

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2016-0093

AMENDING WASTE DISCHARGE REQUIREMENTS ORDER R5-2015-0127

FOR
CALIFORNIA RESOURCES PRODUCTION CORPORATION
AND
NORTH KERN WATER STORAGE DISTRICT

OIL FIELD PRODUCED WATER RECLAMATION PROJECT
KERN COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Central Valley Water Board) finds that:

1. On 11 December 2015, the Central Valley Water Board adopted Waste Discharge Requirements (WDRs) Order R5-2015-0127, prescribing requirements for the California Resources Production Corporation (CRC) and the North Kern Water Storage District (District) in Kern County.
2. Order R5-2015-0127 was issued to CRC and the District to provide CRC's treated oil field produced water to the District to augment the District's water supplies for irrigation and groundwater recharge.
3. Order R5-2015-0127 contains Effluent Limitations B.1 and B.2 as follows.

1. *The discharge of treated oil field produced water from CRC to the District (**Discharge 001**) shall not exceed the following for the constituents listed:*

<u>Constituent</u>	<u>Units</u>	<u>Daily Maximum</u>	<u>Annual Average</u>
<i>Flow</i>	<i>mgd</i>	18.5	-
<i>Electrical Conductivity</i>	<i>umhos/cm</i>	-	1,000
<i>Boron</i>	<i>mg/L</i>	-	1.0
<i>Chloride</i>	<i>mg/L</i>	-	200
<i>Sodium</i>	<i>mg/L</i>	-	175
<i>Oil & Grease</i>	<i>mg/L</i>	35	-

2. *The discharge of blended CRC produced water, Grimmway process wastewater, and Kern River surface water to the District's farmlands (**Discharge 002**) and the discharge to the Rosedale Basin shall not exceed the following for the constituents listed:*

<u>Constituent</u>	<u>Units</u>	<u>Annual Average</u>
<i>Electrical Conductivity</i>	<i>umhos/cm</i>	1,000
<i>Boron</i>	<i>mg/L</i>	1.0
<i>Chloride</i>	<i>mg/L</i>	200
<i>Sodium</i>	<i>mg/L</i>	175

4. Sampling at Discharge 001 and Discharge 002 began in September 2015 and the average results for boron and sodium through June 2016 are shown in the following tables.

Discharge 001 Results

Boron	Sodium
<u>mg/L¹</u>	<u>mg/L¹</u>
1.0	159
(0.8 - 1.1)	(133 - 180)

¹ mg/L = milligrams per liter.

Discharge 002 Results

Boron	Sodium
<u>mg/L¹</u>	<u>mg/L¹</u>
0.26	84
(0.03 - 0.47)	(36 - 127)

¹ mg/L = milligrams per liter.

The annual average boron concentration of the CRC discharge at Discharge 001 is 1.0 milligrams per liter (mg/L), which is equal to the existing Effluent Limit B.1. CRC is concerned that the discharge may exceed this limit in the future and contracted Kennedy/Jenks Consultants (Kennedy Jenks) to evaluate the discharge.

5. On 12 August 2016, Kennedy Jenks submitted a *Report of Waste Discharge Addendum, Proposed Modifications of DS-001 Effluent Limits for Waste Discharge Requirements Order R5-2015-0127* (Addendum) on behalf of CRC. Using historical volumes of Kern River that have been discharged into the Lerdo Canal from 1991 through 2014 (24 years), Kennedy Jenks modeled the discharge and shows that: 1) the oil field produced water will comprise only 12 to 18 percent of the total waters in the canal, 2) the effluent limits at Discharge 001 can be increased with only minimal effects on the water quality at Discharge 002, and 3) the discharge will still meet the limits in place for Discharge 002.
6. The 12 August 2016 Addendum did not however evaluate the discharge of produced water to the Rosedale Spreading Basin that occurs during the non-irrigation season and annually during a shutdown of the Lerdo Canal in January of each year for two weeks to as long as 30 days for maintenance of the Lerdo Canal. Therefore, Kennedy Jenks evaluated the discharge to the Rosedale Spreading Basin in a 23 September 2016 *Supplemental Information for: Report of Waste Discharge Addendum* letter report (Report) addressing the annual discharge of wastewater to the Rosedale Spreading Basin.
7. The 23 September 2016 Report evaluated the discharge to the Rosedale Spreading Basins using the same 24-year historical data set used in the Addendum to compare the annual average volumes of surface water that would typically be recharged in the

Basins with the volume of produced water discharged. With minimum annual discharges of CRC's produced water of 812 acre-feet and annual average surface water flows of 16,144 acre-feet, the Report estimates that produced water will account for about 5 percent of the total discharge to the Rosedale Spreading Basin. The Report also shows that produced water could constitute as much as 24% of average annual flows with discharges of 5,000 acre-feet.

8. The Report evaluated the discharge to the spreading basin using three different boron concentrations (1.3, 1.5, and 1.84 mg/L) and two sodium concentrations (250 mg/L and 225 mg/L). Using the flow and water quality data from the last 24 years, Kennedy Jenks estimates that at a boron concentration of 1.5 mg/L, the long term flow weighted average for boron would be 0.26 mg/L and, using a sodium concentration of 225 mg/L, the long term flow weighted average would be 25 mg/L. With a boron concentration of 1.5 mg/L of produced water, the annual average water quality in the basin would range from 0.21 to 1.21 mg/L. The unsaturated zone is 250 to 300 feet and mixing and blending will occur before the percolating waters reach the underlying groundwater. Kern River water discharged to the Rosedale Spreading Basin during the shutdown of the Lerdo Canal dominates the produced water flows and maintains the low boron and sodium concentrations for groundwater recharge.

Antidegradation

9. The Discharger submitted the 12 August 2016 Addendum that demonstrates increasing the discharge limits at Discharge 001 for boron and sodium to 1.5 mg/L and 225 mg/L, respectively, will have only minimal effects on the water quality at Discharge 002. The 23 September 2016 Report demonstrates that the discharge of CRC produced water and available surface water to the Rosedale Spreading Basin will not cause the underlying groundwater to exceed water quality objectives for boron and sodium.
10. Based on the information provided in the 12 August 2016 Addendum and the 23 September 2016 Report, the Central Valley Water Board finds that increasing the effluent limits at Discharge 001 and the discharge of CRC produced water to the Rosedale Spreading Basins at boron and sodium concentrations of 1.5 mg/L and 225 mg/L, respectively, will not adversely affect the water quality at Discharge 002 and the quality of the groundwater underlying the District.

California Environment Quality Act

11. The action to amend WDRs Order R5-2015-0127 is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEA) (Pub. Resources Code, § 21000 et seq.) because it involves no significant changes to the facility and is consistent with the existing Use Permit (Cal. Code Regs. tit. 14, § 15301).

Public Notice

12. The Central Valley Water Board has notified the Discharger and interested agencies and persons of its intent to amend waste discharge requirements for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
13. The Central Valley Water Board, in a public meeting, heard, and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that, pursuant to sections 13263 and 13267 of the California Water Code, Order R5-2015-0127 is amended to change the Effluent Limitations B.1 and B.2. The California Resources Production Corporation, North Kern Water Storage District, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with amended Order R5-2016-0093 as follows:

Effluent Limitations B.1 and B.2 shall be replaced by the following:

1. *The discharge of treated produced water from CRC’s Section 23 Treatment Facility to the District when the treated produced water is discharged to the Rosedale Spreading Basin (**Discharge 001**) shall not exceed the following for the constituents listed:*

<u>Constituent</u>	<u>Units</u>	<u>Daily Maximum</u>	<u>Annual Average</u>
Flow	mgd	18.5	-
Electrical Conductivity	umhos/cm	-	1,000
Boron	mg/L	-	1.5
Chloride	mg/L	-	200
Sodium	mg/L	-	225
Oil & Grease	mg/L	35	-

2. *The discharge of blended CRC produced water, other permitted process wastewaters, Kern River surface water, and/or groundwater to the District’s farmlands (**Discharge 002**) shall not exceed the following for the constituents listed:*

<u>Constituent</u>	<u>Units</u>	<u>Annual Average</u>
Electrical Conductivity	umhos/cm	1,000
Boron	mg/L	1.0
Chloride	mg/L	200
Sodium	mg/L	175

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the [law and regulations applicable to filing petitions](#) may be found on the Internet at:

(http://www.waterboards.ca.gov/public_notices/petitions/water_quality)

or will be provided upon request.

This Order is effective as of the date of adoption.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full true, and correct copy of an Order adopted by the California Regional Water Quality Control Board on 6 December 2016.

Original signed by

PAMELA C. CREEDON, Executive Officer