



Meeting Summary

Restoration Goal Technical Feedback Group Meeting

Thursday Nov. 21, 2013

San Luis and Delta-Mendota Water Authority, 842 Sixth Street, Los Banos, Calif.

DRAFT

Attendees

Michelle Banonis, Reclamation
Apurba Borah, Reclamation
Jesus Esparza, Calif. Department of Water Resources
Jason Faridi, Fish Bio
Greg Farley, Calif. Department of Water Resources
Steve Haugen, Kings River Water Association
Reggie Hill, Lower San Joaquin Levee District
Bill Luce, Friant Water Authority
Keith Millard, Calif. Department of Water Resources
Alexis Phillips-Dowell, Calif. Department of Water Resources

Erin Rice, Reclamation
Scott Rice, URS Corp., DWR Consultant
Vincent Rodriguez, Calif. Department of Water Resources
Paul Romero, Calif. Department of Water Resources
Steve Stadler, Kings River Conservation District
Becky Victorine, Reclamation
Chris White, CCID
Craig Moyle, MWH

On the phone:

Valentina Cabrera-Stagno, EPA
Amy Merrill, Stillwater Sciences

Welcome and Introductions

Craig Moyle, the meeting facilitator, welcomed the meeting participants, and led introductions for on-site and phone participants. He then reviewed the meeting agenda and introduced the meeting topic and speakers. A webinar was established for remote participants to view and follow along with the presentations.

Standing Items

Erin Rice provided an overview of the San Joaquin River Restoration Program, a brief background of the Settlement, a review of the Restoration and Water Management Goals, and a description of the Restoration Goal Technical Feedback Group's purpose. He additionally displayed a hydrograph of Interim Flow releases from Friant Dam operations, and showed the cubic feet per second (cfs) for the fall 2013 pulse flow.

Channel Capacity Report Overview

Michelle Banonis provided an overview of the Program's 2014 Channel Capacity Report as they relate to Interim and Restoration Flows. As part of this she also provided an overview of the role, responsibilities and membership of the Channel Capacity Advisory Group (CCAG).

The CCAG was established as part of measures to be implemented by Reclamation that were identified in the Program Environmental Impact Report/Statement (PEIS/R). Other PEIS/R requirements were to determine and update estimates of then-existing channel capacities as needed; to maintain Interim and Restoration flows at or below estimates of then-existing channel capacities; and to closely monitor erosion and perform maintenance and/or reduce Interim or Restoration flows as necessary to avoid erosion-related impacts. The Channel Capacity Report excludes topics such as fish passage and seepage that leads to agricultural damages as these are elements addressed through other efforts.

The CCAG is comprised of representatives from Reclamation, California Department of Water Resources (DWR), U.S. Army Corps of Engineers (USACE), Lower San Joaquin Levee District (LSJLD), and the Central Valley Flood Protection Board (CVFPB). The role of the group is to provide an independent review, input and guidance to the In-Channel Capacity Report, and review the existing analyses and the proposed methods for determining future channel capacity. The CCAG is anticipated to continue through 2030, but could be extended if channel capacity activities are on-going.

Updated annually, the 2014 report was released for public review and comment in September 2013 following review and comment by the CCAG. The period of public comment ended December 4, 2013. Reclamation anticipates release of the final document in the first quarter of 2014.

Channel Capacity Report – PEIS/R Levee Criteria



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Paul Romero (DWR) presented on the PEIS/R Levee Criteria. The study area for the 2014 Channel Capacity Report includes Reach 2A, 2B, 3, 4A, 4B2, 5, the Mariposa Bypass, and a portion of Eastside Bypass to Reach 5. Reach 1A, 1B, 4B1 and the bypass system from the Chowchilla Bifurcation Structure to a point approximately 1 mile upstream of Washington Boulevard is excluded. Romero added that the PEIS/R defines then-existing channel capacity, or those flows “that would not significantly increase flood risk from Interim and Restoration Flows in the Restoration Area.” It further defines flood risk as “the risk of levee failure due to seepage and levee stability.” Based on this, flows in the system will be limited to levels that would meet U.S. Army Corps of Engineers Factors of Safety for Levee Slope Stability and Under-seepage. Since the SJRRP does not have adequate data to evaluate the levees under this approach, Romero said the water surface elevations in the system will currently be held to at or below the landside toe of the levee. The report does not take into account changes in channel capacity when construction takes place in the channel, Romero said; these changes would be addressed in updates to the report.

Completed Studies to Inform Channel Capacity

Romero provided a review of three of five studies to inform channel capacity, including:

- In-channel Capacity Study
- Geotechnical Study in Eastside Bypass
- Bypass Subsidence Study

In-Channel Capacity Study:

Romero said the In-Channel Capacity Study is based on 2008 LiDAR mapping and 2010 and 2011 bathymetric data. Data analysis showed that none of the channels evaluated through the Study have an in-channel capacity that met the flow targets identified in the Settlement. One noted result was the Middle Eastside Bypass, which has a flood channel design capacity of 16,000 cfs, but when then-existing channel capacity criteria is applied, the in-channel capacity for Restoration flows is 10 cfs. Romero said that this result was not very realistic and was due to having a channel perched above surrounding land. Since this hydraulically-derived value does not take into account levee performance, additional geotechnical studies were conducted to further evaluate this capacity issue, he said.

Geotechnical Study in Eastside Bypass:

DWR consultant Scott Rice reviewed the results of a preliminary geotechnical analysis of three sites along the west bank of the Middle Eastside Bypass where then-existing channel capacity was calculated as low as 10 cfs. This condition exists because the bypass levee is a significant distance from the flow channel and the ground surface slopes to the west. The work is part of the broader San Joaquin Levee Evaluation (SJLE) project which he summarized later in the meeting. Analyses of these three sites were performed to expedite refinement of existing channel capacity in the lowest flow areas. Seepage and stability analyses were performed to USACE criteria using geotechnical boring data collected under the SJLE in 2012/2013. Because the SJLE data is preliminary, sensitivity analyses were performed to assess levee performance under varying assumptions of subsurface conditions. The analyses indicated that flows up to 1.2 feet above the levee toe could be sustained without exceeding levee geotechnical criteria. This led to revising the in-channel capacity of the Middle Eastside Bypass from 10 cfs to 370 cfs.

Bypass Subsidence Study:

Alexis Phillips-Dowell led the presentation on the Bypass Subsidence Study. She said the historical subsidence rate in the area has been 0.1 to 0.2 feet per year. However, 2008 LiDAR studies showed subsidence of 1.5 feet in one year and a reduction in levee freeboard in the Eastside Bypass. Such changes could have an impact on the sediment deposition patterns and channel slopes in the flood control system, which could result in less freeboard in certain levee sections at lower flows. The most significant subsidence area is Road 4 to Avenue 21, where up to 5 feet of subsidence has been estimated from 2008 to 2012. The subsidence has caused sediments to accumulate downstream and reduce channel capacity. The Upper Eastside Bypass (upstream of Sand Slough) and the Middle Eastside Bypass (downstream of Sand Slough to the Mariposa Bypass) shows potential capacity reductions from 2008 to 2016 of 3,000 and 2,500 cfs, respectively. Similar channel capacity studies are planned for early 2014 in Reach 4A.



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A participant commented that he assumes Reach 4A, which parallels the portion of the Eastside Bypass that has subsided, has likely experienced comparable flow capacity reduction.

Recommended Then-existing Channel Capacities

Romero led a summary that led to the recommended then-existing channel capacities based on the geotechnical study data and review of additional studies that included Reach 2A Sediment Transport Study (sediment from this area did not have significant impact on channel capacity), Bypass Subsidence Study (only assessed design freeboard), Seepage Management Plan (a good data resource, but not applicable to then-existing channel capacities). The primary input, he said, is the In-Channel Capacity Study. He then referred to the table that displayed "Current Capacity Considering Levee Stability" and "2014 Recommended Then-Existing Channel Capacity." The "Current Capacity Considering Levee Stability" data is based on analyses conducted for the PEIS/R and based on 1998 mapping from the Sacramento San Joaquin Comprehensive Study. The data for the "2014 Recommended Then-Existing Channel Capacity" is considered the most up to date and will be utilized for future Restoration flows, he said. In response to a question, Romero said the since Restoration Flows will be kept below the levees wetting of the ground beneath the levee was assumed to not affect levee stability during flood operations. DWR did look at the potential concurrence of Restoration Flows and flood events and found an insignificant impact on the potential for levee stability issues from subsequent floods. **Ongoing and Future Studies and Monitoring**

Alexis Phillips-Dowell gave a presentation on ongoing and future studies. She described six reports for ongoing and future studies and monitoring:

- In-Channel Capacity Verification Study
- Subsidence and Monitoring Studies
- Potential Monitoring Programs
- San Joaquin Levee Evaluation Project
- Reach 2A Sediment transport study
- Vegetation Study

The In-Channel Capacity Verification Study's goal is to verify that the estimated flow capacities reported for each reach are accurate and will avoid levee impacts. It will also seek to develop and implement a monitoring plan to detect changes in the system to avoid future levee impacts.

Potential Monitoring Programs could include:

- Evaluate existing monitoring network
- Install added gages at critical sites
- Monitor changes in channel

The Subsidence Monitoring study has three goals:

- Determine changes in then-existing channel capacities considering geomorphic, sediment and hydraulic changes as a result of subsidence
- Provide more refined and updated data on subsidence rates, as needed
- Determine if updates to the topographic data, modeling tools or design criteria for the site-specific projects are necessary

Scott Rice summarized two current DWR geotechnical studies that impact assessment of Restoration Area levees: the DWR Non-Urban Levee Evaluations (NULE) Program; and the San Joaquin Levee (SJLE) Evaluation Project. The Non-Urban Levee Evaluation project supports the 2012 Central Valley Flood Protection Plan and is being done in two phases. The first phase included an assessment of current data/past performance and categorizing levee segments based on potential risk of levee failure, and was documented in a Geotechnical Analysis Report completed in June 2011. Phase two of this project includes targeted Geotechnical field explorations of levees that protect small communities under 1,000 people which included portions of Restoration Levees in reaches 2A, 3, and 4A. The DWR NULE Geotechnical Data Report is due to be completed end of 2013. The Geotechnical Overview Report is scheduled to be completed in mid to late 2014.

The San Joaquin Levee Evaluation Project is focused on flood control system integrity relating to seepage and stability specific to existing levees within the Restoration Area. It excludes Reach 2B and 4B1 because separate



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Restoration projects are underway that would include new levee alignments in those reaches. The study's first phase used hydraulic analyses to prioritize Restoration Area levees for more detailed geotechnical evaluations in the following categories:

- Priority 1 is based on in-channel capacities less than 2,000 cfs
- Priority 2 is based on in-channel capacities less than 2,000 cfs and likely not convey Restoration Flows without major implementation projects
- Priority 3 is based on in-channel capacities less than 4,500 cfs

Geotechnical explorations of Priority 1 levees are underway. Two phases of geotechnical borings were initiated in 2012 and completed in May of 2013. Supplemental geophysical testing is planned to start in January and may identify a need for additional geotechnical borings. Geotechnical analyses of the Priority 1 levees will be performed using these data and a final analysis report is anticipated by early 2015.

Next Steps

Banonis said the Program plans to reconvene the CCAG in early January 2014 and release the final version of the 2014 Channel Capacity Report. Banonis added that although the Channel Capacity Report shows a defined flow level, the releases will be limited until seepage impacts to adjacent farmland are achieved through other efforts. Romero said subsidence effects in Reach 4A should be characterized by the end of the year and evaluations completed early next year.

Related Studies & Other Activities - Upper San Joaquin River Basin Subsidence

Chris White, general manager of Central California Irrigation District, gave an update on the status of the subsidence in the region, and the alignment of a new irrigation pipeline off of Sack Dam to address the root causes of subsidence east of Sack Dam. He discussed what has been done to slow subsidence, and the next steps and long term strategies including conveyance and coordination efforts to bring 10,000 acre-feet of surface water supplies into the area to halt subsidence. White also shared images and measurement data that showed the rate of subsidence at several locations. This presentation had previously been shared with the Washington Avenue Growers, Red Top Area Growers, Merced County, and Madera County.

- Road 4: 1.5 feet/year
- Sack Dam: 6 inches/year

White said causes of rapid subsidence have included development of agriculture on the eastside of the valley over the last 10 years, and the installation of additional deep wells. Consequences of this pumping are lower flood conveyance in the Eastside Bypass, which increases the risk of flooding in Western Madera & Merced Counties, threatens the water supply of CCID and San Luis Canal Company. It could impede restoration efforts on the San Joaquin River, he said. The short-term response to subsidence is to reduce deep well pumping. Recent conversion of land from row crops to permanent crops has temporarily lowered groundwater pumping demand, he said. Long-term we will need to build a series of shallow groundwater recharge facilities and draw from available flood flows in the Chowchilla and Eastside Bypass.

White said elements of a project to solve the subsidence is to deliver 10,000 acre feet of supplemental irrigation water to the region, and reestablish two water districts in the area (Clayton Water District and Sierra Water District.) Reestablishment of the districts will assist in funding and water supply acquisition. Total project cost is estimated at \$10 million.

Banonis added that a U.S. Geological Survey report on subsidence will be released in the winter. In a pre-release meeting, USGS staff indicated the subsidence may be due to pumping in the shallow aquifer, not below the Corcoran clay layer.

Related Studies & Other Activities - Regional Flood Management Planning

Reggie Hill (LSJLD) gave an update on Regional Flood Management Planning. The locally driven plans are due to DWR by the end of August 2014, and more information can be found at www.usjrflood.org

Four of the scheduled ten public workshops have been held to date:



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- Topics at previous meetings have included O&M, Emergency Response, and Land Use
- Each workshop was attended by more than 40 people, including significant representation from NGOs and Agency staff. However, the team would still like stronger attendance from landowners at future meetings.
- The upcoming January workshop will feature some of the criteria for RFMP, and the selection process for projects. Coordination with counties and other jurisdictions for feedback will follow the development of these selection prioritization classifications.

Meeting Adjourned at 4:30 p.m.