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The objectives of this Conference shall be: the advancement of the knowledge of design, construction, operation and management of water and wastewater systems; the promotion and encouragement, through annual meetings or otherwise, of an exchange of information and experience among its membership; the promotion and encouragement of the protection of public health and improved environment through the construction and efficient operation of water supply and wastewater treatment facilities; and the promotion of water and wastewater system operator education and certification programs.

Article II of the Constitution of the North Dakota Water and Pollution Control Conference

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**OFFICIAL BULLETIN, July-September 2016** 

**CONFERENCE BUSINESS PHONE:** 

## OFFICIAL BULLETIN Official Publication of the

North Dakota Water and Pollution Control Conference

#### **Conference Issue**

**SUBJECT** 

#### Established 1935

PAGE

#### VOL. 105 July-Sepember 2017 NOS. 7-9

PRESIDENT - Joe Ferguson PRESIDENT-ELECT - Tracy Eslinger VICE PRESIDENT - Mike Berg DIRECTORS - Wei Lin, Sarah Volk, Jacqueline Melcher, and Jim Lennington ASSOCIATE DIRECTOR - Lance Meyer

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Members of the conference are indebted to those members and others who have contributed articles and other materials for this publication.

On the cover: Downtown Broadway - Fargo, ND

To receive the *Official Bulletin* electronically or to no longer receive a paper copy, email Jacob Schafer at jrschafer@nd.gov, or call 701-328-6375.

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### 2017 ANNUAL CONFERENCE ACTIVITIES October 17-19

EMERGENCY RES	PONSE PLANNING	WATER AND WASTEWATER OPE	
Monday 1:00 p.m. – Frontier Roo	5:00 p.m. m	EXAMINATIO Tuesday Conference Room	7:30 a.m 11:30 a.m.
NDWPCC SER	VICE PROJECT		
<b>Monday</b> 4:00 p.m. – 7	:00 p.m.	pH CERTIFICA	ATION
		Tuesday	9:00 a m - 11:00 a m
REGIST	RATION	Mezzanine Suites III	
Tuesday 8:00 Wednesday Thursday Atrium/Press Room	a.m 5:00 p.m. 8:00 a.m 5:00 p.m. 8:00 a.m 10:00 p.m.	-	
		YP POSTER CON	IPETITION
MEA	ALS	Wednesday South Conference Corridor	9:00 a.m. – 10:30 a.m.
Tuesday Lunch Sterling and Crowne Rooms	11:30 a.m.	·	
Tuesday Student/YP Social Harvest Hall	6:30 p.m 8:00 p.m.	TABLETOP DISPLA THE GREAT	Y PROGRAM Hall
Wednesday Free Buffett Brea Sponsored by Vendors and Sup The Great Hall/Pool Patio	<b>kfast</b> 8:00 a.m 10:00 a.m. opliers	<b>Tuesday</b> Check in at the Registration Desk	8:00 a.m 5:00 p.m.
Wednesday Lunch Pool Patio	12:00 noon	Tuesday Setup Time	7:00 p.m 9:00 p.m.
Wednesday Social Pool Patio	5:30 p.m.	Wednesday Last Chance Setup Time	7:00 a.m 7:30 a.m.
Wednesday Banquet The Great Hall	6:30 p.m.	Wednesday Display Hours	7:30 a.m 11:30 a.m.
Thursday Lunch Sterling and Crowne Rooms	12:00 noon	Wednesday Takedown Time	1:30 p.m 3:30 p.m.
		FIELD TR	lips
GOLF TOU	IRNAMENT	Transportation wil	l be provided
Tuesday	1:00 p.m.	Tuesday2:00Fargo Municipal Facilities	p.m. – 4:00 p.m.
Rose Creek Golf Course 1500 E Rose Creek Pkwy S. Fargo, ND		·	
		LOCAL ARRANGEME	
CUTCOT		Joe Ferguson	Mark Williams
EN I ER I/	8.00 p m - 9.00 p m	Mark Peterson Karla Olson	Tim Paustian Jody Kosienski
Line Benders	5.00 p.m. 5.00 p.m.	Troy Hall	Kellen Grubb

#### Tuesday

Line Benders

#### **President's Letter**

by Joe Ferguson, President - North Dakota Water and Pollution Control Conference



Dear friends and colleges,

I would like to take this opportunity to invite you to the 89th annual water and pollution control conference. This Years conference will be held in Fargo on October 17, 18, 19. This conference will be jammed packed with some outstanding topics and tours. Plenty of opportunities for all who attend. This is also a great time to meet up and visit with old friends and colleges. I strongly encourage you to mark your calendar and get registered for a great conference. Hope to see you all in Fargo!!

Sincerely, Joe Ferguson, President NDWPCC.



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NORTH DAKOTA SECTION OF THE AMERICAN WATER WORKS ASSOCIATION 27<sup>TH</sup> ANNUAL CONFERENCE

#### NORTH DAKOTA CHAPTER OF THE NORTH AMERICAN STORMWATER AND EROSION CONTROL ASSOCIATION 5th ANNUAL CONFERENCE

OCTOBER 17, 18, AND 19, 2017 FARGO, NORTH DAKOTA HOLIDAY INN 3803 13<sup>th</sup> Ave S 701-282-2700

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#### OCTOBER 16, 2017

4:00pm – 7:00pm Rabanus Park (18th Avenue and 42nd Street SW)

Please visit **www.thefargoproject.com** for information regarding The Fargo Project.

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For questions about registration, the competition, or general information contact:

Kellen Grubb Kellen.Grubb@AE2S.com







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#### Southeast Water Users District to Add Over 450 New Users

By: Steve Hansen, SEWUD General Manager & Brian Bergantine, AE2S Operations Manager

A water district that serves six counties in southeast North Dakota over an area of approximately 5,010 square miles is on the verge of adding hundreds of new customers through a system-wide expansion project. The Southeast Water Users District (SEWUD) expansion project will deliver reliable high-quality drinking water to over 450 new rural water users as well as the City of Walcott over the next two years.



Caption: Crews install pipelines near Walcott for the SEWUD system-wide expansion project.

#### **SEWUD Background**

SEWUD is comprised of three older systems. The first rural water system in southeast North Dakota was installed in the 1970s on the easternmost corner in Richland County and was known as Richland Rural Water Users. It later changed its name to Southeast Water Users to more accurately reflect the system as it expanded into other counties. In the 1990s, two other systems, Ransom-Sargent Water Users and Dickey Rural Water Users, were added further west in Ransom, Sargent, Dickey, and LaMoure counties. The three systems merged in January 2006. That merger created the current Southeast Water Users District,

governed by one board with members from each of the three areas.

#### **Need for Expansion**

For the majority of those who are set to receive SEWUD service through the expansion project, they either have an inadequate supply of potable water or they have very poor water

quality. A study conducted in the mid-2000s of approximately 450 wells by the North Dakota Department of Health in a section of the SEWUD-East service area indicated that 82 percent of the wells tested were above the maximum contaminant level (MCL) for arsenic. Many of the individual wells in the SEWUD service area also experience high concentrations of iron, manganese, and/or total dissolved solids, making rural water from SEWUD very attractive.

After consideration of the groundwater quality and the large amount of interest from potential users, SEWUD and its engineer, AE2S, kicked off a successful sign-up campaign. Sign-up forms were mailed to residents in the service area who were not already SEWUD rural water users. SEWUD placed ads and sent news releases to the local newspapers about the sign-up process. Nine public meetings were held throughout the district over a four month period to educate the public about the project, the benefits to potential users, and costs associated with the new water service.

"We were continually surprised by the increasing number of users who signed up. When we started planning the project, we thought maybe 150 new users would be interested. The interest we saw in this project was just phenomenal," says Steve Hansen, SEWUD General Manager.

#### **Design & Funding**

The design of the SEWUD system-wide expansion consists of over 450 miles of distribution pipe, pump change outs and miscellaneous electrical and control improvements at eight existing reservoirs, plus construction of a new 100,000 gallon reservoir and booster station. The expansion will help meet water demands for the entire city of Walcott as well as individual users within city of McLeod, and includes the installation of a new inline booster station to meet increasing water demands in Dickey, LaMoure, and Logan Counties.

The project's estimated cost is \$20.5 million. SEWUD has secured \$16,500,000 in funds from a combination of grants from the State Water Commission and loans, SEWUD continues to look for additional ways to fund the remaining \$4 million of the project.

The SEWUD system-wide expansion is anticipated to be completed in 2019. "This expansion project will deliver good quality rural water to farmsteads which will eliminate ongoing concerns about their water's source and availability," says Hansen.



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#### **Fargo Wastewater Treatment Facility**

Authors: Karla Olson, PE; Seth Lynne, PE

The Fargo Wastewater Treatment Facility (WWTF) is no stranger to construction projects. During the more than 80 years of use, numerous facility projects have taken place to safely return clean water to the environment. Since the early 1990s members of the Apex team have been involved in nearly every project at the plant.

To understand the complexities of the renovations, it's important to fully grasp the history and timeline of the facility.

1934 – Construction of the original wastewater treatment facility began with the plant becoming fully operational in 1936. The plant provided primary treatment only, and the facility had a capacity of 3.0 million gallons per day (mgd). The treatment system included influent pumping, screening, primary clarification and anaerobic digestion. Lift Station 5, an influent pump station, was originally constructed in 1935 and was utilized consistently until demolished under the 2015 Phase I Improvements Project.

1960 – In 1960, a secondary treatment expansion took place. The project increased the capacity of the plant to 7.0 mgd and introduced the use of trickling filters for BOD reduction. A second influent pump station was also constructed as well as two new primary digesters

1984 – A Facility Expansion was completed increasing the plants capacity to 9.0 mgd. During the expansion, trickling filters and clarification were added to improve the facility's BOD and TSS removal capabilities.

1990 - Fargo's Wastewater Treatment Facility underwent a series of major improvements during the early 1990s, bringing the capacity to 15.0 mgd. The projects included a facility wide expansion of the liquid treatment process including grit removal, primary clarification, trickling filters for BOD and ammonia reduction, intermediate and final clarification, and chlorine disinfection.

2000 – An additional expansion took place at the Fargo Wastewater Treatment Facility in 2000, adding primary and secondary digestion, biosolids storage, and dewatering of biosolids.

2014 – In 2014, the City of Fargo was in need of another expansion to handle the explosive growth the City was experiencing. The WWTF was already a regional player, providing services to multiple, surrounding municipalities. The facility was nearing capacity when presented with the opportunity to service additional, neighboring communities. Apex and the City identified equipment that was ready for immediate replacement while also taking into consideration the future expansion needs and upgrades for future discharge regulations in a Facility Plan Amendment. Phase I Improvements

In February of 2015, the City of Fargo retained Apex Engineering Group to plan, design and oversee the construction of a \$12 million dollar wastewater treatment facility improvements project, which focused heavily on critical upgrades to instrumentation, controls, piping, equipment and infrastructure at the plant. In addition to these updates, an extensive remodel of the administration building was also included in the project. Apex and City Staff worked together to prioritize the upgrades that were needed under the Phase I Project.

Throughout the course of the project, the varying age of infrastructure at the site required Apex to use creativity to solve uncommon situations. These updates were done without disrupting the daily flow of 12 to 13 million gallons of wastewater through the plant.

Lift Station #5 – Lift Station #5 was constructed in 1935. With the age of the infrastructure, the reliability was called into question. In addition, electrical and occupancy codes were no longer adequately met. Finally, replacement parts were not available, due to the age of the equipment. In Phase I, Lift Station #5 was removed from service and demolished.

Primary Clarifiers – Fargo's Wastewater Treatment Facility was currently operating with 1959 clarifiers. During Phase I renovations, the clarifiers were replaced, as the environment they were functioning in caused equipment corrosion and eventually equipment failures. In addition, tank concrete was becoming corroded. Electrical and control elements were in need of replacement, and instrumentation upgrades were necessary for improved sludge pumping and control. Under the Phase I improvements, new equipment and electrical improvements were installed in primary clarifiers number one, four, five, six, and seven. Instrumentation, concrete repairs and protective coatings were applied in all.

Trickling Filters – The Trickling Filters' Rotary Distributors were at the end of their useful life. The corrosive and humid environment caused equipment to deteriorate and brought its reliability into question. In Phase I, new distributor equipment was installed in four trickling filters.

Secondary Digesters – Due to the corrosive nature of the environment, the secondary digesters' covers experienced deterioration and eventual failure. New covers and gas safety equipment were provided in secondary digesters numbers two, three, and four in Phase I.

Influent Pump Station – The 1961 influent pump station's capacity was inadequate. The screens were beyond their useful life, and there were concerns about electrical, controls, occupancy codes, and safety. Under Phase I, new pumps were installed to increase the influent station's pumping capacity

to 25.0 mgd. New electrical, controls, HVAC, plumbing and building modifications were utilized to bring all spaces into code compliance. New stainless steel screens were installed as well as a screening washing press. A new generator was also installed in the event of any power failures.

Digester Gas Safety Equipment & Sludge Piping – Due to corrosive gases and condensation digester gas safety equipment and sludge piping were in need of replacement. The corrosion was also leading to premature valve failure. To improve the condition, new biogas safety equipment, stainless steel piping, and pinch valves were installed.

Sludge Pumping Automation – Sludge pumping had always been a manual process at the Fargo WWTF, which was demanding on City staff and required 24 hour personnel available to do so. Under the Phase I improvements project, new actuated valves, fiber communication lines, instrumentation, controls, and new sludge pumps were installed to automate the sludge pumping process. Automation has increased efficiencies in the sludge pumping process and improved digester performance.

Administration Building – The administration building at Fargo's Wastewater Treatment Facility was in need of updating. The building lacked storage and the laboratory needed to be renovated. The men's bathroom and locker room were old and outdated. The roof leaked and HVAC, electrical and controls needed to be brought up to code and modernized. The roof was replaced, a new men's locker room and additional bathroom facilities were added, as well as added storage and improvements to the laboratory. Other improvements in the Administration Building included new sludge pumps, electrical equipment, instrumentation and controls, and HVAC. The new electrical improvements provided staff with remote monitoring and operational capabilities, which helped eliminate the need to staff a night shift at the plant, thus saving the City on staffing costs.

Due to the familiarity and expertise the Apex Staff has with Fargo's wastewater treatment facility, the City and Apex were able to further build on the existing successful relationship.

#### Future Planning

To continue expanding the Fargo Wastewater Treatment Facility, Apex and the City devised an itinerary for planning, design, and construction of the facility expansion.

While planning and design of the plant expansion was proceeding, the City needed an interim solution to accommodate the flows from the City and the surrounding region that utilize the Fargo Wastewater Treatment Facility. In the fall of 2016, the City of Fargo Wastewater Utility along with their consultant, Apex Engineering Group, conducted a pilot study to research a more efficient way of treating solids at the Wastewater Treatment Plant. The objective of the pilot study was to determine a way to capture and remove solids from the intermediate and final clarifiers, diverting them to the anaerobic digesters for stabilization and ultimate disposal in the City of Fargo Landfill. As a solution, a skid mounted centrifuge was used to enhance and increase thickening of the solids for a four week period with great success. With the removal of solids from the treatment stream, calculations showed that installation of a permanent, full scale centrifuge could provide additional capacity at the Wastewater Treatment Plant that would translate to 23,000 persons. The increased capacity will allow for short term city growth and regionalization, until the Phase II wastewater plant expansion is completed.

The second phase of expansion was designed to accommodate growth and regionalization. The City and Apex plan to implement a new west treatment train adjacent to the existing facility, as well as making modifications to the existing east treatment train. This strategy will allow the City to effectively treat wastewater for the 20 year design conditions.

With the expansion of Fargo's Wastewater Treatment Facility, the City has the ability look to the future needs of not only its own residents, but the surrounding communities as well. The timing of Fargo's need for wastewater system improvements has lent itself to viewing the region differently. While Fargo has seen expansive growth, the metro area has also seen similar trends. This scenario has left multiple communities looking for long-term solutions for their wastewater treatment needs. While many communities believe they have two options – expand their current facilities or build new facilities – there is a third option: regionalization.

In metro areas like Fargo, often times the best solution for communities and residents is to create regionalized public utilities. With regionalization, communities are able to share infrastructure and operation costs, keeping rates lower by spreading expenses amongst more users. Regionalization thereby lessens the financial burden on both city governments and users.

Currently Lake Shure Estates, Harwood, Round Hill Estates, Frontier, Prairie Rose, Briarwood, Reile's Acres, Oxbow, Highland Park and rural Southeast Cass utilize the City of Fargo's WWTF. The City has recently entered into agreements with the Cities of West Fargo and Horace and has the potential to provide opportunities to other communities, such as Kindred and Mapleton. The planned expansion of the plant has taken into account the added populations as well as the expected growth of the existing service area.

Apex Engineering Group prides itself on supporting growth and progress, especially in the communities we serve. Apex was pleased to be selected by the City of Fargo to enhance their wastewater utility, creating an environmentally and fiscally friendly solution for all.

#### **OFFICIAL BULLETIN, July-September 2016**

#### 2017 MEETING SCHEDULE

<u>Monday</u>	
7:00 p.m.	<b>Preconference Meeting</b> North Dakota Section of the American Water Works Association (NDAWWA) Frontier Room
<u>Tuesday</u>	
7:30 a.m 11:30 a.m.	Water and Wastewater Operator Certification Examinations North Dakota Department of Health Conference Room
7:30 a.m.	Officers Meeting NDAWWA Frontier Room
8:00 a.m.	<b>Officers Meeting</b> North Dakota Chapter of the American Stormwater and Erosion Control Association (NASECA-ND) Prairie Room
8:00 a.m.	<b>Officers Meeting</b> North Dakota Chapter of the American Public Works Association (NDCAPWA) Embassy A Room
8:00 a.m.	<b>Officers Meeting</b> North Dakota Water Environment Association (NDWEA) Embassy B Room
9:00 a.m. – 11:00 a.m.	pH Certification Mezzanine Suite III
9:30 a.m.	Officers Meeting Joint Board of Directors of the North Dakota Water and Pollution Control Conference (NDWPC), NDCAPWA, NDWEA, NDAWWA, NASECA-ND Executive Room
10:30 a.m.	<b>AWWA Committee Meetings</b> NDAWWA Frontier Room
11:30 a.m.	Business Meeting NDAWWA Sterling and Crowne Rooms
1:30 p.m. – 5:00 p.m.	<b>Concurrent Sessions</b> Dakota Hall, Executive and Board Rooms, Directors and Conference Rooms

(Over)

#### <u>Wednesday</u>

9:00 a.m.	North Dakota Operator Certification Advisory Committee Meeting Mezzanine Suite IV
12:00 noon	Business Meeting NDWEA Pool Patio
1:30 p.m 4:30 p.m.	<b>Concurrent Sessions</b> Dakota Hall, Executive and Board Rooms, Directors and Conference Rooms
<u>Thursday</u>	
7:30 a.m.	Annual Public Works Directors and City Engineers Meeting Mezzanine Suite IV
8:00 a.m 11:30 a.m.	<b>Concurrent Sessions</b> Dakota Hall, Executive and Board Rooms, Directors and Conference Rooms
12:00 noon	Business Meetings NDCAPWA and NDWPCC Sterling and Crowne Rooms

#### **FUTURE CONFERENCES**

- 2018 Grand Forks, October 16-18th, Alerus Center
- 2019 Bismarck, October 8-10th, Ramkota Hotel
- 2020 Minot, October 13-15, Holiday Inn

# **CONFERENCE HISTORY**

Host CityPresidentResidenceFargoJoe FergusonGrandMinotSeth LynneFar	President Residence Joe Ferguson Grand Seth Lynne Far	<u>Residence</u> Grand Far	Forks	Conference 1972 1971	Host City Williston Farrio	<u>President</u> John Muus Donald Wenaas	President's Residence Grand Forks Jamestown
Bismarck Dan Jonasson Minot	Dan Jonasson Minot	Minot		1970	Minot	Harry Hanson	Bismarck
Fargo Dean Sletten Moorhee	Dean Sletten Moorhes	Moorhea	pa	1969	Bismarck	Clarence Johnson	Garrison
Grand Forks Bill Gefroh Bismard	Bill Gefroh Bismarc	Bismarc	×	1968	Dickinson	Bevan Shaw	Williston
Minot Karla Olson Fargo	Karla Olson Fargo	Fargo	<u>_</u>	1967	Grand Forks	A.E. Forsman	Grand Forks
Fargo Miranda Kleven Grand Fo	Miranda Kleven Grand Fo	Grand Fo	rks	1900	Fargo	Ken Ruby	Fargo
Minot Lisa Ansley Bismar	Lisa Ansley Bismarc	Bismar	×	1964	Minot	Al Swanson	Jamestown
Bismarck Terry Rusť West Fa	Terry Rust Mest Fa	West Fa	rgo	1963	Valley City	Carl Torkelson	Grafton
Fargo Mark Blonigen Fargo	Mark Blonigen Fargo	Fargo	0	1962	Williston	Glenn Berg	Minot
Minot Tom Welle Moorhe	Tom Welle Moorhe	Moorhe	ad	1961	Jamestown	Richard Fuller	West Fargo
Bismarck Jack Long Bismarc	Jack Long Bismarc	Bismarc	×	1960	Bismarck	Frank Orthmeyer	Grand Forks
Fargo Rick Gillund Enderlin	Rick Gillund Enderlin	Enderlin	_	1959	Grand Forks	Herbert Arnold	Williston
Minot Mike Schneider Bismarck	Mike Schneider Bismarck	Bismarck		1958	Dickinson	L.W. Veigel	Dickinson
Bismarck Pat Denne West Farg	Pat Denne West Farg	West Farg	0	1951	Fargo		Jamestown
Fargo Charles Jaszkowiak Bismarck	Charles Jaszkowiak Bismarck	Bismarck		1956	Mandan	Edwin Ustlie	Grand Forks
Dickinson Randal Loeslie I hompsor	Randal Loeslie	Ihompsor	_	1955	Williston	Paul Hays	Minot
Minot Paul Lacina Valley Cit	Paul Lacina Valley Cit	Valley Cit	>	1954	Grand Forks	C.M. Hagen	Oakes
Bismarck Mel Bullinger Bismarck	Mel Bullinger Bismarck	Bismarck		1953	Minot	C.T. Stephenson	Jamestown
Fargo Wayne Lunseth Mayville	Wayne Lunseth Mayville	Mayville		1952	Jamestown	Ed Booth	Bismarck
Minot Don Olatson Valley City	Don Olatson Valley City	Valley City		1951	Fargo	H.H. Behlmer	Fargo
Bismarck Vvaide Kritsky Jamestown	Vvalde Kritsky Jamestown			1950	Bismarck	A.F. Hulteng	Grand Forks
Fargo Byron Inronson Minot	Byron I nronson Wilnot			1040	UICKINSON Miscot	George Ioman	Nangan Coccoccatoria
	Tow Little Mander	Mandon				R.J. LOCKITER	
Eardo Dishial Uni Eitile Ivanuali Eardo Dishard Mannar Bismarch	Dichard Manner Bismarck	Bismarck		1947 1016	Mandan	S K Svankason	GIALIA FOIRS Minot
Williston Richard Recell Willistor	Richard Resell Willistor	Willistor	۷ م	1045	Fardo	F.W. Pinney	Fardo
Minot Dwight Wurzbacher Grand Fo	Dwight Wurzbacher Grand Fo	Grand Fo	orks	1944	Bismarck	Dave MacDonald	Bismarck
Grand Forks Phil Furaus Harve	Phil Furaus Harve	Harve	>	1943	Grand Forks	Joe Morrissey	Jamestown
Dickinson Dale Hanson Valley Č	Dale Hanson Valley Č	Valley Č	ity	1942	Williston	Elmer Pearson	Minot
Bismarck Dan Boyce Grand Fc	Dan Boyce Grand Fc	Grand Fc	orks	1941	Jamestown	R.M. Jenson	Grand Forks
Fargo Lyle Weeks Minot	Lyle Weeks Minot	Minot		1940	Wahpeton	William Nordley	Edgeley
Williston Kenneth Reynolds Bismar	Kenneth Reynolds Bismar	Bismar	÷	1939	Dickinson	William Yegen	Bismarck
Minot Dale Townsend Carringt	Dale Townsend Carringt	Carringt	on	1938	Minot	S.S. Calvelage	Jamestown
Mandan Peter Bilstad Fargo	Peter Bilstad Fargo	Fargo		1937	Mandan	Ora Ayliffe	Fargo
Jamestown Don Cuskelly Dickinso	Don Cuskelly Dickinso	Dickinso	c	1936	Fargo	S.P. Ravnos	Mandan
Grand Forks Don Erikson Watford C	Don Erikson Watford C	Watford C	lity	1935	Grand Forks	H.T. Hintgen	Wahpeton
Bismarck Ken Skuza Fargo	Ken Skuza Fargo	Fargo		1934	Bismarck	W.H. Robinson	Williston
Dickinson Gerald Zander Mand	Gerald Zander Mand	Mand	an	1933	Jamestown	O.N. Bergman	Valley City
Fargo Keith Cornell Grand	Keith Cornell Grand	Grand	Forks	1932	Minot	E.L. Lium	Grand Forks
Minot Peter Mellmer Bisma	Peter Mellmer Bisma	Bisma	arck	1931	Fargo	W.P. Tarbell	Fargo
Mandan Lyle Mitzel Wahpe	Lyle Mitzel Wahpe	Wahpe	ton	1930	Grand Forks	E.J. Thomas	Minot
Grand Forks Daniel Reiter Minot	Daniel Reiter	Minot		1929	Bismarck	A.L. Bavone	Bismarck
Jamestown Kussell Kain Necl	Kusseli Kain	Nect	e				

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#### Fargo Membrane WTP Expansion Will Increase Capacity & Treatment Capabilities

By: Troy Hall, City of Fargo Water Utility Director & Ben Julson, AE2S Project Engineer

The City of Fargo is in the middle of an extensive expansion project at the City's Water Treatment Plant (WTP). The seven year project will increase the WTP's treatment capacity from 30 million gallons per day (mgd) to 45 mgd. The increased capacity is necessary to keep up with the City's continued growth, as well as supply water to the growing City of West Fargo through a cooperative agreement which began in 2016.



Caption: Aerial view of Fargo Membrane WTP construction from the site camera on August 7, 2017.

#### Treating for Sulfates

In addition to expanding the capacity of the WTP to keep up with demand, the City also needed to address treatment challenges associated with changes in the source water. Fargo's primary water source is the Red River, however the water supply is augmented with the Sheyenne River, which contains high bromide and sulfate concentrations due to discharges from Devils Lake.

The City's existing WTP became operational in 1997 and was not designed to remove sulfates, which can cause gastrointestinal upset in vulnerable populations such as infants and the elderly. The Fargo Membrane WTP project will add a 15 mgd membrane treatment facility, which will include reverse osmosis (RO) membrane technology to treat the elevated sulfates in the source water. This RO process will follow pretreatment and membrane filtration, which condition the water for the efficient operation of the RO process, and the treated water will be disinfected before blending with the treated water from the existing WTP.



Caption: Illustration of the treatment process at the Fargo Membrane Water Treatment Plant.

#### **Construction Status**

Construction on the Membrane WTP began in May, 2015 and is scheduled to be completed in September, 2018. The \$105 million project is being financed with a \$30 million grant from the North Dakota State Water Commission and through loans that will be repaid using the City's infrastructure sales tax that has been repeatedly approved by voters, most recently in 2016.



Caption: The first two Reverse Osmosis (RO) skids arrived at the Fargo Membrane WTP in July.

The new facility is being constructed on the same site as the existing WTP and the above grade block and brick superstructure of the new building will match seamlessly with the existing WTP. A deep foundation system was also installed down to glacial till (approximately 90-100 feet deep) to provide the necessary structural support for the new building. Currently the roofing and exterior walls are nearing completion, which will close up the final areas of the building from the elements, while the installation of the treatment equipment, piping (both process and mechanical), HVAC components, and electrical gear and wiring are ongoing.



# 2018 Your Source for Water Wisdom IRFACE TREATMENT WORKSHOP

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Minnesota, North Dakota, and South Dakota AWWA request abstracts for both verbal and poster presentations for the 2018 Surface Water Treatment Workshop.

#### What Makes this Workshop the Best?

- The **only** joint conference with MN, ND, and SD sections hosted by AWWA
- With common water sources, geology, and climate, this workshop provides an opportunity to work jointly on solving this region's unique and challenging issues
- Collaboration with other sections will bring home value to your system
- Over 250 attendees expected

#### Who Should Attend?

Utility Operators, Educators, Regulators, Engineers, Municipalities, Manufacturers, and everyone in between

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CAL	L FO	R	PA	PE	R

DATES TO REM	EMBER
Abstracts Due	August 15, 2017
Notification of Acceptance	October 15, 2017

	TOPICS MAY INCLUDE	
UTILITY MANAGEMENT & OPERATIONS	WATER TREATMENT & TECHNOLOGY	SUPPLY, DISTRIBUTION & GREEN TECHNOLOGIES
Emerging Contaminants	Treatment Technologies	Disinfection
Regulations	Lime Softening	Disinfection By-Products
Sustainability	Membrane Technologies	Water Storage Issues
Financing	Chemical Feed Optimization	Distribution
Asset Management	Innovative Treatment	Water Age
Utility Management	Filter Optimization	Water Modeling
Water Conservation	Biological Treatment	Stormwater
Source Water Issues	Residuals Handling	Surface Water Intake Issues
GIS Applications	Taste & Odor Removal	Green Technologies
	Chemical Usages	

The presentation selection committee will view quality of the abstract as an indication of the quality expected in the presentation and final manuscript. Review of the abstracts will be based on the following criteria:

- Relevance to the theme of the conference and the theme of the individual session(s)
- Significance of the work to a broad audience
- Technical content
- Originality of the work, including new concepts, innovations, or data

Submit abstracts for a presentation or poster at www.AWWAND.org by August 15, 2017. **Questions?** Contact Adam Zach, AE2S Adam.Zach@ae2s.com 701-746-8087

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11:30 a.m. Luncheon á Sterling an Chair Wade Guest Spea	and Busin 1 Crowne 1 Hesch, P	ess Meeting, NDAWWA Rooms 'residing h Kannenberg, Vice President, AWWA		TUE AFTERN	SDAY, OCTOBER 17, 2017 OON CONCURRENT SESSIONS	Welcome: Farç NDCAPWA Pre	jo Mayor I sident Ric	or. Tim Mahoney k Gillund
Dakota Hai	=	Session A	Executive a	nd Board	Session B Rooms of Harvest Hall	Directors and C	conference	Session C e Rooms of Harvest Hall
Moderator:	Adam Za	ch, Trustee, NDAWWA	Moderator:	Wei Lin, W	EF Delegate, NDWEA	Moderator: Luci	Snowden,	Board Member, NASECA-ND
1:30 p.m.	Title:	"Water Treatment Chemistry"	1:30 p.m.	Title:	"Case Studies on De-Classifying Plant Areas to Meet Fire Protection Code NFPA 820"	<b>1:30 p.m</b> . Tit	е. 	argo Infrastructure Update"
0)	Speaker:	Delvin DeBoer, Project Manager, AE2S	S	oeaker:	Colin Marcusen, Senior Engineer, SEH	Speal	(er: TE	ßD
2:30 p.m.	Title:	"Lessons Learned Using Trenchless Technologies for Challenging Water Main Installation"	2:30 p.m.	Title:	"Dewaterability & Bio-P and Dewatering Optimizations"	2:30 p.m. Ti	tle: Se	nalyzing a Gravity vs. Pump Storm ewer System"
.,	Speaker:	Jade Berube, Project Manager, Apex Engineering Group"	S	eaker:	Mario Benisch, Process Engineer, HDR	Speal	er. TT	iomas Johnson, Sr. Water Resource gineer and Emily Huettle, Civil gineer, Ackerman-Estvold
3:00 р.т.		Break – Pool Patio	3:00 p.m.		Break – Pool Patio	3:00 p.m.	Ā	eak – Pool Patio
3:30 p.m.	Title:	"Ghosts in the Machine: Trouble Shooting Strategies to Diagnose Electrical and Control System Problems"	3:30 p.m.	Title:	"Bismarck Wastewater Plant H2S Control"	3:30 p.m. ⊤	itle: St	itban Plains – Integration of Parks and ormwater Management"
	Speaker:	Kyle Koterba, Lead Electrical Engineer, Apex Engineering Group	S	peaker:	Emily Von Hagen, Kristopher Knutson, Ricardo Zamora, and Heather Yelle: WEFTEC Design Team	Spe	aker: Je	iff Hruby, Civil Practices Director, AE2S
4:00 p.m.	Title:	"Water Storage Tank Selection"	4:00 p.m.	Title:	"WEF Update"	4:00 p.m.	litle: "L	arge Scale Capital Improvements"
-	Speaker:	Doug Whitney, Senior Engineer, KLJ	S	peaker:	Tim Williams, Deputy Executive Director, WEF	Spe	aker. Ma	elRon Peters, Sr. Wastewater Project anager, HDR
4:30 p.m.	Title:	"SRF Update"	4:30 p.m.	Title:	"Wastewater Emergency Preparedness:	4:30 p.m.	Title: "2	<sup>nd</sup> Street/Downtown Fargo Floodwalls"
.,	Speaker:	David Bruschwein, DWSRF Program Manager, NDDH	<u>io</u>	oeaker:	Karl Rockeman, Director, Division of Water Quality, NDDH	Spe	aker. R	andy Engelstad, Houston Engineering
5:00 p.m.		Adjoum	5:00 p.m.		Adjoum	5:00 p.m.	Ac	ljourn
6:30 - 8:00 p		Student/YP Social – Harvest Hall						

8:00 – 9:00 p.m.

Entertainment: Line Binders

7:30 - 11:30 a.n	m. Exhil	bitor Program		WEDI	VESDAY, OCTOBER 18, 2017	12:00 Luncheon and	Business Meetings,
Great Hall/Pool Great Hall/Pool	00 a.m. N Patio	Free Breakfast Buffet		AFTERN	00N CONCURRENT SESSIONS	NDWEA President: M Guest Speaker: Tim W WEF	chael Quamme, Presiding illiams, Deputy Executive Director,
liell steded		NDAWWA Session			NDWEA Session	Z	ASECA-ND Session
Moderator: Mike	(e Berg,	Chair-Elect, NDAWWA	Executive a	Jess Wagne	corns or narvest nail er, Past President, NDWEA	Directors and Contere Moderator: Dallas Gros	Ince Rooms of Harvest Hall sman, Treasurer, NASECA-ND
1:30 p.m. <sup>–</sup>	Title:	"Current Events for Lead in Drinking Water"	1:30 p.m.	Title:	"Membrane Replacement"	1:30 p.m. Title:	"Watershed Master Planning - On Site vs. Regional Facility"
Spei	eaker.	Amy Kinzler, Environmental Scientist, NDDH		Speaker.	Don Wald, City of Wahpeton	Speaker:	Jeff Hruby, Civil Practices Director, AE2S
2:00 p.m.	Title:	"Groundwater Issues and Solutions"	2:00 p.m.	Title:	"Improved Anaerobic Digester Performance"	2:00 p.m. Title:	"Regulatory Update"
Spe	eaker:	Brian Bergantine, Operations Manager, AE2S	S	peakers:	Seth Lynne, Associate, Apex Engineering Group; Don Tucker, Wastewater Superintendent, City of Fargo	Speaker:	Patricia McQueary, USACE
2:30 p.m. T	Title:	"Pipe Standard Installation Practices"	2:30 p.m.	Title:	"Wipes and FOG Public Education"	2:30 p.m. Title:	"Working with the Media"
Spea	aker:	Joe Zauner, Sales Engineer, American Cast Iron Pipe		Speaker.	Bill Gefroh, Lab & Pretreatment Manager, City of Bismarck	Speaker:	Tom Jirk, Communication Coordinator, UGPTI
3:00 p.m.		Break – Pool Patio	3:00 p.m.		Break – Pool Patio	3:00 p.m.	Break – Pool Patio
3:30 p.m.	Title:	"Drought Management"	3:30 p.m.	Title:	"Hamful Algal Blooms"	<b>3:30 p.m.</b> Title:	"FM Area Diversion Project Update"
Speak	ikers:	Troy Hall, Water Utility Director, City of Fargo Jacob Strombeck, Project Manager, AE2S	0,	speakers:	Gary Zuroff, Public Works Director, City of Dickinson; Karl Rockernan, Director, Division of Water Quality, NDDH	Speaker.	Eric Dodds, Program Manager, AE2S
4:00 p.m. T	Title:	"Gimmicks and Gadgets Panel Discussion"	4:00 p.m.	Title:	"Resource Recovery"	<b>4:00 p.m.</b> Title:	"Buffalo River Restoration Project"
Speak	kers:	Gary Zuroff, City of Dickinson; Brad Stieg, City of Dickinson		Speaker:	Karla Olson, Apex Engineering Group	Speaker.	Erik Jones, Houston Engineering
4:30 p.m. T	Title:	"AWWA and North Dakota"	4:30 p.m.	Title:	"Operations and Safety"	4:30 p.m. Title:	"Snow Management and Spring Clean-
Spea	aker:	Mitch Kannenberg, Vice President, AWWA		Speaker:		Speakers:	up raner Discussion Jeff Heintz, City of Bismarck; Mark Villiams, City of Fargo, Revin Morlan, City City of West Fargo; Kevin Morlan, City of Fargo; Terry Halstengard, City of Bismarck
5:00 p.m.		Adjourn	5:00 p.m.		Adjourn	5:00 p.m.	Adjoum
5:30 p.m.		Social Hour					
6:30 p.m.		Awards Banquet: The Great Hall Invocation: Terry Rust Master of Ceremonies:					

#### **OFFICIAL BULLETIN, July-September 2016**

		THL MOR	JRSDAY, OCTOBER 19, 2017 VING CONCURRENT SESSIONS		
Dakota Hall	Session A	Executive and Board R	Session B tooms of Harvest Hall	Directors and Confere	NDCAPWA Session nce Rooms of Harvest Hall
Moderator: David Bru	schwein, Secretary, NDAWWA	Moderator: Karl Rocken	nan, Past President NDWEA	Moderator: Rick Gillune	l, President, NDCAPWA
8:00 a.m. Title:	"TMBC Membrane System Improvements"	8:00 a.m. Title:	"Williston WRRF"	8:00 a.m. Title :	"Applied Risk to Prioritize Sanitary Lift Station Improvements"
Speaker:	Dan Heitzmann, Houston Engineering	Speaker:	Jason Benson, AE2S	Speakers:	Jared Heller, Asset Management Coordinator, AE2S Don Tucker, Wastewater Superintendent, City of Fargo
9:00 a.m. Title:	"Regional Aquifer Mapping and Ground Water Sustainability"	9:00 a.m. Title:	"Integrating Digester Improvements with Enhanced Energy Recovery"	9:00 a.m. Title:	"GIS for Public Works Employees"
Speakers:	Mike Plante, Associate/Hydrogeologist, Leggette, Brashears and Graham; Mitch Kannenberg, Associate Vice President, Leggette, Brashears and Graham	Speaker:	Kathy Crowson, Sr. Wastewater Operations Specialist, SEH	Speaker:	Jim Mertz, GIS Specialist, Bolton & Menk
		<b>9:30 a.m.</b> Title:	"Odor and Corrosion Control"		
		Speaker:	Michael Quamme, Project Engineer, Apex Engineering Group		
10:00 a.m.	Break – Pool Patio	10:00 a.m.	Break - Pool Patio	10:00 a.m.	Break - Pool Patio
<b>10:30 a.m.</b> Title:	"What's in Your Pint"	10:30 a.m. Title:	"Planning for a Regional Wastewater Treatment Facility"	<b>10:30 a.m.</b> Title:	"Confined Space and Excavation Safety"
Speaker.	Scott Schaefer, Wastewater Practice Leader, AE2S	Speakers:	Jim Hausauer, Wastewater Utility Director, City of Fargo; Karla Olson, Project Manager, Apex Engineering Group	Speaker	Bill Wuola, Safety Representative, KLJ
11:00 a.m. Title:	"Phosphate in Drinking Water"	11:00 a.m. Title:	"Jet Cleaning, Televising, Inspection and Repair Panel Discussion"		
Speaker.	Bill Gefroh, Lab & Pretreatment Manager, City of Bismarck	Speaker.	Gary Zuroff, City of Dickinson; Kyle Price, City of Dickinson; Jeron Fueller, City of Bismarck		
11:30 a.m.	Adjourn	11:30 a.m.	Adjoum	11:30 a.m.	Adjourn
12:00 noon	Joint Luncheon and Business Meetings, NI NDCAPWA President, Rick Gillund and NC Guest Speaker:	ICAPWA AND NDWPCC, WPCC President, Joe Fer	Sterling and Crowne Rooms of the Great Hall guson, Presiding		



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#### DESK REFERENCE GUIDE TO EXHIBITORS IN THE TABLETOP DISPLAY PROGRAM

#### OCTOBER 18, 2017 7:30 a.m. to 11:30 a.m.

North Dakota Section of the American Water Works Association Water Taste Contest North Dakota Section of the American Water Works Association Water for People North Dakota Water Environment Association North Dakota Chapter of the American Public Works Association North Dakota Chapter of the North American Stormwater and Erosion Control Association

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christopher.okeson@ferguson.com Ferguson Waterworks is a regional waterworks wholesaler. We provide water and sewer distribution products, irrigation systems, geotextiles, polyethylene pipe, fusion equipment, locators, safety equipment, water meter systems and water meter installation. We supply products and services to the Dakotas, Minnesota, western Wisconsin, Iowa and northern Illinois with branch offices in Fargo and Bismarck, ND; Blaine, MN; DeKalb, IL; and Superior, WI.

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tom.welle@apexenggroup.com Apex Engineering Group was founded with our clients in mind. We focus on the fundamentals, providing you with engineering solutions and staff members willing to do what it takes to ensure success. We are a group of entrepreneurial engineers who share a common vision – focus on the fundamentals of engineering and serve our clients with exceptional and rational solutions to their problems. By working hand in hand with our clients, we provide complete planning, design, and construction management services for all water, transportation, municipal, and facility engineering projects. The founders and employees of Apex have extensive experience in the civil engineering industry. Our leaders are seasoned professionals who have proven track records of producing successful projects with many long term clients. We are proud to have earned the trust of partners across the region. Apex has offices located in Bismarck, Dickinson, and Fargo ND, and Detroit Lakes, MN.

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_	emily-allen@terracon.com

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#### ND Rural Water Systems Association Eric Volk 2718 Gateway Ave #201 701-258-9249 Bismarck, ND 58503 FAX 701-258-5002 lschak@ndrw.org

North Dakota Rural Water Systems Association (NDRWSA) is a non profit trade association formed in 1974. NDRWSA exists to enhance the quality of life in small communities by providing training, technical assistance, and representation to public water and wastewater utilities while maintaining environmental integrity. We have six field personnel that provide assistance with leak detection, curbstop and valve location, poly-pigging (water & sewer), sewer smoke testing, sewer camera work, operator certification preparation, and much more. The staff at NDRWSA is ready, willing, and able to help twenty-four hours a day, seven days a week, 365 days a year.

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#### **Dignitaries to Visit NDWPCC 2017**

Tim Williams is Deputy Executive Director for the Water Environment Federation.

In this role, Tim works with volunteers and staff to develop and deliver innovative programs and services for WEF members, including education and training, publications, communications, and advocacy. Tim previously served as WEF Senior Director for Government Affairs and Association Engagement. Prior to joining WEF, Tim worked for the Maryland General Assembly and on the staff of the U.S. Senator recognized as the father of the Chesapeake Bay Program. He received a B.S. in Government and Politics from the University of Maryland and currently lives near Annapolis, Maryland.

Mitch Kannenberg Vice-President (2016-2018) American Water Works Association

Mitch Kannenberg is an Associate Vice-President for Leggette, Brashears & Graham, Inc. in Sioux Falls, South Dakota, where he has been employed since 2003. Mitch joined AWWA in 1999 and has been an active member in the South Dakota Section of AWWA since that time.

Involved in many of the Section's committee, Mitch has served as the Technical & Education Chair, Administrative and Policy Chair and the South Dakota Section Chair. He has served as the South Dakota Section Director on the AWWA Board of Directors since 2015. He received the Fuller Award in 2011.

Mitch is also a member of the National Groundwater Association, the South Dakota Association of Environmental Professionals, and the South Dakota Water & Wastewater Association. He holds a MS and BS in geological engineering from the South Dakota School of Mines & Technology.



Tim Williams - WEF



Mitch Kannenberg - AWWA

#### State of North Dakota Capacity Development Program Report For the Ongoing Implementation of the New And Existing Water System Capacity Strategies

#### Introduction

This is North Dakota's Annual Capacity Development Program Report for state fiscal year 2017 (SFY17). The report verifies ongoing implementation of both the new and existing water system capacity strategies, and that program goals are being met.

The North Dakota Department of Health (Department) meets all SFY17 reporting requirements as it pertains to the Safe Drinking Water Act (SDWA), section 1420 (c), and the withholding of Drinking Water State Revolving Loan Fund (DWSRF) allotments.

The Capacity Development Program Report documenting ongoing implementation of new and existing capacity strategies in SFY16 was completed and submitted to the U.S. Environmental Protection Agency (EPA) Region VIII on July 29th, 2016. The SFY16 report received EPA approval resulting in no SFY16 DWSRF funds being withheld.

#### Authorization

No statutory and/or regulatory changes requiring a new Attorney General's opinion were made to North Dakota's New and Existing Capacity Program Strategies in SFY17.

#### **New Systems Program**

The Department requires all new community water systems (CWSs) and new non-transient non-community water systems (NTNCWSs) to demonstrate financial, managerial, and technical capability (capacity) prior to commencing operations. The New Water System Capacity Assessment Manual outlines the regulations and legal authority the department has to administer a capacity assurance program.

The Department continues to require that plans and specifications be submitted to the Division of Municipal Facilities (DMF) for review and that a Letter of Approval be issued by the DMF before operations commence.

Plans and specifications and the Letter of Approval represent the primary control points in the new water system capacity assurance process. No modifications have been made to North Dakota's control points in SFY17.

There were no new community water systems in SFY17.

Two previously approved systems became regulated drinking water systems in SFY17. These were the community water system The Bluffs HOA, which was originally approved in 2014, and the NTNCW system Watford Place, which was originally approved in 2012. As these were previously approved they are regulated under the Existing Systems Program.

#### **Existing Systems Program**

The North Dakota Existing Water System Capacity Strategy details the steps taken to implement and maintain a capacity program aimed at assisting all North Dakota public water systems (PWSs) acquire and maintain capacity. Factors encouraging and impairing capacity remain the same. Enhancements include federal funding, DMF administration, department primacy, stakeholder involvement, and a decline in oil field activities. Impairments continue to be small systems, limited funding, and lack of technical ability, operator turnover, new members on city councils and rural water boards, and the complexity of SDWA requirements. These impairments are intensified by declining rural populations in a majority of the state.

North Dakota continues to use pertinent existing DMF programs to identify PWSs that lack capacity and are in danger of becoming a compliance problem. The point system developed for the existing system strategy utilizes SDWA compliance data, operator certification deficiencies, inspection reports and laboratory past due accounts to evaluate system capacity. PWSs accumulating ten points or more and having the greatest impact on public health are prioritized beginning with the highest number. PWSs with a history of being priority systems under the enforcement response plan automatically receive ten points making them candidates for immediate assistance.

North Dakota's most common compliance issues are violations under the Revised Total Coliform Rule (RTCR). Forty PWSs had failure to monitor violations, nine systems required a level I assessment, and one system required a level II assessment. Currently, there are 104 CWSs systems with a non-certified or under-certified operator in either water treatment and/or water distribution. There are 7 NTNCWSs with non-certified or under certified operators in either water distribution. SDWA rule violations that affect capacity are addressed through the DMF's Drinking Water program.

Two hundred and seven CWSs, 34 NTNCWSs have received assistance thus far in this program. Fifty-seven of these systems have received assistance in SFY17 and are working towards regaining compliance.

As of June 30, 2017, 239/241 (99%) of the previously assisted systems are in compliance. Two of the CWSs are in need of additional assistance because of repeat violations.

DWSRF 2-percent (2%) set-aside funds will be used to contract with the Midwest Assistance Program (MAP) and the North Dakota Rural Water System Association (NDRWSA) for technical assistance. MAP and NDRWSA continue to consult with and complete Capacity Reports or Compliance Monitoring Plans for public water systems identified by the Department. Capacity Reports include: a Self-Evaluation Questionnaire; a Capacity Attribute Evaluation; and a description of the corrective action(s) that the system has taken or intends to take to address the specific capacity-related issues identified by the Department. The current contracts run through December 31, 2017. The Department will continue to work with MAP and NDRWSA to assist systems with capacity improvements.

#### **Future Follow Up**

The Department will continue to measure capacity improvements by using the state Quarterly Violations & SNC Summary, the operator certification compliance report, PWS inspections report, and new systems activity. The Department encourages a collaborative effort which promotes safe drinking water, public health, and quality of life.

Stakeholder involvement continues to be a key element in program success. Professional organizations, technical assistance providers, DMF staff, and other governmental agencies continue to provide expertise and timely assistance. To further promote stakeholder involvement, a copy of this report was published in the Official Bulletin, official publication of the North Dakota Water and Pollution Control Conference.

#### Summary

North Dakota's new and existing water system capacity strategies continue to meet program goals. All FY17 reporting requirements have been met. There were no new water systems in SFY17.

The majority of the PWSs with recent repeat violations are CWSs. Some common problems with these systems are they are small, they have only one part-time operator, there is a high operator turnover, and many city councils and rural water boards have new members that do not understand their role in a successful water system. The department will continue to address these needs, as well as, other water system issues.

The department will continue to monitor existing PWSs, while providing consultation, training, and financial recommendations, prior to systems becoming an enforcement problem. Implementation of new SDWA regulations that affect existing system capacity will be evaluated. Any modifications resulting from these regulations will be detailed in future reports.

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#### **Operator Certification Program Annual Submittal Reporting Requirements**

#### Introduction

The following summarizes the ongoing implementation of the North Dakota Operator Certification Program. Recommended annual submittal reporting requirements are addressed below.

#### Authorization

No statutory and/or regulatory changes requiring a new Attorney General's certification were made to North Dakota's Operator Certification Program in state fiscal year July 1, 2016 to June 30, 2017 (SFY17).

#### **Classification of Systems, Facilities, and Operators**

The North Dakota Operator Certification Program received U.S. Environmental Protection Agency (EPA) approval on September 27, 2000. Ongoing program efforts continually try to increase the number of North Dakota Community Water Systems (CWSs) and Nontransient Noncommunity Water Systems (NTNCWSs) meeting Safe Drinking Water Act (SDWA) operator certification requirements. Hereinafter, the term system refers to both CWSs and NTNCWSs.

The initial August 10, 2001 mailing notified systems of the February 5, 2001 SDWA requirements. Additional mailings continued to reaffirm the importance and public health benefit of having water operators adequately trained and certified at the proper level. These subsequent mailings also provided operators and systems contracting information, notified them of upcoming training events, identified systems compliance status, and requested action plans from systems not in compliance.

Compliance tracking is ongoing and is updated after each training session.

#### **Compliance Tracking Numbers:**

Total number of CWSs: 325

Total number of CWSs without a certified operator: 104 Total number of NTNCWSs: 12

Total number of NTNCWSs without a certified operator: 7

Total number of certified operators: 414 have Water Distribution, 172 have Water Treatment, and 360 have both for a total of 946

Total number of systems per classification level:

Class	Water Treatment	Water Distribution
1A	39	201
Ι	9	75
II	36	50
III	37	7
IV	10	3

ï Total number of operators per grade level (some operators have certification for both):

Grade	Water Treatment	Water Distribution
1A	10	
1	216	
Ι	89	268
II	161	179
III	79	77
IV	102	34

The North Dakota Operator Certification Program has 67 percent of systems having certified operators compared to 68 percent in SFY01, the first year after program approval. The number of systems with certified operators in SFY17 continually fluctuated due to a variety of factors, the most crucial being the decline in oil exploration. Of the 131 systems that require a water treatment operator, 99 (76%) of these are in compliance. Of the 336 systems that require a water distribution operator, 250 (74%) are in compliance.

In SFY17, 46 percent (18/39) of Class 1A, 89 percent (8/9) of Class I, and 92 percent (33/36) of Class II water treatment systems had certified operators. Also, 62 percent (124/201) of Class 1A, 86 percent (64/75) of Class I, and 100 percent of Class II water distribution systems had certified operators. Also, one hundred percent of the Class III and IV water distribution and Class III and Class IV water treatment systems have certified operators.

The amount of fluctuation is due to several of factors. First, many of the systems are very small and purchase their water, so they are only required to have a certified operator for distribution. Second, for many operators the care of the systems is not their primary employment, especially in smaller systems, and they feel it is not worth getting certified. Third, many systems have lost their operators and are working with the North Dakota Department of Health (Department) to become compliant. Finally, with a decline in the oil exploration many of the systems created previously are no longer in operation, or do not qualify as a public water system. These factors combined have an effect on operator certification numbers.

The number of NTNCWSs decreased in SFY17 from 13 systems to 12. Ten of the 12 (83%) are properly certified in water treatment, and 5/12 (42%) in water distribution. The decrease in NTNCWSs was due to closures and a determination, based on review of records, that a number of active NTNCWSs are no longer subject to operator certification requirements. This is because they: fully meet SDWA regulatory exclusion criteria which includes, among other things, the requirement that they obtain all of their water from another regulated PWS and have no collection or treatment facilities; and, have extremely limited distribution and storage facilities.

#### **Operator Qualifications**

North Dakota did not implement the provisional, temporary, or grandparenting options and requires that all affected PWSs employ operators certified at an appropriate level under Chapter 23-26 of the North Dakota Century Code (NDCC).

#### Enforcement

Article 33-17, North Dakota Public Water Supply Systems, of the North Dakota Administrative Code (NDAC) and NDCC Chapter 61-28.1 provide the statutory authority to issue an Administrative Order for violations of SDWA regulations. The Department has the authority to bring this action pursuant to NDCC Chapter 61-28.1-03.

In SFY17 no enforcement action was needed based solely on operator certification.

#### **Certification Renewal**

NDCC Chapter 23-26 provides the Department the legal authority to promulgate rules necessary to administer an operator certification program. A certificate issued under these provisions is valid for one year and expires the first of July the following year.

The Department is authorized to charge an examination fee not to exceed \$50 for initial certification, or more than \$25 for annual renewal. Certification fees are currently set at \$10 per examination and \$5 per certificate of renewal. Renewal notifications, reimbursement cards, and six-month reminder letters are sent each renewal period. Operators have one year to make payment or return a signed reimbursement waiver before certification is revoked.

To maintain certification, operators are required to earn continuing education credits (CECs) by attending training programs, seminars, and workshops developed or officially recognized by the Department. Operators must earn 12 CECs every three-year period.

#### Resources

Program resources continue to be provided through the collaborative effort of existing Department of Municipal Facilities (DMF) programs and stakeholder involvement. The experience and expertise of program staff, technical assistance providers, and the many professional organizations involved contribute to and enhances program success.

The Department continues to provide financial assistance through State funded Operator Expense Reimbursement, Drinking Water State Revolving Loan Fund (DWSRF) two percent (2%) set-aside, and Public Water System Supervision Program.

#### Recertification

The NDCC has established the basis of recertification of operators who wish to do so. Failure to renew certification for a period of more than one year following expiration of an operator's certificate will require qualification by reapplication, re-examination, and payment of examination fees before recertification is granted as stated in chapter 23-26 of the NDCC. If a certificate is suspended or revoked, a new application for certification may be considered by the Department. If, when, and after the conditions upon which suspension or revocation was based have been corrected and evidence of this fact has been properly submitted to the Department, a new certificate may then be granted by the Department.

#### **Stakeholder Involvement**

Stakeholder involvement continues to be a critical element instrumental to program success.

The DMF and the North Dakota Water and Pollution Control Conference (NDWPCC) continue to offer annual training sessions at the Department's environmental training center. The NDWPCC also jointly sponsored the 88th Annual NDWPCC conference with the North Dakota Water Environment Association (NDWEA), the North Dakota Chapter of the American Water Works Association (NDAWWA), the North Dakota Chapter of the American Public Works Association (NDCAPWA), and the North Dakota Chapter of the North American Stormwater and Erosion Control Association (NASECA). The North Dakota Rural Water Systems Association (NDRWSA) and North Dakota Environmental Health Association (NDEHA) also continue to provide annual training, conferences, and expositions.

The Department continues to contract with the North Dakota State Plumbing Board, Local/District Health Units, and technical assistance providers such as the North Dakota Rural Water System Association (NDRWSA) and the Midwest Assistance Program (MAP). Contracts with the State Plumbing Board and Health Units provide continued support to the public water supply and inspection programs. Contracts continue with the technical assistance providers to help systems with financial management reports, capacity development, sanitary survey follow-up visits, operator certification, compliance monitoring in accordance with Stage 2 Disinfectants and Disinfection by Products Rule, and RTCR Level One Assessments. Also, the NDRWSA, MAP, and NDAWWA will continue to provide additional training events for operators.

Three-hundred and thirty-nine water operators attended the 57th Annual Water and Wastewater Operator Training Program sessions. These operators wrote a total of 147 water exams (35 Class IA, 64 Class I, 30 Class II, 8 Class III, and 10 Class IV). Operators passed a total of 100 (68%) water exams: 35 in water treatment; 65 in water distribution. Results are as follows: Class IA had a passage rate of 83 percent (29/35); Class I systems had a passage rate of 63 percent (40/64); Class II systems had a passage rate of 70 percent (21/30); Class III had a passage rate of 50 percent (4/8); and, Class IV had a passage rate of 60 percent (6/10).

Operators attended two annual conferences, four water treatment and distribution workshops, two wastewater treatment and collection training sessions, 2 field pH certification workshops, one AWWA small systems training, the Rural Water Expo, 5 MAP emergency response trainings, and 18 NDRWSA training sessions. The Rural Water Expo and NDRWSA sessions were attended by a total of 175 operators. NDRWSA sessions included: operator certification, exam training, O&M training, NDDOH Regulatory training, GIS/GPS training, and funding training.

Two-hundred and ten small system operators requested operator expense reimbursement for 35 events in SFY17.

#### **Program Review**

The North Dakota Operator Certification Advisory Committee completed an external review October 12, 2016 in association with the 88th Annual NDWPCC Conference. An internal review by DMF Drinking Water and Operator Certification Program staff was held September 1, 2016 and another is scheduled for September 5, 2017. Minutes of both meetings are attached.

#### **Implementation Schedule Update**

An accurate baseline using pertinent DMF program data is used to identify and prioritize noncompliant PWSs. Systems are prioritized according to level of treatment, level of distribution, response to Department notifications, changes in compliance status, training attendance, action plan submittal, and action plan completion. Water systems having the greatest impact on public health continue to be given the highest priority.

The Department executed DWSRF Grant G15.420, renewing work on the operator certification technician project, and developed a follow up Grant 17.002. The project is designed to assist prioritized systems not meeting SDWA operator certification requirements. The new contract authorizes technical assistance to 25 systems not previously targeted and follow-up assistance to 15 systems not meeting SFY16 goals. Contract dates are January 1, 2017 through December 31, 2017.

#### **Summary**

The number of compliant systems fluctuated in SFY17 with 226 of 337 (67%) systems have certified operators. This drops well below the program goal of 90 percent or greater.

Operators had several training events throughout the year provided by various organizations. These events included a wide variety in classroom training from financial to operational offered by NDRWSA and the Department.

Two-hundred and ten small system operators requested operator expense reimbursement for 35 events in SFY17.

The program continues to see fluctuation between the number of new systems meeting SDWA operator certification requirements and previously certified systems becoming noncompliant. By and large, these are small systems employing only one water operator with water operations being only a part of their overall responsibilities. Operators are generally lost due to retirement or resignation with recruitment of qualified operators hampered by declining population and financial constraints.

The Department will continue to monitor progress by reviewing training and exam rosters, along with other pertinent data from the Drinking Water and Operator Certifications Training and Facilities Inspections programs. Information from the DWSRF 2 percent set-aside contracts, operator expense reimbursement requests, and the capacity development program will also be utilized.

# Riverfront Renaissance 2<sup>nd</sup> Street/Downtown Fargo Floodwalls

#### By Houston Engineering, Inc.

Floods have had a significant impact on residents in the upper Midwest in recent years. In some cases, such as the 2011 flood in Minot and 1997 flood in Grand Forks, river levels exceeded established protection levels and caused devastation within the communities. The City of Fargo has narrowly avoided the same devastation, including during the historic 1997 and 2009 floods, by constructing miles of emergency levees to protect the community. While these emergency measures protected the community at the time, they are not reliable for flood protection and ultimately keep the community at risk from catastrophic flooding.



Emergency levees were constructed on 2<sup>nd</sup> Street North eight times in the past 16 years.

#### NO MORE TEMPORARY SOLUTIONS

In recent years, many of you have either faced the challenges of a flood or felt its lingering effects. With this experience, you can appreciate the City of Fargo's all too regular and consuming efforts to construct emergency levees on 2nd Street North in downtown Fargo. These emergency levees were constructed a remarkable eight times in the past 16 years—twice in 2013—to fight flooding in both the spring and summer. Fighting floods is a costly and time-consuming effort. The repetitive act of constructing emergency levees for one or more

flood(s) every decade since the 1960s has taken a toll on the City and its residents. The City needed a lasting and permanent flood protection solution.

The ongoing F-M Diversion Project being planned and constructed through the F-M Diversion Authority (FMDA) and the US Army Corps of Engineers (USACE) is a means of providing long-term regional flood protection. Until the F-M Diversion is complete—and during larger flood events even after it is complete—permanent flood protection is needed for the 2<sup>nd</sup> Street/ Downtown area. This area is the home to City Hall, historic buildings, established businesses, and residents.

To achieve this, the City and the FMDA chose to construct a floodwall as a permanent line of flood protection between the City's iconic downtown and the flood-prone Red River. While this \$56-million project's primary purpose is to protect homes, businesses, and infrastructure from the Red River, it also presents the opportunity to preserve, restore, and even enhance the riverfront that residents already enjoy.

#### MAINTAINING A CONNECTION

The construction of this floodwall and related segments of the project will actually help bring people closer to the river, not separate them from it. The wall contains several removable sections that the City can close in the event of a flood but will otherwise remain open and provide riverfront access. These openings keep residents connected to a trail system along the riverfront that runs nearly the entire length of the city. The floodwall is also textured and stained to resemble natural limestone enhance its look and compliment the new City Hall.





Pedestrians can enjoy green space pathways that border the 2nd Street North floodwall.

#### THE PROJECT

A floodwall stretching for approximately 1,740 feet with a maximum height of 11 feet and averaging at 8 feet will significantly reduce the need for emergency levees during flood events for the 2<sup>nd</sup> Street/downtown area. This floodwall provides protection for the current 100-year FEMA flood level of river stage 39.3 feet and has a top elevation of approximately river stage 45 feet.

Creating permanent flood protection does not come without hurdles. Located on the edge of downtown, this fully developed area required significant forethought, especially with regard to underground utilities. Decades-old public utilities—including water, sanitary sewer, and storm sewer lines—required replacement. Because of the proximity to the river, many of these utilities were more than 25 feet deep. Nearly a dozen private utility companies coordinated with the project team to relocate their lines in a single trench. In some cases, the floodwall was actually cast around these utilities.



The project is located in the heart of downtown Fargo which has been developed and redeveloped many times over the past 100 years, so a number of obstacles were encountered during design and construction. These obstacles included foundations and debris from old buildings and environmental hazards requiring clean-up to create a clean slate for the new project.

In the end, this floodwall project provides permanent and reliable flood protection to a heavily populated and commercial area while preserving and expanding the existing natural elements of the area and upgrading the outdated underground infrastructure to meet today's vibrant downtown community.



#### Project Name: 32nd Avenue South Reconstruction from 32nd Street to 42nd Street

#### Contributors: Matt Kinsella, PE; Tim Paustian, PE

Fargo continues to see expansive growth throughout the community, specifically on the southern portion of town. 32nd Avenue South, a major east to west thoroughfare, was facing future deficiencies and delays that would impact both the corridor and I-29 interchange. The roadway needed to be expanded to three lanes in each direction to ensure future capacity requirements would be met. In addition to future capacity demands, intersections along the corridor have some of the highest crash rates in the state, signaling the need for improvements. Lastly, the portion of 32nd Avenue South east of I-29 was originally constructed in 1987. After 30 years of use, the roadway had reached the end of its design life and was ready to be revitalized.

The City of Fargo (the City) and the North Dakota Department of Transportation (NDDOT) retained Apex Engineering Group (Apex) to lead the expansion of 32nd Avenue South and the I-29 Interchange. Preliminary engineering began in October 2015 with planning and environmental clearance, and design followed in October 2016, with final plans due in

![](_page_57_Picture_4.jpeg)

December 2016. The aggressive schedule and tight deadlines required strong project management and the ability to quickly identify potential "schedule busters" as early as possible in the process. Coordination of public and private utilities, as well as right of way, easements, traffic control plans, and communication strategies with the project partners and key stakeholders were imperative to the success of the project.

One of the key areas considered was utility coordination. The City and Apex identified areas of public utilities that could be improved in conjunction with the reconstruction of 32nd Avenue South. The City identified a 1,300 foot stretch of 36 inch sanitary sewer pipe that was in need of replacement or rehabilitation. Instead of trying to replace the pipe, which was 20 feet below ground surface, the team recognized the opportunity to use a trenchless cured in place pipe to extend the useful life of the existing pipe. In order to complete this process, the team needed to find an alternative path for the five million gallons of wastewater that flowed through the pipe daily. A bypass plan was careful designed to accommodate both the wastewater demands and the traffic control plans, specifically large truck traffic. Five separate bypass setups were utilized to ensure wastewater would continue to flow towards the lift station. The process required vigilance and dedication from the design team and project contractor to ensure the bypass operation was successful. To date, this is the largest sanitary sewer pipe on which the City has completing the cured in place lining process.

In addition to public utility coordination, private utilities were impacted by the expansion of 32nd Avenue South. Early identification of major utility conflicts in the corridor was extremely important to maintaining the project schedule. The design team worked closely with private utility companies to identify conflicts prior to construction. However, due to the aggressive pace of the project schedule, most of the utilities had to be relocated or adjusted during construction of the roadway.

The project team also needed to acquire new right of way and easements for the expansion of 32nd Avenue South. An area of particular concern was the east side of I-29, where the segment of 32nd Avenue South between 33rd Street and 32nd Street had only 100 feet of existing right of way. The adjacent properties on this block were developed directly adjoining to the property line, presenting an additional challenge to working with these property owners and identifying the most effective way to acquire the land needed with the least amount of impact to their properties. These discussions and negotiations with landowners took approximately six months to reach a resolution that was acceptable to all parties. The roadway section was optimized through this stretch to minimize impacts to adjacent properties, and ultimately only nine feet of additional right of way width was needed for the six-lane section. The project team made it a priority to determine the exact needs in these areas as early as possible, so that the discussions could begin and accurate information could be provided to the landowners.

With 25,000 vehicles passing through the project corridor each day, careful attention and creativity was needed for the traffic control design. An additional consideration was the volume of heavy truck traffic through the construction zone, due to the two large truck stops located in the northwest and southwest quadrants of the 32nd Avenue South/I-29 interchange. The turning path of a truck is significantly larger than standard passenger vehicles, which was taken into consideration when adjusting traffic patterns while reconstructing intersections.

![](_page_57_Picture_10.jpeg)

Other elements of phasing and traffic control design included:

ï Maintaining Through Traffic – Maintaining traffic flow on 32nd Avenue South through the construction zone was imperative to the City and NDDOT to ensure this project was successful, due to the lack of viable, parallel detour routes directly to the north and south of this corridor. Using best practices from previous projects, the City and Apex proposed that the existing raised median be removed and filled with gravel and temporary pavement. This allowed additional width for work zone travel lanes and provided flexibility in traffic crossover and transition locations. ï Phased Intersection Construction – In an effort to ensure traffic was able to flow through the corridor throughout the duration of the project, major intersections were phased to maintain through movements and access. The team focused on the detail of the traffic control plan at intersections required, as these factors were key to a successful traffic operation through the work zone. This was particularly important at the 39th Street intersection, which handles the truck traffic from both major truck stops

ï Large Truck Movements – Two major truck stops as well as equipment manufacturers and servicers are present along 32nd Avenue South. The traffic control plan took the movement of large trucks through the work zone into consideration. Temporary lane widths and intersection radii were designed to allow for these truck movements. The wheel path of a truck is significantly larger than standard, which was considered when adjusting traffic patterns through the reconstruction of intersections

ï Special Stakeholder Considerations – Stakeholders, such as Essentia Hospital, were identified that required special consideration for their needs during construction, such as emergency vehicle access and movement through the work zone. The design team worked to identify these needs as early as possible so they could be factored into the plan. The project communication team met with these stakeholders individually both during project design and prior to construction starting, to ensure that their needs and concerns were understood and addressed.

The reconstruction of 32nd Avenue South marked one of the highest profile projects in the State of North Dakota in 2017. In order to provide stakeholders with vital information, a marketing and communications firm was employed to handle media, social media, press releases, and website updates. On intricate urban reconstruction and widening projects such as 32nd Avenue South, effective communication with the adjacent businesses, property owners, key stakeholders, and the public regarding project plans and public impact is critical. The goal for the team was that once the project reached the construction phase, relationships between the City, NDDOT, Apex and stakeholders would have an established level of trust, which would aid in resolution in the event an issue arose during construction.

As a consultant working as the liaison for the City, NDDOT and the public, Apex's chief focus when interacting is not just to inform about the project, but to understand requests. Apex worked with stakeholders of the project to ensure their needs would be met during construction. As the project representative, Apex made it a priority to respond quickly to emails or phone calls from stakeholders, to reinforce the partnership needed in order for this project to be successful. The City, NDDOT, and Apex worked to keep project messages as consistent and uniform as possible.

Construction began in March 2017 with Dakota Underground as the prime contractor. Apex is providing construction administration and inspection for the City portion, while NDDOT staff is overseeing the work at the I-29 interchange. The \$19.3 million project will be substantially completed by October 2017.

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#### Project Name: 13th Avenue South from 38th Street to 45th Street

Contributor: Josh Olson, PE

#### Project Overview

Apex Engineering Group, in conjunction with the City of Fargo, had the privilege of providing design and construction engineering services for improvements to 13th Avenue South from 38th Street to 45th Street. This major arterial is one of the busiest corridors in the state of North Dakota as it provides access to the West Acres Mall, a thriving business and retail district, with hundreds of local residents living within a block of the project. Reconstructing this corridor was necessary to improve safety, mobility and capacity for the traveling public. The new six-lane section will efficiently handle the 30,000 vehicles that utilize this corridor every day.

A key goal of the project was met by implementing a plan to ensure that at least one lane of traffic was maintained in each direction on 13th Avenue South throughout construction. The design team developed a detailed phasing and work zone traffic control plan. This was especially challenging at the intersection of 42nd Street and 13th Avenue South where the contractor was required to excavate, remove, and replace utilities while maintaining traffic in all directions through final pavement placement. In addition to maintaining accessibility of traffic and in order to avoid project delays, Apex also coordinated with the existing private and public utilities that were disrupted during construction.

Due to the high visibility of this project, a marketing and communications firm was added to the engineering team to help provide external communication and serve as a public information coordinator. The public outreach program utilized bi-weekly meetings for businesses, a project specific website, social media and local news casts to keep the public informed.

Apex Engineering Group was honored to have the opportunity to work with the City of Fargo on this important project which has successfully improved travel and access through one of the busiest districts in Fargo, resulting in a positive economic impact for the local area.

#### Project Background

Few in the Fargo metro community are unaware of the 13th Avenue reconstruction that has taken place west of Interstate 29 in the heart of one of the most populated business districts in the City of Fargo. 13th Avenue South sees roughly 30,000 vehicles per day, as well as an additional 17,000 vehicles per day on 42nd Street. The project had been put on hold since the original planning study was completed in 2007. Budget constraints and other priorities within the City of Fargo postponed this work beyond the original plan for construction.

The estimated \$10.6 million dollar project was designed by Apex Engineering Group and constructed in 2016.

The primary objective of the project was to replace the existing four-lane divided roadway with an enhanced six-lane divided roadway that also provides the necessary safety and infrastructure updates to one of Fargo's most travelled business corridors. This project also featured sanitary, storm sewer and water main improvements, modern street lights and traffic signals, and an enhanced shared use path and sidewalk system. The City of Fargo entrusted the engineers, technicians, and surveyors at Apex Engineering Group to facilitate the planning, design, construction engineering and public information communication efforts for this high-profile urban reconstruction project.

#### Unique and Complex Features of the Project

Maintaining Traffic During Construction

The first, and possibly the most difficult, challenge was meeting the goal to maintain one lane of traffic in each direction during reconstruction. With this requirement, the project team was tasked with developing a detailed construction phasing and work zone traffic control plan to accommodate continuous traffic while the corridor was under construction. Minimizing impacts to traffic and businesses while reconstructing a four-lane roadway to six lanes under traffic is a formidable challenge.

![](_page_59_Picture_14.jpeg)

#### Constructing the 42nd Street Intersection

The City of Fargo and Apex recognized that the local businesses would be concerned about the duration of construction and what would be done to limit potential financial impacts on their businesses. This was especially true when planning the reconstruction of the 42nd Street and 13th Avenue South intersection. This intersection sees more than 45,000 vehicles daily. Apex and City Engineering staff collaborated to develop a construction phasing plan and sequencing activities that would maintain traffic in all four directions at all times - despite the need to excavate 15 feet deep, remove and replace large diameter storm sewer lines and water mains in the middle of the intersection. The intersection and utilities had to be built one quadrant at a time with multiple traffic lane shifts during off-peak hours while utilizing interim traffic signals.

Incentive/Disincentive Plan In order to expedite the contractor's efforts at 42nd Street and other key intersections, the City agreed to add incentive/disincentive clauses to the contract where the contractor could earn bonus payments or be penalized, if work was not completed in a specific number of calendar days. This approach was also applied to the overall project completion date. The plan proved to be a successful tool to keep the project moving, and the public took notice when work occurred at night and on weekends. Other key design elements of the project include:

#### Roadway Section and Left Turn Lanes

While the Corridor Study showed 11-foot wide traffic lanes for the six-lane reconstruction option, the project team understood that the City wanted to explore the option of using 10.5-foot wide through-lanes, and 10-foot wide left and right turn lanes. When space was available, fully offset left turn lanes at unsignalized intersections were preferred as it provides a better opportunity for left turning vehicles to see oncoming traffic. The City, in conjunction with Apex, evaluated these options. After careful consideration, 10.5- foot lanes were used and positive offset left turn lanes were implemented at 40th, 43rd, and 44th Streets. At the 43rd ½ Street intersection, the design included single left turning movements. The 42nd Street intersection included double left turn lanes allowed on protected green arrows in all directions.

#### Utilities and Underground Infrastructure

The condition of the existing sanitary sewer was evaluated by reviewing video provided by City of Fargo Public Works staff. As a result of the analysis, a separate project to reline the existing sanitary sewer was completed during the summer of 2015. The City requested that sections of water main pipe consisting of multiple pipe materials including asbestos cement, ductile iron, and cast iron were replaced with PVC pipe. The project included installation of over 40 hydrants and gate valves. In addition, five EZ Valves were installed, which proved to be one of the most unique aspects of the project. EZ Valves can be installed without shutting down the water main. Apex worked with the City to identify specific locations where the EZ Valves would be best utilized. The valves were installed by a specialized contractor and once installed, sections of water main could be completed without shutting off water service to West Acres Mall, Holiday Inn, several restaurants, and a 170 unit apartment

complex. This was the first use of the EZ Valves by the City and it was proven successful. This process was a benefit to water users as service was not shut down as well as limiting night work required by the contractor.

The City commissioned Apex to complete a separate project to determine the storm sewer capacity needs along the corridor. The recommendation of the storm sewer modeling was implemented as a part of this project.

The project team was also tasked with the responsibility of coordinating the private utility work along the corridor. This effort started years in advance of construction with multiple utility meetings with representatives from the underground telephone, fiber optic, gas, and power line companies. Despite the planning efforts of defining a common corridor for these utilities to relocate in the boulevards, there were still unforeseen conflicts. Apex was able to facilitate design changes and handle conflicts in a timely manner, ensuring the project schedule would not be impacted.

![](_page_60_Picture_3.jpeg)

#### Pedestrian/Bicycle Improvements

Motorists and businesses were not the only stakeholders taken into consideration. Pedestrian accessibility and safety along the corridor was also accounted for. During construction, at least one pedestrian crossing was maintained at all times. A new ten foot shared use path was provided on the south side of the street, and a new six-foot sidewalk was installed on the north side. With these improvements, Fargo's West Acres area became more pedestrian and bicycle friendly for the local neighborhoods and pedestrian generators such as hotels and restaurants along the corridor.

#### Right of Way/Easement Needs

Aside from temporary construction easements, the majority of the sixlane section, sidewalk, and bike path fit within the existing right of way. Some permanent easements were required at intersections to allow for the construction of ADA compliant crosswalks and sidewalks. The team was able to obtain all the necessary easements in order to successfully complete the project.

#### Roadway Profile and Drainage

Apex's experienced team of engineers, technicians, and surveyors successfully updated the roadway profile and drainage in conjunction with the reconstruction of 13th Avenue South. There was an existing low area between 42ndand 44th Streets that had been prone to street flooding in the past. The City explored opportunities to raise this stretch of 13th Avenue South, but they received feedback from property owners that they would rather the street stay lower and flood than have the water come onto their properties. This was a critical issue to assess early in the process with City staff and the property owners, in order to set the new roadway grade and determine what impacts it might have on options for phasing and traffic control. The profile was modified to optimize storm sewer drainage and additional underground storm sewer storage was added to mitigate the loss of above ground storage (ditches) and also minimize street flooding due to heavy rain events.

Value to the Engineering Profession and Perception by the Public Meticulous planning and design efforts are often deemed effective when a project moves from paper to reality, with limited negative impact to public stakeholders during construction. Although the construction work was a temporary inconvenience to the traveling public, access was maintained to all businesses and the work zone accommodated at least one lane of traffic in each direction, at all times eliminating the frustrations of detouring traffic. While 13th Avenue South was one of the biggest projects of the 2016 construction season, some of the best engineering work went unnoticed due to its well thought out planning.

#### Project Focused Public Information Plan

Due to the high profile nature of this project, Apex and the City of Fargo enlisted the assistance of a marketing and communications firm to facilitate a public outreach program throughout construction. Status updates were provided via dozens of press releases that were sent to hundreds of media, businesses, and the public. A project website was created and had thousands of views. There were tens of thousands of likes, shares, and views on social media, and millions were reached via television and radio. Apex and the City also made themselves available for questions or concerns from business owners and residents through bi-weekly public forums. A consistent flow of information was delivered through the various media outlets. In the end, the public was well informed about project changes as they occurred and City staff heard very little in regard to lack of communication.

#### Successful Fulfillment of Client Needs

While the goal of the project is to stay on schedule and within budget, all factors that go into those results cannot be controlled. External forces such as the current bidding environment, the weather, and other influences can change the course of the project. A large portion of the success of the project stemmed from the proactive and frequent communication that was provided. Weekly meetings were held with the project team. The contractor was required to submit a critical path method schedule. This schedule was reviewed and updated monthly or any time there was a change to the schedule. This helped all parties understand the current status of the project and the time and efforts required to meet the project deadline. With the significant amount of traffic that moved through the work zone and the amount of underground utility work completed, the project was viewed as a great success. Much of this can be attributed to good planning, detailed design, and thorough construction inspection. In addition, the strong working relationship built between the City, Apex and the contractor was a positive factor in the success of the project.

![](_page_60_Picture_16.jpeg)

#### Summary

Complex urban street reconstruction projects occur all over the United States every year; however, they are not very common in North Dakota. Only three or four of the largest cities in the State of North Dakota will see the complexities of a project like 13th Avenue South, and only once every two to five years. In addition, not many corridors in North Dakota see 30,000 vehicles per day. Apex Engineering Group was fortunate to have the opportunity to work on this project with the City of Fargo's engineering staff. The improvements on 13th Avenue South are noticeable in terms of less traffic congestion, even in the peak hours of the day, and more pedestrian traffic throughout the corridor.

Drinking Water Program Directory		
Program Administrator	Greg Wavra	701-328-5257
Acrylamide and Epichlorohydrin Rule	Tammy Lamphear	701-328-5295
Arsenic Rule	Amy Kinzler	701-328-5258
Consumer Confidence Reports	LeeAnn Tillotson	701-328-5293
Disinfectant/Disinfection Byproducts Rule (TTHM, HAA5) Stage 1 and Stage 2 Rule	Tammy Lamphears	701-328-5295
Electronic Reporting Information System (ERIS)	Barrett Brown	701-328-5209
Filter and Backwash Recycle Rule	Bob Markhouse	701-328-6623
Fluoride Addition	Amy Kinzler	701-328-5258
Groundwater Rule	Jeni Walsh	701-328-5231
Inspections: Northeast	Gregg Stewart	701-328-6621
Inspections: Northwest	Ivana Striebel	701-328-6624
Inspections: Southeast	Jacob Schafer	701-328-6375
Inspections: Southwest	Shawn Heinle	701-328-6627
Inspections: South Central	Bob Markhouse	701-328-6623
Lead and Copper Rule	Amy Kinzlerr	701-328-5231
Surface Water Treatment Rule: Interim Enhanced, Long Term 1 Enhanced, Long Term 2 Enhanced	Mike Trythall	701-328-5269
Microscopic Particulate Analysis (MPA)	Bob Markhouse	701-328-6623
Nitrate/Nitrite Program	Amy Kinzler	701-328-5231
Operator Certification	Craig Bartholomay	701-328-6626
Operator Expense Reimbursement/Public Notice Rule	LeeAnn Tillotson	701-328-5293
Operator Training	Mike Brisben	701-328-6622
Pesticides (SOCs)	Mike Trythall	701-328-5269
Primary and Secondary Inorganics	Amy Kinzler	701-328-5231
Public Water System Updates (changes to source, treatment, contact, etc.)	Tammy Lamphear	701-328-5295
Radionuclide Rule: Gross Alpha, Total Radium, Uranium	LeeAnn Tillotson	701-328-5293
Total Coliform Rule	Jeni Walsh Josh Seerup	701-328-5231 701-328-5257
Unregulated Contaminant Monitoring	LeeAnn Tillotson	701-328-5293
Volatile Organic Chemicals (VOCs)	Mike Trythall	701-328-5269
Central Phone: 701-328-5211		Fax: 701-328-5200
North Dakota Pollutant Discharge Elimination System Program Directory		
Program Administrator	Marty Haroldson	701-328-5234
Animal Feeding Operations	Brady Espe Rachel Strommen Jeremy Lang	701-328-5228 701-328-5244 701-328-5219
Biosolids	Sarah Waldron	701-328-5237
Construction Stormwater	Dallas Grossman Patty Omlid Duane Sandvick	701-382-5242 701-328-5239 701-328-5260
	Dan Webber	701-328-5285
Dewatering and Hydrostatic Testing	Sarah Waldron	701-328-5237
Discharge Monitoring Reports (DMRs)	All Staff	701-328-5210
DMR Quality Assurance (QA) Study	Marty Haroldson	701-328-5234
Industrial Pretreatment	Jeff Roerick	701-328-5240
Industrial Stormwater	Dallas Grossman Patrick Schuett	701-328-5242 701-328-5235
Inspections	All Staff	701-328-5210
Lagoon Overflows/Releases/Spills	All Staff	701-328-5210
MS4 Stormwater	Dallas Grossman Patty Omlid Duane Sandvick Danial Webber	701-328-5242 701-328-5239 701-328-5260 701-328-5285
Public Notices/NDPDES Permits	Patrick Schuett	701-328-5235
Septic Pumper	Sarah Waldron Sarah Starr	701-328-5237 701-328-5215
Wastewater Discharge Approvals	All Staff	701-328-5210

Central Phone: 701-328-5210

Fax: 701-328-5200

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![](_page_62_Picture_2.jpeg)

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![](_page_62_Picture_9.jpeg)

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![](_page_63_Picture_7.jpeg)

![](_page_63_Picture_8.jpeg)

Advanced Engineering and Environmental Services, Inc. North Dakota Offices: Grand Forks, Fargo, Bismarck, Minot, Dickinson, Williston, Watford City

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