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GOVERNOR

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SECRETARY FOR
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Central Valley Regional Water Quality Control Board

26 June 2018

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CERTIFIED MAIL
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NOTICE OF APPLICABILITY (NOA), CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD, ORDER NUMBER R5-2017-0035, GENERAL ORDER TWO, WASTE DISCHARGE REQUIREMENTS FOR OIL FIELD DISCHARGES TO LAND, AERA ENERGY LLC, MOCO DEHYDRATION PLANT, MIDWAY-SUNSET OIL FIELD, KERN COUNTY

Aera Energy LLC (Aera) operates the MOCO Dehydration Plant, also called the “Moco 35 Lease” (Lease), in the Midway-Sunset Oil Field, on the west side of Highway 33, approximately 2 miles north of the town of Maricopa. The Lease has three surface impoundments (ponds) that receive discharges of produced wastewater (discharge). All three ponds are in the northeast corner of Section 35 of T12N, R24W, SBB&M.

On 7 March 2018, Aera representatives submitted a technical report, dated 5 March 2018 and titled “Technical Report For General Order Number Two, MOCO Dehydration Plant, Midway-Sunset Oil Field, Kern County, California” (Report). The report was submitted as an update to a previous 8 May 2017 Notice of Intent (NOI) submitted by Aera for coverage of ponds in the Midway-Sunset oil field under General Orders for oil field wastewater discharges to land adopted by the Central Valley Water Board on 6 April 2017. The Report requests coverage for the ponds under Waste Discharge Requirements General Order for Oil Field Discharges to Land, General Order Number Two, Order Number R5-2017-0035 (General Order Two).

Available information, including figures and cross-sections provided by Aera, indicates that the ponds are constructed in either alluvium or in the Tulare Formation. The Report describes the first two ponds as being adjacent to each other and constructed of reinforced concrete over an 80-mil HDPE liner. The concrete walls are reported to be 1-foot thick and the concrete floor is reported to vary from 8 inches to 1 foot thick. Aera identifies these as the “MOCO Dehydration Plant East/West Sand Basins” (MOCO Sand Basins). The Report indicates that they are used to separate solids from produced wastewater. Collectively the MOCO Sand Basins are 64 feet (ft.) long, by 43 ft. wide and approximately 10.5 ft. deep. The Report describes the third pond as being constructed with a “... 60 mil-thick HDPE geomembrane.” Aera identified it as the “MOCO Dehydration Plant Emergency Overflow Basin” (MOCO EOB). The Report indicates that it is used to contain produced wastewater when an “upset” occurs in the wastewater treatment and disposal system. The MOCO EOB is 105 ft. long, 85 ft. wide, and varies in depth from 7 to 10 ft.

This letter serves as formal notice that General Order Two is applicable to the Lease. General Order Number **R5-2017-0035-006** is hereby assigned to all produced wastewater discharges into the ponds. Aera 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 R5-2015-0746 (CAO) that apply to the "Moco 35 Lease" are hereby rescinded. The CAO was issued on 1 December 2015 for ponds at the Fulton, Lockwood, Moco 35, National USL, Shale 14, and W&S Leases in the Midway-Sunset Oil Field. Central Valley Water Board staff are currently reviewing NOI technical reports submitted by Aera representatives for coverage of ponds at the Lockwood Dehydration Plant (Lockwood Lease) and AFS Dehydration Plant (Shale 14 Lease).

General Order Two regulates the discharge of produced wastewater into ponds. The MOCO Sand Basins and the MOCO EOB are "ponds" based on the definition in General Order Two's Attachment A (Definition Of Terms). 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 Aera 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. There is a need to maintain on an ongoing basis the integrity of each pond's liner.

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 Two.

FACILITY SPECIFIC REQUIREMENTS

1. Aera 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. Aera must notify the Central Valley Water Board in writing to request termination.
3. Under Discharge Specifications, Item B.1., General Order Two 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.*" Aera has provided an estimation of the maximum monthly discharge volume to each pond. However, the estimates are based on limited data that

may underestimate historic discharges. The Report states, “*The produced wastewater residence time in the ponds is on the order of days and the water is not allowed to accumulate in the ponds nor fill the ponds beyond their capacity.*” Therefore, this NOA does not limit the Facility to a maximum monthly discharge volume at this time. However, maximum design holding capacity of MOCO EOB (3,800 barrels at two feet freeboard) and the MOCO Sand Basins (2,781 barrels at two feet freeboard), as described in the Report, shall not be exceeded. Any increase in usage that would exceed the design holding capacity or treatment capacity in the case of the Sand Basins constitutes a facility expansion requiring an evaluation under the California Environmental Quality Act (CEQA).

4. AERA shall not discharge produced wastewater outside of the ponds except for a permitted dust control use. If Aera intends to apply for use of produced wastewater for dust control, a proposed management plan as described in Provision E.5 of General Order Two must be submitted at least **90 days** prior to the anticipated discharges.
5. **By 21 September 2018**, Aera 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.
6. Aera shall operate and maintain all 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 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, Aera must submit a Report of Waste Discharge (Form 200).
7. **By 21 August 2018**, Aera shall, pursuant to Provision E.6 of General Order Two, submit a solids management plan for approval by the Executive Officer. This plan shall include the information required by Provision E.6. Aera shall, also include the information described in General Order Two, Attachment B, Information Needs Sheet, Item B.8. (a. – c.).
8. The MRP for General Order Two requires the submittal of a Monitoring Well Installation and Sampling Plan (MWISP) in accordance with specified time frames after the NOA is issued. The MWISP for a “medium operator” is due **21 December 2018**, 6 months after the NOA is issued. The Executive Officer may rescind the groundwater investigation and groundwater monitoring portions of General Order Two if Aera demonstrates that wastes discharged to the ponds cannot affect the quality of underlying groundwater. The demonstration must include a plan for periodic testing of the pond liner integrity.

9. Provide **by 21 August 2018**, the Construction Quality Assurance Reports (CQARs) for the engineered liners, if any were prepared. Alternatively, Aera shall submit **by 21 August 2018**, a written statement that CQARs were not prepared or why they are not available.
10. Item B.2.a, Attachment B, of General Order Two asks for a description of how and where in the production or wastewater stream chemical additives are used. The Report contains a table in Appendix C, that includes chemical name/numbers, locations, functions, and volumes of the chemical additives used in 2016. Aera shall submit **by 21 August 2018**, information describing how and where in the production stream chemical additives are used. The units of measure for the reported volumes and chemical additive concentrations also need to be provided.

According to information provided with the NOI, the discharge is contained within the ponds. The NOI reports that, *"Oil and gas facilities that have not released storm water resulting in a discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR Parts 110, 117, and 302 at any time after November 19, 1987, are not required to be permitted unless the industrial storm water discharge contributed to a violation of a water quality standard."* 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 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/r5-2017-0035.pdf.

The MRP includes monitoring and reporting of chemicals and additives. Aera 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 Aera 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, AERA 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.

Aera 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

Area 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 question document for GeoTracker 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. number that is associated with this NOA is T10000007031.

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.



-for-

Patrick Pulupa
Executive Officer

Enclosures: 21 June 2018 Memorandum
1 March 1991 Standard Provisions
General Order Two

cc: Howard D. Barlow, Senior Engineer, Amec Foster Wheeler Environment and Infrastructure, Inc., Fresno
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: 26 June 2018

SUBJECT: NOTICE OF APPLICABILITY, CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD, ORDER NUMBER R5-2017-0035, GENERAL ORDER NUMBER TWO, WASTE DISCHARGE REQUIREMENTS FOR OIL FIELD DISCHARGES TO LAND, AERA ENERGY LLC, MOCO DEHYDRATION PLANT, MIDWAY-SUNSET OIL FIELD, KERN COUNTY

Aera Energy LLC (Aera) operates the MOCO Dehydration Plant, also called the "Moco 35 Lease" (Lease), in the Midway-Sunset Oil Field, on the west side of Highway 33, approximately 2 miles north of the town of Maricopa, Ca. The Lease has three lined surface impoundments (ponds) used for temporarily holding produced wastewater (discharge). All three ponds are in the NE corner of section 35 of T12N, R24W, SBB&M. Aera identifies these ponds as the "MOCO Dehydration Plant Emergency Overflow Basin" (MOCO EOB), and the "MOCO Dehydration Plant East/West Sand Basins" (MOCO Sand Basins). On 7 March 2018, Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff received an email from staff at Amec Foster Wheeler Environmental and Infrastructure Inc. (Amec). The email contained a link to download a technical report, dated 5 March 2018 and titled "Technical Report For General Order Number Two, MOCO Dehydration Plant, Midway-Sunset Oil Field, Kern County, California" (Report). This memorandum provides a summary of the information provided.

BACKGROUND INFORMATION

Order Number R5-2017-0035 (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 15 January 2015, Central Valley Water Board staff (Staff) inspected the ponds. As a result of the inspection, Staff issued a Notice of Violation (NOV), dated 7 April 2015, for unregulated wastewater discharges at the Moco 35 Lease.

On 1 April 2015, Staff issued “*California Water Code Directive Pursuant to Section 13267*” (13267 Order), which required that Aera “*collect representative samples of wastewater within each of the ponds.*” In response a report, dated 15 June 2015, was provided by Aera that contained analytical results from samples collected on 3 June 2015 from both the east side and the west side “*MOCO Dehy Sand Basins.*”

On 1 December 2015, Cleanup and Abatement Order (CAO) R5-2015-0746 was issued to Aera for the Fulton, Lockwood, Moco 35, National USL, Shale 14, And W&S Leases in the Midway-Sunset Oil Field. Among the ponds identified in the CAO were the “*Moco Dehy Sand Basin (east side)*” and the “*Moco Dehy Sand Basin (west side).*” In response to the CAO, Aera conveyed a letter dated 8 February 2016, and a one page work plan (Work Plan).

In May 2017, Central Valley Water Board staff received a Notice of Intent (NOI) for coverage of eight ponds in the Midway-Sunset Oil Field under Waste Discharge Requirements General Order for Oil Field Discharges to Land, General Order Number Three, Order Number R5-2017-0036 (General Order Three). The NOI package included: an application fee; a completed Form 200, Application/Report of Waste Discharge General information form for Waste Discharge Requirements or NPDS Permits; and, a “*Technical Report for General Order Three...*”, dated 6 May 2017. In a review letter, dated 27 July 2017, Central Valley Water Board staff indicated that each pond or group of ponds in the Midway-Sunset Oil Field should be permitted separately, and that individual NOI’s must be submitted for each. The letter also advised Aera that prior to submitting a revised NOI for each pond or group of ponds, Aera should evaluate each independently to determine which can be covered under General Order Three or under General Order Two.

POND CHARACTERISTICS

The Report states: “*The MOCO Dehydration Plant separates the oil and water from leases in the South Midway-Sunset Oil Field...*”

The MOCO EOB is described as being 105 ft. by 85 ft., by 7 to 10 ft. deep. The Report states that the MOCO EOB is “*...constructed below surrounding grades and lined with a 60-mil HDPE geomembrane. The majority of the basin is lined with a single geomembrane. Two sections are indicated to be double-lined.*” The sides of the MOCO EOB slope inward. The west side has a constructed slope of 2 units horizontal to 1 unit vertical (2:1). The north, south, and east sides have a 3:1 slope. At the west end of the MOCO EOB is a sump measuring 6 ft. square that is 3 ft. deeper than the surrounding basin floor. The sump is constructed with 6 inch thick reinforced concrete.

The MOCO Sand Basins abut each other and are separated by a concrete wall. Collectively they are described as being 63.92 ft., by 43 ft, by 10.42 ft. deep. The north, east and west sides

of the MOCO Sand Basins consist of 1 ft. thick vertical concrete walls that extend from 6 inches above the surrounding grade down to the basin floor which slopes from at-grade at the south side to a depth of 11 feet at the north side. The concrete floor is reported to vary from 8 inches to 1 ft. thick. The MOCO Sand Basins are underlain by an 80-mil HDPE geomembrane that extends from under the concrete bottom, up to the outside edges of the vertical concrete walls

The Report indicates that two feet of freeboard will be maintained in the MOCO EOB and in the MOCO Sand Basins. This is required by the General Order Two Discharge Specifications, Item B.

DISCHARGE CHARACTERISTICS

Flow Volumes

The Report states: *“The EOB is used when upsets cause high fluid levels in the produced water tanks or sand basin at the MOCO Dehydration Plant. The Report also states: “...each discharge to the EOB contains approximately 181 barrels (bbls) of fluid. Operations tracks each time fluids go into the EOB. Based on the discharge log, the EOB has an average of 1.3 discharges per month, or about 239 bbls per month. The maximum number of discharges (three) occurred during January 2016. Based on an average discharge amount, the estimated monthly maximum discharge to the EOB is 543 bbls.”*

The Report states: *“The Sand Basin is in continual use and receives sand and produced water from the free water knockouts (FWKOs), heater treaters, and cone bottom tanks. The fluids are directed to one side of the sand basin while the other side is being cleaned. It is estimated that approximately 849 bbls of fluids a day were pumped into the sand basin from 2004 to 2014. Fluids are constantly entering, oil is skimmed off the top, and produced water and oil are pumped back into the appropriate process.”*

Under Discharge Specifications, Item B.1., General Order Two 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.”*

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 wastewater for dust control, the Report states: *“Consistent with Provision E.5 of the General Order, Aera proposes to utilize produced water for dust suppression in the oil field covered by this Notice of Intent (NOI). Analytical data, along with a detailed management plan will be supplied for this use and no application of produced water to land will occur until the Executive Officer approves the management plan.”*

With regards to solid wastes generated at the Facility the Report states:

“Solids knocked out of the produced fluids in the treating process are transported to the Belridge Central Waste facility. It is estimated that 66 tons of solids are removed and transported each month based on 2016 to 2017 data. The tonnage is summarized in attachment B.8 Solids Removed from Treating Facility (Appendix C). This volume includes both the MOCO Dehydration Plant and water treatment equipment.”

“Solids are removed directly from process equipment and transported to the Belridge Central Waste Facility. Solids are transported in vacuum trucks or closed bins. The Central Waste Facility is bermed to prevent run-off. Any solids that are turned into road mix are prepared to proper specifications and rolled on-site for compaction to prevent runoff.”

“Solids will be characterized and reported to the California Regional Water Quality Control Board.”

Central Valley Water Board staff have not evaluated Aera’s current “regional use” of solids generated from production activities, or the potential implications this may have for water quality. A detailed management plan, consistent with Provision E.6 of General Order Two, needs to be provided to determine if Aera’s current and planned uses of produced solids are appropriate for coverage under General Order Two.

Waste Constituents

The Report states that on 3 November 2017 “...waste water samples were collected from the MOCO Dehydration Plant...”. The sample results are summarized in **Table 1**, below.

Table 1 Selected constituent concentration data from wastewater samples collected on 3 November 2017.

Constituents of Salinity	Sample I.D. “MW-76,” MOCO EOB	Sample I.D. “MW-72,” MOCO Sand Basin	Units
Total Dissolved Solids (TDS)	10,000	10,000	milligrams per Liter (mg/L)
Chloride	5,000	5,100	mg/L
Dissolved Boron	110	110	mg/L
Volatile Organic Compounds (VOC), and Polynuclear Aromatic Hydrocarbons (PAH)			
Benzene	33	26	micrograms per Liter (µg/L)
sec-Butylbenzene	<0.79	0.79	µg/L
Ethylbenzene	21	8.2	µg/L
Isopropylbenzene	6.0	1.0	µg/L
n-Propylbenzene	4.9	0.86	µg/L
Toluene	35	16	µg/L
1,2,4-Trimethylbenzene	13	3.2	µg/L
1,3,5-Trimethylbenzene	3.2	0.70	µg/L
Total Xylenes	40	9.2	µg/L
Acenaphthene	2.0	0.95J	µg/L
Anthracene	0.60J	<1.0	µg/L
Benzo(a) anthracene	<1.0	1.1	µg/L
Benzo(k) fluoranthene	<1.0	1.6	µg/L
Benzo[a] pyrene	1.3	0.66J	µg/L
Chrysene	0.80J	<1.0	µg/L
Fluorene	2.0	0.86J	µg/L
Naphthalene *	18 / 7.4	9.4 / 27	µg/L
Phenanthrene	4.8	2.2	µg/L
Pyrene	1.1	<1.0	µg/L
Radioactivity			
Gross Alpha	-15.7 ± 23.4	-14.8 ± 14.9	picoCuries per Liter (pCi/L)
Radium-226	11.2 ± 4.20	6.97 ± 4.91	pCi/L
Radium-228	11.2 ± 6.49	5.08 ± 5.00	pCi/L
Total Uranium	<0.67	<0.67	pCi/L

* Naphthalene was detected at concentrations of 18 µg/L and 9.4 µg/L with U.S. EPA method 8260 (VOCs), and detected at concentrations of 7.4 µg/L and 27 µg/L with U.S. EPA method 8270 (PAHs).

The Report states: *“No hazardous wastes are known to be generated at this facility. If any hazardous wastes are generated, they will be disposed in accordance with State and Federal laws and not commingled with wastewater.”* Discharge Specification B.15 of General Order Two requires that the discharger monitor the accumulations of solids within the ponds and as necessary, remove them. Additional General Order Two requirements for solids are in Section D, titled *“Solids Disposal Specifications.”*

UNSATURATED SOIL AND GROUNDWATER CHARACTERISTICS

With regards to underlying soils, the Report states: *“Lithologic logs were performed in two wells near the MOCO Dehydration Plant. See attachment E.11.b MOCO Geological Study provided in Appendix C. The logs indicate that from the surface to a depth of 530 feet are Tulare Air Sands, which are composed of alternating sand, silt, and clay beds. The high resistivity and neutron-density log crossover in nearby well 35SLV-186D (API: 03021878) indicates the presence of gas, which in this case is air. Corroborating the interpretation that these are unsaturated air sands are the lithologic descriptions in nearby 35O-156A (API: 02919437) which do not mention wet sands until a depth of 1,503 feet. The uppermost hydrocarbon-bearing interval observed in the log was at 1,185 feet, which is likely the Etchegoin Formation.”*

Regarding the depth and quality of groundwater underlying the pond and historic groundwater monitoring results, the Report states: *“Groundwater is not present beneath the facility. No groundwater monitoring data within the last 5 years were available from the GeoTracker GAMA database for nearby monitoring or supply wells. Groundwater results were available for a more distant well, located in the Buena Vista Lake bed, about 3.25 miles northeast and downgradient of the facility. The results are dated 1968 (50 years ago) are shown in attachment E.12.f Groundwater Data Near MOCO (Appendix C). The results show electrical conductivity in the well water ranged between 4,000 and 7,000 micromhos per centimeter.”*

I have reviewed the geophysical logs for well 35SLV-186D. The neutron-density geophysical logs do not cross over at the following approximate depth intervals: 165 to 190 ft. below ground surface (bgs), 220 to 250 ft. bgs, various intervals between 300 and 380 ft. bgs, and below 450 bgs. The resistivity logs indicate the presence of sand and/or more sandy zones at these intervals. This is interpreted to indicate that fluids are present at the indicated depth intervals. The lithology log for well 35O-156A is dated 23 April 1920. The log does not include information now usually included in environmental boring logs, such as Unified Soil Classification System descriptions and moisture content.

A Monitoring Well Installation and Sampling plan is required by Monitoring and Reporting Program R5 2017-0035 (MRP). The MRP allows for this requirement to be rescinded if the discharger demonstrates that wastes discharged to the ponds cannot affect the quality of underlying groundwater. Information provided for compliance with the groundwater monitoring portion of the MRP needs to reflect accurate interpretations.

The ponds are located near the southeast side of the Midway-Sunset Oil Field. Figures included in the 20 July 2016, *“Midway-Sunset Oil Field, Aquifer Exemption Package”* indicate that the ponds are positioned on alluvial sediments that extend into the San Joaquin Valley.

There is a produced wastewater disposal facility with ponds operated by Valley Water Management Company (VWMC) that is approximately 2.25 miles south east of Aera's MOCO ponds. VWMC has a monitoring well network for groundwater in the alluvium.

SUMMARY

The MOCO Sand Basins are lined with reinforced concrete over an HPDE Liner. The MOCO EOB is lined with a 60-mil thick HDPE liner. General Order Two requires groundwater monitoring as described in the MRP that accompanies General Order Two.

The MRP requires that a "*Monitoring Well Installation and Sampling Plan*" (MWISP) be submitted within specified time frames. However, the MRP states that, "*If the Discharger demonstrates that the wastes discharged to the ponds cannot affect the quality of underlying groundwater, the Executive Officer may rescind by signed letter all or part of the requirements to complete the groundwater investigation and groundwater monitoring portions of this Order.*" Any proposal to rescind this requirement will need to demonstrate that the ponds has and will contain produced waste water.

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. Aera is responsible for annual fees associated with this rating, unless conditions or regulatory policies change.