

**FINANCIAL ASSURANCE DEMONSTRATION**  
**LAC 43:XVII.3609(C)**

**Project Name: Live Oak CCS Hub**

**Facility Information**

Facility Contact: Live Oak CCS, LLC  
14302 FNB Parkway  
Omaha, Nebraska 68154  
402-691-9500

OOC Code No.: L1135

Well Locations:

Well Name	Latitude (WGS84)	Longitude (WGS84)	Parish	State
LO-01 M <sup>1</sup>	Claimed as PBI		West Baton Rouge	Louisiana
LO-01 F <sup>1</sup>	Claimed as PBI		West Baton Rouge	Louisiana
LO-02 M	Claimed as PBI		West Baton Rouge	Louisiana
LO-03 M	Claimed as PBI		Iberville	Louisiana
LO-04 F-M	Claimed as PBI		Iberville	Louisiana
LO-05 M	Claimed as PBI		Iberville	Louisiana
LO-06 M <sup>1</sup>	Claimed as PBI		Iberville	Louisiana
LO-06 F <sup>1</sup>	Claimed as PBI		Iberville	Louisiana

<sup>1</sup> For shared well pads, surface hole location spacing is set at a minimum of 15 feet.

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### List of Acronyms

AOB-#	Above-Zone Observation wells
AoR	Area of Review
CCS	Carbon Capture and Storage
CO <sub>2</sub>	Carbon Dioxide
UOB-#	Deep Observation wells
DTS	Distributed Temperature Sensing
IOB-#	In-Zone Observation wells
LO-0(#)	Live Oak CCS Hub injection well number
OC	Louisiana Department of Energy and Natural Resources' Office of Conservation
P&A	Plugged and Abandoned
PISC	Post-Injection Site Care
TBD	To Be Decided
2-D	Two-Dimensional
USDW	Underground Source of Drinking Water

## **1. Introduction**

Live Oak CCS, LLC will provide financial responsibility pursuant to LAC 43:XVII.3609(C) using one or more of the qualifying instruments listed at LAC 43:XVII.3609(C)(1) to cover the costs of corrective action, plugging injection wells, post-injection site care (PISC) and site closure, and emergency and remedial response associated with Live Oak CCS Hub in Iberville and West Baton Rouge Parishes, Louisiana (the “project”).

Live Oak CCS, LLC contracted with Projeo Corporation (Projeo) to provide a third-party estimate of Financial Responsibility for the project. To determine the costs for the coverage amounts underpinning this Financial Responsibility Demonstration, per LAC 43:XVII.3609(C)(4)(h), Projeo used currently available price quotes (in Year 2024 dollars) and assumed the hiring of independent, third-party contractors for each Financial Responsibility activity. The estimated costs of each of these activities are presented in Table 1 below. These costs will be updated regularly as described in Section 4.

**Table 1: Cost Estimates for Activities to be Covered by Financial Responsibility.**

Activity	Total Cost (\$)	Timeline of Coverage
Corrective Action	\$9,902,200	2027-2058
Plugging Injection Wells	\$6,660,360	2063
Post-Injection Site Care and Site Closure	\$17,597,000	2058-2107
Emergency and Remedial Response	\$17,900,638	2028-2058

## **2. Discussion of Financial Responsibility Activities and Cost Estimates**

The costs estimated in Table 1 are based on quotes and technical data available during the permit application development process and are projected to cover the cost of employing an independent third-party subcontractor to perform the services or procurement of requisite goods (LAC 43:XVII.3609(C)(4)(h)). These estimates are based upon historic price data from other projects managed by Live Oak CCS, LLC and its project partners, cost quotes from third-party companies, regulatory guidance documents, and a best judgment about the level of effort required to complete an activity. An expanded cost summary is provided in Appendix A.

### **2.1. Corrective Action**

As discussed in the Area of Review and Corrective Action Plan, Live Oak CCS, LLC has determined that there are up to 22 legacy oil and gas wells in the proposed AoR that may need corrective action. This estimate may change after completion of the survey to identify historic well bores described in subsection 5.1 of the Area of Review and Corrective Action Plan. The cost estimate for corrective action will be revised as described in Section 4 below if additional wells are identified that need corrective action.

Estimated well plugging costs are \$450,100 per well. This is based on a compilation of experience with plugging wells associated with storage projects. The cost estimate assumption that the 22 legacy oil and gas wells will need to be plugged is a worst-case scenario. Each well will be assessed

for its current status, and corrective action for active wells will cost less than the plugging estimate. The plugging cost estimate includes locating the well, assessing its status, and plugging to current standards. A generalized procedure for conducting corrective action is described in the Area of Review and Corrective Action Plan.

Total plugging costs for 22 wells at \$450,100 per well amounts to \$9,902,200.

However, not all these wells will require immediate corrective action. As the project progresses, and as the plume advances over time, the determination on which wells require corrective action will be updated. As summarized in the Area of Review and Corrective Action Plan, timing of corrective action is proposed as phased and is estimated by modeling the number of wells contacted over various time periods by the advancing AoR (pressure plume + buffer), as shown in Table 2.

**Table 2: Estimated number of wells penetrating the caprock contacted by the AoR over time.**

AoR Extent Time Frame	Corrective Action Year	Number of Wells
Pressure plume boundary at 10 <sup>th</sup> year of injection and CO <sub>2</sub> plume at 30 years	Before injection starts	4
Pressure plume boundary at 30 <sup>th</sup> year of injection and CO <sub>2</sub> plume at 30 years	25 <sup>th</sup> year of injection	1
Pressure plume boundary at 30 <sup>th</sup> year of injection and CO <sub>2</sub> plume at 180 years	30 <sup>th</sup> year of injection	17
<b>TOTAL</b>		<b>22</b>

## 2.2. Plugging Injection Wells

In estimating Financial Responsibility coverage values for injection well plugging, it is assumed that the eight injection wells will first be converted to in-zone observation wells after cessation of CO<sub>2</sub> injection, that these wells will monitor pressure for up to 5 years post-injection, and the eight injection wells will be plugged in Year 2063. Costs for plugging and abandoning wells assume filling the entire wellbore with cement and are based on regional estimated costs associated with the plugging of oil, gas, and disposal wells. Based on current information, the injection well plugging and abandonment costs are estimated at \$799,080 per injection well plus pad reclamation costs of \$267,720 for a total of \$6,660,360 for eight wells (in Year 2024 dollars).

## 2.3. Post-Injection Site Care and Site Closure

Project activities during the PISC time period are discussed in the Post-Injection Site Care and Site Closure Plan. PISC activities include monitoring for a period of 50 years once injection ceases, on-going well maintenance, periodic reevaluation of the AoR, maintenance of associated facilities, and field personnel costs. Live Oak CCS, LLC anticipates that the PISC activity will begin in Year 2058, after injection ceases, and continue through Year 2107.

The Financial Responsibility rules state that the well sites must be returned to the original conditions, and the observation wells must be securely plugged and abandoned (P&A). Project

activities for site closure, including the plugging and abandonment of project observation wells and site remediation, are detailed in the Post-Injection Site Care and Site Closure Plan. It is assumed that site closure activity will occur in Year 2107 for this estimate.

The total Financial Responsibility cost estimate for PISC and site closure is \$17,597,000 (in Year 2024 dollars), based on industry estimates and independent, third-party engineering data, some of which is based on regional experience with oil, gas, and disposal well site care.

#### **2.4. Emergency and Remedial Response**

A leakage scenario could result from a loss of mechanical integrity in the wellbore or a loss of geologic containment in the confining zone. The Financial Responsibility estimate assumes a CO<sub>2</sub> leak from the injection zone due to the loss of mechanical integrity in an injection well. The cost estimate of \$17,900,638 assumes a rapid remedial response and includes the cost of the following:

- Isolating the leak;
- Controlling the leaky project well;
- Plugging the leaky project well;
- Safely disposing any produced fluids; and
- Drilling a relief well.

#### **3. Plan for Financial Mechanisms**

Live Oak CCS, LLC intends to demonstrate Financial Responsibility for the project by executing a combination of qualifying instruments prior to requesting authorization to inject and will maintain adequate financial responsibility and resources through site closure. Live Oak CCS, LLC will ensure that any third parties used are authorized to operate in Louisiana, per LAC 43:XVII.3609(C)(3) and have a credit rating in the top four categories from either Standard & Poor's or Moody's, or a comparable rating from another credible credit rating agency. Additionally, Live Oak CCS, LLC will ensure that each instrument comprises the protective conditions of coverage in LAC 43:XVII.3609(C)(4)(c). The financial mechanisms will provide appropriate assurances to the Louisiana Department of Energy and Natural Resources' Office of Conservation (OC) of Live Oak CCS, LLC's ability to fulfill its financial responsibilities for the project.

#### **4. Updates**

Live Oak CCS, LLC will submit the following updates to the OC:

- Annual updates on financial responsibility instruments; [LAC 43:XVII.3609(C)(4)(d)(ii)]
- Annual cost estimate updates for inflation within 60 days before the anniversary date of the establishment of each financial instrument; [LAC 43:XVII.3609(C)(4)(h)(ii)]
- Cost estimate updates within 60 days of OC request or plan amendments that impact the cost estimate. Plans that may impact the cost estimate are Area of Review and Corrective Action Plan, Injection Well Plugging Plans, Post-Injection Site Care and Site Closure Plan,

or Emergency and Remedial Response Plan; [LAC 43:XVII.3609(C)(4)(h)(iii) and 3609(C)(4)(i)]

- Within 60 days of a cost estimate increase, evidence of a likewise increase in the face amount of the financial instrument or evidence that another financial instrument is in place to cover the increase; [LAC 43:XVII.3609(C)(4)(h)(iv)]
- Notification by certified mail of adverse financial conditions that may affect the ability to carry out injection well plugging and PISC and site closure. Bankruptcy proceedings of the owner, operator, or third-party provider of a financial responsibility instrument shall be reported within 10 days after commencement of the proceeding. [LAC 43:XVII.3609(C)(4)(i)]

## Appendix A: Summary of Financial Responsibility Costs

The table below details the expanded cost summary for financial responsibility cost inputs.

Cost Category	Cost / Unit	Quantity	Recurrence	Cost
<b>Corrective Action</b>				
P&A Legacy Well	\$450,100	22 wells	1	\$9,902,200
<b>Total Cost</b>	<b>\$9,902,200</b>			
<b>Plugging Injection Wells</b>				
P&A Injection Well	\$799,080	8 wells	1	\$6,392,640
Well Pad Reclamation	\$44,620	6 pads	1	\$267,720
<b>Total Cost</b>	<b>\$6,660,360</b>			
<b>Post Injection Site Care</b>				
Groundwater Sampling (AOB, UOB wells)	\$5,100	6 wells	20	\$612,000
Storage Complex Pulsed Neutron (Injection wells)	\$60,000	8 wells	5	\$2,400,000
Storage Complex Pulsed Neutron (IOB, AOB wells)	\$60,000	10 wells	10	\$6,000,000
DTS (Injection wells)	\$7,500	8 wells	5	\$300,000
DTS (IOB wells)	\$7,500	7 wells	15	\$787,500
2-D Seismic Monitoring	\$6,000	40 miles	5	\$1,200,000
<b>Total Cost</b>	<b>\$11,299,500</b>			
<b>Site Closure</b>				
P&A Observation Well	\$450,100	8 wells	1	\$5,851,300
Well Pad Reclamation	\$44,620	6 pads	1	\$446,200.00
<b>Total Cost</b>	<b>\$6,297,500</b>			
<b>Emergency and Remedial Response</b>				
Relief Well for Injector Well Blowout	\$7,601,358	1 well	1	\$7,601,358
Surface Brine Water Spill Remediation	\$71,180	1 case	1	\$71,180
USDW Remediation Well	\$650,100	1 well	1	\$650,100
Mitigate USDW CO <sub>2</sub> Contamination	\$9,578,000	1 case	1	\$9,578,000
<b>Total Cost</b>	<b>\$17,900,638</b>			