



Longleaf CCS Hub (DE-FE0032341)

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Project Motivation

- The Longleaf CCS Hub seeks to develop a CO₂ storage facility near Bucks, Alabama
- Builds on the successful SECARB injection demonstration at the Anthropogenic Test Site, conducted at nearby Citronelle, Alabama
- Opportunity to decarbonize the many industrial facilities in Mobile County
- **Motivated project owner and developer in Tenaska**



LONGLEAF
CCS HUB

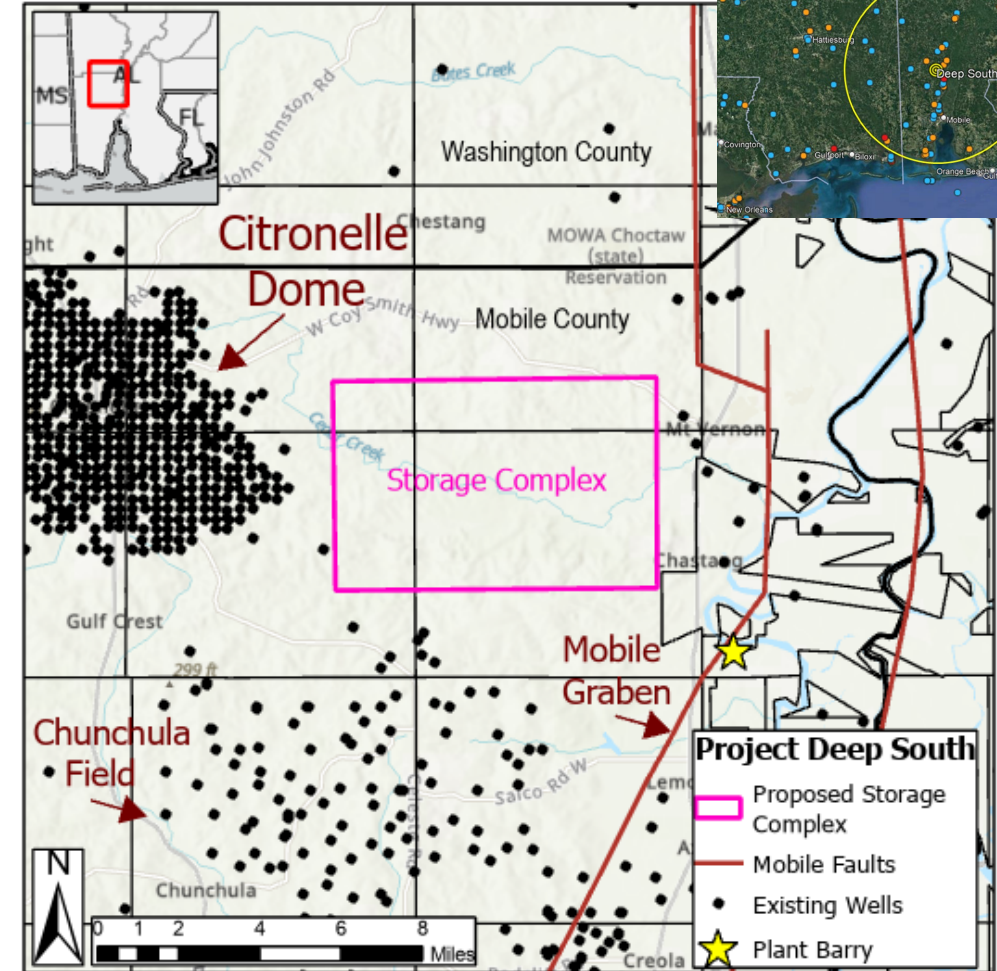


Transcending Boundaries

Location

- The proposed storage complex site is located north of Mobile Alabama
- The complex will provide storage for the CO₂ emissions captured from regional emitters along the Mobile River and to the south
 - > 19 MMtonnes per year from 40+ emitters
- Located 5 miles to the east of the SECARB Anthropogenic test site at Citronelle

Regional emitters in the Gulf South that may wish to explore opportunities to decarbonize.



Map of the Longleaf CCS storage complex in northern Mobile County.

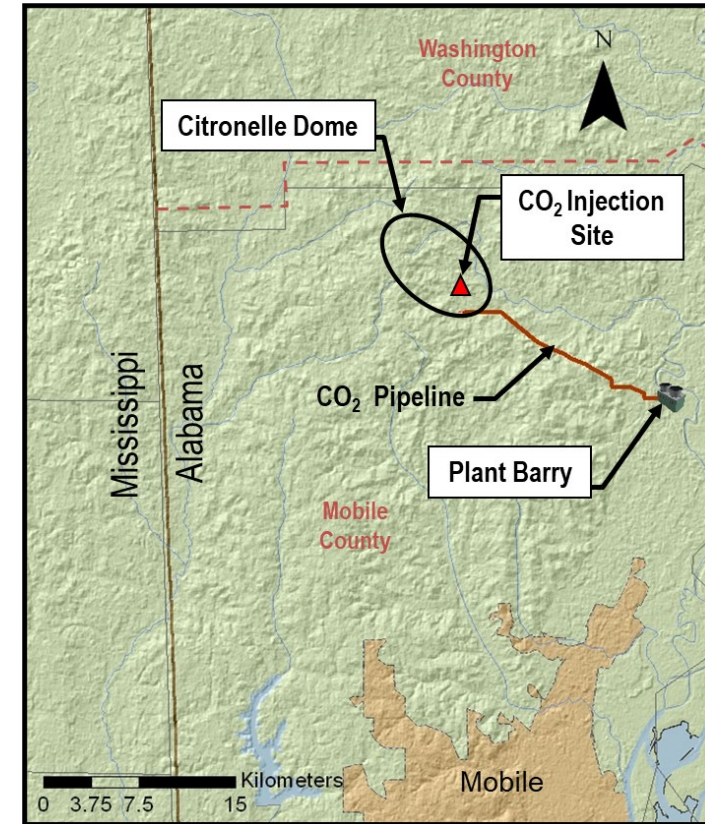


Transcending Boundaries

SECARB Anthropogenic Test Overview

- 25 MW capture unit at Alabama Power's Plant Barry (500 metric tons per day)
- Four-inch, 12-mile CO₂ pipeline from Plant Barry to the Citronelle Dome
 - Normal operating pressure of 1,500 psig
- Three wells drilled in 2011 to 11,800ft.
- Injection 8/2012 to 9/2014
- 114,104 metric tons of CO₂ injection under Class V
- Post-Injection Site Care Period 9/2014 to 5/2018
 - Permit closure in May 2018 based on USDW non-endangerment and CO₂ containment demonstration (5-yr renewal)
- Based on monitoring and modeling results

SECARB Anthropogenic Test Footprint

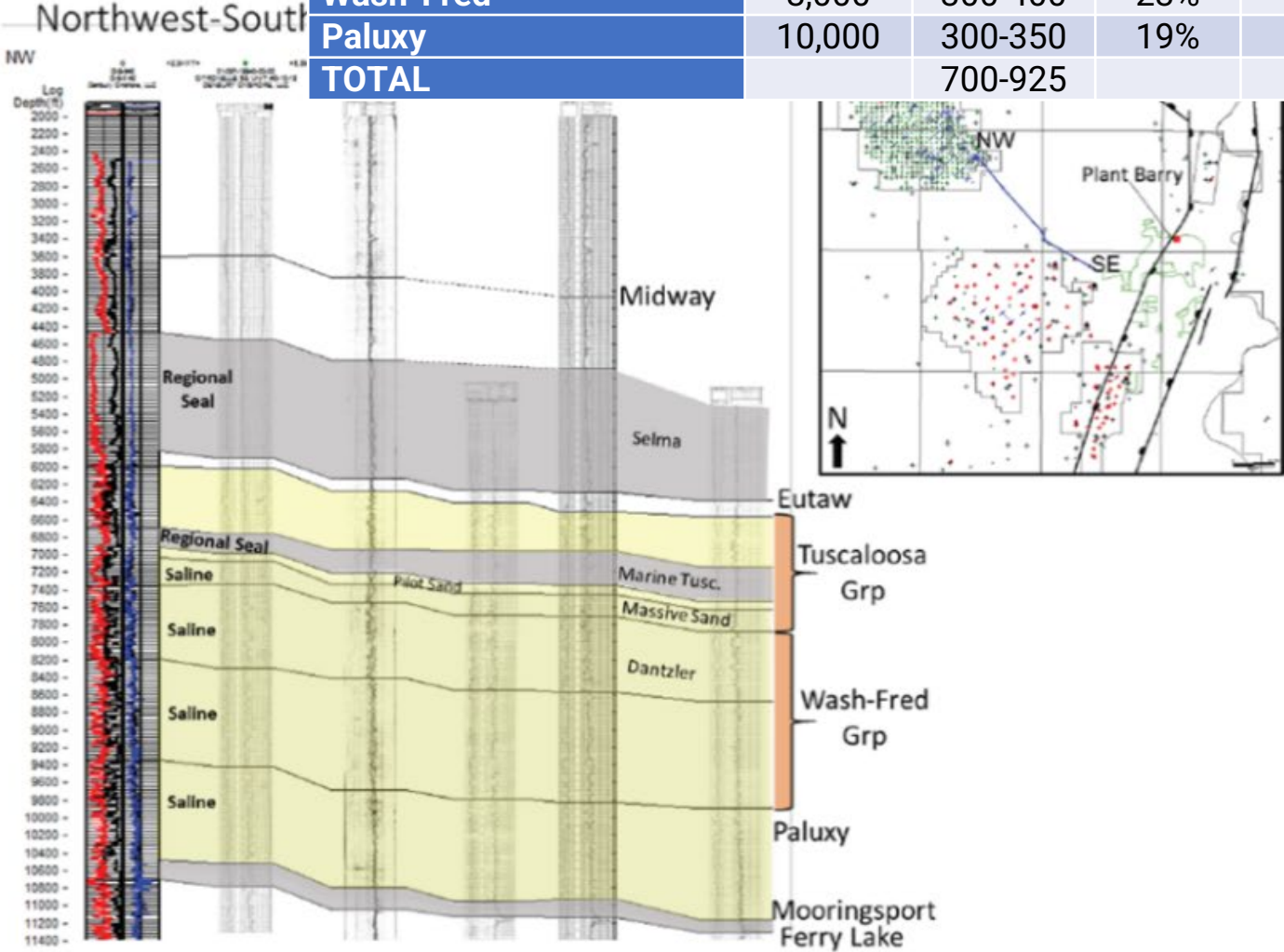
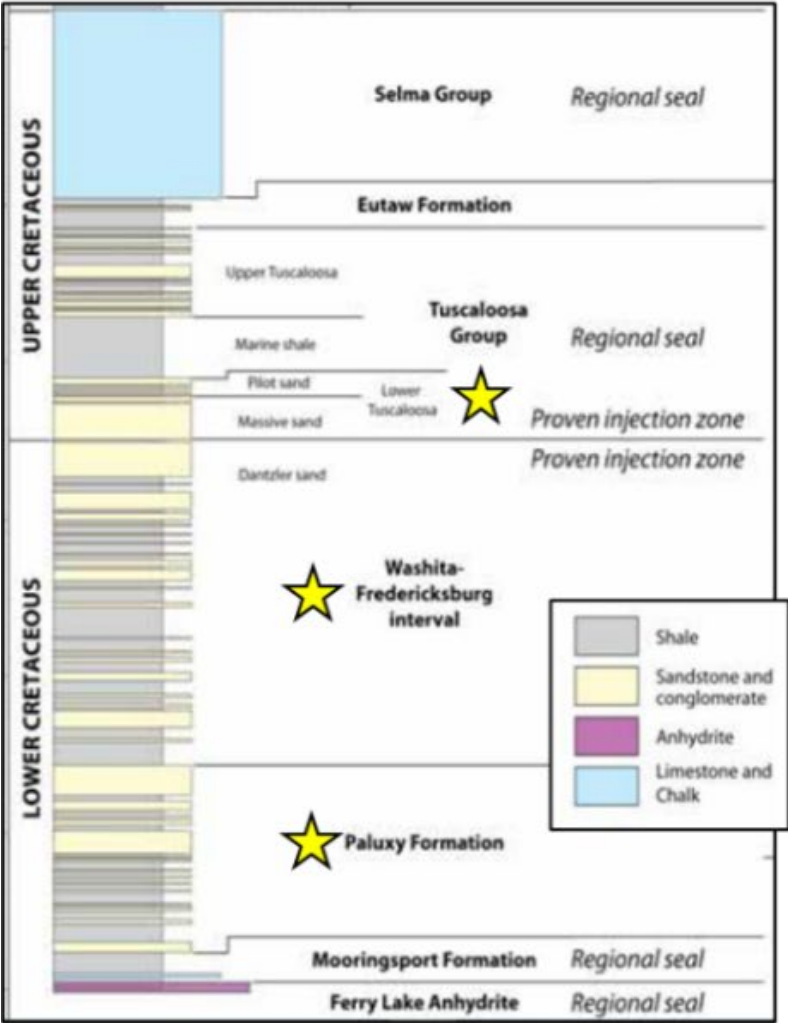


Transcending Boundaries

Geology

Depth, net pay, and average porosity for the target storage intervals. Also shown are P10 and P90 storage resource estimates.

| Storage Unit | Depth (ft) | Net Pay (ft) | Avg. Porosity | P10 and P90 Storage Resource (Mtonne/sqm) |
|-----------------------|------------|--------------|---------------|---|
| L. Tuscaloosa Massive | 7,500 | 100-175 | 24% | 0.9-5.2 |
| Wash-Fred | 8,000 | 300-400 | 23% | 2.7-11.5 |
| Paluxy | 10,000 | 300-350 | 19% | 2.2-8.4 |
| TOTAL | | 700-925 | | 5.8-25.1 |



Left: Local stratigraphic column illustrating the target storage reservoirs. Right: Well log correlation of local stratigraphy illustrating lateral continuity of target formations.



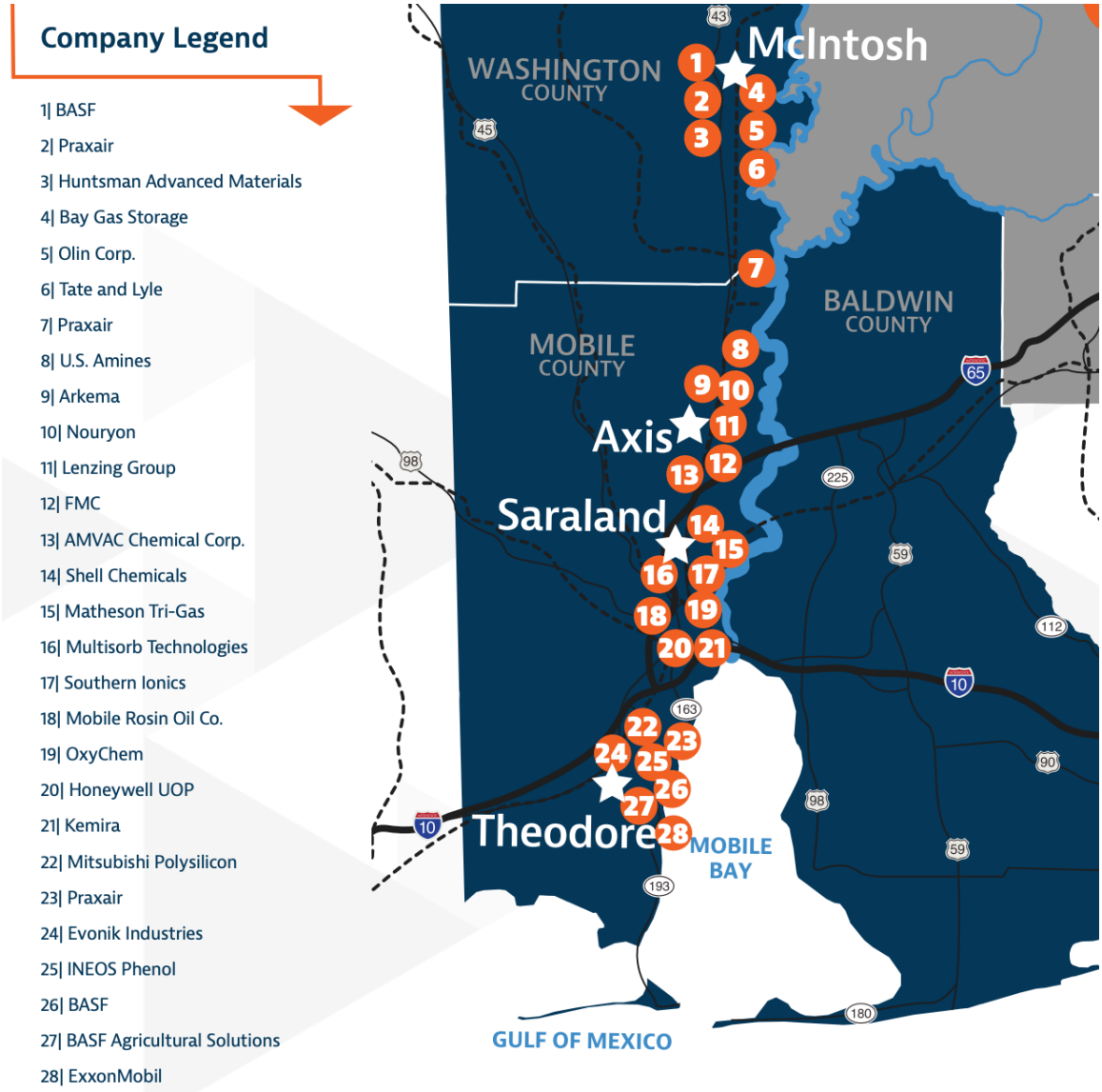
Sources

- Over 19 MMTs of CO₂ emitted from over 28 industrial sources
- Diverse industrial sources participating in the project

| Company | Industry | CO ₂ Emissions Tons/Yr | Letter of Support |
|-------------|------------------------|-----------------------------------|-------------------|
| Calvert | Steel | 500,000 | Received |
| Calysta | Sustainable Protein | 500,000 | Received |
| Plant Barry | Power Generation | 1,500,000 | Received |
| Williams | Natural Gas Processing | 100,000 | Received |

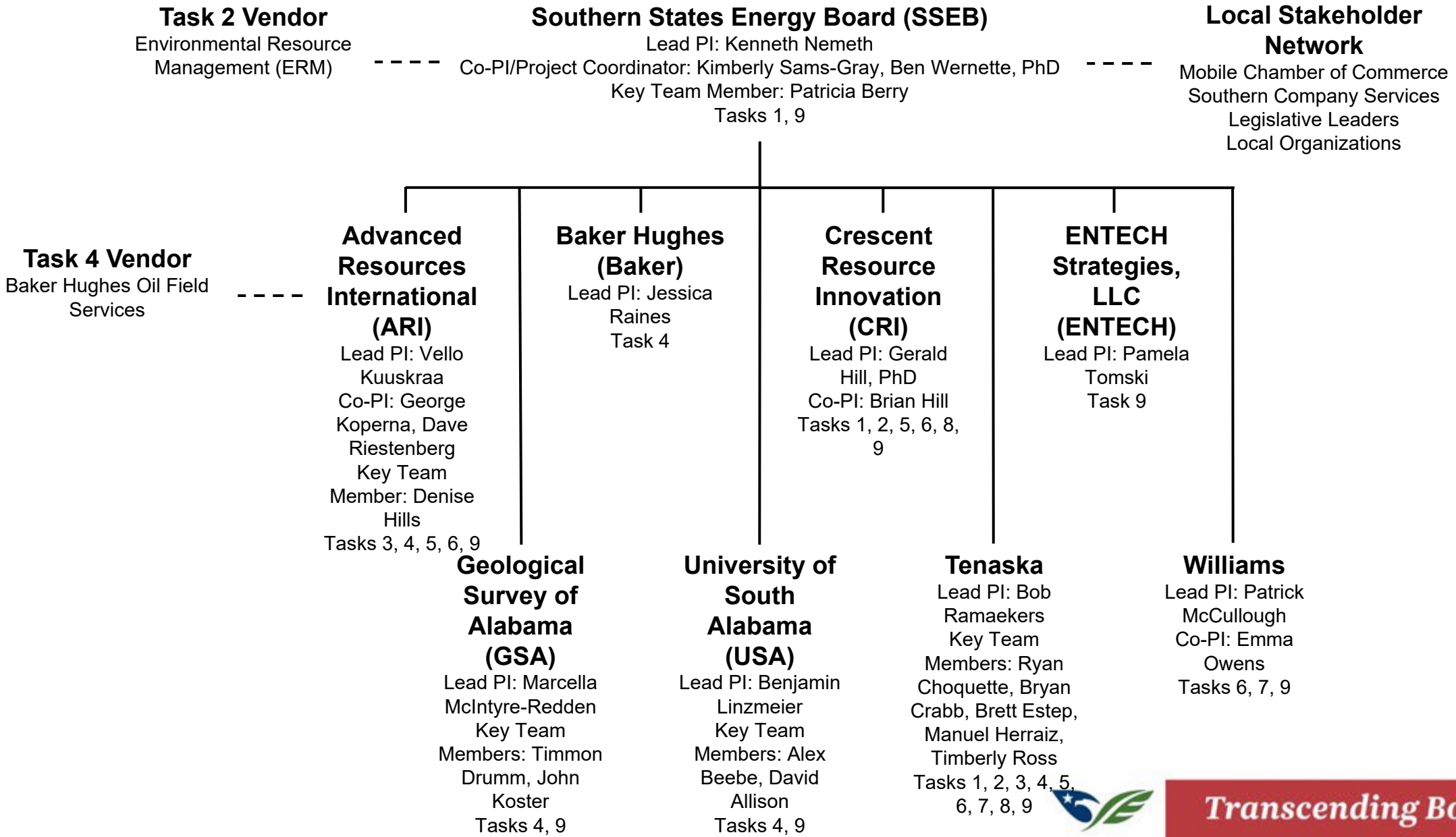
Regional emitters that have agreed to participate in project activities.

Illustration of the MAST chemical corridor, and the potential demand for decarbonization solutions.



Transcending Boundaries

**U.S. Department of Energy (DOE)
National Energy Technology Laboratory (NETL)**



Project Objectives

Rigorously characterize the subsurface for large-scale storage

Develop a comprehensive community benefits plan

Obtain Class VI UIC permit(s)

CO₂ sources and transportation

Storage field development

Risk assessment

NEPA EIV for the integrated project



Tasks

Task 1 – Project Management and Planning

Task 2 – National Environmental Protection Act

Task 3 – UIC Class VI Authorization to Construct

Task 4 – Detailed Site Characterization of a Commercial-Scale CO₂ Storage Site

Task 5 – Storage Field Development Plan

Task 6 – CO₂ Source(s) Feasibility Study

Task 7 – Pipeline FEED Study

Task 8 – Business and Financial Plans and Arrangements

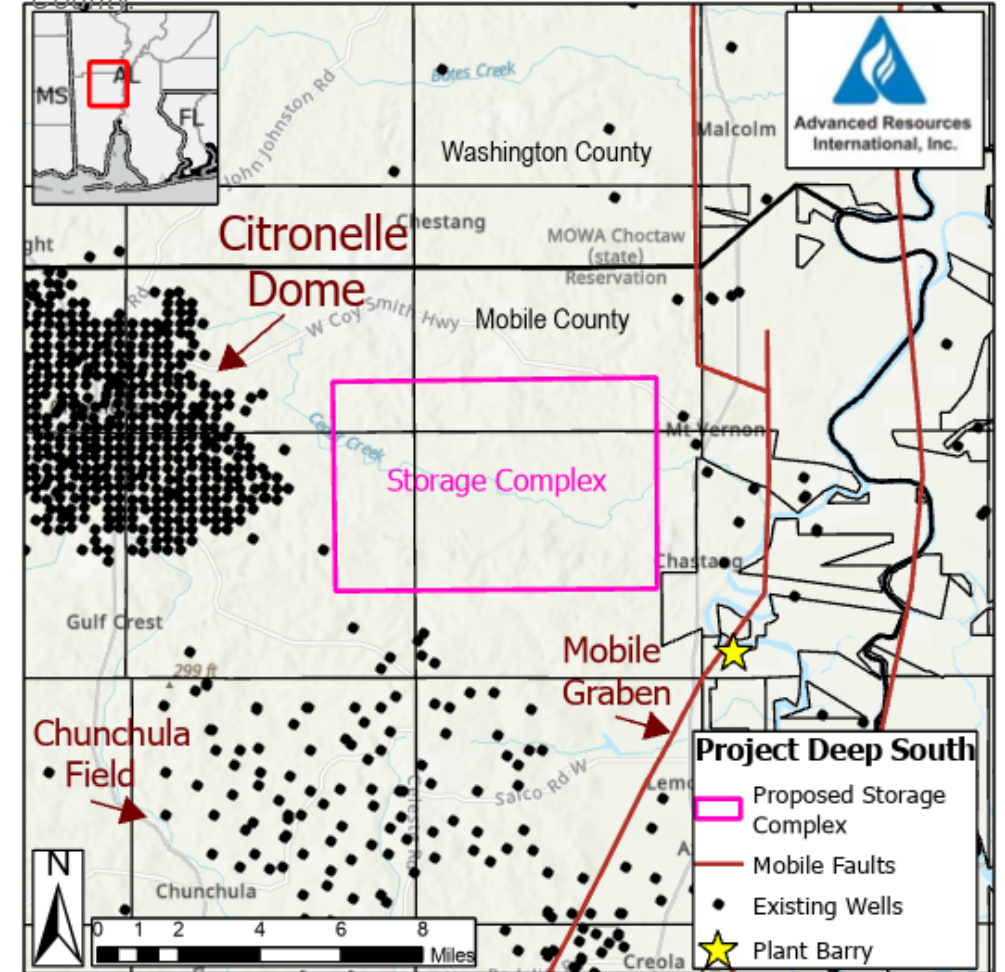
Task 9 – Community Benefits Plan



Task 4 – Detailed Site Characterization of a Commercial-Scale CO₂ Storage Site

- Project owner and developer, Tenaska, has secured land rights for a storage complex in northern Mobile County, AL
- Class VI UIC Permit application submitted to EPA Region 4 in Spring 2023
 - Ongoing discussions with EPA and others
- Augment with stratigraphic test well drilling data acquisition
- Seismic acquisition

Map of the Lingleaf CCS storage complex in northern Mobile County



Task 9 – Community Benefits Plan

- Tenaska has been actively engaged with state legislative leaders, local officials, among others
- Project aligns with the Mobile Chamber's goals to support existing business and attract new industry to South Alabama
- Goals of CBP
 - Increase community involvement in project decision making
 - Increasing access to educational and career opportunities for those from disadvantaged and/or minority communities



Tenaska personnel engaging with community members in Mobile, Alabama.



Deliverables

| Task/Subtask Number | Deliverable Title | Due Date |
|---------------------|--|---|
| 1.0 | Project Management Plan | Update due 30 days after award. Revisions to the PMP shall be submitted as requested by the NETL Project Manager. |
| 1.0 | BIL Metrics Reporting | TBD but likely quarterly |
| 2.1 | Environmental Information Volume | Due at the end of BP 1. |
| 2.2 | NEPA Documentation (EA or EIS) | Due at the end of the Project Performance Period. |
| 3.1 | Application for Underground Injection Control Class VI Permit to Construct | At the end of Budget Period 1. |
| 4.2 | Geologic Catalog of Materials | At the end of each project year. |
| 5.2 | Storage Field Development Plan supported by AFEs | Due within 90 days prior to end of the Project Performance Period. |
| 5.4 | Risk Assessment and Mitigation Plan | Due within 90 days prior to end of the Project Performance Period. |
| 6.0 | CO ₂ Source(s) Feasibility Study | Due at the end of the Project Performance Period. |
| 7.0 | CO ₂ Pipeline FEED Study | Due at the end of the Project Performance Period. |
| 8.0 | Preliminary Business and Financial Plans | Due at the end of Budget Period 1 |
| 8.0 | Final Business and Financial Plans | Due at the end of the Project Performance Period. |



Thanks!

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Mobile, Alabama.



Transcending Boundaries