SECTION 8 – EMERGENCY AND REMEDIAL RESPONSE PLAN

This Emergency and Remedial Response plan for Hackberry Carbon Sequestration Well No. 001 was prepared to meet the requirements of SO 29-N-6, **§623** [40 CFR **§146.94**]. The plan describes potential adverse events that could occur in the development, operation and post-closure phases of the project and the actions to be taken in the event of such an emergency. This plan will be reviewed and updated annually. Any change in key personnel will also cause the Plan to be updated immediately.

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Figures

(None)

Tables

[redacted]

Resources/Infrastructure in AOR

[redacted]

Infrastructure/Resource-Specific Events and Response Plans

The following scenarios represent a high-level concept of potentially significant adverse events, methods of prevention and detection and likely remedial responses. The likely responses are not intended to be exhaustive in nature. Each situation will be evaluated based on the specific event, using best engineering practices.

Event Description – Well blowout

This event could occur during wellbore drilling if unexpected changes in reservoir pressures cause a sudden release of hydrocarbons.

Risk Level: Low

Prevention and Detection:

- Maintain appropriate mud weights as expected for the area based on offset well data
- Monitor rate of drilling fluid returns versus rates pumped, penetration rates, pump pressures, etc.

Potential Response Actions:

- Stop drilling
- Close the blowout preventer; insert rams into the well.
- Read and record stabilized shut-in pressures
- Stop injection and notify the UIC Program Director within 24 hours.
- Kill the well by pumping fluid down the wellbore that is heavier than the current fluid until the well stops flowing.

Response Personnel: Onsite drilling personnel and supervisors.

Equipment: Drilling rig, mud logging equipment, blowout preventers with annular rams, drilling fluid materials to increase mud weight adequately.

Event Description – Spill

This event could occur during the drilling of the wellbore due to an accidental release of drilling fluids, hydrocarbons, chemicals, etc. during drilling and completion or workover operations.

Risk Level: Medium

Prevention and Detection:

- Properly maintained blowout preventers to prevent accidental release of drilling fluids or hydrocarbons
- Spill prevention equipment on drilling or workover rig

Potential Response Actions:

- Contain spill using available equipment such as absorbents, booms, etc.
- Notify appropriate regulatory authority and supervisory personnel
- Immediately take samples around the point of entry
- Initiate Spill Prevention, Control and Countermeasures Plan for facility

Response Personnel: Drilling/workover crews or operations personnel.

Equipment: Absorbents, containment equipment

Event Description – CO_2 Migration

This event could occur if the plume reaches faults or fractures that allow CO_2 migration into another zone, including the USDW, or to the surface. Failure of the confining zone could also cause CO_2 to migrate.

Risk Level: Medium

Prevention and Detection: The CO_2 plume will be monitored as described in the Testing and Monitoring Section.

Potential Response Actions:

- Cease injection immediately and notify the UIC Program Director within 24 hours.
- Use Ambient Reservoir Monitoring system and/or Vertical Seismic Profile system to assess location and degree of CO_2 movement, as described in the Testing and Monitoring Plan.
- Resume injection, if able, at a reduced rate.
- Continue monitoring of plume at a more frequent interval to determine if migration continues.
- If groundwater/USDW is impacted:
    - Pump carbon dioxide-contaminated groundwater to the surface and aerate it to remove carbon dioxide.

  - Apply “pump and treat” methods to remove trace elements.
  - Drill wells that intersect the accumulations in groundwater and extract carbon dioxide.
  - Provide an alternative water supply if ground water-based public water supplies are contaminated.
- If CO_2 plume is detected above the Upper Confining Interval but below the base of the USDW:
  - Cease injection immediately and notify Director within 24 hours.
  - Conduct investigation to determine the most probable source of the leak.
  - Repair source of leak if possible.
  - Conduct a revised area of review for artificial penetrations that could be impacted by the CO_2 plume at the newly detected depth.
  - If required, develop a corrective action plan to address any artificial penetrations identified.
  - If leak has been repaired, notify Director when injection can be expected to resume.
- If surface water is impacted:
  - Shallow lakes will quickly release dissolved carbon dioxide back into the atmosphere.
  - Create a hydraulic barrier by increasing reservoir pressure upstream of the leak.
- If the plume continues to migrate out of the zone or beyond the expected plume extent, recomplete up hole into the next planned injection interval.

Event Description – Loss of Mechanical Integrity

This event could occur due to failure of cement behind the casing, improperly seated packer or tubing leak.

Risk Level: Medium

Prevention and Detection: Proper wellbore design, including proper cement and metallurgy of the casing and tubing will be implemented in the construction phase. Pressure and rate monitoring, pressure fall-off tests, annulus pressure tests, etc., will all be performed per the Testing and Monitoring Plan.

Potential Response Actions:

- Stop injection and notify the UIC Program Director within 24 hours.
- Close wellhead valve.
- Monitor well and annulus pressures.
- Determine the cause and severity of failure to determine if any release of the CO_2 stream or formation fluids may have been released into any unauthorized zone.
- Pull and replace the tubing or the packer.
- Install chemical sealant barrier and or attempt cement squeeze to block leaks.
- Demonstrate Mechanical Integrity per the methods discussed in Section 5.
- Notify the Director when injection can be expected to resume.

Accidents/Unplanned Events (Typical Insurable Events)

Unforeseen events may occur while operating the Hackberry Storage Project, such as surface infrastructure damage, pipeline leak, compressor failure, animal damage, and weather-related events. [redacted]

Risk Level: Medium

Prevention and Detection:
Equipment will be maintained regularly to prevent or minimize damage. Damage prevention infrastructure will be installed, and markers will be placed to alert the public of potential hazards. The markers will include the name of the operator and telephone number. Barricades will be installed to prevent accidental damage to equipment or animals from entering the facility. Weather will be continuously monitored, and during a possibility of an adverse event, precautions will be taken to limit the potential impact.

Potential Response Actions:

- Stop the injection and notify the Program Director within 24 hours.
- Activate the downhole safety valve if necessary.
- Determine the cause and severity of the failure and initiate repairs.
- Demonstrate mechanical integrity per the methods discussed in *Section 5.*
- Notify the Director when injection can be expected to resume.

Training:

Personnel responsible for implementing this plan shall be trained on their duties and responsibilities related to these facilities during annual on-site and/or table-top training exercises. All plant personnel, visitors, and contractors must attend a Plant overview orientation before obtaining permission to enter any of the Facilities. A refresher course on this training is required annually.

Before starting CO_2 injection operations, Hackberry Carbon Sequestration, LLC will provide a copy of the Emergency Response plan to local first responders and discuss potential response scenarios.

Communications Plan and Emergency Notification Procedures:

Emergency response contacts:

Agency	Telephone Number
Cameron Parish Fire Department	911 or (337) 775-7511

Cameron Parish Sheriff	911 or (337) 775-5111
Cameron Parish Health Unit	(337) 775-5368
Cameron Parish Office of Emergency Preparedness	(337) 775-7048
Louisiana Emergency Preparedness Office	(225) 925-7500
Louisiana State Police	(337) 491-2511
Louisiana State Police – Hazardous Material Hotline	(225) 925-6595

*Table 8- 1: Emergency Services – **CALL 911***

Agency	Telephone Number
Environmental Protection Agency Region 6	(214) 665-2200
Class VI Contact	(214) 665-8473
Louisiana Department of Natural Resources	(225) 342-5515
Injection Well Incidents	(225) 342-5515
Cameron Parish Local Emergency Planning Committee (LEPC)	(337)-775-7048
National Response Center (NRC)	(800) 424-8802
Louisiana State Police – Hazardous Material Hotline	(225) 925-6595

Table 8- 2: Government Agency Notification

[redacted]

[redacted]

As appropriate, Hackberry Carbon Sequestration, LLC will communicate with the public regarding events that require an emergency response, including the impact of the event on drinking or the severity of the event, actions taken or planned, etc.

Flood risk

[redacted]

Emergency Response Plan Review and Updates

This Emergency Response Plan will be reviewed and updated annually. Any amendments to the plan must be approved by the Director and will be incorporated into the permit. This plan will also be reviewed and submitted to the Director within one year of an area of review evaluation; following any significant changes to the facility, such as addition of injection or monitoring wells; change in personnel; or when required by the Director.

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