NORTH DAKOTA CarbonSAFE

ACTIVITY FAQs

INVESTIGATING SAFE, PERMANENT GEOLOGIC STORAGE OF CO_2 IN NORTH DAKOTA

Gravity and Magnetic Surveys near Young Station

In late summer 2020, a six-person field crew will conduct gravity and magnetic surveys near Milton R. Young Station to gather information about rock layers in the deep subsurface. The data gathering is part of Project Tundra and the North Dakota CarbonSAFE research effort, which is assessing safe, permanent, commercial-scale geologic storage for carbon dioxide from Young Station.

What Is a Gravity Survey?

The strength of Earth's gravity field becomes stronger or weaker depending on the density of the geologic material below the surface. A gravity survey uses the changes in the gravity field to estimate the density of the rock layers.

Technicians carry battery-operated gravity survey instruments to collect readings every 165 feet along paths throughout the study area.

What Is a Magnetic Survey?

Field teams measure the natural magnetic field strength at points across a grid in a survey area and compare changes to look for inconsistencies in the shallow and deep subsurface rock layers. Highly magnetic materials like iron-rich rock create a stronger magnetic field than other rock layers.

Example of a magnetic survey: a magnetometer measurement in progress.

What Is the Benefit of the Surveys?

The results of these surveys will be used to assess whether these lower-impact approaches will work to track the injected CO_2. This information will help with permitting the commercial geologic storage deep underground should the project move forward.

What Is the Community Impact?

Safety and courtesy are top priorities during this survey. The survey crew will travel by foot and ATVs along a 12-sq-mile grid. Care will be taken to avoid or minimize any environmental impacts and maintain normal traffic flow. The low-impact work requires landowner permission for access.

What Do Landowners in the Survey Area Need to Know?

Project partners Minnkota Power Cooperative, Inc., and the Energy & Environmental Research Center will contact landowners to request permission to walk or drive ATVs on their land before placing marking stakes. Once installed, the markers will remain in place up to 2 weeks as the field crews walk a grid pattern across the area. Testing will avoid buildings and other infrastructure such as drinking water wells. Minnkota will work with landowners to minimize inconveniences and address concerns.

How Is a Survey Carried Out?

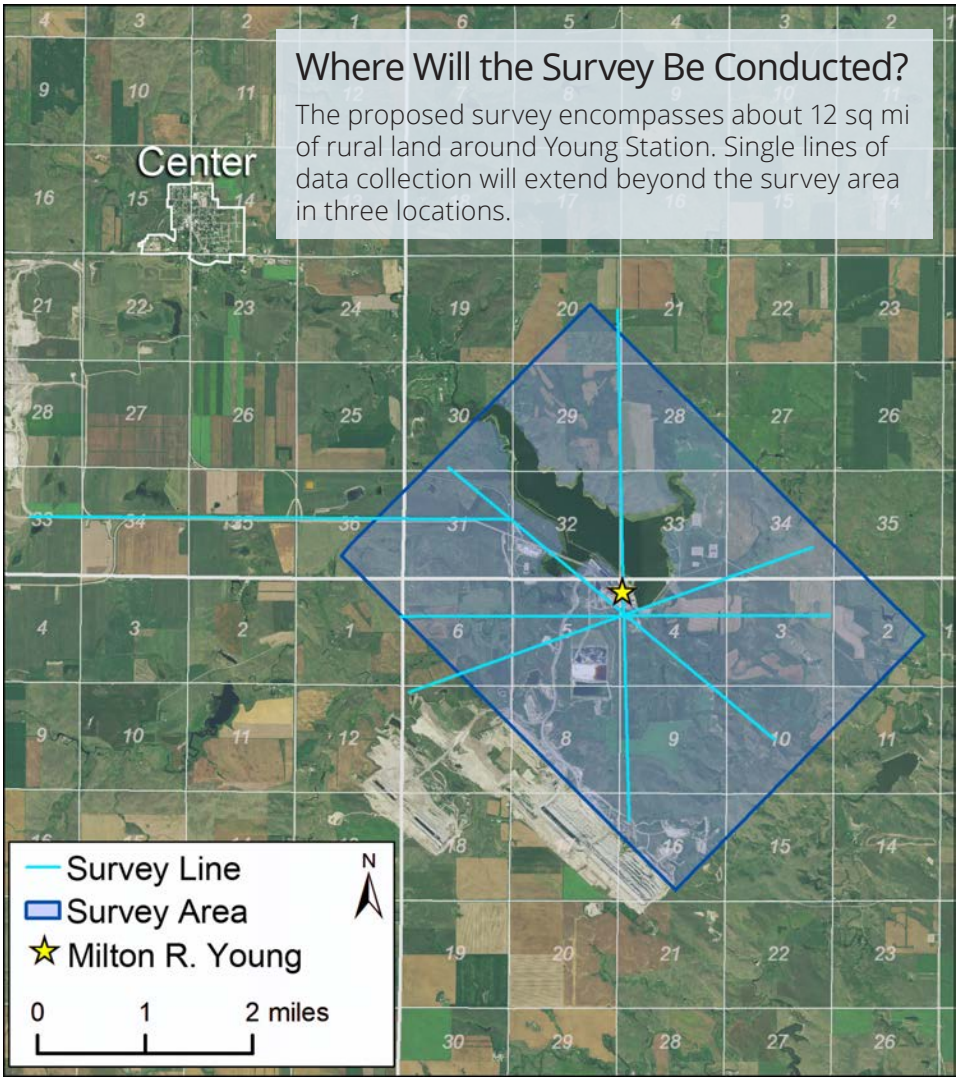
The test involves three sets of survey crews to 1) mark data collection points, 2) collect gravity readings, and 3) collect magnetic readings. Marking stakes will be inserted into the ground in a grid pattern every 165 feet along lines that are spaced 330 feet apart to record natural gravity and magnetic fields during the survey. At 165-foot intervals along lines, the crews will stop for about 20 minutes to collect data. The procedures look similar to those of a land survey crew.

What Are the Next Steps?

Other near-term field activities are planned for late summer and fall 2020. Field crews will be in the same area around Young Station conducting a geophysical survey using vibroseis trucks and sensors. A drilling rig set up just south of Young Station will collect rock samples and other information from deep underground. Learn more at the project websites: www.projecttundrand.com undeerc.org/NDCarbonSAFE.

Where Will the Survey Be Conducted?

The proposed survey encompasses about 12 sq mi of rural land around Young Station. Single lines of data collection will extend beyond the survey area in three locations.



The North Dakota CarbonSAFE project is assessing safe, permanent geologic storage of carbon dioxide. Led by the Energy & Environmental Research Center at the University of North Dakota, partners include the U.S. Department of Energy National Energy Technology Laboratory, the North Dakota Industrial Commission Lignite Research Program, and Minnkota Power Cooperative.

For More Information:

› **Wes Peck**, Project Manager, EERC
wpeck@undeerc.org
701.777.5195

› **Nikki Massmann**
Director of Communications, EERC
nmassmann@undeerc.org
701.777.5428

› **Dan Laudal,** Environmental Manager
Minnkota Power Cooperative, Inc.
dlaudal@minnkota.com

› **Cole Beckel,** Right of Way Agent
Minnkota Power Cooperative, Inc.
cbeckel@minnkota.com
701.795.4336

Learn more at www.undeerc.org/NDCarbonSAFE and www.ProjectTundraND.com

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