
Central Valley Regional Water Quality Control Board

26 April 2018

Megan Silva
Manager – Environmental and Regulatory
Aera Energy, LLC.
10000 Ming Avenue
Bakersfield, CA 93311

CERTIFIED MAIL
7017 3040 0000 4342 3765

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, DEHYDRATION PLANT 2, SOUTH BELBRIDGE OIL FIELD, KERN COUNTY

Aera Energy, LLC. (Aera) operates the Dehydration Plant 2 (Facility) in the South Belridge Oil Field, west of Highway 33. The Facility contains one surface impoundment (pond) lined with a single layer of High Density Polyethylene (HDPE). The pond is referred to by Aera as the Emergency Holding Pond (EHP). The pond is in the southwest corner of section 2, T29S, R21E, MDB&M.

On 12 December 2017, Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff received a letter dated 8 December 2017 containing a Notice of Intent (NOI) for coverage under Waste Discharge Requirements General Order for Oil Field Discharges to Land, General Order Number Two, Order Number R5-2017-0035 (General Order Two). The NOI included a technical report titled “*Technical Report for General Order Two, Dehydration Plant 2, Aera Energy LLC, South Belridge Oil Field, Kern County, California*” (Report).

The Report states: “*Dehydration Plant 2 receives all Tulare Formation produced fluids from the South Belridge, Cymric, McKittrick, and North Belridge oil fields. The oil and produced water are separated using Free Water Knockouts and Induced Gas Flotation Systems, and the produced water is pumped to the Belridge Water Softening Plant (Section 27) and Disposal Facilities, approximately 50 percent to each facility.*” The Report also states: “*The EHP is used when an upset occurs in the produced water disposal process of the plant. If there is an upset at the water pumps or at one of the facilities, the produced water is diverted to the EHP to depressurize the system. When the upset is resolved, the fluids are pumped back into Dehydration Plant 2 and processed again.*”

Information, including figures and cross-sections, provided by Aera, shows the pond is constructed with a single 60-mil HDPE liner in surface alluvium, overlying the Tulare Formation. The Report states: “*The EHP at Dehydration Plant 2 is not designed or operated for long-term wastewater storage. The produced wastewater is put back through the system as soon as the upset condition is resolved. The produced wastewater residence time in the pond is on the order*

of days and the water is not allowed to accumulate in the pond nor fill the pond beyond its capacity.” Therefore, this NOA does not limit the Facility to a maximum monthly discharge volume to the pond as long as the pond total design capacity stated in the Report (102,000 barrels with 2 feet freeboard) is not exceeded per discharge event.

This letter serves as a formal notice that General Order Two is applicable to the Facility. General Order Number **R5-2017-0035-003** is hereby assigned to all produced wastewater discharges into the pond. 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).

General Order Two regulates the discharge of produced wastewater into ponds. The “BL 1 Dehydration Plant 2 EHP” is a “pond” 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 pond. 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. The integrity of the pond’s HDPE liner needs to be maintained on an ongoing basis.

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 will maintain exclusive control of the discharge and shall comply with all of the conditions of General Order Two and the MRP.
2. Aera shall operate and maintain the pond sufficiently to protect the integrity of containment and berms and prevent overtopping and/or structural failure. Discharges not authorized by General Order Two and not described in the NOI should be reported to our office. Discharge of wastes other than those described in the NOI is prohibited. If the method or nature of waste discharge to the pond changes, Aera must submit a Report of Waste Discharge (Form 200).
3. 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.

4. Within **90 days** of receipt of this letter, 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.
5. AERA shall not discharge produced wastewater outside of the pond 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 **90 days** prior to the anticipated discharge.
6. Within **60 days** of receipt of this letter, 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.).
7. The Report states that the discharge does not contain fluids from wells that have been stimulated. If this condition changes, Aera must inform the Central Valley Water Board. The discharge of fluids used in "*well stimulation treatment*", as defined by CCR, title 14, section 1761 (including hydraulic fracturing, acid fracturing, and acid matrix stimulation), to land is prohibited.
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 "small operator" is due 12 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. Item 7.a of General Order Two requires a completed Form 200 as part of the application process. Aera shall submit a completed Form 200 specific for Dehydration Plant 2. Form 200 can be found at:
http://www.waterboards.ca.gov/publications_forms/forms/docs/form200.pdf
10. Provide by **25 June 2018** the Construction Quality Assurance Report (CQAR) for the engineered liner, if one was prepared. Alternatively, Aera shall submit by **25 June 2018** a written statement that a CQAR was not prepared.
11. Item B.4, Attachment B of General Order Two asks for a demonstration of the maximum monthly average effluent flow to each pond that occurred between 26 November 2004 and 26 November 2014 and the basis for the effluent flow limits. The Report states that the pond is not operated for long term wastewater storage and that the wastewater residence time in the pond is on the order of days. Therefore, this NOA does not limit the

Facility to a maximum monthly discharge volume. However, the maximum design capacity of the pond (102,000 barrels at two feet freeboard), as described in the Report, shall not be exceeded per discharge event. If discharge volumes increase, it will be considered a facility expansion. Any increase beyond the design capacity volume (per discharge event) constitutes a facility expansion requiring an evaluation under the California Environmental Quality Act (CEQA).

12. 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 deployed. The Report includes the product names, types, and volumes of the chemical additives used in 2016. Aera shall submit by **25 June 2018** further information to describe how and where in the production or wastewater stream chemical additives are deployed.
13. Item B.3.a, Attachment B of General Order Two asks for the characterization of each wastewater stream type after production facility treatment, but prior to discharge to the pond and within the pond. The Report provides analytical data for one sample collected from the pond, but no characterization of wastewater prior to discharge to the pond was provided. The NOI states: "*Dehydration Plant 2 receives produced Tulare fluids from North Belridge, South Belridge, Cymric, and McKittrick oil fields. The produced water is all comingled in the T900 tank, which are then shipped to disposal or to the Belridge Water Softening Plant. The fluids are comingled before treatment; therefore, the sample collected from the T900 tank will provide adequate characterization of Tulare produced water.*" However, the Report does not provide analytical data for a sample collected from the T900 tank. Aera shall submit by **25 June 2018** analytical data of the sample reportedly collected from Tank 900.

According to information provided with the NOI, the discharge is contained within the pond. The NOI reports that, "*No Aera facilities in the South Belridge oil field have met the requirements for coverage under the Industrial Storm Water General Permit.*" 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 of the Facility and the 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/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 the monitoring frequency or minimize the list of constituents. The proposal must include adequate technical justification for the revisions.

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

The Central Valley Water Board has gone to a paperless office system. All regulatory documents, submissions, materials, data, monitoring reports, and correspondence should be converted to a searchable Portable Document Format (PDF) and submitted electronically to the GeoTracker database <http://geotracker.waterboards.ca.gov/>.

GeoTracker Site Global ID: T10000008082 for the Belridge V Lease

Documents that are less than 50 MB should be emailed to:
centralvalleyfresno@waterboards.ca.gov.

Documents that are 50 MB or larger should be transferred to a disk and mailed to the Central Valley Water Board office at 1685 E Street, Fresno, CA 93706.

Aera Energy, LLC.
Notice of Applicability for General Order Two
Dehydration Plant 2
South Belridge Oil Field
Kern County

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26 April 2018

Please review the attached memorandum for more information. If you have any questions regarding this matter, please contact Omar O. Erekat of this office at (559) 488-5382 or by email at omar.erekat@waterboards.ca.gov.



for Pamela C. Creedon
Executive Officer

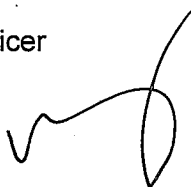
Enclosures: 26 April 2018 Memorandum
1 March 1991 Standard Provisions
General Order Two

cc: William V. Pipes, PG, Amec Foster Wheeler Environment and Infrastructure, Fresno

Central Valley Regional Water Quality Control Board

TO: Clay Rodgers
Assistant Executive Officer

W. Dale Harvey
Supervising Engineer
RCE No. 55628



FROM: Ronald E. Holcomb
Senior Engineering Geologist
PG No. 6725

Omar O. Erekat
WRC Engineer

DATE: 26 April 2018

SUBJECT: NOTICE OF APPLICABILITY, 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, DEHYDRATION PLANT 2, SOUTH BELBRIDGE OIL FIELD, KERN COUNTY

Aera Energy LLC (Aera) operates the Dehydration Plant 2 (Facility) in the South Belridge Oil Field, west of Highway 33. Reportedly, the Facility utilizes a surface impoundment (pond) lined with High Density Polyethylene (HDPE) for the temporary storage of oil field produced wastewater (discharge). The pond is on the SW quarter of section 2, T29S, R21E MDB&M and Aera identifies it as "BL 1 Dehydration Plant 2 Emergency Holding Pond (EHP)." On 12 December 2017, Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff (Staff) received a Notice of Intent (NOI) for coverage under Order No. R5-2017-0035, Waste Discharge Requirements General Order for Oil Field Discharges to Land, General Order Two (General Order Two). The NOI includes a technical report titled "*Technical Report for General Order Two, Dehydration Plant 2, Aera Energy LLC, South Belridge Oil Field, Kern County, California*" (Report). The NOI did not include an application fee or a completed form 200. This memorandum provides a summary of the information provided for the Facility and identifies the pond to be covered under General Order Two.

BACKGROUND INFORMATION

A single pond is used "*as an emergency holding pond when pumps fail.*" The Report states: "*The EHP at Dehydration Plant 2 is not designed or operated for long-term wastewater storage. The produced wastewater is put back through the system as soon as the upset condition is resolved.*" The Report also states: "*The produced wastewater residence time in the pond is on the order of days and the water is not allowed to accumulate in the pond nor fill the pond beyond its capacity.*" The Facility does not have waste discharge requirements (WDRs) and is

not associated with a previously submitted report of waste discharge. Aera reports that the pond was constructed between 1988 and 1989.

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).

Submitted Information and Recent Regulatory History

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, Aera submitted on 16 June 2015 a technical report including analytical results of wastewater samples from a number of ponds. On 7 April 2016, Aera submitted an addendum containing information not provided in the initial 13267 technical report and clarifications requested by Staff.

Aera submitted on 8 May 2017, via email, a document dated 6 May 2017, and titled, “*Technical Report for General Order Number Three.*” The stated purpose of the technical report was to “*...fulfill the partial requirement of the Notice of Intent as stated in Attachment B of General Order Number Three.*” The technical report included information for the pond at the Dehydration Plant 2 along with a number of ponds on multiple facilities within the South Belridge Oil Field. Staff comments regarding the review of the technical report and the Work Plan were conveyed in a letter dated 9 June 2017. The 9 June 2017 letter stated that there was a need to obtain separate permits for the ponds at the different facilities, and that the available information did not indicate that General Order Three was appropriate for regulating Aera’s ponds in the South Belridge Oil Field.

POND CHARACTERISTICS

The Report contains a table that shows a total area of 940,752 square feet for the pond at two feet of freeboard. The pond is 18 feet deep at two feet freeboard according to the Report. The Report states: “*The EHP at Dehydration Plant 2 is constructed below surrounding grades with an earthen dike of varying heights (minimum 2 feet) above the surrounding grades.*” The Report also states: “*The EHP at Dehydration Plant 2 was originally constructed with 40-mil XR-40SP synthetic liner around most of the perimeter and two layers of 40-mil liner at the pipe inlets. The pond was refurbished in 2011-2012 with a new, 60-mil HDPE geomembrane liner that is textured on both sides.*” Appendix A of the Report contains drawings showing a schematic of the pond, construction details of the pond liner, and a manufacturer specification sheet for the used HDPE liner.

Under Discharge Specifications, Item B.10., General Order Two states: “*Unless a California-registered civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any pond shall never be less than two feet (measured vertically from the lowest possible point of overflow).*”

DISCHARGE CHARACTERISTICS

Flow Volumes

The Report states: “*Produced water discharge data were available for the period July 2014 to June 2015. The maximum monthly discharge to the EHP occurred in August 2014 (60,370 barrels [bbls]). Maximum production from the Tulare Formation in the Belridge field occurred in 2006 and was 1.3 times greater than production in 2014. After applying the factor of 1.3, the estimated maximum monthly discharge volume to the EHP is 78,481 bbls.*” The maximum monthly calculated volume reported in Table 7 of the Report is 360,000 barrels (bbls).

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.*”

The Report states: “*The EHP at Dehydration Plant 2 is not designed or operated for long-term wastewater storage. The produced wastewater is put back through the system as soon as the upset condition is resolved. The produced wastewater residence time in the pond is on the order of days and the water is not allowed to accumulate in the pond nor fill the pond beyond its capacity.*” Therefore, this Notice of Applicability does not limit the Facility to a maximum monthly flow volume to the pond as long as the pond total design capacity stated in the Report (102,000 barrels with 2 feet freeboard) is not exceeded per discharge event. 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 Reports 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 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 the reuse of solids, the Report states: “*Consistent with Provision E.6 of the General Order, Aera proposes to continue to beneficially utilize solids generated from the oil field covered by this NOI along with other Aera properties consistent with the current practices. Analytical data, along with a detailed management plan, consistent with Provision E.6 and items B-8 (a-c) will be supplied to describe both the centralized road mix processing facility in South Belridge and the regional use of that product for the construction of roads and well pads throughout Aera’s operating properties.*”

Waste Constituents

The Report states: “A wastewater sample was collected from Dehydration plant 2 EHP on July 26, 2017.” The analytical results from this sampling event are provided in the Report. The sample results are summarized in **Table 1**, below.

Table 1 Selected constituent data from wastewater sample collected on 26 July 2017.

Constituents of Salinity	Concentration	Units
Total Dissolved Solids (TDS)	12,000	milligrams per Liter (mg/L)
Chloride	6,500	mg/L
Dissolved Boron	67	mg/L
Specific Conductance	19,300	µS/cm
Volatile Organic Compounds (VOC), and Polynuclear Aromatic Hydrocarbons (PAH)		
Benzene	37	micrograms per Liter (µg/L)
Ethylbenzene	11	µg/L
Isopropylbenzene	1.1	µg/L
p-isopropyltoluene	0.21	µg/L
n-Propylbenzene	0.97	µg/L
Toluene	39	µg/L
1,2,4-Trimethylbenzene	2.8	µg/L
1,3,5-Trimethylbenzene	0.78	µg/L
Total Xylenes	19	µg/L
Naphthalene *	5.3 / 10	µg/L
Pyrene	ND	µg/L
Phenanthrene	ND	µg/L
Radioactivity		
Gross Alpha	25.9± 49.4	picoCuries per Liter (pCi/L)
Radium-226	7.22 ± 3.64	pCi/L
Radium-228	6.6 ± 5.54	pCi/L
Total Uranium	ND	pCi/L

* Naphthalene was analyzed for twice, and detected at a concentration of 5.3 µg/L with U.S. EPA method 8260 (VOCs), and detected at a concentration of 10 µg/L with U.S. EPA method 8270 (PAHs).

The Report states: *“Hazardous wastes are not typically generated in these fields. However, any generated wastes will be disposed of in accordance with both 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 listed under, Section D, titled *“Solids Disposal Specifications.”*

REGIONAL CHARACTERISTICS

With regards to the underlying soils, the Report states: *“The surface soils are predominantly Holocene alluvium, which is a heterogeneous sequence of alternating sand, silt, and clay sourced from the Temblor Range to the west.”* The Reports contains a number of geophysical logs for borings near the location of the pond. The geophysical logs show a thin layer of alluvium separated from the top of the Tulare Formation by the Corcoran Clay Equivalent. The Geophysical logs also show the level of perched water fluctuating above and below approximately 100 feet below ground surface.

The Report also states: *“Temporary soil borings were advanced in March 2014 in two locations downgradient (northeast) of Dehydration Plant 2. The soil boring data indicate the depth of unsaturated soil (depth to groundwater) in Section 2 is 110 feet. The March 2014 soil boring data are summarized in attachment E.11.a Section 2 Boring Logs provided in Appendix C.”*

The Report stated: *“No groundwater is present beneath Dehydration Plant 2. The cross section shown on attachment E.12.a 1-Section 2 Cross Section Map provided in Appendix A indicates that no groundwater was present in well 5535.2, the well located closest to the EHP.”*

The Report Stated: *“Regionally, the alluvial deposits on the west side of the San Joaquin Valley are derived from the Coast Ranges, which are marine-type rock. These marine rocks contain saline connate water and entrained mineral salts. Therefore, brackish groundwater is present in the alluvial and shallow Quaternary horizons on the west side of the valley. Usable groundwater zones of the eastern San Joaquin Valley are present in Sierra-derived formations. The demarcation between poor quality brackish alluvial groundwater of the west and useable groundwater of the east is located approximately at the Main Drain canal, about 5 miles east of the South Belridge Oil Field.”*

WATER BALANCE AND POND CAPACITY ANALYSIS REQUIREMENTS

The Report reports a capacity of 102,000 bbls with 2 feet freeboard for the pond, and estimated a maximum monthly discharge volume of 78,481 barrels. The Report provides a water balance capacity analysis that takes into account hydraulic loading rates, precipitation, evaporation rates, and outflows from the pond. The analysis assumes no percolation of wastewater beneath the pond and concludes that the excess capacity equals the holding capacity of the pond. Information provided by the Report indicates that pumping is the primary mode of wastewater removal.

SUMMARY AND POTENTIAL THREAT TO WATER QUALITY

The pond is lined with a single 60-mil HDPE liner. Monitoring and Reporting Program R5-2017-0035 (MRP) requires that accompanies General Order Two 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 discharges to the pond do not and will not pose a threat to water quality.

Based on the conditions described above, coverage under General Order Two appears to be appropriate for the pond. 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.