



Central Valley Regional Water Quality Control Board

2 March 2021

Mr. Joseph C. McGahan
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REVIEW OF GRASSLAND BYPASS PROJECT DRAINAGE MANAGEMENT PLAN

Thank you for submitting the Drainage Management Plan (DMP) for the Grassland Bypass Project as required by Order R5-2019-0077 (Order). The DMP is required to reflect the management strategy that will be implemented to address discharges from the Grassland Drainage Area that contain selenium, boron, molybdenum, and salt.

The Central Valley Water Board staff review of the DMP is provided in the attached memorandum. Comments received during a 45-day public comment period were considered as a part of the review process. Staff identified instances where Order requirements were not met. The DMP should be revised to address the comments included in the attached staff memorandum.

Please revise the Drainage Management Plan and resubmit it by **31 May 2021**. If you have any questions or comments regarding the review, please contact Ashley Peters at 916-464-4857 or Ashley.Peters@waterboards.ca.gov.

Sue McConnell
Program Manager
Irrigated Lands Regulatory Program

cc: Michael Jackson, US Bureau of Reclamation Fresno
Jason Peltier, San Luis & Delta-Mendota Water Authority

Enclosures: Staff memo - review of the Grassland Bypass Project DMP

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Central Valley Regional Water Quality Control Board

TO: Susan Fregien
Senior Environmental Scientist
IRRIGATED LANDS REGULATORY PROGRAM

FROM: Ashley Peters, PE
Water Resource Control Engineer
IRRIGATED LANDS REGULATORY PROGRAM

DATE: 26 February 2021

SUBJECT: REVIEW OF THE GRASSLAND BYPASS PROJECT DRAINAGE MANAGEMENT PLAN

On 6 December 2020, the Central Valley Water Board received the Grassland Bypass Project Drainage Management Plan (DMP) as required by Order R5-2019-0077 (Order). The Order required submittal of a new DMP to reflect the revised management strategy that will be implemented to address surface water discharges from the Grassland Drainage Area (GDA) that contain selenium, boron, molybdenum, and salt. The submittal was released for a 45-day public comment period prior to review.

In this memorandum, staff provides a brief summary of the contents of the DMP. Staff comments follow the summary and are numbered based on the requirements described in Order Attachment B section III.D. Stakeholder comments on the content and requirements specific to the DMP are incorporated into the staff review. Additional comments were received about items that are not determined by the DMP. These comments are being evaluated through other processes.

Drainage Management Plan Summary

The DMP updates and incorporates portions of the Westside Regional Drainage Plan and the Long-term Stormwater Management Plan 2020-2045 to present the management strategy that will be used to reduce discharges of storm-induced subsurface agricultural drainage from the GDA. The Westside Regional Drainage Plan, first implemented in 2002, has successfully resulted in the elimination of discharges from the GDA during the irrigation season. Six (6) management activities are described in the DMP that will be utilized to reduce discharges during the storm season including:

1. Irrigation improvements. This entails conversion to high-efficiency irrigation systems, which reduces percolation past the root zone and subsurface drainage production. Currently, 85-percent of the irrigated acreage within the GDA utilizes high-efficiency systems. Irrigation improvements are landowner driven and further implementation is expected to be minimal.
2. Conveyance infrastructure improvements. This involves the replacement of earthen

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canals, laterals, and ditches with lined canals or pipelines to reduce seepage losses that contribute to subsurface drainage. This action is Water District-dependent and usually limited to two (2) to four (4) miles per year. 40 miles of canals and laterals have been converted since 2003 with additional conversions expected to be completed by the Districts over the next 10 years.

3. Drainage recirculation. This is a District-level management activity that involves the capture and recirculation of drainage flows into the irrigation system. The volume of water recirculated varies from year to year based on water supply, but recirculation as a management activity is fully implemented.
4. Drainage reuse. The San Joaquin River Improvement Project (SJRIP) is an area of approximately 6,000 acres planted with salt tolerant crops that are irrigated with subsurface drainwater captured throughout the GDA. Reuse of subsurface drainwater for irrigation has eliminated discharge through the San Luis Drain to Mud Slough during the irrigation season. Drainage reuse has limited capacity to capture flows generated during the storm season. Expansion of the drainage reuse area by up to 1,850 acres is estimated for completion in 2023 to allow crops to be rotated out of production for replanting and periodic fallowing for an improvement to overall operations.
5. Tile sump shut off system. A remote shutoff system will allow tile system pumps to be shut off prior to storm events, even when limited site access restricts manual shut off, to reduce the levels of selenium discharged from fields. Subsurface agricultural drainwater is collected in tile drains and pumped to the SJRIP for reuse. By shutting off the sumps, percolation of stormwater through soils high in selenium can be reduced to minimize selenium transport. The remote shut off system is expected to be completed in 2021.
6. Short-term storage basins. Short-term storage basins can capture peak storm flows or flows where the discharge of stormwater is likely to result in an exceedance of water quality objectives. Water may be held in the basins until it is able to be released without risk of causing an exceedance or it can be reused within the SJRIP. Existing basins occupy approximately 90 acres, with up to an additional 200 acres planned. The estimated completion date is 2023.

These elements are expected to control the selenium, boron, molybdenum, and salt loads from the GDA by reducing the overall volume of discharge. For each of these elements, the DMP provides brief operation and maintenance procedures. The DMP also identifies the criteria under which the management capacity will be exceeded, and storm-season discharge is likely to occur.

In addition to the management activities planned for implementation, a source identification study is proposed to identify seepage sources of boron and molybdenum. Seepage into the San Luis Drain, which transports discharge around downstream wetland channels to Mud Slough, through weep valves and joints is suspected of contributing to exceedances in Mud Slough that have occurred primarily during the irrigation season. This study will identify the pools along the Drain, separated by check structures, where higher groundwater seepage rates are likely to occur. Water samples from the identified pools will be collected at times when there is no discharge from the GDA and analyzed for boron and molybdenum. Check structure modifications will be evaluated for effectiveness and new operational procedures will be developed to reduce groundwater seepage into the San Luis Drain during the irrigation season.

Staff Comments

Staff noted some items required by the Order that are missing from or in need of additional detail in the DMP. These items are described below. The item numbers refer to the requirements listed in Order Attachment B section III.D.

Item 1: Specific control or treatment methods

The Order requires that information be provided about the specific control or treatment methods that will be implemented including a time schedule.

Staff comment: DMP Table 1 identifies the completion dates for planned management activities. Please clarify if these dates represent the completion of all construction activities associated with each activity and, if so, also provide initial implementation dates for when use began or is anticipated to commence (e.g., are the 90 acre basins serviceable and ready to be used this season), and note the percent complete for tile sump conversion.

Items 3 and 4: Operation and maintenance procedures; criteria for initiation of control or treatment measures and/or discharge

The Order requires that operation and maintenance procedures for different control or treatment methods be provided (Item 3). The Order also requires that criteria be provided to explain when specific control or treatment methods will be initiated and/or discharge occur (Item 4).

Staff comment: For the tile sump shutoff system, page 12 references a policy that outlines the conditions for pump shutoff and re-energization. Please describe these conditions or provide the document referenced in the DMP as an appendix (also needed to satisfy item 4). In the event that the remote system is down, please describe the backup procedures.

For the short-term storage basins, please include information to answer the following questions:

1. How will basins be filled (e.g., one at a time to full depth, multiple basins to shallow depths)?
2. How will water levels be managed (e.g., maintained full until they can be completely drawn down or emptied gradually)?
3. Where will water be discharged and how is this decision made?
4. When is the latest anticipated date that the basins will be holding water?
5. What are the basin maintenance and hazing procedures for reducing desirability as habitat?
6. Will the basins be constructed over tile drains or will they be a source of groundwater recharge?
7. Will influent and/or effluent sampling be performed routinely or for initial characterization of the basins?
8. Will diversion to the basins occur before or after the San Luis Drain is allowed to reach capacity (also needed to satisfy item 4)?

Where this information cannot be provided with reasonable certainty, include a statement about the factors that may influence the outcome.

Item 5: Critical milestones

The Order requires identification of critical milestones that the control program must address. Staff comment: No goals or milestones are included in the DMP for salt. Please include this information for salt.

Items 6 and 9: Compliance with the Basin Plan for selenium, boron, molybdenum, and salt

The Order requires discussion of the critical steps that must be taken to continue operations in compliance with the Basin Plan and other limitations and the projected impacts of the selenium control or treatment measures on the discharges of boron, molybdenum, and salt.

Staff comment: A source identification study is proposed to help address recent exceedances of the boron and molybdenum water quality objectives. It is unclear how salt will be addressed per items 6 and 9 and if total dissolved solids will be included in the sampling completed for the source identification study. Please provide more information about salt. Also, the DMP should include a statement about where the results of the source identification study will be reported (e.g., in the DMP update included in the Annual Monitoring Report). In addition, DMP Appendix A Table 1 says task 2 will be completed in 2021, but it is unclear if this should be 2022 based on the timeline for task 1.

Item 7: Long-term approach for managing stormwater

The Order requires that the efforts that will be made to reduce the threat of flooding, monitor the impacts on the project, or minimize the “uncontrollable” aspects of these events be described.

Staff comment: It is unclear if the SJRIP has enough capacity to reuse all of the water diverted to the short-term storage basins, in addition to the subsurface drainage that is generated during the irrigation season. Please clarify whether there is sufficient capacity within the SJRIP to reuse all of the water diverted to the short-term storage basins or if some of that water will be discharged to the San Luis Drain.

Additional staff comment on water quality objectives: the boron water quality objective is described incorrectly on page 5 of the DMP (see Table 1). Please revise the information provided and identify which criteria are monthly means versus maximum values. Figure 4 appears correct, but the 5.8 milligrams per liter shown should be identified as a maximum not a monthly mean.

Table 1: Boron Criteria

<i>Site</i>	<i>Numeric Threshold (monthly mean)</i>	<i>Numeric Threshold (maximum)</i>	<i>Applicable Period</i>
D & R	2.0 mg/L (15 Mar to 15 Sep)	5.8 mg/L (annual)	See each value
N	0.8 mg/L	2.0 mg/L	15 Mar to 15 Sep
N	1.0 mg/L	2.6 mg/L	16 Sep to 14 Mar
N	1.3 mg/L	--	Critical Year

Staff Recommendations

Staff has reviewed the DMP and appreciates the streamlined approach taken in describing the planned management activities. However, some additional details are needed to ensure the plan for drainage management is clear and the various scenarios that can occur during unpredictable storm events are accounted for. Staff recommends that the DMP be revised to include additional details that address the comments provided above.