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NORTH DAKOTA



Critical Challenges. Practical Solutions.



Energy & Environmental Research Center (EERC)

COAL CREEK CARBON CAPTURE: SITE CHARACTERIZATION AND PERMITTING (FE0032331)

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PROJECT OVERVIEW

Project Objective

- Characterize and permit a geologic CO₂ storage hub in central North Dakota to store up to 200 MMt of CO₂, which would contribute 10% of the 2-billion-tonne CO₂ storage capacity goal of the CarbonSAFE Initiative Program.

Project Details

- Phase III project: \$47,109,239
 - DOE share: \$37,687,391
 - Cost share: \$9,421,848
- Period of performance:
 - 3 years, with two 18-month BPs

Project Partners



U.S. DEPARTMENT OF
ENERGY



NATIONAL
ENERGY
TECHNOLOGY
LABORATORY



N E S E T

PROJECT SOURCES

- Proposed storage hub will aggregate CO₂ captured from 1200-MWe Coal Creek Station power plant and Blue Flint ethanol plant.
- Development of CCS at Coal Creek will result in a 19% CO₂ emissions reduction from North Dakota's stationary sources.

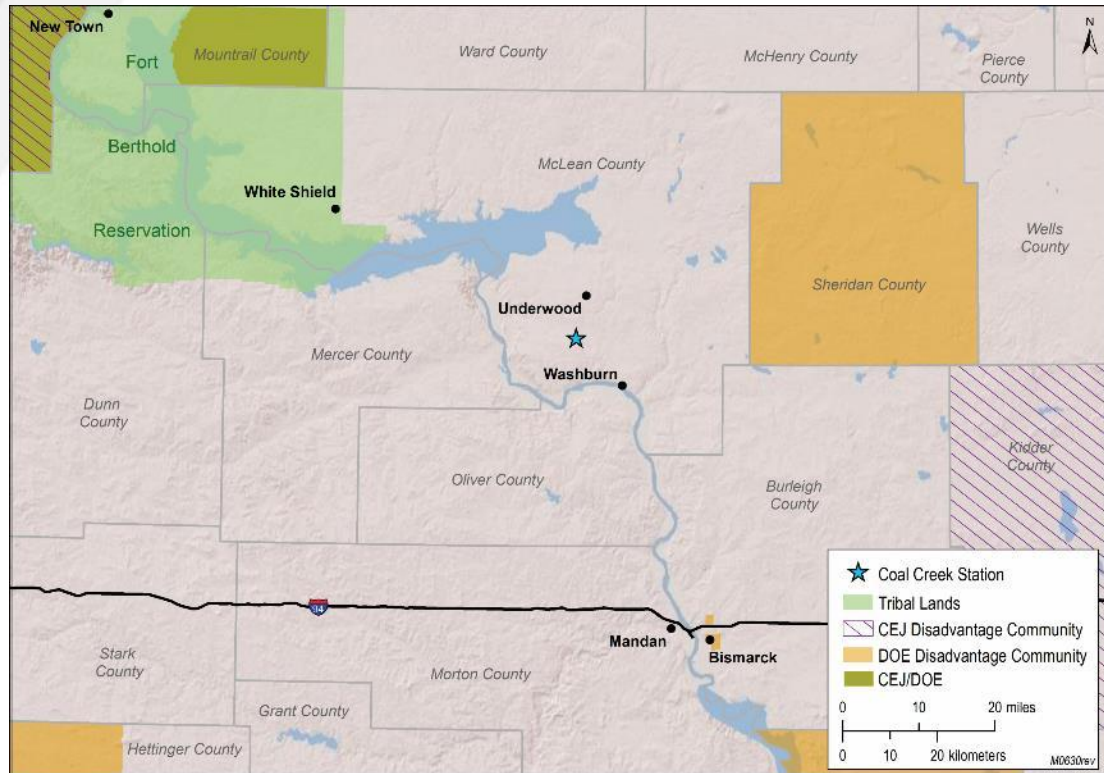


Coal Creek Station Power Plant



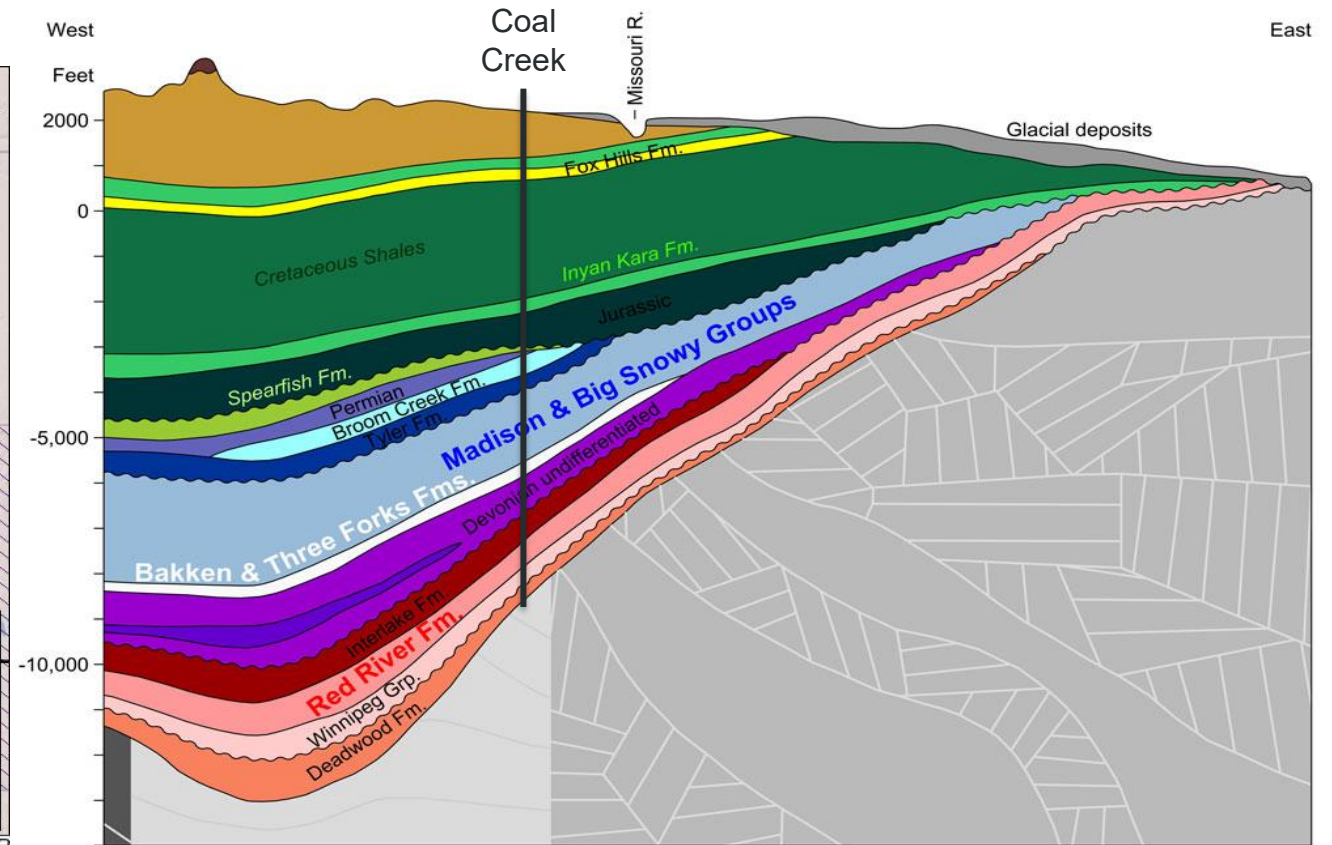
Blue Flint Ethanol Plant

PROJECT AREA



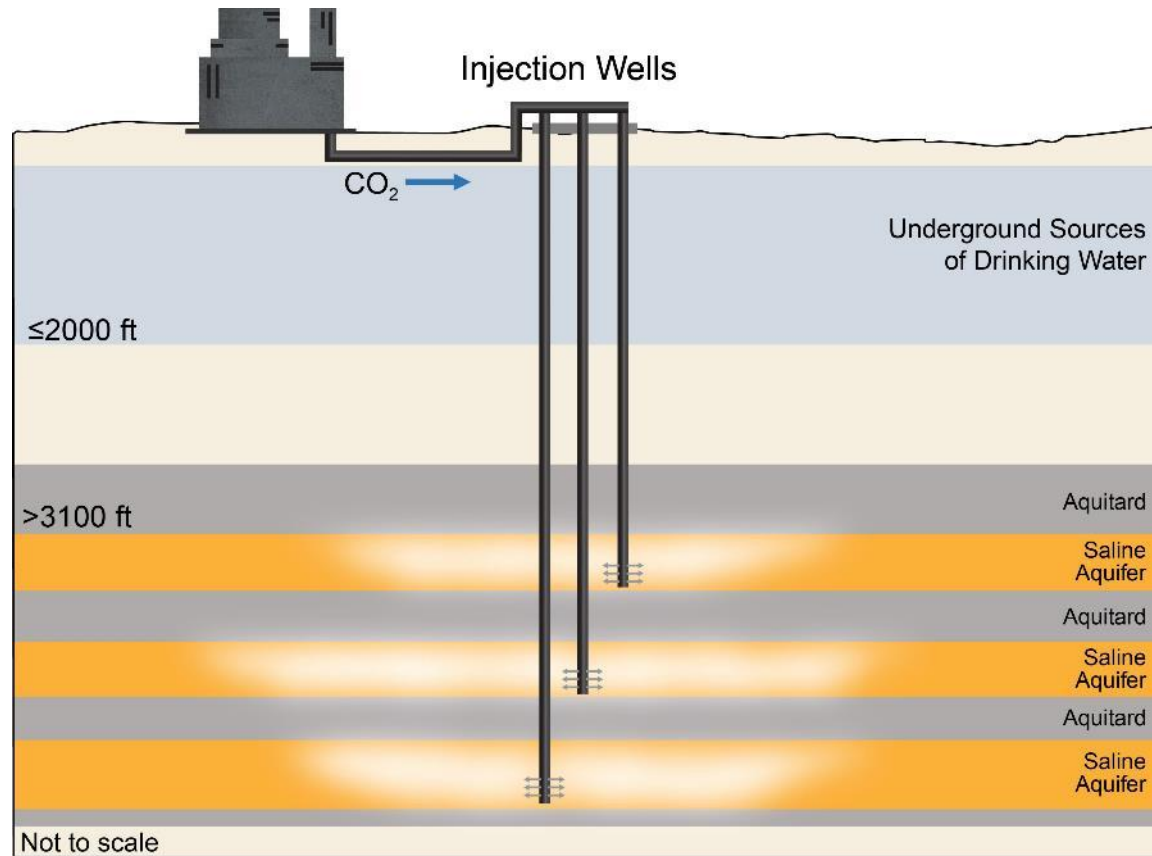
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Williston Basin



STORAGE TARGETS

Multiple deep saline formations—Broom Creek, Interlake, Red River, and Deadwood Formations—and the Madison Group.



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Age Units		Rock Units		Approximate Depth (ft)
Cenozoic	Quaternary			
	Tertiary	White River Grp		
		Golden Valley Fm		
		Fort Union Grp		
Mesozoic	Cretaceous	Hell Creek Fm		800
		Fox Hills Fm		
		Pierre Fm		
		Niobrara Fm	Colorado Group	
		Carlile Fm		
		Greenhorn Fm		
		Belle Fourche Fm		
		Mowry Fm	Dakota Group	
		Newcastle Fm		
	Skull Creek Fm			
	Inyan Kara Fm			
	Jurassic	Swift Fm		
Rierdon Fm				
	Piper Fm			
	Triassic	Spearfish Fm		
Paleozoic	Permian	Minnekahta Fm		4700
		Opeche Fm		
	Pennsylvanian	Broom Creek Fm	Minnelusa Group	
		Amsden Fm		
		Tyler Fm		
	Mississippian	Otter Fm	Madison Group	
		Kibbey Fm		
		Charles Fm		
		Mission Canyon		
		Lodgepole Fm		
	Devonian	Bakken Fm		8100
		Three Forks		
		Birdbear		
		Duperow		
		Souris River		
Dawson Bay				
Silurian	Interlake Fm		8700	
	Stonewall Fm			
	Stony Mountain Fm			
Ordovician	Red River Fm		9200	
	Winnipeg Grp			
	Roughlock Fm			
	Icebox Fm			
	Black Island Fm			
	Cambrian	Deadwood Fm		

MAJOR ACTIVITIES

- Detailed site characterization
 - Drilling and coring one new stratigraphic test well
 - Geophysical logging and fracture testing
 - 3D seismic data acquisition
 - Baseline sampling
- Preparation of North Dakota UIC Class VI storage facility permits and permits to inject
- Pipeline FEED study
- NEPA compliance
- Community benefits plan implementation

ACCOMPLISHMENTS TO DATE



Received permit to drill stratigraphic test well



Started well pad construction



Initiated surveying/mapping and NEPA consultation for the 3D seismic survey



Generated project fact sheets



Engaged:

- Municipal, county and state regulators
- Landowners
- U.S. Fish and Wildlife Service
- North Dakota Game and Fish
- Local goods and services providers



ACCOMPLISHMENTS TO DATE (continued)



Completed energy and environmental justice assessment



Completed stakeholder analysis



Hosted a tour of pilot capture facilities for high school vocational class



Held a workshop on geologic modeling and reservoir simulation best practices for CCS in collaboration with SEG Evolve



RELEVANCE AND OUTCOMES/IMPACTS

- Successful completion of the project and implementation of CCS at Coal Creek Station will result in:
 - 95% reduction of CO₂ emissions from Coal Creek Station.
 - 19% reduction of CO₂ from North Dakota's stationary sources.
 - Supply of reliable low-carbon-baseload power to members of the Midwest Independent System Operators, including Minnesota and disadvantaged communities there as well as others in the surrounding Midwest area.
 - Creation of 35–40 long-term jobs.
 - Creation of over 2000 direct/indirect short-term construction jobs.
 - Facilitation of opportunities to attract, train, and retain a skilled and well-qualified workforce for these new and existing jobs.
 - Internship opportunities for students from minority-serving institutions.

ACKNOWLEDGMENT

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ACKNOWLEDGMENT

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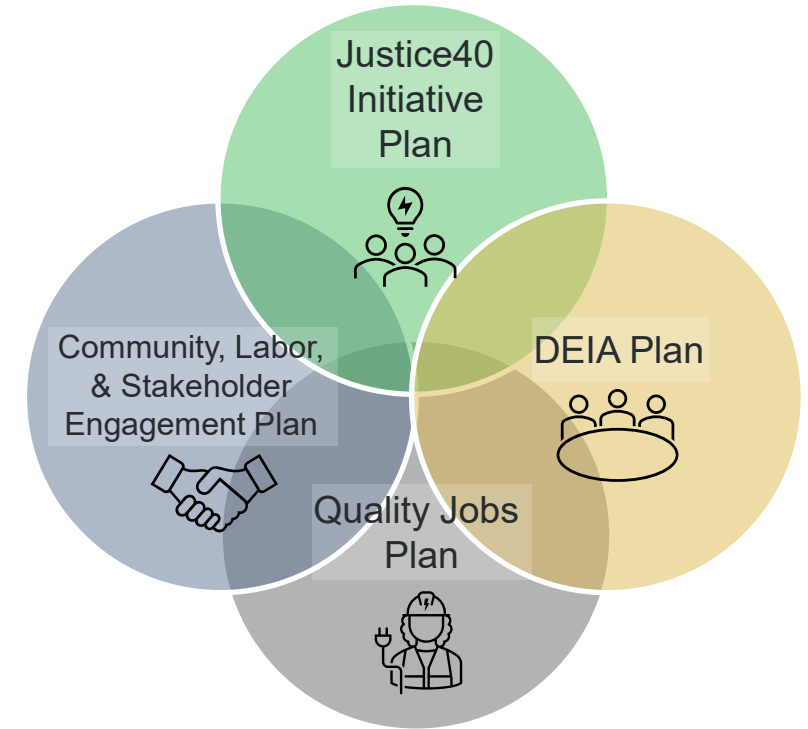
A wide-angle photograph of a university campus at sunset. The sun is low on the left, casting a warm glow over the scene. In the foreground, there are trees with yellowing leaves. In the background, there are several large, multi-story brick buildings, likely university halls or administrative buildings, and a parking lot filled with cars.

THANK YOU

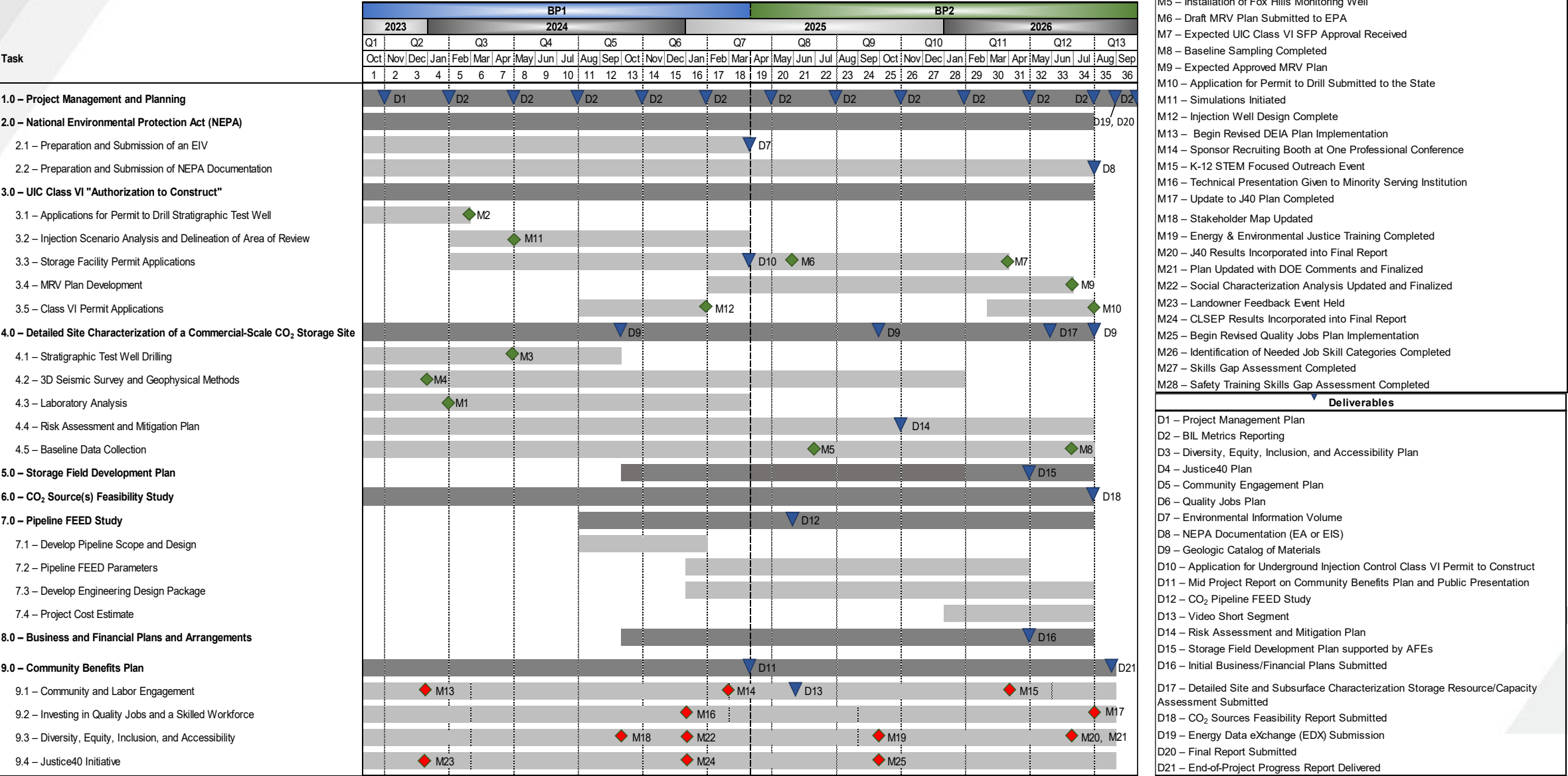
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COMMUNITY BENEFITS PLAN

- Stakeholder engagement evaluation.
- Social characterization analysis.
- Open houses to gather community feedback.
- Evaluation of workforce needs and skills required for CCS implementation.
- Assessment of safety procedures required for CCS implementation.
- Training to advance understanding of DEIA among the project team.
- Development of effective partnership with a workforce diversity training partner to promote employment opportunities to underrepresented individuals and members of rural disadvantaged communities.
- Energy and environmental justice assessment.

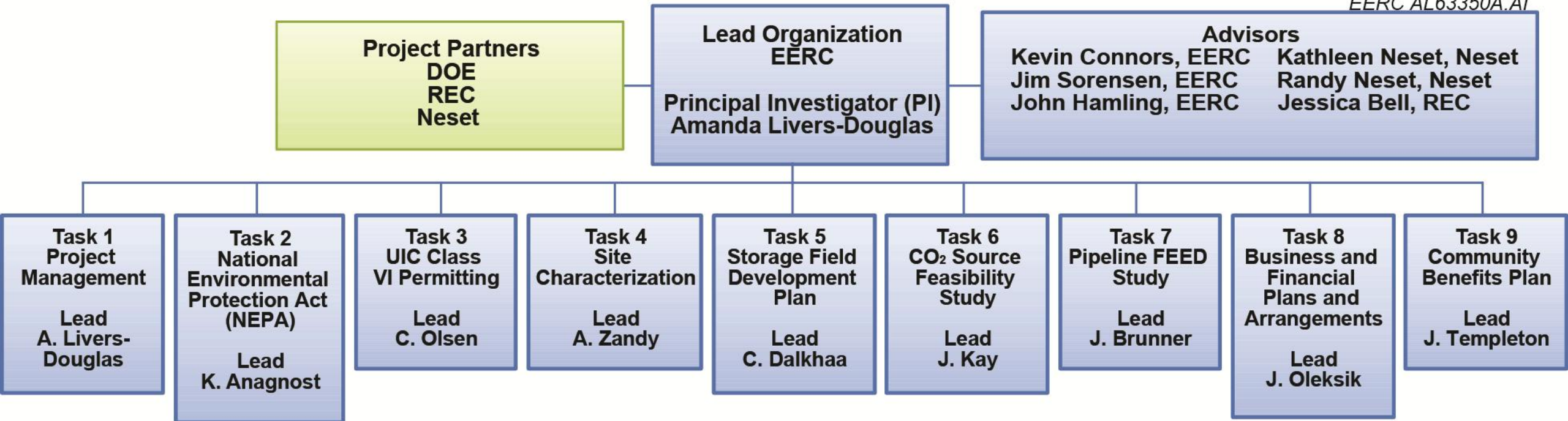


PROJECT TIMELINE



ORGANIZATION CHART

EERC AL63350A.AI





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