

Fall 2019

# BASIN BITS

The Official Publication of the Western Dakota Energy Association



## Wise Roads Project Aims to Reduce Disruption in Oilfield Trucking

**COMPLIMENTARY  
PLEASE TAKE ONE!**

Shaping Health Care  
for the Modern Age

Expansion Projects  
Cleared for Take-Off

The Quest for  
Improved Gas  
Capture Rates





# RAMADA®

BY WYNDHAM

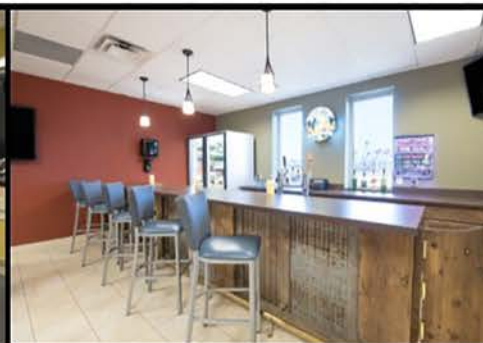
## Williston Airport XWA

**Closest Hotel to New Williston XWA Airport**



**BOOK DIRECT SPECIAL – from \$79 King Bed, \$129 Double Queen Beds (tax additional)**

Min. two consecutive nights stay, prepaid, non-refundable, no changes & subject to availability (expires 12/31/2019)



- Cooked to Order Breakfast
- Nightly Dinner Specials & Menu
- In-Room Refrigerator & Coffee Maker
- Free Internet and Wi-Fi
- 24-Hour Fitness & Business Centers
- Free Scheduled Airport Shuttle
- Corporate/Weekly/30-day Special Rates
- Meetings and Classroom Seating for 6 - 100
- Bar with 5 pm-7 pm Happy Hour (M-F)
- Dealing Black Jack & Pull Tabs
- Pet Friendly Rooms
- Free Self-Service Laundry
- Onsite Boot/Locker Room
- Free Parking
- Big Rig & Tour Bus Parking
- Electric Hookups

*Mention this ad to  
receive 500  
Wyndham Reward  
points*

**701-609-5555**  
**5813 Jefferson Lane, off US 2/85 N**  
**Williston, ND 58801**  
**RAMADAWILLISTON.COM**





**NO MATCH  
FOR THIS  
PATCH.**

carharttFR.com



**NOBODY SELLS MORE  
CARHARTT  
FLAME RESISTANT CLOTHING.**

carhartt   
FR



**WILLISTON WATFORD CITY MINOT DEVILS LAKE JAMESTOWN GRAFTON GRAND FORKS**





## Largest Decanter Centrifuge Service Footprint in North America

With over 30 years of experience in centrifuge repair and refurbishment of the industry's most popular decanter centrifuges, Elgin has the largest one-stop-shop service footprint for maintaining your entire centrifuge fleet.

-  Raleigh, Illinois
-  Houston, Texas
-  Poca, West Virginia



**281-261-5778 • [www.ElginSeparationSolutions.com](http://www.ElginSeparationSolutions.com)**

# Employee Benefits

**NORTH DAKOTA STYLE**

Let our experts help you custom-design an employee benefits package that works for you today and helps you get to where you want to be tomorrow.

**Let's get started on your employee benefits plan.**

**Contact an agent today.**



**Holly Bohler**

Williston • 701.715.9029



**Nicole Wolla**

Dickinson • 701.715.9028



**Ryan Hartje**

Bismarck • 701.255.5562



**Derek Van Dyke**

Minot • 701.858.5019



**ND**

**EmployerPlansND.com**

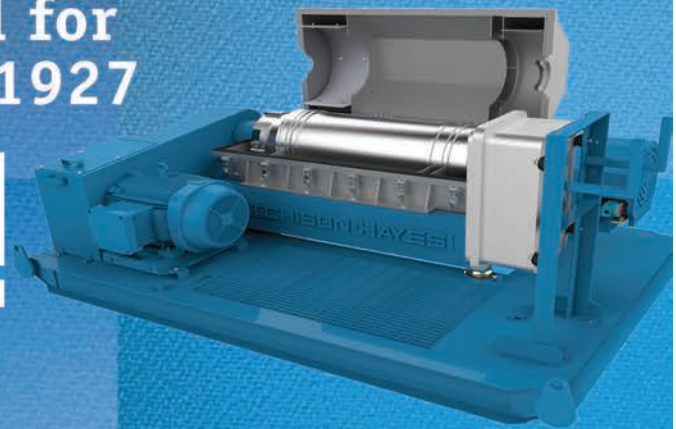
Blue Cross Blue Shield of North Dakota is an independent licensee of the Blue Cross & Blue Shield Association



# Setting the Standard for Solids Control since 1927



**Hutchison Hayes  
Separation Inc.**



Since 1927, Hutchison Hayes has been a dedicated partner to the oil and gas industry. We offer sales of new decanter centrifuges, reconditioned decanter centrifuges, and rental decanter systems.

From our manufacturing facility in Houston, Texas, we supply quality spare parts and full service repairs for all manufacturers and models of centrifuges.

- New Decanters
- Reconditioned Decanters
- Decanter Rentals
- Centrifuge Spare Parts
- Field Service
- Technical Support
- Shop Repair for all Manufacturers Models

## **MegaBowl™ VFD Ready Configuration**

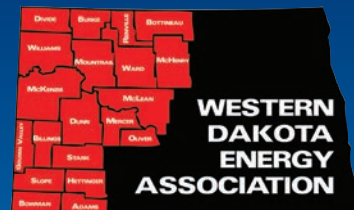


The MegaBowl™ comes with a standard “VFD Ready” drives system which allows for full variability on both the main and back drive motors through VFDs. The bowl is driven by a 150 HP inverter duty main drive motor and the conveyor is driven through a planetary gear box (49:1) with a 40 HP inverter duty back drive motor. The MegaBowl™ is engineered and manufactured within the same rigid standards as the HHS Model 5500 with many of the same features, plus more than twice the processing capacity. All major rotating assembly components are manufactured from either centrifugally cast or forged 316 SS. As with the 5500 the case is also of 316 SS. All major wear areas are protected with tungsten carbide and/or Stellite. This unit is manufactured to operate in a Class 1, Division 1 environment.

**Contact Us at [www.Hutch-Hayes.com](http://www.Hutch-Hayes.com) (800) 441-4850**



# Table of Contents



**WESTERN  
DAKOTA  
ENERGY  
ASSOCIATION**

## BASIN BITS

**Basin Bits is Printed for:**  
The Western Dakota Energy Association

### Association Office

1661 Capitol Way  
Bismarck, ND 58501  
www.ndenergy.org

### Geoff Simon, Executive Director

Tel: (701) 527-1832 (cell)  
Email: geoff@ndenergy.org

### Printed by:

Matrix Group Publishing Inc.  
Please return undeliverable addresses to:  
5605 Riggins Court, Second Floor  
PO Box 41270  
Reno, NV 89504  
Toll-free: (866) 999-1299  
Toll-free fax: (866) 244-2544  
www.matrixgroupinc.net

### President & CEO

Jack Andress

### Operations Manager

Shoshana Weinberg  
sweinberg@matrixgroupinc.net

### Publisher

Jessica Potter

### Editor-in-Chief

Shannon Savory  
ssavory@matrixgroupinc.net

### Senior Editor

Alexandra Kozub  
akozub@matrixgroupinc.net

### Junior Editors

Jenna Collignon, Kaitlin Vitt

### Finance/Administration

Lloyd Weinberg, Nathan Redekop  
accounting@matrixgroupinc.net

### Director of Circulation & Distribution

Lloyd Weinberg  
distribution@matrixgroupinc.net

### Sales Manager – Winnipeg

Neil Gottfred

### Sales Manager – Hamilton

Jeff Cash

### Sales Team Leader

Tanina Di Piazza

### Account Executives

Albert Brydges, Andrew Lee, Bonnie Petrovsky, Brenda McPhee, Brian MacIntyre, Cheryl Klassen, Colleen Bell, Frank Kenyeres, Jim Hamilton, Julie Welsh, Kevin Harris, Mackenzie Carare, Marilyn Beek, Renée Kent, Rob Gibson, Sandra Kirby, Tenisha Myke, Terri Erkelens

### Advertising Design

James Robinson

### Layout & Design

Cody Chomiak

©2019 Matrix Group Publishing Inc. All rights reserved.  
Contents may not be reproduced by any means, in whole or in part, without prior written permission of the publisher.  
The opinions expressed in this publication are not necessarily those of Matrix Group Publishing Inc.

## OPENING REMARKS

- 8 From the Desk of the Western Dakota Energy Association's President
- 10 From the Desk of the Western Dakota Energy Association's Executive Director

## SPECIAL SECTION

- 11 Your Guide to the 2019 WDEA Annual Membership Meeting

## ON THE COVER

- 12 Weather Station Project Aims to Reduce Disruption in Oilfield Trucking: Wise Roads Will Provide Decision-Making Tool to Road Managers

## FEATURES

- 15 Shaping Health Care for the Modern Age
- 16 Denbury Resources' CO<sub>2</sub> Enhanced Oil Recovery Project to Bring Expertise to the Bakken
- 17 Building Bridges: Work Underway on Long X Replacement
- 18 Education Funding Equity: It's Complicated
- 20 Expansion Projects Cleared for Take-Off: Three Airports to Meet Growing Needs in North Dakota
- 21 The Quest for Improved Gas Capture Rates: Pilot Projects Tackle Increased Flaring
- 22 Combating the Coal Industry's Challenge

## IN THE SPOTLIGHT

- 23 Participate, Educate, Engage: Williston Basin API Chapter

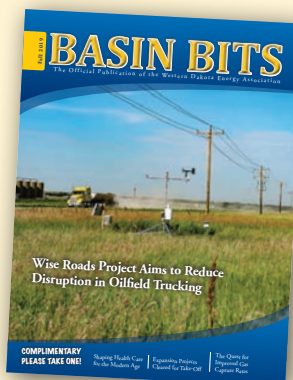
## WDEA NEWS

- 24 Regional Roundup
- 25 The Bakken Top 20

## 26 INDEX TO ADVERTISERS

**On the cover:** One of the 10 new weather stations installed as part of the Wise Roads Project (flip to page 12 to read our in-depth cover story).

This station is about two miles southeast of Epping. Photo by Lindsey Harriman, Williams County Communications & Research Analyst.



## From the Desk of the Western Dakota Energy Association's President



**Gary Wilz**  
President  
Western Dakota Energy Association

**T**his column will delve into in-lieu-of tax revenue and its impact on school funding. Though this is not a deep dive into the issue, I hope it is an adequate explanation that may enlighten the reader on how in-lieu-of tax revenue impacts the state aid school districts receive for students.

There are several categories of in-lieu-of revenue: U.S. flood control, oil and gas gross production tax, tuition from other education agencies, mobile home taxes, telecommunications, electrical generation, distribution, transmission, etc. A recent legislative change now has each of the revenue sources deducted to 75 percent from a school's state aid payment.

So, if a school received \$10,000 in telecommunications tax revenue, the full amount would be credited to the school's general fund; but, \$7,500 would be deducted from the school's state aid payment.

The in-lieu-of revenue varies in each school district; however, most districts will have some form of in-lieu-of revenue. School districts in western North Dakota may have significant revenue from oil and gas gross production tax and/or U.S. flood control.

Flood control revenue for the Killdeer School comes from land that was formerly part of the school district and "acquired" when the Garrison Dam was constructed and Lake Sakakawea was filled. Flood control lands are along the margins of Lake Sakakawea, and drainage corridors, such as the Little Missouri River and other waterways in North Dakota, are under the Army Corps of Engineers' control. Any revenue

## Education Funding: More Than a Little Confusing

*My intent for writing this is not to draw the ire of legislators but to present a different view of being a rich oil school. While schools do receive 25 percent of in-lieu-of revenue without strings, I am hopeful I have dispelled some of the belief that schools such as Killdeer "get all that oil money."*

derived from those lands is payable back to the counties and school districts from which they were acquired.

As a political subdivision, public schools are subject to the *Open Records Act*, so I'll provide some of Killdeer Public School's financial information regarding in-lieu-of revenue. Killdeer School received over \$2.6 million of in-lieu-of revenue in the 2018-19 school year. Seventy-five percent of this value is slightly over \$1.95 million. This amount will be deducted from the state aid payment.

The State of North Dakota uses a weighted-pupil-unit formula that is multiplied by the per student payment rate of \$9,839 to determine a district's total formula payment. There are two key deductions on the total formula amount. One is

the 60 mills deduction, which is the district's taxable value multiplied by 60 mills. All schools are subject to this as a "local responsibility factor."

The second deduction is the 75 percent of in-lieu-of revenue a district receives. The projected formula payment for the 2019-20 school year for Killdeer School calculates at \$6.9 million, before adjustments. The \$6.9 million figure is adjusted by subtracting the aforementioned deductions, and results in a state aid payment of around \$3.2 million; so, the actual per student payment Killdeer receives will be slightly over \$5,275 per student.

I have attempted to determine the overall tax impact using a combination of local property tax and in-lieu-of revenue, and,



admittedly, it becomes a little convoluted. If one uses a combination of local property tax and the in-lieu-of revenue and attempts to determine a mills value or what the taxable value of the school district land would be to equal the \$3.6 million in tax deduction, I calculate the valuation of the Killdeer District to be around \$60 million in property tax value.

The actual value of the Killdeer District is slightly over \$42 million. When I use the current valuation of \$42 million, the total mills on this value to get to the \$3.6 million in deductions would be over 85 mills.

Confused? Many people are. Now, I do understand that property tax value and in-lieu-of revenue are statutorily defined / determined in a different manner. I am merely attempting to show that schools which receive significant in-lieu-of revenue help to “carry the day” by lessening the state responsibility for state aid. The formula has been in place since the equity lawsuit in 1994, with some tweaking along the way.

My intent for writing this is not to draw the ire of legislators but to present a different view of being a rich oil school. While schools do receive 25 percent of in-lieu-of revenue without strings, I am

hopeful I have dispelled some of the belief that schools such as Killdeer “get all that oil money.” I am also looking forward to the work of the Education Funding Formula Review Committee as they work toward improving equitable funding for all North Dakota schools.



*Learn more about the  
WDEA and its initiatives  
at [www.ndenergy.org](http://www.ndenergy.org).*

## ABOUT THE WDEA

The Western Dakota Energy Association (WDEA) is the trusted and unified voice for the betterment of the citizens of North Dakota and WDEA membership.

## WDEA'S 2019 EXECUTIVE COMMITTEE SERVES WESTERN NORTH DAKOTA

President: Supt. Gary Wilz, Killdeer Public School District

Vice-President: Shannon Holter, City of Bowbells

Past President: Daryl Dukart, Dunn County

Joanna Baltes, Williston Public School District #1

Supt. Leslie Bieber, Alexander School District

Mayor Lyn James, City of Bowman

Doug Nordby, McKenzie County

John Phillips, Coal Conversion Counties, Beulah

Supt. Brad Rinas, Coal Conversion Counties, Washburn

Trudy Ruland, Mountrail County

David Tuan, City of Williston

## ASSOCIATION OFFICE

1661 Capitol Way, Bismarck, ND 58501  
[www.ndenergy.org](http://www.ndenergy.org)

Geoff Simon, Executive Director

Tel: (701) 527-1832 (cell)

Email: [geoff@ndenergy.org](mailto:geoff@ndenergy.org)

**WHITING**  
WWW.WHITING.COM

**LEADING THE WAY**

Whiting Petroleum Corporation is an independent exploration and production company. We are a leading crude oil producer in North Dakota and operate substantial assets in northern Colorado.

At Whiting we are committed to economically attractive and environmentally responsible operations. Our hydraulic fracturing advancements and expertise in exploration have made it possible for us to reduce emissions, minimize surface impacts, and preserve precious water resources.

1700 Broadway | Suite 2300 | Denver, Colorado  
**303.837.1661**



# From the Desk of the Western Dakota Energy Association's Executive Director



**Geoff Simon**  
Executive Director  
Western Dakota Energy Association

## Clear Communication Pays Off

*...road restrictions that last for an extended period can have huge financial consequences. If an oil well is shut down because trucks can't get to the site, production is lost. It takes time to get the well operational again, resulting in an even larger loss to the producer. And let's not forget, the royalty owner is also impacted by that loss, as are the state's taxpayers.*

For some time now, western county road superintendents have been getting together for roundtable discussions organized by the Local Technical Assistance Program (LTAP). Director Dale Heglund facilitates the discussion and lines up engineers and others to cover trending topics in the road-building business. The meetings provide road managers with an opportunity to "talk shop," share best practices, and learn from everyone's experiences.

The western roundtable in December 2018 was decidedly different. I'd been hearing grumblings from folks in the oil industry about county road restriction policies. Weight limits were imposed throughout the county after a rain event, even though the entire county didn't get wet. A 12,000-pound weight limit effectively shuts down the oil industry. Trucks hauling crude oil, frac sand, produced water, or various pieces of equipment are forced to wait it out until conditions improve and restrictions are lifted.

Weight limits are understandable. Roads must be protected because they're not just for the industry—they're for the traveling public as well. Safety is also a consideration. If an accident happens and road restrictions aren't in place, there's a question of liability for damage or injuries.

But I wondered if we could improve the situation, so I asked Dale Heglund if we could invite oil companies and truckers to attend the next roundtable. Dale's a great communicator and enthusiastically agreed with the idea.

The result was the largest roundtable ever. More than 70 people were at the Rough Rider Center in Watford City to discuss their mutual interest in building and maintaining

good roads to keep commerce moving in the Bakken. There's no doubt county road staff had heard complaints from the industry about road restriction policies, but I'd bet it was the first time they'd heard companies explain why the restrictions are so annoying.

They not only prevent the industry from operating efficiently; road restrictions that last for an extended period can have huge financial consequences. If an oil well is shut down because trucks can't get to the site, production is lost. It takes time to get the well operational again, resulting in an even larger loss to the producer. And let's not forget, the royalty owner is also impacted by that loss, as are the state's taxpayers.

Long story short, dialogue at that roundtable resulted in the Wise Roads Project, which is featured in this edition of *Basin Bits*. Clear communication between the public and private sector is essential to the development of good public policy. The success of that roundtable continues today.

Oil companies are meeting individually with county highway departments to share confidential details of their future drilling plans. In turn, the counties let the producers know of their road construction and maintenance plans. That sort of collaboration helps both parties.

For one thing, they can stay out of each other's way. And if the counties know in advance where to expect increased truck traffic, they may have time to improve the road before drilling rigs and frac crews move in.

The Western Dakota Energy Association (WDEA), the North Dakota Petroleum Council (NDPC), and our friends at LTAP will continue to promote cooperation between the industry and local government. The agenda for NDPC's annual meeting in September 2019 includes a panel of local government leaders discussing what's next for the Bakken. They'll tell industry attendees where they expect impacts (and problems) associated with future growth. If the industry understands the concerns of city, county, and school officials, maybe they can do something to minimize those impacts.

Likewise, the WDEA's annual meeting in October 2019 will include a panel discussion with folks from the oil industry discussing transportation issues with county road managers. And you can bet an upcoming LTAP roundtable will include an invitation to industry players. Only by getting our concerns on the table are we able to work cooperatively to find a solution.

Let's keep the dialogue going!





# Your Guide to the 2019 WDEA Annual Membership Meeting

*Annual Membership Meeting | October 30 to 31, 2019 | Grand Hotel Convention Center | Minot, North Dakota*

WEDNESDAY, OCTOBER 30	
11:00 a.m. (all times in CDT)	Registration Opens
12:00 p.m.	Exhibits Open
1:00 p.m.	Welcome: WDEA President Gary Wilz and Ward County Commission Chair Shelly Wepppler
1:05 p.m.	LoadPass Permits: Enhancements / Expansion & Operations Update: Janet Sanford and Brent Bogar
1:15 p.m.	Wise Roads Project: Geoff Simon and Brent Bogar, Western Dakota Energy Association
1:30 p.m.	Truck Permitting Issues Panel Discussion Moderated by Ron Ness, North Dakota Petroleum Council: Trudy Ruland, Mountrail County; Dennis Nelson, Williams County; Ritch Gimbel, Bottineau County; Guy Aman, Continental Resources; and Hess Corporation (invited)
2:30 p.m.	Ft. Berthold Road Construction & Maintenance: Scott Satermo, Mandan Hidatsa and Arikara Nation Transportation Administrator
3:00 p.m.	Networking Break
3:15 p.m.	Production Update: Pipeline Capacity Report: Justin Kringstad, North Dakota Pipeline Authority
3:30 p.m.	Industry Presentations on Development of Gas Capture, Processing & Pipeline Infrastructure
4:15 p.m.	iPIPE: Intelligent Pipeline Integrity research project: Jay Almlie, North Dakota Energy & Environmental Research Center
4:30 p.m.	LNG Markets: Ed Woods, North Dakota LNG
5:30 p.m. – 7:30 p.m.	Networking Social with Remarks by Cal Klewin, Theodore Roosevelt Expressway
THURSDAY, OCTOBER 31	
7:30 a.m. – 8:30 a.m.	Continental Breakfast, Exhibits Open
8:30 a.m.	Opening Remarks and Welcome: WDEA President Gary Wilz, Killdeer School District; and Welcome to Minot: Mayor Shaun Sipma
8:40 a.m.	Ethics: Measure One, Implementation & the Ethics Commission: Senator David Hogue, Minot
9:00 a.m.	Western North Dakota Workforce Issues: Department of Commerce (invited)
9:20 a.m.	Western Area Water Supply Authority, History & Update: WAWSA Director Curtis Wilson
9:40 a.m.	Upper Great Plains Transportation Institute Road Needs Assessment: Tim Horner, UGPTI
10:00 a.m.	Networking Break
10:15 a.m.	Production Potential of Mission Canyon Formation & Other Benches: Tim Nesheim, North Dakota Geological Survey
10:45 a.m.	Education Funding Panel Moderated by Aimee Copas, North Dakota Council of Educational Leaders: Panelists Steve Holen, McKenzie County; Leslie Bieber, Alexander; Brandt Dick, Washburn; and Rep. David Richter, Williston
11:30 a.m.	Interim Legislative Study Activity: Senator Rich Wardner
12:00 p.m.	Lunch & Keynote Presentation: Lt. Governor Brent Sanford
1:00 p.m.	Lignite Research Update: Mike Holmes, Lignite Energy Council
1:15 p.m.	Lignite Marketing Study: Lignite Energy Council (invited)
1:30 p.m.	Oil & Gas Production Review, County-by-County Results and Other Comments: Lynn Helms, North Dakota Department of Mineral Resources
2:15 p.m.	Annual Business Meeting: Treasurer's Report, County / City / School Committee Meetings & Election of Officers
3:00 p.m.	Adjourn

*\*Agenda subject to change. Check [www.ndenergy.org](http://www.ndenergy.org) for updates.*



*One of the 10 new weather stations installed as part of the Wise Roads Project. This station is about two miles southeast of Epping. Photo by Lindsey Harriman, Williams County Communications & Research Analyst.*

# Weather Station Project Aims to Reduce Disruption in Oilfield Trucking:

## Wise Roads Will Provide Decision-Making Tool to Road Managers

By Geoff Simon

**A**nyone who lives in a rural state like North Dakota knows when it rains, county and township roads can turn into a muddy mess. That creates a problem for oil producers because local governments impose weight restrictions to protect gravel roads from heavy truck traffic, effectively shutting down oilfield operations.

But the Western Dakota Energy Association (WDEA) has launched a project that should help to minimize weather-related disruptions. The WDEA is partnering with two entities affiliated with North Dakota State University to install research-grade weather stations in the Bakken.



*NDAWN installers James Hyde and Alex Rushing at the Arnegard site in late June 2019.*



The project has been dubbed Wise Roads (Weather Information System to Effectively Reduce Oilfield Delays and Disruption). The first 10 stations were installed in late June 2019, targeting Dunn, McKenzie, Mountrail, and Williams Counties, which account for more than 90 percent of the state's oil production. A second phase with 15 more stations is planned for this fall.

Industry truckers have justifiably complained that, at times, restrictions are imposed more broadly than necessary, including roads that received little or no precipitation. It happens because county road superintendents don't have enough personnel or resources to know the condition of the thousands of miles of roads crisscrossing the oil patch. Highway managers tend to be overly cautious, unknowingly imposing restrictions where they may not be necessary, according to WDEA Consultant Brent Bogar.

"Some of these counties are fairly large, and there were situations where a county might be restricting all, or half, of the county when the rain event only occurred in a small portion of the county," says Bogar.

That's understandably frustrating to the industry, but the Wise Roads Project should improve the situation. Having accurate weather information, especially precipitation data, will allow road managers to more precisely identify roads that require temporary weight restrictions, and most importantly, exclude those that do not.

## PARTNERS MAKE PROJECT A WIN-WIN-WIN

The WDEA has teamed up with the North Dakota Agricultural Weather Network (NDAWN) to install the stations, providing a double benefit by getting the weather data into the hands of the state's agriculture producers.

"Ag is a huge part of the western counties, but they didn't have a lot of weather monitoring stations, so we see NDAWN as a great partnership," says Bogar.

NDAWN Director Daryl Ritchison says weather data in western North Dakota has always been lacking, and most of the data that did exist was a once-a-day posting. Ritchison says NDAWN stations and a few airports helped fill the data gap, but it still meant only one or two stations per county. He expects Wise Roads will produce a huge improvement.

"With the addition of the stations in Phase I, plus more stations planned for the future, western North Dakota will go from a weather data void to having excellent, 'top notch' weather coverage," says Ritchison.

2019-07-12 09:33:41 PM

*The weather stations are equipped with high-resolution cameras, giving road managers a real-time view of current conditions. The station on Rat Lake Road caught sight of this rainbow in mid-July.*



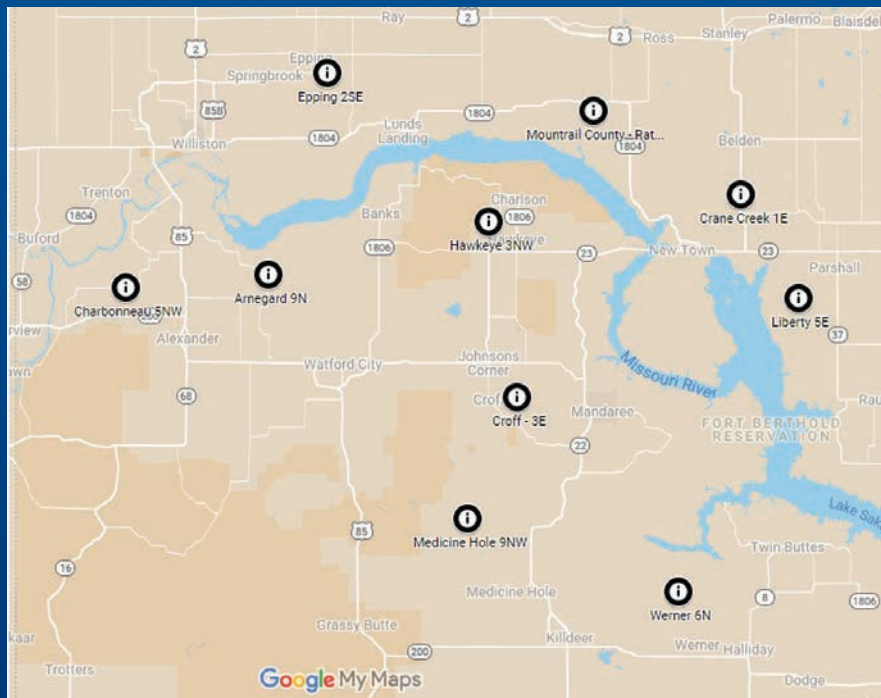
The weather station data will not only help improve the movement of truck traffic in the Bakken; Ritchison says it will offer numerous benefits to the agriculture sector.

"This data will be added to NDAWN's crop modeling to help farmers better determine the potential for crop diseases, like fusarium head blight in wheat, timing for spraying (not only for potential crop diseases), and knowing when inversions are occurring and spraying should not be done, among other uses," says Ritchison.

He says the data will also help with more detailed mapping of rainfall for rain

insurance, which is widely used in western North Dakota. Besides the many agricultural uses, Ritchison says the data will also be useful to the National Weather Service to aid in determining the strength of thunderstorms and verifying warnings, or to help in the issuance of warnings based on the data recorded by the stations.

Also partnering with the WDEA on the project is the Upper Great Plains Transportation Institute (UGPTI), which operates the Local Technical Assistance Program (LTAP) that provides road management and construction training services to counties. Program Director Dale Heglund says



*This map, courtesy of Google Maps, highlights the locations of the first 10 stations installed as part of the Wise Roads Project.*



engineers can examine the weather data to help guide decisions about road restriction policies.

"By looking at roadway properties such as gravel quality, roadway crown and width, and subgrade strength, we can compare pre- and post-rain roadway properties to help counties know when to set road restrictions to protect their roadway investment," says Heglund. "We can also show how better roadway maintenance and better gravel quality can improve roadway carrying capacity and reduce the number of restriction days by comparing data from various roadway quality levels."

The weather stations not only record temperature, wind speed, and precipitation; each is also equipped with a subsurface probe that measures soil temperature and moisture. Heglund believes analysis of the subsoil data will enable UGPTI to better predict roadway conditions to help road managers determine the duration of weight restrictions. That data may also help local road managers during "frost law season," possibly resulting in a prediction model for spring load restriction implementation and removal.

Stations are also equipped with high resolution cameras that can be rotated 360 degrees. Because plans call for most of the


stations to be sited near gravel roads, the cameras give road managers a real-time view of the condition of the road following various weather events. They can also serve as a forecasting tool, providing a glimpse of approaching storm systems.


## SMALL INVESTMENT, HUGE PAYBACK

The WDEA's executive committee has committed up to \$250,000 for the Wise Roads Project. Each weather station costs about \$10,000, which means the association will be able to complete the installation of 25 stations this fall. Funding comes from a surcharge on oversize truck permit revenue, which the WDEA collects for the counties through its LoadPass Permits system. The association has also submitted an application to the North Dakota Oil & Gas Research Council, seeking a matching \$250,000 commitment from the state. If the grant is approved, it will allow the WDEA to install up to 25 more weather stations next spring and summer.

Thousands of dollars are being invested in the project, but the potential payback could be in the millions. If road restrictions are in place for more than a couple days, oil companies can be forced to shut down production because tank batteries and other storage facilities fill up. If trucks can't get to a well pad to empty them, the company must halt production. The shutdown and the time it takes to restart can mean thousands of barrels of lost production, amounting to millions of dollars in lost revenue. That not only hits the producer's bottom line; it also means North Dakota citizens are losing oil tax revenue.




The state's oil producers have voiced their enthusiastic support for the weather station project. The WDEA's grant application received letters of support from three major producers, as well as one of the larger trucking firms operating in the Bakken. The first 10 weather stations were all sited adjacent to well pads, gas processing facilities, or other industry infrastructure. They are typically located on the edge of the property because specifications require that stations are placed in a grassy area. The siting requirements ensure temperature, wind speed, and other data are not corrupted by heat coming off a gravel surface or nearby structures.

With additional weather stations yet to be installed, western North Dakota landowners and others who may be interested in hosting a station on their property are urged to contact WDEA Executive Director Geoff Simon at [geoff@ndenergy.org](mailto:geoff@ndenergy.org). 

**HUSKY®**  
Portable Containment  
"THE LEADER OF THE PACK"

**Bladder/Pillow Tanks - Containment/Spill Berms - Tarps and Covers  
Mini Basins - Decon Pools and Showers - Portable Wash Bays**

protecting  
containing preserving



Lifetime warranty on welds and welded seams  
Husky® Portable Containment • [www.huskyportable.com](http://www.huskyportable.com) • 918-333-2000

# Shaping Health Care for the Modern Age

By Paul Adair

The Bakken boom brought unprecedented growth to the region and gifted North Dakota with the lowest unemployment rates in the country. This newfound prosperity helped attract a wide swath of workers from across the U.S. who were looking for work. The swell in population, however, put a considerable strain on the existing infrastructure and services within the region such as roads, water supplies, schools, and the existing healthcare system.

In 2006, Watford City was just a small, sleepy city of about 1,500 people. Skip ahead 10 years, and the increased production has resulted in the city expanding to 6,500 people and becoming North Dakota's 12<sup>th</sup> largest city. This rapid increase in population is reflected in the higher than usual patient volumes for the McKenzie County Healthcare Systems Inc. (MCHS), which forced MCHS to invest heavily in upgrading its services.

"Before the change to oil and natural gas activity in the Bakken, our healthcare system was essentially a first aid station, which did not offer obstetrical or surgical services," says Dan Kelly, CEO of MCHS. "Today, there are four primary care providers, along with two additional mid-level providers in the rural health clinic and an orthopedic surgeon and general surgeon housed at a specialty clinic."

Watford City is also home to MCHS' new, state-of-the-art medical facility. This \$76.3-million, 120,000-square-foot medical

campus features a brand-new hospital and clinic as well as updates to the connected Good Shepherd Home (nursing home) and nearby Horizon Assisted Living; all under one roof. The change in location has afforded MCHS additional emergency room treatment bays, expanded laboratory and radiology services, and a tripling of its clinic space.

"With just one year of operation in the new facility, we are already foreseeing the day—within the next five years—when we will need additional space for new providers," says Kelly.

The improvements at MCHS were made possible in part due to the support coming from the oil and gas industry of North Dakota, which contributed greatly in terms of donations and contributions in the range of millions of dollars.

"The industry has been a strong supporter, financially, and by giving time and talent to our healthcare facility," says Kelly. "We have benefited greatly from hiring spouses of industry employees to come work with us, and we will continue to welcome the oil and gas industry as permanent members of our community here in Watford City."

As a result of the boom, there is a significant healthcare provider shortfall in the region. The Williston Basin experienced a 31 percent jump in open healthcare-related positions late last year and the available position-to-job-seeker ratio rose to higher than 25:1.

The problem appears to be two-fold. Healthcare systems in

the Bakken are unable to significantly raise wages to entice candidates, as the salary structure within the organizations does not allow the flexibility to do so. In addition, the boom has resulted in massive school overcrowding across the region, with no solution in sight. And, as many candidates have school-aged children, they are often looking to other school districts for employment.

To help tackle this problem, places like Watford City are proactively addressing their student enrollment spikes, which is helping them to successfully recruit much-needed healthcare providers.

"Local hospitals are also working closely with Williston State College and state universities to fill RN positions as soon as new RNs graduate," says Paula Hickel, Workforce Center manager at Job Service North Dakota. "In fact, this region saw a decrease in healthcare practitioner openings last month, largely due to the newly graduated nurses being hired."

*McKenzie County Healthcare Systems' new, state-of-the-art medical facility is a \$76.3-million, 120,000-square-foot medical campus featuring a brand-new hospital and clinic and updates to the connected Good Shepherd Home (nursing home) and nearby Horizon Assisted Living—all under one roof.*





# Denbury Resources' CO<sub>2</sub> Enhanced Oil Recovery Project to Bring Expertise to the Bakken

By Paul Adair



*Process piping at a carbon dioxide recycling facility.*

*Oil and water storage tanks.*



Headquartered in Plano, TX, Denbury Resources Inc. is an independent oil and natural gas company with operations focused with two key operating areas: The Gulf Coast and Rocky Mountain regions. Denbury's overall objective is to increase the value of its properties through a combination of exploitation, drilling, and proven engineering extraction practices, with the most significant emphasis relating to carbon dioxide (CO<sub>2</sub>) enhanced oil recovery (EOR) operations.

Denbury began its CO<sub>2</sub> operations in the summer of 1999 at the Little Creek Field in Mississippi. Shortly after, the company acquired Mississippi's Jackson Dome CO<sub>2</sub> reserves and the Northeast Jackson Dome pipeline in 2001. The company is confident its tertiary recovery operations will provide significant long-term production growth potential at reasonable return metrics, with relatively low risk; assuming crude oil prices remain at levels that support the development of its projects.

"Carbon dioxide used in EOR has proven to be one of the most efficient tertiary recovery mechanisms for producing crude oil," says John Mayer, director of SEC reporting and investor relations at Denbury Resources Inc. "When carbon dioxide is injected under pressure into

underground, oil-bearing rock formations, it acts somewhat like a solvent, traveling through the reservoir rock, mixing with, and modifying, the characteristics of the oil, so it can be produced and sold. Denbury applies what it has learned and developed over the last 20 years to improve and increase sweep efficiency within the numerous carbon dioxide EOR projects operated by the company."


Now, Denbury is seeking to bring its operations and expertise in CO<sub>2</sub> EOR to the Bakken by way of the Cedar Creek Anticline (CCA), a massive geological structure that stretches approximately 125 miles in length across parts of Montana, South Dakota, and North Dakota. Of all Denbury's projects, CCA seems to hold the most promise and potential as it relates to EOR and currently stands as being its largest producing property, contributing roughly 25 percent of the company's total 2018 production.

"Denbury's portion of CCA covers approximately 175,000 acres and is estimated to hold up to five billion barrels of original oil in place," says Mayer. "The carbon dioxide EOR project at CCA could ultimately target EOR potential greater than 400 million barrels of oil, with initial tertiary production currently expected in the second half of 2022 or early 2023."

Last summer, Denbury announced the sanctioning of the CO<sub>2</sub> enhanced oil recovery

development project at CCA, which is located just over one-hundred miles north of the Bell Creek Field in northeastern Montana. Denbury's plan moving forward is to connect this field to the company's Greencore Pipeline by the end of 2020. Denbury will then initiate a CO<sub>2</sub> flood at CCA several years down the line, depending on a number of economic and regulatory factors, like future oil prices, pipeline permitting, and sources and availability of CO<sub>2</sub>.

The capital outlay for the initial phase of the project is currently estimated at \$200 million through 2022, which includes \$150 million for a 110-mile extension of the Greencore CO<sub>2</sub> pipeline from Bell Creek Field and \$150 million for development in the Red River formation at East Lookout Butte and Cedar Hills South fields in the CCA. Denbury expects the first tertiary production from CCA will occur in the second half of 2022 or early 2023. Additional phases of development are expected to target the Interlake, Stony Mountain, and Red River formations at Cabin Creek Field beginning in 2024.

"Phase 1 of the project targets approximately 30 million barrels of estimated recoverable oil in the Red River formation at East Lookout Butte and Cedar Hills South fields," says Mayer. "Production for Phase 1 is estimated to peak between 7,500 and 12,500 barrels per day in 2024 to 2025." 

# Building Bridges:

By Simon Peacock

## Work Underway on Long X Replacement

**A**t long last, the fate of the historic Long X Bridge on U.S. Highway 85, south of Watford City, has been decided. A new, four-lane bridge is set to be built just east of the current structure. Pre-construction meetings began on July 22, 2019, and official construction on a replacement bridge began in mid-August. Completion of the new bridge is anticipated for summer 2021.

The new structure comes with a \$34-million price tag. Backed by federal and state funding, the North Dakota Department of Transportation (NDDOT) has awarded the contract to Ames Construction of Burnsville, MN. Ames was the only bidder on the project. Along with constructing a replacement bridge, Ames will also be responsible for building new grating, guard rails, a wildlife crossing structure, and dismantling the old bridge.

With the bridge eligible for listing on the National Register of Historic Places, the NDDOT placed a portion of the old bridge up for adoption to preserve a part of its architecture. A proposal for adoption by Emmons County rancher Paul Silbernagel has been approved by the department. Silbernagel plans to have 250 feet of the old bridge reconstructed on his family ranch to pass over Beaver Creek. The NDDOT will be covering the cost of disassembly, loading, and transporting up to 100 miles, and as per their agreement, Silbernagel will take on the cost and responsibility of reconstructing and maintaining this section of bridge.

Cal Klewin, executive director of the Theodore Roosevelt Expressway Association and lobbyist for the Highway 85 expansion, says the construction of a replacement



*The historic Long X Bridge on U.S. Highway 85, south of Watford City. A new, four-lane bridge is set to be built just east of the current structure.*

bridge comes at a critical time, as traffic and safety concerns continue to be at the forefront of discussion. A four-lane replacement bridge is a huge step toward creating a safer and more organized roadway.

“This is certainly long overdue, especially with what’s happened in western North Dakota with the boom in oil and gas production,” says Klewin. “With the increase in heavy loads and construction equipment moving up and down the corridor, the Long X Bridge was not functional for efficient freight movement or for the safety of the traveling public.”

The replacement of the Long X Bridge is just the beginning, as aim now shifts to expanding the 62 miles of Highway 85 from Watford City to Interstate 94 at Belfield,

ND. With the final Environmental Impact Statement in place, funding can now begin to be secured through federal and state agencies to have this section of highway expanded to four lanes.

“Nationally, the federal dollars are very important for rural America,” says Klewin. “We cannot operate on tolling, as they do in more populous areas, and we need a huge federal input for matching our state dollars.”

The Highway 85 expansion project is estimated to cost up to \$479 million. The NDDOT has submitted an application for a BUILD grant (Better Utilizing Investments to Leverage Development) from the USDOT, with a maximum request of \$25 million.

If the NDDOT is the successful recipient of this grant, it will be eligible for up to an additional \$50 million through a Bank of North Dakota loan program, thanks to the recent passing of Senate Bill 2268, Corridors of Commerce, by the North Dakota Legislature.

Nearby, in Billings County, the Federal Highway Administration (FHWA) plans to move forward with constructing another Little Missouri River Crossing Project. This will see two miles of new highway and a 600-foot, three-span bridge, built over the Little Missouri River 20 miles north of Medora. The hopes of the project are to improve emergency response time. The project has an estimated cost of \$11 million, with no funding yet secured.



*The Federal Highway Administration plans to move forward with constructing another Little Missouri River Crossing Project: two miles of new highway and a 600-foot, three-span bridge (conceptualized here), built over the Little Missouri River 20 miles north of Medora.*



# Education Funding Equity:



*It's complicated*

By Geoff Simon

Providing adequate and equitable funding for K-12 education was a hot topic for the 2019 North Dakota Legislature, and it's certain to be again in 2021.

Lawmakers this year passed SB 2265, which increased the state's per pupil contribution to the Foundation Aid funding formula and made a few minor changes to help western North Dakota districts struggling to find space for rapidly growing student populations. The legislature also created an interim study committee charged with examining elements of the complicated funding formula.

The formula establishes a "weighted average daily membership" for each of the state's 178 public school districts. The per pupil state aid payment was increased by the legislature to \$9,839, but that amount will vary because of weighting factors in the formula. The factors take into account the size of the district, summer school programs, the number of at-risk students, those who require English language services, and other items.

The formula also includes a "hold harmless" provision that sets a baseline funding amount for each district. It is intended to help districts with declining enrollment that could otherwise experience steep decreases in their state aid payment. It also supports districts with lower property values and smaller districts with higher per-pupil costs.

The formula makes up the difference between what the local district is able to generate through property taxes and the in-lieu-of

revenue it receives. For schools in oil-producing counties, in-lieu-of revenue includes their share of the gross production tax (GPT). The baseline provides "transition minimum" payments to districts that are negatively impacted when paid by a per-pupil method rather than by land base to assure statewide equity. Districts that receive additional revenue from other sources are provided a "transition maximum" payment—again, to assure equity. These districts are said to be "off the formula" because they receive more or less per student than the standard \$9,839 amount.

State law requires each district's local contribution to include at least 60 mills in property taxes, which creates a problem for some western districts that have experienced big increases in property values. The property tax rate in the McKenzie County School District is well below 60 mills because valuations in Watford City have skyrocketed in recent years.

That valuation increase has prevented the district from maintaining a 60-mill levy because state law caps school property tax increases at 12 percent per year. But because of the 60-mill requirement, McKenzie County Superintendent Steve Holen says the district will have to increase property taxes, putting a much greater burden on local residents.

"I'm in a school district that's going to see a significant shift from state to local, and, in that process, explaining why that shift needs to take place," says Holen. "If it's taxpayer equity, everybody should be at 60 mills, but

what's the funding formula equity? Why are we forcing schools to 60 mills if they have the capacity with their in-lieu-of money to do with less?"

Holen believes the district's in-lieu-of dollars (GPT revenue) should be considered part of its local contribution, because the very nature of oil taxes is that they are paid instead of local property taxes.

Even some long-time legislators are puzzled by the reason the formula works the way it does.

"The 60 mills. Where'd we get 60 mills? What's the magic about 60 mills?" pondered Rep. David Monson, R-Osnabrock, at the first meeting of the interim committee. "As I recall, we just kind of grabbed that number out of the air and said, 'Let's go with 60 mills.'"

The formula is designed to meet directives in the state constitution that the state "provide for a uniform system of free public schools throughout the state." It's intended to equalize for variations in district wealth to provide a degree of equity among all the schools, regardless of size. There have been several lawsuits in the past over equity, and Rep. Monson, a retired school administrator who's served in the legislature since 1993, worries that recent changes in the formula may lead to another one.

"Are we getting issues now with equity?" asks Monson. "Are we messing this up when we're becoming more reliant on property tax and putting more on these property-rich

districts that aren't on the formula, and we're saying, 'You have to raise more money from your property tax?'"

The funding question becomes even more complicated when considering the cost of building new schools, which is not factored into the funding formula.

"Where equity goes completely out the window is in building schools," says Rep. Marvin Nelson, D-Rolla. "When I see the towns that are really complaining, it's growing districts that have to build more than one school every 30 years. We haven't had the discussion of what's a reasonable local contribution toward providing the buildings. It seems to me if we're trying to get to fairness, it has to be part of the discussion."

On that point, Senator David Rust, R-Tioga, agrees.

"There is no equity in buildings," says Rust. "I still think the state is going to have to look at some outright grants to school districts that are experiencing rapidly increasing enrollments and have to build buildings on top of buildings on top of buildings and have taxpayers that say, 'Enough, I'm not going to vote for them anymore,' and the kids keep coming and there's no more room."

Achieving fairness in the formula depends on what is included in the formula's weighting factors and what weight is assigned to

*The funding question becomes even more complicated when considering the cost of building new schools, which is not factored into the funding formula.*

each. Rep. Mark Sanford, R-Grand Forks, a retired school administrator, believes it's time to review those factors.

"It seems to me one of the ways we deal with this issue of equity is in those weighting factors," says Sanford. "I'm wondering if we have up-to-date data that suggests what we're doing with the weighting factors is appropriate; that it's current."

West Fargo School Business Manager Mark Lemer agrees with Sanford.

"If there are districts that we think are operating efficiently and the formula is not able to provide them the resources, to me that's a formula problem," says Lemer. "Is there some way to reverse-engineer it? What should that factor look like to get those districts closer to being on the formula?"

The study committee will meet five or six more times to try to answer those questions and more during the 2019-20 interim.



**VIC'S**  
CRANE & HEAVY HAUL INC.

[www.vicsco.com](http://www.vicsco.com)

3000 145<sup>th</sup> Street East  
Rosemount, MN 55068

Rosemount 651-423-7400  
Hibbing 218-403-0008



# Expansion Projects Cleared for Take-Off:

## Three Airports to Meet Growing Needs in North Dakota



*The new Williston Basin International Airport, currently under construction, will open in October 2019. Photo, taken in June 2019, courtesy of Kyle Wanner.*

By Jenna Collignon

Airports have changed drastically throughout North Dakota over the past few years. There have been airport renovations, rebuilds, and new builds across the state. The brand-new Bowman Regional Airport opened in 2015, the Dunn County Weydahl Field Airport in Killdeer reopened its renovated runway in 2014, and the Minot International Airport unveiled a brand-new commercial service terminal building in 2016.

"We've seen tremendous aviation-related growth in both commercial and business traffic across North Dakota. The growth in western North Dakota is largely due to impacts from the oil and gas industry, which has drawn an increased amount of business traffic to communities across our state," says Kyle Wanner, executive director of the North Dakota Aeronautics Commission. "Our public-use airports throughout the region have been working to develop plans to accommodate their current needs as well as their projected future growth."

### DICKINSON THEODORE ROOSEVELT REGIONAL AIRPORT

The reconstruction of the Dickinson Airport main runway is projected to be complete

in the fall of 2022. There are four phases of construction with this project: phase one and two are concentrated on building a parallel taxiway, and phase three and four are concentrated on reconstructing the main runway. The new, stronger runway will be able to accommodate larger aircraft due to the plan to lengthen it from 6,399 feet to 7,300 feet.

"With any airport project we consider, one of the biggest questions we want to answer is how we can best move forward to complete an upgrade while minimizing the impact to the public," says Wanner. "When the current runway is taken out of service due to the reconstruction process, the parallel taxiway will act as a temporary runway to allow commercial and business aviation traffic to operate as usual."

### XWA WILLISTON BASIN INTERNATIONAL AIRPORT

Set to open this October, the new XWA Williston Basin International Airport is an extensive \$270-million addition to the community.

"From the beginning, we knew it was important to have an upgraded airport to support the current needs of the flying public and the growing needs of the energy industry that wanted direct access to the Williston Basin," says Wanner. "We considered all options. Do we build a new airport? Or do we reconstruct on-site? If we did build a new

airport, where would the best place to put it be? Can we justify the build? How will this project affect the flying public?"

The original airfield needed a major reconstruction to meet Federal Aviation Administration (FAA) design standards. The costs of redoing the airport, however, were comparable to a new build, and the aviation traffic would cease for at least two years during the construction.

"From one day to the next, the old airport will close and the XWA airport will be open for business. We have to ensure everything is ready on day one and that aircraft will have the ability to use instrument approach procedures on opening day."


The XWA airport is also planning on adding a crosswind runway in 2020 or 2021, which will accommodate smaller aircraft. This new airport is designed to allow for a significant amount of expansion in the future. One thing is certain: Williston will soon be on an equal playing field with other communities for air service.

### WATFORD CITY MUNICIPAL AIRPORT

The Watford City Municipal Airport will soon undergo a massive runway renovation. Though the public will have to use other airports in surrounding communities for the 2020 summer construction season due to the airport closure, the new runway will be expanded from 4,400 feet to 6,550 feet to accommodate larger aircraft.

"The planning for this project has been underway for a very long time, and we have been trying to figure out the best build out for this airport. We were pleasantly surprised when, earlier this year, the Watford City airport was awarded a \$10-million grant from the FAA for the reconstruction of the runway. This allows us to find a plan that we hope only closes that airport for one construction season, rather than the presupposed two or more," says Wanner.

"Every community is different, and each community has different needs. With every challenge that comes along, there comes an opportunity to find solutions and bring a positive change for these communities," he adds.

Bringing these airports up to par with federal standards and with the ability to accommodate growth in North Dakota guarantees a lasting change in the aviation community and within the communities themselves. 

# The Quest for Improved Gas Capture Rates: Pilot Projects Tackle Increased Flaring

By Kaitlin Vitt

Over the past decade, the extraction of oil and gas from the Bakken petroleum system has greatly increased, but gas capture infrastructure hasn't been able to keep up. Shortfalls in the workforce and in infrastructure has led to the inability to gather all associated gas for transportation and sale, ultimately increasing the volume of produced gas that is flared.

"This is an ongoing challenge, particularly around the basin," says John Harju, vice-president for strategic partnerships at the Energy & Environmental Research Center (EERC) at the University of North Dakota.

To address this challenge, the EERC will be conducting produced gas storage pilot projects, looking for ways to streamline and improve gas capture rates. This comes after the center produced a study, *Evaluation of Subsurface Produced Gas Injection*, in 2018 that outlined a series of hypothetical gas capture projects.

"It was a quick study meant to illustrate the potential, and this is the logical next step to see if we can realize some of that potential and answer some of those questions," says Harju.

The EERC will evaluate up to three different gas storage pilot projects: injection of raw gas into conventional unitized fields (non-Bakken systems), reinjection into the Bakken, and injection into a non-hydrocarbon formation such as the Broom Creek formation, which, as the EERC explains in its study, is "a saline saturated sandstone formation."

After the gas is injected into these storage spaces, the goal is that a significant percentage of this gas can be recaptured and then processed. This will decrease the volume of gas that would otherwise be flared.

"Based on gas capture numbers from November 2018, the estimated volume of curtailed oil production as a result of the industry's inability to meet gas capture requirements ranged from 50,000 to 80,000 bbl/day," says the EERC's *Evaluation of Subsurface Produced Gas Injection*. "At oil prices of \$59/bbl, the value of the curtailed oil ranges from \$3.0 to \$4.7 million per day."


In the economic modeling of the study last year, the researchers found that with

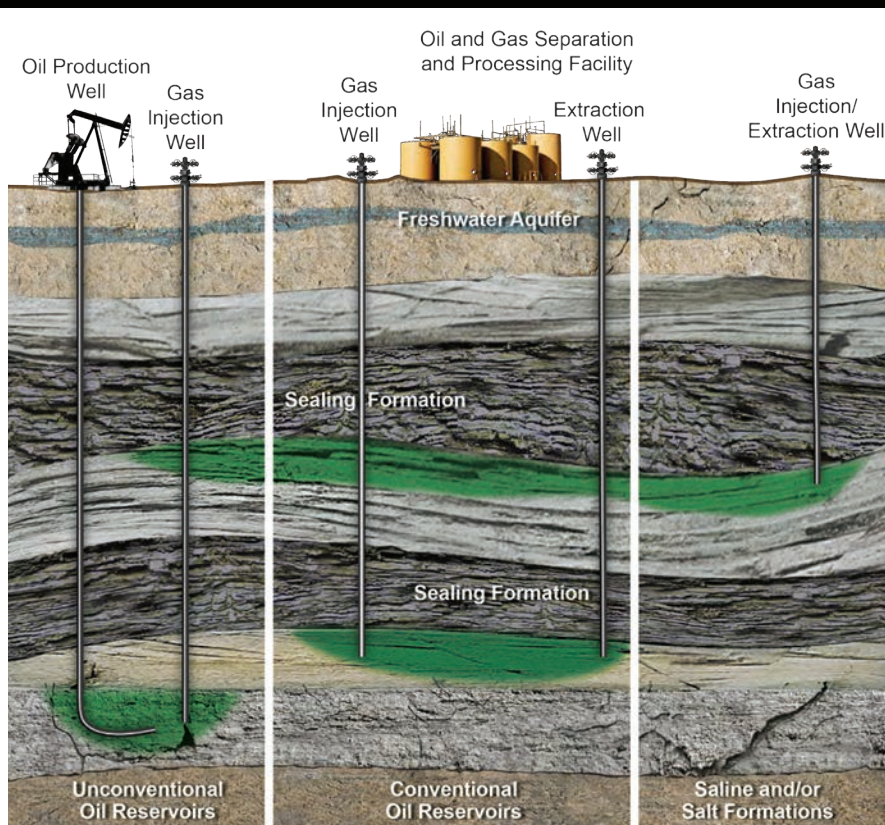
more cycles of injection and retrieval, the cheaper the unit costs of injection and retrieval become. As Harju explains, if you use the infrastructure and technique of one of the pilot projects for one year, the method would be quite expensive, but the idea is to use it for decades, minimizing cost and maximizing gas storage. The study estimates the benefit of subsurface produced gas storage could be as high as \$200 million.

"The desire is to capture 100 percent of the gas and move it to market for sale," says Harju. "There are economic reasons you want to do so—it's a valuable commodity, and it's best for the producers, for the citizens and the royalty owners, and the government to get that hydrocarbon revenue secured and provide benefits that the natural gas provides."

Besides economic reasons, there are also environmental motives to increase gas

capture rates, explains Harju. When gas is flared, the greenhouse gas carbon dioxide is released.

The legislature provided \$6 million for the EERC to work with the industry on pilot projects to demonstrate gas storage. Things are still in the preliminary stages for EERC's projects, but Harju says he is hopeful that with positive recommendations by other key players, the center can enter into agreements to get these projects underway in North Dakota. The project timeline is about two years, though details are still to be worked out. The goal is that the pilot projects will seamlessly lead into the wide-spread operation of these gas capture methods indefinitely. 



This illustration shows produced gas injection into various subsurface targets, including unconventional reservoirs, conventional oil reservoirs, and saline and / or salt formations.



# Combating the Coal Industry's Challenge

By Paul Adair

The electricity markets within North Dakota have been evolving for many years, primarily due to the displacement of coal by both natural gas and wind. Technological developments over the last 15 years have unleashed tremendous volumes of natural gas into the market and have driven prices down. This made natural gas a close economic substitute for coal, which edged marginal coal plants completely out of the marketplace.

"That's different than we have found with wind," says Jason Bohrer, president and CEO of the Lignite Energy Council.

"While wind has also grabbed an increased share of the market, this is mostly due to energy policies that caused utilities to deploy wind that would not be profitable without subsidies. One example is driven by economics; the other by policies."

That being said, North Dakota is now seeing larger and taller wind turbines that are more efficient than earlier models, and the challenges posed by wind have become more acute now than in previous years. This is partly because the demand for new electric capacity is slowing, so instead of all the providers sharing in a growing pie, they are now bidding for slices of said pie.

"Electricity markets are complicated, but we can sort of intellectually compare them to how gas stations work," says Bohrer. "In previous years, coal was the only gas station

*...while adding new forms of electricity to the market brings down some costs, it also results in increased expenses and complexity, as the different utilities juggle all of the moving parts and additional federal regulations.*

in town, but now there are other options such as natural gas, wind, biomass, hydro, and nuclear. Now, imagine that the federal government is paying a few of these new 'gas station owners' for each gallon they sell, and you can see how hard that makes it for the other gas stations in town to compete. It's not impossible, but it has certainly become more difficult."

Where the 'gas station' metaphor tends to break down, however, is that while adding new forms of electricity to the market brings down some costs, it also results in increased expenses and complexity, as the different utilities juggle all of the moving parts and additional federal regulations.


In the past, the lignite industry focused on how little electricity from lignite costs and has not had to greatly espouse the other benefits that come with lignite-branded electricity such as resilience or dispatch-ability. But, as the marketplace becomes more crowded, it is finding it increasingly important to do just that.

North Dakota's legislature recently appropriated \$4.5 million from the lignite research fund as part of a broader look at the significant challenges currently facing the state's lignite industry, including how

it can improve its position in the electricity marketplace and what new products can it bring to North Dakota, like rare earth elements, carbon fiber produce, graphene, and industrial greenhouses.

In addition to seeking out new products and value-added items, this study will also continue examining the more "traditional" regulatory challenges the lignite industry has faced over the last decade such as regional haze and other issues around emissions.

The appropriated fund may also be used to evaluate potential technologies to be aided by the Advanced Energy Technology program, a newly created initiative that replaced the Lignite Vision 21 program that was intended to build new large-scale coal-based facilities.

"This won't be a single, uniform study but is an authorization that will probably result in many different studies and activities," says Bohrer. "The timeline of this study will extend for three years, and what we ultimately hope to come out of it is an increased understanding of what needs to happen, and where the opportunities exist for the next large wave of investment in the lignite industry of North Dakota." 

# Participate, Educate, Engage:

## Williston Basin API Chapter

By Jenna Collignon

**T**he Williston Basin Chapter of the American Petroleum Institute (API) continues to pride itself on being the vehicle that helps to participate with, educate, and engage its members in the energy industry.

As one of three API chapters in North Dakota, the Williston Basin Chapter is a non-profit organization comprised of incredible individuals who volunteer their time to provide a forum of discussion for the energy industry.

“Our job is to educate our members, engage the industry, engage the legislators, and make sure we’re going down the right path. We want to make sure we’re bettering the industry for today and for the future,” says Ken Callahan, president of the Williston Basin Chapter.

“Whatever our members need, whatever our industry needs—or our legislators think we need—our job is to be the vehicle to communicate and find the solutions to whatever problems arise and get everyone on board.”

The Chapter hosts three major events annually: The Chili Cook-Off, the golf tournament, and the Williston Petroleum Banquet. Through each of these events, the Chapter raises money for non-profit organizations and scholarships. The Chili Cook-Off brings together 25 companies for a chili cooking challenge. Participants also decorate their booths, dress up in costumes, and compete for prizes.

“It is a fantastic way of letting the companies that work with us have fun,” says Callahan, “but at the same time, it gives back to the community by raising money for a cause.”

The annual golf tournament is the non-profit’s largest fundraiser. It raises from \$75,000 to \$100,000. This massive event encompasses two golf courses to hold the more than 600 golfers who partake in pursuit of hitting par.

The last event of the year allows the Chapter to celebrate.



*Back row (left to right):  
Crysie Hendershott,  
Jonathan Iblings, Brom  
Lutz, and Dewey Bailey.  
Seated: Kerri Espeland and  
Ken Callahan.*

“This is where we shine,” says Callahan. “We recognize and reward the companies that work with us for their achievements, their new steps toward a better future, and for their community involvement.”

This year, the Chapter is celebrating giving away more than \$1 million over the past seven years, in gifts to non-profit organizations and scholarships to Williston State College, Montana Tech, and the University of North Dakota. Through its partnerships with schools, the Chapter has been able to set up endowments, and the lucky students get a scholarship under the API name for life.

“If not for our great board of directors with its help and leadership, we couldn’t have accomplished what we have today. My hat goes off to them for the many volunteer hours they commit for this great industry and the awesome state we live in,” says Callahan.

“They continue to elect me to lead this great team. Every day, I think I’m the luckiest man in the world. I work for a great company, Montana-Dakota Utilities, and being able to work with the leaders in the industry on our board is incredible.”

Callahan joined the Chapter in 2009 and mentored under Brent Eslinger, the previous president of the Chapter, until he was voted in. As of August, Callahan is encroaching on his eighth year as president.

“I cannot tell you the reward you feel being a part of the Chapter,” says Callahan. “I’ve been blessed to be a part of it. There hasn’t been an organization that has rewarded me more than this Chapter. Every time you ask for help in this industry, it is always, ‘Yes.’”

The Chapter has been a part of the Western Dakota Energy Association (WDEA) since it was still known as the North Dakota Association of Oil & Gas Producing Counties, supporting the association since its inception.

“First and foremost, for the energy industry, this group is second to none. That’s nationwide!” says Callahan.

“I sat on the association’s board for three years, and what is incredible about the WDEA is what it can do for its members. The association’s three core values are also ours: participate, educate, and engage. Every chance the WDEA gets, it’s out there promoting what needs to be promoted,” he adds. “The WDEA is the bright shining star leading the pack.”



# Regional Roundup

## STATE LEADERS TOUR ALBERTA PETROCHEMICAL FACILITIES

Gov. Doug Burgum led a delegation of state officials and legislative leaders on a tour of petrochemical facilities in Canada in August. The group toured industrial facilities in Alberta as part of the state's ongoing efforts to bring the petrochemical industry to North Dakota to add value to the state's abundant natural gas resources.

The group included Burgum, Senate Majority Leader Rich Wardner, House Majority Leader Chet Pollert, Commerce Commissioner Michelle Kommer, Bank of North Dakota President Eric Hardmeyer, Department of Mineral Resources Director Lynn Helms, and Commerce Deputy Commissioner Shawn Kessel.

They toured petrochemical facilities in Alberta's Industrial Heartland and met with industry officials to learn more about the opportunities, workforce needs, and economic impacts associated with the industry.

## WHITING PETROLEUM RESTRUCTURES OPERATIONS

Whiting Petroleum Corporation announced an organizational redesign and cost reduction strategy at the beginning of August that resulted in the layoff of 254 company employees. About 100 of those are North Dakota employees in the Williston, Watford City, and New Town areas. Whiting is the second-largest oil producer in the state, so the announcement caused considerable concern in the communities.

Ashley McNamee, Whiting's director of government and corporate affairs, says the company's action is a response to challenging times in the oil and gas industry and the need to improve its competitiveness. Overall, the company reduced its workforce by 33 percent. McNamee says the reduction included 94 executive and corporate positions. For North Dakotans affected by the layoffs, McNamee says Whiting is a family company and is helping affected workers transition to new employment.

"We're committed to making sure they're treated fairly and respectfully," she says. "We enhanced our packages to make them the best ever offered. They got months of insurance we're covering and outplacement services to make sure they have the opportunity to find jobs. We really do care about their future and want to make sure they're okay."

## WORK UNDERWAY ON WILLISTON'S INNOVATION ACADEMY

School district staff in Williston have cleared out a building that housed a swimming pool and are moving forward with plans to turn the 20,000-square-foot structure into an "innovation academy."

The district is in the midst of a campaign to help raise funds to pay for the renovation work that will gut the building, shore up its foundation, and add a second story. Williston has been struggling to find classroom space for its growing student population. Board President Joanna Baltes says the facility will help address that issue and provide educational benefits as well.

## ETHICS COMMISSION MEMBERS ANNOUNCED

A committee tasked with selecting members of North Dakota's newly created Ethics Commission appointed the first five members in early August.

Among those named to the commission is Ward Koeser, who served as the mayor of Williston from 1994 to 2014. Koeser is a former teacher, military veteran, and telecommunications business owner.

North Dakota voters approved a constitutional amendment in November 2018 establishing the Ethics Commission. The measure, now Article XIV of the state constitution, provides that the five members are to be appointed by consensus agreement of the Governor and the Senate majority and minority leaders. The three made their selection from a list of nearly 70 applicants.

Other appointees include:

- David B. Anderson of Bismarck, a retired brigadier general in the North Dakota National Guard;
- Ronald Goodman of Oakes, a former attorney and retired judge;
- Paul Richard of Fargo, retired former general counsel at Sanford Medical Center in Fargo; and
- Cynthia Lindquist of Devils Lake, who has served as president of Cankdeska Cikana Community College in Fort Totten since 2013.

Legislation passed in 2019 clarified that the members' terms were to be staggered. Goodman and Lindquist will each serve a four-year term, Anderson will serve a three-year term, and Koeser and Richard will each serve a two-year term, effective September 1.



**Petro-Hunt, LLC**

701-258-1557

P.O. Box 935, Bismarck, ND 58502

[www.petrohunt.com](http://www.petrohunt.com)

# THE BAKKEN TOP 20

*As of mid-August 2019, there are 61 active rigs drilling in the North Dakota oil patch, according to the North Dakota Oil & Gas Division of the North Dakota Department of Mineral Resources. This number is down from 65 in May and 63 in June, but up from 57 in July. The all-time high reached 218 on May 29, 2012.*

The statewide rig count is down 72 percent from the high. As of August 2019, current operator plans are to use two to five fewer rigs in the second half of 2019 based on oil price, capital availability, and infrastructure constraints.

The number of producing wells in North Dakota, as of mid-August 2019 is 15,741 (preliminary, new all-time high), with oil production in June reaching 1,424,625 barrels per day (new all-time high). Of the producing wells, 14,152 (90 percent) are now unconventional Bakken – Three Forks wells and 1,589 (10 percent) produce from legacy conventional pools. Over 99 percent of drilling now targets the Bakken and Three Forks formations.

1. **Continental Resources, Inc.**  
Oil production (2019): 35,361,032 bbls  
Gas production (2019): 75,854,616 mcf  
Tel: (405) 234-9000  
Toll-Free: (800) 256-8955  
Killdeer: (701) 764-6582  
Rhame: (701) 279-6688  
Tioga: (701) 664-3001  
Web: [www.contres.com](http://www.contres.com)
2. **Whiting Oil & Gas Corp.**  
Oil production (2019): 21,074,795 bbls  
Gas production (2019): 59,264,499 mcf  
Tel: (303) 837-1661  
Web: [www.whiting.com](http://www.whiting.com)
3. **Hess Bakken Investments II, LLC**  
Oil production (2019): 20,192,357 bbls  
Gas production (2019): 43,813,651 mcf  
Tel: (713) 496-4000  
Web: [www.hess.com](http://www.hess.com)
4. **Marathon Oil Co.**  
Oil production (2019): 20,162,554 bbls  
Gas production (2019): 26,353,678 mcf  
Tel: (713) 629-6600  
Web: [www.marathonoil.com](http://www.marathonoil.com)
5. **Burlington Resources Oil & Gas Co., LP**  
Oil production (2019): 17,797,566 bbls  
Gas production (2019): 32,098,489 mcf  
Tel: (432) 688-6800  
Web: [www.br-inc.com](http://www.br-inc.com)
6. **Oasis Petroleum North America, LLC**  
Oil production (2019): 17,352,393 bbls  
Gas production (2019): 54,332,273 mcf  
Tel: (281) 404-9500  
Web: [www.oasispetroleum.com](http://www.oasispetroleum.com)
7. **XTO Energy Inc.**  
Oil production (2019): 14,462,033 bbls  
Gas production (2019): 34,665,341 mcf  
Tel: (817) 870-2800  
Toll-Free: (800) 299-2800  
Web: [www.xtoenergy.com](http://www.xtoenergy.com)
8. **WPX Energy Williston, LLC**  
Oil production (2019): 13,430,381 bbls  
Gas production (2019): 16,798,602 mcf  
Tel: (701) 837-2900  
Web: [www.wpxenergy.com](http://www.wpxenergy.com)
9. **Equinor Energy LP (Formerly Statoil Oil & Gas LP)**  
Oil production (2019): 9,815,766 bbls  
Gas production (2019): 16,948,336 mcf  
Tel: (713) 918-8200  
Web: [www.equinor.com](http://www.equinor.com)
10. **Bruin E&P Operating, LLC**  
Oil production (2019): 8,349,385 bbls  
Gas production (2019): 16,433,873 mcf  
Tel: (713) 456-3000  
Web: [www.bruinep.com](http://www.bruinep.com)
11. **Petro Hunt, LLC**  
Oil production (2019): 7,283,539 bbls  
Gas production (2019): 13,459,976 mcf  
Tel: (214) 880-8400  
Bismarck: (701) 258-1557  
Charlson: (701) 675-2467  
Crosby: (701) 982-3351  
Killdeer: (701) 863-6622  
McGregor (Tioga): (701) 546-4601  
Web: [www.petrohunt.com](http://www.petrohunt.com)
12. **Slawson Exploration Co., Inc.**  
Oil production (2019): 7,015,292 bbls  
Gas production (2019): 7,612,853 mcf  
Tel: (316) 263-3201  
Web: [www.slawsoncompanies.com/exploration.html](http://www.slawsoncompanies.com/exploration.html)
13. **EOG Resources, Inc.**  
Oil production (2019): 6,484,284 bbls  
Gas production (2019): 14,741,294 mcf  
Tel: (713) 651-7000  
Toll Free: (877) 363-3647 (EOGR)  
Web: [www.eogresources.com](http://www.eogresources.com)
14. **Enerplus Resources USA Corp.**  
Oil production (2019): 6,267,429 bbls  
Gas production (2019): 7,973,369 mcf  
Tel: (701) 675-2135  
Web: [www.enerplus.com](http://www.enerplus.com)
15. **Kraken Operating, LLC**  
Oil production (2019): 5,722,740 bbls  
Gas production (2019): 9,156,865 mcf  
Tel: (713) 360-7705  
Web: [www.krakenoil.com](http://www.krakenoil.com)
16. **QEP Energy Co.**  
Oil production (2019): 5,223,105 bbls  
Gas production (2019): 15,070,837 mcf  
Tel: (303) 672-6900  
Web: [www.qepres.com](http://www.qepres.com)
17. **Newfield Production Co.**  
Oil production (2019): 4,224,993 bbls  
Gas production (2019): 11,544,156 mcf  
Tel: (281) 210-5100  
Web: [www.newfield.com](http://www.newfield.com)
18. **RimRock Oil & Gas Williston LLC**  
Oil production (2019): 3,318,651 bbls  
Gas production (2019): 3,271,791 mcf  
Tel: (303) 339-0885  
Web: [www.rimrockoil.com](http://www.rimrockoil.com)
19. **Lime Rock Resources III-A, LP**  
Oil production (2019): 3,156,260 bbls  
Gas production (2019): 2,690,715 mcf  
Tel: (713) 292-9500  
Web: [www.limerockresources.com](http://www.limerockresources.com)
20. **Crescent Point Energy U.S. Corp.**  
Oil production (2019): 3,093,913 bbls  
Gas production (2019): 4,049,846 mcf  
Tel: (888) 693-0020  
Web: [www.crescentpointenergy.com](http://www.crescentpointenergy.com)



<b>CONVENTION &amp; VISITORS BUREAU</b> Bismarck-Mandan Convention & Visitors Bureau.....	OBC
<b>ENGINEERS</b> Construction Engineers.....	IBC
<b>ENGINEERS, LAND SURVEYORS, PLANNERS &amp; CONSULTANTS</b> Advanced Engineering & Environmental Services Inc. ....	26
<b>HEAVY RIGGING</b> Vic's Crane & Heavy Haul.....	19
<b>HOTEL</b> Ramada Williston Airport XWA.....	IFC
<b>INDEPENDENT OIL &amp; GAS COMPANY</b> Whiting Petroleum Corporation .....	9
<b>INSURANCE</b> Blue Cross Blue Shield of North Dakota.....	5
<b>LAND RECORDS</b> North Dakota Recorder's Information Network.....	26
<b>OIL &amp; GAS EXPLORATION &amp; PRODUCTION</b> Petro Hunt LLC.....	24
<b>OILFIELD</b> Elgin Separation Solutions .....	4

<b>OILFIELD &amp; SAFETY CLOTHING</b> Home of Economy.....	3
<b>PORTABLE LIQUID CONTAINMENT</b> Husky Portable Containment.....	14
<b>SOLIDS CONTROL EQUIPMENT</b> Hutchison Hayes.....	6



**SAVE THE DATE**

**SAVE THE DATE  
FOR WBPC 2020**


The 28<sup>th</sup> annual Williston  
Basin Petroleum Conference  
will be held from  
May 19 to 21, 2020 at the  
Bismarck Event Center. Check  
[www.ndoil.org](http://www.ndoil.org) for details  
as they become available.



**DROP YOUR AD  
ONTO THE PAGES OF  
THIS MAGAZINE.**


Did you know *Basin Bits* is  
distributed to thousands of key  
industry players across the  
U.S. and Canada?

Put your message  
in front of them. Contact  
[sales@matrixgroupinc.net](mailto:sales@matrixgroupinc.net)  
to book your space today.




**BRIDGING THE  
FINANCING GAP**

UTILITY RATE ANALYSIS | FUNDING/FINANCING  
PROJECT DEVELOPMENT AND ADMINISTRATION  
ECONOMIC DEVELOPMENT | ASSET MANAGEMENT  
MUNICIPAL FINANCIAL SERVICES

**AE2S NEXUS**  [www.AE2SNexus.com](http://www.AE2SNexus.com)  
The Financial Link

**A C C E S S**

FAST CONVENIENT

 **ND RIN**  
.com  
North Dakota Recorders Information Network

COST-EFFECTIVE SUBSCRIBE TODAY

% High Plains Technology  
1351 Page Drive, Ste. 106 Fargo, North Dakota 58103  
Phone: 701.364.1280 Fax: 701.271.1557  
[www.ndrin.com](http://www.ndrin.com)

**NORTH DAKOTA**

*The fastest, easiest and most cost-effective way to retrieve land records in North Dakota.*

# building YOUR PRIORITY PROJECTS in our state

**Construction Engineers** is a leading contractor in the Construction Management at Risk (CMAR) delivery method, completing the first CMAR project in the state of ND in 2009. Since then, we have completed more than 35 projects for Western Dakota Energy Association members including cities, counties and school districts.

We are proud of our 41 years in North Dakota and take pride in building high quality facilities which make our state the best place to live, work and raise families.



Construction Manager at Risk (CMAR)  
Design-Build (DB) Services

ConstructionEngineers.com  
701.792.3200

Grand Forks | Devils Lake | Fargo | Mandan | Watford City | Bemidji



DIVIDE COUNTY COURTHOUSE | 2017



WATFORD CITY SCHOOLS  
Elementary | 2013 & 2020  
High School | 2016



McKENZIE COUNTY PUBLIC WORKS SHOP | 2019



BOTTINEAU PUBLIC SCHOOL | 2020



McKENZIE COUNTY JAIL & LEC | 2017



Leave boundaries behind and contact  
us today to explore the limitless  
possibilities of Bismarck-Mandan.



# Bismarck Mandan

NO BOUNDARIES



**Bismarck-Mandan Convention & Visitors Bureau**

**NoBoundariesND.com 800-767-3555**