al. 2016a) and SWAMP's Supplemental Guidance for the SWAMP Bioassessment Field Protocol (Ode et al. 2016b).

Various metrics are available for scoring the health of both the BMI communities (e.g., the California Stream Condition Index or CSCI) and overall PHAB (e.g., the PHAB Index of Physical Integrity or IPI). The CSCI is a statewide biological scoring tool that translates BMI data into an overall measure of stream health (Rehn et al. 2015). The IPI combines eight Geographic Information Systems-calculated metrics with 12 PHAB metrics to produce one overall IPI value (Rehn et al. 2018).

CSCI and PHAB IPI scores will be included in the reporting effort, as well as a discussion of other relevant BMI metrics (e.g., taxa richness, composition, tolerance, functional feeding groups, and habit measures). A synthesis of BMI, water quality, and PHAB data will be included in the reporting process. The SWAMP Stream Habitat Characterization Form, Full Version field forms, as well as all output data, will be provided in appendix format, along with representative photography of the sampling reaches.

The ultimate goal of the bioassessment study is to evaluate the environmental condition of both Funks Creek and Stone Corral Creek by using the indicators of stream condition, as described above. This information, along with the other studies described above, will inform the type of releases that should be made to Funks and Stone Corral Creeks under operating conditions.

Timing: The fieldwork required to complete the bioassessment surveys will occur prior to construction of dams on Funks and Stone Corral Creeks. Post-construction monitoring will occur for 5 to 10 years after start of Project operations. The Authority and the relevant permitting agencies (CDFW and the Central Valley RWQCB) will determine if the frequency of monitoring can be shortened after 5 years. The bioassessment specialists responsible for conducting the bioassessment surveys will coordinate directly with the permitting agencies to develop appropriate performance standards and success criteria for the BMI communities and PHAB conditions on both Funks and Stone Corral Creeks.

2D.1.4 Temperature Study

Purpose: To define temperatures under existing conditions and flow and storage effects on temperature in Stone Corral and Funks Creeks under post-construction conditions.

Outcomes: Temperature measurements before and after construction will be evaluated in combination with the flow characterization study (Section 2D.4.2) and Sites Reservoir storage data to evaluate:

- The temperatures that support the aquatic community under existing conditions, and

- Reservoir discharge needed to establish suitable temperatures in Stone Corral Creek downstream of Sites Dam and Funks Creek downstream of Golden Gate Dam after construction.

Content:

Once access to Stone Corral Creek is obtained, a temperature probe will be installed in Stone Corral Creek at the location of Sites Dam release, and 4 additional probes will be installed downstream from there by approximately 0.5 mile, 1 mile, 2.4 miles (near where Stone Corral Creek goes under Maxwell Sites Road), and 4.4 miles (near where TC Canal goes under Stone Corral Creek).

Once access to Funks Creek is obtained, a temperature probe will be installed in Funks Creek at the location of the I/O tower release to Funks Creek, and 2 additional probes will be installed downstream from there by approximately 0.5 mile and 1 mile (far enough upstream of Funks Reservoir to not be affected it). In addition, probes will be installed at the TC Canal inlet to Funks Reservoir, at the TC Canal outlet from Funks Reservoir, and at the Funks Creek outlet from Funks Reservoir.

As described in the RMP, once construction is complete, water temperature profiles will be measured near Golden Gate Dam once every 2 weeks at 5-foot depth intervals to inform decisions about which ports of the I/O tower to use during March through October.

The temperature probes in the creeks will continuously record hourly temperatures. Temperatures recorded prior to reservoir construction will likely be close to the equilibrium values that will be expected based on ambient meteorological conditions. These temperatures will be used along with specific fish requirements to develop target temperature ranges for post-construction conditions.

Temperatures recorded after reservoir construction will be used along with flow and storage data to determine flow and storage effects on creek temperatures. If creek temperatures cannot be accurately estimated with flow, storage, and the reservoir temperature profiles, water temperature modeling will be performed for both Sites Reservoir and Funks and Stone Corral Creeks. If modeling is necessary, models will be calibrated with the measured flow, storage, and temperature data.

Water released into Stone Corral Creek will originate from the bottom of Sites Reservoir and will likely be cooler than equilibrium values during months when the reservoir is stratified. The biggest differential between release temperatures and equilibrium values will occur when the reservoir is full and ambient conditions are hot. If it is determined that flow should be maintained in Stone Corral Creek at times when releases will be relatively cool compared to temperatures under existing conditions, lower flows will allow the water to warm farther upstream than higher flows.

Water released to Funks Creek will originate from the I/O tower and, when the reservoir is stratified, will be warmer than the water released to Stone Corral Creek. The temperatures will be warmer because the withdrawals will come from higher in the reservoir and, as described in the RMP, the I/O tower port openings will be chosen to provide 65°F or higher water temperatures during the rice growing season (May to September).

Timing: Water temperature measurements will occur before, during, and after construction. Measurements during the initial fill period will be useful for evaluating water temperature under low-storage conditions. Reservoir profile measurements and measurements at the Stone Corral Creek and Funks Creek releases may need to continue long term. Measurements downstream of the release locations could be discontinued if the following conditions are met:

- Sites Reservoir has made releases for at least 2 years when the reservoir was at least 75% full.
- Flow and storage effects on creek temperatures are understood well enough that creek temperatures can be estimated within 3°F based on meteorological conditions, flow, reservoir storage, and reservoir temperature profiles.

Preliminary Evaluation of the Planning Aid Memorandum, Technical Memorandum

To:	Alicia Forsythe, Sites Project Authority
CC:	John Spranza, Sites Integration Laurie Warner-Herson, Sites Integration
Date:	March 21, 2022
From:	ICF
Quality Review:	Mike Hendrick (ICF)
Authority Agent Review:	N/A
Subject:	Preliminary Evaluation of the Planning Aid Memorandum

1.0 Purpose

This memorandum presents a preliminary evaluation of the August 5, 2021, Planning Aid Memorandum (PAM) provided by the U.S. Fish and Wildlife Service (USFWS) to the U.S. Bureau of Reclamation (Reclamation) for the Sites Reservoir Project (Project). The purpose of the PAM was to provide Reclamation with the USFWS's comments and recommendations regarding the Project's potential effects on biological resources for consideration in project planning and preparation of a public revised draft environmental document. The PAM was prepared under the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*). The Fish and Wildlife Coordination Act requires federal agencies proposing water resource development projects or involved in issuance of related permits or licenses to consult with the USFWS and provide equal consideration to the conservation, rehabilitation, and enhancement of fish and wildlife resources with other project purposes.

The PAM summarized early coordination between USFWS and Reclamation regarding potential Project effects of the proposed Sites Reservoir Project (Project). It provided a high-level description of the Project and USFWS's views of potential effects of the inundation of upland habitat (i.e., upland effects), increased diversions of Sacramento River water (i.e., in-river effects), and cumulative impacts associated with implementation of other projects. The PAM also summarized information and early analysis of effects provided to the USFWS by Reclamation and identified areas and concerns where the USFWS indicated that more information or analysis was needed.

The key concerns identified in the PAM are categorized as upland effects (Section 2.0), in-river effects (Section 3.0), and cumulative impacts (Section 4.0). Responses summarizing how each key concern was addressed are provided herein; the Revised Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS) released in

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November 2021 contained much of the information to address these key concerns (Sites Project Authority and U.S. Bureau of Reclamation 2021). Subsequent analysis that was developed in preparation of responses to public comments on the RDEIR/SDEIS and for the development of related permitting processes was also used to address the key concerns.

2.0 Upland Effects

Key Concern: Provide greater specificity regarding potential mitigation lands or banks for each of the habitat types for which mitigation is proposed.

Commented [SJ1]: Reclamation Comment: Note that the mitigation plan will need to discuss more than conceptual, some specifications and general criteria

Commented [SJ2R1]: The plan is in the process of being revised and will incorporate this comment

Response: Given the size of Sites Reservoir, the Sites Project Authority (Authority) will have to rely on several mitigation strategies including a mix of mitigation banks and other mitigation mechanisms. The Project's Mitigation and Monitoring Plan (Plan) that will be provided to the USFWS prior to the coordination Report and will accompany the Final EIR/EIS and the permitting documents provides. The Plan is a comprehensive mitigation planning strategy, ~~and~~ implementation approach and general criteria for species and habitats based on anticipated and permitted Project impacts on regulated biological resources. As access is currently limited to less than 1% of the Project area, a final analysis of impacts will be conducted following the final refinements of Project design and completion of on-the-ground and protocol-level biological field surveys.

Commented [SJ3]: Reclamation Comment: Add assurance for MP to be shared with service prior to coordination act report

Commented [SJ4R3]: Added text to address

Following completion of Project construction, temporary impacts will be mitigated through restoration and revegetation of areas disturbed by construction in accordance with an approved habitat restoration plan. Permanent impacts will be mitigated on site and at agency-approved (USFWS, National Marine Fisheries Service [NMFS], and/or California Department of Fish and Wildlife [CDFW]) offsite locations. Onsite compensatory mitigation may include restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or preservation of aquatic or terrestrial biological resources that occur within the proposed Project area. Offsite compensatory mitigation for the proposed Project may include the purchase of agency-approved mitigation/conservation bank credits, the establishment of third party-responsible "turn-key" mitigation/conservation bank projects, preservation of biological resources through conservation easements with private landowners, payments to in-lieu fee programs, or the establishment of permittee-responsible offsite mitigation sites. The methods for assessing resources in the project footprint, best management practices to be applied, tools available for mitigating effects of the project are discusses in chapters 9 – *Vegetation and Wetland Resources*, and 10 – *Wildlife Resources* RDEIR/SDEIS.

The Authority has conferred with USFWS about species habitat models and used this information to estimate mitigation obligations. The Authority expects to continue to work with USFWS and Reclamation as the Project moves forward and better information becomes available to define mitigation requirements.

Key Concern: Provide a better description of how increases in Level 4 refuge water will be provided and the expected benefit to migratory birds.

Commented [SJ5]: Reclamation Comment: Review the comment for coordination with the service

Commented [SJ6R5]: Added coordination text to first paragraph of response to address

Response: Security/expansion of Level 4 refuge water supply is an environmental benefit recognized by the California Water Commission in its authorization of State funding from the

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Water Storage Investment Program (WSIP). The Authority envisions that CDFW will take an active role in managing the ecosystem water and would work with CDFW to schedule and adjust releases of ecosystem water to address real-time conditions and needs. The Authority also recognizes that Level 4 refuge water may be made available to federal refuges north and south of the Sacramento–San Joaquin Delta (Delta) and as such, expects that it would provide Level 4 water to appropriate destinations based on guidance from, and coordination with the CDFW, USFWS, and Reclamation.

Table 1 below is from the *Water Storage Investment Program: Sites Reservoir Project Continuing Eligibility and Feasibility Determination* report (California Water Commission 2021). It identifies the Project's Incremental Level 4 Refuge water supply benefits in terms of water supply increases to National Wildlife Refuges, State Wildlife Areas, and privately managed wetlands projected in 2030 and 2070 as estimated based on WSIP Unit Water Values.

The Authority expects to work closely with the state and federal refuge managers to ensure this water is used effectively, including for migratory waterfowl use in winter and, as appropriate, its inclusion in the Central Valley Project Improvement Act Refuge Water Supply Program.

Table 1. Incremental Level 4 Refuge Water Supply Increases (2030 and 2070) (TAF/year)

Period	North-of-the-Delta	South-of-the-Delta [b]	Total
2030 Results			
Long-Term Average [a]	5	11	17
Wet	0	0	0
Above Normal	9	5	14
Below Normal	9	13	22
Dry	8	27	34
Critical	6	17	23
2070 Results			
Long-Term Average [a]	5	10	15
Wet	0	0	0
Above Normal	9	1	10
Below Normal	7	8	16
Dry	7	10	17
Critical	6	21	27

Source: CALSIM II.
Notes:
(a) Average weighted based on water-year frequency rates
(b) Includes both San Joaquin and Tulare Lake Refuge deliveries and based on San Joaquin Valley 60-20-20 Index Year Class.
TAF = thousand acre-feet

Key Concern: More thorough analysis of geomorphic effects of flow reduction in the higher flow range on habitat (cut bank formation, cottonwood seed dispersion/regeneration processes, wood transport) and the sensitive species that use it (e.g., bank swallows, yellow-billed cuckoo).

Commented [SJ7]: Reclamation Comment: May have ROC implications and need to crosscheck this topic

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Response: The SRH-Meander model results presented in the RDEIR/SDEIS (Chapter 7 – *Fluvial Geomorphology* ,Sites Project Authority and U.S. Bureau of Reclamation 2021) suggested that the tendency for meander is not significant among the Project alternatives and the No Action Alternative (NAA). The river meandering, bank erosion, and deposition modeling concluded that there were no significant differences in the channel alignments between existing conditions and the modeled alternatives. Thus, operational impacts on the geomorphic regime (including natural river geomorphic processes such as sediment transport and bank erosion) and existing river geomorphic characteristics (e.g., sinuosity, channel gradient, substrate composition, channel width and depth, and riparian vegetation) of the greater Sacramento River system are expected to be minimal, and consequently, impacts on sensitive species would be negligible or minimal as well. The Authority will review these results with USFWS and Reclamation to determine whether additional analysis is warranted, or additional considerations will be added to the monitoring and adaptive management plans or the Project description.

Key Concern: Additional review may be needed of the resource protection measures identified for habitats (e.g., riparian, upland, stream, and wetland) that could support special-status species including the listed valley elderberry longhorn beetle, red-legged frog, and several rare plants, which are potentially present within the impact area.

Response: As stated above, verification of species' presence and habitat suitability has been limited by lack of access to lands that would be affected by the Project. Potential wildlife resources in the study area were evaluated by reviewing existing information and identifying potentially suitable habitat with geographic information system modeling. Sources of information and modeling techniques are summarized in Chapter 10, *Wildlife Resources*, of the RDEIR/SDEIS (Sites Project Authority and U.S. Bureau of Reclamation 2021). During the development of Project environmental documents and prior to the Record of Decision, the Authority will continue to work with USFWS, Reclamation, and other regulatory agencies to review these results and verify whether the resource protection measures identified address their concerns.

3.0 In-River Effects

Key Concern: Provide a better demonstration of temperature benefit expected from opportunities to increase storage in Shasta reservoir.

Response: In coordination with Reclamation, text was developed to expand the discussion of fisheries benefits related to increased operational flexibility associated with Shasta reservoir. Additional water supply from Sites Reservoir would provide opportunities for improved management of salmonid habitat, particularly in the Sacramento River above Red Bluff Diversion Dam. By exchanging Sites Reservoir water for Central Valley Project (CVP) water, Reclamation has an additional tool to maintain and improve habitat for salmonid spawning, incubation, rearing, and migration. By delivering water to CVP contractors from Sites Reservoir, Reclamation may maintain supply in Shasta reservoir. Maintenance of supply can then be allocated in real-time management scenarios to uses that protect and enhance anadromous fish benefits, including protecting and enhancing the cold-water pool, which is essential for temperature control in the salmonid spawning reaches below Keswick Dam during Dry and Critically Dry Water Years. Maintenance of supply in Shasta reservoir may also provide a

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resource for maintaining fall flows to sustain spawning redds that persist in the wetted margins of the Sacramento River. In years when storm events are weak and pulse flows are minimal, this maintenance of supply could be used to manufacture a spring pulse flow to assist juvenile salmonids in completing their migration from the upper Sacramento River to the Delta and ultimately the Pacific Ocean. Sites Authority and its contractor will work with USBR to re-analyze various levels of USBR participation in the project to assess fisheries benefits associated with those levels of participation.

The Project would also provide an additional capability to address expected changes in precipitation and runoff patterns anticipated to result from climate change (see chapter 28 of the RDEIR/SDEIS). While long-term averages in precipitation are not expected to change, more precipitation is expected to fall as rain, resulting in a decreased snowpack and changes in runoff patterns. These changes will likely present challenges for future water management, including that for environmental benefits. The ability of the Project to capture and store water that cannot be captured and stored by Reclamation and to exchange water with Shasta reservoir creates flexibility to provide environmental benefits to anadromous fish in the upper Sacramento River under climate change scenarios.

Key Concern: In general, whenever water diversions occur, there will be an associated loss of food organisms and sediment, incidental mortality of fish at the intake screen(s), and lower survival due to lower flows and related mechanisms (predation exposure, less inundated edge cover, less food production, less suspended sediment):

A. Flow criteria at Wilkins Slough (8,000 cfs [cubic feet per second] in April and May; 5,000 cfs in other months) is likely inadequate to protect downstream migrating salmon. Suggest consideration of Michel et al. (2021).

B. Need more thorough analysis of effects of habitat reduction on survival, weighted usable area (WUA) curves do not disclose all effects associated with reduced flow

C. More complete analysis of effects of flow reductions on sturgeon migration

Response:

A. Wilkins Slough: During discussions with the State of California and others, the Authority has agreed to analyze increasing the base flow requirement at Wilkins Slough during October to May to 10,700 cfs (303 m^3/s), which is consistent with the step function identified in Michel et al. (2021) for increased Chinook salmon survival in the Sacramento River. In summary, Michel et al. (2021) looked at the challenge of implementing functional flows to optimize ecosystem improvements given the limited resources. Operations of the Project will include this revised Wilkins Slough standard and the pulse flow requirements. The following criteria have been drafted to define a qualified pulse flow event:

    1. Outmigration pulse of anadromous fish is detected based on the Project's fish monitoring program.

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2. If the 3-day forecasted average of Sacramento River flow at Bend Bridge is projected to exceed 8,000 cfs and the 3-day forecasted average tributary flow upstream of Bend Bridge (Cow Creek, Cottonwood Creek, and Battle Creek) is projected to exceed 2,500 cfs, a pulse event is initiated and diversion restrictions would begin when flows in the Sacramento River at Bend Bridge exceed 8,000 cfs and flows in the tributaries upstream of Bend Bridge cumulatively exceed 2,500 cfs and the previous day was not already in a pulse event. If no forecast data are available for Sacramento River flow at Bend Bridge, a pulse event is initiated, and diversion restrictions would begin when the 3-day trailing average of Sacramento River flow at Bend Bridge exceeds 8,000 cfs and the 3-day trailing average of tributary flow upstream of Bend Bridge (Cow Creek, Cottonwood Creek, and Battle Creek) exceeds 2,500 cfs and the previous day was not already in a pulse event.

3. A pulse event terminates 7 days after initiation or earlier if any of the following conditions occur: (1) the outmigration pulse of anadromous fish is no longer detected by the fish monitoring program; or (2) Sacramento River flow at Bend Bridge exceeds 25,000 cfs. If the Sacramento River flow at Bend Bridge exceeds 25,000 cfs during the 7-day pulse event, Project diversions may resume such that average daily diversions subtracted from Sacramento River flow at Bend Bridge continues to be at least 25,000 cfs.

4. After completion of a pulse event, the following conditions must occur before another pulse event is triggered: (1) 3-day trailing average of Sacramento River flow at Bend Bridge was less than 7,500 cfs for 7 consecutive days; and (2) 3-day trailing average of tributary flow upstream of Bend Bridge (Cow Creek, Cottonwood Creek, and Battle Creek) was less than 2,500 cfs for 7 consecutive days. Diversions are otherwise unrestricted by the Bend Bridge pulse flow protection criteria.

The Authority consulting team will be working with Reclamation to model the effects of this new operations scenario on fisheries resources affected by the Project. The Authority and its consulting team are in ongoing conversations with Reclamation, CDFW, NMFS, and USFWS to develop language to describe how these operational requirements will be implemented. For example, pulse flow criteria could be based on a 3-day trailing average as proposed in the RDEIR/SDEIS (Sites Project Authority and U.S. Bureau of Reclamation 2021) or based on a forecast from the California Nevada River Forecast Center. The operating language also needs to take into account the distance between the two diversion locations and Wilkins Slough and the travel time of flows.

B. Upstream habitat: The Authority agrees diverting flow can have effects on habitat volume and available food that are likely more limiting, and not apparent in WUA calculations. The WUA is derived from the CALSIM runs and as such the WUA's are based on monthly averages that may not accurately reflect real time operations. The analysis in Chapter 11, *Aquatic Biological Resources*, of the RDEIR/SDEIS considers factors such as temperature, flow, and the effects of flow reductions on side channel and floodplain

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habitats to support its impact determination of less than significant with mitigation for salmonids (Sites Project Authority and U.S. Bureau of Reclamation).

The Authority and its consulting team will be revising the CALSIM analysis with the updated modeling inputs associated with RDEIR/SDEIS Alternative 3 and updated flow criteria to reassess the effects on WUA. During the spring and summer of 2022, the Authority will work with Reclamation, USFWS, CDFW, and NMFS to review the revised CALSIM and related analyses to assess the adequacy of the analysis and work toward consensus on impact determinations and any measures needed to reduce impacts to less than significant levels.

C. Sturgeon: Shaffter (1997) reported spawning on white sturgeon in the Sacramento River at flows on 184 to 188 m^3/s after observing pulse of 40 m^3/s over base flow conditions. This reference appears to be the source for the concern. The Sites Authority's decision to adopt a higher Wilkins Slough flow discussed above and the proposed pulse flow protection measure incorporated in the proposed action will ensure Sites Project diversion do not cause flows to decline below those likely to influence sturgeon migration and spawning.

Key Concern: The relationship between pulses and fish movement is not a precise relationship. Longer and more frequent flows may be necessary to protect downstream-migrating juvenile salmon.

Response: The pulse flow criteria described in the RDEIR/SDEIS (Sites Project Authority and U.S. Bureau of Reclamation 2021) were developed to facilitate modeling the effect of pulse flow protection on diversions to the Sites Reservoir. The purpose of the pulse protection measure to a account for the importance of pulses in stimulating and providing for the redistribution of juvenile fish for their spawning grounds to downstream rearing areas and seaward migration (Poytress 2014, Michel 2021, Hassrick 2022). How pulses are identified in real-time operations is a current topic of discussion between the Authority and the regulatory agencies. The Authority will continue this discussion as it develops the Final EIR/EIS and ROD. The Authority will continue to work with Reclamation, USFWS, CDFW, and NMFS to develop a suitable set of pulse flow protection criteria for the initial period of Project operations. And the Authority intends to incorporate pulse protection criteria into its adaptive management plan to address the uncertainty and refine to criteria to ensure they provide the intended protections.

Key Concern: Need to address pulses as a mechanism to initiate/attract adult salmon and sturgeon up stream.

Response: The proposed pulse flow criteria will ensure pulses are protected and propagate downstream to the Delta. The maximum rate of diversion for the Project is 3,900 cfs and many pulse flow criteria far exceed that level. As presented in the RDEIR/SDEIS, the Project is not expected to impede the upstream migration of adult salmon or sturgeon (Sites Project Authority and U.S. Bureau of Reclamation 2021). In addition, the revised Wilkins Slough flow requirement will ensure that Project operations do not diminish flows below levels which may interrupt or delay the upstream migration of sturgeon. The Authority will review these results and those for new model runs that reflect revised operations criteria and Reclamation's increased Project

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involvement with the regulatory agencies and Reclamation to ensure concurrence with these findings.

Key Concern: Provide a better explanation of effects and benefits of fall pulse flows into Yolo Bypass for plankton production and discussion of consequences of reduced flow into the bypass due to reduction in flows attributable to diversions at TCCA and GCID diversions.

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Response: The effect of moving Sites Reservoir water across the Delta to the Delta export facilities on the location of X2, flows in Old and Middle River, and expected loss at the export facilities are addressed in Chapter 11 - *Aquatic Biological Resources*, and Appendix 5B3, *Delta Operations*, of the RDEIR/SDEIS (Sites Project Authority and U.S. Bureau of Reclamation 2021). The results of these analyses suggest there would be little difference in south Delta entrainment risk between the NAA and Alternatives 1, 2, and 3.

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Key Concern: More thorough analysis may be needed of the effects of exchanges on spawning and rearing habitat in the American and Feather Rivers.

Response: The effects of Project operations on temperatures in the American and Feather Rivers are discussed in Chapter 11, *Aquatic Biological Resources*; Appendix 11B, *Upstream Fisheries Impact Assessment Quantitative Methods*; and Appendix 11D, *Fisheries Water Temperature Assessment*, of the RDEIR/SDEIS (Sites Project Authority and U.S. Bureau of Reclamation 2021). The results indicate impacts from changes in temperatures are less than significant. The effects of Project operations on availability of spawning and rearing habitat in the American and Feather Rivers are also analyzed in Chapter 11 and Appendix 11K, *Weighted Usable Area Analysis*, of the RDEIR/SDEIS. The analysis suggests no significant differences between Alternatives 1, 2, and 3 and the NAA with respect to WUA. An analysis of the potential redd

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dewatering in the American and Feather Rivers was also conducted and discussed in Chapter 11. The results of that analysis suggested no significant differences among the alternatives. Data were not available to support a redd dewatering analysis on the Feather River; however, the Project operations are expected to have minimal to no effect on the low-flow channel.

These analyses will be revised to reflect the new CALSIM runs, and the Authority will be available to present and discuss those results with Reclamation, USFWS, and the other regulatory agencies.

4.0 Cumulative Impacts with Other Projects

Key Concern: Reclamation should consider the benefits of these other projects, how they would interact with the proposed project, and explain the sequence of construction/completion relative to the proposed project.

Response: The Authority understands the interest in exploring how the Project may operate in conjunction with proposed projects such as the revised Delta Conveyance Project and the Shasta Raise Project. However, these projects are presently not sufficiently developed to assess how they would be constructed and operated, and any analysis of cumulative effects would be speculative. The Authority thinks adding speculative results to the cumulative effects analysis could be misleading; Therefore, it does not plan to pursue such an analysis. For additional details, refer to Chapter 31, *Cumulative Impacts*, in the RDEIR/SDEIS (Sites Project Authority and U.S. Bureau of Reclamation 2021). Chapter 31 states "The cumulative analysis is primarily qualitative. The cumulative analysis qualitatively addresses projects listed in Table 31-1, such as Delta Conveyance Project. For many of the projects in Table 31-1 it would be speculative to define multiple parameters and assumptions within a numerical modeling effort."

5.0 References

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Sites Project Authority and U.S. Bureau of Reclamation. 2021. Sites Reservoir Project Revised Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS). November. Available: https://sitesproject.org/revised-draft-environmental-impact-report-supplemental-draft-environmental-impact-statement/

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Preliminary Evaluation of the Planning Aid Memorandum, Technical Memorandum

To:	Alicia Forsythe, Sites Project Authority
CC:	John Spranza, Sites Integration Laurie Warner-Herson, Sites Integration
Date:	March 21, 2022
From:	ICF
Quality Review:	Mike Hendrick (ICF)
Authority Agent Review:	N/A
Subject:	Preliminary Evaluation of the Planning Aid Memorandum

1.0 Purpose

This memorandum presents a preliminary evaluation of the August 5, 2021, Planning Aid Memorandum (PAM) provided by the U.S. Fish and Wildlife Service (USFWS) to the U.S. Bureau of Reclamation (Reclamation) for the Sites Reservoir Project (Project). The purpose of the PAM was to provide Reclamation with the USFWS's comments and recommendations regarding the Project's potential effects on biological resources for consideration in project planning and preparation of a public revised draft environmental document. The PAM was prepared under the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*). The Fish and Wildlife Coordination Act requires federal agencies proposing water resource development projects or involved in issuance of related permits or licenses to consult with the USFWS and provide equal consideration to the conservation, rehabilitation, and enhancement of fish and wildlife resources with other project purposes.

The PAM summarized early coordination between USFWS and Reclamation regarding potential Project effects of the proposed Sites Reservoir Project (Project). It provided a high-level description of the Project and USFWS's views of potential effects of the inundation of upland habitat (i.e., upland effects), increased diversions of Sacramento River water (i.e., in-river effects), and cumulative impacts associated with implementation of other projects. The PAM also summarized information and early analysis of effects provided to the USFWS by Reclamation and identified areas and concerns where the USFWS indicated that more information or analysis was needed.

The key concerns identified in the PAM are categorized as upland effects (Section 2.0), in-river effects (Section 3.0), and cumulative impacts (Section 4.0). Responses summarizing how each key concern was addressed are provided herein; the Revised Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS) released in

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November 2021 contained much of the information to address these key concerns (Sites Project Authority and U.S. Bureau of Reclamation 2021). Subsequent analysis that was developed in preparation of responses to public comments on the RDEIR/SDEIS and for the development of related permitting processes was also used to address the key concerns.

2.0 Upland Effects

Key Concern: Provide greater specificity regarding potential mitigation lands or banks for each of the habitat types for which mitigation is proposed.

Commented [SJ1]: Reclamation Comment: Note that the mitigation plan will need to discuss more than conceptual, some specifications and general criteria

Commented [SJ2R1]: The plan is in the process of being revised and will incorporate this comment

Response: Given the size of Sites Reservoir, the Sites Project Authority (Authority) will have to rely on several mitigation strategies including a mix of mitigation banks and other mitigation mechanisms. The Project's Mitigation and Monitoring Plan (Plan) that will be provided to the USFWS prior to the coordination Report and will accompany the Final EIR/EIS and the permitting documents provides. The Plan is a comprehensive mitigation planning strategy, ~~and~~ implementation approach and general criteria for species and habitats based on anticipated and permitted Project impacts on regulated biological resources. As access is currently limited to less than 1% of the Project area, a final analysis of impacts will be conducted following the final refinements of Project design and completion of on-the-ground and protocol-level biological field surveys.

Commented [SJ3]: Reclamation Comment: Add assurance for MP to be shared with service prior to coordination act report

Commented [SJ4R3]: Added text to address

Following completion of Project construction, temporary impacts will be mitigated through restoration and revegetation of areas disturbed by construction in accordance with an approved habitat restoration plan. Permanent impacts will be mitigated on site and at agency-approved (USFWS, National Marine Fisheries Service [NMFS], and/or California Department of Fish and Wildlife [CDFW]) offsite locations. Onsite compensatory mitigation may include restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or preservation of aquatic or terrestrial biological resources that occur within the proposed Project area. Offsite compensatory mitigation for the proposed Project may include the purchase of agency-approved mitigation/conservation bank credits, the establishment of third party-responsible "turn-key" mitigation/conservation bank projects, preservation of biological resources through conservation easements with private landowners, payments to in-lieu fee programs, or the establishment of permittee-responsible offsite mitigation sites. The methods for assessing resources in the project footprint, best management practices to be applied, tools available for mitigating effects of the project are discusses in chapters 9 – *Vegetation and Wetland Resources*, and 10 – *Wildlife Resources* RDEIR/SDEIS.

The Authority has conferred with USFWS about species habitat models and used this information to estimate mitigation obligations. The Authority expects to continue to work with USFWS and Reclamation as the Project moves forward and better information becomes available to define mitigation requirements.

Key Concern: Provide a better description of how increases in Level 4 refuge water will be provided and the expected benefit to migratory birds.

Commented [SJ5]: Reclamation Comment: Review the comment for coordination with the service

Commented [SJ6R5]: Added coordination text to first paragraph of response to address

Response: Security/expansion of Level 4 refuge water supply is an environmental benefit recognized by the California Water Commission in its authorization of State funding from the

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Water Storage Investment Program (WSIP). The Authority envisions that CDFW will take an active role in managing the ecosystem water and would work with CDFW to schedule and adjust releases of ecosystem water to address real-time conditions and needs. The Authority also recognizes that Level 4 refuge water may be made available to federal refuges north and south of the Sacramento–San Joaquin Delta (Delta) and as such, expects that it would provide Level 4 water to appropriate destinations based on guidance from, and coordination with the CDFW, USFWS, and Reclamation.

Table 1 below is from the *Water Storage Investment Program: Sites Reservoir Project Continuing Eligibility and Feasibility Determination* report (California Water Commission 2021). It identifies the Project's Incremental Level 4 Refuge water supply benefits in terms of water supply increases to National Wildlife Refuges, State Wildlife Areas, and privately managed wetlands projected in 2030 and 2070 as estimated based on WSIP Unit Water Values.

The Authority expects to work closely with the state and federal refuge managers to ensure this water is used effectively, including for migratory waterfowl use in winter and, as appropriate, its inclusion in the Central Valley Project Improvement Act Refuge Water Supply Program.

Table 1. Incremental Level 4 Refuge Water Supply Increases (2030 and 2070) (TAF/year)

Period	North-of-the-Delta	South-of-the-Delta [b]	Total
2030 Results			
Long-Term Average [a]	5	11	17
Wet	0	0	0
Above Normal	9	5	14
Below Normal	9	13	22
Dry	8	27	34
Critical	6	17	23
2070 Results			
Long-Term Average [a]	5	10	15
Wet	0	0	0
Above Normal	9	1	10
Below Normal	7	8	16
Dry	7	10	17
Critical	6	21	27

Source: CALSIM II.
Notes:
(a) Average weighted based on water-year frequency rates
(b) Includes both San Joaquin and Tulare Lake Refuge deliveries and based on San Joaquin Valley 60-20-20 Index Year Class.
TAF = thousand acre-feet

Key Concern: More thorough analysis of geomorphic effects of flow reduction in the higher flow range on habitat (cut bank formation, cottonwood seed dispersion/regeneration processes, wood transport) and the sensitive species that use it (e.g., bank swallows, yellow-billed cuckoo).

Commented [SJ7]: Reclamation Comment: May have ROC implications and need to crosscheck this topic

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Response: The SRH-Meander model results presented in the RDEIR/SDEIS (Chapter 7 – *Fluvial Geomorphology* ,Sites Project Authority and U.S. Bureau of Reclamation 2021) suggested that the tendency for meander is not significant among the Project alternatives and the No Action Alternative (NAA). The river meandering, bank erosion, and deposition modeling concluded that there were no significant differences in the channel alignments between existing conditions and the modeled alternatives. Thus, operational impacts on the geomorphic regime (including natural river geomorphic processes such as sediment transport and bank erosion) and existing river geomorphic characteristics (e.g., sinuosity, channel gradient, substrate composition, channel width and depth, and riparian vegetation) of the greater Sacramento River system are expected to be minimal, and consequently, impacts on sensitive species would be negligible or minimal as well. The Authority will review these results with USFWS and Reclamation to determine whether additional analysis is warranted, or additional considerations will be added to the monitoring and adaptive management plans or the Project description.

Key Concern: Additional review may be needed of the resource protection measures identified for habitats (e.g., riparian, upland, stream, and wetland) that could support special-status species including the listed valley elderberry longhorn beetle, red-legged frog, and several rare plants, which are potentially present within the impact area.

Response: As stated above, verification of species' presence and habitat suitability has been limited by lack of access to lands that would be affected by the Project. Potential wildlife resources in the study area were evaluated by reviewing existing information and identifying potentially suitable habitat with geographic information system modeling. Sources of information and modeling techniques are summarized in Chapter 10, *Wildlife Resources*, of the RDEIR/SDEIS (Sites Project Authority and U.S. Bureau of Reclamation 2021). During the development of Project environmental documents and prior to the Record of Decision, the Authority will continue to work with USFWS, Reclamation, and other regulatory agencies to review these results and verify whether the resource protection measures identified address their concerns.

3.0 In-River Effects

Key Concern: Provide a better demonstration of temperature benefit expected from opportunities to increase storage in Shasta reservoir.

Response: In coordination with Reclamation, text was developed to expand the discussion of fisheries benefits related to increased operational flexibility associated with Shasta reservoir. Additional water supply from Sites Reservoir would provide opportunities for improved management of salmonid habitat, particularly in the Sacramento River above Red Bluff Diversion Dam. By exchanging Sites Reservoir water for Central Valley Project (CVP) water, Reclamation has an additional tool to maintain and improve habitat for salmonid spawning, incubation, rearing, and migration. By delivering water to CVP contractors from Sites Reservoir, Reclamation may maintain supply in Shasta reservoir. Maintenance of supply can then be allocated in real-time management scenarios to uses that protect and enhance anadromous fish benefits, including protecting and enhancing the cold-water pool, which is essential for temperature control in the salmonid spawning reaches below Keswick Dam during Dry and Critically Dry Water Years. Maintenance of supply in Shasta reservoir may also provide a

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resource for maintaining fall flows to sustain spawning redds that persist in the wetted margins of the Sacramento River. In years when storm events are weak and pulse flows are minimal, this maintenance of supply could be used to manufacture a spring pulse flow to assist juvenile salmonids in completing their migration from the upper Sacramento River to the Delta and ultimately the Pacific Ocean. Sites Authority and its contractor will work with USBR to re-analyze various levels of USBR participation in the project to assess fisheries benefits associated with those levels of participation.

The Project would also provide an additional capability to address expected changes in precipitation and runoff patterns anticipated to result from climate change (see chapter 28 of the RDEIR/SDEIS). While long-term averages in precipitation are not expected to change, more precipitation is expected to fall as rain, resulting in a decreased snowpack and changes in runoff patterns. These changes will likely present challenges for future water management, including that for environmental benefits. The ability of the Project to capture and store water that cannot be captured and stored by Reclamation and to exchange water with Shasta reservoir creates flexibility to provide environmental benefits to anadromous fish in the upper Sacramento River under climate change scenarios.

Key Concern: In general, whenever water diversions occur, there will be an associated loss of food organisms and sediment, incidental mortality of fish at the intake screen(s), and lower survival due to lower flows and related mechanisms (predation exposure, less inundated edge cover, less food production, less suspended sediment):

A. Flow criteria at Wilkins Slough (8,000 cfs [cubic feet per second] in April and May; 5,000 cfs in other months) is likely inadequate to protect downstream migrating salmon. Suggest consideration of Michel et al. (2021).

B. Need more thorough analysis of effects of habitat reduction on survival, weighted usable area (WUA) curves do not disclose all effects associated with reduced flow

C. More complete analysis of effects of flow reductions on sturgeon migration

Response:

A. Wilkins Slough: During discussions with the State of California and others, the Authority has agreed to analyze increasing the base flow requirement at Wilkins Slough during October to May to 10,700 cfs (303 m^3/s), which is consistent with the step function identified in Michel et al. (2021) for increased Chinook salmon survival in the Sacramento River. In summary, Michel et al. (2021) looked at the challenge of implementing functional flows to optimize ecosystem improvements given the limited resources. Operations of the Project will include this revised Wilkins Slough standard and the pulse flow requirements. The following criteria have been drafted to define a qualified pulse flow event:

    1. Outmigration pulse of anadromous fish is detected based on the Project's fish monitoring program.

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2. If the 3-day forecasted average of Sacramento River flow at Bend Bridge is projected to exceed 8,000 cfs and the 3-day forecasted average tributary flow upstream of Bend Bridge (Cow Creek, Cottonwood Creek, and Battle Creek) is projected to exceed 2,500 cfs, a pulse event is initiated and diversion restrictions would begin when flows in the Sacramento River at Bend Bridge exceed 8,000 cfs and flows in the tributaries upstream of Bend Bridge cumulatively exceed 2,500 cfs and the previous day was not already in a pulse event. If no forecast data are available for Sacramento River flow at Bend Bridge, a pulse event is initiated, and diversion restrictions would begin when the 3-day trailing average of Sacramento River flow at Bend Bridge exceeds 8,000 cfs and the 3-day trailing average of tributary flow upstream of Bend Bridge (Cow Creek, Cottonwood Creek, and Battle Creek) exceeds 2,500 cfs and the previous day was not already in a pulse event.

3. A pulse event terminates 7 days after initiation or earlier if any of the following conditions occur: (1) the outmigration pulse of anadromous fish is no longer detected by the fish monitoring program; or (2) Sacramento River flow at Bend Bridge exceeds 25,000 cfs. If the Sacramento River flow at Bend Bridge exceeds 25,000 cfs during the 7-day pulse event, Project diversions may resume such that average daily diversions subtracted from Sacramento River flow at Bend Bridge continues to be at least 25,000 cfs.

4. After completion of a pulse event, the following conditions must occur before another pulse event is triggered: (1) 3-day trailing average of Sacramento River flow at Bend Bridge was less than 7,500 cfs for 7 consecutive days; and (2) 3-day trailing average of tributary flow upstream of Bend Bridge (Cow Creek, Cottonwood Creek, and Battle Creek) was less than 2,500 cfs for 7 consecutive days. Diversions are otherwise unrestricted by the Bend Bridge pulse flow protection criteria.

The Authority consulting team will be working with Reclamation to model the effects of this new operations scenario on fisheries resources affected by the Project. The Authority and its consulting team are in ongoing conversations with Reclamation, CDFW, NMFS, and USFWS to develop language to describe how these operational requirements will be implemented. For example, pulse flow criteria could be based on a 3-day trailing average as proposed in the RDEIR/SDEIS (Sites Project Authority and U.S. Bureau of Reclamation 2021) or based on a forecast from the California Nevada River Forecast Center. The operating language also needs to take into account the distance between the two diversion locations and Wilkins Slough and the travel time of flows.

B. Upstream habitat: The Authority agrees diverting flow can have effects on habitat volume and available food that are likely more limiting, and not apparent in WUA calculations. The WUA is derived from the CALSIM runs and as such the WUA's are based on monthly averages that may not accurately reflect real time operations. The analysis in Chapter 11, *Aquatic Biological Resources*, of the RDEIR/SDEIS considers factors such as temperature, flow, and the effects of flow reductions on side channel and floodplain

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habitats to support its impact determination of less than significant with mitigation for salmonids (Sites Project Authority and U.S. Bureau of Reclamation).

The Authority and its consulting team will be revising the CALSIM analysis with the updated modeling inputs associated with RDEIR/SDEIS Alternative 3 and updated flow criteria to reassess the effects on WUA. During the spring and summer of 2022, the Authority will work with Reclamation, USFWS, CDFW, and NMFS to review the revised CALSIM and related analyses to assess the adequacy of the analysis and work toward consensus on impact determinations and any measures needed to reduce impacts to less than significant levels.

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Lifecycle Modeling for the Sites Reservoir Project Biological Assessment

Scope of Work

prepared by UC Santa Cruz for the Sites Project Authority

March XX, 2022

1. BACKGROUND

The Sites Project Authority (SPA) is undergoing a study to evaluate the effect of operating a new off-river water storage reservoir northwest of Sacramento, California that diverts water directly from the Sacramento River. This project, called the Sites Reservoir Project (Project), would provide an additional water storage facility to secure water resources for California residents while trying to minimize take to endangered aquatic species. The Project may ~~not only includes major physical alteration to the Sacramento River system network but will also~~ change the hydrodynamics of the Sacramento River system ~~that will~~and could affect habitat for several aquatic species, including threatened and endangered salmonids.

Commented [AF1]: I changed this as we are not physically altering the Sacramento River system. In addition, I am not sure that we will be changing the hydrodynamics of the Sacramento River, so I softened that a bit. I realized that we are diverting water from the river but this generally already occurs, but I guess that I think of changes in hydrodynamics as like making the river flow backwards or something. Maybe I am thinking of something much larger and this is intended to capture both large and small changes, but it just jumped out at me.

The Sacramento River winter-run Chinook (SRWRC) salmon (*Oncorhynchus tshawytscha*) is a federally endangered species (Federal Register 1994) that relies on the Sacramento River system for all freshwater lifestages. Historically, SRWRC adults returned from the ocean in the winter and navigated up the Sacramento River to spawn in the cool spring-fed tributaries of Mount Shasta the following summer. The construction of Shasta Dam in 1938 blocked access to their historical spawning grounds, forcing SRWRC to spawn in the mainstem Sacramento River below Keswick Dam where water temperature is artificially regulated by Shasta Dam releases to provide cool water for spawning. After spawning, eggs emerge as fry where they can either rear as juveniles in the upper river or move downstream to the Yolo Bypass, lower river, Delta, or bay to continue growth before outmigrating to the ocean as smolts the following winter/spring. Because SRWRC exist throughout the Sacramento River in several lifestages, the Project may affect the habitat for multiple SRWRC freshwater lifestages. As mandated by the Endangered Species Act, major construction requires that the operating agency conducts a Biological Assessment to quantify the impacts on threatened and endangered species and their habitat. In 2011, the findings from the Consolidated Salmonid Cases argued that lifecycle models are a necessary tool to quantify the effect of habitat modification and water operations on the overall population dynamics of salmonid species, including SRWRC.

The winter-run Chinook salmon lifecycle model (WRLCM) was initially developed in 2014 (Hendrix et al) to evaluate the effect of water operations on the population dynamics of SRWRC. The WRLCM has since been used to successfully evaluate the effect of alternative water management actions and large-scale modifications to the Sacramento River system in the Biological Opinion for the California WaterFix Project in Central Valley, California (Hendrix et al. 2017) and to evaluate the effect of alternative management actions without physical modifications in the Biological Opinion on Long-term Operation of the Central Valley Project and the State Water Project (Hendrix et al. 2019). Through these implementations of the model, the WRLCM was used to predict how proposed actions affect population metrics including cohort replacement rate, escapement, and smolt production. The implementation of the WRLCM to evaluate water operations is a significant advancement over lifestage-specific models because it can integrate the effect of water operations across the entire lifecycle and multiple environmental conditions. Therefore, the WRLCM is one of the most appropriate tools to evaluate the effect of proposed Project operations on the population dynamics of SRWRC.

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Commented [AF2]: Erin – what do you think – do we really need to say this? I guess I am fine if this is in their proposal, but not comfortable if this is in a scope of work – which the Authority would be signing. IDK, I just feel like it goes too far and discounts our other analysis efforts. What do you think?

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2. DESCRIPTION OF WORK

This Scope of Work includes an application of the WRLCM to evaluate the effects of proposed Project operations on SRWRC population dynamics to inform SPA's Biological Assessment. SPA has planned a 3-phased approach to evaluating proposed Project operations on SRWRC population dynamics. Each phase consists of running three proposed Project operations: two action alternatives and one baseline (no project). The third and last phase will consist of proposed Project operations that are informed by the results of the first two phases. Therefore, our Scope Of Work is categorized into three tasks. Task 1 includes all work associated with the first batch of three scenarios. Task 2 includes all work associated with the second batch of three scenarios. Task 3 includes all work associated with the last batch of three scenarios, following SPA's review of the results from the first two tasks.

Our proposed work supports both University of California (UC) Santa Cruz staff and staff from a subconsultant, QEDA Consulting, LLC (QEDA). Together, UC Santa Cruz and QEDA staff comprise the lead model developers for both the WRLCM and the submodels upon which the WRLCM depends. Submodels include habitat capacity models and the enhanced Particle Tracking Model (ePTM), which can be used to estimate outmigration survival through the Delta. UC Santa Cruz and QEDA staff have an on-going collaboration that fosters continued model improvement and seamless transitions between submodels.

This Scope of Work is generated with the expectation that we use most up-to-date versions of our models to evaluate proposed Project operations, including the ePTMvII to evaluate Delta smolt survival, and the WRLCM v.1.5 to evaluate SRWRC population dynamics. We also assume there are no changes in geometry from DSM2 v.8.0.6 or the CalSimII version that was provided by SPA as an example on March 2, 2022. If there are any reasons that necessitate using different versions of these models or changes to system geometry, UC Santa Cruz will discuss these changes with SPA and make any necessary changes to the timeline and/or budget.

Table 1 below describes the expected timeline for each Task and Subtask proposed in this Scope of Work. Based on Table 1, we expect each task will take 2-3 months to complete. Although it is possible to analyze separate tasks in parallel, we require at least 1 month between starting the analyses on separate tasks to stagger when submodels are run for a given task.

Table 1. Description of subtasks and timelines for Tasks 1, 2, and 3.

Sub-Task	Timeline		
	Task 1: 3 scenarios	**Task 2: 3 scenarios**	**Task 3: 3 scenarios**
1: Project Management	all weeks	all weeks	all weeks

2: Database Management	2 weeks	2 weeks	2 weeks
3-4: Generate Estimates for Habitat Capacity (Subtask 3) and Delta Smolt Survival (Subtask 4)[1]	5 weeks	4 weeks	4 weeks
5: Generate WRLCM results	2 weeks	2 weeks	2 weeks
6: Communicating WRLCM results	2 weeks	2 weeks	2 weeks
TOTAL DURATION	**11 weeks**	**10 weeks**	**10 weeks**

[1] Subtasks 3 and 4 are combined in the timeline because some components can be executed in parallel.

TASK 1: Evaluating effects of initial 3 proposed Project operations on SRWRC population dynamics

Subtask 1: Project Management

Project management includes the UC Santa Cruz Principal Investigator and support for administrative staff. The UC Santa Cruz Principal Investigator will serve as the point of contact between UC Santa Cruz and SPA, ensure project progress and deliverables, and attend meetings with SPA. Administrative staff for UC Santa Cruz's Fisheries Collaborative Program will provide several resources including contract support and human resources.

Subtask 2: Database Management

UC Santa Cruz staff will maintain a SQL database to house data received from SPA for each proposed action. This database will store results from CalSim II and the HEC5Q model to simulate temperature in the Sacramento River. Database Management also includes translation between SPA's CalSimII geometry and the CalSim3 geometry used in the development of the WRLCM and its submodels. The generation of this database will allow for repeatability of WRLCM results.

Subtask 3: Generate Habitat Capacity Estimates

Habitat capacity models estimate the number of individuals that saturate a given habitat area with specific environmental conditions. Within the WRLCM, habitat capacity estimates inform the density dependent movement function to determine if fry remain in a given geographic area (i.e., upper river, lower river, Yolo Bypass, Delta, or bay) or move downstream. Finescale estimates of habitat capacity (i.e., by DSM2 node) are also directly incorporated into the ePTMvII to inform the distribution of fry and subsequent location of the origin of smolts in the Delta. Therefore, habitat capacity models are important submodels that directly inform both the WRLCM and the ePTMvII. UC Santa Cruz staff includes the lead model developers for both habitat capacity models. UC Santa Cruz staff will generate estimates of habitat capacity for all geographic areas of the WRLCM (upper river, lower river, Yolo Bypass, Delta, and bay), and for all DSM2 nodes in the Delta according to methods described in Hendrix et al (2019). This subtask also includes translation between SPA's DSM2 v.8.0.6 geometry and the DSM2 v.8.2 geometry used in the development of the WRLCM and its submodels.

Subtask 4: Generate Delta Smolt Survival Estimates

The ePTMvII is a mechanistic model that combines hydrodynamics and fish behavior to simulate Delta survival and routing for outmigrating smolts. Therefore, the ePTMvII submodel estimates the important vital rate of Delta smolt survival for the WRLCM. An earlier version of the ePTM (ePTM vI) was used in the Biological Opinion for the California WaterFix Project in Central Valley, California (Hendrix et al. 2017) to estimate smolt survival and has recently undergone substantial improvement to better represent outmigration survival in the Delta. Lead developers of the ePTMvII work at both UC Santa Cruz and QEDA and thus staff from both groups will work on this Subtask. This Subtask is split into Part A and Part B to reflect the work done by each group. This subtask also includes translation between SPA's DSM2 v.8.0.6 geometry and the DSM2 v.8.2 geometry used in the development of the WRLCM and its submodels.

Part A (QEDA Consulting):

Dr. Doug Jackson is the lead programmer at QEDA and serves as a core member of the ePTMvII development team lead by UC Santa Cruz. The ePTMvII is a complex model that is computationally expensive because it layers fish behavior on top of finescale hydrodynamic data from DMS2 Hydro. Dr. Jackson has extensive knowledge of both the ePTMvII and computer programming and as a result has developed a way to expedite running the ePTMvII using the Amazon Web Services (AWS) Cloud Platform. While this requires an additional cost, it significantly reduces computation time and allows for faster generation of ePTMvII results.

Part B (UC Santa Cruz):
Dr. Vamsi Sridharan is an Assistant Project Scientist at UC Santa Cruz and has been the team lead for ePTMvII development since the first pilot application in 2015 (Sridharan and Byrne 2015). Once the ePTMvII runs are completed by QEDA, Dr. Sridharan will translate the ePTMvII results to the monthly scale required by the WRLCM. Dr. Sridharan will achieve this by post-processing the results of the ePTMvII runs into a tabulated set of 1000 replicate river and floodplain rearing smolts. He will also incorporate the Delta habitat capacity calculations to renormalize the ePTMvII predicted through-Delta survivals to estimate 1000 replicate habitat-capacity weighted through-Delta survivals of Delta-rearing smolts. These replicates allow uncertainty to be propagated along with survival estimates within the WRLCM.

Subtask 5: Generate WRLCM results

The WRLCM is a spatially and temporally explicit stage-structured simulation model that has been used in previous Biological Opinions (Hendrix et al, 2017, 2019) to evaluate the effect of Central Valley Project and State Water Projects on SRWRC population dynamics. Dr. Noble Hendrix is a Quantitative Ecologist at QEDA and is the lead model developer for the WRLCM (Hendrix et al. 2014, 2017, 2019), which was previously used to evaluate proposed projects under Cal Water Fix (Hendrix et al 2017) and the ROC LTO (Hendrix et al 2019). Therefore, QEDA will take the lead on generating typical WRLCM results for evaluating population dynamics. Results will include relative differences between baseline and alternative scenarios in population metrics such as the cohort replacement rate, escapement, Delta smolt survival, and smolt production. Relative comparisons are necessary to avoid confusion between modeled fish with historically observed numbers of fish. QEDA will work with the SPA and UC Santa Cruz staff to coordinate the development of these outputs in a manner that is appropriate given the WRLCM assumptions and limitations.

Subtask 6: Communicating WRLCM results
Both UC Santa Cruz and QEDA will be involved with communicating WRLCM results to SPA. This Subtask is split into Part A and Part B to reflect the work done by each group.

Part A (QEDA Consulting):

QEDA will contribute to at least two presentations to discuss WRLCM results with SPA. The first presentation will occur after the completion of Task 1 (Subtasks 1 through 5) to discuss model results. Before this meeting, QEDA will disseminate the following figures:

- Summary of WRLCM population metrics, including differences in cohort replacement rate, escapement, Delta smolt survival, and smolt production under the baseline and compared to each of the alternatives.
- Summary of Delta smolt survival by month (generated in Subtask 4)
- Summary of habitat capacity by month (generated in Subtask 3)

Following discussion with SPA, QEDA will revise figures as needed and will attend an additional meeting with SPA to discuss the final suite of figures and associated text.

QEDA will also contribute to a WRLCM model description that can be available for use as an Appendix to the Project BA. This model description will include the details of model calibration and will be similar to those included as Appendices to previous Biological Opinions (Hendrix et al. 2017, Hendrix et al. 2019). The model description will include:

- Description of the WRLCM model structure and parameter values used in the evaluation of the Project
- Description of the ePTMvII version and its assumptions used in the WRLCM to evaluate the Project scenarios
- Description of WRLCM components that reflect modifications to the existing system (e.g., effect of Fremont Weir notch on probability of entry into the Yolo Bypass)

QEDA will also review sections of the Project BA pertaining to interpretation of the WRLCM. This review will allow QEDA staff the opportunity to ensure that SPA's interpretation of model results are consistent with the capabilities and limitations of the WRLCM.

Part B (UC Santa Cruz):

UC Santa Cruz staff will contribute to final figures summarizing WRLCM and will participate in all presentations to SPA. UC Santa Cruz staff will also review sections of the Project BA pertaining to interpretation of the WRLCM. This review will allow UC Santa Cruz staff the opportunity to ensure that SPA interpretation of model results are consistent with the capabilities and limitations of the WRLCM.

TASK 2: Evaluating effects of a second batch of 3 proposed Project operations on SRWRC population dynamics

Subtask 1: Project Management

Subtask 1 is identical for all Tasks. See Task 1, Subtask 1 for details.

Subtask 2: Database Management

Subtask 2 is identical for all Tasks. See Task 1, Subtask 2 for details.

Subtask 3: Generate Habitat Capacity Estimates

Subtask 3 is identical for all Tasks. See Task 1, Subtask 3 for details.

Subtask 4: Generate Delta Smolt Survival Estimates

Subtask 4 is identical for all Tasks. See Task 1, Subtask 4 for details.

Subtask 5: Generate WRLCM

Subtask 5 is identical for all Tasks. See Task 1, Subtask 5 for details.

Subtask 6: Communicating WRLCM results

Both UC Santa Cruz and QEDA will hold one meeting (virtual) with SPA consultant's team to discuss results from all proposed actions including those developed in Task 2. Finally, QEDA will incorporate the WRLCM outputs from the scenarios developed under Task 2 into the final suite of figures.

TASK 3: Evaluating effects of a third batch of 3 proposed Project operations on SRWRC population dynamics

Subtask 1: Project Management

Subtask 1 is identical for all Tasks. See Task 1, Subtask 1 for details.

Subtask 2: Database Management

Subtask 2 is identical for all Tasks. See Task 1, Subtask 2 for details.

Subtask 3: Generate Habitat Capacity Estimates

Subtask 3 is identical for all Tasks. See Task 1, Subtask 3 for details.

Subtask 4: Generate Delta Smolt Survival Estimates

Subtask 4 is identical for all Tasks. See Task 1, Subtask 4 for details.

Subtask 5: Generate WRLCM

Subtask 5 is identical for all Tasks. See Task 1, Subtask 5 for details.

Subtask 6: Communicating WRLCM results

Both UC Santa Cruz and QEDA will hold one meeting (virtual) with SPA consultant's team to discuss results from all proposed actions including those developed in Task 3. Finally, QEDA will incorporate the WRLCM outputs from the scenarios developed under Task 3 into the final suite of figures.

3. DELIVERABLES AND SCHEDULE

Table 2 below provides descriptions of the project deliverables and approximations of estimated completion dates.

Table 2. Description and estimated completion date for project deliverables. The Estimated Completion Date for all deliverables is the number of weeks after UCSC receives SPA model outputs for a given task. Initially, UCSC expects to receive SPA model outputs for Task 1 by 5/2/2022, for Task 2 by 7/1/2022 and for Task 3 by 10/1/2022. If there is any delay in receiving model inputs from SPA or to the contract start date, the estimated completion dates will be shifted by the same number of days as the delay.

Commented [AMO3]: Check with Sites team re: anticipated timeline for each batch.

Deliverable Number	Deliverable Description	Estimated Completion Date
UCSC-01-01	Provide Final WRLCM modeling schedule once Task 1 scenarios are delivered	*+ 1 wk (5/9/2022)*

UCSC-01-02	Provide summary of WRLCM population metrics (e.g. CRR and escapement), Delta smolt survival by month, and habitat capacity by month for Task 1 scenarios	*+ 9 wk (7/5/2022)*
UCSC-01-03	Provide Final figures summarizing WRLCM results for Task 1 scenarios	*+ 11w (7/19/2022)*
UCSC-01-04	Provide WRLCM model description (e.g. description of model structure and assumptions)	*+ 13w (8/2/2022)*
UCSC-01-05	Provide written and verbal comments on interpretation of WRLCM results in Draft Project BA sections for Task 1 scenarios	*+ 13 wk*
UCSC-02-01	Provide Final WRLCM modeling schedule once Task 2 scenarios are delivered	*+ 1 wk*
UCSC-02-02	Provide summary of WRLCM population metrics (e.g. CRR and escapement), Delta smolt survival by month, and habitat capacity by month for Task 2 scenarios	*+ 8 wk*
UCSC-02-03	Provide Final figures summarizing WRLCM results for Task 2 scenarios	*+ 10 wk*
UCSC-02-04	Provide written and verbal comments on interpretation of WRLCM results in Draft Project BA sections for Task 2 scenarios	*+ 12 wk*
UCSC-03-01	Provide Final WRLCM modeling schedule once Task 3 scenarios are delivered	*+ 1 wk*
UCSC-03-02	Provide summary of WRLCM population metrics (e.g. CRR and escapement), Delta smolt survival by month, and habitat capacity by month for Task 3 scenarios	*+ 8 wk*
UCSC-03-03	Provide Final figures summarizing WRLCM results for Task 3 scenarios	*+ 10 wk*
UCSC-03-04	Provide updates to WRLCM model description (e.g. description of model structure and assumptions) based on Task 3 scenarios, if applicable	*+ 12 wk*
UCSC-03-05	Provide written and verbal comments on interpretation of WRLCM results in Draft Project BA sections for Task 3 scenarios	*+ 12 wk*
UCSC-04-00	Submit any remaining deliverables to close contract	*12/31/2022*

4. BUDGET

The total project budget for this agreement is $XXX,XXX (Table 3). The budget includes salaries and benefits for UC Santa Cruz staff, and costs through QEDA's subaward, which includes both staffing and Amazon Web Services. We assume there will be no travel, and all meetings will be hosted virtually. Please refer to additional documents for more detailed budget information.

Table 3. Estimated project costs.

Description	Total Cost
UCSC Staff Salaries	$XX,XXX
UCSC Staff Benefits	$XX,XXX
Indirect Costs	$XX,XXX
QEDA Consulting LLC (subaward)	$XX,XXX
PROJECT TOTAL	**$XXX,XXX**

5. TERM OF CONTRACT, FUNDING, AND INVOICING

The term of this agreement shall be May 1, 2022 or upon execution, whichever is later, through December 31, 2022. The total amount of this contract is $XXX,XXX. Invoices will be submitted to SPA bimonthly to pay for the work conducted by UCSC and sub-contractor QEDA Consulting, LLC.

Commented [AMO4]: Check with Sites re: anticipated start date

Commented [AMO5]: we may want to stretch this out farther, given past issues, to avoid the need for a NCTE? Check with Sites and their timeline

6. REFERECES

Federal Register. 1994. Endangered and Threatened Species; Status of Sacramento River Winter-run Chinook Salmon; Final Rule. Federal Register, Volume 59.

Hendrix, N., Criss, A., Danner, E., Greene, C.M., Imaki, H., Pike, A., and Lindley, S.T. 2014. Life cycle modeling framework for Sacramento River Winter run Chinook salmon. NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-530 U.S. 1-27.

Hendrix, N., Jennings, E., Criss, A., Danner, E., Sridharan, V., and Lindley, S.T. 2017. Model Description for the Sacramento River Winter-run Chinook Salmon Life Cycle Model. Prepared for the 2017 Biological Opinion for the California WaterFix Project in Central Valley, California.

Hendrix, N., Osterback, A.-M.K., Jennings, E., Danner, E., Sridharan, V., and Lindley, S.T. 2019. Model Description for the Sacramento River Winter-run Chinook Salmon Life Cycle Model. Prepared for the 2019 Biological Opinion on Long-term Operation of the Central Valley Project and the State Water Project.

Sridharan V., and Byrne B. 2015. Enhanced Particle Tracking Model (ePTM): status of model development and pilot application during WY 2015. Sacramento (CA): National Marine Fisheries Service, National Oceanographic and Atmospheric Administration. Report Submitted to the independent review committee of the Delta Science Panel on the Long Term Operations and Biological Opinions. 90 p.

Email:
ctwilliams2012@yahoo.com

First Name:
Clyde

Message:
Where is the REIR now?

Commented [SH1]: The Revised Draft EIR/Supplemental Draft EIS was released on Nov. 12, 2021 for a 77-day public review and comment period, which ended on January 28, 2022. The Sites Project Authority and U.S. Bureau of Reclamation are preparing the Final EIR/EIS, which is expected to be completed in Fall 2022. The Final EIR/EIS will include responses to comments received during the Revised Draft EIR/Supplemental Draft EIS comment period.

Please continue to stay in touch via sitesproject.org to stay updated on the latest news.

Email:
wve5eml@gmail.com

First Name:
Will

Message:
I am doing some homework to understand Sites Reservoir. Is this chart an accurate presentation of the numbers?
Thank you,
-Will

Well, apparently my chart is not permissible. Had Sites been in operation, would approximately 31,000 acre feet have been stored in Jan -Feb 2021, and 226,000 acre feet stored in Oct 2021 - Jan 2022 ?

Thank you.

Commented [SH2]: I think this is correct – can we confirm?

Name: Erik Zinn
Email: enzinn@gmail.com
Message: I have followed this project closely for what seems like decades, as a duck hunter in the Northern Sacramento Valley and as a consulting engineering geologist in Santa Cruz. I am both happy and chagrined at the project status. It seems clear to most of us that are involved in water supply projects in California that we need the Sites Reservoir, and more water storage projects like it ASAP. In any event, thanks for pushing this project - it will probably end up being essential to our survival in California. I wish I could apply my skills as a geologist and be part of the project!

Keep up the good work.

Sincerely,

Erik Zinn

Name: Anna N. Bolla
Email: annanbolla@gmail.com
Message: I am a lifelong California resident & homeowner. My primary residence is in Richmond & I own a second property in Stonyford. I have strong ties to Colusa County & I'm interested in learning more about the project & any possible job openings.

I have a Class A license (with 11 years of experience) & I have worked in the public sector now since 2010.

This never ending drought will have long-reaching consequences for future generations & I fully support the Sites Reservoir project.

Email:
iantreat@gmail.com

First Name:
Ian

Message:
About 80% of California's developed water projects go to a handful of agribusinesses that benefit from water subsidized by taxpayers. The Sites Reservoir may market itself with pictures of residential faucets, but the people living in its watershed will never benefit from it. California's water may be another security on a trading floor, but the people will continue to resent exploitation by profiteers.

From: John Brower <jxbxhome@gmail.com>
Sent: Thursday, March 17, 2022 3:02 PM
To: info@sitesproject.org
Subject: Sites Reservoir, Aqueduct, and Deschutes River

I learned today that there will be funding for the Sites Reservoir. I would like to share something that I am sure was looked into, but wanted to make sure I shared.

Central Oregon has similar concerns about sustainability for farmers and aquatic life that California does. The Irrigation Districts have decided to pipe the irrigation canals for water taken from the Deschutes River. The estimates for evaporation in the canals are about 40%. When piped, it will significantly reduce the loss. This will give the Deschutes River increased flow.

I wonder if there has been consideration given to piping the California Aqueduct? At 13,100 cfs a reduction in loss of any magnitude even close to 40% would be amazing. Maybe less water siphoned from the Sacramento River.

Here is the environmental impact report from Central Oregon Irrigation District.

Commented [SH3]: Dear Erik,

Thank you so much for your support. We believe that Sites Reservoir is the best insurance policy for future droughts and water resiliency in California. We count on supporters like yourself to keep the interest alive in construction of this project.

Please continue to stay in touch via sitesproject.org to stay updated on the latest news.

Best,
The Sites Project team

Commented [SH4]: Hi Anna,

Thank you so much for your support. We believe that Sites Reservoir is the best insurance policy for future droughts and water resiliency in California. We count on supporters like yourself to keep the interest alive in construction of this project.

Please continue to stay in touch via sitesproject.org to stay updated on the latest news.

Best,
The Sites Project team

Commented [SH5]: Please advise.

Commented [SH6]: Please advise.

Central Oregon Irrigation District – COID Piping

Thank you, sincerely hope all works, John Brower Bend, OR

Good afternoon,

My name is Andre Hawks and we are interested in the Sites Reservoir project and were wondering the status of the design of the Reservoir. We are a SBE/DBE Design Build Heavy Civil construction company that would like to work on this project.

Please find attached our capability statement and COI.

Commented [SH7]: Please advise.

Sites Reservoir Project

Schedule

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#	Activity ID	Activity Name	Remaining Duration	Start	Finish
1		**Sites Reservoir Project**	2188	02-Jan-20 A	03-Sep-30
2		**Project Milestones**	2079	16-Aug-22	03-Sep-30
3	WP3-015	Contracting Strategy Completed	0		16-Aug-22
4	MS-250-FE	Final EIR/EIS	0		02-Mar-23
5	MS-450-RD	ROD Signed	0		10-Apr-23
6	WR-185	Water Right Permit Issued	0		28-Dec-23
7	WP3-025	Investor Commitment (needs Predecessors)	0		12-Feb-24
8	MS-500-CS	Construction Starts	0	23-May-25	
9	WP3-010	Phase 2 Amendment 3 Complete	0		07-Aug-25*
10	MS-510-CC	Construction Complete	0		25-Oct-29
11	MS-600-PB	Public Beneficial Occupancy - Sites Program	0		03-Sep-30
12		**Planning**	481	01-Sep-20 A	14-Feb-24
13		**Key Deliverables**	21	24-Jan-22 A	12-Apr-22
14	KD-1130	Complete Updated Master Project Schedule	21	24-Jan-22 A	12-Apr-22
15	KD-1290	Formalize AB/RC Governance & Delegation of Authority for Phase 3 (needs development)	21	14-Mar-22	12-Apr-22
16		**Local Agency Agreements & Permits**	400	08-Jul-22	14-Feb-24
17		**Colusa County**	400	08-Jul-22	14-Feb-24
18	LOC-050	Colusa County General Plan & Zoning	400	08-Jul-22	14-Feb-24
19		**Glenn County**	400	08-Jul-22	14-Feb-24
20	LOC-140	Glenn County General Plan & Zoning	400	08-Jul-22	14-Feb-24
21		**Yolo County**	400	08-Jul-22	14-Feb-24
22	LOC-90	Yolo County General Plan & Zoning	400	08-Jul-22	14-Feb-24
23		**US Bureau of Reclamation Warren Act**	311	01-Jun-21 A	08-Jun-23
24	FED-090	Prepare Warren Act Contract (who?, Ali, JP?)	291	01-Jun-21 A	10-May-23
25	FED-110	Executed Warren Act Contract	20	11-May-23	08-Jun-23
26		**Facility Use Agreeements**	325	27-Aug-21 A	28-Jun-23
27	FO-1020	Final TCCA Facility Use Agreement (JP & ?)	325	27-Aug-21 A	28-Jun-23
28	FO-1030	Final GCID Facility Use Agreement	325	27-Aug-21 A	28-Jun-23
29	FO-1040	Final CBDA Facility Use Agreement	325	27-Aug-21 A	28-Jun-23
30	KD-1230	Execute Final Facilities Use Agreements	0		28-Jun-23
31		**NAHC/Local Tribes AB 52 Consultation**	148	01-Sep-20 A	12-Oct-22
32	STA-120	NAHC/Local Tribes AB 52 Consultation (move to Laurie/Planning?)	148	01-Sep-20 A	12-Oct-22
33		**Reservoir Operations & Modeling**	789	01-Nov-20 A	23-Apr-25
34	KD-1220	Negotiate & Execute Benefits Contracts with DWR & CDFW (move to Erin?)	21	14-Mar-22	12-Apr-22
35	OS-1150	Develop Sites-Specific Model	344	29-Dec-23	23-Apr-25
36		**Operations Plan - Version 2**	260	29-Dec-23	26-Dec-24
37	KD-1510	Operations Plan, Version 2	260	29-Dec-23	26-Dec-24
38		**Final Sites DWR/Reclamation Operating Agreement**	151	04-Apr-22	04-Nov-22

Remaining Level of Effort | Remaining Work | Summary
Actual Level of Effort | Critical Remaining Work
Actual Work | Milestone

Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filter: Incomplete.
Data Date: 13-Mar-22 / Print Date: 23-Mar-22

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Sites Reservoir Project

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Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
39	OP-1005	Final Sites DWR /Reclamation Operating Agreement	151	04-Apr-22	04-Nov-22
40	Provide Operations Input on Response to Comments & Final EIR/EIS		24	04-Apr-22	05-May-22
41	FO-1110	Perform Modeling for Final EIR/EIS	24	04-Apr-22*	05-May-22
42	FO-1080	Provide Operations Input on Response to Comments & Final EIR/EIS	20	07-Apr-22	04-May-22
43	BA/ITP Modeling		34	01-Nov-20 A	29-Apr-22
44	OP-450	BA/ITP Modeling Support	13	01-Nov-20 A	11-Apr-22
45	OP-360	Appendices for BA/ITP	34	01-Apr-21 A	29-Apr-22
46	Water Rights Modeling		40	14-Mar-22	09-May-22
47	A1200	Water Rights Modeling Support	40	14-Mar-22	09-May-22
48	A1210	Documentation for Water Rights	40	14-Mar-22	09-May-22
49	Refined Daily Operations Model		130	07-Apr-22	11-Oct-22
50	A1220	Refined Daily Operations Model	130	07-Apr-22	11-Oct-22
51	Update to CalSim 3		240	26-Oct-22	11-Oct-23
52	A1230	Update to CalSim 3	240	26-Oct-22	11-Oct-23
53	Funding		708	03-Jan-22 A	31-Dec-24
54	Key Deliverables		576	03-Jan-22 A	02-Oct-24
55	KD-1270	Complete Loan Applications (need Water Rights Permit to complete)	411	03-Jan-22 A	12-Feb-24
56	KD-1260	Final Federal Funding Request	0		08-Aug-22
57	KD-1300	Execute Benefits & Obligations Contracts with Participants	0		29-Jun-23
58	KD-1310	Receive WSIP Final Award from CWC (need Water Rights Permit to complete)	0		17-Nov-23
59	KD-1280	Execute Loan Docs	0		02-Oct-24
60	Federal Funding		644	17-Jan-22 A	02-Oct-24
61	WIIN Act FAA		55	17-Jan-22 A	31-May-22
62	WIIN-1120	Review by Bureau of Reclamation	55	17-Jan-22 A	31-May-22
63	WIIN-1140	Agreement Execution	0		31-May-22
64	Federal Funding Committment		103	07-Feb-22 A	08-Aug-22
65	WIIN-1150	Reclamation Submits OMB Addendum	83	07-Feb-22 A	11-Jul-22
66	WIIN-1160	Authority Submits Letter of Funding to Reclamation	20	13-Jun-22	11-Jul-22
67	WIIN-1170	Execute Reclamation Benefits Agreement	20	12-Jul-22	08-Aug-22
68	WIFIA Loan		431	01-Jul-22	25-Mar-24
69	Application		176	01-Jul-22	20-Mar-23
70	WIFIA-110	Agreement in Principle	95	01-Jul-22	16-Nov-22
71	WIFIA-120	Indicative Rating Assessment	60	17-Nov-22	15-Feb-23
72	WIFIA-130	Finalizing Application	30	16-Feb-23	17-Mar-23
73	WIFIA-140	Submittal of Final WIFIA App	0		20-Mar-23
74	Negotiation		255	20-Mar-23	25-Mar-24
75	WIFIA-210	Term Sheet Development	250	20-Mar-23	18-Mar-24
76	WIFIA-220	Final Rating Assessment (Depends on Final Rebalancing)	250	20-Mar-23	18-Mar-24
77	WIFIA-230	Close WIFIA Loan	0		25-Mar-24

Remaining Level of Effort | Actual Level of Effort | Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

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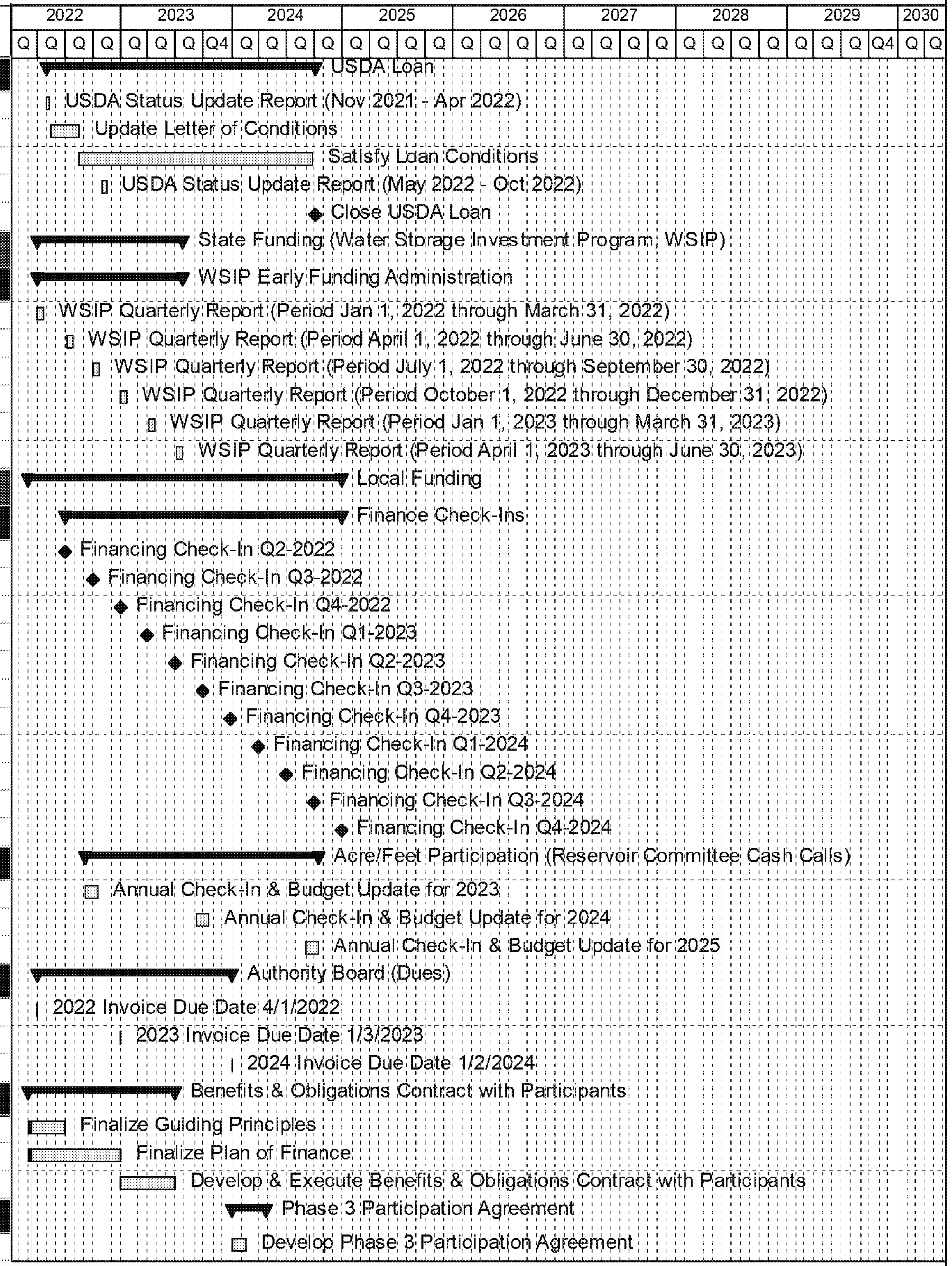
Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
78	**USDA Loan**		610	02-May-22	02-Oct-24
79	USDA-1030	USDA Status Update Report (Nov 2021 - Apr 2022)	10	02-May-22	13-May-22
80	USDA-1050	Update Letter of Conditions	65	16-May-22	16-Aug-22
81	USDA-1060	Satisfy Loan Conditions	530	17-Aug-22	25-Sep-24
82	USDA-1040	USDA Status Update Report (May 2022 - Oct 2022)	10	04-Nov-22	18-Nov-22
83	USDA-1070	Close USDA Loan	0		02-Oct-24
84	**State Funding (Water Storage Investment Program, WSIP)**		329	04-Apr-22	25-Jul-23
85	**WSIP Early Funding Administration**		329	04-Apr-22	25-Jul-23
86	WSIP-1210	WSIP Quarterly Report (Period Jan 1, 2022 through March 31, 2022)	15	04-Apr-22	22-Apr-22
87	WSIP-1220	WSIP Quarterly Report (Period April 1, 2022 through June 30, 2022)	15	06-Jul-22	26-Jul-22
88	WSIP-1230	WSIP Quarterly Report (Period July 1, 2022 through September 30, 2022)	15	03-Oct-22	24-Oct-22
89	WSIP-1240	WSIP Quarterly Report (Period October 1, 2022 through December 31, 2022)	15	03-Jan-23	24-Jan-23
90	WSIP-1250	WSIP Quarterly Report (Period Jan 1, 2023 through March 31, 2023)	15	03-Apr-23	21-Apr-23
91	WSIP-1260	WSIP Quarterly Report (Period April 1, 2023 through June 30, 2023)	15	05-Jul-23	25-Jul-23
92	**Local Funding**		708	01-Mar-22 A	31-Dec-24
93	**Finance Check-Ins**		631	30-Jun-22	31-Dec-24
94	FC-1250	Financing Check-In Q2-2022	0		30-Jun-22*
95	FC-1260	Financing Check-In Q3-2022	0		30-Sep-22
96	FC-1270	Financing Check-In Q4-2022	0		30-Dec-22
97	FC-1280	Financing Check-In Q1-2023	0		31-Mar-23
98	FC-1290	Financing Check-In Q2-2023	0		30-Jun-23
99	FC-1300	Financing Check-In Q3-2023	0		29-Sep-23
100	FC-1310	Financing Check-In Q4-2023	0		29-Dec-23
101	FC-1320	Financing Check-In Q1-2024	0		29-Mar-24
102	FC-1330	Financing Check-In Q2-2024	0		28-Jun-24
103	FC-1340	Financing Check-In Q3-2024	0		30-Sep-24
104	FC-1350	Financing Check-In Q4-2024	0		31-Dec-24
105	**Acre/Feet Participation (Reservoir Committee Cash Calls)**		530	06-Sep-22	14-Oct-24
106	AF-1100	Annual Check-In & Budget Update for 2023	30	06-Sep-22	18-Oct-22
107	AF-1120	Annual Check-In & Budget Update for 2024	30	06-Sep-23	18-Oct-23
108	AF-1140	Annual Check-In & Budget Update for 2025	30	03-Sep-24	14-Oct-24
109	**Authority Board (Dues)**		438	01-Apr-22	02-Jan-24
110	AB-2100	2022 Invoice Due Date 4/1/2022	1	01-Apr-22	01-Apr-22*
111	AB-2120	2023 Invoice Due Date 1/3/2023	1	03-Jan-23	03-Jan-23*
112	AB-2140	2024 Invoice Due Date 1/2/2024	1	02-Jan-24	02-Jan-24*
113	**Benefits & Obligations Contract with Participants**		326	01-Mar-22 A	29-Jun-23
114	BOA-1100	Finalize Guiding Principles	77	01-Mar-22 A	30-Jun-22
115	BOA-1200	Finalize Plan of Finance	201	01-Mar-22 A	30-Dec-22
116	BOA-1300	Develop & Execute Benefits & Obligations Contract with Participants	125	03-Jan-23	29-Jun-23
117	**Phase 3 Participation Agreement**		80	04-Jan-24	26-Apr-24
118	P3PA-1100	Develop Phase 3 Participation Agreement	30	04-Jan-24	15-Feb-24



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
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Milestone
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#	Activity ID	Activity Name	Remaining Duration	Start	Finish
119	P3PA-1110	Home Board Execution & Final Rebalancing	50	16-Feb-24	26-Apr-24
120	**Bank Financing**		50	20-Mar-23	26-May-23
121	BF-1100	Prepare & Issue RFP to Prospective Lenders	15	20-Mar-23	07-Apr-23
122	BF-1120	Review & Select Lender(s)	20	10-Apr-23	05-May-23
123	BF-1140	Execute Bank Financing Loan Documents	15	08-May-23	26-May-23
124	**Permitting (John, Jelica, Ali)**		515	04-Jan-21 A	03-Apr-24
125	**Key Deliverables**		509	14-Mar-22	26-Mar-24
126	KD-1240	Execute Federal Operations Agreement	0		14-Mar-22
127	KD-1250	Execute State Operations Agreement	0		14-Mar-22
128	KD-1320	Water Right - Complete Protest Resolution Period & Resolve as Many Protests as Possible	0		14-Mar-22
129	KD-1360	Section 106 - Programmatic Historic Properties Management Plan Development	0		14-Mar-22
130	KD-1450	Obtain Local Agency Agreements & Permits	0		14-Mar-22
131	KD-1460	Develop Mitigation Master Plan	125	17-Aug-22	17-Feb-23
132	KD-1340	Federal ESA - Receive Biological Opinions	0		30-Dec-22
133	KD-1350	Section 106 - Final Programmatic Agreement	0		16-Mar-23
134	KD-1430	Eagle Permit - Short Term & Nest Permit Issued	0		31-Mar-23
135	KD-1370	Incidental Take Permit - Construction ITP Issued	0		11-May-23
136	KD-1380	Incidental Take Permit - Operations ITP Issued	0		11-May-23
137	KD-1390	CWA 404/401 - Submit Final Permit Applications	0		11-May-23
138	KD-1420	Streambed Alteration Agreement	0		11-May-23
139	KD-1400	CWA 404/401 - Permits Issued	0		07-Aug-23
140	KD-1410	Levee & Flood Permits - Section 408 & CVFPB Encroachment Permits Issued	0		10-Aug-23
141	KD-1330	Water Right - Receive Water Right Order & Permit	0		28-Dec-23
142	KD-1440	Eagle Permit - Long Term Permit Issued	0		26-Mar-24
143	**Federal Agency Agreements & Permits**		515	11-Jan-21 A	03-Apr-24
144	CE-1570	Mitigation Cost Estimate Update	20	07-Mar-24	03-Apr-24
145	**Phase 1 Environmental Site Assessments (Where does this go?)**		421	14-Mar-22	23-Oct-23
146	FED-010	Phase 1 Environmental Site Assessments (Engineering ?)	421	14-Mar-22	23-Oct-23
147	**Clean Water Act Section 404**		352	04-Feb-21 A	07-Aug-23
148	404-050	Prepare Draft 404 Application	291	04-Feb-21 A	10-May-23
149	404-120	Submit 404 Application	1	11-May-23	11-May-23
150	404-130	Receive 404 Permit	0		07-Aug-23
151	**US Army Corps of Engineers Rivers & Harbors Act Section 14, Section 408**		233	31-Aug-22	07-Aug-23
152	408-150	Prepare Encroachment Permit/408 Request	172	31-Aug-22	10-May-23
153	408-160	Submit Encroachment Permit/408 Request	1	11-May-23	11-May-23
154	408-170	Receive Encroachment Permit/408 Permit	0		07-Aug-23
155	**Advisory Council on Historic Preservation NHPA Section 106**		252	14-Mar-22 A	16-Mar-23
156	106-081	Prepare Final PA	112	14-Mar-22 A	19-Aug-22
157	106-092	Circulate Final PA to SHPO & Consulting Parties for Signatures	18	22-Aug-22	15-Sep-22
158	106-102	Execute Final PA	10	03-Mar-23	16-Mar-23

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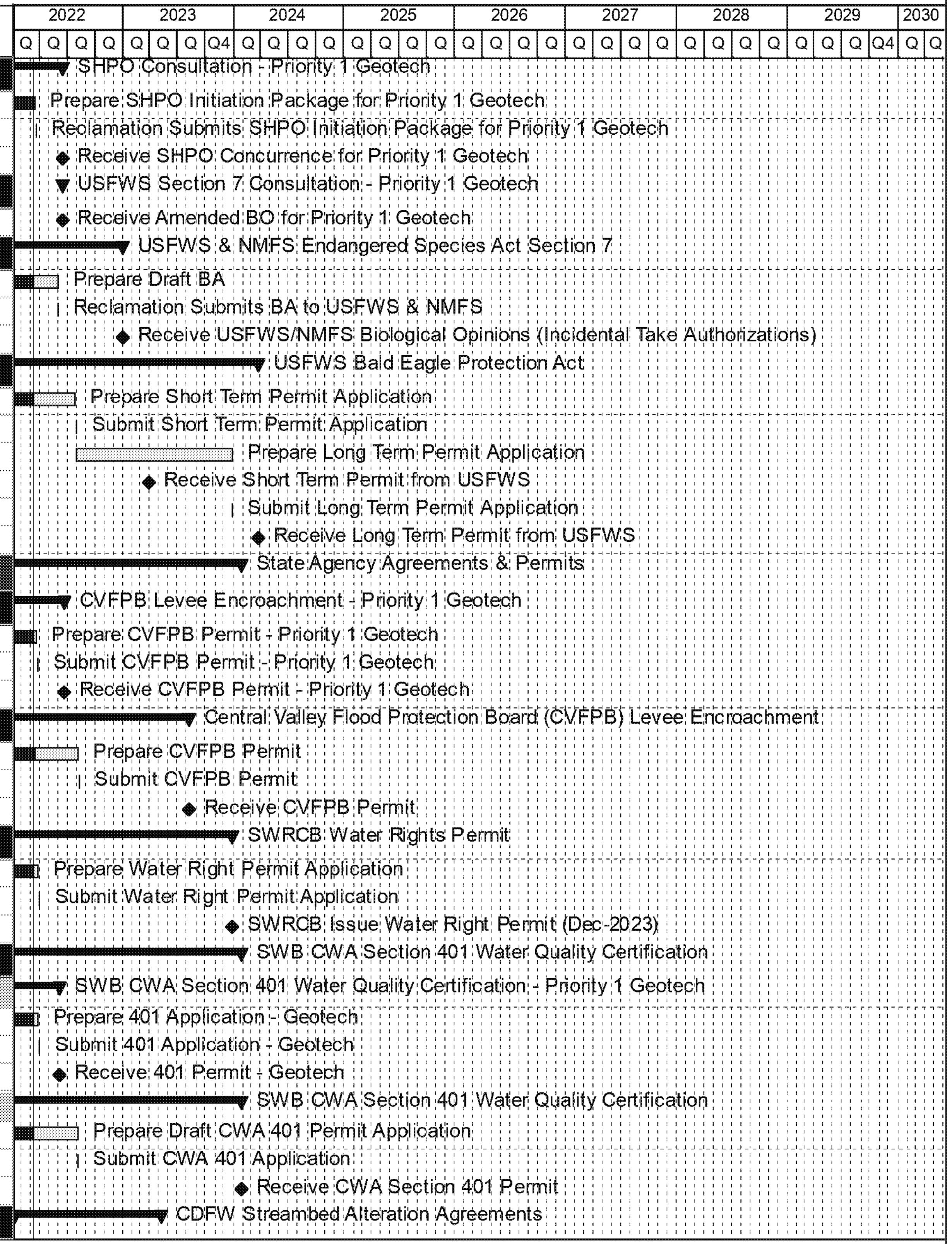
#	Activity ID	Activity Name	Remaining Duration	Start	Finish
159		**SHPO Consultation - Priority 1 Geotech**	66	02-Aug-21 A	15-Jun-22
160	SHPO-240	Prepare SHPO Initiation Package for Priority 1 Geotech	5	02-Aug-21 A	18-Mar-22
161	SHPO-250	Reclamation Submits SHPO Initiation Package for Priority 1 Geotech	1	21-Mar-22	21-Mar-22
162	SHPO-260	Receive SHPO Concurrence for Priority 1 Geotech	0		15-Jun-22
163		**USFWS Section 7 Consultation - Priority 1 Geotech**	0	16-Jun-22	16-Jun-22
164	BA-120	Receive Amended BO for Priority 1 Geotech	0		16-Jun-22
165		**USFWS & NMFS Endangered Species Act Section 7**	201	11-Jan-21 A	30-Dec-22
166	BA-200	Prepare Draft BA	57	11-Jan-21 A	02-Jun-22
167	BA-210	Reclamation Submits BA to USFWS & NMFS	1	03-Jun-22	03-Jun-22
168	BA-220	Receive USFWS/NMFS Biological Opinions (Incidental Take Authorizations)	0		30-Dec-22
169		**USFWS Bald Eagle Protection Act**	509	03-Jan-22 A	26-Mar-24
170	USFWS-110	Prepare Short Term Permit Application	97	03-Jan-22 A	29-Jul-22
171	USFWS-120	Submit Short Term Permit Application	1	01-Aug-22	01-Aug-22
172	USFWS-140	Prepare Long Term Permit Application	350	02-Aug-22	27-Dec-23
173	USFWS-130	Receive Short Term Permit from USFWS	0		31-Mar-23
174	USFWS-150	Submit Long Term Permit Application	1	28-Dec-23	28-Dec-23
175	USFWS-160	Receive Long Term Permit from USFWS	0		26-Mar-24
176		**State Agency Agreements & Permits**	469	04-Jan-21 A	29-Jan-24
177		**CVFPB Levee Encroachment - Priority 1 Geotech**	71	01-Nov-21 A	22-Jun-22
178	CVFPB-100	Prepare CVFPB Permit - Priority 1 Geotech	10	01-Nov-21 A	25-Mar-22
179	CVFPB-110	Submit CVFPB Permit - Priority 1 Geotech	1	28-Mar-22	28-Mar-22
180	CVFPB-120	Receive CVFPB Permit - Priority 1 Geotech	0		22-Jun-22
181		**Central Valley Flood Protection Board (CVFPB) Levee Encroachment**	351	13-Dec-21 A	10-Aug-23
182	CVFPB-200	Prepare CVFPB Permit	100	13-Dec-21 A	09-Aug-22
183	CVFPB-210	Submit CVFPB Permit	1	10-Aug-22	10-Aug-22
184	CVFPB-220	Receive CVFPB Permit	0		10-Aug-23
185		**SWRCB Water Rights Permit**	449	01-Feb-21 A	28-Dec-23
186	WRP-100	Prepare Water Right Permit Application	13	01-Feb-21 A	30-Mar-22
187	WRP-110	Submit Water Right Permit Application	1	01-Apr-22	01-Apr-22
188	WRP-120	SWRCB Issue Water Right Permit (Dec-2023)	0		28-Dec-23
189		**SWB CWA Section 401 Water Quality Certification**	469	04-Jan-21 A	29-Jan-24
190		**SWB CWA Section 401 Water Quality Certification - Priority 1 Geotech**	59	01-Mar-21 A	06-Jun-22
191	401-100	Prepare 401 Application - Geotech	13	01-Mar-21 A	30-Mar-22
192	401-110	Submit 401 Application - Geotech	1	01-Apr-22	01-Apr-22
193	401-120	Receive 401 Permit - Geotech	0		06-Jun-22
194		**SWB CWA Section 401 Water Quality Certification**	469	04-Jan-21 A	29-Jan-24
195	401-200	Prepare Draft CWA 401 Permit Application	103	04-Jan-21 A	08-Aug-22
196	401-210	Submit CWA 401 Application	1	09-Aug-22	09-Aug-22
197	401-220	Receive CWA Section 401 Permit	0		29-Jan-24
198		**CDFW Streambed Alteration Agreements**	292	10-Jan-22 A	11-May-23



Remaining Level of Effort | Remaining Work | Summary
Actual Level of Effort | Critical Remaining Work
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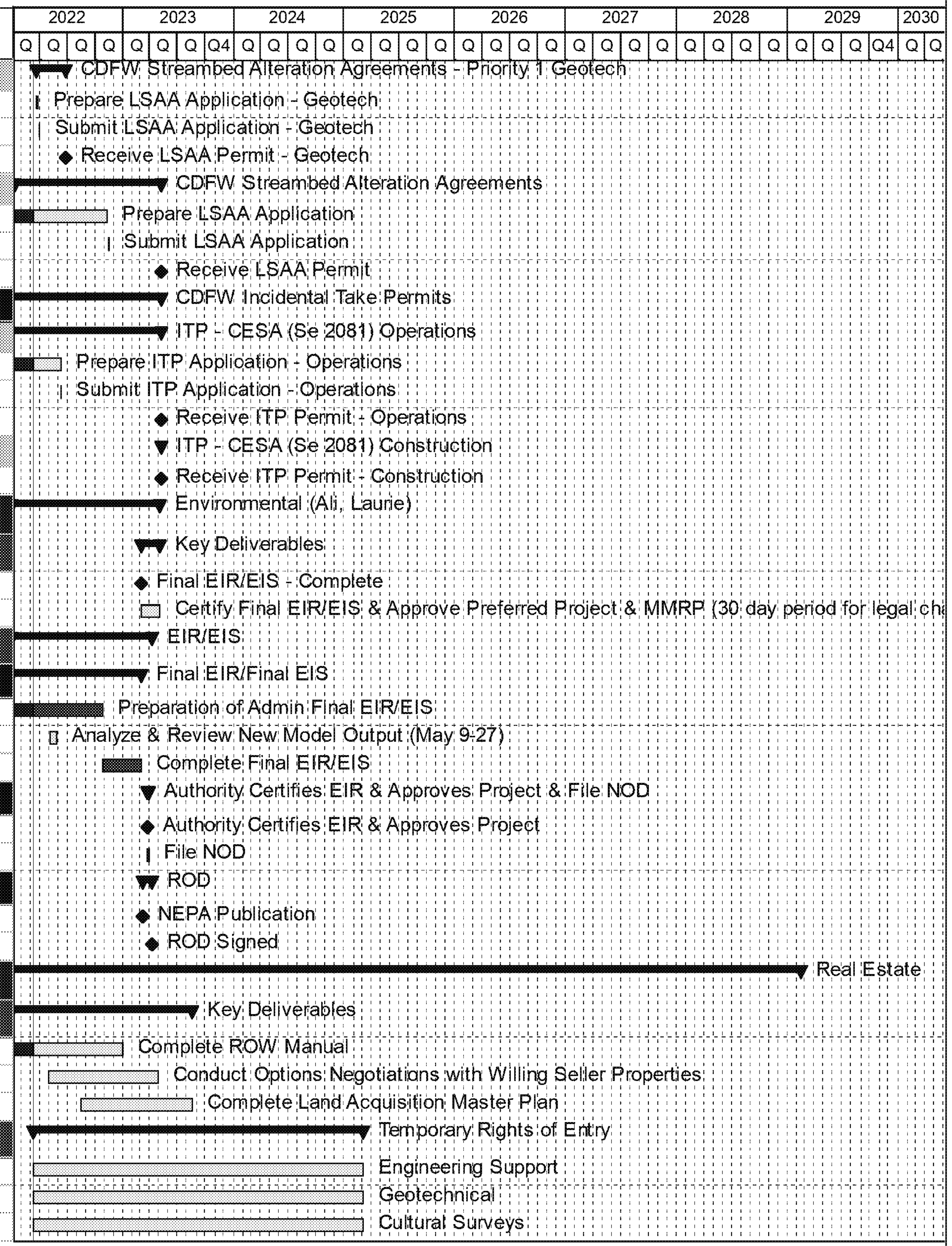
#	Activity ID	Activity Name	Remaining Duration	Start	Finish
199	CDFW Streambed Alteration Agreements - Priority 1 Geotech		69	21-Mar-22	27-Jun-22
200	1600-100	Prepare LSAA Application - Geotech	8	21-Mar-22*	30-Mar-22
201	1600-110	Submit LSAA Application - Geotech	1	01-Apr-22	01-Apr-22
202	1600-120	Receive LSAA Permit - Geotech	0		27-Jun-22
203	CDFW Streambed Alteration Agreements		292	10-Jan-22 A	11-May-23
204	1600-200	Prepare LSAA Application	170	10-Jan-22 A	14-Nov-22
205	1600-210	Submit LSAA Application	1	15-Nov-22	15-Nov-22
206	1600-220	Receive LSAA Permit	0		11-May-23
207	CDFW Incidental Take Permits		292	11-Jan-21 A	11-May-23
208	ITP - CESA (Se 2081) Operations		292	11-Jan-21 A	11-May-23
209	2081-100	Prepare ITP Application - Operations	64	11-Jan-21 A	13-Jun-22
210	2081-110	Submit ITP Application - Operations	1	14-Jun-22	14-Jun-22
211	2081-120	Receive ITP Permit - Operations	0		11-May-23
212	ITP - CESA (Se 2081) Construction		0	11-May-23	11-May-23
213	2081-220	Receive ITP Permit - Construction	0		11-May-23
214	Environmental (Ali, Laurie)		287	03-Jan-22 A	04-May-23
215	Key Deliverables		45	02-Mar-23	04-May-23
216	KD-1470	Final EIR/EIS - Complete	0		02-Mar-23
217	KD-1480	Certify Final EIR/EIS & Approve Preferred Project & MMRP (30 day period for legal challenge)	45	03-Mar-23	04-May-23
218	EIR/EIS		269	03-Jan-22 A	10-Apr-23
219	Final EIR/Final EIS		242	03-Jan-22 A	02-Mar-23
220	EIR-210	Preparation of Admin Final EIR/EIS	158	03-Jan-22 A	26-Oct-22
221	EIR-220	Analyze & Review New Model Output (May 9-27)	15	06-May-22	26-May-22
222	EIR-250	Complete Final EIR/EIS	84	27-Oct-22	02-Mar-23
223	Authority Certifies EIR & Approves Project & File NOD		5	23-Mar-23	30-Mar-23
224	EIR-370	Authority Certifies EIR & Approves Project	0		23-Mar-23
225	EIR-380	File NOD	5	24-Mar-23	30-Mar-23
226	ROD		22	09-Mar-23	10-Apr-23
227	EIR-440	NEPA Publication	0		09-Mar-23
228	EIR-450	ROD Signed	0		10-Apr-23
229	Real Estate		1784	02-Nov-20 A	14-Feb-29
230	Key Deliverables		359	03-Jan-22 A	16-Aug-23
231	KD-1495	Complete ROW Manual	201	03-Jan-22 A	30-Dec-22
232	KD-1500	Conduct Options Negotiations with Willing Seller Properties	250	02-May-22*	01-May-23
233	KD-1490	Complete Land Acquisition Master Plan	250	17-Aug-22	16-Aug-23
234	Temporary Rights of Entry		756	14-Mar-22	07-Mar-25
235	RE-1010	Engineering Support	756	14-Mar-22	07-Mar-25
236	RE-1020	Geotechnical	756	14-Mar-22	07-Mar-25
237	RE-1030	Cultural Surveys	756	14-Mar-22	07-Mar-25



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238	RE-1040	Biological Surveys	756	14-Mar-22	07-Mar-25
239	Land Acquisition		1500	02-May-23	14-Feb-29
240	RE-1050	Construction Package 1 - Land Acquisition	1500	02-May-23	14-Feb-29
241	RE-1060	Construction Package 2 - Land Acquisition	1400	22-Sep-23	14-Feb-29
242	RE-1070	Construction Package 3 - Land Acquisition	1300	21-Feb-24	14-Feb-29
243	Relocation		1500	02-May-23	29-Jan-29
244	RE-1100	Relocation Assistance, as Needed	1500	02-May-23	29-Jan-29
245	USBR - Land Agreement		278	02-Nov-20 A	21-Apr-23
246	FED-100	USBR Land Agreements	278	02-Nov-20 A	21-Apr-23
247	Geotechnical Engineering		847	08-Apr-22	07-Aug-25
248	Key Deliverables		847	08-Apr-22	07-Aug-25
249	KD-2000	Early Evaluation Geotech Investigations	44	08-Apr-22	09-Jun-22
250	P1A Geotechnical Investigations		373	21-Feb-23	12-Aug-24
251	KD-1160	Quarter 3 2022 Investigation & Report	64	21-Feb-23	19-May-23
252	KD-1520	Quarter 4 2022 Investigation & Report	60	22-May-23	15-Aug-23
253	KD-1530	Quarter 1 2023 Investigation & Report	62	16-Aug-23	14-Nov-23
254	KD-1540	Quarter 2 2023 Investigation & Report	64	15-Nov-23	20-Feb-24
255	KD-1550	Quarter 3 2023 Investigation & Report	63	21-Feb-24	17-May-24
256	KD-1560	Quarter 4 2023 Investigation & Report	60	20-May-24	12-Aug-24
257	P1B Geotechnical Investigations		258	13-Aug-24	07-Aug-25
258	KD-1590	Quarter 1 2024 Investigation & Report	62	13-Aug-24	06-Nov-24
259	KD-1600	Quarter 2 2024 Investigation & Report	64	07-Nov-24	04-Feb-25
260	KD-1610	Quarter 3 2024 Investigation & Report	66	05-Feb-25	07-May-25
261	KD-1620	Quarter 4 2024 Investigation & Report	66	08-May-25	07-Aug-25
262	Preliminary Engineering		2086	14-Oct-20 A	12-Apr-30
263	Key Deliverables		515	14-Mar-22	03-Apr-24
264	KD-1120	Determine Criteria & Weighting for Project Delivery Decisions	21	14-Mar-22	12-Apr-22
265	KD-1210	Update Project Risk Assessments (ongoing) (Risk Mgr Bob Beduhn & Henry Luu)	21	14-Mar-22	12-Apr-22
266	KD-1110	Advance Engineering of Project Feature Encroachments to 65% Design Level in Support of P	21	05-Jul-22	02-Aug-22
267	KD-1180	Preliminary Engineering (30% Design Level)	0		29-Dec-23
268	KD-1190	Update to Class 3 Construction Cost Estimate	0		03-Apr-24
269	Conveyance (Pipelines, Pump Stations, Canals)		708	03-Jan-22 A	31-Dec-24
270	UPRR Oversight & Review		708	03-Jan-22 A	31-Dec-24
271	A1110	Coordination & Oversight with UPRR	708	03-Jan-22 A	31-Dec-24
272	Caltrans Oversight & Review		708	03-Jan-22 A	31-Dec-24
273	A1120	Coordination & Oversight with Caltrans	708	03-Jan-22 A	31-Dec-24
274	DWR Operations Oversight & Review (KLOG)		708	03-Jan-22 A	31-Dec-24
275	A1130	Coordination & Oversight with Department of Water Resources	708	03-Jan-22 A	31-Dec-24
276	RD 108 Oversight & Review		708	03-Jan-22 A	31-Dec-24

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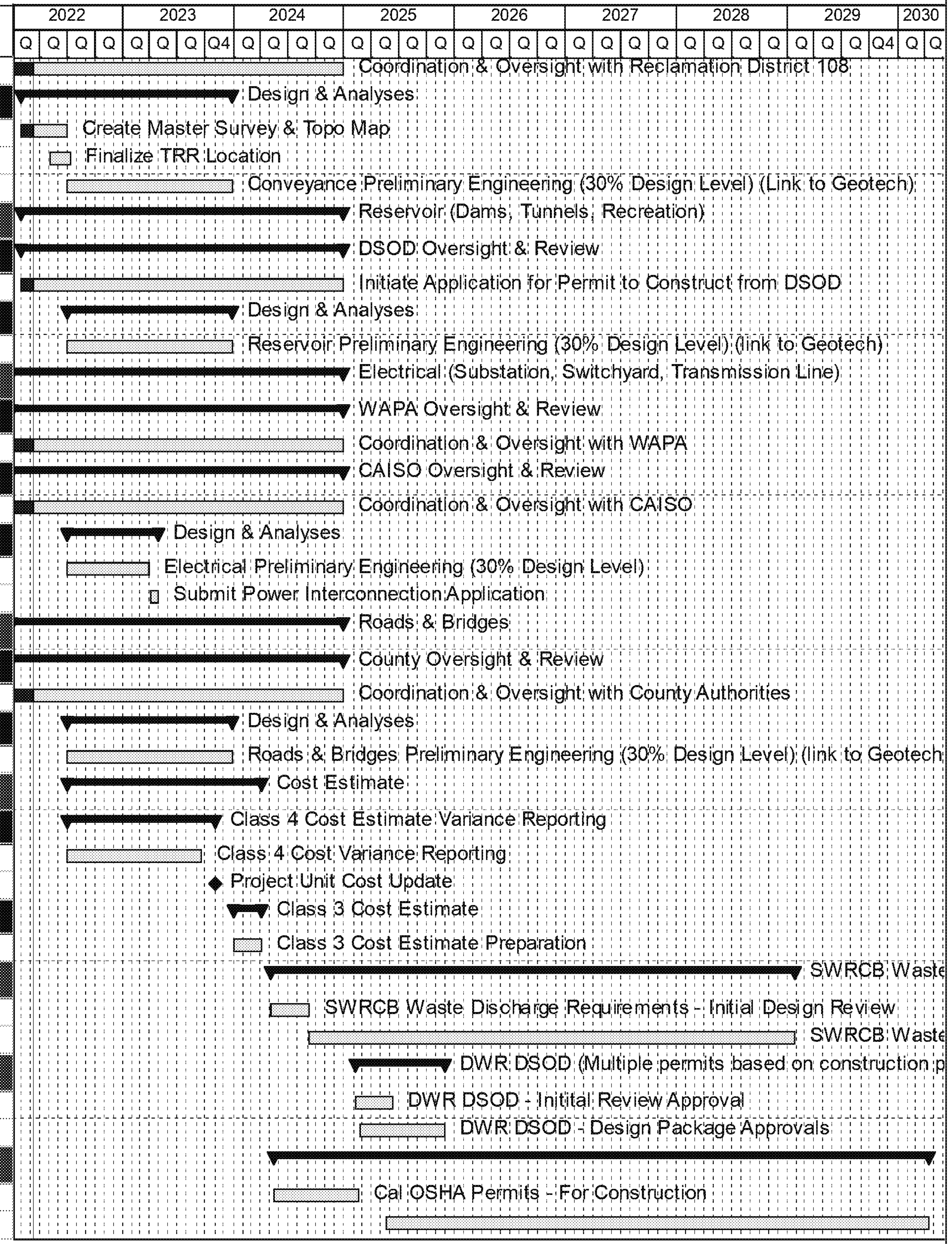
#	Activity ID	Activity Name	Remaining Duration	Start	Finish
277	A1140	Coordination & Oversight with Reclamation District 108	708	03-Jan-22 A	31-Dec-24
278		**Design & Analyses**	450	01-Feb-22 A	29-Dec-23
279	KD-1140	Create Master Survey & Topo Map	78	01-Feb-22 A	01-Jul-22
280	KD-1150	Finalize TRR Location	46	10-May-22	14-Jul-22
281	KD-1630	Conveyance Preliminary Engineering (30% Design Level) (Link to Geotech)	372	05-Jul-22	29-Dec-23
282		**Reservoir (Dams, Tunnels, Recreation)**	708	01-Feb-22 A	31-Dec-24
283		**DSOD Oversight & Review**	708	01-Feb-22 A	31-Dec-24
284	KD-1100	Initiate Application for Permit to Construct from DSOD	708	01-Feb-22 A	31-Dec-24
285		**Design & Analyses**	372	05-Jul-22	29-Dec-23
286	KD-1660	Reservoir Preliminary Engineering (30% Design Level) (link to Geotech)	372	05-Jul-22	29-Dec-23
287		**Electrical (Substation, Switchyard, Transmission Line)**	708	03-Jan-22 A	31-Dec-24
288		**WAPA Oversight & Review**	708	03-Jan-22 A	31-Dec-24
289	A1150	Coordination & Oversight with WAPA	708	03-Jan-22 A	31-Dec-24
290		**CAISO Oversight & Review**	708	03-Jan-22 A	31-Dec-24
291	A1160	Coordination & Oversight with CAISO	708	03-Jan-22 A	31-Dec-24
292		**Design & Analyses**	205	05-Jul-22	28-Apr-23
293	KD-1640	Electrical Preliminary Engineering (30% Design Level)	185	05-Jul-22	31-Mar-23
294	KD-1200	Submit Power Interconnection Application	20	03-Apr-23	28-Apr-23
295		**Roads & Bridges**	708	03-Jan-22 A	31-Dec-24
296		**County Oversight & Review**	708	03-Jan-22 A	31-Dec-24
297	A1170	Coordination & Oversight with County Authorities	708	03-Jan-22 A	31-Dec-24
298		**Design & Analyses**	372	05-Jul-22	29-Dec-23
299	KD-1650	Roads & Bridges Preliminary Engineering (30% Design Level) (link to Geotech)	372	05-Jul-22	29-Dec-23
300		**Cost Estimate**	437	05-Jul-22	03-Apr-24
301		**Class 4 Cost Estimate Variance Reporting**	334	05-Jul-22	01-Nov-23
302	A1180	Class 4 Cost Variance Reporting	304	05-Jul-22	19-Sep-23
303	A1240	Project Unit Cost Update	0		01-Nov-23
304		**Class 3 Cost Estimate**	65	02-Jan-24	03-Apr-24
305	A1190	Class 3 Cost Estimate Preparation	65	02-Jan-24	03-Apr-24
306		**SWRCB Waste Discharge Requirements (Multiple permits based on constr. packages &/(**	1234	03-May-24	25-Jan-29
307	STA-160	SWRCB Waste Discharge Requirements - Initial Design Review	90	03-May-24	06-Sep-24
308	STA-060	SWRCB Waste Discharge Requirements - Implementation	1144	09-Sep-24	25-Jan-29
309		**DWR DSOD (Multiple permits based on construction packages &/or ROW access) - Engi**	210	07-Feb-25	27-Nov-25
310	STA-130	DWR DSOD - Initital Review Approval	90	07-Feb-25	12-Jun-25
311	STA-080	DWR DSOD - Design Package Approvals	200	21-Feb-25	27-Nov-25
312		**Cal OSHA Permits (Multiple permits based on construction packages &/or ROW access)**	1541	16-May-24	12-Apr-30
313	STA-170	Cal OSHA Permits - For Construction	200	16-May-24	20-Feb-25
314	STA-090	Cal OSHA Implementation	1276	23-May-25	12-Apr-30



Remaining Level of Effort | Remaining Work | Summary
Actual Level of Effort | Critical Remaining Work
Actual Work | Milestone

Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filter: Incomplete.
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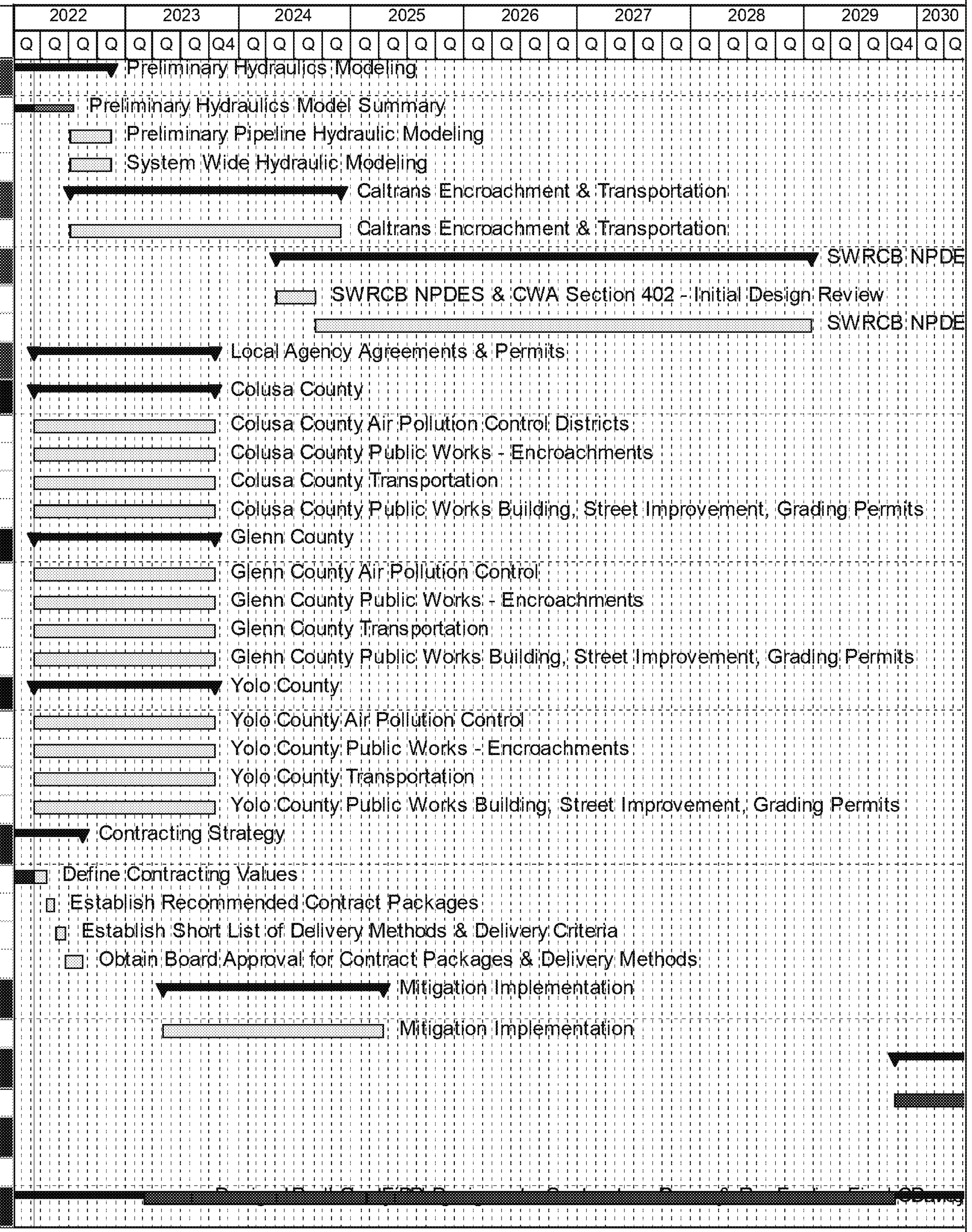
Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
315	**Preliminary Hydraulics Modeling**		171	14-Oct-20 A	15-Nov-22
316	ENG-420	Preliminary Hydraulics Model Summary	90	14-Oct-20 A	20-Jul-22
317	ENG-470	Preliminary Pipeline Hydraulic Modeling	90	08-Jul-22	15-Nov-22
318	ENG-480	System Wide Hydraulic Modeling	90	08-Jul-22	15-Nov-22
319	**Caltrans Encroachment & Transportation**		605	08-Jul-22	29-Nov-24
320	STA-010	Caltrans Encroachment & Transportation	605	08-Jul-22	29-Nov-24
321	**SWRCB NPDES & CWA Section 402 (Multiple permits based on construction packages &**		1234	03-May-24	25-Jan-29
322	STA-150	SWRCB NPDES & CWA Section 402 - Initial Design Review	90	03-May-24	06-Sep-24
323	STA-050	SWRCB NPDES & CWA Section 402 - Implementation	1144	09-Sep-24	25-Jan-29
324	**Local Agency Agreements & Permits**		400	14-Mar-22	16-Oct-23
325	**Colusa County**		400	14-Mar-22	16-Oct-23
326	LOC-150	Colusa County Air Pollution Control Districts	400	14-Mar-22	16-Oct-23
327	LOC-160	Colusa County Public Works - Encroachments	400	14-Mar-22	16-Oct-23
328	LOC-170	Colusa County Transportation	400	14-Mar-22	16-Oct-23
329	LOC-180	Colusa County Public Works Building, Street Improvement, Grading Permits	400	14-Mar-22	16-Oct-23
330	**Glenn County**		400	14-Mar-22	16-Oct-23
331	LOC-250	Glenn County Air Pollution Control	400	14-Mar-22	16-Oct-23
332	LOC-260	Glenn County Public Works - Encroachments	400	14-Mar-22	16-Oct-23
333	LOC-270	Glenn County Transportation	400	14-Mar-22	16-Oct-23
334	LOC-280	Glenn County Public Works Building, Street Improvement, Grading Permits	400	14-Mar-22	16-Oct-23
335	**Yolo County**		400	14-Mar-22	16-Oct-23
336	LOC-200	Yolo County Air Pollution Control	400	14-Mar-22	16-Oct-23
337	LOC-210	Yolo County Public Works - Encroachments	400	14-Mar-22	16-Oct-23
338	LOC-220	Yolo County Transportation	400	14-Mar-22	16-Oct-23
339	LOC-230	Yolo County Public Works Building, Street Improvement, Grading Permits	400	14-Mar-22	16-Oct-23
340	**Contracting Strategy**		109	03-Jan-22 A	16-Aug-22
341	A1070	Define Contracting Values	29	03-Jan-22 A	22-Apr-22
342	A1080	Establish Recommended Contract Packages	20	25-Apr-22	20-May-22
343	A1090	Establish Short List of Delivery Methods & Delivery Criteria	20	23-May-22	20-Jun-22
344	A1100	Obtain Board Approval for Contract Packages & Delivery Methods	40	21-Jun-22	16-Aug-22
345	**Mitigation Implementation**		500	02-May-23	16-Apr-25
346	MI-1100	Mitigation Implementation	500	02-May-23	16-Apr-25
347	**Commissioning**		222	26-Oct-29	02-Sep-30
348	COM-1100	Commissioning	222	26-Oct-29	02-Sep-30
349	**Facility Operations**		0	03-Sep-30	03-Sep-30
350	OPR-1100	Full Operations Begins	0		03-Sep-30
351	**COMPLETED / MARK FOR DELETE**		2188	02-Jan-20 A	03-Sep-30



Remaining Level of Effort | Remaining Work | Summary
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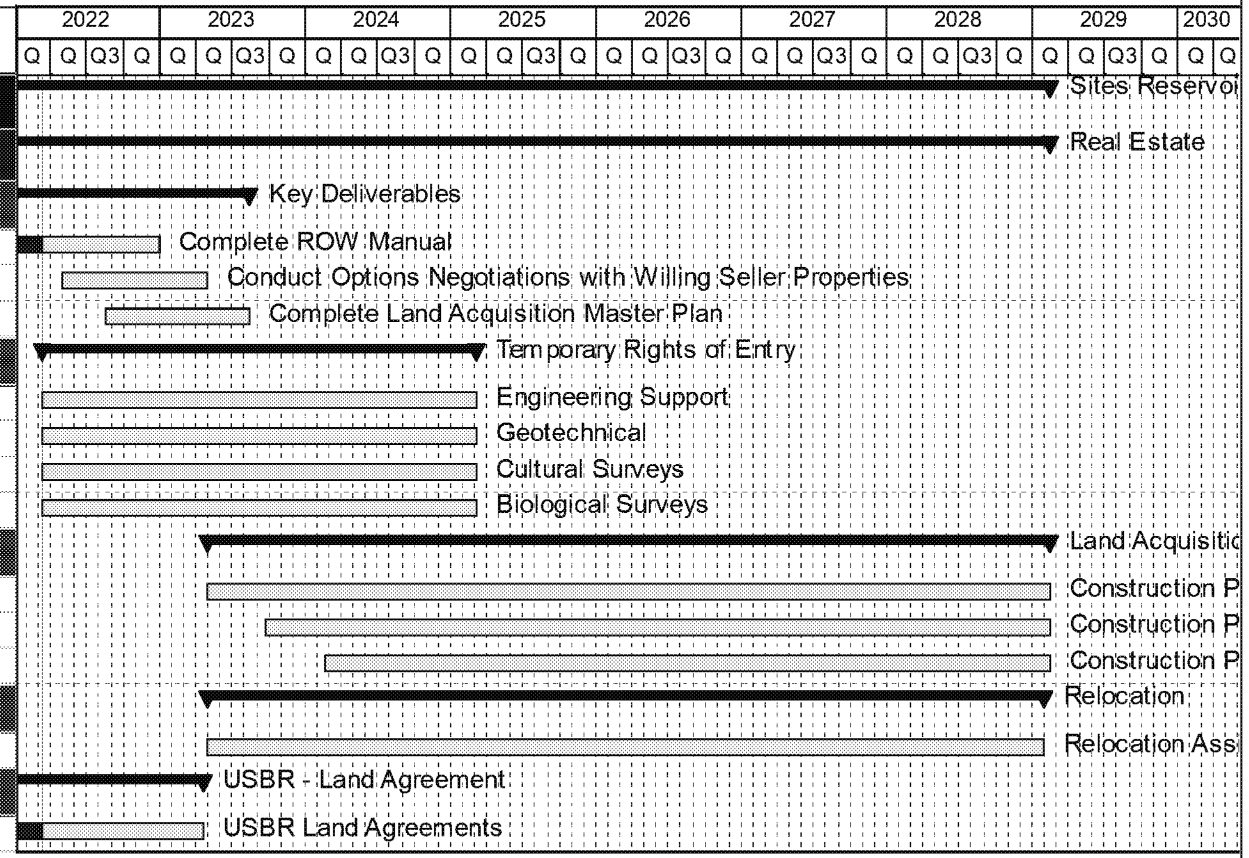
1	Sites Reservoir Project		1784	02-Nov-20 A	14-Feb-29
2	Real Estate		1784	02-Nov-20 A	14-Feb-29
3	Key Deliverables		359	03-Jan-22 A	16-Aug-23
4	KD-1495	Complete ROW Manual	201	03-Jan-22 A	30-Dec-22
5	KD-1500	Conduct Options Negotiations with Willing Seller Properties	250	02-May-22*	01-May-23
6	KD-1490	Complete Land Acquisition Master Plan	250	17-Aug-22	16-Aug-23
7	Temporary Rights of Entry		756	14-Mar-22	07-Mar-25
8	RE-1010	Engineering Support	756	14-Mar-22	07-Mar-25
9	RE-1020	Geotechnical	756	14-Mar-22	07-Mar-25
10	RE-1030	Cultural Surveys	756	14-Mar-22	07-Mar-25
11	RE-1040	Biological Surveys	756	14-Mar-22	07-Mar-25
12	Land Acquisition		1500	02-May-23	14-Feb-29
13	RE-1050	Construction Package 1 - Land Acquisition	1500	02-May-23	14-Feb-29
14	RE-1060	Construction Package 2 - Land Acquisition	1400	22-Sep-23	14-Feb-29
15	RE-1070	Construction Package 3 - Land Acquisition	1300	21-Feb-24	14-Feb-29
16	Relocation		1500	02-May-23	29-Jan-29
17	RE-1100	Relocation Assistance, as Needed	1500	02-May-23	29-Jan-29
18	USBR - Land Agreement		278	02-Nov-20 A	21-Apr-23
19	FED-100	USBR Land Agreements	278	02-Nov-20 A	21-Apr-23



Remaining Level of Effort
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Sites Reservoir Project

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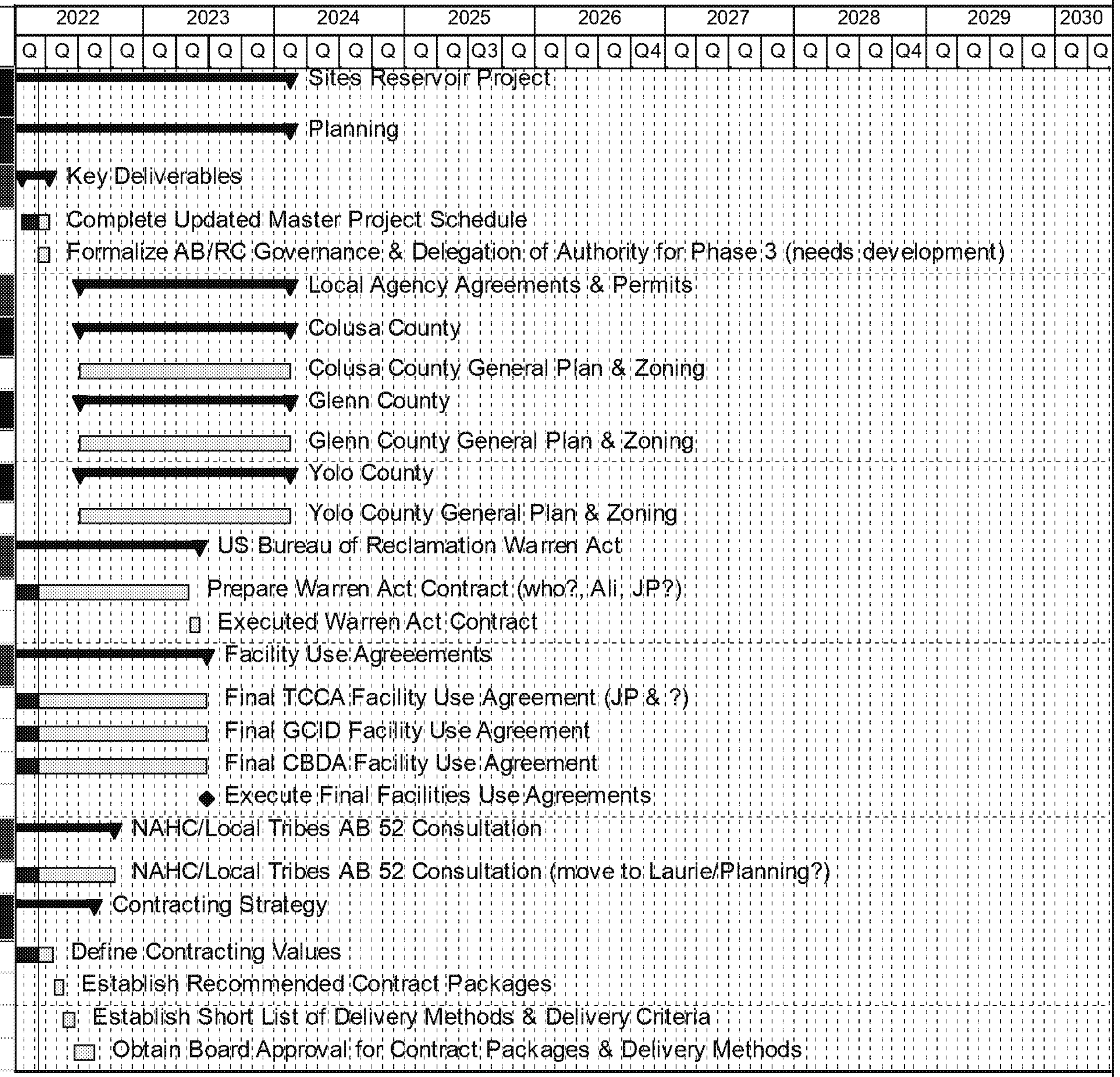
Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish
1	Sites Reservoir Project		481	01-Sep-20 A	14-Feb-24
2	Planning		481	01-Sep-20 A	14-Feb-24
3	Key Deliverables		21	24-Jan-22 A	12-Apr-22
4	KD-1130	Complete Updated Master Project Schedule	21	24-Jan-22 A	12-Apr-22
5	KD-1290	Formalize AB/RC Governance & Delegation of Authority for Phase 3 (needs development)	21	14-Mar-22	12-Apr-22
6	Local Agency Agreements & Permits		400	08-Jul-22	14-Feb-24
7	Colusa County		400	08-Jul-22	14-Feb-24
8	LOC-050	Colusa County General Plan & Zoning	400	08-Jul-22	14-Feb-24
9	Glenn County		400	08-Jul-22	14-Feb-24
10	LOC-140	Glenn County General Plan & Zoning	400	08-Jul-22	14-Feb-24
11	Yolo County		400	08-Jul-22	14-Feb-24
12	LOC-90	Yolo County General Plan & Zoning	400	08-Jul-22	14-Feb-24
13	US Bureau of Reclamation Warren Act		311	01-Jun-21 A	08-Jun-23
14	FED-090	Prepare Warren Act Contract (who?, Ali, JP?)	291	01-Jun-21 A	10-May-23
15	FED-110	Executed Warren Act Contract	20	11-May-23	08-Jun-23
16	Facility Use Agreeements		325	27-Aug-21 A	28-Jun-23
17	FO-1020	Final TCCA Facility Use Agreement (JP & ?)	325	27-Aug-21 A	28-Jun-23
18	FO-1030	Final GCID Facility Use Agreement	325	27-Aug-21 A	28-Jun-23
19	FO-1040	Final CBDA Facility Use Agreement	325	27-Aug-21 A	28-Jun-23
20	KD-1230	Execute Final Facilities Use Agreements	0		28-Jun-23
21	NAHC/Local Tribes AB 52 Consultation		148	01-Sep-20 A	12-Oct-22
22	STA-120	NAHC/Local Tribes AB 52 Consultation (move to Laurie/Planning?)	148	01-Sep-20 A	12-Oct-22
23	Contracting Strategy		109	03-Jan-22 A	16-Aug-22
24	A1070	Define Contracting Values	29	03-Jan-22 A	22-Apr-22
25	A1080	Establish Recommended Contract Packages	20	25-Apr-22	20-May-22
26	A1090	Establish Short List of Delivery Methods & Delivery Criteria	20	23-May-22	20-Jun-22
27	A1100	Obtain Board Approval for Contract Packages & Delivery Methods	40	21-Jun-22	16-Aug-22



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filters: Incomplete, WBS Starts With.
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Sites Reservoir Project

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1	Sites Reservoir Project		1784	02-Nov-20 A	14-Feb-29
2	Real Estate		1784	02-Nov-20 A	14-Feb-29
3	Key Deliverables		359	03-Jan-22 A	16-Aug-23
4	KD-1495	Complete ROW Manual	201	03-Jan-22 A	30-Dec-22
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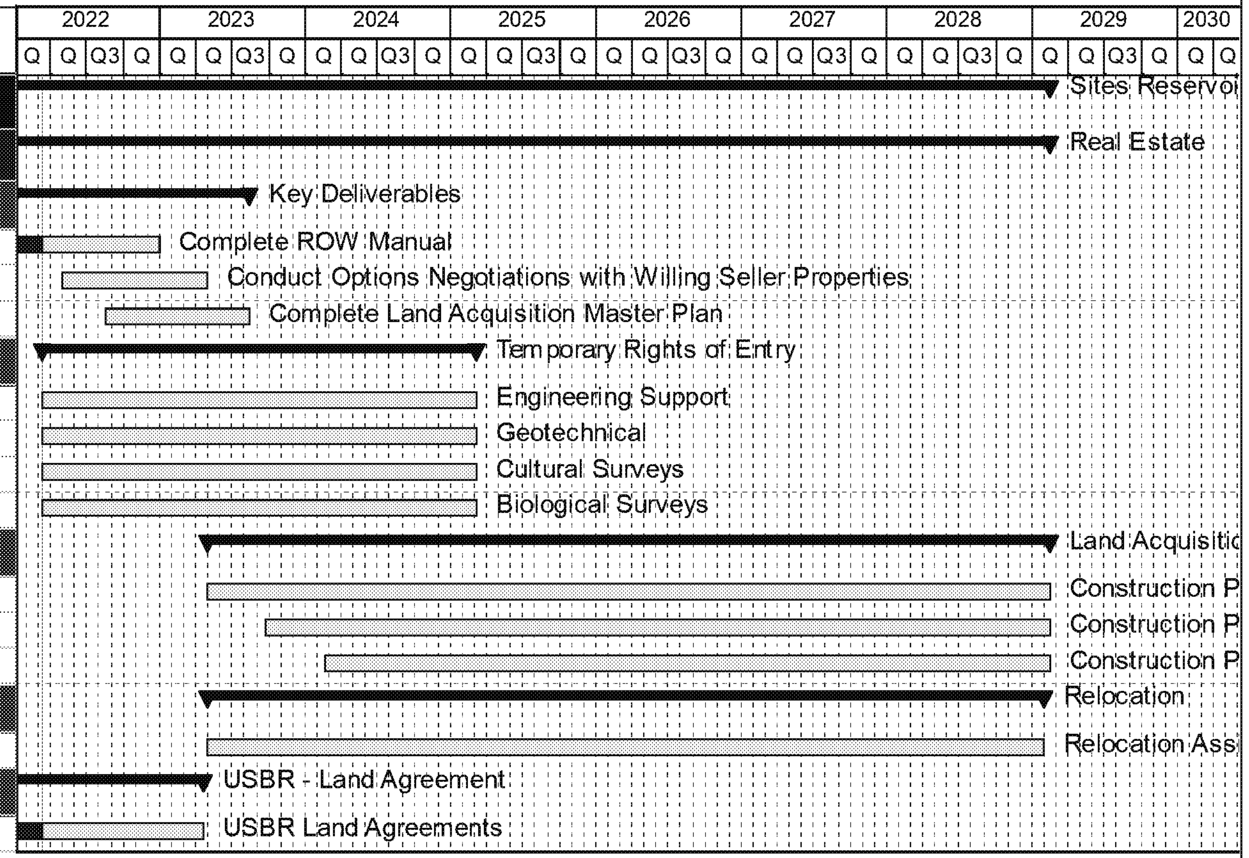
7	Temporary Rights of Entry		756	14-Mar-22	07-Mar-25
8	RE-1010	Engineering Support	756	14-Mar-22	07-Mar-25
9	RE-1020	Geotechnical	756	14-Mar-22	07-Mar-25
10	RE-1030	Cultural Surveys	756	14-Mar-22	07-Mar-25
11	RE-1040	Biological Surveys	756	14-Mar-22	07-Mar-25
12	Land Acquisition		1500	02-May-23	14-Feb-29
13	RE-1050	Construction Package 1 - Land Acquisition	1500	02-May-23	14-Feb-29
14	RE-1060	Construction Package 2 - Land Acquisition	1400	22-Sep-23	14-Feb-29
15	RE-1070	Construction Package 3 - Land Acquisition	1300	21-Feb-24	14-Feb-29
16	Relocation		1500	02-May-23	29-Jan-29
17	RE-1100	Relocation Assistance, as Needed	1500	02-May-23	29-Jan-29
18	USBR - Land Agreement		278	02-Nov-20 A	21-Apr-23
19	FED-100	USBR Land Agreements	278	02-Nov-20 A	21-Apr-23



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Sites

Field Activity Advisory

Bald Eagle and Golden Eagle Surveys | January 2022

The Sites Project Authority is preparing to conduct bald and golden eagle surveys within and adjacent to the anticipated area of the proposed Sites Reservoir. Surveys are needed to identify if any bald eagle and/or golden eagle nests are located within, or adjacent to, the proposed project areas, to understand the potential for the project to impact bald and golden eagles during construction and operation. The surveys will include visual observation, both from a helicopter and from public roads.

What: Sites Reservoir Project consultant staff, during a four-day period, will conduct visual surveys by helicopter to identify the location of any bald eagle and/or golden eagle nests in the proposed project area. Flights will occur at an average height of about 500 feet, with some time spent below this altitude only as needed for specific nest site observation and/or safety considerations. Most overflights will occur at speeds of 60 miles per hour. Extended periods of hovering are not anticipated but may occur periodically for a period of one to two minutes to evaluate a potential nest location. Generally, the helicopter will fly rounded/looping transects that follow topography and trend from north to south, and from east to west. Transect routes may be influenced by visibility, vegetation density, presence of nests, wind conditions, and fuel availability. The field crew will be comprised of one helicopter with a pilot and two wildlife biologists, who will perform the surveys.

Separately, consultant staff will also be conducting visual surveys by public roads to identify possible nest locations and observe eagle use of the proposed project area and up to about four miles outside of the proposed project area.

When: Aerial surveys are proposed to occur for three to four days beginning on or around January 24, 2022, weather permitting. If conditions are not suitable, surveys would occur the following week. Flights will occur between the hours of 8 a.m. and 5 p.m. Following the January surveys, an additional two to three days of helicopter surveys are proposed in both April and July 2022, to confirm eagle nesting activity and complete the required survey protocol.

Ground surveys by biologists working from a vehicle would occur simultaneously with the helicopter surveys and would continue for up to two days after the arial surveys are complete. The survey team would use binoculars and/or spotting scopes and support the helicopter survey team by briefly viewing accessible nests that have been identified by the helicopter survey team.

Where: Helicopter flights will focus on nesting habitat consisting of woodlands and cliffs. Surveys will include the proposed project area, and nesting habitat within four miles of the project boundary. Ground surveys by biologists working from a vehicle would be limited to public roads and roadway right of ways. Using binoculars and/or spotting scopes, the biologists would work in concert with the helicopter survey team by briefly viewing the accessible nests that have been identified by the helicopter survey team.

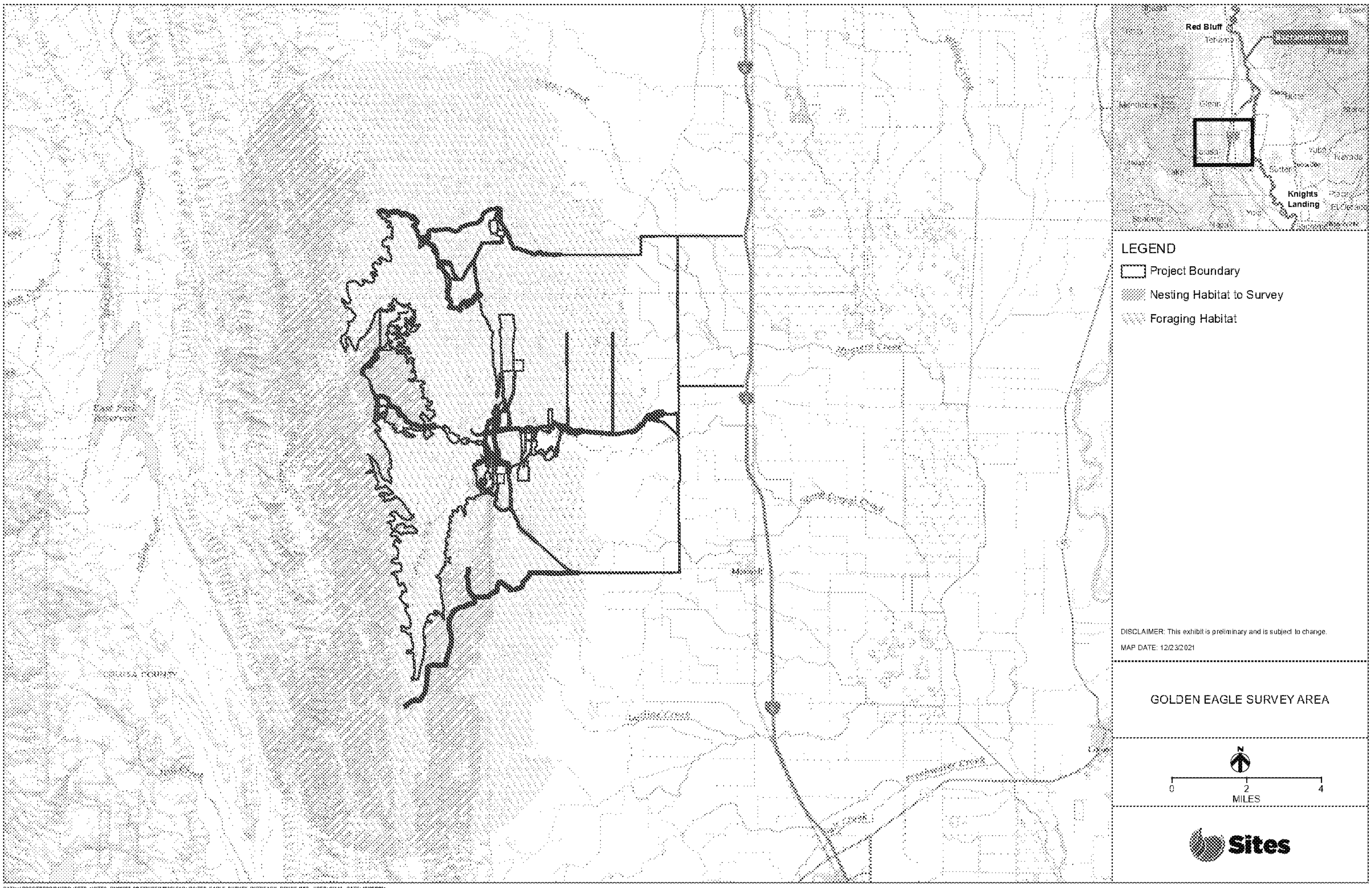
Should you have any questions regarding Sites Reservoir Project field activities, please contact Kevin Spesert or Conner McDonald of the Sites Project Authority Team.

Kevin Spesert
External Affairs Manager
Phone: 530-632-4071
E-Mail: kspesert@sitesproject.org
Office: 122 Old Hwy 99W, Maxwell, CA 95955

Conner McDonald
Landowner Coordinator
Phone: 530-750-9912
E-Mail: conner@cmdwest.com

For additional information regarding the Sites Reservoir Project, please contact us, or visit our website at sitesproject.org

Proposed Aerial Survey Area



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Schedule

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1	Sites Reservoir Project		1784	02-Nov-20 A	14-Feb-29
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3	Key Deliverables		359	03-Jan-22 A	16-Aug-23
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6	KD-1490	Complete Land Acquisition Master Plan	250	17-Aug-22	16-Aug-23
7	Temporary Rights of Entry		756	14-Mar-22	07-Mar-25
8	RE-1010	Engineering Support	756	14-Mar-22	07-Mar-25
9	RE-1020	Geotechnical	756	14-Mar-22	07-Mar-25
10	RE-1030	Cultural Surveys	756	14-Mar-22	07-Mar-25
11	RE-1040	Biological Surveys	756	14-Mar-22	07-Mar-25
12	Land Acquisition		1500	02-May-23	14-Feb-29
13	RE-1050	Construction Package 1 - Land Acquisition	1500	02-May-23	14-Feb-29
14	RE-1060	Construction Package 2 - Land Acquisition	1400	22-Sep-23	14-Feb-29
15	RE-1070	Construction Package 3 - Land Acquisition	1300	21-Feb-24	14-Feb-29
16	Relocation		1500	02-May-23	29-Jan-29
17	RE-1100	Relocation Assistance, as Needed	1500	02-May-23	29-Jan-29
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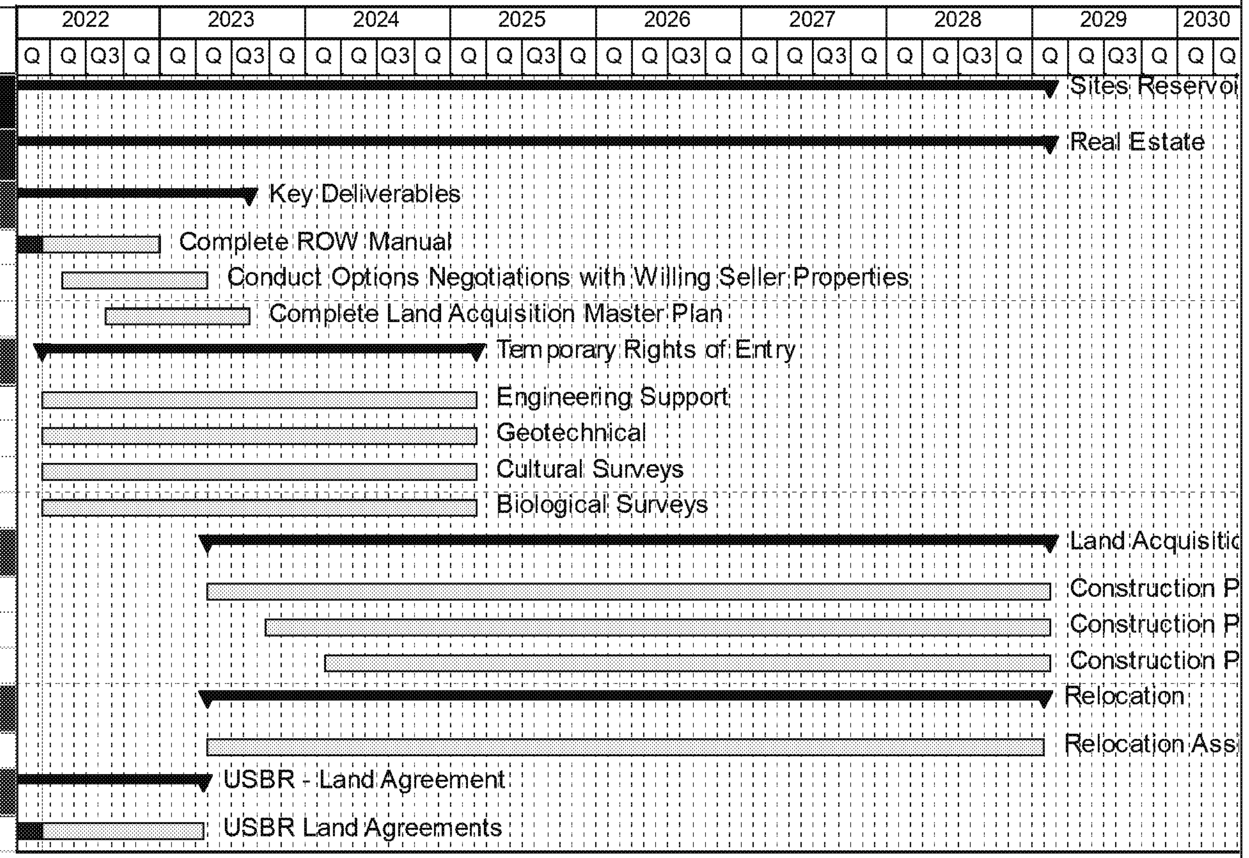

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14	RE-1060	Construction Package 2 - Land Acquisition	1400	22-Sep-23	14-Feb-29
15	RE-1070	Construction Package 3 - Land Acquisition	1300	21-Feb-24	14-Feb-29
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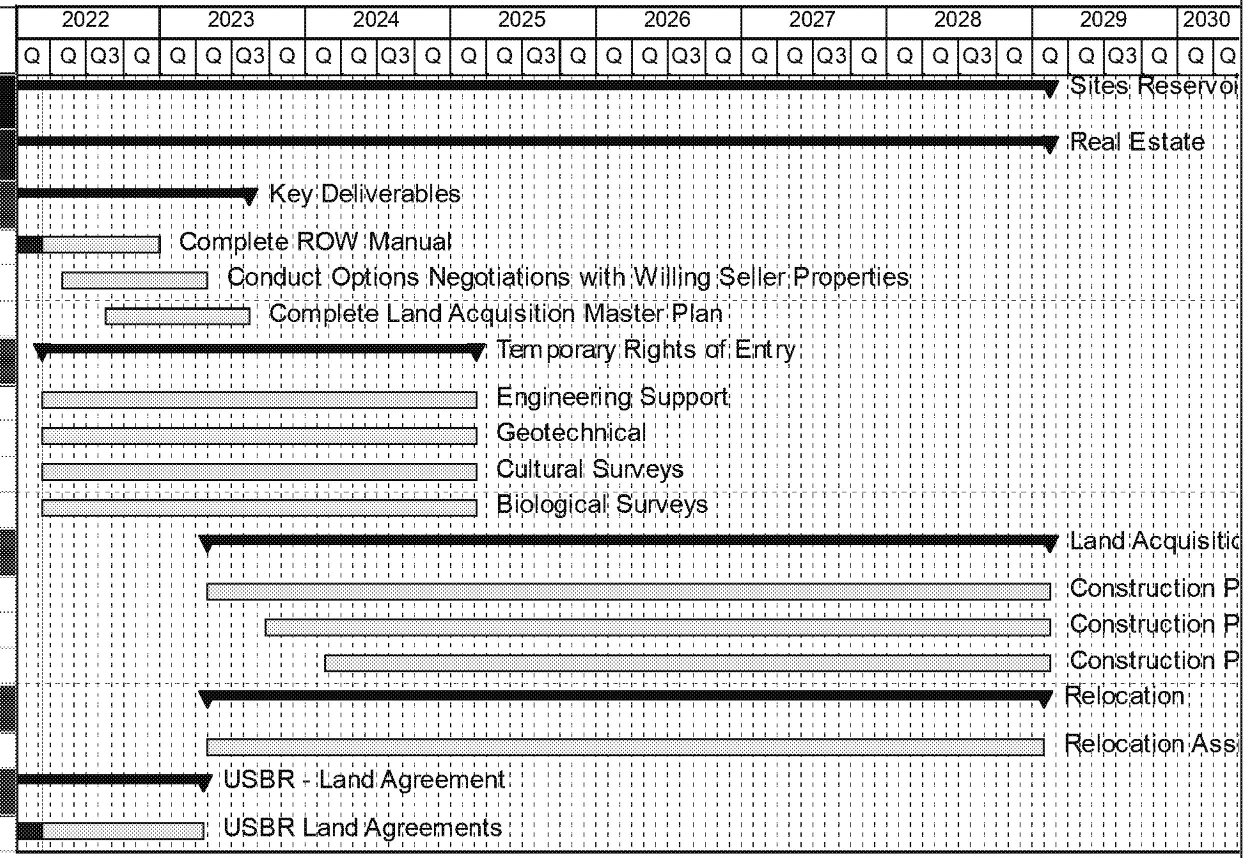

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Email:
ctwilliams2012@yahoo.com

First Name:
Clyde

Message:
Where is the REIR now?

Commented [SH1]: The Revised Draft EIR/Supplemental Draft EIS was released on Nov. 12, 2021 for a 77-day public review and comment period, which ended on January 28, 2022. The Sites Project Authority and U.S. Bureau of Reclamation are preparing the Final EIR/EIS, which is expected to be completed in Fall 2022. The Final EIR/EIS will include responses to comments received during the Revised Draft EIR/Supplemental Draft EIS comment period.

Please continue to stay in touch via sitesproject.org to stay updated on the latest news.

Email:
wve5eml@gmail.com

First Name:
Will

Message:
I am doing some homework to understand Sites Reservoir. Is this chart an accurate presentation of the numbers?
Thank you,
-Will

Well, apparently my chart is not permissible. Had Sites been in operation, would approximately 31,000 acre feet have been stored in Jan -Feb 2021, and 226,000 acre feet stored in Oct 2021 - Jan 2022 ?

Thank you.

Commented [SH2]: I think this is correct – can we confirm?

Name: Erik Zinn
Email: enzinn@gmail.com
Message: I have followed this project closely for what seems like decades, as a duck hunter in the Northern Sacramento Valley and as a consulting engineering geologist in Santa Cruz. I am both happy and chagrined at the project status. It seems clear to most of us that are involved in water supply projects in California that we need the Sites Reservoir, and more water storage projects like it ASAP. In any event, thanks for pushing this project - it will probably end up being essential to our survival in California. I wish I could apply my skills as a geologist and be part of the project!

Keep up the good work.

Sincerely,

Erik Zinn

Name: Anna N. Bolla
Email: annanbolla@gmail.com
Message: I am a lifelong California resident & homeowner. My primary residence is in Richmond & I own a second property in Stonyford. I have strong ties to Colusa County & I'm interested in learning more about the project & any possible job openings.

I have a Class A license (with 11 years of experience) & I have worked in the public sector now since 2010.

This never ending drought will have long-reaching consequences for future generations & I fully support the Sites Reservoir project.

Email:
iantreat@gmail.com

First Name:
Ian

Message:
About 80% of California's developed water projects go to a handful of agribusinesses that benefit from water subsidized by taxpayers. The Sites Reservoir may market itself with pictures of residential faucets, but the people living in its watershed will never benefit from it. California's water may be another security on a trading floor, but the people will continue to resent exploitation by profiteers.

From: John Brower <jxbxhome@gmail.com>
Sent: Thursday, March 17, 2022 3:02 PM
To: info@sitesproject.org
Subject: Sites Reservoir, Aqueduct, and Deschutes River

I learned today that there will be funding for the Sites Reservoir. I would like to share something that I am sure was looked into, but wanted to make sure I shared.

Central Oregon has similar concerns about sustainability for farmers and aquatic life that California does. The Irrigation Districts have decided to pipe the irrigation canals for water taken from the Deschutes River. The estimates for evaporation in the canals are about 40%. When piped, it will significantly reduce the loss. This will give the Deschutes River increased flow.

I wonder if there has been consideration given to piping the California Aqueduct? At 13,100 cfs a reduction in loss of any magnitude even close to 40% would be amazing. Maybe less water siphoned from the Sacramento River.

Here is the environmental impact report from Central Oregon Irrigation District.

Commented [SH3]: Dear Erik,

Thank you so much for your support. We believe that Sites Reservoir is the best insurance policy for future droughts and water resiliency in California. We count on supporters like yourself to keep the interest alive in construction of this project.

Please continue to stay in touch via sitesproject.org to stay updated on the latest news.

Best,
The Sites Project team

Commented [SH4]: Hi Anna,

Thank you so much for your support. We believe that Sites Reservoir is the best insurance policy for future droughts and water resiliency in California. We count on supporters like yourself to keep the interest alive in construction of this project.

Please continue to stay in touch via sitesproject.org to stay updated on the latest news.

Best,
The Sites Project team

Commented [SH5]: Please advise.

Commented [SH6]: Please advise.

Central Oregon Irrigation District – COID Piping

Thank you, sincerely hope all works, John Brower Bend, OR

Good afternoon,

My name is Andre Hawks and we are interested in the Sites Reservoir project and were wondering the status of the design of the Reservoir. We are a SBE/DBE Design Build Heavy Civil construction company that would like to work on this project.

Please find attached our capability statement and COI.

Commented [SH7]: Please advise.

Email:
ckehrlich@gmail.com

First Name:
Charles

Message:
Where can I find kmz "mapping" files showing the latest Sites reservoir boundaries, dams, canals, roads, etc.?
Thank you, -Chas

Sites Reservoir Project

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Schedule

#	Activity ID	Activity Name	A.3 Subschedu	Remaining Duration	Start	Finish
1		**Sites Reservoir Project**		1784	02-Nov-20 A	14-Feb-29
2		**Environmental (Ali, Laurie)**		287	03-Jan-22 A	04-May-23
3		**Key Deliverables**		45	02-Mar-23	04-May-23
4	KD-1470	Final EIR/EIS - Complete		0		02-Mar-23
5	KD-1480	Certify Final EIR/EIS & Approve Preferred Project & MMRP (30 day period for legal challenge)		45	03-Mar-23	04-May-23
6		**Geotech EA/IS**		130	03-Jan-22 A	15-Sep-22
7	EIR-230	Geotech P1A EA/IS	GEO	68	03-Jan-22 A	17-Jun-22
8	EIR-630	Geotech Trench & Test Pits EA/IS (when can this start, driven by Enviro?)	GEO	100	14-Mar-22	03-Aug-22
9	EIR-640	Geotech Trench & Test Pits Environmental Surveys (which RE access agreements are needed	GEO	90	10-May-22	15-Sep-22
10	EIR-260	Geotech P1A Environmental Surveys (which Real Estate access agreements are needed to sta	GEO	20	20-Jun-22	18-Jul-22
11		**EIR/EIS**		269	03-Jan-22 A	10-Apr-23
12		**Final EIR/Final EIS**		242	03-Jan-22 A	02-Mar-23
13	EIR-210	Preparation of Admin Final EIR/EIS		158	03-Jan-22 A	26-Oct-22
14	EIR-220	Analyze & Review New Model Output (May 9-27)		15	06-May-22	26-May-22
15	EIR-250	Complete Final EIR/EIS	GEO	84	27-Oct-22	02-Mar-23
16		**Authority Certifies EIR & Approves Project & File NOD**		5	23-Mar-23	30-Mar-23
17	EIR-370	Authority Certifies EIR & Approves Project	GEO	0		23-Mar-23
18	EIR-380	File NOD		5	24-Mar-23	30-Mar-23
19		**ROD**		22	09-Mar-23	10-Apr-23
20	EIR-440	NEPA Publication		0		09-Mar-23
21	EIR-450	ROD Signed		0		10-Apr-23
22		**Real Estate**		1784	02-Nov-20 A	14-Feb-29
23		**Key Deliverables**		359	03-Jan-22 A	16-Aug-23
24	KD-1495	Complete ROW Manual		201	03-Jan-22 A	30-Dec-22
25	KD-1500	Conduct Options Negotiations with Willing Seller Properties		250	02-May-22*	01-May-23
26	KD-1490	Complete Land Acquisition Master Plan		250	17-Aug-22	16-Aug-23
27		**Temporary Rights of Entry**		756	14-Mar-22	07-Mar-25
28	RE-1010	Engineering Support		756	14-Mar-22	07-Mar-25
29	RE-1020	Geotechnical		756	14-Mar-22	07-Mar-25
30	RE-1030	Cultural Surveys		756	14-Mar-22	07-Mar-25
31	RE-1040	Biological Surveys		756	14-Mar-22	07-Mar-25
32		**Land Access Agreements**		560	14-Mar-22	06-Jun-24
33		**Colusa County**		560	14-Mar-22	06-Jun-24
34	LAAC-1100	Colusa Co. Landowners Access Agreements for Geotech Work Pkg #1	GEO	80	14-Mar-22	06-Jul-22

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Summary
Milestone

Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filters: Incomplete, WBS Starts With.
Data Date: 13-Mar-22 / Print Date: 29-Mar-22

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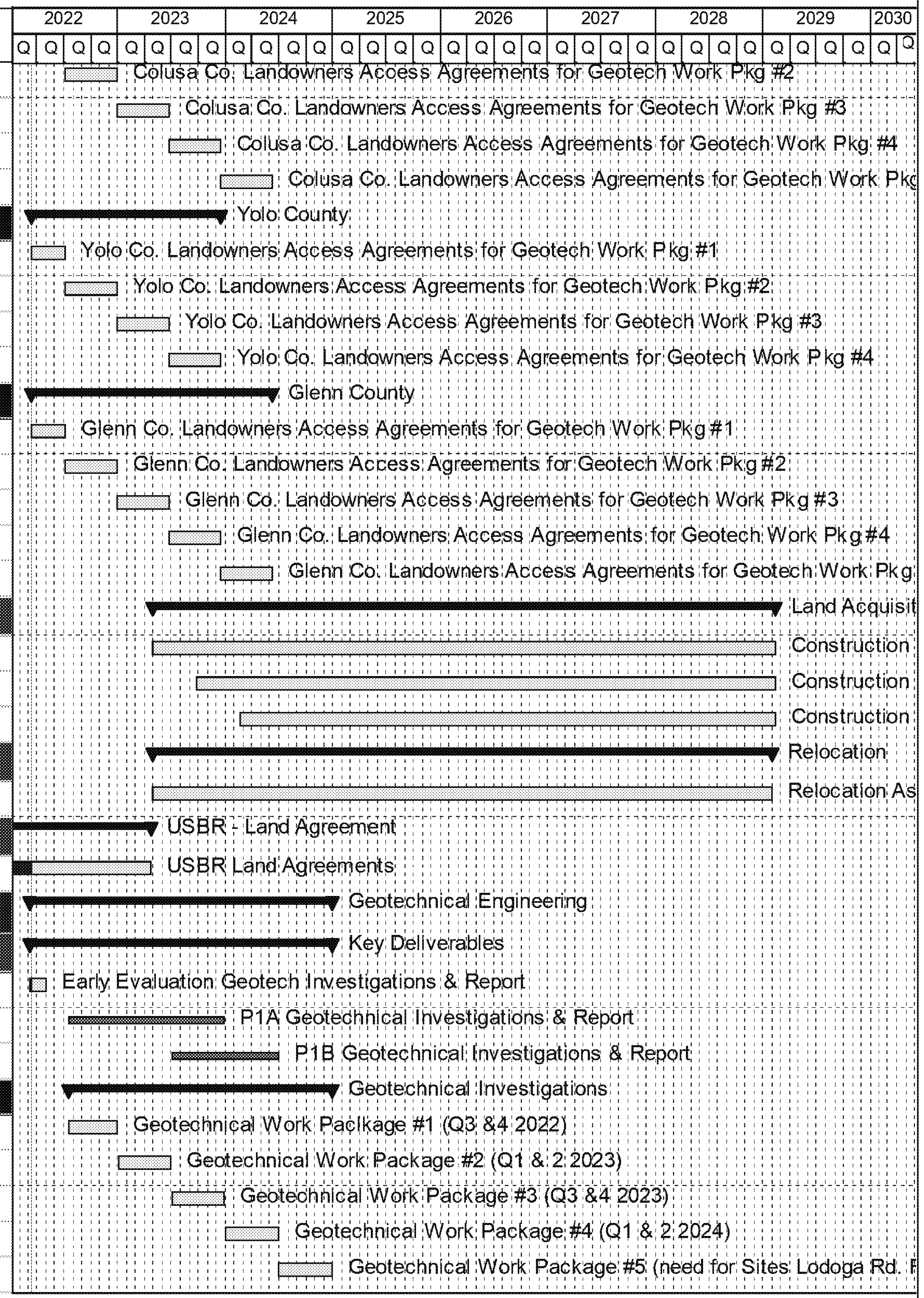
Sites Reservoir Project

Schedule

#	Activity ID	Activity Name	A.3 Subschedu	Remaining Duration	Start	Finish
35	LAAC-1200	Colusa Co. Landowners Access Agreements for Geotech Work Pkg #2	GEO	120	07-Jul-22	29-Dec-22
36	LAAC-1300	Colusa Co. Landowners Access Agreements for Geotech Work Pkg #3	GEO	120	30-Dec-22	21-Jun-23
37	LAAC-1400	Colusa Co. Landowners Access Agreements for Geotech Work Pkg #4	GEO	120	22-Jun-23	14-Dec-23
38	LAAC-1500	Colusa Co. Landowners Access Agreements for Geotech Work Pkg #5	GEO	120	15-Dec-23	06-Jun-24
39	**Yolo County**			440	14-Mar-22	14-Dec-23
40	LAAY-1100	Yolo Co. Landowners Access Agreements for Geotech Work Pkg #1	GEO	80	14-Mar-22	06-Jul-22
41	LAAY-1200	Yolo Co. Landowners Access Agreements for Geotech Work Pkg #2	GEO	120	07-Jul-22	29-Dec-22
42	LAAY-1300	Yolo Co. Landowners Access Agreements for Geotech Work Pkg #3	GEO	120	30-Dec-22	21-Jun-23
43	LAAY-1400	Yolo Co. Landowners Access Agreements for Geotech Work Pkg #4	GEO	120	22-Jun-23	14-Dec-23
44	**Glenn County**			560	14-Mar-22	06-Jun-24
45	LAAG-1100	Glenn Co. Landowners Access Agreements for Geotech Work Pkg #1	GEO	80	14-Mar-22	06-Jul-22
46	LAAG-1200	Glenn Co. Landowners Access Agreements for Geotech Work Pkg #2	GEO	120	07-Jul-22	29-Dec-22
47	LAAG-1300	Glenn Co. Landowners Access Agreements for Geotech Work Pkg #3	GEO	120	30-Dec-22	21-Jun-23
48	LAAG-1400	Glenn Co. Landowners Access Agreements for Geotech Work Pkg #4	GEO	120	22-Jun-23	14-Dec-23
49	LAAG-1500	Glenn Co. Landowners Access Agreements for Geotech Work Pkg #5	GEO	120	15-Dec-23	06-Jun-24
50	**Land Acquisition**			1500	02-May-23	14-Feb-29
51	RE-1050	Construction Package 1 - Land Acquisition		1500	02-May-23	14-Feb-29
52	RE-1060	Construction Package 2 - Land Acquisition		1400	22-Sep-23	14-Feb-29
53	RE-1070	Construction Package 3 - Land Acquisition		1300	21-Feb-24	14-Feb-29
54	**Relocation**			1500	02-May-23	29-Jan-29
55	RE-1100	Relocation Assistance, as Needed		1500	02-May-23	29-Jan-29
56	**USBR - Land Agreement**			278	02-Nov-20 A	21-Apr-23
57	FED-100	USBR Land Agreements		278	02-Nov-20 A	21-Apr-23
58	**Geotechnical Engineering**			706	07-Mar-22 A	27-Dec-24
59	**Key Deliverables**			706	07-Mar-22 A	27-Dec-24
60	KD-2000	Early Evaluation Geotech Investigations & Report	GEO	34	07-Mar-22 A	29-Apr-22
61	KD-2015	P1A Geotechnical Investigations & Report	GEO	362	19-Jul-22	29-Dec-23
62	KD-2025	P1B Geotechnical Investigations & Report	GEO	249	03-Jul-23	28-Jun-24
63	**Geotechnical Investigations**			618	19-Jul-22	27-Dec-24
64	GWP-1100	Geotechnical Work Paclkage #1 (Q3 &4 2022)	GEO	113	19-Jul-22	30-Dec-22
65	GWP-1200	Geotechnical Work Package #2 (Q1 & 2 2023)	GEO	126	03-Jan-23	30-Jun-23
66	GWP-1300	Geotechnical Work Package #3 (Q3 &4 2023)	GEO	123	03-Jul-23	29-Dec-23
67	GWP-1400	Geotechnical Work Package #4 (Q1 & 2 2024)	GEO	126	02-Jan-24	28-Jun-24
68	GWP-1500	Geotechnical Work Package #5 (need for Sites Lodoga Rd. Realignment Cost Certainty)	GEO	130	01-Jul-24	27-Dec-24



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filters: Incomplete, WBS Starts With.
Data Date: 13-Mar-22 / Print Date: 29-Mar-22

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Sites Reservoir Project

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Schedule

#	Activity ID	Activity Name	A.3 Subschedu	Remaining Duration	Start	Finish
69		Preliminary Engineering		708	03-Jan-22 A	31-Dec-24
70		Key Deliverables		515	14-Mar-22	03-Apr-24
71	KD-1120	Determine Criteria & Weighting for Project Delivery Decisions		21	14-Mar-22	12-Apr-22
72	KD-1210	Update Project Risk Assessments (ongoing) (Risk Mgr Bob Beduhn & Henry Luu)		21	14-Mar-22	12-Apr-22
73	KD-1110	Advance Engineering of Project Feature Encroachments to 65% Design Level in Support of Per		21	05-Jul-22	02-Aug-22
74	KD-1180	Preliminary Engineering (30% Design Level)		0		29-Dec-23
75	KD-1190	Update to Class 3 Construction Cost Estimate		0		03-Apr-24
76		Conveyance (Pipelines, Pump Stations, Canals)		708	03-Jan-22 A	31-Dec-24
77		UPRR Oversight & Review		708	03-Jan-22 A	31-Dec-24
78	A1110	Coordination & Oversight with UPRR		708	03-Jan-22 A	31-Dec-24
79		Caltrans Oversight & Review		708	03-Jan-22 A	31-Dec-24
80	A1120	Coordination & Oversight with Caltrans		708	03-Jan-22 A	31-Dec-24
81		DWR Operations Oversight & Review (KLOG)		708	03-Jan-22 A	31-Dec-24
82	A1130	Coordination & Oversight with Department of Water Resources		708	03-Jan-22 A	31-Dec-24
83		RD 108 Oversight & Review		708	03-Jan-22 A	31-Dec-24
84	A1140	Coordination & Oversight with Reclamation District 108		708	03-Jan-22 A	31-Dec-24
85		Design & Analyses		450	01-Feb-22 A	29-Dec-23
86	KD-1140	Create Master Survey & Topo Map		78	01-Feb-22 A	01-Jul-22
87	KD-1150	Finalize TRR Location		46	07-Apr-22	10-Jun-22
88	KD-1630	30% Dunnigan Pipeline PS&E		372	05-Jul-22	29-Dec-23
89	KD-2010	30% Funks PS&E		372	05-Jul-22	29-Dec-23
90	KD-2020	30% TRR PS&E		372	05-Jul-22	29-Dec-23
91	KD-2030	30% Funks & TRR Pipeline PS&E		372	05-Jul-22	29-Dec-23
92		Reservoir (Dams, Tunnels)		708	01-Feb-22 A	31-Dec-24
93		DSOD Oversight & Review		708	01-Feb-22 A	31-Dec-24
94	KD-1100	Initiate Application for Permit to Construct from DSOD		708	01-Feb-22 A	31-Dec-24
95		Design & Analyses		372	05-Jul-22	29-Dec-23
96	KD-1660	30% Golden Gate Dam PS&E		372	05-Jul-22	29-Dec-23
97	KD-2040	30% Sites Dam PS&E		372	05-Jul-22	29-Dec-23
98	KD-2050	30% Saddle Dams PS&E		372	05-Jul-22	29-Dec-23
99	KD-2060	30% I/O Facilities PS&E		372	05-Jul-22	29-Dec-23
100	KD-2070	Emergency Release Modeling		372	05-Jul-22	29-Dec-23
101	KD-2080	System Wide Hydraulic Modeling		372	05-Jul-22	29-Dec-23
102		Electrical (Substation, Switchyard, Transmission Line)		708	03-Jan-22 A	31-Dec-24

Remaining Level of Effort
Actual Level of Effort
Actual Work
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Sites Reservoir Project

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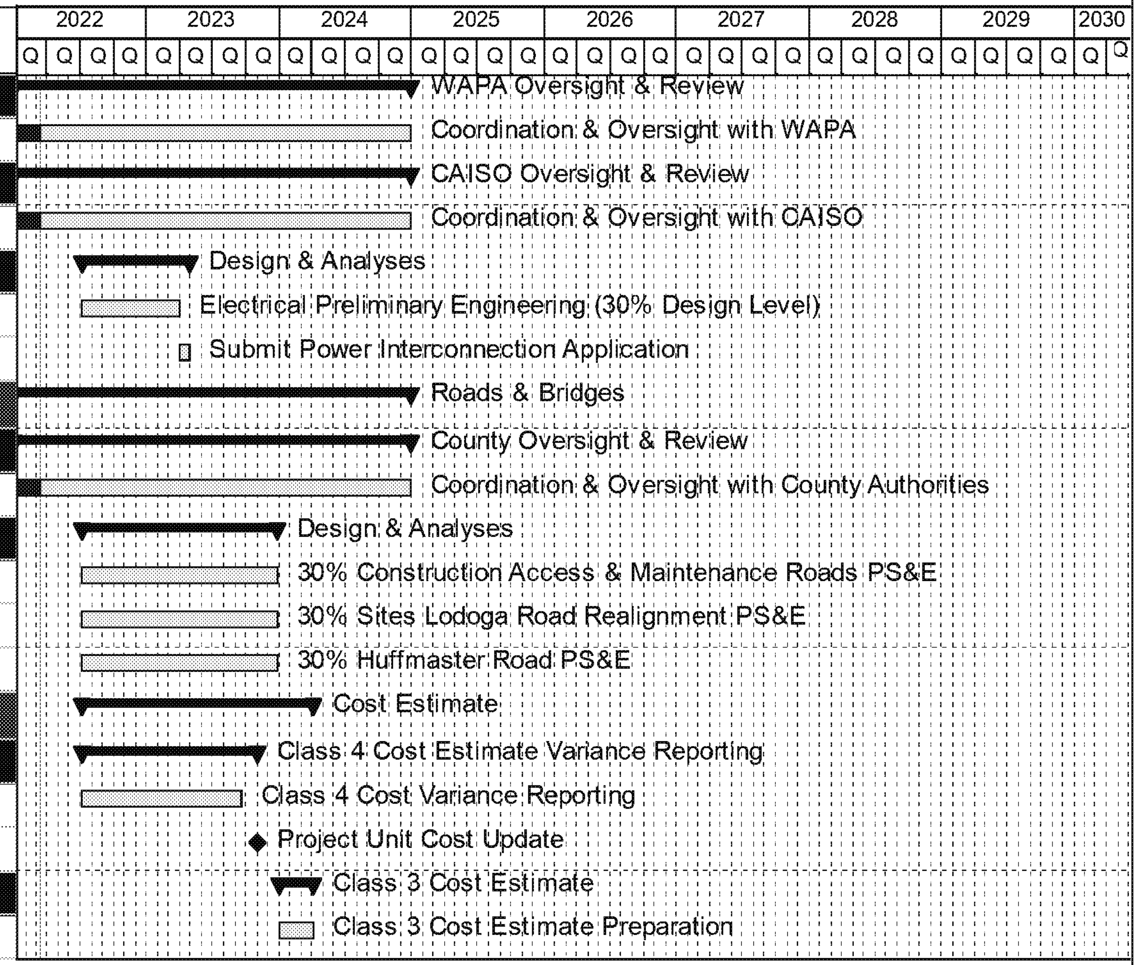
#	Activity ID	Activity Name	A.3 Subschedu	Remaining Duration	Start	Finish
103		**WAPA Oversight & Review**		708	03-Jan-22 A	31-Dec-24
104	A1150	Coordination & Oversight with WAPA		708	03-Jan-22 A	31-Dec-24
105		**CAISO Oversight & Review**		708	03-Jan-22 A	31-Dec-24
106	A1160	Coordination & Oversight with CAISO		708	03-Jan-22 A	31-Dec-24
107		**Design & Analyses**		205	05-Jul-22	28-Apr-23
108	KD-1640	Electrical Preliminary Engineering (30% Design Level)		185	05-Jul-22	31-Mar-23
109	KD-1200	Submit Power Interconnection Application		20	03-Apr-23	28-Apr-23
110		**Roads & Bridges**		708	03-Jan-22 A	31-Dec-24
111		**County Oversight & Review**		708	03-Jan-22 A	31-Dec-24
112	A1170	Coordination & Oversight with County Authorities		708	03-Jan-22 A	31-Dec-24
113		**Design & Analyses**		372	05-Jul-22	29-Dec-23
114	KD-1650	30% Construction Access & Maintenance Roads PS&E		372	05-Jul-22	29-Dec-23
115	KD-2090	30% Sites Lodoga Road Realignment PS&E		372	05-Jul-22	29-Dec-23
116	KD-2100	30% Huffmaster Road PS&E		372	05-Jul-22	29-Dec-23
117		**Cost Estimate**		437	05-Jul-22	03-Apr-24
118		**Class 4 Cost Estimate Variance Reporting**		334	05-Jul-22	01-Nov-23
119	A1180	Class 4 Cost Variance Reporting		304	05-Jul-22	19-Sep-23
120	A1240	Project Unit Cost Update	GEO	0		01-Nov-23
121		**Class 3 Cost Estimate**		65	02-Jan-24	03-Apr-24
122	A1190	Class 3 Cost Estimate Preparation		65	02-Jan-24	03-Apr-24



Remaining Level of Effort
Actual Level of Effort
Actual Work
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Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filters: Incomplete, WBS Starts With.
Data Date: 13-Mar-22 / Print Date: 29-Mar-22

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From: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Sent: 3/29/2022 10:51:46 AM
To: Kevin Spesert [kspesert@sitesproject.org]; Alicia Forsythe [aforsythe@sitesproject.org]
Subject: FW: Shapefile Update
Attachments: RE: Shapefile Update

Good morning,

I brought this up briefly with Ali on Friday morning but there has been much back-and-forth with the Yocha Dehe GIS staff regarding the data that we have been providing. It is my understanding that they have been provided with all site record data as well as the GIS locational data for both the cultural sites and isolates. However, they have recently requested additional data for the isolates. Janis reached out to Laverne since this was not in their original request – there are over 400 isolates and data is minimal. But, Laverne has indicated that they need the data.

I will continue to work with Janis to see how this can be resolved but wanted to give you a heads up.

Laurie

From: Janis Offermann <janis@horizonh2o.com>
Sent: Saturday, March 26, 2022 9:17 PM
To: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Subject: FW: Shapefile Update

Hi, Laurie
I talked with Laverne on Friday morning, but they are pressing the issue about the isolate data. We have a tentative meeting set up for Tuesday morning. Do you want to sit in?

Please also see Susan's email, attached. Any guidance you can provide would be great.
Thanks
janis

From: Laverne Bill <LBill@yochadehe-nsn.gov>
Sent: Friday, March 25, 2022 11:26 AM
To: 'Janis Offermann' <janis@horizonh2o.com>; Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>; 'Havelaar, Christiaan' <Christiaan.Havelaar@icf.com>
Cc: Victoria Delgado <VDelgado@yochadehe-nsn.gov>; Rebekah Canavesio <RCanavesio@yochadehe-nsn.gov>
Subject: RE: Shapefile Update

Good morning, Janis. Thank you for the follow up email about the site records for the prehistoric sites. But after reading your email, the Tribe would like also like to have the isolates turned into shape files. This data is extremely important and can help us determine if further testing will need to be done in these areas. Let us schedule a time to have a video call with you and your GIS folks to better understand how to move forward in a productive way. I have included my staff on the email to help schedule that meeting. Thanks.

Laverne Bill
Director of Cultural Resources

Yocha Dehe Wintun Nation
PO Box 18 | Brooks, CA 95606
p 530.796.3400 | c 530.723.3891
f 530.796.2143
lbill@yochadehe-nsn.gov

www.yochadehe.org

From: Janis Offermann <janis@horizonh2o.com>
Sent: Friday, March 25, 2022 11:19 AM
To: Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>; Havelaar, Christiaan <Christiaan.Havelaar@icf.com>
Cc: Laverne Bill <LBill@yochadehe-nsn.gov>
Subject: RE: Shapefile Update

[Warning External Sender]

Hi, Andrew
The isolates/points shouldn't be entirely blank and should be labeled prehistoric, historic, or multicomponent. You are correct, however, that more specific info is likely not included at this time. While the isolates provide general information about land use, the more important and detailed information is contained in the archaeological site files. The site data will be the most useful for identifying occupational sites, etc. I'm sorry, but there are over 400 isolates, and there is no plan to address them in the near future.

Thanks
janis

From: Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>
Sent: Friday, March 25, 2022 10:52 AM
To: 'Havelaar, Christiaan' <Christiaan.Havelaar@icf.com>; janis@horizonh2o.com
Subject: RE: Shapefile Update

Janis,

I haven't heard back from you or ICF. I was pretty surprised to put it mildly to find the isos/ point shapefiles completely blank. Are you planning to correct this?

From: Havelaar, Christiaan <Christiaan.Havelaar@icf.com>
Sent: Thursday, March 24, 2022 1:25 PM
To: Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>; janis@horizonh2o.com
Subject: RE: Shapefile Update

[Warning External Sender]

Link to download should have been sent. Let me know if you have any issues.

From: Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>
Sent: Thursday, March 24, 2022 9:05 AM
To: janis@horizonh2o.com
Cc: Havelaar, Christiaan <Christiaan.Havelaar@icf.com>
Subject: RE: Shapefile Update

Any updates on when I can expect the shapefiles?

From: Janis Offermann <janis@horizonh2o.com>
Sent: Tuesday, March 22, 2022 12:09 PM
To: Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>
Subject: RE: Shapefile Update

[Warning External Sender]

Hi, Andrew
Sorry for not responding sooner. The problem with going on vacation is that you are swamped when you get back.
I just heard from Christiaan, and the ICF GIS staff is working on this now. To be honest, ICF thought you could pull the spreadsheet data into the shapefiles.?? Since I don???t know anything about how this works, I figured we were on the right track. Hope you see this today.??
I will try uploading the site records I tried to send earlier to your share file.
Thanks
janis
??
??

From: Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>
Sent: Monday, March 21, 2022 11:55 AM
To: janis@horizonh2o.com
Cc: 'Havelaar, Christiaan' <Christiaan.Havelaar@icf.com>
Subject: Shapefile Update
??
Janis,
??
Not sure if you saw, but we were sent a spreadsheet with no spatial information and not shapefiles. It seems somehow there was some confusion despite my thinking we were on the same page. We???re looking for shapefiles with descriptions of the resources.
??
Thank you,
??
Andy Cherna
GIS Analyst
??
Yocha Dehe Wintun Nation
PO Box 18 | Brooks, CA 95606
o 530.796.2805 |?? c 530.723.2076 |
acherna@yochadehe-nsn.gov
www.yochadehe.org
??

From: Lassell, Susan [Susan.Lassell@icf.com]
Sent: 3/25/2022 5:10:29 PM
To: janis@horizonh2o.com; Havelaar, Christiaan [Christiaan.Havelaar@icf.com]
CC: Briard, Monique [Monique.Briard@icf.com]; Risse, Danielle [danielle.risse@hdrinc.com]
Subject: RE: Shapefile Update

Hi Janis –

Christiaan is out on medical leave today so is not able to weigh in on scheduling meetings for early next week. Also note that our GIS staff who has been supporting these efforts over the past months is on PTO next week.

It does seem that we should talk this through with the Authority prior to attending that meeting. We certainly can't commit to digitizing the isolates during a call with the Tribe without running it by the Authority first. I would suspect that they'd want to know the degree of push back going on here, as well. Earlier this week we thought things would be resolved with a friendly call, but that doesn't seem to be Laverne's take-away?

Danielle – I think I may have lost track, but to what degree should we be saving email communications to the HDR sharepoint? It does seem that these are the record of consultation and should be memorialized somehow.

Susan

SUSAN LASSELL | +1.916.231.7612 direct | +1.415.238.9086 mobile

---

From: Janis Offermann <janis@horizonh2o.com>
Sent: Friday, March 25, 2022 11:47 AM
To: Havelaar, Christiaan <Christiaan.Havelaar@icf.com>; Lassell, Susan <Susan.Lassell@icf.com>
Cc: Briard, Monique <Monique.Briard@icf.com>
Subject: FW: Shapefile Update

Hi, Christiaan
I talked with Laverne this morning, and told him that we acknowledged the info wasn't perfect, but that it was a conglomeration of decades of recordations that are not always a perfect match. I also said this is the data we are using for analyses and ensured him that all the sites would be revisited in the future, with their participation. I believe he then followed up with Andrew. Obviously, they are pushing back about the isolates now.
Hopefully you and one of your GIS staff can make one of the meeting dates they supplied for early next week.
thanks
janis

From: Laverne Bill <LBill@yochadehe-nsn.gov>
Sent: Friday, March 25, 2022 11:26 AM
To: 'Janis Offermann' <janis@horizonh2o.com>; Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>; 'Havelaar, Christiaan' <Christiaan.Havelaar@icf.com>
Cc: Victoria Delgado <VDelgado@yochadehe-nsn.gov>; Rebekah Canavesio <RCanavesio@yochadehe-nsn.gov>
Subject: RE: Shapefile Update

Good morning, Janis. Thank you for the follow up email about the site records for the prehistoric sites. But after reading your email, the Tribe would like also like to have the isolates turned into shape files. This data is extremely important and can help us determine if further testing will need to be done in these areas. Let us schedule a time to have a video call with you and your GIS folks to better understand how to move forward in a productive way. I have included my staff on the email to help schedule that meeting. Thanks.

Laverne Bill
Director of Cultural Resources

Yocha Dehe Wintun Nation
PO Box 18 | Brooks, CA 95606
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lbill@yochadehe-nsn.gov
www.yochadehe.org

From: Janis Offermann <janis@horizonh2o.com>
Sent: Friday, March 25, 2022 11:19 AM
To: Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>; Havelaar, Christiaan <Christiaan.Havelaar@icf.com>
Cc: Laverne Bill <LBill@yochadehe-nsn.gov>
Subject: RE: Shapefile Update

[Warning External Sender]

Hi, Andrew
The isolates/points shouldn't be entirely blank and should be labeled prehistoric, historic, or multicomponent. You are correct, however, that more specific info is likely not included at this time. While the isolates provide general information about land use, the more important and detailed information is contained in the archaeological site files. The site data will be the most useful for identifying occupational sites, etc. I'm sorry, but there are over 400 isolates, and there is no plan to address them in the near future.

Thanks
janis

From: Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>
Sent: Friday, March 25, 2022 10:52 AM
To: 'Havelaar, Christiaan' <Christiaan.Havelaar@icf.com>; janis@horizonh2o.com
Subject: RE: Shapefile Update

Janis,

I haven't heard back from you or ICF. I was pretty surprised to put it mildly to find the isos/ point shapefiles completely blank. Are you planning to correct this?

From: Havelaar, Christiaan <Christiaan.Havelaar@icf.com>
Sent: Thursday, March 24, 2022 1:25 PM
To: Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>; janis@horizonh2o.com
Subject: RE: Shapefile Update

[Warning External Sender]

Link to download should have been sent. Let me know if you have any issues.

From: Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>
Sent: Thursday, March 24, 2022 9:05 AM
To: janis@horizonh2o.com
Cc: Havelaar, Christiaan <Christiaan.Havelaar@icf.com>
Subject: RE: Shapefile Update

Any updates on when I can expect the shapefiles?

From: Janis Offermann <janis@horizonh2o.com>
Sent: Tuesday, March 22, 2022 12:09 PM
To: Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>
Subject: RE: Shapefile Update

[Warning External Sender]

Hi, Andrew
Sorry for not responding sooner. The problem with going on vacation is that you are swamped when you get back.
I just heard from Christiaan, and the ICF GIS staff is working on this now. To be honest, ICF thought you could pull the spreadsheet data into the shapefiles.?? Since I don???t know anything about how this works, I figured we were on the right track. Hope you see this today.??
I will try uploading the site records I tried to send earlier to your share file.
Thanks
janis
??
??

From: Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>
Sent: Monday, March 21, 2022 11:55 AM
To: janis@horizonh2o.com
Cc: 'Havelaar, Christiaan' <Christiaan.Havelaar@icf.com>
Subject: Shapefile Update
??
Janis,
??
Not sure if you saw, but we were sent a spreadsheet with no spatial information and not shapefiles. It seems somehow there was some confusion despite my thinking we were on the same page. We???re looking for shapefiles with descriptions of the resources.
??
Thank you,
??
Andy Cherna
GIS Analyst
??
Yocha Dehe Wintun Nation
PO Box 18 | Brooks, CA 95606
o 530.796.2805 |?? c 530.723.2076 |
acherna@yochadehe-nsn.gov
www.yochadehe.org
??

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Sites Reservoir Project

Schedule

#	Activity ID	Activity Name	A.3 Subschedu	Remaining Duration	Start	Finish
1		**Sites Reservoir Project**		2188	02-Jan-20 A	03-Sep-30
2		**Project Milestones**		2079	16-Aug-22	03-Sep-30
3	WP3-015	Contracting Strategy Completed		0		16-Aug-22
4	MS-250-FE	Final EIR/EIS		0		02-Mar-23
5	MS-450-RD	ROD Signed		0		10-Apr-23
6	WR-185	Water Right Permit Issued	GEO	0		28-Dec-23
7	WP3-025	Investor Commitment (needs Predecessors)	GEO	0		12-Feb-24
8	WP3-010	Phase 2 Amendment 3 Complete		0		23-Apr-25*
9	MS-500-CS	Construction Starts		0	23-May-25	
10	MS-510-CC	Construction Complete		0		25-Oct-29
11	MS-600-PB	Public Beneficial Occupancy - Sites Program		0		03-Sep-30
12		**Planning**		481	01-Sep-20 A	14-Feb-24
13		**Key Deliverables**		21	24-Jan-22 A	12-Apr-22
14	KD-1130	Complete Updated Master Project Schedule		21	24-Jan-22 A	12-Apr-22
15	KD-1290	Formalize AB/RC Governance & Delegation of Authority for Phase 3 (needs development)		21	14-Mar-22	12-Apr-22
16		**Local Agency Agreements & Permits**		400	08-Jul-22	14-Feb-24
17		**Colusa County**		400	08-Jul-22	14-Feb-24
18	LOC-050	Colusa County General Plan & Zoning		400	08-Jul-22	14-Feb-24
19		**Glenn County**		400	08-Jul-22	14-Feb-24
20	LOC-140	Glenn County General Plan & Zoning		400	08-Jul-22	14-Feb-24
21		**Yolo County**		400	08-Jul-22	14-Feb-24
22	LOC-90	Yolo County General Plan & Zoning		400	08-Jul-22	14-Feb-24
23		**US Bureau of Reclamation Warren Act**		311	01-Jun-21 A	08-Jun-23
24	FED-090	Prepare Warren Act Contract (who?, Ali, JP?)		291	01-Jun-21 A	10-May-23
25	FED-110	Executed Warren Act Contract		20	11-May-23	08-Jun-23
26		**Facility Use Agreeements**		325	27-Aug-21 A	28-Jun-23
27	FO-1020	Final TCCA Facility Use Agreement (JP & ?)	GEO	325	27-Aug-21 A	28-Jun-23
28	FO-1030	Final GCID Facility Use Agreement	GEO	325	27-Aug-21 A	28-Jun-23
29	FO-1040	Final CBDA Facility Use Agreement	GEO	325	27-Aug-21 A	28-Jun-23
30	KD-1230	Execute Final Facilities Use Agreements	GEO	0		28-Jun-23
31		**NAHC/Local Tribes AB 52 Consultation**		148	01-Sep-20 A	12-Oct-22
32	STA-120	NAHC/Local Tribes AB 52 Consultation (move to Laurie/Planning?)		148	01-Sep-20 A	12-Oct-22
33		**Reservoir Operations & Modeling**		789	01-Nov-20 A	23-Apr-25
34		**Key Deliverables**		21	14-Mar-22	12-Apr-22
35	KD-1220	Negotiate & Execute Benefits Contracts with DWR & CDFW (move to Erin?)		21	14-Mar-22	12-Apr-22
36		**Operations Plan - Version 2**		260	29-Dec-23	26-Dec-24

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filter: Less than 100%.
Data Date: 13-Mar-22 / Print Date: 29-Mar-22

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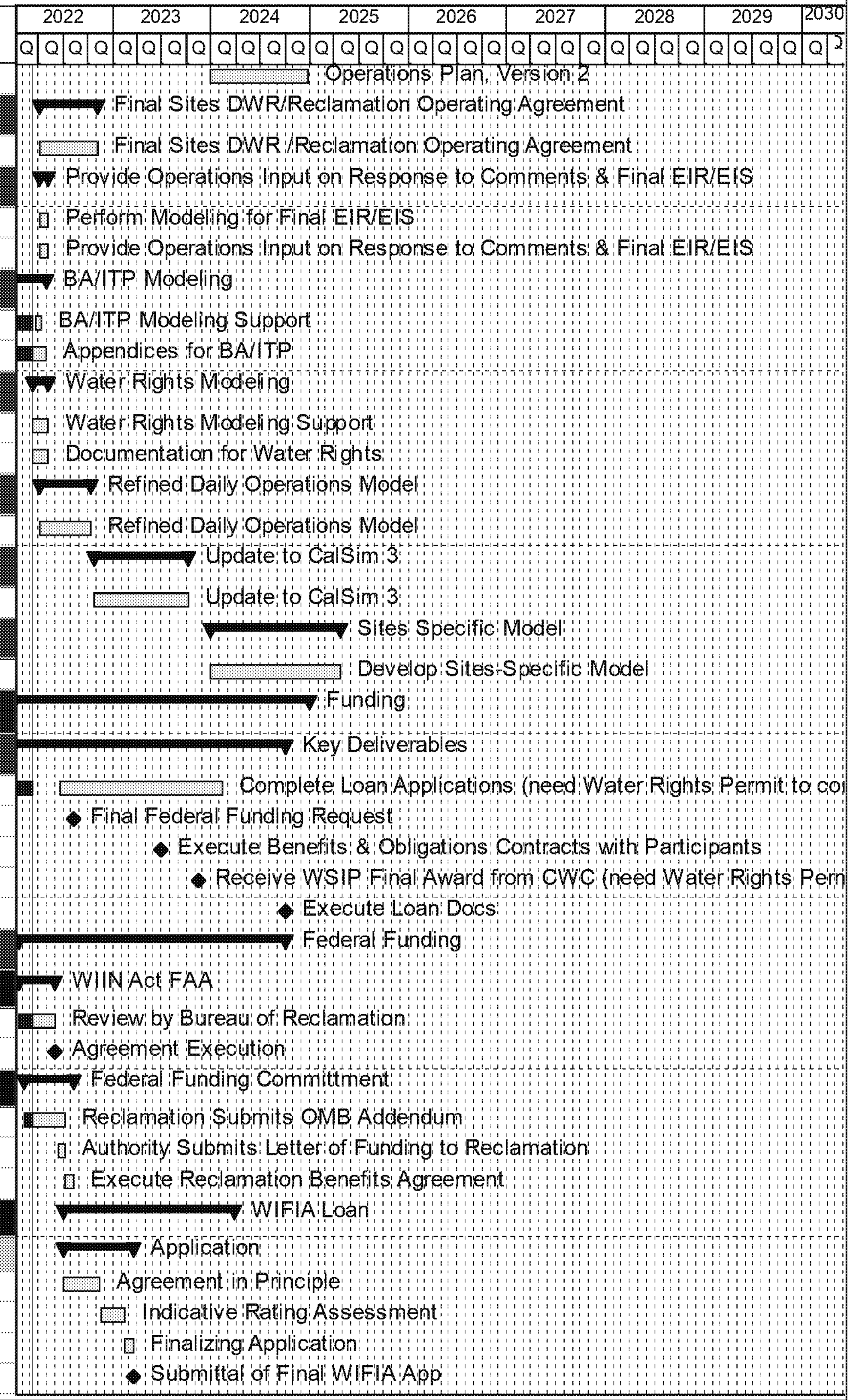
Sites Reservoir Project

Schedule

#	Activity ID	Activity Name	A.3 Subschedu	Remaining Duration	Start	Finish
37	KD-1510	Operations Plan, Version 2		260	29-Dec-23	26-Dec-24
38		**Final Sites DWR/Reclamation Operating Agreement**		151	04-Apr-22	04-Nov-22
39	OP-1005	Final Sites DWR /Reclamation Operating Agreement		151	04-Apr-22	04-Nov-22
40		**Provide Operations Input on Response to Comments & Final EIR/EIS**		24	04-Apr-22	05-May-22
41	FO-1110	Perform Modeling for Final EIR/EIS		24	04-Apr-22*	05-May-22
42	FO-1080	Provide Operations Input on Response to Comments & Final EIR/EIS		20	07-Apr-22	04-May-22
43		**BA/ITP Modeling**		34	01-Nov-20 A	29-Apr-22
44	OP-450	BA/ITP Modeling Support		13	01-Nov-20 A	11-Apr-22
45	OP-360	Appendices for BA/ITP		34	01-Apr-21 A	29-Apr-22
46		**Water Rights Modeling**		40	14-Mar-22	09-May-22
47	A1200	Water Rights Modeling Support		40	14-Mar-22	09-May-22
48	A1210	Documentation for Water Rights		40	14-Mar-22	09-May-22
49		**Refined Daily Operations Model**		130	07-Apr-22	11-Oct-22
50	A1220	Refined Daily Operations Model		130	07-Apr-22	11-Oct-22
51		**Update to CalSim 3**		240	26-Oct-22	11-Oct-23
52	A1230	Update to CalSim 3		240	26-Oct-22	11-Oct-23
53		**Sites Specific Model**		344	29-Dec-23	23-Apr-25
54	OS-1150	Develop Sites-Specific Model		344	29-Dec-23	23-Apr-25
55		**Funding**		708	03-Jan-22 A	31-Dec-24
56		**Key Deliverables**		576	03-Jan-22 A	02-Oct-24
57	KD-1270	Complete Loan Applications (need Water Rights Permit to complete)		411	03-Jan-22 A	12-Feb-24
58	KD-1260	Final Federal Funding Request		0		08-Aug-22
59	KD-1300	Execute Benefits & Obligations Contracts with Participants		0		29-Jun-23
60	KD-1310	Receive WSIP Final Award from CWC (need Water Rights Permit to complete)		0		17-Nov-23
61	KD-1280	Execute Loan Docs		0		02-Oct-24
62		**Federal Funding**		644	17-Jan-22 A	02-Oct-24
63		**WIIN Act FAA**		55	17-Jan-22 A	31-May-22
64	WIIN-1120	Review by Bureau of Reclamation		55	17-Jan-22 A	31-May-22
65	WIIN-1140	Agreement Execution		0		31-May-22
66		**Federal Funding Committment**		103	07-Feb-22 A	08-Aug-22
67	WIIN-1150	Reclamation Submits OMB Addendum		83	07-Feb-22 A	11-Jul-22
68	WIIN-1160	Authority Submits Letter of Funding to Reclamation		20	13-Jun-22	11-Jul-22
69	WIIN-1170	Execute Reclamation Benefits Agreement		20	12-Jul-22	08-Aug-22
70		**WIFIA Loan**		431	01-Jul-22	25-Mar-24
71		**Application**		176	01-Jul-22	20-Mar-23
72	WIFIA-110	Agreement in Principle		95	01-Jul-22	16-Nov-22
73	WIFIA-120	Indicative Rating Assessment		60	17-Nov-22	15-Feb-23
74	WIFIA-130	Finalizing Application		30	16-Feb-23	17-Mar-23
75	WIFIA-140	Submittal of Final WIFIA App		0		20-Mar-23



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filter: Less than 100%.
Data Date: 13-Mar-22 / Print Date: 29-Mar-22

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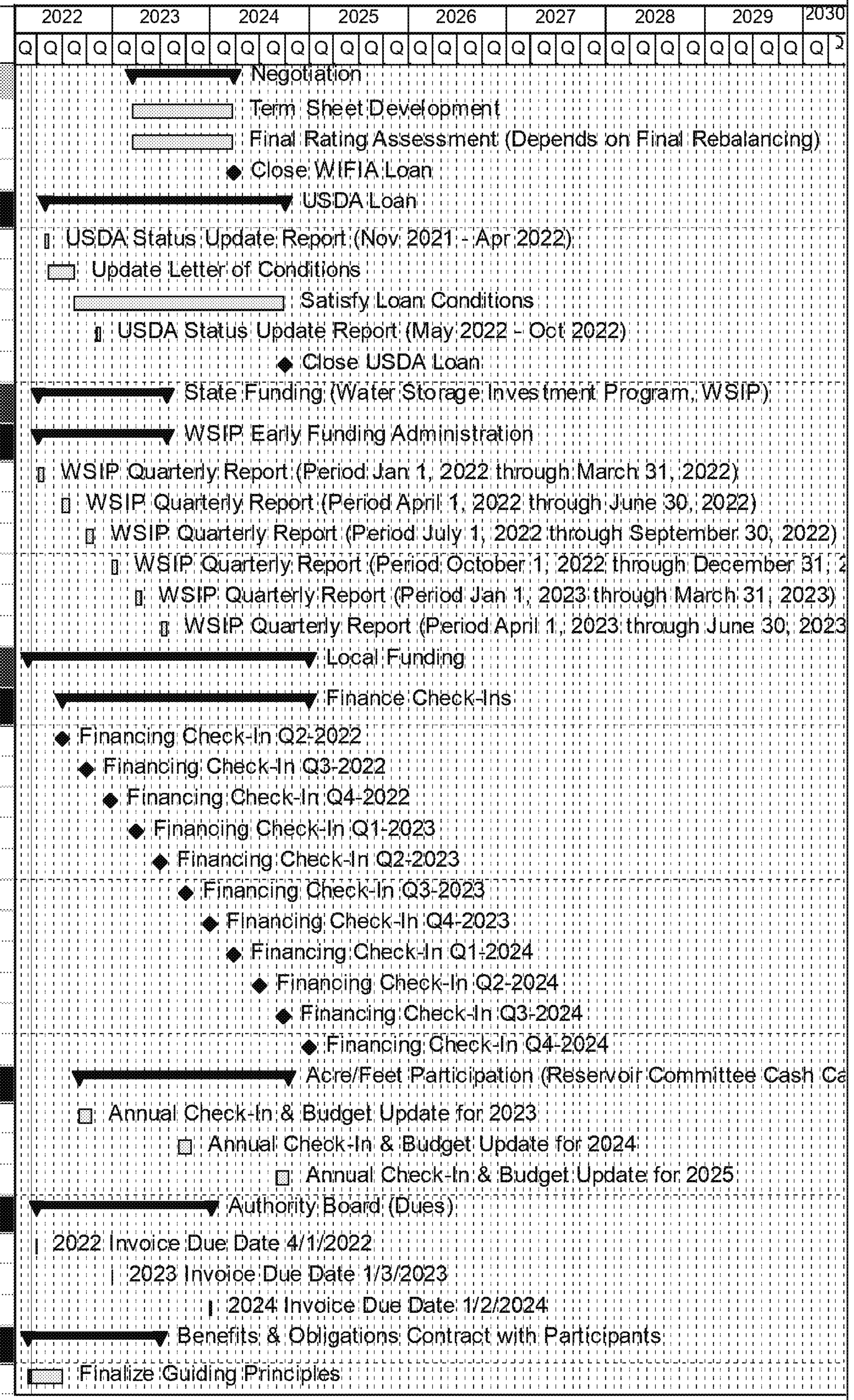
Sites Reservoir Project

Schedule

#	Activity ID	Activity Name	A.3 Subschedu	Remaining Duration	Start	Finish
76	Negotiation			255	20-Mar-23	25-Mar-24
77	WIFIA-210	Term Sheet Development		250	20-Mar-23	18-Mar-24
78	WIFIA-220	Final Rating Assessment (Depends on Final Rebalancing)		250	20-Mar-23	18-Mar-24
79	WIFIA-230	Close WIFIA Loan	GEO	0		25-Mar-24
80	USDA Loan			610	02-May-22	02-Oct-24
81	USDA-1030	USDA Status Update Report (Nov 2021 - Apr 2022)		10	02-May-22	13-May-22
82	USDA-1050	Update Letter of Conditions		65	16-May-22	16-Aug-22
83	USDA-1060	Satisfy Loan Conditions		530	17-Aug-22	25-Sep-24
84	USDA-1040	USDA Status Update Report (May 2022 - Oct 2022)		10	04-Nov-22	18-Nov-22
85	USDA-1070	Close USDA Loan	GEO	0		02-Oct-24
86	State Funding (Water Storage Investment Program, WSIP)			329	04-Apr-22	25-Jul-23
87	WSIP Early Funding Administration			329	04-Apr-22	25-Jul-23
88	WSIP-1210	WSIP Quarterly Report (Period Jan 1, 2022 through March 31, 2022)		15	04-Apr-22	22-Apr-22
89	WSIP-1220	WSIP Quarterly Report (Period April 1, 2022 through June 30, 2022)		15	06-Jul-22	26-Jul-22
90	WSIP-1230	WSIP Quarterly Report (Period July 1, 2022 through September 30, 2022)		15	03-Oct-22	24-Oct-22
91	WSIP-1240	WSIP Quarterly Report (Period October 1, 2022 through December 31, 2022)		15	03-Jan-23	24-Jan-23
92	WSIP-1250	WSIP Quarterly Report (Period Jan 1, 2023 through March 31, 2023)		15	03-Apr-23	21-Apr-23
93	WSIP-1260	WSIP Quarterly Report (Period April 1, 2023 through June 30, 2023)		15	05-Jul-23	25-Jul-23
94	Local Funding			708	01-Mar-22 A	31-Dec-24
95	Finance Check-Ins			631	30-Jun-22	31-Dec-24
96	FC-1250	Financing Check-In Q2-2022		0		30-Jun-22*
97	FC-1260	Financing Check-In Q3-2022		0		30-Sep-22
98	FC-1270	Financing Check-In Q4-2022		0		30-Dec-22
99	FC-1280	Financing Check-In Q1-2023		0		31-Mar-23
100	FC-1290	Financing Check-In Q2-2023		0		30-Jun-23
101	FC-1300	Financing Check-In Q3-2023		0		29-Sep-23
102	FC-1310	Financing Check-In Q4-2023		0		29-Dec-23
103	FC-1320	Financing Check-In Q1-2024		0		29-Mar-24
104	FC-1330	Financing Check-In Q2-2024		0		28-Jun-24
105	FC-1340	Financing Check-In Q3-2024		0		30-Sep-24
106	FC-1350	Financing Check-In Q4-2024		0		31-Dec-24
107	Acre/Feet Participation (Reservoir Committee Cash Calls)			530	06-Sep-22	14-Oct-24
108	AF-1100	Annual Check-In & Budget Update for 2023		30	06-Sep-22	18-Oct-22
109	AF-1120	Annual Check-In & Budget Update for 2024		30	06-Sep-23	18-Oct-23
110	AF-1140	Annual Check-In & Budget Update for 2025		30	03-Sep-24	14-Oct-24
111	Authority Board (Dues)			438	01-Apr-22	02-Jan-24
112	AB-2100	2022 Invoice Due Date 4/1/2022		1	01-Apr-22	01-Apr-22*
113	AB-2120	2023 Invoice Due Date 1/3/2023		1	03-Jan-23	03-Jan-23*
114	AB-2140	2024 Invoice Due Date 1/2/2024		1	02-Jan-24	02-Jan-24*
115	Benefits & Obligations Contract with Participants			326	01-Mar-22 A	29-Jun-23
116	BOA-1100	Finalize Guiding Principles		77	01-Mar-22 A	30-Jun-22



Remaining Level of Effort | Remaining Work | Summary
Actual Level of Effort | Critical Remaining Work
Actual Work | Milestone

Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filter: Less than 100%.
Data Date: 13-Mar-22 / Print Date: 29-Mar-22

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Schedule

#	Activity ID	Activity Name	A.3 Subschedu	Remaining Duration	Start	Finish
117	BOA-1200	Finalize Plan of Finance		201	01-Mar-22 A	30-Dec-22
118	BOA-1300	Develop & Execute Benefits & Obligations Contract with Participants		125	03-Jan-23	29-Jun-23
119		**Phase 3 Participation Agreement**		80	04-Jan-24	26-Apr-24
120	P3PA-1100	Develop Phase 3 Participation Agreement	GEO	30	04-Jan-24	15-Feb-24
121	P3PA-1110	Home Board Execution & Final Rebalancing	GEO	50	16-Feb-24	26-Apr-24
122		**Bank Financing**		50	20-Mar-23	26-May-23
123	BF-1100	Prepare & Issue RFP to Prospective Lenders		15	20-Mar-23	07-Apr-23
124	BF-1120	Review & Select Lender(s)		20	10-Apr-23	05-May-23
125	BF-1140	Execute Bank Financing Loan Documents	GEO	15	08-May-23	26-May-23
126		**Permitting (Ali, John, Jelica)**		756	04-Jan-21 A	07-Mar-25
127		**Key Deliverables**		509	14-Mar-22	26-Mar-24
128	KD-1240	Execute Federal Operations Agreement		0		14-Mar-22
129	KD-1250	Execute State Operations Agreement		0		14-Mar-22
130	KD-1320	Water Right - Complete Protest Resolution Period & Resolve as Many Protests as Possible		0		14-Mar-22
131	KD-1360	Section 106 - Programmatic Historic Properties Management Plan Development		0		14-Mar-22
132	KD-1450	Obtain Local Agency Agreements & Permits		0		14-Mar-22
133	KD-1460	Develop Mitigation Master Plan		125	17-Aug-22	17-Feb-23
134	KD-1340	Federal ESA - Receive Biological Opinions		0		30-Dec-22
135	KD-1350	Section 106 - Final Programmatic Agreement		0		16-Mar-23
136	KD-1430	Eagle Permit - Short Term & Nest Permit Issued		0		31-Mar-23
137	KD-1370	Incidental Take Permit - Construction ITP Issued	GEO	0		11-May-23
138	KD-1380	Incidental Take Permit - Operations ITP Issued	GEO	0		11-May-23
139	KD-1390	CWA 404/401 - Submit Final Permit Applications		0		11-May-23
140	KD-1420	Streambed Alteration Agreement		0		11-May-23
141	KD-1400	CWA 404/401 - Permits Issued		0		07-Aug-23
142	KD-1410	Levee & Flood Permits - Section 408 & CVFPB Encroachment Permits Issued		0		10-Aug-23
143	KD-1330	Water Right - Receive Water Right Order & Permit		0		28-Dec-23
144	KD-1440	Eagle Permit - Long Term Permit Issued		0		26-Mar-24
145		**Field Surveys**		756	14-Mar-22	07-Mar-25
146	RE-1030	Cultural Surveys		756	14-Mar-22	07-Mar-25
147	RE-1040	Biological Surveys		756	14-Mar-22	07-Mar-25
148		**Federal Agency Agreements & Permits**		515	11-Jan-21 A	03-Apr-24
149	CE-1570	Mitigation Cost Estimate Update		20	07-Mar-24	03-Apr-24
150		**Phase 1 Environmental Site Assessments (Where does this go?)**		421	14-Mar-22	23-Oct-23
151	FED-010	Phase 1 Environmental Site Assessments (Engineering ?)		421	14-Mar-22	23-Oct-23
152		**Clean Water Act Section 404**		352	04-Feb-21 A	07-Aug-23
153	404-050	Prepare Draft 404 Application		291	04-Feb-21 A	10-May-23
154	404-120	Submit 404 Application		1	11-May-23	11-May-23
155	404-130	Receive 404 Permit		0		07-Aug-23
156		**US Army Corps of Engineers Rivers & Harbors Act Section 14, Section 408**		233	31-Aug-22	07-Aug-23

Remaining Level of Effort | Remaining Work | Summary
Actual Level of Effort | Critical Remaining Work
Actual Work | Milestone

Project ID: Sites / Project Name: Sites Reservoir Project
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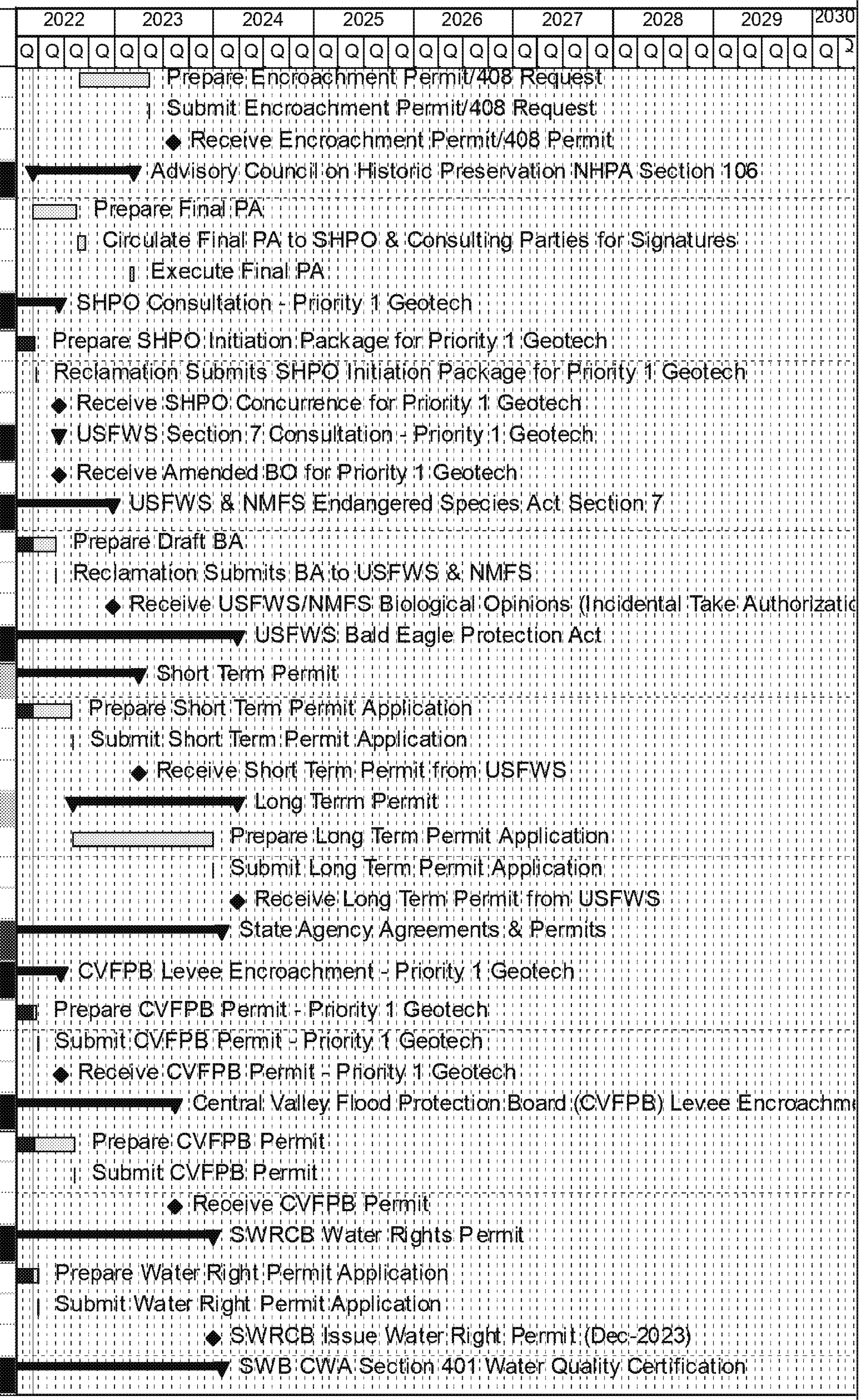
Sites Reservoir Project

Schedule

#	Activity ID	Activity Name	A.3 Subschedu	Remaining Duration	Start	Finish
157	408-150	Prepare Encroachment Permit/408 Request		172	31-Aug-22	10-May-23
158	408-160	Submit Encroachment Permit/408 Request		1	11-May-23	11-May-23
159	408-170	Receive Encroachment Permit/408 Permit		0		07-Aug-23
160	**Advisory Council on Historic Preservation NHPA Section 106**			252	14-Mar-22 A	16-Mar-23
161	106-081	Prepare Final PA		112	14-Mar-22 A	19-Aug-22
162	106-092	Circulate Final PA to SHPO & Consulting Parties for Signatures		18	22-Aug-22	15-Sep-22
163	106-102	Execute Final PA		10	03-Mar-23	16-Mar-23
164	**SHPO Consultation - Priority 1 Geotech**			66	02-Aug-21 A	15-Jun-22
165	SHPO-240	Prepare SHPO Initiation Package for Priority 1 Geotech	GEO	5	02-Aug-21 A	18-Mar-22
166	SHPO-250	Reclamation Submits SHPO Initiation Package for Priority 1 Geotech	GEO	1	21-Mar-22	21-Mar-22
167	SHPO-260	Receive SHPO Concurrence for Priority 1 Geotech	GEO	0		15-Jun-22
168	**USFWS Section 7 Consultation - Priority 1 Geotech**			0	16-Jun-22	16-Jun-22
169	BA-120	Receive Amended BO for Priority 1 Geotech	GEO	0		16-Jun-22
170	**USFWS & NMFS Endangered Species Act Section 7**			201	11-Jan-21 A	30-Dec-22
171	BA-200	Prepare Draft BA		57	11-Jan-21 A	02-Jun-22
172	BA-210	Reclamation Submits BA to USFWS & NMFS		1	03-Jun-22	03-Jun-22
173	BA-220	Receive USFWS/NMFS Biological Opinions (Incidental Take Authorizations)		0		30-Dec-22
174	**USFWS Bald Eagle Protection Act**			509	03-Jan-22 A	26-Mar-24
175	**Short Term Permit**			263	03-Jan-22 A	31-Mar-23
176	USFWS-110	Prepare Short Term Permit Application		97	03-Jan-22 A	29-Jul-22
177	USFWS-120	Submit Short Term Permit Application		1	01-Aug-22	01-Aug-22
178	USFWS-130	Receive Short Term Permit from USFWS		0		31-Mar-23
179	**Long Terrm Permit**			411	02-Aug-22	26-Mar-24
180	USFWS-140	Prepare Long Term Permit Application		350	02-Aug-22	27-Dec-23
181	USFWS-150	Submit Long Term Permit Application		1	28-Dec-23	28-Dec-23
182	USFWS-160	Receive Long Term Permit from USFWS		0		26-Mar-24
183	**State Agency Agreements & Permits**			469	04-Jan-21 A	29-Jan-24
184	**CVFPB Levee Encroachment - Priority 1 Geotech**			71	01-Nov-21 A	22-Jun-22
185	CVFPB-100	Prepare CVFPB Permit - Priority 1 Geotech	GEO	10	01-Nov-21 A	25-Mar-22
186	CVFPB-110	Submit CVFPB Permit - Priority 1 Geotech	GEO	1	28-Mar-22	28-Mar-22
187	CVFPB-120	Receive CVFPB Permit - Priority 1 Geotech	GEO	0		22-Jun-22
188	**Central Valley Flood Protection Board (CVFPB) Levee Encroachment**			351	13-Dec-21 A	10-Aug-23
189	CVFPB-200	Prepare CVFPB Permit		100	13-Dec-21 A	09-Aug-22
190	CVFPB-210	Submit CVFPB Permit		1	10-Aug-22	10-Aug-22
191	CVFPB-220	Receive CVFPB Permit		0		10-Aug-23
192	**SWRCB Water Rights Permit**			449	01-Feb-21 A	28-Dec-23
193	WRP-100	Prepare Water Right Permit Application		13	01-Feb-21 A	30-Mar-22
194	WRP-110	Submit Water Right Permit Application	GEO	1	01-Apr-22	01-Apr-22
195	WRP-120	SWRCB Issue Water Right Permit (Dec-2023)	GEO	0		28-Dec-23
196	**SWB CWA Section 401 Water Quality Certification**			469	04-Jan-21 A	29-Jan-24



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filter: Less than 100%.
Data Date: 13-Mar-22 / Print Date: 29-Mar-22

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Sites Reservoir Project

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Schedule

#	Activity ID	Activity Name	A.3 Subschedu	Remaining Duration	Start	Finish
197		SWB CWA Section 401 Water Quality Certification - Priority 1 Geotech		68	01-Mar-21 A	17-Jun-22
198	401-100	Prepare 401 Application - Geotech	GEO	13	01-Mar-21 A	30-Mar-22
199	401-110	Submit 401 Application - Geotech	GEO	1	01-Apr-22	01-Apr-22
200	401-120	Receive 401 Permit - Geotech	GEO	0		17-Jun-22
201		SWB CWA Section 401 Water Quality Certification		469	04-Jan-21 A	29-Jan-24
202	401-200	Prepare Draft CWA 401 Permit Application		103	04-Jan-21 A	08-Aug-22
203	401-210	Submit CWA 401 Application		1	09-Aug-22	09-Aug-22
204	401-220	Receive CWA Section 401 Permit		0		29-Jan-24
205		CDFW Streambed Alteration Agreements		292	10-Jan-22 A	11-May-23
206		CDFW Streambed Alteration Agreements - Priority 1 Geotech		69	21-Mar-22	27-Jun-22
207	1600-100	Prepare LSAA Application - Geotech	GEO	8	21-Mar-22*	30-Mar-22
208	1600-110	Submit LSAA Application - Geotech	GEO	1	01-Apr-22	01-Apr-22
209	1600-120	Receive LSAA Permit - Geotech	GEO	0		27-Jun-22
210		CDFW Streambed Alteration Agreements		292	10-Jan-22 A	11-May-23
211	1600-200	Prepare LSAA Application		170	10-Jan-22 A	14-Nov-22
212	1600-210	Submit LSAA Application		1	15-Nov-22	15-Nov-22
213	1600-220	Receive LSAA Permit		0		11-May-23
214		CDFW Incidental Take Permits		292	11-Jan-21 A	11-May-23
215		ITP - CESA (Se 2081) Operations		292	11-Jan-21 A	11-May-23
216	2081-100	Prepare ITP Application - Operations		64	11-Jan-21 A	13-Jun-22
217	2081-110	Submit ITP Application - Operations		1	14-Jun-22	14-Jun-22
218	2081-120	Receive ITP Permit - Operations		0		11-May-23
219		ITP - CESA (Se 2081) Construction		0	11-May-23	11-May-23
220	2081-220	Receive ITP Permit - Construction		0		11-May-23
221		Environmental (Ali, Laurie)		450	03-Jan-22 A	29-Dec-23
222		Key Deliverables		45	02-Mar-23	04-May-23
223	KD-1470	Final EIR/EIS - Complete		0		02-Mar-23
224	KD-1480	Certify Final EIR/EIS & Approve Preferred Project & MMRP (30 day period for legal challenge)		45	03-Mar-23	04-May-23
225		Geotech EA/IS		450	03-Jan-22 A	29-Dec-23
226	EIR-230	Geotech P1A EA/IS	GEO	68	03-Jan-22 A	17-Jun-22
227	EIR-260	Geotech P1A Environmental Surveys (which Real Estate access agreements are needed to start this?)	GEO	450	14-Mar-22	29-Dec-23
228	EIR-630	Geotech Trench & Test Pits EA/IS (when can this start, driven by Enviro?)	GEO	100	20-Jun-22	09-Nov-22
229	EIR-640	Geotech Trench & Test Pits Environmental Surveys (depending on approach may not need early access)	GEO	90	16-Aug-22	27-Dec-22
230		EIR/EIS		269	03-Jan-22 A	10-Apr-23
231		Final EIR/Final EIS		242	03-Jan-22 A	02-Mar-23
232	EIR-210	Preparation of Admin Final EIR/EIS		158	03-Jan-22 A	26-Oct-22
233	EIR-220	Analyze & Review New Model Output (May 9-27)		15	06-May-22	26-May-22
234	EIR-250	Complete Final EIR/EIS	GEO	84	27-Oct-22	02-Mar-23
235		Authority Certifies EIR & Approves Project & File NOD		5	23-Mar-23	30-Mar-23
236	EIR-370	Authority Certifies EIR & Approves Project	GEO	0		23-Mar-23

Remaining Level of Effort — Remaining Work — Summary
Actual Level of Effort — Critical Remaining Work
Actual Work — Milestone

Project ID: Sites / Project Name: Sites Reservoir Project
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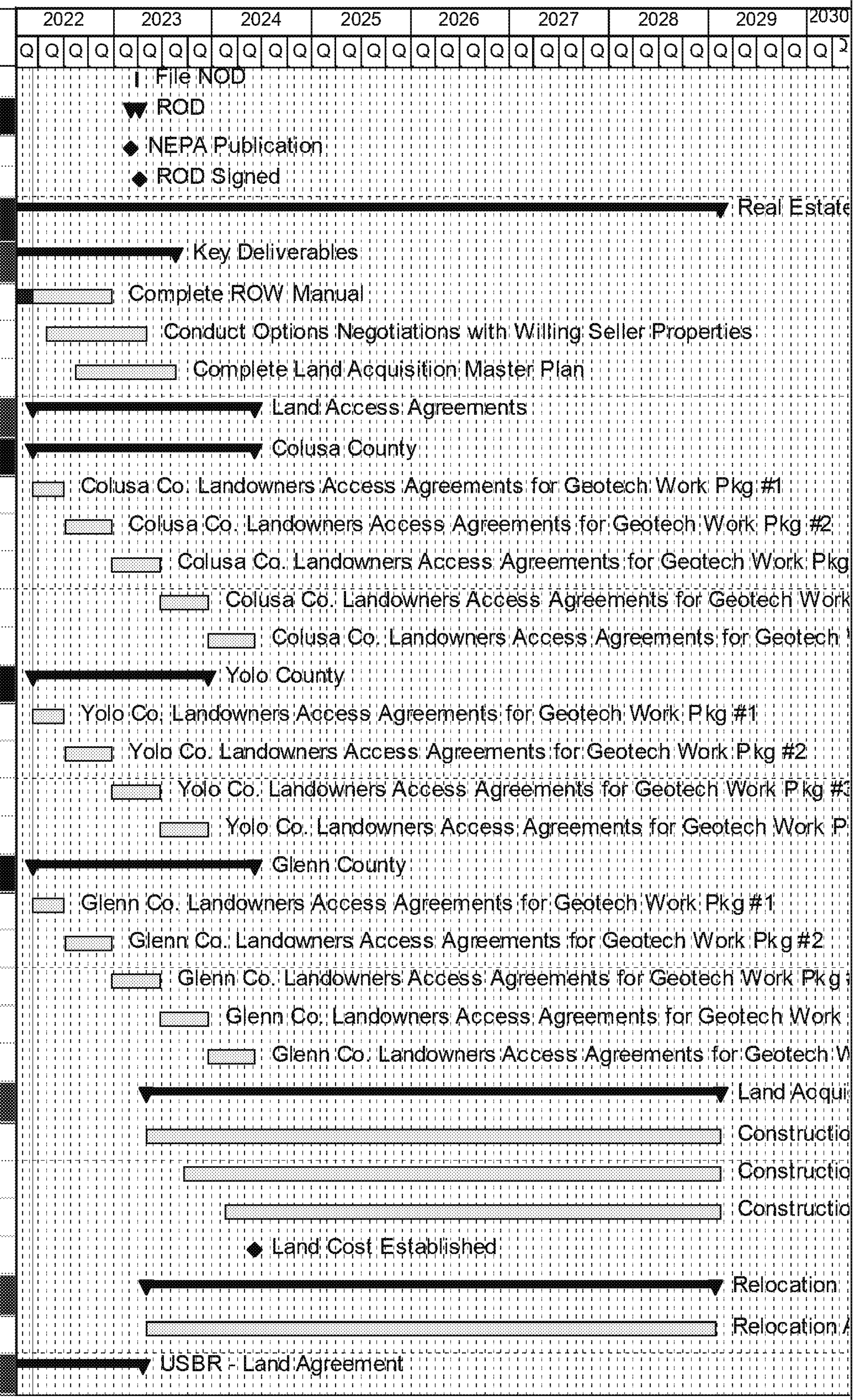
Sites Reservoir Project

Schedule

#	Activity ID	Activity Name	A.3 Subschedu	Remaining Duration	Start	Finish
237	EIR-380	File NOD		5	24-Mar-23	30-Mar-23
238	**ROD**			22	09-Mar-23	10-Apr-23
239	EIR-440	NEPA Publication		0		09-Mar-23
240	EIR-450	ROD Signed		0		10-Apr-23
241	**Real Estate**			1784	02-Nov-20 A	14-Feb-29
242	**Key Deliverables**			359	03-Jan-22 A	16-Aug-23
243	KD-1495	Complete ROW Manual		201	03-Jan-22 A	30-Dec-22
244	KD-1500	Conduct Options Negotiations with Willing Seller Properties		250	02-May-22*	01-May-23
245	KD-1490	Complete Land Acquisition Master Plan		250	17-Aug-22	16-Aug-23
246	**Land Access Agreements**			560	14-Mar-22	06-Jun-24
247	**Colusa County**			560	14-Mar-22	06-Jun-24
248	LAAC-1100	Colusa Co. Landowners Access Agreements for Geotech Work Pkg #1	GEO	80	14-Mar-22	06-Jul-22
249	LAAC-1200	Colusa Co. Landowners Access Agreements for Geotech Work Pkg #2	GEO	120	07-Jul-22	29-Dec-22
250	LAAC-1300	Colusa Co. Landowners Access Agreements for Geotech Work Pkg #3	GEO	120	30-Dec-22	21-Jun-23
251	LAAC-1400	Colusa Co. Landowners Access Agreements for Geotech Work Pkg #4	GEO	120	22-Jun-23	14-Dec-23
252	LAAC-1500	Colusa Co. Landowners Access Agreements for Geotech Work Pkg #5	GEO	120	15-Dec-23	06-Jun-24
253	**Yolo County**			440	14-Mar-22	14-Dec-23
254	LAAY-1100	Yolo Co. Landowners Access Agreements for Geotech Work Pkg #1	GEO	80	14-Mar-22	06-Jul-22
255	LAAY-1200	Yolo Co. Landowners Access Agreements for Geotech Work Pkg #2	GEO	120	07-Jul-22	29-Dec-22
256	LAAY-1300	Yolo Co. Landowners Access Agreements for Geotech Work Pkg #3	GEO	120	30-Dec-22	21-Jun-23
257	LAAY-1400	Yolo Co. Landowners Access Agreements for Geotech Work Pkg #4	GEO	120	22-Jun-23	14-Dec-23
258	**Glenn County**			560	14-Mar-22	06-Jun-24
259	LAAG-1100	Glenn Co. Landowners Access Agreements for Geotech Work Pkg #1	GEO	80	14-Mar-22	06-Jul-22
260	LAAG-1200	Glenn Co. Landowners Access Agreements for Geotech Work Pkg #2	GEO	120	07-Jul-22	29-Dec-22
261	LAAG-1300	Glenn Co. Landowners Access Agreements for Geotech Work Pkg #3	GEO	120	30-Dec-22	21-Jun-23
262	LAAG-1400	Glenn Co. Landowners Access Agreements for Geotech Work Pkg #4	GEO	120	22-Jun-23	14-Dec-23
263	LAAG-1500	Glenn Co. Landowners Access Agreements for Geotech Work Pkg #5	GEO	120	15-Dec-23	06-Jun-24
264	**Land Acquisition**			1500	02-May-23	14-Feb-29
265	RE-1060	Construction Package 1 - Land Acquisition		1500	02-May-23	14-Feb-29
266	RE-1070	Construction Package 2 - Land Acquisition		1400	22-Sep-23	14-Feb-29
267	RE-1080	Construction Package 3 - Land Acquisition		1300	21-Feb-24	14-Feb-29
268	RE-1050	Land Cost Established	GEO	0		06-Jun-24
269	**Relocation**			1500	02-May-23	29-Jan-29
270	RE-1100	Relocation Assistance, as Needed		1500	02-May-23	29-Jan-29
271	**USBR - Land Agreement**			278	02-Nov-20 A	21-Apr-23



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filter: Less than 100%.
Data Date: 13-Mar-22 / Print Date: 29-Mar-22

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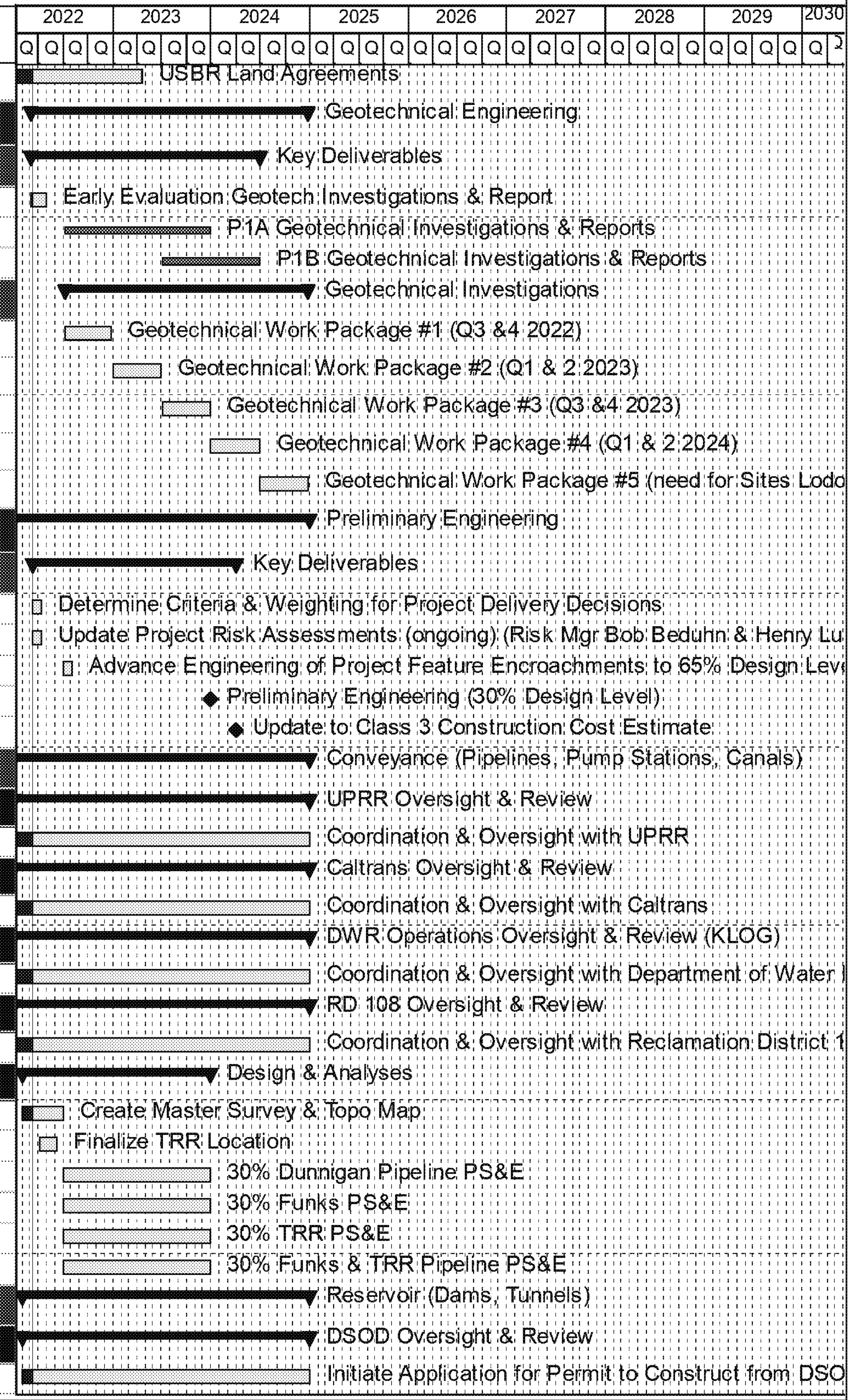
Sites Reservoir Project

Schedule

#	Activity ID	Activity Name	A.3 Subschedu	Remaining Duration	Start	Finish
272	FED-100	USBR Land Agreements		278	02-Nov-20 A	21-Apr-23
273		**Geotechnical Engineering**		706	07-Mar-22 A	27-Dec-24
274		**Key Deliverables**		576	07-Mar-22 A	28-Jun-24
275	KD-2000	Early Evaluation Geotech Investigations & Report	GEO	34	07-Mar-22 A	29-Apr-22
276	KD-2015	P1A Geotechnical Investigations & Reports	GEO	370	07-Jul-22	29-Dec-23
277	KD-2025	P1B Geotechnical Investigations & Reports	GEO	249	03-Jul-23	28-Jun-24
278		**Geotechnical Investigations**		626	07-Jul-22	27-Dec-24
279	GWP-1100	Geotechnical Work Package #1 (Q3 &4 2022)	GEO	121	07-Jul-22	30-Dec-22
280	GWP-1200	Geotechnical Work Package #2 (Q1 & 2 2023)	GEO	126	03-Jan-23	30-Jun-23
281	GWP-1300	Geotechnical Work Package #3 (Q3 &4 2023)	GEO	123	03-Jul-23	29-Dec-23
282	GWP-1400	Geotechnical Work Package #4 (Q1 & 2 2024)	GEO	126	02-Jan-24	28-Jun-24
283	GWP-1500	Geotechnical Work Package #5 (need for Sites Lodoga Rd. Realignment Cost Certainty)	GEO	130	01-Jul-24	27-Dec-24
284		**Preliminary Engineering**		708	03-Jan-22 A	31-Dec-24
285		**Key Deliverables**		515	14-Mar-22	03-Apr-24
286	KD-1120	Determine Criteria & Weighting for Project Delivery Decisions		21	14-Mar-22	12-Apr-22
287	KD-1210	Update Project Risk Assessments (ongoing) (Risk Mgr Bob Beduhn & Henry Luu)		21	14-Mar-22	12-Apr-22
288	KD-1110	Advance Engineering of Project Feature Encroachments to 65% Design Level in Support of Permitting		21	05-Jul-22	02-Aug-22
289	KD-1180	Preliminary Engineering (30% Design Level)		0		29-Dec-23
290	KD-1190	Update to Class 3 Construction Cost Estimate		0		03-Apr-24
291		**Conveyance (Pipelines, Pump Stations, Canals)**		708	03-Jan-22 A	31-Dec-24
292		**UPRR Oversight & Review**		708	03-Jan-22 A	31-Dec-24
293	A1110	Coordination & Oversight with UPRR		708	03-Jan-22 A	31-Dec-24
294		**Caltrans Oversight & Review**		708	03-Jan-22 A	31-Dec-24
295	A1120	Coordination & Oversight with Caltrans		708	03-Jan-22 A	31-Dec-24
296		**DWR Operations Oversight & Review (KLOG)**		708	03-Jan-22 A	31-Dec-24
297	A1130	Coordination & Oversight with Department of Water Resources		708	03-Jan-22 A	31-Dec-24
298		**RD 108 Oversight & Review**		708	03-Jan-22 A	31-Dec-24
299	A1140	Coordination & Oversight with Reclamation District 108		708	03-Jan-22 A	31-Dec-24
300		**Design & Analyses**		450	01-Feb-22 A	29-Dec-23
301	KD-1140	Create Master Survey & Topo Map		78	01-Feb-22 A	01-Jul-22
302	KD-1150	Finalize TRR Location		46	07-Apr-22	10-Jun-22
303	KD-1630	30% Dunnigan Pipeline PS&E		372	05-Jul-22	29-Dec-23
304	KD-2010	30% Funks PS&E		372	05-Jul-22	29-Dec-23
305	KD-2020	30% TRR PS&E		372	05-Jul-22	29-Dec-23
306	KD-2030	30% Funks & TRR Pipeline PS&E		372	05-Jul-22	29-Dec-23
307		**Reservoir (Dams, Tunnels)**		708	01-Feb-22 A	31-Dec-24
308		**DSOD Oversight & Review**		708	01-Feb-22 A	31-Dec-24
309	KD-1100	Initiate Application for Permit to Construct from DSOD		708	01-Feb-22 A	31-Dec-24



Remaining Level of Effort | Remaining Work | Summary
Actual Level of Effort | Critical Remaining Work
Actual Work | Milestone

Project ID: Sites / Project Name: Sites Reservoir Project
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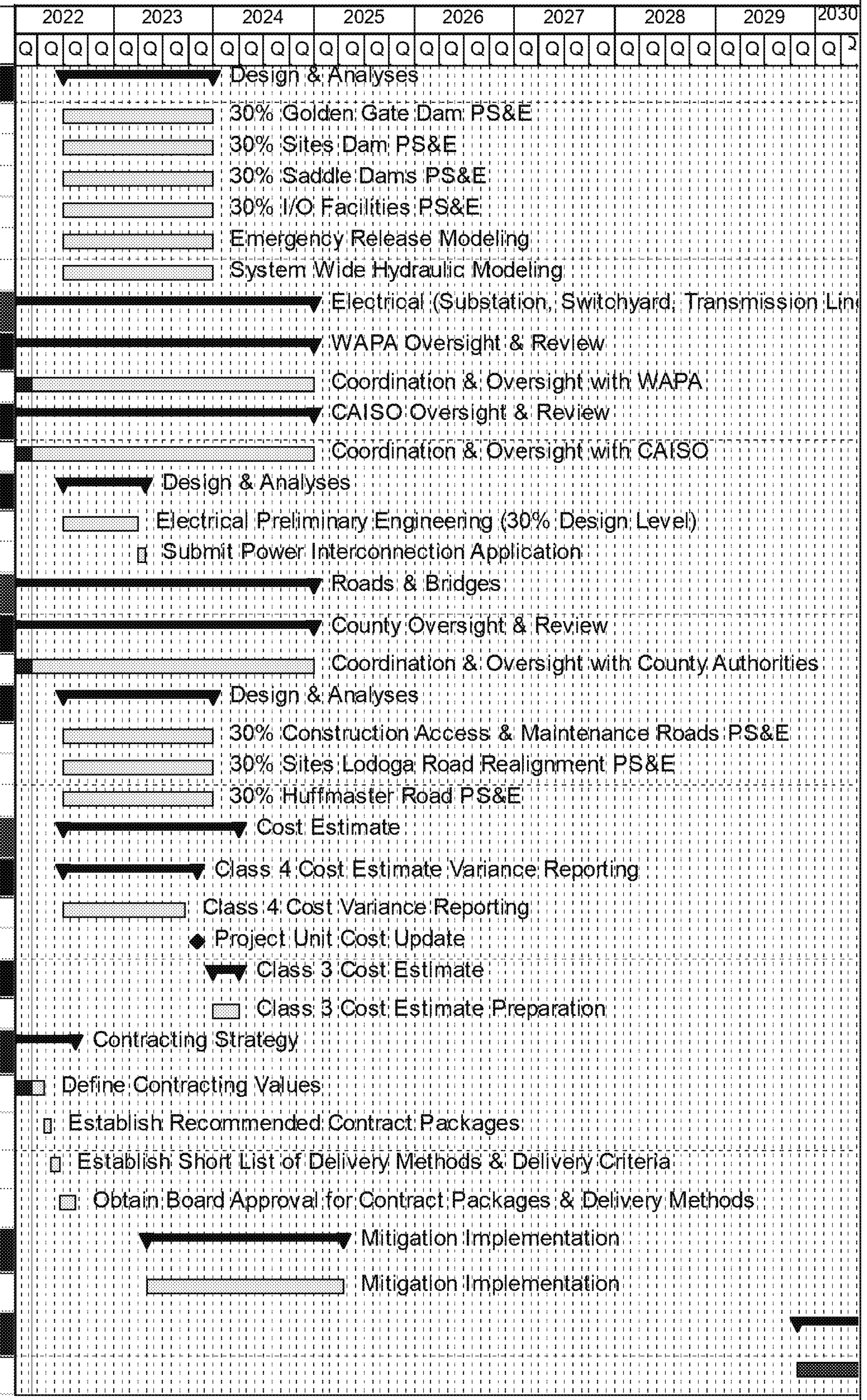
Sites Reservoir Project

Schedule

#	Activity ID	Activity Name	A.3 Subschedu	Remaining Duration	Start	Finish
310		**Design & Analyses**		372	05-Jul-22	29-Dec-23
311	KD-1660	30% Golden Gate Dam PS&E		372	05-Jul-22	29-Dec-23
312	KD-2040	30% Sites Dam PS&E		372	05-Jul-22	29-Dec-23
313	KD-2050	30% Saddle Dams PS&E		372	05-Jul-22	29-Dec-23
314	KD-2060	30% I/O Facilities PS&E		372	05-Jul-22	29-Dec-23
315	KD-2070	Emergency Release Modeling		372	05-Jul-22	29-Dec-23
316	KD-2080	System Wide Hydraulic Modeling		372	05-Jul-22	29-Dec-23
317		**Electrical (Substation, Switchyard, Transmission Line)**		708	03-Jan-22 A	31-Dec-24
318		**WAPA Oversight & Review**		708	03-Jan-22 A	31-Dec-24
319	A1150	Coordination & Oversight with WAPA		708	03-Jan-22 A	31-Dec-24
320		**CAISO Oversight & Review**		708	03-Jan-22 A	31-Dec-24
321	A1160	Coordination & Oversight with CAISO		708	03-Jan-22 A	31-Dec-24
322		**Design & Analyses**		205	05-Jul-22	28-Apr-23
323	KD-1640	Electrical Preliminary Engineering (30% Design Level)		185	05-Jul-22	31-Mar-23
324	KD-1200	Submit Power Interconnection Application		20	03-Apr-23	28-Apr-23
325		**Roads & Bridges**		708	03-Jan-22 A	31-Dec-24
326		**County Oversight & Review**		708	03-Jan-22 A	31-Dec-24
327	A1170	Coordination & Oversight with County Authorities		708	03-Jan-22 A	31-Dec-24
328		**Design & Analyses**		372	05-Jul-22	29-Dec-23
329	KD-1650	30% Construction Access & Maintenance Roads PS&E		372	05-Jul-22	29-Dec-23
330	KD-2090	30% Sites Lodoga Road Realignment PS&E		372	05-Jul-22	29-Dec-23
331	KD-2100	30% Huffmaster Road PS&E		372	05-Jul-22	29-Dec-23
332		**Cost Estimate**		437	05-Jul-22	03-Apr-24
333		**Class 4 Cost Estimate Variance Reporting**		334	05-Jul-22	01-Nov-23
334	A1180	Class 4 Cost Variance Reporting		304	05-Jul-22	19-Sep-23
335	A1240	Project Unit Cost Update	GEO	0		01-Nov-23
336		**Class 3 Cost Estimate**		65	02-Jan-24	03-Apr-24
337	A1190	Class 3 Cost Estimate Preparation		65	02-Jan-24	03-Apr-24
338		**Contracting Strategy**		109	03-Jan-22 A	16-Aug-22
339	A1070	Define Contracting Values		29	03-Jan-22 A	22-Apr-22
340	A1080	Establish Recommended Contract Packages		20	25-Apr-22	20-May-22
341	A1090	Establish Short List of Delivery Methods & Delivery Criteria		20	23-May-22	20-Jun-22
342	A1100	Obtain Board Approval for Contract Packages & Delivery Methods		40	21-Jun-22	16-Aug-22
343		**Mitigation Implementation**		500	02-May-23	16-Apr-25
344	MI-1100	Mitigation Implementation		500	02-May-23	16-Apr-25
345		**Commissioning**		222	26-Oct-29	02-Sep-30
346	COM-1100	Commissioning		222	26-Oct-29	02-Sep-30



Remaining Level of Effort | Remaining Work | Summary
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Sites Reservoir Project

Schedule

#	Activity ID	Activity Name	A.3 Subschedu	Remaining Duration	Start	Finish
347	Facility Operations			0	03-Sep-30	03-Sep-30
348	OPR-1100	Full Operations Begins		0		03-Sep-30
349	COMPLETED / MARK FOR DELETE			2188	02-Jan-20 A	03-Sep-30

Remaining Level of Effort
Actual Level of Effort
Actual Work
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From: Alicia Forsythe [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A6CDF06A7E904B65BAA21702A82AD329-AFORSYTHE]
Sent: 3/29/2022 12:34:36 PM
To: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]; Kevin Spesert [kspesert@sitesproject.org]
Subject: RE: Shapefile Update

Thanks Laurie. While this is different than the direction the Tribe gave us a while ago, I am fine with ICF putting this all together and getting this to the Tribe. I can appreciate that they may want to understand these isolates to understand if they maybe are an indication of something bigger and/or are just feeling pressure from other tribes to be extremely thorough. Appreciate the continued updates!

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Project Authority | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Sent: Tuesday, March 29, 2022 10:52 AM
To: Kevin Spesert <kspesert@sitesproject.org>; Alicia Forsythe <aforsythe@sitesproject.org>
Subject: FW: Shapefile Update

Good morning,

I brought this up briefly with Ali on Friday morning but there has been much back-and-forth with the Yocha Dehe GIS staff regarding the data that we have been providing. It is my understanding that they have been provided with all site record data as well as the GIS locational data for both the cultural sites and isolates. However, they have recently requested additional data for the isolates. Janis reached out to Laverne since this was not in their original request – there are over 400 isolates and data is minimal. But, Laverne has indicated that they need the data.

I will continue to work with Janis to see how this can be resolved but wanted to give you a heads up.

Laurie

From: Janis Offermann <janis@horizonh2o.com>
Sent: Saturday, March 26, 2022 9:17 PM
To: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Subject: FW: Shapefile Update

Hi, Laurie
I talked with Laverne on Friday morning, but they are pressing the issue about the isolate data. We have a tentative meeting set up for Tuesday morning. Do you want to sit in?

Please also see Susan's email, attached. Any guidance you can provide would be great.
Thanks
janis

From: Laverne Bill <LBill@yochadehe-nsn.gov>
Sent: Friday, March 25, 2022 11:26 AM
To: 'Janis Offermann' <janis@horizonh2o.com>; Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>; 'Havelaar, Christiaan' <Christiaan.Havelaar@icf.com>
Cc: Victoria Delgado <VDelgado@yochadehe-nsn.gov>; Rebekah Canavesio <RCanavesio@yochadehe-nsn.gov>
Subject: RE: Shapefile Update

Good morning, Janis. Thank you for the follow up email about the site records for the prehistoric sites. But after reading your email, the Tribe would like also like to have the isolates turned into shape files. This data is extremely important and can help us determine if further testing will need to be done in these areas. Let us schedule a time to have a video call with you and your GIS folks to better understand how to move forward in a productive way. I have included my staff on the email to help schedule that meeting. Thanks.

Laverne Bill
Director of Cultural Resources

Yocha Dehe Wintun Nation
PO Box 18 | Brooks, CA 95606
p 530.796.3400 | c 530.723.3891
f 530.796.2143
lbill@yochadehe-nsn.gov
www.yochadehe.org

From: Janis Offermann <janis@horizonh2o.com>
Sent: Friday, March 25, 2022 11:19 AM
To: Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>; Havelaar, Christiaan <Christiaan.Havelaar@icf.com>
Cc: Laverne Bill <LBill@yochadehe-nsn.gov>
Subject: RE: Shapefile Update

[Warning External Sender]

Hi, Andrew
The isolates/points shouldn't be entirely blank and should be labeled prehistoric, historic, or multicomponent. You are correct, however, that more specific info is likely not included at this time. While the isolates provide general information about land use, the more important and detailed information is contained in the archaeological site files. The site data will be the most useful for identifying occupational sites, etc. I'm sorry, but there are over 400 isolates, and there is no plan to address them in the near future.

Thanks
janis

From: Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>
Sent: Friday, March 25, 2022 10:52 AM
To: 'Havelaar, Christiaan' <Christiaan.Havelaar@icf.com>; janis@horizonh2o.com
Subject: RE: Shapefile Update

Janis,

I haven't heard back from you or ICF. I was pretty surprised to put it mildly to find the isos/ point shapefiles completely blank. Are you planning to correct this?

From: Havelaar, Christiaan <Christiaan.Havelaar@icf.com>
Sent: Thursday, March 24, 2022 1:25 PM
To: Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>; janis@horizonh2o.com
Subject: RE: Shapefile Update

[Warning External Sender]

Link to download should have been sent. Let me know if you have any issues.

From: Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>
Sent: Thursday, March 24, 2022 9:05 AM
To: janis@horizonh2o.com
Cc: Havelaar, Christiaan <Christiaan.Havelaar@icf.com>
Subject: RE: Shapefile Update

Any updates on when I can expect the shapefiles?

From: Janis Offermann <janis@horizonh2o.com>
Sent: Tuesday, March 22, 2022 12:09 PM
To: Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>
Subject: RE: Shapefile Update

[Warning External Sender]

Hi, Andrew
Sorry for not responding sooner. The problem with going on vacation is that you are swamped when you get back.
I just heard from Christiaan, and the ICF GIS staff is working on this now. To be honest, ICF thought you could pull the spreadsheet data into the shapefiles.?? Since I don???t know anything about how this works, I figured we were on the right track. Hope you see this today.??
I will try uploading the site records I tried to send earlier to your share file.
Thanks
janis
??
??

From: Andrew Cherna Jr <ACherna@yochadehe-nsn.gov>
Sent: Monday, March 21, 2022 11:55 AM
To: janis@horizonh2o.com
Cc: 'Havelaar, Christiaan' <Christiaan.Havelaar@icf.com>
Subject: Shapefile Update
??
Janis,
??
Not sure if you saw, but we were sent a spreadsheet with no spatial information and not shapefiles. It seems somehow there was some confusion despite my thinking we were on the same page. We???re looking for shapefiles with descriptions of the resources.
??
Thank you,
??
Andy Cherna
GIS Analyst

??

Yocha Dehe Wintun Nation
PO Box 18 | Brooks, CA 95606
o 530.796.2805 |?? c 530.723.2076 |
acherna@yochadehe-nsn.gov
www.yochadehe.org

??

File Provided Natively

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The list below highlights the differences between the Sites BA ALT 3A 032822 and ALT 3B 032822 models and the models published in the Sites RDEIR/SDEIS.

Changes to CalSim II Model:

- Baseline model is the updated Benchmark (11/17/21)
- Operating at 2035 climate conditions:
    - 2035 CT hydrology (developed by DWR)
    - 15 cm of sea level rise
- Shasta Operations:
    - Sites-Shasta exchanges supports Shasta cold water pool management, Fall Flow Stability and Spring Pulse Flow actions. Previously, Sites-Shasta exchanges focused on improving Shasta cold water pool management and incidentally improved Fall Flow Stability.
    - CVP Operational Flexibility supports Shasta cold water pool management, Fall Flow Stability and CVP deliveries. Previously, CVP Operational Flexibility focused on improving Shasta cold water pool management and CVP deliveries.
- Sites Incremental Level 4 Refuges releases are now pumped at Banks and Jones Pumping Plants for delivery to South of Delta Refuges. Previously, only Banks Pumping Plant facilitated delivery to South of Delta Refuges.
- Improved salinity accounting of Sites deliveries to South of Delta Refuges and Participants
- Diversions are only permitted from September 1st through June 15th, when Sacramento streamflow is not fully appropriated
- Releases to Sacramento River cannot be made through the Dunnigan Pipeline while Sacramento River flows are high, reflecting operations at the Knights Landing flap gate
- Reduced Sites Reservoir dead pool size from 120 TAF to 60 TAF
- Releases to South of Delta Participants may occur in all years
- Updated diversion criteria (see Sites_BA_AssumptionMatrix_032822.xlsx for more details)

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From: Heydinger, Erin [Erin.Heydinger@hdrinc.com]
Sent: 3/30/2022 8:58:45 AM
To: Jerry Brown [jbrown@sitesproject.org]
CC: Alicia Forsythe [aforsythe@sitesproject.org]; JP Robinette [jrobinette@sitesproject.org]
Subject: Modeling Results - Summary
Attachments: SitesMetrics_2035CT_20220330.pdf

Jerry,

FYI – attached are summary tables for the BA modeling (2035 climate change). JP, thought you would be interested as well.

Thanks,
Erin

Erin Heydinger, PE, PMP
Project Manager - Water

HDR
2379 Gateway Oaks Dr, #200
Sacramento, CA 95833
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Sites Releases Table

Releases (TAF/year)	ALT 3A 032922 2035CT		ALT 3B 032922 2035CT	
	Average	**Dry and Critical**	**Average**	**Dry and Critical**
	1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) 2035 CT Climate		1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) 2035 CT Climate	
Releases for Authority PWA Deliveries - North of Delta	26	40	27	42
Assumed transfer from North of Delta to South of Delta	5	3	7	4
Releases for Authority PWA Deliveries - South of Delta	104	212	120	241
Releases for CVP Deliveries - Operational Flexibility	88	83	58	54
Releases for Refuge Water Supply	21	31	22	33
Releases for Yolo Bypass Habitat Water Supply	40	12	41	12
Total Releases	**284**	**381**	**274**	**387**
Percentage of Total Releases from Sites				
Releases for Authority PWA Deliveries - North of Delta	9%	10%	10%	11%
Assumed transfer from North of Delta to South of Delta	2%	1%	3%	1%
Releases for Authority PWA Deliveries - South of Delta	37%	56%	44%	62%
Releases for CVP Deliveries - Operational Flexibility	31%	22%	21%	14%
Releases for Refuge Water Supply	7%	8%	8%	8%
Releases for Yolo Bypass Habitat Water Supply	14%	3%	15%	3%

Notes:
Results are dependent on storage allocations (see storage allocation table)

Sites Fills Table

Fills (TAF/year)	ALT 3A 032922 2035CT		ALT 3B 032922 2035CT	
	Average	**Dry and Critical**	**Average**	**Dry and Critical**
	1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) 2035 CT Climate		1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) 2035 CT Climate	
Fills for Authority PWA - North of Delta	36	15	40	16
Fills for Authority PWA - South of Delta	113	51	131	59
Fills for CVP Operational Flexibility	90	33	59	21
Fills for Refuge Water Supply	22	9	24	10
Fills for Yolo Bypass Habitat Water Supply	41	9	42	9
Total Fill	**303**	**118**	**295**	**115**
Percentage of Total Fills				
Fills for Authority PWA - North of Delta	12%	13%	14%	14%
Fills for Authority PWA - South of Delta	37%	44%	44%	51%
Fills for CVP Operational Flexibility	30%	28%	20%	18%
Fills for Refuge Water Supply	7%	8%	8%	8%
Fills for Yolo Bypass Habitat Water Supply	14%	8%	14%	8%

Notes:

Results are dependent on storage allocations (see storage allocation table)

Sites Storage Allocation Table

Storage Volumes (TAF)	ALT 3A 032922 2035CT	ALT 3B 032922 2035CT
	1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) 2035 CT Climate	1.5 MAF Reservoir Dunnigan Pipeline (outlet to CBD) 2035 CT Climate
Authority PWA - North of Delta	205	238
TCCA	*109*	*126*
GCID	*25*	*29*
RD108	*21*	*25*
Other Sacramento Valley	*50*	*58*
Authority PWA - South of Delta	631	728
CVP Operational Flexibility	360	230
Refuge Water Supply	124	124
Yolo Bypass Habitat Water Supply	120	120
Dead Pool Storage	60	60
Total Storage	**1500**	**1500**
Percentage of Total Storage Capacity		
Authority PWA - North of Delta	14%	17%
Authority PWA - South of Delta	44%	51%
CVP Operational Flexibility	25%	16%
Refuge Water Supply	9%	9%
Yolo Bypass Habitat Water Supply	8%	8%

Notes:

Results are dependent on storage allocations

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Sent: 3/30/2022 9:53:50 AM
To: Heydinger, Erin [erin.heydinger@hdrinc.com]
CC: Alicia Forsythe [aforsythe@sitesproject.org]; JP Robinette [jrobinette@sitesproject.org]
Subject: Re: Modeling Results - Summary

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SIERRA CLUB CALIFORNIA

March 28, 2022

Board of Directors
344 East Laurel Street
Willows, CA 95988

Re: Funding Sites Reservoir

Dear Board of Directors,

We hope this letter finds you safe in these difficult times. On behalf of Sierra Club California and our more than 500,000 members and supporters statewide, thousands of whom reside in your service area, we write to offer the following comments on the vote to fund the next phase of planning for Sites Reservoir.

The board will be voting on whether or not to fund the next phase of planning for Sites Reservoir. This phase includes planning, an FEIR, and permitting and costs all contractors a total of $143 million. This is an expensive project that harms the environment and does not provide a new source of water.

Impact to Communities

Sites Reservoir would be located less than a mile from the Great Valley fault system, which produced a 6.7 magnitude earthquake in 1892 and again in 1983. Damming can also cause seismic activity, and nearby small towns like Maxwell have not completely retrofitted for earthquakes.

Field studies show that there are 144 prehistoric Tribal sites in the area of impact, some of which meet the criteria to be placed on the National Register of Historic Places. "We have been working to restore flows to help water quality, and to bring salmon back over the dams and back to native lands for salmon survival and Tribal people," says Pit River Tribal member Morning Star Gali. "California is losing the salmon and our clean water. This is an issue of justice. We already have over a 1000 reservoirs, and more water allocated than exists in California. An environmentally destructive private reservoir being built in an area that is important to native people is a step in the wrong direction."

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This is a very expensive project. Metropolitan Water District's well-known former general manager, Jeff Kightlinger, said that unless the Delta Conveyance project was guaranteed to happen, he would not recommend moving forward with Sites Reservoir. The Delta Conveyance project's draft EIR comes out this May, so the project's equivalent vote on the next phase will not be until next year. Construction would not start until 2024, if lawsuits do not delay it further, and it would not produce water until 2042, which is already a two year delay versus what DWR said in 2020. The Delta Conveyance project is despised by the public and was voted down in 1982. 40 years later, this tunnel has still not been built. Moving forward now is a huge gamble with ratepayer money.

Proponents now estimate that Sites Reservoir will cost $3.9 billion to construct the project, a 30% increase from prior estimates (the Bureau of Reclamation posits closer to $6.3 billion). Memos have estimated that the cost of water from the project would be $700-$900 per acre foot at the reservoir and an additional $300-400 per acre foot for conveyance, Delta carriage losses and water treatment costs. Those assumptions are optimistic and financially irresponsible. First, as the yield declines, the cost per acre foot will increase. Second, Delta carriage losses are typically 20-33% of the water yield at the reservoir, which alone increases the per acre foot cost south of the Delta by 20-33%. Conveyance and treatment costs in the budget are estimated at more than $500 per acre foot for water moved from the Delta.

The Delta tunnel will cost between $16-40 billion on top of the Sites costs, in an era of climate change, where it was just predicted that the Sierra Nevada will not have snow in 25 years. Sites Reservoir will likely never be completely full and will eventually become a deadpool, or a stranded asset. These costs take away from funds that could create new water recycling and local resource programs that could actually generate revenue.

Feasibility

The current proposed diversions would likely not be permitted. The project would need a new water right from the State Water Resources Control Board. The California Department of Fish and Wildlife has previously said that the proposed diversions are insufficient to ensure endangered species will survive. It is likely that more changes would have to be made to the proposed project operations for it to receive the necessary permits. Sites Reservoir remains a speculative project. The Delta Plan is still in progress, and would likely require Sites Project operations to be further altered to ensure the updated water quality standards for the Delta can be met.

Environmental Destruction

Sites Reservoir would divert additional water from the Sacramento River, which is a main tributary to the Delta. The Delta is already stressed because of existing diversions, and climate change is adding to that stress. The project is also not providing enough flows to actually meet species needs according to the project proposals.

Significant diversions from the Sacramento River to fill Sites Reservoir could result in substantial impacts to the river's ecosystem- reduced volume of water and water quality due to the inability to flush out runoff, Ag waste and municipal waste, increased temperatures, salinity, and harmful algal blooms (HABs). These affect sensitive riparian and aquatic habitats. The region where Sites would be built is an area that naturally produces selenium and other metals and potential pollutants. There may be abandoned mercury mines in the reservoir footprint that could release the mineral in warm waters.

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One estimate is that Sites will drown 15,500 acres of grassland, woodland, chaparral, riparian habitat, vernal pools and wetlands (including 19 acres of rare alkali wetlands). 23 endangered or threatened species would be at risk and 56 other endangered species have the potential to be threatened. There are 4 plant species that the California Native Plant species deems of "rare distribution" in the affected site.

Electricity will be generated when water is released from the reservoir, but needed to pump water into the reservoir. The amount of electricity needed and produced is unpredictable, but Sites will need more energy than it will produce.

Conclusion

Ultimately, paying for storage in Sites Reservoir doesn't guarantee there will be any water in the reservoir in the next drought, and certainly not water that is cost-effective or an environmentally sustainable supply. California already has 1,400 reservoirs, and as President Obama's science advisor John Holdren explained in 2014, "The problem in California is not that we don't have enough reservoirs, it is that we do not have enough water in them..... It wouldn't help to build any more."

We hope that you will consider our comments, which echo what the public has been saying for years on the construction of Sites Reservoir. We look forward to working with you in this process. If you would like to discuss this further, please contact Caty Wagner at caty.wagner@sierraclub.org.

Sincerely,

Caty Wagner

Caty Wagner
Southern California Water Organizer
Sierra Club California

From: JP Robinette [jrobinette@sitesproject.org]
Sent: 3/30/2022 11:26:02 AM
To: Heydinger, Erin [erin.heydinger@hdrinc.com]; Jerry Brown [jbrown@sitesproject.org]
CC: Alicia Forsythe [aforsythe@sitesproject.org]
Subject: Re: Modeling Results - Summary

Good stuff, Erin. For Alt 3B, do you assume the storage made available by Reclamation investment in transfers (i.e. non-storage investment) is allocated equally to all PWAs?

From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Wednesday, March 30, 2022 10:48 AM
To: Jerry Brown <jbrown@sitesproject.org>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>; JP Robinette <jrobinette@sitesproject.org>
Subject: RE: Modeling Results - Summary

I'm not sure it necessarily means much. Local PWAs are allocated 68% of the fills as long as they have space in their storage accounts. So, this is a result of the way they are using their storage space but is not an input to the model. They could get 68% if they had storage space available as often as the State or Feds.

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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To: Jerry Brown [jbrown@sitesproject.org]
CC: Alicia Forsythe [aforsythe@sitesproject.org]; JP Robinette [jrobinette@sitesproject.org]
Subject: RE: Modeling Results - Summary

Agreed. Yes, I think the State's storage is actually something like 16.6%, so it's rounding. Also, I got your voicemail. It is possible that if some participants start using their accounts much more aggressively then the State would receive slightly less water diverted. That said, the benefits themselves are not just based on amount of water but also water year type, so there will be some fuzziness surrounding that part of it as well.

JP – if I understand your question correctly, the storage allocation for the alternatives was developed by removing the deadpool and the State's allocation, then providing Reclamation either 16% or 25% of active storage, then allocating the remainder to the PWAs proportionate to their investment. This is the same way it was done per the methodology approved by the RC/AB last April. So, they have slightly less storage allocated to them under 3A and 3B than under 1B (not much less because we also reduced deadpool size). Interestingly, their release numbers did not substantially decrease, even with 25% storage going to Reclamation. See that comparison here (comparing 1B historic vs. new modeling with climate change):

Category	Alt 1B (historic) 7% storage to Reclamation	Alt 3A (2035 CT) 25% storage to Reclamation	Alt 3B (2035 CT) 16% storage to Reclamation
NOD PWAs	29	26	27
SOD PWAs	111	109	127
OpFlex (Reclamation)	28	88	58
State	65	61	63
Total	**233**	**284**	**275**

Erin

Erin Heydinger PE, PMP
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Cc: Alicia Forsythe <aforsythe@sitesproject.org>; JP Robinette <jrobinette@sitesproject.org>
Subject: Re: Modeling Results - Summary

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Interesting –Consider that the PWAs are allocated 68% of the storage space but are only getting 58% of the filling. What does that say about cost allocation?

From: "Heydinger, Erin" <Erin.Heydinger@hdrinc.com>
Date: Wednesday, March 30, 2022 at 8:58 AM
To: Jerry Brown <jbrown@sitesproject.org>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>, JP Robinette <jrobinette@sitesproject.org>
Subject: Modeling Results - Summary

Jerry,

FYI – attached are summary tables for the BA modeling (2035 climate change). JP, thought you would be interested as well.

Thanks,
Erin

Erin Heydinger, PE, PMP
Project Manager - Water

HDR

2379 Gateway Oaks Dr, #200
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Sites Reservoir Project

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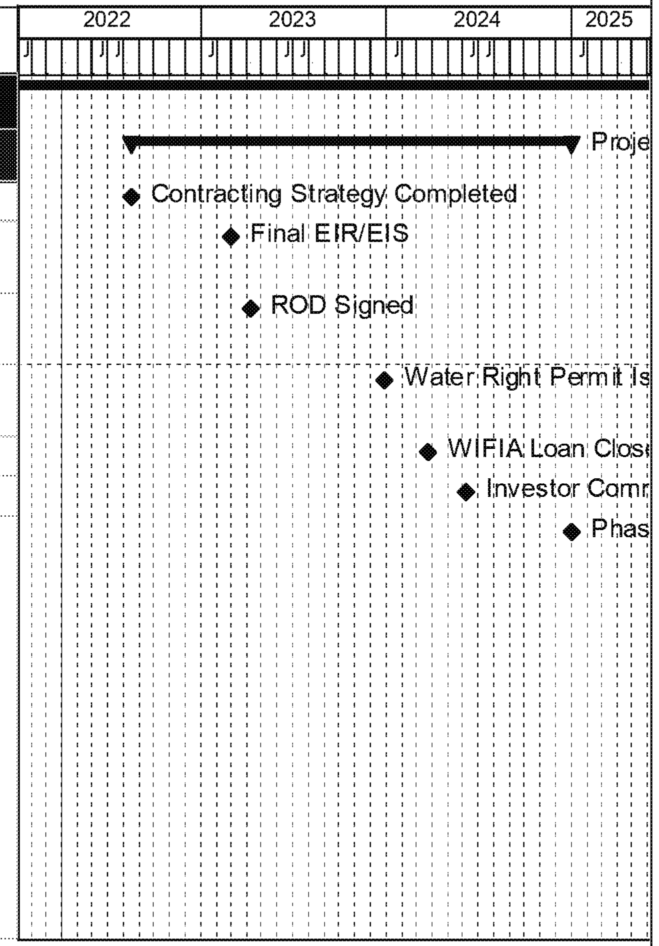
Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish	Predecessors	Successors
1	Sites Reservoir Project		1771	01-Sep-20 A	14-Feb-29		
2	Project Milestones		599	16-Aug-22	31-Dec-24		
3	MS-1100	Contracting Strategy Completed	0		16-Aug-22	CS-1400	KD-1460, KD-1490
4	MS-1200	Final EIR/EIS	0		02-Mar-23	EIR-250, STA-140, MS-006-Ph2-2a, MS-011-DE	MS-1300, ENG-450, ENG-460
5	MS-1300	ROD Signed	0		10-Apr-23	EIR-450, MS-1200, FF-020, REC-010, FAA-1070, USDA-1030	MS-500-CS, EIR-460
6	MS-1400	Water Right Permit Issued	0		28-Dec-23	WRP-120	CWC-510, KD-1270, MS-5000, PA-1100, MS-1500
7	MS-1600	WIFIA Loan Closed	0		25-Mar-24	WIFIA-230	
8	MS-1500	Investor Commitment (needs Predecessors)	0		06-Jun-24	MS-1400, CU-1000	
9	MS-5000	Phase 2 Amendment 3 Complete	0		31-Dec-24*	MS-1000, MS-1400, OS-1150, KD-1510, WIFIA-230, USDA-1060, FC-1350, AF-1300, KD-1440, KD-1420, USFWS-160, KD-1190, A1170, A1160, A1150, KD-1100, A1140, A1130, A1120, A1110, A1230, RE-1040, RE-1030, KD-1400, KD-1410, KD-1430, KD-1350, KD-1340, KD-1450, KD-1360, KD-1320, KD-1250, KD-1240, BF-1300, PA-1200, AB-2300, KD-1300, KD-1310, KD-1280, KD-1220, KD-2015, KD-2025, GWP-1500, KD-1210, KD-1120, KD-1130, KD-1290, KD-1230, KD-1200	MS-600-PB



Remaining Level of Effort | Remaining Work | Summary
Actual Level of Effort | Critical Remaining Work
Actual Work | Milestone

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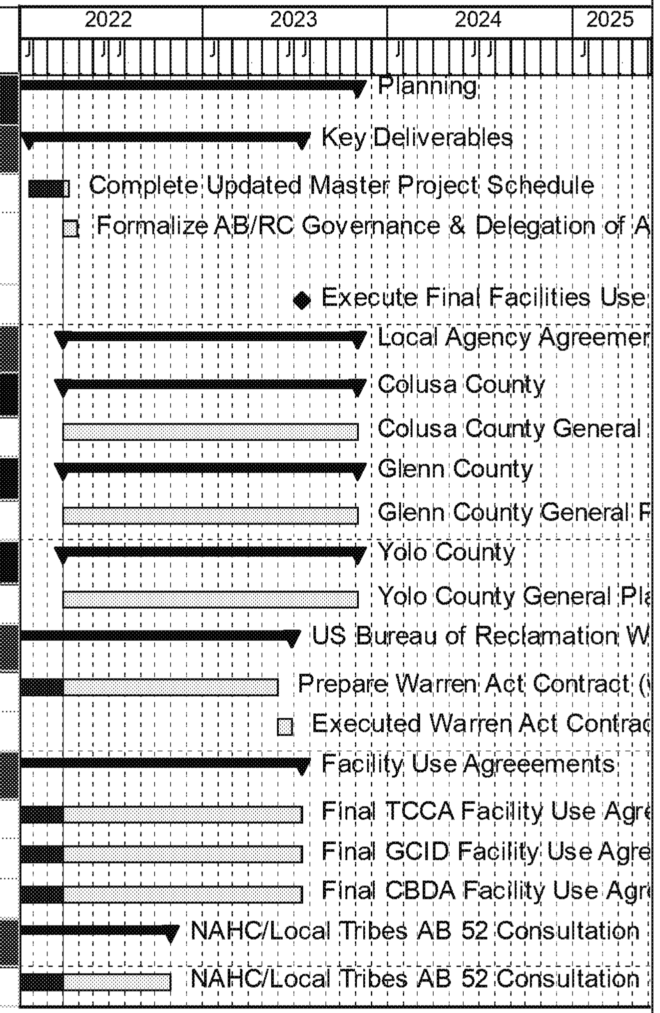
#	Activity ID	Activity Name	Remaining Duration	Start	Finish	Predecessors	Successors
11	Planning		400	01-Sep-20 A	02-Nov-23		
12	Key Deliverables		325	24-Jan-22 A	18-Jul-23		
13	KD-1130	Complete Updated Master Project Schedule	8	24-Jan-22 A	12-Apr-22	MS-1000	MS-5000
14	KD-1290	Formalize AB/RC Governance & Delegation of Authority for Phase 3 (needs development)	21	01-Apr-22	29-Apr-22	MS-1000	MS-5000
15	KD-1230	Execute Final Facilities Use Agreements	0		18-Jul-23	FO-1020, FO-1030, FO-1040	MS-5000
16	Local Agency Agreements & Permits		400	01-Apr-22	02-Nov-23		
17	Colusa County		400	01-Apr-22	02-Nov-23		
18	LOC-050	Colusa County General Plan & Zoning	400	01-Apr-22	02-Nov-23		RC-100
19	Glenn County		400	01-Apr-22	02-Nov-23		
20	LOC-140	Glenn County General Plan & Zoning	400	01-Apr-22	02-Nov-23		RC-100
21	Yolo County		400	01-Apr-22	02-Nov-23		
22	LOC-90	Yolo County General Plan & Zoning	400	01-Apr-22	02-Nov-23		RC-100
23	US Bureau of Reclamation Warren Act		312	01-Jun-21 A	28-Jun-23		
24	FED-090	Prepare Warren Act Contract (who?, Ali, JP?)	292	01-Jun-21 A	31-May-23	EIR-450	FED-110
25	FED-110	Executed Warren Act Contract	20	01-Jun-23	28-Jun-23	FED-090	
26	Facility Use Agreeements		325	27-Aug-21 A	18-Jul-23		
27	FO-1020	Final TCCA Facility Use Agreement (JP & ?)	325	27-Aug-21 A	18-Jul-23		PD-100, KD-1230
28	FO-1030	Final GCID Facility Use Agreement	325	27-Aug-21 A	18-Jul-23		PD-100, KD-1230
29	FO-1040	Final CBDA Facility Use Agreement	325	27-Aug-21 A	18-Jul-23		KD-1230
30	NAHC/Local Tribes AB 52 Consultation		148	01-Sep-20 A	31-Oct-22		
31	STA-120	NAHC/Local Tribes AB 52 Consultation (move to Laurie/Planning?)	148	01-Sep-20 A	31-Oct-22		



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

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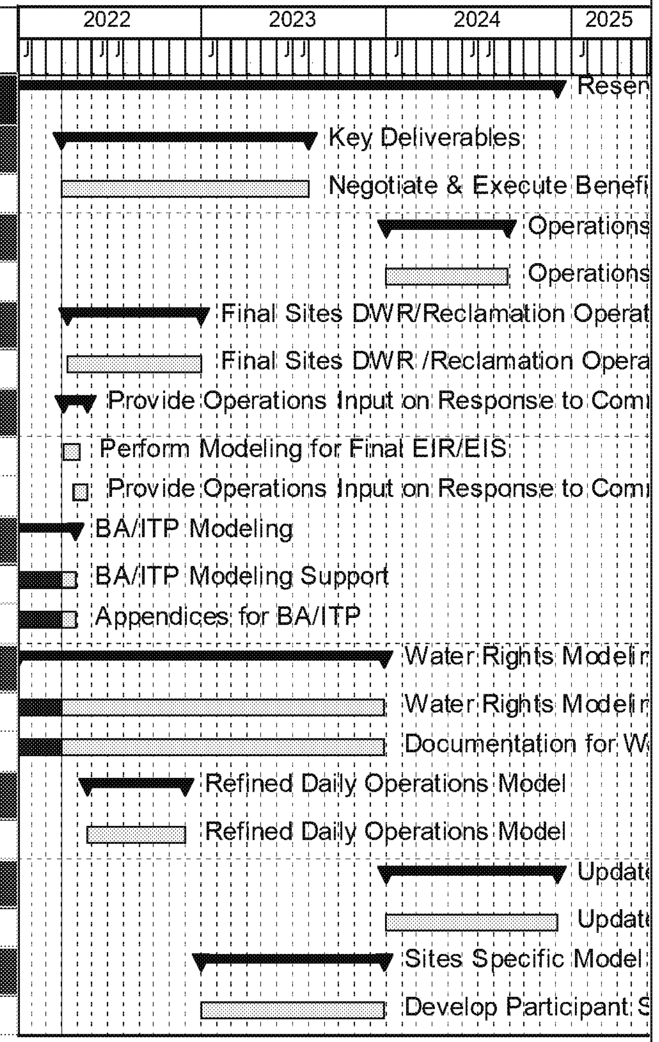
Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish	Predecessors	Successors
33		**Reservoir Operations & Modeling**	677	01-Nov-20 A	05-Dec-24		
34		**Key Deliverables**	334	01-Apr-22	31-Jul-23		
35	KD-1220	Negotiate & Execute Benefits Contracts with DWR & CDFW	334	01-Apr-22	31-Jul-23	MS-1000	MS-5000
36		**Operations Plan - Version 2**	173	03-Jan-24	30-Aug-24		
37	KD-1510	Operations Plan, Version 2	173	03-Jan-24	30-Aug-24	KD-1380, KD-1330, KD-1370	FO-1060, MS-5000
38		**Final Sites DWR/Reclamation Operating Agreement**	182	11-Apr-22	30-Dec-22		
39	OP-1005	Final Sites DWR /Reclamation Operating Agreement	182	11-Apr-22*	30-Dec-22	OP-1110, WRP-110	OP-1015
40		**Provide Operations Input on Response to Comments & Final EIR/E**	36	04-Apr-22	23-May-22		
41	FO-1110	Perform Modeling for Final EIR/EIS	25	04-Apr-22*	06-May-22	EIR-090	EIR-220
42	FO-1080	Provide Operations Input on Response to Comments & Final EIR/EIS	20	26-Apr-22	23-May-22	EIR-100	EIR-240, A1220
43		**BA/ITP Modeling**	21	01-Nov-20 A	29-Apr-22		
44	OP-450	BA/ITP Modeling Support	21	01-Nov-20 A	29-Apr-22		OP-360, 2081-100
45	OP-360	Appendices for BA/ITP	21	01-Apr-21 A	29-Apr-22	OP-450	CES-030
46		**Water Rights Modeling**	437	03-Jan-22 A	29-Dec-23		
47	A1200	Water Rights Modeling Support	436	03-Jan-22 A	28-Dec-23	WRP-120	A1230
48	A1210	Documentation for Water Rights	437	03-Jan-22 A	29-Dec-23		A1230
49		**Refined Daily Operations Model**	130	24-May-22	30-Nov-22		
50	A1220	Refined Daily Operations Model	130	24-May-22	30-Nov-22	FO-1080	OS-1150
51		**Update to CalSim 3**	240	02-Jan-24	05-Dec-24		
52	A1230	Update to CalSim 3	240	02-Jan-24	05-Dec-24	OS-1150, A1210, A1200	MS-5000
53		**Sites Specific Model**	258	03-Jan-23	28-Dec-23		
54	OS-1150	Develop Participant Specific Model	258	03-Jan-23	28-Dec-23	WRP-120, A1220	MS-5000, A1230



Remaining Level of Effort | Remaining Work | Summary
Actual Level of Effort | Critical Remaining Work
Actual Work | Milestone

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Schedule

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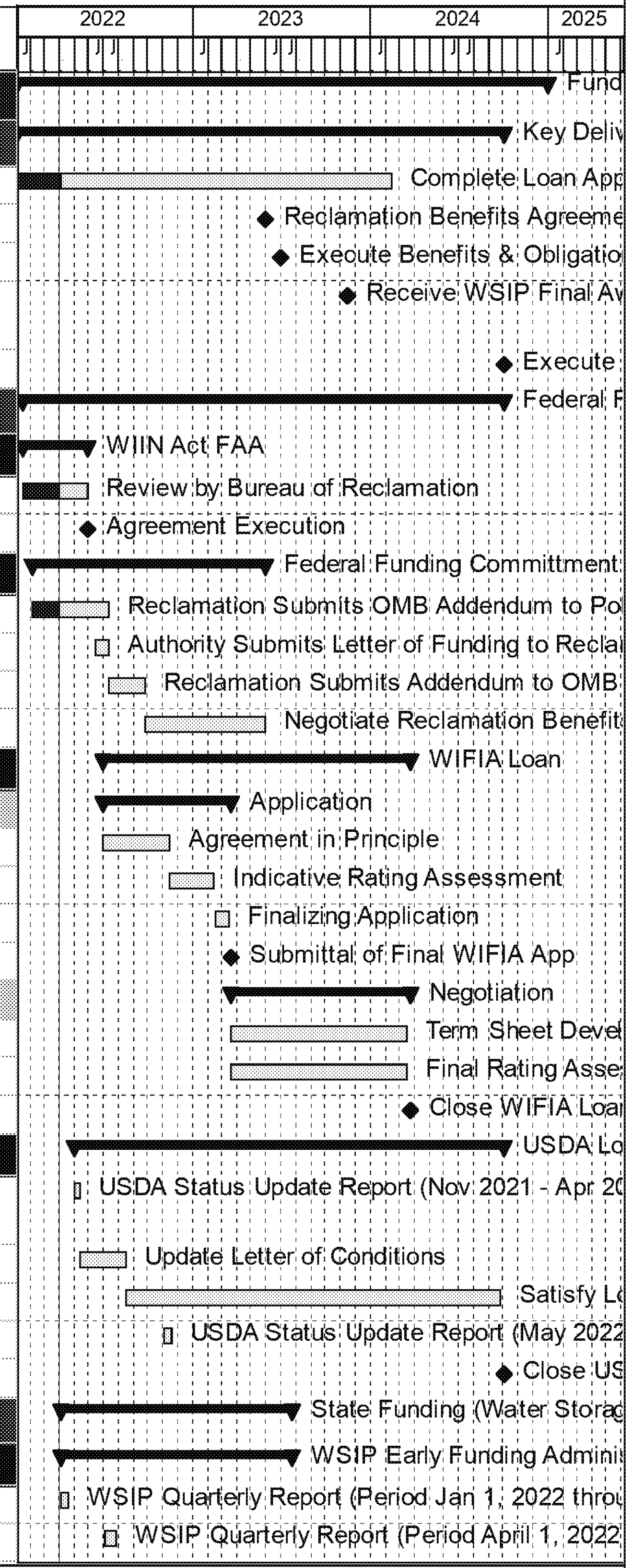
56	**Funding**		695	03-Jan-22 A	31-Dec-24		
57	**Key Deliverables**		630	03-Jan-22 A	02-Oct-24		
58	KD-1270	Complete Loan Applications (need Water Rights Permit to complete)	465	03-Jan-22 A	12-Feb-24	MS-1400	KD-1280
59	KD-1260	Reclamation Benefits Agreement Executed	0		01-Jun-23	WIIN-1140, WIIN-1170	KD-1300
60	KD-1300	Execute Benefits & Obligations Contracts with Participants	0		29-Jun-23	WIIN-1170, BO-1300, KD-1260	MS-5000
61	KD-1310	Receive WSIP Final Award from CWC (need Water Rights Permit to complete)	0		17-Nov-23	WSIP-1260	MS-5000
62	KD-1280	Execute Loan Docs	0		02-Oct-24	KD-1270, WIFIA-230, USDA-1070	MS-5000
63	**Federal Funding**		631	17-Jan-22 A	02-Oct-24		
64	**WIIN Act FAA**		42	17-Jan-22 A	31-May-22		
65	WIIN-1120	Review by Bureau of Reclamation	42	17-Jan-22 A	31-May-22		WIIN-1140
66	WIIN-1140	Agreement Execution	0		31-May-22	WIIN-1120	KD-1260
67	**Federal Funding Committment**		293	07-Feb-22 A	01-Jun-23		
68	WIIN-1150	Reclamation Submits OMB Addendum to Policy Office	70	07-Feb-22 A	11-Jul-22		WIIN-1160, WIIN-1180
69	WIIN-1160	Authority Submits Letter of Funding to Reclamation	20	13-Jun-22	11-Jul-22	WIIN-1150	WIIN-1180
70	WIIN-1180	Reclamation Submits Addendum to OMB	53	12-Jul-22	23-Sep-22	WIIN-1150, WIIN-1160	WIIN-1170
71	WIIN-1170	Negotiate Reclamation Benefits Agreement	170	26-Sep-22	01-Jun-23	WIIN-1180	KD-1300, KD-1260
72	**WIFIA Loan**		431	01-Jul-22	25-Mar-24		
73	**Application**		176	01-Jul-22	20-Mar-23		
74	WIFIA-110	Agreement in Principle	95	01-Jul-22	16-Nov-22	WIFIA-005, FC-1250	WIFIA-120
75	WIFIA-120	Indicative Rating Assessment	60	17-Nov-22	15-Feb-23	WIFIA-110	WIFIA-130
76	WIFIA-130	Finalizing Application	30	16-Feb-23	17-Mar-23	WIFIA-120	WIFIA-140
77	WIFIA-140	Submittal of Final WIFIA App	0		20-Mar-23	WIFIA-130	BF-1100, PH3-1000, WIFIA-210
78	**Negotiation**		255	20-Mar-23	25-Mar-24		
79	WIFIA-210	Term Sheet Development	250	20-Mar-23	18-Mar-24	WIFIA-140	WIFIA-220, WIFIA-230
80	WIFIA-220	Final Rating Assessment (Depends on Final Rebalancing)	250	20-Mar-23	18-Mar-24	WIFIA-210	WIFIA-230
81	WIFIA-230	Close WIFIA Loan	0		25-Mar-24	WIFIA-210, WIFIA-220	MS-5000, KD-1280, MS-1600
82	**USDA Loan**		610	02-May-22	02-Oct-24		
83	USDA-1030	USDA Status Update Report (Nov 2021 - Apr 2022)	10	02-May-22	13-May-22	USDA-1020	USDA-1040, MS-1300, USDA-1050
84	USDA-1050	Update Letter of Conditions	65	16-May-22	16-Aug-22	USDA-1030	USDA-1060
85	USDA-1060	Satisfy Loan Conditions	530	17-Aug-22	25-Sep-24	USDA-1050	USDA-1070, MS-5000
86	USDA-1040	USDA Status Update Report (May 2022 - Oct 2022)	10	04-Nov-22	18-Nov-22	USDA-1030	USDA-1070
87	USDA-1070	Close USDA Loan	0		02-Oct-24	USDA-1060, USDA-1040	KD-1280
88	**State Funding (Water Storage Investment Program, WSIP)**		329	04-Apr-22	25-Jul-23		
89	**WSIP Early Funding Administration**		329	04-Apr-22	25-Jul-23		
90	WSIP-1210	WSIP Quarterly Report (Period Jan 1, 2022 through March 31, 2022)	15	04-Apr-22	22-Apr-22	MS-1000	WSIP-1220
91	WSIP-1220	WSIP Quarterly Report (Period April 1, 2022 through June 30, 2022)	15	06-Jul-22	26-Jul-22	WSIP-1210	WSIP-1230



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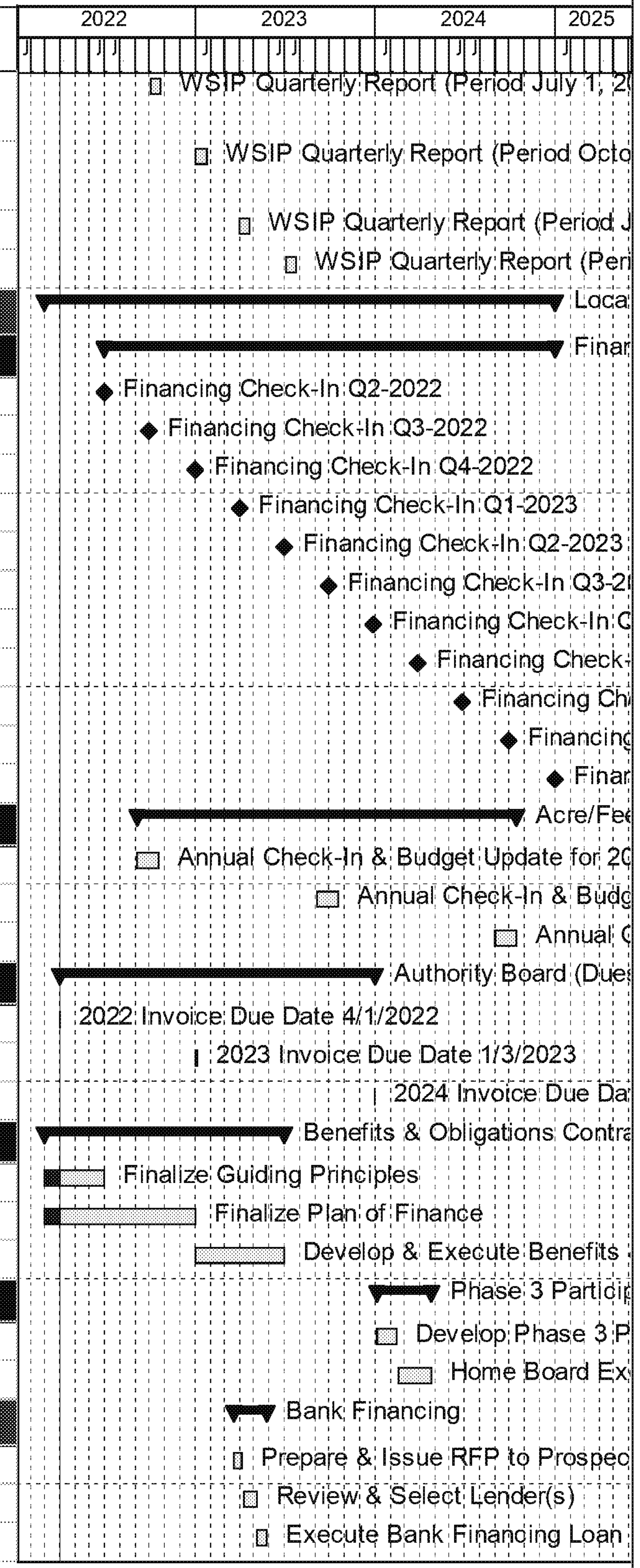
92	WSIP-1230	WSIP Quarterly Report (Period July 1, 2022 through September 30, 2022)	15	03-Oct-22	24-Oct-22	WSIP-1220	WSIP-1240
93	WSIP-1240	WSIP Quarterly Report (Period October 1, 2022 through December 31, 2022)	15	03-Jan-23	24-Jan-23	WSIP-1230	WSIP-1250
94	WSIP-1250	WSIP Quarterly Report (Period Jan 1, 2023 through March 31, 2023)	15	03-Apr-23	21-Apr-23	WSIP-1240	WSIP-1260
95	WSIP-1260	WSIP Quarterly Report (Period April 1, 2023 through June 30, 2023)	15	05-Jul-23	25-Jul-23	WSIP-1250	KD-1310
96	**Local Funding**		695	01-Mar-22 A	31-Dec-24		
97	**Finance Check-Ins**		631	30-Jun-22	31-Dec-24		
98	FC-1250	Financing Check-In Q2-2022	0		30-Jun-22*	MS-1000	WIFIA-110, FC-1260
99	FC-1260	Financing Check-In Q3-2022	0		30-Sep-22	FC-1250	FC-1270
100	FC-1270	Financing Check-In Q4-2022	0		30-Dec-22	FC-1260	FC-1280
101	FC-1280	Financing Check-In Q1-2023	0		31-Mar-23	FC-1270	FC-1290
102	FC-1290	Financing Check-In Q2-2023	0		30-Jun-23	FC-1280	FC-1300
103	FC-1300	Financing Check-In Q3-2023	0		29-Sep-23	FC-1290	FC-1310
104	FC-1310	Financing Check-In Q4-2023	0		29-Dec-23	FC-1300	FC-1320
105	FC-1320	Financing Check-In Q1-2024	0		29-Mar-24	FC-1310	FC-1330
106	FC-1330	Financing Check-In Q2-2024	0		28-Jun-24	FC-1320	FC-1340
107	FC-1340	Financing Check-In Q3-2024	0		30-Sep-24	FC-1330	FC-1350
108	FC-1350	Financing Check-In Q4-2024	0		31-Dec-24	FC-1340	MS-5000
109	**Acre/Feet Participation (Reservoir Committee Cash Calls)**		530	06-Sep-22	14-Oct-24		
110	AF-1100	Annual Check-In & Budget Update for 2023	30	06-Sep-22	18-Oct-22	MS-1000	AF-1200
111	AF-1200	Annual Check-In & Budget Update for 2024	30	06-Sep-23	18-Oct-23	AF-1100	AF-1300
112	AF-1300	Annual Check-In & Budget Update for 2025	30	03-Sep-24	14-Oct-24	AF-1200	MS-5000
113	**Authority Board (Dues)**		438	01-Apr-22	02-Jan-24		
114	AB-2100	2022 Invoice Due Date 4/1/2022	1	01-Apr-22	01-Apr-22*	MS-1000	AB-2200
115	AB-2200	2023 Invoice Due Date 1/3/2023	1	03-Jan-23	03-Jan-23*	AB-2100	AB-2300
116	AB-2300	2024 Invoice Due Date 1/2/2024	1	02-Jan-24	02-Jan-24*	AB-2200	MS-5000
117	**Benefits & Obligations Contract with Participants**		313	01-Mar-22 A	29-Jun-23		
118	BO-1100	Finalize Guiding Principles	64	01-Mar-22 A	30-Jun-22		BO-1200
119	BO-1200	Finalize Plan of Finance	188	01-Mar-22 A	30-Dec-22	BO-1100	BO-1300
120	BO-1300	Develop & Execute Benefits & Obligations Contract with Participants	125	03-Jan-23	29-Jun-23	BO-1200	KD-1300
121	**Phase 3 Participation Agreement**		80	04-Jan-24	26-Apr-24		
122	PA-1100	Develop Phase 3 Participation Agreement	30	04-Jan-24	15-Feb-24	MS-1400	PA-1200
123	PA-1200	Home Board Execution & Final Rebalancing	50	16-Feb-24	26-Apr-24	PA-1100	MS-5000
124	**Bank Financing**		50	20-Mar-23	26-May-23		
125	BF-1100	Prepare & Issue RFP to Prospective Lenders	15	20-Mar-23	07-Apr-23	WIFIA-140	BF-1200
126	BF-1200	Review & Select Lender(s)	20	10-Apr-23	05-May-23	BF-1100	BF-1300
127	BF-1300	Execute Bank Financing Loan Documents	15	08-May-23	26-May-23	BF-1200	MS-5000



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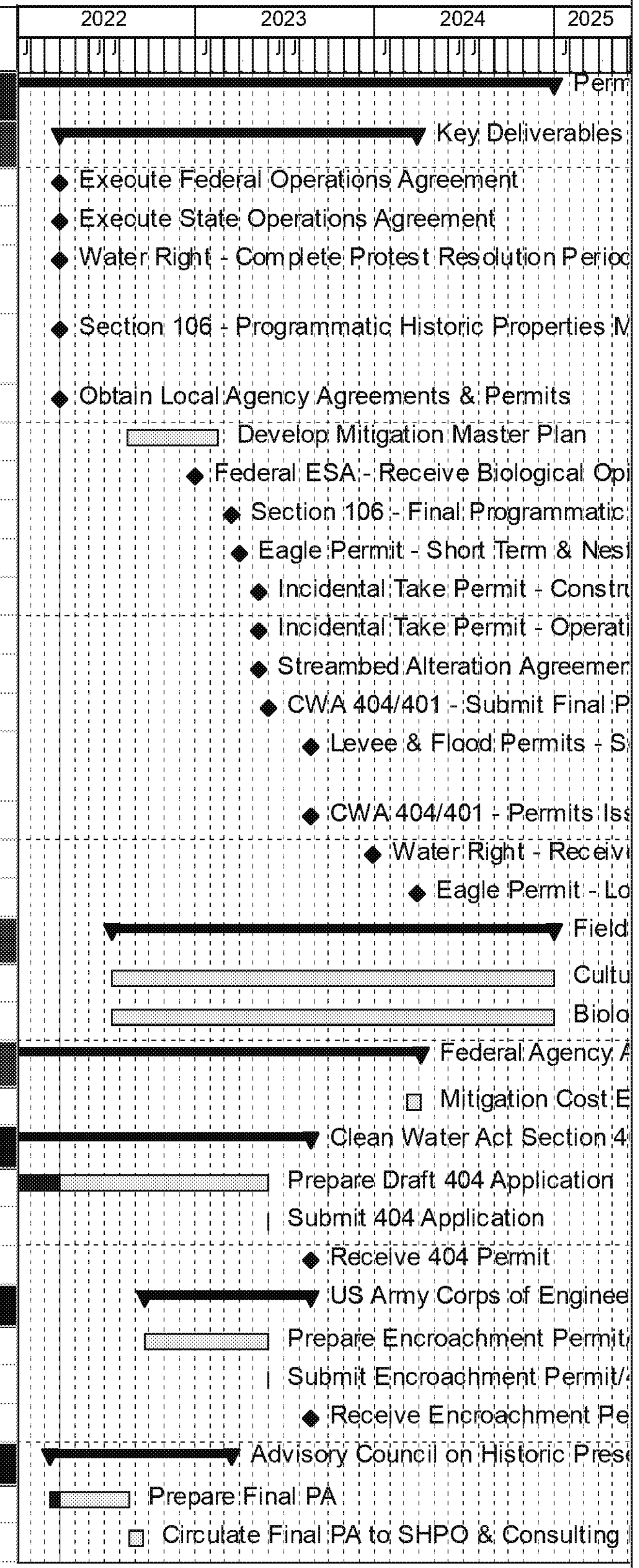
Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish	Predecessors	Successors
129		**Permitting (Ali, John, Jelica)**	695	04-Jan-21 A	31-Dec-24		
130		**Key Deliverables**	496	01-Apr-22	26-Mar-24		
131	KD-1240	Execute Federal Operations Agreement	0		01-Apr-22		MS-5000
132	KD-1250	Execute State Operations Agreement	0		01-Apr-22		MS-5000
133	KD-1320	Water Right - Complete Protest Resolution Period & Resolve as Many Protests as Possible	0		01-Apr-22		MS-5000
134	KD-1360	Section 106 - Programmatic Historic Properties Management Plan Development	0		01-Apr-22		MS-5000
135	KD-1450	Obtain Local Agency Agreements & Permits	0		01-Apr-22		MS-5000
136	KD-1460	Develop Mitigation Master Plan	125	17-Aug-22	17-Feb-23	MS-1100	CE-1570
137	KD-1340	Federal ESA - Receive Biological Opinions	0		30-Dec-22	BA-220, BA-120	MS-5000
138	KD-1350	Section 106 - Final Programmatic Agreement	0		16-Mar-23	106-102	MS-5000
139	KD-1430	Eagle Permit - Short Term & Nest Permit Issued	0		31-Mar-23	MS-1000, USFWS-130	MS-5000
140	KD-1370	Incidental Take Permit - Construction ITP Issued	0		11-May-23	MS-1000, 2081-220	KD-1510
141	KD-1380	Incidental Take Permit - Operations ITP Issued	0		11-May-23	MS-1000, 2081-120	KD-1510
142	KD-1420	Streambed Alteration Agreement	0		11-May-23	1600-220	MS-5000
143	KD-1390	CWA 404/401 - Submit Final Permit Applications	0		31-May-23	404-120	KD-1400
144	KD-1410	Levee & Flood Permits - Section 408 & CVFPB Encroachment Permits Issued	0		23-Aug-23	CVFPB-120, CVFPB-220	MS-5000
145	KD-1400	CWA 404/401 - Permits Issued	0		24-Aug-23	404-130, KD-1390	MS-5000
146	KD-1330	Water Right - Receive Water Right Order & Permit	0		28-Dec-23	WRP-120, MS-1000	KD-1510
147	KD-1440	Eagle Permit - Long Term Permit Issued	0		26-Mar-24	MS-1000, USFWS-160	MS-5000
148		**Field Surveys**	621	18-Jul-22	31-Dec-24		
149	RE-1030	Cultural Surveys	621	18-Jul-22	31-Dec-24	LAAC-1100, LAAY-1100, LAAG-1100	MS-5000
150	RE-1040	Biological Surveys	621	18-Jul-22	31-Dec-24	LAAC-1100, LAAY-1100, LAAG-1100	MS-5000
151		**Federal Agency Agreements & Permits**	502	11-Jan-21 A	03-Apr-24		
152	CE-1570	Mitigation Cost Estimate Update	20	07-Mar-24	03-Apr-24	KD-1460, C3E-1000	
153		**Clean Water Act Section 404**	352	04-Feb-21 A	24-Aug-23		
154	404-050	Prepare Draft 404 Application	291	04-Feb-21 A	30-May-23	404-003, 404-025, EIR-250	404-120, 408-150
155	404-120	Submit 404 Application	1	31-May-23	31-May-23	404-050	CWC-510, KD-1390, 404-130
156	404-130	Receive 404 Permit	0		24-Aug-23	404-120	KD-1400
157		**US Army Corps of Engineers Rivers & Harbors Act Section 14, Section 4**	233	20-Sep-22	24-Aug-23		
158	408-150	Prepare Encroachment Permit/408 Request	172	20-Sep-22	30-May-23	EIR-450, 404-050, KD-1110	408-160
159	408-160	Submit Encroachment Permit/408 Request	1	31-May-23	31-May-23	408-150, EIR-450	CWC-510, 408-170
160	408-170	Receive Encroachment Permit/408 Permit	0		24-Aug-23	408-160	
161		**Advisory Council on Historic Preservation NHPA Section 106**	239	14-Mar-22 A	16-Mar-23		
162	106-081	Prepare Final PA	99	14-Mar-22 A	19-Aug-22	106-072	106-082, 106-092
163	106-092	Circulate Final PA to SHPO & Consulting Parties for Signatures	18	22-Aug-22	15-Sep-22	106-081	106-093, 106-102



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Schedule

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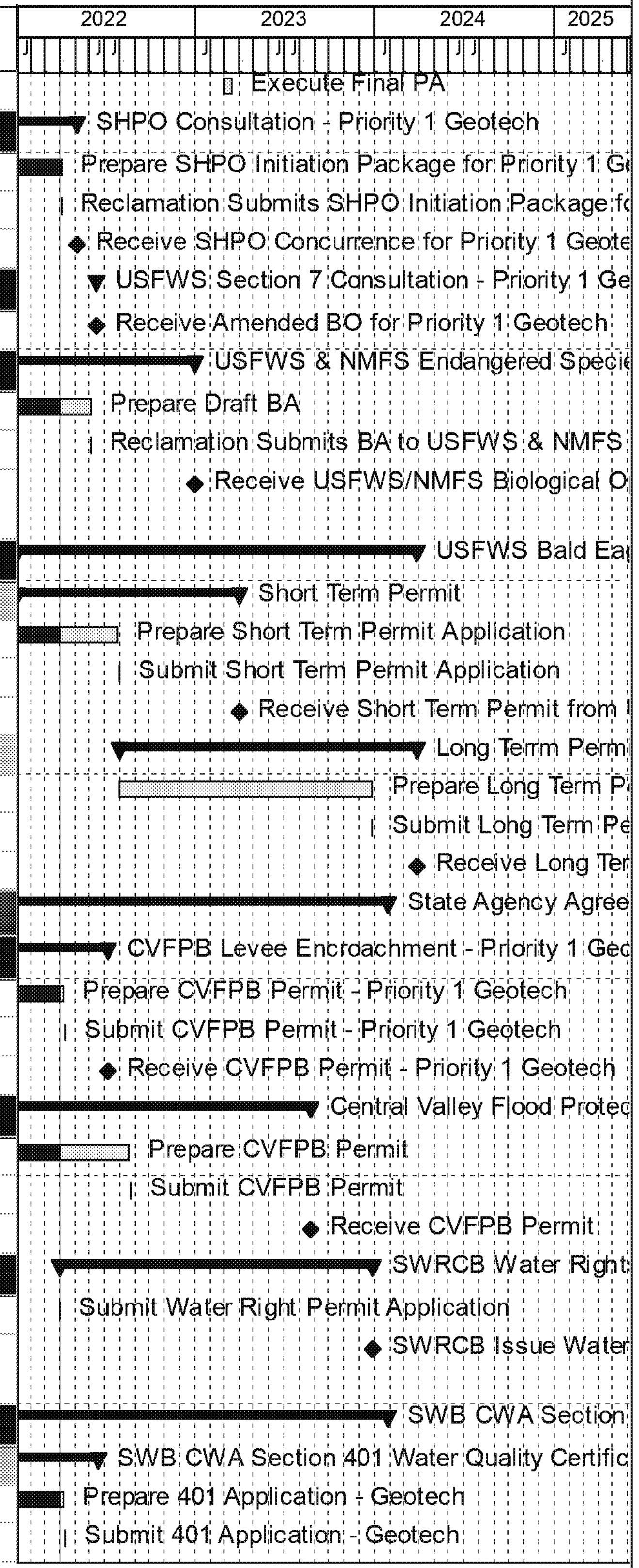
164	106-102	Execute Final PA	10	03-Mar-23	16-Mar-23	106-092, EIR-250	EIR-450, KD-1350
165	**SHPO Consultation - Priority 1 Geotech**		25	02-Aug-21 A	05-May-22		
166	SHPO-240	Prepare SHPO Initiation Package for Priority 1 Geotech	2	02-Aug-21 A	04-Apr-22		SHPO-250
167	SHPO-250	Reclamation Submits SHPO Initiation Package for Priority 1 Geotech	1	05-Apr-22	05-Apr-22	SHPO-240	SHPO-260
168	SHPO-260	Receive SHPO Concurrence for Priority 1 Geotech	0		05-May-22	SHPO-250	EIR-230
169	**USFWS Section 7 Consultation - Priority 1 Geotech**		0	16-Jun-22	16-Jun-22		
170	BA-120	Receive Amended BO for Priority 1 Geotech	0		16-Jun-22	BA-110	KD-1340, EIR-230
171	**USFWS & NMFS Endangered Species Act Section 7**		188	11-Jan-21 A	30-Dec-22		
172	BA-200	Prepare Draft BA	44	11-Jan-21 A	02-Jun-22		BA-210
173	BA-210	Reclamation Submits BA to USFWS & NMFS	1	03-Jun-22	03-Jun-22	BA-200	BA-1110, EIR-450, BA-220
174	BA-220	Receive USFWS/NMFS Biological Opinions (Incidental Take Authorizations)	0		30-Dec-22	BA-210	EIR-450, KD-1340
175	**USFWS Bald Eagle Protection Act**		496	03-Jan-22 A	26-Mar-24		
176	**Short Term Permit**		250	03-Jan-22 A	31-Mar-23		
177	USFWS-110	Prepare Short Term Permit Application	84	03-Jan-22 A	29-Jul-22		USFWS-120
178	USFWS-120	Submit Short Term Permit Application	1	01-Aug-22	01-Aug-22	USFWS-110	USFWS-130, USFWS-140
179	USFWS-130	Receive Short Term Permit from USFWS	0		31-Mar-23	USFWS-120	KD-1430
180	**Long Terrm Permit**		411	02-Aug-22	26-Mar-24		
181	USFWS-140	Prepare Long Term Permit Application	350	02-Aug-22	27-Dec-23	USFWS-120	USFWS-150
182	USFWS-150	Submit Long Term Permit Application	1	28-Dec-23	28-Dec-23	USFWS-140	USFWS-160
183	USFWS-160	Receive Long Term Permit from USFWS	0		26-Mar-24	USFWS-150	KD-1440, MS-5000
184	**State Agency Agreements & Permits**		456	04-Jan-21 A	29-Jan-24		
185	**CVFPB Levee Encroachment - Priority 1 Geotech**		67	01-Nov-21 A	06-Jul-22		
186	CVFPB-100	Prepare CVFPB Permit - Priority 1 Geotech	6	01-Nov-21 A	08-Apr-22		CVFPB-110
187	CVFPB-110	Submit CVFPB Permit - Priority 1 Geotech	1	11-Apr-22	11-Apr-22	CVFPB-100	CVFPB-120
188	CVFPB-120	Receive CVFPB Permit - Priority 1 Geotech	0		06-Jul-22	CVFPB-110, EIR-230	KD-1410
189	**Central Valley Flood Protection Board (CVFPB) Levee Encroachment**		351	13-Dec-21 A	23-Aug-23		
190	CVFPB-200	Prepare CVFPB Permit	100	13-Dec-21 A	22-Aug-22	KD-1110	CVFPB-210
191	CVFPB-210	Submit CVFPB Permit	1	23-Aug-22	23-Aug-22	CVFPB-200	CVFPB-220
192	CVFPB-220	Receive CVFPB Permit	0		23-Aug-23	CVFPB-210, EIR-380	KD-1410
193	**SWRCB Water Rights Permit**		436	01-Apr-22	28-Dec-23		
194	WRP-110	Submit Water Right Permit Application	1	01-Apr-22	01-Apr-22	WRP-100	WR-095, OP-1005, WRP-120
195	WRP-120	SWRCB Issue Water Right Permit (Dec-2023)	0		28-Dec-23	WRP-110, EIR-380	KD-1330, MS-1400, OS-1130, OS-1150, A1200
196	**SWB CWA Section 401 Water Quality Certification**		456	04-Jan-21 A	29-Jan-24		
197	**SWB CWA Section 401 Water Quality Certification - Priority 1 Geotech**		55	01-Mar-21 A	17-Jun-22		
198	401-100	Prepare 401 Application - Geotech	6	01-Mar-21 A	08-Apr-22	WP2-130	401-110
199	401-110	Submit 401 Application - Geotech	1	11-Apr-22	11-Apr-22	401-100	401-120



Remaining Level of Effort | Remaining Work | Summary
Actual Level of Effort | Critical Remaining Work
Actual Work | Milestone

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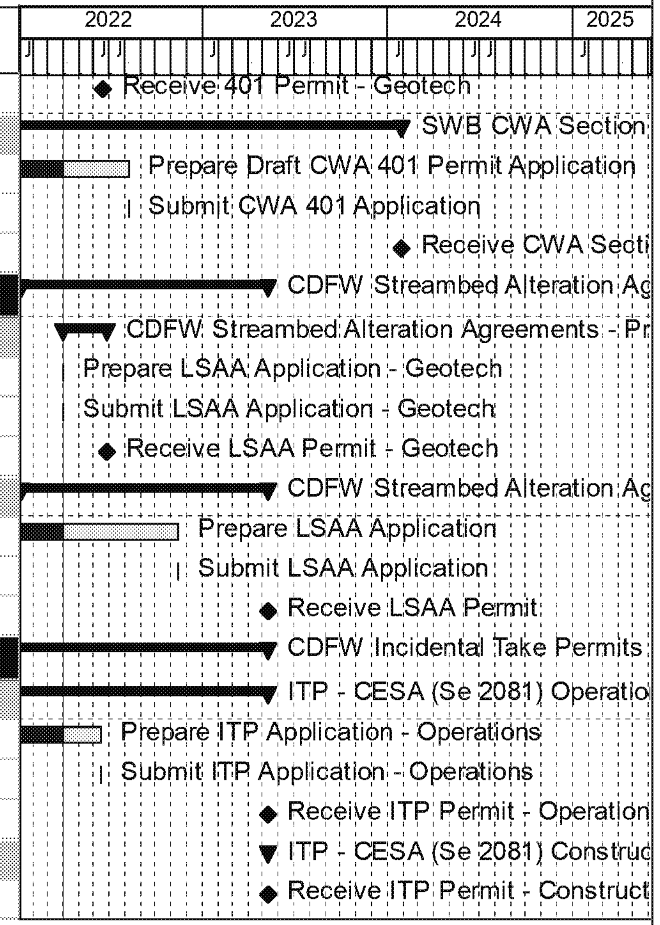
200	401-120	Receive 401 Permit - Geotech	0		17-Jun-22	401-110, EIR-230	GWP-1100
201		**SWB CWA Section 401 Water Quality Certification**	456	04-Jan-21 A	29-Jan-24		
202	401-200	Prepare Draft CWA 401 Permit Application	90	04-Jan-21 A	08-Aug-22		401-210
203	401-210	Submit CWA 401 Application	1	09-Aug-22	09-Aug-22	401-200	401-220
204	401-220	Receive CWA Section 401 Permit	0		29-Jan-24	401-210, EIR-380	
205		**CDFW Streambed Alteration Agreements**	279	10-Jan-22 A	11-May-23		
206		**CDFW Streambed Alteration Agreements - Priority 1 Geotech**	61	01-Apr-22	27-Jun-22		
207	1600-100	Prepare LSAA Application - Geotech	0	01-Apr-22*	01-Apr-22		1600-110
208	1600-110	Submit LSAA Application - Geotech	1	01-Apr-22	01-Apr-22	1600-100	1600-120
209	1600-120	Receive LSAA Permit - Geotech	0		27-Jun-22	1600-110, EIR-230	GWP-1100
210		**CDFW Streambed Alteration Agreements**	279	10-Jan-22 A	11-May-23		
211	1600-200	Prepare LSAA Application	157	10-Jan-22 A	14-Nov-22		1600-210
212	1600-210	Submit LSAA Application	1	15-Nov-22	15-Nov-22	1600-200	1600-220
213	1600-220	Receive LSAA Permit	0		11-May-23	1600-210, EIR-380	KD-1420, 2081-120
214		**CDFW Incidental Take Permits**	279	11-Jan-21 A	11-May-23		
215		**ITP - CESA (Se 2081) Operations**	279	11-Jan-21 A	11-May-23		
216	2081-100	Prepare ITP Application - Operations	51	11-Jan-21 A	13-Jun-22	OP-450	2081-110
217	2081-110	Submit ITP Application - Operations	1	14-Jun-22	14-Jun-22	2081-100	2081-120
218	2081-120	Receive ITP Permit - Operations	0		11-May-23	2081-110, 1600-220, EIR-380	KD-1380, 2081-220
219		**ITP - CESA (Se 2081) Construction**	0	11-May-23	11-May-23		
220	2081-220	Receive ITP Permit - Construction	0		11-May-23	2081-210, 2081-120, EIR-380	KD-1370



Remaining Level of Effort | Remaining Work | Summary
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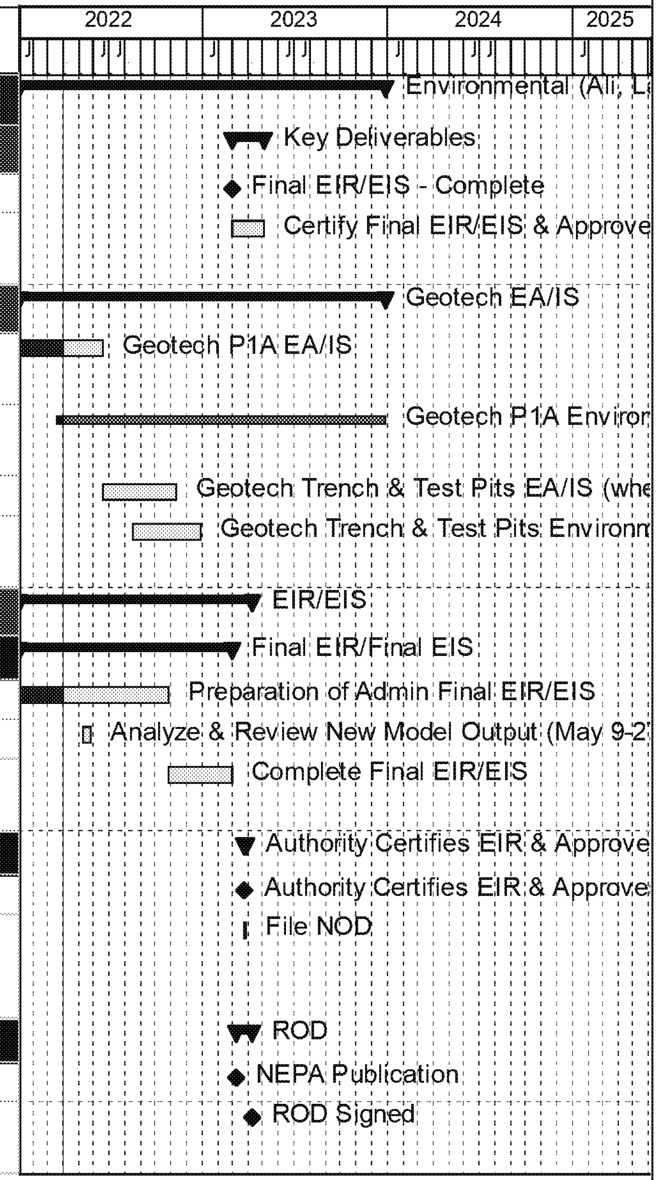
#	Activity ID	Activity Name	Remaining Duration	Start	Finish	Predecessors	Successors
222	**Environmental (Ali, Laurie)**		437	03-Jan-22 A	29-Dec-23		
223	**Key Deliverables**		45	02-Mar-23	04-May-23		
224	KD-1470	Final EIR/EIS - Complete	0		02-Mar-23	EIR-250, MS-1000	KD-1480
225	KD-1480	Certify Final EIR/EIS & Approve Preferred Project & MMRP (30 day period for legal challenge)	45	03-Mar-23	04-May-23	KD-1470, MS-1000	
226	**Geotech EA/IS**		437	03-Jan-22 A	29-Dec-23		
227	EIR-230	Geotech P1A EA/IS	55	03-Jan-22 A	17-Jun-22	SHPO-260, BA-120	EIR-260, EIR-630, GWP-1100, CVFPB-120, 401-120, 1600-120
228	EIR-260	Geotech P1A Environmental Surveys (which Real Estate access agreements are needed to start this?)	437	22-Mar-22 A	29-Dec-23	EIR-230, LAAC-1100, LAAY-1100, LAAG-1100, GWP-1300	
229	EIR-630	Geotech Trench & Test Pits EA/IS (when can this start, driven by Env	100	20-Jun-22	09-Nov-22	EIR-230	EIR-640, EIR-640, GWP-1500
230	EIR-640	Geotech Trench & Test Pits Environmental Surveys (depending on approach may not need early access)	90	16-Aug-22	27-Dec-22	EIR-630, EIR-630	
231	**EIR/EIS**		256	03-Jan-22 A	10-Apr-23		
232	**Final EIR/Final EIS**		229	03-Jan-22 A	02-Mar-23		
233	EIR-210	Preparation of Admin Final EIR/EIS	145	03-Jan-22 A	26-Oct-22		WR-125, STA-140, EIR-250
234	EIR-220	Analyze & Review New Model Output (May 9-27)	15	09-May-22	27-May-22	FO-1110	
235	EIR-250	Complete Final EIR/EIS	84	27-Oct-22	02-Mar-23	EIR-210	KD-1470, MS-1200, EIR-370, EIR-440, 404-050, 106-102
236	**Authority Certifies EIR & Approves Project & File NOD**		5	23-Mar-23	30-Mar-23		
237	EIR-370	Authority Certifies EIR & Approves Project	0		23-Mar-23	EIR-250	EIR-380
238	EIR-380	File NOD	5	24-Mar-23	30-Mar-23	EIR-370	EIR-450, WRP-120, 401-220, 1600-220, 2081-120, 2081-220, CVFPB-220
239	**ROD**		22	09-Mar-23	10-Apr-23		
240	EIR-440	NEPA Publication	0		09-Mar-23	EIR-250	EIR-450
241	EIR-450	ROD Signed	0		10-Apr-23	EIR-440, EIR-380, BA-210, BA-220, 106-102	MS-1300, EIR-460, FED-090, 408-160, FED-100, 408-150



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Actual Level of Effort
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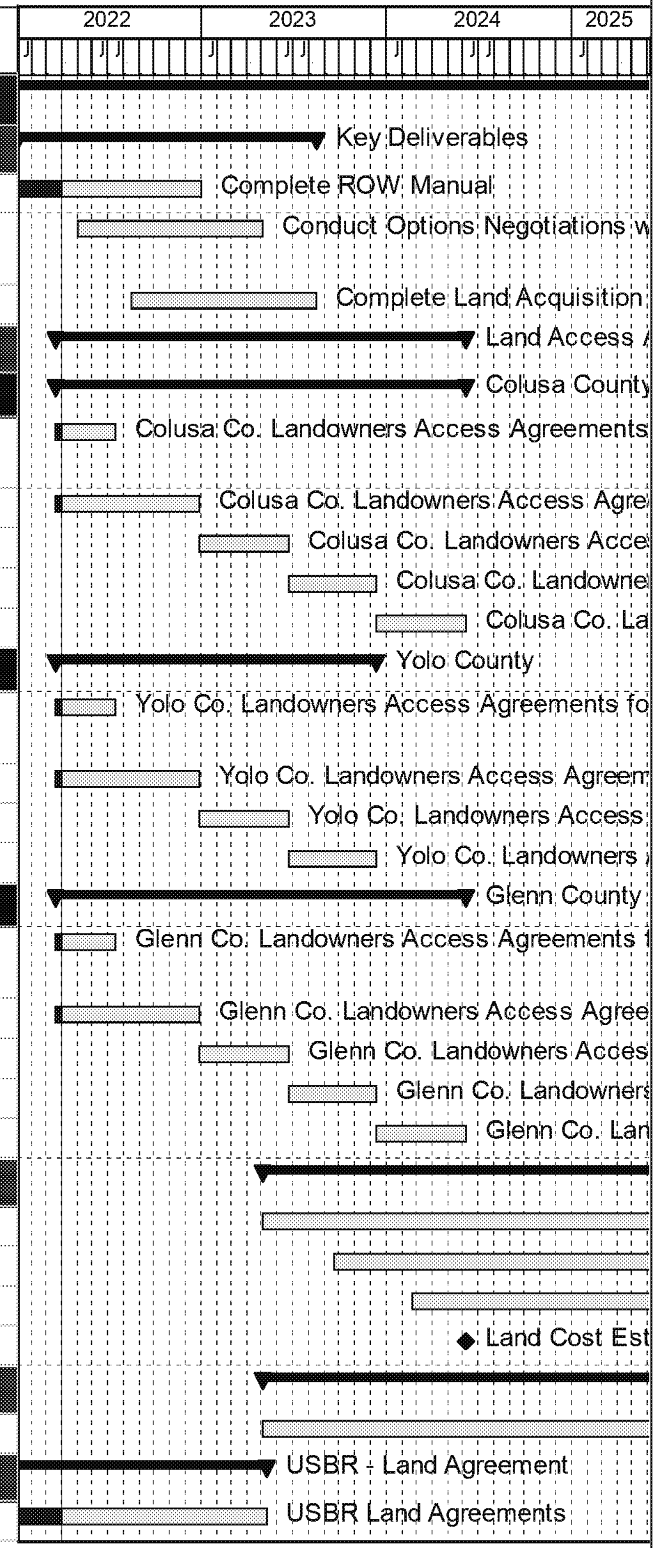
243	**Real Estate**		1771	02-Nov-20 A	14-Feb-29		
244	**Key Deliverables**		346	03-Jan-22 A	16-Aug-23		
245	KD-1495	Complete ROW Manual	188	03-Jan-22 A	30-Dec-22	MS-1000	
246	KD-1500	Conduct Options Negotiations with Willing Seller Properties	250	02-May-22*	01-May-23		RE-1080, RE-1070, RE-1060, MI-1100
247	KD-1490	Complete Land Acquisition Master Plan	250	17-Aug-22	16-Aug-23	MS-1100	
248	**Land Access Agreements**		547	22-Mar-22 A	06-Jun-24		
249	**Colusa County**		547	22-Mar-22 A	06-Jun-24		
250	LAAC-1100	Colusa Co. Landowners Access Agreements for Geotech Work Pkg #1	74	22-Mar-22 A	15-Jul-22		GWP-1100, LAAC-1200, EIR-260, RE-1030, RE-1040
251	LAAC-1200	Colusa Co. Landowners Access Agreements for Geotech Work Pkg #2	187	22-Mar-22 A	29-Dec-22	LAAC-1100	GWP-1200, LAAC-1300
252	LAAC-1300	Colusa Co. Landowners Access Agreements for Geotech Work Pkg #3	120	30-Dec-22	21-Jun-23	LAAC-1200	GWP-1300, LAAC-1400
253	LAAC-1400	Colusa Co. Landowners Access Agreements for Geotech Work Pkg #4	120	22-Jun-23	14-Dec-23	LAAC-1300	GWP-1400, LAAC-1500
254	LAAC-1500	Colusa Co. Landowners Access Agreements for Geotech Work Pkg #5	120	15-Dec-23	06-Jun-24	LAAC-1400	GWP-1500, RE-1050
255	**Yolo County**		427	22-Mar-22 A	14-Dec-23		
256	LAAY-1100	Yolo Co. Landowners Access Agreements for Geotech Work Pkg #1	74	22-Mar-22 A	15-Jul-22		GWP-1100, LAAY-1200, EIR-260, RE-1030, RE-1040
257	LAAY-1200	Yolo Co. Landowners Access Agreements for Geotech Work Pkg #2	187	22-Mar-22 A	29-Dec-22	LAAY-1100	GWP-1200, LAAY-1300
258	LAAY-1300	Yolo Co. Landowners Access Agreements for Geotech Work Pkg #3	120	30-Dec-22	21-Jun-23	LAAY-1200	GWP-1300, LAAY-1400
259	LAAY-1400	Yolo Co. Landowners Access Agreements for Geotech Work Pkg #4	120	22-Jun-23	14-Dec-23	LAAY-1300	GWP-1400
260	**Glenn County**		547	22-Mar-22 A	06-Jun-24		
261	LAAG-1100	Glenn Co. Landowners Access Agreements for Geotech Work Pkg #1	74	22-Mar-22 A	15-Jul-22		GWP-1100, LAAG-1200, EIR-260, RE-1030, RE-1040
262	LAAG-1200	Glenn Co. Landowners Access Agreements for Geotech Work Pkg #2	187	22-Mar-22 A	29-Dec-22	LAAG-1100	GWP-1200, LAAG-1300
263	LAAG-1300	Glenn Co. Landowners Access Agreements for Geotech Work Pkg #3	120	30-Dec-22	21-Jun-23	LAAG-1200	GWP-1300, LAAG-1400
264	LAAG-1400	Glenn Co. Landowners Access Agreements for Geotech Work Pkg #4	120	22-Jun-23	14-Dec-23	LAAG-1300	GWP-1400, LAAG-1500
265	LAAG-1500	Glenn Co. Landowners Access Agreements for Geotech Work Pkg #5	120	15-Dec-23	06-Jun-24	LAAG-1400	GWP-1500, RE-1050
266	**Land Acquisition**		1500	02-May-23	14-Feb-29		
267	RE-1060	Construction Package 1 - Land Acquisition	1500	02-May-23	14-Feb-29	KD-1500	RE-1100, RE-1070
268	RE-1070	Construction Package 2 - Land Acquisition	1400	22-Sep-23	14-Feb-29	RE-1060, KD-1500	RE-1080
269	RE-1080	Construction Package 3 - Land Acquisition	1300	21-Feb-24	14-Feb-29	RE-1070, KD-1500	
270	RE-1050	Land Cost Established	0		06-Jun-24	LAAG-1500, LAAC-1500	CU-1000
271	**Relocation**		1500	02-May-23	29-Jan-29		
272	RE-1100	Relocation Assistance, as Needed	1500	02-May-23	29-Jan-29	RE-1060	RC-100
273	**USBR - Land Agreement**		278	02-Nov-20 A	10-May-23		
274	FED-100	USBR Land Agreements	278	02-Nov-20 A	10-May-23	WP2-130, EIR-450	PD-100



Remaining Level of Effort
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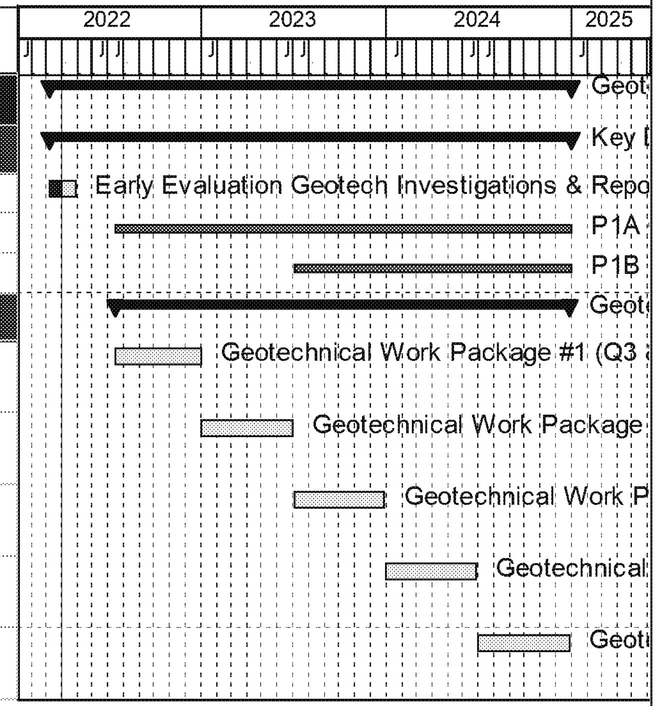
Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish	Predecessors	Successors
276		**Geotechnical Engineering**	695	07-Mar-22 A	31-Dec-24		
277		**Key Deliverables**	695	07-Mar-22 A	31-Dec-24		
278	KD-2000	Early Evaluation Geotech Investigations & Report	21	07-Mar-22 A	29-Apr-22		KD-1150
279	KD-2015	P1A Geotechnical Investigations & Reports	621	18-Jul-22	31-Dec-24	GWP-1100, GWP-1200, GWP-1300	MS-5000
280	KD-2025	P1B Geotechnical Investigations & Reports	381	03-Jul-23	31-Dec-24	GWP-1300, GWP-1400	MS-5000
281		**Geotechnical Investigations**	619	18-Jul-22	27-Dec-24		
282	GWP-1100	Geotechnical Work Package #1 (Q3 &4 2022)	114	18-Jul-22	30-Dec-22	LAAC-1100, LAAG-1100, LAAY-1100, EIR-230, 401-120, 1600-120	KD-2015, GWP-1200
283	GWP-1200	Geotechnical Work Package #2 (Q1 & 2 2023)	126	03-Jan-23	30-Jun-23	LAAC-1200, GWP-1100, LAAG-1200, LAAY-1200	GWP-1300, KD-2015
284	GWP-1300	Geotechnical Work Package #3 (Q3 &4 2023)	123	03-Jul-23	29-Dec-23	GWP-1200, LAAC-1300, LAAG-1300, LAAY-1300	GWP-1400, KD-2015, KD-2025, EIR-260
285	GWP-1400	Geotechnical Work Package #4 (Q1 & 2 2024)	126	02-Jan-24	28-Jun-24	GWP-1300, LAAC-1400, LAAG-1400, LAAY-1400	GWP-1500, KD-2025
286	GWP-1500	Geotechnical Work Package #5 (need for Sites Lodoga Rd. Realignment Cost Certainty)	130	01-Jul-24	27-Dec-24	GWP-1400, LAAC-1500, LAAG-1500, EIR-630	MS-5000



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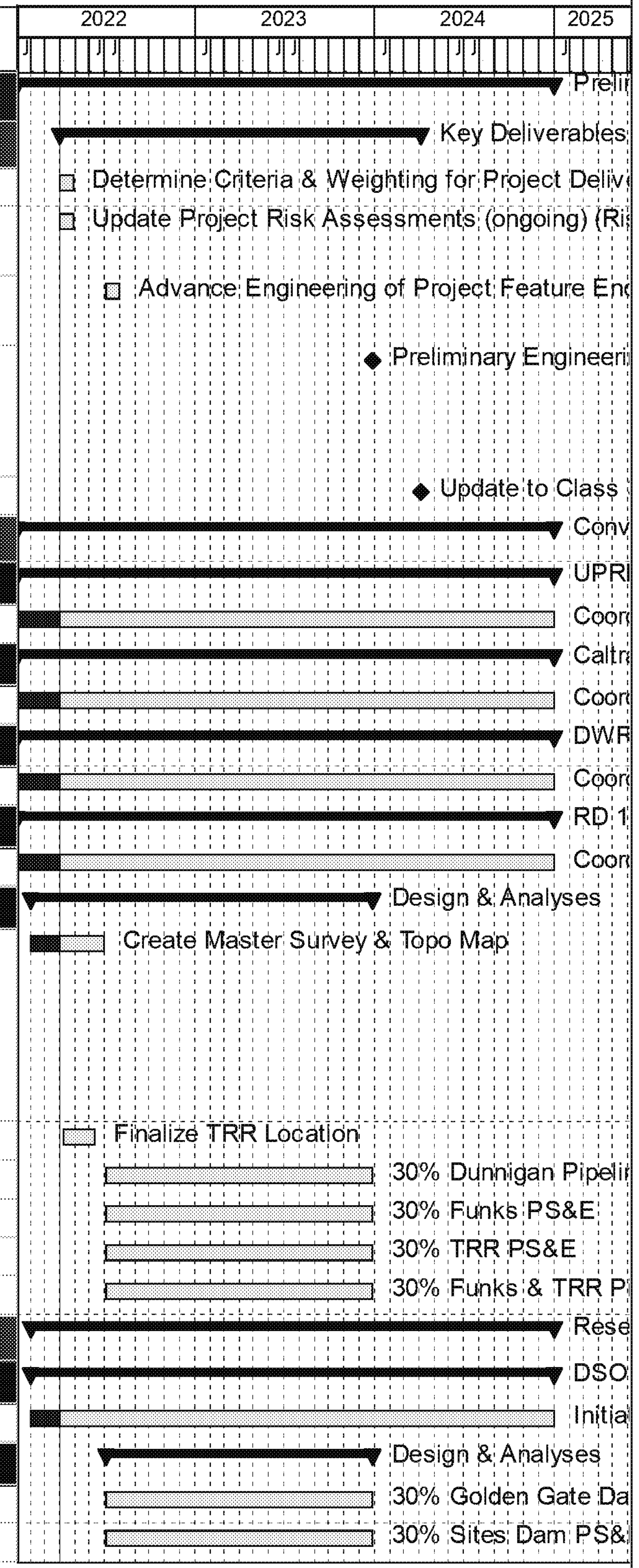
288		**Preliminary Engineering**	695	03-Jan-22 A	31-Dec-24		
289		**Key Deliverables**	502	01-Apr-22	03-Apr-24		
290	KD-1120	Determine Criteria & Weighting for Project Delivery Decisions	21	01-Apr-22	29-Apr-22		MS-5000
291	KD-1210	Update Project Risk Assessments (ongoing) (Risk Mgr Bob Beduhn & Henry Luu)	21	01-Apr-22	29-Apr-22		MS-5000
292	KD-1110	Advance Engineering of Project Feature Encroachments to 65% Design Level in Support of Permitting	21	05-Jul-22	02-Aug-22	KD-1140	408-135, 408-150, CVFPB-200
293	KD-1180	Preliminary Engineering (30% Design Level)	0		29-Dec-23	MS-1000, KD-1630, KD-1660, KD-1640, KD-1650, KD-2010, KD-2020, KD-2030, KD-2040, KD-2050, KD-2060, KD-2070, KD-2080, KD-2090, KD-2100	C3E-1000
294	KD-1190	Update to Class 3 Construction Cost Estimate	0		03-Apr-24	C3E-1000	MS-5000
295		**Conveyance (Pipelines, Pump Stations, Canals)**	695	03-Jan-22 A	31-Dec-24		
296		**UPRR Oversight & Review**	695	03-Jan-22 A	31-Dec-24		
297	A1110	Coordination & Oversight with UPRR	695	03-Jan-22 A	31-Dec-24		MS-5000
298		**Caltrans Oversight & Review**	695	03-Jan-22 A	31-Dec-24		
299	A1120	Coordination & Oversight with Caltrans	695	03-Jan-22 A	31-Dec-24		MS-5000
300		**DWR Operations Oversight & Review (KLOG)**	695	03-Jan-22 A	31-Dec-24		
301	A1130	Coordination & Oversight with Department of Water Resources	695	03-Jan-22 A	31-Dec-24		MS-5000
302		**RD 108 Oversight & Review**	695	03-Jan-22 A	31-Dec-24		
303	A1140	Coordination & Oversight with Reclamation District 108	695	03-Jan-22 A	31-Dec-24		MS-5000
304		**Design & Analyses**	437	01-Feb-22 A	29-Dec-23		
305	KD-1140	Create Master Survey & Topo Map	65	01-Feb-22 A	01-Jul-22	MS-1000	KD-1110, KD-1630, KD-1660, KD-1200, KD-1640, KD-1650, KD-2010, KD-2020, KD-2030, KD-2040, KD-2050, KD-2060, KD-2070, KD-2080, KD-2090, KD-2100
306	KD-1150	Finalize TRR Location	46	07-Apr-22	10-Jun-22	KD-2000	KD-2020
307	KD-1630	30% Dunnigan Pipeline PS&E	372	05-Jul-22	29-Dec-23	KD-1140	KD-1180, C4E-1000
308	KD-2010	30% Funks PS&E	372	05-Jul-22	29-Dec-23	KD-1140	KD-1180
309	KD-2020	30% TRR PS&E	372	05-Jul-22	29-Dec-23	KD-1140, KD-1150	KD-1180
310	KD-2030	30% Funks & TRR Pipeline PS&E	372	05-Jul-22	29-Dec-23	KD-1140	KD-1180
311		**Reservoir (Dams, Tunnels)**	695	01-Feb-22 A	31-Dec-24		
312		**DSOD Oversight & Review**	695	01-Feb-22 A	31-Dec-24		
313	KD-1100	Initiate Application for Permit to Construct from DSOD	695	01-Feb-22 A	31-Dec-24	MS-1000	MS-5000
314		**Design & Analyses**	372	05-Jul-22	29-Dec-23		
315	KD-1660	30% Golden Gate Dam PS&E	372	05-Jul-22	29-Dec-23	KD-1140	KD-1180, C4E-1000
316	KD-2040	30% Sites Dam PS&E	372	05-Jul-22	29-Dec-23	KD-1140	KD-1180



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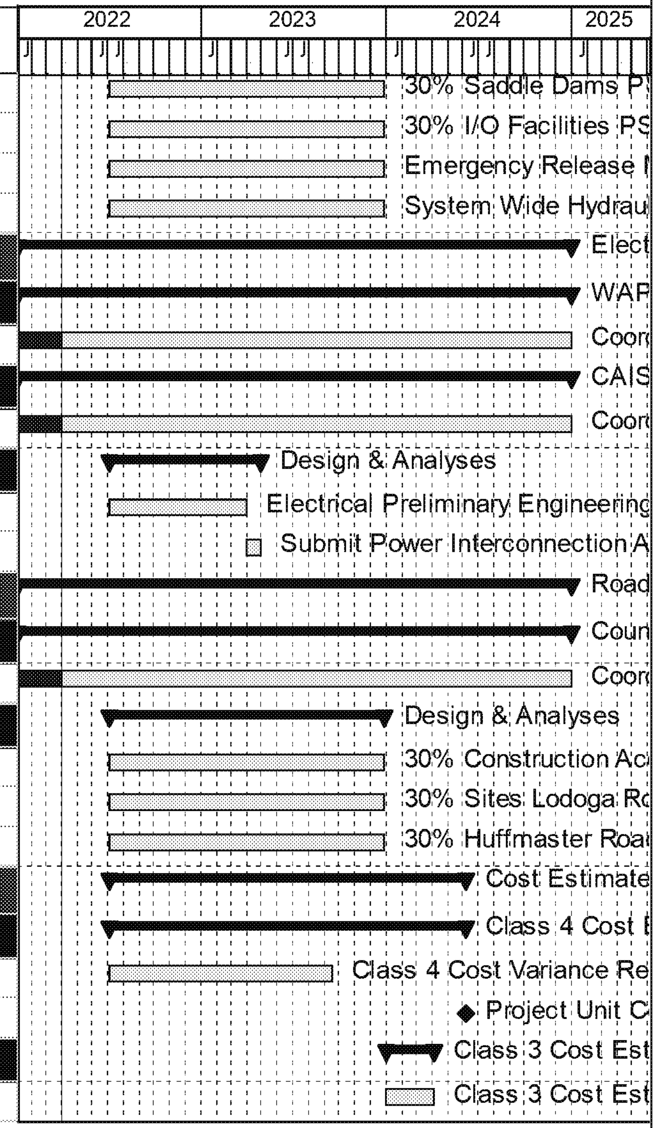
317	KD-2050	30% Saddle Dams PS&E	372	05-Jul-22	29-Dec-23	KD-1140	KD-1180
318	KD-2060	30% I/O Facilities PS&E	372	05-Jul-22	29-Dec-23	KD-1140	KD-1180
319	KD-2070	Emergency Release Modeling	372	05-Jul-22	29-Dec-23	KD-1140	KD-1180
320	KD-2080	System Wide Hydraulic Modeling	372	05-Jul-22	29-Dec-23	KD-1140	KD-1180
321		**Electrical (Substation, Switchyard, Transmission Line)**	695	03-Jan-22 A	31-Dec-24		
322		**WAPA Oversight & Review**	695	03-Jan-22 A	31-Dec-24		
323	A1150	Coordination & Oversight with WAPA	695	03-Jan-22 A	31-Dec-24		MS-5000
324		**CAISO Oversight & Review**	695	03-Jan-22 A	31-Dec-24		
325	A1160	Coordination & Oversight with CAISO	695	03-Jan-22 A	31-Dec-24		MS-5000
326		**Design & Analyses**	205	05-Jul-22	28-Apr-23		
327	KD-1640	Electrical Preliminary Engineering (30% Design Level)	185	05-Jul-22	31-Mar-23	KD-1140	KD-1200, KD-1180, C4E-1000
328	KD-1200	Submit Power Interconnection Application	20	03-Apr-23	28-Apr-23	MS-1000, KD-1140, KD-1640	MS-5000
329		**Roads & Bridges**	695	03-Jan-22 A	31-Dec-24		
330		**County Oversight & Review**	695	03-Jan-22 A	31-Dec-24		
331	A1170	Coordination & Oversight with County Authorities	695	03-Jan-22 A	31-Dec-24		MS-5000
332		**Design & Analyses**	372	05-Jul-22	29-Dec-23		
333	KD-1650	30% Construction Access & Maintenance Roads PS&E	372	05-Jul-22	29-Dec-23	KD-1140	KD-1180, C4E-1000
334	KD-2090	30% Sites Lodoga Road Realignment PS&E	372	05-Jul-22	29-Dec-23	KD-1140	KD-1180
335	KD-2100	30% Huffmaster Road PS&E	372	05-Jul-22	29-Dec-23	KD-1140	KD-1180
336		**Cost Estimate**	482	05-Jul-22	06-Jun-24		
337		**Class 4 Cost Estimate Variance Reporting**	482	05-Jul-22	06-Jun-24		
338	C4E-1000	Class 4 Cost Variance Reporting	304	05-Jul-22	19-Sep-23	KD-1650, KD-1640, KD-1660, KD-1630	CU-1000
339	CU-1000	Project Unit Cost Update	0		06-Jun-24	C4E-1000, C3E-1000, RE-1050	MS-1500
340		**Class 3 Cost Estimate**	65	02-Jan-24	03-Apr-24		
341	C3E-1000	Class 3 Cost Estimate Preparation (Capital Cost)	65	02-Jan-24	03-Apr-24	KD-1180	KD-1190, CE-1570, CU-1000



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filters: Less than 100%, Remove XX.
Data Date: 31-Mar-22 / Print Date: 31-Mar-22

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Draft_0016206

Sites Reservoir Project

Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish	Predecessors	Successors
343	Contracting Strategy		96	03-Jan-22 A	16-Aug-22		
344	CS-1100	Define Contracting Values	16	03-Jan-22 A	22-Apr-22		CS-1200
345	CS-1200	Establish Recommended Contract Packages	20	25-Apr-22	20-May-22	CS-1100	CS-1300
346	CS-1300	Establish Short List of Delivery Methods & Delivery Criteria	20	23-May-22	20-Jun-22	CS-1200	CS-1400
347	CS-1400	Obtain Board Approval for Contract Packages & Delivery Methods	40	21-Jun-22	16-Aug-22	CS-1300	MS-1100

Remaining Level of Effort | Remaining Work | Summary
Actual Level of Effort | Critical Remaining Work
Actual Work | Milestone

Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filters: Less than 100%, Remove XX.
Data Date: 31-Mar-22 / Print Date: 31-Mar-22

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Sites Reservoir Project

Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish	Predecessors	Successors
349	Mitigation Implementation		500	02-May-23	16-Apr-25		
350	MI-1100	Mitigation Implementation	500	02-May-23	16-Apr-25	KD-1500	

2022 2023 2024 2025

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filters: Less than 100%, Remove XX.
Data Date: 31-Mar-22 / Print Date: 31-Mar-22

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From: Heydinger, Erin [Erin.Heydinger@hdrinc.com]
Sent: 3/31/2022 9:33:49 AM
To: Alicia Forsythe [aforsythe@sitesproject.org]
Subject: FW: Sites Project Divertible Flow Tool
Attachments: Daily_Divertible_Storable_Flow_for_Sites_Project_Package_20210309_v3e.zip

Hi Ali,

Steve confirmed that the attached is the tool that was used to develop the 1 MAF estimate and has some of the references removed. This is the one that should go to Doug.

Thanks!
Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: Heydinger, Erin
Sent: Wednesday, March 30, 2022 11:01 AM
To: steve.micko@jacobs.com
Subject: FW: Sites Project Divertible Flow Tool

I think this might be the one?

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: Micko, Steve/SAC <Steve.Micko@jacobs.com>
Sent: Friday, June 4, 2021 2:07 PM
To: Alicia Forsythe <aforsythe@sitesproject.org>; Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Cc: Whittington, Chad/SAC <Chad.Whittington@jacobs.com>; Leaf, Rob/SAC <Rob.Leaf@jacobs.com>
Subject: RE: Sites Project Divertible Flow Tool

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Ali and Erin,

We've revised the Daily Divertible Flow Tool (attached) so that it no longer includes references to "NRDC".
To make sure I'm catching what you're seeing, I noticed and removed the references to "NRDC" in the "AnnFills" sheet.
I could not find additional references to those results.
Please let me know if you would like additional revisions.

A preliminary draft of the fill and release estimate tool and corresponding documentation are complete.
We'll send it over once we go through QAQC.

Best,
Steve

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Friday, June 4, 2021 6:27 AM
To: Heydinger, Erin <erin.heydinger@hdrinc.com>; Leaf, Rob/SAC <Rob.Leaf@jacobs.com>
Cc: Whittington, Chad/SAC <Chad.Whittington@jacobs.com>; Micko, Steve/SAC <Steve.Micko@jacobs.com>
Subject: [EXTERNAL] RE: Sites Project Divertible Flow Tool

Hi all – I just wanted to check on the status of removing the NRDC criteria from the tool so I can get it out to the NGO group.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 |
aforsythe@sitesproject.org | www.SitesProject.org

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From: Alicia Forsythe
Sent: Tuesday, June 1, 2021 1:20 PM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>; Leaf, Rob/SAC <Rob.Leaf@jacobs.com>
Cc: Whittington, Chad/SAC <Chad.Whittington@jacobs.com>; steve.micko@jacobs.com
Subject: RE: Sites Project Divertible Flow Tool

Thanks Erin. I took a quick look at the tool.

Lets take out the NRDC criteria. I would prefer to have our project as proposed in there. They can play around with the tool and put in what they want. But we should give it to them with the Proposed Project in the tool.

Rob, can you send over the spreadsheet and document that Chad prepared? I suspect we have this already, but it would be great for us to take a second look to see If we would want to send this also.

Thank you!

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 |
aforsythe@sitesproject.org | www.SitesProject.org

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From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Friday, May 28, 2021 6:36 PM
To: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>
Cc: Whittington, Chad/SAC <Chad.Whittington@jacobs.com>; Alicia Forsythe <aforsythe@sitesproject.org>; steve.micko@jacobs.com
Subject: RE: Sites Project Divertible Flow Tool

Hi all,

I was just reviewing this after our call with the NGOs this afternoon. I think this is pretty much ready to go, but I did want to ask whether we want to include the scenarios on more strict/looser diversion criteria?

Ali – FYI, the NRDC criteria is in here as well as some of our "looser" criteria. I am wondering for this if we just want to include our existing diversion criteria for now to not add that into this discussion.

Let me know your thoughts, but not until Tuesday! 😉

Thanks,
Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: Spranza, John <John.Spranza@hdrinc.com>
Sent: Monday, April 26, 2021 1:39 PM
To: Davis-Fadtke, Kristal@Wildlife <kristal.davis-fadtke@wildlife.ca.gov>; Dekar, Melissa D <mdekar@usbr.gov>; Kundargi, Kenneth (Kenneth.Kundargi@wildlife.ca.gov) <Kenneth.Kundargi@wildlife.ca.gov>; Williams, Jonathan@Wildlife <Jonathan.Williams@wildlife.ca.gov>; smanugian (smanugian@usbr.gov) <smanugian@usbr.gov>; La Luz, Felipe@Wildlife <felipe.laluz@wildlife.ca.gov>; evan.sawyer <evan.sawyer@noaa.gov>; Schoenberg, Steven <steven_schoenberg@fws.gov>; Sherrick, Robert@Wildlife <robert.sherrick@wildlife.ca.gov>; King, Vanessa M <vking@usbr.gov>
Cc: Micko, Steve/SAC (Steve.Micko@jacobs.com) <Steve.Micko@jacobs.com>; aforsythe (aforsythe@sitesproject.org) <aforsythe@sitesproject.org>; Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Subject: Sites Project Divertible Flow Tool

Hello,
The Sites' daily divertible flow tool used in the April Joint Agency Workshop is in the attached zip file. When distributing to others please send the entire zip file.

Let me know if you have any questions.
Thanks.
John

John Spranza, MS, CCN
Senior Ecologist / Regulatory Specialist

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File Provided Natively

Daily Divertible & Storable Flow for Sites Project Package 20210309

Files included in package:

- Sites Daily Divertible & Storable Flow Tool (version 20210309)
    - Divertible_Storable_Flow_for_Sites_Project_20210309.xlsm
- Sites daily Divertible & Storable Flow Tool Documentation (version 20210309)
    - Sites_Reservoir_Daily_Divertible_Flow_Tool_Documentation_20210309.docx

The Daily Divertible & Storable Flow Tool (version 20210309) is setup with the assumptions for the DEIRS Alternatives, which are provided in Table 1 and Table 2.

Table 1. Facility Assumptions used in the Daily Divertible & Storable Flow Tool (version 20210309) for DEIR/EIS Analysis.

Sites Facilities	
Sites Storage Capacity	1.5 MAF
Initial Sites Storage	200 TAF
Sites Diversion Season	November - May
Red Bluff Diversion Capacity	2,100 CFS
Red Bluff Bypass Flow	3,250 CFS
TCC Minimum Pumping Level	125 CFS
Hamilton City Diversion Capacity	1,800 CFS
Hamilton City Bypass Flow	4,000 CFS
GCC Minimum Pumping Level	100 CFS
GCC Maintenance Window	January 25^{th} – February 7^{th}
Facilities (Not Sites Specific)	
Fremont Weir	Fremont Weir Notch

Table 2. Regulatory Assumptions used in the Daily Divertible & Storable Flow Tool (version 20210309) for DEIR/EIS Analysis.

Regulations	
Bend Bridge Pulse Protection	
Bend Bridge Pulse Protection Season	October - May
Bend Bridge Pulse Protection Initiation Criteria	3-day average Sacramento River must exceed 8,000 cfs; 3-day average tributary flow must exceed 2,500 cfs
Bend Bridge Pulse Protection Duration	7 days upon initiation
Bend Bridge Pulse Protection Re-setting Criteria	After completion of pulse protection period, resetting criteria must be met for another pulse protection period to commence: 3-day Sacramento River flow must go below 7,500 cfs for 7 consecutive days; 3-day moving average tributary flow must go below 2,500 cfs for 7 consecutive days
Wilkins Slough Bypass Flow	8,000 cfs April - May; all other times, 5,000 cfs
Fremont Weir Notch Criteria	Prioritize the Fremont Weir Notch, Yolo Bypass preferred alternative, flow over weir within 10% when spill range

	between 600 cfs and 6,000 cfs; First 600 cfs of spill are protected within 1%
Flows into the Sutter Bypass System	None
Freeport Bypass Flow	None
Surplus Delta Outflow	7 days of flow availability in February – March is required before diversions can be made in those months
SWP ITP Delta Outflow	44,500 cfs April - May

Sites Reservoir Daily Divertible & Storable Flow Tool

1. Objective

The Daily Divertible & Storable Flow Tool (Divertible Flow Tool/Daily Modeling Tool) has been developed to evaluate and test diversion criteria in a real-time operations context. The Tool determine daily divertible and storable flow for Sites Project in October 1st, 2008 – May 31st, 2018 based on water availability and user specified conveyance constraints and diversion criteria. The spreadsheet generates timeseries of diverted and stored flow at three intake locations – Red Bluff, Hamilton City, and Delevan (by default, diversions through Delevan are set to zero in version 2021-03-09). Furthermore, the Divertible Flow Tool can be used to supplement CalSim II by:

- Representing the effects of operations criteria on a daily timestep
- Allowing for relative comparisons between monthly and daily approaches
- Providing results for more recent years (WY 2009 – 2018)

Several differences between CalSim II and the daily Divertible Flow Tool should be considered when both models are used in conjunction to evaluate Sites operations. Firstly, CalSim II yields results on a monthly timestep and the Divertible Flow Tool operates on a daily timestep. Different approaches are sometimes necessary to simulate monthly conditions as opposed to daily conditions, and implementing operation criteria on a daily timestep tends to be more conservative. Additionally, the two modeling tools include different simulation periods. CalSim II includes WY 1922 – 2003 while the Divertible Flow Tool includes WY 2009 – 2018. Table 1-1 shows the difference in proportion of Water Year Types (WYTs) for each modeling tool. As shown, the Divertible Flow Tool includes a drier period than does CalSim II.

Table 1-1. Proportion of Water Year Types in CalSim II and the Daily Divertible Flow Tool

WYT	CalSim II (1922-2003)	Divertible Flow Tool (2009-2018)
Wet	32%	20%
Above Normal	15%	0%
Below Normal	17%	40%
Dry	22%	20%
Critical	15%	20%

Another key difference is that CalSim II provides a continuous simulation over an 82-year period, while the Divertible Flow Tool simulates each year as a separate event. Furthermore, the daily modeling tool only provides estimated fill volumes, whereas CalSim II also includes release operations.

With the above considerations in mind, the daily Divertible Flow Tool serves as a valuable resource that can supplement CalSim II by evaluating Sites operations in real-time.

2. Available, Divertible, and Storable Flow

The Divertible Flow Tool uses outputs from the Flow Availability Tool, which estimates flow available for potential diversion to Sites Reservoir, subject to hydrology and regulations outside the scope of Sites Project operations (i.e., Delta Outflow standards, downstream water quality regulations, and other criteria from D-1641). The Divertible Flow Tool can then be used to evaluate various combinations of hydrology and Sites-related operations criteria. Divertible and storable flow are defined as follows:

- Divertible Flow = Flow available for potential diversion to Sites Reservoir subject to flow requirements and conveyance constraints associated with Sites Project.

- Storable Flow = “Divertible Flow” subject to storable capacity.

3. User Specifications and Input Assumptions

Figure 3-1 shows a snapshot of the Tool's dashboard, where users can specify various regulations and constraints corresponding to project operations. The table situated in the top-center displays monthly available, divertible, and storable flows associated with user specifications. The charts show daily hydrographs for the Sacramento River and the divertible and storable flow available at each intake.

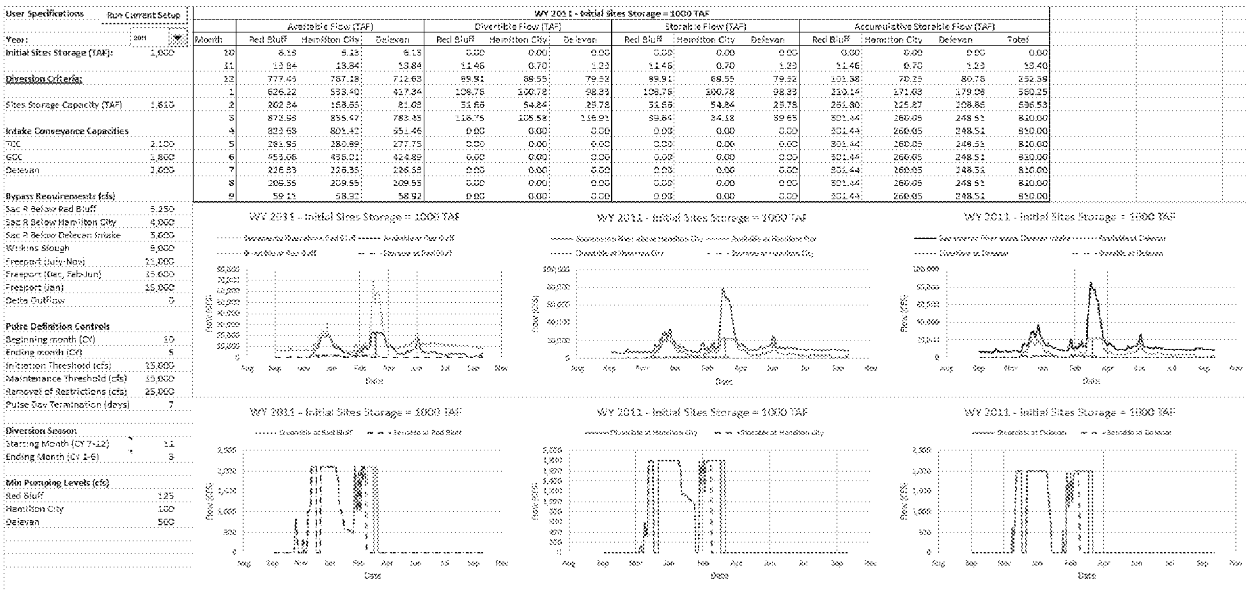


Figure 3-1. Snapshot of the Divertible Flow Tools User Dashboard.

The dashboard gives users the ability to specify the following:

- Year (hydrology) (WY 2009 – 2018)

- Initial Sites Storage (end of September storage)

- Sites Storage Capacity (TAF)

- Intake Conveyance Capacity (cfs)

    - Red Bluff (TCC)

    - Hamilton City (GCC)

- Delevan

- Bypass Flow Requirements (cfs)
  - Sacramento River at Red Bluff
  - Sacramento River at Hamilton City
  - Sacramento River at Delevan
  - Sacramento River at Wilkins Slough
  - Sacramento River at Freeport
- Pulse Flow Criteria at Bend Bridge
  - Initiation Flow Threshold
  - Maintenance Flow Threshold
  - Pulse Duration Limit
- Delta Outflow Criteria
- Fremont Weir Notch (on/off switch)
- Weir Spill Protection
  - Fremont Weir Spills
  - Aggregate Weir Spills to Sutter Bypass (from Moulton Weir, Colusa Weir, & Tisdale Weir)
- Minimum Pumping Level (cfs)
  - Red Bluff (TCC)
  - Hamilton City (GCC)
  - Delevan
- Low Level Pumping (diversion rate at each intake when Sacramento River flow at a certain location is less than its associated bypass flow requirement) (cfs)
  - Wilkins Slough Bypass override
  - Freeport override
  - Bend Bridge pulse protection override
- Intake Prioritization
- Diversion Season (range of months)
- Intake Season (specify when diversions are permitted at each intake) (range of months)
- Surplus Outflow (February – March)

3.1 Year (Hydrology)

Users can toggle through 10 different Water Years (WYs) – 2009 through 2018. However, WY 2018 only includes information up to May 31st. Each year provides a different hydrologic condition. The water year hydrologic classifications associated with each year are provided in Table 3-1. Water Year Hydrologic Classification Index (CDEC, 2019).Table 3-1. Each year is associated with flow availabilities that were estimated in the Flow Availability Tool.

Table 3-1. Water Year Hydrologic Classification Index (CDEC, 2019).

Water Year	Water Year Type
2009	D
2010	BN
2011	W
2012	BN
2013	D
2014	C
2015	C
2016	BN
2017	W
2018	BN

3.2 Initial Sites Storage (End of September)

Initial Sites storage has potential to affect the quantity of flow that is stored in the reservoir. Through a range of initial Sites storages, users can evaluate the duration for the reservoir to reach capacity, which occurs when storable flow no longer equals divertible flow. In drier years, storage capacity may never be reached even when initial storage is set relatively high. The default initial storage is 200 TAF.

3.3 Sites Storage Capacity

The default Sites storage capacity is 1.5 MAF. However, users can enter any desired value.

3.4 Intake Capacity

The default intake capacities of the Tehama Colusa Canal (Red Bluff intake), Glenn Colusa Canal (Hamilton City intake) are 2,100 cfs and 1,800 cfs, and respectively. However, users can enter any desired value.

3.5 Bypass Flow Requirements

A bypass flow requirement can be specified along the Sacramento River at five locations:

1. Red Bluff (default = 3,250 cfs)
2. Hamilton City (default = 4,000 cfs)
3. Delevan (default = none)
4. Wilkins Slough (default = 8,000 cfs in April – May)
5. Freeport (default = none)

Furthermore, users can specify a range of months at which the Wilkins Slough and Freeport bypass requirements are implemented (by entering the starting month in column C and entering the ending month in column D). Freeport includes four different cells at which bypass criteria can be entered. The first cell ("B22") dictates bypass criteria over a user-specified range of months. The next three cells ("B23:B25") dictate bypass criteria that persist under the primary Freeport bypass criteria for various times of the year.

3.6 Pulse Flow Criteria at Bend Bridge

The pulse flow criteria at Bend Bridge was developed to protect fish migration during naturally occurring, storm-induced, pulse flow events in the Sacramento River. Pulse flows are defined as extended peak river flows at Bend Bridge that originate from storm event tributary inflows downstream of Keswick Dam. A pulse is initiated once the three-day running average flow at Bend Bridge exceeds the "Initiation Threshold". The pulse persists as long as the three-day running average flow at Bend Bridge remains above the "Maintenance Threshold". If the three-day running average flow at Bend Bridge exceeds the "Removal of Restrictions Threshold", then Sites diversions are permitted if flow at Bend Bridge remains above the Maintenance Threshold. The "Reset Threshold" represents the value at which the 3-day moving average flow at Bend Bridge must not exceed for a given number of days before another pulse protected event can be triggered. The "Pulse Protection Duration" can be used to set the number of consecutive days that a pulse period can last before the protection criteria is removed. For example, if the Pulse Duration Limit is set to 7 days, then diversions to Sites are permitted after flow at Bend Bridge exceeds the pulse flow threshold for over 7 consecutive days. The Bend Bridge pulse protection criteria can be further modified in the "BB_Pulse_Definitions" tab. The current set of criteria assumes the following:

1. Season:
    a. Pulse protection can be initiated in October through May
2. Initiation:
    a. 3-day moving average Sacramento River flow at Bend Bridge must exceed 8,000 cfs,
    b. And the 3-day moving average tributary flow upstream of Bend Bridge (Cow Creek, Cottonwood Creek, and Battle Creek) must exceed 2,500 cfs
3. Duration:
    a. Pulse protection lasts for 7 days upon initiation
4. Re-setting condition:
    a. After completion of a pulse protection period, the following conditions must occur before another pulse event is triggered:
        i. 3-day moving average of Bend Bridge flow was less than 7,500 cfs for 7 consecutive days,
        ii. 3-day moving average tributary flow up upstream of Bend Bridge (Cow Creek, Cottonwood Creek, and Battle Creek) was less than 2,500 cfs for 7 consecutive days

3.7 Delta Outflow Criteria

The Divertible Flow Tool includes a few options to constrain Sites diversion based on Delta Outflow requirements. "Delta Outflow (SWP ITP) is intended to represent the 44,500 cfs flow requirement included in the 2020 SWP ITP. "Delta Outflow (Additional) is intended for any supplemental delta outflow constraints.

Users can also turn on or off NDOI criteria, which implements Delta Outflow targets for a specified period (default of March 1st through May 31st) based on WaterFix longfin smelt protection criteria (Incidental Take Permit No 2081-2016-055-03, WaterFix, CDFW, page 186). Outflow targets are determined based on a table derived from a linear relationship between the 50% exceedance forecast for the current month's Eight River Index (8RI) and recent historic Delta outflow (1980 – 2016). These tables have been stored in the "Ref. Tables" tab. The NDOI criteria is set off by default.

3.8 Fremont Weir Notch Spill Protection

The Fremont Weir Notch and its associated flow protection criteria can be turned on or off in the Divertible Flow Tool. Spills over the Fremont Weir Notch are based on a rule curve used in CalSim II. Furthermore, the Sites diversion criteria protects spills of 6,000 cfs from November 1st through March 15th and spills of 600 cfs from March 16th through April 30th. Figure 3-2 and Figure 3-3 demonstrate the effect of the Fremont Weir notch and its associated protection criteria on spills and diversions to Sites in an example scenario for WY 2010. The notch protection criteria cause a reduction in diversions to Sites, most notably in February when nearly all diversions are restricted because notch spills range from 0 – 6,000 cfs for most of the month.

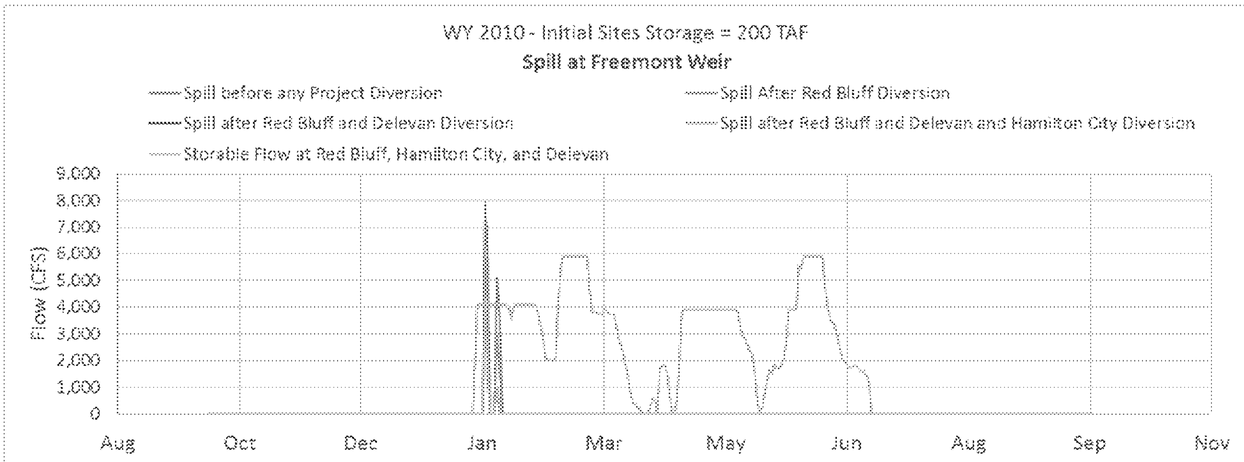


Figure 3-2. Spill at Fremont Weir vs Storable Flow – Without the Fremont Weir Notch.

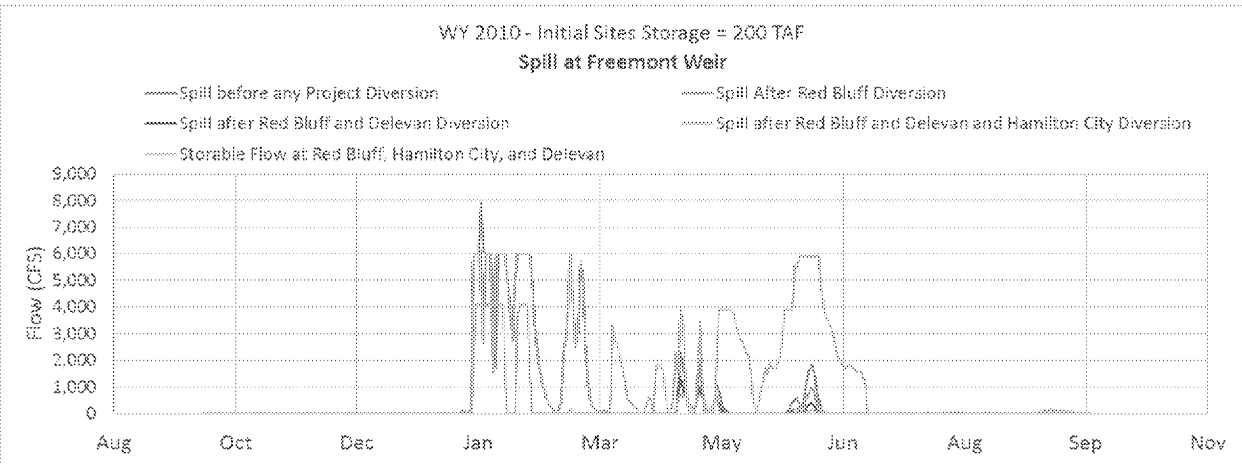


Figure 3-3. Spill at Fremont Weir vs Storable Flow – With the Fremont Weir Notch (and associated protection criteria).

In the daily modeling tool, users may specify buffer values for Fremont Weir notch protection. Two buffer values may be specified – one for spills between 0 and 600 cfs (low-spill buffer), and one for spills between 600 and 6,000 cfs (high-spill buffer). The buffer values are entered as percentages of flow above certain thresholds that may be diverted to Sites. For example, consider a case where the user enters a low-spill buffer of 1% and a high-spill buffer of 10%. The following would take effect:

- November 1 – March 15
  - When spills range between 0 – 600 cfs, 1% of the flow above 600 cfs may be diverted
  - When spills range between 600 – 6,000 cfs, 10% of the flow above 6,000 cfs may be diverted
- March 16 – April 30
  - When spills range between 0 – 600 cfs, 1% of the flow above 600 cfs may be diverted

3.9 Protection of Aggregate Weir Spills to the Sutter Bypass

The Tool provides users the ability to implement protection of spills into the Sutter Bypass via Colusa Weir, Moulton Weir, and Tisdale Weir. Users can specify the upper bound of the total spill range that must be protected, a buffer on the specified spill range, and the percent of spill that can be diverted to Sites in the specified spill range. Aggregate Sutter Bypass weir spill protection is set off by default.

3.10 Minimum Pumping Level

Each intake is assigned a minimum level of flow that can be diverted into Sites Reservoir. If flow availability is below an intake's minimum pumping level, then the intake will not be utilized. The smallest pumps at Red Bluff and Hamilton City have capacities of 125 cfs and 100 cfs, respectively.

3.11 Low Level Pumping

Users can specify low level pumping rates when Sacramento River flow at a certain location is less than its associated bypass flow requirement and above the user specified "low level pumping initiation flow". For example, if the low level pumping rate at Red Bluff is set to 300 cfs, the initiation flow rate at Wilkins Slough is 5,000 cfs, the bypass flow rate at Wilkins Slough is 10,000 cfs, and the actual flow rate at Wilkins Slough is 8,000 cfs, then the Red Bluff intake can divert up to 300 cfs from the river. Low level pumping rates can be used to override three bypass flow criteria: Bend Bridge pulse protection, Wilkins Slough bypass flows, and Freeport bypass flows. Low level pumping is set off by default.

3.12 Intake Prioritization

Intake prioritization is not modifiable in this version of the Divertible & Storable Flow Tool. The current setup prioritizes diversions at Red Bluff and then at Hamilton City (by default, Delevan is not used in version 2021-03-09).

3.13 Diversion Season

A diversion window can be defined to constrain the months in which the Divertible Flow Tool will attempt to allocate water into Sites Reservoir. Users can enter a starting month (from July through December) and ending month (from January through June). The default diversion season is November through May. Diversions to Sites would not be expected in June through October, as this is the period coincides with the season of Sites deliveries.

3.14 Intake Season

The Intake Season refers to the months in which diversions are permitted at each intake. For example, if the Red Bluff starting month is set to 1 and its ending month is set to 6, then diversion through the Red Bluff intake can only be made from January through June. By default, the Red Bluff and Hamilton City intakes are only limited by the diversion season (default = November through May), while the intake season for Delevan is turned off.

3.15 Freeport Pulse and Post Pulse Protective Criteria

Pulse & Post-Pulse criteria based on the 2016 CWF ITP have been integrated into the Daily Divertible Flow Tool. These criteria are set off by default. If specified by users, Sites intakes can be operated within a range of pulse protection and post-pulse protection levels (1 through 3) in place when winter run chinook salmon (CHNWR) and spring run chinook salmon (CHNSR) migration is occurring. The post-pulse protection operations are defined in Sub Table A of the CWF ITP. In the daily modeling tool, two interpretations of the criteria for transition among pulse-protection levels are included:

- Fish presence (Knights Landing Catch Index (KLCI)) (CWF ITP)
- Sacramento River flow at Freemont (CalSim II based logic)

Table 3-2 identifies the assumptions implemented in the CWF ITP (criteria based on fish presence) and the assumptions implemented in CalSim II.

Table 3-2. Pulse and Post-Pulse Assumptions of CWF ITP vs CalSim II.

Pulse and Post-Pulse Assumptions	
CWF ITP	**CalSim II**
• **All pulses** of CHNWR and CHNSR shall be protected from October 1 – June 30.	• **One or two pulses** shall be protected from October 1 – June 30 (depending on whether a pulse ends before December 1).
• Beginning October 1st, whenever the initial pulse begins, low level pumping takes effect.	• Beginning October 1st, whenever the initial Sacramento River pulse begins, low level pumping takes effect.
• A Sacramento River pulse is determined based on real-time monitoring of juvenile fish movement (see Condition of Approval 9.9.5.1). A fish pulse is defined as a **Knights Landing Catch**	• The initiation of the pulse is defined by the following criteria: (1) **Wilkins Slough flow changing by more than 45% within a five day**

Index (KLCI) ≥ 5 where KLCI = (# of CHNWR + # of CHNSR)/(Total Hours Fished/24). • Pulse protection operations shall be implemented within 24 hours of detection of a fish pulse.	**period** and (2) **Wilkins Slough flow becomes greater than 12,000 cfs**.
• Pulse protection ends after **five consecutive days of daily KLCI < 5**.	• The pulse protection and the low level pumping continues until (1) **Wilkins Slough returns to pre-pulse flows** (flow on first day of the within-5 day increase), (2) **Wilkins Slough flows decrease for five consecutive days**, or (3) **Wilkins Slough flows are greater than 20,000 cfs for 10 consecutive days**.
• Number of allowable pulses is not specified; ASSUME ALL ELIGIBLE PULSES (KLCI ≥ 5) ARE PROTECTED.	• Number of allowable pulses in unlimited; ASSUME ALL ELIGIBLE PULSES ARE PROTECTED.
• Once the pulse protection ends, **post-pulse bypass flow operations may remain at Level 1 diversion depending on fish presence, abundance, and movement in the north Delta**; however, the exact levels will be determined through initial operating studies evaluating the level of protection provided at various levels of diversions.	• After a pulse has ended, the allowable diversion will go to post-pulse operations through June that can transition through three levels of protection.
• The criteria for transitioning between and among pulse-protection, **Level 1, Level 2, and/or Level 3 operations are based on real-time fish monitoring** and hydrologic/ behavioral cues upstream of and in the Delta that will be studied as part of the Project's Adaptive Management Program. Based on the outcome of the studies pursued under that program, additional information about appropriate triggers, off-ramps, and other RTO management of NDD intake operations may be integrated into the Test Period Operations Plan and the Full Project Operations Plan.	• After the initial pulse(s), **Level I post-pulse bypass rules are applied until 15 days of bypass flows above 20,000 cfs have accrued since the pulse ended**. Then **Level II post-pulse bypass rules are applied until 30 days of bypass flows above 20,000 cfs have accrued** since the pulse ended. Then Level III post-pulse bypass rules are applied.
• **The NDDTT shall develop criteria for transitioning between and among pulse protection, Levels 1, 2 and 3 based on best available science**. The NDDTT shall recommend transitional criteria to the TOT and IICG for consideration through the Adaptive Management Program, to ensure that the Project will achieve the objectives of Biological Criteria 1 and 2.	• Under the post-pulse operations allowable diversion will be greater of the low-level pumping or the diversion allowed by the following post-pulse bypass flow rules.

Taken from the "Pulse_Post-Pulse_Figs" tab of the daily modeling tool, Figure 3-4. Fish-based Pulse and Post-Pulse Protection Levels in WY 2016. Figure 3-4 and Figure 3-5 demonstrate the difference in pulse and post-pulse protection levels under the two interpretations. In Figure 3-4, the purple dots represent the KCLI for winter run and spring run chinook salmon. Whenever the KCLI exceeds 4, pulse protection operations are initiated, as represented by the red shading. In the daily modeling tool, users may specify KCLI thresholds to determine pulse and post-pulse conditions. In this example, post-pulse Levels 1 and Level 2 have KCLI thresholds of 3 and 1, respectively. Thus, if the KCLI for a given day is between 3 and

5, Level 1 is implemented. If the KCLI is between 1 and 3, Level 2 is implemented. Finally, if the KCLI is 0, Level 3 operations take effect.

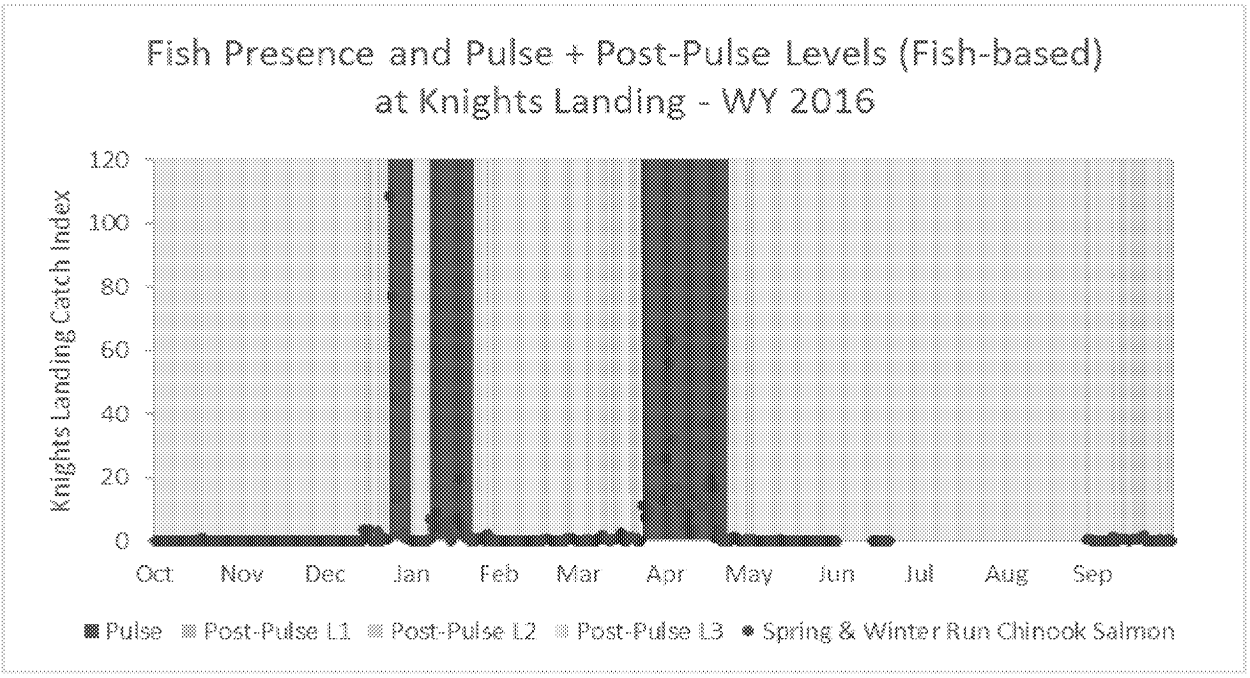


Figure 3-4. Fish-based Pulse and Post-Pulse Protection Levels in WY 2016.

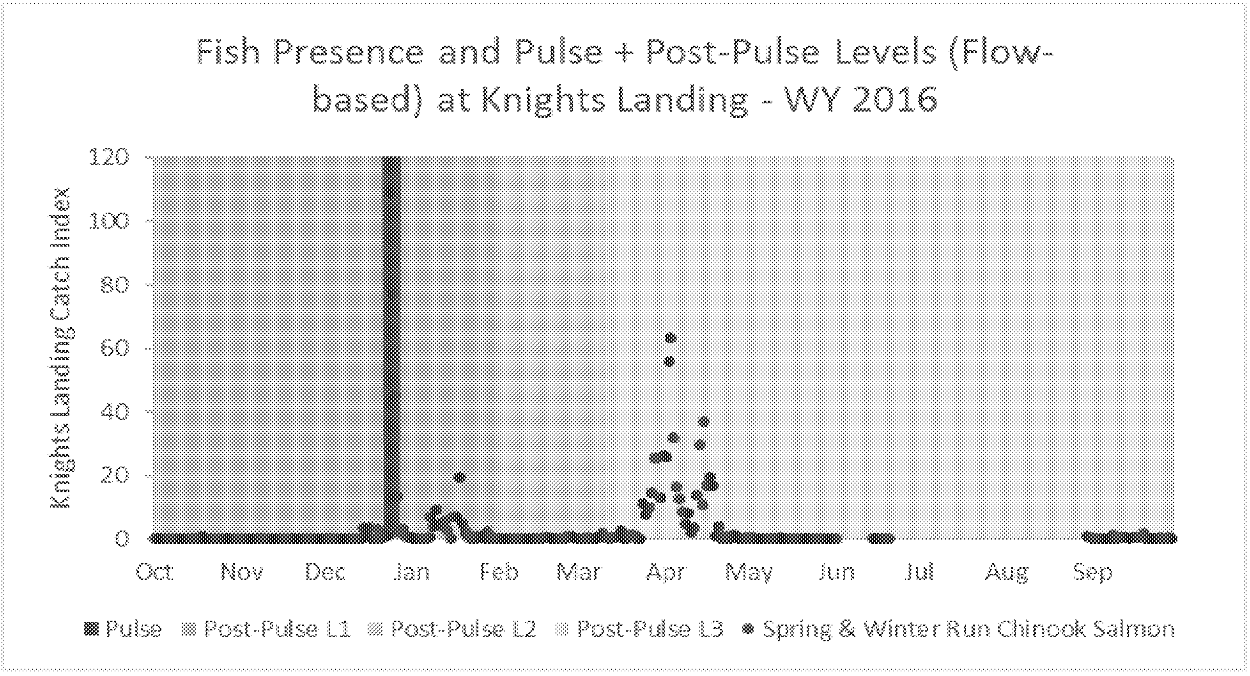


Figure 3-5. Flow-based (CalSim II) Pulse and Post-Pulse Protection Levels in WY 2016.

In the daily modeling tool, users may specify starting and ending months of the pulse and post-pulse protection periods (i.e., the October through June period defined in the CWF ITP may be modified).

3.16 Surplus Outflow (Feb-Mar)

This criterion provides a margin of safety to prevent shifting the regulatory burden of X2 onto SWP or CVP operations. It is only applied to February and March. Diversions are only permitted after a specified number of days that flow is available in February through March (default = 7 days).

3.17 Additional Protective Criteria

The "Table1" and "ProtectiveCrit" tabs includes additional protective criteria to limit project diversions under user-specified flow conditions and time periods. The table in "Table1" can be used to implement a set of rules to limit diversion at each intake to a certain percentage of total Sacramento River flow, based on local conditions. Inputs to this table can be specified in the "Protective Criteria & Ramp Down Specs" section of the "User_Specifications" tab.

The tables in "ProtectiveCrit" perform similar functions; however, diversions are instead limited to a proportion of total intake conveyance capacity.

The additional protective criteria set off by default and are only activated if Cell B91 in the "User_Specifications" tab is set to "Yes".

4. Results

The Divertible Flow Tool evaluates various combinations of hydrographs, diversion regulations, and initial storage conditions. For example, users can manipulate pulse flow protection criteria, minimum pumping levels, or intake diversion seasons to generate different divertible and storable flow results under a range of hydrologic conditions. Consequently, the tool may be useful in evaluating the effects of varying operations criteria on diversions to Sites Reservoir.

4.1 Sacramento River Flow, Delta Outflow, and X2

Monthly available, divertible, and storable flow results for a given water year are displayed in the table and figures of the "User_Specifications" tab. The table also includes accumulated storage, representing the total amount of water diverted into Sites throughout the year.

The "Hydrographs" tab includes figures that show Sacramento River flows before and after project diversions at the following locations:

- Red Bluff
- Hamilton City
- Delevan
- Wilkins Slough
- Knights Landing
- Spill at Fremont Weir
- Freeport

The "Hydrographs" tab also includes the figures demonstrating the effect of Sites diversions on Delta Outflow and X2 position. Figure 4-1 through Figure 4-9 demonstrate example charts from the "Hydrographs" tab.

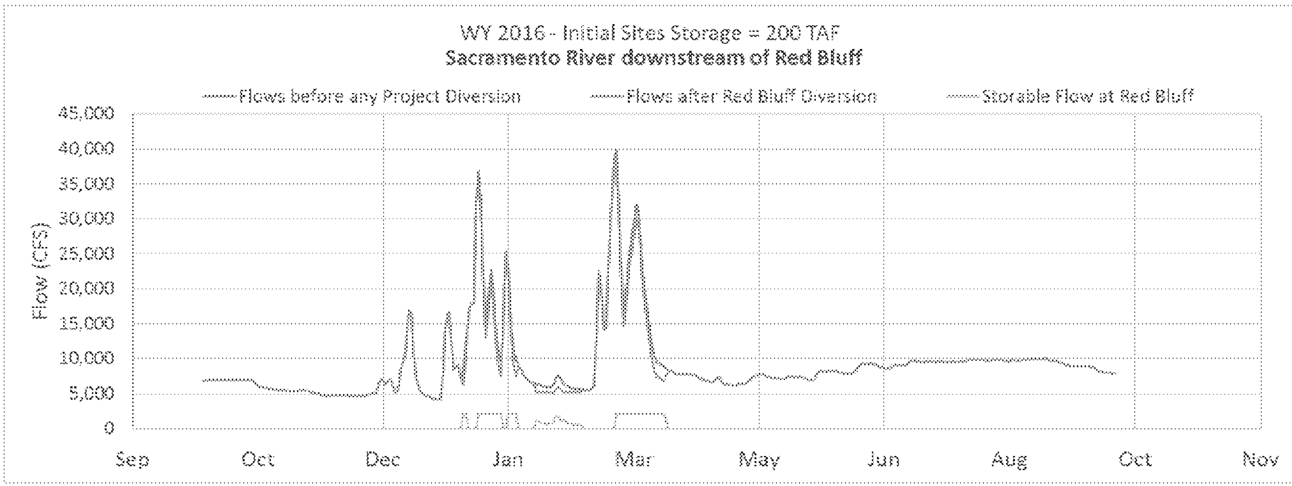


Figure 4-1. Sites Storable Flow Effect on Sacramento River Flow at Red Bluff – WY 2016.

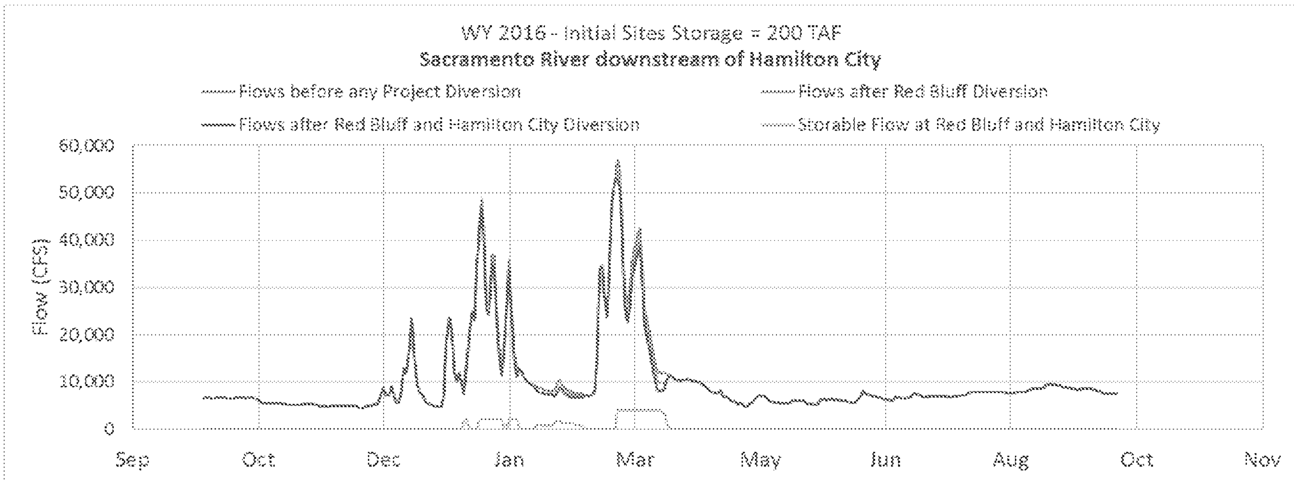


Figure 4-2. Sites Storable Flow Effect on Sacramento River Flow at Hamilton City – WY 2016.

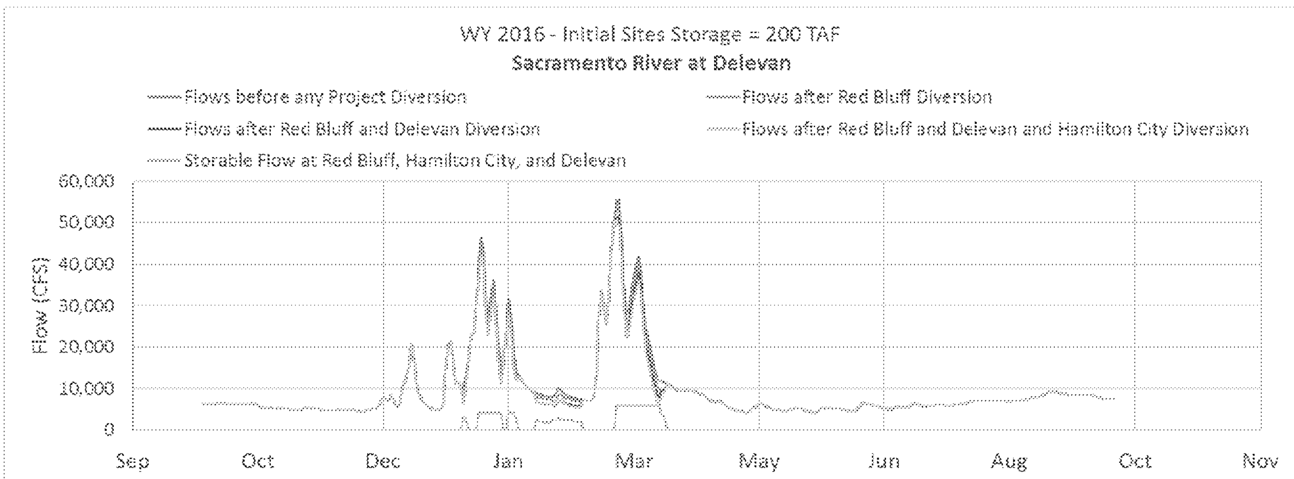


Figure 4-3. Sites Storable Flow Effect on Sacramento River Flow at Delevan – WY 2016.

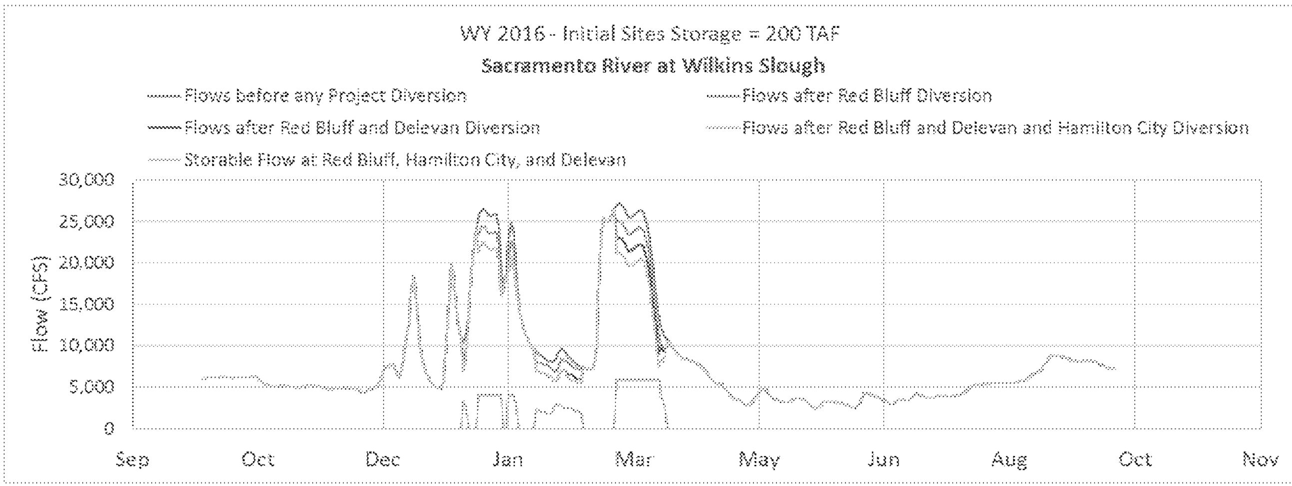


Figure 4-4. Sites Storable Flow Effect on Sacramento River Flow at Wilkins Slough – WY 2016.

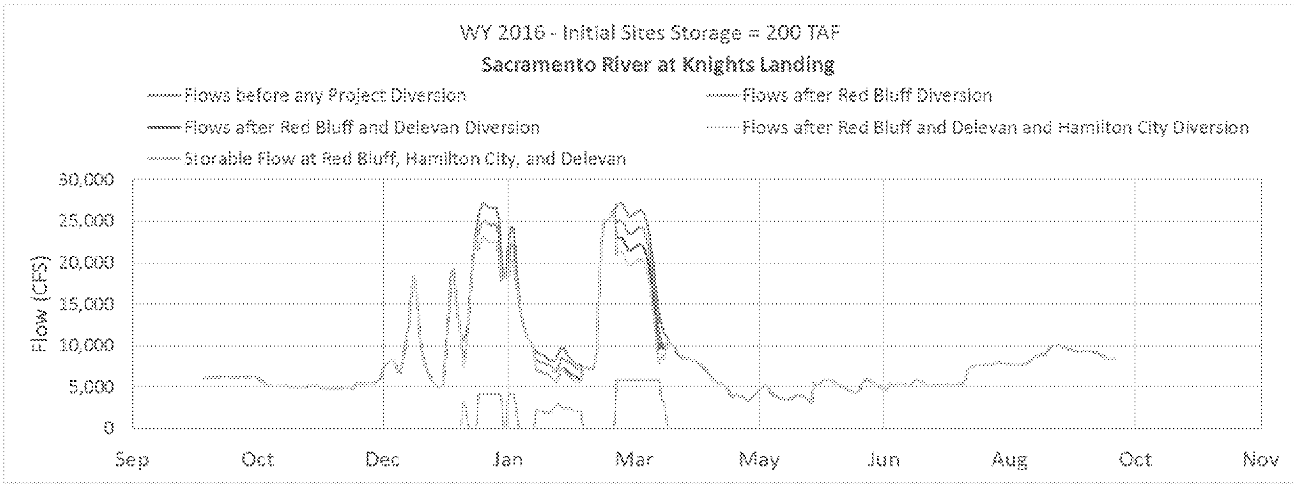


Figure 4-5. Sites Storable Flow Effect on Sacramento River Flow at Knights Landing – WY 2016.

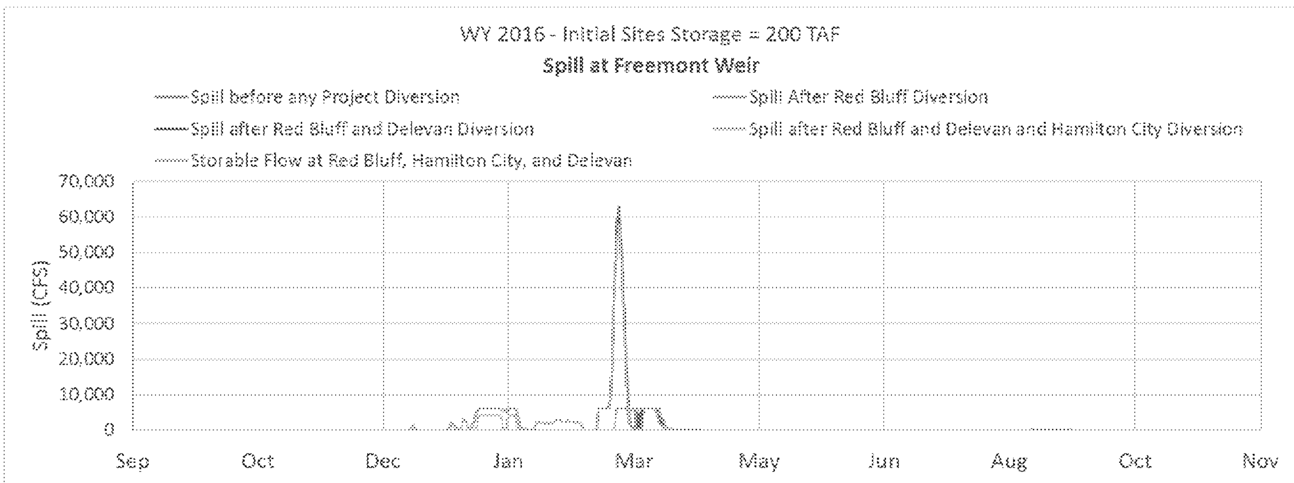


Figure 4-6. Sites Storable Flow Effect on Fremont Weir Spills – WY 2016.

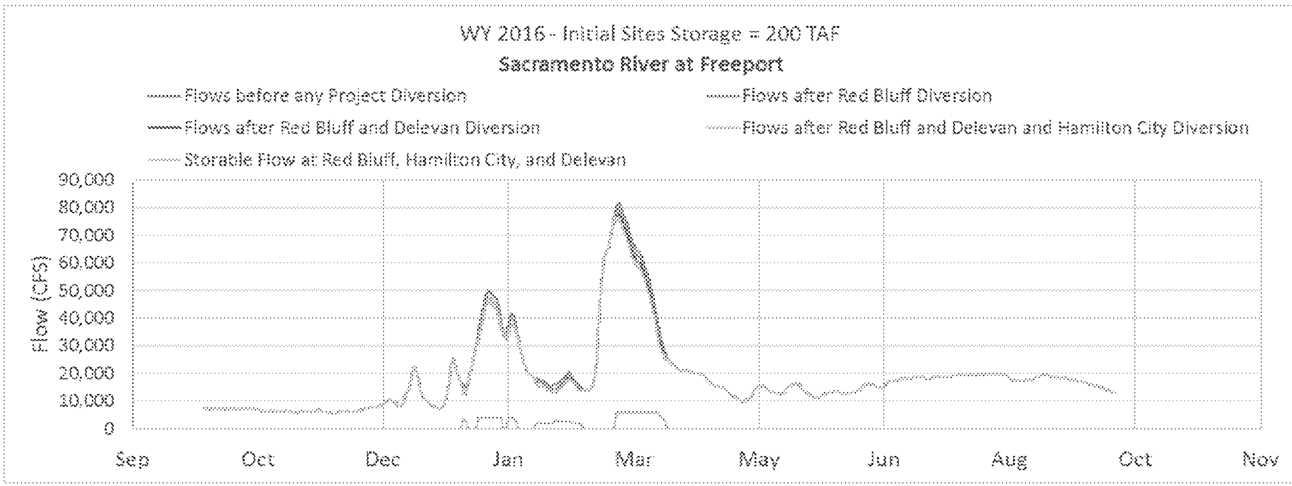


Figure 4-7. Sites Storable Flow Effect on Sacramento River Flow at Freeport – WY 2016.

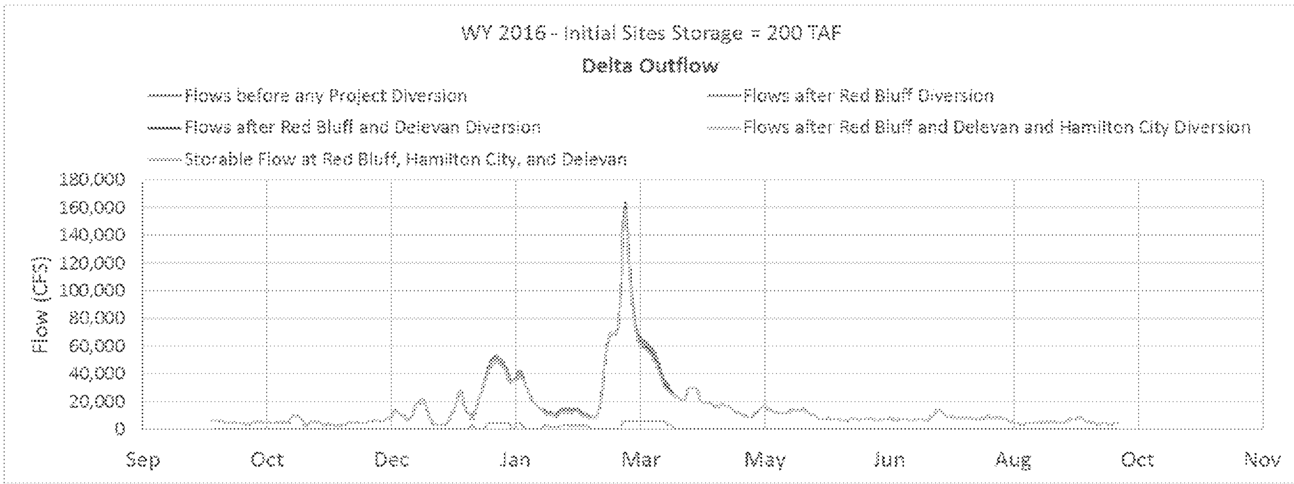


Figure 4-8. Sites Storable Flow Effect on Delta Outflow – WY 2016.

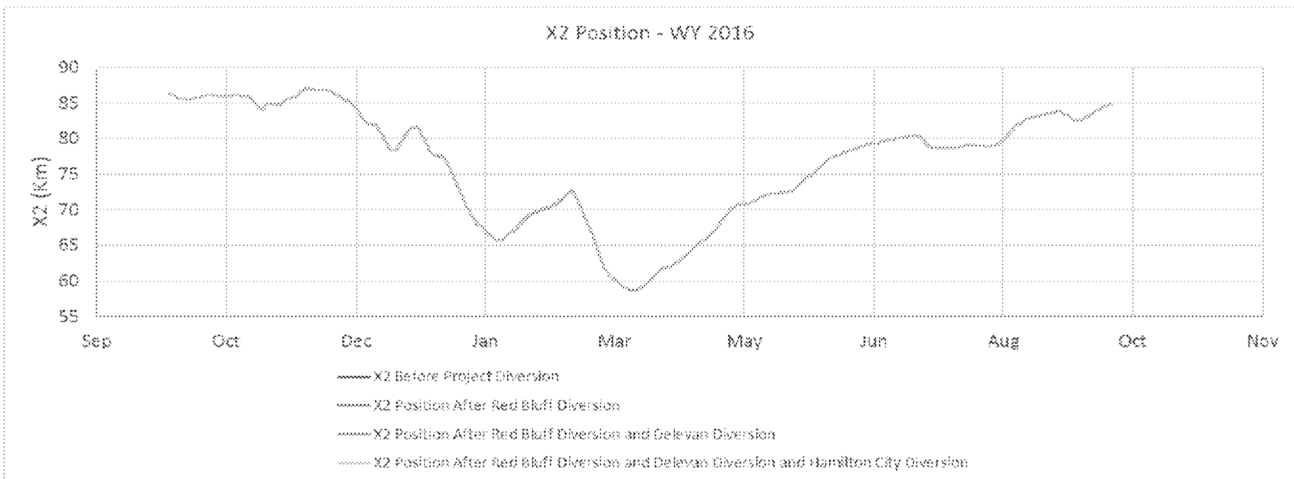


Figure 4-9. Sites Storable Flow Effect on X2 – WY 2016.

4.2 Fish Presence

Sacramento River fish data has been collected and integrated into the Divertible Flow Tool at the following locations:

- **Red Bluff Dam** (October 1st 2008 – May 31st 2018)
    - Source: Red Bluff Fish & Wildlife Office, USFWS (collated into a spreadsheet by LeAnne Rojas, 4/15/2019, using data from: http://www.cbr.washington.edu/sacramento/data/query_redbluff_daily.html)
- **Hamilton City** (March 2nd 2013 – May 31st 2018)
    - Source: GCID (collated into a spreadsheet by LeAnne Rojas on 4/16/2019, based on data provided by GCID (Josef Loera) via John Spranza (HDR) on 4/1/2019)
- **Tisdale** (July 7th 2010 – May 31st 2018)
    - Source: CDFW (collated into a spreadsheet by LeAnne Rojas on 4/18/2019, from data provided by Diane Coulon (DFW) on 4/11/2019)
- **Knights Landing** (October 1st 2008 – May 31st 2018)
    - Source: CDFW (collated into a spreadsheet by LeAnne Rojas based on workbooks provided by Jason Julienne (DFW) on 4/24/2019)

The relationship between flows and fish presence can be evaluated in several tabs towards the back of the spreadsheet. The "Fish_Count_OneYr" tab include figures of Sacramento River flow and storable flow vs fish count at the four locations listed above. Figure 4-10 demonstrates an example figure from this tab. At Red Bluff, the term "fish count" is defined as the estimated daily number of fish passage through the Sacramento River at Red Bluff. At Hamilton City, Tisdale, and Knights Landing, "fish count" is defined as the estimated daily number of fish caught in rotary screw traps at each location.

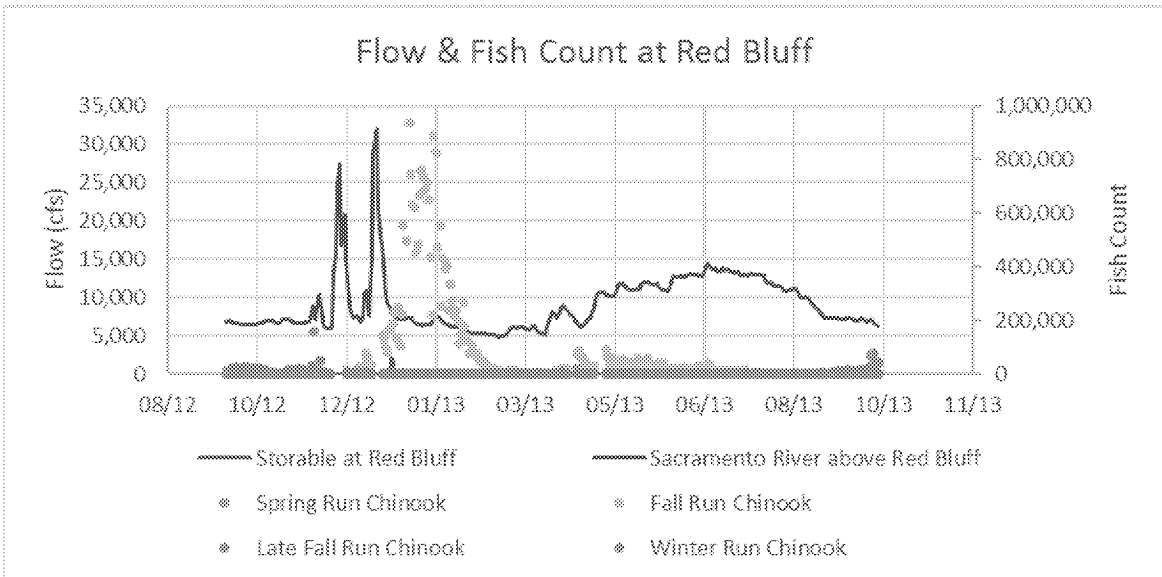


Figure 4-10. Sacramento River Flow vs Fish Presence at Red Bluff in WY 2013.

4.3 Controlling Constraints

The "Controls" tab includes tables displaying the number of instances each constraint controls the quantity of storable flow in each month of the selected year. A controlling constraint is defined as the primary limiter of storable flow to Sites Reservoir. For example, if no flow is available for the project because the river is in "Balanced Conditions", then the controlling constraint is identified as "Balance" in the Divertible Flow Tool. A table of controls has been developed for each intake location (Red Bluff, Hamilton City, and Delevan) in the "Controls" tab. Additionally, daily timeseries of controlling constraints can be viewed in columns "BG:BH" of the "Divertible_Flow_OneYr" tab.

4.4 Annual Simulations

On the "User_Specification" tab, users can generate results for all 10 years (WY 2009 – 2018) by clicking on the "Run Current Setup" button at the top of the page. This button will simulate available flow, divertible flow, and storable flow for each year under current user specifications. Furthermore, the initial Sites storage will be reset at the start of each year. Daily inputs and outputs will be copied into the "ScenID_Main" tab, monthly results are populated in the "Monthly_Report" tab, and annual inputs and outputs are populated in the "Ann_Fills" tab.

The Excel spreadsheet includes several macros to iterate through multiple combinations of years and input conditions (user-specified constraints). Before running one of these macros using the "Run Full Simulation Period" button on the "User_Specifications" tab, the macros should be updated to accommodate for whatever analysis is desired. The daily, monthly, and annual results will be copied into the "ScenID_Main" tab, "Monthly_Report" tab, and "Ann_fills" tab. Each 10-year period will be assigned a Scenario ID number corresponding to a particular set of inputs.

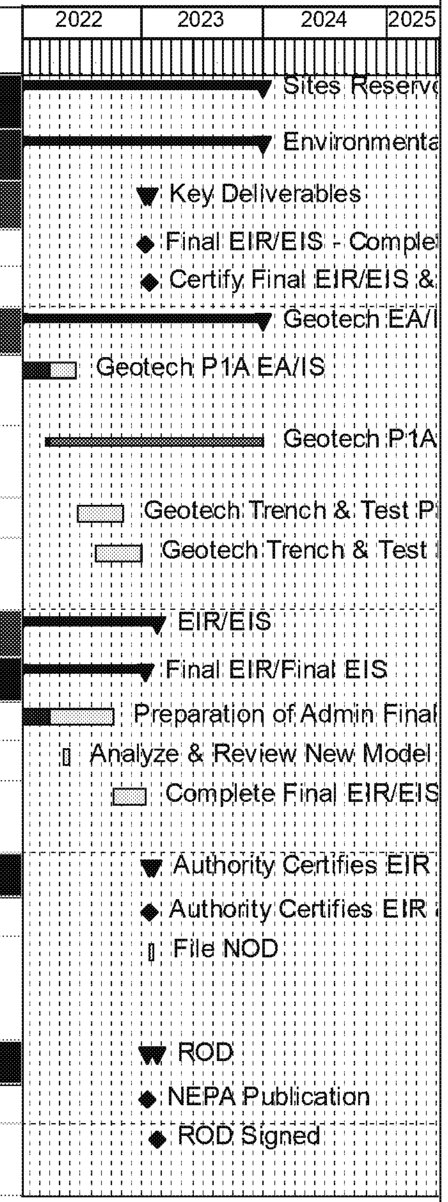
Draft_0016231

Sites Reservoir Project

Sites
Build Sites Now
sitesproject.org

Schedule

#	Activity ID	Activity Name	Remaining Duration	Start	Finish	Predecessors	Successors
1	Sites Reservoir Project		437	03-Jan-22 A	29-Dec-23		
2	Environmental (Ali, Laurie)		437	03-Jan-22 A	29-Dec-23		
3	Key Deliverables		10	10-Jan-23	25-Jan-23		
4	KD-1470	Final EIR/EIS - Complete	0		10-Jan-23	EIR-250, MS-1000	KD-1480
5	KD-1480	Certify Final EIR/EIS & Approve Preferred Project & MMRP (30 day period for legal challer	0		25-Jan-23	KD-1470	
6	Geotech EA/IS		437	03-Jan-22 A	29-Dec-23		
7	EIR-230	Geotech P1A EA/IS	55	03-Jan-22 A	17-Jun-22	SHPO-260, BA-120	EIR-260, EIR-630, GWP-1100, CVFPB-120, 401-120, 1600-120
8	EIR-260	Geotech P1A Environmental Surveys (which Real Estate access agreements are needed to start this?)	437	22-Mar-22 A	29-Dec-23	EIR-230, LAAC-1100, LAAY-1100, LAAG-1100, GWP-1300	
9	EIR-630	Geotech Trench & Test Pits EA/IS (come back to this, when can this start, driven by Envi	100	20-Jun-22	09-Nov-22	EIR-230	EIR-640, EIR-640, GWP-1500
10	EIR-640	Geotech Trench & Test Pits Environmental Surveys (come back to this, depending on approach may not need early access)	90	16-Aug-22	27-Dec-22	EIR-630, EIR-630	
11	EIR/EIS		221	03-Jan-22 A	17-Feb-23		
12	Final EIR/Final EIS		194	03-Jan-22 A	10-Jan-23		
13	EIR-210	Preparation of Admin Final EIR/EIS	131	03-Jan-22 A	05-Oct-22		WR-125, STA-140, EIR-250
14	EIR-220	Analyze & Review New Model Output (May 9-27)	15	09-May-22	27-May-22	FO-1110	
15	EIR-250	Complete Final EIR/EIS	63	06-Oct-22	10-Jan-23	EIR-210	KD-1470, MS-1200, EIR-370, EIR-440, 404-050, 106-102
16	Authority Certifies EIR & Approves Project & File NOD		5	25-Jan-23	01-Feb-23		
17	EIR-370	Authority Certifies EIR & Approves Project	0		25-Jan-23	EIR-250	EIR-380
18	EIR-380	File NOD	5	26-Jan-23	01-Feb-23	EIR-370	EIR-450, WRP-120, 401-220, 1600-220, 2081-120, 2081-220, CVFPB-220
19	ROD		22	18-Jan-23	17-Feb-23		
20	EIR-440	NEPA Publication	0		18-Jan-23	EIR-250	EIR-450
21	EIR-450	ROD Signed	0		17-Feb-23	EIR-440, EIR-380, BA-210, BA-220, 106-102	MS-1300, EIR-460, FED-090, 408-160, FED-100, 408-150



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Project ID: Sites / Project Name: Sites Reservoir Project
Layout Name: Sites WBS / TASK filters: Less than 100%, Remove XX, WBS Selector.
Data Date: 31-Mar-22 / Print Date: 31-Mar-22

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Draft_0016232

SIERRA CLUB
CALIFORNIA

March 28, 2022

Board of Directors
344 East Laurel Street
Willows, CA 95988

Re: Funding Sites Reservoir

Dear Board of Directors,

We hope this letter finds you safe in these difficult times. On behalf of Sierra Club California and our more than 500,000 members and supporters statewide, thousands of whom reside in your service area, we write to offer the following comments on the vote to fund the next phase of planning for Sites Reservoir.

The board will be voting on whether or not to fund the next phase of planning for Sites Reservoir. This phase includes planning, an FEIR, and permitting and costs all contractors a total of $143 million. This is an expensive project that harms the environment and does not provide a new source of water.

Impact to Communities

Sites Reservoir would be located less than a mile from the Great Valley fault system, which produced a 6.7 magnitude earthquake in 1892 and again in 1983. Damming can also cause seismic activity, and nearby small towns like Maxwell have not completely retrofitted for earthquakes.

Field studies show that there are 144 prehistoric Tribal sites in the area of impact, some of which meet criteria to be placed on the National Register of Historic Places. "We have been working to restore flows to help water quality, and to bring salmon back over the dams and back to native lands for salmon survival and Tribal people," says Pit River Tribal member Morning Star Gali. "California is losing the salmon and our clean water. This is an issue of justice. We already have over a 1000 reservoirs, and more water allocated than exists in California. An environmentally destructive private reservoir being built in an area that is important to native people is a step in the wrong direction."

Cost

909 12th Street, Suite 202, Sacramento, CA 95814
(916) 557-1100 • Fax (916) 557-9669 • www.sierraclubcalifornia.org

This is a very expensive project. Metropolitan Water District's well-known former general manager, Jeff Kightlinger, said that unless the Delta Conveyance project was guaranteed to happen, he would not recommend moving forward with Sites Reservoir. The Delta Conveyance project's draft EIR comes out this May, so the project's equivalent vote on the next phase will not be until next year. Construction would not start until 2024, if lawsuits do not delay it further, and it would not produce water until 2042, which is already a two year delay versus what DWR said in 2020. The Delta Conveyance project is despised by the public and was voted down in 1982. 40 years later, this tunnel has still not been built. Moving forward now is a huge gamble with ratepayer money.

Proponents now estimate that Sites Reservoir will cost $3.9 billion to construct the project, a 30% increase from prior estimates (the Bureau of Reclamation posits closer to $6.3 billion). Memos have estimated that the cost of water from the project would be $700-$900 per acre foot at the reservoir and an additional $300-400 per acre foot for conveyance, Delta carriage losses and water treatment costs. Those assumptions are optimistic and financially irresponsible. First, as the yield declines, the cost per acre foot will increase. Second, Delta carriage losses are typically 20-33% of the water yield at the reservoir, which alone increases the per acre foot cost south of the Delta by 20-33%. Conveyance and treatment costs in the budget are estimated at more than $500 per acre foot for water moved from the Delta.

The Delta tunnel will cost between $16-40 billion on top of the Sites costs, in an era of climate change, where it was just predicted that the Sierra Nevada will not have snow in 25 years. Sites Reservoir will likely never be completely full and will eventually become a deadpool, or a stranded asset. These costs take away from funds that could create new water recycling and local resource programs that could actually generate revenue.

Feasibility

The current proposed diversions would likely not be permitted. The project would need a new water right from the State Water Resources Control Board. The California Department of Fish and Wildlife has previously said that the proposed diversions are insufficient to ensure endangered species will survive. It is likely that more changes would have to be made to the proposed project operations for it to receive the necessary permits. Sites Reservoir remains a speculative project. The Delta Plan is still in progress, and would likely require Sites Project operations to be further altered to ensure the updated water quality standards for the Delta can be met.

Environmental Destruction

Sites Reservoir would divert additional water from the Sacramento River, which is a main tributary to the Delta. The Delta is already stressed because of existing diversions, and climate change is adding to that stress. The project is also not providing enough flows to actually meet species needs according to the project proposals.

Significant diversions from the Sacramento River to fill Sites Reservoir could result in substantial impacts to the river's ecosystem- reduced volume of water and water quality due to the inability to flush out runoff, Ag waste and municipal waste, increased temperatures, salinity, and harmful algal blooms (HABs). These affect sensitive riparian and aquatic habitats. The region where Sites would be built is an area that naturally produces selenium and other metals and potential pollutants. There may be abandoned mercury mines in the reservoir footprint that could release the mineral in warm waters.

One estimate is that Sites will drown 15,500 acres of grassland, woodland, chaparral, riparian habitat, vernal pools and wetlands (including 19 acres of rare alkali wetlands). 23 endangered or threatened species would be at risk and 56 other endangered species have the potential to be threatened. There are 4 plant species that the California Native Plant species deems of "rare distribution" in the affected site.

Electricity will be generated when water is released from the reservoir, but needed to pump water into the reservoir. The amount of electricity needed and produced is unpredictable, but Sites will need more energy than it will produce.

Conclusion

Ultimately, paying for storage in Sites Reservoir doesn't guarantee there will be any water in the reservoir in the next drought, and certainly not water that is cost-effective or an environmentally sustainable supply. California already has 1,400 reservoirs, and as President Obama's science advisor John Holdren explained in 2014, "The problem in California is not that we don't have enough reservoirs, it is that we do not have enough water in them..... It wouldn't help to build any more."

We hope that you will consider our comments, which echo what the public has been saying for years on the construction of Sites Reservoir. We look forward to working with you in this process. If you would like to discuss this further, please contact Caty Wagner at caty.wagner@sierraclub.org.

Sincerely,

Caty Wagner

Caty Wagner
Southern California Water Organizer
Sierra Club California

From: Alicia Forsythe [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A6CDF06A7E904B65BAA21702A82AD329-AFORSYTHE]
Sent: 3/31/2022 12:45:44 PM
To: Obegi, Doug [dobegi@nrdc.org]
Subject: RE: Request for Daily Divertible an Storage Flow Tool (Excel spreadsheet)
Attachments: Daily_Divertible_Storable_Flow_for_Sites_Project_Package_20210309_v3e.zip

Hey Doug – Thanks for patience on this. Attached is the tool.

I am not well versed in it, but happy to set up a call with the Jacobs team if you have any questions or would like an overview of the tool.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Project Authority | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Obegi, Doug <dobegi@nrdc.org>
Sent: Wednesday, March 30, 2022 10:49 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Subject: RE: Request for Daily Divertible an Storage Flow Tool (Excel spreadsheet)

Thanks Ali.

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Wednesday, March 30, 2022 10:48 AM
To: Obegi, Doug <dobegi@nrdc.org>
Subject: RE: Request for Daily Divertible an Storage Flow Tool (Excel spreadsheet)

Hey Doug – Wanted to let you know that I haven't forgotten about this. Should be coming shortly. We have the model from Jacobs and just reviewing quickly in house.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Project Authority | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Obegi, Doug <dobegi@nrdc.org>
Sent: Wednesday, March 23, 2022 1:46 PM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Subject: RE: Request for Daily Divertible an Storage Flow Tool (Excel spreadsheet)

Thanks Ali. Hope you're hanging in there.

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Wednesday, March 23, 2022 1:39 PM
To: Obegi, Doug <dobegi@nrdc.org>
Subject: RE: Request for Daily Divertible an Storage Flow Tool (Excel spreadsheet)

Hey Doug – I'm coordinating with the modeling team on this and will get back to you shortly.

Good to hear from you and hope you're doing well!

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Project Authority | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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From: Obegi, Doug <dobegi@nrdc.org>
Sent: Wednesday, March 23, 2022 10:18 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Subject: Request for Daily Divertible an Storage Flow Tool (Excel spreadsheet)

Hi Ali,

Sorry to bug you, but I'm trying to track down a copy of the Daily Divertible and Storage Flow Tool that is relied upon in the RDEIR/SDEIS, and which you indicated last year would be shared with the NGOs (see below). I'm aware that you circulated a copy of a spreadsheet with results from the tool last year, but I haven't found a copy of the tool itself. Would you please email a copy of the Daily Divertible and Storage Flow tool (Excel spreadsheet) to me?

Thanks,
Doug

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Friday, May 28, 2021 4:33 PM
To: Obegi, Doug <dobegi@nrdc.org>; Ron Stork <RStork@friendsoftheriver.org>; Greg Reis <reis@bayecotarium.org>; brandon.dawson@sierraclub.org; Chris Shutes <blancapaloma@msn.com>; jon@baykeeper.org; bobker@bay.org; Bobker, Gary (Mail Contact) <bobker@sbcglobal.net>; barry@westernwaterstrategies.com; McManus, John (Mail Contact) <john@goldengatesalmon.org>; Zwillinger, Rachel (Mail Contact) <rzwillinger@defenders.org>; Jerry Brown <jbrown@sitesproject.org>; Heydinger, Erin <erin.heydinger@hdrinc.com>; Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; steve.micko@jacobs.com; Deirdre Des Jardins <ddj@cah2oresearch.com>
Subject: RE: Sites - 2021 Water Estimate

Hi all – Thank you for taking the time to chat with the Sites Team this afternoon. Attached is a PDF file of the PowerPoint presentation. We will be getting the Daily Divertible and Storage Flow Tool out to this group next week sometime.

I hope everyone has a safe and wonderful holiday weekend as we honor those who gave so much to our country.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 |
aforsythe@sitesproject.org | www.SitesProject.org

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-----Original Appointment-----
From: Alicia Forsythe
Sent: Monday, May 24, 2021 11:55 AM
To: Alicia Forsythe; dobegi@nrdc.org; Ron Stork; Greg Reis; brandon.dawson@sierraclub.org; Chris Shutes; jon@baykeeper.org; bobker@bay.org; bobker@sbcglobal.net; barry@westernwaterstrategies.com; john@goldengatesalmon.org; rzwillinger@defenders.org; Jerry Brown; Heydinger, Erin; Leaf, Rob/SAC; Steve Micko (Steve.Micko@jacobs.com)
Cc: Deirdre Des Jardins
Subject: Sites - 2021 Water Estimate
When: Friday, May 28, 2021 1:00 PM-2:30 PM (UTC-08:00) Pacific Time (US & Canada).
Where: Microsoft Teams Meeting

Based on the doodle poll, this date works for the majority of the group.

Agenda to follow.

Ali

Microsoft Teams meeting

Join on your computer or mobile app
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Or call in (audio only)
+1 916-538-7066,,339027022#   United States, Sacramento
Phone Conference ID: 339 027 022#
Find a local number | Reset PIN

Learn More | Meeting options

File Provided Natively

Daily Divertible & Storable Flow for Sites Project Package 20210309

Files included in package:

- Sites Daily Divertible & Storable Flow Tool (version 20210309)
    - Divertible_Storable_Flow_for_Sites_Project_20210309.xlsm
- Sites daily Divertible & Storable Flow Tool Documentation (version 20210309)
    - Sites_Reservoir_Daily_Divertible_Flow_Tool_Documentation_20210309.docx

The Daily Divertible & Storable Flow Tool (version 20210309) is setup with the assumptions for the DEIRS Alternatives, which are provided in Table 1 and Table 2.

Table 1. Facility Assumptions used in the Daily Divertible & Storable Flow Tool (version 20210309) for DEIR/EIS Analysis.

Sites Facilities	
Sites Storage Capacity	1.5 MAF
Initial Sites Storage	200 TAF
Sites Diversion Season	November - May
Red Bluff Diversion Capacity	2,100 CFS
Red Bluff Bypass Flow	3,250 CFS
TCC Minimum Pumping Level	125 CFS
Hamilton City Diversion Capacity	1,800 CFS
Hamilton City Bypass Flow	4,000 CFS
GCC Minimum Pumping Level	100 CFS
GCC Maintenance Window	January 25th – February 7th
Facilities (Not Sites Specific)	
Fremont Weir	Fremont Weir Notch

Table 2. Regulatory Assumptions used in the Daily Divertible & Storable Flow Tool (version 20210309) for DEIR/EIS Analysis.

Regulations	
Bend Bridge Pulse Protection	
Bend Bridge Pulse Protection Season	October - May
Bend Bridge Pulse Protection Initiation Criteria	3-day average Sacramento River must exceed 8,000 cfs; 3-day average tributary flow must exceed 2,500 cfs
Bend Bridge Pulse Protection Duration	7 days upon initiation
Bend Bridge Pulse Protection Re-setting Criteria	After completion of pulse protection period, resetting criteria must be met for another pulse protection period to commence: 3-day Sacramento River flow must go below 7,500 cfs for 7 consecutive days; 3-day moving average tributary flow must go below 2,500 cfs for 7 consecutive days
Wilkins Slough Bypass Flow	8,000 cfs April - May; all other times, 5,000 cfs
Fremont Weir Notch Criteria	Prioritize the Fremont Weir Notch, Yolo Bypass preferred alternative, flow over weir within 10% when spill range

	between 600 cfs and 6,000 cfs; First 600 cfs of spill are protected within 1%
Flows into the Sutter Bypass System	None
Freeport Bypass Flow	None
Surplus Delta Outflow	7 days of flow availability in February – March is required before diversions can be made in those months
SWP ITP Delta Outflow	44,500 cfs April - May

Sites Reservoir Daily Divertible & Storable Flow Tool

1. Objective

The Daily Divertible & Storable Flow Tool (Divertible Flow Tool/Daily Modeling Tool) has been developed to evaluate and test diversion criteria in a real-time operations context. The Tool determine daily divertible and storable flow for Sites Project in October 1st, 2008 – May 31st, 2018 based on water availability and user specified conveyance constraints and diversion criteria. The spreadsheet generates timeseries of diverted and stored flow at three intake locations – Red Bluff, Hamilton City, and Delevan (by default, diversions through Delevan are set to zero in version 2021-03-09). Furthermore, the Divertible Flow Tool can be used to supplement CalSim II by:

- Representing the effects of operations criteria on a daily timestep
- Allowing for relative comparisons between monthly and daily approaches
- Providing results for more recent years (WY 2009 – 2018)

Several differences between CalSim II and the daily Divertible Flow Tool should be considered when both models are used in conjunction to evaluate Sites operations. Firstly, CalSim II yields results on a monthly timestep and the Divertible Flow Tool operates on a daily timestep. Different approaches are sometimes necessary to simulate monthly conditions as opposed to daily conditions, and implementing operation criteria on a daily timestep tends to be more conservative. Additionally, the two modeling tools include different simulation periods. CalSim II includes WY 1922 – 2003 while the Divertible Flow Tool includes WY 2009 – 2018. Table 1-1 shows the difference in proportion of Water Year Types (WYTs) for each modeling tool. As shown, the Divertible Flow Tool includes a drier period than does CalSim II.

Table 1-1. Proportion of Water Year Types in CalSim II and the Daily Divertible Flow Tool

WYT	CalSim II (1922-2003)	Divertible Flow Tool (2009-2018)
Wet	32%	20%
Above Normal	15%	0%
Below Normal	17%	40%
Dry	22%	20%
Critical	15%	20%

Another key difference is that CalSim II provides a continuous simulation over an 82-year period, while the Divertible Flow Tool simulates each year as a separate event. Furthermore, the daily modeling tool only provides estimated fill volumes, whereas CalSim II also includes release operations.

With the above considerations in mind, the daily Divertible Flow Tool serves as a valuable resource that can supplement CalSim II by evaluating Sites operations in real-time.

2. Available, Divertible, and Storable Flow

The Divertible Flow Tool uses outputs from the Flow Availability Tool, which estimates flow available for potential diversion to Sites Reservoir, subject to hydrology and regulations outside the scope of Sites Project operations (i.e., Delta Outflow standards, downstream water quality regulations, and other criteria from D-1641). The Divertible Flow Tool can then be used to evaluate various combinations of hydrology and Sites-related operations criteria. Divertible and storable flow are defined as follows:

- Divertible Flow = Flow available for potential diversion to Sites Reservoir subject to flow requirements and conveyance constraints associated with Sites Project.
- Storable Flow = "Divertible Flow" subject to storable capacity.

3. User Specifications and Input Assumptions

Figure 3-1 shows a snapshot of the Tool's dashboard, where users can specify various regulations and constraints corresponding to project operations. The table situated in the top-center displays monthly available, divertible, and storable flows associated with user specifications. The charts show daily hydrographs for the Sacramento River and the divertible and storable flow available at each intake.

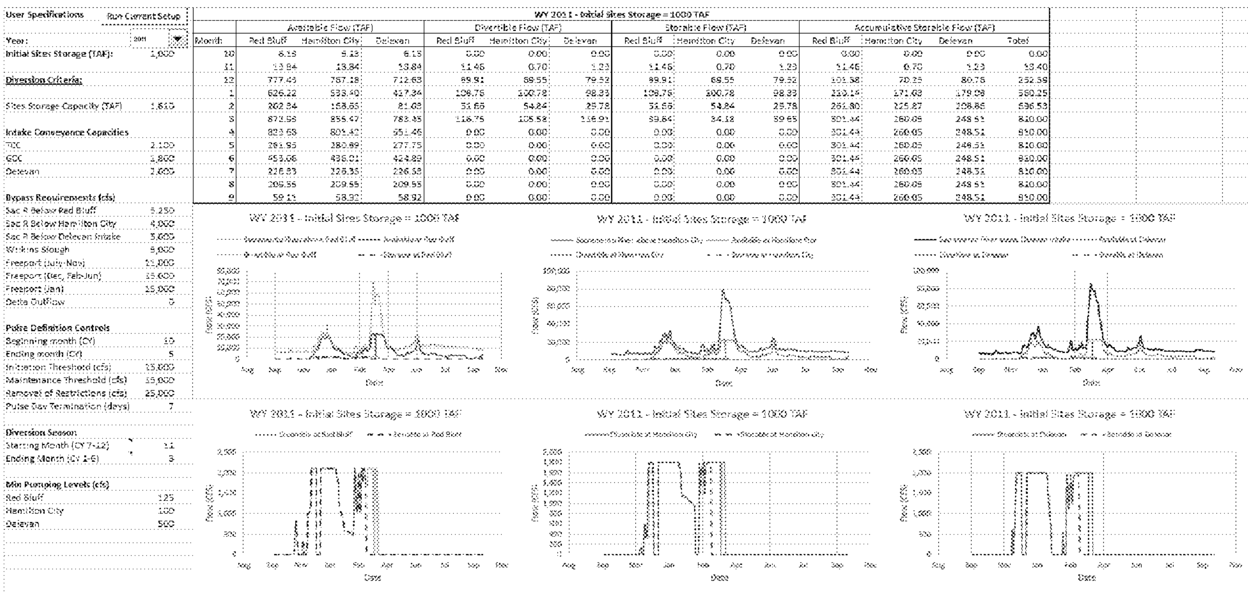

Figure 3-1. Snapshot of the Divertible Flow Tools User Dashboard.

The dashboard gives users the ability to specify the following:

- Year (hydrology) (WY 2009 – 2018)
- Initial Sites Storage (end of September storage)
- Sites Storage Capacity (TAF)
- Intake Conveyance Capacity (cfs)
    - Red Bluff (TCC)
    - Hamilton City (GCC)

- Delevan

- Bypass Flow Requirements (cfs)
    - Sacramento River at Red Bluff
    - Sacramento River at Hamilton City
    - Sacramento River at Delevan
    - Sacramento River at Wilkins Slough
    - Sacramento River at Freeport
- Pulse Flow Criteria at Bend Bridge
    - Initiation Flow Threshold
    - Maintenance Flow Threshold
    - Pulse Duration Limit
- Delta Outflow Criteria
- Fremont Weir Notch (on/off switch)
- Weir Spill Protection
    - Fremont Weir Spills
    - Aggregate Weir Spills to Sutter Bypass (from Moulton Weir, Colusa Weir, & Tisdale Weir)
- Minimum Pumping Level (cfs)
    - Red Bluff (TCC)
    - Hamilton City (GCC)
    - Delevan
- Low Level Pumping (diversion rate at each intake when Sacramento River flow at a certain location is less than its associated bypass flow requirement) (cfs)
    - Wilkins Slough Bypass override
    - Freeport override
    - Bend Bridge pulse protection override
- Intake Prioritization
- Diversion Season (range of months)
- Intake Season (specify when diversions are permitted at each intake) (range of months)
- Surplus Outflow (February – March)

3.1 Year (Hydrology)

Users can toggle through 10 different Water Years (WYs) – 2009 through 2018. However, WY 2018 only includes information up to May 31st. Each year provides a different hydrologic condition. The water year hydrologic classifications associated with each year are provided in Table 3-1. Water Year Hydrologic Classification Index (CDEC, 2019).Table 3-1. Each year is associated with flow availabilities that were estimated in the Flow Availability Tool.

Table 3-1. Water Year Hydrologic Classification Index (CDEC, 2019).

Water Year	Water Year Type
2009	D
2010	BN
2011	W
2012	BN
2013	D
2014	C
2015	C
2016	BN
2017	W
2018	BN

3.2 Initial Sites Storage (End of September)

Initial Sites storage has potential to affect the quantity of flow that is stored in the reservoir. Through a range of initial Sites storages, users can evaluate the duration for the reservoir to reach capacity, which occurs when storable flow no longer equals divertible flow. In drier years, storage capacity may never be reached even when initial storage is set relatively high. The default initial storage is 200 TAF.

3.3 Sites Storage Capacity

The default Sites storage capacity is 1.5 MAF. However, users can enter any desired value.

3.4 Intake Capacity

The default intake capacities of the Tehama Colusa Canal (Red Bluff intake), Glenn Colusa Canal (Hamilton City intake) are 2,100 cfs and 1,800 cfs, and respectively. However, users can enter any desired value.

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3.5 Bypass Flow Requirements

A bypass flow requirement can be specified along the Sacramento River at five locations:

1. Red Bluff (default = 3,250 cfs)
2. Hamilton City (default = 4,000 cfs)
3. Delevan (default = none)
4. Wilkins Slough (default = 8,000 cfs in April – May)
5. Freeport (default = none)

Furthermore, users can specify a range of months at which the Wilkins Slough and Freeport bypass requirements are implemented (by entering the starting month in column C and entering the ending month in column D). Freeport includes four different cells at which bypass criteria can be entered. The first cell ("B22") dictates bypass criteria over a user-specified range of months. The next three cells ("B23:B25") dictate bypass criteria that persist under the primary Freeport bypass criteria for various times of the year.

3.6 Pulse Flow Criteria at Bend Bridge

The pulse flow criteria at Bend Bridge was developed to protect fish migration during naturally occurring, storm-induced, pulse flow events in the Sacramento River. Pulse flows are defined as extended peak river flows at Bend Bridge that originate from storm event tributary inflows downstream of Keswick Dam. A pulse is initiated once the three-day running average flow at Bend Bridge exceeds the "Initiation Threshold". The pulse persists as long as the three-day running average flow at Bend Bridge remains above the "Maintenance Threshold". If the three-day running average flow at Bend Bridge exceeds the "Removal of Restrictions Threshold", then Sites diversions are permitted if flow at Bend Bridge remains above the Maintenance Threshold. The "Reset Threshold" represents the value at which the 3-day moving average flow at Bend Bridge must not exceed for a given number of days before another pulse protected event can be triggered. The "Pulse Protection Duration" can be used to set the number of consecutive days that a pulse period can last before the protection criteria is removed. For example, if the Pulse Duration Limit is set to 7 days, then diversions to Sites are permitted after flow at Bend Bridge exceeds the pulse flow threshold for over 7 consecutive days. The Bend Bridge pulse protection criteria can be further modified in the "BB_Pulse_Definitions" tab. The current set of criteria assumes the following:

1. Season:
   a. Pulse protection can be initiated in October through May
2. Initiation:
   a. 3-day moving average Sacramento River flow at Bend Bridge must exceed 8,000 cfs,
   b. And the 3-day moving average tributary flow upstream of Bend Bridge (Cow Creek, Cottonwood Creek, and Battle Creek) must exceed 2,500 cfs
3. Duration:
   a. Pulse protection lasts for 7 days upon initiation
4. Re-setting condition:
   a. After completion of a pulse protection period, the following conditions must occur before another pulse event is triggered:
      i. 3-day moving average of Bend Bridge flow was less than 7,500 cfs for 7 consecutive days,
      ii. 3-day moving average tributary flow up upstream of Bend Bridge (Cow Creek, Cottonwood Creek, and Battle Creek) was less than 2,500 cfs for 7 consecutive days

3.7 Delta Outflow Criteria

The Divertible Flow Tool includes a few options to constrain Sites diversion based on Delta Outflow requirements. “Delta Outflow (SWP ITP) is intended to represent the 44,500 cfs flow requirement included in the 2020 SWP ITP. “Delta Outflow (Additional) is intended for any supplemental delta outflow constraints.

Users can also turn on or off NDOI criteria, which implements Delta Outflow targets for a specified period (default of March 1st through May 31st) based on WaterFix longfin smelt protection criteria (Incidental Take Permit No 2081-2016-055-03, WaterFix, CDFW, page 186). Outflow targets are determined based on a table derived from a linear relationship between the 50% exceedance forecast for the current month’s Eight River Index (8RI) and recent historic Delta outflow (1980 – 2016). These tables have been stored in the “Ref. Tables” tab. The NDOI criteria is set off by default.

3.8 Fremont Weir Notch Spill Protection

The Fremont Weir Notch and its associated flow protection criteria can be turned on or off in the Divertible Flow Tool. Spills over the Fremont Weir Notch are based on a rule curve used in CalSim II. Furthermore, the Sites diversion criteria protects spills of 6,000 cfs from November 1st through March 15th and spills of 600 cfs from March 16th through April 30th. Figure 3-2 and Figure 3-3 demonstrate the effect of the Fremont Weir notch and its associated protection criteria on spills and diversions to Sites in an example scenario for WY 2010. The notch protection criteria cause a reduction in diversions to Sites, most notably in February when nearly all diversions are restricted because notch spills range from 0 – 6,000 cfs for most of the month.

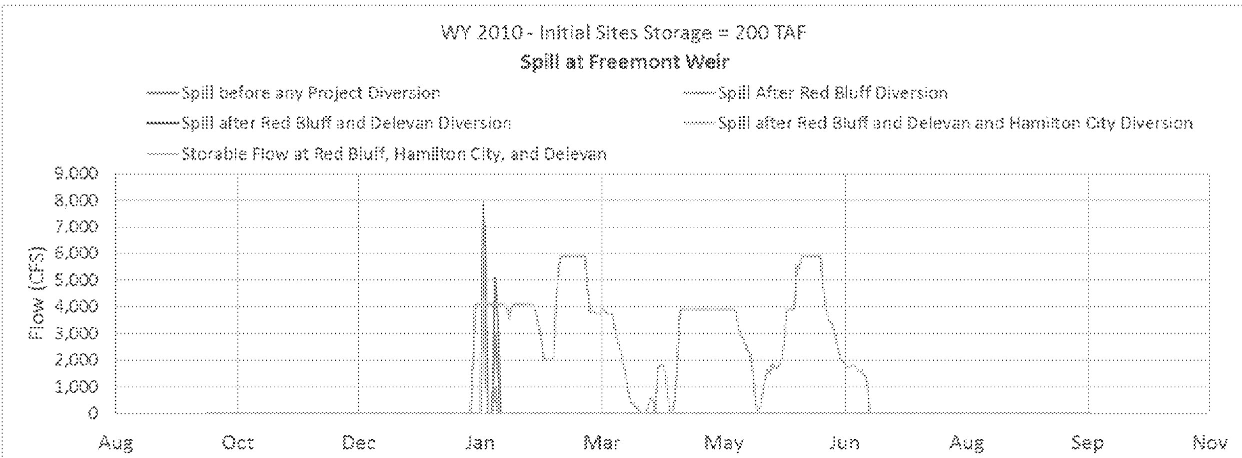

Figure 3-2. Spill at Fremont Weir vs Storable Flow – Without the Fremont Weir Notch.

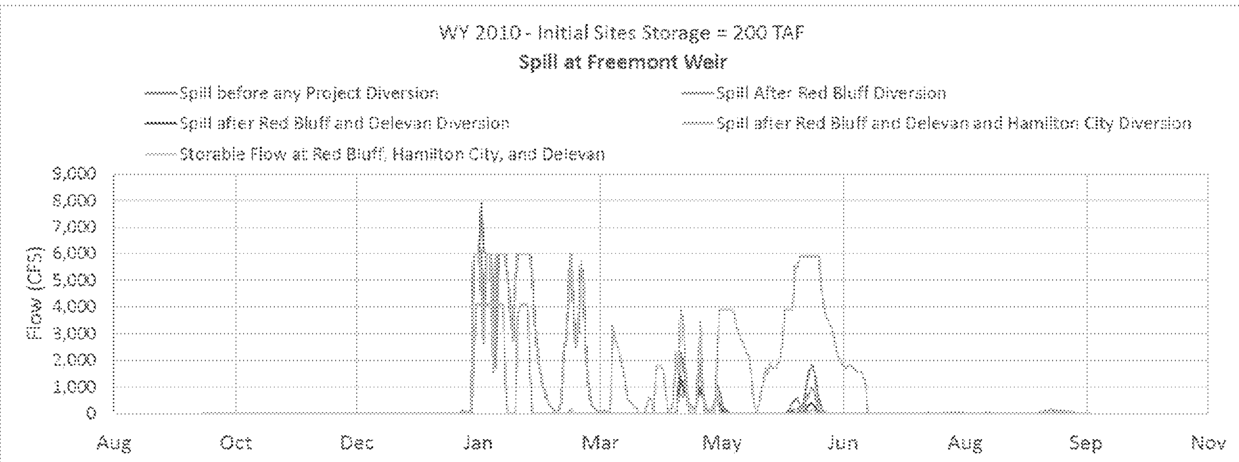

Figure 3-3. Spill at Fremont Weir vs Storable Flow – With the Fremont Weir Notch (and associated protection criteria).

In the daily modeling tool, users may specify buffer values for Fremont Weir notch protection. Two buffer values may be specified – one for spills between 0 and 600 cfs (low-spill buffer), and one for spills between 600 and 6,000 cfs (high-spill buffer). The buffer values are entered as percentages of flow above certain thresholds that may be diverted to Sites. For example, consider a case where the user enters a low-spill buffer of 1% and a high-spill buffer of 10%. The following would take effect:

- November 1 – March 15
  - When spills range between 0 – 600 cfs, 1% of the flow above 600 cfs may be diverted
  - When spills range between 600 – 6,000 cfs, 10% of the flow above 6,000 cfs may be diverted
- March 16 – April 30
  - When spills range between 0 – 600 cfs, 1% of the flow above 600 cfs may be diverted

3.9 Protection of Aggregate Weir Spills to the Sutter Bypass

The Tool provides users the ability to implement protection of spills into the Sutter Bypass via Colusa Weir, Moulton Weir, and Tisdale Weir. Users can specify the upper bound of the total spill range that must be protected, a buffer on the specified spill range, and the percent of spill that can be diverted to Sites in the specified spill range. Aggregate Sutter Bypass weir spill protection is set off by default.

3.10 Minimum Pumping Level

Each intake is assigned a minimum level of flow that can be diverted into Sites Reservoir. If flow availability is below an intake's minimum pumping level, then the intake will not be utilized. The smallest pumps at Red Bluff and Hamilton City have capacities of 125 cfs and 100 cfs, respectively.

3.11 Low Level Pumping

Users can specify low level pumping rates when Sacramento River flow at a certain location is less than its associated bypass flow requirement and above the user specified "low level pumping initiation flow". For example, if the low level pumping rate at Red Bluff is set to 300 cfs, the initiation flow rate at Wilkins Slough is 5,000 cfs, the bypass flow rate at Wilkins Slough is 10,000 cfs, and the actual flow rate at Wilkins Slough is 8,000 cfs, then the Red Bluff intake can divert up to 300 cfs from the river. Low level pumping rates can be used to override three bypass flow criteria: Bend Bridge pulse protection, Wilkins Slough bypass flows, and Freeport bypass flows. Low level pumping is set off by default.

3.12 Intake Prioritization

Intake prioritization is not modifiable in this version of the Divertible & Storable Flow Tool. The current setup prioritizes diversions at Red Bluff and then at Hamilton City (by default, Delevan is not used in version 2021-03-09).

3.13 Diversion Season

A diversion window can be defined to constrain the months in which the Divertible Flow Tool will attempt to allocate water into Sites Reservoir. Users can enter a starting month (from July through December) and ending month (from January through June). The default diversion season is November through May. Diversions to Sites would not be expected in June through October, as this is the period coincides with the season of Sites deliveries.

3.14 Intake Season

The Intake Season refers to the months in which diversions are permitted at each intake. For example, if the Red Bluff starting month is set to 1 and its ending month is set to 6, then diversion through the Red Bluff intake can only be made from January through June. By default, the Red Bluff and Hamilton City intakes are only limited by the diversion season (default = November through May), while the intake season for Delevan is turned off.

3.15 Freeport Pulse and Post Pulse Protective Criteria

Pulse & Post-Pulse criteria based on the 2016 CWF ITP have been integrated into the Daily Divertible Flow Tool. These criteria are set off by default. If specified by users, Sites intakes can be operated within a range of pulse protection and post-pulse protection levels (1 through 3) in place when winter run chinook salmon (CHNWR) and spring run chinook salmon (CHNSR) migration is occurring. The post-pulse protection operations are defined in Sub Table A of the CWF ITP. In the daily modeling tool, two interpretations of the criteria for transition among pulse-protection levels are included:

- Fish presence (Knights Landing Catch Index (KLCI)) (CWF ITP)
- Sacramento River flow at Freemont (CalSim II based logic)

Table 3-2 identifies the assumptions implemented in the CWF ITP (criteria based on fish presence) and the assumptions implemented in CalSim II.

Table 3-2. Pulse and Post-Pulse Assumptions of CWF ITP vs CalSim II.

Pulse and Post-Pulse Assumptions	
CWF ITP	**CalSim II**
• **All pulses** of CHNWR and CHNSR shall be protected from October 1 – June 30.	• **One or two pulses** shall be protected from October 1 – June 30 (depending on whether a pulse ends before December 1).
• Beginning October 1st, whenever the initial pulse begins, low level pumping takes effect.	• Beginning October 1st, whenever the initial Sacramento River pulse begins, low level pumping takes effect.
• A Sacramento River pulse is determined based on real-time monitoring of juvenile fish movement (see Condition of Approval 9.9.5.1). A fish pulse is defined as a **Knights Landing Catch**	• The initiation of the pulse is defined by the following criteria: (1) **Wilkins Slough flow changing by more than 45% within a five day**

Index (KLCI) ≥ 5 where KLCI = (# of CHNWR + # of CHNSR)/(Total Hours Fished/24). • Pulse protection operations shall be implemented within 24 hours of detection of a fish pulse.	**period** and (2) **Wilkins Slough flow becomes greater than 12,000 cfs**.
• Pulse protection ends after **five consecutive days of daily KLCI < 5**.	• The pulse protection and the low level pumping continues until (1) **Wilkins Slough returns to pre-pulse flows** (flow on first day of the within-5 day increase), (2) **Wilkins Slough flows decrease for five consecutive days**, or (3) **Wilkins Slough flows are greater than 20,000 cfs for 10 consecutive days**.
• Number of allowable pulses is not specified; ASSUME ALL ELIGIBLE PULSES (KLCI ≥ 5) ARE PROTECTED.	• Number of allowable pulses in unlimited; ASSUME ALL ELIGIBLE PULSES ARE PROTECTED.
• Once the pulse protection ends, **post-pulse bypass flow operations may remain at Level 1 diversion depending on fish presence, abundance, and movement in the north Delta**; however, the exact levels will be determined through initial operating studies evaluating the level of protection provided at various levels of diversions.	• After a pulse has ended, the allowable diversion will go to post-pulse operations through June that can transition through three levels of protection.
• The criteria for transitioning between and among pulse-protection, **Level 1, Level 2, and/or Level 3 operations are based on real-time fish monitoring** and hydrologic/ behavioral cues upstream of and in the Delta that will be studied as part of the Project's Adaptive Management Program. Based on the outcome of the studies pursued under that program, additional information about appropriate triggers, off-ramps, and other RTO management of NDD intake operations may be integrated into the Test Period Operations Plan and the Full Project Operations Plan.	• After the initial pulse(s), **Level I post-pulse bypass rules are applied until 15 days of bypass flows above 20,000 cfs have accrued since the pulse ended**. Then **Level II post-pulse bypass rules are applied until 30 days of bypass flows above 20,000 cfs have accrued** since the pulse ended. Then Level III post-pulse bypass rules are applied.
• **The NDDTT shall develop criteria for transitioning between and among pulse protection, Levels 1, 2 and 3 based on best available science**. The NDDTT shall recommend transitional criteria to the TOT and IICG for consideration through the Adaptive Management Program, to ensure that the Project will achieve the objectives of Biological Criteria 1 and 2.	• Under the post-pulse operations allowable diversion will be greater of the low-level pumping or the diversion allowed by the following post-pulse bypass flow rules.

Taken from the "Pulse_Post-Pulse_Figs" tab of the daily modeling tool, Figure 3-4. Fish-based Pulse and Post-Pulse Protection Levels in WY 2016. Figure 3-4 and Figure 3-5 demonstrate the difference in pulse and post-pulse protection levels under the two interpretations. In Figure 3-4, the purple dots represent the KCLI for winter run and spring run chinook salmon. Whenever the KCLI exceeds 4, pulse protection operations are initiated, as represented by the red shading. In the daily modeling tool, users may specify KCLI thresholds to determine pulse and post-pulse conditions. In this example, post-pulse Levels 1 and Level 2 have KCLI thresholds of 3 and 1, respectively. Thus, if the KCLI for a given day is between 3 and

5, Level 1 is implemented. If the KCLI is between 1 and 3, Level 2 is implemented. Finally, if the KCLI is 0, Level 3 operations take effect.

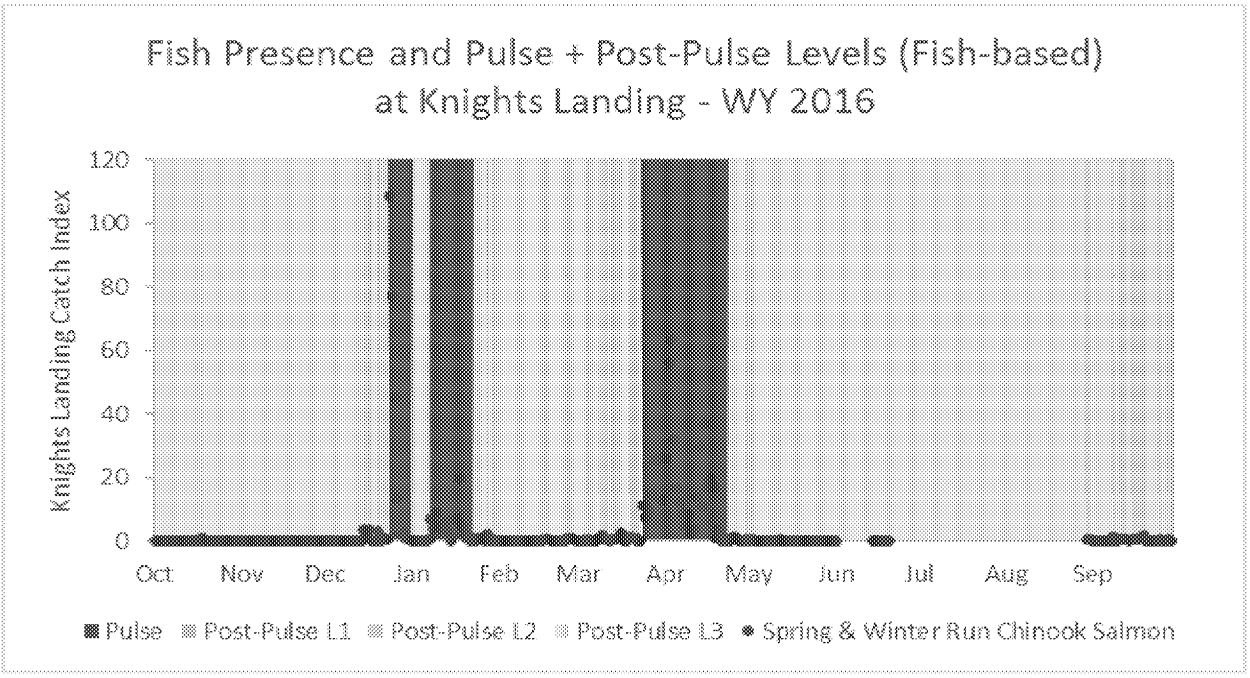

Figure 3-4. Fish-based Pulse and Post-Pulse Protection Levels in WY 2016.

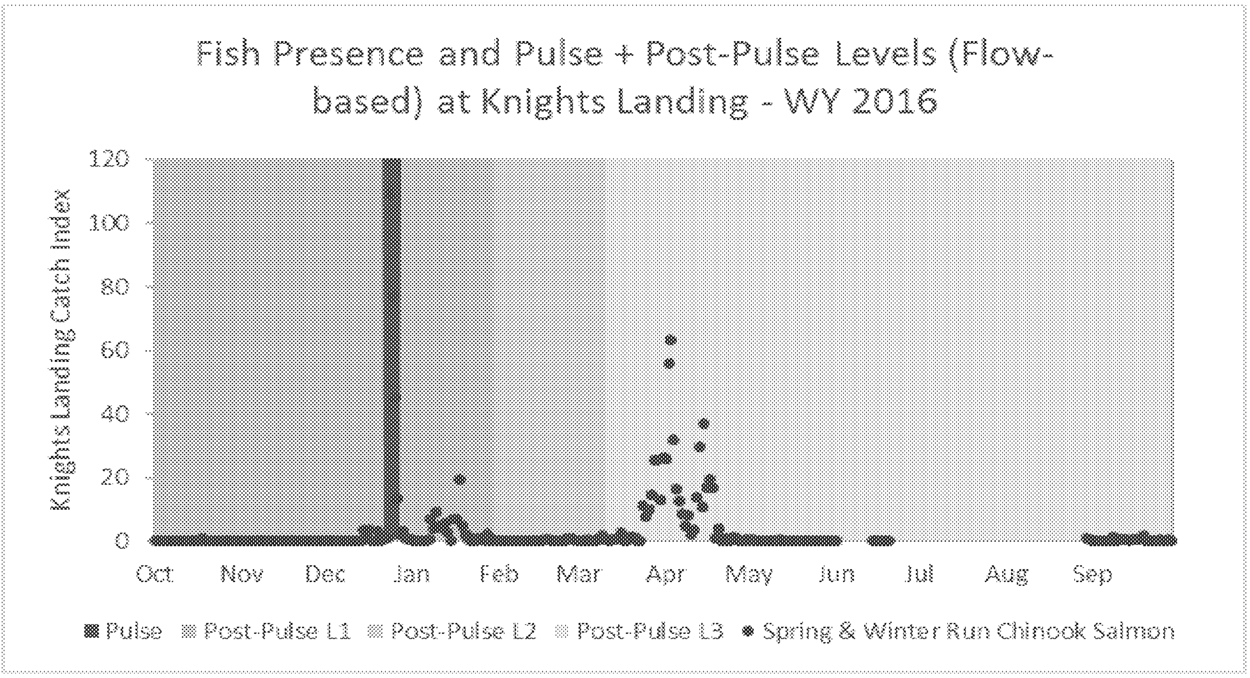

Figure 3-5. Flow-based (CalSim II) Pulse and Post-Pulse Protection Levels in WY 2016.

In the daily modeling tool, users may specify starting and ending months of the pulse and post-pulse protection periods (i.e., the October through June period defined in the CWF ITP may be modified).

3.16 Surplus Outflow (Feb-Mar)

This criterion provides a margin of safety to prevent shifting the regulatory burden of X2 onto SWP or CVP operations. It is only applied to February and March. Diversions are only permitted after a specified number of days that flow is available in February through March (default = 7 days).

3.17 Additional Protective Criteria

The “Table1” and “ProtectiveCrit” tabs includes additional protective criteria to limit project diversions under user-specified flow conditions and time periods. The table in “Table1” can be used to implement a set of rules to limit diversion at each intake to a certain percentage of total Sacramento River flow, based on local conditions. Inputs to this table can be specified in the “Protective Criteria & Ramp Down Specs” section of the “User_Specifications” tab.

The tables in “ProtectiveCrit” perform similar functions; however, diversions are instead limited to a proportion of total intake conveyance capacity.

The additional protective criteria set off by default and are only activated if Cell B91 in the “User_Specifications” tab is set to “Yes”.

4. Results

The Divertible Flow Tool evaluates various combinations of hydrographs, diversion regulations, and initial storage conditions. For example, users can manipulate pulse flow protection criteria, minimum pumping levels, or intake diversion seasons to generate different divertible and storable flow results under a range of hydrologic conditions. Consequently, the tool may be useful in evaluating the effects of varying operations criteria on diversions to Sites Reservoir.

4.1 Sacramento River Flow, Delta Outflow, and X2

Monthly available, divertible, and storable flow results for a given water year are displayed in the table and figures of the “User_Specifications” tab. The table also includes accumulated storage, representing the total amount of water diverted into Sites throughout the year.

The “Hydrographs” tab includes figures that show Sacramento River flows before and after project diversions at the following locations:

- Red Bluff
- Hamilton City
- Delevan
- Wilkins Slough
- Knights Landing
- Spill at Fremont Weir
- Freeport

The “Hydrographs” tab also includes the figures demonstrating the effect of Sites diversions on Delta Outflow and X2 position. Figure 4-1 through Figure 4-9 demonstrate example charts from the “Hydrographs” tab.

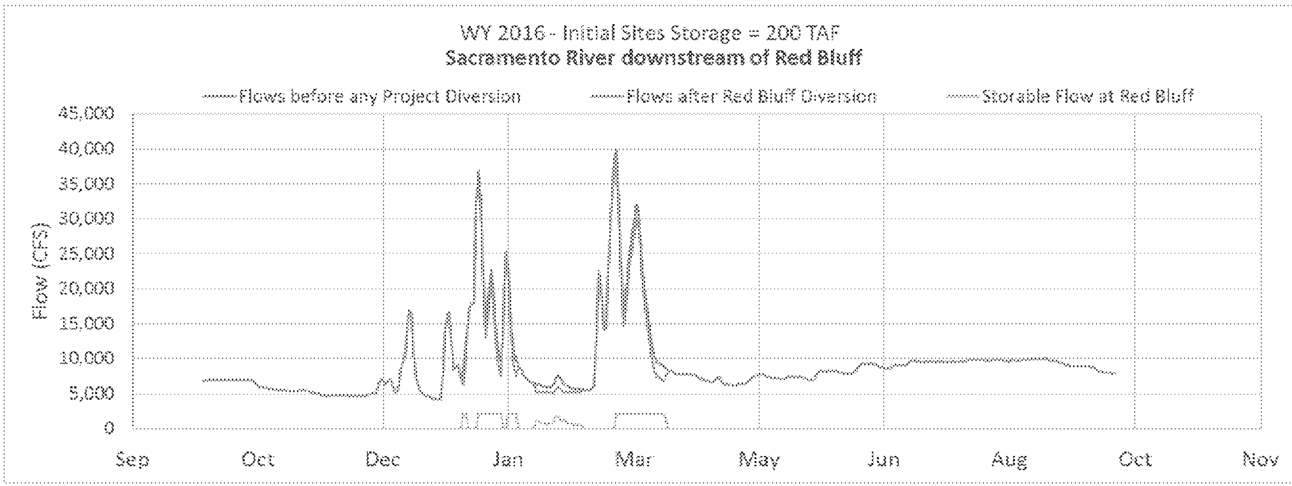

Figure 4-1. Sites Storable Flow Effect on Sacramento River Flow at Red Bluff – WY 2016.

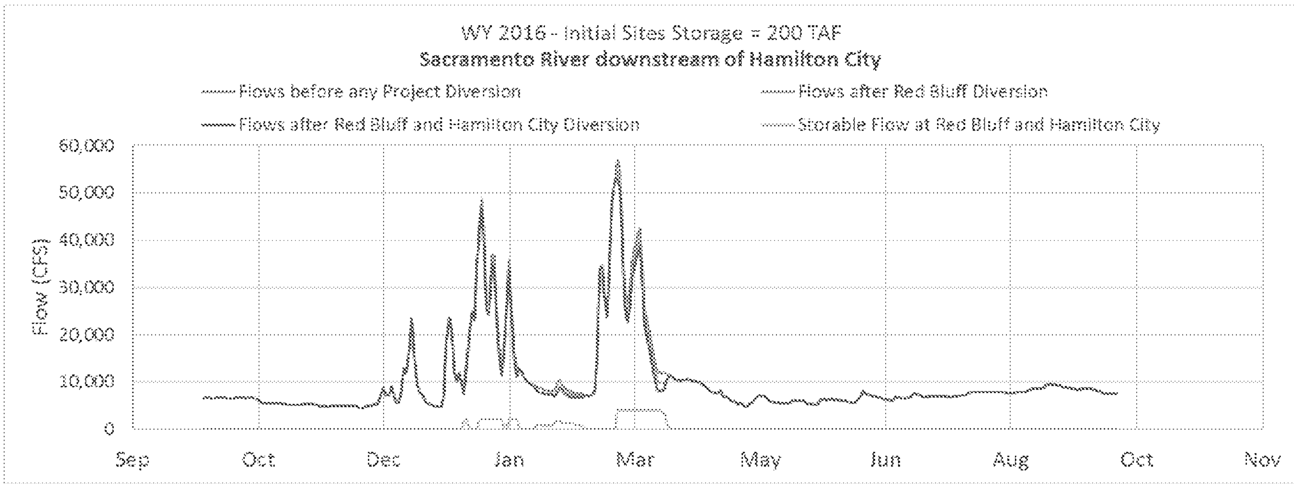

Figure 4-2. Sites Storable Flow Effect on Sacramento River Flow at Hamilton City – WY 2016.

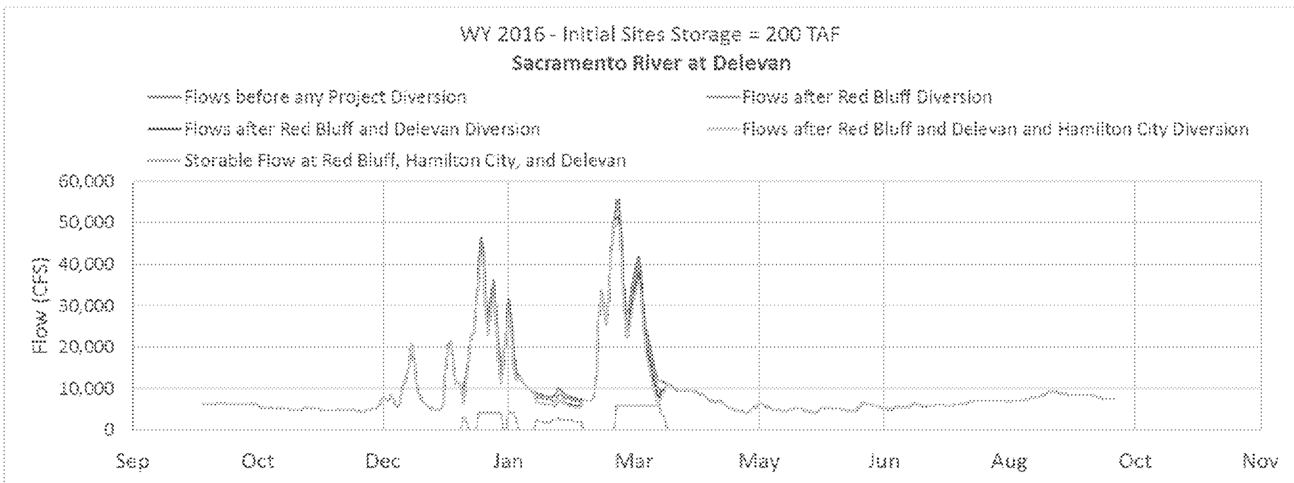

Figure 4-3. Sites Storable Flow Effect on Sacramento River Flow at Delevan – WY 2016.

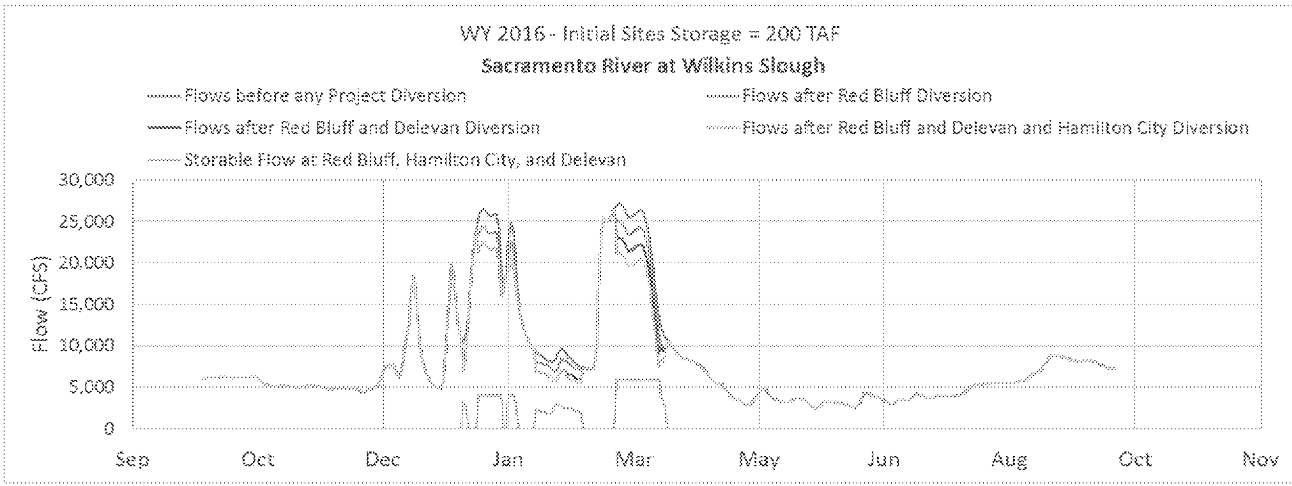

Figure 4-4. Sites Storable Flow Effect on Sacramento River Flow at Wilkins Slough – WY 2016.

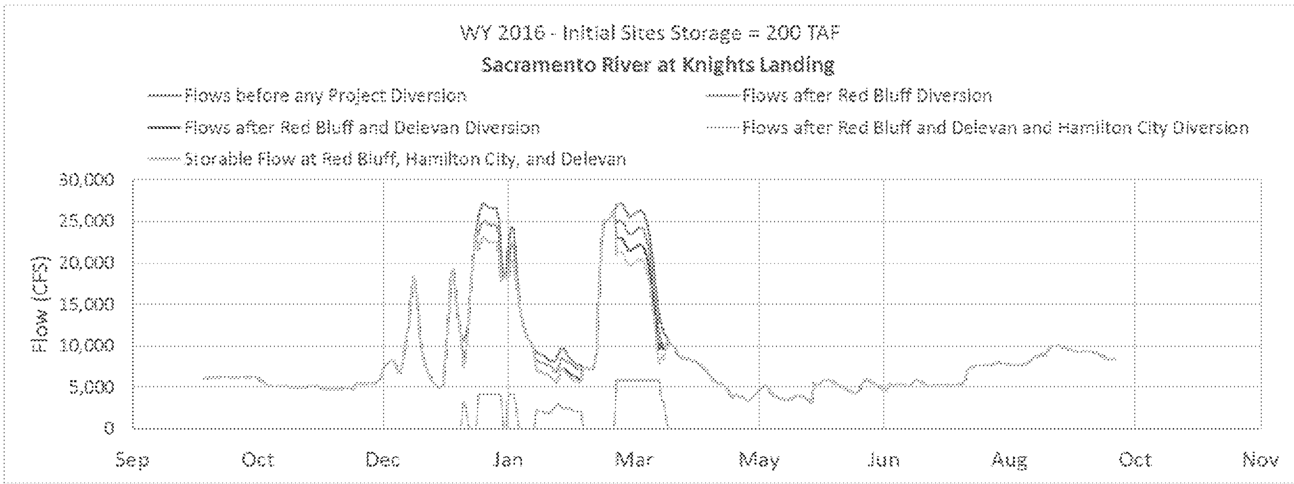

Figure 4-5. Sites Storable Flow Effect on Sacramento River Flow at Knights Landing – WY 2016.

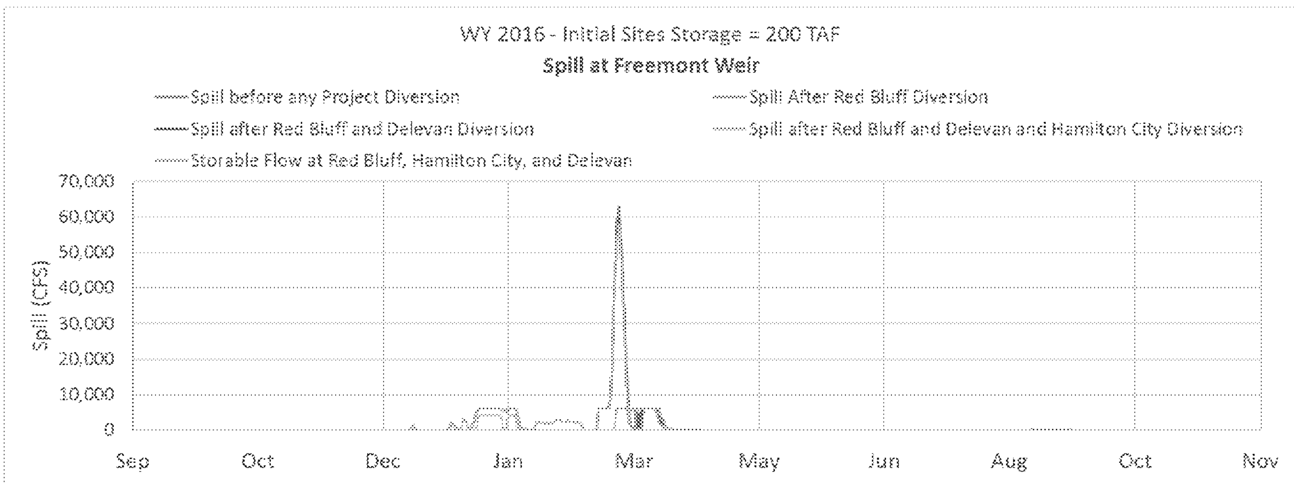

Figure 4-6. Sites Storable Flow Effect on Fremont Weir Spills – WY 2016.

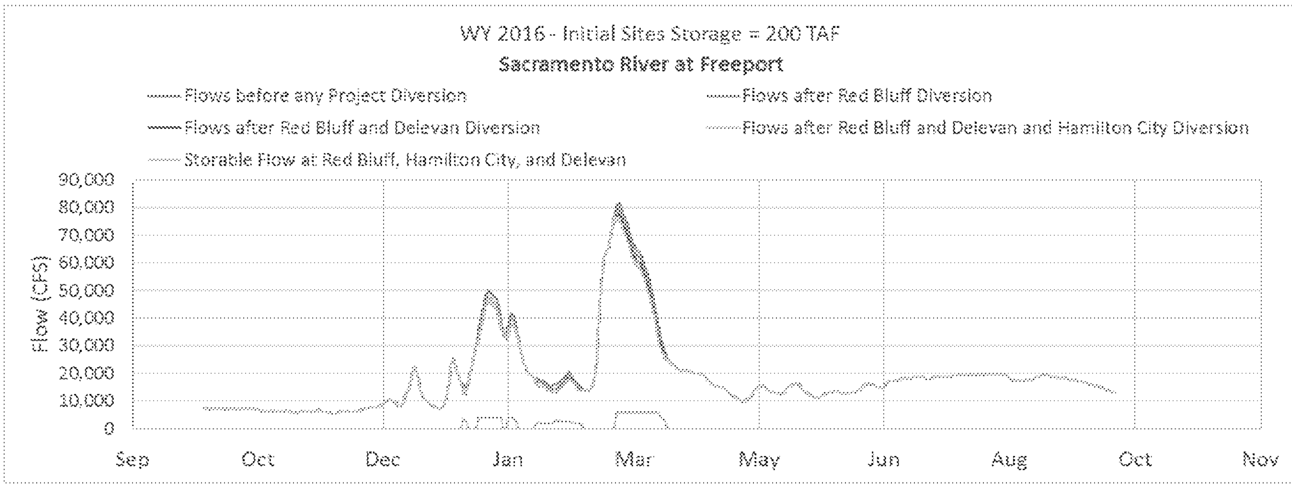

Figure 4-7. Sites Storable Flow Effect on Sacramento River Flow at Freeport – WY 2016.

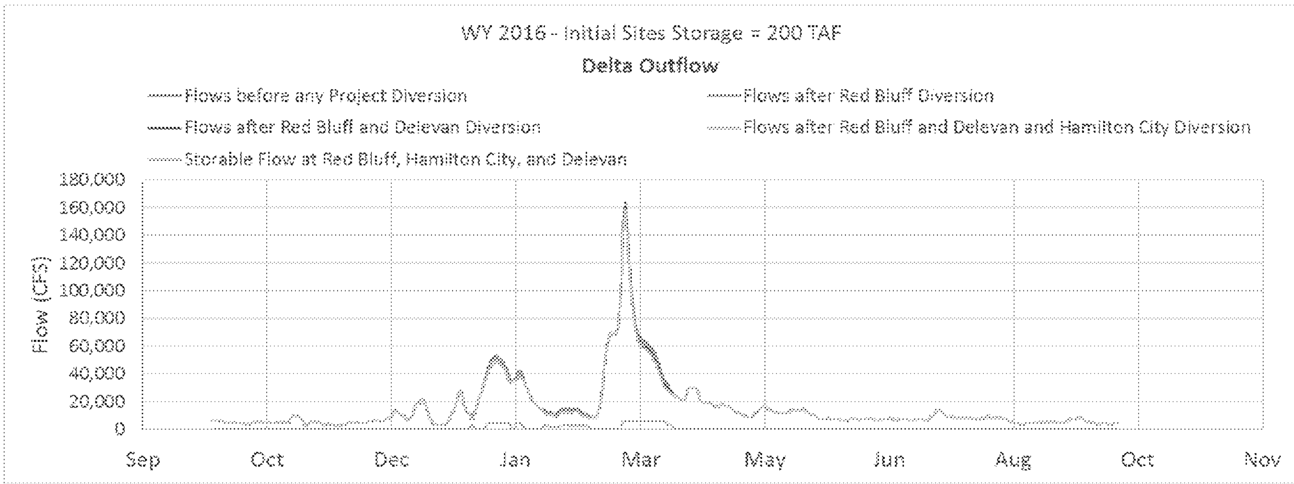

Figure 4-8. Sites Storable Flow Effect on Delta Outflow – WY 2016.

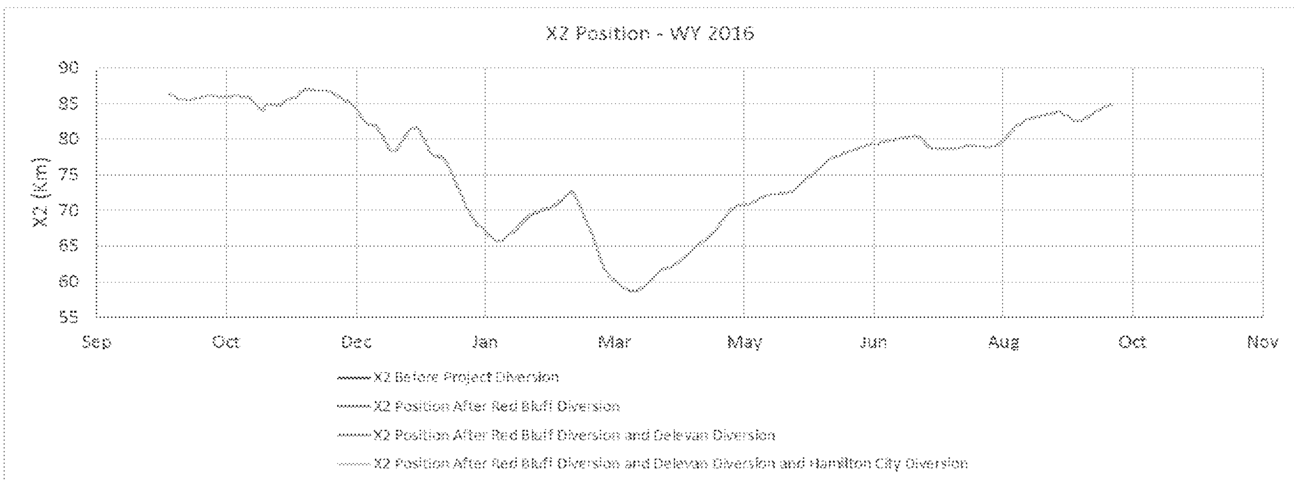

Figure 4-9. Sites Storable Flow Effect on X2 – WY 2016.

4.2 Fish Presence

Sacramento River fish data has been collected and integrated into the Divertible Flow Tool at the following locations:

- **Red Bluff Dam** (October 1st 2008 – May 31st 2018)
  - Source: Red Bluff Fish & Wildlife Office, USFWS (collated into a spreadsheet by LeAnne Rojas, 4/15/2019, using data from: http://www.cbr.washington.edu/sacramento/data/query_redbluff_daily.html)
- **Hamilton City** (March 2nd 2013 – May 31st 2018)
  - Source: GCID (collated into a spreadsheet by LeAnne Rojas on 4/16/2019, based on data provided by GCID (Josef Loera) via John Spranza (HDR) on 4/1/2019)
- **Tisdale** (July 7th 2010 – May 31st 2018)
  - Source: CDFW (collated into a spreadsheet by LeAnne Rojas on 4/18/2019, from data provided by Diane Coulon (DFW) on 4/11/2019)
- **Knights Landing** (October 1st 2008 – May 31st 2018)
  - Source: CDFW (collated into a spreadsheet by LeAnne Rojas based on workbooks provided by Jason Julienne (DFW) on 4/24/2019)

The relationship between flows and fish presence can be evaluated in several tabs towards the back of the spreadsheet. The "Fish_Count_OneYr" tab include figures of Sacramento River flow and storable flow vs fish count at the four locations listed above. Figure 4-10 demonstrates an example figure from this tab. At Red Bluff, the term "fish count" is defined as the estimated daily number of fish passage through the Sacramento River at Red Bluff. At Hamilton City, Tisdale, and Knights Landing, "fish count" is defined as the estimated daily number of fish caught in rotary screw traps at each location.

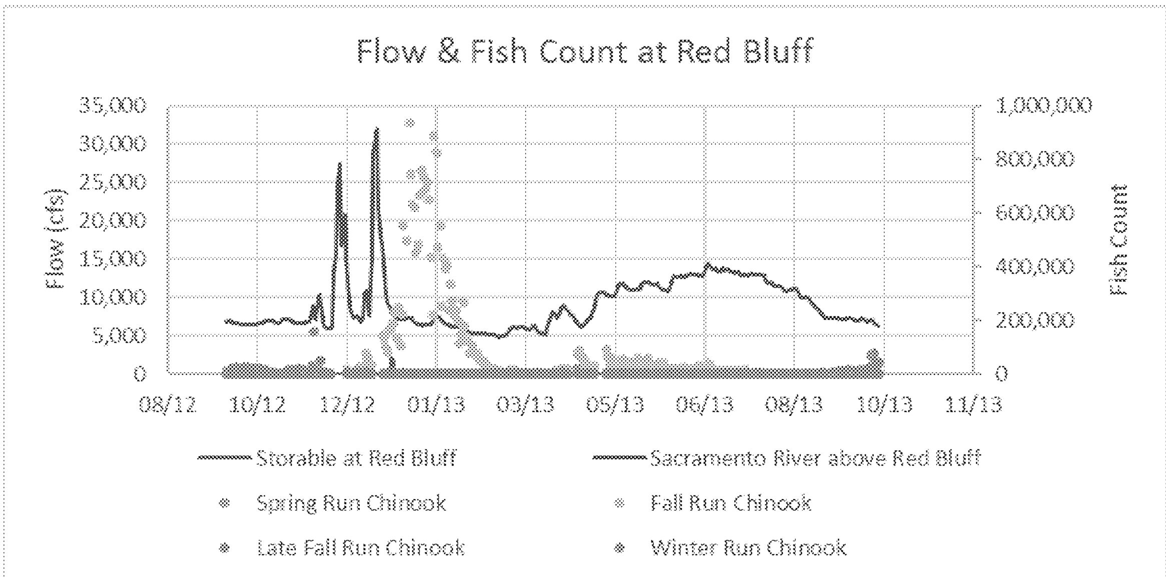

Figure 4-10. Sacramento River Flow vs Fish Presence at Red Bluff in WY 2013.

4.3 Controlling Constraints

The "Controls" tab includes tables displaying the number of instances each constraint controls the quantity of storable flow in each month of the selected year. A controlling constraint is defined as the primary limiter of storable flow to Sites Reservoir. For example, if no flow is available for the project because the river is in "Balanced Conditions", then the controlling constraint is identified as "Balance" in the Divertible Flow Tool. A table of controls has been developed for each intake location (Red Bluff, Hamilton City, and Delevan) in the "Controls" tab. Additionally, daily timeseries of controlling constraints can be viewed in columns "BG:BH" of the "Divertible_Flow_OneYr" tab.

4.4 Annual Simulations

On the "User_Specification" tab, users can generate results for all 10 years (WY 2009 – 2018) by clicking on the "Run Current Setup" button at the top of the page. This button will simulate available flow, divertible flow, and storable flow for each year under current user specifications. Furthermore, the initial Sites storage will be reset at the start of each year. Daily inputs and outputs will be copied into the "ScenID_Main" tab, monthly results are populated in the "Monthly_Report" tab, and annual inputs and outputs are populated in the "Ann_Fills" tab.

The Excel spreadsheet includes several macros to iterate through multiple combinations of years and input conditions (user-specified constraints). Before running one of these macros using the "Run Full Simulation Period" button on the "User_Specifications" tab, the macros should be updated to accommodate for whatever analysis is desired. The daily, monthly, and annual results will be copied into the "ScenID_Main" tab, "Monthly_Report" tab, and "Ann_fills" tab. Each 10-year period will be assigned a Scenario ID number corresponding to a particular set of inputs.