Denbury Carbon Solutions, LLC

Application Narrative

Leo Storage Facility, Simpson and Copiah Counties, Mississippi

Denbury

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1.0 FACILITY INFORMATION

Facility Name: Leo Storage Facility

[redacted]

Mailing Address: 5851 Legacy Circle, Suite 1200
Plano, Texas 75024

Well Location(s) Simpson County, Mississippi

[redacted]

2.0 PROJECT BACKGROUND

[redacted]. The goal of the Leo Storage Facility is to permanently store anthropogenic CO_2 captured from industrial sources, thereby facilitating the United States' effort to reduce greenhouse gas emissions. The Leo Storage Facility will be a commercial scale carbon capture system that will be designed, constructed, and operated with the capability of storing CO_2 into deep geologic formations. The site was chosen based on the favorable geology, ideal for storage, and the proximity to emitting sources of CO_2. [redacted]

The application that follows will thoroughly describe and characterize the geology of the planned well locations, evaluate the formation for the qualities required to permanently contain the sequestered CO_2, and outline the engineering design and safety requirements of the constructed wells. The application will also discuss the planned monitoring system, which will be used to analyze the movement of the actual injectate plume with that predicted by reservoir modeling and simulation.

This application has been developed to meet all the requirements of US Code 40 CFR 146.82 through 146.95. Once the permit has been issued, per the requirements of 40 CFR 144.36(a) the permit will be updated every five years thereafter for the active injection life of the well (s).

GSDT Submission - Project Background and Contact Information

GSDT Module: Project Information Tracking

Tab(s): General Information tab; Facility Information and Owner/Operator Information tab

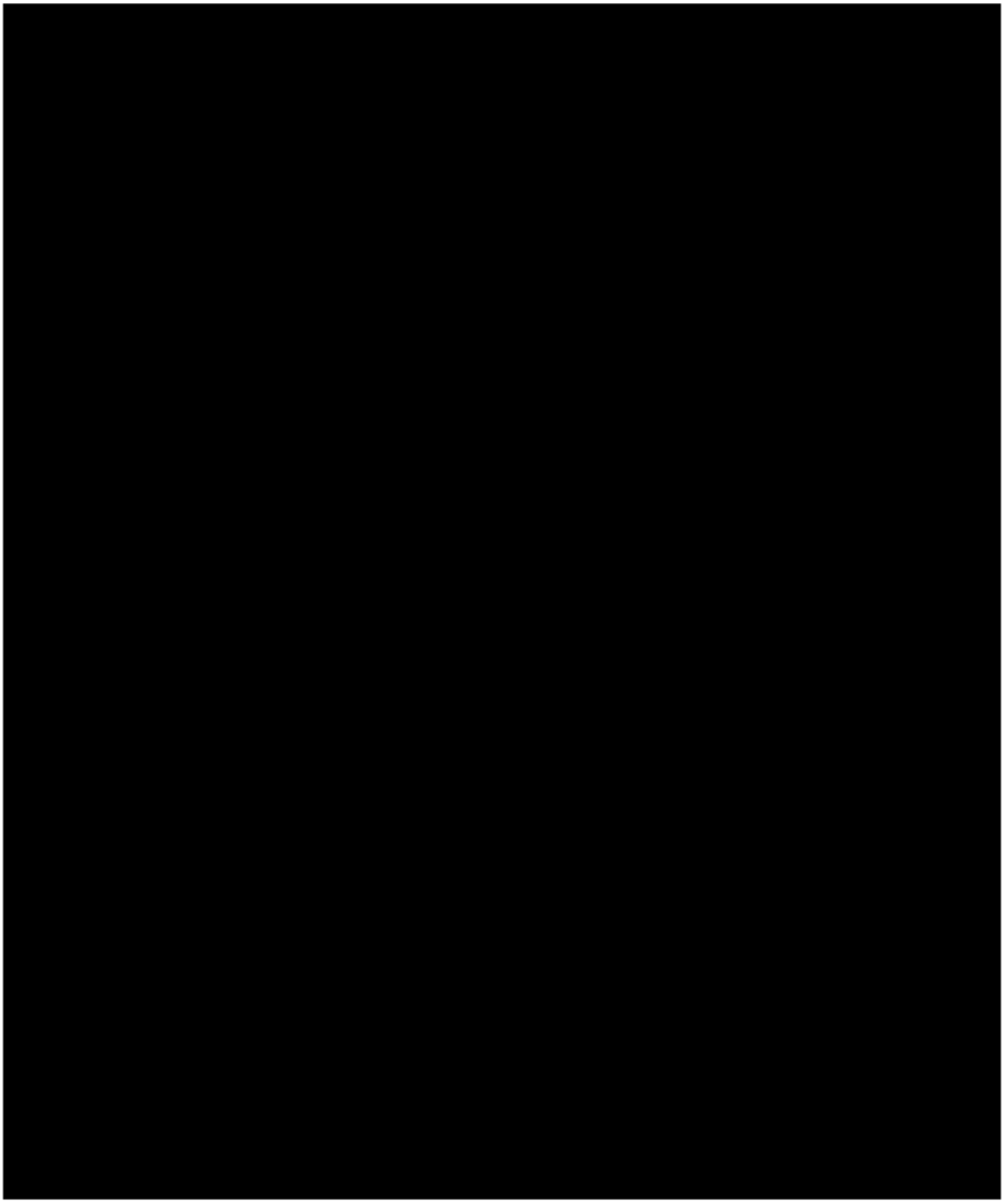
Please use the checkbox(es) to verify the following information was submitted to the GSDT:

☐ Required project and facility details ***[40 CFR 146.82(a)(1)]***

3.0 SITE CHARACTERIZATION

A regional and local geologic evaluation was conducted for the Leo Storage Facility site using geologic, geophysical, petrophysical, hydrogeological and well log analysis data obtained from published literature, commercial sources, and publicly available datasets.

Detailed discussions of the geologic features, seismic history, injection and confining zone details, and the area of review site suitability is in the Site Characterization and Area of Review and Corrective Action Plan documents of the permit; some highlights from those discussions are below.



4.0 AOR AND CORRECTIVE ACTION

All the requirements of the Environmental Protection Agency (EPA) 40 CFR 146.84 are met by the Area of Review & Corrective Action Plan document submitted along with the application. The document describes the subsurface characterization, computational modeling, current area of review delineation, corrective action plan and schedule, wells requiring corrective action, and future area of review re-evaluation plan and schedule. At a fixed frequency, or more frequently when monitoring and operational conditions warrant, the area of review will be reevaluated and any required corrective action in the manner specified in 40 CFR 146.84 will be performed. Following each Area of Review and Corrective Action Plan reevaluation or demonstration showing that no new evaluation is needed, Denbury, will submit the results to the Director for review and approval.

AoR and Corrective Action GSDT Submissions
GSDT Module: AoR and Corrective Action Tab(s): All applicable tabs Please use the checkbox(es) to verify the following information was submitted to the GSDT: ☐ Tabulation of all wells within AoR that penetrate confining zone [40 CFR 146.82(a)(4)] ☐ AoR and Corrective Action Plan [40 CFR 146.82(a)(13) and 146.84(b)] ☐ Computational modeling details [40 CFR 146.84(c)]

5.0 FINANCIAL RESPONSIBILITY

As required by 40 CFR 146.85, Denbury will maintain financial responsibility throughout all phases of the Leo Storage Facility project. The financial responsibility instruments can be found in the Financial Assurance Demonstration document submitted with this application. The instruments will be

sufficient to cover the costs of corrective action, injection well plugging, post-injection site care, site closure, and emergency and remedial response (ERR). Adjustments to the cost estimate, to include adjustment for inflation, cost estimate increases, or an event that may adversely affect financial conditions, will be provided to the Director in writing within 60 days.

Financial Responsibility GSDT Submissions
GSDT Module: Financial Responsibility Demonstration Tab(s): Cost Estimate tab and all applicable financial instrument tabs Please use the checkbox(es) to verify the following information was submitted to the GSDT: ☐ Demonstration of financial responsibility [40 CFR 146.82(a)(14) and 146.85]

6.0 INJECTION WELL CONSTRUCTION

[redacted]The wells are to be constructed in compliance with Class VI UIC injection well construction requirements. The goal of the operating parameters and material selection is to guarantee the system's mechanical integrity, ensuring protection of the USDW, and to maximize performance during the life of the project. A more in-depth discussion of the injection well construction, along with wellbore schematics, can be found in the Well Construction Details section included in the submission of this application.

6.1 PROPOSED STIMULATION PROGRAM [40 CFR 146.82(A)(9)]

[redacted]If it is determined that stimulation is warranted, a stimulation plan will be developed and submitted to EPA Region 4 for review and approval 30 days before the anticipated start of stimulation, per 40 CFR 146.91(d)(2).

[redacted]

[redacted]

[redacted]

9.0 TESTING AND MONITORING

This Testing and Monitoring Plan document describes how Denbury will monitor the Leo Storage Facility pursuant to 40 CFR 146.90. In addition to demonstrating that the well is operating as planned, the carbon dioxide plume and pressure front are moving as predicted, and that there is no endangerment to USDWs, the monitoring data will be used to validate and adjust the geological models used to predict the distribution of the carbon dioxide within the storage zone to support AoR reevaluations and a non-endangerment demonstration.

Results of the testing and monitoring activities described below may trigger action according to the Emergency and Remedial Response Plan (ERRP).

Testing and Monitoring GSDT Submissions
GSDT Module: Project Plan Submissions Tab(s): Testing and Monitoring tab Please use the checkbox(es) to verify the following information was submitted to the GSDT: ☐ Testing and Monitoring Plan [40 CFR 146.82(a)(15) and 146.90]

10.0 INECTION WELL PLUGGING

After cessation of injection, Denbury plans plug and abandoned the injection wells in compliance with 40 CFR 146.92(c), Denbury will notify the regulatory agency at least 60 days before plugging the well and provide updated Injection Well Plugging Plan, if applicable. Denbury will submit a plugging report to the regulatory agency within 60 days after plugging. Denbury will retain the plugging report for 10 years following site closure pursuant to 40 CFR 146.91(e).

Injection Well Plugging GSDT Submissions
GSDT Module: Project Plan Submissions Tab(s): Injection Well Plugging tab Please use the checkbox(es) to verify the following information was submitted to the GSDT: ☐ Injection Well Plugging Plan [40 CFR 146.82(a)(16) and 146.92(b)]

11.0 POST-INJECTION SITE CARE (PISC) AND SITE CLOSURE

This Post-Injection Site Care and Site Closure (PISC) plan describes the activities that Denbury will perform to meet the requirements of 40 CFR 146.93. Denbury will monitor ground water quality and track the position of the carbon dioxide plume and pressure for 50 years or less if plume stabilization is demonstrated to be reached sooner. Denbury may not cease post-injection monitoring until a demonstration of non-endangerment of underground source of drinking water USDWs has been approved by the underground injection control Program Director pursuant to 40 CFR 146.93(b)(3). Following approval for site closure, Denbury will plug all monitoring wells, restore the site to its original condition, and submit a site closure report and associated documentation.

PISC and Site Closure GSDT Submissions
GSDT Module: Project Plan Submissions Tab(s): PISC and Site Closure tab Please use the checkbox(es) to verify the following information was submitted to the GSDT: ☐ PISC and Site Closure Plan [40 CFR 146.82(a)(17) and 146.93(a)]

GSDT Module: Alternative PISC Timeframe Demonstration
Tab(s): All tabs (only if an alternative PISC timeframe is requested)

Please use the checkbox(es) to verify the following information was submitted to the GSDT:
☐ Alternative PISC timeframe demonstration [40 CFR 146.82(a)(18) and 146.93(c)]

12.0 EMERGENCY AND REMEDIAL RESPONSE

In the event of an emergency that could endanger public health and safety or any underground source of drinking water (USDW) during the construction, operation, or post-injection site care periods, the Emergency and Remedial Response Plan document of this permit describes the actions that Denbury will perform at the Leo Storage Facility. If verified evidence that the injected CO_2 stream and/or associated pressure front may cause endangerment to a USDW, Denbury will initiate shutdown plan for the injection wells, take all steps reasonably necessary to identify and characterize the release, notify the permitting agency (Underground Injection Control Program Director) of the emergency event within 24 hours, and implement the approved ERRP.

Emergency and Remedial Response GSDT Submissions

GSDT Module: Project Plan Submissions
Tab(s): Emergency and Remedial Response tab

Please use the checkbox(es) to verify the following information was submitted to the GSDT:
☐ Emergency and Remedial Response Plan [40 CFR 146.82(a)(19) and 146.94(a)]