

**MEMORANDUM**

November 12, 2024

**TO:** Reclamation District No. 2044

**FROM:** Michael Moncrief

**SUBJECT: November 2024 Engineer’s Report**

Board Members and Representatives:

Described below are the engineering items to be discussed at your November 2024 meeting.

**Subventions 2023-24** – Your Subventions Claim was submitted to DWR on October 31, 2024. Your total Claim submittal was for $194,881.94. After the $1,000 per mile deduction, your 75 % reimbursement would be approximately $139,336 if there are no adjustments. We still need the GM levee patrol inspection forms for the 2023-24 FY to be provided to ensure reimbursement of that eligible item.

**Erosion Repair Project Recap –** The District administered another critical erosion repair project to continue addressing deferred maintenance and emergency damaged as an outcome of the 2023 flood event. This successful project repaired an additional 2,000 LF of waterside erosion over 17 sites, see attached map. The bid came in lower than budgeted which allowed funding to go towards necessary access road repairs on the SE corner of the District. Since 2023, the District had approved repairs covering 39 sites and almost 4,900 LF of levee. There is an active list of remaining Serious Erosion Sites (35 sites and 3,200 LF); MBK plans to evaluate these sites prior to the flood season to determine level of concern going into the flood season. For planning purposes, the District may consider this list for future ongoing repairs next construction season, with coverage under your existing CDFW LSAA.

**Marina Anomaly Repair –** The first of two repairs were completed earlier this summer, and 3 rodent den entrances were removed from the levee shoulder, and centerline levee crown. The shoulder was rebuilt with recycled concrete aggregate base rock and the levee crown roadway was regraded and compacted with similar materials. We are still waiting for proposals from contractors to extend this work another 75 feet west through the next anomaly area. The District may have to keep this segment of roadway as road base until warmer weather allows for final treatment to repair with asphalt or chip seal.

**Fall-Winter 2024 Monitoring-Maintenance Activities –** Routine maintenance, ongoing repairs in preparation for 2024-25 Flood Season.

1. Erosion Repair Planning– There are 35 serious sites that need to be addressed and prioritized for potential future repairs. We have an agreement with CDFW to repair these sites under LSAA #EPIMS-SJN-40749-R3, which expires December 31, 2027. Work outside this permit coverage could be done under your RMA over several years. Estimated cost for all remaining serious repairs is $150,000. Sites should be monitored, see attached list
2. Flood Season Preparation: A meeting should be scheduled with the land management team, District General Manager and District Engineer to review emergency operation plan, slow-rise checklist and confirm general availability this flood season for coverage. We have requested a drone survey to support baseline assessment in case of emergency event this year from SJ County.
3. Rodent Activity – Monitor new animal activity; a possible den was removed during the last erosion repair, but it turned out to be a rotted old tree stump. Any rodent activity needs to be controlled with baiting or other methods, backfill of holes and excavation of dens is critical; coordinate with MBK for any signs of beaver dens.
4. Levee sloughing, cracking, rodent repairs, landside anomalies – Continue to monitor for levee movement at key locations around the District, especially pump stations locations (3 locations around District), pipe penetrations, ramps, and historic seepage areas like the southern levee from the old pumpstation east towards Paradise Point Marina.
5. Vegetation Control; General Manager report on required maintenance. If there remains any dead/dying Acatia Trees (Tree of Heaven) on east levee, we can notified CDFW of the dead trees on the east levee south of Eight Mile Road and they can be removed without any mitigation. The District must consult first with CDFW, but they will approve removal. Remove Palm tree on landside shoulder of north levee adjacent to Foppiano Property. Mow and clear landside toe berm and adjacent toe along south levee to avoid establishment of woody vegetation, wetland features, and native plants that would create mitigation problems for the District.
6. Pumpstation repairs to main pumphouse: any additional pipe/pump issues to address? Harris valve replacement; shifting pumps on platforms? What is the status of the District pumpstations?

**FEMA/OES Update –** Districts that have been fully obligated, like RD 2044, are starting to see some funding come through. Look for payments in the amount of ($95,991.33, $5,202.22, $6,039.70 and $1,509) respectively from State of California.. We are not sure of timing of payments.

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**Encroachment Permit Concerns – New Private Pumpstation Encroachment in RD 2044 Canal does not appear to meet Design, Possible Sour Hole Forming in base of Canal**

The District (MBK Engineers) performed a post-construction survey of the new encroachment private pumpstation project area to check conditions after we observed that the original approved permit design was not constructed. The District requested an updated plan set showing the actual as-built conditions to be provided to the District to update the permit record. Upon receiving the updated plan set, MBK Engineers surveyed the new embankment, pumpstation, gravity drain and erosion protection rock placed to confirm design. It appears there are numerous issues with the currently constructed pumpstation within the RD 2044 easement that does not match the as-built drawings and there are significant concerns.

Our Survey shows the following potential issues that need to be confirmed with the permittee and their Engineer, including the following:

1. The design is not reflected in the actual construction performed, and there is likely a scour hole being formed due to pump operations in the base of the RD 2044 Canal that is likely to increase over time and potentially create issues within our easement and drainage system.
2. The construction cut at least a 5-foot deeper channel adjacent to the new pumpstation, knowing that permit condition 2 did not allow for this without sufficient geotechnical investigation and review. The plans do show a general cut, but the pipe outfall shown is at or above existing base of canal. Actual pipe invert is at the base of the new cut in the canal.
3. Rip Rap Protection, instead of a concrete apron, was installed. Engineering design shows concrete apron, or Rip Rap Protection at least 10 feet beyond the pipe outfall. We did not observe any Rip Rap, by performing sticking/soundings, projected beyond the toe of the new embankment or beyond the pipe outfall, which is lower than designed in the canal. This will cause scour, and it appears to already have created movement. The extent of Rip Rap along the canal banks, new embankment, and base of canal do not match the design drawings approved by the District and this will not perform, as designed.
4. It appears that a new ridge is forming immediately past the discharge scour hole where the displaced material is forming in the canal. This could be caused by the deep outfall pipe with no scour proection beyond the outfall.
5. The earthen filled 1:1 slope embankment is showing signs of movement and cracking. The original concrete lined embankment had structural designelements to minimize embankment movement, this berm was likely constructed without dewaterting the project area and may not have proper compaction to protect from future movement of the embankment. This embankment will need to be monitored and likely repaired as useage and water levels change throughout the years.
6. There is no geotechnical report that shows the extent of the canal excavation with a new depth, and data that shows the material types encountered. There is no information for the District to support an informed understanding of potential issues with the deeper canal and potential seepage/stability issues that could impact the District easement and landowners.

MBK Engineers recommends that the District request the permittee to verify their as-built design, repair any damages caused by any unauthorized design modifications, and construct the authorized feature to match the actual design drawings (revised drawing set is sufficient if constructed as such in the field). The District should also confirm with the permittee the actual extent of additional canal depth that was cut as part of this construction. Based on our findings, and matching their surveys, it appears that the canal was lowered roughly five (5) feet. The specific depth of cut is not disclosed or discussed in the plans. The District needs to find out the extent of this canal dredging south of the new pumpstation as well. If this cut extends south towards the southern levee where known seepage problems exist, we could have serious concerns. If there are concerns regarding ongoing damage this pump operation is creating the District should seek to have this encroachment stop pumping until repairs and remediation of design can be made.

**Victoria Island Levee Failure – October 2024:** Reclamation District No. 2040, Victoria Island suffered a massive levee failure mid October; a 200+ foot section of levee cracked and slumped 5-6 feet vertically, overnight, and the levee started seeping rapidly through the failed embankment at about 6,000 GPM. This levee would have breached within the day if the District did not immediately begin flood fight procedures with the help of many local landowners, County support, Contractors and District Engineering forces.

Through significant effort, including waterside cutoff trenching and excavation, waterside emergency material banket (4-foot thick mixed material), landside ring levee construction, and reconstruction of the levee embankment, the District was able to suppress and complete a preliminary repair of the failed levee segment. The District is continuing to investigate (geotechnical investigations including CPT rig) potential causes for the levee failure. The location of the failure is near the confluence of the Old-Middle River dredge cuts on Victoria Island. It was determined that this location is where there is a remnant 600-foot wide channel meander with sand deposits at least to a depth of 26-feet. While this sand lens does not by itself create the failure, old channels are weak spots in levees, and change in condition due to waterside channel scour, rodent activity, landside farming operational changes, aging embankment materials, high tidal fluctuations, abandoned buried pipe failure, can lead to rapid changes in conditions within an embankment.

This is a **SIGNIFICANT** event in the Delta, and an important reminder to **STAY VIGILANT.** The takeaway from this example of a levee failure is to stay focused on routine maintenance and levee inspections/patrols. Annually evaluate the flood control and drainage system for weak links, and have plan to not only repair identified issues, but also operate under emergency conditions that could present themselves at any time.

**DPIIC October 28 Meeting on the Importance of Levees**: The DSC Delta Plan Interagency Implementation Committee met on October 28 with Delta levee stakeholders to discuss the importance of the levee system in the Delta and the science that needs to be incorporated moving forward to ensure levee integrity is included in future efforts by DSC. The Implementation Committee has limited Delta Specific experience, so one takeaway is to provide access and education opportunities for council and committee members to better educate them on the actual Delta and Levee system.

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