ATTACHMENT I

EMERGENCY AND REMEDIAL RESPONSE PLAN (40 CFR 146.94(a))

1. FACILITY INFORMATION

Facility Name: Aera CCS

Facility Contact: Garth Reucassel, Carbon Director
10000 Ming Ave., Bakersfield, CA 93311
(661) 665-5000, GIReucassel@aeraenergy.com

Injection Well Information:

Well Number	County, State	Latitude	Longitude
CI1-64Z-27N	Kern County, CA	35°33'9.4877"N	119°48'26.3702"W
CI2-64Z-35N	Kern County, CA	35°32'32.6713"N	119°47'37.0682"W
CI3-64Z-35N	Kern County, CA	35°32'11.6457"N	119°47'7.5912"W
CI4-64Z-35N	Kern County, CA	35°31'55.4154"N	119°46'51.7864"W
27R-27N	Kern County, CA	35°33'2.4280"N	119°48'28.6103"W
55-26N	Kern County, CA	35°32'43.2520"N	119°47'32.7755"W
64-35N	Kern County, CA	35°31'44.3600"N	119°46'44.9788"W
9-1N	Kern County, CA	35°31'31.6480"N	119°46'37.0154"W
64-27N	Kern County, CA	35°32'41.1707"N	119°47'52.2726"W

This Emergency and Remedial Response Plan (ERRP) describes actions that Aera Energy LLC (Aera) shall take to address movement of the injection fluid or formation fluid in a manner that may endanger an underground source of drinking water (USDW) during the construction, operation, or post-injection site care periods for the proposed Aera CCS Project. The Plan is provided to meet the requirements of 40 CFR 146.94 Emergency and Remedial Response.

If Aera obtains evidence that the injected CO_2 stream and/or associated pressure front may cause an endangerment to a USDW, human health and safety, and the environment, Aera must perform the following actions:

1. Cease injection;
2. Take the steps reasonably necessary to identify and characterize a release;
3. Notify the permitting agency [Underground Injection Control (UIC) Program Director and California Air Resources Board (CARB) Executive Officer] of the emergency event within 24 hours (hrs); and
4. Implement applicable portions of the approved ERRP.

Where the phrase "initiate shutdown plan" is used, the following protocol will be employed: Aera will immediately cease injection. However, in some circumstances, Aera will, in consultation with the UIC Program Director, determine whether gradual cessation of injection (using the parameters set forth in Class VI Permit, **Attachment A –** Summary of Operating and Reporting Requirements) is appropriate.

2. LOCAL RESOURCES AND INFRASTRUCTURE

The area surrounding the Aera CCS Project is primarily oil and gas production and undeveloped acreage on the southwest side of West Side Highway. East of the West Side Highway are agricultural fields and a materials/soil stockpile industrial facility. Resources in the vicinity of the Aera CCS Project that may be affected as a result of an emergency event at the project site include:

1. Aera oil and gas production infrastructure not directly associated with the Project.
2. Towns of Lost Hills located approximately 7 miles northeast, Blackwell approximately 2.4 miles northwest on the Paso Robles Highway, and Spicer City approximately 10 miles east of the project area near the West Side Freeway.
3. USDWs within area of review (AoR).

The U.S. Environmental Protection Agency (EPA) approved a USDW aquifer exemption for the Tulare Formation (Fm), Etchegoin Fm, Monterey Fm, Temblor Fm, and Tumey Fm in the North Belridge oil field area since they are hydrocarbon-producing aquifers. The original aquifer exemption was issued by EPA Record of Decision on March 14, 1983, and an expansion of the aquifer exemption for the Tulare Fm was approved on June 7, 2019. The shallow alluvium located near former-produced water disposal ponds does not qualify as a USDW within the AoR because total dissolved solids (TDS) levels exceed 10,000 ppm. The Tulare Fm has the potential to be a USDW over a portion of the area within the AoR outside the aquifer exemption boundary for the Tulare Fm.

Infrastructure in the vicinity of the Aera CCS Project that may be affected as a result of an emergency at the project site include: the injection wellhead(s) and surface facilities and Aera Belridge oil and gas production facilities.

Resources and infrastructure addressed in this plan are shown in **Figure 1** attached.

3. POTENTIAL RISK SCENARIOS

The following events related to the Aera CCS Project that could potentially result in an emergency response:

- Injection well or monitoring well integrity failure;
- Injection well monitoring equipment failure (e.g., shutoff valve or pressure gauge, etc.);
- Fluid (e.g., formation water) or CO_2 leakage to a potential USDW or land surface;
- Natural disaster (e.g., lightning strike, grass or brush fire); and
- Natural or induced seismic event.

Response actions will depend on the severity of the event(s) triggering an emergency response. Emergency conditions were ranked by comparing the risk categories of people, assets,

environment, and governance with severity of event and likelihood of occurrence. "Emergency events" are categorized as shown in **Table 1**.

Table 1. Degrees of Risk for Emergency Events

Severity	Definition
Minor Emergency	Event poses little to no immediate risk of impact to human health, infrastructure, resources, or governance.
Serious Emergency	Event poses potential significant near-term risk of impact to human health, resources, infrastructure, or governance if conditions worsen or no response actions taken.
Major Emergency	Event poses immediate substantial risk of impact to human health, resources, infrastructure, or governance. Emergency actions involving local authorities (evacuation or isolation of areas) should be initiated.

4. EMERGENCY IDENTIFICATION AND RESPONSE ACTIONS

Steps to identify and characterize the event will be dependent on the specific issue identified, and the severity of the event. Actionable limits located in the Quality Assurance and Surveillance Plan (QASP) will be used to assist in ranking the severity of an event. The potential risk scenarios are detailed below.

4.1 Well Integrity Failure

Integrity loss of an injection well may have occurred if the following events occur:

- Automatic shutdown devices are activated:
    - Wellhead pressure exceeds the specified shutdown pressure specified in the permit.
    - Annulus pressure indicates a loss of external or internal well containment.
- Mechanical Integrity Test (MIT) results identify a loss of mechanical integrity.

4.1.1 Severity

- Minor Emergency (e.g., if a shutoff is triggered by mechanical or electrical malfunctions)
- Serious or Major Emergency (e.g., triggered alarms from automatic shut in of CO_2 into or from injection well or a failed MIT)

4.1.2 Timing of Event

Injection phase

4.1.3 Avoidance Measures

- Well Construction – Aera's well design and construction will consist of several barriers to separate groundwater from injected CO_2 in the injection well and from brine water from saline formation(s) in the monitoring well(s). The barriers include blowout preventors; compatible steel conductor pipe, surface casing, intermediate casing, outer long-string

casing, tubing, and packers between tubing and casing strings; and cement between casing strings and between outermost casing and borehole.

- Operations – Aera will operate within the permit limits through automated surface monitoring and visual equipment inspections to avoid or identify early signs of integrity issues. Aera will install aboveground automatic shutoff valves and alarms that will be triggered by pressures beyond permitted operating limits that occur either upstream or downstream of the valves and check valves to prevent flow in a direction opposite to the intended design. Aera will maintain wellbore integrity and isolation of CO_2 to the permitted injection zone by means of regular subsurface monitoring and logging.

4.1.4 Detection methods

Pressure and flow rate monitoring, MITs, and / or groundwater analyses

4.1.5 Potential response actions

- Notify the EPA UIC Program Director within 24 hrs of the emergency event per 40 CFR 146.91(c). Notify appropriate state and local agencies as required.
- Identify the location, nature, and extent of damage (if any) to the well or wellhead.
- Determine the severity of the event, based on the information available, within 24 hours of notification.

If the situation is a Minor Emergency, perform necessary repairs.

If the situation is a Major or Serious Emergency:

- Initiate shutdown plan, in consultation with the EPA UIC Program Director.
- Notify Belridge Producing Complex, On Duty Manager of Operations and/or On Duty Supervisor (s), using the Aera Pre-Incident Plan for Emergency Response as applicable.
- Initiate the Incident Command System and begin staffing an Incident Management Team.
- Use handheld equipment to measure CO_2 levels, then isolate and restrict access as appropriate to the Aera CCS site.
- Continuously monitor the well site, well pressure, temperature, and annulus fluid level and annulus pressure to assess integrity loss and determine the root cause of failure.
- Perform appropriate repairs and confirm internal and external mechanical integrity prior to restarting injection upon approval from the UIC Program Director.
- Monitor CO_2 and indicator parameter levels, as appropriate in groundwater monitoring wells.

- Based on analytical results and observations, a case-specific work plan may be developed in consultation with the UIC Program Director and may include, but not be limited to, additional groundwater monitoring and evaluation of further actions.

4.1.6 Response personnel

The following response personnel have contact information listed in the Aera Belridge Producing Complex Emergency Incident Placard, and will be dispatched in case of a Major or Serious Emergency.

- Belridge Producing Complex, On Duty Manager of Operations and/or On Duty Supervisor(s), (see placard for contact phone number)
- Belridge Critical Well Response Team, (661) 765-1133, 24-hour (800) 247-5977
- Contractors including: Patriot Environmental Service, (800) 624-9136

4.1.7 Equipment

Required equipment will be selected based on the event-specific evaluations performed, and may include but are not limited to: drilling rig or workover rig or coiled tubing unit; wireline and logging equipment; slickline; and well control equipment.

4.2 Injection Well Monitoring Equipment Failure

The failure of monitoring equipment for wellhead pressure, temperature, and/or annulus pressure may indicate a potential issue with the injection well. This loss of data may affect the ability to demonstrate injection well mechanical integrity.

4.2.1 Severity

- Minor Emergency (e.g., loss of sensor or monitoring data, but other data sources are sufficient to demonstrate injection well mechanical integrity)
- Serious Emergency (e.g., loss of sensor or monitoring data and other data sources are not sufficient to demonstrate injection well mechanical integrity)

4.2.2 Timing of event

Injection and post-injection phases

4.2.3 Avoidance measures

Regular site and equipment inspections and prompt maintenance, manned-remote monitoring, equipment updates and calibration.

4.2.4 Detection methods

Observed anomalies in monitoring data or visual inspections of monitoring and measuring equipment.

4.2.5 Potential response actions

- Notify the EPA UIC Program Director within 24 hrs of the emergency event per 40 CFR 146.91(c). Notify appropriate state and local agencies as required.
- Identify the nature of the equipment malfunction.
- Determine the severity of the event, based on the information available, within 24 hours of notification.

If the situation is a Minor Emergency, perform necessary reset/repair or replacement of sensor/monitoring devices.

If the situation is a Serious Emergency:

- Initiate shutdown plan, in consultation with the EPA UIC Program Director.
- Notify Belridge Producing Complex, On Duty Manager of Operations and/or On Duty Supervisor (s), using the Aera Pre-Incident Plan for Emergency Response as applicable.
- Identify the location, nature, and extent of the failure; reset/repair, or replace sensor/monitoring devices; and/or confirm internal and external well integrity prior to restarting injection (upon approval of the UIC Program Director).
- If a loss of mechanical integrity is determined, use response actions described in **Section 4.1.5**.

4.2.6 Response personnel

The following response personnel have contact information listed in the Aera Belridge Producing Complex Emergency Incident Placard, and will be dispatched in case of a Major or Serious Emergency.

- Belridge Producing Complex, On Duty Manager of Operations and/or On Duty Supervisor(s), (see placard for contact phone number)
- Belridge Critical Well Response Team, (661) 765-1133, 24-hour (800) 247-5977
- Contractors including: Patriot Environmental Service, (800) 624-9136

4.2.7 Equipment

Required equipment will be selected based on the event-specific evaluations performed**.**

4.3 Potential Fluid (brine) or CO_2 Leakage to Potential USDW

Elevated concentrations of indicator parameter(s) in groundwater sample(s) or other evidence of fluid (brine) or CO_2 leakage into a potential USDW.

4.3.1 Severity

- Minor Emergency: evidence that fluid or CO2 has potentially leaked from the injection zone into the oil-bearing, saline aquifers above; no immediate risk to human health, resources, or infrastructure.
- Serious to Major Emergency: evidence that fluid or CO_2 has potentially migrated from the injection zone into a potential USDW.

4.3.2 Timing of event

Injection and post-injection phases

4.3.3 Avoidance measures

- The project site has been carefully evaluated and is suitable for the project activities, as described in **Section 2.10** of the **Application Narrative**.
- Detailed evaluations of artificial penetrations within the AoR have been performed and necessary corrective actions will be performed prior to injection (**Attachment B**).
- Injection wells will operate within the established permit limits (**Section 7.1** of the **Application Narrative**).
- Rigorous monitoring will be performed during injection and post-injection phases (**Attachments E** and **G**).

4.3.4 Detection methods

Comprehensive groundwater monitoring is detailed in **Attachments E** and **G**.

4.3.5 Potential response actions

- Notify the EPA UIC Program Director within 24 hrs of the emergency event per 40 CFR 146.91(c). Notify appropriate state and local agencies as required.
- Initiate shutdown plan, in consultation with the UIC Program Director.
- Notify Belridge Producing Complex, On Duty Manager of Operations and/or On Duty Supervisor (s), using the Aera Pre-Incident Plan for Emergency Response as applicable.
- Initiate the Incident Command System and begin staffing an Incident Management Team.
- Evaluate the nature, extent, and cause(s) of the potential leak.
- Determine the severity of the event, based on the information available, within 24 hours of notification.
- If the presence of indicator parameters are confirmed, develop (in consultation with the UIC Program Director and other state and local agencies as required) a case-specific work plan that may include, but may not be limited to:

- Performing additional groundwater monitoring to evaluate the extent of impacts.
- Evaluating further actions, which may include infrastructure repairs/modifications:
    - If the source of the release is suspected to be an active or abandoned well, corrective action will be performed.
    - If faults, fractures, or confining zone failure are the suspected leakage pathways, geophysical surveys will be conducted in an attempt to locate the source of the leak. Next steps will be proposed and developed in coordination with the UIC Program Director.
    - If a loss of mechanical integrity is determined, use response actions described in **Section 4.1.5**.
- Evaluating whether groundwater remediation is required:
    - If required, perform groundwater remediation and conduct monitoring on a frequency to be determined by Aera in consultation with the UIC Program Director, until impacts have been mitigated.

4.3.6 Response personnel

The following response personnel have contact information listed in the Aera Belridge Producing Complex Emergency Incident Placard, and will be dispatched in case of a Major or Serious Emergency.

- Belridge Producing Complex, On Duty Manager of Operations and/or On Duty Supervisor(s), (see placard for contact phone number)
- Belridge Critical Well Response Team, (661) 765-1133, 24-hour (800) 247-5977
- Contractors including: Patriot Environmental Service, (800) 624-9136

4.3.7 Equipment

Required equipment will be selected based on the event-specific evaluations performed**.**

4.4 Natural Disaster

Natural and weather-related events such as a grass fire or a lightning strike may affect surface facilities and/or wells. Natural and weather-related events such as a grass fire or a lightning strike may affect surface facilities.

4.4.1 Severity

- Minor Emergency (e.g., small, contained/extinguished fire with little to no risk or interruption in operations)
- Serious or Major Emergency (e.g., fire requiring operational shut down and/or causing significant damage to equipment)

4.4.2 Timing of event

Injection and post-injection phases

4.4.3 Avoidance measures

- Grass or brush fire: create grass and brush clearance zones by clearing to bare soil zones of 2 to 3 feet (ft) for grass and 4 to 6 ft for medium brush around injection and observations wells
- Lightning: install lightning protection system, as appropriate

4.4.4 Detection methods

Visual and automatic shutoff valves and alarms

4.4.5 Potential response actions

- Notify the EPA UIC Program Director within 24 hrs of the emergency event per 40 CFR 146.91(c). Notify appropriate state and local agencies as required.
- Determine the severity of the event, based on the information available, within 24 hours of notification.
- Coordinate with emergency responders and other state and local agencies on emergency response actions.

For a Minor Emergency:

- Coordinate with Belridge Producing Complex, On Duty Manager of Operations and/or On Duty Supervisor (s), using the Aera Pre-Incident Plan for Emergency Response as applicable.
- Follow appropriate instructions from the Incident Management Team and continue operations.

For a Major or Serious Emergency:

- Initiate shutdown plan, in consultation with the UIC Program Director.
- Notify Belridge Producing Complex, On Duty Manager of Operations and/or On Duty Supervisor (s), using the Aera Pre-Incident Plan for Emergency Response as applicable.
- When the Incident Management Team has communicated it is safe to do so, perform the following:
    - If a loss of mechanical integrity is known or suspected, follow response actions described in **Section 4.1.5**.
    - If sensor/monitoring equipment failures are known or suspected, follow response actions described in **Section 4.2.5**.

- If a potential brine or CO_2 release to a USDW is known or suspected, follow response actions described in **Section 4.3.5**.

4.4.6 Response personnel

The following response personnel, who's contact information is listed in the Aera Belridge Producing Complex Emergency Incident Placard, will be dispatched in the case of emergency.

- Belridge Producing Complex, On Duty Manager of Operations and/or On Duty Supervisor(s), (see placard for contact phone number)
- Belridge Critical Well Response Team, (661) 765-1133, 24-hour (800) 247-5977
- Contractors including: Patriot Environmental Service, (800) 624-9136

4.4.7 Equipment

Required equipment will be selected based on the event-specific evaluations performed**.**

4.5 Natural or Induced Seismic Event

Natural and induced seismic events have the potential to affect injection and monitoring wells and equipment. Based on the project operating conditions, it is unlikely that injection operations would induce a seismic event outside a 10-mile radius around each injection well. Therefore, this portion of the response plan is developed for seismic events with an epicenter within a 10.0-mi radius of the injection wells, or natural events that have the potential to cause disruption to project operations.

4.5.1 Severity

- Major – Operating State RED
- Serious – Operating State YELLOW
- Minor – Operating State GREEN

4.5.2 Timing of event

Injection, post injection

4.5.3 Avoidance measures

Fault stability analysis and appropriate operating conditions as described in **Sections 2.3** and **7.1** of the **Application Narrative**, and microseismic monitoring as described in the Testing and Monitoring Plan (**Attachment E**).

4.5.4 Detection methods

Aera will conduct periodic monitoring and analysis of the Southern California Earthquake Data Center (SCEDC) reporting data of earthquakes with moment magnitude (M) >1, local reporting of felt events, local observations, and reports of damage caused by seismic activity within a 10.0-mi

radius of the injection well. Continuous microseismic monitoring will be performed as described in **Attachment E**.

4.5.5 Potential response actions

Aera will use a Seismic Response System structure presented in **Table 2**. An operating state will be assigned based on data obtained from the SCEDC catalog. The operating state is determined using threshold criteria that correspond to the site's potential risk and level of seismic activity. **Table 2** correlates each level of operating state with the threshold conditions and operating personnel information about the potential risk of further seismic activity and guides them through a series of response actions .

4.5.6 Response personnel

The following response personnel, who's contact information is listed in the Aera Belridge Producing Complex Emergency Incident Placard, will be dispatched in the case of emergency.

- Belridge Producing Complex, On Duty Manager of Operations and/or On Duty Supervisor(s), (see placard for contact phone number)
- Belridge Critical Well Response Team, (661) 765-1133, 24-hour (800) 247-5977
- Contractors including: Patriot Environmental Service, (800) 624-9136

4.5.7 Equipment

Required equipment will be selected based on the event-specific evaluations performed**.**

Table 2. Seismic Response System for Seismic Events > M1.0 with an Epicenter within a 10.0-Mi. Radius of an Injection Well

Operating Level		Threshold Conditions	Response Actions
Green		Seismic events with magnitude ≤ M1.5 or Seismic events > M1.5 and ≤ M2.5 with no felt report or local observation	1. Continue normal operation within permitted levels. 2. Closely monitor SCEDC data for 30 days. 3. Evaluate continuous microseismic monitoring data to identify potentially correlated events; consult with the UIC Program Director on next steps.
Yellow		Seismic events > M1.5 and ≤ M2.5 with felt report or local observation or Seismic event > M2.5 and no felt report or local observation	1. Evaluate impacts to the project and notify the UIC Program Director within 24 hours of the incident. 2. Following evaluation, determine whether normal operations can continue. 3. If a loss of mechanical integrity is known or suspected, follow response actions described in **Section 4.1.5**. 4. If sensor/monitoring equipment failures are known or suspected, follow response actions described in **Section 4.2.5**. 5. If a potential brine or CO_2 release to a USDW is known or suspected, follow response actions described in **Section 4.3.5**. 6. Evaluate continuous microseismic monitoring data to identify potentially correlated events; consult with the UIC Program Director on next steps.
Red		Seismic event > M2.5 with local observation or felt report or damage report	1. Initiate shutdown plan, in consultation with the UIC Program Director. 2. Notify Belridge Producing Complex, On Duty Manager of Operations and/or On Duty Supervisor(s), using the Aera Pre-Incident Plan for Emergency Response as applicable. 3. When the Incident Management Team has communicated it is safe to do so, determine whether normal operations can continue. 4. If a loss of mechanical integrity is known or suspected, follow response actions described in **Section 4.1.5**. 5. If sensor/monitoring equipment failures are known or suspected, follow response actions described in **Section 4.2.5**. 6. If a potential brine or CO_2 release to a USDW is known or suspected, follow response actions described in **Section 4.3.5**. 7. Evaluate continuous microseismic monitoring data to identify potentially correlated events; consult with the UIC Program Director on next steps.

5. RESPONSE PERSONNEL AND EQUIPMENT

Site personnel, project personnel, and local authorities will be relied upon to implement this ERRP.

Site personnel to be notified are identified on the Aera Belridge Producing Complex Emergency Incident Placard.

The site-specific emergency contact list in **Table 3** will be maintained on site and updated as appropriate during the life of the project.

Table 3. Contact Information for Key Local, State, and Other Authorities

Organization	Phone Number
Trans West (dispatches Emergency Response (ER) Teams and connects to Kern County services (Sheriff & Fire Dept.)	(661) 765-4450
Kern County Sheriff	(661) 862-8740
Kern County Fire Dept.	(877) 237-2911 (877-AERA-911) (emergency) (661) 324-6551 (non-emergency)
California Governor's Office of Emergency Services Warning Center (Cal OES)	(800) 852-7550
Patriot Environmental Service	(800) 624-9136
UIC Program Director	(415) 972-3971
EPA National Response Center (24 hours)	(800) 424-8802
CARB Executive Officer	(800) 242-4450
California Geological Survey	(916) 445-1825
California Highway Patrol	911

Equipment needed in the event of an emergency and remedial response will vary, depending on the type of event. Response actions (cessation of injection, well shut-in, and evacuation) will generally not require specialized equipment to implement. Where specialized equipment (such as a drilling rig or logging equipment) is required, Aera will be responsible for its procurement.

6. EMERGENCY COMMUNICATIONS PLAN

Aera will communicate to the public about signicant events that require an emergency response and may reasonably be expected to endanger public health and safety or have significant adverse effects on the environment. The amount of information, timing, and communications method(s) will be appropriate to the event and its severity, and will include: event description, potential impacts to the environment or other local resources, investigation summary, response actions and status. Aera will provide periodic updates as necessary.

If required, Aera will also communicate with entities who may need to be informed about or act in response to the event, including local water purveyors or operators, CO_2 suppliers, pipeline operators, oil and gas operators, landowners, and other departments/authorities as guided by the UIC Program Director.

7. PLAN REVIEW

This ERRP shall be reviewed:

- At least once every five years following its approval by the EPA;
- Within one year of an AoR reevaluation;
- Within 30 days following significant changes to the injection process or the injection facility, or a Serious or Major Emergency; or
- As required by the EPA.

If the review indicates that no amendments to the ERRP are necessary, Aera will provide the EPA with the documentation supporting the "no amendment necessary" determination.

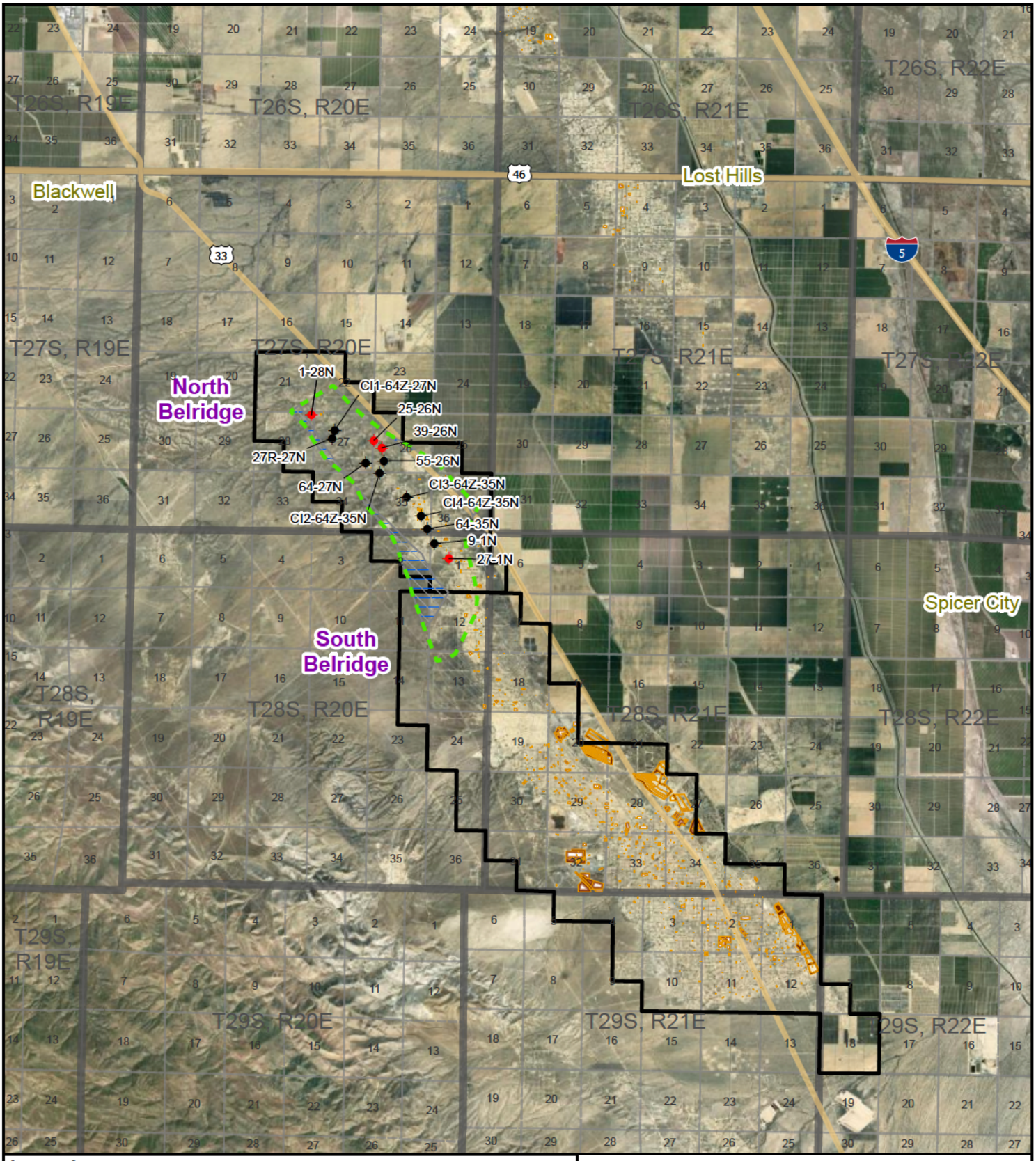
If the review indicates that amendments to the ERRP are necessary, amendments shall be made and submitted to the EPA within 120 days following an event that initiates the ERRP review procedure.

8. STAFF TRAINING AND EXERCISE PROCEDURES

Aera facility staff and contractors working at the Aera CCS Facility or within the AoR may require training depending on project role and activities. This may include, but not be limited to, the following:

- Incident Command System Training
- CO_2 Facilities Training
- CO_2 Safety Training
- CO_2 Hazards Training
- Emergency Response Training

Figures



Legend

Class VI Wells

- Injection Well
- Monitoring Well
- Area of Review
- Potential USDWs Within the AOR
- North/South Belridge Administrative Boundary
- Facilities/Building Infrastructure
- Township
- Section

N

0 2 Miles

Aera North Belridge Oil Field Resources and Infrastructure

North Belridge Oil Field
Western Kern County
California

Geosyntec consultants

Aera CCS	December 2022	Figure 1

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