3.0 FINANCIAL RESPONSIBILITY
40 CFR 146.85

MARQUIS BIOCARBON PROJECT

Facility Information

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Well name:	MCI CCS 3
Well location:	PUTNAM COUNTY, ILLINOIS S2 T32N R2W Latitude: 41.27026520 N, Longitude: 89.30939322 W

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3.0 Financial Responsibility

3.1 General Overview

Pursuant to 40 CFR 146.85(a), Marquis Carbon Injection LLC (Marquis) is providing a demonstration of financial responsibility for implementation of the four general geologic sequestration (GS) activities listed below, if needed, to prevent endangerment of Underground Sources of Drinking Water (USDWs). Marquis will use multiple qualifying financial instruments to cover the cost of certain general GS activities as identified in **Table 3-1** below.

GS Phase	GS Activity	Financial Instrument
1	Corrective Action	Not Applicable. See **Section 3.3.1**
2	Injection Well Plugging	Letter of Credit
3	Post Injection Site Care & Site Closure	Letter of Credit
4	Emergency & Remedial Response	Third-Party Insurance

Table 3- 1: Proposed Financial Responsibility Instruments for GS Activities

Marquis includes information necessary to demonstrate financial responsibility and information to be released from financial assurance requirements. [40 CFR 146.85(a) and (b)]. The financial instruments shall be amended and effective before CO_2 injection begins.

The detailed cost estimates for financial responsibility are included in **Table 3-3.** These cost estimates were provided by Battelle, the third-party applied science and technical consultant, based on 2022 costs. Up-to-date cost estimates are provided to ensure adequate funding for closure and post-closure activities. See **Section 3.4.2** for updated Financial Responsibility Costs.

The financial responsibility instruments that ensure the Marquis Carbon Injection LLC's Underground Injection Control (UIC) Class VI well has sufficient resources to carry out the Geologic Sequestration (GS) activities have been provided in **Appendix 3-1**.

A demonstration of financial responsibility for the third-party providers has been included. e

3.2 GS Activities Financial Instrument and Time Period

3.2.1. Corrective action

Financial responsibility is not included for site characterization as Marquis has completed a site characterization and Area of Review (AoR) evaluation. Moreover, as detailed in **Section 3.3.1**, no financial responsibility instrument has been provided for the corrective action GS activity as there is only one well that has been identified in the AoR that would be intersected by the CO_2 plume or pressure front during the injection operation or endanger the lowest USDW by the injection activity. ArcelorMittal, the site where the J&L well is located, ceased accepting pickling liquor in 2009. The J&L well was abandoned and closed, and final approval was received from the Illinois EPA in 2013. The well was

closed in accordance with the standards of 35 Illinois Administrative Code (IAC) 730.171. See **Appendix W** (ArcelorMittal Permit No. UIC-004-W1-JL confirming proper plugging and abandonment of the J&L Well, Condition D.4). Based on the certified closure of the J&L well, no corrective action costs have been included as part of MCI's financial assurance.

A review of the other wells located within the AoR that may be impacted by the MCI was conducted within the 29-mile diameter AoR. None of the other wells were at a depth to extend through the confining layer (Eau Claire) into the injection zone (Mt. Simon) so no leakage pathway through the confining zone to the lowest USDW exists. Therefore, those wells were not considered a risk so costs for corrective action measures were not addressed. See Permit **Section 2.5**, **Appendix V,** and **Appendix W** for additional information.

MCI MW 1, the stratigraphic test well, penetrates through the confining zone, and MCI MW 2 and MCI CCS 3 will penetrate through the confining zone. However, the MCI CCS 3 well, MCI MW 1, and MCI MW 2 wells that penetrate through the Eau Claire confining layer will be constructed or completed according to the USEPA Class VI regulations. Additionally, several measures will be incorporated in the well design to ensure protection of the USDWs at the site following the injection period (Injection Well Construction Plan, Permit **Section 4**). These wells will be constructed, cased, and cemented to the appropriate standards (e.g., Casing Performance and Mechanical standards, etc.). The long casing string, tubing, and packer will be constructed of corrosion-resistant alloys (25Cr) across the injection reservoir and confining zone to reduce the chances of casing degradation over the long term. Similarly, a CO_2-resistant cement (EverCRETE) will be pumped behind the deep string casing across the injection reservoir and confining zone. Following completion of the injection phase of the project and monitoring efforts, all wells will be plugged and abandoned according to the EPA Class VI guidelines, including the use of CO_2-resistant cement across the storage formation (Injection Well Plugging Plan, Permit **Section 8**). All sensitivity modeling of vertical permeability shows that CO_2 does not migrate into the lower Elmhurst.

Additionally, monitoring data will be collected, analyzed, and processed from those wells in accordance with the Quality Assurance and Surveillance Plan. Therefore, these wells are not considered potential vertical pathways for fluid movement out of the Mt. Simon injection zone (Permit **Section 4.0,** Permit **Section 7.0,** and Permit **Appendix 7A)**. If there is leakage upward from the Mt. Simon injection zone through the future MCI MW 2 well that will transect through the confining zone, the cost estimate for well closure included in the current financial responsibility costs would be applied to the corrective action measures that could be implemented.

3.2.2. Injection well plugging

Marquis anticipates that well plugging will take place over a 7-day period. The financial instrument for plugging the injection well is funded through a Letter of Credit (LOC) and standby trust. The LOC and standby trust document are included in **Appendix 3-1** with the UIC Program Director named as the beneficiary.

The irrevocable standby LOC is issued by Central Bank Illinois, Member FDIC, 101 North State Street, Geneseo, Illinois. The standby trust is administered by U.S. Bank Trust Company, a national banking association. Pursuant to 40 CFR 146.85(a)(6)(ii), Central Bank Illinois is a high performing community bank founded in 1907 and headquartered in Geneseo, Illinois with total assets nearing $1 Billion. U.S.

Bank has a credit rating of A1 from Moody's. Moody defines that banks rated "A" possess superior intrinsic financial strength, ensuring the stability of their financial instruments. Central Bank is monitored by the FDIC. See **Appendix 3-1.**

3.2.3. Post injection site care and site closure

US EPA anticipates that post injection site care and site closure will last for 50 years, unless an alternative timeframe has been approved by the UIC Director. Based on modeling results of pressure behavior, plume stability, and other factors, Marquis Carbon Injection LLC is requesting approval of a 12-year post-injection site care and site closure period as per justification in Permit **Section 9.5**. The financial instrument for post-injection site care and site closure is a Letter of Credit and Pollution Liability Insurance and was discussed further in **Section 3.2.2**. Marquis Carbon Injection LLC commits to maintaining adequate financial responsibility and resources until:

1) Receiving approval of the completed post-injection site care and site closure plan; and
2) Site closure is approved by the Director.

3.2.4 Emergency and remedial response

Because emergency and remedial response events have the potential to occur over the entire course of the GS project's lifecycle, the financial assurance cost estimate for this phase assumes a 6-year period for the operation of the well and a 12-year period for post-closure site care. The financial instrument for emergency and remedial response is a third-party environmental insurance policy issued by Ironshore Specialty Insurance Company. Ironshore has an "A" (Excellent) Class XIV financial strength rating from AM Best. See **Appendix 3-1** for further information regarding the project financial instruments.

3.3 Site Specific Risk Minimization Factors

High quality site selection and clear identification and analysis of the AoR lowered the estimated costs for specific GS activities. The CO_2 plume that will be formed due to the Marquis Biocarbon Project sequestration activities will be located in a relatively remote area that is a mixture of agricultural and industrial property on land that is owned by Marquis Land Holdings LLC, a sister company to Marquis Carbon Injection LLC, or Marquis Carbon Injection LLC. Comprehensive information collected from the onsite stratigraphic well and 2-D and 3-D seismic analysis confirm that the Mt. Simon formation and the Eau Claire confining zone beneath the site provide an ideal location for long term CO_2 storage. Therefore, the risk to the general public is limited as compared to other carbon sequestration projects in the region.

3.3.1 Corrective Action for Wells in AoR

40 CFR 146.84 requires corrective action be performed on all wells in the AoR that would be intersected by the CO_2 plume or pressure front over the time of injection operation, thus possibly endangering the USDWs by the injection activity. There is only one well in the AoR that penetrates through the confining zone besides wells related to the Class VI project (J&L well). The J&L well was properly plugged and closed pursuant to Illinois' Underground Injection Control standards (35 IAC 730.171). Therefore, no corrective action is anticipated or planned at this time. Site characteristics that minimize the risks within the AoR are identified below. See **Appendix W** for more information.

Based on data obtained from the characterization well, the lowest USDW is the Gunter Sandstone located Confidential, Privileged, or Sens the top of the Mt. Simon. Confidential, Privileged, or Sensitive Business Information. For purposes of the Marquis BioCarbon Project, a tabulation of all wells within the AoR were identified using well databases held by the Illinois State Geologic Survey (ISGS). Available well information indicates approximately 3,085 well records identified within the AoR. Except for one well (J&L well), there were 12 wells identified within the AoR that penetrated into the top of the Eau Claire, but those other wells did not penetrate through the confining layer. All wells within the AoR have been identified and the logs included in **Appendix V**. As detailed in the well logs, since those wells did not fully penetrate the cap rock and were properly sealed, these wells have not been identified as potential leakage pathways, and no corrective action is required. Except for the stratigraphic test well that was drilled onsite during 2021 for purposes of the Marquis project and the closed J&L well, no other wells within the AoR penetrate through the confining layer (Eau Claire) so no leakage pathways to the lowest USDW have been identified. The onsite stratigraphic test well will be used as a deep monitoring well as part of the Class VI well monitoring program.

A 2-D seismic assessment was conducted in 2021, and it confirmed the absence of large-scale faulting in the vicinity of the Marquis Biocarbon Project site. A 3-D seismic assessment was conducted in 2022, and final evaluation of the data confirmed the assessment from the 2-D seismic that there is no large-scale faulting, fracture networks, or other potential leakage paths at the project site. The 3D results did not identify any fractures present in the cap rock. The data obtained from the site was used to define the size and shape of the CO_2 plume. Based on the modeling, the CO_2 plume will extend out approximately ½ mile beyond the MCI CCS 3 injection well. See **Figure 1-4** in Permit **Section 1.0**.

With regard to an AoR update, those costs are included in the post-injection site care costs, and an AoR update is included following site closure. Battelle conducted a comprehensive AoR calculation model based on site evaluation data. A characterization well was Confidential, Privileged, or Sensitive Business Information surface to the Precambrian basement rock. Groundwater, saline water, and core samples from the injection zones and caprock sealing formations were collected. Tests on the caprock and injection zones to confirm caprock integrity, fracture strength, and injectivity were performed. 2-D surface seismic data over a total Confidential, Privileged, or Sensitive Business Information. 3-D surface seismic data over a distance Confidential, Privileg were acquired. Because of the comprehensive data obtained and incorporated in the model, the AoR model will be updated every 5 years during the post-closure period and following well closure. Additional 3-D seismic surveys will be conducted twice during the post-injection period (i.e., 5- and 10-years post injection) under post-injection site care & closure (PISC) plan and once after well closure. Therefore, the costs associated with the AoR update during the post-closure period have been included in the PISC and not in the Corrective Action GS Activity.

3.3.2 Injection Well Plugging Opportunities

The following were considered when estimating and evaluating the costs for plugging the Class VI injection well:

- Well depth.
- Composition of the CO_2 can affect what types of cement are appropriate. Because the source of the CO_2 is from an ethanol plant, there is a very good understanding of the composition of the CO_2. Therefore, the risk of utilizing a cement that is not adequate is very low.
- A characterization well was drilled in 2021. This provided a comprehensive understanding of any subsurface formations that need to be addressed when plugging the injection well.

See Permit **Section 8.0** for the well plugging and abandonment plan.

3.3.3 Post-Injection Site Care Timeframe

The post-injection site care being proposed is 12-years as justified in Permit **Section 2.0**. The cost estimates were based on:

- The results of the comprehensive modeling that has been performed.
- Site characteristics, such as depth and proximity of the USDW and depth of the confining zone which significantly reduces the risk to drinking water supplies.
- The high purity of the CO_2 that will be injected into the ground.

See Permit **Section 9.0** of the application for the PISC and site closure plan.

3.3.4 Emergency and Remedial Response Preparedness

The cost estimates for site closure were based on a technical risk assessment performed by Battelle, as well as example emergency scenarios. Consideration was also given to the following site factors:

1. Thousands of acres surrounding the injection well that is owned by Marquis.
2. The construction of only one injection well.
3. The injection period of 6 years.
4. The absence of community drinking water systems within the CO_2 Plume.
5. The proximity of the injection zone to the lowest USDW.

See Permit **Section 10.0** of the application for the emergency and remedial response plan.

3.4 Financial Responsibility Cost Estimate

3.4.1 Project Activities and Cost Estimates

The cost estimates for each of the four GS phases/activities are addressed separately and based on data provided by Battelle. Battelle obtained and provided third-party cost estimates for the activities outlined in **Table 3-2** and **Table 3-3**.

GS Phase	GS Activity	12 Years Total Cost (Dollars)
1	Confidential, Privileged, or Sensitive Business Information	
2	Confidential, Privileged, or Sensitive Business Information	
3	Confidential, Privileged, or Sensitive Business Information	
4	Confidential, Privileged, or Sensitive Business Information	
	Total:	Confidential, Privileged, or Sensitive Business Inf

Table 3- 2: Summary of Cost Estimates for Financial Responsibility

Detailed cost estimates are provided in **Table 3-3** and **Table 3-4**.

2. Injection Well Plugging – See Permit Section 8 for details on plugging method.		
Flush injection well with a buffer fluid		Confidential, Privileged, or Sensitive Business Information
Tests to measure bottomhole reservoir pressure	Confidential, Privileged, or Sensitive Business Information	
Final external mechanical integrity test to evaluate the integrity of the existing casing and cement that will remain after the well is plugged		
Plug injection well	Confidential, Privileged, or Sensitive Business Information	
	Confidential, Privileged, or Sensitive Business Information	
Cement/gel	Confidential, Privileged, or Sensitive Business Information	
Plugging oversight & report preparation	Confidential, Privileged, or Sensitive Business Information	
Subtotal: Injection Well Plugging		Confidential, Privileged, or Sensitive Business

2. Injection Well Plugging – See Permit Section 8 for details on plugging method.	
3. Post-Injection Site Care	
4 Shallow Groundwater Well Sampling & Isotope Analysis	[redacted]
Annular Pressure Analysis & Fluid Volume of injection well	[redacted]
Annular Pressure Analysis of deep monitoring well MW-2	[redacted]
Injection Zone Pressure Monitoring	[redacted]
Temperature Measurement of injection well, and deep monitoring well MW-2	[redacted]
Fluid sampling and isotope analysis of ACZ well and deep monitoring well MW-2	[redacted]
Pulsed Neutron Capture (PNC) Logging of ACZ well and deep monitor well	[redacted]
Data Analysis/AoR Updated Modeling	[redacted]
Microseismic Monitoring of 5 Surface Stations	[redacted]
Time-Lapse 3D Surface Seismic Data of Surface	[redacted]
PISC Monitoring Reports to US EPA	[redacted]
Subtotal: Post-Injection Site Care	[redacted]
4. Site Closure	**Site Closure**
Prior to plugging wells, check external integrity by temperature & PNC logging	[redacted]
Plug ACZ Well and Deep Monitoring Well 1	[redacted]
Plugging Oversight & Remove above ground infrastructure (e.g., wellheads and monitoring equipment)	[redacted]
Time-Lapse 3D Surface Seismic Data of Surface	[redacted]
Data Analysis/ Updated Modeling	[redacted]
Site Closure Report to US EPA	[redacted]
Subtotal: Site Closure Cost	[redacted]

Table 3- 3: Detailed Cost Estimates Covered by LOC

5. Emergency and Remedial Response		Emergency and Remedial Response
Implement Shutdown	Confidential, Privileged, or Sensitive Business Information	Confidential, Privileged, or Sensitive B
Conduct Site / Cause of Emergency Review	Confidential, Privileged, or Sensitive Business Information	
Mechanical Integrity Concern	Confidential, Privileg Confidential, Privileged, or Sensitive Business Information	
Equipment Failure	Confidential, Privileged, or Sensitive Business Information	
Subsurface damage	Confidential, Privileged, or Sensitive Business Information	
Report of Corrective Action to US EPA	Confidential, Privileged, or Sensitive Business	Information
Subtotal: ERP Cost		Confidential, Privileged, or Sensitive Business

Table 3- 4: Detailed Cost Estimates Covered by Insurance

3.4.2 Cost Estimate Updates (40 CFR 146.85(c))

Accurate and up-to-date cost estimates are important to ensure adequate funding for closure and post-closure activities. Marquis Carbon Injection LLC will adjust the cost estimate for inflation within 60 days of the following events and provide the adjustment to the Director in electronic form:

1. Prior to the anniversary date of the establishment of the financial instrument(s) used to comply with the financial responsibility requirements.
2. Any amendments to the area of review and corrective action plan (40 CFR 146.84), the injection well plugging plan (Section 146.92), the post-injection site care and site closure plan (Section 146.93), and the emergency and remedial response plan (Section 146.94).
3. Director approval of Marquis Carbon Injection LLC request to increase or decrease the initial cost estimate to the area of review and corrective action plan (40 CFR 146.84), the injection well plugging plan (Section 146.92), the post-injection site care and site closure plan (Section 146.93), and the emergency and remedial response plan (Section 146.94).
4. Whenever the current cost estimate increases or decreases to an amount greater than the face amount of the financial instrument currently in use.
5. Director determines, during the annual evaluation of the qualifying financial responsibility instrument(s) that the most recent demonstration is no longer adequate to cover the cost of corrective action (as required by Section 146.84), injection well plugging (as required by Section 146.92), post-injection site care and site closure (as required by Section 146.93), and emergency and remedial response (as required by Section 146.94).

Updates can be provided either by completing a new cost estimate, or by multiplying the previous year's cost estimate by the inflation factor (the Implicit Price Deflator for the U.S. Gross National Product is published by the U.S. Department of Commerce, Bureau of Economic Analysis, annually on March 31. http://www.bea.gov). Therefore, it is appropriate to use the previous year's factor when inflation adjusting cost estimates due between January 1 and March 31.

For reference, the annual inflation factor for 2023 and 2024 is shown in **Table 3-5**.

Year	Implicit Price Deflators (IPD)(Note 1) - *Updated March 31 of each year*	Inflation Factor (Note 2)
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]		

Table 3- 5: Inflation Factors for 2023 and 2024

The calculation for the annual inflation adjustment for 2023 and 2024 for costs covered by a letter of credit (LOC), and costs covered by insurance are in **Table 3-6** and **Table 3-7**, respectively.

Calculation to Adjust for Inflation from 2023 Dollars to 2024 Dollars	
Sum of costs for Categories 2, 3 in **Table 3-3** (2022 Dollars):	[redacted]
Times the inflation factor for 2023:	[redacted]
Updated cost estimate for 2023:	[redacted]
Times the inflation factor for 2024:	[redacted]
Updated cost estimate for 2024 – Letter of Credit :	[redacted]

Table 3- 6: Updated Cost Estimates Covered by LOC

Calculation to Adjust for Inflation from 2023 Dollars to 2024 Dollars	
Annual sum of costs for Category 5 in **Table 3-4** (2022 Dollars):	[redacted]
Times the inflation factor for 2023:	[redacted]
Updated cost estimate for 2023:	[redacted]
Times the inflation factor for 2024:	[redacted]
Updated cost estimate for 2024 - Insurance	[redacted]

Table 3- 7: Updated Cost Estimates Covered by Insurance

3.4.3 Adverse Financial Conditions (40 CFR 146.85(d))

Marquis Carbon Injection LLC shall provide notification by certified mail of adverse financial conditions such as bankruptcy that may affect the ability to carry out injection well plugging and post-injection site care and site closure as follows:

1) In the event that Marquis Carbon Injection or the third party provider of a financial responsibility instrument is going through a bankruptcy, Marquis Carbon Injection shall provide notification to the Director by certified mail of the commencement of voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming Marquis Carbon Injection LLC as debtor, within 10 days after commencement of the proceeding.
2) A guarantor of a corporate guarantee must make such a notification to the Director if he/she is named as debtor, as required under terms of the corporate guarantee.
3) If Marquis Carbon Injection LLC fulfills the financial responsibility requirements by obtaining a trust fund, surety bond, letter of credit, escrow account, or insurance policy will be deemed to be without the required financial assurance in the event of bankruptcy of the trustee or issuing institution, or a suspension or revocation of the authority of the trustee institution to act as trustee of the institution issuing the trust fund, surety bond, letter of credit, escrow account, or insurance policy. Marquis Carbon Injection LLC must establish other financial assurance within 60 days after such an event.

Appendix 3-1

Financial Responsibility Documents

1) **Marquis Carbon Injection Cover Letter to Letter of Credit #120**
2) **Letter of Credit #120 issued by Central Bank of Illinois**
3) **Documentation of Central Bank of Illinois Member of FDIC**
4) **Trust Agreement by US Bank Trust Company, National Association**
5) **Ironshore Insurance Policy**
   - **Certificate of Insurance for Emergency and Remedial Response**
   - **Financial Responsibility and Reimbursement Endorsement #21**
   - **Financial Responsibility and Reimbursement Endorsement #22**
   - **Site Pollution Incident Legal Liability Declarations**
6) **Ironshore Credit Rating**