CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

RESOLUTION R5-2018-0015

DIRECTING STAFF TO PREPARE AN APPROPRIATE ORDER
FOR
VALLEY WATER MANAGEMENT COMPANY'S MCKITTRICK 1 & 1-3 FACILITY
KERN COUNTY

WHEREAS, the California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) finds that:

1. Valley Water Management Company (Valley Water) owns and operates an oil field produced wastewater disposal pond system named the McKittrick 1 & 1-3 Facility (Facility) approximately 8.7 miles west of the community of Buttonwillow.

2. Valley Water has been accepting up to 115,000 barrels (bbls) per day of produced wastewater at the Facility for disposal by evaporation and percolation since the 1950s. Reported rates since 2015 have varied from 105,000 to 42,000 bbls per day. The produced wastewater in the ponds is saline, with historic total dissolved solids (TDS) concentrations from 7,772 milligrams per liter (mg/L) to 26,000 mg/L, chloride concentrations from 4,100 mg/L to 16,000 mg/L and boron concentrations from 42.5 mg/L to 130 mg/L.

3. Valley Water's discharges to the produced wastewater disposal ponds are regulated under Waste Discharge Requirements Resolution No. 69-199 (Resolution), adopted by the Central Valley Water Board (Board) on 14 February 1969. The Resolution prohibits the discharges from creating pollution and nuisance. The Resolution issued to Valley Water states in relevant part:

    1. The discharge shall not cause a pollution of ground or surface waters.

4. The *Water Quality Control Plan for the Tulare Lake Basin* (Revised 2016) (Basin Plan) designations of beneficial uses of groundwater for the Cymric Area include: Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), and Industrial Service Supply (IND).

5. There is agricultural land 1,500 feet north of the Facility and several miles to the east of the Facility. Agricultural wells in the vicinity that are downgradient of the Facility have TDS concentrations ranging from 2,300 mg/L to 6,800 mg/L. Starrh Family Farms LP owns and operates these wells, and they are reportedly important for operations when surface water deliveries are in short supply. The existence and use of these wells indicates that the groundwater, designated as supporting the AGR beneficial use, is currently being used for that purpose downgradient from the Facility.

6. Valley Water installed a groundwater monitoring well network in 2002 to investigate whether wastewater discharged to its ponds was migrating down-structure to the northeast. Two wells (CYM-19H1 and CYM-17N1) were installed in what is referred to in Valley Water documents as the upper Tulare sand, and one well (CYM-21D1) was installed in what is referred to as the deeper Tulare sand or aquifer. The deeper Tulare sand appears to be the regional aquifer. The upper Tulare and deeper Tulare sequences

are separated by a silt/clay layer referred to as the upper Tulare clay layer. The network was expanded in 2006 with the addition of three wells (CYM-17K1, CYM-17M1, CYM-17Q1) completed in the upper Tulare sand downgradient of the original wells. These three wells were positioned to be sentinel wells and were dry at the time of installation.

7. From 2002 to 2017, the TDS concentrations in CYM-21D1 have increased from about 1,200 mg/L to 8,500 mg/L, and the chloride concentrations have increased from 334 mg/L to 2,400 mg/L. The TDS and chloride concentrations now exceed State drinking water Secondary MCLs and water quality objectives associated with the AGR beneficial use.

8. Clean Harbors Buttonwillow LP (Clean Harbors) operates a Class I hazardous waste disposal facility approximately 1.8 miles to the north-northeast and down-structure and downgradient of the Facility. At least two of Clean Harbors' upgradient groundwater monitoring wells have been showing increasing concentrations of TDS and chloride for several years. TDS concentrations in MW-148I have increased from 2,340 mg/L to 5,400 mg/L from 2011 to 2017. Chloride concentrations in MW-148I have increased from about 246 mg/L to 1,200 mg/L from 2009 to 2017. TDS concentrations in MW-102RL have increased from about 3,040 mg/L to 3,900 mg/L from 2013 to 2017. Chloride concentrations in MW-102RL have increased from about 450 mg/L to 740 mg/L from 2007 to 2017. Given that Clean Harbors is directly downgradient of the McKittrick Facility, the McKittrick Facility is a potential source of the observed TDS and chloride concentrations in the Clean Harbors' groundwater monitoring wells.

9. The information in Findings 2 through 8 indicate that:

   a. There is a plume of produced wastewater migrating from the Facility ponds toward the northeast and east-northeast;

   b. The plume has moved beyond the Facility groundwater monitoring network and may have affected TDS and chloride levels in CYM-21D1, which appears to be connected to the regional aquifer that is used for agricultural purposes; and

   c. The plume may have affected at least two of Clean Harbors' upgradient groundwater monitoring wells and increased TDS and chloride levels in MW-148I, but may not have affected MW-143U. Additional work is needed determine the lateral and vertical extent of the plume.

10. The Central Valley Water Board adopted three Waste Discharge Requirements General Orders for Oil Field Discharges to Land (General Orders) on 6 April 2017. The General Orders address three specific scenarios:

    a. General Order Number One – The discharge meets the Basin Plan effluent limits for TDS, chloride, and boron of 1000 umhos/cm, 200 mg/L, and 1 mg/L, respectively.

    b. General Order Number Two – The discharge exceeds the Basin Plan effluent limits, but will not substantially affect water quality nor cause a violation of water quality objectives; it must meet the requirements of the State Antidegradation Policy.

c. General Order Number Three – The discharge must be to an area where the first encountered groundwater is of poor quality or there is no first encountered groundwater, or the first encountered groundwater does not support the following beneficial uses identified in the Basin Plan: MUN, ARG, IND, and PRO.

11. Groundwater directly under the Valley Water Facility is of poor quality, and could potentially have the MUN beneficial use de-designated consistent with State Water Board Resolution 88-63, the Sources of Drinking Water Policy.

12. Valley Water has informally requested that discharges from the Facility be regulated under General Order Number Three. General Order Number Three does not require groundwater monitoring, which generally reduces a discharger's monitoring costs.

13. Regulation of the Facility's discharges under the General Orders may be inappropriate for the following reasons:

    a. General Order Number One requires discharges to comply with the Basin Plan effluent limits for EC, chloride, and boron. Valley Water's discharges exceed these limits and, therefore, cannot comply with them.

    b. General Order Number Two requires discharges to comply with the State Antidegradation Policy. Valley Water's high salinity discharge comingles with better quality groundwater down gradient, and likely will cause degradation of groundwater. Discharges at the Facility have been occurring since the 1950s and may have affected water in CYM-21D1 and MW-148I. Though groundwater beneath the Facility may not be high quality groundwater, the lateral spread of high-salinity produced water is likely impacting higher-quality water. Therefore, in order to be regulated under General Order Number Two, Valley Water may be required to closely monitor impacts caused by its discharge and employ best practicable treatment and control technology to minimize degradation, consistent with the State Antidegradation Policy.

    c. General Order Number Three requires dischargers to either demonstrate that there is no groundwater beneath their discharge areas or demonstrate that the current Basin Plan-designated groundwater beneficial uses may be de-designated consistent with applicable policies.

       Groundwater underlying the Facility may not support the MUN and AGR beneficial uses. However, discharges from the Facility may be causing impacts to downgradient groundwater that currently supports, at a minimum, the AGR beneficial use (CYM-21D1). It is unlikely that the beneficial uses of this groundwater are eligible for de-designation under existing policies. In order for the Facility to be regulated under General Order Number Three, Valley Water would be required to demonstrate that the impacts of its discharges are contained to portions of the aquifer eligible for de-designation. Existing technical data is insufficient to make this demonstration.

THEREFORE BE IT RESOLVED that:

The Central Valley Water Board directs staff to take appropriate action to determine whether Valley Water's discharge may be regulated under General Order Number Two, General Order Number Three, or whether Valley Water should be directed submit for the Board's consideration a report of waste discharge to be regulated under an updated set of individual waste discharge requirements. Compliance options may include a consideration of the policies currently under development through the CV-SALTS initiative.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Central Valley Region, on 5 April 2018.

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PAMELA C. CREEDON, Executive Officer