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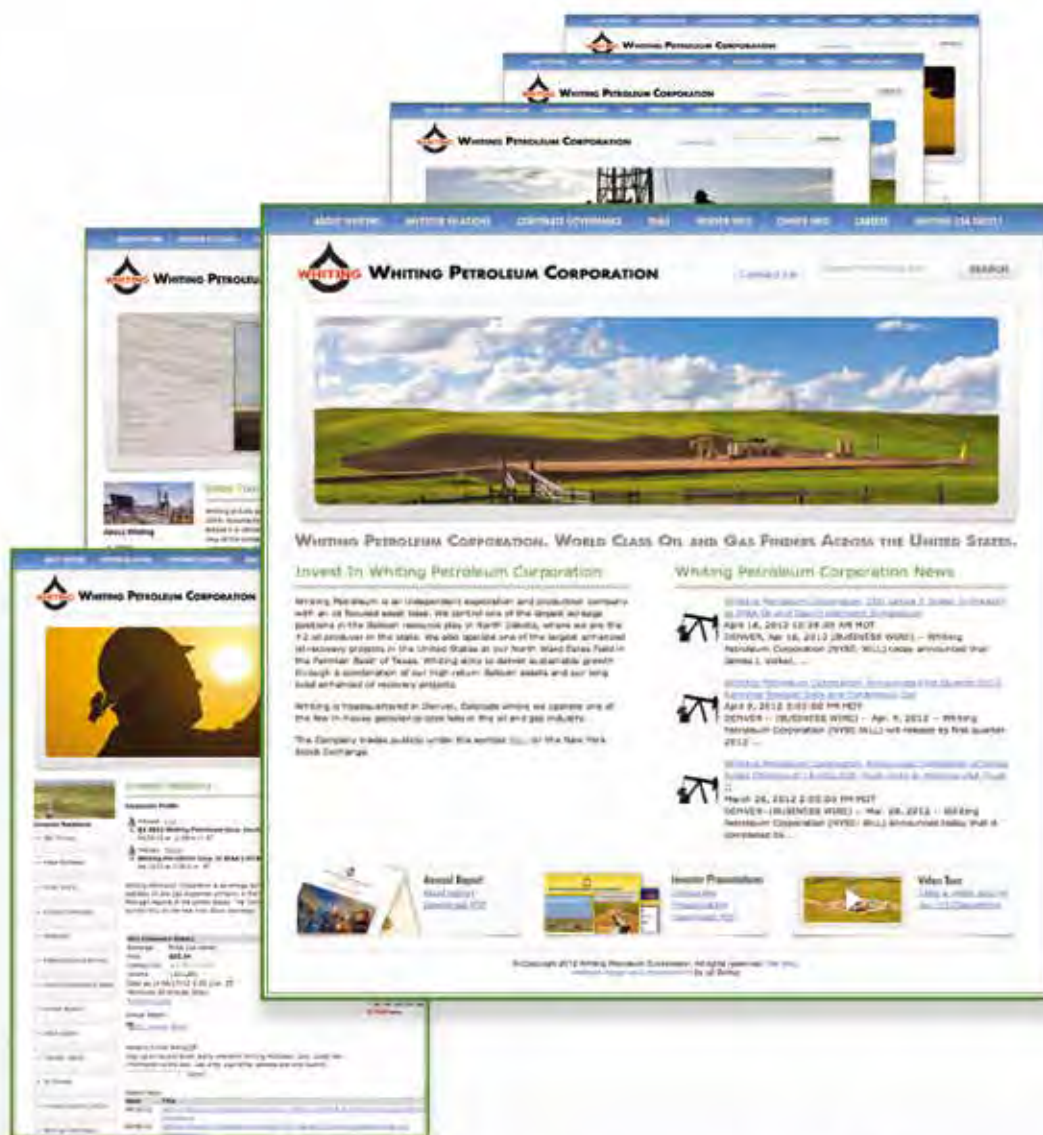


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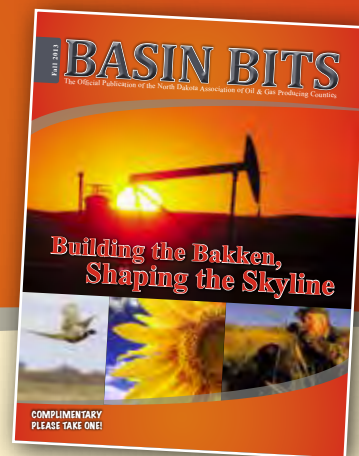


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**Cover photo credit:** This issue's cover depicts the sights of a North Dakotan fall. The image of the sun rising over an oil rig in North Dakota was taken by photographer James Ruddy and has been printed with permission.



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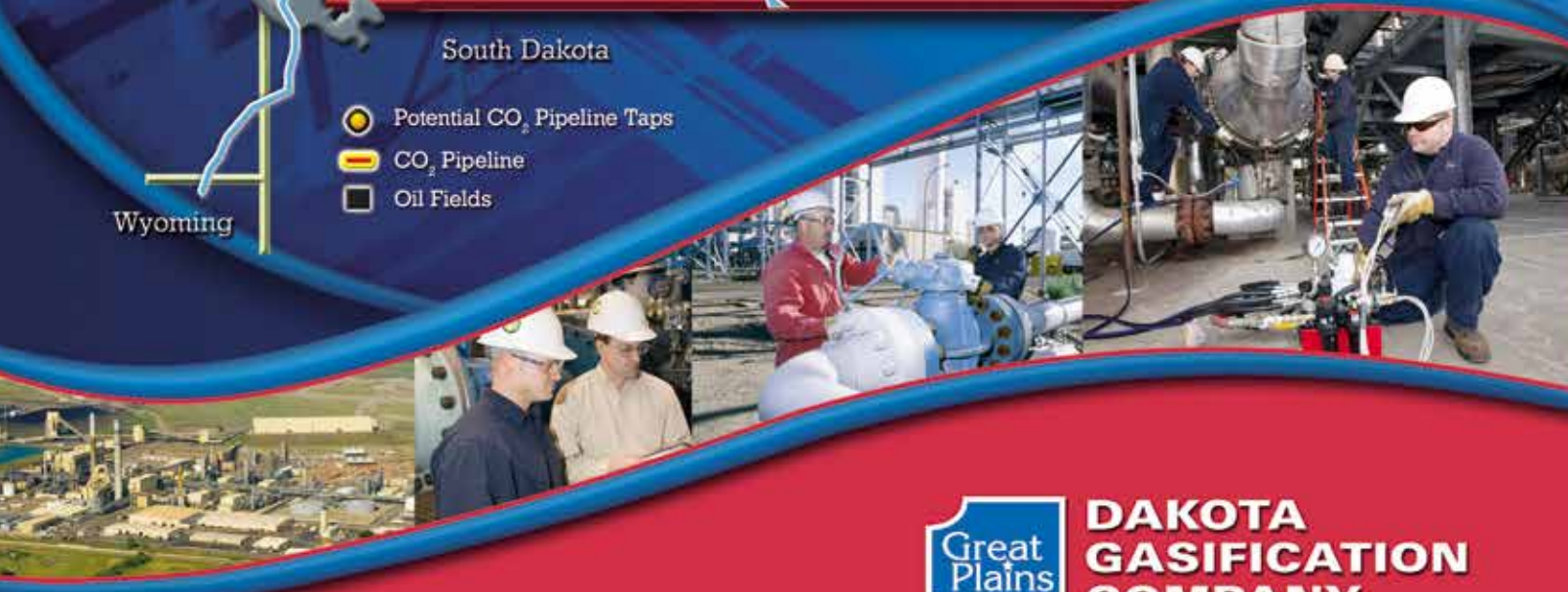
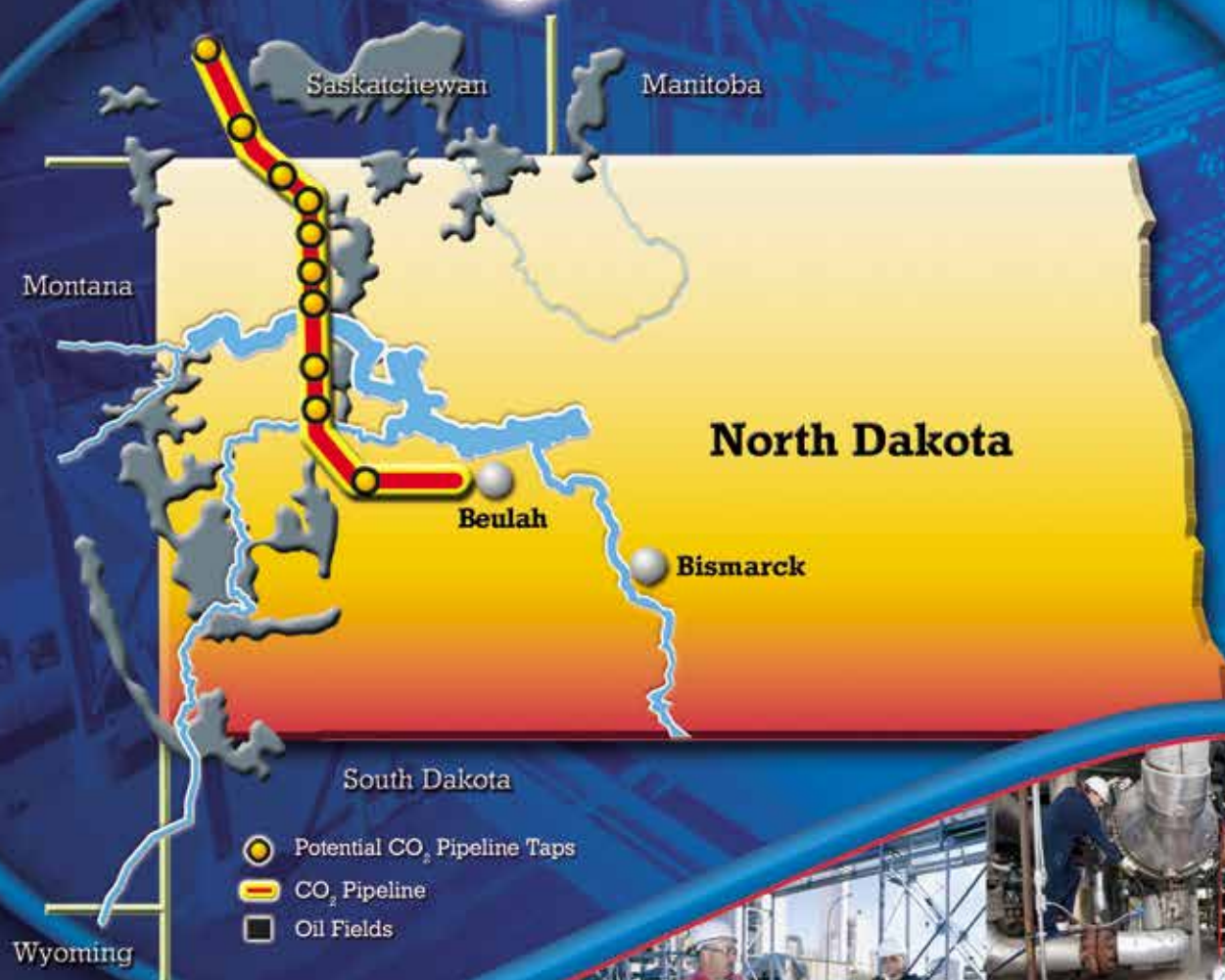
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# From the Desk of the North Dakota Association of Oil & Gas Producing Counties' President



**Dan Brosz**  
President  
North Dakota Association of  
Oil & Gas Producing Counties

*Looking back at the 2013 legislative session, I was pleased with changes and disappointed with others. There are challenges to prosperity and we must move forward from that session and prepare for the next.*

**G**reetings from the North Dakota Association of Oil and Gas Producing Counties!

Now that summer is behind us, we can look forward to the change of season with the cooler fall temperatures. To say it's been a busy summer seems to be an understatement; with Bakken oil price and production above state forecasts, it was all positive in the economic section but the impacts are still being addressed as you read this message.

Looking back at the 2013 legislative session, I can say I was both pleased with some changes and disappointed with others. There definitely are some challenges to prosperity and we must move forward from that session and prepare for the next.

As I mentioned, the session produced some good change and some not so good. Our association worked with western legislators for six months to craft the original House Bill 1358, and that had some good change in it. The House passed the bill but the Senate made some not so good changes to it. HB 1358 created a simpler county and state distribution formula. The bill also increases the amount of money sent back to oil and gas producing counties to cover basic services. However, ND Senate cut \$400 million during the final days and only partially restored that money at the end of the session, leaving western North Dakota to once again face a two-year wait to fully fund the impacts.

While the energy impact fund was increased from \$100 million to a little less than

\$240 million, there were other groups receiving part of the energy impact fund that had never been part of it before, such as airports and higher education. The number looks large, and it is compared to the previous appropriation, but the categories or groups eligible also increased substantially. Of the available \$239.3 million for impact grants, over 50 per cent is earmarked for airports, hub cities, western county sheriff's departments, western emergency medical services, emerging new oil counties, higher education campuses, western fire districts, western schools and dust control.

Of the unobligated balance, approximately \$80 million was allocated for city infrastructure—hub cities were excluded. Round one, designated for midsized, small cities and villages, had \$440 million in grant requests, with only \$80 million in available funds. The remaining \$30-plus million will be disbursed in five grant rounds in the coming two years. I suspect requests from all other political subdivisions, including counties and park districts, will be large, with little money to fund the requests.

Other separate appropriations included \$2 million to the North Dakota Department of Commerce for grants to nursing homes, basic care facilities and developmental disability service providers; \$9.6 million for critical access hospitals; and \$9.6 million to the Attorney General's office to battle growing criminal activity.

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## ABOUT THE NORTH DAKOTA ASSOCIATION OF OIL & GAS PRODUCING COUNTIES

The North Dakota Association of Oil & Gas Producing Counties (NDAOGPC) is the trusted and unified voice for the betterment of the citizens of North Dakota and the membership of the North Dakota Association of Oil & Gas Producing Counties.

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Early in the legislative session, legislators pushed road money to the tune of \$620 million out the door for North Dakota Department of Transportation projects in western North Dakota. The projects proposed were for truck reliever or bypass routes in Alexander, New Town, Killdeer, Williston, Watford City and Dickinson, four lanes for Highway 85 from Williston to Watford City, passing lanes for Highway 85 and Highway 23, and resurfacing and maintaining Highway 1804 and Highway 23. An additional \$100 million was given to counties, cities and townships outside oil country.

In the public health and safety arena, monies were provided for 15 additional HP troopers and two additional district court judgeships in the northwest. Monies were provided for fire, EMS and local public health units' services across the state.

In the area of tax credits, \$20 million was set aside to be designated in tax credits for affordable housing projects. If you owe the state income tax, you can use that program to direct your tax dollars to a certain city or project. From the state general fund, \$15.4 million was allocated for direct investment of affordable housing projects, with priority given to "essential service workers," meaning public sector employees like police officers. There was \$12 million allocated for Flex Pace buy-down funds to support residential construction, and \$2.6 million allocated for child care projects.

The oil extraction tax provides hundreds of millions of dollars for water projects statewide. Some of the projects funded include:


- The Western Area Water Supply in northwest North Dakota: \$40 million;
- The Southwest Area Pipeline Authority in southwest North Dakota, Dunn County and central North Dakota: \$79 million;
- Rural water projects: \$79 million; and
- Northwest Area Water supply near Minot, ND: \$14 million.

An area I personally work in every day with my company is road design. In HB 1358, the state approved \$160 million to oil producing counties with \$5 million of oil and gas gross production tax revenue in fiscal year 2013. Non-oil counties and oil counties with less than \$5 million received \$120 million. The Upper Great Plains study, which the state had hired to deliver data on road impacts, reported \$521 million in western county road needs for this biennium, alone. Thus, the \$160 million is far short of the needs identified by the study.

I think some of the changes on the horizon will make a significant difference; we'll have to wait and see how it plays out over the next two years. The new five per cent Gross Production

tax formula will deliver its first dollars to western counties in September 2013. The state's investments will be paid out over the next two years, so we'll see how it works. For those changes we don't think work, we'll have to be ready to explain it at the next legislative session.

This is my last column, as I hand over the reins to a capable Steve Holen, the Superintendent of the McKenzie County School District #1, Watford City, ND later this fall. I served the typical two-year term as president of the association, but it was less than typical because of the Bakken oil development.

Thanks for reading my column over the past two years. Safe travels! 

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**ENERGY ON THE MOVE**



# From the Desk of the North Dakota Association of Oil & Gas Producing Counties' Executive Director



**Vicky Steiner**  
Executive Director  
North Dakota Association of  
Oil & Gas Producing Counties  
North Dakota House Representative  
for District 37, Dickinson, ND

Last summer, our petite three-year-old granddaughter slipped on a pair of swim goggles and bobbed in the shallows along the shore in Lake Sakakawea, trying to get a glimpse of a fish. The water was murky but she was quite determined. A couple of teenage girls walked by her on the beach and one of them asked her sweetly, "How old are you?" She paused from her snorkeling expedition; her blonde locks twisted in the plastic band, and said quite matter-of-factly, "Sixteen." And then she put her face back down in the water.

Her answer was so unexpected that the girls looked at each other, confused. The next morning, my son asked her if she was still 16-years-old. She answered quickly, "No. Today, I'm 20."

She must be on Bakken time. Time does fly when you are living and working in western North Dakota.

I find it hard to believe that summer thunderstorm nights are gone. To me, fall looks like a pheasant. Fall in North Dakota brings hunters together to re-tell the same old stories about the birds so thick that they blocked the sun. Really? Or the big doe that had to be dragged for miles out of a roadless gully. Fall means the goslings are grown and learning how to fly in formation. The calls of migratory birds fill the sky. North Dakota's seasons blend into one another and time passes.

Time has passed in the hunt for the Bakken. The pace is not as feverish but appears to be a "busy stable." It's just as determined



but perhaps more calculated, and companies, with new, innovative ways to save the oil and gas industry time and money, are getting face-time with management. In this issue of *Basin Bits*, we visit with some of those innovators.

The landscape continues to change as cities push into new areas of the county. In July, the *Fedgazette*, a publication of the Minneapolis Federal Reserve bank, published research by Dulguun Batbold and Rob Grunewald on wage and unemployment rates near the Bakken counties. As common sense would tell you, the strongest wage growth and lowest unemployment took place in the immediate Bakken area, and each 100 miles showed positive Bakken impact to lessen unemployment rates. The ripple-effect of the Bakken impacted nearby counties and moved out, first to adjacent states and then nearby states.

Positive Bakken impact from the four major counties—Dunn, McKenzie, Mountrail and Williams—ripples into southern Iowa and Nebraska. Wage growth began to separate Bakken counties from others as early as 2004, accelerated there in 2005, but wage growth in other counties up to 100 miles away didn't separate from non-oil

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counties until 2009. The study can be found at [www.minneapolisfed.org/publications\\_papers/pub\\_display.cfm?id=5098](http://www.minneapolisfed.org/publications_papers/pub_display.cfm?id=5098).

Speaking of studies, the North Dakota Association of Oil & Gas Producing Counties is working on a study of emergency service in the four Bakken counties. We asked Ulteig Engineering to look at response times, given the road traffic, and to overlay the fatality rate for most dangerous corners or spots of highways in the Bakken core area. This study will educate stakeholders on possible solutions, one of which would be mobile emergency stations that serve as a place for extra temporary equipment and EMTs during the next couple of years before the four-laning or widening of state highways are finished.

The legislature appropriated \$7 million for emergency services in western North Dakota. Rotations or temporary positions for EMTs may be necessary to address the rapid change. Communities like Watford City, Alexander and Arnegard will benefit from the widening of Highway 85, which carries a large volume of industrial traffic, along with the traditional agricultural vehicles and the tourist sector. The two clogged lanes, combined with impatient drivers, lead to unsafe conditions when passing lanes are not available. A truck diversion or bypass for Watford City will help residents move about their


community without the crush of traffic from the highway. Bypasses are also in the works for Williston, New Town and Dickinson. The housing and road construction industries also put more people in the area as infrastructure is built.

The Long X Bridge in McKenzie County should be widened. The North Dakota Department of Transportation (DOT) is exploring it; however, the federal park service north unit of the Theodore Roosevelt National Park owns some property that could be used to improve the bridge and highway. As of the writing of this column, the park opposed improvements to the road. They oppose more traffic because of noise, concerns for wildlife movements and other factors. I would argue that traffic will still be there, even with their opposition and DOT's improvements will make the road safer for both animals and people. North Dakotans care about those issues.

The Theodore Roosevelt Expressway (TRE) coalition is working to resolve the concerns for wildlife crossings with the DOT. This bridge is a vital economic link and, like other states, such as Wyoming, wildlife tunnels can accommodate movements of the park animals. If you'd like to follow the progress of four-laning of Highway 85, go to [www.trexpressway.com](http://www.trexpressway.com). Our association has been a member of the TRE coalition for several years because of its importance to western North Dakota.

Western North Dakota legislators faced an uphill battle this session because of the fast pace of change. Some key legislators had a hard time believing the growth numbers presented in testimony. We had tours last year, but a two-day tour didn't do the job. The Bakken oilfield changes each time I drive through it—and I live here. It's Bakken time, not the time of the past.

North Dakota has prided itself in saving for a rainy day, so legislators tend to tuck money away quickly but invest with great caution. Now is the time to use the Strategic Infrastructure and Investment Fund (SIIF) generated by oil taxes to invest—so western communities can accommodate the population surge. Legislators like to see money "saved" or carried over to the next session. The SIIF should function as an investment account. That permanent and temporary population will peak around 2020, so we don't have much time. If the past legislative session changes impact funding and formula prove to be woefully inadequate, perhaps a special session will be needed; ultimately, that will be the governor's call. The 64<sup>th</sup> legislative session convenes Tuesday, January 6, 2015 and that's when a significant investment should be made.

As quickly as the days pass, North Dakota's grandchildren will be adults before we know it. We all want this place to be a better home for them. 



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# A Message from the North Dakota Department of Mineral Resources



**Lynn Helms**  
North Dakota  
Department of Mineral Resources

*Technology improves efficiencies, efficiencies improve production, production improves the industries' willingness to see what more they can do, and the cycle continues.*

Since the beginning of the Bakken play, the question most frequently asked of the state has been, "How will the North Dakota Industrial Commission best manage this unconventional resource development?" The description of the play itself—unconventional—demands a different approach to management. But how can the state take an unconventional approach when the guiding principles of the oil and gas division are so conventional? The Division's mission statement says, in part, promote development, while preventing waste and protect correlative rights so that all may realize the greatest possible good from these vital resources.

By 2009, it was apparent that development of the Bakken oilfield had to take a different approach than what had been done in other states. Examples of poor well placement and impacts to the surface and wildlife can be found throughout the country. Even in North Dakota, conventional oil and gas development at one time used up to 10 per cent of the surface. With up to 50,000 wells expected to fully develop this play, 10 per cent was too high.

In 2010, the Industrial Commission issued Order 14497, authorizing the organization of 15,000 square miles of western North Dakota into 1,280-acre spacing units, or two sections, as a way to manage and potentially limit surface damage within an area the size of the state of West Virginia. With this pattern, wells are placed in east/west rows, and two to four miles apart, north and south. Because of the use of horizontal drilling, wells can

be placed four miles apart and drilled toward each other, leaving land in between undisturbed. This concept was supported by the industry, as it allowed use of multi-well pads and reduced the footprint on the surface to less than half of one per cent. It also allowed for flexibility. If well placement north to south won't work due to extenuating circumstances, they can be placed east to west.

Also written into order 14497 was the requirement to protect mineral owners' correlative rights—something that is defined in statute for the oil and gas division to protect. Wells must be placed and cemented no closer than 500 feet to the east or west boundary and 200 feet to the north or south boundary. This ensures minerals from bordering units are not depleted.

Everything about the Bakken seems to change on a daily basis. Technology improves efficiencies, efficiencies improve production, production improves the industries' willingness to see what more they can do, and the cycle continues. As more is learned about the Bakken, it's becoming clear that well density can increase and more of the resource can be produced. With that in mind, management must continue to evolve.

To continue to protect correlative rights but promote production, the oil and gas division has begun to grant orders overlapping already existing 1,280-acre units with 2,560-acre units, or four sections. At the oil and gas division, this is referred to as overlapping spacing. Many of these units continue to run north and south, so wells can be placed in east/west rows. These

2,560-acre units can overlap two 1,280-acre units east and west of each other to form a square. With four sections now contained in a spacing unit, more minerals are pooled together. Wells can now be drilled closer to section lines, allowing operators to extract previously unrecoverable oil and gas, allowing for greater well density and greater economic good.

How does this work for mineral rights owners? Now that a 2,560-acre unit has been established, what about the wells previously drilled in the 1,280-acre unit? Will everyone in that 2,560 acres share in a previously developed well? The answer is no. Mineral owners with wells spaced as 1,280-acres do not have to share royalties with new mineral owners. It's only new wells drilled and spaced as 2,560-acres that require more mineral owners to share royalties.

This overlapping concept is applied all across the Bakken play—640-acre spacing units are being overlapped by 1,280-acre spacing units. In some places, like Parshall field, 640-acre spacing units are being overlapped by 1,920-acre spacing units.

Horizontal drilling, combined with unconventional thinking by the industry and state, alike, has allowed this unconventional play to become the norm in oil and gas extraction. Other states look to North Dakota when developing policy and management style. And as the limits of the Bakken continue to be pushed through technology, the Industrial Commission will continue to push the unconventional style of how to best manage development.

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Cartoonist Kevin Holten, holten24@gmail.com





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Thursday, September 12, 2013	
11:30 a.m. - 12:30 p.m.	Municipal Finance Officers Association Lunch
12:30 p.m. - 4:30 p.m.	Municipal Finance Officers Association Workshop
1:00 p.m. - 5:00 p.m.	North Dakota Chiefs of Police Association Meeting
1:00 p.m. - 5:00 p.m.	North Dakota Fire Chiefs Association Meeting
3:00 p.m. - 8:00 p.m.	North Dakota League of Cities Board of Directors Meeting and Dinner
8:00 p.m. - 10:00 p.m.	Welcome Reception
Friday, September 13, 2013	
7:30 a.m. - 6:00 p.m.	Conference Registration
8:00 a.m. - 1:00 p.m.	Annual Golf Scramble <i>Riverwood Golf Course.</i>
8:30 a.m. - 12:30 p.m.	AE'S Mighty Missouri River Adventure <i>Board the Lewis &amp; Clark Riverboat for a tour of the Missouri River. Finish the event with a delicious fish fry lunch at Sertoma Park. Pre-registration is essential.</i>
8:30 a.m. - 12:30 p.m.	History and Heritage Tour <i>This tour combines two state landmarks, the North Dakota Heritage Center and the State Capitol. Lunch is provided and pre-registration is essential.</i>
9:00 a.m. - 11:30 a.m. & 12:30 p.m. - 6:30 p.m.	Exhibitor Showcase (Friday only)
12:30 p.m. - 1:00 p.m.	First Things First: Newcomers Orientation <i>This session will highlight events and help you connect with other city leaders.</i>
1:00 p.m. - 2:15 p.m.	Urban Roads Program Highlights for 2014 <i>Grant Levi, NDDOT; (Program available to cities with populations over 5,000).</i>
1:30 p.m. - 2:15 p.m.	Refreshments with Exhibitors
1:45 p.m. - 2:15 p.m.	Lake Agassiz Water Authority (LAWA) Caucus <i>Eastern cities eligible for the LAWA (all cities east of Highway 1) will elect city representatives to this board.</i>
Opening General Session	
2:30 p.m. - 4:00 p.m.	Rethinking Public Leadership <i>Scott Paine, University of Tampa professor and former city council member, will examine political, social and technological changes over the last half-century that have altered public leadership.</i>
Concurrent Sessions	
4:15 p.m. - 5:15 p.m.	Rethinking Public Leadership: Part II <i>Scott Paine, University of Tampa, discusses practical steps to becoming a successful public leader.</i>
4:15 p.m. - 5:15 p.m.	Grant Programs and Partnerships <i>Andrea Holl Pfennig, North Dakota Department of Commerce; Jolene Kline, North Dakota Housing Finance Agency; and Molly Matheson Gruen, Bush Foundation offer information on three grant programs.</i>
4:15 p.m. - 5:15 p.m.	Construction Management for Sustainable Infrastructure <i>Doug Jackson, HDR, will teach you how good construction management and observation leads to long-term sustainable infrastructure; developing specifications to dictate development; best practices for construction staffing and long-term construction planning.</i>
Mobile Workshop	
4:15 p.m. - 5:30 p.m.	Flower Power: Exploring Mandan's Community Gardens <i>Sue Balcom, Mandan Community Gardens, explains how community gardens can be a great and inexpensive way to boost community pride. Hear how this community garden started and the obstacles they've overcome.</i>
Conference Event	
5:15 p.m.	Exhibitor Social
6:30 p.m.	Flashback Friday <i>Feel the funk and make connections as we head back to the '70s for a neat-o night of disco balls and lava lamps. Wear your favorite '70s clothing...you'll be outta sight!</i>
Saturday, September 14, 2013	
8:00 a.m. - 12:00 p.m.	Conference Registration
7:00 a.m. - 8:15 a.m.	Mayors' Breakfast
7:00 a.m. - 8:15 a.m.	Large City Finance Officers Breakfast
7:00 a.m. - 8:15 a.m.	Continental Breakfast
Concurrent Sessions	
8:30 a.m. - 9:45 a.m.	Sexual Harassment <i>Dawn Kaiser, Village Business Institute will share how to protect your city from legal issues and allegations through training, proper procedures and investigation.</i>
8:30 a.m. - 9:45 a.m.	Advanced Planning Techniques <i>Kevin Martin, Houston Engineering; and Roger Austin, MWH, will explain common challenges to planning, lessons learned and a quick-start approach to beginning your community planning process.</i>

<b>Mobile Workshop</b>	
8:30 a.m. - 11:30 a.m.	Blast from the Past: Downtown Bismarck's Special Spaces <i>Jim Christianson and Johnathan Campbell, Bismarck Historical Society, share Bismarck's most historic and loved venues: Camp Hancock, the former governor's residence, Peacock Alley and the Silver Ballroom.</i>
<b>Concurrent Sessions</b>	
10:15 a.m. - 11:30 a.m.	Pick a Panel: Cool City Communicating (Public Information Officers) <i>Gloria David, City of Bismarck; and Katie Pinke, City of Wishek, offer information on communicating with the media and the public.</i>
10:15 a.m. - 11:30 a.m.	Pick a Panel: Groovy and Green: Creating Hip Parks <i>Bob Gillen, Crosby Park District; Roger Loerch, Harvey Park District; and Cole Higlin, Mandan Park District, explore some of the state's best park districts. Hear about projects, how they accomplish their ideas and ways you can improve parks to make your community more livable.</i>
10:15 a.m. - 11:30 a.m.	Pick a Panel: Legal and Effective Planning and Zoning <i>John Shockey, Ohmstad Twichell; Erik Johnson, City of Fargo; and Charlie Whitman, City of Bismarck, examine the legal way to plan and zone your city's expansion. Development agreements will be addressed.</i>
<b>Conference Events</b>	
11:45 a.m. - 1:15 p.m.	Municipal Attorneys Association Luncheon and Annual Meeting
11:45 a.m. - 1:15 p.m.	Awards Luncheon <i>Help us honor winners of the Elected Official of the Year and Appointed Official of the Year awards.</i>
<b>Concurrent Sessions</b>	
1:30 p.m. - 2:45 p.m.	Dig It! Ways to Attract Young Professionals <i>Molly Sullivan and Heather Welle, Bismarck Mandan Young Professionals, explain how, typically, young professionals prioritize great community ahead of their job, and how you can make sure your community is at the top of the list.</i>
1:30 p.m. - 2:45 p.m.	Property Assessment <i>Cory Fong, State Tax Commissioner, will focus on the assessment process and what it means for your community.</i>
3:00 p.m. - 4:15 p.m.	Small Cities, Big Ideas: Idea Exchange for Cities 2,500 and Under <i>Annual Q&amp;A for smaller cities.</i>
<b>Mobile Workshop</b>	
3:00 p.m. - 4:15 p.m.	Lockport Fire Station Tour <i>Jeff Holte, Bismarck Fire Department, will guide your tour through Bismarck's newest, 12,000 sq.ft. station.</i>
<b>Conference Events</b>	
4:30 p.m. - 5:00 p.m.	Annual Business Meeting
5:30 p.m.	Closing Social, President's Dinner and Annual Awards <i>Celebrate the year's success as we award the City of the Year. Feel free to dress up for a sparkling final evening.</i>

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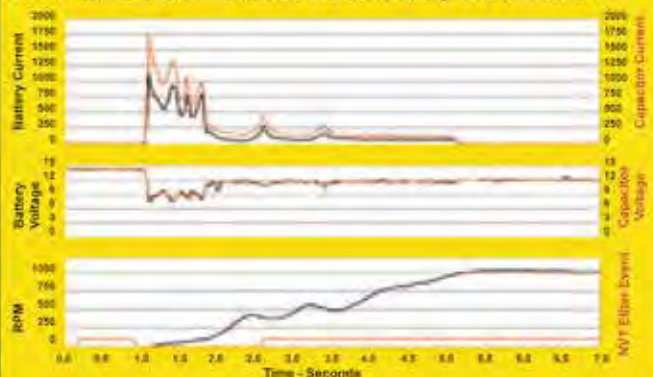


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## FROM LAST YEAR'S CONFERENCE

LEFT: Kyle Countryman of ExxonMobil gives a presentation called *The Outlook for Energy: A View to 2040*.

RIGHT: Williston Mayor Ward Koester receives an outstanding service award for the work he has done in the community of Williston.



## Your Guide to the 32<sup>nd</sup> North Dakota Petroleum Council Annual Meeting

### 2013 NDPC ANNUAL MEETING & MEMBERS' ONLY SHOWCASE

### September 16-18, 2013 in Grand Forks, North Dakota



Monday, September 16, 2013		
2:30 p.m. - 4:00 p.m.	Bakken Education Session <i>Featuring Ron Ness, Kathy Neset and Lynn Helms</i>	Ballrooms 4-5
3:00 p.m. - 7:30 p.m.	Members Only Showcase*	Alerus Center Arena
4:00 p.m. - 5:30 p.m.	Bakken Education Session <i>Featuring Ron Ness, Kathy Neset and Lynn Helms</i>	Ballrooms 4-5
5:30 p.m. - 7:30 p.m.	Community BBQ*	Alerus Center/Ballrooms 4-5

\*The Bakken Education Sessions, Members Only Showcase and Community BBQ are open to the public, free-of-charge, on Monday.

Tuesday, September 17, 2013		
7:00 a.m.	Annual Meeting Registration Opens	Alerus Center Lobby
7:30 a.m. - 5:00 p.m.	Members' Only Expo	Alerus Center Arena
<b>Alerus Center Ballrooms 4-5, Annual Meeting Registrants Only</b>		
11:00 a.m.	North Dakota Oil Update <i>Lynn Helms, Department of Mineral Resources</i>	Ballrooms 4-5
12:00 pm. - 1:30 p.m.	Lunch <i>Keynote: TBD**</i> <i>Outstanding Service Award, Kenny Sample</i>	Ballrooms 4-5
<b>Social for Annual Meeting Registrants</b>		
5:30 p.m. - 6:30 p.m.	Social for Annual Meeting Registrants	Ballrooms 4-5
6:45 p.m.	Chairman's Banquet for Annual Meeting Registrants <i>Bob Mau induction into NDPC Hall of Fame</i> <i>Entertainment by Dana Daniels, Comedian</i>	Ballrooms 4-5

Wednesday, September 18, 2013		
7:00 a.m.	Annual Meeting Registration Opens	Alerus Center Lobby
<b>Alerus Center Ballrooms 3-5, Annual Meeting Registrants Only</b>		
7:00 a.m. - 8:30 a.m.	Breakfast Buffet	Junior Ballrooms 1- 3
8:20 a.m.	Welcome <i>Michael R. Brown, Mayor of Grand Forks</i>	Ballrooms 3-5
8:30 a.m.	"Coach" Lou Holtz	Ballrooms 3-5
9:30 a.m.	NDPC Year in Review <i>Terry Kovacevich, Chairman</i>	Ballrooms 3-5
10:00 a.m.	Break	Ballrooms 3-5
10:30 a.m.	Remarks <i>North Dakota Gov. Jack Dalrymple</i>	Ballrooms 3-5
11:00 a.m.	<i>Bill Maloney, Statoil GM North America</i>	Ballrooms 3-5
11:30 a.m. - 1:00 p.m.	Lunch <i>Matt Rose, CEO Burlington Northern Santa Fe</i> <i>NDPC Outstanding Public Service Award, Rep. Todd Porter</i>	Ballrooms 3-5
1:30 p.m.	Legislative Review & 2014 Administrative Rules <i>Ron Ness</i>	Ballrooms 3-5
1: 45 p.m.	Bakken Reservoir and Operations Optimization <i>John Harju, EERC and Stan Wilson, Continental Resources</i>	Ballrooms 3-5
2:30 p.m.	Break	Ballrooms 3-5
2:45p.m.	H <sub>2</sub> O Forward Initiative <i>Walter Dale, Halliburton</i>	Ballrooms 3-5
3:15 p.m.	<i>Jamie Connell, Montana-Dakota BLM (invited)</i>	Ballrooms 3-5
3:35 p.m.	Key Regulatory Issues <i>Dave Searle, Marathon Oil</i>	Ballrooms 3-5
4:30 p.m.	Annual Meeting Adjourned	Ballrooms 3-5

\*\*Agenda is current as of publication date. Please visit <https://annualmeeting.risprojects.org/agenda.aspx> for the most up-to-date conference schedule.



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# Building the Bakken,

# Shaping the Skyline







## By Paul Adair

**A**s a community grows as a result of the Bakken boom, so does its need to provide core services to its burgeoning population. This is clearly evident in the case of Dickinson, ND, an oil-hub city situated at the very bottom of the Bakken, where stress on services have precipitated the need for construction of the new St. Joseph's Hospital and Medical Office Building.

The hospital design for this 178,000 square-foot complex includes 16 emergency rooms, with additional room for 25 acute care patients. The three-story medical office building will house a rehabilitation center, an urgent care clinic, a pharmacy, orthopedic clinical services and an ambulatory surgical center. Additionally, the people of Dickinson can soon expect to see a new medical helicopter flying overhead as part of this project.

"This will have a very positive effect on Dickinson," says Dickinson Mayor Dennis Johnson. "We will have more new medical services here in Dickinson than we've had before. We will be able to get more medical care here at home as opposed to going to Bismarck or other communities for services."

St. Joseph's has been serving the community for over 100 years, doubling the average lifespan of a typical hospital. Because of this, there was already intent to begin construction of a new hospital project sometime in the future. However, increased activity at the hospital as a result of action in the Bakken helped ramp up the need for something now.

"These things really add to our quality of life and quality of place," says Johnson. "Given the age of the hospital, all the changes in medical technology, and considering the boost from Bakken development, the timing is just right to do this."

At a cost of around \$100 million, the medical office building is expected to be finished in the fall of 2013, while the hospital phase of the project is expected to be completed mid-2014.

## WANT FOR WATFORD

Last summer, Coborn's, Inc. announced plans to build five new Coborn's and Cash Wise Food stores in western North Dakota, more than doubling the company's presence in the Bakken and helping serve the region's booming population growth.

"North Dakota is a prime market for Coborn's to expand," says Coborn President and CEO Chris Coborn. "We currently operate six grocery stores throughout the state, including three in the Bakken region. Building five new stores in the Bakken will strengthen our brand across

*Continued on page 35*



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*Continued from page 33*

North Dakota and will bring new fresh food options to these rapidly growing communities.”

This summer, Coborn's will be opening the Cash Wise Foods and Cash Wise Liquor in Watford City, ND. Combined, the two stores will be the company's seventh location in North Dakota and will be roughly five times larger (50,000 square feet) than the store it will replace (Mike's Super Valu). By acquiring Mike's Super Valu, Coborn's has also inherited the familiarity and consumer confidence which Mike's Super Valu had accumulated from almost 30 years of serving the community's needs.

“Mike's Super Valu has a long history of being part of the city,” says Coborn. “They know their customers and the market and are very involved in the community. Their understanding and involvement in Watford City will be invaluable as we move full steam ahead with our North Dakota expansion efforts.”

Coborn's will offer their customers a wide assortment of fresh fruits and vegetables, full-service deli and meat counter, bakery, household products, groceries, and varieties of wine, spirits and beers, all priced to bring savings to the people of Watford City.

## MAKING AIR TO MINOT

Over the next few years, flying into Minot, ND may begin to look a little different as the Minot International Airport begins to construct its new \$40.6 million terminal building project, striving to live up to its slogan: “More Flights, Fewer Hassles!”

Unprecedented development in the Bakken has resulted in an expanding population for Minot, straining its infrastructure and resources. The 21-year-old Minot International Airport has not been immune to this strain. Originally designed to meet the demands of roughly 100,000 passengers, this facility has experienced increasing usage in recent years as a result of the oil and gas boom, exceeding 224,000 revenue passengers in 2012.

“The community and stakeholders all agree that a new terminal is needed based on the rapid passenger growth over the last few years, and on the continued growth expected over the next 20 years,” says Andy Solsvig, airport director of the Minot International Airport. “The significant operational challenges in the existing building will become much easier to handle in a new building, not to mention that the passenger experience will improve ten-fold.”

Along with the new airport terminal, this three- or four-year project will entail the relocation and construction of a new snow removal equipment building, a new taxiway, a

new, larger apron, new parking facilities and an access road.

Currently, the project is in its early stages, where the Minot International Airport is working with Federal Aviation Administration, the North Dakota Aeronautics Commission and the City of Minot to determine a funding strategy. Should everything fall into place, terminal construction could begin as early as August, pleasing both travelers and the residents of Minot.

“This is a really nice building that Minot should be proud of once it's all complete,” says

Solsvig. “We've tried the best we can to look at this structure from all angles, perceptions and functions, to have a facility that's realistic and has the ability to grow with the community.”

## WELLNESS IN WILLISTON

Keeping a community entertained, engaged and healthy can be difficult for any municipal parks and recreation department, but for the city of Williston, ND, this challenge is compounded by the intense population growth spurred on by the boom of the Bakken.

*Continued on page 37*

## GET TO KNOW OUR EXPERTS

### ANDY SOLSVIG

Andy Solsvig has a BBA from the University of North Dakota – Airport & Business Management; a MBA from University of Phoenix – Reno; and is a Certified Member of the American Association of Airport Executives.

Solsvig was a ramp agent for Mesaba Airlines at Minneapolis/St. Paul International Airport from 1998-1999, interned at Grand Forks International Airport (in 1999) and at Phoenix Sky-Harbor International Airport in 2000. He was the Airport Planner / Marketing Coordinator for the Reno-Tahoe International Airport from 2000-2009, and acted as Airport Director of Minot International Airport from July 2009 to the present day.

“I originally wanted to be a pilot and realized I enjoyed business and aviation. As part of my college curriculum, I took an airport management class and realized, ‘that's what I want to do! Run an airport someday,’” says Solsvig. “It had both of my interests combined and I've found it's a very interesting industry which I'm glad to be a part of.”



### DARIN KRUEGER

Darin Krueger studied at Moorhead State University in Moorhead, MN.

In college, Krueger was involved with MSU Intramurals as the officials coordinator from 1987-1994 and started as director in 1992. Krueger also worked part-time for the Fargo Parks District and the Moorhead Park Department, and for Perham Area Recreation Center in Perham, MN from 1996-1998 as recreation director.

At Highlands Ranch Community Association in Highlands Ranch, CO, he worked as the adult and youth sports coordinator from 1998-2001, and then moved on to be sports dome program director at the South Suburban Park District in Littleton, CO from 2001-2003. In 2003, Krueger joined the Denver Broncos Football Club as the facility/operations coordinator until 2006, when he moved to Williston to become the executive director of the Williston Parks & Recreation District, where he works to this day.

“I decided at a young age that I want to work with kids and make an impact in the lives of youth,” says Krueger. “I set a goal to be just like my dad, Jack Brown (the director in Jamestown) and Tom Gould (my teacher/coach). They made lasting impacts on youth and that's why I am in the field. To provide for the youth and my community an active lifestyle they can do forever!”



### DENNIS JOHNSON

Dennis Johnson graduated from North Dakota State University in 1974 with a BS in Electrical Engineering and a MS in Industrial Engineering. He has been employed by TMI Systems Design Corporation since 1974 and currently serves as its Chairman and CEO. Johnson has been Mayor of Dickinson since June 2000. “I ran for Mayor to change the direction of the city.”





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*Continued from page 35*

The population of this western North Dakota city has more than grown exponentially in the last three years to approximately 35,000, with projections estimating another doubling over the next decade! This increase has placed a tremendous demand on Williston's existing recreational facilities.

The answer to meeting this demand is the Williston Area Recreation Center (ARC), now nine months into construction. The Williston ARC is designed to be a 254,000 square-foot recreation center that will become one of the largest park district recreation centers in the country and a regional recreation destination.

"The parks and recreation district continues to grow on a daily basis and we felt we needed to do something," says Darin Krueger, executive director of the Williston Parks and Recreation District. "With so many new families and kids moving to our community, this facility will be a game changer for Williston. We hope and believe this facility will assist our community in continuing to grow."

Williston has embraced the ARC, with its citizens supporting a one per cent sales tax increase going to secure the funding for this \$76 million project, with other improvements going to existing recreation facilities. The park district, in return, suspended their portion of the property tax in exchange for this one per cent sales tax funding.

Built on the Williston State College campus and set to open its doors in the spring of 2014, this premiere recreational facility promises to have something for everyone. The Williston ARC will feature a

water park with lazy river and slides, competitive pools, a FlowRider—which allows an indoor wake boarding experience—four indoor tennis courts, four basketball courts, a 200m indoor track, golf simulator and various community facilities, such as meeting spaces and senior activity rooms.

"I think the FlowRider especially will be a huge hit! No one in our region has one indoors and it is one of our feature items in the building," says Krueger. "But we are very excited about all the features we have included in the ARC and the uses available for every age group."

## ROADS OF THE REGION

If the Bakken is the heart of the oil and gas industry of North Dakota, then the roads leading into the region are its arteries. However, because of the boom, these arteries are deteriorating from increased traffic volumes, putting the Bakken at risk of cardiac arrest.

For every single oil well drilled in the Bakken, it takes approximately 2,300 truckloads to bring it into production. From 2010-2012, there has been a 22 per cent increase in traffic across North Dakota and a 53 per cent increase in the traffic traveling the highways in the western part of the state.

Highway 85 west of Watford City averaged 11,051 vehicles per day in 2012, compared to 2,322 in 2006—an increase of almost 500 per cent! This increase takes an enormous toll on the state's roadway infrastructure. Constructed 60 years ago to handle small grain and ranching agricultural traffic, North Dakota's roads and highways were simply not designed to service the heavy loads associated with present-day oil development.

In order to counter this, the North Dakota Department of Transportation (NDDOT) has been working alongside county, city, township and tribal agencies to embark on its most ambitious road construction program to date, with \$878 million in projects having been slated for 2013.

Safety is the number-one concern for the NDDOT, and much of the infrastructure investment will reflect that priority. Drivers should expect to see widening of many of the roadways, more passing and turning lanes added to many troublesome areas, and increased construction of truck bypasses in order to alleviate some of the traffic congestion. There will also be a state-wide center-line and edge-line rumble-strip program in place, alerting travelers who may be drifting across lanes.

One of the main challenges facing the NDDOT in fulfilling its project mandate, is in the retention of experienced staff due to the higher salaries paid by other companies in the region—not to mention the skyrocketing living expenses. In response, the NDDOT is developing a Rental Assistance Program to help their employees live and work in the oil-impacted regions, offsetting the region's high cost of living.

North Dakota and the Bakken can come to expect a continuation in this aggressive address of infrastructure improvements well into the future. Recent analysis has found that the state has twice as many transportation requirements as there is current funding for. If the oil and gas industry remains as robust as predicted, there will be a need for the NDDOT to remain focused on increasing roadway maintenance and construction across the state.

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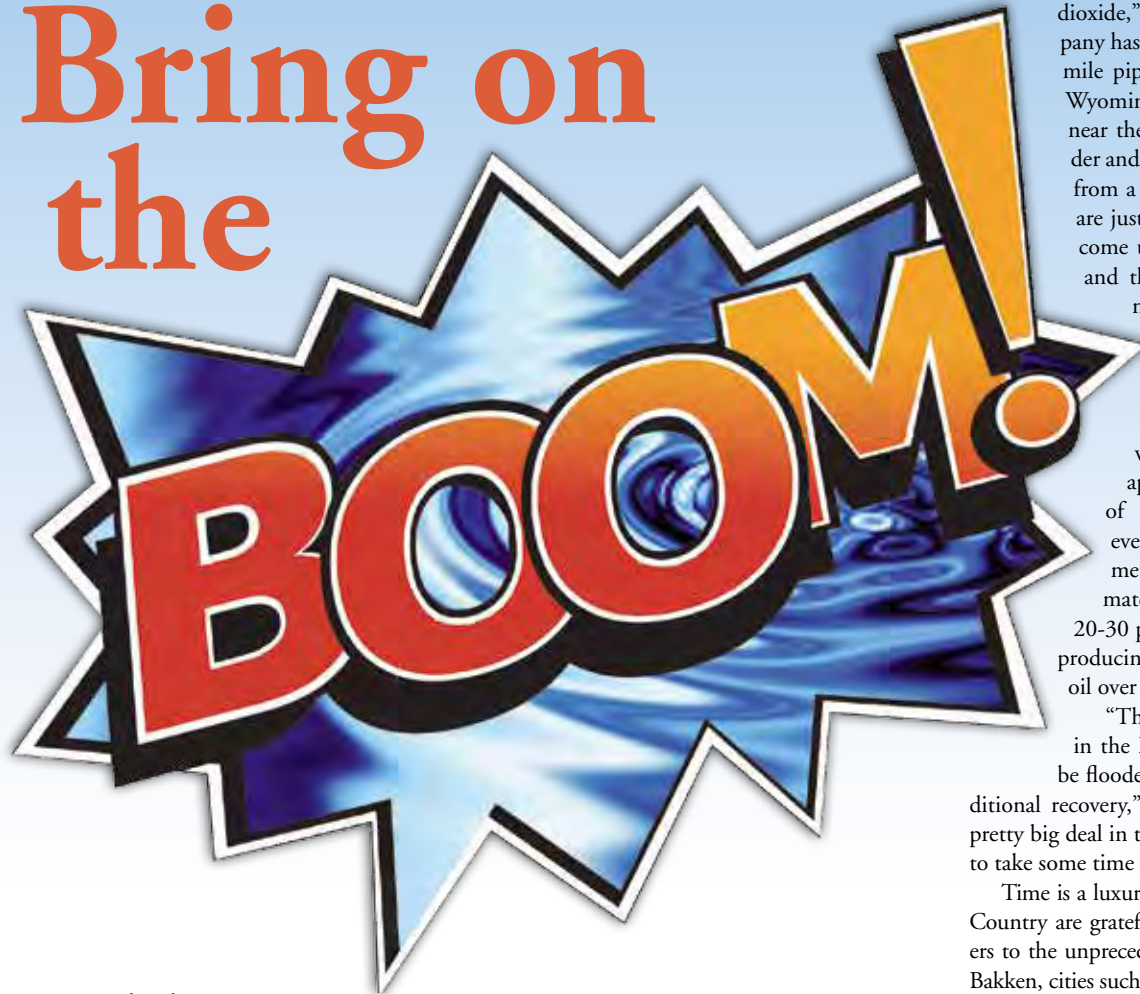
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# Bring on the



By Paul Adair

**A**s North Dakota's oil development expands outside of the Bakken, the communities of Bowman County are getting ready to greet it with open arms, preparing themselves for whatever the boom may bring.

"I have been informed that a major oil company plans to invest a great deal of money in Bowman County by building a CO<sub>2</sub> pipeline and by drilling a substantial number of wells," says Lyn James, president of the Bowman City Commission. "In addition, there are new tax incentives put in place by the North Dakota Legislature supporting drilling outside the Bakken field, which may also encourage additional exploration here in Bowman County."

The major oil company that James makes mention of is Texas-based Denbury Resources Inc., which has made several recent purchases around Bowman County and is anticipated to allocate approximately \$2 billion toward regional infrastructure projects over the next few years. As part of this planned infrastructure investment, there will be drilling

of approximately 100 oil wells in the region, greatly enhancing the county's overall oilfield production.

"There are usually 10 to 20 new wells drilled in Bowman County over any given year," says Bruce Hicks, assistant director of the oil and gas division at the North Dakota Department of Mineral Resources. "Denbury will most likely double that activity over the next four or five years, which is a lot for this area."

For the most part, the units Denbury has acquired have already been developed, as commercial quantities of oil were first discovered in the Red River Formation/Cedar Creek anticline in the early 1950s. However, with analysts estimating a potential three billion-plus oil barrels in play, Denbury feels there will be an economic return should the area be revitalized through carbon dioxide injections—a process in which Denbury captures CO<sub>2</sub>, transports it to mature oilfields, and increases well production by pumping it into oil reserves.

"Denbury is in the business to make money on enhanced recovery using carbon

dioxide," says Hicks. "The company has recently completed a 200-mile pipeline from a gas plant in Wyoming. They brought it up to near the Wyoming-Montana border and are planning to inject it all from a point in Bell Creek. They are just waiting for more CO<sub>2</sub> to come up to the Williston Basin, and this should happen in the next five years or so."

Currently, there is significant production from two of the units purchased by Denbury, which had made use of approximately 10 per cent of the available oil. However, with enhanced recovery methods, Denbury is estimated to draw an additional 20-30 per cent from the deposits, producing a substantial amount of oil over time.

"There are a lot of fields out in the Red River region that can be flooded with CO<sub>2</sub> to receive additional recovery," says Hicks. "It can be a pretty big deal in the long-run; it's just going to take some time to get it all in place."

Time is a luxury the residents of Bowman County are grateful for. As relative bystanders to the unprecedented development in the Bakken, cities such as Bowman have been in a position to witness the impact of the oil boom from a distance, learning a great deal from the experiences of their neighbors to the north.

"The Bowman County communities will certainly be impacted by Denbury's activity," says James. "Their pipeline project will bring many people to this area to live and work, and we will need to be supportive of them, doing our very best to accommodate them. When a community experiences an influx of temporary workers, there are many different impacts and opportunities."

Although the city of Bowman has remained somewhat isolated from the action in the Bakken, it is no stranger to the influence of North Dakota's oil and gas industry. Like many other communities in the state, Bowman has experienced a spike in population not reflected in the state's most recent census.

"Bowman is already experiencing change," says James. "And every community impacted by the oil and gas industry has faced some challenge. However, I truly believe the opportunities stemming from this growth are endless."

With Denbury expressing renewed interest in Bowman County, the cities are

*“And every community impacted by the oil and gas industry has faced some challenge. However, I truly believe the opportunities stemming from this growth are endless.”*

anticipating changes coming into their quiet communities; changes both positive and negative.

“There are many positive aspects of the growth resulting from the increased oil and gas activity,” says James. “We have seen more new faces in the churches and new customers in our places of business. Our local Chamber of Commerce has welcomed new businesses. The Bowman County Economic Development Corp. and Southwest Business Development office has been very busy assisting clients with their business ideas and projects. The Bowman County

School district has seen a steady increase in enrollment.”

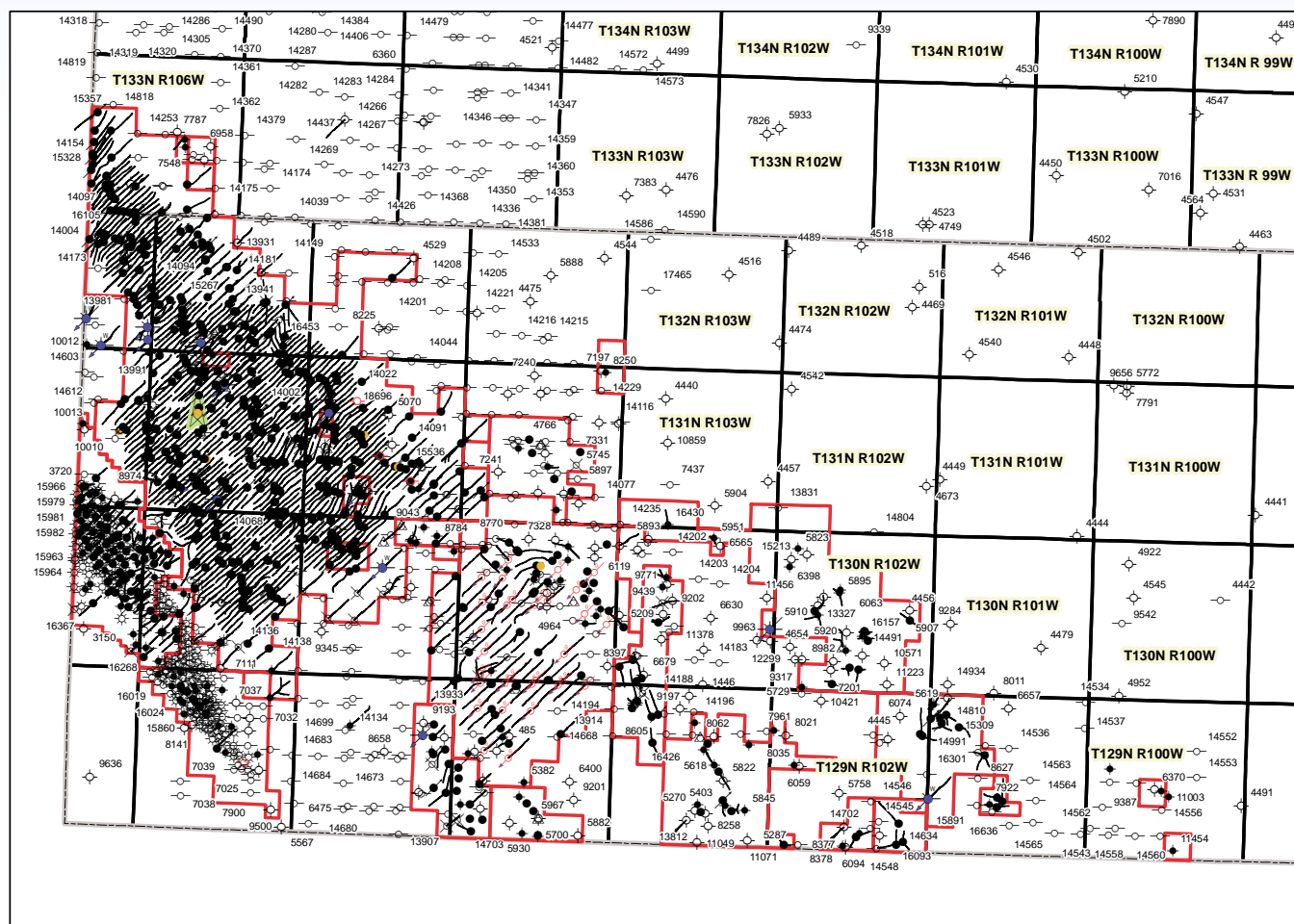
The challenges Bowman will need to overcome are likely similar to those felt by comparable cities in the Bakken. Infrastructure capacity will be strained and public services meant for a population of less than 2,000 will be put to the test as more people move into the community.

With Highway 85 running through Bowman en route to the Bakken, traffic volumes have already increased, along with road safety concerns. There has been additional pressure put on the region’s schools,

hospitals, law enforcement staff and emergency services.

“I also see challenges for local business,” says James. “It is tough to compete with oilfield wages and benefits, so retaining employees is going to be an issue. However, the economic opportunities are great, and each of the individual communities in the county will need to assess the actions to take to capitalize on these opportunities.”

Bowman is watching the multi-faceted challenges facing the cities of the Bakken, like Watford City. They have taken proactive steps to—hopefully—circumvent the



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worst of the growing pains associated with unbridled oil and gas development, should they arrive.

"The City of Bowman has recently completed and adopted a comprehensive plan and a land use plan, together with updates of our zoning ordinances," says James. "Each of these will be very important and useful tools for us as we grow. Some of the other cities that have been highly impacted did not have time to plan, due to the rapid growth."

Something that will need to be protected over the next few years of growth and development will be the charm and personality of the communities within Bowman County. After all, what good is prosperity if you lose your home because of it?

"Bowman is a proud and friendly community," says James. "I like to describe Bowman and the surrounding rural partners as a 'community of champion citizens' who are willing to go the extra mile for a friend, neighbor or visitor."

It is this strength of character, along with careful planning, that will be required in the days ahead, allowing Bowman County to ride out the waves of transformation coming to the region, rather than be swept under and dragged along by the currents of change.

## GET TO KNOW OUR EXPERTS

### BRUCE HICKS



Bruce Hicks has an engineering degree from the University of North Dakota. He is a registered Professional Engineer in the State of North Dakota and has been employed with the North Dakota Industrial Commission for 33 years. Hicks has held several positions, including water injection supervisor and manager of horizontal drilling, and is presently the assistant director of the oil and gas division.

"I grew up in Sherwood, ND, which was surrounded by oil production," he says. "I was very intrigued in the process, so I pursued a petroleum engineering degree at the University of North Dakota in Grand Forks."

### LYN JAMES



Lyn James attended Black Hills State University in Spearfish, SD. She served two terms as a city commissioner from 1996-2003, and is currently in her third term as president of the commission, from 2004 to the present day.

For years, James has been very active testifying before the North Dakota Legislature regarding the impacts to cities in the oil and gas producing counties. James was appointed by Gov. Jack Dalrymple to the North Dakota Energy Impact and Infrastructure (ND EIIO) Advisory Committee in 2011 and continues to serve on that committee. The ND EIIO committee was formed to study applications and make recommendations to the ND Land Board regarding grant funding with regard to energy impact.

"I am passionate about preserving the integrity of our city and responsibly guiding our growth due to oil and gas activity."



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# Cutting Down Crime

By Jim Taylor

Law and order is priority number one in North Dakota. Last year, North Dakota Attorney General Wayne Stenehjem released the latest crime statistics for the state. At the time, the results were bitter-sweet. "Although the crime rate has increased in the last year, so has the state's population," reported Stenehjem. And, despite the spike in crime, North Dakota has still managed to maintain one of the lowest crime rates in the United States. Good news for North Dakotans, but still a cause for concern. The growing number of temporary workers flocking to North Dakota means a further increase in population, and the report reveals an upward trend in aggravated assaults—something North Dakota law enforcement is working to put a stop to in many ways.

The North Dakota State Legislature is also doing its part, dedicating a total of \$16.6 million dollars to public safety and crime prevention and response throughout the state. Of this amount, \$7 million has been earmarked for county sheriffs whose departments are in oil-producing and oil-impacted counties. The distribution of the money will focus on emergencies as the top priority, followed by equipment, firearms, rental assistance for employees and overtime for officers. To Attorney General Stenehjem, this additional funding is a worthwhile investment.

"North Dakota will continue to be one of the safest states in the country," Stenehjem told reporters in an interview with KXNews. "We are seeing an increase in the kinds of crimes that worry us. These are things that are new to the area, and we need to make sure we get a handle on it and we do it now. We

can either spend a little bit now, or down the road it's going to be much more expensive."

For the North Dakota Attorney General and law enforcement agencies throughout the state, these newly-added funds could not have come at a better time. According to the 2012 crime statistics report, crime is up in North Dakota in almost every area. Violent crime saw an increase of 16 per cent, with aggravated assault seeing a rise of 22.8 per cent. It's important to note, however, that despite these increases, violent crime still only accounts for less than 10 per cent of all crimes reported throughout North Dakota. Out of the number of violent crimes that occurred, 54 per cent were reported as cleared by North Dakota law enforcement officers, either by arrest or extraordinary means.

The majority of crimes committed in North Dakota in 2011 were property crimes, which accounted for 90.2 per cent of crime index offenses reported. Property crimes saw a rise since 2010, with an increase of 10.3 per cent in 2011. More than \$16.2 million worth of property was reported stolen in 2011. Motor vehicle thefts also rose, increasing by 11.9 per cent. Homicide, unfortunately, also saw an increase, with 15 murders occurring in 2011. While this is a statistically significant spike from the average of 11 homicides per year, it still only accounts for 0.1 per cent of crime in North Dakota.

With 25 per cent of North Dakota's population residing in oil-impacted counties, these numbers are of particular importance. The concentrated populations in these areas are still growing, and law enforcement agencies need to grow with it to effectively do their job. This means more highway patrol

officers, up-to-date training facilities and techniques, better communication, and a broader support staff for officers, the Attorney General's office, and the courts. These are the areas where the added funding will make the most difference.

The state also keeps track of drug and alcohol offenses, which have risen due to the growth in population. In 2011, there were 5,750 arrests for alcohol-related offenses, up from 4,695 in 2010, and arrests for DUI went up nine per cent. In response, North Dakota recently announced new DUI laws, which took effect on July 1, 2013. Under these tough new laws, drunk drivers whose carelessness lead to death can face A-felony charges and up to 20 years in prison. First offenders face harsh, new penalties, with minimum fines of \$500 for driving under twice the legal limit. First time offenders caught driving over twice the limit will find themselves slapped with a \$750 and a minimum mandatory jail sentence of two days or 10 hours of community service per day of jail time. Refusing to submit to chemical testing will be met with the same penalties as taking a test with positive results. To date, 25 people have been killed in alcohol-related crashes this year, according to the North Dakota Highway Patrol. It has hoped these strengthened laws will help prevent further deaths on North Dakota's roads.

Another area North Dakota law enforcement is cracking down is financial scams. Attorney General Stenehjem recently joined forces with federal agencies nationwide and international law enforcement bodies in a coordinated effort to curb travel and time-share scams. Typically, these scams involve



timeshare resellers convincing consumers they have buyers or renters who will pay big money for timeshare properties, and then tricking consumers into paying large upfront fees to rent or sell their properties. These scams can end in consumers losing hundreds of thousands of dollars in bogus closing costs and unsold properties. Stenehjem is confident this new initiative will help end these con jobs.

"Timeshare scams continue to victimize North Dakota consumers and we are pleased to join with the multinational enforcement group to address this serious problem," he says. In addition to timeshare scams, the Attorney General's office provides vital information and services to prevent asphalt paving scams, car repair infractions, carnival fraud and other schemes designed to cheat North Dakotans out of their hard-earned money.

But perhaps the most significant and disconcerting effect that the boom in North Dakota has had on crime is the increase in gang-related and organized crime. It was this issue that prompted Attorney General Stenehjem to ask for additional funding for law enforcement in the first place. For police officers patrolling the streets, the game has changed. With an increase in gang activity comes an increase in drug dealing.

Methamphetamines are making an alarming comeback in the area, and the amounts police are trying to get off the street aren't measured in ounces, but in pounds. Prostitution is also increasing in frequency, putting unwanted strain on police departments throughout North Dakota. For this reason, the added funding from the State Legislature is a welcome shot in the arm that will allow law enforcement to beef up their resources, keeping North Dakota residents safe and criminals off the streets.

The continued expansion and success of North Dakota's oil industry means the influx of workers and the increase of the state's population aren't finished yet. It's estimated that nearly 20,000 temporary workers currently call North Dakota home, and that number is expected to reach as high as 60,000 in the next few years. There are bound to be growing pains but North Dakota's law enforcement agencies are working hard to keep the progress as painless as possible.

## GET TO KNOW OUR EXPERTS



### ATTORNEY GENERAL WAYNE STENEHJEM

Attorney General Wayne Stenehjem was born in Mohall, North Dakota. He graduated from the University of North Dakota and received his law degree from the University of North Dakota School of Law in 1977. Attorney General Stenehjem was elected to the North Dakota House of Representatives in 1976, serving for two terms until his election to the North Dakota Senate in 1980. He served for 20 years in the Senate, until his election to the Office of Attorney General.

Attorney General Stenehjem was named one of Ten Outstanding Legislators in the U.S. by the Association of Government Employees, and is the recipient of "Champion of the People's Right to Know" award; SBAND Legislative Service Award; "Friend of Psychology" award; the 2005 North Dakota Peace Officer's Association's Lone Eagle Award, was inducted into the Scandinavian American Hall of Fame in 2007, and was named the 2011 Bismarck State College Alumnus of the Year.

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A large oil drilling rig is shown in the foreground, set against a backdrop of a lush green landscape with trees and a blue sky with clouds. The rig is a complex structure of metal beams and platforms, with a tall derrick. The entire scene is framed within a large, stylized green oval shape that has a wavy, organic edge.

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# H<sub>2</sub>O

By Jennifer Ryan

**W**ater demand in North Dakota must be met—and fast. A surge in North Dakota's population due to a flood of oil production has put a burst of demand on the western regional water supply. That formerly healthy flow of water, though it's not down to a trickle yet, could be in trouble if the current demand persists.

With so much production in North Dakota, the region's municipal and regional water suppliers are struggling to handle the current amount of water needed to supply the oil industry and the constant growth in the area.

The Western Area Water Supply Project (WAWSP) seeks to solve that problem by using the Missouri River to meet the needs of surrounding counties including McKenzie, Williams, Divide, Burke, and Mountrail (including the communities of Williston, Watford City, Ray, Tioga, Stanley, Wildrose, Crosby, Grenora, Ross, Fortuna, Noonan, Columbus, Alexander and Arnegard).

## SURGING POPULATION

When WAWSP was first conceived in 2011, the business plan stated the goal of the system was to serve a predicted peak population of 48,000 people. This included both community and rural users in the region.

It is now 2013—a mere two years later—and the current population is already estimated at over 58,000. “The immediate need for the project is

clear,” says Jaret Wirtz, executive director for the Western Area Water Supply Authority (WAWSA).

To further illustrate the impact of the region's oil boom, one could examine the number of requests for residential developments, commercial lots, crew camps and RV parks. In 2011, the water system would have been able to more than adequately supply the entire region. Since then, 17,000 requests have been filed; approximately 43 times the original plan.

Along with those additional 17,000 service requests in rural areas, communities of residents, workers, schools, businesses, health care facilities and industrial areas all need water.

“For some areas of the system, there would not be enough capacity to match the pace of growth and meet the needs of the citizens,” Wirtz explains. “For other areas of the system, the quality of available water was lacking.”

In 2012, the Center for Social Research at North Dakota State University conducted the North Dakota Statewide Housing Needs Assessment, a study forecasting the total population for the five-county region serviced by the WAWSP. The study found

that the population in the WAWSP service area will need to serve almost 100,000 people—essentially the size of Fargo, ND. It further concluded that the WAWSA service area has the fastest growing population in all of the United States, far exceeding any population growth served by any other regional water system.

With these unique challenges in mind, the WAWSP has since adjusted its original system design to accommodate these explosive new population projections.

“There is definite concern that population will exceed current projections,” says Cory Chorne, Project Manager of the WAWSP. “We may have to bring in a second pipeline in Watford City if the population increases. We'll continue to consider Plan B options, but we remind everyone that minor changes can really help sustain the adequacy of water supply.”

Those minor changes involve following stern water conservation practices such as alternating watering days between those with an even or an odd house address.

## MAKING WAWSP HAPPEN

As the source of water, the Missouri River plays a huge role in the quality and





availability of water to all those serviced in the western area of North Dakota.

“The Missouri River is a high-quality, valuable and adequate source of water,” says Chorne. “But there’s a good reason why its nickname is ‘The Big Muddy.’ It brings lots of sediment into the plant.”

The Williston Regional Water Treatment Facility is currently undergoing construction. Construction is moving along, but there have been some minor hiccups in making this portion of WAWSP happen.

June’s heavy rainfall in eastern Montana and western North Dakota caused a drastic increase in the sediment levels of the Missouri River. “Levels were two times higher than previously recorded. It creates treatment and design challenges,” says Chorne.

Throw in the spring’s rising of the Yellowstone River, and those conditions—combined with the Williston Regional Water Treatment Facility’s current construction project—forced the WAWSA to issue a restriction on local water usage.

Residents and businesses were restricted from using lawn sprinklers and washing vehicles. They were also encouraged to “implement other voluntary water conservation measures.”

Had demand for water increased, the water treatment plant would have increased production. Demand would have been met, but performance would have been compromised and could have resulted in a region-wide boil order.

Visitors to the WAWSP website are still greeted by this message: “WAWSA thanks water customers for restricting water use while it meets water needs of the region.” It goes on to name the residents and businesses of Williston, Watford City, Trenton, the Williams Rural Water District and the McKenzie County Water

Resource District as those affected by the water restrictions. Construction continues on the facility and is on schedule.

## FOOTING THE BILL

The oil industry has a great need for water sources in order to conduct its all-important hydraulic fracturing process. Oil companies are buying up any excess water capacity at key points throughout the water system. Chorne says they are also building on-site storage, which allows the Authority to distribute consistent amounts of water over a longer period of time. This alleviates the demand when reserves may be low.

“Domestic needs come first,” Chorne explains. “We don’t want to shut down water to the industry because that means a loss of income, and they would question our reliability. We need to balance private contracts with availability. Fortunately, we have had a pretty wet year, so water availability is a little higher than expected.”

The strategy of private industry paying for the public water infrastructure was the first of its kind in North Dakota.

This plan is vital as it will reduce the tax burden on North Dakota taxpayers and make the entire system more affordable for all citizens in its service area. Since the project is more affordable—thanks to the influx of private dollars—the amount of grant funds needed from state programs is significantly reduced. Grant funds are not as depleted, meaning that water systems in other parts of North Dakota can share in grant money. An additional benefit to the fill stations is the reduction in traffic. Fewer trucks are using roadways to transport water.

## PROGRESS SO FAR

The WAWSP project is large in scope, and is also planned for rapid development.

Crucial project milestones have been identified to ensure every aspect of the project is completed in a timely manner. So far, many milestones have already been achieved, including:

- In 2011, the project oversaw the construction of the Williston By-Pass Transmission Line, an interim 10.5-mile stretch of pipe that extends north and west from Williston to new industrial growth areas.
- Several improvements to the 26<sup>th</sup> Street Pump Station were made in 2011.
- By sharing costs with the WAWSA, the project extended service to Basin Electric Power Co-op west of the City of Williston and to the southeast of the City of Alexander. The aim of these extensions was to serve two new peaking power generation facilities, and to provide service to several rural developments in the Williams Rural Water and McKenzie County Water Resource Districts.
- Construction of a five million-gallon reservoir located northwest of Williston was a priority. It now serves as the primary supply for growth areas around Williston and the rest of the northern WAWSA service area.
- The project extended water service to Watford City by crossing the Missouri River and installing 30 miles of 20-inch pipeline and the R&T Water Supply Commerce Authority with a 25-mile-long, 20-inch pipeline to the City of Ray. Several other pipeline extensions were constructed, including one from Wildrose, ND to Crosby, ND. Rural water service to western McKenzie County was also extended by installing 150 miles of distribution pipe. This project is still underway.
- Revenue-generating water depots also became a priority for the project. Since

## GET TO KNOW OUR EXPERTS



### CORY CHORNE

Cory Chorne, Project Manager, Western Area Water Supply Authority, has a Bachelor of Science degree in Civil Engineering from North Dakota State University. He has over 14 years of experience with AEWSP in rural and regional water supply, treatment and distribution systems.

“Being from a small town, I always wanted to work on projects that would benefit the rural population of North Dakota. I was drawn to rural water projects designed to bring public, treated water to those who normally wouldn’t have access. It’s very rewarding to hear from landowners you’ve helped who now have access to water.”

2011, four operational water depots have been built, one member depot was expanded, and five member-operated depots were incorporated into WAWSA’s business plan. In addition, several oil companies have or are in the process of connecting their own pipeline networks directly to the WAWSP.

- The Williston Regional Water Treatment Plant is under expansion from 10 to 14 million gallons per day (MGD).

## STILL WORK TO DO

The first priority for WAWSA is further expansion of the Williston Regional Water Treatment Plant. It currently has capacity for 14 MGD, but work is already underway to expand that capacity to 14 MGD and construction contracts are being executed to further expand the capacity to 21 MGD. The goal of a 21 MGD capacity should be achieved in 2015.

Additionally, design is underway on the Williston Bypass Transmission Line. Nine miles of 36- and 30-inch pipe will run from the Williston Regional Water Treatment Plant along the west side of Williston to the recently built five million-gallon Northwest Williston Reservoir. A new pump station and reservoir will also be built as part of the Williams Rural Water District West Expansion Project. When complete, the pump station and reservoir will benefit the rural areas west of Williston.

Finally, WAWSA will soon wrap up the design for the construction of the McKenzie County Water Resource District System II Loop pipeline. It will run 25 miles, from Watford City, ND to a reservoir near Keene in eastern McKenzie County. The project will deliver water to rural customers along the pipeline’s route and serve as the transmission line to serve other areas in rural north central McKenzie County. A new reservoir and pump station along the pipeline route is also in the early stages of construction.

## WELL-LAID PLANS

The Williston Area Water Supply Authority is confident the WAWSP will meet all current and future demand with high-quality water. The project’s ambitious scope is already proving to be manageable.

“Considering the challenges we’re facing, we’re pretty happy and proud to make this system a reality,” says Chorne. “Revenue projections are ahead of what we expected to sell industrially, so there is hope we’ll be able to expand our capability.”



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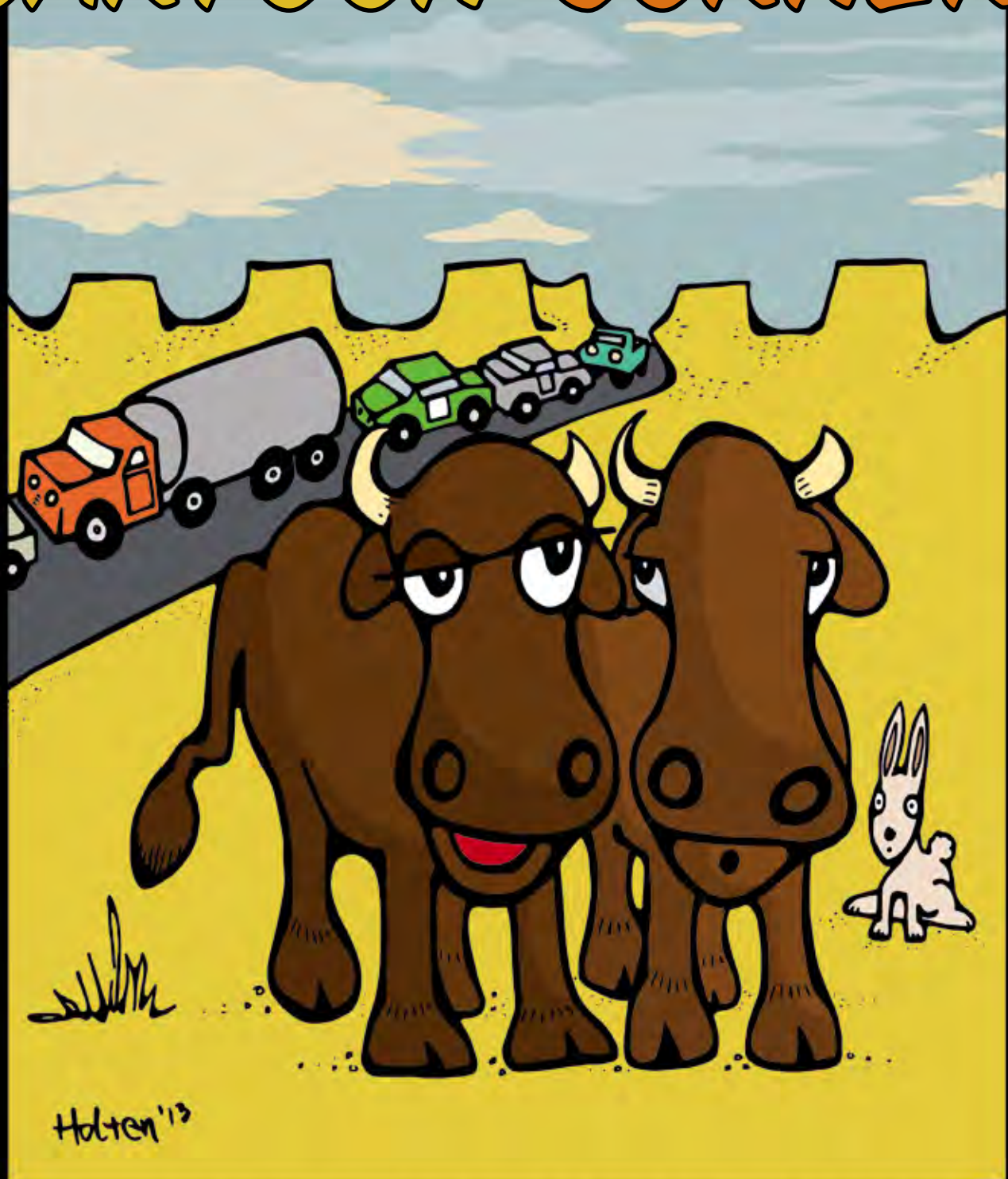
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*"I remember strolling down that section line when I was just a calf and it was just a prairie trail."*

Cartoonist Kevin Holden, [holden24@gmail.com](mailto:holden24@gmail.com)



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# Raising Roosevelt's Legacy

By Kirsten Mangin



*Roosevelt family picture. 1895. Prints and Photographs division. The Library of Congress. [www.theodorerooseveltcenter.org/Research/Digital-Library/Record.aspx?libID=o281873](http://www.theodorerooseveltcenter.org/Research/Digital-Library/Record.aspx?libID=o281873). Theodore Roosevelt Digital Library. Dickinson State University.*





*Pursuing the boat thieves. 1886. Theodore Roosevelt Birthplace National Historic Site. [www.theodorerooseveltcenter.org/Research/Digital-Library/Record.aspx?libID=o284921](http://www.theodorerooseveltcenter.org/Research/Digital-Library/Record.aspx?libID=o284921). Theodore Roosevelt Digital Library. Dickinson State University.*

In the middle of a modern-day oil boom sits Theodore Roosevelt National Park. Across the United States, modern presidents are honored and commemorated through presidential libraries. Until recently, America's 26<sup>th</sup> president, Theodore Roosevelt, was not being celebrated in one distinct area. With no presidential library for Roosevelt, his personal and presidential documents were dispersed among libraries and various sites across the United States. The Theodore Roosevelt Center at Dickinson State University (DSU) has made it their mission to change this fact by creating the most comprehensive and accessible collection of Roosevelt documents across the country.

The Theodore Roosevelt Center has assumed the immense task of sourcing out,



*Invitation to a dance at the White House. December 28, 1908. Prints and Photographs division. The Library of Congress. [www.theodorerooseveltcenter.org/Research/Digital-Library/Record.aspx?libID=o282134](http://www.theodorerooseveltcenter.org/Research/Digital-Library/Record.aspx?libID=o282134). Theodore Roosevelt Digital Library. Dickinson State University.*



February 28, 1903.

His Royal Highness,  
Prince Henry of Prussia,  
Kiel, Germany.

Am greatly pleased with your telegram. I shall always hold  
our ride in remembrance. Heartiest regards to His Majesty.

THEODORE ROOSEVELT.

Bismarck, Sunday 1/24

Mr. Roosevelt

Dear Sir

I came to the conclusion two weeks ago that  
two days I have been thinking of doing so for some  
time but always put it off for one reason or another.

Well I sincerely hope that I am not offending  
you in writing two years and hoping that you  
will pay a little attention to what I may have  
two say in this my first letter to you.

To begin with in the first place Mr. Roosevelt  
you must not think that I now or ever did  
harbor any ill feelings towards you for sending  
me to the Penitentiary. As I look back now and  
think it over I say to myself that it was all  
for the best, the lesson that I have learned I  
shall never forget, though that lesson has been very  
dear one to me and mine. Had this misfortune  
settled solely on myself I would not have cared one half  
so much. But there were others who it caused much  
pain and sorrow, those whom I held in love and  
esteem dearer than all else on earth. Mr. Roosevelt  
you may have thought or conceived the idea that I  
was or is the scum of some Eastern City, raised in  
the midst of vice and crime, but if so you are  
indeed wrong. There are not many men thinking it  
on the Plains two days, that can boast of a better home  
or of better folks than what I have. Though that  
dear old home circle, I am sure now will know  
me no more, I would not go home now to my people  
with the title to my name, or convict.

ABOVE: Telegram from Theodore Roosevelt to Heinrich, Prince of Prussia. February 28, 1903. Theodore Roosevelt Papers, Manuscripts division. The Library of Congress. [www.theodorerooseveltcenter.org/Research/Digital-Library/Record.aspx?libID=o184332](http://www.theodorerooseveltcenter.org/Research/Digital-Library/Record.aspx?libID=o184332). Theodore Roosevelt Digital Library. Dickinson State University.

gathering and digitizing copies of all documents related to the president. This project brings Roosevelt's legacy together digitally on one user-friendly website. Students, enthusiasts and citizens can get their hands on diary entries, newspaper columns, magazine articles, correspondence to and from Roosevelt, notes, political cartoons, scrapbooks, speeches and photographs just by visiting the site. Video clips and audio recordings are also available.

To date more than 165,000 items have been collected and digitized. The project is made possible by the collaboration of experienced history and library professionals, volunteers and interns from across the country. These individuals work diligently to review and catalog documents received from the Library of Congress, Harvard College Library, the National Park Service and other locations.

In the beginning stages, Sharon Kilzer, project manager for the Theodore Roosevelt Center at DSU, was one of the first staff members to begin work on the library. Eventually, additional staff members were hired and the library began to make incredible progress. One of Kilzer's roles at the Center is to supervise the passionate staff working on developing the library.



*“Roosevelt was a window to the nation’s history. The project has a passionate staff, but the more people to join in, the more productive we can be.”*

“The library takes high quality dedicated people working on it,” says Kilzer. “My staff are amazing. It is an overwhelming project and we had no idea how big it would be before we started. Roosevelt was an intellectual and produced a lot of documents. His interests ranged far beyond politics, including science, the arts and sports. We have a lean staff but they are committed and productive.”

Since the digital library work started in earnest in early 2010, 20,000 documents have made it onto the website in just three-and-a-half years. The Center provides means for people to work on this project no matter where they are located in the country.

“Technology allows us to engage interested citizens anywhere to participate with us,” explains Kilzer. “We provide training on how to identify documents and use the cataloging system. We have people volunteering in places such as Texas or Iowa.” The Center also has an internship program where graduate students from across the country participate in cataloging information.

All the dedication from the staff since the inception of this project has permitted individuals from as far as the United Kingdom and Uganda to learn more about the Roosevelt and his ties to North Dakota. The digital library has also made a big difference in how scholars are being served.

Kilzer says one of the biggest challenges with the project is that there are countless documents associated to Roosevelt’s name. There are days where hours of work are tedious and do not produce new “discoveries.”

“It was a period that hinged into the modern era and so much was going on,” says Kilzer. “Roosevelt was a window to the nation’s history. The project has a passionate staff, but the more people to join in, the more productive we can be.”

Sue Jackson is one of the volunteers working on the library. Through this project, Jackson has discovered prose and poetry that reveal how the president was an endearing family man and prolific writer. Jackson says she enjoys discovering

*Continued on page 62*

Mr. Hope excited yet, it being a new institution  
 Now seriously Mr. Roosevelt don't you think that we are  
 both banished enough. We have been in confinement about 14 months  
 And I was thinking that if I would write to you that you  
 might try and help me and Ed, too get out this fall and  
 as you intimately acquainted with Governor (Cheech)  
 it would not be so hard to do so, you could get our time  
 commuted some anyway I think  
 And after you have thought this matter over and should come  
 to the conclusion to help us, I promise you that you will  
 never be sorry for doing so, if Barnstead could get his  
 liberty now he would come out all night I think, but it  
 may be too late by and by.  
 Now Mr. Roosevelt I hope that you will consider over this  
 matter and if you can assist us, please do so.  
 I would be very glad to hear from you and if you can  
 give me any encouragement let me know  
 I have read a good many of your letters on ranch  
 life in the papers, since I have been here and they interest  
 me deeply, Will I suppose that this letter has tired you  
 out this & I will bring it to a close  
 Hoping you are well & success on your fall  
 I remain  
 Yours sincerely  
 M. J. Finnegan  
 (P.S. Should you stop over at Bismarck this  
 fall on your winter tour, make a call to the Prison  
 I should be glad to meet you)

ABOVE AND OPPOSITE: Letter from Michael J. Finnegan to Theodore Roosevelt. [August 14, 1887?]. Theodore Roosevelt Papers, Manuscripts division. The Library of Congress. [www.theodorerooseveltcenter.org/Research/Digital-Library/Record.aspx?libID=o25536](http://www.theodorerooseveltcenter.org/Research/Digital-Library/Record.aspx?libID=o25536). Theodore Roosevelt Digital Library. Dickinson State University.



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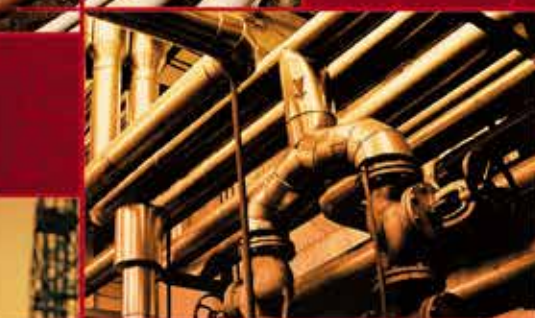
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*Continued from page 59*

facts she wouldn't learn just by reading a history book.

"It's a pleasure to get to know someone who is powerful, compassionate, understanding and moral, and who has a high degree of integrity. He was successful without compromising his values. You can be kind and not be a politician's politician. TR is worth our admiration and delving deeper into his career."

Jackson goes on to explain that working on the digital library has made her proud of what Roosevelt did for the nation. She's discovered how lucky North Dakota is to

have had a president of such high values and integrity as a part of their culture.

Kay Werremeyer, Professor Emeritus at DSU, also volunteers on the digital library and shares an equal passion for the project. "It's like reading somebody else's mail," Werremeyer states. "Roosevelt was such a fantastic and interesting person with so many facets to his personality. Where most people don't see it as exciting, we get excited when we find something unique and interesting."

Another aspect of volunteering on the project that Werremeyer enjoys is the interaction with all the staff. "We get

to know people all over the US while researching. That's a highlight."

The hard work going into this project is making a difference for those writing about Roosevelt. "They mention and credit the TR library in their works," says Kilzer. "The new book on Edith Roosevelt, his second wife, credits the Centre for making resources available for his research and they even sent us a hand-signed copy of the book."

With their small staff and so many hidden documents yet to be discovered, there are many more hours of work to be done on the project. With so many discoveries yet to be made, some may even say that the work will never be done. However, as long as the resources are there, the staff will continue to ensure the documents are made available and shared online for the world to see. To take a look at these amazing discoveries, visit the Theodore Roosevelt Digital Library at [www.theodorerooseveltcenter.org](http://www.theodorerooseveltcenter.org).



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### SHARON KILZER

Sharon Kilzer serves as project manager for the Theodore Roosevelt Center at DSU, where she oversees the creation of the Theodore Roosevelt Digital Library. A North Dakota native, Sharon holds degrees in business administration and business education, as well as a master's degree in theology and Christian ministry. Before joining the Theodore Roosevelt Center, Sharon served in administrative roles in retail and in higher education. She also served for two years as a business educator for grades 7-12, taught accounting at a business college, and taught introductory computer courses for adults.



## GET TO KNOW OUR EXPERTS



### SUE JACKSON

A life-long learner, Sue Jackson attended DSU; University of Mary, Bismarck, ND; St. Thomas University, St. Paul, MN; and St. John's University, Collegeville, MN. She received a Masters of Arts in Theology from University of Notre Dame, South Bend, IN. Jackson taught K-12 music, high school religion classes and then went on to DSU to teach World Religions, Old Testament, New Testament and the History of Christianity. She became involved in the digital library project after attending the TR symposium at DSU.

### KAY WERREMEYER

Professor Emeritus in the departments of Education and Psychology, Werremeyer taught at DSU for 15 years. Prior to joining the faculty at DSU, she had seven years of public school teaching experience in fourth grade, kindergarten, and with special needs children in Michigan, Colorado and North Dakota. Kay graduated from Union College in Barboursville, KY in 1959 with a bachelor's degree in Elementary Education and earned her master's degree in Elementary Education from the University of Northern Colorado in 1968. She was awarded a year-long fellowship in reading at Ohio State University from 1969-1970. She became involved in the digital library project after attending the TR symposium at DSU.

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# You Know the Drill... Or Do You? Introducing Non-Hydraulic Fracturing

By Paul Adair

**H**ydraulic fracturing has opened up the Bakken to previously undesirable oil and gas reserves. It has helped create an energy boom for the region and delivered unprecedented growth for communities. Fracking has brought an economic windfall, not just for North Dakota but for the entire country.

On the flip side, hydraulic fracturing is also expensive, uses copious amounts of water, injects chemicals into underground formations and demands the treatment/disposal of tremendous volumes of wastewater, requiring a heavy reliance on trucks to deliver water and wastewater.

However, the drawbacks of hydraulic fracturing open the doors for innovative

companies such as Expansion Energy, LLC, which is striving to eliminate the use of water and chemical additives in the fracturing process, while lowering costs, maintaining or increasing well productivity and enabling other tangible production benefits with their patented VRGE™ (pronounced “VeRGE”) dry-fracking technology.

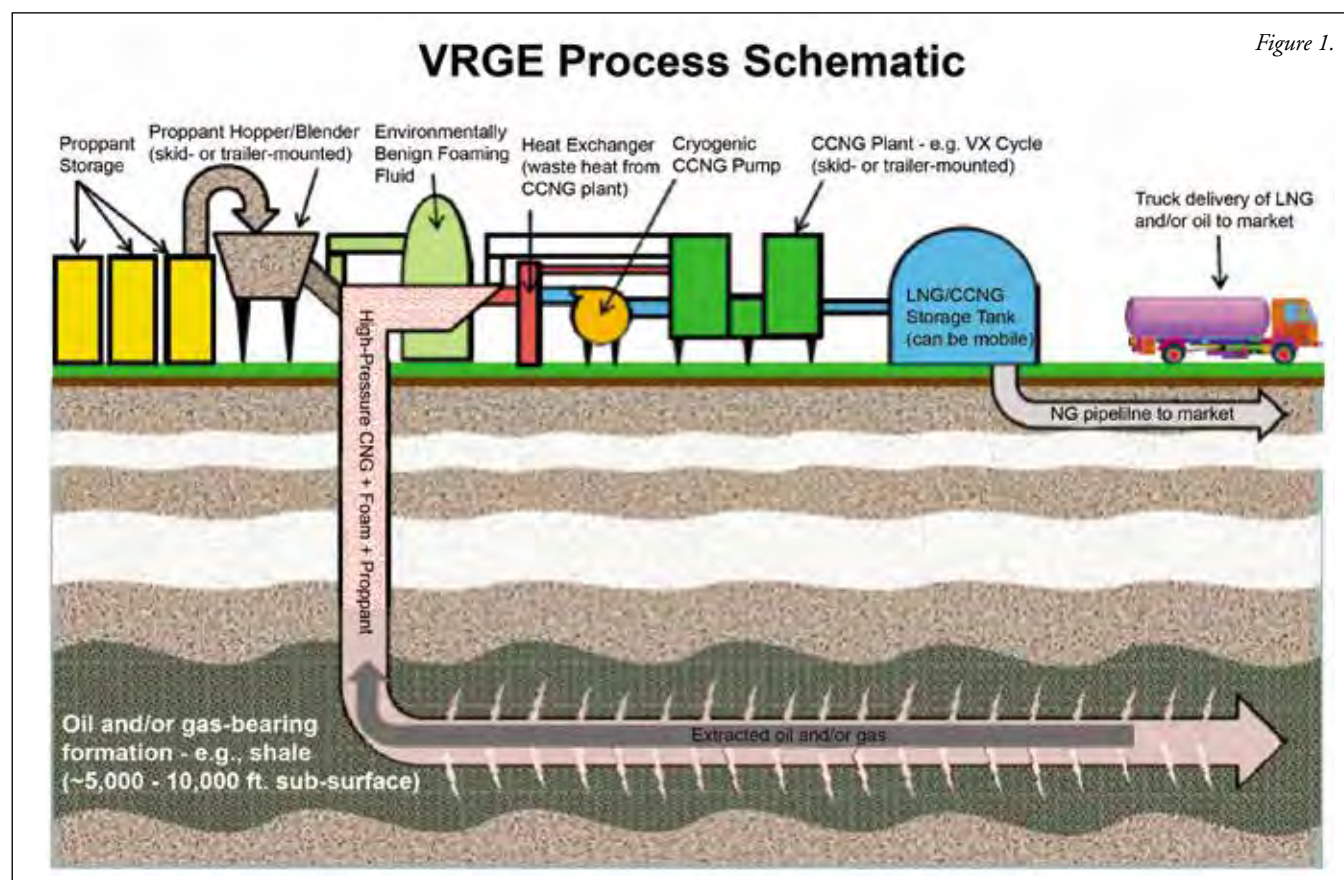


Figure 1.

## VRGE™ PROCESS STEPS

1. Natural gas is supplied from a nearby well(s) or from the targeted underground formation itself.
2. Natural gas is converted to CCNG by an on-site cryogenic plant.
3. The CCNG is pumped to high pressure with a cryogenic pump(s).
4. CCNG is then warmed and expanded by waste heat from the CCNG plant to make high-pressure CNG.
5. The high-pressure CNG is then blended with a proprietary, safe/benign, proppant-carrying foam.
6. The “energized” warm, high-pressure CNG+foam+proppant blend is sent down-hole to the well bore.
7. The high-pressure CNG+foam creates, extends and holds open fissures in the underground formation, and also carries proppants into those fissures.
8. Pressure is then reduced, leaving proppants to hold open the fissures, thus liberating oil and/or gas.

The process is repeated for each “stage” of fracking to be completed per well.

Founded in 2007, Expansion Energy is a developer and licensor of breakthrough technologies designed to solve key challenges in the energy and industrial sectors. The work of this New York-based company focuses on improving the production, transport, storage, processing and conversion of energy and related natural resources.

“Our mantra of ‘relentless innovation’ and a focus solely on breakthrough technologies with substantial commercial value has brought us to where we are today,” says Jeremy Dockter, native of Bismarck, ND and co-founder and managing director of Expansion Energy, LCC. “Along the way, we have formed strategic relationships and licensing arrangements with some of the global energy industry’s largest companies.”

Expansion Energy’s patented VRGE™ non-hydraulic fracturing technology virtually eliminates the use of water from the fracturing process. VRGE™ is able to take the place of hydraulic fracturing, using natural gas from nearby wells or from the shale formation itself as the fracturing medium instead of water.

By using very deep refrigeration and energy-efficient compression of natural gas

to create the fracturing medium, VRGE™ relies on one or many mobile cryogenic natural gas plants (such as “VX™ Cycle” LNG plants manufactured by Dresser-Rand using Expansion Energy’s LNG technology) placed at the well site. The cryogenic plant and cryogenic pumps then produce high-pressure compressed natural gas, which fractures the formations and delivers proppants via a benign, proprietary foam to hold open the fissures.

VRGE™ uses a dense, cryogenic (below -150° F) non-liquid fluid phase of natural gas that Expansion Energy refers to as Metacritical™, produced by the on-site cryogenic plant. Metacritical natural gas is above its critical pressure and below its critical temperature, and is synonymous with what Expansion Energy calls cold compressed natural gas (CCNG™). The CCNG produced on-site is nearly as dense as a liquid and can be pumped like a liquid with little energy, while requiring far less energy to produce than the full-liquid form of natural gas (LNG).

Although VRGE™ is intended to be a substitute for the hydraulic fracturing process, Expansion Energy acknowledges this technology builds on the history of success hydraulic fracturing has delivered to the

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Bakken, and elsewhere, in the oil and gas industry. Even so, there are numerous differences between the two processes.

"One of the main differences is that VRGE™ uses virtually no water," says Dockter. "The use of water is the root cause of many of the public and regulatory concerns associated with hydraulic fracturing. By eliminating the use of water, we can solve many of these concerns."

A typical well created through hydraulic fracturing will use upwards of five million gallons of water and will require hundreds of truck trips to deliver. This entails expenses for the water itself and for water deliveries, increasing road traffic volumes, creating road wear and increasing road safety concerns. On top of this, the used frack water needs to be disposed of or treated, resulting in still more expense and a fresh round of truck trips. By using VRGE™ technology, companies can eliminate many costs associated with water consumption, water transportation and water treatment.

"At the regional costs level, VRGE™ reduces the need for new or upgraded wastewater treatment plants and new disposal wells," says Dockter. "Furthermore, reducing water truck trips translates into less frequent need for road repairs and expansions, saving money for state, county and local governments."

Hydraulic fracturing also uses many chemicals and fluid additives to counter the negative effects of water on oil and gas production, such as the swelling of shale formations, issues surrounding fluid viscosity and the surface tension of water. Some of these chemicals are considered by environmentalists, regulators and policymakers to be potentially harmful to the water supply. By nearly eliminating the use of water in fracturing, VRGE™ avoids the need for these chemicals and fluid additives.

The VRGE™ technology will also shrink the footprint of fracking, reducing the amount of capital equipment, capital expenditures and operating expenses required. A smaller footprint will also result in smaller well pads, lessening construction costs and surface disturbances.

As an economic bonus, should the cryogenic plant that creates the CCNG for the VRGE™ frack-job be left at the well site instead of moving it to frack new wells, it could further increase revenues for the well owner by creating or extracting value-added products from the natural gas, namely LNG and NGLs such as propane and butane—on a fully automated basis. These

fuels can then be sold to nearby markets for many applications, from fueling drilling rigs and trucks to heating residential and commercial developments.

Additionally, almost all of the natural gas used in a VRGE™-fracturing job will eventually resurface, allowing it be sold to markets so even natural gas costs can be recovered.

Along with its tangible environmental and economic advantages, VRGE™ also has the potential to increase oil and gas production for many wells. Oil-bearing and gas-bearing formations generally do not "like" the water used in hydraulic fracturing. Water

causes swelling in shales and creates surface tension in the underground formation, restricting the flow of oil and gas. Again, VRGE™ avoids this drawback by virtually eliminating the use of water.

It has been shown by others in the oil and gas industry that gas-energized fracturing fluids increases a well's oil and gas production and results in a more gradual reduction of a well's production over time; in other words, a less steep decline curve. Although VRGE™ relies on using natural gas in place of CO<sub>2</sub> or nitrogen, the principle is similar.

*Continued on page 68*

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Continued from page 67

The use of CO<sub>2</sub> or nitrogen-energized fracturing requires the costly importation of CO<sub>2</sub> or nitrogen (which must be purchased from the market) from a source other than at the well site, which can be very cost-prohibitive. VRGE™ technology, in contrast, uses the natural gas directly from the well site itself, avoiding the logistical complexity and expense of shipping other compressed or liquefied gases to the wells.

An additional benefit to using natural gas instead of CO<sub>2</sub> or nitrogen is that these gases must first be separated from the produced natural gas before it can be

sold into the market. The natural gas used by VRGE™, of course, does not need to be separated and can be marketed directly with the produced gas.

As an added bonus, VRGE™ may help improve production by delivering a cold “thermal shock” to the shale formation. VRGE’s™ cryogenic plant is capable of producing very cold fluids, which can be sent underground at temperatures of about -20° F, making it brittle or pre-conditioning the formation before actual fracturing occurs.

The introduction of a new technology such as VRGE™ to the oil and gas industry requires that certain hurdles be cleared.

Fracturing is a highly scientific process that relies on time-tested practices to determine the right combination of fracturing factors. For VRGE™ to be widely accepted as a commercial practice and to optimize it for individual shale plays—such as in the Bakken—significant field demonstration and tweaking must be undertaken.

“The industry uses formulas that, while always undergoing continuous improvement, are derived primarily from the statistical databases which fracturing services companies have amassed and analyzed in recent years,” says Dockter. “VRGE™ will need to piggyback on that knowledge and undergo experimentation in the field until enough VRGE™ data has been amassed to create formulas that are tailored specifically to the VRGE™ approach.”

To date, VRGE™ technology has not been deployed within the Bakken. However, the oil and gas industry is showing an ever-increasing interest in using the VRGE™ technology to advance the effectiveness of the fracturing process.

“To that end, we are in discussions with several large producers and fracturing/completion service companies to embark upon a demonstration program in the coming months and we invite other companies in the industry to contact us to participate,” says Dockter. “Expansion Energy almost always prefers to partner with existing companies in the industries we target, rather than trying to compete against them. This is also our plan for the commercialization of VRGE™; license the technology to key companies already in the industry, or to partner with them in other ways.”

It is important to note that VRGE™ does not require any substantial changes to well development and production practices prior to or after fracturing.

“Drilling companies and producers can continue to operate almost exactly the same as they do today for wells that use the VRGE™ technology,” says Dockter. “Only the companies involved in the actual fracturing/completion step of a well’s lifecycle need to undertake some retooling and operational changes to get the full benefits of VRGE™.”

The most important retooling is for fracturing/completion service companies to purchase or lease cryogenic (LNG/CCNG) plants that are part of the VRGE™ approach. However, any expenses incurred adopting VRGE™ would be offset by the reduction of costs currently related to hydraulic fracturing, such as avoiding the need for standard hydraulic fracturing compression



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and pumping equipment, and the elimination of the costs for chemical additives, water use and in labor cost savings.

"Technological progress is a continuous process and we believe VRGE™ is a key next-step in the ongoing innovation of oil and gas production technologies," says Dockter. "VRGE™ can help the oil and gas production industry lower its costs and become more profitable, more resource-efficient and more sustainable, providing a win-win outcome for oil and gas producers and the regional stakeholders who host their operations, including landowners and the general public."



## GET TO KNOW OUR EXPERTS



### JEREMY DOCKTER

Jeremy Dockter is co-founder and managing director of Expansion Energy LLC. He has an MBA from Columbia University (New York, NY); and a BA from the University of Minnesota (Minneapolis, MN).

Dockter is the founder of four energy-related companies and has 15+ years' experience in the energy and natural resources industry with energy technology, energy and natural resources production/project development and energy finance. Specific areas of expertise include oil and gas exploration and production; natural gas pipelines, processing and storage; liquefied natural gas (LNG); power generation; waste-to-energy; refining; gasification; mining and minerals; fertilizer production; biomass-to-energy; industrial-waste-heat-to-power; and renewable fuels.

"Energy is one of the most important industries in the world," he says. "Tremendous opportunities exist for new, innovative ways to produce, convert and use energy. Being involved in the energy industry allows me to have a global impact while working at home in North Dakota."

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# Clean Coal: Is It Possible?

By Christine McKay

It may not be home to Butcher Holler, but North Dakota coal mining has come a long way since settlers first mined the region's lignite in 1873. Gone are the days of the wagon mine, gone are the days of the pickax, and gone are the days of ignorance about fossil fuels and their impact on the environment.

Today, we are aware burning coal releases gases that can seriously harm the environment. We know them as greenhouse gas emissions and we understand their role in climate change.

Yet, coal demand is on the rise almost everywhere in the world. In fact, in a December 2012 report, the International Energy Agency said that in 2017, the fuel will come "close to surpassing oil as the world's top energy source," burning about 1.2 billion tons per year by then. And according to the United States Energy Information Administration, 42 per cent of electricity in the United States is generated by coal.

So, if it's bad for the environment, how can millions of people continue to choose coal as their main source of power? The answer lies in *clean* coal.

Already, many of the effects of coal burning have been significantly reduced or eliminated. There is "coal cleaning," a pre-combustion method for removing contaminants from coal; there are scrubbers that use flue gas desulfurization systems to remove more than 90 per cent of the sulfur dioxide emissions from coal combustion; and there are baghouses, which are used to remove fly ash.

*"Well, I was born the coal miner's daughter in a cabin on a hill in Butcher Holler."*

*—Loretta Lynn, Coal Miner's Daughter*





These are good methods to make coal cleaner, but what about truly clean coal? Is it possible?

With the help of new technology developed by NET Power, it looks like the answer to that question is finally, “yes.”

## SOLVING THE FOSSIL FUEL PROBLEM

NET Power was founded by 8 Rivers Capital, a technology commercialization firm, to solve the energy and carbon emissions problems facing the world. Their goal was to develop a technology that would make energy from fossil fuels not only cleaner, but also significantly cheaper.

“Most approaches to clean coal are additive,” explains Mike McGroddy, one of the original engineers at NET Power. “They assume the basic underlying thermodynamics employed by conventional power generation technologies are the optimum, even though this science is extremely old and was not developed with clean generation in mind.”

To make these older power generation technologies clean, systems must be added on top of them. Because of their additive nature, NET Power maintains that conventional cleaning approaches will always result in an increase in the cost of electricity. Even as these systems are improved, they will still require additional equipment and some level of energy input. So as coal power gets cleaner and cleaner, the cost must go up—usually to the point of being prohibitive for many companies.

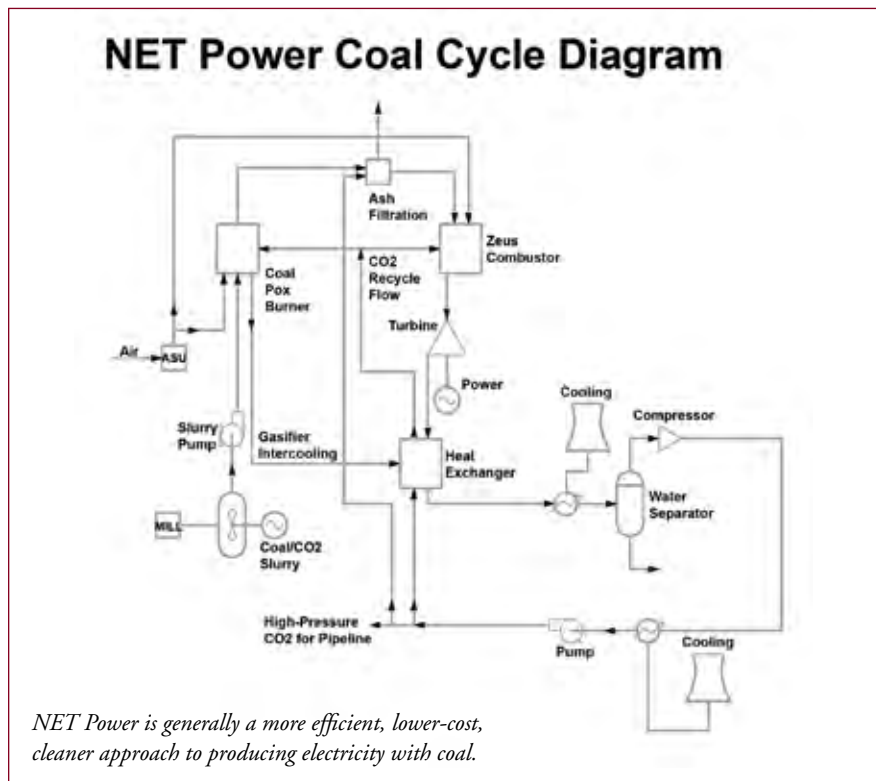
## A NEW TECHNOLOGY

That’s why NET Power is turning the concept of clean coal on its head by inventing and commercializing a novel power generation system that delivers low-cost, high-efficiency power generation from fossil fuels as compared to conventional technologies, with the added benefit of capturing all air of emissions, including all produced carbon dioxide, at no added cost.

“NET Power starts with an entirely new thermodynamic cycle called the Allam Cycle, which enables very high efficiencies, low capital costs and the elimination of air emissions without requiring such complex, additive emissions control equipment,” divulges McGroddy. “We’re rethinking the basic science and optimizing it for clean power generation.”

The basic Allam Cycle is based on:

- **Oxy-combustion:** The system combusts natural gas or synthetic gas (derived from a gasification system) with pure oxygen as opposed to air. This generates a much purer working fluid of water and carbon dioxide while eliminating NOx and most other pollutants.
- **Carbon dioxide working fluid:** The CO<sub>2</sub> produced by combustion in the Allam



cycle is recycled back to the combustor multiple times, producing a working fluid that is mostly pure, high-pressure CO<sub>2</sub>, enabling the cycle to reach extremely high efficiencies.

- **High pressure:** The cycle is high pressure, which drives the high cycle efficiencies and enables NET Power plants to be smaller than traditional plants. The smaller size also helps drive lower capital costs.

The basic NET Power process is not a combined cycle process, eliminating the use of steam and its associated equipment altogether. This enables the user to save capital costs and allows for reclaimed energy to be better deployed. The savings are used to buy new equipment, such as a heat exchanger and air separation unit, and to modify existing equipment so that NET Power is essentially on par with a combined cycle, in terms of cost and efficiency.

“These advantages are maintained when the NET Power cycle is applied to coal,” McGroddy adds. “We’re seeing efficiencies well above what the best, most advanced coal-based technologies can deliver, with dramatic reductions on system cost, while capturing all plant emissions. The potential for this technology is enormous.”

“NET Power will produce cleaner, cheaper power from very abundant, cheap fossil fuel resources,” McGroddy continues. “It will enable places like North Dakota to use vast coal reserves in a clean and cost-effective way.”

## THE LIGNITE CONNECTION

It’s not hard to imagine why a new technology like this might pique the interest of North Dakota’s lignite industry. According to a 2001 North Dakota Geological Survey, Western North Dakota has more than an 835-year supply of lignite currently accessible and economically feasible to recover. Lignite is more accessible than other types of coal because lignite veins are located relatively near the surface, eliminating the need for underground excavation in tunnels.

In 2012, North Dakota produced 27.5 million tons of lignite—the equivalent of 70 million barrels of oil. And while 60 per cent of oil is imported into the United States, the use of coal to generate electricity and create synthetic fuels provides more domestic jobs and energy independence.

There are clearly very good reasons for North Dakota’s lignite industry to be interested in the NET Power system. The application of generation technology would preserve jobs and potentially create new jobs involved in the production and use of North Dakota lignite, and it would ensure economic stability and future growth in the North Dakota lignite industry.

That’s where ALLETE, Inc. comes in.

## A PARTNERSHIP TO SUCCESS

Through its Minnesota Power and BNI Coal subsidiaries, ALLETE, Inc. is undertaking a feasibility project to assess the technical feasibility of the new technology when fueled

with North Dakota lignite. The study will be conducted by the Electric Power Research Institute (EPRI), in combination with NET Power and its development partners Progressive Energy Ltd. and CB&I. The study also received funding from the Dakota Gasification Company and a grant from the North Dakota Industrial Commission.

"The objectives of the project are to assess what type of design is required for the power cycle to operate when fueled with North Dakota lignite," says William Sawyer, project development supervisor with Minnesota Power about the study. "What the system integration requirements will be and what the challenges are for continued development of this power cycle on North Dakota lignite."

The project is a natural fit for ALLETE, as coal—especially North Dakota lignite—is important to both Minnesota Power and BNI Coal.

"Lignite is a cost-effective, abundant resource in North Dakota that ALLETE remains focused on for the benefit of our customers. ALLETE continues to look for innovative ways to keep North Dakota lignite in the game long-term for electric generation, and to develop alternate and additional uses for this resource," confirms Sawyer. "The NET Power technology is one important avenue to pursue for future use of North Dakota lignite."

But how did the idea of fuelling the NET Power technology with North Dakota lignite come to be?

"North Dakota lignite is an abundant, low-cost and under-used fuel source," adds McGroddy. "While NET Power is generally a more efficient, lower-cost, cleaner approach

to producing electricity with coal, the system may also be uniquely suited to use lignite coals much more efficiently than conventional systems."

McGroddy continues, "This ability would be of significant value to both NET Power, which is seeking to develop the cleanest and lowest cost source of power from fossil fuels, and to North Dakota, which is seeking to increase demand for its resources in a clean, efficient and economic way."

## THE FUTURE IS ROSY


When all is said and done, if the NET Power technology feasibility study is successful, the impact on North Dakota lignite could be significant. North Dakota lignite is unquestionably vital to the local economy. The coal conversion tax brings in millions to the state every year. Mining companies pay a severance tax on every ton of coal mined while coal-producing counties receive a portion of the tax for improvements to infrastructure like schools, roads and water/sewage systems.

Additionally, according to the NDSU Agricultural Economics Department, the lignite industry directly employs 4,097 people in North Dakota. And for every direct job provided by the lignite industry, another three jobs are needed to supply the industry with goods and services. Thus, there are 13,347 indirect employees.

For these reasons and many more, the North Dakota lignite industry wants to see demand for its product continue to increase, and one way of doing so would be to finally produce truly clean coal. As Sawyer explains, clean coal technology would give North

Dakota a leg up in the competitive power industry and position it for many years of future success.

"If successful, this technology would provide the North Dakota lignite industry with a potential path forward for maintaining or growing the use of lignite for power production amidst the ever-changing and challenging regulatory environment," Sawyer concludes.

And North Dakota would be on its way to ensuring the next 835 years of lignite in their soil would be mined in a safe and economic way for generations to come. 

## GET TO KNOW OUR EXPERTS



### WILLIAM SAWYER

William Sawyer is project development supervisor at Minnesota Power. He has an Industrial Engineering degree and MBA from the University of Minnesota, has 10 years' experience in the electric utility industry, and has 15 years' experience in the project management of large environmental and municipal utility projects for municipal government.

"This is a challenging and exciting industry with diverse project and technology development opportunities requiring strong technical and business skill and interest."

### MICHAEL MCGRODDY

Michael McGroddy is project leader with NET Power, LLC. He has a Bachelor of Science in Engineering and a Master of Engineering Management from Duke University. McGroddy has five years' experience in engineering and project management, and has three years' experience with 8 Rivers Capital and NET Power.

"The global scale and impact of the energy industry is tremendous, therefore, the potential of a technology like NET Power's to affect change with far reaching impacts is equally tremendous."

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# They Say the Road to Success is Always Under Construction

By Jennifer Ryan

**I**n all the romantic West, few adventures were as colorful as the trailing of Longhorn cattle from Texas to the northern ranges.”

A sign posted near Long X Bridge over the Little Missouri River in North Dakota paints an idyllic picture of a lush landscape burgeoning with promise and plenty. In a span of only a few years in the 1880s, history books explain the site was a popular crossing for over 20,000 longhorns that eventually made their home in Montana.

The site remains a popular crossing, but now its travelers include big rigs, oil tankers, semi trucks and local commuters numbering near 4-5,000 per day.

Highway 85 is an essential roadway for the oil patch, stretching north and south across North Dakota. The Long X Bridge, located on the roadway about 14 miles south of Watford City, ND, plays a pivotal role on the thoroughfare.

It was damaged in the spring of 2012 when a truck load that was too high struck it repeatedly. A semi truck hauling a trailer and carrying an excavator hit several of the cross bracing beams of the bridge while attempting to travel under the bridge. Eventually, one of the braces broke off. Structural damage to the bracing beams

required the North Dakota Department of Transportation (NDDOT) to temporarily close the bridge. Fortunately, no one was injured in the incident.

Unfortunately, highway accidents, collisions and, sometimes, fatalities are a reality, particularly when there is a high volume of traffic like North Dakota has seen on its roadways since the oil boom. The state is doing its part by building safer roads designed to handle the heavy traffic created by the oilfields.

North Dakota's Highway Patrol maintains that when all drivers take appropriate precautions, most accidents are preventable. This means obeying all road safety laws, following the strict guidelines for truck loads, driving only with safe equipment, and being conscientious and alert drivers.

Inspectors were flown in from Bismarck, ND and determined that the bridge, while structurally sound, required repairs. On such a vital artery for the oilfields, complete closure of the highway was not an ideal solution. The NDDOT implemented a couple of measures to ensure repairs were completed safely while still allowing traffic to use the road.

Traffic was reduced to one lane with one-way traffic. Flaggers and signals facilitated the traffic flow, while motorists were required to reduce speed. The department also enforced a 15-foot width and a 105,500-lb. gross vehicle weight restriction for trucks, while reminding all motorists that only legal load limits were permitted at all times. Finally, the highway was closed to night-time driving for two weeks in April for temporary repairs, and again for two weeks in June 2012 for permanent repairs. Several signed detours provided motorists with alternative routes during the periods the bridge underwent repairs.

Now that permanent repairs are long completed, Ron Henke, deputy director of engineering for the NDDOT, says the department is taking another look at the bridge.

The state maintains a bridge inspection program to ensure the condition of bridges is safe to the traveling public. The NDDOT also conducts inspections on all state, urban and county bridges through a recurring two-year cycle.

“The Long X Bridge isn't in need of further repairs; however, the NDDOT is studying the bridge and surrounding area to determine the best way to accommodate the increase in traffic and move oversized truck traffic more efficiently in the area,” says Henke.



## STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM

To determine which bridges and roadways require repairs and upgrades, the department uses a number of tools, including its Statewide Transportation Improvement Program (STIP).

The program details are available to the public on the NDDOT website ([www.dot.nd.gov/manuals/planning/STIP/final-STIP.pdf](http://www.dot.nd.gov/manuals/planning/STIP/final-STIP.pdf)) in a comprehensive, 138-page planning document that describes the department's plans for the federally funded highway and transit projects to be constructed in North Dakota from 2013-2016 (depending on the availability of funds).

"The program requires coordination between state, city and county governments, and the public," Henke explains.

Listing each district in the state (Bismarck, Valley City, Devils Lake, Minot, Dickinson, Grand Forks, Williston, Fargo, and various statewide locations), the program stipulates what type of work is expected, how long each project is projected to take, and the total cost of each project, including where those funds will come from.

## ESSENTIAL OIL PATCH ROADWAYS

Highway 85, of course, remains a strong focus for the state, as it provides the main route for transportation servicing the oilfields. Not only does the state want to ensure the road is efficient and in good condition, safety is also a paramount concern on the heavily trafficked route.

Current design plans for the highway from Watford City to Williston include two 12-foot driving lanes in each direction with a paved median in the middle. The section of highway will also have eight-foot wide shoulders on both sides.

Other design elements of the project include:

- Rumble strips on both edge lines;
- Large rumble strips throughout the median; and
- Dedicated turning lanes at major intersections.

The turning lanes are designed to allow traffic to keep moving at speed in the driving lanes while motorists can safely make left-hand turns off of the highway.

Highway 85 is not the only roadway vital to the oil industry in western North Dakota. The NDDOT currently has construction projects underway on a number of highways that impact the oil industry.

## AGGRESSIVE INFRASTRUCTURE IMPROVEMENTS


The NDDOT website boasts it is "aggressively addressing infrastructure improvements to enhance safety and traffic movement in western North Dakota."

From 2008-2012, the NDDOT invested approximately \$940 million in state projects "to preserve and improve transportation infrastructure." It also plans to invest upwards of \$1 billion dollars over the next three years.

"Approximately \$630 million is being invested in roadways in western North Dakota this year alone," says Henke.

Some of those projects include: ND 22; US 2; bypasses for Williston, Watford City, Dickinson, Alexander, New Town and Killdeer; ND 8, ND 23; and ND 1804.

First up in the state's plans, the department plans to bid out the northwest Williston bypass and the US 85 Watford City bypass. Those projects should begin construction this year, while the remainder of the work will be completed in 2014. Following those two projects, the Dickinson, Alexander and New Town bypasses will be bid out in 2014. The Killdeer bypass project is still in the early planning stages and will be bid out at a later date.

"This investment will help to provide an enhanced transportation system that meets the growing demands in the west," says Henke. 

## GET TO KNOW OUR EXPERTS



### RON HENKE

Ron Henke is deputy director for engineering at the North Dakota Department of Transportation. He earned his Bachelor of Science degrees in Construction Management and Construction Engineering from North Dakota State University in 1988 and 2001. As a registered Professional Engineer in North Dakota, Henke has a background in field construction, statewide operations (construction and maintenance), planning and programming of projects, budget, environmental document preparation, and plan development.

He is a member of the North Dakota Society of Professional Engineers and the American Society of Highway Engineers and currently serves on the American Association of State Highway and Transportation Officials (AASHTO) Standing Committee on Highways. He joined NDDOT in 1990 and previously served as office of operations director, office of project development director, and in various capacities including design, construction and as assistant engineer for planning and programming.

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GRAND FORKS



Foundation construction of the Dakota Plains Refinery. Photo provided by MDU Resources Group.

Tank construction of the Dakota Plains Refinery. Photo provided by MDU Resources Group.

Feature

# Refining the Process

By Paul Adair

In 1924, MDU Resources Group Inc. began as a utility business that served the communities which would, one day, become the heart of the Bakken oilfields. Now, almost 90 years later, MDU Resources continues to serve the region in building the Dakota Prairie Refinery, one of three new refinery projects coming to North Dakota, and the first greenfield refinery built in the United States since 1976.

Located just outside of Dickinson, ND, The Dakota Prairie Refinery can trace its roots back to December 2011, when MDU Resources and Calumet Specialty Products discussed a joint partnership to develop, build and operate a state-of-the-art diesel topping plant in southwestern North Dakota.

"Calumet has extensive experience operating refineries and MDU Resources has great infrastructure experience," says Dave Goodin, president and CEO of MDU Resources Group. "We quickly discovered both companies had similar cultures and could work well together."

Progress on the Dakota Prairie Refinery project has been on track since the initial groundbreaking in March 2013. Project workers have already logged approximately 50,000 man hours in the early construction phase, with rough grading and excavation essentially complete. Work on the concrete foundations is ready to commence and should be done by November.

"In mid-summer we began installing the plant's utility service systems, storm water, firewater and related systems, and those should be substantially complete by the end of the year," says Goodin. "We expect the refinery to begin operating in late 2014."

*When completed, the Dakota Prairie Refinery will have the capacity to process 20,000 bbls of Bakken crude every day and refine approximately 6,000 bbls per day of diesel fuel.*

The Dakota Prairie Refinery provides an opportunity for MDU Resources Group to expand its midstream business into new areas of operation. This project will also offer a chance for all of MDU Resources' businesses to become involved in the process.

"Knife River is handling the groundwork, WBI Energy will supply the natural gas and Montana-Dakota Utilities will provide the electric service," says Goodin. "WBI Energy Corrosion Services will provide cathodic protection services, and there is the potential for MDU Construction Services Group to perform wiring and electrical work. And of course, we will source some of the oil for the refinery from our E&P company, Fidelity."

When completed, the Dakota Prairie Refinery will have the capacity to process 20,000 bbls of Bakken crude every day and refine approximately 6,000 bbls per day of diesel fuel. The processed crude will also produce 6,000 bbls per day of Naphtha—used

primarily for making high-octane gasoline and, in the chemical industry, for solvents and cleaning products—and 6,000 bbls per day of atmospheric bottoms—used for lubricating oils and can be additionally processed into a heavy fuel oil. The diesel produced can then be sold to distributors throughout North Dakota. The other products (Naphtha and atmospheric bottoms) will be rail-shipped out of the Bakken to other facilities to be further processed.

The cities of Dickinson, ND and South Heart, ND will be the closest communities in proximity to the Dakota Prairie Refinery and, because of this, will benefit from the most significant economic perks: jobs. The refinery is expected to need up to 500 jobs during the time of peak construction and about 100 permanent jobs when in operation.

There will be other benefits, such as Dickinson's new wastewater treatment plant selling the refinery its industrial water supply

and treatment services. There is also an important benefit in processing the oil of the Bakken locally in North Dakota, helping keep money in North Dakota.

"This will be similar to our state's agriculture industry, which adds value by processing commodities within the state," says Goodin. "We can do the same with our Bakken crude, rather than letting other states reap the monetary benefits of our oil."

Estimates from the United States Geological Survey claim the Bakken and Three Forks formations together hold over seven billion barrels of undiscovered, technically recoverable oil, helping ensure North Dakota's oil industry will be part of America's domestic energy strategy for a long time. MDU Resources' businesses are ready to continue investing in the region and are always seeking new ways to expand its midstream operations.

"I expect the Bakken will continue to be a very important source of opportunity and growth for all of our businesses," says Goodin. "The Bakken communities are where MDU Resources got its start nearly 90 years ago, and we are extremely proud we are able to continue serving and growing with those communities."

## THUNDER BUTTE PETROLEUM SERVICES REFINERY

In May, the Mandan, Hidatsa, and Arikara Nation (MHA Nation) gathered to bless the ground on the Fort Berthold Indian Reservation at the site of where the latest refinery planned for North Dakota will be built.

This ceremonial groundbreaking represented more than a decade of patience and hard work for the Three Affiliated Tribes,

since the MHA Nation embarked on its initial plans for the refinery. The name, Thunder Butte Petroleum Services Refinery, was chosen to honor Thunder Butte, one of the most sacred sites on the Fort Berthold reservation.

"It's really an important time for our people; it's exciting," says Ken Hall, tribal representative. "But we have to be mindful going forward to not lose our culture." The refinery will be owned and operated by the MHA Nation.

Full-scale construction of the Thunder Butte refinery southwest of Minot, ND began in August. Conservative estimates show a projected cost of \$450 million, and the facility is expected to be completed over several phases in the next two years. Should all go as planned, the Thunder Butte refinery will commence production of diesel and petroleum products by 2015.

So far, the tribal business council has set aside \$40 million for the first phase of the project, which will include the construction of a truck-to-rail crude oil trans-loading facility that will later tie into the completed refinery.

Presently, the MHA Nation is in the process of finalizing details with Chemex Inc. of Salt Lake City, UT to design and build a modular refinery in Bakersfield, CA. The refinery will then be transported in pieces to North Dakota to be assembled, with the entire construction process expected to take up to two years.

The Thunder Butte refinery is one of the first refineries to be built in the United States in over 30 years and is the second to begin construction in North Dakota in as many months—the other being the Dakota Prairie Refinery.

Similar to the Dakota Prairie Refinery, the Thunder Butte refinery will be able to process 20,000 bbls per day into diesel fuel, propane and naphtha products. Once finished, the facility will refine Bakken Formation crude oil at the site in southwest Ward County, where the MHA Nation owns 469 acres of land, with a portion of the land specifically set aside for the refinery.

The refinery itself will be owned and operated by the MHA Nation and, as such, will be employing 300 local construction jobs and 75 to 100 permanent, full-time jobs once up and running. These jobs will help bring welcome relief to the people of the Fort Berthold Reservation, who have been facing chronically-high levels of unemployment for some time.



## GET TO KNOW OUR EXPERTS



### DAVE GOODIN

Dave Goodin is President and CEO of MDU Resources Group, Inc. He earned a BS Electrical and Electronics Engineering degree from North Dakota State University (1983), an MBA from the University of North Dakota (2002), and graduated from the Harvard Advanced Management Program (2006).

Goodin began his career with Montana-Dakota Utilities Co. in 1983 upon graduating from college and worked in Dickinson as an electrical engineer. He became president and CEO of MDU Resources Group's entire utility business in 2008, and in January 2013, he became president and CEO of MDU Resources Group, Inc.

"Like most college students, I started out looking for a job. Instead, I found a career. This company took a fresh-out-of-college engineer 30 years ago and gave me different opportunities along the way. I'm just very grateful to have had all this experience through the company."



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# Legislative Line: Changing Oil Tax Distribution

By Paul Adair

**B**enjamin Franklin is quoted as saying, “Nothing can be said to be certain, except death and taxes.” Of course, at the time, Franklin did not make mention of the great uncertainty in how both death and taxes might be distributed.

However, in North Dakota’s 63<sup>rd</sup> Legislative Assembly, giant steps were taken to provide a measure of clarity and stability to the future of the state’s oil patch communities, helping them face infrastructure challenges produced by the oil and gas boom rockin’ the Bakken.

The Oil and Gas Gross Production Tax is not a new tax for North Dakota. Instituted in 1953 at a rate of 4.25 per cent, it was increased four years later to five per cent, where it remains today. The state collected this tax and a distribution formula was established to bring oil tax dollars back into local counties, communities and school districts, where the oil production occurred, and although these local subdivisions received oil tax dollars, the state of North Dakota received the lion’s share for general state fund purposes.

At present, the five per cent Oil and Gas Gross Production Tax will generate an estimated \$2.2 billion for the 2013-2015 biennium, \$1.1 billion of which is diverted back into the oil and gas counties. The counties which have the highest production of oil receive more of the revenue diverted back, with Mountrail, Williams, Dunn, McKenzie and Bowman counties currently being the biggest producers.

Changes were made this year in how the monies are distributed within the counties. In the past, distribution was limited to three political subs; counties (45 per cent), cities (20 per cent) and school districts (35 per cent). The new formula targets monies to the cities of Williston, Minot and Dickinson, which serve as hubs for workers and businesses in the oil patch. The new system also provides a two-tiered formula differentiating between the low and high-producing counties—those either above or below \$5 million in annual Gross Production Tax.

In addition, the Oil and Gas Impact

Fund, which targets money to the areas of greatest need in the oil patch, will grow from \$100 million in the 2011-2013 biennium budget to \$240 million in the the 2013-2015 state budget. In the new biennium, funds are directed to law enforcement, hospitals, emergency medical services, airports, nursing homes, townships and higher education.

“This will give them the resources they need to meet the challenges of production impacts, which are great in the oil and gas counties,” says Sen. Rich Wardner. “The strain on law enforcement, small town fire departments, medical services, roads, water infrastructure and schools needs to be addressed. Help is needed now and it may still not be enough. However, the next legislative session will continue to change the formula and other appropriations to meet the challenging impacts in oil country.”

Although it will be the services in the oil and gas counties which will most notice the changes to tax distribution, all of North Dakota will reap benefits from a healthy and prosperous oil and gas industry. An additional 6.5 per cent Extraction Tax, when combined with the five per cent Oil and Gas Gross Production Tax, generates 11.5 per cent on all the oil revenue of North Dakota, going directly into the coffers to go toward state initiatives.

“The revenue from this combined tax will fund education, water projects, property tax relief, infrastructure and disaster relief across the state of North Dakota,” says Wardner. “We need to remind people if it were not for the oil activity, the state would have had a difficult time providing dollars to Minot, Devils Lake and Fargo for flood control.”

It should also be noted that the \$1.1 billion the oil patch counties received were not the only dollars sent into oil country. The state provided \$200 million for water projects, \$120 million for Western Area Water System and \$80 million for SWWA. In addition, the state provided an emergency appropriation of \$1.12 billion for state roads in the region, which will

directly benefit communities in North Dakota, like Dickinson, Watford City, Williston and New Town.

Last June, the Board of University and School Lands announced about \$71 million in Energy Impact Grant funds to assist 20 communities in the oil-producing Bakken that were affected by the region’s unparalleled growth due to the boom. North Dakota is expecting to invest a total of \$240 million in Energy Impact Grants to the region by the end of 2015.

These Energy Impact Grants, along with the new distribution formula for the



*Photo by Bobak Ha'Eri,  
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five per cent Oil and Gas Gross Production Tax, are only pieces of a larger puzzle, representing North Dakota's resolve to face challenges created by the rapid growth in the Bakken region. The state has committed itself to investing an unprecedented

\$2.6 billion to help support the beleaguered oil and gas region during the 2013-2015 biennium—more than double the \$1.2 billion in the last biennium's two-year funding package.

The monies allotted to the affected communities will be used to shore up a number of infrastructure needs throughout western North Dakota, including highway, county and township road improvements, water supply and treatment projects, public safety, policing and emergency service improvements, and other assistance for schools and communities in the oil patch.

"These grant funds are an important part of our overall strategy to meet the

challenges that come with rapid growth," says Gov. Jack Dalrymple. "The grant program allows us to adapt to the region's dynamic needs and the funding process relies on the participation of local residents and officials."

Alongside \$240 million in Energy Impact Grants, the state will continue assisting the Bakken in other ways, working with the North Dakota Department of Transportation to bring major infrastructure improvements to the area, including the construction of new bypass routes and the expansion of Highway 85 between Watford City and Williston.

## GET TO KNOW OUR EXPERTS



### GOV. JACK DALRYMPLE

Jack Dalrymple was sworn in as the 32<sup>nd</sup> Governor of the great state of North Dakota on December 7, 2010, and began working to grow and diversify North Dakota's economy and create good jobs and economic opportunities for its citizens. He brings to the office an outstanding record of agriculture, business, legislative and executive leadership.



### SEN. RICH WARDNER

Rich Wardner is a retired educator and farmer and former executive director of the Dickinson Area Chamber of Commerce. He has a Bachelor of Science degree from Dakota State University and a Master of Science from Northern State University.

Wardner is past president pro tempore of the senate, was chairman of the Sunrise Youth Bureau and was previously chair of the Midwest Legislative Conference and a member of Legislative Management for the Elks and Rotary International. He was a member of the House from 1991-1997 and has been a member of the senate since 1999.

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# Foreign Workforce Fares Well in North Dakota

By Jennifer Ryan

Despite some economic improvement since the 2008 recession, headlines across the country paint a grim picture of the plight of America's many jobless.

In June 2013, national statistics showed that over half of the 50 states watched their unemployment rates rise. It was reported that 11 states remained the same, while 11 states had lower unemployment rates.

Nevada remains at the bottom of the list, with a staggering 9.6 per cent unemployment rate. Illinois reports numbers just shy of that—9.2 per cent—while some of its major metropolitan centres, including Chicago, are experiencing unemployment rates in the double digits.

Yet, consistently, in a country where many states are struggling with continued joblessness, North Dakota's unemployment rate sits comfortably and confidently at the top of the list with an unemployment rate of approximately 2.5 per cent. In the

western parts of the state, that number is even lower than one per cent.

The oil boom is, of course, responsible for North Dakota's trajectory to the top of the list. Yet, many of its cities have been left with a unique problem: job vacancies in the thousands. The oilfield represented an opportunity for the state's unskilled and labour workers to make a lot of money. The subsequent migration to North Dakota's oil towns and their promise of high-paying jobs left a trail of empty positions in its wake, most in the service and hospitality industries.

Simple math shows the problem: In a state that the total population barely exceeds 700,000—nearly 98 per cent of whom are already employed—the Department of Commerce has tracked 21,000 vacant jobs (7,000 of which are in the 19 oil-producing counties). Yet the Department of Commerce can only track vacancies that have been publicly posted. For people searching for a job (and based on the

above statistics, it can only be assumed that many Americans have found themselves in this situation in recent times), they know that posted jobs are just the tip of the iceberg. Most job openings are "hidden" and filled through word of mouth, referrals and internal appointments.

Andy Peterson, president and CEO of the Greater North Dakota Chamber, predicts the number of vacancies in North Dakota is actually much higher. "I'd guess even upwards of 50,000," he says.

That's the problem; what's the solution?

## INFLUX OF INTERNATIONAL WORKERS

A wave of young workers from countries around the world has made its way to North Dakota to fill vacant positions in service and hospitality businesses.

While some youth dream of the United States as sprawling metropolitan cities with skyscrapers, bustling nightlife, sweeping freeways and crowded subways, others are





finding their own American experience in North Dakotan cities like Minot, Beulah, Dickinson, Watford and Williston.

Foreign cultural exchange programs like the recently defunct J-1 visa work and travel program and the H2B worker visa program have been supplying the state with an eager and capable workforce. These programs bring young workers to the United States to fill temporary positions and to immerse them in a different culture.

The H2B worker visa program places foreign workers in non-agricultural jobs for up to 10 months. Its website boasts 22 years of success in helping “employers fill temporary or seasonal needs that are near impossible to fill with United States workers.” It adds that it provides only “law-abiding citizens from a few select United States-friendly countries,” including the Philippines.

A relative newcomer, Global Employment Services, just started bringing international workers to North Dakota in November 2012. By January, they had 26 people employed. All of those positions had housing secured by the employer as part of the contract.

The J-1 Visa work and travel program was very popular until this year, when North Dakota cancelled the program, effective September 1. International student workers were placed in seasonal positions for up to four months before pursuing other travel plans (such as seeing those impressive New York skylines and Californian vistas for themselves).

Participating countries for the J-1 visa work and travel program included Jamaica, Macedonia, Turkey, Bulgaria, Brazil, the Ukraine and more. Though it was a popular program for applicants and employers alike, North Dakota has stopped using it because it was designed for seasonal needs. The oil boom, the government argues, is permanent. Therefore, the needs of North Dakota employers mean they are no longer eligible to qualify for the program.

It is not uncommon for North Dakota businesses to rely on foreign workers to make up one-third to one-half of its total staff. These vital employees ensure businesses can stay open for regular hours. Without them, fast-food restaurants have been forced to close earlier than desired, while only able to maintain operation of their drive-thru windows. Temporary workers also helped ensure the customer experience remains satisfactory. For example, some understaffed supermarkets were experiencing long lines. The simple influx of a few immigrant visa workers alleviates the problem.

*However, the rent in Williston has reached levels that rival those of housing prices in New York City—a challenge international workers are willing to face, with support from their employers.*

Businesses in Dickinson have welcomed at least 100 international workers, who arrived on temporary work visas and filled the vacant service industry jobs left behind by those now working in the oilfields.

Cities like Watford and Williston have similar stories. Their workers appreciate the highly competitive wages they can earn while working in service jobs before they embark on the travel portion of their work and travel programs. However, the rent in Williston has reached levels that rival those of housing prices in New York City—a challenge international workers are willing to face, with support from their employers.

While the businesses and their customers benefit, so do the international workers, who find themselves completely immersed in the American culture. Many have come simply looking to improve their English language skills; they leave with valuable life experience, and memories and relationships to last a lifetime.

Americans working with temporary workers, meanwhile, establish important relationships, too. The exposure to a different cultural perspective teaches them new ways to approach their jobs.

In 2010, 15 J-1 visas were issued for workers in North Dakota. Two years later, that number had grown to 1,000. Since the J-1 visa work and travel program is ending, many businesses will be turning to the H2B worker visa program and other similar enterprises to fill the demand for capable workers.

## SCIENCE AND TECH SECTORS AFFECTED

Hospitality is not the only industry struggling from a lack of workers. The science and technology sector has seen the detrimental effect of vacancies.

“Hospitals, specialty positions, technology workers, even government positions like police and fire services are feeling the affects,” says Peterson.

“I’ve spoken with management in these places and the challenge they face with vacant positions is that it can take up to six months to replace someone.”

Other North Dakota leaders are calling for a change, citing the global economy we now live in. Without the right talent, it is too

easy to fall behind in the world of technology research, development and implementation. Skilled workers are needed to bring ideas forth that ensure the United States remains competitive on a global scale.

## BOOMING ECONOMY SYNDROME

Many employers looking to attract workers are focusing on their competitive advantages, whether that is the ability to offer an even higher wage, or to provide support for other necessities, like difficult-to-come-by housing and child care options.

The increase of workers in oil-producing counties has resulted in a high demand for housing, child care, infrastructure, health care and education resources, to name a few. All of these things come with a cost.

“Budgets are up,” says Peterson. “North Dakota leads the nation in per capita income growth right now. Wages go up, wage pressure increases. You can see the cycle. It’s certainly a challenge! We have booming economy syndrome. But these are good problems to have in contrast to the United State’s struggles to get back on its feet.”

## GET TO KNOW OUR EXPERTS



**ANDY PETERSON**

Andy Peterson has served as president and CEO of the Greater North Dakota Chamber since October 2010. Prior to his current position, Andy served as the director of public policy for the Duluth Area Chamber of Commerce for 12 years.

# Lighting Solutions



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# Fuelling the Industry

By Matthew TenBruggencate

The Bakken boom has prompted many discussions on infrastructure and physical limits. As governments, companies and communities work to keep up with the demands of the industry, which includes a steady diet of sturdy roads, ample power, fresh water and so on, another asset struggles to receive the same emphasis: worker quality of life.

The workers who make up the core of the Midwest's oil industry tend to be hard-working, goal-oriented achievers. The demands of the work and mutual dependency it fosters flush out people who come up short. This largely male workforce (though less so than it once was) is used to long hours. The physical demands of extreme weather go with the territory—literally. But employers and employees accept these conditions at a cost.

"This is a problem for workers everywhere, though it may be more severe in blue collar industries," says Christopher Wanjek, whose 2013 white paper for Target Logistics titled *Workforce Housing and Feeding Solutions for Health, Safety, Productivity and Morale* looked at the impact that lack of proper nutrition, shelter and relaxation has on remote and temporary worksites.

"It can apply to office workers, too, if they're not getting the right nutrients, or are working long hours in cramped conditions. It's a problem in any given industry," says Wanjek. "But it's more severe with industries like oil and mining because of the nature of the work; the sometimes-remote nature of the work sites."

Wanjek first started looking at nutritional support for workers in the field when he was approached by the International Labor Organization in 2004. The resulting book, *Food at Work*, drew data from industries around the world and reframed the discussion of worker nutrition as a safety and productivity concern.

"In 2005, when I started talking about this, other people were talking about 'workplace health' as though it was just fumes, fire

hazards and so on," he says. "I'm talking about food and it sounds like a luxury."

Wanjek's research found direct links between the quality of food workers were able to access and a number of outcomes: the quality of the products being produced, accident rates, worker happiness and absenteeism.

"I think companies are nuts not to think more about this," says Wanjek. He believes that in some industries, such as oil extraction, the can-do culture actually works against worker quality of life.

"[These men] are used to fending for themselves, they're comfortable with the lifestyle and accept the repercussions. With oil workers, the idea is accepted that they're on their own."

Wanjek cites studies that measured the energy output of workers in vigorous jobs, setting the average at 300 kcal/hour, or roughly 4,000 calories in an oilfield shift. While those calories can come from any food source, a carbohydrate diet found on the menus of many North American restaurants and fast food chains provide rushes of complex sugars

that quickly crash, leaving workers hungry or weak after just a few hours on the job. Subsistence on these meals also runs up a serious vitamin deficiency, particularly Vitamins A, C and D.

This vitamin deficiency would cause its problems, but it's typically exacerbated by a high intake of carbohydrates and fats to compensate for low energy levels. Workers may think they're fuelling up, but these poor choices end up adding weight.

"We've seen poor nutrition in the field lead to diabetes, obesity and a lack of dexterity," says Wanjek. "In the worst cases, we've seen construction workers who, wearing their gear, become too heavy for their equipment to handle."

Poor diet choices aren't a given in the field, Wanjek says, but the more remote a site is, or the longer a stay in temporary quarters, the less likely a wide variety of fruits, vegetables and whole grains will be available.

*Continued on page 88*



*Continued from page 87*

While an unhealthy diet should be avoided for obvious quality of life concerns, it also becomes a safety hazard when powerful equipment is being operated. Poor diet, coupled with exhaustion from 10- to 12-hour shifts, can be a killer.

Research shows that 90 per cent of workplace accidents are human error. Among those, the leading cause of a mishap is fatigue.

“Good food and relaxation become your protective equipment,” says Wanjek, talking about the metaphor he uses when speaking to front-line workers, unions and CEOs. “It’s what’s protecting the worker.”

Though food and nutrition were the primary focus of his research in the mid-2000s, Wanjek has been widening his gaze lately to examine the value of rest and relaxation. It’s a harder area to research. While nutrients are quantifiable, a good night’s rest and enjoyable recreation with family and friends is harder to pin down. Wanjek is adamant, however, that not only is there a connection between relaxation and the bottom line, but is a noticeable

spectrum of downtime activities and their related returns. A night’s sleep in a cheap motel, he says, delivers a noticeably inferior recharge to an oil patch worker than a stay in a four-star hotel or, better yet, a night at home.

Healthier, better-rested employees are less likely to injure themselves and others, lowering medical claims and work stoppages. In an era where the oil industry is under increasing scrutiny from critics and regulators alike, Wanjek thinks having programs in place to ensure proper rest and nutrition makes public relations sense.

“Anything you can do to show you’re being proactive—that you’re not creating a scene where people are scrambling to get as much done as quickly as possible—I think that not only will you be preventing accidents but, God forbid, something goes wrong, you’ll be pointing out how you’re doing the best you could; that you don’t run a haphazard operation.”


Beyond intangibles like good PR, Wanjek and others have shown there is a calculable return on investment for programs that subsidize—or provide—worker food regimes give higher quality downtime.

In his white paper, Wanjek documents how Husky Injection Molding Systems, Ltd., in Bolton, Ontario, Canada, showed a US\$6.8 million in yearly savings from a US\$2.5 million investment in wellness. Coors Brewing Company, the team behind “the silver bullet” has reported a \$6.15 productivity gain for every \$1 invested in food and fitness. On the lower end of the spectrum for companies that tracked ROI on wellness programs, DuPont has seen just over a \$2 gain for \$1 spent on workers’ recreation and quality food.

With demonstrated financial returns for wellness programs and healthier, happier workers, it’s not clear why more companies don’t invest in worker support. Wanjek thinks it comes down to corporate culture, with change often being solely determined by the CEO. It’s the leader who sets the course, Wanjek says, pointing to his favorite example: Robert Schad of Husky Molding Systems, whose subsidized nutrition-rich cafeteria “doesn’t provide a bad meal.”

It was the outgrowth of Schad’s motto that a nourished body produced a rested mind, producing, in turn, a productive, motivated individual. It’s a motto Wanjek wants to see across the oil industry.

“Carrying on the earlier analogy,” Wanjek writes in his white paper, “a pair of simple garden gloves cannot protect a well operator in sub -40° weather. Similarly, fast food or even typical diner food cannot sustain this same well operator for very

long. Workers of heavy labor in extreme conditions...need upwards of 4,000 kcal per day in well-designed portions of proteins, fats and carbohydrates. This helps ensure the proper energy, vitamins and minerals required not only to work 8- to 12-hour shifts but also to recover from the long workday and to stay healthy.” 

## GET TO KNOW OUR EXPERTS



*Christopher Wanjek giving a presentation on workplace health.*

### CHRISTOPHER WANJEK

Christopher Wanjek has a Master’s degree in Public Health (Harvard) and in Journalism (Temple University, Philadelphia). Wanjek is the author of *Hey, Einstein!* (2012), *Food at Work* (2005) and *Bad Medicine* (2003). He is an international lecturer on food and workplace health and has written for over 300 publications, including the *Washington Post* and *Smithsonian Magazine*.

Wanjek entered journalism and health research due to a burning curiosity to understand the world around him and to introduce it to others in many forms. His work ranges from scholarly articles to science and technology jokes for Jay Leno on the *Tonight Show*, where he has been a contributing writer since 1997.



## TRIVIA TIME

### ND ENERGY FACTS

North Dakota is becoming an energy and economic powerhouse. Our economy is the envy of the nation, and the oil we produce helps make us less dependent on foreign energy. Did you know:

- The biggest source of energy in the United States is petroleum, which accounts for 37.8 per cent of our energy usage.
- In 2010, we imported over 60 per cent of our oil, mostly from Canada, Mexico, Saudi Arabia and Venezuela.
- Oil and gas exploration has taken place in every county except Traill.
- Each drilling rig creates approximately 120 direct and indirect jobs.
- The average wage in the oil and gas extraction industry is \$97,827—over 140 per cent higher than the state-wide average of \$39,707.
- Gross production tax paid in 2011: \$623,440,183.
- Oil extraction tax paid in 2011: \$672,665,790.

While our rapidly expanding economy creates prosperity, it also creates challenges. The oil industry is working with state, local and tribal officials to meet those challenges, build new infrastructure and ensure a brighter and prosperous, energy-secure future for our state and country.

Source: [www.northdakotaoilcan.com/NDenergyfacts](http://www.northdakotaoilcan.com/NDenergyfacts)



# Shackin' the Bakken

By Jim Taylor

**N**orth Dakota is becoming a popular destination. It is estimated by the North Dakota Department of Health that more than 20,000 temporary workers currently live and work in North Dakota, and the number continues to grow. In just a few short years, this number is expected to double to 40,000 workers, and

then triple to 60,000. This rapid population growth will impact the state in many ways, but one of the first priorities is finding a place for everyone to live. It's not an easy job but the North Dakota Department of Health is confident they can get it done.

The work falls primarily to the Department's Division of Food and Lodging. They are the ones responsible for protecting public health through the licensing and inspection of lodging establishments located throughout the state. This includes temporary workforce lodging establishments in western North Dakota. Julie Wagendorf has been working

for the North Dakota Department of Health since 2002, and has been a licensed environmental health practitioner in the Division of Food and Lodging for the past year. She outlines the processes necessary to ensure safe living conditions for the thousands of temporary workers who currently call North Dakota home.

"Establishments that meet the state century code definitions are licensed by the state health department if not otherwise regulated by a city or local public health unit," she explains. "Inspection procedures ensure licensed establishments meet both sanitation

Community Master Planning



Apartment Perspective



Residential Component



Central Services and Security



PTI Group USA, LLC – Village Concept Plan for 500 - 1,500 Residents

*“Rural areas tend to have huge tracts of farmland that stretch for thousands of acres that have been handed down over a long period of time. The preference is often to keep the land as agricultural as possible.”*

and certain fire and life safety standards before opening to the public and while in operation.”

Cities and townships hoping to build homes for temporary workers must make sure all of their paperwork is in place.

“Local planning and zoning requirements including state building code are enforced locally through building permits and building inspections,” says Wagendorf. “It is important to get local approval before starting any construction on a project. Water and wastewater systems are permitted and approved by either local or state requirements, depending on the location and size of the establishment. The state electrical and plumbing board performs inspections to ensure state codes were adhered to during construction.”

Once the building meets local standards and is approved, it is time for the Division of Food and Lodging to step in. Plans for the facility are submitted to the Department of Health, which goes over every detail to ensure everything is in order. It isn't an easy process and often requires collaboration between city, local and multiple state agencies.

While the emphasis for temporary worker camps is health and safety, every effort is also made to ensure lodgings are, indeed, a home away from home. Many of these establishments offer comfort and entertainment for those living in them. Amenities like recreation rooms, exercise equipment, business centers, internet access and movie theaters can be found in many facilities.

North Dakota Food Code regulations are strictly enforced on any food service provided, maintaining a high standard and food safety training for any staff operating an on-site kitchen. The ability to prepare a wide-variety of food items is also an important part of the process. As building the camps catches up with the speed at which oilfield workers are being brought in, greater emphasis is being placed on comfort and privacy. Bunk beds and shared accommodations are starting to give way to single suites, where workers can unwind after a tough day in the fields. This focus on personal space and comfort is a good way to make sure workers are refreshed and well-rested at the beginning of the workday, which benefits employee and employer alike. In addition to these amenities, each

residence needs to be able to stand up to the harsh winters of North Dakota. Comfort and durability both need to be taken into account when housing the hard-working employees of the oil industry.

But accommodating these workers in the short-term is only half of the equation. It's also important that the surrounding community has the proper infrastructure in place to deal with the sudden burst in population that will occur when these temporary workers arrive. Emergency services need to be in place to deal with any crisis that may arise. Community gas, water and electricity systems need to be able to handle the influx, and city services like garbage pickup and disposal have to be able to handle the extra load. It's a complex symphony where a huge number of city, state and federal services need to play in harmony.

Lou Doiron is the vice-president of sales for the PTI Group, a company that builds temporary work villages. He explains that this is an incredible obstacle for companies like PTI that wish to build temporary work camps near towns that are not prepared.


“We're going into smaller communities that have no infrastructure or capital to build an infrastructure,” he explains. The villages are designed to support different levels of accommodation. Meanwhile, the town is trying to attract teachers, doctors, lawyers and other professionals to support the growth, but those people don't have anywhere to stay until they can buy a house, build a house or find something more permanent.”

And the challenges don't end there. The price of the land these villages are built on is another huge factor to consider.

“It sometimes gets to the point where the market just doesn't allow us to build because the price of the land is too out of hand,” he says. This is further vexed by the difference in culture between the rural nature of places like the Bakken and the more heavily populated areas such as Marcellus and the Utica Shale formations.

“Rural areas tend to have huge tracts of farmland that stretch for thousands of acres that have been handed down over a long period of time,” he explains. “The preference is often to keep the land as agricultural as possible.” And even if companies like PTI are able to purchase

the land, they're not necessarily guaranteed to own the mineral rights, which are sold separately in most states in the country.

As the oil boom continues in North Dakota, sustainable solutions to accommodate its workers are starting to take hold. The early days of putting up makeshift shelters is now giving way to building longer-lasting facilities where workers can feel the comforts of home after a long day's work. The ultimate goal, for everyone involved, is make this current home-away-from-home simply feel like home. 

## GET TO KNOW OUR EXPERTS



### JULIE WAGENDORF

Julie Wagendorf received her Master of Science degree with a major in Microbiology and her Bachelor of Science degree majoring in Microbiology and minoring in chemistry, from North Dakota State University. She also received an Associate's Degree majoring in computer support specialist-database management from Bismarck State College. Wagendorf started working for the health department in November 2002 and for the next nearly 10 years as an epidemiologist for the Division of Disease Control. In May 2012, she changed positions within the state health department and is now working for the Division of Food and Lodging as a licensed environmental health practitioner.

Julie finds her career in public health very rewarding and enjoys helping people live a healthy lifestyle. She's happy to have the opportunity to work and live in North Dakota, where she was born and raised.

## THE PTI GROUP

The PTI Group is one of the world's largest and most-respected suppliers of integrated remote site services. They provide workforce housing for a wide variety of areas and industries, and have over three decades of international experience designing, building, owning and operating modular facilities.



# Honing Housing Incentives

By Sarah Mudder, North Dakota Housing Finance Agency


**T**he North Dakota Housing Finance Agency (NDHFA) is ready to put the state's most innovative, affordable housing development tool back to work.

The 2013 Legislature reauthorized the North Dakota Housing Incentive Fund (HIF) at \$35.4 million and established program priorities of providing housing for essential service workers in energy-impacted counties, and preserving and providing

for the needs of low- to moderate-income households statewide.

"To ensure western North Dakota communities are able to recruit and retain law enforcement personnel, teachers and highway maintenance workers, HIF applicants that set aside units for these and other essential service workers will receive a scoring preference," says Jolene Kline, NDHFA acting executive director.

The HIF allocation plan is available online at [www.ndhousingincentivefund.org](http://www.ndhousingincentivefund.org). Applications for the next funding round must be submitted by 5:00 p.m. (CDT) on Monday, September 30, 2013. Questions regarding HIF can be directed to Kline or Bill Hourigan at (800) 292-8621, (701) 328-8080 or [info@ndhfa.org](mailto:info@ndhfa.org).

A general fund appropriation provided the reauthorized fund with \$15.4 million. NDHFA is authorized to capitalize the balance of the fund by issuing \$20 million in state tax credits. More than 600 taxpayers contributed \$15 million to the fund during the 2011-2012 biennium, providing enough capital to support 24 housing projects. HIF contributors receive a dollar-for-dollar state tax credit, and contributions can be directed to a specific project or community. 

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# Come As You RV

By Jim Taylor

**F**or many in North Dakota, RV living is more than just a pastime. It's a way of life. With its beautifully rugged landscape, majestic lakes, wealth of hiking trails and abundance of campgrounds, North Dakota has always been a prime destination for outdoor enthusiasts. The state boasts over 1,300 campsites, a great deal of which are equipped to handle RVs. And with its 17 state parks and laundry list of outdoor activities, it's no surprise that North Dakota has a reputation as Motor Home Mecca for travelers across the continent.

There are many reasons why travelers throughout North Dakota would choose RV travel over tent and trailer camping or booking stays in hotels. And with the baby-boomer generation entering retirement age, the RV option is more popular than ever. A huge segment of the American population now finds itself with the time, resources and desire to travel across this vast country, and setting out in an RV allows them to do so in comfort. Free of the stress of booking accommodations, catching connecting flights and being searched by airport security, more and more people are seeing the light and purchasing RVs with every passing year.

The first advantage they discover is the savings. Frequent travel can be expensive when one is paying for transportation, lodging and dining. RV travel dispenses with these individual costs and, while the price of gasoline may still be high, it pales in comparison to the various expenses and fees that go into airline travel and hotels. Another plus is the freedom. RV travelers don't





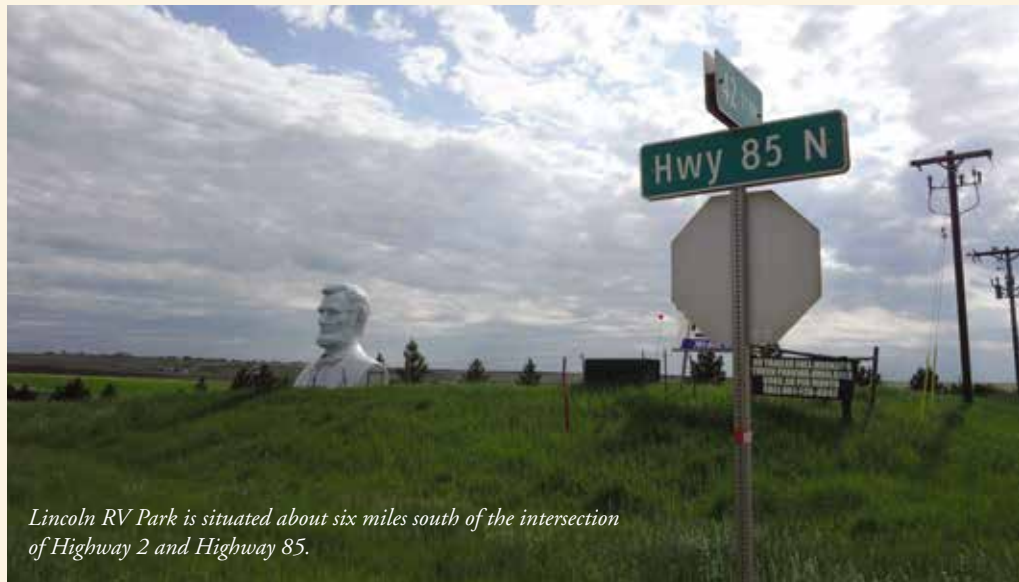
have to worry about getting to the airport an hour before their flight or packing light for fear of overweight luggage. The money that is saved can be used to continue travelling and engage in more experiences, activities, creating more lasting memories. RV owners are also free to choose their own level of comfort, with no worry of cramped legroom or the passenger in front of them leaning too far back in their seat. Bikes, boats and even small cars can be easily brought along to further enhance the experience, and, with an RV, there is no need to leave your cherished pet behind.

For the RVer travelling through North Dakota, there is no shortage of beautiful places to visit and incredible sights to see. State parks like Theodore Roosevelt State Park, historic sites like the Knife River Indian Villages, and cities like Fargo and state capital of Bismarck, barely scratch the surface of the treasures North Dakota has in store. Fishing, hiking, swimming, boating and golfing are available in abundance, not to mention a host of other fun and exciting activities for all ages and interests. A place of incredible significance to Native Americans, North Dakota also offers a wide range of opportunities to learn about the nation's first peoples and view many of the lands and sites that they hold sacred.

But North Dakota's RV scene isn't just about tourism anymore. As the state's oil boom continues to bring in more workers, RVs are often seen as a viable option for those who need a place to live year-round. For these workers, the RV is much more than a pleasure craft for leaving the beaten path. It is an economic way to live in relative comfort. With a few minor modifications, like the addition of heaters, sealing and skirting to keep heat from escaping, many RVs can be converted to provide shelter even during harsh North Dakotan winters.

The large influx of temporary workers has put conventional housing at a premium in the area and, as a result, rental costs have skyrocketed to the point where a one-bedroom apartment can cost up \$1,700 per month. For the many workers who are trying to save money while working in the Bakken, RVs are their best option. This sudden spike in the RV market has caused a real boost in the local economy, particularly in the area of RV sales and service.

As straightforward as RV living for oil workers might seem, the situation hasn't been without its share of bumps in the road. RVs may provide a place for temporary workers to live, but they can't just park them anywhere. Some communities in the region, like the city of Williston, have passed ordinances banning RVs within their city limits, in an attempt to curb health and safety issues like increased traffic on the roads and improperly



*Lincoln RV Park is situated about six miles south of the intersection of Highway 2 and Highway 85.*

drained sewage. The penalties for disobeying the ordinance are severe, with fines of up to \$500 per day for non-compliance. In response, North Dakota is seeing a sharp rise in the number of RV parks being built in the oil-producing regions of the state. It is hoped that these parks will alleviate the pressure currently placed on the surrounding communities still accommodating many RVs.

Ken Hartog, owner of the Lincoln RV Park on Highway 85 (located about six miles south of the intersection of Highway 2 and Highway 85), was one of the people who saw the business opportunity RVs had to offer in the Bakken and answered the call.

"I had been involved in real estate for about 20 years when I started researching the Bakken," he says. "When I came out here, I found a great piece of land and thought, 'This is a great chance to build something nice.'"


While lot-dwellers still need to pay fees, the cost is much lower than what they would be expected to pay for housing or rentals in towns where the population is being pushed to the limit. The quick response to the situation is leading to safer and better options for workers choosing to live in RVs during their stay in North Dakota, but space is still in high demand. While places like Lincoln RV Park are still developing, Hartog plans to make sure it's seen as more than just a temporary living space.

"We're building a BBQ pit, and making sure there's lots of surrounding green space," he says. "It's very early, but our plans are to make it a place that is a nice place to live—where people will want to stay for a long time."

As the growing pains of the oil boom's burgeoning workforce start to ebb, and temporary workers are finding more suitable places to live, the focus of RV culture is free

to return to its roots in travel and tourism. Until that time, people like Ken Hartog want to make sure residents of the Bakken are living in the best possible conditions.

"Everybody who moves here is very nice," he says. "They're all here for the same reason: to work hard and make a better life for themselves. They all want to make an honest living. There's a lot of respect."

Before long, the mention of RVing in North Dakota will, once more, conjure up images of voyaging off the interstate and into the unknown for adventures on forest trails, state parks and rural festivals and fairs. The symbol of the RV has, itself, gone on an interesting journey in North Dakota these past few years. But, whether you're piloting one on vacation, or hunkering down in one for warmth after a long day in the oilfields, it will always be a home away from home. 

## GET TO KNOW OUR EXPERTS

### KEN HARTOG

Ken Hartog was involved in real estate when he decided to investigate opportunities in the Bakken oil play. While staying at a crew camp, he noticed the surrounding RV parks were completely full. After reaching out to someone in the RV business, Hartog learned the ropes quickly, and is now involved with two RV parks in North Dakota.

Hartog lists the people as his favorite part of the industry, and is proud to be a part of such an honest and hardworking community. He feels an obligation to provide value for the rent they are paying to live in his parks, and looks forward to continuing to improve each park he owns.

# Vision West ND: Regional Plan in the Works for Western North Dakota

By Andrea Boe, Vision West ND Information Officer

“**W**e’re well on our way to putting together an all-encompassing regional plan to address critical issues and drive economic development for those who live in the oil producing areas of western North Dakota,” says Deb Nelson, Vision West ND (VWND) program manager. When the VWND project began 18 months ago, 19 western North Dakota counties teamed up with the Three Affiliated Tribes, four universities and colleges and two regional councils to tackle community, county and regional planning.

“We had two goals in mind when we brought these separate entities together,” says Nelson, “First, identify problems and find solutions that will improve life in each of the individual oil-impacted counties. Second, take those local solutions and develop strategies to improve the entire region.”

## WRAPPING UP 18 MONTHS OF WORK

The members of the VWND Consortium Board are taking the information gathered during the individual community plan weeks, municipal infrastructure assessments and economic development strategy sessions to develop the regional plan. Some items that rose to the top during discussions among leaders and the Consortium Board included lack of affordable housing, aging road infrastructure, aging or insufficient water infrastructure, child care and emergency services.

The results of two dozen community plan week sessions have been logged over the past year-and-a-half. Most recently, Bowman and McKenzie Counties wrapped up their plan weeks. Building Communities, the lead planning consultant of the project, facilitated the series of two- or three-day events that brought county and community leaders together to identify local issues and develop solutions for each strategic plan.



“I want to thank the community leaders and residents of western North Dakota who have participated in the plan weeks. We’ve found that community involvement and volunteer leadership is so important to this process. Vision West ND could not have made it this far without support and participation from the people who live here,” says Nelson.

Another important piece of the project is the completion of 26 municipal infrastructure assessment plans by Advanced Engineering and Environmental Services, Inc. (AE<sub>2</sub>S). The assessments allowed the cities and VWND team to create an inventory of water, wastewater, stormwater and street infrastructure, identify the immediate needs of each community, prioritize the needed improvements and estimate the associated costs of making the improvements.

The most common infrastructure needs that emerged were insufficient water supply for current and projected future populations, inadequate capacity in main wastewater sewer lines and rapidly deteriorating roads due to the large amount of industrial traffic. With these priorities and infrastructure needs in mind, and with growth factors identified during plan week sessions, leaders obtained planning and zoning recommendations and best practices training, and completed economic development strategic plans. The plan directors and their associated steering committees have worked diligently to complete the individual strategic plans (which

can be found at [www.VisionWestND.com](http://www.VisionWestND.com)), so they can be rolled into the larger regional plan.

## LAWMAKERS RECOGNIZE NEED FOR FUNDING

All of this VWND groundwork will prove useful, as the \$2.5 billion of funding for North Dakota’s oil producing counties that was approved by North Dakota’s legislature this spring is distributed. More than \$1.5 billion is earmarked for highway and local road improvement projects, and \$10 million is allocated both to critical-access hospitals and to beefing up law enforcement in western North Dakota.

At the most recent consortium meeting, Brady Pelton, deputy director of the North Dakota Association of Oil & Gas Producing Counties (NDAOGPC), presented on funding throughout the region. He reported on legislative funding for child care that included \$2.6 million in matching grants to assist in establishment/expansion of child care facilities and \$4.1 million for training, technical assistance, incentives for child care providers for workforce development, quality improvement, and capacity building among other things.

“We are grateful that lawmakers recognized the need for funding in western North Dakota to take care of these critical issues, but there is still more to do,” says Nelson. “When the regional plan is complete, we intend to use it as a blueprint for future legislative sessions.”



## DIVERSIFIED ECONOMY AND RESPONSIBLE GROWTH

The framework that VWND is creating will be one of the keys to the successful growth and evolution of western North Dakota in the coming years. Project leaders recognized early on that the oil-impacted communities benefited by the boom also need help because of it.

"It is the goal of VWND to establish a diversified economy for these towns and cities for the future, and to responsibly manage their growth in the present," explains Nelson.

## PARTNERING TO ACCOMPLISH COMMUNITY GOALS

At a recent session, Robert Grow, a speaker from the Envision Utah project, advised the Vision West ND Consortium to partner with business leaders to accomplish community goals. Grow said his community of Sandy, UT grew from 12,000 to 120,000. It's about how to preserve the best of your past, they recommended, and about developing a civil will and building relationships with corporate industries that made Envision Utah successful. In Utah, the chamber advocates support for their plan.

The Rural Economic Area Partnership (REAP) Fund, Southwest REAP Zone and the NDAOGPC secured a \$1.5 million grant from the United States Department of Housing and Urban Development and a \$310,000 grant from the North Dakota Departments of Trust Lands and

Commerce to start the VWND project in early 2012. The project has also received \$600,000 of matched in-kind funding. For more information about grant opportunities, research studies and webinars associated with the project, go to [www.VisionWestND.com](http://www.VisionWestND.com).



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# Reclamation Nation

By Alison Ritter

**O**n a recent fishing trip, my brother-in-law made a comment that had this public relations girl in a brief moment of panic.

"I don't even want to see what North Dakota is going to look like years from now," he said. "All those wells—nobody's going to be able to put it all back the way it was."

"Yikes!" I thought, "Is this really what people believe North Dakota is headed for? A bunch of old, abandoned wells scattered across the landscape?"

North Dakota has been producing oil since 1951 and has been reclaiming wells ever since. The process may not have started out perfect and will continue to see improvements, but the state has taken great strides to ensure that "those who follow and repopulate the land will be able to say our grandparents did their job well; this land is as good and, in some cases, better than before."

Gives you goosebumps, doesn't it? Yes, Governor Art Link was talking about coal mining but the same principles apply to oil and gas development. The landscape is temporarily changing in North Dakota and we need to plan development and restoration right for all generations.

In 1981, the oil and gas division was formed. One of the first regulations created was reclamation standards. Prior to 1981, top soil was not saved, leaving resources for reclamation limited. Today, top soil is stockpiled so after development, the land is reshaped and returned as close as possible to the

original contour. The area can be reseeded with appropriate native fauna or crop. It is not a process that happens overnight, and can sometimes take years to get a site returned to its original condition.

When an operator decides to begin reclamation, they must receive approval of the reclamation plan from the oil and gas division. They must begin reclamation of a well site no more than a year after a well has been plugged. The description of work must include the removal of equipment, flushing and capping the flow lines, and reclamation plans for the access road and any other associated facilities, including the redistribution of topsoil over the area.

There were also limited requirements for bonding prior to 1981. Adding this requirement ensured if a company could not take responsibility to reclaim a well site, an insurance policy was in place to help cover the costs. Fees collected at the oil and gas division are also placed in the state Abandoned Well and Reclamation Fund. If a bond does not cover the cost of reclamation, more than \$2 million is available to help cover the cost of plugging and reclamation. Since 2009, only a handful of wells have needed to use money from the reclamation fund for plugging and reclamation.

Since 1981, more than 6,600 wells have successfully been reclaimed and released from their bond, and more than 830 are going through the process. A well site will not be released by the state until it is returned as close as practicable to the surrounding area.

The duties of the Abandoned Well and Reclamation fund are about to expand. The passing of House Bill 1333 during the 63<sup>rd</sup> Legislature allows for reclamation and clean-up, should a responsible party be unidentified in the event of an abandoned pipeline, a pipeline spill or an illegal dumping incident. The additional money for the fund will come from one-fourth of one per cent of state oil extraction taxes. The goal is to one day have the fund reach \$75 million.

The passage of this bill was something the North Dakota Industrial Commission supported entirely. Pipelines and well sites are expected to increase ten-fold in the next 25 years. As I told my brother-in-law, in order to properly take care of these sites down the road, we need to start preparing our rules now. The oil and gas division has already begun promulgating administrative rules to execute House Bill 1333, and will have a public comment period this fall, with final rules likely becoming effective April 1, 2014.


With as many as 50,000 Bakken wells and more than 30,000 miles of pipeline expected to be built over the next 20 years, and with wells producing as much as 45 years after that, it won't be my generation, or even my children's generation reclaiming these sites—it may be my children's grandchildren! Thankfully, the oil and gas division has already started assembling tools future generations will need to do it successfully. Multi-well pads are one tool that will aid this future process. By placing wells in organized rows and minimizing the surface footprint, there will be fewer well pads to reclaim than if



*Federal #41-21, Beaver Creek Field, ND.  
Near final reclamation, in 2005. The well  
was released from bond in 2009.*



traditional drilling methods were used. Current drilling methods use less than half of a per cent of the surface. In the 1950s through to the 1980s, as much as 10 per cent of the surface was used.

With a few changes now, and continued changes as this unconventional resource evolves, future generations can put North Dakota back to the way it was. They will see North Dakota's natural beauty, along with its oil heritage. 

## GET TO KNOW OUR EXPERTS



### ALISON RITTER

Alison Ritter is a public information officer with the oil and gas division of the North Dakota Department of Mineral Resources in Bismarck, ND.

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# Houston Engineering Inc.: Creating Lasting Legacies

By Matthew TenBruggencate

“**W**e’re very engaged in the most precious resource of all: water.”

“We just had a team get back from Belize last week, actually,” says Mike Seminary, a business development manager at Houston Engineering Inc. (HEI). HEI is a full-service engineering firm that has been helping the Midwest build survey land, design streets and manage all aspects of human interaction with water since 1968.

The 45-year-old company is headquartered in Fargo, ND with most of its activities concentrated in North Dakota and the surrounding states. But that doesn’t stop the company from stretching its legs once in awhile. HEI’s expertise can be viewed across the continental United States and beyond.

“Full-service” covers a wide range of projects at HEI. The company works with a range of clients on transportation, surveying, land and site development, and Geographic Information Science projects. The majority of their clients are in the public sector—municipalities, government bodies and states. Within that work, Seminary and his team usually find themselves plunging into the wet stuff.

“The overwhelming majority of what we do is watershed management and long-term water modelling; we do everything from wastewater treatment facilities to water supplies, water treatment. We’re very involved in the environmental side of water quality.”

Seminary says HEI, like all firms that work for public bodies, lives with the reality of funding-based projects.

“Communities are always engaged in aggressive strategies to manage their finances, and prioritize their needs and wish lists. We’re always looking for funding mechanisms to work within those constraints. Once funding is set aside, we’re meticulous about the scope of the project, endeavoring to help the client in all possible ways to maximize the value of that dollar.”



*HEI focuses on the environmental side of water quality, with projects spanning wastewater treatment facilities, water supplies and water treatment.*



*Houston Engineering Inc. (HEI) specializes in watershed management and long-term water modelling. Photos provided by HEI.*

In addition to working closely with clients to ensure good financial management, Seminary says the general public is more frequently and intensely involved in project proposal and completion, especially when it comes to managing water resources.

“As they should be,” says Seminary, who also serves as a city commissioner in Bismarck, ND. “The citizenry is far more involved, vocal and concerned about their surroundings. They’re always very willing to express their concerns and thoughts on wanting



or not wanting a project. We make great efforts to address those concerns at HEI.”

Seminary believes the proliferation of communications tools—the internet and its various social media platforms, chiefly—has led to the increased awareness of Midwest citizens when it comes to civic development. He also thinks the same tools make it easy to communicate Houston Engineering’s plans to concerned stakeholders, even when there’s a significant degree of technical knowledge.

“The people involved in these dialogues are well-educated. They have access to advanced information, they’ve done their research—‘Googling,’ we call it nowadays—and are well informed, so there’s no problem conveying our position and plans,” he says. “People now expect more accountability and it’s our duty to give it.”

That accountability and service to community is something every employee tries to bring to the job, Seminary says. The company has about 150 full-time employees, though summer’s peak times can swell HEI’s ranks. Spreading a workforce across six corporate offices, not to mention national and international projects, could lead to a sense of disconnection and alienation in a different organization. Houston Engineering, however, has made keeping “the family” tight a priority.

“We’re a company that holds our employees and clients near and dear,” says Seminary. “We’re good about using video commuting, Skype and other technologies to connect our teams. At our offices, there is no dress code; people dress for the appropriateness of the day.

“We’re a multigenerational company, like most organizations these days, with people of different ages who have different generational values,” he continues. “We’re sensitive to that. The key is an open culture, so people can feel free to bring issues forward. I visit the head office in Fargo two to three times per month. Not once have I seen our CEO, Jeff LeDoux, have his door closed. Not once.”

The offices frequently gather for brown bag lunch sessions, where every employee sits down in the lunchroom while discussing HEI’s recent victories, setbacks and challenges. Seminary says there’s a definite effort to make sure every employee knows where the company is heading.

That interconnectivity and mutual support has been a bulwark to the “hyperactivity” HEI has found itself in the past few years. The development boom sparked by the Bakken would have kept HEI hopping by itself; the oilfield’s need for water, particularly for the fracking process, has a deep impact on HEI’s water management projects.

But the past few years have also brought the incredible challenges of major flood events, particularly when the Red River breached its banks in 2011.

“We’re involved in managing flood control, in dealing with the Red River as it passes by Fargo and Moorhead. The authority overseeing the FM diversion and managing that project, they’re pulling out all the stops to make sure future damage is minimized or eliminated, combining that with an effort to be cost-effective and beneficial over the long-term,” he says. “Up and down that entire system, all the stakeholder constituents are doing a wonderful job addressing the situation.”

While Seminary wasn’t with HEI when the floodwaters came in 2011, he did have a chance to observe the engineering community and HEI, specifically, from his perch as a city commissioner.

“From that perspective, I couldn’t have been more proud of the extraordinary things they did to prevent damage, to serve the communities they live in. And the general citizens with them, going above the call of duty to protect themselves and their neighbors—I couldn’t be more proud.”

Beyond preparing North Dakota and surrounding states for future floods, HEI is working to increase its expertise when it comes to renewing aging infrastructure. Seminary says North Dakota infrastructure is seeing a dual-prong challenge: rapid construction of new infrastructure to deal with an expanding population, and the maturation of existing infrastructure that has taken a heavy hit with the increased wear and tear it’s receiving in these active times.

“We see that particularly in North Dakota; we’re putting infrastructure in to deal with wastewater, to aggressively monitor wastewater and pay close attention to the permitting process, which is a huge concern at this time,” says Seminary. “North Dakota is blessed to have financial reserves for this infrastructure turnaround, much of it because of the oil exploration and production industry. And that’s not going to change. The technological leaps they’ve made in oil exploration—literally mining it out instead of just sticking a straw in the ground—makes oil a sustainable industry. As a result, we’re blessed and fortunate to address most of our infrastructure concerns.”

The input Houston Engineering is bringing on how North Dakota transforms is reflected in how the company gives employees opportunities to grow. That, Seminary says, is the best way HEI impacts the communities it’s active in. Yes, its projects are lasting legacies. But by attracting and retaining talented people, and offering them the opportunity to acquire skills—technical or professional—HEI provides towns and cities with engaged and skilled citizens who can make their neighborhoods better places.

“Your team members can serve the communities to the fullest advantage,” says Seminary, “and we take great pride in that.”

#### FOR MORE INFORMATION:

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# Stantec: Bringing Bold Ideas to the Bakken

By Christine McKay

Stantec's story is about quality of life. It's about improving communities through innovative projects and consulting engineering. It's the story of people who contribute bold ideas, expertise and skills to solving problems, meeting clients' needs and ensuring each project successfully achieves its goals. And it's been this way since 1954.

That was when Stantec founder, Dr. Don Stanley, a Harvard graduate in environmental engineering, set out to improve the quality of life in small towns across North America. He did this by designing innovative, economically-feasible municipal water supply and sewage systems.

In the years since, Stantec has evolved from a one-person consulting engineering business into one of the largest design firms in the nation. Today, their services are offered through approximately 12,000 employees operating out of more than 200 locations across North America and from four international offices. They successfully leverage this broad staff capability through many local offices to focus on meeting clients' needs.

"Stantec has a strong culture of commitment to staff, clients and communities where we live and work," says Bob Gomes, Stantec President and CEO. "Our performance is driven by our ability to achieve excellence by putting people first, developing strong, long-lasting relationships with each other and our clients, doing what is right in every decision we make, and being driven to achieve at every level."

## THE BAKKEN BECKONS

For the last 20 years, Stantec has been completing projects in North Dakota that have spanned service lines, including environmental remediation design and oversight, environmental permitting and inspection, mid-stream pipeline services, survey services, roadway design and construction oversight, general civil engineering, planning and landscape architecture, water supply and treatment, wastewater conveyance and treatment and general building architecture and engineering.

The company has a strong presence in North Dakota, which was solidified when they opened



*Residential construction in Minot, ND.*



*A closed pedestrian bridge in Minot, ND.*



*Downtown Minot, ND.*



their first North Dakota office in Fargo in 2010. An office in Minot soon followed and they recently opened their third ND office in Bismarck.

Stantec's core business in the state is providing professional consulting services related to infrastructure, facilities, pipelines and rail projects. They work with both public and private sector clients in a diverse range of markets at every stage, from the initial conceptualization and financial feasibility study to project completion and beyond.

## HELPING BOOM TOWNS

We don't often hear about the challenges of an oil boom, only the opportunity; but, with every newcomer that moves to a booming region comes added pressure on the area's existing services and infrastructure. When towns and cities grow at such rapid rates, planning and development can begin to lag behind—and that's where Stantec's expertise comes in.

Stantec is working with two North Dakota cities, Minot and Mandan, to create comprehensive community and neighborhood plans. This proactive partnership will allow the cities' leaders and Stantec to work on an integrated approach in planning for issues such as transportation networks, downtown revitalization, compact development and greenway connections.

"The Bakken oil boom has allowed us to expand our practice by providing services to the broader North Dakota community," explains Steve Alm, principal at Stantec and head of North Dakota operations. "We have the opportunity to directly impact lives and communities in North Dakota. The boom has created an environment in which we've been able to leverage our skills and expertise to assist public and private clients as they address the tremendous impact the boom is having on people's lives—both positive and negative.

"Additionally, by addressing the ever-expanding pressures on land and communities, we've been able to further grow our business and staffing within the state."

Stantec currently has more than 30 staff living in North Dakota being supported by staff from at least five other offices across the Upper Midwest. The company is also active in the community, taking part in the Minot and Fargo Chambers of Commerce and the Minot Downtown Association.

Of course, Stantec isn't the only engineering firm in town. The North Dakota marketplace has seen an influx of professional services firms and oil workers in the last few years. Yet Stantec is confident in its ability to serve the people of North Dakota.

"Being locally based, with the support of our national footprint, allows us to be integral to the North Dakota community while providing the specialized expertise our clients require," Alm

divulges. "We are a very client-centric organization and have not only followed our current clients into the North Dakota markets but have been fortunate to expand the client base we do serve."

## PUTTING PEOPLE FIRST

Stantec is a people-oriented company that focuses on staff, clients and the communities they serve. According to Alm, this is why the company has continued to grow and succeed for almost 60 years.

Stantec maintains its success by being well-diversified across technical disciplines and market sectors, and between the public and private sector work. This has allowed the company to adapt to changing market and economic conditions and remain consistently profitable.

"We foster a safe and supportive environment where direction, mentoring and technical support are always available, and we encourage our staff to serve communities they're personally invested in."

This approach has helped Stantec rank #24 on *Engineering News Record's* Top 500 Design Firms, and place in the top 20 firms nationwide in several major areas, including transportation, general building, water, and sewer and waste. They are currently ranked #5 on *Engineering News Record/Midwest's* Top Design Firms, and place in the top five firms in petroleum, power, master planned development/site utilities and water supply sectors.

## SURVIVAL OF THE FITTEST

In a constantly changing landscape, companies must evolve to stay relevant. For Stantec, this meant investing in people and innovative ideas and solutions. Stantec has a robust professional


development program and many staff members hold key leadership positions in trade and technical associations. As a large firm with diverse specialties, they draw on the best technical resources for each project and apply the latest techniques and technologies in the industry.

They also fund their own research and development programs to ensure they remain at the leading edge of new technology and emerging practices.

"Very few engineering firms have active research and development programs; yet, we've found that effective R&D can help us bring immediate and practical benefits to our clients and communities," Alm explains.

Twice annually, Stantec funds research initiatives that help advance knowledge in technical fields. Through their R&D program, they carry out independent research—oftentimes in partnership with clients and academia—to find better solutions to the challenges that require innovative approaches.

## THE OUTLOOK IS BRIGHT

These innovative solutions will benefit communities in North Dakota as they continue to flourish and grow. And Stantec will be there every step of the way, investing in the region, meeting every client's needs and helping build the Bakken, one project at a time. 

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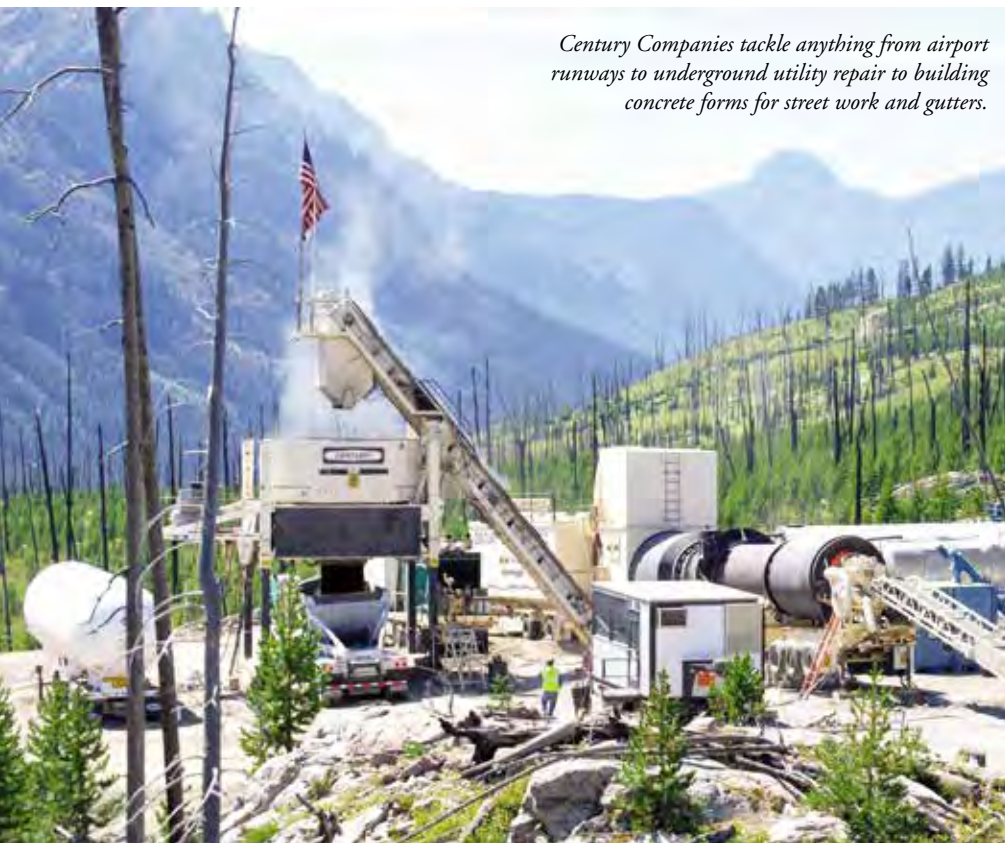
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# Century Companies: Solving Problems with Innovation

By Matthew TenBruggencate

*Century Companies tackle anything from airport runways to underground utility repair to building concrete forms for street work and gutters.*



*The companies operate project crews throughout Montana, northern Idaho and North Dakota, building pads for oil platforms, and building/repairing roads.*

Marc Williams has been with Century Companies for two years. The manager of oilfield operations knows he should refer to the company's activities, projects and potential with the pronoun "we." But he doesn't feel like he's earned it yet. Not with the sterling reputation the company has; a reputation that precedes him at conferences and client meetings. Not when he can remember from his childhood in central Montana how Century Companies was held as "a construction icon."

"The company is highly respected and loved by rural Montana," says Williams. "Just recently, I went to a conference on gravel roads, primarily for county road crews...It caught me off guard how much everyone admired Century there. People were asking about what jobs I'm working on, how my co-workers are doing."

Begun in 1975 as a rural asphalt paving operation, Century Companies was founded by Jack and Ann Morgenstern with just \$3,000 capital and a forgiving line of credit. The veteran Seabee and homemaker spent the first year of operations working out of an abandoned filing station in Dillon, MT, with Jack supervising the contract jobs and Ann tending the books while raising their two children. Their industry paid off as the company gradually expanded through the Midwest, refurbishing used equipment and developing a shining reputation for quality work.

Now, the company operates a number of project crews working throughout Montana, northern Idaho and North Dakota. Williams' team could tackle anything from airport runways to underground utility repair to building concrete forms for street work and gutters. The bulk of his workload, however, is building pads for the Bakken field's multiplying oil platforms, and building/repairing roads that connect the area's bustling hotspots.

"The roads here are in dire straits," says Williams, who moved back to Montana with his wife to join the company when the economy soured in Arizona. "We're working hard with the counties and the states because the roads really are the lifeblood of the oil industry."

Since the latest blossoming of the fields, those precious routes have taken a beating.





*ABOVE and BELOW: Century Companies is working on a project to build a rural gravel road to hold up to oilfield traffic.*



Williams says one loaded semi does the same damage to a road as 18,000 single-vehicle trips. When you consider that a town such as Watford City, ND has measured up to 4,800 semis moving through an intersection during a given day, that's a lot of punishment Williams' crew has to undo. It's a good thing he likes a challenge.

"Throughout my life, I've been a problem-solver," says Williams. "This boom gives me lots of opportunities to solve problems. And Century gives me the leeway and back-up to do that."

Williams has seen the dust settling from the initial boom of Bakken field development. The pace has slowed from the initial mad rush, but that hasn't diminished the number of jobs Century Companies is taking on. With the dust settling, companies that couldn't do high-quality work quickly are dropping from the industry.

"One of our clients had 12 contractors building pads for them initially. This spring it's down to three," Williams says. "We're picking up more work, even if, overall, there is less to be done."

"Two or three years ago, it was an explosion to get it done right now, to help our clients secure their leased mineral rights by drilling as soon as possible, locking in their rights. Lots of contractors were not up to the task."

"I think we're known for the quality of work we do, the integrity with which we work and live," says Williams. "If there's a problem on the job, we don't bury it; we address it and take care of it."

Another change Williams has seen is the move away from single oil wells in favor of multi-well locations. These ecopads, named for their smaller ecological footprint, might have up to a dozen wells feeding into the same set of tanks and doubling up on other process equipment. It's easier to run pipelines to and from ecopads than scattered, single-well sites. But the building requires some careful coordination.

Williams is in charge of the up to 100 trucks hauling gravel and other supplies to an ecopad when it's under construction. On those days, asset and time management become his biggest challenges.

"Getting the material on time and making sure everyone involved is working and making money—yeah, it's a challenge," says Williams. "Especially as there's a general shortage of trucks. Two years ago, there was a lot going on and a lot of trucks. Now, trucks are working closer to home, especially when winter comes on. We have a great base of trucks that work for us, but everyone is busy."

All that busy-ness is setting up North Dakota and the surrounding states to have the "finest infrastructure anywhere in the country."

"Infrastructure is something people don't think of enough. Other places in the country need billions of dollars in infrastructure, but that's actually happening here," says Williams. "North Dakota will be light-years ahead."

"There's nothing stagnant here. We're busy—not in a cosmopolitan way, but in a problem-solving, 'we're going to make this work' environment. Wherever my wife and I live, we try to assimilate the local culture, and the opportunity to live in this boom-town, gold-rush times is fascinating."

Williams continues, "When you go to McDonalds, if there are less than 25 people in line, it's a good day. When you go to Walmart, the shelves are stocked as best as they can be but there are pallets in the aisles to keep up with the demand and people just pick out what they need," he says. "Watching demand out-pace the supply and seeing the adjustments people try to make in response, I don't know how to explain it in cultural terms other than to say it's very Americana."

There are a lot of problems to solve, but watching the local governments, retailers, everybody going out of their way to solve those problems: it's refreshing. These people are my tribe."

Century Companies is continuing to innovate to help solve those problems. The company has been working with a Richland county research project on how to build a rural gravel road to hold up to oilfield traffic. Different soil cements are being mixed with a base layer of earth, then covered with a variety of surface treatments and tested to see which combination creates the sturdiest structure.

It's a project Century Companies was invited into based on their track record.

"We develop very strong relationships with government entities, and those relationships go on forever," Williams says. "The little town in Montana where I grew up wanted to pave their streets and had grant money to do it over three years. They asked Century to do the paving and the company agreed to take installment payments over the three years, maintaining the roads the whole time."

It's hard to tell what Williams values more about Century Companies—the quality project or the standard of customer service. But given his enthusiasm for both, it's clear that sooner rather than later, he'd better start using the phrase "we" when talking about the company.

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# Eide Bailly:

## Part of Your Trusted Advisory Team

By Darla Read



*Carleen  
Shilling*

**A**s a company that has been around for nearly a century, Eide Bailly has the knowledge and experience to serve oil and gas-related clients across the United States. Founded in 1917, Eide Bailly has 22 offices in 10 states with 1,200 staff. Over the past 10 years, the firm has tripled its revenue and expects continued growth in the future. It serves 49,000 clients in a mix of services, primarily tax compliance and planning, financial reporting (also referred to as audit and assurance) and consulting.

And, even though the economy in the United States has struggled with a downturn the past few years, Eide Bailly has more than weathered the storm with regular annual growth. Some of this growth is the result

of opportunities in the offices in states with significant oil and gas activity.

Amy Holstad, communications manager, credits Eide Bailly's success to the staff's work ethic and emphasis on client service.

"We take pride in our Midwest roots," she says. "It's part of our culture, and it sets us apart. It's engrained in every team member to deliver exceptional service while looking out for client needs, always looking for that value-added information the client wasn't expecting you to find."

Holstad says Eide Bailly is also successful because its clients are so diverse: its 49,000 clients come from more than a dozen industries, including auto and equipment dealerships, construction and real estate, agriculture and cooperatives, health care, financial institutions, non-profit, government entities and manufacturing.

For more than 40 years, Eide Bailly has been serving the oil and gas industry. Currently, it serves nearly 600 clients directly and indirectly related to energy. With 22 office locations west of the Mississippi, Eide Bailly is strategically positioned to serve the oil and gas industry. Locally, the Bakken region is served from its Bismarck and Williston offices.

"We are committed to serving the Bakken area," says Carleen Shilling, CPA, partner at Eide Bailly. "We have a large group of people with different expertise to respond to the needs of clients, including royalty owners, service providers, real estate



developers and trucking," she explains. "We really cover all aspects of energy activity."

The services Eide Bailly provide the oil and gas sector include nearly everything financial, including financial and tax compliance, which Shilling notes can become quite complex when the company or individual has reporting obligations to multiple states or regulatory agencies. Eide Bailly's clients may be individuals, closely-held businesses or publicly traded businesses. "Our talent pool can provide services to cover a wide range of needs, industries and sales volume."

Shilling notes Eide Bailly recently acquired the Voller, Lee, Suess & Associates office in Williston, ND, and "that really rounded out our ability to have people on board to recognize and provide services needed in western North Dakota and the Bakken region."

Shilling says it's important for Eide Bailly to belong to energy-related organizations, such as its associate membership to the North Dakota Association of Oil and Gas Producing Counties, because it keeps the company in touch with local decision makers.

Eide Bailly does a significant amount of audit work for oil and gas producing counties, which means they can stay abreast of what's happening in these counties and the special issues they face today as a result of changes in their communities. "It also gives us the opportunity to recognize the need for additional services that we can provide to these areas."

Eide Bailly is currently busy with specialized projects brought about by the variety of activities in Williston and the surrounding area, including:


- New construction and remodeling projects provide an opportunity for the property owner to consider a depreciation study. The benefit of such a study is to help clients improve their return on investment by accelerating income tax deductions for depreciation. The study can result in decreasing the depreciable life from 39 years, for example, to a period of five, 10 or 15 years.
- Succession planning for the business owner, to adopt a process to transition the family business from one generation of ownership to the next generation of leadership and/or ownership. Farmers, royalty owners, and other businesses all have benefited from the time spent to determine how to keep the business in the family.
- If you are thinking of selling your business, Eide Bailly's transaction specialists are helping sellers maximize the value

received from the sale. They work as a team to properly value your business, find qualified buyers and negotiate the terms of the sale for a tax-efficient transaction.

- Buyers are looking to western North Dakota for business and investment opportunities. Before the transaction is closed, a buyer conducts a process of due diligence to examine books and records of the seller. Eide Bailly has completed several such projects for buyers who are buying regional businesses.
- There is a shortage of accounting and other financial personnel available to companies doing business in the Bakken area. Eide Bailly's staff of accountants provides monthly accounting services, payroll processing and reporting, sales tax reporting and compliance and other financial reporting functions. Their CFO or "controller on call" oversees management reporting and budgeting, assists with banking relationships and other services as directed by the owner or CEO.
- Estate planning rules are complex and continually changing. Eide Bailly has successfully worked with an advisory team to develop a plan to efficiently transfer assets to family members, charity or others as the client desires. Through the use of IRS-approved methods, assets are transferred with the minimum estate tax cost to the family.
- Oil and gas clients have worked with Eide Bailly to structure ownership of entities, which is important for the purposes of financial reporting, efficient income

and estate tax outcomes, and company management.

- Eide Bailly's Health Care Reform team members are trained in implementing the new rules for mandatory health care coverage and evaluating the impact to employers and individuals. The team has conducted training sessions in various locations to educate and inform, and to provide solutions to the issues brought about by this major law change.
- Additional income tax law changes that take effect in 2013 will impact every taxpayer. Increased income tax rates, changes in deductions, and the addition of a new 3.8 per cent tax on investment income will result in increased income taxes to many families, especially those who are royalty owners and investors. Eide Bailly's tax consultants are working with taxpayers now to take a proactive approach to minimize income taxes for 2013 and beyond.

With such a wide range of services, Eide Bailly is able to help you and strives to become a member of your trusted advisory team. 

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# Regional Roundup



Governor Jack Dalrymple, chairman of the State Board of University and School Lands (Land Board), and Superintendent of Public Instruction Kirsten Baesler listen as Land Commissioner Lance Gaebe explains energy impact grant recommendations. The remaining Land Board members, Attorney General Wayne Stenehjem, Secretary of State Al Jaeger, and State Treasurer Kelly Schmidt, joined via telephone.

## STATE LAND BOARD AWARDS GRANTS TO POLITICAL SUBDIVISIONS

Over \$54 million in energy impact grants was recently awarded to municipalities in oil-impacted counties for infrastructure upgrades. On July 25, 2013, the State Land Board discussed the Energy Infrastructure and Impact Office and Energy Impact Advisory Committee's recommendations for grant awards.

Recommendations included \$39.66 million for non-hub city infrastructure projects. Watford City received \$10 million for water supply/sewer improvement projects. Crosby was awarded \$3 million for similar projects. The City of Alexander was awarded \$2 million for wastewater treatment improvements, and Killdeer received \$3.8 million for water supply truck line expansions and wastewater treatment service. About \$31.2 million remains allocated for non-hub city infrastructure projects in fiscal year 2015.

Also awarded was \$14 million in grants for hub cities. Under HB 1358, the cities of Williston, Dickinson and Minot were allocated \$2 million, \$7 million, and \$5 million, respectively. Williston will use funds for sewer plant upgrades, Dickinson will apply its award to water and wastewater treatment improvements, and Minot will use the money for sewer improvements.

For county road dust control pilot studies, \$3 million was awarded; receiving \$1 million each to find dust control best practices were Bowman, Dunn and Mountrail counties.

Almost \$1.4 million was awarded to support local law enforcement agencies. Over \$390,000 will fund new patrol vehicles equipment, housing allowances and overtime pay.

An additional \$9.6 million was portioned out of the \$240 million grant total for use on law enforcement support; \$750,000 of the total will allow for a one-year subscription to Lexipol's Law Enforcement Policy Manual.

## BAKKEN ROCKS COOKFEST A SUCCESS

The North Dakota Petroleum Council (NDPC) held its fifth annual Bakken Rocks CookFests on July 16, 2013 in Powers Lake, ND and July 18, 2013 in Parshall, ND. Both events featured a Bakken Basics Education Session with talks from Kathy Neset of Neset Consulting Services, Alison Ritter with the Department of Mineral Resources, Justin Kringstad of the North Dakota Pipeline Authority and Ron Ness of the NDPC.

Ken Hall, Councilman for the Three Affiliated Tribes North Segment spoke about the tax agreement between the state and Three Affiliated Tribes at the Parshall CookFest. Following the education session, more than 1,500 attendees were treated to food and live entertainment by Dave Diffeley of Just Diff, activities for kids, and educational booths and exhibits, including the ONEOK Natural Gas Mobile Museum.

Nine cook teams made up of 20 companies participated in the Parshall CookFest and served up smoked and grilled ribs, burgers, pork chops, pulled pork and more. Eleven cook teams made up of 24 companies involved in the oil and gas industry grilled all day for an estimated 1,500 attendees at the Powers Lake High School.

The NDPC extends a big thank-you to the communities of Powers Lake and Parshall for helping host the fifth annual Bakken Rocks CookFests, and to all members who made these events a success.

## NEW JUDGESHIPS APPOINTED

On July 15, Gov. Jack Dalrymple appointed Robin Schmidt and Paul Jacobson to serve on two newly-created district court judge vacancies in North Dakota's Northwest Judicial District. Dalrymple appointed Schmidt to the newly-created Northwest Judicial District Judgeship No. 11 to be chambered in Watford City, ND, and appointed Jacobson to the newly created Northwest Judicial District Judgeship No. 10, which will be chambered in Williston, ND. The Northwest Judicial District serves Burke, Divide, McKenzie, Mountrail, Ward and Williams counties. The Legislature also created a new judgeship for the East Central Judicial District.



## LEGISLATIVE INTERIM COMMITTEES KICK OFF WORK

In August, interim committees began policy review, financial oversight and interim studies in Bismarck, ND. Pam Sharp, director of the state's office of management and budget, gave an update on the state general fund, the Budget Stabilization Fund and the Legacy Fund. The preliminary ending balance of the General Fund stands around \$1.53 billion, as of June 30, 2013. The Legacy Fund is just over \$1.28 billion.

The Government Finance Committee heard from Department of Mineral Resources Director Lynn Helms on oil and gas developments. Helms said the state may have reached its "cruising altitude" for developments. The Industrial Commission is receiving an average of 200 drilling permits per month.

For the state's 2013-2015 budget estimates, Helms said the actual production and pricing of oil and gas during May were within one per cent of estimates, indicating expected future revenue from oil and gas taxes may be close to estimates made during the 2013 legislative session. Production estimates for the 2013-15 biennium range from 830,000 to 850,000 barrels per day at prices ranging from \$70-\$80 per barrel.

Helms discussed how infrastructure improvements will minimize negative impacts and allow for economical continuation of oil and gas extraction. He also spoke about how electricity transmission will remain a "chronic need for the next 19 years," due to continued pipeline development, water distribution expansion and, eventually, enhanced oil recovery.

State Land Commissioner Lance Gaebe spoke on the Energy Infrastructure and Impact Office (EIIO) and its administration of energy impact grants appropriated by the state legislature. Regarding the "local match" requirement typical of city infrastructure project funding, Gaebe stated that a 20 per cent local match was used in the last biennium on a case-by-case basis. He said that with a limited amount of energy impact funding available, the 20 per cent local match will stretch resources to as many entities as possible.



## SCHOOL FUNDING IN THE PATCH

Officials from schools throughout western North Dakota gathered in Bismarck to hear from state officials on funding for the next biennium. The event, sponsored by the NDAOGPC, featured speakers including the state's Deputy Tax Commissioner Ryan Rauschenberger and Tax Commissioner's Office Director of Research and Communications Kathy Strombeck.

Rauschenberger overviewed the revised oil and gas tax system and how bills like HB 1358 changed the percentage of oil and gas Gross Production Tax (GPT) revenue. Strombeck shared a chart showing estimated amounts of GPT revenue to be distributed to schools in fiscal year 2014.

Jerry Coleman, school funding director within the North Dakota Department of Public Instruction, provided information on the new state school funding model, which distributes money to schools on a per-student basis. State Treasurer Kelly Schmidt gave insight into how GPT revenue will be distributed to schools in the 2013-15 biennium.

Gerry Fisher, assistant director of the Energy Infrastructure and Impact Office, presented on the opportunities available to oil-impacted schools. The State Land Board has dedicated \$25 million to oil-impacted schools for the biennium.

Bill Hourigan, program administrator for the Housing Incentive Fund, explained that 155 housing units are owned by school districts, with an additional 86 units needed. Units sold by a school district would remain affordable and available to school employees.



*Fishing Derby Biggest Fish at 7.21 lbs.:  
Paul Cownie, Rainbow Oil and Gas.*

### **OIL CAN! FISHING DERBY BENEFITS WILDLIFE, HABITATS AND BOAT RAMPS**

The North Dakota Petroleum Council hosted its first Annual Oil Can! Fishing Derby on July 17, 2013. The Derby was open to NDPC members, and prizes were awarded to the top five finishing teams and angler who caught the largest fish. The largest walleye, weighing in at 7.21 lbs., was caught by Paul Cownie, Rainbow Oil and Gas. Brian Hymel, Scott Meschke and Ken Schandelmeier, sponsored by Five Diamond Fund Managers, finished in the top place with 22.09 lbs.

All participants donated cash prizes back to ND Energy Forum's Sporting and Oil Industry Forum, raising \$14,495 for the Forum's Projects Committee, which will use contributions for its Habitat Improvement Program, which brings the industry and sporting and conservation groups together on projects that enhance habitat in western North Dakota and increase access to the outdoors.

Thank you to the 142 anglers who came out to support this program and to everyone who helped organize the event.



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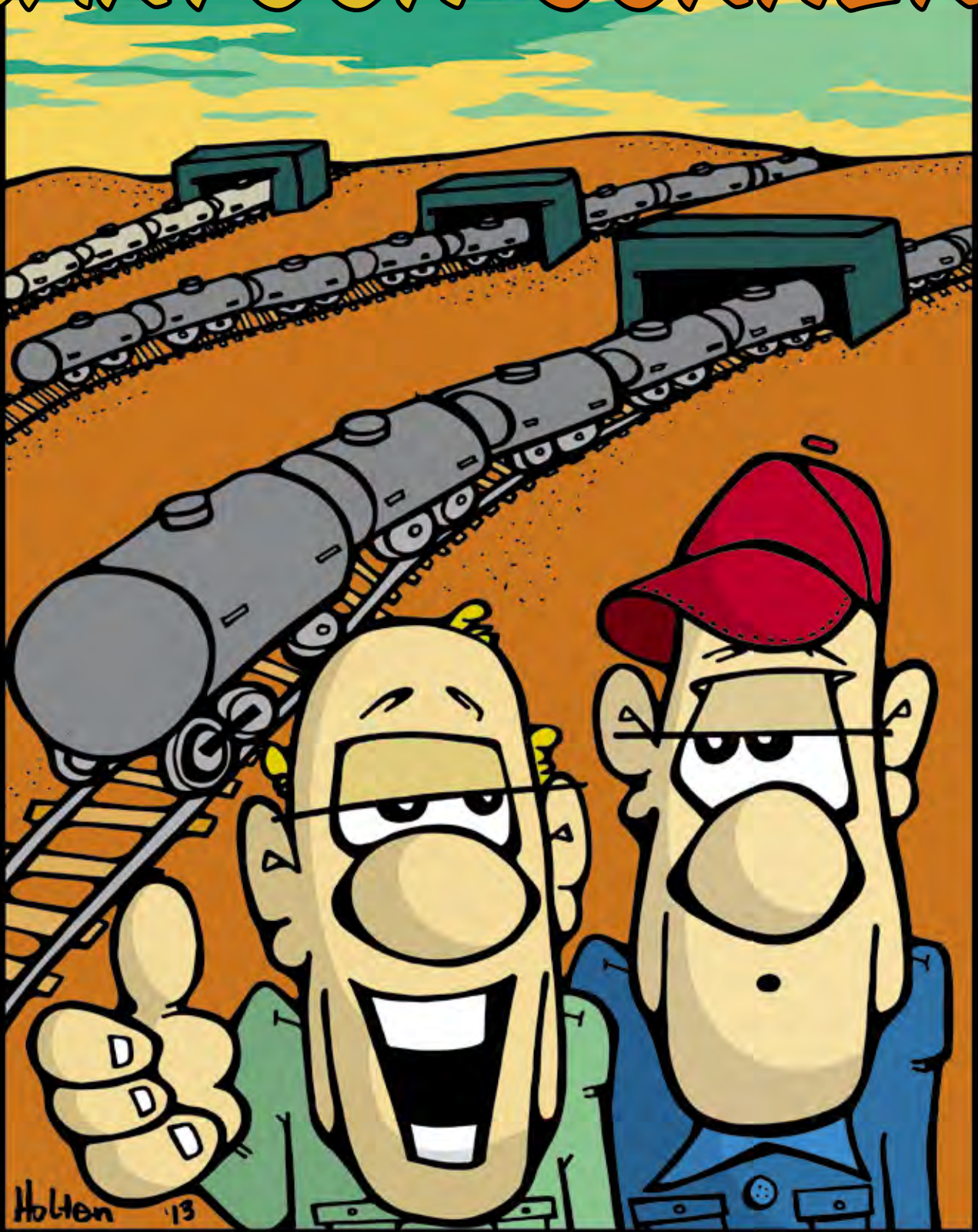


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# Congrats, Scholarship Winners!



Lucas Schaaf




Whitney Page

The North Dakota Association of Oil & Gas Producing Counties is proud to announce this year's top \$2,500 scholarship winners, Lucas Schaaf, of Glen Ullin, ND, who is majoring in Electrical Engineering; and Whitney Page, of Bottineau, ND, who is majoring in Petroleum Engineering.

The scholarships are awarded to North Dakota students in their sophomore or junior year of college, and applicants must be pursuing degrees in engineering, chemistry,

geology, petroleum sciences or other studies directly related to the oil and gas industry.

Other scholarships were awarded August 1, 2013 to Maxwell Johnson, Watford City, ND; Matt Jahner, Bismarck, ND; Ben Buchholz, Bismarck, ND; and Josephe Zikmund, Fargo, ND. The scholarship committee, which consists of Supt. Steve Holen, Supt. Tony Duletski and Supt. Jason Kersten, awarded a record \$10,000 total in scholarships to North Dakota students. Scholarship dollars are supplemented by advertising dollars from *Basin Bits* magazine—thank you, advertisers, for helping these students! 



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"The Mouvex A Series pump remains one of the most robust and reliable pumps on the market," says Paul Cardon, Product Manager, Industry, for Mouvex. "Now, the recent enhancements allow this long-lasting pump to be used in global chemical, food and oil applications where it previously could not."

The Mouvex A Series, previously available in cast iron construction, is now available in ductile iron construction—a critical upgrade as more companies in the petrochemical industry, for example, are integrating ductile iron systems into their processes. The upgraded A Series also features the availability of both Mouvex or standardized mechanical seals, which helps expedite installations, regardless of location. The mechanical seal is positioned behind the piston and provides efficient shaft sealing.

Mouvex A Series pumps enable product transfer up to 482°F (250°C). The pumps have maximum speeds to 750 rpm, maximum flow rates to 55 m<sup>3</sup>/h (242 gpm), as well as suction and discharge ports from 1" through 4" in size. The A Series are positive displacement pumps and utilize eccentric disc technology, which enables self-priming and run-dry capabilities while maintaining constant flow rate, regardless of changes in viscosity and pressure. Mouvex A Series pumps also maintain their initial performance over time and are ATEX-certified for use in potentially dangerous environments with the ability to run-dry for up to three minutes.

[www.mouvex.com](http://www.mouvex.com) or [www.psgdover.com](http://www.psgdover.com)



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## TRIVIA TIME

### PRODUCTION HITS ALL-TIME HIGH

Oil and natural gas production from North Dakota's Bakken play reached new all-time record highs, the North Dakota Industrial Commission's (NDIC) Department of Mineral Resources (DMR) recently reported.

According to preliminary estimates, oil production in June 2013 grew 1.3 per cent to 821,415 bbls of oil per day (bopd) from 811,262 bopd in May. While the number of well completions dropped by 4 to 139, well completions remained above the threshold needed to maintain production; as a result, the oil production rate rose. At the end of June, approximately 490 wells were waiting on completion services, a decrease of 10. The number of wells producing in the Bakken also reached a new record high of 9,071 at the end of June, up from 8,932 in May.

Drilling permit activity was up slightly in June, and is increasing rapidly as operators plan for winter; there is a sufficient permit inventory to accommodate multi-well pads and the time required to deal with federal hydraulic fracturing rules if required. More than 95 per cent of drilling still targets the Bakken and Three Forks formations.

Source: [www.dmr.nd.gov/oilgas/directorscut/directorscut-2013-08-15.pdf](http://www.dmr.nd.gov/oilgas/directorscut/directorscut-2013-08-15.pdf)

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# The Bakken Top 20

*The following are the top 20 oil and gas operators in North Dakota as of July 2013. The list, which shows the cumulative amount of oil that the top 20 companies in North Dakota have produced up to the present time and going back to the discovery of oil in North Dakota more than 60 years ago, was provided by the North Dakota Department of Mineral Resources.*

**A**s of late June 2013, there are 184 rigs actively drilling in the North Dakota oil patch, according to the North Dakota Oil and Gas Division of the North Dakota Department of Mineral Resources. The new all-time high number (preliminary) of producing wells as of April 2013 is 8,758, and over 95 per cent of drilling still targets the Bakken and Three Forks formations. North Dakota is currently sitting as number two in oil production in the nation, and will continue to strive for that number one position as the boom continues in the Bakken.

1. **Hess Corporation**  
Production to date: 338,482,605 bbls  
Tel: (713) 496-4000  
Web: www.hess.com
2. **Denbury Onshore, LLC**  
Production to date: 205,029,314 bbls  
Tel: (701) 575-8188  
Web: www.denbury.com
3. **Whiting Oil and Gas Corporation**  
Production to date: 186,014,092 bbls  
Tel: (303) 837-1661  
Fax: (303) 861-4023  
Web: www.whiting.com
4. **Continental Resources, Inc.**  
Production to date: 146,175,212 bbls  
Tel: (405) 234-9000  
Toll-Free: (800) 256-8955  
Killdeer: (701) 764-6582  
Rhome: (701) 279-6688  
Tioga: (701) 664-3001  
Fax: (405) 234-9253  
Web: www.contres.com

5. **Petro-Hunt, LLC**  
Production to date: 120,698,285 bbls  
Tel: (214) 880-8400  
New Town: (701) 675-2467  
Killdeer: (701) 863-6622  
McGregor (Tioga): (701) 546-4601  
Web: www.petro-hunt.com
6. **Amerada Hess Corporation**  
Production to date: 112,393,684 bbls  
Tel: (713) 496-4000  
Web: www.hess.com
7. **EOG Resources, Inc.**  
Production to date: 84,926,110 bbls  
Tel: (713) 651-7000  
Toll Free: (877) 363-3647 (EOGR)  
Web: www.eogresources.com
8. **SM Energy Co.**  
Production to date: 71,908,227 bbls  
Tel: (406) 245-6248  
Web: www.sm-energy.com
9. **XTO Energy Inc.**  
Production to date: 64,632,535 bbls  
Tel: (817) 870-2800  
Toll-Free: (800) 299-2800  
Fax: (817) 870-1671  
Web: www.xtoenergy.com
10. **Enduro Operating, LLC**  
Production to date: 57,932,396 bbls  
Tel: (817) 744-8200
11. **Sequel Energy, LLC**  
Production to date: 45,637,121 bbls  
Tel: (303) 468-2106  
Web: www.sequelenegy.com

12. **Marathon Oil Co.**  
Production to date: 36,373,401 bbls  
Tel: (713) 629-6600  
Web: www.marathonoil.com
13. **Citation Oil & Gas Corporation**  
Production to date: 33,939,731 bbls  
Tel: (281) 891-1000  
Web: www.cogc.com
14. **Statoil Oil & Gas, LP**  
Production to date: 30,268,276 bbls  
Tel: (512) 427-3300  
Web: www.statoil.com
15. **Texaco Exploration & Production Inc.**  
Production to date: 29,172,952 bbls  
Tel: (800) 962-1223  
Web: www.texaco.com
16. **Slawson Exploration Co. Inc.**  
Production to date: 29,107,075 bbls  
Tel: (316) 263-3201  
Fax: (316) 268-0702  
Web: www.slawsoncompanies.com/exploration.html
17. **Murex Petroleum Corporation**  
Production to date: 27,498,698 bbls  
Tel: (281) 590-3313  
Fax: (281) 590-3381  
Web: www.murexpetroleum.com
18. **Burlington Resources Oil & Gas Co., LP**  
Production to date: 25,907,258 bbls  
Tel: (432) 688-6800  
Web: www.br-inc.com
19. **Encore Energy Partners Operating, LLC**  
Production to date: 22,560,067 bbls  
Tel: (307) 754-7300  
Web: www.encoreenp.com;  
www.vnrlc.com
20. **Oasis Petroleum North America, LLC**  
Production to date: 22,233,495 bbls  
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Web: www.oasispetroleum.com



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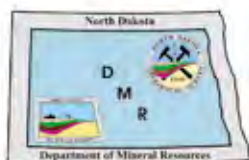
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