

CDFW - Sites 60 day Evaluation Meeting No. 6: Meeting Agenda and Action Items



Sites Reservoir Project

Date: July 2, 2019

Location:

HDR Office: 2379 Gateway Oaks Drive, Suite 200 Fleming Conference Room or SYPE with Call in 866-583-7984,, 1977661

Time: 9:00 am – 12:00 pm

Purpose: Continue 60 day evaluation of Operational Scenarios.

Invitees:

Rob Thomson, Sites Authority (call)
Ali Forsythe, Sites Authority
Duane Linander, CDFW
Kristal Davis Fadtko, CDFW
Ian Boyd, CDFW

Ken Kundargi- CDFW
Johnathan Williams, CDFW
Lenny Grimaldo, ICF
Marin Greenwood, ICF (call)

Felipe La Luz – CDFW
Chris Fitzer, ESA Associates
Rob Tull, Jacobs
John Spranza, HDR
Jelica Arsenijevic, HDR

Action Item	Owner	Deadline	Notes	
1	Schedule presentation on CalSim and DSM2 and how Delta is performing.	CH2	TBD	Pending
2	CH2 will provide list of reference for available water supply. Will give daily model spreadsheet as well. Annual and monthly total diversion volumes – on dashboard of spreadsheet – add screen shot and add to presentation	CH2	Prior to June 26, 2019 meeting	Provided 7/3/19
6	Draft workshop Agenda for distribution	Sites/HDR	Prior to July 2, 2019 meeting	To be done ASAP
7	Provide analysis of project effect on Suisun Marsh Salinity control Gates	Sites/CH -	TBD	In progress (Marin)
8	Schedule Workshop	All	7/3/2019	Compleat
9	Identify Region 2 concerns	CDFW	7/10/2019	
10	Sutter Bypass Analysis	Authority/CH	7/10/2019	

11	Provide references used for hydrologic model	Rob Tull	7/10/2019	Provided 7/3/19
12	Initiate discussions with CDFW, River Partners and other NGO's to talk about possible effects of projects.	Authority	After July	Ongoing task item
13	Provide carcass/redd reports to ICF	Duane/Lenny	7/10/2019	
14	Develop functional mechanisms Put together RST data and overlay it.	Authority/CH	7/5/2019	Prior to meeting.

Meeting Minutes:

1. Action item review
 - a. See above table
2. Modeling Discussion

a. Floodplains and bypass habitats benefits and impacts

Fremont Weir Spills and Flow Duration: Table was prepared in initial WSIP application. Laying out the different flows into Yolo Bypass through Fremont Weir. Compares with and without project using DWR 2015 – main focus of admin draft BA. Relatively small differences in years with greater flow. Doesn't account for Fremont weir notching and prioritizing of notch flow over Sites diversions.

Yolo Bypass Biological Effects:

- Focused on number days of Yolo Bypass flooding based on Fremont weir flow greater than greater than 3,000 cfs. Using DCR 2015 modeling there are minor decreases in years with main flooding; however, doesn't account for the Fremont weir notch and pritotization of notch flow over Sites diversions.
- Takata et al. 2017 publication – emigration, size of fish emigrating, and catch per unit effort looked at against mean number of days of Yolo Bypass flooding. Tables were part of WSIP application, Appendix A - pages A-73 and A-74.
- Mean inundated area (acres and capacity decreases with project for each water year type. Greatest difference in critically dry years, least during wet years.
- Clarification – DCR 2015 as provided by Commission does not include Fremont Weir notch. Team has additional information based on sensitivity, including giving priority to the notch, etc.
- Prioritization of notch – maximum Sites diversion is 5,900 cfs. Different numbers provided relative to range of flow that was regarded as priority for protection. Has to be satisfied before project is allowed to divert. Sensitivity analyses have been conducted with operations of the notch and senior priority is given to notch operations before Sites can divert upstream.
 - CDFW wanted to know if any analysis done for Sutter bypass. Some sensitivity analysis done relative to protections of different levels of spills to see what it looks like and can walk through that as well. CDFW reported that Region 2 will have concerns for Sutter Bypass as well as Pete Slough Outfall gates. CDFW notified team that a notch at Tisdale is being considered.
 - Jacobs previously developed a 2-D model of the Sutter Bypass for the Flood Board. Specifically looking at refuge and different vegetation management / land use. The model could be applied to assess flow inundation in the bypass.
 - CDFW would like to know more information regarding what the changes would be in the Sutter Bypass. Recommendation made to team to include and evaluate it in 2081 application. There have not been enough studies for Sutter Bypass. The project will have to evaluate what the changes may occur. CDFW notified team that the NMFS Northwest Science Center has been doing studies but not sure on what is publicly available. Specifically, the project should analyze what the effects are on juvenile rearing. For example, abiotic parameters,

which translates into potential effects and loss of habitat. Adult stranding at Tisdale is also a concern.

- **Action Item: CDFW to talk with Region 2 and identify what the region would want to see in application to give better idea of what they will need to help focus effort.**
 - The Authority will look at what analyses can be conducted for the Sutter Bypass.
 - Authority will add sensitivity analysis to a future meeting agenda. Discuss notch and determine if reasonable from CDFW perspective.
 - CDFW wants to see changes in habitat. Habitat mapping was included in analysis; however hydrology analysis was not done for the bypass.
- **Sacramento River Habitat and Hydrologic Analyses**
 - New information presented in slides that was not included in WSIP application. Developed in coordination with Authority recognizing CDFW will ask for additional information. Can be applied as part of future analysis.
 - Upper Sacramento River – Bend Bridge to Knights landing. Analysis has aerial coverage for Sutter Bypass, but did not include hydraulic analysis of the bypass.
 - Graphical representation to show inundated habitat areas for a range of flows along the river.
 - Most of the information for habitat comes from CVFED and CVFPP flood protection work. Mapping completed by incorporating bathymetry and LiDAR. Analysis included a look at inundation. Developed 1-D hydraulic model that extends to Knights Landing that allows evaluation of different flow scenarios. Developed maps of habitat types and inundated areas for different flow levels. Mapped secondary channel features. Secondary channel features obtained from TNC report a few years ago primarily for the upper river but gave them idea for opportunities for physical projects and when those areas got activated by oxbows, etc.
 - Currently team is going through data to see if there is supplemental information available.
 - **Action Item: Rob Tull to provide references used for the hydrologic analysis.**
 - Reach 1 – conducted a series of steady state HEC-1 simulations at 5,000 cfs increments up to 50,000 cfs to see how increases in water surface elevation changes habitat areas that are wetted. Inundation maps show green as floodplain habitat, red dots indicate side channel activation locations, blue shows the extent of inundation...increasing amounts of blue as more water is put through the system and see where water goes and what value it might be. Model allows a look at depth of inundation (depth less than 5 feet are considered better per literature). Model results can provide information on flow velocities also. Gives a good representation how things may change as WSE goes up.
 - Team can run daily flow analysis that shows the frequency, duration, and timing of of inundation areas. Currently done as static model; however, in progress for daily analysis.
 - CDFW recommended that project team communicate with the various landowners including national wildlife complex, USFWS, Nature Conservancy, and CDFW. CDFW recommends that the project take into consideration the hydrology effects and implications on various current management activities– drawing water, flooding, geomorphology (sedimentation or lack thereof). CDFW notified team to look at existing literature on recovery and rates of recovery various tree planting efforts.
 - CDFW notified team that River Partners is working with NMFS on structure opposite of Delevan pipe
 - **Action Item – Authority will initiate discussions in August with CDFW, River Partners and other NGO's to talk about possible effects of projects.**
 - Team is coordinating with USFWS and this analysis can be applied to terrestrial analysis too.
 - Secondary channel features (activation flows) – only available for Reaches 1 and 2 due to the makeup of Reach 3 (presence of levees, rip rap, constrained, etc.)

b. Temperature Discussion; Shasta Lake and Upper Sacramento River Temperature Operations.

- Critical temperature region is upstream of Bend Bridge. Corner stone piece of the Sites project from environmental perspective is cold water pool management – water stored in Sites Reservoir is released to Glen Colusa Irrigation District and Tehama-Colusa Canal in exchange for water stored in Shasta. Project is not increasing the size of cold water pool, it is preserving and maintaining the cold-water pool to allow improved temperature management. The exchange of water with Shasta is triggered by Shasta storage declining to specific levels – as Shasta drops to

certain levels then the exchange will be initiated. If the lake level drops too low, there will be lost opportunity for exchange.

- CDFW would like to look back at 2014 and 2015 – temperature modeling issues. If 200,000 acre-feet available, it could have benefitted the river/species.
- Priority recap of project
 - Cold water pool conservation in Shasta, Oroville, and Folsom Lake. Greatest opportunity at Shasta
 - Manage and improve Yolo Bypass flows and Delta water quality
 - Improve flows for Delta fisheries habitat based on the X2 location
 - Stabilize Sacramento river fall flows for improving spawning
 - Provide water for level 4 refuge.
 - Analytical modeling framework
 - Iterative process through all the tools.
 - Today's presentation focused on HEC-5Q temperature model and SALMOD and with intent on getting feedback from CDFW for future operations/modeling
 - HEC5Q – includes temperature control device at Shasta, designed to work with the CalSim II model and calibrated for historical meteorological conditions (82-year record)
 - Team can take historical data and reoperate and can get idea of what the benefits are using models. CDFW would like to look at different scenarios; however, will discuss internally with engineer and formulate more questions accurately.
 - **Action item: Next meeting will determine next steps for temperature analysis.**
 - Another potential benefit of project lies with GCID and RD108 as those agencies have ability to release water from Sites Reservoir and leave water in Shasta to provide temperature management benefits.
 - In WSIP CDFW recognized that there were temperature benefits, but the application didn't fully analyze impacts. Project intent is to fully analyze and get approval
 - Team available to schedule a HEC5Q specific session. CDFW clarified that as part of the WSIP application, CDFW analyzed the HEC5Q and CDFW felt comfortable with what was included.
 - Greatest drops in temperature in critical years from July to September, and a little bit in October. By the time cold water reaches Bend Bridge losing benefit because water is at equilibrium.
 - CDFW – October is becoming more of a critical month as incubation can extend into early part of November. Emphasis is through September, some benefits in October. Depends on how its managed – if cold water is released earlier then cold water won't be available later in the year. Model currently based on information obtained/available with July through September being the incubation period but team can build in newer information. The model uses general guidelines that are applied to show average benefits across the 82-year simulation period. Temperature benefits for individual years could be improved based on specific application to individual years as is done by CVO for annual forecasting purposes. CDFW would like the project to provide temperature benefits for the entire length of life stage. Need to determine if this project could provide a temperature benefit for that particular time in the year (October).
 - Project in coordination with task force can release water when needed. If shifting of water needs to be focused from August to October, then the project will release then from cold water pool.
 - Region 1 office – carcass data available.
 - Adaptive management plan – need to determine through coordination how the plan will be framed and what metrics will be used. Need to determine where maximum benefits will be obtained. Need to determine what options this project give so CDFW can be behind it and support permit.

- CDFW - how does it change gate operations, is there potential to delay use of or increase ability to use upper level gates in spring time.
- Potentially schedule another session to discuss details of the assumptions and application of HEC5Q.
- Gate settings used in HEC5Q are averages, not optimizing for one specific year. Team can refine the analyses to look at specific years across the 82 years included in the CalSim II simulation.
- Data available each week as part of discussion for Sacramento River task force. CDFW can provide carcass survey data to gage redd building. This information gets built into the decision making process/forecasting. Last observed redd is the projection. SRTTG available online - look at those for understanding of process. Gives good insight on the decisions made each year, good source of info.
 - https://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Sacramento%20River%20Temperature%20Task%20Group/SRTTG%202018/
- CDFW inquired whether HEC5Q can be ran with daily model .
 - Yes, current model runs on a 6-hour step and therefore can be done at higher level resolution.
- SALMOD – discussed how the model is used as part of iterative process to evaluate Shasta and upper Sacramento River operations. Not a life cycle model, a production of model. Each year is run individually with an assumed starting population. SALMOD was updated based on recent NMFS spawning distributions (Water Fix, etc.). SALMOD gives an indication if specific operations assumptions are improving or hurting salmonid production. Each iteration looks at all the salmon runs to see if the proposed operation is benefitting one run, while hurting another, etc. Temperature management becomes much more critical under future climate conditions (2030, 2070).

3. Reviewed Action Items

4. Other:

- a. Duane to pull together reports on data and coordinate with Lenny.
- b. Workshop: Intent is to go through different parameters of daily model (bypass flow targets). Start upstream and look at downstream through dynamics of system. Next meeting talk about the parameters that CDFW wants to see and run through parameters and be able iterate at workshop.
- c. Authority will Draft up functional mechanisms (prioritization of those – send ahead of the meeting). Put together RST data and overlay it.
 - i. Dynamic scenarios – what would a dynamic real-time operation look like. Possible dynamic scenario for workshop. Discuss and iterate at future workshop.