

3.6 Master Response on Vegetation Effects of Drawdown

3.6.1 Introduction

Overview

This master response addresses issues commenters raised regarding potential effects of groundwater drawdown on vegetation (including phreatophytic plants) on Bristol and Cadiz Playas as well as potential impacts of reduced evaporation on vegetation throughout the eastern Mojave Desert.

This master response is organized by the following subtopics:

3.6.2 Impacts to Vegetation due to Groundwater Drawdown

3.6.2 Impacts to Vegetation due to Groundwater Drawdown

Summary of Issues Raised by Commenters

Commenters expressed concern that groundwater drawdown could impact vegetation, including phreatophytic plants, within both the local and adjacent groundwater basins.

Response

Commenters expressed concern that the extraction of groundwater might lower the water table such that vegetation would no longer be able to reach the groundwater, and animal life dependent on that vegetation would be adversely affected within this or adjacent basins.

Potential for Impact to Vegetation and Wildlife in Adjacent Basins

As described in the Draft EIR Vol. 1, Section 4.9.1 Hydrology and Water Quality, pp. 4.9-1 to 4.9-2, the area where groundwater levels would be lowered is entirely within the closed drainage basin consisting of the Fenner, Bristol, Orange Blossom Wash, and Cadiz Watersheds. See also Draft EIR Vol. 1, Section 4.4 Biological Resources, p. 4.9-1. Because this is a closed drainage system, all precipitation that enters the closed basin stays within the basin until it evapotranspires back to the atmosphere, infiltrates down to the aquifer system, or evaporates from the Dry Lakes at the points where the groundwater is shallow.

Groundwater within the closed basin does not interact with neighboring basins. Surface water and groundwater in this closed drainage system cannot pass back and forth between this basin and any adjacent basins because the bedrock that forms the bowl of the basin is impermeable. Therefore, the pumping of groundwater from this basin would not have any impact on vegetation or wildlife in any adjacent basins.

Further, even though the Project will not result in any significant Project impacts to vegetation and wildlife in adjacent basins, the Project will be subject to a Groundwater Management Monitoring and Mitigation Plan (GMMMP) pursuant to the San Bernardino County (County) Desert Groundwater Ordinance, which will be approved by the County in its capacity as a responsible agency. The provisions of the GMMMP are not required to mitigate any significant Project impacts, but rather to avoid any doubt of significant impacts and satisfy the requirements of the Desert Groundwater Ordinance and the Memorandum of Understanding (MOU) approved by Santa Margarita Water District (SMWD), Cadiz Inc., Fenner Valley Mutual Water Company (FVMWC), and the County in May of 2012. With regard to concerns regarding a possible connection between the closed basin and neighboring basins, the GMMMP (attached as Appendix B1 to this Final EIR in the revised version (Updated GMMMP)) includes two monitoring wells that are located outside the Fenner, Bristol, Orange Blossom Wash, and Cadiz Watersheds. One monitoring well would be located southeast of Cadiz Dry Lake near the Danby Dry Lake, and the other would be located east of the Fenner Watershed in the Piute Watershed. The Updated GMMMP establishes a monitoring and reporting protocol that will provide data to be evaluated by the FVMWC and the County of San Bernardino. See the Final EIR Vol. 7, Appendix B1 Updated GMMMP and **Master Response 3.8** GMMMP.

Potential for Impact to Vegetation within the Basin

As described in the Draft EIR Vol. 1, Section 4.9.1 Hydrology and Water Quality, pp. 4.9-28 to 4.9-31, the depth to groundwater in the Fenner Valley ranges from 200 to 400 feet and in Orange Blossom Wash ranges from 350 to 1,300 feet. Depth to groundwater flowing through the Fenner Gap and into the playas rises gradually towards the Dry Lakes. Monitoring wells sampled near the “RailCycle wells” shown on Figure 4.9-5 at the eastern edge of Bristol Dry Lake showed depths of 93.40 and 85.05 feet below ground surface (bgs). The only area where the depth to groundwater is less than 65 feet is at the Dry Lakes themselves. These depths in the Watershed, Wash, and Playas are well below that of the root zone of the plants in the Project area, which is a maximum of 25 feet (see discussion below). The central areas of the Dry Lakes, where groundwater is at shallower depths, do not support any vegetation because the soil is too saline, even for salt-tolerant plants. Moving outward from the centers of the Dry Lakes, the salt levels in the soil decrease and, at the playa margins, salt-tolerant vegetation is present. However, these plants do not use or rely on the groundwater, as described below, because the root zone of these plants is still outside the reach of the groundwater table in that area. Therefore, changes to the depths of groundwater will have no impact on vegetation within the Basin. Please also see **Master Response 3.5** Dry Lakes and Dust regarding potential impacts to vegetation on the Dry Lakes.

Potential for Impact to Phreatophytic Vegetation

As described in the Draft EIR, and mentioned above, salt-tolerant vegetation is present at the playa margins, consisting of four-wing saltbush, cattle saltbush, and creosote bush. See Draft EIR Vol. 1, Section 4.9.1 Hydrology and Water Quality, pp. 4.9-15 to 4.9-18; Final EIR Vol. 7, Appendix E2 Fugitive Dust and Effects from Changing Water Table at Bristol and Cadiz Playas; and Final EIR Vol. 7, Appendix F4 Vegetation, Groundwater Levels and Potential Impacts from Groundwater Pumping near Bristol and Cadiz Playas. Cattle saltbush and creosote bush are

shallow-rooted plants and are not phreatophytes as they derive all of their water from rainfall and surface water runoff, not groundwater. The four-wing saltbush is a facultative phreatophyte, a deeper-rooted plant that can benefit from but does not depend on groundwater. Its roots extend an average of 13 feet below the ground surface and, in rare instances, can grow to 25 feet. Given that the depth to groundwater level at the plant-supporting edges of the Dry Lakes playa is not less than 65 feet bgs, there is at minimum a 40-foot gap between roots and water. The four-wing saltbush does not use and is not dependent upon groundwater at the Dry Lakes, meaning phreatophytic vegetation along the margins of the playas is not using or dependent upon groundwater. Therefore, changes to the depths of groundwater will have no impact on phreatophytic vegetation.

The Cadiz Dry Lake lacks any indication of vegetative cover except for Russian Thistle at the north to northeast portion of the playa. Russian thistle is not a phreatophytic plant and, as such, does not depend upon groundwater for its survival; rather it gets its water from surface runoff and precipitation.