



ONEOK

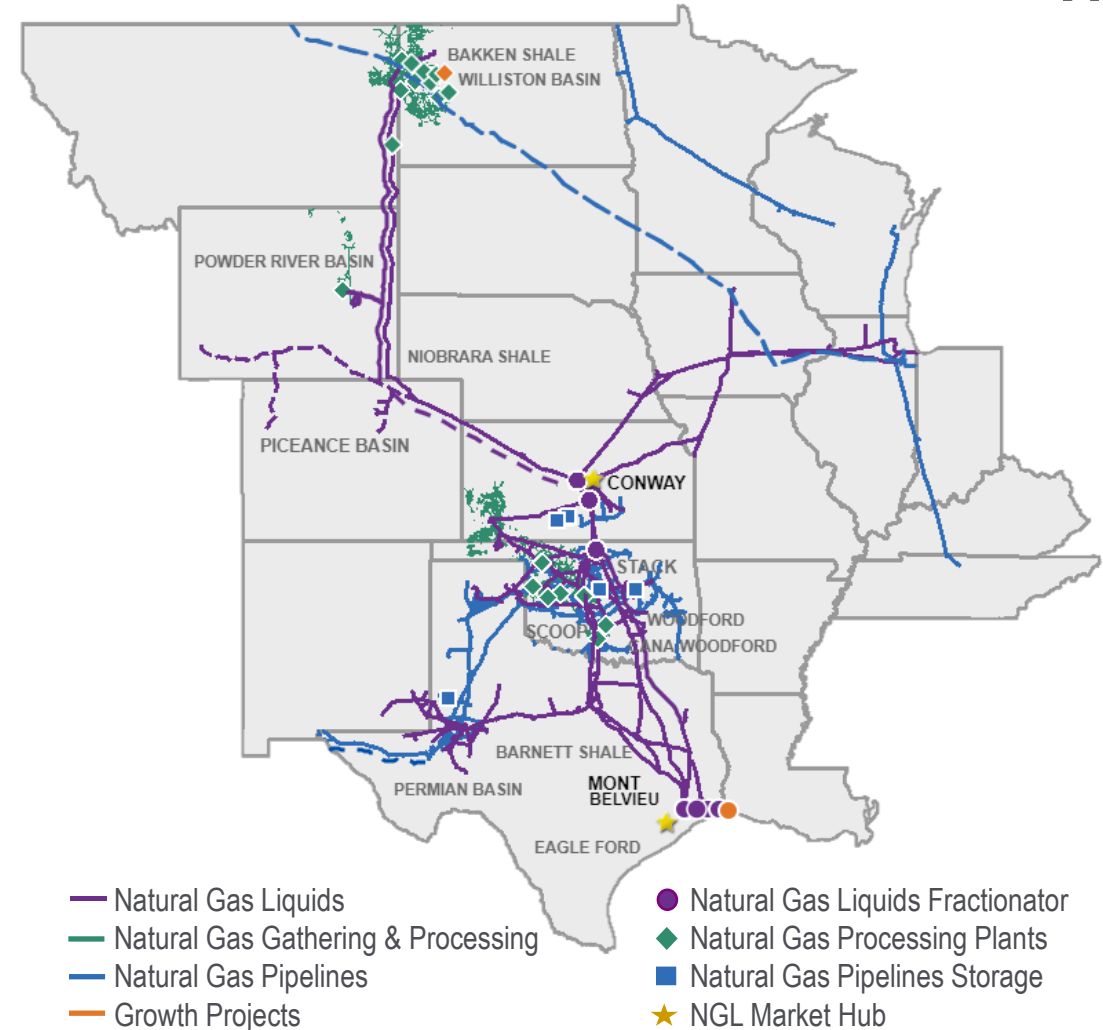
# ROUGH RIDER CARBON STORAGE HUB

JULY 21, 2023

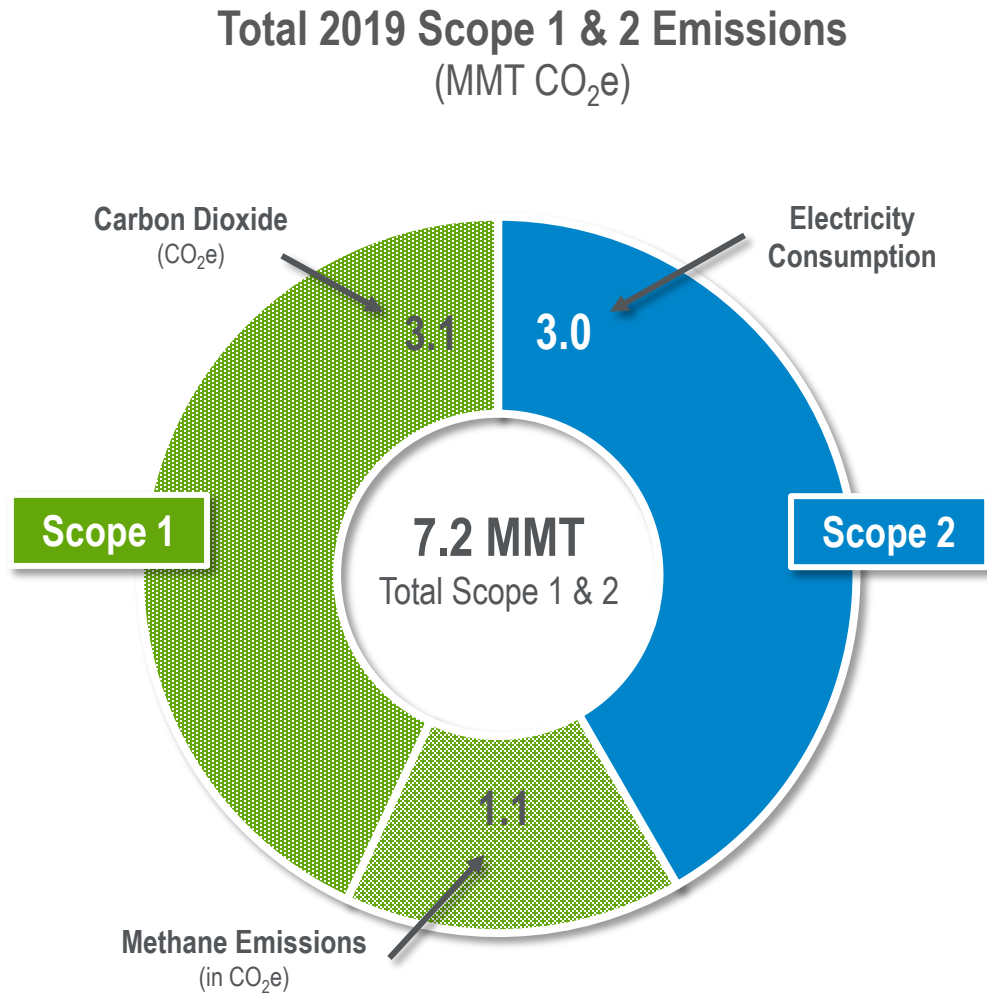
# INTEGRATED. RELIABLE. DIVERSIFIED.

**OKE**  
**LISTED**  
**NYSE**

- ◆ ONEOK, INC. (ONEOK) is a leading midstream service provider and owner of one of the nation's premier natural gas liquids (NGL) systems and an extensive network of natural gas gathering, processing, storage and transportation assets.
- ◆ Competitively positioned – key asset locations and market share
- ◆ Approximately 40,000-mile network of natural gas liquids (NGL) and natural gas pipelines
- ◆ Greater than 10 Bcf/d (or 10%) of U.S. natural gas production is reliant on the utilization of ONEOK's infrastructure
- ◆ Provides midstream services to producers, processors and customers
- ◆ Major supplier of NGLs to the petrochemical industry



# ABSOLUTE EMISSIONS REDUCTION TARGET



## 2.2 MMT Reduction

Combined Scope 1 & 2  
Emissions by 2030<sup>(a)</sup>

### Emissions Reduction Opportunities



Electrification of natural gas compression assets.



Methane emission mitigation through best management practices.



System optimizations.



Collaborating with utility providers to increase the availability of lower-carbon power options.

(a) ONEOK is targeting an absolute greenhouse gas emissions reduction of 2.2 million metric tons (MMT) of combined Scope 1 and Scope 2 emissions by 2030, which represents a 30% reduction in total operational emissions attributable to ONEOK assets in 2019.

Note: Scope 1 emissions are defined as emissions that result directly from operations. Scope 2 emissions are defined as indirect emissions that occur from the consumption of energy generated by other entity, such as a utility.

# PROJECT BACKGROUND

- ◆ The Department of Energy (DOE) released a Funding Opportunity Announcement under the CarbonSAFE Initiative in May 2022 to support Phase II feasibility studies for CO2 storage complexes
- ◆ CCS and other decarbonization strategies are a key part of the energy transformation and will allow the oil and natural gas industry to continue to grow in North Dakota, providing jobs and economic prosperity while reducing the carbon intensity of fossil fuels.
- ◆ As envisioned, the Roughrider Carbon Storage Hub is expected to store more than 50 million tons of CO2 over a 30-year period.
- ◆ Potential sources of CO2 in Western North Dakota:
  - Proposed natural gas-to-liquids facility near Trenton
  - Natural gas midstream operations
  - Power generation
  - Ethanol production
  - Oil and gas production activities

# PROJECT SUMMARY

## GOAL:

- Accelerate wide-scale deployment of CCUS by assessing the feasibility of using stacked storage complexes in Western North Dakota for safe and cost-effective commercial-scale storage of CO<sub>2</sub>.

## OBJECTIVES:

- Perform a feasibility study and geologic characterization for a carbon storage hub capable of managing carbon resources associated with ND's gas production and processing.
- Evaluate and understand geologic storage of CO<sub>2</sub> in active oil/gas-producing areas.
- Provide outreach and education to promote the benefits and opportunities of the ND oil and gas industry and how carbon management can play a role in providing both resiliency and opportunity for the industry.
- Help meet North Dakota's net-zero carbon target through innovation and technology.



# PROJECT COMPONENTS

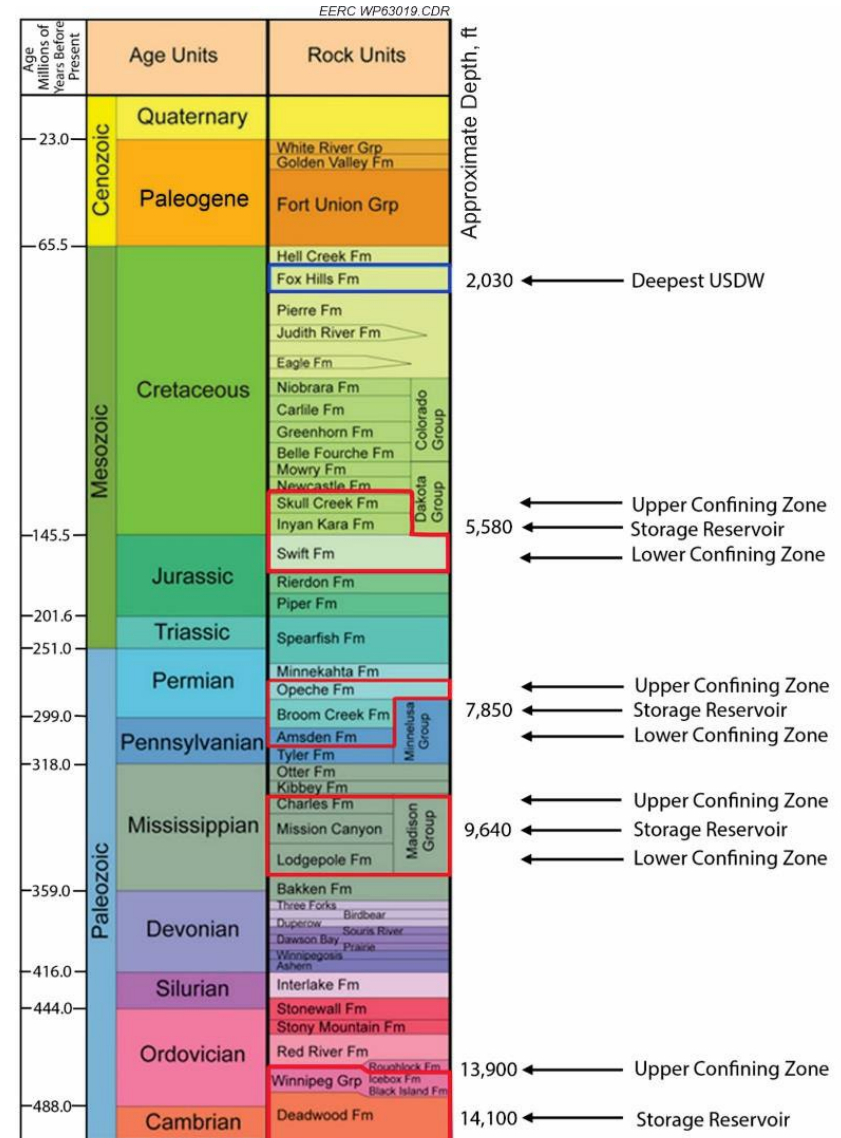
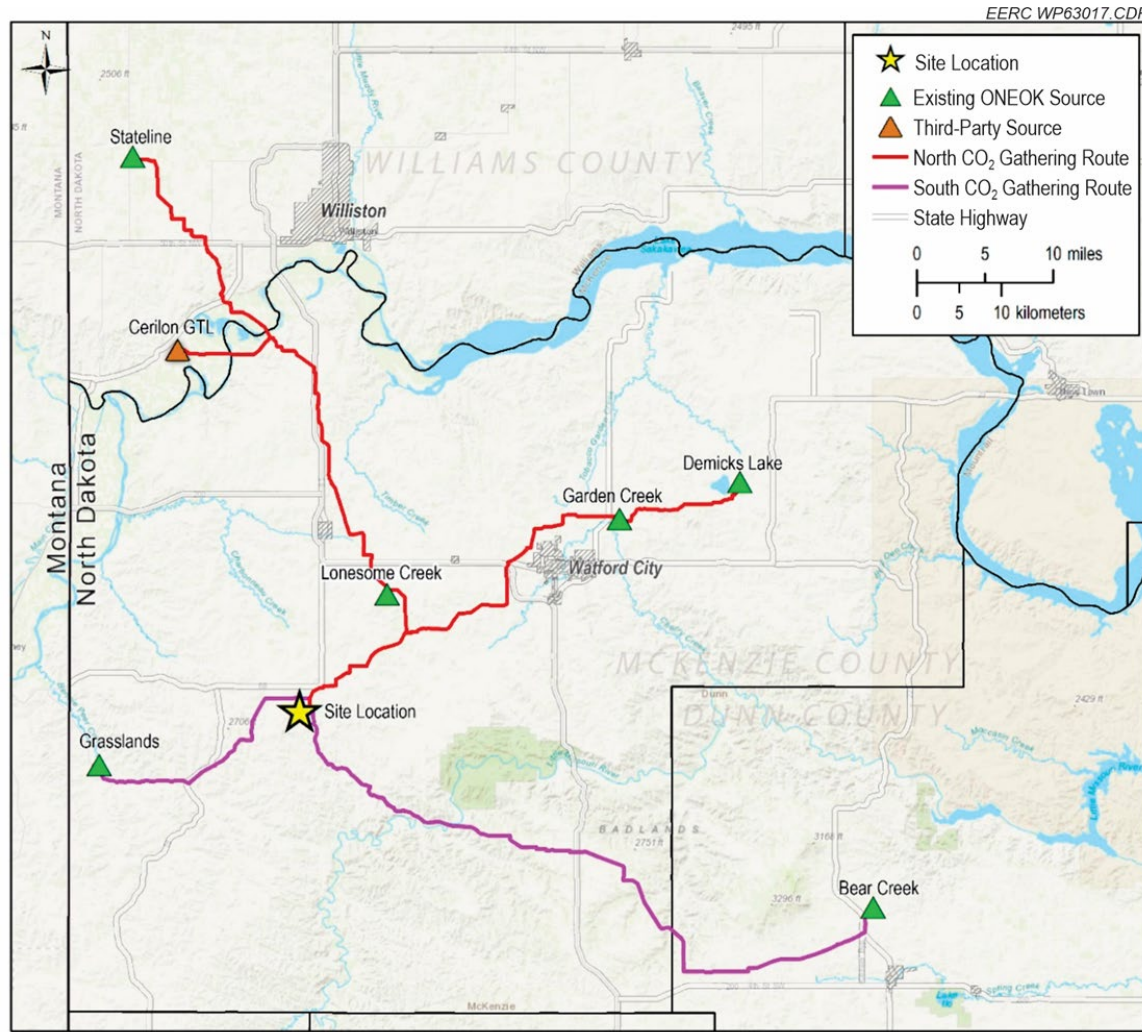
- ◆ Storage Complex Characterization
  - Characterize up to four prospective complexes
  - Recover and analyze >1,000 feet of core
  - DSTs in the prospective horizons
  - Broad suit of geophysical logs collected
  - Drill to the pre-Cambrian basement...full stratigraphic depth of the Williston Basin.
- ◆ Geologic Modeling and Simulation
- ◆ Technical and Economic Analysis
- ◆ Site Development Plan
- ◆ Community Benefits

# PROJECT COST AND SCHEDULE

DOE's Share	ONEOK's Share	NDIC's Share	Total
\$9,000,000 (55%)	\$6,500,000 (39%)	\$1,050,000 (6%)	\$16,550,000

- ◆ Anticipated start date – September 2023
  - Start date is dependent on finalization of DOE contract documents and receipt of funds
- ◆ Anticipated finish date – September 2025

# PROJECT OVERVIEW





# PROJECT BENEFITS

- Understand the technical and economic feasibility for the aggregation and storage of low-volume CO<sub>2</sub> sources in western ND associated with gas-processing.
- Provide a prospective option for carbon management associated with a range of distributed CO<sub>2</sub> sources through a centralized geologic CO<sub>2</sub> storage hub and associated transportation infrastructure.
- Inform participation, investment, and development decisions in a carbon storage hub by ONEOK and other current and future operators of distributed sources within the project region.
- Position project for future design and geologic CO<sub>2</sub> storage facility permitting through private and/or future DOE funding opportunities.

# REVIEWER COMMENTS

*“This project is one of the greatest bargains to the ND OGRP that I have seen, especially considering the potential new carbon dioxide storage technology and stratigraphic data to be gleaned.”*

*“This type of cutting-edge research, and the resulting data gathered, is essential to the successful development of the proposed Roughrider Carbon Storage Hub. In addition, the stratigraphic test well and operational data acquired for this project will likely also be useful for other technologies like geothermal, oil and gas exploration, EOR development, etc.”*



 ONEOK

ONEOK Plaza — Oklahoma