ATTACHMENT K –
EMERGENCY AND REMEDIAL RESPONSE PLAN

GULF COAST SEQUESTRATION
PROJECT MINERVA

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FACILITY INFORMATION

Facility name: Project Minerva
Injector Well Nos. 1 – 4

Facility contact: David Cook, CEO
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Well Locations: [redacted]

1.0 INTRODUCTION

This Emergency and Remedial Response Plan ("ERRP") describes actions that Gulf Coast Sequestration ("GCS") shall take to address movement of the injection fluid/gas or formation fluid in a manner that may endanger the underground source of drinking water ("USDW") during the construction, operation, or post-injection site care periods.

If GCS obtains evidence that the injected CO_2 stream and/or associated pressure front may cause endangerment to a USDW, GCS must perform the following actions:

1. Immediately cease injection for the injection well(s)
2. Take all steps reasonably necessary to identify and characterize any release
3. Notify the permitting agency (UIC Program Director / LDNR Commissioner) of the emergency event within 24 hours
4. Implement applicable portions of the approved ERRP
5. Prepare and submit an incident report to the Injection and Post-Injection Phase reporting module of the USEPA (EPA) GSDT (Geologic Sequestration Data Tool).

2.0 LOCAL RESOURCES AND INFRASTRUCTURE

Resources in the vicinity of Project Minerva that may be affected as a result of an emergency event at the project site include:

- Local USDW
- Eight (8) active groundwater wells
- Wetland areas

Infrastructure in the vicinity of Project Minerva that may be affected as a result of an emergency at the project site includes:

- Local roads and access roads
- Pipelines – multiple pipelines as defined in Figure K.2.0-1
- 105 oil and gas wells (including sidetracks and recompletions). Full details may be found in Section 8.0 (Corrective Action) and Table B.8.0-1 (Corrective Action Summary) of Attachment B (Area of Review and Corrective Action Plan)
- Project Minerva CO_2 injection wells wellheads (Injector Well Nos. 1 – No 4)
- Project Minerva monitoring wells
    - Three (3) in-zone well wellheads
    - Four (4) above-zone well wellheads
    - Six (6) USDW well wellheads

Resources and infrastructure addressed in this plan are shown in Figure K.2.0-1.

3.0 POTENTIAL RISK SCENARIOS

The following events related to Project Minerva that could potentially result in an emergency response:

- Injection or monitoring well integrity failure
- Injection well monitoring equipment failure (e.g., shut-off valve or pressure gauge, etc.)
- Fluid (e.g., brine) leakage to a USDW

- CO_2 leakage to USDW or land surface
- A natural disaster (e.g., earthquake, tornado, hurricane, lightning strike)
- Significant induced seismic event, of level Orange or Magenta in Table K.3.0-1

Response actions will depend on the severity of the event(s) triggering an emergency response. "Emergency events" are categorized as shown in Table K.3.0-2.

3.1 EMERGENCY IDENTIFICATION AND RESPONSE ACTIONS

Steps to identify and characterize the event will be dependent on the specific issue detected, and the severity of the event. The potential risk scenarios identified in Section 4.0 are detailed below.

3.1.1 Injection or Monitoring Well Integrity Failure

Integrity loss of an injection or monitoring well may endanger USDWs. Integrity loss may occur if the following events happen:

- 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
    - Pursuant to 40 CFR 146.91(c)(3), GCS must notify the UIC Program Director within 24 hours of any triggering of a shut-off system (i.e., down-hole or at the surface)
- Mechanical integrity test results identify a loss of mechanical integrity

Severity: Minor to major, depending on the results of investigation into the incident and identified remedial activities.

Timing of event: Construction, pre-injection, injection, post-injection phases.

Avoidance measures:

- Proper well design, construction, inspection, and maintenance.
- Routine mechanical integrity testing.
- Routine inspection of monitoring equipment.

Detection methods:

- Well pressure monitoring.
- Annulus pressure and fluid level monitoring.
- Monitoring drilling fluid returns and parameters during well construction and workovers.

Potential response actions:

- Notify the UIC Program Director within 24 hours of the emergency event, per 40 CFR 146.91(c)
- Determine the severity of the event, based on the information available, within 24 hours of notification
- Begin investigation into the source and extent of the problem and determine an appropriate course of action to repair and/or remediate the issue.
- Prepare and submit an incident report to the Injection and Post-Injection Phase reporting module of GSDT.
- For a major or serious emergency:
    - Immediately cease injection
    - If contamination is detected, identify and implement appropriate remedial actions (in consultation with the UIC Program Director)
- For a minor emergency:
    - Conduct assessment to determine whether there has been a loss of mechanical integrity.
    - If there has been a loss of mechanical integrity, immediately cease injection

Response personnel: Drilling, workover, or injection crew, supervisory personnel.

Equipment: Depending on the severity of the event, equipment required may include a workover rig, drilling rig, casing, and cementing equipment, drilling fluids/muds/kill fluids, logging equipment, and surface monitoring equipment.

3.1.2 Injection Well Monitoring Equipment Failure

The failure of monitoring equipment for wellhead pressure, temperature, and/or annulus pressure may indicate a problem that could endanger USDWs.

Severity: Minor to major, depending on the results of the investigation into the incident and identified remedial activities.

Timing of event: Injection, post-injection phases.

Avoidance measures:

- Preventative and routine maintenance of monitoring equipment.
- Back-up monitoring equipment.

Detection methods: Continuous monitoring and recording of well parameters. Please see "Testing and Monitoring Plan 40 CFR 146.90" document for full details on detection methods

Response actions:

- Notify the UIC Program Director and LDNR Commissioner within 24 hours of the emergency event, per 40 CFR §146.91(c) and LAC43: XVII §3629.A.1.c.
- Determine the severity of the event based on the information available within 24 hours of notification.
- Begin investigation into the source and extent of the problem and determine an appropriate course of action to repair and/or remediate the issue.
- Prepare and submit an incident report to the Injection and Post-Injection Phase reporting module of GSDT.
- For a major or serious emergency:
    - Immediately cease injection .
    - If contamination is detected, identify and implement appropriate remedial actions (in consultation with UIC Program Director and LDNR Commissioner).
- For a minor emergency:

- Conduct assessment to determine whether there has been a loss of mechanical integrity.
- If there has been a loss of mechanical integrity, immediately cease injection .

Response Personnel: Supervisory personnel, maintenance technicians, contract personnel.

Equipment: Applicable equipment for repair and/or replacement of monitoring systems.

3.1.3 Brine or CO_2 Leakage to USDW or the Surface

Elevated concentrations of indicator parameter(s) in groundwater sample(s) as identified in the Testing and Monitoring Plan, or other verified evidence of fluid (brine) leakage into a USDW.

Severity: Major, due to potential contamination of USDWs.

Timing of event: Injection, post-injection phases.

Avoidance measures: Following methods and sampling schedules as specified in the Testing and Monitoring Plan.

Detection methods: Anomalies in the results of any monitoring outlined in the Testing and Monitoring Plan or during the Post-Injection Site Care period may be cause for additional samples to be taken in the USDW to investigate potential leakage.

Response actions:

- Notify the UIC Program Director within 24 hours of the emergency event, per 40 CFR 146.91(c)
- Determine the severity of the event, based on the information available, within 24 hours of notification
- Elevated concentrations of indicator parameters in USDW samples.
- Anomalies in the results of any monitoring outlined in the Testing and Monitoring Plan or during the Post-Injection Site Care period may be cause for additional samples to be taken in the USDW to investigate potential leakage.
- For all emergencies:

- Immediately cease injection
- Sample groundwater and surface water wells. For purging of wells, water sample withdrawal equipment shall be completely inert, economical, easily cleaned, cleaned prior to use (in the case of reusable items), able to operate at remote sites in the absence of power sources, and capable of delivering variable rates for well purging and sample collection. To ensure that a proper volume of water is removed from a well prior to sampling, it is first necessary to know the volume of standing water in the well pipe (including well screen where applicable). This volume can be easily calculated using standard procedures. The volume of water to be purged from each well will be determined prior to sample collection. This volume will depend on the intent of the monitoring program and the hydrogeologic conditions. Purge a minimum of three to five well casing volumes into a 55-gallon drum(s) for storage of potentially contaminated purged groundwater, before sampling (or as directed by the project-specific work plan). In low-permeability strata (i.e., if the well is pumped to dryness), one volume will suffice. Allow the well to recover to 75 percent of initial water level before sampling.
- If the presence of indicator parameters is confirmed, develop (in consultation with the UIC Program Director) a case-specific work plan
- If any water well being utilized as potable water supply and has been caused to exceed drinking water standards, arrange for an alternate potable water supply
- Proceed with efforts to remediate USDW to mitigate any unsafe conditions
- Continue groundwater remediation and monitoring on a frequent basis (frequency to be determined by GCS and the UIC Program Director) until unacceptable adverse USDW impact has been fully addressed

Response personnel: Supervisory personnel, environmental professionals/subcontractors.

Equipment: Depending on the severity of the event, response equipment may include water testing and treatment/sampling equipment, sampling equipment for surface water, soil gas, ambient air, and surface water remediation and water supply equipment.

3.1.4 Natural Disaster

A natural disaster (e.g., hurricane, tornado, lightning strike, flooding or earthquake) affecting the normal operation of the injection well could impact site operations by loss of well integrity, fluid leakage, and/or equipment malfunction. An earthquake may disturb surface and/or subsurface facilities, and weather-related events may affect surface facilities.

Due to the proximity of the location to the Gulf of Mexico, hurricanes and severe storms involving tornadoes are the most likely natural disasters/severe weather events to occur at the facility.

Severity: Minor to major, depending on the type and severity of the natural disaster. Any immediate, near-term, or prolonged risk to human health, resources, or infrastructure will be assessed immediately to determine emergency actions that will be taken.

Timing of event: All phases of the project

Avoidance measures:

- Preparation measures may be taken by monitoring current and predicted conditions.

Detection methods:

- Weather forecast monitoring and monitoring of activity reported by the USGS earthquake hazard program.

Response actions:

- Notify the UIC Program Director within 24 hours of the emergency event, per 40 CFR 146.91(c)
- Determine the severity of the event, based on the information available, within 24 hours of notification

- Begin investigation into the extent of the problem and determine an appropriate course of action to repair and/or remediate any issues caused by or resulting from the disaster.
- Prepare and submit an incident report to the Injection and Post-Injection Phase reporting module of GSDT.
- For a major emergency:
    - Immediately cease injection
    - If contamination or endangerment is detected, identify and implement appropriate remedial actions (in consultation with the UIC Program Director)
- For a major or minor emergency:
    - Conduct assessment to determine whether there has been a loss of mechanical integrity
    - If there has been a loss of mechanical integrity, immediately cease injection

Response personnel: Supervisory personnel, and applicable personnel to diagnose, repair, and remediate as needed.

Equipment: Applicable equipment to diagnose, repair, and remediate as needed.

3.1.5 Induced or Natural Seismic Event

Based on the project operating conditions, it is highly unlikely that injection operations would ever induce a seismic event outside the Area of Review ("AoR"). Therefore, this portion of the response plan is developed for any seismic event within the AoR (see Figure K.2.0-1).

To monitor the area for seismicity, Distributed Acoustic Sensing ("DAS") will be installed in the monitoring wells. DAS is a technology that enables continuous, real-time measurements along the entire length of a fiber optic cable. Unlike traditional sensors that rely on discrete sensors measuring at pre-determined points, distributed sensing utilizes the optical fiber. The optical fiber is the sensing element. These systems allow acoustic signals to be detected over large distances and in harsh environments.

Based on the periodic analysis of the monitoring data, observed level of seismic activity, and local reporting of felt events, the site will be assigned an operating state. The operating state is determined using threshold criteria which correspond to the site's potential risk and level of seismic activity. The operating state provides operating personnel information about the potential risk of further seismic activity and guides them through a series of response actions.

Severity: Depending on the magnitude of the induced or natural seismic event, the impact could cause a minor, serious, or major emergency. Any immediate, near term, or prolonged risk to human health, resources, or infrastructure will be assessed immediately to determine emergency actions that will be taken.

Timing of event: All phases of the project.

Avoidance measures:

- Refer to Table K.3.0-1 for response actions.

Detection methods: DAS installed in monitoring wells and the public monitoring array to detect any minor changes in induced or natural seismicity.

Response actions:

The site will be assigned an operating state based on the periodic analysis of monitoring data, observed level of seismic activity, and local reporting of felt events. The operating state is determined using threshold criteria which correspond to the site's potential risk and level of seismic activity. The operating state provides information to facility personnel regarding the potential risk of further seismic activity and guides them through a series of response actions, further described in Table K.3.0-1.

GCS will perform the following in the event of a seismic event:

- Identify the epicenter, timing, frequency, and magnitude of the events,
- Determine whether there is a correlation between the event and injection activities,
- Determine if the event has impacted the mechanical integrity (well integrity testing details are included in the Testing and Monitoring Plan) of the well and/or confining layers of the injection zone, and;

- If warranted, stop CO_2 injection and/or depressurize surface facilities and implement appropriate remedial actions in consultation with the UIC Program Director and LDNR Commissioner.

- If warranted, prepare and submit an incident report to the Injection and Post-Injection Phase reporting module of GSDT.

The seismic monitoring system summary is presented in Table K.3.0-1. The table provides each level of operating state with the threshold conditions and operation response actions.

Response personnel: Identify the on-call or available staff (e.g., operational staff, contractors) who would respond to the event.

Equipment: Depending on the severity of the event, equipment needed may include groundwater remediation equipment, drilling rig, workover rig, drilling fluids/muds/kill fluids, logging equipment, and cement or casing equipment as approved and discussed with the UIC Program Director and LDNR Commissioner

4.0 RESPONSE PERSONNEL AND EQUIPMENT

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

Site personnel to be notified includes (not listed in order of notification):

1. Project Engineer(s)
2. Plant Safety Manager(s)
3. Environmental Manager(s)
4. Plant Manager
5. Plant Superintendent

A site-specific emergency contact list will be developed and maintained during the life of the project. Project Minerva will provide the current site-specific emergency contact list to the UIC Program Director.

Equipment needed in the event of an emergency and remedial response will vary, depending on the triggering emergency 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, GCS shall be responsible for its procurement.

5.0 EMERGENCY COMMUNICATIONS PLAN

Public access to information is a top priority at GCS. Project Minerva will communicate to the public about any event that requires an emergency response to ensure that the public understands the event and whether there are any short- or long-term environmental or safety implications. The amount of information, timing, and communications method(s) will be appropriate to the event, its severity, whether proximity to sources of drinking water or other environmental implications, any impacts to the surrounding community, and their awareness of the event.

We have committed to creating a dedicated website to provide information about the project, CCUS technology and ongoing information related to our development of the project. GCS has also committed to creating a live stream of the injection site in order to provide the community with complete transparency and visual details of potential activity at the site.

GCS will describe what happened, any impacts to the environment or other local resources, how the event was investigated, what responses were taken, and the status of the response. For responses that occur over the long-term (e.g., ongoing cleanups), GCS will provide timely and continual updates on the progress of the response action(s).

5.1 EMERGENCY RESPONSE COORDINATION

GCS will also communicate with entities who may need to be informed about or act in response to the event, including local water systems, CO_2 source(s) and pipeline operators, landowners, and Regional Response Teams (as part of the National Response Team). Table K.5.1-1 lists key contacts for notification.

5.1.1 Community outreach plan

GCS will maintain consistent communication with the entities in the event of an incident. Information will be transmitted through each of the local governments' emergency alert systems. These are all free services to the public.

For the counties located in Southeast Texas, GCS will coordinate any notifications to be sent via Southeast Texas Alerting Network (STAN) and the State of Texas Emergency

Assistance Registry (STEAR). For Parishes in Southwest Louisiana, GCS will utilize "Calcashout" in Calcasieu Parish and "CODERED" in Cameron Parish.

The notifications are transmitted to local businesses, local governments, as well as from the citizenry at large. These alerts are intended to streamline the outreach to folks in the impacted areas while simultaneously bringing awareness to the local media, emergency response personnel, and individuals in the impacted area. These personalized alerts will be effective in communicating any emergency issues to individuals and businesses in certain locations via a home line, cell phone, email, or text.

5.1.2 Media outreach plan

GCS has developed strong working relationships with the local media and will proactively provide information to all media outlets, including broadcast, radio and social media. Access to information, links to video surveillance and real-time updates will be made available upon development of the Project.

Priority media outlets in southwest Louisiana include the following, based on viewership, network affiliations, and audience size:

- KPLC – NBC
- KATC – ABC
- KBAV
- Gator 99.5
- The Lake 92.9

Priority media outlets in southeast Texas include the following, based on viewership, network affiliations, and audience size:

- KBTV Channel 4 (FOX)
- KFDM Channel 6 (CBS)
- KBMT (ABC/NBC)
- KITU TV (Community Broadcast)
- KTXN FM – Beaumont
- KIOC FM

6.0 PLAN REVIEW

This ERRP shall be reviewed:

- At least once every five years following its approval by the permitting agency
- Within one year of an AoR reevaluation
- Immediately after any significant changes to the injection process or the injection facility, or an emergency event
- As required by the permitting agency

If the review indicates that no amendments to the ERRP are necessary, GCS will provide the permitting agency 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 permitting agency, following an event that initiates the ERRP review procedure.

7.0 STAFF TRAINING AND EXERCISE PROCEDURES

GCS will ensure all personnel have the knowledge they need to conduct their job safely.

NIMS (300 Level) ICS training is required on a biennial basis for personnel who are named in the Spill Management Team in a Facility or Emergency and Remedial Response Plan or are reasonably expected to fulfill a supervisory role in the management of an incident/emergency. All personnel expected to participate in an emergency response will be trained annually on the hazardous substances they may encounter during an emergency response and will be provided training on mitigating those hazards.

Hazardous Waste Operations and Emergency Response (HAZWOPER) Operations level training is required for personnel who are required to participate in the active response to an incident/emergency. The Training Program Administrator will certify personnel as HAZWOPER trained through the completion of comprehensive quarterly training, hands-on training, response drill participation, and applicable on-the-job experiences. Applicable personnel will possess biennial CPR/First Aid/AED Awareness Certifications and participate in hands-on response training in their area of operations through

equipment deployment drills aligning with the Preparedness Response Exercise Program (PREP).

GCS will provide appropriate training as required by organizations with geographic and logistical jurisdiction at the facility (e.g., PHMSA).

The Training Program Administrator will maintain documentation on the completion of all training elements and HAZWOPER certification for each trained employee.