

**STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION**

STAFF REPORT FOR REGULAR MEETING OF DECEMBER 8, 2011
Prepared on September 9, 2011

ITEM NUMBER: —

SUBJECT: **Waste Discharge Requirements, Order No. R3-2011-0225, for California Valley Solar Ranch Class II Surface Impoundments, San Luis Obispo County.**

KEY INFORMATION:

Location: Approximately 60 miles east of San Luis Obispo along highway 58.
Owner/Operator: High Plains Ranch II and High Plains Ranch III (Discharger)
Type of Waste: Non-hazardous designated waste (reverse osmosis brine).
Capacity: Approximately 4.8 million gallons.
Disposal: Class II surface impoundments.
Liner System: Engineered alternative. Three 60-mil high-density polyethylene (HDPE) liners, leachate collection and removal systems, and a vadose zone monitoring systems.
Existing Orders: None – new facility

This Action: **Adopt Waste Discharge Requirements Order No. R3-2011-0225**

SUMMARY

Central Coast Regional Water Quality Control Board (Water Board) staff proposed Waste Discharge Requirements Order No. R3-2011-0225 (Order or Order No. R3-2011-0225) for the California Valley Solar Ranch Class II Surface Impoundments (surface impoundments) to specify design and operations requirements to protect water quality from wastes discharged into the surface impoundments.

DISCUSSION

The Discharger submitted a report of waste discharge on May 19, 2011, to facilitate the issuance of WDRs to allow the discharge of reverse osmosis brine into two surface impoundments. The proposed Order provides guidance and requirements for the surface impoundments. The design and construction specifications within the proposed Order meet or exceed requirements in the CCR Title 27 which pertain to siting, design, construction, and operation of class II surface impoundments.

Facility Description: The Discharger will build a reverse osmosis water treatment facility to supply potable water and fire protection water for a solar photovoltaic power plant located 60 miles east of the City of San Luis Obispo. Groundwater will be treated using reverse osmosis with a maximum discharge to the surface impoundments of approximately 8,000 gallons per

day. The peak brine pond discharge flows will occur during the three year power plant construction period. The Discharger estimates brine discharge flows of approximately 4,000 gallons per day after construction is completed and for the life of the surface impoundments.

Designated waste is identified in Title 27, Section 20210, as a nonhazardous waste which consists of, or contains pollutants which, under ambient environmental conditions at the waste management unit, could be released at concentrations in excess of applicable water quality objectives, or that could reasonably be expected to affect beneficial uses of waters of the state. The discharge poses a significant threat to water quality. Therefore, the discharge is a designated waste and, as such, must be discharged to a Class II surface impoundment as required by Title 27.

The wastewater consists of concentrated brine from the reverse osmosis water treatment plant. The brine waste characteristics were developed based on feed water quality, RO treatment removal, finished water quality goals, and resulting mass balance. The estimated concentrations are as follows:

<u>Parameter</u>	<u>Concentration (mg/L)</u>
Total Dissolved Solids	29,640
Chloride	2,340
Fluoride	2.4
Sulfate	19,200
Calcium	2,520
Iron	3.6
Potassium	55.8
Magnesium	1,200
Sodium	4,800
Aluminum	3.3
Arsenic	0.042

The surface impoundments will be constructed using an engineered alternative to the prescriptive liner requirements of Title 27 for the Class II surface impoundments. The liner will include a primary 60-mil thick high density polyethylene (HDPE) geomembrane, a geonet drainage layer as a leachate collection and removal system (LCRS), a secondary 60-mil thick HDPE geomembrane in lieu of the clay liner, a geonet drainage layer as a vadose zone monitoring system, and a tertiary 60-mil thick HDPE geomembrane.

The LCRS and vadose zone monitoring systems will provide liner leak detection. In the event leachate is detected in either the LCRS or vadose zone monitoring systems, the Discharger will cease discharge to the surface impoundment with the leak. The Discharger is required to identify the leak(s) and repair the liner system. The discharge of wastes to the surface impoundment is not allowed again until Water Board staff has determined that repairs to the liners are complete and there is no further threat to water quality.

The surface impoundments are designed to hold 50-years of solids accumulation while maintaining adequate brine discharge capacity. Once the solids capacity of the surface impoundments are reached, the Discharger will clean close the site and will haul all materials offsite for disposal at a facility permitted to accept the waste.

Surface Water: The surface impoundments are located entirely outside of the 100-year flood plain. Unnamed surface drainages flow intermittently, primarily during heavy rain events. The

drainages flow to Soda Lake approximately four miles to the southeast of the surface impoundments. Soda Lake is a shallow, ephemeral, alkali lake that retains water and allows no outflow to other bodies of water. The Discharger will route surface drainage around the surface impoundments.

Groundwater: Groundwater is located at depths of approximately 150 feet below the surface impoundments and flows in a relatively consistent southwest direction. An onsite supply well for the reverse osmosis treatment system is located approximately 800 ft from the surface impoundments. No other domestic or irrigation wells are known to exist within one mile of the surface impoundments.

Groundwater Quality: The Discharger collected one groundwater sample from an onsite well and the results indicate elevated concentrations of selenium, total dissolved solids, sulfate, sodium, chloride, and nitrate (as N). Once the facility is constructed the Discharger will collect additional groundwater samples from newly installed monitoring wells located upgradient and downgradient of the surface impoundments.

Proposed Order: The proposed Order requires the Discharger properly construct, operate, and maintain the surface impoundments to protect water quality.

MONITORING AND REPORTING PROGRAM

The Monitoring and Reporting Program (MRP) includes:

Part I – Monitoring and Observation Schedule: This section requires periodic routine inspections of the surface impoundments, the leachate collection system, the vadose zone monitoring system, and detailed analytical monitoring of groundwater and leachate.

Part II – Sample Collection and Analysis: This section establishes criteria for sample collection and analysis, methods to determine concentration limits, and specifies how the Discharger must maintain these records.

Part III – Statistical and Non-Statistical Analysis of Data: This section establishes methods for the Discharger to determine surface impoundments compliance with water quality protection standards based on laboratory analytical information.

Part IV – Reporting: This section establishes formats and requirements that the Discharger must follow when submitting analytical data, annual reports, and summaries to the Water Board.

Part V – Definition of Terms: This section defines specific terms used in the MRP.

ENVIRONMENTAL SUMMARY

This Order contains prohibitions, discharge specifications, water quality protection standards, and provisions intended to protect the environment by mitigating or avoiding impacts of the surface impoundments operations on water quality.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

The County of San Luis Obispo certified the Final Environmental Impact Report for the California Valley Solar Ranch on April 20, 2011, and filed a Notice of Determination on April 20, 2011, in

compliance with the California Environmental Quality Act (Public Resources Code, Section 21000, et seq.) in accordance with Title 14, Chapter 3, and Section 15301.

PUBLIC NOTICE AND COMMENTS ON ORDER NO. R3-2011-0225

Water Board staff distributed the draft Order No. R3-2011-0225 and MRP No. R3-2011-0225 on September 9, 2011, to a list of interested parties and agencies and surrounding landowners that have been involved with the California Valley Solar Ranch development. After a 30-day public comment period, Water Board staff received XXXX comments to the proposed Order and MRP.

CONCLUSION

The proposed Order provides operational and monitoring requirements for the California Valley Solar Farm surface impoundments to protect groundwater and surface water through required engineering controls, preventative inspections, and monitoring. The surface impoundments do not pose a significant risk to groundwater and surface water with the engineered alternative liner system and the controls and requirements included in the proposed Order.

RECOMMENDATION

Adopt Waste Discharge Requirements Order No. R3-2011-0225 with Monitoring and Reporting Program No. R3-2011-0225.

ATTACHMENT

Attachment 1: Proposed Waste Discharge Requirements Order No. R3-2011-0225

Attachment 2: Monitoring and Reporting Program No. R3-2011-0225