

Central Valley Regional Water Quality Control Board

15 August 2018

Stephen Lieberman, Managing Member
Caleco, LLC.
340 South Lemon Avenue, Suite 4377
Walnut, California 91789

CERTIFIED MAIL
7018 0040 0000 1911 5562

NOTICE OF APPLICABILITY (NOA), ORDER R5-2017-0035, WASTE DISCHARGE REQUIREMENTS GENERAL ORDER, FOR OIL FIELD DISCHARGES TO LAND, GENERAL ORDER TWO, CALECO, LLC., ESSEX LEASE, MIDWAY-SUNSET OIL FIELD, KERN COUNTY

Caleco, LLC. (Caleco), operates the Essex Lease (Lease), in the Midway-Sunset Oil Field, on the north side of Highway 166, approximately 1.75 miles northwest of the town of Maricopa. The Lease has two surface impoundments (ponds) that receive discharges of produced wastewater (discharge). The ponds are in the northeast corner of Section 6 of T11N, R23W, SBB&M.

On 4 August 2017, Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff received a Notice of Intent (NOI) from Caleco for coverage under Order R5-2017-0035, Waste Discharge Requirements General Order, For Oil Field Discharges to Land, General Order Number Two (General Order Two). The NOI included: an application fee; a completed Form 200, "*Application/Report of Waste Discharge General Information Form for Waste Discharge Requirements or NPDES Permits*"; and a technical report titled "*Technical Report for NOI, Caleco LLC...*" and dated July 2017.

The information submitted in the NOI indicates that the ponds are constructed in surface alluvium overlying the Tulare Formation. The technical report describes the ponds as being adjacent to each other and receiving wastewater discharges in series. The technical report indicates that they are used to dispose of produced wastewater through percolation and evaporation. The Essex Lease Pond No. 1 is described as being 149 feet (ft.) by 82 ft. by 3 ft. deep. Pond No. 2 is described as being 161 ft. by 102 ft. by 3 ft. deep. The technical report indicates that the ponds are surrounded by an 18 inch soil berm.

This letter serves as formal notice that General Order Two is applicable to the Lease. General Order Number **R5-2017-0035-007** is hereby assigned to all produced wastewater discharges into the ponds. Caleco should become familiar with all of the requirements, time schedules, prohibitions, and provisions of General Order Two; and Monitoring and Reporting Program R5-2017-0035 (MRP).

This letter also serves as formal notice that the portions of Cleanup and Abatement Order No. R5-2015-0709 (CAO) that apply to the active Essex Lease ponds are hereby rescinded. The CAO was issued for ponds on the Essex, Sheehan, and Maricopa Leases in the Midway-Sunset Oil Field.

As stated in Water Code section 13263, all discharges of waste into waters of the state are privileges, not rights. General Order Two does not create a vested right for Caleco to continue the discharges of waste to the ponds. Failure to prevent conditions that create or threaten to create pollution or nuisance or cause degradation will be sufficient reason to modify, revoke, or enforce the provisions of General Order Two, as well as prohibit further discharge.

In 2006, the Central Valley Water Board, the State Water Resources Control Board (State Water Board), and regional stakeholders began a joint effort to address salinity and nitrate problems in the region and adopt long-term solutions that will lead to enhanced water quality and economic sustainability. Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) is a collaborative basin planning effort aimed at developing and implementing a comprehensive salinity and nitrate management program. The CV-SALTS effort might effect changes to the *“Water Quality Control Plan for the Tulare Lake Basin, Second Edition, Revised 2016”* (Basin Plan) that would necessitate the re-opening of General Order Two.

FACILITY SPECIFIC REQUIREMENTS

1. Caleco shall maintain exclusive control of the discharge and shall comply with all of the requirements and timelines of General Order Two and the MRP.
2. The required annual fee specified in the annual billing from the State Water Board shall be paid until coverage under General Order Two is officially terminated. Caleco must notify the Central Valley Water Board in writing to request termination.
3. In accordance with General Order Two, Discharge Specifications B.1, Caleco shall not exceed the allowable maximum monthly flow of 15,624 barrels, or 656,205 gallons, of discharge to the pond, which is the reported maximum average monthly flow to the Essex Lease ponds between 26 November 2004 and 26 November 2014. General Order Two, Discharge Specifications B.1. also requires that, *“the discharge flow also shall not exceed the maximum design flow of the Facility’s limiting unit as described by the technical data in the NOI.”* The analysis of the pond containment capacity that was reported in the NOI is not adequate because it does not accurately consider the indicated pond dimensions and lacks required supporting water balance capacity analysis information. **By 17 September 2018**, Caleco shall submit a water balance capacity analysis as described in General Order Two, Attachment B, Item A.7.g., demonstrating that *“... the as-built hydraulic capacity of the facility (i.e., tank battery and pond storage capacity) is consistent with the flow limits based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.”* As required by General Order Two, Provision 8, the water balance capacity analysis needs to be prepared by or under the direction of a registered professional competent and proficient in completing this type of analysis and shall bear the professional’s signature and stamp. The results of the water balance capacity analysis may result in a reduction of the allowable maximum monthly flow to the pond.

4. **By 15 November 2018**, Caleco shall, pursuant to Provision E.3 of General Order Two, submit written certification that acceptable flow meters have been installed at a location or locations to ensure the accurate measurement of all discharge flows. The certification shall be accompanied by: (1) a description of the flow metering devices installed, (2) a diagram showing their locations, and (3) evidence demonstrating that the devices were properly calibrated. An engineered alternative may be used if approved in writing by the Central Valley Water Board's Executive Officer.
5. Caleco shall operate and maintain the ponds sufficiently to protect the integrity of containment and berms, and prevent overtopping and/or structural failure. Discharges not authorized by the General Order and not described in the NOI are prohibited. Before making material changes in the character, location or volume of the discharge, a Report of Waste Discharge (Form 200) must be submitted. Caleco in accordance with Water Code Section 13264 shall not take any of these actions until after filing the Report of Waste Discharge and until whichever of the following occurs first: 1) issuance of waste discharge requirements, or 2) the expiration of 140 days after compliance with Water Code Section 13260 if the waste to be discharged does not create or threaten to create a condition of pollution or nuisance and any of the Water Code Section 13264 listed applicable items applies.
6. **By 17 September 2018**, Caleco shall inform the Central Valley Water Board, in writing, as to whether the ponds accept produced wastewater discharge from any wells that have undergone a "well stimulation treatment," as defined by California Code of Regulations (CCR), title 14, section 1761 (including hydraulic fracturing, acid fracturing, and acid matrix stimulation). If the ponds accept wastewater from wells that have undergone a "well stimulation treatment," then Caleco shall comply with the compliance schedule in General Order Two, Provision E.7 and **within 3 months of the date of this NOA**, submit either: 1) a work plan to conduct studies necessary to demonstrate that the discharges of produced wastewater from wells that have been stimulated do not contain well stimulation treatment fluids in concentrations that could adversely affect beneficial uses of waters; or, 2) a work plan for an alternate disposal method for wastewater discharges from wells with a history of, or are planned to receive, a "well stimulation treatment."
7. The MRP requires Caleco to provide information regarding all chemicals and additives used at all leases and facilities that discharge produced wastewater to land. Item B.2.a, Attachment B of General Order Two identifies the need for disclosing how and where in the production or wastewater stream chemical additives are deployed. The technical report dated July 2017 notes that "*Both the Essex and Sheehan Lease use corrosion inhibitors.*" and that "*...corrosion inhibitors are used to protect piping and flowlines.*" **By 17 September 2018**, Caleco shall submit information that describes how and where in the production or wastewater stream the corrosion inhibitors are deployed.

8. Caleco shall **by 15 August 2019** submit to the Central Valley Water Board a Monitoring Well Installation and Sampling Plan (MWISP). The MRP for General Order Two requires the submittal of an MWISP in accordance with specified time frames after the NOA is issued. The MWISP for a “small operator” is due 12 months after the NOA is issued, and is therefore due 15 August 2019 as noted above. Produced wastewater discharges to the ponds could affect beneficial uses of underlying groundwater and down gradient groundwater. The beneficial uses are identified in the Basin Plan. Groundwater monitoring is needed, as required by the MRP.

The NOI states that, *“The National Pollutant Discharge Elimination System (NPDES) specifies that exempt facilities include Storage tanks and oil-water separators as well as Well sites and drill pads, crude oil pipelines, and pump stations. Caleco, LLC. is in the process of applying for an No Exposure Certification (NEC).”* Order Number 2014-0057-DWQ (NPDES General Permit CAS000001) specifies waste discharge requirements for discharges of storm water associated with industrial activities. If an NEC is granted and then conditions or regulatory policies change, the Lease may need coverage under NPDES General Permit CAS000001. Caleco does not need to obtain coverage under NPDES General Permit CAS000001 at this time.

The MRP requires extensive monitoring of the facility and discharge. Failure to comply with the requirements in General Order Two and the MRP could result in an enforcement action as authorized by provisions of the California Water Code. A copy of General Order Two and the MRP is included with the enclosures to this notice. A copy can also be found online at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/5-2017-0035.pdf.

The MRP includes monitoring and reporting of chemicals and additives. Caleco should become familiar with those requirements. The Central Valley Water Board will review the MRP periodically and revise requirements when necessary. The MRP can be modified if Caleco provides sufficient data to support the proposed changes. If monitoring consistently shows no significant variation in magnitude of a constituent concentration or parameter after a statistically significant number of sampling events, Caleco may request the MRP be revised by the Executive Officer to reduce monitoring frequency or minimize the list of constituents. The proposal must include adequate technical justification for reduction in monitoring frequency.

Caleco must comply with the Central Valley Water Board’s Standard Provisions and Reporting Requirements for Waste Discharge Requirements, dated 1 March 1991 (Standard Provisions). A copy of the Standard Provisions is included with the enclosures to this notice. A copy can also be found online at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/std_provisions/wdr-mar1991.pdf.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review this action in accordance with Water Code section 13320 and CCR, title 23, division 3, chapter 6, section 2050 and those that follow. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Notice of Applicability, except that if the thirtieth day following the date 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.

SUBMISSIONS

Caleco shall submit electronic copies of all work plans, reports, analytical results, and groundwater elevation data over the internet to the State Water Board Geographic Environmental Information Management System database (GeoTracker) at http://www.waterboards.ca.gov/ust/electronic_submittal/index.shtml.

A frequently asked question document for GeoTracker can be found at http://www.waterboards.ca.gov/ust/electronic_submittal/docs/faq.pdf.

Electronic submittals shall comply with GeoTracker standards and procedures, as specified on the State Water Board's web site. Uploads to GeoTracker shall be completed on or prior to the due date. The Geotracker site Global I.D. number that is associated with this NOA is T10000006765.

In addition documents that are less than 50 MB shall be sent via electronic mail to: centralvalleyfresno@waterboards.ca.gov. Documents that are 50 MB or larger shall be transferred to a disk and mailed to the Central Valley Water Board office at 1685 E Street, Fresno, CA 93706.

Please review the attached memorandum for more information. If you have any questions regarding this matter, please contact Zachary Jarvie of this office at (559) 445-5455 or at zachary.jarvie@waterboards.ca.gov.



Patrick Pulupa
Executive Officer

Enclosures: 15 August 2018 Memorandum
1 March 1991 Standard Provisions
General Order Two

cc: Richard B. Wilson, Vice President of Engineering, WZI Inc., Bakersfield
Bill Bartling, Chief Deputy of the Division of Oil Gas and Geothermal Resources, Bakersfield
Keith Nakatani, Oil and Gas Program Manager, Clean Water Action (NOA only, Via Email)

Central Valley Regional Water Quality Control Board

TO: Clay Rodgers
Assistant Executive Officer

W. Dale Harvey
Supervising Engineer
RCE No. 55628

FROM: Michael L. Pfister
Senior Engineering Geologist
PG No. 5946

Zachary J. Jarvie
Engineering Geologist

DATE: 15 August 2018

SUBJECT: NOTICE OF APPLICABILITY, CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD, ORDER R5-2017-0035, WASTE DISCHARGE REQUIREMENTS GENERAL ORDER, FOR OIL FIELD DISCHARGES TO LAND, GENERAL ORDER NUMBER TWO, CALECO, LLC., ESSEX LEASE, MIDWAY-SUNSET OIL FIELD, KERN COUNTY

Caleco, LLC. (Caleco), operates the Essex Lease (Lease) in the Midway-Sunset Oil Field, west of the town of Maricopa. The Lease has two unlined surface impoundments (ponds) that are used for the discharge and disposal of produced wastewater (discharge). The ponds are in the northeast corner of Section 6 of T11N, R23W, SBB&M. On 4 August 2017, Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff received a Notice of Intent (NOI) from Caleco for coverage of the ponds on the Essex Lease under Order R5-2017-0035, Waste Discharge Requirements General Order, For Oil Field Discharges to Land, General Order Number Two (General Order Two). The NOI contained: an application fee; a completed State Form 200, "Application/Report of Waste Discharge General Application Form for Waste Discharge Requirements or NPDES Permit"; and, a technical report, prepared by WZI Inc., dated July 2017, and titled, "Technical Report NOI, Caleco, LLC, Essex, Maricopa & Sheehan Leases, Midway-Sunset Oil Field" (Report). This memorandum provides a summary of the information provided for the Essex Lease.

BACKGROUND INFORMATION

General Order Two regulates oil field wastewater discharges that exceed the maximum oil field discharge limits for electrical conductivity, chloride, and boron contained in the "Water Quality Control Plan for the Tulare Lake Basin, Second Edition, Revised July 2016" (Basin Plan).

Regulatory History

On 12 February 2015, Central Valley Water Board staff (staff) inspected the ponds. As a result of the inspection, staff issued a Notice of Violation (NOV), dated 3 April 2015, for unregulated wastewater discharges at the Essex Lease.

On 1 April 2015, Staff issued “California Water Code Directive Pursuant to Section 13267” (13267 Order), which required that Caleco “Collect representative samples of wastewater within each of the ponds.” In response, a report, dated 9 June 2015, and amended 10 July 2015, was provided that contained analytical results from samples collected on 20 May 2015 from both the Essex Lease ponds and the Sheehan Lease pond.

On 23 July 2015, Cleanup and Abatement Order No. R5-2015-0709 (CAO) was issued to Caleco for the Essex, Maricopa, and Sheehan Leases in the Midway-Sunset Oil Field. In response to the CAO, WZI Inc., prepared a document titled “Caleco, LLC, Work Plan...” (Work Plan), with cover letter dated 4 September 2015. Central Valley Water Board staff responded to the Work Plan in a letter dated 3 August 2017. The letter stated that the Work Plan did not satisfy all requirements of the CAO, and that an NOI was needed if Caleco desired to continue use of the ponds under one of the General Orders for Oil Field Discharges To Land, adopted on 6 April 2017. The NOI was submitted in response to the Central Valley Water Board letter.

POND CHARACTERISTICS AND CAPACITY

The dimensions and coordinate locations for the ponds are summarized in **Table 1**, below.

Table 1 Essex Lease pond dimensions and coordinates.

Lease	Pond I.D.(s)	Dimensions (ft.)			Coordinates
		Length	Width	Depth	Latitude, Longitude
Essex	Pond No. 1	149	82	3	35.07413, -119.37051
	Pond No. 2	161	102	3	35.07408, -119.37019

The Essex Lease ponds are constructed in series, with discharges flowing from Pond No. 1 into Pond No. 2. The Report indicates that the ponds are surrounded by an 18-inch (1.5 ft.) soil berm. The Report provides a “Facility Layout” figure that shows the outline of the berm. The berm outline coincides with a barbed wire fence that surrounds the ponds. The berm is not visible in pictures taken during a 12 February 2015 pond inspection. Discharge Specification B.8 requires that ponds be “...designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.” The berm may have been constructed to protect the ponds from surface runoff.

Pages 8 and 12 of the Report identify the “Volumetric Capacity” of the pond, with two feet of freeboard, as being 140,000 cubic feet (ft³). However, the Report’s Exhibit 4a states that the that the “Sump Volume” is 140,000 barrels (bbls). This capacity is not correct because it apparently includes the volume encompassed within the berm, which is greater than the holding capacity of the ponds. The containment capacity of the ponds, not considering freeboard and based on the dimensions in **Table 1**, is 85,920 ft³, or 15,303 bbls, or 642,726 gallons (gal).

The water balance provided in the NOI does not adequately demonstrate that the facility has sufficient capacity to contain the maximum monthly flow volume that is allowable under General Order Two. The maximum allowable monthly flow volumes are discussed below.

DISCHARGE CHARACTERISTICS

Flow Volumes

The maximum monthly produced wastewater volume reported for Essex Lease is 15,624 bbls, or 656,205 gal, or 87,722 ft³ in May 2007. This constitutes the maximum monthly flow to the ponds allowable under General Order Two, based on historic discharges.

Under Discharge Specifications, Item B.1., General Order Two states: *“The discharge flow shall not exceed actual maximum monthly average produced wastewater flow to pond between 26 November 2004 and 26 November 2014. The discharge flow also shall not exceed the maximum design flow of the Facility’s limiting unit as described by the technical data in the NOI.”* Produced wastewater must not be allowed to over top and flow outside of the ponds. General Order Two prohibits produced wastewater discharges outside of the ponds.

Dust Control and Solid Reuse

With regards to the use of produced wastewater for dust control, the Report states that Caleco *“...does not plan to apply for dust control.”* Produced wastewater is not permitted for dust control at the Lease unless a management plan, as described in Provision E.5 of General Order Two, is prepared by Caleco and approved by the Central Valley Water Board Executive Officer.

With regards to solid waste, the Report states, “No significant amount of solid waste is generated on site.” Solids reuse is not permitted unless a management plan, as described in Provision E.6 of General Order Two, is prepared by Caleco and approved by the Central Valley Water Board Executive Officer.

Well Stimulation Treatment Fluids

General Order Two, Prohibition A.5 states, “The discharge of produced wastewater from wells containing well stimulation treatment fluids is prohibited except as provided by Provision E.7.”

The Report does not address the discharge of produced wastewater from wells containing well stimulation treatment fluids. Caleco needs to identify whether there has been any wastewater discharge to the ponds from wells that have received any *“well stimulation treatment”* as defined by CCR title 14, section 1761.

Waste Constituents

The Report states, *“Representative samples of wastewater were collected by EnviroTech Consultants, Inc. (EnviroTech) on May 20, 2015, as required by Order 13267 dated April 1, 2015. The samples were collected from the sampling ports on the wastewater tanks on the leases.”* Selected analytical results from the 20 May 2015 sampling event are summarized in **Table 2**.

Table 2 Selected constituent concentration data from produced wastewater samples collected on 20 May 2015.

Constituents of Salinity	Essex Lease Produced Water	Units
Total Dissolved Solids (TDS)	23,000	milligrams per Liter (mg/L)
Chloride	11,000	mg/L
Dissolved Boron	61	mg/L
Volatile Organic Compounds (VOC), and Polynuclear Aromatic Hydrocarbons (PAH)		
Benzene	64	micrograms per Liter (µg/L)
Ethylbenzene	180	µg/L
Toluene	22	µg/L
Total Xylenes	64	µg/L
Naphthalene	49	µg/L
Radioactivity		
Gross Alpha	96.6 ± 148	picoCuries per Liter (pCi/L)
Gross Beta	225 ± 77.5	pCi/L
Radium-226	13.4 ± 1.40	pCi/L
Radium-228	9.66 ± 1.27	pCi/L

The Report does not indicate whether hazardous wastes are generated. However, the Report does state, “Both the Essex and Sheehan Lease use corrosion inhibitors. Essex Lease uses CI 5037 and the Sheehan Lease uses M 1807”, and, “CI 5037 & M 1807 consists of multiple hazardous wastes...” The Report states that at the Essex Lease 540 gallons of CI 5037 is used per year. **Table 3**, below lists the CI 5037 “hazardous components” identified in the Safety Data Sheet, provided with the Report. The concentrations below are apparently reported as the percent weight of the constituent of the weight of the total solution (“% w/w”).

Table 3 Hazardous components in CI 5037 corrosion inhibitor used at the Essex Lease.

	Corrosion Inhibitors	CAS-No.	Concentration (% w/w)
CI 5037	Fuels, diesel; “Gasoil – unspecified”	68334-30-5	<= 85
	2-Ethylhexanol	104-76-7	<= 5
	Solvent naphtha	64742-94-5	<= 5
	1,2,4-Trimethylbenzene	95-63-6	“>= <= 5”
	Naphthalene	91-20-3	<= 1.5

UNSATURATED SOIL AND GROUNDWATER CHARACTERISTICS

The Report states, *“The site and the surrounding area are underlain by Quaternary Alluvial Fan deposits, consisting of unconsolidated sand, gravel, silt and clay. The non-marine Tulare Formation underlies the Recent Alluvial deposits.”* Oil production is from the *“...Pliocene Top Oil Sand and the Miocene Sand which is equivalent to the Monarch Sand.”* The Alluvium and Tulare formation *“...overlie the Top Oil Zone.”* The Tulare Formation is *“...overlain by a basal clay unit of the Alluvium.”* The Report states that the basal clay unit of the Alluvium is *“...approximately 250 feet thick...”*

The Report states, *“For the wells on the Essex and Sheehan Lease, the first encountered fluid was water.”* The Report also states, *“The unconfined groundwater aquifer is encountered in the lower portion of the Alluvium at a depth of approximately 200 feet.”*

The Report states, *“Groundwater monitoring has been conducted in the area of the impoundments since 1999. All constituents of concern have consistently been found to be at higher concentrations than the water quality objectives, and therefore the groundwater at the leases is not of better quality, see Appendix 7, Monitoring Water Well Analytical Summary for summary.”* The Technical Report further states that area groundwater *“has not been identified as a high-quality water.”*

The groundwater monitoring that is conducted and referenced above refers to a monitoring well network, maintained by the Valley Water Management Company (Valley Water) for the Maricopa Facility and that is located between Caleco's Essex Lease and the Sheehan Lease ponds. The monitoring well network maintained by Valley Water is insufficient to evaluate groundwater degradation associated with discharges into the ponds on the Essex and Sheehan Leases. The monitoring wells are too distant from the Caleco ponds and are not immediately upgradient or downgradient of either the Essex Lease or the Sheehan Lease ponds.

First encountered groundwater quality and flow direction is unknown at the Essex Lease and the Sheehan Lease locations. As required by Monitoring and Reporting Program R5-2017-0035 (MRP), Caleco needs to establish a groundwater monitoring well system and monitor groundwater beneath its ponds.

SUMMARY

The Essex Lease contains two unlined ponds into which oil field produced wastewater is discharged. General Order Two requires groundwater monitoring as described in the MRP that accompanies General Order Two.

Based on the conditions described in the Report, coverage under General Order Two appears to be appropriate for the ponds. As per Title 23, CCR, section 2200, the discharge shall be given a TTWQ (threat to water quality) and CPLX (complexity rating) of 3C. Caleco is responsible for annual fees associated with this rating, unless conditions or regulatory policies change.