



Timberlands Sequestration Project (FE0032330)

CarbonSAFE Phase III

Timberlands Sequestration, LLC
Principal Investigator: Andrew Chartrand

August 2024

Timberlands Sequestration Project Overview

- A CCS project for a pulp and paper mill in southwestern Alabama
- Project designed to capture, transport, and sequester 2 million tons per year of CO₂ for 30 years from the mill
- Phase III CarbonSAFE funding:

\$27.1 million (DOE)

\$6.8 million (Timberlands)

\$33.8 million (total)

- Recipients:



THE UNIVERSITY OF
ALABAMA



AUBURN
UNIVERSITY

- Project Objectives:

- Demonstrate the technical and commercial feasibility of a carbon capture and sequestration project for the pulp & paper industry in Alabama that can be replicated across numerous other mills
- Demonstrate initial storage site viability to position it as a large-scale storage hub for multiple emitters across Alabama



Timberlands Sequestration Project Background

Pore Space

- Approximately 4,000 acres of undeveloped land in rural Monroe County
- Estimated storage capacity of 60 million metric tons of CO₂

Pipeline

- Captured CO₂ will be transported in a dense phase using a 33-mile-long, new-build CO₂ pipeline from the mill to the pore space
- The area is rural with many large tracts of land used for timber production

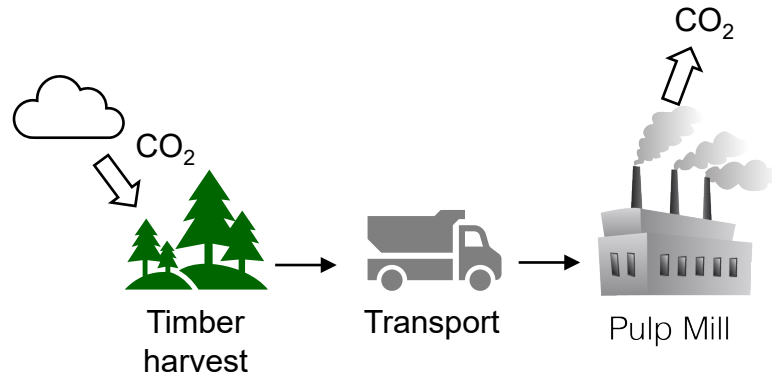
Pulp & Paper Mill

- A large, integrated pulp and paper mill with CO₂ emissions of 1.5 million metric tons per year (5-year average)
- Approximately 90% of the mill CO₂ emissions are biogenic
- CO₂ emissions generated from powering capture plant with low pressure steam and electricity using either natural gas or waste wood as fuel sources will also be captured (+0.4 million metric tons annually)



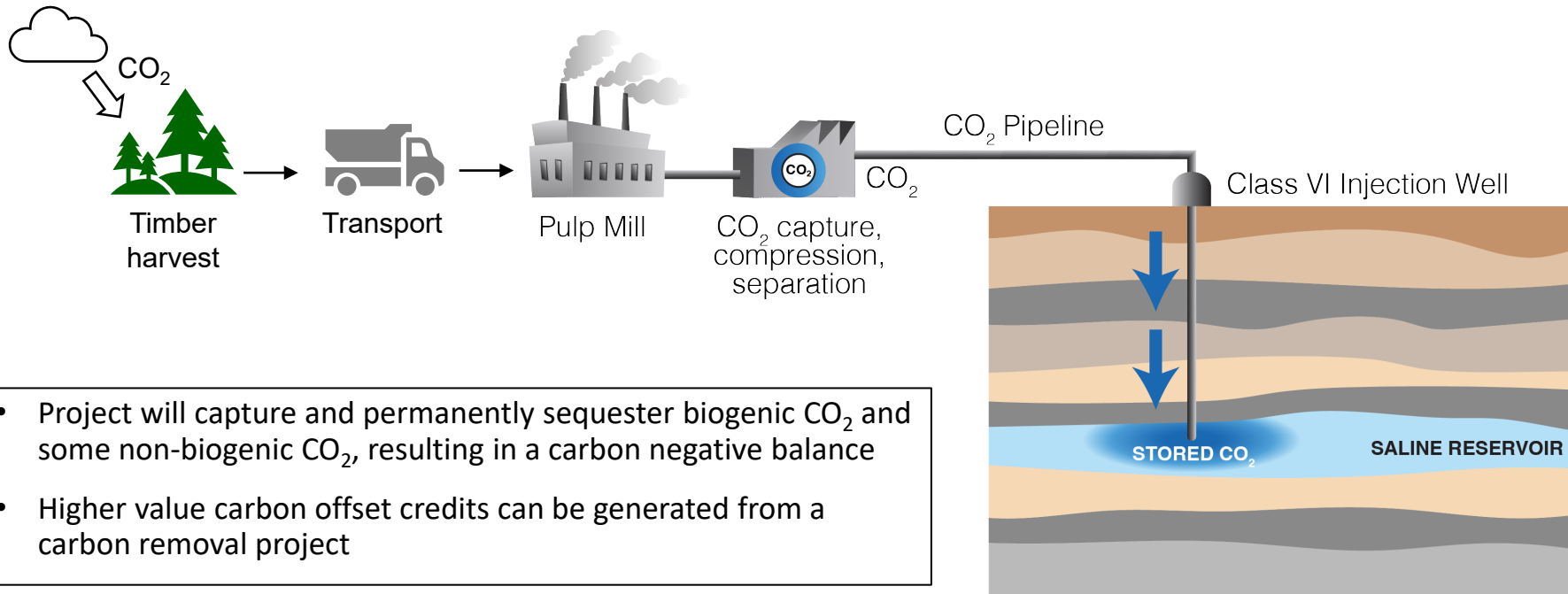
Timberlands Sequestration Project CO₂ Reduction

Current



- About 90% of the mill's CO₂ emissions are biogenic – from the processing and combustion of timber that removed CO₂ from the atmosphere during its life cycle
- Biogenic and non-biogenic CO₂ are released to the atmosphere today
- Southeastern US timber harvesting for the pulp and paper industry is sustainable: for every 1 tree cut down, 3 are planted

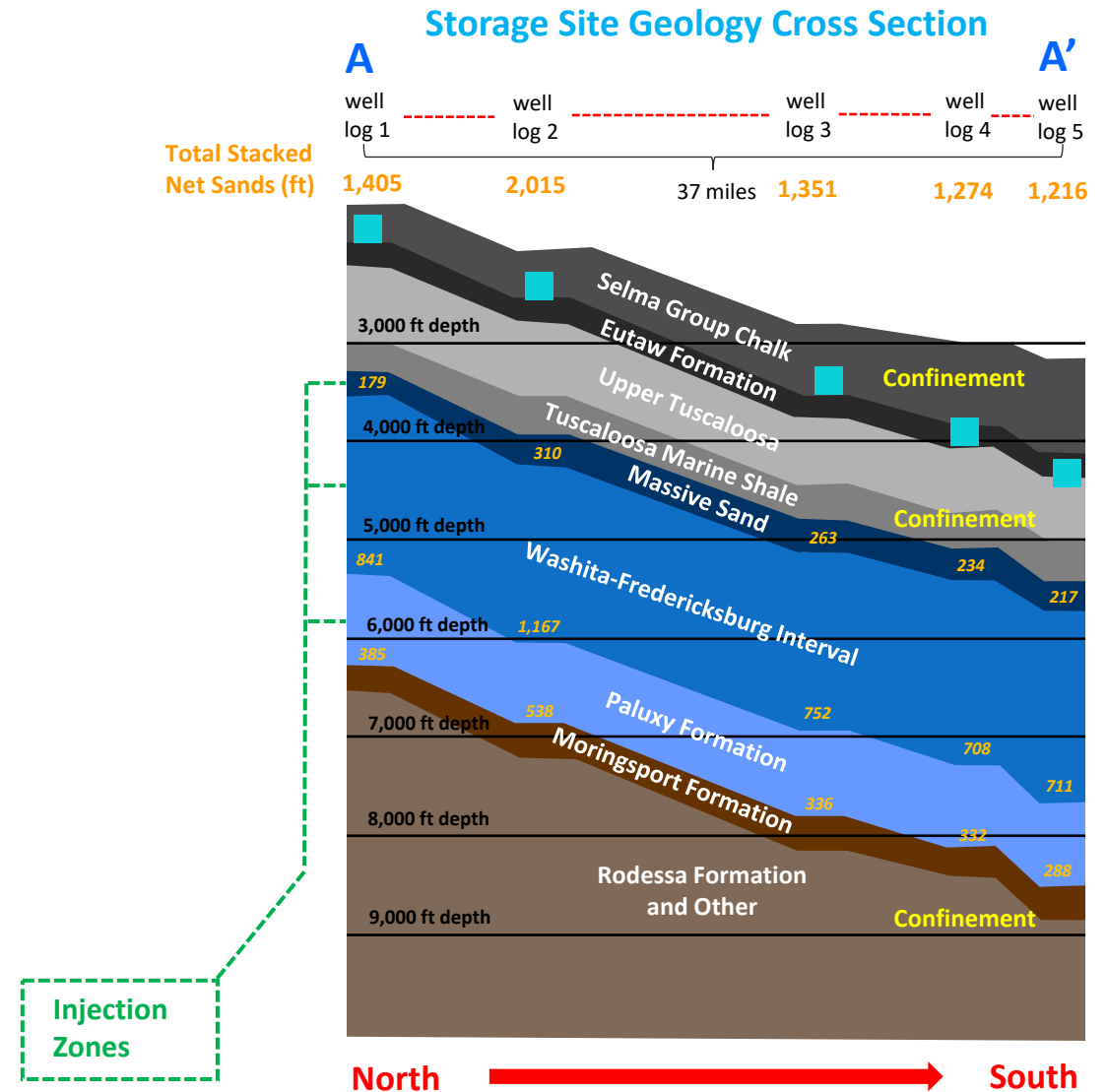
Future



- Project will capture and permanently sequester biogenic CO₂ and some non-biogenic CO₂, resulting in a carbon negative balance
- Higher value carbon offset credits can be generated from a carbon removal project

Timberlands Sequestration Geology

- Good existing data available (10+ well logs and 200+ miles of 2D seismic data)
- Existing 3D seismic will be licensed and a test well will be drilled for analysis
- 3 vertically stacked injection zones below the Tuscaloosa Marine Shale primary confining unit
- 1,200 feet to 1,400 feet of net injectable sands
- None of the injection zones have oil and gas production
- Planned injection will commence in the Paluxy formation first (~7k feet deep) and once this layer is utilized within pore space lease boundary, a plug is set, and injection moves up to the Wash-Fred formation (~5k feet deep)



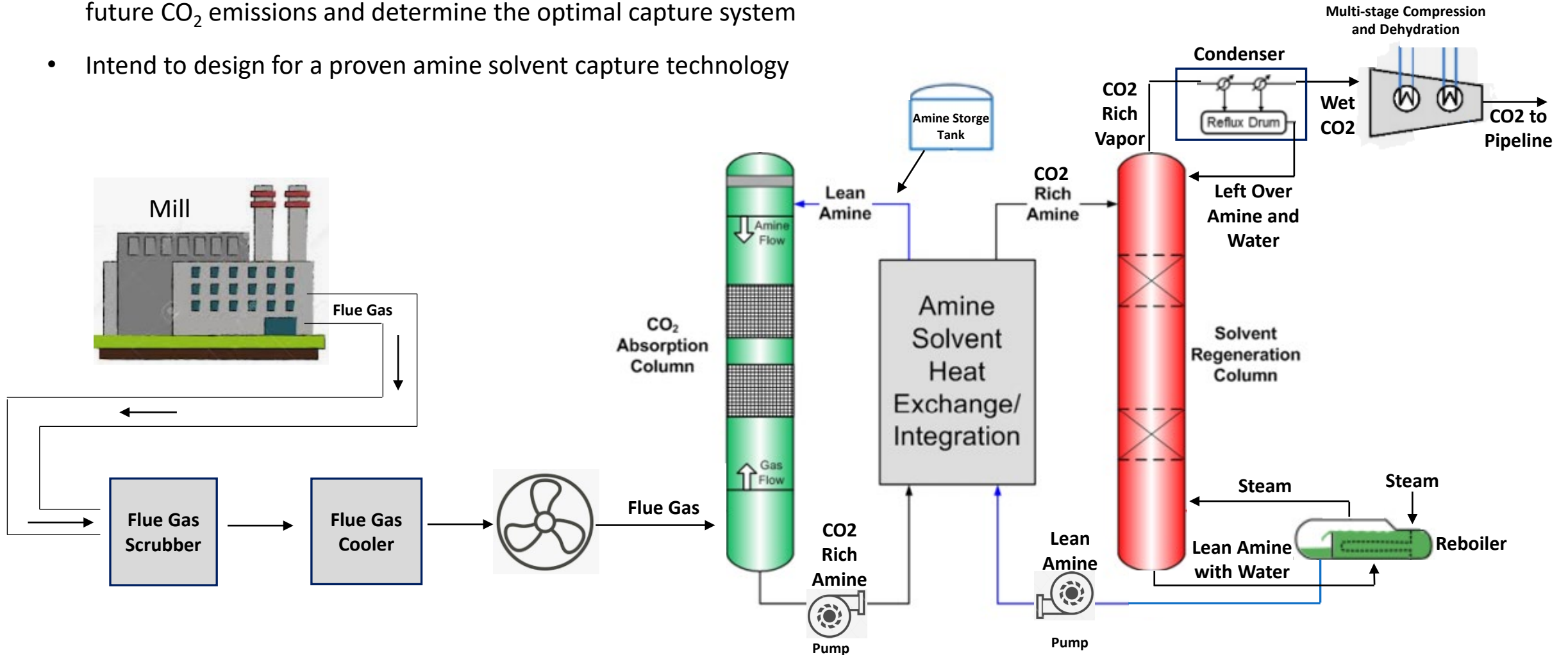
Timberlands Sequestration CarbonSAFE Phase III Scope

- Lease pore space
- Acquire 3D seismic survey data that covers pore space area
- Permit and drill stratigraphic test well
- Submit Class VI permit application for a future injection well
- Conduct pipeline FEED study to include:
 - Civil survey
 - Environmental and cultural resources surveys
 - Routing and workspace optimization
- Submit pipeline permit applications
- Perform capture plant engineering study
- Create development, business, and financial plans
- Implement Community Benefits Plan
- Complete NEPA evaluation with DOE

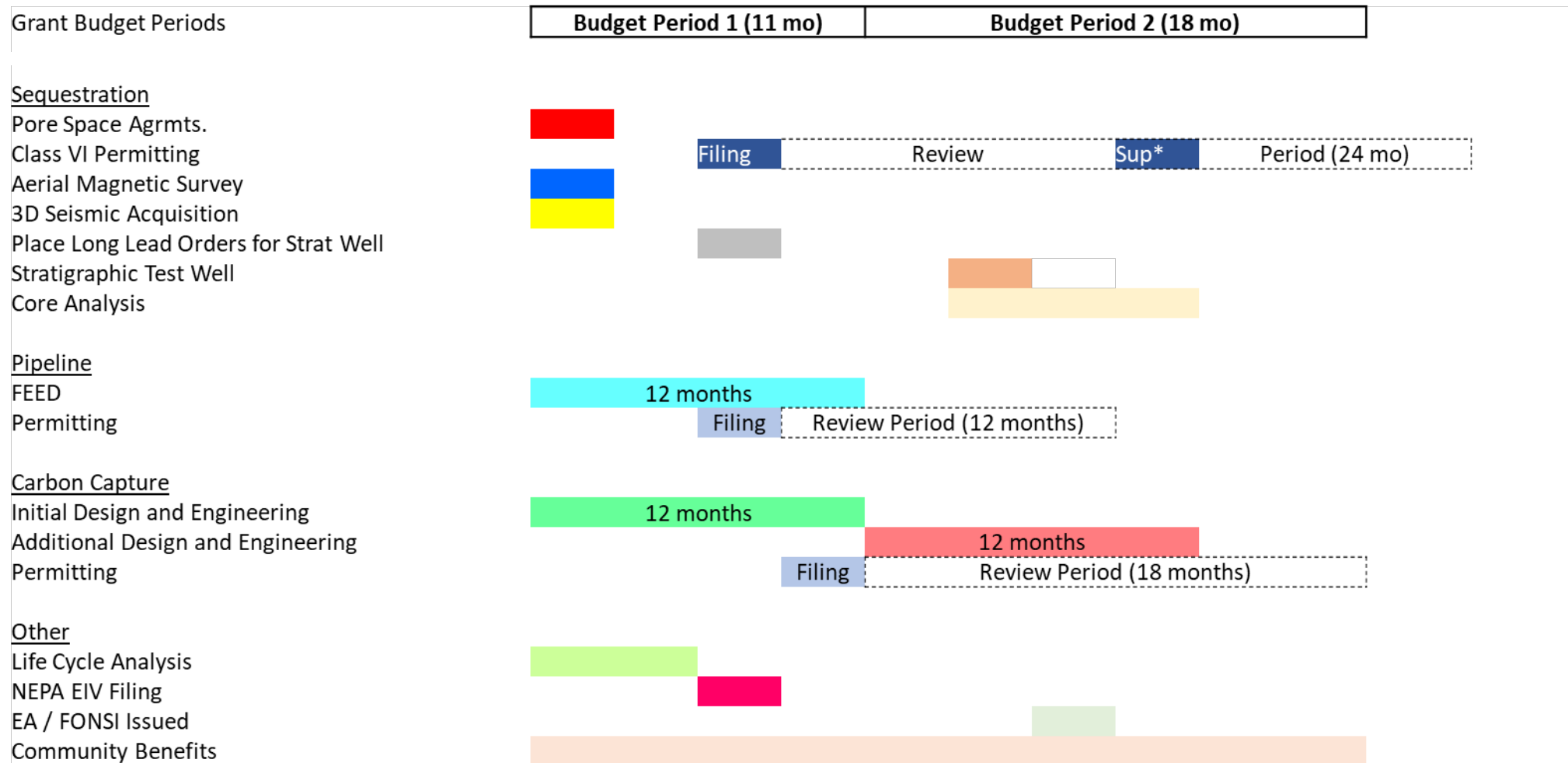


Capture Plant Engineering Study

- Will analyze the mill operations to understand the current and future CO₂ emissions and determine the optimal capture system
- Intend to design for a proven amine solvent capture technology



CarbonSAFE Phase III Project Schedule



Community Attributes and Benefits Plan

- The area is rural and there is limited knowledge of CCS among residents and public officials
- The majority of the project area is considered “disadvantaged”
- Partnering with the University of Alabama on a Community Benefits Plan to:
 - Engage, educate, and solicit feedback from stakeholders throughout life of the project
 - Provide quality, high-wage jobs with training opportunities during the execution and operation of the project
 - Create a Community Benefits Fund and appoint an advisory board to allocate and manage a portion of TS’s future injection fee to be used to make ongoing investments to serve needs of local communities
 - Work with a local community college to assist with the development of careers in energy transition services