

## **DECKERN-01**

**Finding:** There are no operational plans or contingencies to mitigate high arsenic levels during system startup, if arsenic levels increase over time, or arsenic Maximum Containment Level (MCL) is reduced.

**Recommendation:** Develop operational and monitoring plans with contingencies to handle startup conditions, potential increases in arsenic concentrations, and lower MCLs established in the future.

**Discussion:** There is a potential for recovered water to exceed the MCL for arsenic and other contaminants of concern.

Arsenic is present in the project area, and local ASR (Aquifer Storage and Recovery) recovery water. An operational plan should be developed to monitor well discharge at startup and adjust as necessary to assure that discharges do not exceed the MCL for arsenic. Existing similar facilities in the project area may have operational plans that can be used or modified for this project, such as blending water from wells that have elevated arsenic with water that has lower levels.

There is a potential for arsenic levels to increase over time as water is infiltrated from the basins. A monitoring plan should be developed to track arsenic concentrations and a contingency plan developed to adjust as needed. The relatively short period of operation for the existing Rosedale-Rio Bravo Management Area may not be able to adequately quantify this risk. The Project Team should investigate any precedence for arsenic levels remaining unchanged after long term intermittent well pumping.

Many jurisdictions are considering reducing MCL levels, and there is a possibility that the MCL for arsenic may be lowered during the life of this project. The MCL for arsenic has been lowered from 50ug/l to 10 ug/l over the last 20 years. A contingency plan for a decreased MCL should be developed, including monitoring and adjustment of operations. If this were to occur in the California Aqueduct, then the amount of recovered water that could be returned to the canal may be reduced.

The Project Team described their system of blending water sources to maintain the MCL level. If the MCL were to be reduced, several wells may become unavailable to supply recovered water to the California Aqueduct. It is unclear to the DEC Team if lowering MCL levels would have any impact on local agricultural use of the recovered water.

Mitigation for high levels of arsenic, such as water treatment, have not been included in the Feasibility Report. Although it may not be feasible, water treatment should be discussed in the Feasibility Report. It is not clear if any of the water recovered in private wells is used for drinking water purposes.

**Response to Recommendation:** Monitoring arsenic concentrations over time will continue. If levels indicate a concerning trend, an operational plan with contingencies will be developed during final design to handle startup conditions and potential increases in arsenic concentrations. Project sponsors already have a contingency plan for the potential of lower MCLs established in the future.

**Position of Regional Director and Senior Advisor, DEC:** *We concur with this response.*

Response to Finding and Recommendation – Independent Design, Estimating, and Construction (DEC) Review of the Kern Fan Groundwater Storage Project

## **DECKERN-02**

**Finding:** As currently designed the recharge basins may not meet the requirements for classification as an intermittent wetland.

**Recommendation:** Determine requirements for creation of intermittent wetlands, and update design and cost estimate to include these features.

**Discussion:** For areas to be considered jurisdictional wetlands, certain design features and project conditions must be met. These can include sustainability, depth to groundwater, diversity of wetland plant species, transitional zones of vegetation based on available water, presence of hydric soils, and depth of open water. As designed, the ponds may not meet the requirements for jurisdictional wetlands.

The functionality of the recharge ponds as wetlands may be relatively low as designed. Information provided in the Feasibility Study shows that water for recharge of the basins was available 16 of 81 years between 1922 and 2003, or 20% of the time. The remainder of the time the basins will be dry. Recharge is expected to occur in the winter months and the water will likely infiltrate before wetland vegetation could get established. The 4:1 side slopes of the basins provides a relatively narrow riparian area that will be seeded with dryland grass species. Flatter slopes and wetland vegetation should be considered. When full, the majority of the basins area will be open water, providing little habitat.

The addition of these features will increase the project cost. The cost estimate should also include the cost of wetland maintenance, as they may remain dry for long periods.

**Response to Recommendation:** Continued development of the intermittent wetlands design to meet classification requirements will be incorporated and cost estimate updated appropriately into the final design for the project.

**Position of Regional Director and Senior Advisor, DEC:** *We concur with this response.*

## **DECKERN-03**

**Finding:** The overall project cost contingency appears to be low for the current level of design.

**Recommendation:** An evaluation of cost risk should be undertaken to determine an adequate level of contingency. Risks should be captured for both project dollars and project schedule.

**Discussion:** The current estimate on the preferred alternative includes a 20% contingency for construction. That is 20% contingency on \$129,605,592 or \$25,921,118.

The Total Project Cost of \$225,073,822 carries no further contingency. This equates to total project contingency on the total project of 11.5%. Historically at the feasibility level and the current level of design and cost definition the total project contingency is typically in the range of 20-50% on Federal Projects.

**Response to Recommendation:** Based on subsequent information (responses per Finding from Project Sponsors documented in an appendix of the DEC Review report) and DEC Team further evaluation, the contingency for this project are believed to be appropriate and capture the project risk. Revised total project cost was adjusted to include appropriate escalation.

**Position of Regional Director and Senior Advisor, DEC:** *We concur with this response.*

Response to Finding and Recommendation – Independent Design, Estimating, and Construction (DEC) Review of the Kern Fan Groundwater Storage Project

**DECKERN-04**

**Finding:** There are several deficiencies within the Feasibility Study that as a whole may result in higher project costs or reduced benefits.

**Recommendation:** Evaluate and document the items listed below.

**Discussion:** During the review, many additional documents were provided to the DEC Team. The Team had limited ability to review all these additional documents within time constraints. However, many previous concerns were alleviated with the additional information. It is possible that other documents also exist that may document design of the features of concern mentioned below.

A Reclamation Feasibility Report would contain all pertinent documents within the report or its appendices. Although beneficial, this format is not a requirement for non-Reclamation projects.

The items the DEC Team identified, and were unable to locate, or unable to review (due to receiving them during, and not prior to the DEC Review) include the following.

- The proposed lining system is expensive, and other lining systems should be considered
- The basis for cut and fill quantities is unclear.
- The lifespan of facilities may be reduced due to their intermittent usage
- Operation and Maintenance as it relates to wells, well pumps, and lift station pumps is unclear
- This information may be available in one of the documents provided during the DEC Review, but was not reviewed as of the publication of this report.

**Response to Recommendation:** Based on subsequent information, evaluation of the items identified have either been completed or are in-progress. Revisions to the project will be incorporated based on this evaluation within the final design and associated cost estimate.

**Position of Regional Director and Senior Advisor, DEC:** *We concur with this response.*