

Attachment 10: Emergency and Remedial Response Plan
40 CFR 146.94(a)
Vervain Project, McLean County, Illinois
31 January 2023



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Project Information

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List of Acronyms

AoR	Area of Review
CO ₂	Carbon dioxide
ERRP	Emergency and Remedial Response Plan
IL-ICCS	Illinois Industrial CCS Project
MIT	mechanical integrity test
NV_INJ1	Vervain Injection Well #1
NV_INJ2	Vervain Injection Well #2
NV_OBS1	Vervain Deep Observation Well
SOP	standard operating procedure
UIC	Underground Injection Control
USDW	Underground Source of Drinking Water

1. Introduction

This section of the permit application addresses the Emergency Remedial and Response Plan (ERRP) that Heartland Greenway Carbon Storage, LLC (HGCS) will implement for the Vervain Project. This ERRP describes the actions that HGCS shall take to address and remediate mechanical integrity issues, induced seismic events, and other events that could allow for the movement of the CO₂ or injection zone fluids in a manner that may endanger an underground source of drinking water (USDW) during the construction, operation, or post-injection site care periods of the project.

The following events are identified as potential risk scenarios. These scenarios are discussed further in Section 2. These scenarios were identified and discussed as part of the Risk Assessment performed for the project.

1. Injection Wells (NV_INJ1, NV_INJ2)/ Deep Observation Well (NV_OBS1) well integrity failure,
2. NV_INJ1, NV_INJ2, or NV_OBS1 monitoring equipment failure,
3. Natural Disaster,
4. Fluid (non-CO₂) leakage into a USDW or surface,
5. CO₂ leakage into USDW or surface,
6. Induced seismic event.

In accordance with 40 CFR 146.94 (b), should HGCS obtain evidence that the injected CO₂ stream and/or associated pressure front may cause an endangerment to a USDW, HGCS must perform the following actions:

1. Initiate shutdown plan for the injection well.
2. Take all steps reasonably necessary to identify and characterize any release.
3. Notify the permitting agency (Underground Injection Control (UIC) Program Director) of the emergency event within 24 hours.
4. Implement applicable portions of the approved ERRP.

Where the phrase “initiate shutdown plan” is used, HGCS will immediately cease injection. However, in some circumstances, HGCS will, in consultation with the UIC Program Director, determine whether gradual cessation of injection is appropriate.

2. Local Resources and Infrastructure

Resources in the Area of Review (AoR) of the project that may be affected as a result of an emergency event at the project site include the shallow and lowermost USDWs as discussed in (Attachment 1:Project Narrative, 2023). These include:

- Unconsolidated glacial till including the Mahomet aquifer
- St Peter Sandstone

In addition to these local aquifers, several surface bodies of water are also located within the AoR. These include:

- Dennis Lake
- Hickory Lake
- Kickapoo Creek
- Minier Lake
- Prairie Creek
- Sugar Creek, Middle Fork
- Sugar Creek, West Fork
- Timber Creek
- Small unnamed streams and ponds

Population centers and towns in the vicinity of the project that may be affected as a result of an emergency at the project site include:

- Armington, IL
- Atlanta, IL
- Lawndale, IL
- McLean, IL

Atlanta Water Treatment Plant and Atlanta Sewer Treatment Plant are within the AoR. Other major public infrastructure (parks, cemeteries, etc.) within the AoR includes:

- Atlanta Cemetery
- Atlanta Park
- Brooks Grove Cemetery
- Gingerbread Park
- Hieronymous Cemetery
- Hittle Grove Cemetery
- Howser Cemetery
- Ilo Dillin State Habitat Area
- Jolly Cemetery
- Kampf Cemetery
- Lawndale Union Cemetery
- Longworth Cemetery
- McLean- Mount Hope Cemetery
- Morgan Cemetery
- Oak View Cemetery
- Olympia High School

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- Olympia Middle School
- Olympia South Elementary Schools
- Xenia Park

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

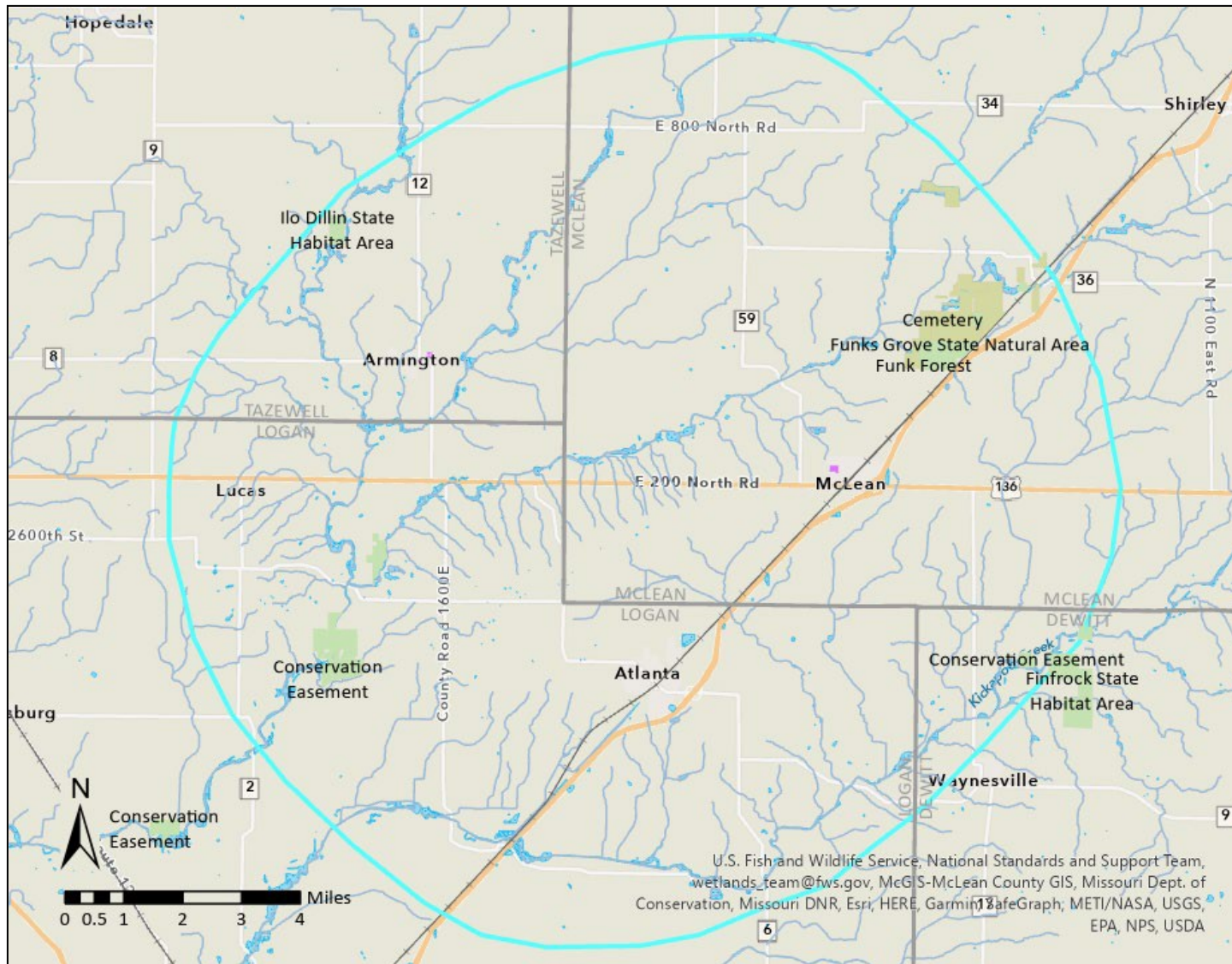


Figure 1: Map of the site resources and infrastructure. AoR is indicated by the blue circle.

3. Potential Risk Scenarios

The following events related to the project, as listed in Section 1, could potentially result in an emergency response:

- NV_INJ1, NV_INJ2, or NV_OBS1 well integrity failure,
- Injection well monitoring equipment failure (e.g., shut-off valve or pressure gauge, etc.),
- Natural Disaster,
- Fluid (non-CO₂) leakage into a USDW,
- CO₂ leakage into USDW, or
- Induced seismic event.

Response actions will depend on the severity of the event(s) triggering an emergency response. Emergency events are categorized as shown in Table 1.

Additional events have also been considered, but were accounted for in other sections, and are not anticipated to occur, or will be accounted for without a formal plan.

- Unanticipated emergency corrective action(s) needed on a well within the AoR
 - The ramifications of this have been addressed in the Financial Assurance section (Attachment 3: Financial Assurance, 2023).
 - Corrective action will be performed on an as needed basis. These actions will likely vary by situation. Response actions, prior to corrective action, will likely be the same as those applied to a CO₂ or non-CO₂ leak into an aquifer.
- CO₂ exposure in facility
- Air quality monitors will be installed in enclosed spaces. Fans meant to remove the CO₂ from these spaces will be activated if the CO₂ rises above permissible exposure limits.
- Metal leaching due to prolonged wetted CO₂ exposure.

Construction materials confirmed to be suitable for long term corrosive loading will be used for this project.

Table 1: Degrees of risk for emergency events.

Emergency Condition	Definition
Major emergency (high risk)	Event poses immediate substantial risk to human health, resources, or infrastructure. Emergency actions involving local authorities (evacuation or isolation of areas) should be initiated.
Serious emergency (medium risk)	Event poses potential serious (or significant) near term risk to human health, resources, or infrastructure if conditions worsen or no response actions taken.
Minor emergency (low risk)	Event poses no immediate risk to human health, resources, or infrastructure.

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. The potential risk scenarios identified in Section 2 are detailed below. Once equipment placement and location are finalized, a figure will be provided that displays the following:

- Facility building components,
- Project wells,
- Monitoring equipment,
- Emergency shut-down equipment, and
- Flowlines.

It is important to note that in major or serious events, certain actions may be taken to minimize the impact of such events before they are listed in the following action plans. Additionally, as part of the minimization of these events, emergency services may be contacted prior to any other actions taking place.

A formal evacuation plan will be provided as part of the final ERRP and will be specific for site personnel. In addition, primary and secondary muster points will be identified, and these plans will be provided as part of operator training.

4.1. Well Integrity Failure (*NV_INJ1, NV_INJ2, or NV_OBS1*)

Integrity loss of the injection or observation wells may endanger USDWs. Integrity loss may have occurred if the following events occur (note, this is not an exhaustive list):

- Automatic shutdown devices are activated:
 - *Wellhead injection pressure* exceeds the maximum allowed injection pressure.
 - Note: high-high pressure limit will be set to 5% less than the maximum allowed injection pressure in the permit.
 - *Bottomhole injection pressure* exceeds the maximum allowable bottomhole injection pressure as calculated from the wellhead pressure.
 - Note: high-high pressure limit will be 5% less than the maximum allowed bottomhole injection pressure detailed in the permit.
 - *Annulus pressure* indicates a loss of external or internal well containment
 - The emergency shutdown points of -5 or 1,500 psi are exceeded (Attachment 7: Testing And Monitoring Plan, 2023), (Attachment 6A: NV_INJ1 Well Operations Plan, 2023), (Attachment 6B: NV_INJ2 Well Operations Plan, 2023).
 - Note: pursuant to 40 CFR 146.94(b)(3), HGCS must notify the UIC Program Director within 24 hours of any triggering of an emergency shutdown system.
- Mechanical Integrity Test (MIT) results identify a loss of mechanical integrity.
 - Note: pursuant to 40 CFR 146.94(b)(3), HGCS must notify the UIC Program Director within 24 hours of a loss of mechanical integrity that could lead to endangerment of the USDW.

Response actions:

1. Notify the UIC Program Director within 24 hours of the emergency event, per 40 CFR 146.94(b)(3).
2. Determine the severity of the event, based on the information available, within 24 hours of notification.
 - a. For a Major or Serious emergency:
 - i. Initiate Company Shutdown Procedures/Plan.
 1. Shut-in the well(s)
 - a. All necessary valves closed and locked out
 2. Vent CO₂ from surface lines and facility as necessary
 3. Limit access to wellhead and surface facilities to only those authorized
 - a. Caution tape or barriers may be used to limit access to the well and facility
 4. Initiate evacuation plans (if necessary)
 - a. Communicate at all times with personnel and local authorities if evacuation is necessary
 5. Monitor wellhead pressure (tubing and annulus) and temperature as is feasible.
 - a. This information should be used to assess the nature and extent of the mechanical integrity failure
 6. Identify appropriate remedial actions to repair damage to the well
 - ii. If contamination is detected, identify, and implement appropriate remedial actions.
 1. Potential actions are listed in the ERR portion Financial Assurance section of this application and are dependent on the magnitude of any potential contamination (Attachment 3: Financial Responsibility Navigator Rogers, 2023).
 - iii. Perform MIT prior to bringing the well back online.
 - b. For a Minor emergency:
 - i. Assess the well to determine whether there has been a loss of mechanical integrity.
 - ii. If a loss of mechanical integrity is present, initiate the shutdown plan.
 1. Shut-in the well(s)
 - a. All necessary valves closed and locked out as per Company shutdown procedures/plans
 2. Vent CO₂ from surface lines and facility as necessary
 3. Limit access to wellhead and surface facilities to only those authorized
 - a. Caution tape and/or rope may be used to limit access to the well and facility
 4. Reset automatic shutdown devices
 5. Monitor wellhead pressure (tubing and annulus) and temperature as is feasible.
 - a. This information should be used to assess the nature and extent of the mechanical integrity failure
 6. Identify appropriate remedial actions to repair damage to the well.
 - iii. If contamination is detected, identify, and implement appropriate remedial actions.
 1. Potential actions are listed in the ERR portion Financial Assurance section of this application and are dependent on the magnitude of any potential contamination (Attachment 3: Financial Responsibility Navigator Rogers, 2023).
 - iv. Perform MIT prior to bringing the well back online.

4.2. Well Monitoring Equipment Failure (NV_INJ1, NV_INJ2, or NV_OBS1)

The failure of monitoring equipment for wellhead pressure, temperature, and/or annulus pressure may indicate a problem with the injection or observation wells that could endanger USDWs. This subsection covers the remedial response and procedures to be followed should one (or more) of the following monitoring sensors fail:

- Injection Well (NV_INJ1, NV_INJ2)
 - Wellhead injection pressure
 - Wellhead injection temperature
 - Annulus pressure
 - Annulus fluid volume
 - Injection flowrate
- Deep Observation Well (NV_OBS1)
 - Annulus pressure
 - Annulus fluid volume

Response actions:

1. Determine the impact of the event, based on the information available, within 24 hours of the event occurring. At this time, the impact of the loss of monitoring equipment should be assessed, and a viable alternative method should be determined and implemented.
 - a. Assess the well to determine whether there has been a loss of mechanical integrity associated with the failure of a piece of monitoring equipment.
 - b. If a loss of mechanical integrity is not present, assess the impact the loss of monitoring equipment could have on operations.
 - i. If the impact is negligible, implement the viable alternative method of monitoring determined during the initial assessment.
 - ii. Plans to replace the equipment should consider replacing the equipment as soon as is feasible based on operational conditions and suitability of the alternative method of monitoring.
 - iii. Provide details of the equipment failure, the alternative method of monitoring, and impact to continuous data collection to the UIC Program Director as part of the routine operational reporting.
 - c. If a loss of mechanical integrity is present, initiate the shutdown plan.
 - i. Notify the UIC Program Director within 24 hours of the event, per 40 CFR 146.94(b)(3)
 - ii. Shut-in the well
 1. All necessary valves closed and locked out
 - iii. Vent CO₂ from surface lines and facility as necessary
 - iv. Limit access to wellhead and surface facilities to only those authorized
 1. Caution tape and/or rope may be used to limit access to the well and facility
 - v. Reset automatic shutdown devices
 - vi. Monitor wellhead pressure (tubing and annulus) and temperature as is feasible.
 1. This information should be used to assess the nature and extent of the mechanical integrity failure

2. Note that alternative methods of monitoring may need to be implemented at this time.
- vii. Identify appropriate remedial actions to repair damage to the well.
- viii. If contamination is detected, identify, and implement appropriate remedial actions.
 1. Potential actions are listed in the ERR portion Financial Assurance section of this application and are dependent on the magnitude of any potential contamination (Attachment 3: Financial Assurance, 2023).
- ix. Perform MIT prior to bringing the well back online.

4.3. Natural Disaster

Disturbance or damage as a result of a natural disaster may impact the normal operation of the project. A non-exhaustive list of examples of such potential events and the impact to the project they may cause are:

- An earthquake damages compression equipment and causes an integrity issue with the CO₂ flowline,
- Lightning strikes the wellhead and damages all surface monitoring equipment,
- Severe flooding (i.e., 100-year flood) limits access to the well or injection facility.

These events may impact or damage the ability to properly operate the well or utilize the facility for the intended purposes of the project. If a natural disaster occurs that affects normal operation of the injection well, perform the following response actions:

1. Notify the UIC Program Director within 24 hours of the emergency event, per 40 CFR 146.94(b)(3).
2. Determine the severity of the event, based on the information available, within 24 hours of notification.
 - a. For a Major or Serious emergency:
 - i. Initiate shutdown plan.
 1. Shut-in the wells
 - a. All necessary valves closed and locked out
 2. Vent CO₂ from surface lines and facility as necessary
 3. Limit access to wellhead and surface facilities to only those authorized
 - a. Caution tape and/or rope may be used to limit access to the well and facility
 4. Initiate evacuation plans (if necessary)
 - a. Communicate at all times with personnel and local authorities if evacuation is necessary
 5. Monitor wellhead pressure (tubing and annulus) and temperature as is feasible.
 - a. This information should be used to assess the nature and extent of the mechanical integrity failure
 6. Identify appropriate remedial actions to repair damage to the well
 - ii. Determine if any leaks of fluid have occurred due to the natural disaster
 1. If contamination is detected, identify, and implement appropriate remedial actions.

2. Potential actions are listed in the ERR portion Financial Assurance section of this application and are dependent on the magnitude of any potential contamination (Attachment 3: Financial Assurance, 2023).
- iii. Perform mechanical integrity test prior to bringing the well back online.
- b. For a Minor emergency:
 - i. Assess the well to determine whether there has been a loss of mechanical integrity.
 - ii. If a loss of mechanical integrity is present, initiate the shutdown plan.
 1. Shut-in the well(s)
 - a. All necessary valves closed and locked out
 2. Vent CO₂ from surface lines and facility as necessary
 3. Limit access to wellhead and surface facilities to only those authorized
 - a. Caution tape and/or rope may be used to limit access to the well and facility
 4. Reset automatic shutdown devices
 5. Monitor wellhead pressure (tubing and annulus) and temperature as is feasible.
 - a. This information should be used to assess the nature and extent of the mechanical integrity failure
 6. Identify appropriate remedial actions to repair damage to the well.
 - iii. Determine if any leaks of fluid have occurred due to the natural disaster
 1. If contamination is detected, identify, and implement appropriate remedial actions.
 2. Potential actions are listed in the ERR portion Financial Assurance section of this application and are dependent on the magnitude of any potential contamination (Attachment 3: Financial Assurance, 2023).
 - iv. Perform mechanical integrity test prior to bringing the well back online.

4.4. Non-CO₂ (Brine) Fluid Leakage into USDW or Surface

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

Response actions:

1. Notify the UIC Program Director within 24 hours of the emergency event, per 40 CFR 146.94(b)(3).
2. Determine the severity of the event, based on the information available, within 24 hours of notification.
3. For all emergencies (Major, Serious, or Minor):
 - a. Shut-in the wells
 - i. All necessary valves closed and locked out
 - b. Vent CO₂ from surface lines and facility as necessary
 - c. Collect confirmation sample(s) of groundwater and perform groundwater constituent analysis to determine elevated parameters
 - i. The parameters to be tested are provided in the testing and monitoring plan (Attachment 7: Testing And Monitoring Plan, 2023).
 - ii. If the presence of indicator parameters is confirmed, develop (in consultation with the UIC Program Director) a case-specific work plan to:

1. Potential actions are listed in the ERR portion Financial Assurance section of this application and are dependent on the magnitude of any potential contamination (Attachment 3: Financial Assurance, 2023).
- d. The following plan of action may be initiated should drinking water be negatively impacted:
 - i. Potential actions are listed in the ERR portion Financial Assurance section of this application and are dependent on the magnitude of any potential contamination (Attachment 3: Financial Assurance, 2023).
- e. Continue groundwater remediation and monitoring on a frequent basis (frequency to be determined by HGCS and the UIC Program Director) until unacceptable adverse USDW impact has been fully addressed.

4.5 CO₂ Leakage into USDW or Surface

Elevated concentrations of indicator parameter(s) in groundwater sample(s) or other evidence of CO₂ leakage into a USDW.

Response actions:

1. Notify the UIC Program Director within 24 hours of the emergency event, per 40 CFR 146.94(b)(3).
2. Determine the severity of the event, based on the information available, within 24 hours of notification.
3. For all emergencies (Major, Serious, or Minor):
 - a. Shut-in the wells
 - i. All necessary valves closed and locked out
 - b. Vent CO₂ from surface lines and facility as necessary
 - c. Collect confirmation sample(s) of groundwater and perform routine analysis to determine elevated parameters
 - i. The parameters to be tested are provided in the testing and monitoring plan.
 - ii. If the presence of indicator parameters is confirmed, develop (in consultation with the UIC Program Director) a case-specific work plan:
 1. Potential actions are listed in the ERR portion Financial Assurance section of this application and are dependent on the magnitude of any potential contamination (Attachment 3: Financial Assurance, 2023).
 - d. The following plan of action may be initiated should drinking water be negatively impacted:
 - i. Potential actions are listed in the ERR portion Financial Assurance section of this application and are dependent on the magnitude of any potential contamination (Attachment 3: Financial Assurance, 2023).
 - e. Continue groundwater remediation and monitoring on a frequent basis (frequency to be determined by HGCS and the UIC Program Director) until unacceptable adverse USDW impact has been fully addressed.

4.6. Induced Seismic Event

Induced seismic events typically refer to minor seismic events that are caused by human activity. These events are typically caused when activity alters the stresses or fluid pressures in subsurface formations. This alteration of fluid pressures and stresses could potentially be caused by the injection of fluids. This change in stress can cause fault movement and energy release. This energy release results in seismic events.

It is not expected that natural seismicity will affect the project. The Illinois Basin – Decatur Project (IBDP) demonstration injected CO₂ into the Lower Mt. Simon Sandstone and Arkose Zone and generated microseismic events (all less than M2) during injection (Bauer, Carney, & Finley, 2016). The subsequent and adjacent commercial project IL-ICCS (UIC Permit IL-115-6A-0001) also injects into the Lower Mt. Simon Sandstone and Arkose and has mitigated the frequency of microseismicity through increasing the distance from the bottom of the perforated interval to the Precambrian basement. The Vervain project plans to inject CO₂ into the Lower Mt. Simon Sandstone and Arkose Zone and will monitor for induced seismicity as well. The passive seismic monitoring will be used to accurately determine the locations and magnitudes of potential injection-induced seismic events with the primary goals of:

- Addressing public and stakeholder concerns related to induced seismicity,
- Monitoring the spatial extent of the pressure front from the distribution of seismic events,
- Identifying activity that may indicate failure of the confining zone and possible containment loss

A surface-based passive seismic monitoring array will be designed with seismic monitoring stations at a range of azimuths to optimize the accuracy of the event locations and magnitudes. This network can easily be expanded in response to monitoring results or future AoR re-evaluations, if necessary.

Based on the periodic analysis of the monitoring data, observed level of seismicity, 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 seismicity. The operating state provides operating personnel with information about the potential risk of further seismicity and guides them through a series of response actions.

The passive seismic monitoring system structure is presented in Table 2. The table corresponds each level of operating state with the threshold conditions and operational response actions.

Table 2: Seismic monitoring system for seismic events > M1.0 with an epicenter within the project AoR

Operating State	Threshold Condition *, **	Response Action *
Green	Seismic events less than or equal to M1.5	1. Continue normal operation within permitted levels.
Yellow	Five (5) or more seismic events within a 30-day period having a magnitude greater than M1.5 but less than or equal to M2.0	1. Continue normal operation within permitted levels. 2. Within 24 hours of the event, notify the UIC Program Director of the operating status of the well.
Orange	Seismic event greater than M1.5 and local observation or felt report	1. Continue normal operation within permitted levels. 2. Within 24 hours of the incident, notify the UIC Program Director, of the operating status of the well. 3. Review seismic and operational data.
	Seismic event greater than M2.0 and no felt report	4. Report findings to the UIC Program Director and issue corrective actions, if necessary.
Magenta	Seismic event greater than M2.0 and local observation or report	1. Initiate rate reduction plan. 2. Within 24 hours of the incident, notify the UIC Program Director, of the operating status of the well. 3. Communicate with personnel and local authorities to initiate evacuation plans, as necessary. 4. Monitor well pressure, temperature, and annulus pressure to verify well status and determine the cause and extent of any failure; identify and implement appropriate remedial actions (in consultation with the UIC Program Director). 5. Determine if leaks to ground water or surface water occurred (CO ₂ or brine). 6. If USDW contamination is detected: a. Notify the UIC Program Director within 24 hours of the determination. b. Follow plan of action as detailed in Sections 4.4 and 4.5. 7. Review seismic and operational data. 8. Report findings to the UIC Program Director and issue corrective actions, if necessary.
Red	Seismic event greater than M2.0, and local observation or report, and local report and confirmation of damage*	1. Initiate shutdown plan. 2. Within 24 hours of the incident, notify the UIC Program Director of the operating status of the well. 3. Communicate with personnel and local authorities to initiate evacuation plans, as necessary.
	Seismic event >M3.5	4. Monitor well pressure, temperature, and annulus pressure to verify well status and determine the cause and extent of any failure; identify and implement appropriate remedial actions (in consultation with the UIC Program Director). 5. Determine if leaks to groundwater or surface water occurred. 6. If USDW contamination is detected: a. Notify the UIC Program Director within 24 hours of the determination. b. Follow plan of action as detailed in Section 4.4 and 4.5. 7. Review seismic and operational data. 8. Report findings to the UIC Program Director and issue corrective actions, if necessary.

*Report findings to the UIC Program Director and issuing corrective action will occur within 25 business days (five weeks) of change in operating state.

** Onset of damage is defined as cosmetic damage to structures, such as bricks dislodged from chimneys and parapet walls, broken windows, and fallen objects from walls, shelves, and cabinets.

4.7. Unforeseen Events

Should unforeseen events occur (i.e., meteor strike, global pandemic, etc.) that could impact the operations and integrity of the program, response steps will be provided to the UIC Program Director and implemented once approved.

5. Response Personnel, Authorities, and Equipment

Site personnel, project personnel, and local authorities will be relied upon to implement this ERRP. The injection wells and monitoring wells are located in southwest McLean County. Offsite monitoring of shallow groundwater will occur at various points throughout the sites listed in Section 2. As such, local responders for these places will be utilized for emergency contacts and will be notified of an incident as necessary. In addition, state agencies may need to be notified as well. Site personnel to be notified (not listed in order of notification):

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

All staff will be trained in the methods prescribed in Section 8 of this document. A site-specific emergency contact list will be developed, maintained, and periodically updated during the life of the project. The list will include phone numbers and email addresses for facility emergency 24-hour contacts. HGCS will provide the current site-specific emergency contact list to the UIC Program Director prior to commencement of injection operations.

Table 3: Contact information for key local, state, and other authorities.

Agency	Phone Number
McLean County Sheriff's Office	(309) 888-5034
Mt. Hope-Funks Grove FPD, McLean, IL (Fire & EMS)	(309) 874-2532
McLean Police Department, McLean, IL	(309)-874-2731
Illinois State Police District 6	(815) 844-1500
McLean County Emergency Management Agency (EMA)	(309) 888-5020
Illinois Emergency Management Agency (IEMA)	(217) 782-2700 (217) 782-7860 (24-hour Response)
Federal Emergency Management Agency (FEMA)	(800) 621-3362 (FEMA Helpline) (312) 408-5500 (FEMA Region 5 General)
Environmental Services Contractors : EnviroServe	(800) 488-0910 (EnviroServe 24/7 Emergency Response)
GFL Environmental UMO Peoria	(309) 637-6243 (GFL)
US Environmental Protection Agency (EPA) Region 5 Underground Injection Control (UIC), UIC Supervisor Class VI Wells/Carbon Sequestration/Climate Change	(312) 353-7648 (UIC Supervisor) (312) 353-3944 (Class VI Wells/Carbon Sequestration)
EPA National Response Center (24 hours)	(800)- 424-8802
Illinois Department of Natural Resources (DNR) Oil & Gas Resource Management	(217) 782-6302

Equipment required in the event of an emergency and remedial response will vary, dependent upon the 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 workover rig or logging equipment) is required, HGCS shall be responsible for its procurement.

6. Emergency Communications Plan

The order of contact call-out should an emergency occur is as follows:

1. Project Manager,
2. Necessary emergency authorities,
3. Impact landowners (if any),
4. HGCS Management Teams,
5. HGCS Public Response Personnel (Section 5).

Within 24 hours, following contact with the public response personnel, incidents will be reported to the Region 5 office staff assigned to the project.

Based on the appropriate level of emergency response and the magnitude of the event, a crisis event center will be established. For minor emergencies, this will be held on at the wellsite. For major or serious emergencies, a crisis event center will be established at a safe location. This will serve as the headquarters for communication on the emergency. HGCS will establish a liaison to communicate with the public and impacted landowners.

This liaison will then communicate to the public and impacted landowners about any event that requires an emergency response to ensure that the public understands what happened and whether there are any environmental or safety implications. The amount of information, timing, and communications method(s) will be appropriate to the event, its severity, whether any impacts to drinking water or other environmental resources occurred, any impacts to the surrounding community, and their awareness of the event.

HGCS 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), HGCS will provide periodic updates on the progress of the response action(s).

HGCS will also communicate with entities who may need to be informed about or act in response to the event, including local water systems, CO₂ source(s) and pipeline operators, landowners, and Regional Response Teams (as part of the National Response Team). A detailed list of these people will be developed and updated periodically.

7. Plan Review

In accordance with 40 CFR 146.94(d), this ERRP shall be reviewed:

- At least once every five years following its approval by the permitting agency,
- Within one year of an AoR re-evaluation,
- Within a time to be determined as part of the permit following any significant changes to the injection process or the injection facility, or an emergency event, or
- As required by the permitting agency.

If the review indicates that no amendments to the ERRP are necessary, HGCS will provide the permitting agency with 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 within six months following an event that initiates the ERRP review procedure.

8. Staff Training and Exercise Procedures

HGCS will develop a standard operating procedure (SOP) in tandem with the contractors that provide the surface capture and compression equipment, the surface monitoring system, and develop detailed operating procedures to be followed in the event of an emergency that will be supplied to all other contractors.

Included in this SOP will be specific details that can be used to train the project operators regarding the ERRP. Based on these SOPs, annual training and testing will be provided to all those involved with the project as well as those identified in Section 5 of this document.

All personnel identified and assigned as responding personnel in the document will complete initial training prior to the commencement of operations. Documentation of this initial training as well as annual certifications will be documented and retained.

9. References

- (2023). *Attachment 1: Project Narrative*. Class VI Permit Application Project Narrative; Vervain.
- (2023). *Attachment 3: Financial Assurance*. Class VI Permit Application Financial Responsibility; Vervain.
- (2023). *Attachment 6A: NV_INJ1 Well Operations Plan*. Class VI Permit Application Injection Well #1 Operations Plan; Vervain.
- (2023). *Attachment 6B: NV_INJ2 Well Operations Plan*. Class VI Permit Application Injection Well #2 Operations Plan; Vervain.
- (2023). *Attachment 7: Testing And Monitoring Plan*. Class VI Permit Application Testing And Monitoring Plan; Vervain.
- Bauer, R. A., Carney, M., & Finley, R. J. (2016). Overview of microseismic response to CO₂ injection into the Mt. Simon saline reservoir at the Illinois Basin -- Decatur Project. *International Journal of Greenhouse Gas Control*, 378-388.