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ENVIRONMENTAL PROTECTION

Central Valley Regional Water Quality Control Board

11 October 2018

Stephen J Griffin, Owner
Griffin Resources, LLC
1695 Mesa Verde Avenue, Suite 210
Ventura, CA 93003

CERTIFIED MAIL
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NOTICE OF APPLICABILITY (NOA), CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD, ORDER R5-2017-0036, WASTE DISCHARGE REQUIREMENTS GENERAL ORDER FOR OIL FIELD DISCHARGES TO LAND, GENERAL ORDER NUMBER THREE, GRIFFIN RESOURCES, LLC, MCKITTRICK OIL FIELD, KERN COUNTY

Griffin Resources, LLC (Griffin) operates the McKittrick Fee and G-R Leases in the McKittrick Oil Field, west of Highway 33 and south of Reward Road (Facility). The Facility contains seven surface impoundments (ponds), three of which are actively used for the disposal of oil field produced wastewater (discharge). The G-R Lease has a single active pond in the southwest corner of the southeast corner of Section 12, T30S, R21E, MDB&M. The pond on the G-R Lease receives produced wastewater from wells on the G-R Lease. The McKittrick Fee Lease has two active and four inactive ponds in the north half of the northeast corner of Section 13, T30S, R21E, MDB&M. In addition to receiving produced wastewater from the McKittrick Fee Lease and the Robertson Lease, Griffin reports that the McKittrick Fee Lease ponds also receive "low volumes" of produced wastewater from wells on the Gabriel Lease. The NOI states that the primary method of disposal for produced wastewater from the Gabriel Lease is underground injection.

On 10 August 2017, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) received from Griffin a letter and a Notice of Intent (NOI) for coverage of ponds under "*Waste Discharge Requirements General Order for Oil Field Discharges to Land, General Order Number Three, Order No. R5 2017-0036*" (General Order Three), adopted on 6 April 2017. General Order Three regulates oil field produced wastewater discharges where first encountered groundwater does not support beneficial uses as identified in the "*Water Quality Control Plan for the Tulare Lake Basin, Second Edition, Revised July 2016*" (Basin Plan), or where there is no first encountered groundwater. The NOI included: a completed State Form 200, "*Application/Report of Waste Discharge General Application Form for Waste Discharge Requirements or NPDES Permit*," and two checks containing the required application fees for ponds in both the McKittrick Oil Field and the Pyramid Hills Oil Field. On 15 August 2017, Central Valley Water Board staff received via email a technical report, dated 7 August 2018 and titled "*Griffin Resources, LLC, Technical Report for waste Discharge Requirements General Order...*" (Report). The Report was submitted as part of the NOI. Central Valley Water Board staff's review of the information provided in the Report and the NOI are contained in the enclosed Memorandum.

This letter serves as formal notice that General Order Three is applicable to Griffin's three active ponds that are labeled as Pond No. 1, Pond No. 2, and Pond No. 5 on Attachment A of this document. General Order Number **R5-2017-0036-005** is hereby assigned to all produced wastewater discharges into Pond No. 1, Pond No. 2 and Pond No. 5. Griffin should become familiar with all of the requirements, time schedules, prohibitions, and provisions of General Order Three, and Monitoring and Reporting Program R5-2017-0036 (MRP).

Coverage of produced wastewater discharges into Pond No. 1, Pond No. 2, and Pond No. 5 is allowable under General Order Three because information provided in the NOA shows that Pond No. 1 and Pond No. 5 have received produced wastewater discharges during the 10 years prior to 26 November 2014; and Central Valley Water Board staff have also observed that Pond No. 2 has also received produced wastewater discharges, from Pond No. 1, during this time.

This NOA does not provide regulatory coverage to the ponds labeled as Pond No. 3, Pond No. 4, Pond No. 6, and Pond No. 7 on Attachment A of this document. The NOI did not provide evidence that these ponds received discharges of produced wastewater prior to 26 November 2014. Coverage of discharges to ponds under General Order Three may be permitted only when it is documented that there has been a discharge flow to a pond during the 10 years prior to 26 November 2014 (paragraph 62, page 16, General Order Three.)

Griffin may apply for coverage of produced wastewater discharges into Pond No. 3, Pond No. 4, Pond No. 6, and Pond No. 7 by submitting a Report of Waste Discharge and obtaining Waste Discharge Requirements (WDRs). However, the ponds will be considered "new facilities" and issuance of WDRs would require compliance with the requirements of the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). If Griffin does not intend to permit produced wastewater discharges into these ponds under WDRs, then closure plans are needed. A request for pond closure plans or to separately permit these ponds will be addressed under separate cover.

On 25 November 2015, the Central Valley Water Board issued Cleanup and Abatement Order No. R5-2015-0710 (CAO). The CAO remains in effect because Pond No. 3, and Pond No. 4 which are identified in the CAO have not been granted coverage under General Order Three.

As stated in Water Code section 13263, all discharges of waste into waters of the state are privileges, not rights. General Order Three does not create a vested right for Griffin 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 Three, 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 Basin Plan that would necessitate the re-opening of General Order Three.

FACILITY SPECIFIC REQUIREMENTS

1. Griffin shall maintain exclusive control of the discharge into Pond No. 1, Pond No. 2, and Pond No. 5; and, shall comply with all of the requirements and timelines of General Order Three 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 Three is officially terminated. Griffin must notify the Central Valley Water Board in writing to request termination.
3. Under Discharge Specifications, Item B.2., General Order Three states: *“The discharge flow shall not exceed actual maximum monthly average produced wastewater flow to the 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.”* The allowable maximum monthly flow to the G-R Lease pond (Pond No. 5) is 93 barrels (bbls) or 3,906 gallons (gal). The allowable maximum monthly flow to the McKittrick Fee Lease ponds (Pond No. 1 and Pond No. 2) is 930 bbls or 39,059 gal. These maximum monthly flow rates are based on information provided in the Report. Any increase in monthly discharges beyond these limits or any usage that would exceed the design holding capacity of the ponds constitutes a facility expansion requiring an evaluation under the California Environmental Quality Act (CEQA).
4. Griffin shall not discharge produced wastewater outside of Pond No. 1, Pond No. 2, and Pond No. 5 except for a permitted dust control use. If Griffin intends to apply for use of produced wastewater for dust control, a proposed management plan as described in Provision E.6 of General Order Three must be submitted at least **90 days** prior to the anticipated discharges.
5. **By 14 January 2019**, Griffin shall, pursuant to Provision E.3 of General Order Three, 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.

Griffin shall also describe how and by what path (via pipeline or truck) produced wastewater is transferred from the Gabriel Lease into the McKittrick Fee Lease ponds (Pond No. 1 and Pond No. 2). Griffin shall also propose a method for measuring and reporting the volume of any wastewater transferred from the Gabriel Lease into the McKittrick Fee Lease ponds.

6. **By 12 December 2018**, Griffin shall, pursuant to Provision E.4 of General Order Three, submit either:
 - a. The results of a hydrogeological investigation demonstrating that there is no groundwater beneath the Facility discharge areas and that produced wastewater and constituents associated with other approved wastes discharged at the Facility will not migrate into areas where there is groundwater with designated

beneficial uses. Upon the written concurrence of the investigation results by the Executive Officer, this provision shall be considered satisfied,

or

- b. If there is first encountered groundwater underlying the Facility or the Executive Officer does not concur with the results of the investigation in Provision E.4.a., above, the Discharger shall demonstrate that the natural background groundwater quality for the Facility meets the Sources of Drinking Water Policy exception criteria and/or parallel exception criteria outlined in this General Order (Findings 22 through 24) and thus the current Basin Plan groundwater beneficial uses are eligible for de-designation in accordance with the compliance schedule provided in Tasks 1 through 10 of Provision 4.b.

The Report states that geophysical log for the McKittrick Fee #31 oil well shows that unsaturated sands are present at a depth of 666 feet (ft.) below ground surface (bgs) and that they rest on oil bearing sands. Central Valley Water Board staff review of the geophysical log for the McKittrick Fee #31 oil well indicates that fluids may be present beginning at about 250 ft. bgs. This needs to be assessed.

7. Griffin shall operate and maintain Pond No. 1, Pond No. 2, and Pond No. 5 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 should be reported to Central Valley Water Board Fresno office. Discharge of wastes other than those described in the NOI is prohibited. If the method of waste disposal changes, Griffin must submit a complete Report of Waste Discharge (Form 200) at least 140 days prior to the change.
8. The Report states that *"No solid waste is generated on the McKittrick Fee or G-R Leases; therefore, a waste management plan has not been implemented."* Griffin shall monitor the accumulation of solids in the ponds and if needed, clean out solids from the ponds as required by General Order Three Discharge Specifications B.16. Griffin shall characterize any solid waste generated in accordance with the Solid Waste Monitoring section of the MRP, and Griffin shall comply with General Order Three Solids Disposal Specifications D.1 through D.5.
9. Griffin has not indicated whether the wells on the Robertson Lease and the Gabriel Lease have received any "well stimulation treatment" as defined by CCR title 14, section 1761. The Report states that *"None of the wells on the McKittrick Fee or G-R Leases have been stimulated as defined by CCR Title 14, Section 1761,"* and that *"prior to any discharge to the ponds of any wastewater from stimulated wells, the CVRWQCB will be notified and a draft Work Plan will be submitted to come into compliance."*

By 12 November 2018 Griffin 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 Griffin shall comply with the compliance schedule in General Order Three, Provision E.8. and, **by 14 January 2019**, 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.”

According to the NOI, the produced wastewater discharge is contained within the ponds. The NOI reports that *“The McKittrick Fee and G-R Leases are exempt from coverage under the Industrial Storm Water General Permit because no industrial storm water waste is generated. The oil and wastewater tanks on site have secondary containment around them that will compensate 25% more than the largest tank on site. The ponds are currently not in use and are empty. When in use, water levels are kept below the regulated 2 feet of freeboard and additional earthen berms are surrounding the ponds to provide secondary containment.”* Order Number 2014-0057-DWQ (NPDES General Permit CAS000001) specifies waste discharge requirements for discharges of storm water associated with industrial activities. If the conditions or regulatory policies change, the Lease may need coverage under NPDES General Permit CAS000001. There is not a need to obtain coverage under NPDES General Permit CAS000001 at this time.

The MRP requires extensive monitoring requirements. Failure to comply with the requirements in General Order Three and the MRP could result in an enforcement action as authorized by provisions of the California Water Code. A copy of General Order Three 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/r5-2017-0036.pdf.

The MRP includes requirements for the monitoring and reporting of chemicals and additives. Griffin 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 Griffin 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, Griffin 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.

Griffin 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

Griffin 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_submission/index.shtml.

A frequently asked document for GeoTracker questions can be found at http://www.waterboards.ca.gov/ust/electronic_submission/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. numbers that are associated with this NOA are: T10000006751 for the McKittrick Fee Lease Ponds; and, T10000006752 for the G-R Lease Pond.

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

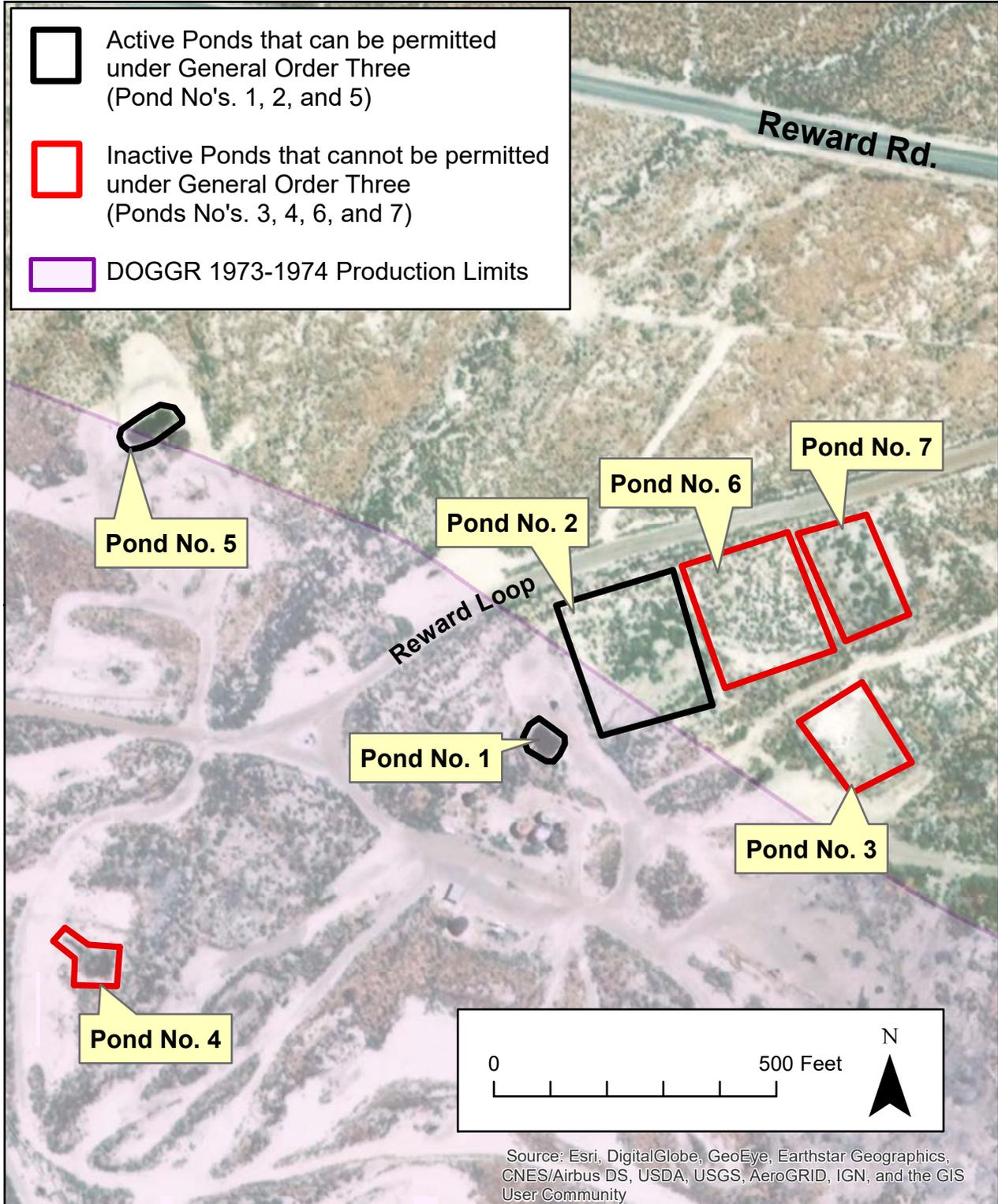
Attachments: Attachment A, Map of Griffin Ponds in the McKittrick Oil Field

Enclosures: 11 October 2018 Memorandum
General Order Three
1 March 1991 Standard Provisions

cc: Cameron Campbell, District Deputy of the Division of Oil Gas and Geothermal Resources,
Bakersfield
Gary Brierly, Senior Geologist, EnviroTech Consultants, Inc., Bakersfield
Keith Nakatani, Oil and Gas Program Manager, Clean Water Action
(NOA and Memorandum only, Via Email)
Andrew Grinberg, National Campaigns Special Projects Manager, Clean Water Action
(NOA and Memorandum only, Via Email)
Bill Allayaud, California Director of Government Affairs, Environmental Working Group
(NOA and Memorandum only, Via Email)

ATTACHMENT A

Map of Griffin Ponds in the McKittrick Oil Field



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 *MLP*
Senior Engineering Geologist
PG No. 5946

Zachary J. Jarvie *ZJJ*
Engineering Geologist

DATE: 11 October 2018

SUBJECT: NOTICE OF APPLICABILITY (NOA), CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD, ORDER NUMBER R5-2017-0036, GENERAL ORDER THREE, WASTE DISCHARGE REQUIREMENTS FOR OIL FIELD DISCHARGES TO LAND, GRIFFIN RESOURCES, LLC, MCKITTRICK FEE LEASE AND G-R LEASE, MCKITTRICK OIL FIELD, KERN COUNTY

Griffin Resources, LLC (Griffin) operates the G-R Lease and the McKittrick Fee Lease in the McKittrick Oil Field, west of Highway 33 and south of Reward Road. Griffin utilizes surface impoundments (ponds) for the disposal of oil field produced wastewater (discharge). The G-R Lease has a single active pond in the southwest corner of the southeast corner of Section 12, T30S, R21E, MDB&M. The McKittrick Fee Lease has two active and four inactive ponds in the north half of the northeast corner of Section 13, T30S, R21E, MDB&M. On 10 August 2017, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) received from Griffin a letter and a Notice of Intent (NOI) for coverage of the ponds under Waste Discharge Requirements General Order for Oil Field Discharges to Land, General Order Number Three, Order No. R5 2017-0036 (General Order Three), adopted on 6 April 2017. The NOI included: a completed State Form 200, "Application/Report of Waste Discharge General Application Form for Waste Discharge Requirements or NPDES Permit," and two checks containing the required application fees for ponds in both the McKittrick Oil Field and the Pyramid Hills Oil Field. On 15 August 2017, Central Valley Water Board staff received an email, from EnviroTech Consultants, Inc., (EnviroTech) that contained a technical report prepared by EnviroTech for the NOI titled "Griffin Resources, LLC, Technical Report for Waste Discharge Requirements General Order...", and dated 7 August 2017 (Report). This memorandum provides a summary of the information provided for ponds in the NOI and Report.

BACKGROUND INFORMATION

General Order Three regulates oil field produced wastewater discharges where first encountered groundwater does not support beneficial uses as identified in the Water Quality Control Plan for the Tulare Lake Basin, Third Edition, Revised May 2018 (Basin Plan), or where there is no first encountered groundwater.

Regulatory History

On 7 January 2015, Central Valley Water Board staff conducted inspections of ponds identified by the California Division of Oil, Gas and Geothermal Resources (DOGGR), as being on the G-R, the McKittrick Fee, and the Robertson Leases in the McKittrick Oil Field. As a result of the inspections Central Valley Water Board staff issued to Griffin three separate inspection letters, each dated 1 April 2015. The contents of each of three letters are as follows:

- 1.) The first letter was a Notice of Violation (NOV) and inspection report for unregulated wastewater discharges into three unlined ponds on the Robertson Lease without Waste Discharge Requirements (WDRs). These ponds are identified in the NOI Report as being on the McKittrick Fee Lease and are listed as Pond No. 1, Pond No. 2, and Pond No. 3 in Table 1, below. The NOV noted that at the time of the inspection Pond No. 1 was active, Pond No. 2 was dry, and Pond No. 3 was not being used.
- 2.) The second letter was an inspection report for a single pond on the McKittrick Fee Lease that was observed to contain “oil or sludge”. This pond is listed as Pond No. 4 in Table 1, below. The NOI does not seek coverage for discharges into this pond.
- 3.) The Third letter was an NOV and inspection report for unregulated wastewater discharges into a single unlined pond on the G-R Lease. This is the same pond identified in the NOI Report as being on the G-R Lease and is listed as Pond No. 5 in Table 1, below.

On 1 April 2015, Central Valley Water Board staff issued “*California Water Code Directive Pursuant to Section 13267*” (13267 Order), which required that Griffin “*collect representative samples of wastewater within each of the ponds.*”

On 25 November 2015, the Central Valley Water Board issued Cleanup and Abatement Order No. R5-2015-0753 (CAO) requiring the following: “**By 25 January 2016, the Discharger shall prepare and submit to the Central Valley Water Board a Work Plan with a time schedule proposed by the Discharger and approved by the Assistant Executive Officer. The schedule shall provide the ability to determine whether the discharge can comply with applicable laws, policies, and regulations that would allow the issuance of waste discharge requirements by 31 October 2016. If issuance of updated waste discharge requirements is not obtained by 31 December 2016, the discharge shall cease.**” The ponds that are referenced in the CAO are noted in Table 1, below.

In a letter, dated 22 November 2016, the Central Valley Water Board extended the above 31 December 2016 deadline to obtain updated Waste Discharge Requirements (WDRs) to a

date no later than four months following the adoption of the General Orders for Oil Field Wastewater Discharges. The General Orders were adopted on 6 April 2017.

Griffin submitted the NOI and Report in an attempt to comply with previous Central Valley Water Board directives.

POND CHARACTERISTICS

The ponds, their coordinates, and their dimensions are listed in Table 1, below. Pond numbers are consistent with their numbering in the CAO.

Table 1 Pond coordinates and their approximate dimensions as reported in the NOI.

Pond No.	Lease name in CAO	Lease name in NOI	Latitude and Longitude	Approximate Dimensions Reported in NOI	
				Surface Area (ft. ²)	Depth (ft.)
Pond No. 1	Robertson	McKittrick Fee	35.319710, -119.667008	1,200	7
Pond No. 2	Robertson	McKittrick Fee	35.320047, -119.666545	24,000	7
Pond No. 3	Robertson	McKittrick Fee	35.319755, -119.665513	8,800	7
Pond No. 4	Robertson	(NOI does not seek coverage)	35.318860, -119.669160	--	--
Pond No. 5	G-R	G-R	35.320980, -119.668920	1,400	7
Pond No. 6	(not identified in CAO)	McKittrick Fee	35.320215, -119.665986	24,000	7
Pond No. 7	(not identified in CAO)	(NOI does not seek coverage)	35.320341, -119.665496	--	--

GENERAL ORDER THREE APLICABILITY

Pond No. 1, No. 2, No. 3, No. 4, and No. 5 were identified in the CAO. The NOI requested coverage for the G-R Lease pond (Pond No. 5) and for the active McKittrick Fee Lease pond (Pond No. 1) and for three other McKittrick Fee Lease ponds (Pond No. 2, Pond No. 3, and Pond No. 6) which are described as inactive. Pond No. 7 was recently identified by Central Valley Water Board staff. EnviroTech staff, during recent telephone conversations with Central Valley Water Board staff, requested coverage for wastewater discharges into Pond No. 7.

During the 7 January 2015 inspection, Central Valley Water Board staff observed that Pond No. 1 and Pond No. 5 each received produced wastewater discharges directly from wash tanks nearest to each pond. Staff also observed that Pond No. 2 received produced wastewater discharges from Pond No. 1 via a pipeline. The NOI describes Pond No. 2 as being “inactive.” The NOI again requested coverage for discharges into Pond No. 2 under General Order Three. Available google earth imagery shows that discharges occurred to the pond during the 10 years

prior to 26 November 2014. Therefore, coverage under General Order Three may be allowed (paragraph 63, page 16, General Order Three).

Aerial photographs available on GoogleEarth from 1994 to 2016 do not show any produced water discharged in Pond No. 3, Pond No. 6, or Pond No. 7. The NOI describes Pond No. 3. and Pond No. 6 as being “inactive,” and does not identify Pond No 7. The NOI does not specify how these ponds may have received wastewater discharges; such as via a pipeline, either directly from tanks or from another pond. Specifically, the NOI does not provide evidence that these ponds received discharges of produced wastewater between 26 November 2004 and 26 November 2014. As a result, these three ponds do not qualify for coverage under General Order Three.

For those ponds that have not received produced wastewater discharge prior to 26 November 2014, Griffin may apply for coverage for discharges under WDRs by submitting a Report of Waste Discharge. Griffin should be advised that ponds that have not received produced wastewater discharge prior to 26 November 2014 are considered “new facilities” and issuance of WDRs would require compliance with the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). If Griffin does not intend to obtain WDRs for Pond No. 3, Pond No. 4, Pond No. 6, and Pond No. 7, then closure plans for these ponds are needed.

It is appropriate to issue one NOA for Griffin’s active ponds on both the McKittrick Fee and G-R Leases as they are positioned in an area 1,000 ft. by 600 ft., and are on adjacent parcels. The G-R Lease pond (Pond No. 5) is separated from the McKittrick Fee Lease ponds (Pond No. 1 and Pond No. 2) by the Reward Loop, an unpaved oil field access road.

DISCHARGE CHARACTERISTICS

Flow Volumes

With regards to the sources of discharge the Report states that “*the G-R Lease pond does not receive wastewater from other leases or individuals.*”; and, “*the McKittrick Fee pond receives wastewater from the McKittrick Fee wells, as well as the Gabriel Lease wells, in low volumes,*” and the primary disposal method for the Gabriel Lease wastewater “*...is through underground injection.*” The Report’s Exhibit A-2, subtitled “McKittrick Field - Gabriel, McKittrick Fee, Robertson & G-R Leases Crude Oil Flow Schematic,” indicates that the wells that DOGGR records describe as being on the Robertson Lease flow into the same tank and pond system as the McKittrick Fee Lease wells. The Report does not describe how the “low volumes” of Gabriel Lease wastewater are conveyed to the McKittrick Lease ponds; (e.g., either by pipe or truck).

The Report provides “typical produced fluid rate” and “maximum flow rate” reported in barrels (bbls) per day. For the McKittrick fee Lease ponds the Report states: “*The typical produced fluid rate is 20 bbls/day with a maximum flow rate of 30 bbls/day.*” For the G-R Lease ponds the Report states: “*The typical produced fluid rate is 1.25 bbls/day with a maximum flow rate of 3 bbls/day.* The Report also provides monthly water production rates for only the G-R and McKittrick Fee Leases and indicates that they were obtained from DOGGR records. In Table 2, below, the “*typical*” and “*maximum*” daily flow rates, described above, are applied to a 31-day

month and compared to the average and maximum monthly wastewater production values as indicated by records maintained by DOGGR for Griffin’s Leases in the McKittrick Oil Field.

Table 2 A Comparison of Wastewater Flow Rates Indicated in The NOI Report and Wastewater Production Volumes as Recorded by DOGGR.

Lease Name	“Typical” 31-day Wastewater Flow Indicated by the NOI bbls	Average Monthly Wastewater Production Indicated by DOGGR Records, 2004 – 2014 bbls	“Maximum” 31-day Wastewater Flow Indicated by the NOI bbls	Maximum Monthly Wastewater Production Indicated by DOGGR Records, 2004 - 2014	
				bbls	Month, Year
Gabriel	--	7,325	--	18,419	Apr 2012
G-R	38.75	0 *	93	0 *	--
McKittrick Fee	620	204	930	1,055	Jun 2006
Robertson	--	13	--	41	Dec 2008
				41	Jan 2009
				41	Oct 2011
				41	Jan 2012

* For the G-R Lease, DOGGR records show a volume of “0” water production since 1990. The G-R Lease pond has remained in use for this period indicating that the wastewater production at the G-R lease may not have been accurately recorded. However, earlier DOGGR records do show wastewater production volumes that are consistent with the “typical” and “maximum” daily flow rates for the G-R Lease provided in the Report. DOGGR records indicate that from 1977 through 1982 the average recorded monthly wastewater production rate was approximately 63 bbls and the maximum rate was 190 bbls in June of 1982.

General Order Three Discharge Specifications, Item B.2., states: *“the discharge flow shall not exceed actual maximum monthly average produced wastewater flow to pond between 26 November 2004 and 26 November 2014,”* and 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 maximum monthly flow to the G-R Lease pond, allowable under General Order Three, and based on the Report’s stated *“maximum flow rate of 3 bbls/day,”* is 93 bbls or 3,906 gallons (gal). The maximum monthly flow to the McKittrick Fee Lease ponds, allowable under General Order Three, is 930 bbls or 39,059 gal. These volumes are based on flows identified in the Report. General Order Three allows Griffin to continue to discharge “low volumes” of produced wastewater from Gabriel Lease well into the McKittrick Fee Lease ponds as long as the total monthly inflow volume does not exceed the specified volume, above. Any discharge from the Gabriel Lease must be recorded.

General Order Three requires the installation of flow meters to record the flow into the ponds. If produced wastewater from the Gabriel Lease is transported to the ponds via a truck, then the volume of the discharge transported will need to be recorded and provided in the Quarterly Monitoring Reports, as required by Monitoring And Reporting Program R5-2017-0036 (MRP). Any discharge of Gabriel Lease wastewater to the ponds must also be sampled, and the results

reported, as an “intermittent discharge” as described in the Produced Wastewater Monitoring section of the MRP.

Produced wastewater must not over top and flow outside of the ponds. General Order Three requires that a minimum of two feet of freeboard must be maintained at all times. The monthly discharges, up to and including the above noted maximum monthly volumes cannot be used to justify a violation of the General Order’s requirements. The General Order also prohibits all wastewater discharges outside of the ponds.

Dust Control and Solid Reuse

With regards to the use of wastewater for dust control, the Report states: *“Griffin Resources, LLC does not have plans to use wastewater for dust control or construction activities. If that decision changes, a document will be submitted to the RWQCB stating the technical justification that produced water is the best practicable treatment or control, surface and ground waters will be produced, and demonstrate that discharges will not create nuisance or pollution conditions.”* Wastewater will not be permitted for dust control at the Lease until after a management plan, as described in Provision E.6 of General Order Three, is received and approved by the Central Valley Water Board Executive Officer.

With regards to solid waste, the Report states that *“No solid waste is generated on the McKittrick Fee or G-R Leases; therefore, a waste management plan has not been implemented.”* The Report also states that *“If solids are at any point produced on site at the McKittrick Fee or G-R Leases, and prior to any removal or reuse, the solids will be analyzed according to CVRWQCB requirements and reported as per General Order Number Three to the Executive Officer.”* The General Order Three requirements for the monitoring, management, handling and, disposal of solid wastes that accumulate in the ponds are in: Solids Disposal Specifications, Items D.1 through D.5; Discharge Specifications, Item B.16; and, Provisions, Item E.7. Additionally, Monitoring And Reporting Program R5-2017-0036 (MRP), that accompanies General Order Three, also contains requirements for solid waste monitoring.

Well Stimulation Treatment Fluids

General Order Three, 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 states that *“None of the wells on the McKittrick Fee or G-R Leases have been stimulated as defined by CCR Title 14, Section 1761.”* The Report also states that *“Prior to any discharge to the ponds of any wastewater from stimulated wells, the CVRWQCB will be notified and a draft Work Plan will be submitted to come into compliance.”* Griffin also needs to identify whether there are any of the wells on the Robertson Lease and the Gabriel Lease have received any “well stimulation treatment” as defined by CCR title 14, section 1761.

Waste Constituents

The NOI states that, “Produced water sample analytical results, in accordance with Table I of Monitoring and Reporting Program R5-2017-0036, for the McKittrick Fee and G-R Lease ponds are not available at this time.”

A wastewater sample was collected by Central Valley Water Board staff during the inspection on 7 January 2015. The sample was collected from the wash tank that discharges into Pond No. 1. This sample did not include analysis for the full list of constituents required by General Order Three. Table 3, below, contains a summary of the analytical results.

Table 3 Selected analytical results from the produced wastewater sample collected on 7 January 2015.

Sample Source	Wash Tank on the McKittrick Fee / Robertson Lease	
Lab Sample ID	ZJJ150107-1	
Constituents of Salinity		Units
Total Dissolved Solids (TDS)	12,000	milligrams per liter (mg/L)
Chloride	4,700	mg/L
Boron	51	mg/L
Volatile Organic Compounds (VOC)		
Benzene	13	micrograms per liter (µg/L)
Naphthalene	57	µg/L
1,3,5-Trimethylbenzene	35	µg/L
Metals		
Arsenic	25	µg/L
Lead	5.6	µg/L

Each produced wastewater source on the GR Lease and the McKittrick Fee Lease, and any other sources that may discharge to the ponds need to be sampled and these samples need to be analyzed for the constituents listed in Table I of Monitoring and Reporting Program R5-2017-0036. The Robertson Lease and the McKittrick Fee Leases are adjacent and appear to use the same production storage tanks. If this is the case, then only a single sample is necessary for the combined wastewater from these leases. Produced water from the Gabriel Lease also needs to be sampled and analyzed for the required constituents.

REGIONAL GEOLOGY AND UNDERLYING GROUNDWATER

On 7 June 2018 the Central Valley Water Board Assistant Executive officer conveyed to Kenneth Harris, Oil and Gas Supervisor at DOGGR, a letter titled, “*Review of the Proposed*

Expansion of Cyclic Steam Project Number 45406112,...” The letter contained a review of proposed expanded steam injection in the Antelope Shale (Upper McLure Shale) of the Monterey Formation, in Section 19 T30S, R22E, MDB&M, which is the southeast adjacent section to Section 13 that contains the McKittrick Fee and Robertson Leases. This letter is available at the GeoTracker¹ site ID: T10000011283, along with and the 14 August 2017 application document submitted by Chevron to DOGGR, with cover titled *“Request for Approval: Expansion of Approved, Underground Injection Project, McKittrick Diatomite, Section 19, Underground Injection Control, Project No. 45403112”* (Application). The 7 June 2018 letter states that the type log and maps within the Application show varying levels of “Overburden” (20 to 400 feet) overlying the antelope Formation in the Project Area,” and that the Application identifies “Overburden” as “remnants of the initially overlaying rocks...” that are *“...are preserved as indicated by a thin layer of Tulare sands SW of the surface trace of the McKittrick Thrust.”* The letter also states that Central Valley Water Board expressed concern that *“...some portion of the overburden deposits could contain groundwater with concentrations of TDS < 10,000. mg/L (protected waters)...,”* and requested that DOGGR *“...evaluate the overburden for evidence of the presence of protected water.”* The Letter states that DOGGR response was that *“...upon review of available geophysical logs, there is no evidence of water existing in the overburden layers in the Project Area.”*

The NOI Report states that there are no Underground Sources of Drinking Water (USDW), *“... in the general area, as evidenced by the lack of water wells noted by the water well survey map. This is also reaffirmed and demonstrated by a recently drilled oil well, Griffin Resources, McKittrick Fee #31 (API: 030-29478), which shows unsaturated sands (air sand contact at 666 feet) resting on oil bearing sands as interpreted by the Array Induction/Density/Neutron electrical log and sidewall core analysis. The produced fluid discharge to the sumps is greater than the maximum allowable salinity limits for electrical conductivity, chloride, and boron for the “Water Control Plan for the Tulare Lake Basin. Only produced water from those leases is collected in their respective ponds.”*

McKittrick Fee Lease Well #31 is listed in DOGGR records as having the API# 03-029479. The API number in the above statement (API: 030-29478) appears to be an error. Well #31 is approximately 1,600 ft. east/southeast of Pond No. 1. The technical reports interpretation that this well log is demonstrative of unsaturated sediments to 660 ft. bgs may be incorrect. The “crossover affect” of the neutron porosity and bulk density geophysical logs, considered characteristic of unsaturated sediments, is not consistent from approximately 250 ft. bgs, and below. The lack of consistent “crossover” in the neutron porosity and bulk density geophysical log and patterns of other logs such as the spontaneous potential geophysical log indicates that fluids are present beginning about 280 ft. bgs in some intervals and above the *“air sand contact at 666 feet.”*

We have reviewed geologic maps, for the area, which include: Geologic map of the Reward Quadrangle, San Luis Obispo and Kern Counties, California, by Dibblee, T.W., and Minch, J.A., 2005²; Geologic map of the West Elk Hills quadrangle, Kern County, California, by Dibblee,

¹ Geotracker: <https://geotracker.waterboards.ca.gov/>

² National Geologic Map Database: https://ngmdb.usgs.gov/Prodesc/proddesc_73838.htm

T.W., and Minch, J.A., 2005³; and, Geologic Map of the "McKittrick" Quadrangle, California, by Dibblee, T.W., 1966-67, U.S. Geological Survey, Open-File Report OF-72-89⁴. The mapping by Dibblee and Minch (2005) also shows that the surface exposure of alluvium, overlies the Tulare Formation in the northern and eastern portion of the McKittrick Valley and is within a long trough that extends from the McKittrick Oil Field to the Asphalto Oil Field. The ponds appear to be constructed in alluvium that overly the McLure Shale Member (Tm) of the Monterey Shale Formation within the western portion of the McKittrick Valley. Dibblee and Minch (2005) mapped the subsurface trace of the northwest southeast trending McKittrick Thrust Fault as being approximately 200-400 ft. northeast of the ponds. Northeast of the fault is the alluvial trough of the McKittrick Valley.

The ponds do not appear to be located within the Aquifer Exemption boundaries for the Tulare Formation approved by the U.S. EPA on 28 September 2018.

PROVISION E.4. OF GENERAL ORDER THREE

Provision E.4 of General Order Three requires the dischargers to either, a.) demonstrate, within 60 days of issuance of the NOA, that "...there is no groundwater beneath the Facility discharge areas and that produced wastewater and constituents associated with other approved wastes discharged at the Facility will not migrate into areas that there is groundwater with designated beneficial uses," or b.) "...demonstrate that the natural background groundwater quality for the Facility meets the Sources of Drinking Water Policy exception criteria and/or parallel exception criteria ..." and enter into a 5 year time schedule to develop an amendment to the Basin Plan that removes the beneficial uses of underlying groundwater.

Based on the characteristics of the regional geology and underlying groundwater, discussed above, it appears that coverage of the ponds under General Order Three is appropriate.

However, information regarding the depth and quality of first encountered fluids beneath the ponds is needed in order to assess how Provision E.4. of General Order Three is to be applied. Griffin needs to conduct additional hydrogeologic investigations in order to show that there is "no groundwater" beneath the ponds. The results of these hydrogeologic investigations need to be submitted within **60 Days** of the issuance of the NOA. In order to make a demonstration that there is "no groundwater" beneath the site Griffin needs to show that first encountered fluids, beneath the ponds are oil or hydrocarbon bearing. Alternatively, Griffin needs to demonstrate that that the current Basin Plan groundwater beneficial uses are eligible for designation.

SUMMARY

General Order Three applies to operators of existing oil and gas production facilities where the first encountered groundwater is of poor quality or where there is no first encountered groundwater.

³ National Geologic Map Database: https://ngmdb.usgs.gov/Prodesc/proddesc_73840.htm

⁴ National Geologic Map Database: https://ngmdb.usgs.gov/Prodesc/proddesc_118.htm

Available information indicates that coverage under General Order Three is appropriate for Pond No. 1 and Pond No. 2 located on the McKittrick Fee Lease and also for Pond No. 5 on the G-R Lease. However, more information regarding first encountered fluids beneath the site is needed. If first encountered fluids are oil or hydrocarbon bearing then General Order Three Provision E.4.a. will apply. Otherwise Griffin needs to show that the current Basin Plan groundwater beneficial uses are eligible for de-designation and apply for a Basin Plan amendment as described in General Order Three Provision E.4.b.

Based on these conditions, as per Title 23, California Code of Regulations, section 2200, the discharge shall be given a TTWQ (threat to water quality) and CPLX (complexity rating) of 3C. Griffin is responsible for annual fees associated with this rating unless conditions or regulatory policies change.

Pond No. 3, Pond No. 4, Pond No. 6, and Pond No. 7 cannot be covered under General Order Three. Griffin must either obtain coverage for the discharge of produced wastewater into these ponds by obtaining WDRs or must submit closure plans for the ponds.