A Proposal to

Detroit Township

to provide

Engineering Services for a

Wastewater Facility Plan & Water Feasibility Study

WIDSETH SMITH NOLTING

ENGINEERS
ARCHITECTS
LAND SURVEYORS
PROJECT MANAGERS

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Contents:

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ENVIRONMENTAL SERVICES

July1, 1997

Board of Supervisors
c/o Mr. Ray Windschitl, Clerk
Detroit Township
Route 3 Box 381A
Detroit Lakes, MN 56501

Dear Mr. Windschitl:

We appreciated the time you spent discussing your plans for a subordinate service district on a portion of Big Floyd Lake. Widseth Smith Nolting is very interested in working with the township and we have tried to be responsive to your request for information on both our qualifications and rough estimates of project costs.

Our proposed scope of services is based on our experience with similar communities and from our understanding of your needs. We have structured our proposal around the assumption that you will require a Facility Plan for the wastewater project. A Facility Plan is a more indepth analysis of the project as compared with a feasibility study which would cost somewhat less. A Facility Plan is required if you wish to apply for grants/loans from the Public Facilities Authority (PFA). A feasibility study is adequate for Rural Development funding and for Small Cities funding. However, the median household income for Detroit Township is $28,750 which exceeds Rural Development's ceiling of $27,496. This income level makes the township ineligible for grants from Rural Development and eligible for a loan at the market rate (currently 5.5%) rather than below market rates if the median household income were less. Therefore, we believe that the most attractive funding will be PFA. Our fee for preparing the Facility Plan for the wastewater project is $9,500, plus our $3,500 fee for a water feasibility study, for a total of $13,000.

The following statement of qualifications includes information on our experience working with other communities around lakes and our proposed project team, based here in our Alexandria office. We would be happy to meet with you and discuss our qualifications in more detail.

Sincerely,

Timothy E. Bayerl, P.E.
Vice President

ALEXANDRIA
2504 Aga Drive
Alexandria, MN 56308
320-762-8149
Fax: 320-762-0263

Scope of Services/Fees

Preliminary Scope of Services for the Floyd Lake WASTEWATER FACILITY PLAN

	Task
1.	Meet with key individuals to refine project scope to gather information for preparing a description and evaluation of the existing individual wastewater treatment systems and problems that need correction.
2.	Provide data describing existing wastewater flows and loadings
3.	Project growth within the defined project area and estimate wastewater flows and loadings for the next 20-year period. Complete MPCA design flow determination.
4.	Review collection system alternatives including: A. Standard gravity collection B. Small diameter pressure sewer (STEP and grinders) C. Vacuum sewer
5.	Provide a discussion of treatment alternatives considered in the study. Based on preliminary information on this area, we propose to consider A. Stabilization pond (including discharge via land application, surface discharge, and rapid infiltration B. Mechanical treatment facility C. Cluster septic drainfields/mounds D. One large drainfield
6.	In reviewing these alternatives we will consider: A. A present-worth cost comparison of the alternatives B. An assessment of the existing soil and groundwater conditions based on soil survey information provided by the Soil Conservation Service *SEE NOTE A* C. A comparison of the potential environmental impacts D. Design parameters of the system E. Estimate of construction, annual operation and maintenance, and equipment replacement costs F. Estimate of annual sewer service charges. G. An analysis of the 25- and 100-year flood elevations in relation to the proposed treatment site(s)
7.	Assist grant writer with grant and loan applications. Submit required information to MPCA to get on the Project Priority List (PPL) and the Intended Use Plan (IUP) after preliminary approval of the facilities plan.
8.	Preparation of base map with conceptual layout of sewer collection system and treatment site(s) *SEE NOTE B.*
9.	Complete Environmental Assessment Worksheet
10.	Meeting(s) with MPCA and/or County. Respond to MPCA review comments

Preliminary Scope of Services for the Floyd Lake
WASTEWATER FACILITY PLAN

	Task	
11.	Coordinate public participation program • hold a public hearing to present the study findings and estimated costs	
Estimated Total for Preparing a Wastewater Facility Plan		**$9,500**

NOTE A: *MPCA may require additional information regarding subsurface conditions at the proposed treatment area(s). A soils study for each potential treatment area would involve drilling of at least four test holes at each potential area and logging the soil characteristics and groundwater elevations. The estimated fee for this soils investigation (to be contracted separately with a qualified geotechnical firm), based on two potential areas, is $2,500. Those costs are not included in the proposed fee.*

NOTE B: *For the purpose of this study we suggest using a combination of existing data (e.g. aerial photography, NAPP photography, digital elevation models and USGS quadrangles) to prepare a base map that can be used for conceptual layout of the sewer system. This map would include wetlands, roadways and potential water/wastewater treatment site(s) and sewer collection system layout.*

Preliminary Scope of Services for the Floyd Lake
WATER SYSTEM FEASIBILITY STUDY

	Task
1.	Meet with key individuals to refine the project scope and gather information in order to describe and evaluate existing water sources
2.	Determine existing population equivalent and complete 20 year population projection (from the Wastewater Study)
3.	Determine existing and projected water demand.
4.	Evaluate supply and distribution alternatives including • municipal type system • rural water type system • pressure system vs. elevated storage
5.	Analyze in detail the selected supply and distribution alternative.
6.	Estimate annual water service charges for selected alternative.
7.	Coordinate public participation program • hold a public hearing to present the study findings and estimated costs
8.	Describe environmental impacts and review with Minnesota Department of Health and/or County. Respond to review comments.

Estimated Total for Preparing a Water System Feasibility Study **$3,500**

Note: This estimate assumes that the study would be completed in conjunction with the wastewater study

Fee Schedule

We are open to any fee arrangement that you would prefer—percentage of construction contract, lump sum, hourly. For this project we propose to use a negotiated lump sum fee for the feasibility studies and design. Once the scope of work is finalized and you are in agreement with the defined scope, we can finalize a fee that will remain constant (the above estimate may vary depending upon this finalized scope). The lump sum fee remains constant regardless of the contractor's bid and the economic conditions or work load that may affect that bid. In this way we have no vested interest in increasing the project cost, but can independently recommend the most cost effective options for you.

Our standard practice is to bill on an hourly basis according to our standard fee schedule (attached) for construction staking and resident observation during construction. Expenses such as meals, lodging, materials will be billed at actual cost. Our mileage rate, as indicated on our fee schedule is 32¢ per mile.

Cost Estimates

FLOYD LAKE WASTEWATER TREATMENT FACILITY
COLLECTION SYSTEM
Cursory Cost Estimate

(Pursuant to the specific request of your RFP WSN is providing these estimates which are general in nature (see Assumptions which follow) and based on our experience in other locations. This project has not been studied by our engineers. These estimates should not be used for funding applications since actual costs may vary significantly.)

Item Description	Quantity	Unit	Unit Cost	Amount
8" Sanitary Sewer	16,000	LF	$25	$400,000
Manholes	50	Each	$1,500	$75,000
Wyes	150	Each	$100	$15,000
Services	4,500	LF	$15	$67,500
Lift Station	6	Each	$40,000	$240,000
Simplex Grinder Station	12	Each	$7,000	$84,000
Forcemain	7,400	LF	$10	$74,000
Bituminous Street Repair	15,800	LF	$15	$237,000
Gravel Street Repair	1,200	LF	$5	$6,000
Seeding	10	Acre	$1,000	$10,000
Estimated Construction Cost				**$1,208,500**
Contingencies				$121,000
Engineering - Basic Services				$91,000
Engineering - Construction				$91,000
Legal, Fiscal & Administrative				$23,500
TOTAL				**$1,535,000**

Assumptions:

1. Assume that a conventional gravity system with 8" diameter mains is used. Lift stations would pump from one section to another. Assume 6 lift stations are needed.
2. Sewer to be installed in roadway and restoration of bituminous pavement is necessary.
3. Some low lying homes will be served with individual grinder pumps.
4. Dewatering costs are not excessive.
5. Assumed 150 users: 130 lake shore + 20 back lots.

Note: Validity of all assumptions to be determined by the study

FLOYD LAKE WASTEWATER TREATMENT FACILITY
STABILIZATION POND WITH LAND APPLICATION
Cursory Cost Estimate

(Pursuant to the specific request of your RFP WSN is providing these estimates which are general in nature (see Assumptions which follow) and based on our experience in other locations. This project has not been studied by our engineers. These estimates should not be used for funding applications since actual costs may vary significantly.)

Item Description	Amount
Forcemain to Pond Site	$30,000
Excavation and Embankment	$100,000
Synthetic Liner	$125,000
Random Riprap	$50,000
Control Structures and Piping	$60,000
Fencing and Seeding	$15,000
Tractor and Mower	$30,000
Portable Emergency Generator	$20,000
Irrigation Pump Station	$40,000
Irrigation Forcemain	$10,000
Center Pivot Irrigator	$50,000
Miscellaneous	$20,000
Estimated Construction Cost	**$550,000**
Contingencies	$55,000
Land (60 acres)	$60,000
Engineering - Basic Services	$46,750
Engineering - Construction	$41,250
Legal, Fiscal & Administrative	$7,000
TOTAL	**$760,000**

Assumptions:

1. Assume that a stabilization pond with land application is used. This assumption is made because stabilization ponds are commonly used for small community systems. A potential site is in the south half of Section 15.
2. Assume a synthetic liner is needed for the pond.
3. Assume a design flow of approximately 200 gpd per user and 150 users for a total of 30,000 gpd.
4. Assume discharge to surface waters is not feasible and land application by spray irrigation is required.

Note: Validity of all assumptions to be determined by the study.

FLOYD LAKE WATER SYSTEM
Cursory Cost Estimate

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Item Description	Quantity	Unit	Unit Cost	Amount
Well with chemical feed equipment and building	1	LS	$145,000	$145,000
Hydropneumatic tank pressure system	1	LS	$40,000	$40,000
6" watermain	17,000	LF	$15	$255,000
6" gate valves	10	Each	$400	$4,000
6" hydrants	4	Each	$1,500	$6,000
1" copper service	4,500	LF	$12	$54,000
1" corporation stop	150	Each	$100	$15,000
1" curb stop and box	150	Each	$100	$15,000
Misc. fittings and cleanouts	1	LS	$16,000	$16,000
Estimated Construction Cost				**$550,000**
Contingencies (10%)				$55,000
Engineering - Basic Services				$46,750
Engineering - Construction				$41,250
Legal, Fiscal & Administrative				$7,000
TOTAL				**$700,000**

Assumptions:

1. Restoration cost included with the sanitary sewer collection system.
2. Use of hydropneumatic tank is chosen because of less initial cost vs. elevated storage.
3. Fire protection is not provided.
4. Adequate water supply is available near project location.
5. Water treatment not included (softening or iron removal)

Note: Validity of all assumptions to be determined by the study.

Equipment

To provide our clients with the best professional services available, we employ state-of-the-art computer aided design/drafting and modeling tools, coupled with electronic survey data collection devices and Global Positioning System survey equipment. Fully networked workstations with special application software packages allow us and our clients to react to changes in scope or budget, look at options and make informed decisions. Features of our computer capabilities that aid in our efficiency and accuracy include:

- Special application computer software programs to analyze alternatives and explore what-ifs during feasibility studies and design.
- Wild Total Station and onboard data collection is used to gather 3-dimensional point positions for topography and utilities on each site.
- Field data is uploaded directly to the computer to form the base for engineering design, using AutoCAD.
- Once design is complete, coordinates can then be downloaded from the computer to the field instruments to aid in construction staking.
- Field corrected data is used to develop as-built drawings and form foundation for computer generated mapping.

Introduction to WSN

WSN Established

Widseth Smith Nolting (WSN) was founded as a Minnesota corporation in 1975 at Crookston. The firm expanded into Central Minnesota by acquiring the Dean Anderson firm of Brainerd in 1978 and Hall Engineering of Alexandria in 1979.

Multi-Disciplined Services

Since that time, WSN has grown to approximately 100 employees with a staff of registered architects; civil, structural and water resources engineers; environmental geologists; and land surveyors experienced in a wide variety of architectural and engineering projects. The three office locations give WSN the flexibility and strength to effectively serve our clients with quality engineering and architectural services.

Municipal Engineering

Widseth Smith Nolting has provided municipal engineering services to a number of Minnesota communities. These communities include:

Aitkin
Alberta
Alexandria
Ashby
Backus
Bagley
Barrett
Barry
Baudette
Baxter
Beardsley
Beltrami
Bertha
Brainerd
Brandon
Brooten
Browns Valley
Buckman
Chokio
Clarissa
Clearbrook
Climax
Crookston
Crosby
Crosslake
DeGraff
Dumont
Elrosa
Emily
Erskine
Farwell
Fergus Falls
Fertile
Fosston
Genola
Gonvick
Grand Rapids
Greenwald
Hallock
Halstad
Hancock
Hendrum
Henning
Herman
Int'l Falls
Kensington
Kerkhoven
Lake Bronson
Lake Shore
Laporte
Little Falls
Longville
Lowry
Maynard
Meire Grove
Middle River
Miltona
Morris
Nelson
Nevis
New Munich
Nisswa
Norcross
Oklee
Osakis
Oslo
Parkers Prairie
Pequot Lakes
Pierz
Pillager
Plummer
Riverton
Sauk Centre
Starbuck
Stephen
Sunburg
Swanville
Thief River Falls
Upsala
Verndale
Villard
Wendell
Wheaton

Townships
Crow Wing
Eagle
Henrietta
Ida
LaGrande
Lake Mary
Pike Bay

Range of Services

Widseth Smith Nolting offers professional services in civil engineering, architecture, land information management and environmental consulting, with registered professionals in each discipline.

Architecture

WSN's architectural services include but are not limited to:

- Needs assessment, space planning/master planning
- Space programming/quantifying user needs
- Building design
- Addition/remodel feasibility analysis and design
- Building restoration, masonry, tuckpointing, window replacements, retrofitting
- ADA/fire/life safety code upgrades
- Construction administration

Civil Engineering

WSN's engineering services encompass a wide range of projects:

- Surface water management
- Stormwater management
- Wastewater collection and treatment, industrial and municipal
- Water storage, treatment and distribution
- Rural water systems
- Access roads, parking areas, streets, highways
- Site evaluation/site grading and utility plan
- Wetland resources planning and management
- Solid waste facilities
- Municipal planning and zoning
- Bridges and structural design
- Airport layout and design
- Experienced construction observation

Land Information Management

WSN's Land Information Management Services includes land surveying, mapping and planning.

Surveys

- Land subdivision surveys
- Property line surveys
- Legal descriptions
- Topographic surveys
- Ground control surveys
- Mortgage loan surveys
- As-built surveys

Mapping

- Land use
- Utilities
- Parcels
- Wetlands

Planning

- Sustainable development - comprehensive planning
- Resource management strategies
- Site selection
- Environmental issues strategies
- Community/urban planning
- Utility/facility routing

Environmental

Environmental Services fall primarily within three areas:

Groundwater and Geology

- Supply well design and pump tests
- Contamination assessments of spills and leaks
- Environmental audits/pre-acquisition site assessments
- Hydrogeologic studies

Landfills/Solid Waste

- Siting studies, permit applications, management plans
- Hydrogeologic evaluations and water quality monitoring
- Engineering design and development plans
- Closure, post-closure and contingency action
- Remedial investigation and corrective action

Underground Storage Tanks

- System evaluation and management
- Installation design and construction observation
- Closure observation, testing and reporting
- Remedial investigations, feasibility studies

Project Examples

Widseth Smith Nolting has experience in designing wastewater systems from single family on-sites, to cluster systems serving a group of homes, to larger municipal systems. These systems are designed by our registered professional engineers who have experience with various types of systems and are certified as on-site sewer designers and evaluators. The selected examples below show the variety of systems, sites and soils that we work with.

Wastewater Studies for Lake Shore Development Areas

WSN is seeing an increasing interest and need for wastewater treatment systems in areas around lakes. Escalating development pressure, both residential and commercial, is forcing local units of government to look at how this growth can be managed to protect the environment.

We see a number of similarities between this trend and the growth that a number of our municipal clients have experienced, especially during the past ten years. WSN has worked with cities to plan for and expand their wastewater collection and treatment systems. As residential neighborhoods develop, the systems are expanded to serve them. Today, many townships—either because of their location adjacent to expanding cities, or because of the recreational amenities within their boundaries—are looking at cost effective means to protect their natural resources.

WSN was selected by **Lake Mary Township** (Douglas County), **Ida Township** (Douglas County), **Pike Bay Township** (Cass County), the **Tri County Leech Lake Watershed Project** (Walker Hwy 200 "Y" corridor extension), the City of **Crosslake**, and **Henrietta Township** (Hubbard County) to conduct preliminary engineering studies on the feasibility of serving their more densely populated and commercial districts with a wastewater treatment system. Some of these areas are in a position for explosive growth.

These studies include an evaluation of alternative treatment facilities such as connection to an existing system, community drain fields, stabilization ponds vs. a mechanical plant and possible locations for these facilities, along with potential discharge possibilities to wetlands or directly to a stream. The studies address estimated user charges based on various funding scenarios.

We are also in the process of examining alternative sewer collection methods including small diameter pipelines installed using directional boring and positive displacement pumps at the homesites. The advantages to this type of collection system is in the economies of installing sewer facilities around lakes with minimal disturbance to the environment.

On-Site Wastewater Systems

Mounds, trenches, alternative systems

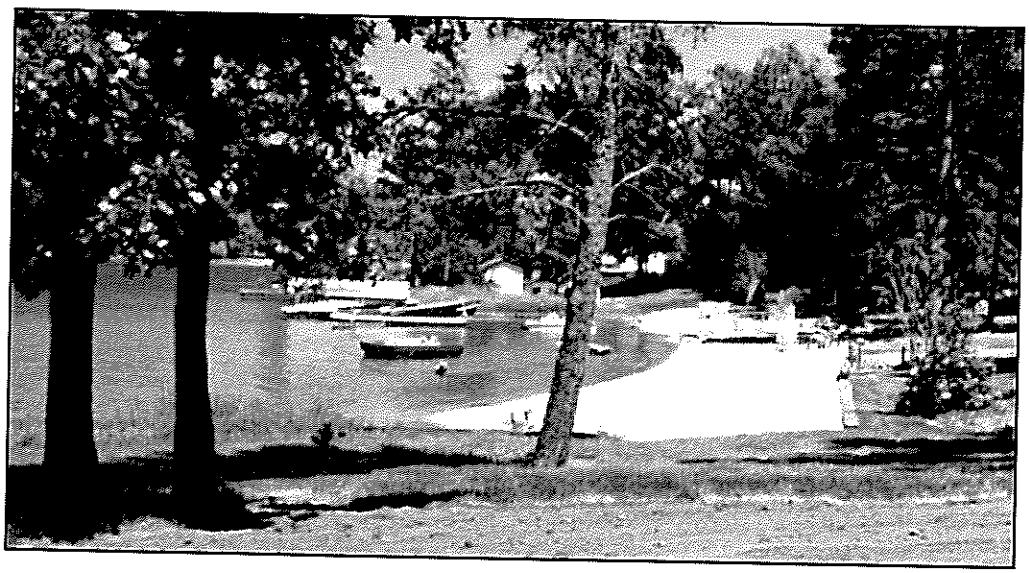
WIDSETH SMITH NOLTING

Project Experience:

- City of Bagley
- City of Norcross
- City of Riverton
- Cozy Nook Development, Alexandria, MN
- Ida Wild East Development, Alexandria, MN
- Private Development on Chippewa Lake, Alexandria, MN
- Pike Bay Township (Cass County) Preliminary & Feasibility Study
- Thief Lake Wildlife Management Area, Department of Natural Resources
- Lonesome Pine Resort, Deerwood, MN Preliminary & Feasibility Study
- Stone Ridge Development, Brainerd, MN Preliminary & Feasibility Study
- Mills Fleet Farm, St. Cloud, MN

Services Provided:

- On-site wastewater system alternatives that protect our lakes and streams
- Preliminary engineering study
- Feasibility study
- Site evaluations by a Minnesota Certified Individual Sewage Treatment Systems (ISTS) evaluator
- Funding application assistance
- Permitting assistance
- Systems designed by a Minnesota Certified Individual Sewage Treatment Systems (ISTS) designer
- Wastewater collection system design and layout
- Regulatory agency coordination
- Construction engineering services
- System inspections by a Minnesota Certified Individual Sewage Treatment Systems (ISTS) inspector



Widseth Smith Nolting can help you find the best approach for your project. Contact us for a no-cost consultation.

Range of Services

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Serving you from our three offices

Alexandria
2504 Aga Drive
Alexandria, MN 56308
320-762-8149
Fax 320-762-0263

Brainerd
2000 Industrial Park Rd S
Baxter, MN 56425
218-829-5117
Fax 218-829-2517

Crookston
216 South Main
Crookston, MN 56716
218-281-6522
Fax 218-281-6545

Civil Engineering

- Wastewater collection and treatment
- Water storage,treatment and distribution
- Rural water systems
- Storm sewers/retention ponds
- Streets, highways, access roads
- Municipal planning and zoning
- Site planning and engineering
- Airports

Environmental Services

- Landfills
- Underground and aboveground storage tanks projects
- Environmental site audits
- Voluntary investigation and cleanup (VIC) projects
- Hydrogeologic studies
- Remedial investigation and design
- Wellhead protection
- Supply well design and pump tests

Surface Water Management

- Flood control designers and advisors
- Ditch design and administration
- Wetland resources planning and management
- Recreational water projects

Structural Engineering

- Bridges
- Structural design of new buildings
- Structural analysis

Architecture

- Downtown renovation studies
- Space planning/programming
- Many types of buildings and renovations for industrial, retail, municipal, educational, and other government and private clients.

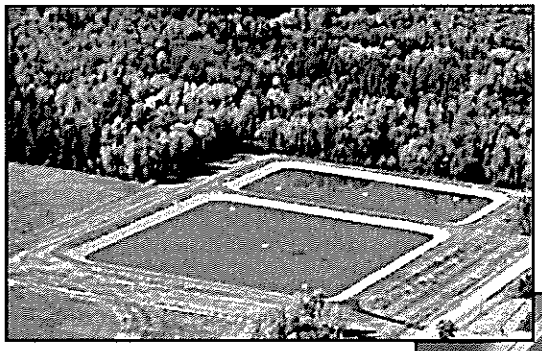
Land Information Management

- Land surveys
- Geographic information systems
- Land use
- Map production
- Rural addressing
- Sustainable development comprehensive planning
- Community/urban planning
- Utility/facility routing

Wastewater Treatment Facilities

WIDSETH SMITH NOLTING

Stabilization ponds, facility upgrades, sludge handling, mechanical wastewater treatment



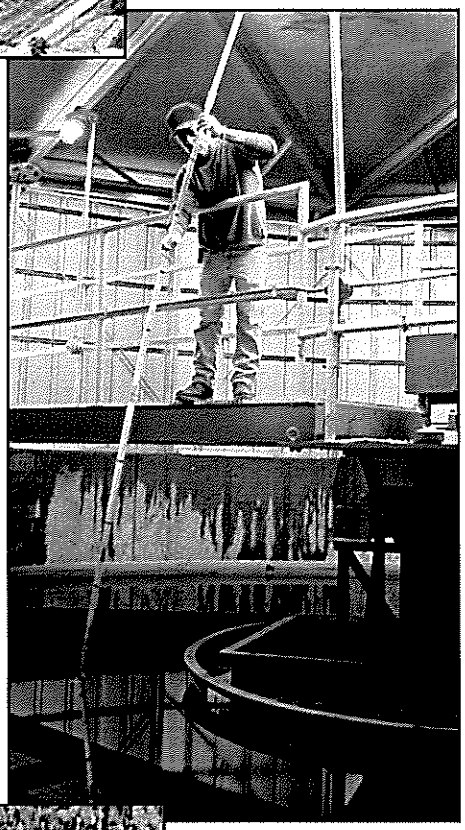
City of Pillager's two-cell stabilization pond with synthetic liner and three pumping stations.

Project Experience:

- City of Brandon
- City of Browns Valley
- City of Chokio
- City of Clarissa
- City of Clearbrook
- City of Lowry
- City of Nevis
- City of Osakis
- City of Plummer
- City of Sauk Centre
- City of Verndale
- City of Wendell
- GEM Sanitary District, Greenwald, Elrosa, and Meire Grove, MN
- Rich Prairie Sanitary District, Pierz and Genola, MN

Services Provided:

- Preliminary engineering study
- Site evaluation
- Funding and grant application assistance
- Wastewater treatment system design
- Wastewater collection system design and routing
- Permitting assistance and regulatory agency coordination
- Construction staking
- Construction engineering services
- Start-up and operational assistance



City of Aitkin's Wastewater Treatment Plant Upgrade included an equilization basin, bar screen, clarifier & chlorination/dechlorination system for treatment prior to discharge to the Mississippi River.

City of Longville's three cell system including chemical treatment for phosphorus removal.

Widseth Smith Nolting can help you find the best approach for your project. Contact us for a no-cost consultation.

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Alexandria Lakes Area Sanitary District

The Alexandria Lakes Area Sanitary District (ALASD) was formed in 1971 to protect the area's lakes from potentially adverse effects of pollution caused by the increasing development of the shorelines. The District has since grown to where it now serves a population of 15,500 people and an area of some 60 square miles including the Cities of **Alexandria** and **Nelson** and portions of **Alexandria, Carlos, Hudson** and **LaGrande Townships.**

The system now includes approximately 149 miles of sanitary sewer with 161 grinder and lift stations.

WSN has been actively involved in the planning and construction of ALASD facilities since just after WSN's Alexandria office opened in 1979. This continuing, long term relationship has included dozens of large and small projects throughout the system.

In 1994, WSN was hired to produce a comprehensive feasibility study to examine the potential of providing sanitary sewer to all remaining platted, unserved lots within the District. This study included approximately 468 lots in 24 separate project areas. The study was completed in June, 1994 and formed the basis for the development of construction documents for this project. The project was let for bids in March, 1995 for approximately $2 million and included approximately ten miles of sanitary sewer, two full sized lift stations, and seven smaller grinder stations. The project was designed and constructed on time and within budget.

The District continues to expand its service within the existing boundaries as development occurs. Adjacent townships of Lake Mary and Ida recently petitioned ALASD to expand. WSN is currently working with Lake Mary and Ida Townships developing plans for the expansion. Lake Mary Township plans to proceed with construction in 1998 and Ida Township construction is scheduled for 1999.

Lake Mary Township

Lake Mary Township is located south of Alexandria in Douglas County. The township is adjacent to the Alexandria Lakes Area Sanitary District (ALASD). Lake Mary and Lake Andrew lie within Lake Mary Township. Both lakes have about two-thirds of the shoreline developed and development is continuing. Existing structures are served by individual sewage treatment systems (ISTS). Twenty-three percent of the ISTS have surface discharges, 60% are failed systems and 35% have seepage or backup problems.

In 1995-96 WSN completed a preliminary engineering study, determining that the cost effective solution is to construct a standard gravity collection system and connect to the ALASD. In 1996 WSN upgraded the study to Facility Plan status. The estimated project cost is $4.3 million. The township has been

offered $2.3 million as a Wastewater Infrastructure Fund grant and $2.0 million as a Public Facilities Authority low interest loan. WSN is presently working on design documents and construction is scheduled for 1998.

Ida Township

Lake Ida of Ida Township is located north of Alexandria, MN in Douglas County. The preliminary engineering study WSN completed for the Township, like that for Lake Mary Township, recommended connection to the ALASD. The study was upgraded in 1996 to a Facility Plan. The Township expects to obtain funding in 1998 and proceed with construction in 1999.

Rich Prairie Sanitary Sewer & Water District — Pierz, Genola, Buckman

Wastewater: WSN completed a Facility Plan to determine wastewater treatment needs for Pierz, Genola and Buckman. The City of Pierz has an existing collection system with a mechanical wastewater treatment system that discharges to the Skunk River. The MPCA proposed NPDES discharge limits which would require advanced treatment of the wastewater. In addition, the existing wastewater treatment facility is in poor condition. Both Genola and Buckman have individual on-site treatment systems, most of which are not in compliance with Chapter 7080 of Minnesota Rules.

The facility plan prepared by WSN found the lowest cost alternative for these three communities was to build a common wastewater collection and treatment system. WSN worked with the communities to form the Rich Prairie Sanitary Sewer and Water District.

Currently under the construction, the wastewater system will include two pre-treatment aeration ponds to lower the BOD levels, two primary treatment ponds and one secondary, with discharge to surface waters.

Water: WSN also worked with the Pierz and Genola on a water system (Buckman has an adequate water system). The City of Pierz has a water distribution system but treatment was limited to chlorination/dechlorination and the addition of fluoride. High levels of iron and manganese are present, exceeding drinking water secondary standards, and created staining problems. The City of Genola has individual wells. WSN's study recommended a shared distribution and treatment system which would remove iron and manganese.

Currently under construction, the new system includes a sand filtration water teratment facility, a 200,000 gallon elevated storage tank and a 100,000 gallon buried water storage facility, and two new wells.

Total construction cost of the water and wastewater systems is estimated at $6.6 million with completion scheduled for Fall, 1998. The District received

funding from Rural Development and the Department of Trade and Economic Development.

City of Osakis

Wastewater: The City of Osakis is adjacent to Lake Osakis. The portion of Lake Osakis within the city limits has long been served by sanitary sewer. A major developed area east of the city limits along Lake Osakis was served by failed individual sewage treatment systems. This area on the southeast shore of the lake extended for approximately 2 miles beyond the city limits. In 1993, WSN completed an engineering study of the southeast Lake Osakis area. The study considered several alternatives including innovative collection methods such as a vacuum collection system. The study recommended connection to the Osakis municipal system with a standard gravity system as the lowest cost alternative. The $1.3 million project was funded by Rural Development ($970,000 grant and $330,000 loan). Construction was completed in 1996.

Water: The City of Osakis also wished to pursue improvements to the water system. Inadequate fire flows within the city called for a new water tower and watermain extensions. WSN and the city's grant administrator worked together on a Small Cities Grant Application for 1994 funding. Although this application was not successful, WSN worked with the city to re-package the project and successfully applied for a Small Cities grant in1995 to fund water system improvements. This water project was substantially complete in 1996.

City of Riverton

This Mississippi River community has a collection system (31 hook-ups) with a septic tank that may not be watertight and a drainfield believed to be failing. WSN was retained to design three new drainfields on a 6 acre parcel. The drainfield is designed so that the City can alternately use two of the drainfields and rest one, thus extending the life of the drainfields. This project is currently under construction.

Polk County Park and Campground

The County is implementing a three phased improvement plan for this park and campground on Maple Lake in northwestern Minnesota. WSN's architects are currently working on the design of an office building for the manager (Phase I improvements). Construction of the water and sewer system is Phase II and construction of the new bathhouse is Phase III.

A site evaluation found that a conventional trench system would not be feasible due to high groundwater and soil conditions. WSN is currently designing an on-site mound sewer system with lift stations, septic tanks, drainfield and collection system serving the manager's office, the campground the RV dump station, and proposed bathhouse. In addition we are designing a water distribution system to serve these same areas and provide flow requirements

for the well and specifications for the pump house. Construction is scheduled for Fall, 1997.

City of Norcross

The existing septic system/drain fields serving this community were failing and the high water table contributed to contamination of the groundwater, particularly during years of above normal precipitation when the area was prone to flooding. WSN worked with the city's grants writer in the successful application for 100% grant funding ($300,000) from the Small Cities Flood Program. WSN prepared the preliminary engineering study which analyzed the most cost effective solution for a system to serve the residents. On-site mound systems were deemed to be the most appropriate solution. WSN provided input at public hearings, designed the systems and observed construction. The systems are now operational.

City of Sunburg

Sunburg was faced with failing on-site systems and the average city lot was too small to support replacement on-sites. The City worked with WSN and a grants writer to explore the funding possibilities for a municipal sanitary sewer system. WSN prepared the feasibility study which analyzed costs of approximately $950,000 for a collection system and stabilization ponds to serve 65 connections. This study supported successful grant applications to both Small Cities and Rural Development. Design is underway for a two cell pond system with surface discharge and a standard gravity collection system. Construction is scheduled for 1998.

STEP Systems

WSN serves as city engineer for the communities of Lake Shore, Nisswa and Crosslake. Both Lake Shore and Nisswa are served by municipal systems that incorporate a septic tank effluent pumping (STEP) pressure system. WSN has researched the unique operating and maintenance concerns of these systems in order to provide knowledgeable advice to the cities.

As part of the recent municipal sewer feasibility study for the City of Crosslake, one of the alternatives WSN evaluated was a STEP system.

Cozy Nook Development

WSN sized and prepared a layout for a sewer and water system serving a 60-unit development near Alexandria. The sewer system design included collection, lift stations and drain fields. The water system included design of wells and a distribution system.

City of Nevis Wastewater System

WIDSETH SMITH NOLTING

Project Highlights:

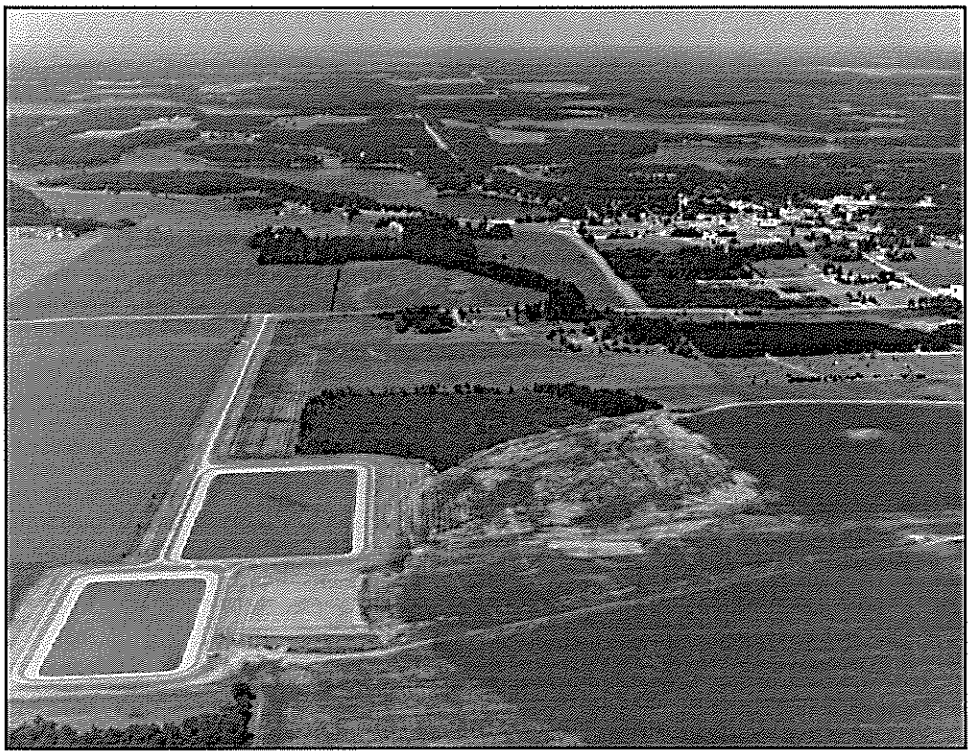
- Project began June 12, 1995
- Two-cell stabilization pond system with PVC liner
- Spray irrigation system used to discharge effluent
- Design allows for future pond expansion
- $2.3 million construction cost
- Funded by USDA Rural Development, 75 percent Grant and 25 percent loan monies
- Construction completed June 1996

The City of Nevis was served by individual on-site wastewater treatment systems and a central water system. A survey of the existing on-site systems found that 84 percent of the 187 systems were non-conforming, and more than 30 percent of the systems were within 1,000 feet of Lake Belle Taine. WSN analyzed three alternatives for upgrading the City's wastewater systems:

1. Individual and cluster septic systems with soil treatment units;
2. Mechanical wastewater treatment utilizing an oxidation ditch;
3. Stabilization pond (with three different means of discharge: land application by spray irrigation, rapid infiltration, and surface discharge).

Septic systems were found to be the lowest cost alternative; however, several factors made this option undesirable. Funding options were not sufficient to make the alternative affordable to the users, the individual system is not easily administered by the city, individual systems limit growth and are considered less reliable in the long term.

The recommended alternative was to proceed with a stabilization pond with land application by spray irrigation. WSN designed a two-cell system lined with a 30-mil. PVC that was funded by USDA Rural Development, 75 percent grant and 25 percent loan. Total construction cost was $2.3 million with the construction being completed in June 1996.



City of Baxter

The City of Baxter has experienced significant growth during the past ten years. In 1987, the City directed WSN to study the feasibility of providing municipal water and sewer service to the population. Part of the study included infra-red photographs of White Sand and Perch lakes that graphically illustrated failing on-site systems by tracing the migration path of contaminants/nutrients into the lakes.

After negotiating an agreement to share the capacity of Brainerd's wastewater plant, Baxter began a phased construction sewer and water extensions. The first and largest (in 1989) included approximately 400 sewer hook-ups with seven miles of sanitary sewer lines and five miles of water main. Subsequent extensions have sewered a major portion of the City and helped to improve the water quality of the City lakes.

City of Longville

WSN worked with the city on converting an existing two cell system into a three cell system, including chemical treatment for phosphorus removal. Construction completed in 1992 at a cost of $680,000 with funding from EPA, MPCA and FmHA.

City of Wendell

To replace malfunctioning on-site systems, WSN worked with the City of Wendell in the design and construction of a 2-cell stabilization pond with clay liner, a lift station and approximately 7,000 ft of forcemain. Peak flow is designed at 48,800 gpd with an average flow of 19,500 gpd. The system features direct discharge to a nearby river. WSN assisted in putting together the funding package of $540,000 that included Small Cities, EPA, MPCA and Farmer's Home Administration monies.

City of Pillager

This community had individual wells which were being contaminated by inadequate on-site drain fields. First priority was to provide safe drinking water. WSN designed a new city water system that included a 150 gpm water treatment plant with side detention, 5 miles of pipeline, construction of two 150 gpm wells, a 75,000 elevated storage tank, and cold water meters. WSN was involved in up-front planning and assisted in grant writing for FmHA and DTED. The project was complicated by the high water table which made construction more difficult and costly so that distribution costs ran over estimate. WSN worked with the city in the successful application for additional funding from FmHA.

WSN then proceeded with design and construction of a two cell stabilization pond with synthetic liner and three pumping stations. Completed in 1992, this

facility was funded by a $2.3 million funding package of EPA, MPCA, FMHA and Public Facilities authority monies.

GEM Sanitary District

WSN worked with Greenwald, Elrosa and Meire Grove—three communities in central Minnesota— to design a sewage transmission line with lift stations connecting these cities to a common stabilization pond for treatment and discharge. New collection systems were designed for Meire Grove which had malfunctioning individual on-site systems and for Elrosa which had a malfunctioning collection system. The facility includes collection systems, 7 miles of forcemains, 3 lift stations, a 3-cell stabilization pond with clay liner, and chemical treatment to remove the phosphorus. WSN was involved in the formation of the GEM Sanitary District, the facilities plan, design and construction observation. Construction was completed in 1990; the total cost is 1.9 million funded by a combination of EPA, Pollution Control Agency and FmHA monies.

City of Chokio

Wastewater: WSN designed the City's wastewater system, in operation since 1986. The system has a peak flow of 400,000 gpd and an average flow of 105,000. This project included sewer rehabilitation, lift stations, forcemain and 3-cell direct discharge stabilization pond with clay liner. Total project cost was $670,000 with funding provided by FmHA.

Water: WSN also worked with the City of Chokio on upgrading their municipal water system because of maintenance problems with the lines and insufficient storage capacity to meet fire flow demands. The City obtained funding from Farmers Home Administration for a $415,000 loan and $448,000 grant package. The improvements include replacement of 21 blocks of aging watermain and construction of a new 150,000 gallon elevated storage tank to replace the old one.

City of Brandon

WSN provided the City of Brandon with complete engineering services to upgrade their waste treatment facilities. WSN was involved in the public hearings, the facilities plan, design and construction. The system which WSN designed to serve this community includes three-cell stabilization ponds with synthetic liner, lift station and forcemain, irrigation pump and forcemain, center pivot irrigation system, and a collection system renovation and storm sewer. The design allows for a peak flow of 350,000 gpd and an average flow of 95,000 gpd.

The city was eligible for an additional 20 percent EPA funding due to the alternative design using center pivot irrigation. Other funding sources included a grant from FmHA and the Pollution Control Agency. The facility was completed in May, 1988 at a cost of $1,325,000.

Public Water Systems

Supply, treatment, storage, distribution

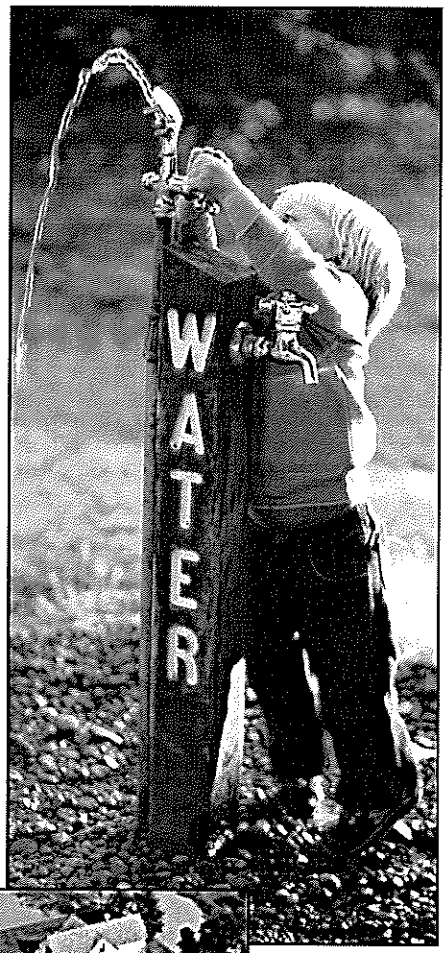
WIDSETH SMITH NOLTING

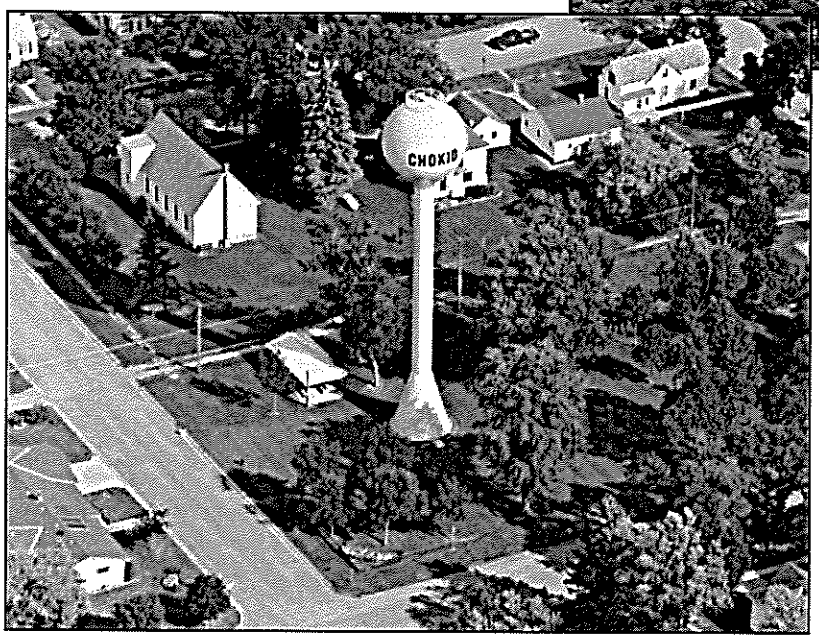
Project Experience:

- City of Crookston
- City of Little Falls
- City of Upsala
- City of Bagley
- City of Starbuck
- City of Pillager
- City of Kerkhoven
- City of Baxter
- City of Chokio
- City of Backus
- City of Osakis
- City of Oslo
- North Kittson Rural Water System, Kittson County, MN
- Rich Prairie Water District, Pierz and Genola, MN

Services Provided:

- Preliminary engineering study
- Site evaluation
- Funding and grant application assistance
- Hydrogeologic investigation
- Water supply and treatment design
- Water storage and distribution design
- Municipal well and pump design
- Permitting assistance and regulatory agency coordination
- Construction staking
- Construction engineering services
- Start-up and operational assistance





Widseth Smith Nolting can help you find the best approach for your project. Contact us for a no-cost consultation.

Range of Services

WIDSETH SMITH NOLTING

We offer professional services in civil engineering, architecture, land information management, and environmental consulting, with registered professionals in each discipline.

Serving you from our three offices

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2504 Aga Drive
Alexandria, MN 56308
320-762-8149
Fax 320-762-0263

Brainerd
2000 Industrial Park Rd S
Baxter, MN 56425
218-829-5117
Fax 218-829-2517

Crookston
216 South Main
Crookston, MN 56716
218-281-6522
Fax 218-281-6545

Civil Engineering

- Wastewater collection and treatment
- Water storage,treatment and distribution
- Rural water systems
- Storm sewers/retention ponds
- Streets, highways, access roads
- Municipal planning and zoning
- Site planning and engineering
- Airports

Environmental Services

- Landfills
- Underground and aboveground storage tanks projects
- Environmental site audits
- Voluntary investigation and cleanup (VIC) projects
- Hydrogeologic studies
- Remedial investigation and design
- Wellhead protection
- Supply well design and pump tests

Surface Water Management

- Flood control designers and advisors
- Ditch design and administration
- Wetland resources planning and management
- Recreational water projects

Structural Engineering

- Bridges
- Structural design of new buildings
- Structural analysis

Architecture

- Downtown renovation studies
- Space planning/programming
- Many types of buildings and renovations for industrial, retail, municipal, educational, and other government and private clients.

Land Information Management

- Land surveys
- Geographic information systems
- Land use
- Map production
- Rural addressing
- Sustainable development comprehensive planning
- Community/urban planning
- Utility/facility routing

City of Upsala Water System Improvements

WIDSETH SMITH NOLTING

Project Highlights:

- Construction begins on the water system improvements August 1995
- A new 70 gpm municipal water well was on-line in May 1996
- Distribution improvements throughout the City enhanced fire protection and increased water pressure.
- $1.8 million construction cost
- Funded by USDA Rural Development, 72 percent grant and 28 percent loan monies
- New Water Treatment Plant using a manganese green sand filtering system was completed May 1996

The high levels of iron and manganese in the existing municipal water well had become a nuisance for the community of Upsala. Iron and manganese showed up as red and black staining in sinks and toilets.

The City of Upsala retained Widseth Smith Nolting to complete a study, including distribution modeling, that reviewed the existing municipal water system and indicated areas of concern. Areas of concern identified by the study follow:

One of the existing municipal water wells had deteriorated due to age and needed replacement.

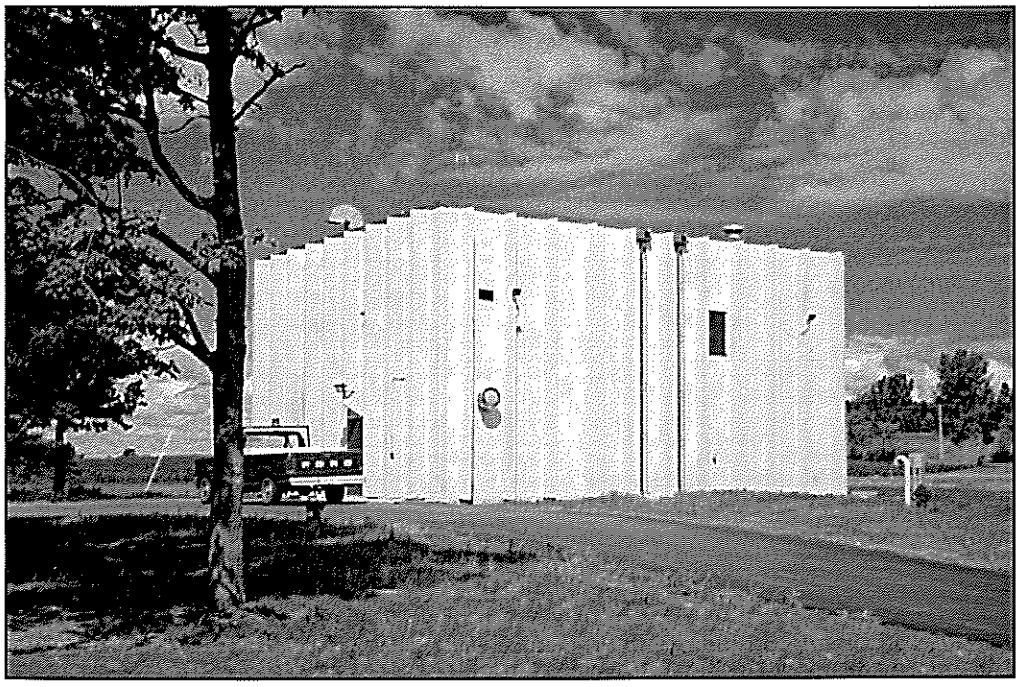
The existing water distribution system was under sized and did not provide adequate fire protection for the south-east part of the community.

There was no water treatment to remove iron and manganese.

Existing municipal water storage requirements did not meet design standards.

Based on the information and recommendations presented in the study, the City of Upsala decided to proceed with the necessary improvements.

Funded by a grant and loan package from the USDA Rural Development (formerly FmHA) agency, the $1.8 million improvements feature a water treatment plant for the removal of iron and manganese, a new 70 gallon per minute (gpm) municipal water well, and a 50,000 gallon ground water storage tank. In addition, the existing municipal water well underwent a rehabilitation process increasing the water flow to 180 gpm. Distribution improvements throughout the City enhanced fire protection and increased water pressure.



City of Starbuck Water System Improvements

WIDSETH SMITH NOLTING

Project Highlights:

- Construction begins on the water system improvements April 1995
- New 180,000 gallon ground storage tank was completed July 1995
- Two new 200 gpm municipal water wells were on-line December 1995
- New water treatment plant using a manganese green sand filtering system in operation December 1995
- $1.3 million construction cost
- Funded by USDA Rural Development, 41 percent grant and 59 percent loan monies

The City of Starbuck's municipal water treatment system was undersized for current needs and in need of either renovation or replacement.

One of the problems facing the City was that the existing water treatment plant had deteriorated to a point where it could no longer remove iron and manganese affectively. High levels of iron and manganese were showing up as red and black staining in bathroom fixtures throughout the community.

Widseth Smith Nolting worked with the City to assess the existing conditions and examine available alternatives. Based on the information gathered, the City of Starbuck decided to proceed with the necessary improvements.

Funded by a grant and loan package from the USDA Rural Development (formerly FmHA) agency, the $1.3 million improvements feature a water treatment plant for the removal of iron and manganese, two new 200 gallon per minute (gpm) municipal water wells, a new 180,000 gallon ground storage tank, and new distribution lines.

References

City of Nevis

Ted LaLonde, former City Council Member
218-652-3971

City of Sunburg

Dennis Leaf, Council
320-366-3553

City of Norcross

Kenneth Olhoft, Mayor
320-284-2138

GEM Sanitary District

Jim Leukam, GEM Secretary
320-987-3538

Lake Mary Township

Allen Johnson, Township Supervisor, Chair
320-283-5795

Lake Ida Township

Robert Hildebrandt, Township Supervisor, Past Chair
320-834-2604

Alexandria Lakes Area Sanitary District

Bruce Nelson, Executive Director
320-762-1135

City of Longville

Ralph Urshal, City Council
218-363-2022

Key Personnel

Civil Engineering

Bruce R. Buxton, P.E./L.S., President
Donald D. Anderson, P.E., Executive Vice President
★ Timothy E. Bayerl, P.E., Vice President
David B. Kildahl, P.E., Vice President
Darrell F. Schneider, Sr. P.E., Vice President
Timothy D. Schoonhoven, P.E., Vice President
★ Larry Van Hout, P.E., Vice President
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Peter J. Caspers, P.E.
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R.A. (Art) Desautels, L.S.
Bryce Fossand, E.I.T.
★ Mark V. Hallan, P.E.
Timothy M. Houle, P.E.
Michael LaFrance, P.E.
★ Jeffrey Ledin, P.E.
Charles Marohn, Jr., E.I.T.
David S. Reese, P.E., ISTS Certified
Peter Sarberg
★ Daniel R. Viau, P.E., ISTS Certified
J. Steven Windish, IV, P.E.

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Brian A. Ross, P.G., Director of Environmental Services
Gregory W. Smith, P.G
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Iain A. Olness
Wayne E. Green
Doug Schultz

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Robert L. Meyer, A.I.A., Vice President
Kevin Donnay, A.I.A., Vice President
Roger D. Helland, A.I.A.
Debra Parrott, A.I.A.
Del Sheets, A.I.A.
Ronald A. Jasmer, Designer
Russell D. Gilson, Designer
Wade Erickson, Intern Architect

Structural Engineering

★ Timothy J. Moe, P.E., Treasurer
Robert R. Tomczak, P.E., Technical Director/Bridge-Related Projects
Kent A. Rohr, P.E.

Land Information Management

Jeffrey W. Miller, L.S., Vice President
Donn Rasmussen, L.S.
Thomas P. Thiessen, L.S.
Gary L. Thompson, L.S.
George W. Orning, Comprehensive Planner
Norm Drye, Computer System Specialist

★ *= project team for Detroit Township, resumes follow*

Professional Registrations:
P.E. = Professional Engineer
E.I.T. = Engineer in Training
P.G. = Professional Geologist
L.S. = Licensed Surveyor
A.I.A. = American Institute of Architects (Registered Architect)
ISTS = Individual Sewage Treatment System Certification

Timothy Moe, P.E.
Principal in Charge, Water System Engineer

Education: B.S. in Engineering, 1972
University of North Dakota

Registration: Professional Engineer

Joined WSN in 1977 and currently serves as an officer of the company and office manager in WSN's Alexandria office. Responsibilities include facilities management, coordination and assignment of office resources, and recruiting, training and development of personnel. Also supervises WSN's bridge design projects for Mn/DOT and counties throughout Minnesota, on all types and sizes of bridges, from box culverts to four-lane highway bridges.

Served as project engineer on the initial construction of a rural water system (North Kittson Rural Water) and subsequent expansions. The system initially served five cities in northwestern Minnesota (Lake Bronson, Hallock, Lancaster, Humboldt and St. Vincent) and more than 350 rural farms and homes within a 400 square mile area. A 1990 extension added 190 users and over 140 miles of watermain. A 1993-94 extension added 720 new users including the cities of Stephen and Kennedy and the Kittson-Marshall Rural Water system.

Timothy Bayerl, P.E.
Detroit Twp Project Engineer

Education: B.S. in Engineering, 1981
University of Minnesota

Registration: Professional Engineer

Certification: Class B operator's certificate for both water and wastewater treatment

Experience includes four years with a consulting firm in Albert Lea, MN with responsibilities in the field of industrial and municipal wastewater treatment, and water resources engineering. Previous experience as a water/wastewater treatment plant operator has been helpful in start-up and operator training for water and wastewater plants. Currently serves as an officer of WSN and has been project engineer responsible for planning, design, construction inspection, and supervision of various municipal engineering projects, primarily wastewater collection and treatment projects.

Has also served as project engineer for the design, construction and closure of several landfills and has experience with liner systems for leachate collection and cover systems. Familiar with leachate treatment alternatives and both passive and active gas collection systems. Demolition debris landfills—with their specific state regulations for planning, development, operation and closure—are also an area of concentration.

Project Experience

Stabilization ponds in:

- Grove Sanitary District
- Chokio
- Nevis (including Lake Bel Taine)
- Wendell
- Brandon
- Clarissa
- Henning
- Morris
- Verndale

Sewer & water projects in:

- Lake Osakis
- Alexandria Lakes Area Sanitary District
- Ashby
- Clarissa

Larry Van Hout, P.E.
Mechanical Wastewater Treatment Plant Engineer

Education: B.S. in Civil Engineering
M.S. in Sanitary Engineering
South Dakota State University

Registration: Registered Engineer

Has widely varied experience in the water and wastewater fields. Before joining WSN, served as a wastewater operator, troubleshooter for operational problems at wastewater treatment plants, and trainer for wastewater operators.

Since joining WSN in 1986, has worked primarily with water and wastewater treatment projects. Experienced with mechanical wastewater plants includes planning, design, construction administration, start-up, operator training, and preparation of operations and maintenance manuals. Served as project engineer on the planning, design and construction of stabilization ponds and has designed wastewater collection systems. Prepared studies for sludge handling, infiltration/inflow, sewer use/user charge systems, and stormwater pollution prevention.

Water system projects include computer analysis of distribution systems, studies of treatment needs, and projection of user demands. Served as project engineer for planning, design, and construction administration of water storage and distribution projects. Prior to joining WSN, conducted research of the ozonation of municipal water supplies.

Experienced in administering water and wastewater projects financed through community development block grants, MPCA and EPA funds, and Rural Development.

Project experience

- Browns Valley stabilization ponds
- Aitkin wastewater treatment plant modifications
- North Koochiching wastewater treatment plant rehab and expansion
- Little Falls wastewater treatment plant studies (anaerobic digester)
- Pierz wastewater treatment plant study
- Rich Prairie facility plan and design

Mark V. Hallan, P.E.
Alternative Wastewater System Engineer

Education: B.S. in Civil Engineering, 1979
North Dakota State University

Registration: Professional Engineer

Joined WSN in 1996 with 17 years experience in civil and structural engineering. As principal engineer with a New York engineering firm, was responsible for project development, funding application and management, design, regulatory agency approval, public bidding and construction observation for municipal infrastructure improvements. Served as principal in charge responsible for coordination, design, approvals, construction observation and quality control for water, wastewater, solid waste facilities and street/highway projects. Road design experience includes realignment to improve sight distances, incorporation of turn lanes, traffic control plans, and review/coordination with state agencies. Monitored project budgets including administration of grant and loan monies. Also has experience as structural engineer for an engineering firm specializing in pulp and paper company expansions.

As a project engineer with WSN, advises city staffs/councils on infrastructure considerations to meet projected growth, the impact of development on existing city systems and funding/assessment alternatives. Manages WSN's project teams assigned to the preparation of feasibility studies, preliminary and final plans/specifications, and construction observation. Represents WSN's clients in all negotiations with State and Federal agencies and prepares permit applications.

Project Experience

Wastewater: Extended aeration facility, process review for separation of domestic & industrial flows, conversion of lagoons to extended aeration, belt press installations, phosphorus removal, and the fine bubble aeration installations.

Water: Water treatment improvements with rapid sand filtration, concrete storage/clearwells, pre-cast storage tanks distribution lines, and green sand filtration units.

Daniel Viau, P.E.
On-Site Systems Engineer

Education: B.S. in Civil Engineering
M.S. in Sanitary and Water Resources Engineering
University of North Dakota

Registration: Registered Engineer in Minnesota,

Certification: Certified On-site Designer II #3248
(Designer and Evaluator)

Engineering experience includes one year with the Navy (as a civilian) in Norfolk, VA, as an environmental engineer with responsibility in the area of hazardous waste management including administration of a PCB clean-up site.

Serves as a project engineer responsible for feasibility studies, design and contract administration including work with FmHA, EPA, DTED, EDA, and MPCA funding. Project experience includes water treatment, storage and collection systems as well as sanitary sewer collection and treatment systems. He has also performed cost and feasibility studies for the installation of underground storage tank (UST) systems.

Wastewater project experience includes:

- Norcross on-site mound systems to serve entire community
- On-site system at the DNR office near Thief Lake.
- On-site evaluation for development at Lonesome Pine Resort on Bay Lake
- Nevis and Longville stabilization ponds with land application by spray irrigation.
- Baxter Industrial Park expansion (water and sewer extensions, stormwater infiltration pond).
- Pillager water and sewer systems
- Riverton On-site Disposal

Jeffrey Ledin, P.E.
Water Systems Engineer

Education: B.S. in Civil Engineering, 1994
University of Colorado, Denver

Registration: Registered Engineer

Joined WSN in 1996 with experience in water resource related civil engineering projects. Engineering designs are enriched by practical experience gained throughout a decade of construction supervision and inspection of civil projects in Minnesota, Florida, and Colorado. Responsible for engineering analysis and reports for a variety of projects including hydraulic modeling (HEC-1, HEC-2), groundwater and surface water computer modeling, hydrologic analysis of drainage basins (½ acre to 10 square miles) and storm drainage conveyance system design and analysis, water distribution system design and analysis, sanitary sewer collection system design and analysis, site planning including grading and earthwork computation, plat preparation.