NOTES: Water Supply Working Group #4

Meeting Held: 10.03.18
Notes prepared by Consensus Building Institute

Next Meeting: January 8, 2019 10:00a-1:00p @ Sonoma County Water Agency in Santa Rosa

Meeting in Brief

The Model Sub-Group presented a detailed validation analysis of the PVP model. Based on the sub-group's investigations, the Water Supply Working Group agreed that the HEC-ResSim model will simulate future scenarios with sufficient accuracy to evaluate/compare different water supply management options. The Model Sub-Group will simultaneously continue to refine the model's accuracy and continue to run model scenarios.

The Model Sub-Group presented preliminary modeling results for current operations, PVP decommission, and run-of-the-river scenarios. Flows and Lake Mendocino water supply reliability are significantly impacted under the PVP decommission scenario compared to current operations. The run-of-the-river scenario results indicate potential sufficient water supply and fish flow conditions; however, scenario assumptions are significant (e.g., costly capital projects), and results may change under different climate futures.

The group identified the next round of model scenarios and began to prepare for the October 17 Ad Hoc Committee meeting. At the next Water Supply Working Group meeting on January 8th, the group will review the second round of model runs and discuss recommendations for the Ad Hoc.

Action Items

Model Sub-Group	Oct 10	Develop key points for the Ad Hoc Briefing document
Model Sub-Group	Sept 28	Begin running additional scenarios per Oct 3 discussion.

PVP HEC-ResSim Model Verification Review

View presentation slides.

At the previous meeting, the working group affirmed the PVP HEC-ResSim model results closely match observed conditions with a few discrepancies. The Model Sub-Group presented the likely causes for PVP HEC-ResSim Model deviations from observed conditions.

Based on the sub-group's investigations, the working group indicated confidence that the HEC-ResSim model will simulate future scenarios with sufficient accuracy to evaluate/compare different water supply management options.

Deviations primarily resulted from human management decisions/actions (e.g., delayed gate closure or lower reservoir releases during drought). Sub-group members noted more analyses should occur for when some years have higher flows in the model than observed conditions. Sub-group members speculate this may be partly attributable to gage error inaccurately calculating mass balances resulting in unrealistic negative accretions in Scott Dam to the Van Arsdale reach.

Discussion

The validation exercise also provides detailed documentation that working group and sub-group thoroughly analyzed model discrepancies to conclude the deviations can be easily explained.

The group recommends summarizing the model's limitations for whichever scenarios advance forward for Ad Hoc consideration.

Next Steps

Sonoma Water staff and consultants will continue to refine the model, but the Model Sub-Group can also move forward and continue to simulate other scenarios per the Working Group's direction.

Preliminary Scenario Modeling Results

View presentation slides.

The Model Sub-Group presented preliminary results for three model runs:

1) Current Operations
2) PVP Decommission
3) Run-of-the-River

Major assumptions and inputs applied to all model scenarios:

- Historical hydrology developed by Cardno for PVP
- Simulation period: 1910-2017
- Russian River ResSim model assumes the Fish Flow EIR for upper river losses and uses unimpaired hydrology developed by USGS.

Sub-group members emphasized the model solely explores the hydrologic feasibility of management options. The group did not consider other factors like cost feasibility or

impacts on habitat and water quality. Most of the graphs also show the wetter conditions (75% and 90% exceedance plot lines).

Current Operations

The validation review exercise indicates the model reasonably portrays observed conditions.

PVP Decommission

The PVP full decommission scenario assumes both Scott Dam and Cape Horn Dam are removed resulting in no water supply storage and no transfers to the East For Russian River.

Flows below Scott Dam are significantly lower in the summer through mid-fall compared to current operations. Flows below Cape Horn Dam are generally similar to current operations; flows are slightly lower than current operations in the low flow portion in late fall and slightly higher during high flow events in late fall and late spring. No block water is available for flow enhancement. Flows in East Fork Russian River and Upper Russian River (during summer-mid-fall) are significantly lower than current operations. No water is available for Potter Valley irrigation. Decommission substantially affects Lake Mendocino water supply reliability, leading to the lake going dry for some period 68 out of the 110 years of historical hydrology modeled.

Run-of-the-River

The run-of-the-river scenario assumes Scott Dam is removed resulting in no water supply storage and major capital projects occur to modify Cape Horn Dam, Van Arsdale fish screens, conveyance pumping project from Lake Mendocino to Potter Valley Irrigation District. The model also assumes revised hydrologic index and instream flow requirements as proposed by the Fish Flow Project (per Water Board approval), and the Coyote Valley Dam-Lake Mendocino Water Control Manual includes Forecast Informed Reservoir Operations (FIRO). Some entity is also necessary to manage operations, even without Scott Dam.

Flows below Scott Dam are significantly lower in the summer through mid-fall compared to current operations. Flows below Cape Horn Dam are similar to current operations, except flows are lower in late fall. No block water is available for flow enhancement. Flow does not exist in the East For Russian River during summer and fall except from return flows from the Lake Mendocino pump-back to PVID. Water supply reliability in Lake Mendocino and upper Russian River improve during dry years compared to current operations. Flows are lower in early summer to early fall due to the lower minimum instream flow requirements.

Discussion

- The decommission results cannot easily be compared to the run-of-the-river scenario because the two scenarios used different operation assumptions (e.g., different flow releases).
- The Russian River model focuses on surface water flows and supply. Mass balance loss between gages includes several factors including groundwater-surface water interaction, but those losses are not individually calculated. A

USGS study may help inform impacts on the aquifer, but that information is several years out.
- The run-of-the-river scenario still requires that water transfers be monetized.
- Several of the assumptions for the run-of-the-river are complex and likely very costly (e.g., PVID pump-back capital project and optimizing tunnel efficiency).
- Water quality data (primarily temperature) will be available in about half a year.
- Model results for the wetter conditions (e.g., 10% exceedance plots) may help inform which scenarios support successful fish passage. Fisheries crash when they get too many mediocre water years; healthy fisheries really need a minimum number of occasional excellent water year conditions.
- Despite the significant challenges for the run-of-the-river scenario, the model offers a run-of-the-river scenario that is hydrologically feasible and appears to meet both Eel River and Russian River basin needs. However, that may change after applying climate change futures to the model.
- A working group member remarked the Congressman Huffman's Ad Hoc process introduced a unique opportunity to the relicensing process for open and creative exploration of a wide suite of management options to meet the needs of the two watersheds.

Prioritize Additional Modeling Scenarios

Refer to Slide 85-86 of the presentation slides.

The initial round of model runs aimed to understand both the baseline of current operations and the general "bookends" of the water supply options. Given the timeline and staff resources, the working group considered which scenarios to prioritize for upcoming model runs. The group acknowledged that crafting and testing a conceptually feasible solution for the model is an efficient approach, but also complicates analyses if many variables change.

Suggestions for next round of model runs:
- Apply climate change scenarios to the run-of-the-river scenario.
- Revise PVP operations: reduce minimum flows on the East For Russian River, improve Eel River flows below Cape Horn Dam during late fall and late spring shoulder seasons. Aim to improve the cold water pool availability in Lake Pillsbury and Lake Mendocino.
- PVP decommission with revised Lake Mendocino operations (FIRO hybrid) with Fish Flow EIR operations.

Future model run suggestions/considerations
- PVP decommission with a raised Coyote Valley Dam component. A UC Davis study explored this scenario; however, a few attendees expressed concerns that some of the study's assumptions were over-optimistic.
- Russian River demand reduction.

Next Steps

The Model Sub-Group will run the climate scenarios and begin to run the second round of model scenarios per the October 3rd discussion.

Reporting Model Results and Preparation for Oct 17 Ad Hoc Meeting

- Present a simplified version of the model results from the presentation slides. Show completed and upcoming model scenario runs.
- Remember to outline the major scenario assumptions to appropriately convey the substantial challenges to make certain options feasible.
- Are the opportunities for federal funding to support some of the major capital projects (e.g., PVID pump-back project)?
- Are there scenarios of particular interest the working group should evaluate (e.g., raising Coyote Valley Dam)?

Next Steps and Future Agenda Items

The Model Sub-Group will meet and work with CBI to develop key messages for the Ad Hoc meeting and briefing document.

At its next meeting in January 8, 2019, the Water Supply Working Group will discuss the following topics:

- Review results from the second round of model analyses
- Continue to develop potential recommendations