ATTACHMENT B: AREA OF REVIEW AND CORRECTIVE ACTION PLAN

Facility Information

Facility name: One Carbon Partnership, LP
CCS1

Facility address: 1554 N. 600 E. Union City, IN 47390

Well location: Section 17, Township 20 N, Range 15 E
40.1874°, -84.8646°

Introduction

Pursuant to 40 C.F.R. § 146.84, this plan delineates the Area of Review (AoR) and describes the Corrective Action Plan for wells that require corrective action.

As a condition of the permit and as required by EPA's regulations set forth at 40 C.F.R. § 146.84, the Permittee must maintain, implement, and comply with an approved plan to delineate the area of review for a proposed geologic sequestration project, periodically reevaluate the delineation, and perform corrective action on all wells in the AoR needing corrective action as determined by the Director.

Site Characterization

A detailed regional and local geologic evaluation of the area around the One Carbon Partnership site was conducted using geological, geophysical, petrophysical, and geochemical data obtained from public literature, licensed data, and site-specific data collected for this Project. These data are described in the following sections.

Local and Regional Geology

This section includes information on the geologic structure and hydrogeologic properties of the proposed storage site and overlying formations, including:

- Maps and cross sections of the AoR (40 C.F.R. § 146.82(a)(3)(i));
- The location, orientation, and properties of known or suspected faults and fractures that may transect the confining zone(s) in the AoR and a determination that they would not interfere with containment (40 C.F.R. § 146.82(a)(3)(ii));
- Data on the depth, areal extent, thickness, mineralogy, porosity, permeability, and capillary pressure of the injection and confining zone(s); including geology/facies changes based on field data which may include geologic cores, outcrop data, seismic surveys, well logs, and names and lithologic descriptions (40 C.F.R. § 146.82(a)(3)(iii));
- Geomechanical information on fractures, stress, ductility, rock strength, and in situ fluid pressures within the confining zone(s) (40 C.F.R. § 146.82(a)(3)(iv));
- Information on the seismic history including the presence and depth of seismic sources and a determination that the seismicity would not interfere with containment (40 C.F.R.

§ 146.82(a)(3)(v)); and

- Geologic and topographic maps and cross sections illustrating regional geology, hydrogeology, and the geologic structure of the local area (40 C.F.R. § 146.82(a)(3)(vi)).
    - A map showing the CCS1 well and the applicable AoR consistent with 40 C.F.R. § 146.84. Within the AoR, the map shows the number or name, and location of all injection wells, producing wells, abandoned wells, plugged wells or dry holes, deep stratigraphic boreholes, State- or EPA-approved subsurface cleanup sites, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells, other pertinent surface features including structures intended for human occupancy, State, Tribal, and Territory boundaries, and roads. (The map should also show faults, if known or suspected). Only information of public record is required to be included on this map (40 C.F.R. § 146.82 (a)(2)).
    - A tabulation of all wells within the AoR which penetrate the injection or confining zone(s). Such data must include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Director may require (40 C.F.R. § 146.82(a)(4)).
    - Maps and stratigraphic cross sections indicating the general vertical and lateral limits of all USDWs, water wells and springs within the area of review, their positions relative to the injection zone(s), and the direction of water movement, where known (40 C.F.R. § 146.82(a)(5)).
    - Baseline geochemical data on subsurface formations, including all USDWs in the AoR (40 C.F.R. § 146.82(a)(6)).

Porosity and Permeability

Injection Zone:

Three wells have provided significant data to assist in the characterization of the injection and confining zones: IN133540 and two Class I injection wells in Ohio (Figure 1). These wells have well logs, core, and fluid injection data covering the complete Mt. Simon Sandstone section. The data from these wells represent the nearest analog for how the injection and confining zones may perform and are believed to be reasonably representative of the injection zone at the project site. The data from these wells were used as a calibration point for the petrophysical analysis of eight wells in the region (Figure 1).

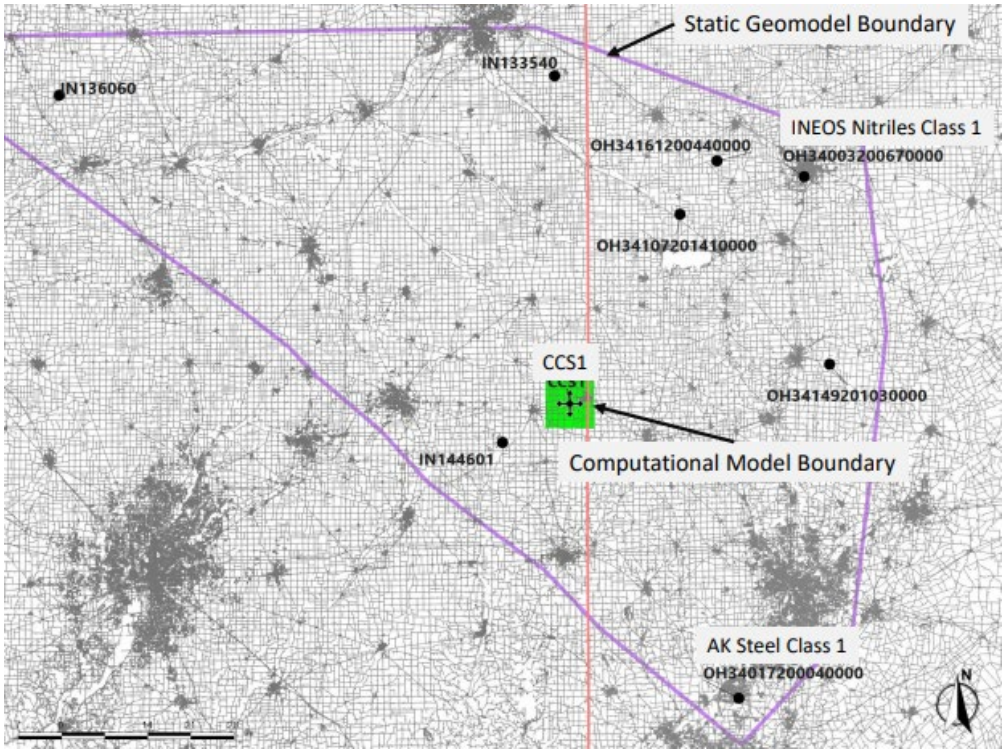


Figure 1: Wells used for injection zone, confining zone and petrophysical analysis

Table 1 summarizes the porosity and permeability values for the Mt. Simon Sandstone that were derived from the Carrie E Edwards, AK Steel, INEOS (BP Lima) Nitrile, and 133540 wells (INEOS Nitriles, 2016; Cleveland-Cliffs Steel Corporation, 2021). The values in the table were derived from a combination of well logs, core, and reservoir testing. These values were incorporated in the static model developed for the project. The Carrie E Edwards well (13135000020000/IN144601) is the closest analog to the Hoosier #1 site, though it does not penetrate the entire thickness of the Mt. Simon Sandstone.

Table 1: Summary of porosity and permeability values for the Mt. Simon Sandstone from four regional wells

Well	Porosity Range (%)	Permeability Range Millidarcy (mD)
Carrie E Edwards[1]	Well Log: 4-23; Avg = 14.9	Well log: <0.001 to 416; Avg = 96.6
AK Steel	Core: 4.9 – 21.1Avg = 13.5 Well Log: 5 – 21	Core: 0.1 – 8,520
INEOS (BP Lima) Nitrile	Well log: 2.6 – 20.8	Well log: 0.0005 – 645
133540	Core: Avg = 8.5	
[1] well does not penetrate the entire thickness of the Mt. Simon Sandstone		

Well logs and core analyses completed as part of the pre-operational testing program will be used to further characterize the porosity and permeability of the injection zone (Attachment G of the draft permit). The baseline 3D surface seismic data will be calibrated to the well data and used for inversion analysis. This will allow the project to characterize variations in porosity and lithology away from the project wells for the entire injection zone over the imaging area of the 3D surface seismic data volume.

Confining Zone:

The Carrie E Edwards well is the closest geologic analog to the project site (13 miles southwest of the project site; Figure 1). This well has over 473 feet of the Eau Claire Shale and the shale facies specifically have average porosities of 0.5% or less and permeabilities <0.001 mD (Table 2), and the interbedded shale and siltstone facies do not exceed 1.2% and <0.001 mD, respectively (Table 2). The shale facies of the Eau Claire Shale are notably homogeneous laterally and vertically across a broad region from eastern Indiana into western Ohio. In western Ohio, porosity measurements of core from the Eau Claire Shale at the INEOS (BP Lima) Nitriles facility range from 0.1% to 10.1%, and permeabilities from 0.000017 mD to 0.25 mD, with the highest porosity (10.1%) occurring in a thin sandstone layer in the middle of the shale. This well data supports the lateral continuity of the Eau Claire Shale beds across this region.

More than 60 miles southeast of the project site, the ODNR drilled a stratigraphic test (ODNR DGS 2627) in Warren County, Ohio, that has facies in the Eau Claire Formation that become more calcareous, but which have relatively low effective porosity and permeability values (Table 2). The Eau Claire Shale facies identified from thin section in ODNR DGS 2627 are significantly more dolomitic than those expected at the project site, and dolomite dissolution porosity was noted in core thin section examination (Table 2). At the Hoosier #1 site, the primary confining zone is expected to be mostly composed of homogeneous shale facies with properties consistent with the Carrie E Edwards well.

Table 2: Eau Claire Shale facies identified in the Carrie E Edwards well (Figure 16) and the ODNR Warren County stratigraphic test well

Well Name	Distance from CCS1	Facies	Depth (feet below ground level)	Average Effective Porosity (%)	Average Permeability (mD)
Carrie E Edwards	13 miles southwest	Shale	2,713-2,820	>0.5	<0.001
		Interbedded shale, siltstone, and sandstone	2,820-3,025	1.2	<0.001
		Shale	3,025-3,186	0.5	<0.001
ODNR GDS 2627	>60 miles southeast	Bioclastic oolitic packstone/grainstone	One sample: 2,690.8	0.3	
		Silty dolomite/dolomitic siltstone	Eight samples: 2,714.6 – 3,015.2	3.4	<0.01
		Glauconitic fine-grained sandstone	Five samples: 3,049 – 3,149.9 3,107 – 3,108		Vertical: 0.86 Horizontal: 0.86

Well logs and core analyses completed as part of the pre-operational testing program will be used to further characterize the porosity and permeability of the confining zone (Attachment G)). The baseline 3D surface seismic data will be calibrated to the well data and used for inversion analysis. This will

allow the project to characterize variations in porosity and lithology away from the project wells for the entire confining zone over the imaging area of the 3D surface seismic data volume.

Fracture Pressure, Fracture Gradient, and Critical Pressure

Calculated fracture gradient and maximum injection pressure values are given below in Table 3 Fracture gradient was estimated from mini-fracs and step-rate tests performed for INEOS (BP Lima) Nitriles USA LLC UIC Class I Application (INEOS (BP Lima) Nitriles, August 22, 2016), Cleveland-Cliffs Steel Corporation Well # 1, (AK Steel Cleveland-Cliffs Steel Corporation, March 15, 2021), and Vickery Well Corporation Well # 4 (Vickery Environmental, 2021). OCP will perform a step-rate test in the injection zone to determine the fracture gradient at the project site as part of the Pre-Operational Testing Program (Attachment G). The project specific fracture gradient will be updated in the computational model once it is available.

Table 3. Injection Pressure Details

Injection Pressure Details	CCS1
Fracture gradient (psi/ft)	0.84
Maximum injection pressure (90% of fracture pressure) (psi)	2,325

Critical Pressure Calculations

To delineate the pressure plume radius, a minimum (or critical) delta pressure was calculated. The delta pressure is the increase in pressure necessary to overcome the hydrostatic head of the injection zone fluid and would allow fluids to migrate up an open conduit to the lowermost USDW in the unlikely event that a conduit exists. This pressure was calculated to be 227 psi. The formula for calculating the delta pressure is given below (source: UIC Program Class VI Well Area of Review and Corrective Action Evaluation Guidance)

$$\Delta P_{if} = P_u + \rho_i * (z_u - z_i) - P$$

Where:

ΔPif = delta pressure,

Pu = initial pressure of the lowermost USDW,

ρi = fluid density of the injection zone,

g = acceleration due to gravity,

zu = elevation of the lowermost USDW,

zi = elevation of the injection zone, and

P = initial pressure of the injection zone. Substituting appropriate values into the equation, a minimum delta pressure was calculated to be 227 psi.

Figure 2: Formula for Calculating Delta Pressure

Table 4: Parameters and values used as input in the critical pressure calculation

Parameter	Value	Units	Source
Pressure at the base of the lowermost USDW	171	psi	Estimated from other UIC applications
Depth to base of lowermost USDW	450	ft	Estimated from Permit Number 30922 (IGS Well ID/PDMS 144860)
Depth to reservoir zone below lowermost USDW	3,100	ft	Estimated from the Carrie E Edwards test well, AK Steel UIC Class I wells, and INEOS (BP Lima) Nitrile UIC Class I wells
Hydrostatic reservoir zone pressure below lowermost USDW	1,183	psi	Estimated from INEOS (BP Lima) UIC Class I wells
Fluid density within the reservoir zone below lowermost USDW	1.071	gm/cm^3	Estimated from INEOS (BP Lima) UIC Class I wells

Computational Modeling Approach

The AoR is the region surrounding the CCS1 Well where USDWs may be endangered by the injection activity. The AoR is delineated using multiphase computational modeling, constructed from a model that accounts for the site-specific hydrogeology and the physical and chemical properties of all phases of the injected CO_2 stream and displaced fluids. The AoR delineation is based on available site characterization, monitoring, and operational data as set forth in 40 C.F.R. § 146.84. The methods and approaches for developing this complex multiphase simulation model and delineating the AoR are provided below.

One Carbon Partnership used two models in its UIC Class VI application: a 141 x 116-mile model to assess the AoR and a 7.9 x 7.9-mile model for the CO_2 plume. The 141 x 116-mile AoR model is an expansion of the 7.9 x 7.9-mile plume model. The AoR model was developed using Rock Flow Dynamics' software tNavigator. The static AoR model developed in tNavigator serves as the framework for the Generalized Equation Modeling (GEM) of CO_2 Injection developed by Computational Modeling Group (CMG) of Calgary, Alberta. The top and bottom of the grid are considered no-flow boundaries because the top of the model overlies a thick cap rock, and the bottom of the model represents impermeable Precambrian basement, where insubstantial fluid flow is expected. The model simulation used an aquifer function applied to the grid boundary condition. This boundary is sufficiently far from the CO_2 plume to avoid any artificial influence to plume model results. Lastly, the vertical grid spacing is 4 ft for the AoR and Plume model respectively. The lateral grid spacing is 500 ft.

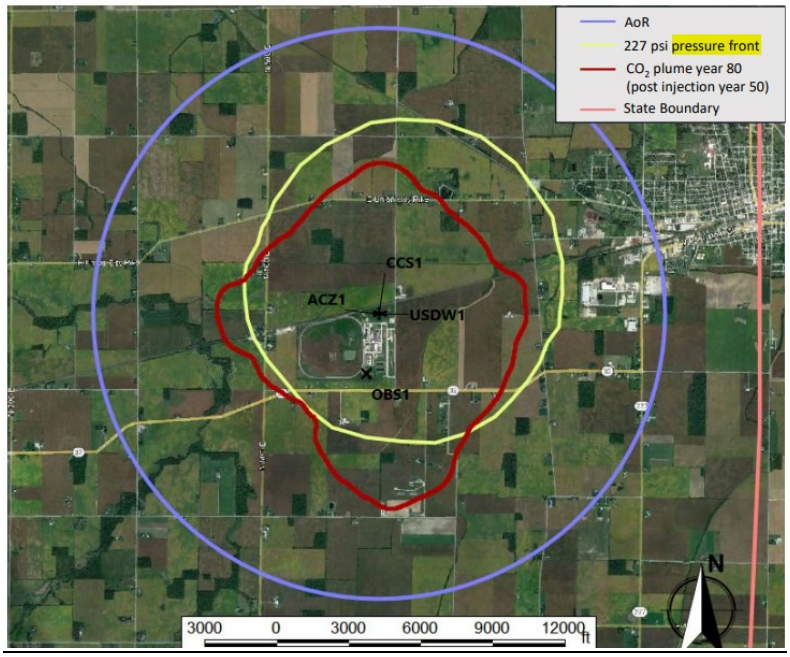


Figure 2: Map showing the modeled CO2 pressure plume based on a 227-psi delta pressure and the AoR

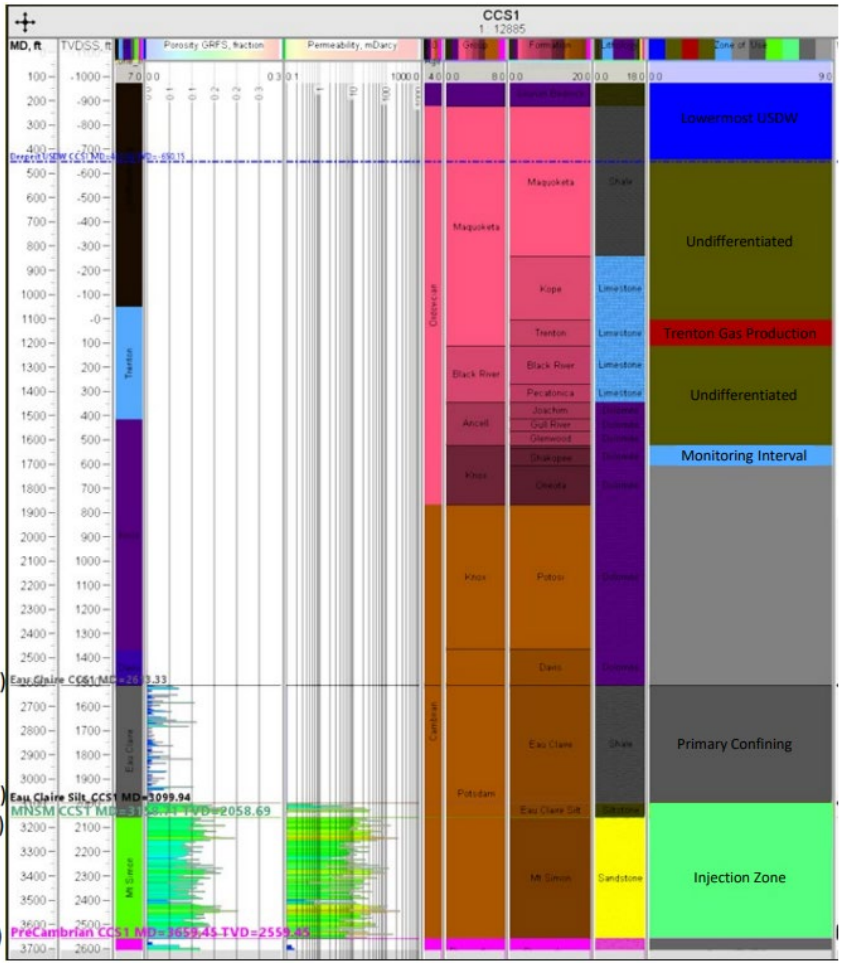


Figure 3: Regional stratigraphic column for the One Carbon Project site

Table 5: List of significant intervals above the injection zone within the One Carbon Partnership project area, as identified in Table 6 of (Permit Application Attachment 02: AoR and Corrective Action Plan, 2025)

Overlying Rock Formation Name	Rock Type Description	Formation Thickness (ft)	Depth (ft)	Avg. Porosity (%) derived from logs	Estimated Avg. Permeability (mD)
Eau Claire Shale	Shale	493-553	2,578-2,622	2	0.0005

Table 6: Proposed zone for injection reservoir at the One Carbon Partnership project area, as identified in the Table 6 of (Permit Application Attachment 02: AoR and Corrective Action Plan, 2025)

Injection zone	Formation Thickness (ft)	Depth (ft)	Avg. Porosity (%)	Avg. Permeability (mD)	Reservoir Thickness (ft)
Eau Claire Silt	60	3,080-3,118	14	22.6	60
Mt. Simon Sandstone	456-562	3,087-3,200	10.9	31	456-562

Table 7: Static Model domain information

Coordinate System	Indiana East European Petroleum Survey Group (EPSG) 2965		
Horizontal Datum	Indiana East EPSG 2965		
Coordinate System Units	Field = feet		
Zone	Indiana East EPSG 2965		
FIPSZONE	1301	**ADSZONE**	3826
Coordinate of X min	57216	**Coordinate of X max**	824716
Coordinate of Y min	1511167	**Coordinate of Y max**	2123667
Elevation of bottom of domain (fbsl)	3,967	**Elevation of bottom of domain**	-1187

Table 8: Computational Model domain information

Coordinate System	Indiana East EPSG 2965
Horizontal Datum	Indiana East EPSG 2965
Coordinate System Units	Field = feet
Zone	Indiana East EPSG 2965

FIPSZONE	1301	**ADSZONE**	3826
Coordinate of X min	530951	**Coordinate of X max**	572951
Coordinate of Y min	1778776	**Coordinate of Y max**	1820776
Elevation of top of domain	2,681	**Elevation of bottom of domain**	1,926

Table 9: Initial Modeled Conditions

Parameter	Value or Range	Units	Corresponding Elevation (ft MSL)	Data Source
Temperature	96	°F	2,008	INEOS (BP Lima) UIC
Formation pressure	1,183	psi	2,008	INEOS (BP Lima) UIC
Fluid density	0.465	lb/ft^3	2,008	INEOS (BP Lima) UIC
Salinity	120,000	ppm	2,008	INEOS (BP Lima) UIC

Table 10: Modeled Operating Parameters

Operating Information		LP CCS 1
Location (global coordinates)	X Y	40.1874° -84.8646°
Model coordinates (ft)	X Y	552,167 1,799,966
No. of perforated intervals		1
Perforated interval (ft MSL)	Z Top Z Bottom	2,058 2,559
Wellbore diameter (in)		8 1/2
Planned injection period	Start End	Q2 2024 Q2 2056
Injection duration (years)		30
Maximum injection rate (million tonnes (MT)/year)		0.45

Predictions of System Behavior

The computational modeling predicts, using existing site characterization, monitoring and operational data, the projected lateral and vertical migration of the carbon dioxide plume and formation fluids in the subsurface from the commencement of injection activities until the plume movement ceases, until pressure differentials sufficient to cause the movement of injected fluids or formation fluids into a USDW are no longer present, or until the end of a fixed time period as determined by the Director (40 C.F.R. § 146.84 (c)(1)).

The computational modeling is based on detailed geologic data collected to characterize the injection zone(s), confining zone(s) and any additional zone(s); and anticipated operating data, including injection pressures, rates, and total volumes over the proposed life of the geologic sequestration project (40 C.F.R. § 146.84 (c)(1)(i)). It takes into account any geologic heterogeneities, other discontinuities, data quality, and their possible impact on model predictions (40 C.F.R. § 146.84(c)(1)(ii)); and considers potential migration through faults, fractures, and artificial penetrations (40 C.F.R. § 146.84 (c)(1)(iii)).

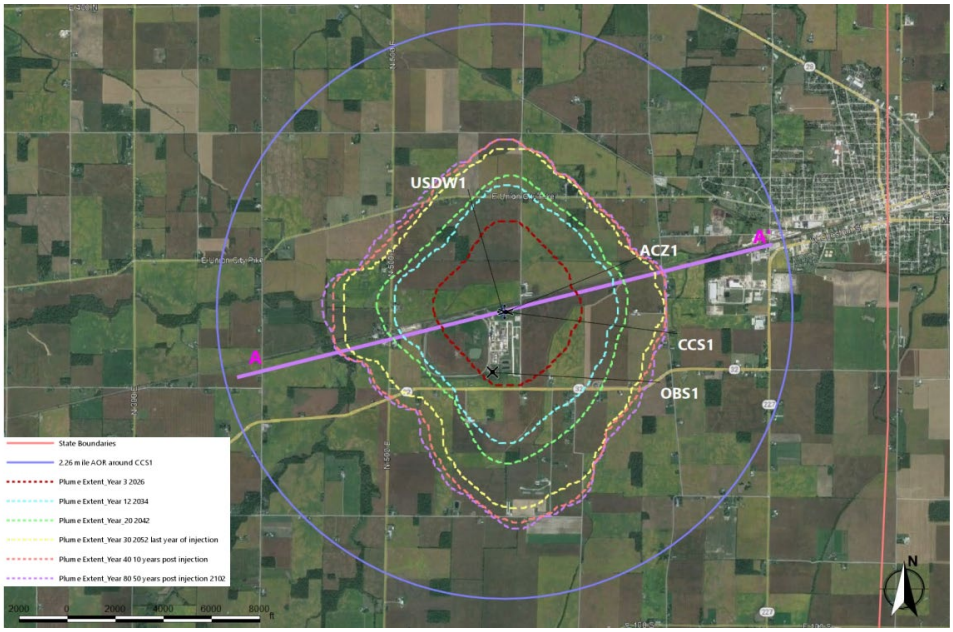
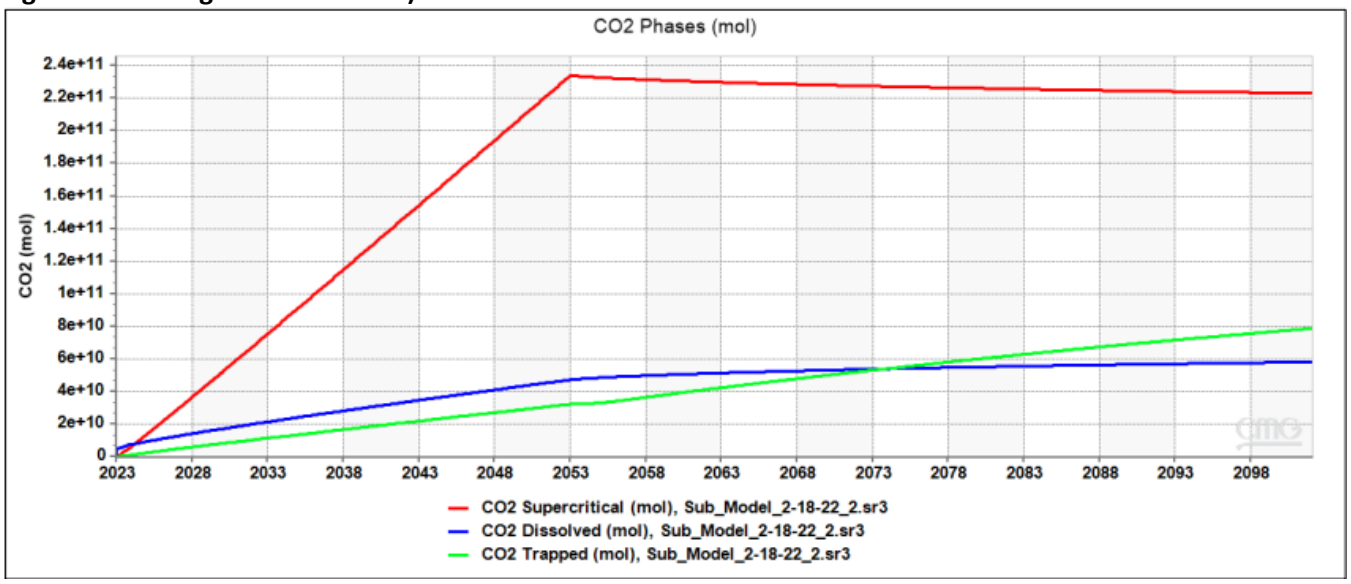


Figure 4: Time-lapse CO2 plume development map over 3-, 12-, 20-, and 30-years of injection as well as 10- and 50 years post injection. Note the relative stability of the CO2 plume radius after injection operations cease

Figure 5: Chart showing supercritical gas, dissolved gas, and trapped gas over time (Mineralization is not significant during this time frame)



Uncertainty and Sensitivity Analysis

Uncertainty analysis was performed to examine the impact of variations of porosity, permeability, and thickness on the petrophysical property distribution within the Mt. Simon Sandstone in the static and computational models. The static model was generated using offset well log data. The interpolated mean effective porosity for the project area was approximately 11%, which is generally consistent with the input well log data. The uncertainty analysis explored the effect of varying the mean effective porosity value between 7% and 15% on CO2 plume development over the course of the project. The variations in mean effective porosity were completed with Latin Hypercube sampling for 147 versions of the static model. The results from the uncertainty analysis were ranked based on the average kh over a one-mile area around CCS1 on a cumulative distribution chart and assigned P90 (low), P50, and P10 (high) values. The base case static model aligns closely with the P50 case. The P90, base case, and P10 cases were input into the computational modeling to assess the impacts on CO2 plume development over the 30-year injection phase of the project. The results indicate that the overall CO2 plume extent does not change significantly among the different cases. Whereas it is observed that the plume extent is larger in the base case than either P10 or P90 cases, this is interpreted to reflect the random porosity distribution within the model layers generated by the 147 realizations highlighting the role of geological variability in addition to petrophysical properties (i.e. kh) in influencing plume evolution.

The kv/kh (vertical/horizontal permeability) ratio is a key uncertainty given the lack of deep well data in the region. From pressure transient analysis of well test data from the INEOS (BP Lima) UIC Project, it was estimated that kv/kh is approximately 0.003. Sensitivity cases were run with kv/kh values equal to 0.01, 0.1, and 0.5. Table 11 gives the maximum extent of each plume in miles. The sensitivity results of kv/kh 0.003 through 0.1 indicate that the lower the ratio the larger the plume extent, as the CO2 is forced to move out laterally because of being restricted in vertical movement. However, for a significantly higher kv/kh ratio of 0.5, the plume migrates vertically and then spreads out laterally at

the base of confining zone resulting in a larger plume extent.

Table 11: Impact of varying kv/kh values on the CO2 plume radius

Kv/kh	CO_2 Plume Radius (mi)
0.003	1.33
0.01	1.23
0.1	1.04
0.5	1.33

AoR Delineation

One Carbon Partnership has prepared, and will maintain and comply with, a plan to delineate the AoR, periodically reevaluate the delineation, and perform corrective action that meets the requirements of this section and is acceptable to the Director. The requirement to maintain and implement an approved AoR and Corrective Action Plan is directly enforceable regardless of whether the requirement is a condition of the permit (40 C.F.R. § 146.84(b)(1)).

As a part of the permit application for approval by the Director, One Carbon Partnership has submitted an AoR and Corrective Action Plan that includes the method for delineating the AoR that meets the requirements of 40 C.F.R. § 146.84(c), including the model to be used, assumptions that will be made, and the site characterization data on which the model will be based (40 C.F.R. § 146.84(b)(1)). It includes a description of the minimum fixed frequency, not to exceed five years, at which the owner or operator proposes to reevaluate the AoR (40 C.F.R. § 146.84(b)(2)(i)); the monitoring and operational conditions that would warrant a reevaluation of the AoR prior to the next scheduled reevaluation as determined by the minimum fixed frequency (40 C.F.R. § 146.84(b)(2)(ii)), and how monitoring and operational data (e.g., injection rate and pressure) will be used to inform an AoR reevaluation (40 C.F.R. § 146.84(b)(2)(iii)).

One Carbon Partnership includes a map showing the injection well for which a permit is sought and the applicable AoR consistent with 40 C.F.R. § 146.84. Within the AoR, the map shows the number or name, and location of all injection wells, producing wells, abandoned wells, plugged wells or dry holes, deep stratigraphic boreholes, State- or EPA-approved subsurface cleanup sites, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells, other pertinent surface features including structures intended for human occupancy, State, Tribal, and Territory boundaries, and roads. (The map should also show faults, if known or suspected). Only information of public record is required to be included on this map (40 C.F.R. § 146.82(a)(2)).

The AoR was initially selected by observing the delta pressure of each grid block in the model after 30 years of injection. The grid blocks that had a delta pressure equal to or greater than the minimum delta pressure (calculated above) were considered to be in the AoR. A radius was measured from the wellbore location to the maximum extent of the pressure plume. A 0.5-mile buffer was added to be conservative. Through the Pre-operational Testing Program, uncertainties around the injection zone parameters will be addressed, and the static and computational models will be updated with the new data (Attachment G). The new computational model will be used to recalculate a new maximum radius

and the AoR will be revised if necessary. OBS1 will be used to monitor changes in injection zone pressure at a distance from the injection well (Attachment C). The computational model will be updated to match the observed data. If the injection zone does not perform as predicted, the AoR will be re-assessed as detailed below.

Corrective Action Plan and Area of review Re-evaluation

Tabulation of Wells Within the AoR

One Carbon Partnership will utilize CCS1. The AoR represents the maximum extent of pressure from CCS1 well at the end of twelve to thirty years of CO_2 injection with an additional 0.5 mile buffer. The AoR is modeled to be approximately 2.26 square miles.

This Corrective Action Plan and Area of Review reevaluation describes how One Carbon Partnership will comply with the plan requirements at the Permit CCS1 Project site pursuant to 40 C.F.R. § 146.84 and per Section G of this permit. There are no wells within the area of review that penetrate the project's confining zone. The deepest well within the proposed area of review is located approximately 1.5 miles southwest of the proposed well location and reaches a max depth of 2,310 feet, which is more than 300 feet above the confining zone. Data collected as part of the Testing and Monitoring Plan will be evaluated to assess the prohibition of fluid movement and protection of USDWs. The Corrective Action Plan will be re-evaluated in accordance with this permit and as set forth in 40 C.F.R. § 146.84.

Reevaluation of CAP: Schedule and Criteria

One Carbon Partnership will take the following steps to evaluate project data and reevaluate the AoR. AoR reevaluations will be performed during the injection and post-injection phases at least every 5 years. One Carbon Partnership will:

1) Review available monitoring data and compare it to the model predictions. One Carbon Partnership will analyze monitoring and operational data from the injection well, the formation monitoring well and confinement monitoring well, and other sources to assess whether the predicted carbon dioxide plume migration is consistent with actual data. Monitoring activities to be conducted are described in the Testing and Monitoring Plan and the Post Injection Site Care (PISC) and Closure Plan. Specific steps of this review include:

    a) Reviewing available data on the position of the carbon dioxide plume and pressure front. Specific activities will include:
        i) Both direct and indirect methods—such as pressure monitoring, time-lapse seismic data, and pulsed neutron logging (PNL)—will be used to monitor the carbon dioxide plume and pressure front. Additional details are provided in Attachments C, E, and K.
    b) Reviewing groundwater chemistry monitoring data taken in the above confining zone monitoring wells to verify that there is no evidence of excursion of carbon dioxide or brines that

represent an endangerment to any USDWs.

c) Reviewing operating data, e.g., on injection rates and pressures, and verifying that it is consistent with the inputs used in the most recent modeling effort.

d) Reviewing any geologic data acquired since the last modeling effort, e.g., additional site characterization performed, updates of petrophysical properties from core analysis, etc. Identifying whether any new data materially differ from modeling inputs/assumptions.

2) Compare the results of computational modeling used for AoR delineation to monitoring data collected. Monitoring data will be used to show that the computational model accurately represents the storage site and can be used as a proxy to determine the plume's properties and size. One Carbon Partnership will demonstrate this degree of accuracy by comparing monitoring data against the model's predicted properties (i.e., plume location, rate of movement, and pressure decay). Statistical methods will be employed to correlate the data and confirm the model's ability to accurately represent the storage site.

3) If the information reviewed is consistent with, or is unchanged from, the most recent modeling assumptions or confirms modeled predictions about the maximum extent of the plume and pressure front movement, One Carbon Partnership will prepare a report demonstrating that, based on the monitoring and operating data, no reevaluation of the AoR is needed. The report will be submitted to the Director within 30-days of its review of the data and will include the data and results demonstrating that no changes are necessary. One Carbon Partnership will review all data within 90-days of the commencement of the 5-year review process or any other review triggered by monitoring and operational conditions.

4) If material changes have occurred (e.g., in the behavior of the plume and pressure front, operations, or site conditions) such that the actual plume or pressure front may extend beyond the modeled plume and pressure front, One Carbon Partnership will re-delineate the AoR. The following steps will be taken:

a) Revising the site conceptual model based on new site characterization, operational, or monitoring data.

b) Calibrating the model in order to minimize the differences between monitoring data and model simulations.

c) Performing the AoR delineation as described in the Computational Modeling section of the AoR and Corrective Action Plan.

5) Review wells in any newly identified areas of the AoR and apply corrective action to deficient wells. Specific steps include:

a) Identifying any new wells within the AoR that penetrate the confining zone and provide a description of each well type, location, depth, and date of plugging/completion.

b) Performing corrective action on all deficient wells that penetrate the primary confining zone using methods designed to prevent the movement of fluid into USDWs.

6) Prepare an annual report documenting the AoR reevaluation process, data evaluated, any corrective actions determined to be necessary, and the status of corrective action or a schedule for any corrective actions to be performed. The report will be submitted to EPA per the schedule for submitting annual reports in this permit. The report will include maps that highlight the similarities and differences in comparison with previous AoR delineations.

AoR Reevaluation Cycle

Upon commencement of injection, One Carbon Partnership will reevaluate the above described AoR at least once every 5 years during the injection and post-injection phases. More frequent reviews may occur if any of the events described in the next section occur or at the discretion of the Director.

Triggers for AoR Reevaluations Prior to the Next Scheduled Reevaluation

Unscheduled reevaluation of the AoR will be based on quantitative changes of the monitoring parameters, including unexpected changes in the following parameters: pressure, temperature, carbon dioxide saturation, and deep groundwater constituent concentrations indicating that the actual plume or pressure front may extend beyond the modeled plume and pressure front. These changes may include but are not limited to:

1) **Pressure:** Changes in pressure that are unexpected and outside three standard deviations from the average will trigger a new evaluation of the AoR.
2) **Pressure front arrival**: If the arrival time of the pressure front at the deep monitoring well differs significantly from the model projections (2 standard variations) or if the pressure and plume data recorded at the well differs materially from expectations, an AoR reevaluation will be performed.
3) **Change in pressure front not seen in monitoring well**: A reevaluation of the AoR will be triggered in the event that a secondary means of pressure front and/or plume distribution is detected (such as through seismic observation).
4) **AoR interaction:** Potential interaction of AoRs from different wells: Future modeling could indicate possible interactions of AoRs from different injection wells in the same injection zone. This has the potential to change the evaluation schedule (i.e., cause an unscheduled AoR reevaluation) to assess the possible impact of such an occurrence.
5) **Temperature:** Changes in temperature that are unexpected and outside three standard deviations from the average will trigger a new evaluation of the AoR.
6) **CO_2 saturation:** Increases in carbon dioxide saturation that indicate the movement of the carbon dioxide into or above the confining zone will trigger a new evaluation of the AoR unless the

changes are found to be related to the well integrity. (Any well integrity issues will be investigated and addressed.)

7) **Deep groundwater constituent concentrations:** Unexpected changes in fluid constituent concentrations that indicate movement of the carbon dioxide or brines into or above the confining zone will trigger a new evaluation of the AoR unless the changes are found to be related to the well integrity. (Any well integrity issues will be investigated and addressed.)
8) **Exceeding fracture pressure conditions:** Pressure in any of the injection or monitoring wells exceeding 90 percent of the geologic formation fracture pressure at the point of the measurement. This would be a violation of the permit conditions. The Testing and Monitoring Plan and the operating procedures in the Narrative provides a discussion of pressure monitoring and specific procedures that will be completed during the injection start-up period and continuing operations.
9) **Exceeding established baseline hydrochemical/physical parameter patterns:** A statistically significant difference between observed and baseline hydrochemical/physical parameter patterns (e.g., fluid conductivity, pressure, temperature) immediately above the confining zone. The Testing and Monitoring Plan provides extended information regarding how pressure, temperature, and fluid conductivity will be monitored.
10) **Compromise in injection well mechanical integrity:** A significant change in pressure within the protective annular pressurization system surrounding each injection well that indicates a loss of mechanical integrity at an injection well.

An unscheduled AoR reevaluation will also be needed if it is likely that the actual plume or pressure front may extend beyond the modeled plume and pressure front because any of the following has occurred:

1) Seismic event greater than M_w 3.5 within 100 km of the injection well.

2) If there is an exceedance of any Class VI operating permit condition (e.g., exceeding the permitted volumes of carbon dioxide injected); or

3) If new site characterization data changes the computational model to such an extent that the predicted plume or pressure front exceeds, or is expected to exceed, vertically or horizontally beyond the predicted AoR.

One Carbon Partnership will discuss any such events with the Director to determine if an AoR reevaluation is required. If an unscheduled reevaluation is triggered, One Carbon Partnership will perform the steps described at the beginning of this section of this Plan.