New Ulm Public Utilities
Water Supply Plan

Formerly called Water Emergency & Water Conservation Plan

DEPARTMENT OF NATURAL RESOURCES

Cover photo by Molly Shodeen

For more information on this Water Supply Plan Template, please contact the DNR Division of Ecological and Water Resources at (651) 259-5034 or (651) 259-5100.

This information is available in an alternative format upon request.

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INTRODUCTION TO WATER SUPPLY PLANS (WSP)

Who needs to complete a Water Supply Plan

Public water suppliers serving more than 1,000 people, large private water suppliers in designated Groundwater Management Areas, and all water suppliers in the Twin Cities metropolitan area are required to prepare and submit a water supply plan.

The goal of the WSP is to help water suppliers: 1) implement long term water sustainability and conservation measures; and 2) develop critical emergency preparedness measures. Your community needs to know what measures will be implemented in case of a water crisis. A lot of emergencies can be avoided or mitigated if long term sustainability measures are implemented.

Groundwater Management Areas (GWMA)

The DNR has designated three areas of the state as Groundwater Management Areas (GWMAs) to focus groundwater management efforts in specific geographies where there is an added risk of overuse or water quality degradation. A plan directing the DNRs actions within each GWMA has been prepared. Although there are no specific additional requirements with respect to the water supply planning for communities within designated GWMAs, communities should be aware of the issues and actions planned if they are within the boundary of one of the GWMAs. The three GWMAs are the North and East Metro GWMA (Twin Cities Metro), the Bonanza Valley GWMA and the Straight River GWMA (near Park Rapids). Additional information and maps are included in the DNR Groundwater Management Areas webpage.

Benefits of completing a WSP

Completing a WSP using this template, fulfills a water supplier's statutory obligations under M.S. M.S.103G.291 to complete a water supply plan. For water suppliers in the metropolitan area, the WSP will help local governmental units to fulfill their requirements under M.S. 473.859 to complete a local comprehensive plan. Additional benefits of completing WSP template:

- The standardized format allows for quicker and easier review and approval
- Help water suppliers prepare for droughts and water emergencies.
- Create eligibility for funding requests to the Minnesota Department of Health (MDH) for the Drinking Water Revolving Fund.
- Allow water suppliers to submit requests for new wells or expanded capacity of existing wells.
- Simplify the development of county comprehensive water plans and watershed plans.
- Fulfill the contingency plan provisions required in the MDH wellhead protection and surface water protection plans.
- Fulfill the demand reduction requirements of Minnesota Statutes, section 103G.291 subd 3 and 4.

- Upon implementation, contribute to maintaining aquifer levels, reducing potential well interference and water use conflicts, and reducing the need to drill new wells or expand system capacity.
- Enable DNR to compile and analyze water use and conservation data to help guide decisions.
- Conserve Minnesota's water resources

If your community needs assistance completing the Water Supply Plan, assistance is available from your area hydrologist or groundwater specialist, the MN Rural Waters Association circuit rider program, or in the metropolitan area from Metropolitan Council staff. Many private consultants are also available.

WSP Approval Process

10 Basic Steps for completing a 10-Year Water Supply Plan

1. Download the DNR/Metropolitan Council Water Supply Plan Template from the DNR Water Supply Plan webpage.
2. Save the document with a file name with this naming convention: WSP_cityname_permitnumber_date.doc.
3. The template is a form that should be completed electronically.
4. Compile the required water use data (Part 1) and emergency procedures information (Part 2)
5. The Water Conservation section (Part 3) may need discussion with the water department, council, or planning commission, if your community does not already have an active water conservation program.
6. Communities in the seven-county Twin Cities metropolitan area should complete all the information discussed in Part 4. The Metropolitan Council has additional guidance information on their Water Supply webpage. All out-state water suppliers ***do not*** need to complete the content addressed in Part 4.
7. Use the Plan instructions and Checklist document from the DNR Water Supply Plan webpage to insure all data is complete and attachments are included. This will allow for a quicker approval process.
8. Plans should be submitted electronically using the MPARS website – no paper documents are required.
9. DNR hydrologist will review plans (in cooperation with Metropolitan Council in Metro area) and approve the plan or make recommendations.
10. Once approved, communities should complete a Certification of Adoption form, and send a copy to the DNR.

Complete Table 1 with information about the public water supply system covered by this WSP.

Table 1. General information regarding this WSP

Requested Information	Description
DNR Water Appropriation Permit Number(s)	**1971-0331**
Ownership	☒ Public or ☐ Private
Metropolitan Council Area	☐ Yes or ☒ No (and county name) Brown
Street Address	**310 First North Street**
City, State, Zip	**New Ulm, MN 56073**
Contact Person Name	George I. Brown, Jr.
Title	Supervisor, Water/Steam Department
Phone Number	507.359.8279
MDH Supplier Classification	Municipal

PART 1. WATER SUPPLY SYSTEM DESCRIPTION AND EVALUATION

The first step in any water supply analysis is to assess the current status of demand and availability. Information summarized in Part 1 can be used to develop Emergency Preparedness Procedures (Part 2) and the Water Conservation Plan (Part 3). This data is also needed to track progress for water efficiency measures.

A. Analysis of Water Demand

Complete Table 2 showing the past 10 years of water demand data.

- Some of this information may be in your Wellhead Protection Plan.
- If you do not have this information, do your best, call your engineer for assistance or if necessary leave blank.

If your customer categories are different than the ones listed in Table 2, please describe the differences below:

There is limited data for 2005 – 2008 and the breakdown for residential and C/I/I usage is not available.

Table 2. Historic water demand (see definitions in the glossary after Part 4 of this template)

Year	Pop. Served	Total Connections	Residential Water Delivered (MG)	C/I/I Water Delivered (MG)	Water used for Non-essential	Wholesale Deliveries (MG)	Total Water Delivered (MG)	Total Water Pumped (MG)	Water Supplier Services	Percent Unmetered/ Unaccounted	Average Daily Demand (MGD)	Max. Daily Demand (MGD)	Date of Max. Demand	Residential Per Capita Demand (GPCD)	Total per capita Demand (GPCD)
2005	12,996	5,138			0	0		849			2.32	3.94			179.0
2006	13,215				0	0		866			2.37	4.29			179.5
2007	13,108				0	0		865			2.37	4.08			180.8
2008	12,996				0	0		868			2.38	4.26			183.0
2009	12,909	5,288	291	354	0	0	645.0	834		22.7	2.29	4.00	7/15	61.8	177.0
2010	13,512	5,298	268	365	0	0	656.5	726	23.49	9.6	1.98	3.34	8/15	54.3	147.2
2011	13,401	5,310	235	443	0	0	701.5	800	23.49	12.3	2.19	3.30	7/15	48.0	163.6
2012	13,275	5,311	313	355	0	0	691.5	756	23.49	8.5	2.07	4.29	6/29	64.6	156.0
2013	13,210	5,331	279	328	0	0	630.5	704	23.49	10.4	1.93	4.16	8/29	57.9	146.0
2014	13,258	5,360	256	342	0	0	603.4	737	5.37	18.1	2.02	4.55	7/31	52.9	152.3
2015	13,512	5,393	247	345	0	0	595.5	701	3.45	15.1	1.92	3.48	6/20	50.1	142.1
Avg. 2010 - 2015	13,361	5333	266	363	0	0	646.5	737	17.13	12.3	2.02	3.85		54.6	151.2

MG – Million Gallons **MGD –** Million Gallons per Day **GPCD** – Gallons per Capita per Day

See Glossary for definitions. A list of Acronyms and Initialisms can be found after the Glossary.

Complete Table 3 by listing the top 10 water users by volume, from largest to smallest. For each user, include information about the category of use (residential, commercial, industrial, institutional, or wholesale), the amount of water used in gallons per year, the percent of total water delivered, and the status of water conservation measures.

Table 3. Large volume users

Customer	Use Category (Residential, Industrial, Commercial, Institutional,	Amount Used (Gallons per Year)	Percent of Total Annual Water Delivered	Implementing Water Conservation Measures? (Yes/No/Unknown)
1. KRAFT	INDUSTRIAL	74,002,000	12.4%	UNKNOWN
2. AMPI	INDUSTRIAL	29,139,000	4.9%	UNKNOWN
3. SCHELLS	INDUSTRIAL	24,871,000	4.2%	UNKNOWN
4. FIRMENICH	INDUSTRIAL	19,858,000	3.3%	UNKNOWN
5. 3-M	INDUSTRIAL	16,190,000	2.7%	UNKNOWN
6. NU MOBILE VILLAGE	RESIDENTIAL	13,295,000	2.2%	UNKNOWN
7 .NEW ULM MEDICAL CENTER	COMMERCIAL	10,748,000	1.8%	UNKNOWN
8. TRAULICH ESTATES	RESIDENTIAL	8,554,000	1.4%	UNKNOWN
9. BEST WESTERN INN	COMMERCIAL	4,626,000	0.8%	UNKNOWN
10. MARTIN LUTHER COLLEGE	COMMERCIAL	4,316,000	0.7%	UNKNOWN

B. Treatment and Storage Capacity

Complete Table 4 with a description of where water is treated, the year treatment facilities were constructed, water treatment capacity, the treatment methods (i.e. chemical addition, reverse osmosis, coagulation, sedimentation, etc.) and treatment types used (i.e. fluoridation, softening, chlorination, Fe/MN removal, coagulation, etc.). Also describe the annual amount and method of disposal of treatment residuals. Add rows to the table as needed.

Table 4. Water treatment capacity and treatment processes

Treatment Site ID (Plant Name or Well ID)	Year Constructed	Treatment Capacity (GPD)	Treatment Method	Treatment Type	Annual Volume of Residuals	Disposal Process for Residuals	Do You Reclaim Filter Backwash Water?
1080003	1993	7.5 MGD	Chemical Addition	Fluoridation, Chlorination, Fe/MN removal, Rapid sand filtration	4 MG	Sanitary Sewer	Yes

Complete Table 5 with information about storage structures. Describe the type (i.e. elevated, ground, etc.), the storage capacity of each type of structure, the year each structure was constructed, and the primary material for each structure. Add rows to the table as needed.

Table 5. Storage capacity, as of the end of the last calendar year

Structure Name	Type of Storage Structure	Year Constructed	Primary Material	Storage Capacity (Gallons)
Airport Tower	Elevated storage	1988	Steel	200,000
Nehl's Tower	Elevated storage	2014	Steel	250,000
Heinenhill	Ground storage	1959	Concrete	3,000,000
Southside	Ground storage	1978	Concrete	4,500,000
Water Plant	Clear well	1993	Concrete	750,000
Total	NA	NA	NA	8,700,000

Treatment and storage capacity versus demand

It is recommended that total storage equal or exceed the average daily demand.

Discuss the difference between current storage and treatment capacity versus the water supplier's projected average water demand over the next 10 years (see Table 7 for projected water demand):

Since the current storage is 8.7 MG and the treatment capacity is 7.5 MGD, and the projected average demand is below 2.5 MGD, our total storage exceeds our projected average demand by 6.2 MG. New Ulm is in excellent shape for the next ten years.

C. Water Sources

Complete Table 6 by listing all types of water sources that supply water to the system, including groundwater, surface water, interconnections with other water suppliers, or others. Provide the name of each source (aquifer name, river or lake name, name of interconnecting water supplier) and the Minnesota unique well number or intake ID, as appropriate. Report the year the source was installed or established and the current capacity. Provide information about the depth of all wells. Describe the status of the source (active, inactive, emergency only, retail/wholesale interconnection) and if the source facilities have a dedicated emergency power source. Add rows to the table as needed for each installation.

Include copies of well records and maintenance summary for each well that has occurred since your last approved plan in **Appendix 1.**

Table 6. Water sources and status

Resource Type (Groundwater, Surface water, Interconnection)	Resource Name	MN Unique Well # or Intake ID	Year Installed	Capacity (Gallons per Minute)	Well Depth (Feet)	Status of Normal and Emergency Operations (active, inactive, emergency only, retail/wholesale interconnection))	Does this Source have a Dedicated Emergency Power Source? (Yes or No)
Groundwater	CMTS	430604	1987	150	247	Active	No
Groundwater	CMTS	241335	1965	175	210	Active	No
Groundwater	QBAA	188651	1982	190	67	Active	No
Groundwater	QBAA	241337	1960	180	147	Active	No
Groundwater	QBAA	241338	1965	120	189	Active	No
Groundwater	QBAA	209604	1969	500	175	Active	No
Groundwater	QBAA	209605	1969	550	171	Active	No
Groundwater	QBAA	241339	1969	150	88	Active	No
Groundwater	QBAA	241340	1971	400	206	Active	No
Groundwater	QBAA	209603	1971	140	71	Active	No
Groundwater	QBAA	511075	1962	80	68	Active	No
Groundwater	QBAA	513011	1993	120	96	Active	No
Groundwater	QBAA	520956	1993	400	166	Active	No

Limits on Emergency Interconnections

Discuss any limitations on the use of the water sources (e.g. not to be operated simultaneously, limitations due to blending, aquifer recovery issues etc.) and the use of interconnections, including capacity limits or timing constraints (i.e. only 200 gallons per minute are available from the City of Prior Lake, and it is estimated to take 6 hours to establish the emergency connection). If there are no limitations, list none.

There are no possible emergency interconnections since there are no adjacent communities within 5 miles that could supply any water of consequence to New Ulm. Over the last twenty years there have not been any limitations on the use of our current wells enough to impact the adequacy of the water supply to New Ulm. The New Ulm power plant can provide power in an emergency to power two community wells. There are two raw water mains that carry raw water to the treatment plant, which effectively creates two independent well fields. Each of these wellfields are supplied power by two distinct power companies. The two main booster stations in the distribution system have standby generators that automatically switch on if there is a power failure.

D. Future Demand Projections – *Key Metropolitan Council Benchmark*

Water Use Trends

Use the data in Table 2 to describe trends in 1) population served; 2) total per capita water demand; 3) average daily demand; 4) maximum daily demand. Then explain the causes for upward or downward trends. For example, over the ten years has the average daily demand trended up or down? Why is this occurring?

Over the past 10 years the population of New Ulm has fluctuated, but the population in 2010 matches that of 2015 and was very close to that of 2006. The population trend has been nearly flat. The total per capita Demand has fluctuated between 137 gpcd and 163 gpcd with an average of 150 gpcd and the last three years have been about 146 gpcd, resulting in a downward trend. The average daily demand ranged from 1.89 to 2.25 with an average of 2.11 over the last five years resulting in a relatively flat trend. Over the last 6 years the Maximum daily demand was split between 3 of the lowest maximum demands of the ten years and 3 of the highest of the maximum demands. There does not appear to be a strong trend up or down, although there was a drought and a 2.2% shift in population down and then back up again during those 6 years.

Use the water use trend information discussed above to complete Table 7 with projected annual demand for the next ten years. Communities in the seven-county Twin Cities metropolitan area must also include projections for 2030 and 2040 as part of their local comprehensive planning.

Projected demand should be consistent with trends evident in the historical data in Table 2, as discussed above. Projected demand should also reflect state demographer population projections and/or other planning projections.

Table 7. Projected annual water demand

Year	Projected Total Population	Projected Population Served	Projected Total Per Capita Water Demand (GPCD)	Projected Average Daily Demand (MGD)	Projected Maximum Daily Demand (MGD)
2016	13,539	13,539	151.2	2.05	4.09
2017	13,490	13,490	151.0	2.04	4.07
2018	13,440	13,440	150.0	2.02	4.03
2019	13,390	13,390	149.0	2.00	3.99
2020	13,339	13,339	148.5	1.98	3.96
2021	13,321	13,321	148.0	1.97	3.94
2022	13,341	13,341	147.0	1.96	3.92
2023	13,364	13,364	146.8	1.96	3.92
2024	13,391	13,391	146.6	1.96	3.93
2025	13,279	13,279	146.5	1.95	3.89
2030	13,146	13,146	146	1.92	3.84
2040	13,015	13,015	146	1.90	3.80

GPCD – Gallons per Capita per Day **MGD** – Million Gallons per Day

Projection Method

Describe the method used to project water demand, including assumptions for population and business growth and how water conservation and efficiency programs affect projected water demand:

Minnesota State Demographer population projections for Brown County were used and then the projected New Ulm population was calculated as the percentage of the total Brown County population. Brown County population is expected to decrease 4.8% over the next ten years and therefore New Ulm population is expected to drop by 1.9%.

E. Resource Sustainability

Monitoring – *Key DNR Benchmark*

Complete Table 8 by inserting information about source water quality and quantity monitoring efforts. The list should include all production wells, observation wells, and source water intakes or reservoirs. Groundwater level data for DNR's statewide network of observation wells are available online through the DNR's Cooperative Groundwater Monitoring (CGM) webpage.

Table 8. Information about source water quality and quantity monitoring

MN Unique Well # or Surface Water ID	Type of monitoring point	Monitoring program	Frequency of monitoring	Monitoring Method
00188651	☒ production well ☐ observation well ☐ source water intake ☐ source water reservoir	☒ routine MDH sampling ☒ routine water utility sampling ☐ other	☒ continuous ☐ hourly ☐ daily ☒ monthly ☐ quarterly ☐ annually	☒ SCADA ☐ grab sampling ☒ steel tape ☐ stream gauge
00241337	☒ production well ☐ observation well ☐ source water intake ☐ source water reservoir	☒ routine MDH sampling ☒ routine water utility sampling ☐ other	☒ continuous ☐ hourly ☐ daily ☒ monthly ☐ quarterly ☐ annually	☒ SCADA ☐ grab sampling ☒ steel tape ☐ stream gauge
00241338	☒ production well ☐ observation well ☐ source water intake ☐ source water reservoir	☒ routine MDH sampling ☒ routine water utility sampling ☐ other	☒ continuous ☐ hourly ☐ daily ☒ monthly ☐ quarterly ☐ annually	☒ SCADA ☐ grab sampling ☒ steel tape ☐ stream gauge
00209605	Production well	Routine water utility & MDH sampling	Monthly, Continuous	Steel tape, SCADA
00241339	Production well	Routine water utility & MDH sampling	Monthly, Continuous	Steel tape, SCADA
00241340	Production well	Routine water utility & MDH sampling	Monthly, Continuous	Steel tape, SCADA
00209603	Production well	Routine water utility 7 MDH sampling	Monthly, Continuous	Steel tape, SCADA
00511075	Production well	Routine water utility & MDH sampling	Monthly, Continuous	Steel tape, SCADA
00513011	Production well	Routine water utility & MDH sampling	Monthly, Continuous	Steel tape, SCADA
00520956	Production well	Routine water utility & MDH sampling	Monthly, Continuous	Steel tape, SCADA

MN Unique Well # or Surface Water ID	Type of monitoring point	Monitoring program	Frequency of monitoring	Monitoring Method
00209604	☒ production well ☐ observation well ☐ source water intake ☐ source water reservoir	☒ routine MDH sampling ☒ routine water utility sampling ☐ other	☒ continuous ☐ hourly ☐ daily ☒ monthly ☐ quarterly ☐ annually	☒ SCADA ☐ grab sampling ☒ steel tape ☐ stream gauge
00430604	Production well	Routine water utility & MDH sampling	Monthly, Continuous	Steel tape, SCADA
002411335	Production well	Routine water utility & MDH sampling	Monthly, Continuous	Steel tape, SCADA

Water Level Data

A water level monitoring plan that includes monitoring locations and a schedule for water level readings must be submitted as **Appendix 2**. If one does not already exist, it needs to be prepared and submitted with the WSP. Ideally, all production and observation wells are monitored at least monthly.

Complete Table 9 to summarize water level data for each well being monitored. Provide the name of the aquifer and a brief description of how much water levels vary over the season (the difference between the highest and lowest water levels measured during the year) and the long-term trends for each well. If water levels are not measured and recorded on a routine basis, then provide the static water level when each well was constructed and the most recent water level measured during the same season the well was constructed. Also include all water level data taken during any well and pump maintenance. Add rows to the table as needed.

Groundwater hydrographs illustrate the historical record of aquifer water levels measured within a well and can indicate water level trends over time. For each well in your system, provide a hydrograph for the life of the well, or for as many years as water levels have been measured. Include the hydrographs in **Appendix 3**. An example of a hydrograph can be found on the DNR Groundwater Hydrograph webpage. Hydrographs for DNR Observation wells can be found in the CGM discussed above.

Table 9. Water level data

Unique Well Number or Well ID	Aquifer Name	Seasonal Variation (Feet)	Long-term Trend in water level data	Water level measured during well/pumping maintenance
430604 Well #4	Mt. Simon	30	☒ Falling ☐ Stable ☐ Rising	MM/DD/YY: NA MM/DD/YY:____ MM/DD/YY:____
241335 Well #6	Mt. Simon	28	☒ Falling ☐ Stable ☐ Rising	MM/DD/YY: NA MM/DD/YY:____ MM/DD/YY:____
188651 Well #15	QBAA	4	☐ Falling ☒ Stable ☐ Rising	MM/DD/YY: NA MM/DD/YY:____ MM/DD/YY:____

Unique Well Number or Well ID	Aquifer Name	Seasonal Variation (Feet)	Long-term Trend in water level data	Water level measured during well/pumping maintenance
241337 Well #18	QBAA	4	☐ Falling ☐ Stable ☒ Rising	MM/DD/YY: NA MM/DD/YY:____ MM/DD/YY:____
241338 Well #19	QBAA	7	☒ Falling ☐ Stable ☐ Rising	NA
209604 Well #20	QBAA	3	☐ Falling ☐ Stable ☒ Rising	NA
209605 Well #21	QBAA	4	☐ Falling ☐ Stable ☒ Rising	NA
241339 Well #22	QBAA	4	☐ Falling ☒ Stable ☐ Rising	NA
241340 Well #23	Mt. Simon	4	☐ Falling ☒ Stable ☐ Rising	NA
209603 Well #24	QBAA	6	☐ Falling ☒ Stable ☐ Rising	NA
511075 Well #25	QBAA	5	☐ Falling ☐ Stable ☒ Rising	NA
513011 Well #26	QBAA	6	☐ Falling ☒ Stable ☐ Rising	NA
520956 Well #27	QBAA	9	☐ Falling ☐ Stable ☒ Rising	NA

Potential Water Supply Issues & Natural Resource Impacts – *Key DNR & Metropolitan Council Benchmark*

Complete Table 10 by listing the types of natural resources that are or could potentially be impacted by permitted water withdrawals in the future. You do not need to identify every single water resource in your entire community. The goal is to help you triage the most important water resources and/or the water resources that may be impacted by your water supply system – perhaps during a drought or when the population has grown significantly in ten years. This is emerging science, so do the best you can with available data. For identified resources, provide the name of specific resources that may be impacted. Identify what the greatest risks to the resource are and how the risks are being assessed. Identify any resource protection thresholds – formal or informal – that have been established to identify when actions should be taken to mitigate impacts. Provide information about the potential mitigation actions

that may be taken, if a resource protection threshold is crossed. Add additional rows to the table as needed. See the glossary at the end of the template for definitions.

Some of this baseline data should have been in your earlier water supply plans or county comprehensive water plans. When filling out this table, think of what are the water supply risks, identify the resources, determine the threshold and then determine what your community will do to mitigate the impacts.

Your DNR area hydrologist is available to assist with this table.

For communities in the seven-county Twin Cities metropolitan area, the Master Water Supply Plan *Appendix 1 (Water Supply Profiles)*, provides information about potential water supply issues and natural resource impacts for your community.

Steps for completing Table 10

1. ***Identify the potential for natural resource impacts/issues within the community***
   First, review available information to identify resources that may be impacted by the operation of your water supply system (such as pumping).
   Potential Sources of Information:
   - County Geologic Atlas
   - Local studies
   - Metropolitan Council System Statement (for metro communities)
   - Metropolitan Council Master Water Supply Plan (for metro communities)

   ACTION: Check the resource type(s) that may be impacted in the column "Resource Type"

2. ***Identify where your water supply system is most likely to impact those resources (and vice versa).***
   Potential Sources of Information:
   - Drinking Water Supply Management Areas
   - Geologic Atlas - Sensitivity
   - If no WHPA or other information exists, consider rivers, lakes, wetlands and significant within 1.5 miles of wells; and calcareous fens and trout streams within 5 miles of wells

   ACTION: Focus the rest of your work in these areas.

3. ***Within focus areas, identify specific features of value to the community***
   You know your community best. What resources are important to pay attention to? It may be useful to check in with your community's planning and zoning staff and others.

   Potential Sources of Information:
   - Park plans
   - Local studies
   - Natural resource inventories
   - Tourist attractions/recreational areas/valued community resource

ACTION: Identify specific features that the community prioritizes in the "Resource Name" column (for example: North Lake, Long River, Brook Trout Stream, or Green Fen). If, based on a review of available information, no features are likely to be at risk, note "None".

4. *Identify what impact(s) the resource is at risk for*

Potential Sources of Information:

- Wellhead Protection Plan
- Water Appropriation Permit
- County Geologic Atlas
- MDH or PCA reports of the area
- Metropolitan Council System Statement (for metro communities)
- Metropolitan Council Master Water Supply Plan (for metro communities)

ACTION: Check the risk type in the column "Risk". If, based on a review of available information, no risk is identified, note "None anticipated".

5. *Describe how the risk was assessed*

Potential Sources of Information:

- Local studies
- Monitoring data (community, WMO, DNR, etc.)
- Aquifer testing
- County Geologic Atlas or other hydrogeologic studies
- Regional or state studies, such as DNR's report 'Definitions and Thresholds for Negative Impacts to Surface Waters'
- Well boring logs

ACTION: Identify the method(s) used to identify the risk to the resource in the "Risk Assessed Through" column

6. *Describe protection threshold/goals*

What is the goal, if any, for protecting these resources? For example, is there a lower limit on acceptable flow in a river or stream? Water quality outside of an accepted range? A lower limit on acceptable aquifer level decline at one or more monitoring wells? Withdrawals that exceed some percent of the total amount available from a source? Or a lower limit on acceptable changes to a protected habitat?

Potential Sources of Information:

- County Comprehensive Water Plans
- Watershed Plans or One Watershed/One Plan
- Groundwater or Aquifer Plans
- Metropolitan Master Plans
- DNR Thresholds study
- Community parks, open space, and natural resource plans

ACTION: Describe resource protection goals in the "Describe Resource Protection Threshold" column or reference an existing plan/document/webpage

7. ***If a goal/threshold should trigger action, describe the plan that will be implemented.***
   Identify specific action, mitigation measures or management plan that the water supplier will implement, or refer to a partner's plan that includes actions to be taken.

   Potential Sources of Information:
   - County Comprehensive Water Plans
   - Watershed Plans or One Watershed/One Plan
   - Groundwater or Aquifer Plans
   - Metropolitan Master Plans
   - Studies such as DNR Thresholds study

   ACTION: Describe the mitigation measure or management plan in the "Mitigation Measure or Management Plan" column.

8. ***Describe work to evaluate these risks going forward.***
   For example, what is the plan to regularly check in to stay current on plans or new data?

   Identify specific action that the water supplier will take to identify the creation of or change to goals/thresholds, or refer to a partner's plan that includes actions to be taken.

   Potential Sources of Information:
   - County Comprehensive Water Plans
   - Watershed Plans or One Watershed/One Plan
   - Groundwater or Aquifer Plans
   - Metropolitan Master Plans
   - Studies such as DNR Thresholds study

   ACTION: Describe what will be done to evaluate risks going forward, including any changes to goals or protection thresholds in the "Describe how Changes to Goals are monitored" column.

Table 10. Natural resource impacts (*List specific resources in Appendix 12)

Resource Type	Resource Name	Risk	Risk Assessed Through *	Describe Resource Protection Threshold or Goal *	Mitigation Measures or Management Plan	Describe How Thresholds or Goals are Monitored
☒ River or stream **(w/in a 5-mile radius of production wells)**	**Minnesota R. (M-055)** **Unnamed (M-055-099)** **Fritsche Cr. (M-055-098)** **Heymans Cr. (M-055-096)** **Cottonwood R. (M-055-095)** **Unnamed (M-055-095-001)** **Unnamed (M-055-101)**	☒ **None anticipated** ☒**(possible) Flow/water level decline** ☐ Degrading water quality trends ☐ Impacts on endangered, threatened, or special concern species habitat ☒ Other: **Aquifers are confined; some streams on opposite side of MN R.**	☐ Geologic atlas or other mapping ☐ Modeling ☐ Modeling ☒ **Monitoring** ☐ Aquifer testing ☐WRAPS or other watershed report ☐Proximity (<1.5 miles) ☒ Other: **Inferred from MDH well & boring records**	☐ Not applicable ☐ Additional data is needed to establish ☐ See report: _____ ☐ No data available ☒ Other: **State Law established protection threshold at Q90 (i.e. 90% exceedance flow).**	☐Not applicable ☐ Change groundwater pumping ☒ **Increase conservation** ☒ Other: **Limited or no impact; no mitigation measure or management plan**	☐Not applicable ☒ Newly collected data will be analyzed ☐ Regular check-in with these partners: _____ ☒ Other: **DNR monitors stream flow**
☐ Calcareous fen	**None located w/in 5 miles of the production wells**	☐ None anticipated ☐ Flow/water level decline ☐ Degrading water quality trends ☐ Impacts on endangered, threatened, or special concern species habitat ☐ Other:	☐ Geologic atlas or other mapping ☐ Modeling ☐ Modeling ☐ Monitoring ☐ Aquifer testing ☐WRAPS or other watershed Report ☐Proximity (<5 miles) ☐ Other: _____ ☐ Other: ___	☐ Not applicable ☐ Additional data is needed to establish ☐ See report: _____ ☐ Other: _____	☐Not applicable ☐ Change groundwater pumping ☐ Increase conservation ☐ Other: _____	☐Not applicable ☐ Newly collected data will be analyzed ☐ Regular check-in with these partners: ☐ Other:

Resource Type	Resource Name	Risk	Risk Assessed Through *	Describe Resource Protection Threshold or Goal *	Mitigation Measures or Management Plan	Describe How Thresholds or Goals are Monitored
☒ Lake **(w/in a 5-mile radius of production wells)**	**Somsen (8-18P)** **Clear (8-11P)** **Unnamed (52-60P)**	☒ **None anticipated - Aquifers are confined.** ☐ Flow/water level decline ☐ Degrading water quality trends ☐ Impacts on endangered, threatened, or special concern species habitat ☐ Other:	☐ Geologic atlas or other mapping ☐ Modeling ☐ Modeling ☐ Monitoring ☐ Aquifer testing ☐WRAPS or other watershed report ☐Proximity (<1.5 miles) ☐ Other: ☒ Other: **Inferred**	☒ **Not applicable** ☐ Additional data is needed to establish ☐ See report: ☐ Other:	☒**Not applicable** ☐ Change groundwater pumping ☐ Increase conservation ☐ Other:	☒**Not applicable** ☐ Newly collected data will be analyzed ☐ Regular check-in with these partners: ☐ Other:
☒ Wetland **(w/in a 5-mile radius of production wells**)	**Unnamed (52-41W)** **Unnamed (52-57W)** **Unnamed (52-47W)** **Unnamed (8-110W)** **Unnamed (52-62W)** **Unnamed (52-44W)** **Numerous NWI wetlands**	☒ **None anticipated** ☐ Flow/water level decline ☐ Degrading water quality trends ☐ Impacts on endangered, threatened, or special concern species habitat ☒ Other: **Aquifers are confined and/or wetlands on opposite side of MN R.**	☐ Geologic atlas or other mapping ☐ Modeling ☐ Modeling ☐ Monitoring ☐ Aquifer testing ☐WRAPS or other watershed report ☐Proximity (<1.5 miles) ☒ Other: **Inferred through MDH well & boring records**	☐ Not applicable ☐ Additional data is needed to establish ☐ See report: ☒ Other: **Wetland impacts governed by Minnesota Conservation Act**	☐Not applicable ☐ Change groundwater pumping ☐ Increase conservation ☒ Other: **Limited or no impact; no mitigation measure or management plan**	☒**Not applicable** ☐ Newly collected data will be analyzed ☐ Regular check-in with these partners: ☐ Other:

Resource Type	Resource Name	Risk	Risk Assessed Through *	Describe Resource Protection Threshold or Goal *	Mitigation Measures or Management Plan	Describe How Thresholds or Goals are Monitored
☐ Trout stream	**None located w/in 5 miles of the production wells**	☐ None anticipated ☐ Flow/water level decline ☐ Degrading water quality trends ☐ Impacts on endangered, threatened, or special concern species habitat ☐ Other:	☐ Geologic atlas or other mapping ☐ Modeling ☐ Monitoring ☐ Aquifer testing ☐WRAPS or other watershed report ☐Proximity (< 5 miles) ☐ Other: _____	☐ Not applicable ☐ Additional data is needed to establish ☐ See report: _____ ☐ Other: _____	☐Not applicable ☐ Change groundwater pumping ☐ Increase conservation ☐ Other: _____	☐Not applicable ☐ Newly collected data will be analyzed ☐ Regular check-in with these partners: _____ ☐ Other: _____
☒ Aquifer	**Mt Simon (CMTS)** **QBAA**	☒ **None anticipated** ☒ **(possible)** Flow/water level decline ☒ Degrading water quality trends ☐ Impacts on endangered, threatened, or special concern species habitat ☐ Other:	☐ Geologic atlas or other mapping ☐ Modeling ☒ Monitoring ☒ Aquifer testing ☐Proximity (obwell < 5 miles) ☐ Other: _____	☐ Not applicable ☒ **Additional data is needed to establish** ☐ See report: _____ ☒ Other**: No thresholds currently listed in Permit 1971-0331**	☐Not applicable ☒ **Change groundwater pumping** ☒ Increase conservation ☐ Other: _____	☒**Not applicable; water levels are monitored by the city** ☒ **Newly collected data will be analyzed** ☐ Regular check-in with these partners: ☐ Other:

Wellhead Protection (WHP) and Source Water Protection (SWP) Plans

Complete Table 11 to provide status information about WHP and SWP plans.

The emergency procedures in this plan are intended to comply with the contingency plan provisions required in the Minnesota Department of Health's (MDH) Wellhead Protection (WHP) Plan and Surface Water Protection (SWP) Plan.

Table 11. Status of Wellhead Protection and Source Water Protection Plans

Plan Type	Status	Date Adopted	Date for Update
WHP	☐ In Process ☒ Completed ☐ Not Applicable	July 19, 2017	July 20, 2027
SWP	☐ In Process ☐ Completed ☒ Not Applicable		

WHP – Wellhead Protection Plan **SWP** – Source Water Protection Plan

F. Capital Improvement Plan (CIP)

Please note that any wells that received approval under a ten-year permit, but that were not built, are now expired and must submit a water appropriations permit.

Adequacy of Water Supply System

Complete Table 12 with information about the adequacy of wells and/or intakes, storage facilities, treatment facilities, and distribution systems to sustain current and projected demands. List planned capital improvements for any system components, in chronological order. Communities in the seven-county Twin Cities metropolitan area should also include information about plans through 2040.

The assessment can be the general status by category; it is not necessary to identify every single well, storage facility, treatment facility, lift station, and mile of pipe.

Please attach your latest Capital Improvement Plan as **Appendix 4**.

Table 12. Adequacy of Water Supply System

System Component	Planned action	Anticipated Construction Year	Notes
Wells/Intakes	☐ No action planned - adequate ☒ Repair/replacement ☐ Expansion/addition	Annual well rehab going forward	See Appendix 4 for details.
Water Storage Facilities	☒ No action planned - adequate ☐ Repair/replacement ☐ Expansion/addition		
Water Treatment Facilities	☒ No action planned - adequate ☐ Repair/replacement ☐ Expansion/addition		
Distribution Systems (Pipes, valves, etc.)	☐ No action planned - adequate ☒ Repair/replacement ☐ Expansion/addition	Ongoing replacement of mains	
Pressure Zones	☒ No action planned - adequate ☐ Repair/replacement ☐ Expansion/addition		

System Component	Planned action	Anticipated Construction Year	Notes
Other: Flood mitigation measures, well equipment evaluation/repair/replacement and well rehabilitation	☐ No action planned - adequate ☒ Repair/replacement ☐ Expansion/addition	2019	$3 million expected in cost.

Proposed Future Water Sources

Complete Table 13 to identify new water source installation planned over the next ten years. Add rows to the table as needed.

Table 13. Proposed future installations/sources

Source	Installation Location (approximate)	Resource Name	Proposed Pumping Capacity (gpm)	Planned Installation Year	Planned Partnerships
Groundwater	None	None	None	None	None
Surface Water	None	None	None	None	None
Interconnection to another supplier	NA	NA	NA	NA	NA

Water Source Alternatives - *Key Metropolitan Council Benchmark*

Do you anticipate the need for alternative water sources in the next 10 years? Yes ☐ No ☒

For metro communities, will you need alternative water sources by the year 2040? Yes ☐ No ☐

If you answered yes for either question, then complete table 14. If no, insert NA.

Complete Table 14 by checking the box next to alternative approaches that your community is considering, including approximate locations (if known), the estimated amount of future demand that could be met through the approach, the estimated timeframe to implement the approach, potential partnerships, and the major benefits and challenges of the approach. Add rows to the table as needed.

For communities in the seven-county Twin Cities metropolitan area, these alternatives should include approaches the community is considering to meet projected 2040 water demand.

Table 14. Alternative water sources

Alternative Source Considered	Source and/or Installation Location (approximate)	Estimated Amount of Future Demand (%)	Timeframe to Implement (YYYY)	Potential Partners	Benefits	Challenges
☐ Groundwater	NA	NA	NA	NA	NA	NA
☐ Surface Water	NA	NA	NA	NA	NA	NA
☐ Reclaimed stormwater	NA	NA	NA	NA	NA	NA
☐ Reclaimed wastewater	NA	NA	NA	NA	NA	NA
☐ Interconnection to another supplier	NA	NA	NA	NA	NA	NA

PART 2. EMERGENCY PREPAREDNESS PROCEDURES

The emergency preparedness procedures outlined in this plan are intended to comply with the contingency plan provisions required by MDH in the WHP and SWP. Water emergencies can occur as a result of vandalism, sabotage, accidental contamination, mechanical problems, power failings, drought, flooding, and other natural disasters. The purpose of emergency planning is to develop emergency response procedures and to identify actions needed to improve emergency preparedness. In the case of a municipality, these procedures should be in support of, and part of, an all-hazard emergency operations plan. Municipalities that already have written procedures dealing with water emergencies should review the following information and update existing procedures to address these water supply protection measures.

A. Emergency Response Plan

Section 1433(b) of the Safe Drinking Water Act, (Public Law 107-188, Title IV- Drinking Water Security and Safety) requires community water suppliers serving over 3,300 people to prepare an Emergency Response Plan. MDH recommends that Emergency Response Plans are updated annually.

Do you have an Emergency Response Plan? Yes ☒ No ☐

Have you updated the Emergency Response Plan in the last year? Yes ☐ No ☒

When did you last update your Emergency Response Plan? 12/29/2004

Complete Table 15 by inserting the noted information regarding your completed Emergency Response Plan.

Table 15. Emergency Response Plan contact information

Emergency Response Plan Role	Contact Person	Contact Phone Number	Contact Email
Emergency Response Lead	George I Brown Jr	507-359-8279	GEORGE.BROWN@CI.NEW-ULM.MN.US
Alternate Emergency Response Lead	Larry Pelzel	507-359-8229	LARRY.PELZEL@CI.NEW-ULM.MN.US

B. Operational Contingency Plan

All utilities should have a written operational contingency plan that describes measures to be taken for water supply mainline breaks and other common system failures as well as routine maintenance.

Do you have a written operational contingency plan? Yes ☒ No ☐

At a minimum, a water supplier should prepare and maintain an emergency contact list of contractors and suppliers.

C. Emergency Response Procedures

Water suppliers must meet the requirements of MN Rules 4720.5280. Accordingly, the Minnesota Department of Natural Resources (DNR) requires public water suppliers serving more than 1,000 people to submit Emergency and Conservation Plans. Water emergency and conservation plans that have been

approved by the DNR, under provisions of Minnesota Statute 186 and Minnesota Rules, part 6115.0770, will be considered equivalent to an approved WHP contingency plan.

Emergency Telephone List

Prepare and attach a list of emergency contacts, including the MN Duty Officer (1-800-422-0798), as **Appendix 5**. An Emergency Contact List template is available at the MnDNR Water Supply Plans webpage.

The list should include key utility and community personnel, contacts in adjacent water suppliers, and appropriate local, state and federal emergency contacts. Please be sure to verify and update the contacts on the emergency telephone list and date it. Thereafter, update on a regular basis (once a year is recommended). In the case of a municipality, this information should be contained in a notification and warning standard operating procedure maintained by the Emergency Manager for that community. Responsibilities and services for each contact should be defined.

Current Water Sources and Service Area

Quick access to concise and detailed information on water sources, water treatment, and the distribution system may be needed in an emergency. System operation and maintenance records should be maintained in secured central and back-up locations so that the records are accessible for emergency purposes. A detailed map of the system showing the treatment plants, water sources, storage facilities, supply lines, interconnections, and other information that would be useful in an emergency should also be readily available. It is critical that public water supplier representatives and emergency response personnel communicate about the response procedures and be able to easily obtain this kind of information both in electronic and hard copy formats (in case of a power outage).

Do records and maps exist? Yes ☒ No ☐

Can staff access records and maps from a central secured location in the event of an emergency?

Yes ☒ No ☐

Does the appropriate staff know where the materials are located?

Yes ☒ No ☐

Procedure for Augmenting Water Supplies

Complete Tables 16 – 17 by listing all available sources of water that can be used to augment or replace existing sources in an emergency. Add rows to the tables as needed.

In the case of a municipality, this information should be contained in a notification and warning standard operating procedure maintained by the warning point for that community. Municipalities are encouraged to execute cooperative agreements for potential emergency water services and copies should be included in **Appendix 6**. Outstate Communities may consider using nearby high capacity wells (industry, golf course) as emergency water sources.

WSP should include information on any physical or chemical problems that may limit interconnections to other sources of water. Approvals from the MDH are required for interconnections or the reuse of water.

Table 16. Interconnections with other water supply systems to supply water in an emergency

Other Water Supply System Owner	Capacity (GPM & MGD)	Note Any Limitations On Use	List of services, equipment, supplies available to respond
NONE	NA	NA	NA

GPM – Gallons per minute MGD – million gallons per day

Table 17. Utilizing surface water as an alternative source

Surface Water Source Name	Capacity (GPM)	Capacity (MGD)	Treatment Needs	Note Any Limitations On Use
NONE	NA	NA	NA	NA

If not covered above, describe additional emergency measures for providing water (obtaining bottled water, or steps to obtain National Guard services, etc.)

The assistance of the county Emergency Management, Public Works, and Environmental Health departments will be enlisted, as necessary, to obtain temporary sources of potable water.

Allocation and Demand Reduction Procedures

Complete Table 18 by adding information about how decisions will be made to allocate water and reduce demand during an emergency. Provide information for each customer category, including its priority ranking, average day demand, and demand reduction potential for each customer category. Modify the customer categories as needed, and add additional lines if necessary.

Water use categories should be prioritized in a way that is consistent with Minnesota Statutes 103G.261 (#1 is highest priority) as follows:

1. Water use for human needs such as cooking, cleaning, drinking, washing and waste disposal; use for on-farm livestock watering; and use for power production that meets contingency requirements.
2. Water use involving consumption of less than 10,000 gallons per day (usually from private wells or surface water intakes)

3. Water use for agricultural irrigation and processing of agricultural products involving consumption of more than 10,000 gallons per day (usually from private high-capacity wells or surface water intakes)
4. Water use for power production above the use provided for in the contingency plan.
5. All other water use involving consumption of more than 10,000 gallons per day.
6. Nonessential uses – car washes, golf courses, etc.

Water used for human needs at hospitals, nursing homes and similar types of facilities should be designated as a high priority to be maintained in an emergency. Lower priority uses will need to address water used for human needs at other types of facilities such as hotels, office buildings, and manufacturing plants. The volume of water and other types of water uses at these facilities must be carefully considered. After reviewing the data, common sense should dictate local allocation priorities to protect domestic requirements over certain types of economic needs. Water use for lawn sprinkling, vehicle washing, golf courses, and recreation are legislatively considered non-essential.

Table 18. Water use priorities

Customer Category	Allocation Priority	Average Daily Demand (GPD)	Short-Term Emergency Demand Reduction Potential (GPD)
Residential	1	728,767	250,000
Institutional	1	994,520	200,000
Commercial	2		
Industrial	3		
Irrigation	NA		
Wholesale	NA		
Non-Essential	4	46,931	46,931
TOTAL	NA	1,770,217	496,931

GPD – Gallons per Day

Tip: Calculating Emergency Demand Reduction Potential

The emergency demand reduction potential for all uses will typically equal the difference between maximum use (summer demand) and base use (winter demand). In extreme emergency situations, lower priority water uses must be restricted or eliminated to protect priority domestic water requirements. Emergency demand reduction potential should be based on average day demands for customer categories within each priority class. Use the tables in Part 3 on water conservation to help you determine strategies.

Complete Table 19 by selecting the triggers and actions during water supply disruption conditions.

Table 19. Emergency demand reduction conditions, triggers and actions (Select all that may apply and describe)

Emergency Triggers	Short-term Actions	Long-term Actions
☒ Contamination ☒ Loss of production ☐ Infrastructure failure ☒ Executive order by Governor ☐ Other: _____	☐ Supply augmentation through ____ ☐ Adopt (if not already) and enforce a critical water deficiency ordinance to penalize lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses. ☐ Water allocation through____ ☒ Meet with large water users to discuss their contingency plan.	☐ Supply augmentation through ____ ☐ Adopt (if not already) and enforce a critical water deficiency ordinance to penalize lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses. ☐ Water allocation through____ ☒ Meet with large water users to discuss their contingency plan.

Notification Procedures

Complete Table 20 by selecting trigger for informing customers regarding conservation requests, water use restrictions, and suspensions; notification frequencies; and partners that may assist in the notification process. Add rows to the table as needed.

Table 20. Plan to inform customers regarding conservation requests, water use restrictions, and suspensions

Notification Trigger(s)	Methods (select all that apply)	Update Frequency	Partners
☒ Short-term demand reduction declared (< 1 year)	☒ Website ☐ Email list serve ☒ Social media (e.g. Twitter, Facebook) ☐ Direct customer mailing, ☒ Press release (TV, radio, newspaper), ☒ Meeting with large water users (> 10% of total city use) ☐ Other: _____	☒ Daily ☒ Weekly ☐ Monthly ☐ Annually	
☒ Long-term Ongoing demand reduction declared	☒ Website ☐ Email list serve ☒ Social media (e.g. Twitter, Facebook) ☒ Direct customer mailing, ☒ Press release (TV, radio, newspaper), ☒ Meeting with large water users (> 10% of total city use) ☐ Other: _____	☒ Daily ☐ Weekly ☒ Monthly ☐ Annually	
☒ Governor's critical water deficiency declared	☒ Website ☐ Email list serve ☒ Social media (e.g. Twitter, Facebook)	☒ Daily ☒ Weekly ☐ Monthly ☐ Annually	

Notification Trigger(s)	Methods (select all that apply)	Update Frequency	Partners
	☒ Direct customer mailing, ☒ Press release (TV, radio, newspaper), ☒ Meeting with large water users (> 10% of total city use) ☐ Other: _____		

Enforcement

Prior to a water emergency, municipal water suppliers must adopt regulations that restrict water use and outline the enforcement response plan. The enforcement response plan must outline how conditions will be monitored to know when enforcement actions are triggered, what enforcement tools will be used, who will be responsible for enforcement, and what timelines for corrective actions will be expected.

Affected operations, communications, and enforcement staff must then be trained to rapidly implement those provisions during emergency conditions.

Important Note:

Disregard of critical water deficiency orders, even though total appropriation remains less than permitted, is adequate grounds for immediate modification of a public water supply authority's water use permit (2013 MN Statutes 103G.291)

Does the city have a critical water deficiency restriction/official control in place that includes provisions to restrict water use and enforce the restrictions? (This restriction may be an ordinance, rule, regulation, policy under a council directive, or other official control) Yes ☒ No ☐

If yes, attach the official control document to this WSP as **Appendix 7**.

If no, the municipality must adopt such an official control within 6 months of submitting this WSP and submit it to the DNR as an amendment to this WSP.

Irrespective of whether a critical water deficiency control is in place, does the public water supply utility, city manager, mayor, or emergency manager have standing authority to implement water restrictions? Yes ☒ No ☐

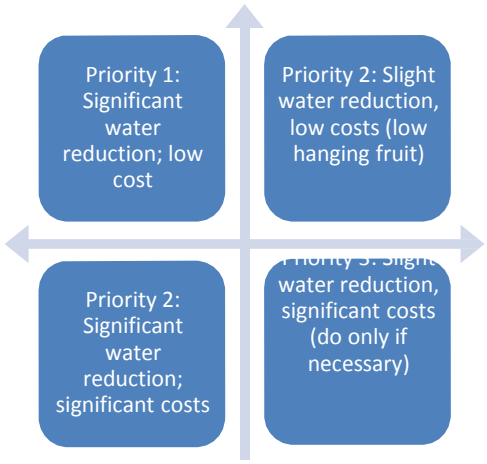
If yes, cite the regulatory authority reference: Ordinance No. 247.

If no, who has authority to implement water use restrictions in an emergency?

NA

PART 3. WATER CONSERVATION PLAN

Minnesotans have historically benefited from the state's abundant water supplies, reducing the need for conservation. There are however, limits to the available supplies of water and increasing threats to the quality of our drinking water. Causes of water supply limitation may include: population increases, economic trends, uneven statewide availability of groundwater, climatic changes, and degraded water quality. Examples of threats to drinking water quality include: the presence of contaminant plumes from past land use activities, exceedances of water quality standards from natural and human sources, contaminants of emerging concern, and increasing pollutant trends from nonpoint sources.



There are many incentives for conserving water; conservation:

- reduces the potential for pumping-induced transfer of contaminants into the deeper aquifers, which can add treatment costs
- reduces the need for capital projects to expand system capacity
- reduces the likelihood of water use conflicts, like well interference, aquatic habitat loss, and declining lake levels
- conserves energy, because less energy is needed to extract, treat and distribute water (and less energy production also conserves water since water is used to produce energy)
- maintains water supplies that can then be available during times of drought

It is therefore imperative that water suppliers implement water conservation plans. The first step in water conservation is identifying opportunities for behavioral or engineering changes that could be made to reduce water use by conducting a thorough analysis of:

- Water use by customer
- Extraction, treatment, distribution and irrigation system efficiencies
- Industrial processing system efficiencies
- Regulatory and barriers to conservation
- Cultural barriers to conservation
- Water reuse opportunities

Once accurate data is compiled, water suppliers can set achievable goals for reducing water use. A successful water conservation plan follows a logical sequence of events. The plan should address both conservation on the supply side (leak detection and repairs, metering), as well as on the demand side (reductions in usage). Implementation should be conducted in phases, starting with the most obvious and lowest-cost options. In some cases, one of the early steps will be reviewing regulatory constraints to water conservation, such as lawn irrigation requirements. Outside funding and grants may be available for implementation of projects. Engage water system operators and maintenance staff and customers in brainstorming opportunities to reduce water use. Ask the question: "How can I help save water?"

Progress since 2006

Is this your community's first Water Supply Plan? Yes ☐ No ☒

If yes, describe conservation practices that you are already implementing, such as: pricing, system improvements, education, regulation, appliance retrofitting, enforcement, etc.

NA

If no, complete Table 21 to summarize conservation actions taken since the adoption of the 2006 water supply plan.

Table 21. Implementation of previous ten-year Conservation Plan

2006 Plan Commitments	Action Taken?
Change water rates structure to provide conservation pricing	☐ Yes ☐ No
Water supply system improvements (e.g. leak repairs, valve replacements, etc.)	☒ Yes ☐ No
Educational efforts	☒ Yes ☐ No
New water conservation ordinances	☐ Yes ☐ No
Rebate or retrofitting Program (e.g. for toilet, faucets, appliances, showerheads, dish washers, washing machines, irrigation systems, rain barrels, water softeners, etc.	☐ Yes ☒ No
Enforcement	☐ Yes ☐ No
Describe other	☐ Yes ☐ No

What are the results you have seen from the actions in Table 21 and how were results measured?

Residential per capita demand has remained low.

A. Triggers for Allocation and Demand Reduction Actions

Complete table 22 by checking each trigger below, as appropriate, and the actions to be taken at various levels or stages of severity. Add in additional rows to the table as needed.

Table 22. Short and long-term demand reduction conditions, triggers and actions

Objective	Triggers	Actions
Protect surface water flows	☒ Low stream flow conditions ☐ Reports of declining wetland	☒ Increase promotion of conservation measures

Objective	Triggers	Actions
	and lake levels ☐ Other: _____	☐ Other: _____
Short-term demand reduction (less than 1 year	☒ Extremely high seasonal water demand (more than double winter demand) ☐ Loss of treatment capacity ☐ Lack of water in storage ☐ State drought plan ☐ Well interference ☐ Other:	☒ Adopt (if not already) and enforce the critical water deficiency ordinance to restrict or prohibit lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses. ☐ Supply augmentation through ____ ☐ Water allocation through____ ☒ Meet with large water users to discuss user's contingency plan.
Long-term demand reduction (>1 year)	☐ Per capita demand increasing ☒ Total demand increase (higher population or more industry). Water level in well(s) below elevation of _____ ☐ Other: _____	☒ Develop a critical water deficiency ordinance that is or can be quickly adopted to penalize lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses. ☒ Enact a water waste ordinance that targets overwatering (causing water to flow off the landscape into streets, parking lots, or similar), watering impervious surfaces (streets, driveways or other hardscape areas), and negligence of known leaks, breaks, or malfunctions. ☒ Meet with large water users to discuss user's contingency plan. ☐ Enhanced monitoring and reporting: audits, meters, billing, etc.
Governor's "Critical Water Deficiency Order" declared	☒ Describe – When the Governor declares it.	☒ Describe – Follow the short term demand reduction about or as directed by the Governor

B. Conservation Objectives and Strategies – *Key benchmark for DNR*

This section establishes water conservation objectives and strategies for eight major areas of water use.

Objective 1: Reduce Unaccounted (Non-Revenue) Water loss to Less than 10%

The Minnesota Rural Water Association, the Metropolitan Council and the Department of Natural Resources recommend that all water uses be metered. Metering can help identify high use locations and times, along with leaks within buildings that have multiple meters.

It is difficult to quantify specific unmetered water use such as that associated with firefighting and system flushing or system leaks. Typically, water suppliers subtract metered water use from total water pumped to calculate unaccounted or non-revenue water loss.

Is your five-year average (2005-2014) unaccounted Water Use in Table 2 higher than 10%?

Yes ☒ No ☐

What is your leak detection monitoring schedule? (e.g. Monitor 1/3rd of the city lines per year)

Leak Detection Service hired to test entire system yearly for both water main and water service leaks. Water Department repairs all water main leaks and service leaks up to the customer's curb stop. If a leak is found on the customer side of the curb stop then a repair ticket is given to homeowner and owner has 7 days to repair the leak, or the Water Department may repair the leak and charge the owner.

Water Audits - are designed to help quantify and track water losses associated with water distribution systems and identify areas for improved efficiency and cost recovery. The American Water Works Association (AWWA) has a recommended water audit methodology which is presented in AWWA's M3 6 Manual of Water Supply Practices: Water Audits and Loss Control Programs. AWWA also provides a free spreadsheet-based water audit tool that water suppliers can use to conduct their own water audits. This free water audit tool can be found on AWWA's Water Loss Control webpage. Another resource for water audit and water loss control information is Minnesota Rural Water Association.

What is the date of your most recent water audit? NA

Frequency of water audits: ☐ **yearly** ☐ **other (specify frequency)** _____
Leak detection and survey: ☒ **every year** ☐ **every other year** ☐ **periodic as needed**
Year last leak detection survey completed: 2017

If Table 2 shows annual water losses over 10% or an increasing trend over time, describe what actions will be taken to reach the <10% loss objective and within what timeframe

Work with fire department staff to be notified of how much water they use. The Utility can measure hydrant flows and other city uses that are not being accounted for to better track those water uses. Since system wide leak detection is done every year, the Utility is able to respond to leaks as soon as they find them.

Metering -AWWA recommends that every water supplier install meters to account for all water taken into its system, along with all water distributed from its system at each customer's point of service. An effective metering program relies upon periodic performance testing, repair, maintenance or replacement of all meters. Drinking Water Revolving Loan Funds are available for purchase of new meters when new plants are built. AWWA also recommends that water suppliers conduct regular water audits to account for unmetered unbilled consumption, metered unbilled consumption and source water and customer metering inaccuracies. Some cities install separate meters for interior and exterior water use, but some research suggests that this may not result in water conservation.

Complete Table 23 by adding the requested information regarding the number, types, testing and maintenance of customer meters.

Table 23. Information about customer meters

Customer Category	Number of Customers	Number of Metered Connections	Number of Automated Meter Readers	Meter testing Intervals (years)	Average Age/Meter Replacement Schedule (years)
Residential	4736	4736	4736		10 / 20
Irrigation meters	63	63	63		10 / 20
Institutional	NA	NA	NA	NA	NA
Commercial	618	618	618		10 / 15-20
Industrial	15	15	15		10 / 10
Public facilities	53	53	53		10 / 20
Other	0	0	0	NA	NA
TOTALS	5485	5485	5485	NA	NA

For unmetered systems, describe any plans to install meters or replace current meters with advanced technology meters. Provide an estimate of the cost to implement the plan and the projected water savings from implementing the plan.

In 2018 we are planning to start changing out all compound meters for the industrial customers.

Table 24. Water source meters

Category	Number of Meters	Meter testing Schedule (years)	Number of Automated Meter Readers	Average Age/Meter Replacement Schedule (years)
Water source (wells/intakes)	13	5 years	13	/as needed
Treatment plant	1	as needed	1	/as needed

Objective 2: Achieve Less than 75 Residential Gallons per Capita Demand (GPCD)

The 2002 average residential per capita demand in the Twin Cities Metropolitan area was 75 gallons per capita per day.

Is your average 2010-2015 residential per capita water demand in Table 2 more than 75? Yes ☐ No ☒

What was your 2010 – 2015 five-year average residential per capita water demand? 54.6 gal/person/day

Describe the water use trend over that timeframe:

Water use trend over the five year timeframe is basically flat.

Complete Table 25 by checking which strategies you will use to continue reducing residential per capita demand and project a likely timeframe for completing each checked strategy (Select all that apply and add rows for additional strategies):

Table 25. Strategies and timeframe to reduce residential per capita demand

Strategy to reduce residential per capita demand	Timeframe for completing work
☐ Revise city ordinances/codes to encourage or require water efficient landscaping.	
☐ Revise city ordinance/codes to permit water reuse options, especially for non-potable purposes like irrigation, groundwater recharge, and industrial use. Check with plumbing authority to see if internal buildings reuse is permitted	
☐ Revise ordinances to limit irrigation. Describe the restricted irrigation plan:	
☐ Revise outdoor irrigation installations codes to require high efficiency systems (e.g. those with soil moisture sensors or programmable watering areas) in new installations or system replacements.	
☐ Make water system infrastructure improvements	
☐ Offer free or reduced cost water use audits) for residential customers.	
☐ Implement a notification system to inform customers when water availability conditions change.	
☐ Provide rebates or incentives for installing water efficient appliances and/or fixtures indoors (e.g., low flow toilets, high efficiency dish washers and washing machines, showerhead and faucet aerators, water softeners, etc.)	
☐ Provide rebates or incentives to reduce outdoor water use (e.g., turf replacement/reduction, rain gardens, rain barrels, smart irrigation, outdoor water use meters, etc.)	
☐ Identify supplemental Water Resources	
☒ Conduct audience-appropriate water conservation education and outreach.	Ongoing as residential per capita demand has remained flat.
☐ Describe other plans	

Objective 3: Achieve at least 1.5% annual reduction in non-residential per capita water use

(For each of the next ten years, or a 15% total reduction over ten years.) This includes commercial, institutional, industrial and agricultural water users.

Complete Table 26 by checking which strategies you will used to continue reducing non-residential customer use demand and project a likely timeframe for completing each checked strategy (add rows for additional strategies).

Where possible, substitute recycled water used in one process for reuse in another. (For example, spent rinse water can often be reused in a cooling tower.) Keep in mind the true cost of water is the amount on the water bill PLUS the expenses to heat, cool, treat, pump, and dispose of/discharge the water. Don't just calculate the initial investment. Many conservation retrofits that appear to be prohibitively expensive are actually very cost-effective when amortized over the life of the equipment. Often reducing water use also saves electrical and other utility costs. Note: as of 2015, water reuse, and is not allowed by the state plumbing code, M.R. 4715 (a variance is needed). However, several state agencies are addressing this issue.

Table 26. Strategies and timeframe to reduce institutional, commercial industrial, and agricultural and non-revenue use demand

Strategy to reduce total business, industry, agricultural demand	Timeframe for completing work
☐ Conduct a facility water use audit for both indoor and outdoor use, including system components	
☐ Install enhanced meters capable of automated readings to detect spikes in consumption	
☐ Compare facility water use to related industry benchmarks, if available (e.g., meat processing, dairy, fruit and vegetable, beverage, textiles, paper/pulp, metals, technology, petroleum refining etc.)	
☐ Install water conservation fixtures and appliances or change processes to conserve water	
☒ Repair leaking system components (e.g., pipes, valves)	Leak detection completed every year for service lines.
☐ Investigate the reuse of reclaimed water (e.g., stormwater, wastewater effluent, process wastewater, etc.)	
☒ Reduce outdoor water use (e.g., turf replacement/reduction, rain gardens, rain barrels, smart irrigation, outdoor water use meters, etc.)	Study in the future for potential opportunities.
☐ Train employees how to conserve water	
☐ Implement a notification system to inform non-residential customers when water availability conditions change.	
☐ Nonpotable rainwater catchment systems intended to supply uses such as water closets, urinals, trap primers for floor drains and floor sinks, industrial processes, water features, vehicle washing facilities, cooling tower makeup, and similar uses shall be approved by the commissioner. Plumbing code 4714.1702, Published October 31, 2016	
☐ Describe other plans:	

Objective 4: Achieve a Decreasing Trend in Total Per Capita Demand

Include as **Appendix 8** one graph showing total per capita water demand for each customer category (i.e., residential, institutional, commercial, industrial) from 2005-2014 and add the calculated/estimated linear trend for the next 10 years.

Describe the trend for each customer category; explain the reason(s) for the trends, and where trends are increasing.

Residential and Commercial/Institutional/Industrial (C/I/I) water use over the five year timeframe is basically flat. Residential use is projected to be flat with even a slight decrease. C/I/I water use is projected to remain flat at this time as well.

Objective 5: Reduce Ratio of Maximum day (peak day) to the Average Day Demand to Less Than 2.6

Is the ratio of average 2005-2014 maximum day demand to average 2005-2014 average day demand reported in Table 2 more than 2.6? Yes ☐ No ☒

Calculate a ten-year average (2005 – 2014) of the ratio of maximum day demand to average day demand: 1.90

The position of the DNR has been that a peak day/average day ratio that is above 2.6 for in summer indicates that the water being used for irrigation by the residents in a community is too large and that efforts should be made to reduce the peak day use by the community.

It should be noted that by reducing the peak day use, communities can also reduce the amount of infrastructure that is required to meet the peak day use. This infrastructure includes new wells, new water towers which can be costly items.

Objective 6: Implement Demand Reduction Measures

Water Conservation Program

Municipal water suppliers serving over 1,000 people are required to adopt demand reduction measures that include a conservation rate structure, or a uniform rate structure with a conservation program that achieves demand reduction. These measures must achieve demand reduction in ways that reduce water demand, water losses, peak water demands, and nonessential water uses. These measures must be approved before a community may request well construction approval from the Department of Health or before requesting an increase in water appropriations permit volume (Minnesota Statutes, section 103G.291, subd. 3 and 4). Rates should be adjusted on a regular basis to ensure that revenue of the system is adequate under reduced demand scenarios. If a municipal water supplier intends to use a Uniform Rate Structure, a community-wide Water Conservation Program that will achieve demand reduction must be provided.

Current Water Rates

Include a copy of the actual rate structure in **Appendix 9** or list current water rates including base/service fees and volume charges below.

Volume included in base rate or service charge: 0 gallons or ____cubic feet ____other

Frequency of billing: ☒ Monthly ☐ Bimonthly ☐ Quarterly ☐ Other: _____

Water Rate Evaluation Frequency: ☐ every year ☐ every ___years ☒ no schedule

Date of last rate change: 2 or 3 years ago; in 2019 a rate evaluation is expected and is anticipated every 3-5 years going forward.

Table 27. Rate structures for each customer category (Select all that apply and add additional rows as needed)

Customer Category	Conservation Billing Strategies in Use *	Conservation Neutral Billing Strategies in Use **	Non-Conserving Billing Strategies in Use ***
Residential	☒ Monthly billing ☒ Increasing block rates	☐ Uniform ☐ Odd/even day watering	☐ Service charge based on water volume

Customer Category	Conservation Billing Strategies in Use *	Conservation Neutral Billing Strategies in Use **	Non-Conserving Billing Strategies in Use ***
	(volume tiered rates) ☐ Seasonal rates ☐ Time of use rates ☐ Water bills reported in gallons ☐ Individualized goal rates ☐ Excess use rates ☐ Drought surcharge ☐ Use water bill to provide comparisons ☒ Service charge not based on water volume ☐ Other (describe)		☐ Declining block ☐ Flat ☐ Other (describe)
Commercial/ Industrial/ Institutional	☒ Monthly billing ☒ Increasing block rates (volume tiered rates) ☐ Seasonal rates ☐ Time of use rates ☐ Water bills reported in gallons ☐ Individualized goal rates ☐ Excess use rates ☐ Drought surcharge ☐ Use water bill to provide comparisons ☐ Service charge not based on water volume ☐ Other (describe)	☐ Uniform	☐ Service charge based on water volume ☐ Declining block ☐ Flat ☐ Other (describe)
☐ Other			

*** Rate Structures components that may promote water conservation:**

- **Monthly billing:** is encouraged to help people see their water usage so they can consider changing behavior.
- **Increasing block rates (also known as a tiered residential rate structure):** Typically, these have at least three tiers: should have at least three tiers.
    - The first tier is for the winter average water use.
    - The second tier is the year-round average use, which is lower than typical summer use. This rate should be set to cover the full cost of service.
    - The third tier should be above the average annual use and should be priced high enough to encourage conservation, as should any higher tiers. For this to be effective, the difference in block rates should be significant.
- **Seasonal rate:** higher rates in summer to reduce peak demands
- **Time of Use rates:** lower rates for off peak water use
- **Bill water use in gallons:** this allows customers to compare their use to average rates
- **Individualized goal rates:** typically used for industry, business or other large water users to promote water conservation if they keep within agreed upon goals. **Excess Use rates**: if water use goes above an agreed upon amount this higher rate is charged
- **Drought surcharge:** an extra fee is charged for guaranteed water use during drought

- **Use water bill to provide comparisons**: simple graphics comparing individual use over time or compare individual use to others.
- **Service charge or base fee that does not include a water volume** – a base charge or fee to cover universal city expenses that are not customer dependent and/or to provide minimal water at a lower rate (e.g., an amount less than the average residential per capita demand for the water supplier for the last 5 years)
- **Emergency rates** -A community may have a separate conservation rate that only goes into effect when the community or governor declares a drought emergency. These higher rates can help to protect the city budgets during times of significantly less water usage.

****Conservation Neutral****

- **Uniform rate**: rate per unit used is the same regardless of the volume used
- **Odd/even day watering** –This approach reduces peak demand on a daily basis for system operation, but it does not reduce overall water use.

***** Non-Conserving *****

- **Service charge or base fee with water volume:** an amount of water larger than the average residential per capita demand for the water supplier for the last 5 years
- **Declining block rate:** the rate per unit used decreases as water use increases.
- **Flat rate:** one fee regardless of how much water is used (usually unmetered).

Provide justification for any conservation neutral or non-conserving rate structures. If intending to adopt a conservation rate structure, include the timeframe to do so:

NA (city has a conservation rate structure)

Objective 7: Additional strategies to Reduce Water Use and Support Wellhead Protection Planning

Development and redevelopment projects can provide additional water conservation opportunities, such as the actions listed below. If a Uniform Rate Structure is in place, the water supplier must provide a Water Conservation Program that includes at <u>least two</u> of the actions listed below. Check those actions that you intent to implement within the next 10 years.

Table 28. Additional strategies to Reduce Water Use & Support Wellhead Protection

☐	Participate in the GreenStep Cities Program, including implementation of at least one of the 20 "Best Practices" for water
☐	Prepare a master plan for smart growth (compact urban growth that avoids sprawl)
☐	Prepare a comprehensive open space plan (areas for parks, green spaces, natural areas)
☐	Adopt a water use restriction ordinance (lawn irrigation, car washing, pools, etc.)
☐	Adopt an outdoor lawn irrigation ordinance
☐	Adopt a private well ordinance (private wells in a city must comply with water restrictions)
☐	Implement a stormwater management program
☐	Adopt non-zoning wetlands ordinance (can further protect wetlands beyond state/federal laws-for vernal pools, buffer areas, restrictions on filling or alterations)
☐	Adopt a water offset program (primarily for new development or expansion)
☒	Implement a water conservation outreach program
☐	Hire a water conservation coordinator (part-time)
☒	Implement a rebate program for water efficient appliances, fixtures, or outdoor water

	management
☐	Other

Objective 8: Tracking Success: How will you track or measure success through the next ten years?

Continue to track per capita demand and unaccounted water.

Number of people using the rebates will be a measure of success.

Tip: The process to monitor demand reduction and/or a rate structure includes:

a) The DNR Hydrologist will call or visit the community the first 1-3 years after the water supply plan is completed.
b) They will discuss what activities the community is doing to conserve water and if they feel their actions are successful. The Water Supply Plan, Part 3 tables and responses will guide the discussion. For example, they will discuss efforts to reduce unaccounted for water loss if that is a problem, or go through Tables 33, 34 and 35 to discuss new initiatives.
c) The city representative and the hydrologist will discuss total per capita water use, residential per capita water use, and business/industry use. They will note trends.
d) They will also discuss options for improvement and/or collect case studies of success stories to share with other communities. One option may be to change the rate structure, but there are many other paths to successful water conservation.
e) If appropriate, they will cooperatively develop a simple work plan for the next few years, targeting a couple areas where the city might focus efforts.

C. Regulation

Complete Table 29 by selecting which regulations are used to reduce demand and improve water efficiencies. Add additional rows as needed.

Copies of adopted regulations or proposed restrictions or should be included in **Appendix 10** (a list with hyperlinks is acceptable).

Table 29. Regulations for short-term reductions in demand and long-term improvements in water efficiencies

Regulations Utilized	When is it applied (in effect)?
☐ Rainfall sensors required on landscape irrigation systems	☐ Ongoing ☐ Seasonal ☐ Only during declared Emergencies
☒ Water efficient plumbing fixtures required	☒ New development ☒ Replacement ☐ Rebate Programs
☒ Critical/Emergency Water Deficiency ordinance	☒ Only during declared Emergencies
☒ Watering restriction requirements (time of day, allowable days, etc.)	☐ Odd/even ☐ 2 days/week ☒ Only during declared Emergencies
☐ Water waste prohibited (for example, having a fine for irrigators spraying on the street)	☐ Ongoing ☐ Seasonal

Regulations Utilized	When is it applied (in effect)?
	☐ Only during declared Emergencies
☐ Limitations on turf areas (requiring lots to have 10% - 25% of the space in natural areas)	☐ New development ☐ Shoreland/zoning ☐ Other
☐ Soil preparation requirement s (after construction, requiring topsoil to be applied to promote good root growth)	☐ New Development ☐ Construction Projects ☐ Other
☐ Tree ratios (requiring a certain number of trees per square foot of lawn)	☐ New development ☐ Shoreland/zoning ☐ Other
☐ Permit to fill swimming pool and/or requiring pools to be covered (to prevent evaporation)	☐ Ongoing ☐ Seasonal ☐ Only during declared Emergencies
☐ Ordinances that permit stormwater irrigation, reuse of water, or other alternative water use (Note: be sure to check current plumbing codes for updates)	☐ Describe

D. Retrofitting Programs

Education and incentive programs aimed at replacing inefficient plumbing fixtures and appliances can help reduce per capita water use, as well as energy costs. It is recommended that municipal water suppliers develop a long-term plan to retrofit public buildings with water efficient plumbing fixtures and appliances. Some water suppliers have developed partnerships with organizations having similar conservation goals, such as electric or gas suppliers, to develop cooperative rebate and retrofit programs.

A study by the AWWA Research Foundation (Residential End Uses of Water, 1999) found that the average indoor water use for a non-conserving home is 69.3 gallons per capita per day (gpcd). The average indoor water use in a conserving home is 45.2 gpcd and most of the decrease in water use is related to water efficient plumbing fixtures and appliances that can reduce water, sewer and energy costs. In Minnesota, certain electric and gas providers are required (Minnesota Statute 216B.241) to fund programs that will conserve energy resources and some utilities have distributed water efficient showerheads to customers to help reduce energy demands required to supply hot water.

Retrofitting Programs

Complete Table 30 by checking which water uses are targeted, the outreach methods used, the measures used to identify success, and any participating partners.

Table 30. Retrofitting programs (Select all that apply)

Water Use Targets	Outreach Methods	Partners
☒ Low flush toilets, ☒ Toilet leak tablets, ☒ Low flow showerheads, ☐ Faucet aerators;	☒ Education about ☒ Free distribution of ☐ Rebate for ☐ Other	☒ Gas company ☒ Electric company ☐ Watershed organization

Water Use Targets	Outreach Methods	Partners
☒ Water conserving washing machines, ☒ Dish washers, ☐ Water softeners;	☒ Education about ☐ Free distribution of ☐ Rebate for ☐ Other	☐ Gas company ☐ Electric company ☐ Watershed organization
☒ Rain gardens, ☒ Rain barrels, ☒ Native/drought tolerant landscaping, etc.	☒ Education about ☐ Free distribution of ☐ Rebate for ☐ Other	☐ Gas company ☐ Electric company ☐ Watershed organization

Briefly discuss measures of success from the above table (e.g. number of items distributed, dollar value of rebates, gallons of water conserved, etc.):

Low flush toilets are required by code.

E. Education and Information Programs

Customer education should take place in three different circumstances. First, customers should be provided information on how to conserve water and improve water use efficiencies. Second, information should be provided at appropriate times to address peak demands. Third, emergency notices and educational materials about how to reduce water use should be available for quick distribution during an emergency.

Proposed Education Programs

Complete Table 31 by selecting which methods are used to provide water conservation and information, including the frequency of program components. Select all that apply and add additional lines as needed.

Table 31. Current and Proposed Education Programs

Education Methods	General summary of topics	#/Year	Frequency
Billing inserts or tips printed on the actual bill			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Consumer Confidence Reports		1	☒ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Press releases to traditional local news outlets (e.g., newspapers, radio and TV)	Water conservation measures in effect		☐ Ongoing ☐ Seasonal ☒ Only during declared emergencies
Social media distribution (e.g., emails, Facebook, Twitter)	Water conservation measures in effect		☐ Ongoing ☐ Seasonal ☒ Only during declared emergencies

Education Methods	General summary of topics	#/Year	Frequency
Paid advertisements (e.g., billboards, print media, TV, radio, web sites, etc.)	Water conservation measures in effect		☐ Ongoing ☐ Seasonal ☒ Only during declared emergencies
Presentations to community groups			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Staff training			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Facility tours			☒ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Displays and exhibits			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Marketing rebate programs (e.g., indoor fixtures & appliances and outdoor practices)			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Community news letters		4	☐ Ongoing ☒ Seasonal ☐ Only during declared emergencies
Direct mailings (water audit/retrofit kits, showerheads, brochures)			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Information kiosk at utility and public buildings			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Public service announcements			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Cable TV Programs			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Demonstration projects (landscaping or plumbing)			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies

Education Methods	General summary of topics	#/Year	Frequency
K-12 education programs (Project Wet, Drinking Water Institute, presentations)			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Community events (children's water festivals, environmental fairs)			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Community education classes			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Water week promotions			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Website (include address:)			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Targeted efforts (large volume users, users with large increases)			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Notices of ordinances			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Emergency conservation notices	Water conservation measures in effect		☐ Ongoing ☐ Seasonal ☒ Only during declared emergencies
Other:			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies

Briefly discuss what future education and information activities your community is considering in the future:

The city plans to continue our current practices

PART 4. ITEMS FOR METROPOLITAN AREA COMMUNITIES

Minnesota Statute 473.859 requires WSPs to be completed for all local units of government in the seven-county Metropolitan Area as part of the local comprehensive planning process.

Much of the information in Parts 1-3 addresses water demand for the next 10 years. However, additional information is needed to address water demand through 2040, which will make the WSP consistent with the Metropolitan Land Use Planning Act, upon which the local comprehensive plans are based.

This Part 4 provides guidance to complete the WSP in a way that addresses plans for water supply through 2040.

A. Water Demand Projections through 2040

Complete Table 7 in Part 1D by filling in information about long-term water demand projections through 2040. Total Community Population projections should be consistent with the community's system statement, which can be found on the Metropolitan Council's website and which was sent to the community in September 2015.

Projected Average Day, Maximum Day, and Annual Water Demands may either be calculated using the method outlined in *Appendix 2* of the *2015 Master Water Supply Plan* or by a method developed by the individual water supplier.

B. Potential Water Supply Issues

Complete Table 10 in Part 1E by providing information about the potential water supply issues in your community, including those that might occur due to 2040 projected water use.

The Master Water Supply Plan provides information about potential issues for your community in *Appendix 1 (Water Supply Profiles).* This resource may be useful in completing Table 10.

You may document results of local work done to evaluate impact of planned uses by attaching a feasibility assessment or providing a citation and link to where the plan is available electronically.

C. Proposed Alternative Approaches to Meet Extended Water Demand Projections

Complete Table 12 in Part 1F with information about potential water supply infrastructure impacts (such as replacements, expansions or additions to wells/intakes, water storage and treatment capacity, distribution systems, and emergency interconnections) of extended plans for development and redevelopment, in 10-year increments through 2040. It may be useful to refer to information in the community's local Land Use Plan, if available.

Complete Table 14 in Part 1F by checking each approach your community is considering to meet future demand. For each approach your community is considering, provide information about the amount of

future water demand to be met using that approach, the timeframe to implement the approach, potential partners, and current understanding of the key benefits and challenges of the approach.

As challenges are being discussed, consider the need for: evaluation of geologic conditions (mapping, aquifer tests, modeling), identification of areas where domestic wells could be impacted, measurement and analysis of water levels & pumping rates, triggers & associated actions to protect water levels, etc.

D. Value-Added Water Supply Planning Efforts (Optional)

The following information is not required to be completed as part of the local water supply plan, but completing this can help strengthen source water protection throughout the region and help Metropolitan Council and partners in the region to better support local efforts.

Source Water Protection Strategies

Does a Drinking Water Supply Management Area for a neighboring public water supplier overlap your community? Yes ☐ No ☐

If you answered no, skip this section. If you answered yes, please complete Table 32 with information about new water demand or land use planning-related local controls that are being considered to provide additional protection in this area.

Table 32. Local controls and schedule to protect Drinking Water Supply Management Areas

Local Control	Schedule to Implement	Potential Partners
☐ None at this time		
☐ Comprehensive planning that guides development in vulnerable drinking water supply management areas		
☐ Zoning overlay		
☐ Other:		

Technical assistance

From your community's perspective, what are the most important topics for the Metropolitan Council to address, guided by the region's Metropolitan Area Water Supply Advisory Committee and Technical Advisory Committee, as part of its ongoing water supply planning role?

☐ Coordination of state, regional and local water supply planning roles
☐ Regional water use goals
☐ Water use reporting standards
☐ Regional and sub-regional partnership opportunities
☐ Identifying and prioritizing data gaps and input for regional and sub-regional analyses
☐ Others: _____

GLOSSARY

Agricultural/Irrigation Water Use - Water used for crop and non-crop irrigation, livestock watering, chemigation, golf course irrigation, landscape and athletic field irrigation.

Average Daily Demand - The total water pumped during the year divided by 365 days.

Calcareous Fen - Calcareous fens are rare and distinctive wetlands dependent on a constant supply of cold groundwater. Because they are dependent on groundwater and are one of the rarest natural communities in the United States, they are a protected resource in MN. Approximately 200 have been located in Minnesota. They may not be filled, drained or otherwise degraded.

Commercial/Institutional Water Use - Water used by motels, hotels, restaurants, office buildings, commercial facilities and institutions (both civilian and military). Consider maintaining separate institutional water use records for emergency planning and allocation purposes. Water used by multi-family dwellings, apartment buildings, senior housing complexes, and mobile home parks should be reported as Residential Water Use.

Commercial/Institutional/Industrial (C/I/I) Water Sold - The sum of water delivered for commercial/institutional or industrial purposes.

Conservation Rate Structure - A rate structure that encourages conservation and may include increasing block rates, seasonal rates, time of use rates, individualized goal rates, or excess use rates. If a conservation rate is applied to multifamily dwellings, the rate structure must consider each residential unit as an individual user. A community may have a separate conservation rate that only goes into effect when the community or governor declares a drought emergency. These higher rates can help to protect the city budgets during times of significantly less water usage.

Date of Maximum Daily Demand - The date of the maximum (highest) water demand. Typically this is a day in July or August.

Declining Rate Structure - Under a declining block rate structure, a consumer pays less per additional unit of water as usage increases. This rate structure does not promote water conservation.

Distribution System - Water distribution systems consist of an interconnected series of pipes, valves, storage facilities (water tanks, water towers, reservoirs), water purification facilities, pumping stations, flushing hydrants, and components that convey drinking water and meeting fire protection needs for cities, homes, schools, hospitals, businesses, industries and other facilities.

Flat Rate Structure - Flat fee rates do not vary by customer characteristics or water usage. This rate structure does not promote water conservation.

Industrial Water Use - Water used for thermonuclear power (electric utility generation) and other industrial use such as steel, chemical and allied products, paper and allied products, mining, and petroleum refining.

Low Flow Fixtures/Appliances - Plumbing fixtures and appliances that significantly reduce the amount of water released per use are labeled “low flow”. These fixtures and appliances use just enough water to be effective, saving excess, clean drinking water that usually goes down the drain.

Maximum Daily Demand - The maximum (highest) amount of water used in one day.

Metered Residential Connections - The number of residential connections to the water system that have meters. For multifamily dwellings, report each residential unit as an individual user.

Percent Unmetered/Unaccounted For - Unaccounted for water use is the volume of water withdrawn from all sources minus the volume of water delivered. This value represents water “lost” by miscalculated water use due to inaccurate meters, water lost through leaks, or water that is used but unmetered or otherwise undocumented. Water used for public services such as hydrant flushing, ice skating rinks, and public swimming pools should be reported under the category “Water Supplier Services”.

Population Served - The number of people who are served by the community's public water supply system. This includes the number of people in the community who are connected to the public water supply system, as well as people in neighboring communities who use water supplied by the community's public water supply system. It should not include residents in the community who have private wells or get their water from neighboring water supply.

Residential Connections - The total number of residential connections to the water system. For multifamily dwellings, report each residential unit as an individual user.

Residential Per Capita Demand - The total residential water delivered during the year divided by the population served divided by 365 days.

Residential Water Use - Water used for normal household purposes such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns and gardens. Should include all water delivered to single family private residences, multi-family dwellings, apartment buildings, senior housing complexes, mobile home parks, etc.

Smart Meter - Smart meters can be used by municipalities or by individual homeowners. Smart metering generally indicates the presence of one or more of the following:

- Smart irrigation water meters are controllers that look at factors such as weather, soil, slope, etc. and adjust watering time up or down based on data. Smart controllers in a typical summer will reduce water use by 30%-50%. Just changing the spray nozzle to new efficient models can reduce water use by 40%.
- Smart Meters on customer premises that measure consumption during specific time periods and communicate it to the utility, often on a daily basis.
- A communication channel that permits the utility, at a minimum, to obtain meter reads on demand, to ascertain whether water has recently been flowing through the meter and onto the premises, and to issue commands to the meter to perform specific tasks such as disconnecting or restricting water flow.

Total Connections - The number of connections to the public water supply system.

Total Per Capita Demand - The total amount of water withdrawn from all water supply sources during the year divided by the population served divided by 365 days.

Total Water Pumped - The cumulative amount of water withdrawn from all water supply sources during the year.

Total Water Delivered - The sum of residential, commercial, industrial, institutional, water supplier services, wholesale and other water delivered.

Ultimate (Full Build-Out) - Time period representing the community's estimated total amount and location of potential development, or when the community is fully built out at the final planned density.

Unaccounted (Non-revenue) Loss - See definitions for "percent unmetered/unaccounted for loss".

Uniform Rate Structure - A uniform rate structure charges the same price-per-unit for water usage beyond the fixed customer charge, which covers some fixed costs. The rate sends a price signal to the customer because the water bill will vary by usage. Uniform rates by class charge the same price-per-unit for all customers within a customer class (e.g. residential or non-residential). This price structure is generally considered less effective in encouraging water conservation.

Water Supplier Services - Water used for public services such as hydrant flushing, ice skating rinks, public swimming pools, city park irrigation, back-flushing at water treatment facilities, and/or other uses.

Water Used for Nonessential Purposes - Water used for lawn irrigation, golf course and park irrigation, car washes, ornamental fountains, and other non-essential uses.

Wholesale Deliveries - The amount of water delivered in bulk to other public water suppliers.

Acronyms and Initialisms

AWWA – American Water Works Association
C/I/I – Commercial/Institutional/Industrial
CIP – Capital Improvement Plan
GIS – Geographic Information System
GPCD – Gallons per capita per day
GWMA – Groundwater Management Area – North and East Metro, Straight River, Bonanza,
MDH – Minnesota Department of Health
MGD – Million gallons per day
MG – Million gallons
MGL – Maximum Contaminant Level
MnTAP – Minnesota Technical Assistance Program (University of Minnesota)
MPARS – MN/DNR Permitting and Reporting System (new electronic permitting system)
MRWA – Minnesota Rural Waters Association
SWP – Source Water Protection
WHP – Wellhead Protection

APPENDICES TO BE SUBMITTED BY THE WATER SUPPLIER

Appendix 1: Well records and maintenance summaries
Go to Part 1C for information on what to include in appendix

Appendix 2: Water level monitoring plan
Go to Part 1E for information on what to include in appendix

Appendix 3: Water level graphs for each water supply well
Go to Part 1E for information on what to include in appendix

Appendix 4: Capital Improvement Plan
Go to Part 1E for information on what to include in appendix

Appendix 5: Emergency Telephone List
Go to Part 2C for information on what to include in appendix

Appendix 6: Cooperative Agreements for Emergency Services
Go to Part 2C for information on what to include in appendix

Appendix 7: Municipal Critical Water Deficiency Ordinance
Go to Part 2C for information on what to include in appendix

Appendix 8: Graph of Ten Years of Annual Per Capita Water Demand for Each Customer Category
Go to Objective 4 in Part 3B for information on what to include in appendix

Appendix 9: Water Rate Structure
Go to Objective 6 in Part 3B for information on what to include in appendix

Appendix 10: Ordinances or Regulations Related to Water Use
Go to Objective 7 in Part 3B for information on what to include in appendix

Appendix 11: Implementation Checklist
Provide a table that summarizes all the actions that the public water supplier is doing, or proposes to do, with estimated implementation dates.

Appendix 12: Sources of Information for Table 10
Provide links or references to the information used to complete Table 10. If the file size is reasonable, provide source information as attachments to the plan.

Appendix 1: Well records and maintenance summaries

There has been no maintenance of the wells since the last approved plan. Going forward there will be annual well rehabs.

Minnesota Unique Well Number

209603

County Nicollet
Quad New Ulm
Quad ID 76C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 04/13/1988
Update Date 03/10/2014
Received Date

Well Name	Township	Range	Dir Section	Subsection
NEW ULM 24	110	30	W 21	BCCAAA

Elevation 800 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact NEW ULM MN 56073
Well NEW ULM MN 56073

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
FILL	0	12		
CLAY	12	60		
SAND AND GRAVEL	60	71		

Remarks

Well Depth	Depth Completed	Date Well Completed
71 ft.	71 ft.	08/18/1971

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Step down **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter	Weight
30 in. To 60 ft.	lbs./ft.
36 in. To 21 ft.	lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** stainless **Make**

Diameter	Slot/Gauze	Length	Set	
18 in.		11 ft.	60 ft.	71 ft.

Static Water Level
38.3 ft. land surface Measure 08/18/1971

Pumping Level (below land surface)
51.2 ft. 10. hrs. Pumping at 530 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	30 Sacks	0 ft.	21 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed 00/00/1971
Manufacturer's name PEERLESS
Model Number HP 50 Volt 230
Length of drop pipe 50 ft Capacity 600 g.p. Typ Turbine

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer Quat. buried
Last Strat sand +larger Depth to Bedrock ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:24,000)
System UTM - NAD83, Zone 15, Meters X 384403 Y 4908517
Unique Number Verification Information from Input Date 03/05/1996

Angled Drill Hole

Well Contractor
Keys Well Co. 62012 GIBSON, E.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

209605

County Nicollet
Quad New Ulm
Quad ID 76C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 04/13/1988
Update Date 04/10/2014
Received Date

Well Name	Township	Range	Dir Section	Subsection
NEW ULM 21	110	30	W 17	ADCABB

Elevation 787 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact NEW ULM MN 56073
Well NEW ULM MN 56073

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
FILL	0	21		
CLAY	21	55	BLUE	
GRAVEL	55	61		
CLAY	61	70	BLUE	
SAND & GRAVEL	70	135		
CLAY	135	136		
SAND & GRAVEL	136	167		
CLAY	167	172		

Remarks

Well Depth 172 ft. **Depth Completed** 167 ft. **Date Well Completed** 02/27/1969

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Step down **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter		Weight
16 in.	To 137 ft.	lbs./ft.
20 in.	To 30 ft.	lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** stainless **Make**

Diameter	Slot/Gauze	Length	Set	
12 in.	40	18 ft.	137 ft.	155 ft.
12 in.	30	9 ft.	155 ft.	164 ft.
12 in.	40	3 ft.	164 ft.	167 ft.

Static Water Level
16.5 ft. land surface Measure 02/27/1969

Pumping Level (below land surface)
26.5 ft. 1 hrs. Pumping at 300 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
neat cement	30	Sacks	0 ft.	30 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer Quat. buried
Last Strat clay Depth to Bedrock ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:12,000)
System UTM - NAD83, Zone 15, Meters X 383943 Y 4910130
Unique Number Verification Information from Input Date 01/01/1990

Angled Drill Hole

Well Contractor

Keys Well Co.	62012	HORRIGAN, D.
Licensee Business	Lic. or Reg. No.	Name of Driller

Minnesota Unique Well Number

209604

County Nicollet
Quad New Ulm
Quad ID 76C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 04/13/1988
Update Date 04/10/2014
Received Date

Well Name	Township	Range	Dir Section	Subsection
NEW ULM 20	110	30	W 17	ADADAB

Elevation 787 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact NEW ULM MN 56073
Well NEW ULM MN 56073

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
FILL	0	18		
CLAY	18	68		
SAND & GRAVEL	68	115		
CLAY	115	118	BLUE	
SAND & GRAVEL	118	170		
CLAY	170	178		
CLAY & GRAVEL	178	181		
BOULDERS & GRAVEL	181	197		
CLAY & GRAVEL	197	202		
HARDPAN	202	216		

Remarks
SCREEN IS 9 FT. OF 30 SLOT, 2 FT. OF 40 SLOT, AND 19 FT. OF 80 SLOT.

Well Depth	Depth Completed	Date Well Completed
216 ft.	170 ft.	02/28/1969

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Step down **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter		Weight
16 in. To	140 ft.	lbs./ft.
20 in. To	30 ft.	lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** stainless **Make**

Diameter	Slot/Gauze	Length	Set	
12 in.		30 ft.	140 ft.	170 ft.

Static Water Level
17 ft. land surface Measure 02/28/1969

Pumping Level (below land surface)
39 ft. 1 hrs. Pumping at 280 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	30 Sacks	0 ft.	30 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer Quat. buried
Last Strat pebbly sand/silt/clay Depth to Bedrock ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:12,000)
System UTM - NAD83, Zone 15, Meters X 384188 Y 4910232
Unique Number Verification Information from Input Date 01/01/1990

Angled Drill Hole

Well Contractor
Keys Well Co. 62012 GIBSON, R.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

430604

County Brown
Quad New Ulm
Quad ID 76C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 10/06/1992
Update Date 12/10/2015
Received Date

Well Name	Township	Range	Dir Section	Subsection
NEW ULM 4	110	30	W 20	BDDAAA

Elevation 867 ft. **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Well 6TH ST N NEW ULM MN 56073
Contact NEW ULM MN 56073

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND	0	5	BROWN	SOFT
SANDY CLAY	5	16	YELLOW	SOFT
SANDY CLAY	16	31	BLUE	SOFT
SHALE	31	214	VARIED	SOFT
SANDSTONE	214	247	WHITE	SOFT
SHALE SMERY	247	247	BROWN	

Remarks

THIS IS THE REPLACEMENT WELL FOR OLD WELL NO. 4.
WE NEED SAMPLES AND GAMMA LOGS TO FIND OUT WHAT IS REALLY THERE.
THE INTERPRETATION FROM 31 TO 247 FEET IS ONLY THE BEST GUESS.

Well Depth 247 ft. **Depth Completed** 247 ft. **Date Well Completed** 04/02/1987

Drill Method Non-specified Rotary **Drill Fluid** Bentonite

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint** Welded
Drive Shoe? Yes ☐ No ☒ **Above/Below** 2 ft.

Casing Diameter	Weight	Hole Diameter
12 in. To 216 ft.	lbs./ft.	17 in. To 216 ft.
		12 in. To 247 ft.

Open Hole From 216 ft. To 247 ft.

Screen? ☐ **Type** **Make**

Static Water Level
83 ft. land surface Measure 04/02/1987

Pumping Level (below land surface)
200 ft. 10 hrs. Pumping at 150 g.p.m.

Wellhead Completion
Pitless adapter manufacturer MONITOR Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	5.75 Cubic yards	8 ft.	216 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☒ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Phanerozoic undiff. Aquifer Mt.Simon
Last Strat Pre-Croixan regolith Depth to Bedrock 31 ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:12,000)
System UTM - NAD83, Zone 15, Meters X 383420 Y 4908533
Unique Number Verification Info/GPS from data Input Date 03/05/1996

Angled Drill Hole

Well Contractor
Searles Well Co. 08258 KUCK, R.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

241335

County Brown
Quad New Ulm
Quad ID 76C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 10/06/1992
Update Date 03/10/2014
Received Date

Well Name	Township	Range	Dir Section	Subsection
NEW ULM 6	110	30	W 20	DDCABC

Elevation 839 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact NEW ULM MN 56073
Well NEW ULM MN 56073

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND & CLAY	0	30		
CRETACEOUS	30	212		

Remarks

THE INTERPRETATION FROM 30 TO 212 FEET IS OUR BEST GUESS.
WE NEED SAMPLES AND GAMMA LOGS TO KNOW WHAT IS REALLY THERE.

NO CONSTRUCTION LOG AVAILABLE FOR THIS WELL AT CITY.

Well Depth 212 ft. **Depth Completed** 212 ft. **Date Well Completed** 02/00/1965

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter **Weight**
24 in. To 203 ft. lbs./ft.

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level
60 ft. land surface Measure 03/05/1968

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☒ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 25 Volt
Length of drop pipe ft Capacity g.p. Typ Turbine

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Phanerozoic undiff. Aquifer Mt.Simon
Last Strat Phanerozoic undiff. Depth to Bedrock 30 ft
Located by Minnesota Department of Health
Locate Method GPS Differentially Corrected
System UTM - NAD83, Zone 15, Meters X 383919 Y 4907683
Unique Number Verification Information from Input Date 03/05/1996

Angled Drill Hole

Well Contractor
Mueller Well Co. 96460
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

188651

County Nicollet
Quad New Ulm
Quad ID 76C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 12/26/2002
Update Date 04/28/2014
Received Date

Well Name	Township	Range	Dir Section	Subsection
NEW ULM 15	110	30	W 21	BCACCB

Elevation 800 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact NEW ULM MN
Well NEW ULM MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
FILL	0	12	BLACK	SOFT
CLAY	46	46	BLUE	SOFT
CLAY	46	50	GRAY	
COARSE SAND	50	62	BROWN	SOFT
WOOD	62	63	BLACK	SOFT
COARSE SAND	63	66	BROWN	SOFT
SANDY SHALE	66	67	WHITE	SOFT

Remarks

Well Depth	Depth Completed	Date Well Completed
67 ft.	67 ft.	02/16/1982

Drill Method Non-specified Rotary **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint** Welded
Drive Shoe? Yes ☐ No ☒ **Above/Below** 2 ft.

Casing Diameter	Weight	Hole Diameter
12 in. To 53 ft.	lbs./ft.	16 in. To 67 ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** stainless **Make** JOHNSON

Diameter	Slot/Gauze	Length	Set	
12 in.	60	16 ft.	53 ft.	62 ft.
12 in.	60	16 ft.	63 ft.	67 ft.

Static Water Level

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
neat cement	3	Cubic yards	0 ft.	25 ft.

Nearest Known Source of Contamination

200 feet North Direction Body of water Type

Well disinfected upon completion? ☒ Yes ☐ No

Pump ☐ Not Installed Date Installed 05/00/1982

Manufacturer's name FLINT & WALLING
Model Number HP 30 Volt 460
Length of drop pipe 60 ft Capacity g.p. Typ Submersible

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Phanerozoic undiff. Aquifer Quat. buried
Last Strat Phanerozoic undiff. Depth to Bedrock 66 ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:24,000)
System UTM - NAD83, Zone 15, Meters X 384413 Y 4908554
Unique Number Verification Information from Input Date 03/05/1996

Angled Drill Hole

Well Contractor

Searles Well Co. 08258
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

241337

County Brown
Quad New Ulm
Quad ID 76C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 01/29/1998
Update Date 04/10/2014
Received Date

Well Name	Township	Range	Dir Section	Subsection
NEW ULM 18	110	30	W 17	DCBABA

Elevation 800 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact NEW ULM MN 56073
Well NEW ULM MN 56073

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
TOP SOIL	0	5		
SAND & GRAVEL	5	60		
CLAY	60	70		
SAND & GRAVEL	70	82		
FINE SAND	82	105		
CLAY	105	128	BLUE	
SAND & GRAVEL	128	145		
FINE SAND	145	179		

Remarks

Well Depth 179 ft. **Depth Completed** 147 ft. **Date Well Completed** 11/11/1960

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter **Weight**
12 in. To 125 ft. lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** **Make**

Diameter	Slot/Gauze	Length	Set	
in.		22 ft.	122 ft.	147 ft.

Static Water Level
24 ft. land surface Measure 00/00/1984

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☒ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 15 Volt
Length of drop pipe ft Capacity 286 g.p. Typ Turbine

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer Quat. buried
Last Strat sand Depth to Bedrock ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:12,000)
System UTM - NAD83, Zone 15, Meters X 383572 Y 4909527
Unique Number Verification Information from Input Date 03/05/1996

Angled Drill Hole

Well Contractor
Minnesota Department of MDH
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

241338

County Brown
Quad New Ulm
Quad ID 76C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 01/29/1998
Update Date 03/13/2015
Received Date

Well Name	Township	Range	Dir Section	Subsection
NEW ULM 19	110	30	W 17	DBCCBB

Elevation 800 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact NEW ULM MN 56073
Well NEW ULM MN 56073

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
TOP SOIL	0	5		
SAND & GRAVEL	5	60		
CLAY	60	70		
SAND & GRAVEL	70	80		
FINE SAND	80	100		
CLAY	100	130	BLUE	
SAND & GRAVEL	130	143		
FINE SAND	143	185		
QUARTZITE	185	187		

Remarks
DATA SOURCE - CITY FILES USING AN "AS BUILT" DIAGRAM.

Well Depth 187 ft. **Depth Completed** 168 ft. **Date Well Completed** 03/00/1965

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter **Weight**
12 in. To 144 ft. lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** **Make**

Diameter	Slot/Gauze	Length	Set	
in.	100	13 ft.	144 ft.	157 ft.
in.	60	20 ft.	167 ft.	187 ft.

Static Water Level
24 ft. land surface Measure 00/00/1984

Pumping Level (below land surface)
133 ft. 12 hrs. Pumping at 450 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☒ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 20 Volt
Length of drop pipe ft Capacity 450 g.p. Typ Turbine

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Sioux Quartzite Aquifer Quat. buried
Last Strat Sioux Quartzite Depth to Bedrock 185 ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:12,000)
System UTM - NAD83, Zone 15, Meters X 383467 Y 4909629
Unique Number Verification Information from Input Date 03/05/1996

Angled Drill Hole

Well Contractor
Minnesota Department of | MDH | MUELLER BROS.
Licensee Business | Lic. or Reg. No. | Name of Driller

Minnesota Unique Well Number

241339

County Nicollet
Quad New Ulm
Quad ID 76C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 10/06/1992
Update Date 04/16/2014
Received Date

Well Name	Township	Range	Dir	Section	Subsection
NEW ULM 22	110	30	W	21	CDDBDB

Elevation 792 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact NEW ULM MN 56073
Well NEW ULM MN 56073

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
GUMBO	0	35		
CLAY	35	50	BLUE	
CLAY	50	60	YELLOW	
WATERSAND	60	85		

Remarks

WELL WAS PUT INTO SERVICE 1-19-1972.
BERGERSON-CASWELL HAS WORKED ON THIS WELL.

Well Depth 85 ft. **Depth Completed** 83 ft. **Date Well Completed** 00/00/1972

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Telescoping **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter		Weight
36 in. To	28 ft.	lbs./ft.
18 in. To	63 ft.	lbs./ft.
30 in. To	55.7 ft.	lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** stainless **Make**

Diameter	Slot/Gauze	Length		Set			
in.	50	12	ft.	63	ft.	75	ft.
in.	40	8	ft.	75	ft.	83	ft.

Static Water Level
33 ft. land surface Measure 00/00/1972

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☒ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed 02/02/1987
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ Submersible

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer Quat. buried
Last Strat sand Depth to Bedrock ft
Located by Minnesota Department of Health
Locate Method GPS SA Off (averaged)
System UTM - NAD83, Zone 15, Meters X 384851 Y 4907650
Unique Number Verification Info/GPS from data Input Date 03/05/1996

Angled Drill Hole

Well Contractor
Minnesota Department of MDH
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

241340

County Nicollet
Quad New Ulm
Quad ID 76C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 10/06/1992
Update Date 04/16/2014
Received Date

Well Name	Township	Range	Dir Section	Subsection
NEW ULM 23	110	30	W 21	CDDBDB

Elevation 807 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact NEW ULM MN 56073
Well NEW ULM MN 56073

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
GUMBO	0	27		
SANDY GUMBO	27	64		
CLAY & GRAVEL	64	69		
WATER SAND &	69	80		
MUDDY SAND &	80	87		
SHALE	87	140	WHITE	
SHALE	140	148	RED	
GRAVEL WATER SAND	148	156		
SANDROCK	156	195		
SHALE	195	200	RED	

Remarks

NO INTERPRETATION FOR 156 TO 200 FEET.
WE NEED SAMPLES AND GAMMA LOGS TO FIND OUT WHAT IS REALLY THERE.
BERGERSON-CASWELL HAS WORKED ON THIS WELL.

Well Depth 206 ft. **Depth Completed** 195 ft. **Date Well Completed** 08/30/1971

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Telescoping **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter		Weight
30 in. To	30 ft.	lbs./ft.
12 in. To	145 ft.	lbs./ft.
16 in. To	152 ft.	lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** stainless **Make**

Diameter	Slot/Gauze	Length	Set	
8 in.	30	ft.	146 ft.	176 ft.

Static Water Level
28 ft. land surface Measure 08/30/1971

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☒ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed 00/00/1971
Manufacturer's name
Model Number HP 40 Volt
Length of drop pipe ft Capacity g.p. Typ Turbine

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Phanerozoic undiff. Aquifer Mt.Simon
Last Strat Pre-Croixan regolith Depth to Bedrock 87 ft
Located by Minnesota Department of Health
Locate Method GPS SA Off (averaged)
System UTM - NAD83, Zone 15, Meters X 384850 Y 4907648
Unique Number Verification Info/GPS from data Input Date 03/05/1996

Angled Drill Hole

Well Contractor
Minnesota Department of MDH
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

511075

County Nicollet
Quad New Ulm
Quad ID 76C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 10/06/1992
Update Date 04/16/2014
Received Date

Well Name	Township	Range	Dir Section	Subsection
NEW ULM 25	110	30	W 21	BCBDDB

Elevation 801 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact NEW ULM MN 56073
Well NEW ULM MN 56073

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
FILL	0	1	BROWN	
TOPSOIL	1	2	BLACK	
CLAY	2	8	BROWN	
CLAY	8	23	GRAY	
CLAY	23	33	BLUE	
SOFT CLAY W/LENSES	33	38	BLU/WHT	
CLAY	38	46	BLUE	
SAND AND GRAVEL	46	62	VARIED	
CLAY	62	68	BLUE	

Remarks

Well Depth	Depth Completed	Date Well Completed
68 ft.	62 ft.	08/11/1989

Drill Method Non-specified Rotary **Drill Fluid** Bentonite

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☒ **Above/Below** 1.5 ft.

Casing Diameter	Weight	Hole Diameter
12 in. To 46 ft.	lbs./ft.	17. in. To 62 ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** stainless **Make** JOHNSON

Diameter	Slot/Gauze	Length	Set
12 in.	30	18.2 ft.	46 ft. 62 ft.

Static Water Level
25.3 ft. land surface Measure 08/11/1989

Pumping Level (below land surface)
39.5 ft. 24 hrs. Pumping at 500 g.p.m.

Wellhead Completion
Pitless adapter manufacturer MONITOR Model 8PS1214W
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	1.75 Cubic yards	10 ft.	46 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☒ Yes ☐ No

Pump ☐ Not Installed Date Installed 09/27/1989
Manufacturer's name GRUNDFOS
Model Number 375-S-2504 HP 25 Volt 230
Length of drop pipe 35 ft Capacity 300 g.p. Typ Submersible

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer Quat. buried
Last Strat clay-gray Depth to Bedrock ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:24,000)
System UTM - NAD83, Zone 15, Meters X 384381 Y 4908566
Unique Number Verification Information from Input Date 03/05/1996

Angled Drill Hole

Well Contractor

Licensee Business	Lic. or Reg. No.	Name of Driller
Ltp Enterprises	91353	HEJTMANEK, D.

Minnesota Unique Well Number

513011

County Nicollet
Quad New Ulm
Quad ID 76C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 06/14/1993
Update Date 04/16/2014
Received Date

Well Name	Township	Range	Dir	Section	Subsection
NEW ULM 26	110	30	W	21	CDAADB

Elevation 792 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact NEW ULM MN 56073
Well NEW ULM MN 56073

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
FILL/CLAY/GRAVEL	0	21	YELLOW	
TOPSOIL	21	23	BLACK	
CLAY/PEBBLES	23	32	BROWN	
CLAY	32	54	BLACK	
CLAY STICKY	54	69		
SAND	69	73	BLUE	
SAND	73	80	BLUE	
SAND	80	90	BLUE	
SAND	90	96	GRAY	

Remarks
1200 SE OF HWY. 14, 15, THEN DOWN SERVICE ROAD.

Well Depth 96 ft. **Depth Completed** 96 ft. **Date Well Completed** 08/06/1992
Drill Method Non-specified Rotary **Drill Fluid** Other
Use community supply(municipal) **Status** Active
Well Hydrofractured? Yes ☐ No ☐ **From** **To**
Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter	Weight	Hole Diameter
12 in. To 73 ft.	0 lbs./ft.	17. in. To 73 ft.

Open Hole From ft. To ft.
Screen? ☒ **Type** stainless **Make** JOHNSON

Diameter	Slot/Gauze	Length	Set	
10 in.	25	ft.	73 ft.	76 ft.
10 in.	7	ft.	76 ft.	96 ft.

Static Water Level
31.7 ft. land surface Measure 08/06/1992

Pumping Level (below land surface)
44.5 ft. hrs. Pumping at 500 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement		0 ft.	73 ft.

Nearest Known Source of Contamination
150 feet East Direction Body of water Type
Well disinfected upon completion? ☒ Yes ☐ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer Quat. buried
Last Strat sand-gray Depth to Bedrock ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:24,000)
System UTM - NAD83, Zone 15, Meters X 384962 Y 4907855
Unique Number Verification Information from Input Date 03/05/1996

Angled Drill Hole

Well Contractor

Licensee Business	Lic. or Reg. No.	Name of Driller
Ltp Enterprises	91353	VERDECK, D.

Minnesota Unique Well Number

520956

County Nicollet
Quad New Ulm
Quad ID 76C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 10/27/1993
Update Date 03/10/2014
Received Date

Well Name	Township	Range	Dir	Section	Subsection
NEW ULM 27	110	30	W	21	CDAADB

Elevation 792 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact NEW ULM MN 56073
Well NEW ULM MN 56073

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
FILL CLAY	0	21	YELLOW	
TOPSOIL	21	23	BLACK	
CLAY STICKY	23	35	BLUE	
CLAY	35	69	BLACK	
SAND	69	97	GRAY	
SHALEY CLAY	97	109	BLACK	
SAND	109	119	BROWN	
SAND	119	135	GRY/BRN	
SAND	135	157	GRY/BRN	
SAND	157	163	GRY/BRN	
SANDSTONE	163	166	BRN/WHT	

Remarks

NO INTERPRETATION FOR 163 TO 166 FEET.

WE NEED SAMPLES AND GAMMA LOGS TO FIND OUT WHAT IS REALLY THERE.

Well Depth 166 ft. **Depth Completed** 162 ft. **Date Well Completed** 10/08/1993

Drill Method Non-specified Rotary **Drill Fluid** Bentonite

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter	Weight	Hole Diameter
12 in. To 122 ft.	49.5 lbs./ft.	17. in. To 122 ft.
		12 in. To 162 ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** stainless **Make** JOHNSON

Diameter	Slot/Gauze	Length	Set
10 in.	27	ft.	ft. 162 ft.
10 in.	27	ft.	ft. ft.
10 in.	27	ft.	ft. ft.
10 in.	30	ft.	ft. ft.
10 in.	30	ft.	122 ft. ft.

Static Water Level 17.9 ft. land surface Measure ft. 10/08/1993

Pumping Level (below land surface) 30 ft. ft. ft.

25.5 ft. 48 hrs. Pumping at 525 g.p.m.

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	4.25 Cubic yards	0 ft.	122 ft.

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☒ Yes ☐ No

Pump ☒ Not Installed Date Installed

Manufacturer's name

Model Number HP Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Mt.Simon Sandstone Aquifer Quat. buried
Last Strat Mt.Simon Sandstone Depth to Bedrock 163 ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:24,000)
System UTM - NAD83, Zone 15, Meters X 384966 Y 4907857
Unique Number Verification Information from Input Date 03/05/1996

Angled Drill Hole

Well Contractor

Ltp Enterprises 91353 VERDECK, D.
Licensee Business Lic. or Reg. No. Name of Driller

Appendix 2

Water Level Monitoring Plan

Static water levels will be measured at least once a month for each municipal production water wells. Each well will be measured after having been shut off for a minimum period of 24 hours and before being turned on again. The static water levels shall be measured with the M-Scope at each wellhead. The static water levels can also be read from the SCADA system wellfield screen also after a 24 hour idle period and before being returned to service.

- WELL LOCATION & NUMBER
- 8" DUCTILE IRON PIPE
- 16" DUCTILE IRON PIPE
- RAW WATER MAIN

0 250 500 1000
SCALE IN FEET

SHEET TITLE	WELL LOCATIONS
SEH FILE NO.	137533 - NULPU
CITY PROJECT NO.	----
ISSUE DATE	DEC. 2018
DESIGNED BY	RL
DRAWN BY	dk-

Short Elliott Hendrickson, Inc. © (SEH)

MARK DATE DESCRIPTION
REVISIONS

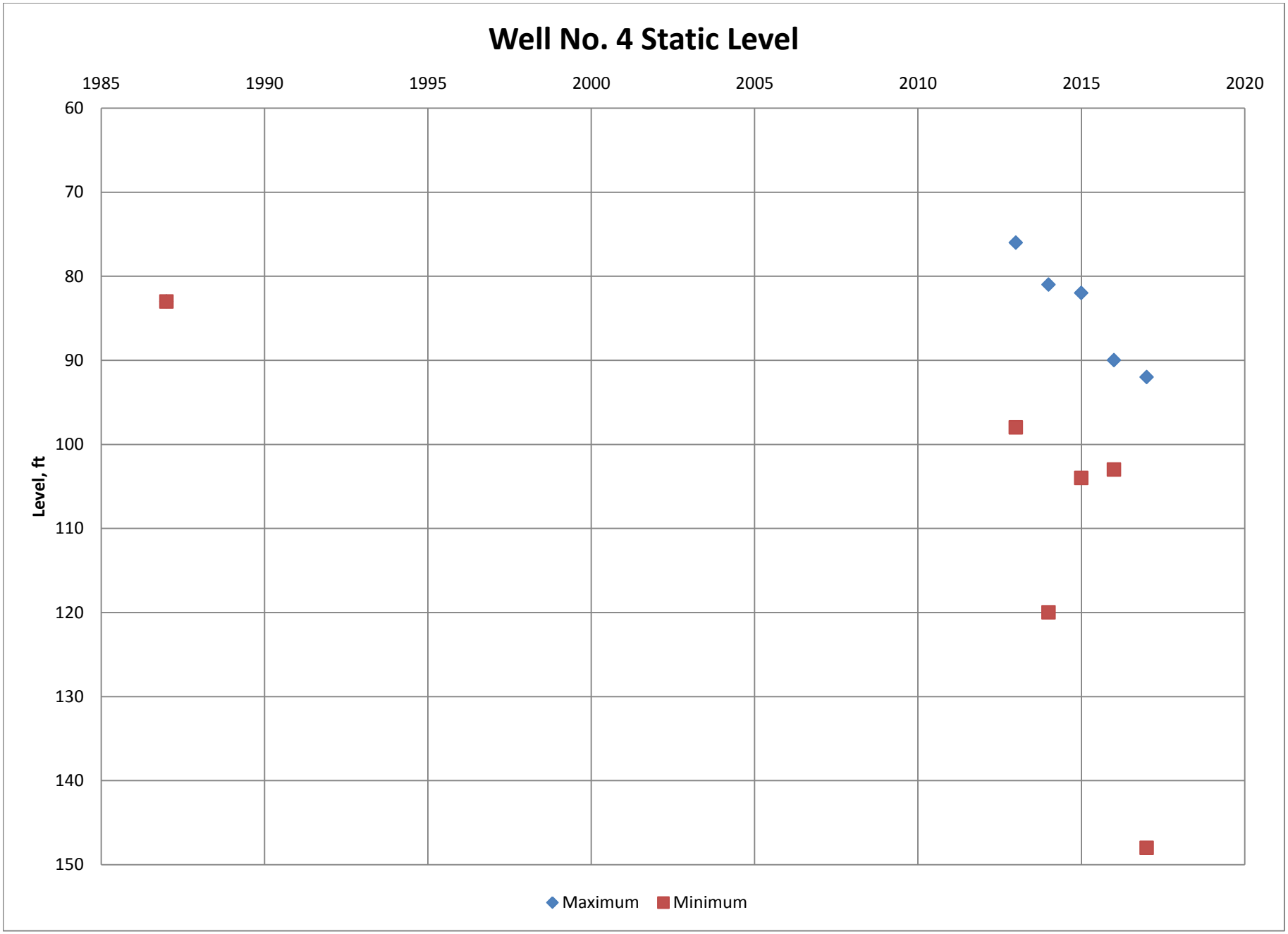
WELL LOCATION & RAW WATER LINES
NEW ULM, MINNESOTA

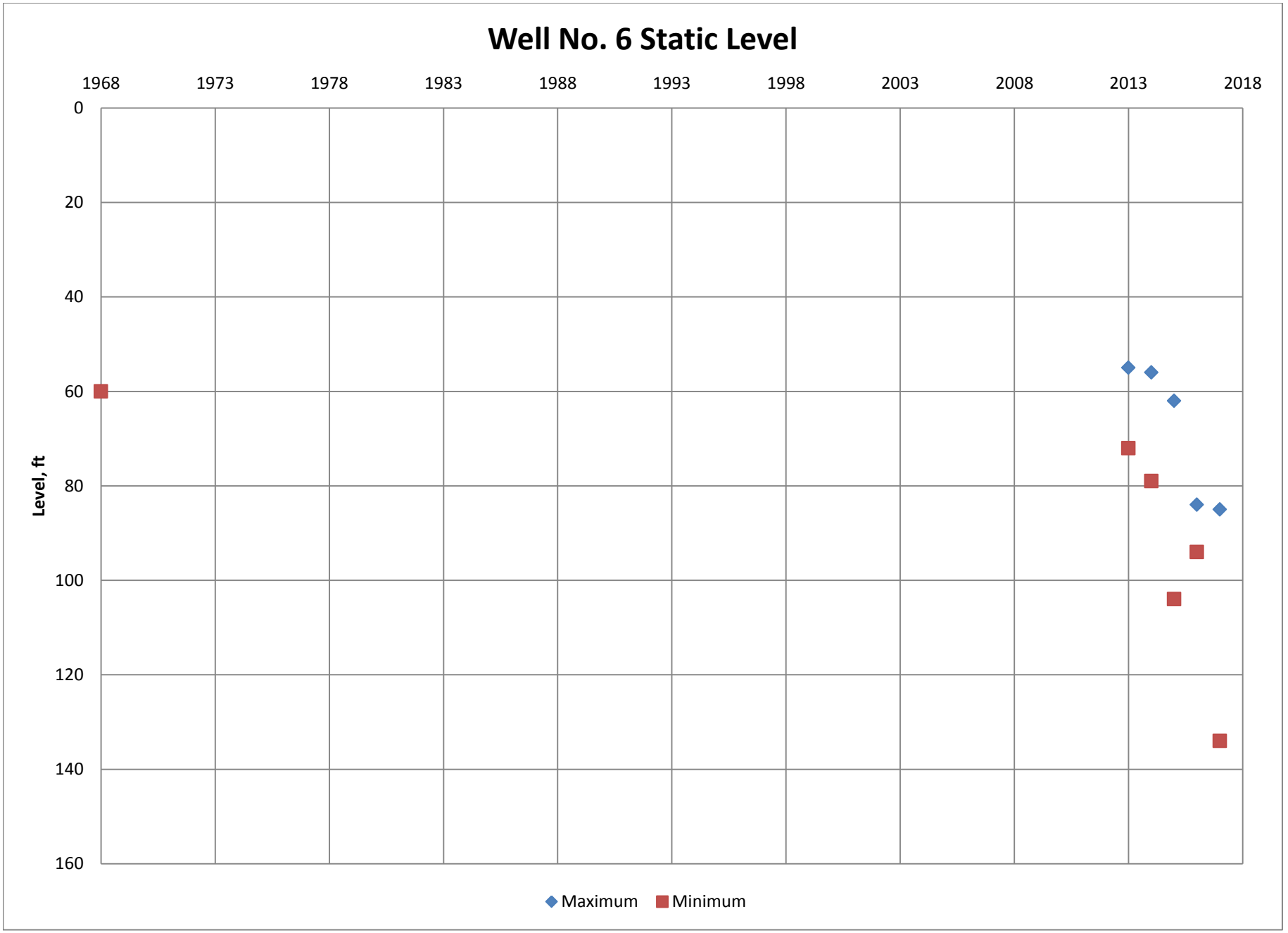
SEH
215 NORTH ADAMS AVENUE
MASON CITY, IOWA 50401
PHONE: 641.424.6344
www.sehinc.com

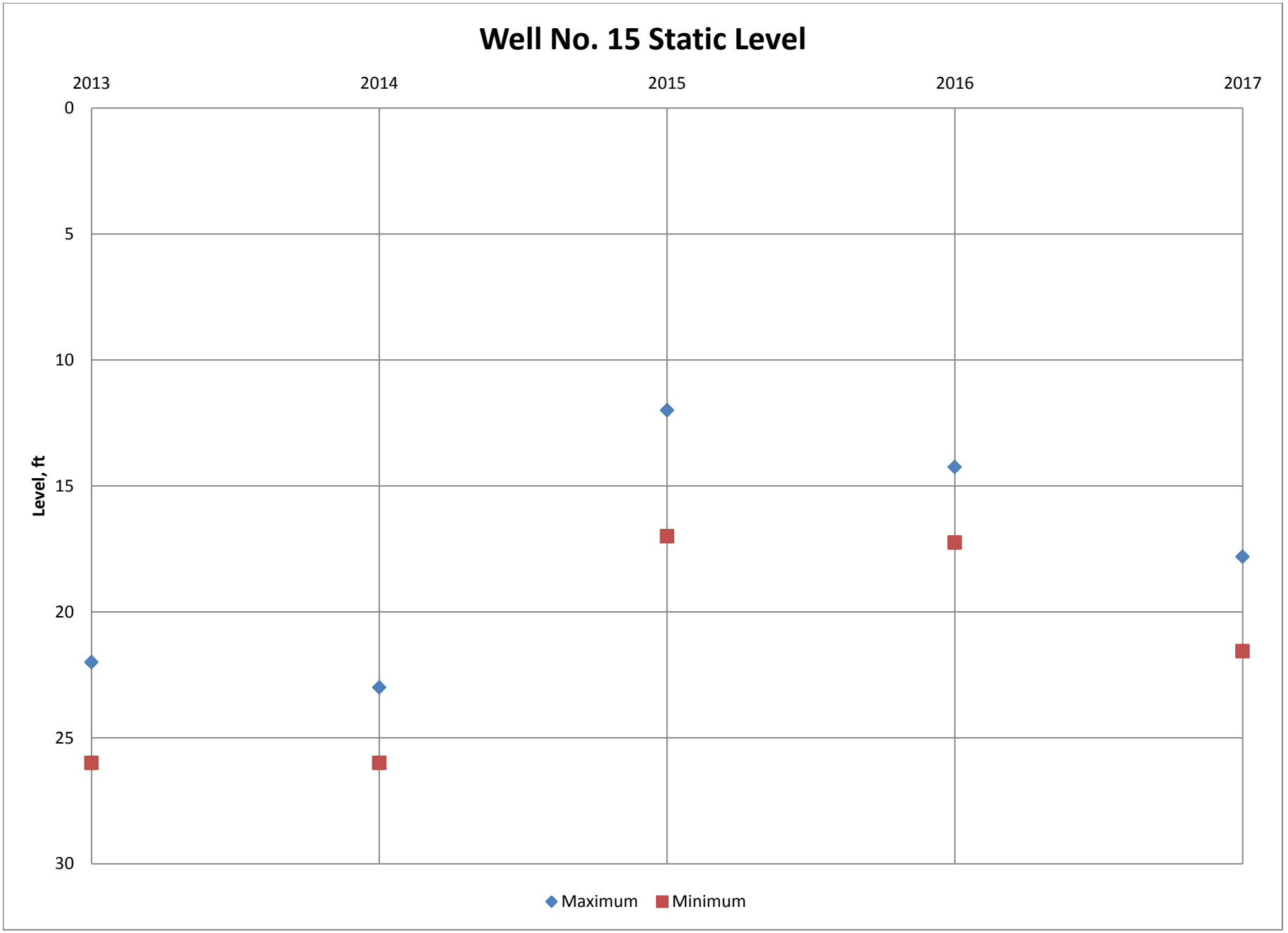
SHEET
*

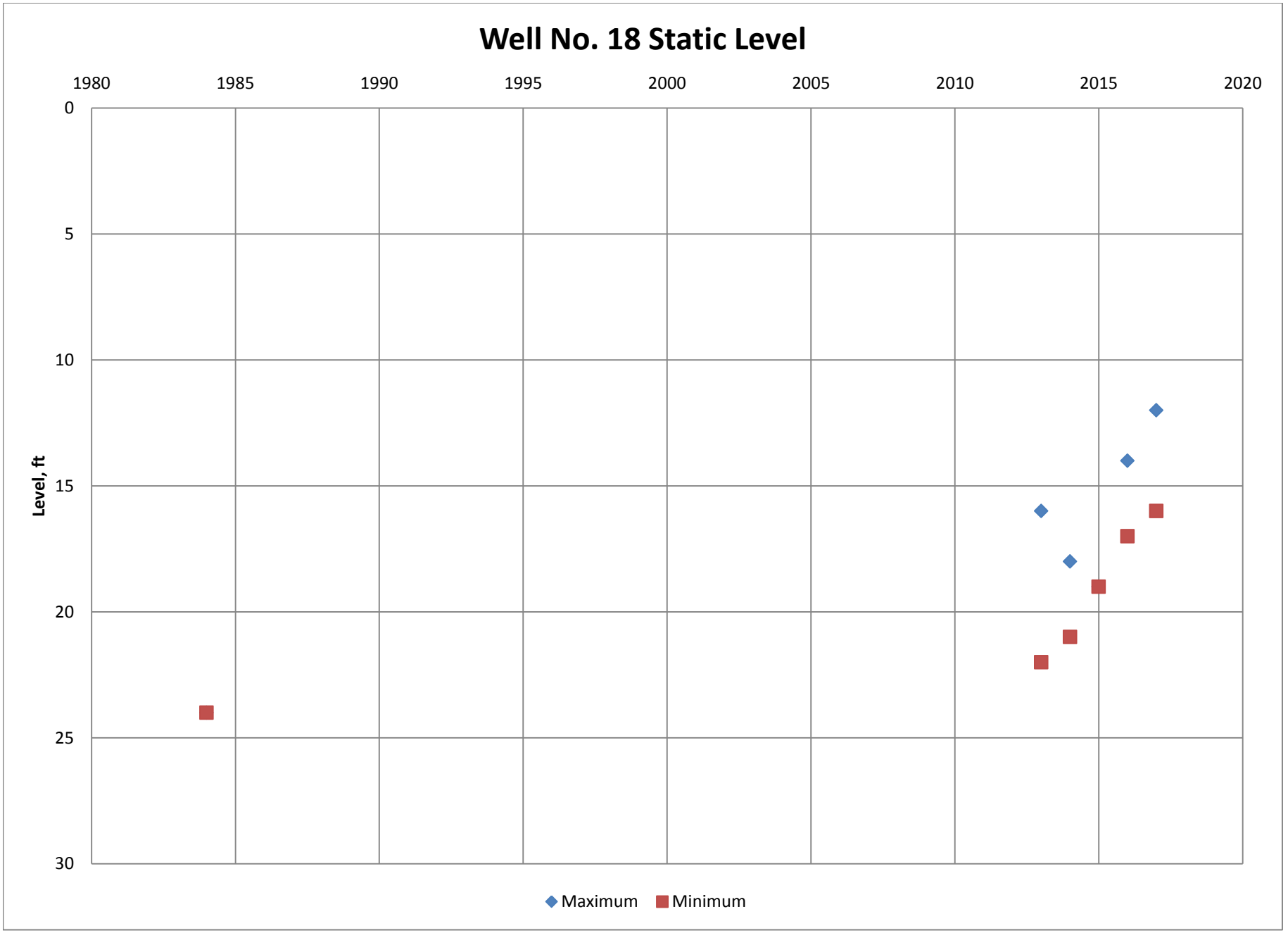
Appendix 3: Water level graphs for each water supply well

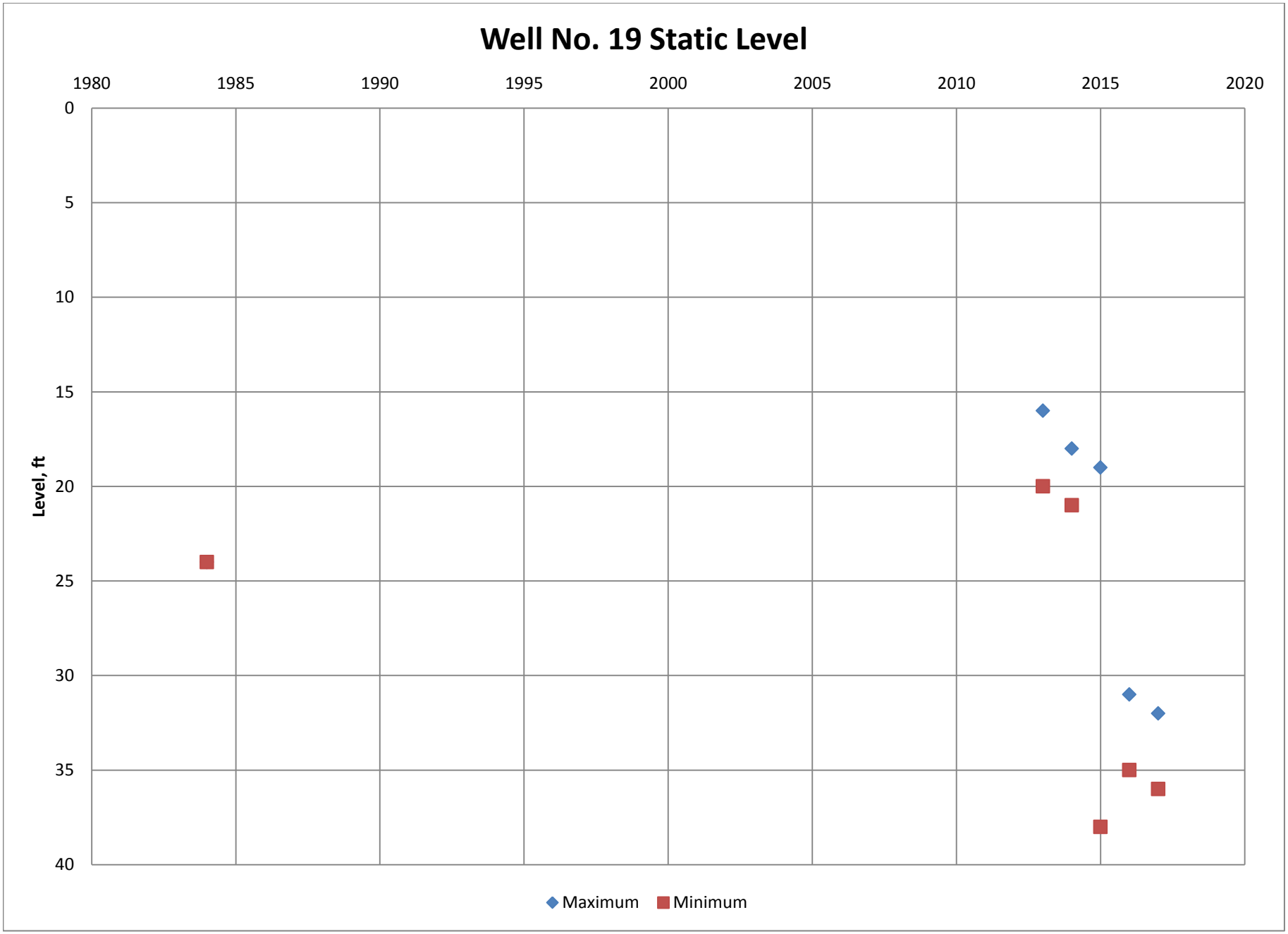
Static level data could not be found prior to 2013 except from the original well and boring report.

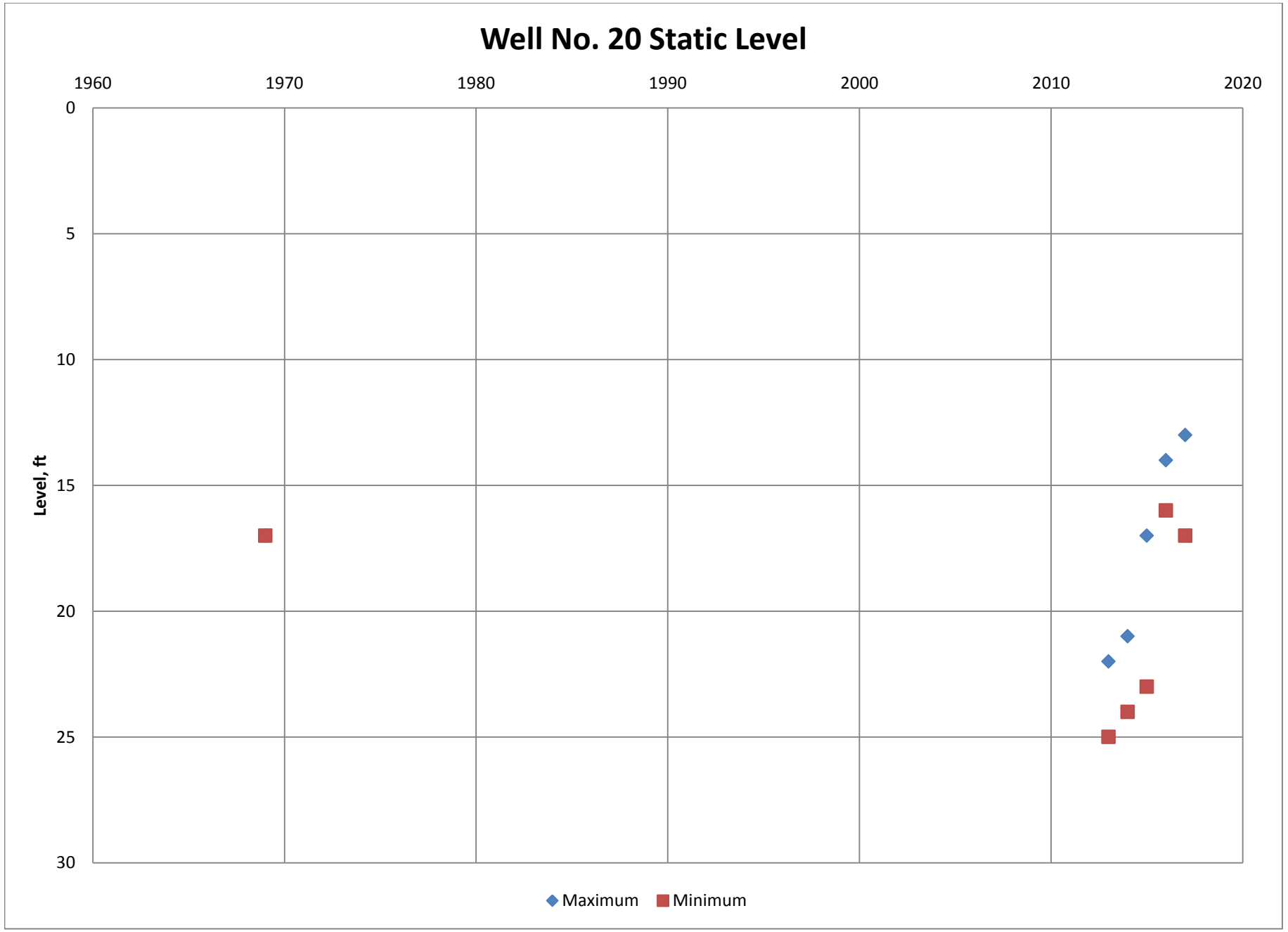

Well No. 4 Static Level
1985
1990
1995
2000
2005
2010
2015
2020
60
70
80
90
100
110
120
130
140
150
Level, ft
Maximum
Minimum

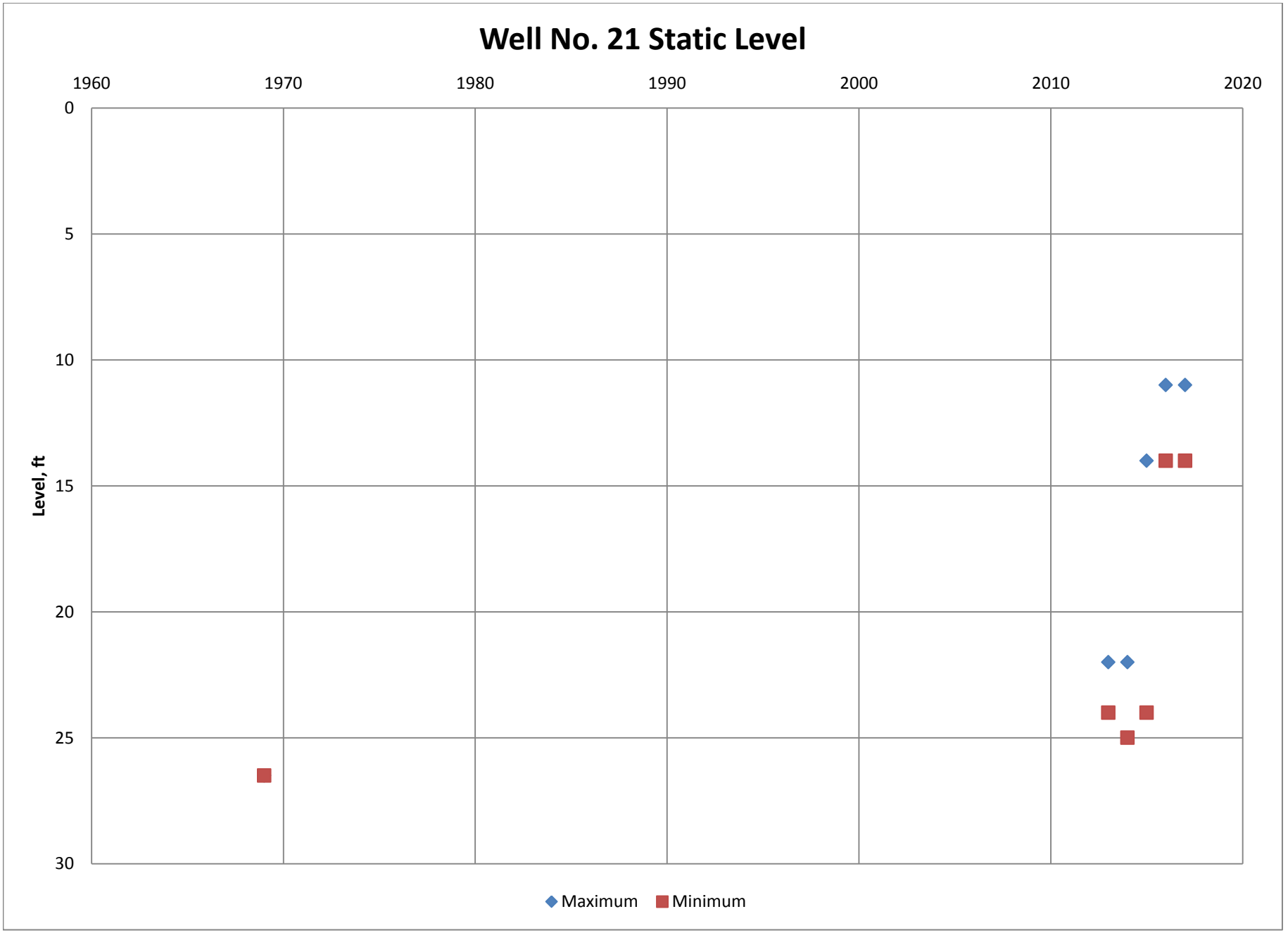

Well No. 6 Static Level
1968
1973
1978
1983
1988
1993
1998
2003
2008
2013
2018
0
20
40
60
80
100
120
140
160
Level, ft
Maximum
Minimum

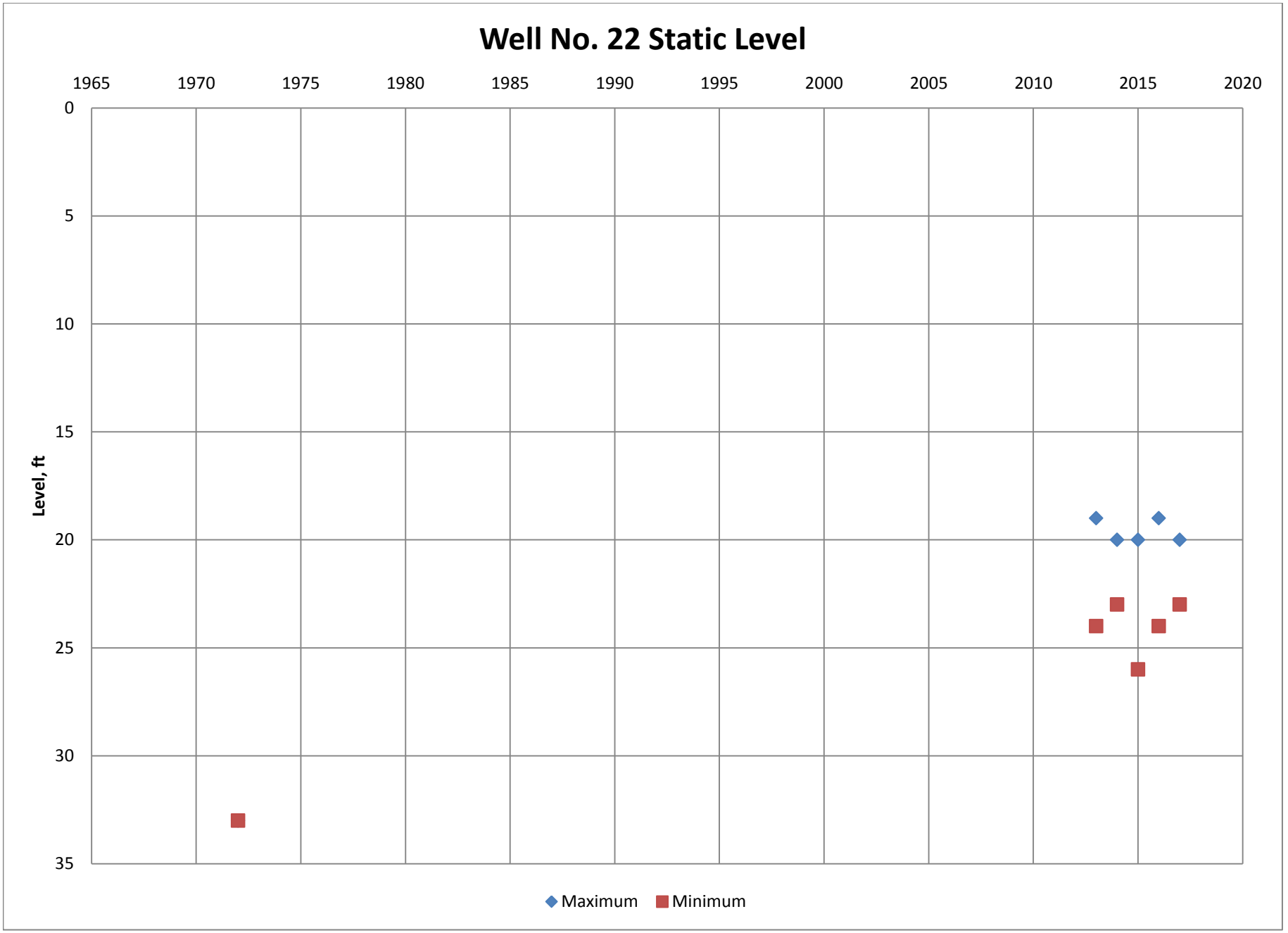

Well No. 15 Static Level
2013
2014
2015
2016
2017
0
5
10
15
20
25
30
Level, ft
Maximum
Minimum

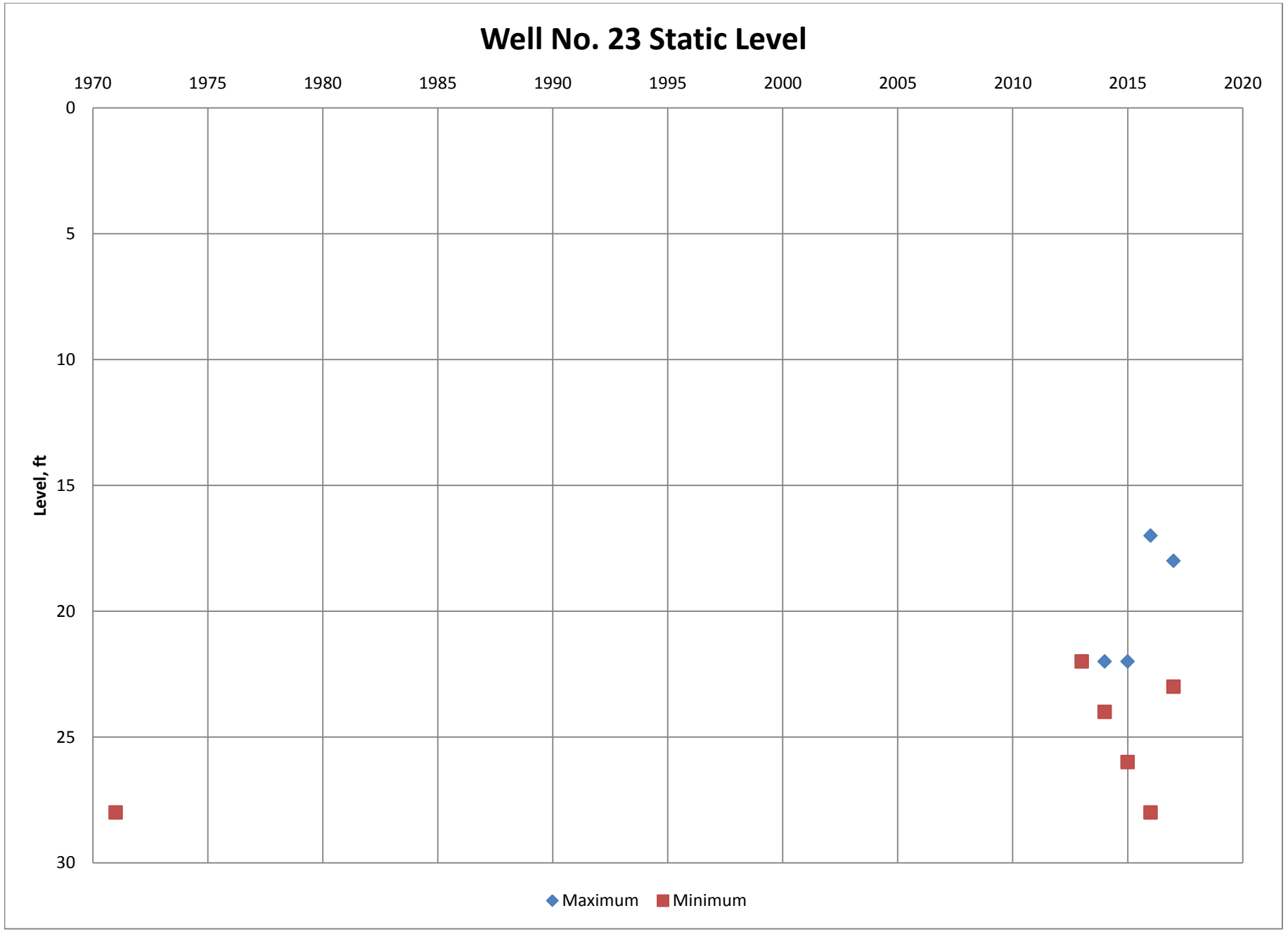

Well No. 18 Static Level
1980
1985
1990
1995
2000
2005
2010
2015
2020
0
5
10
15
20
25
30
Level, ft
Maximum
Minimum

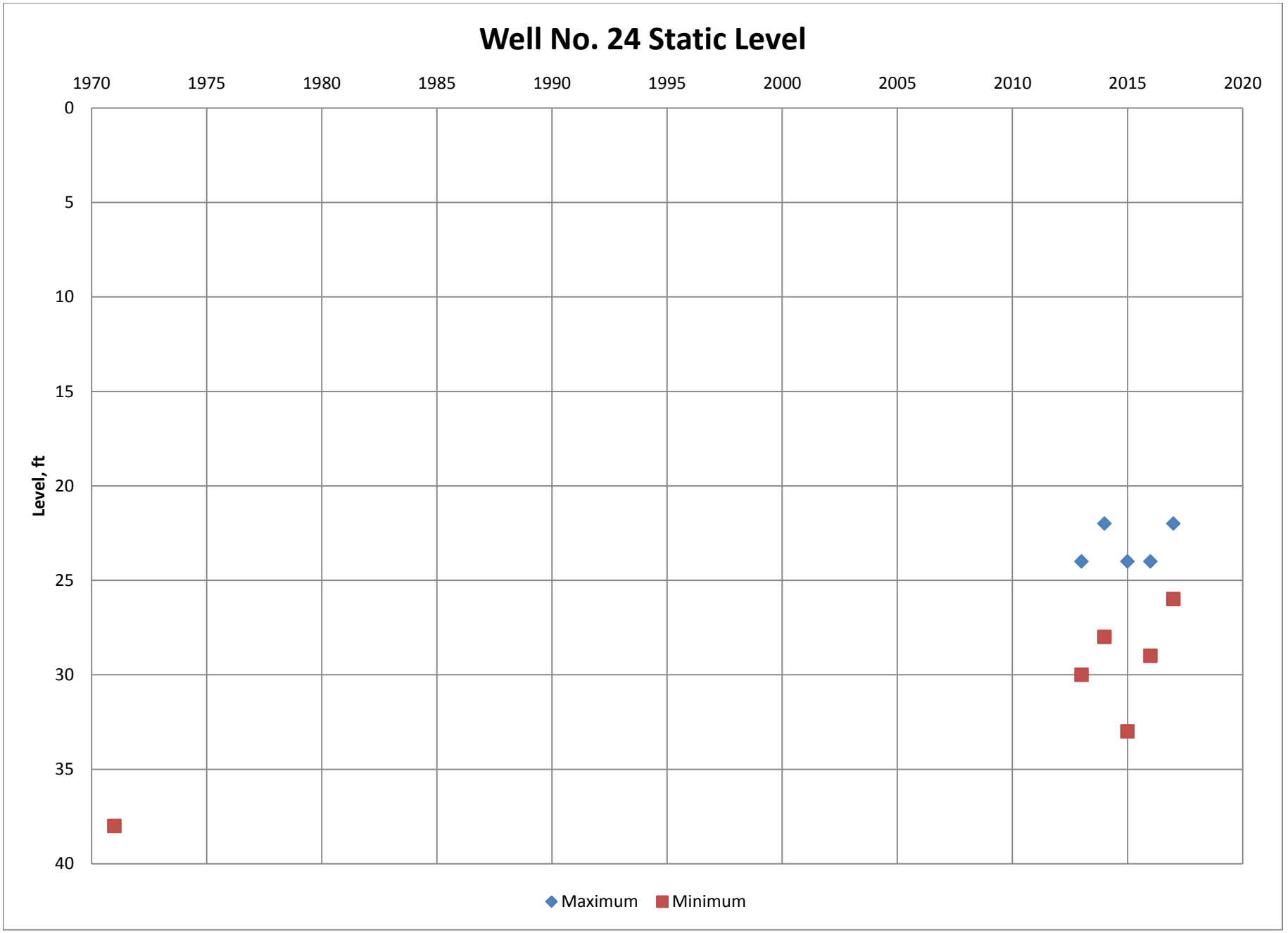

Well No. 19 Static Level
1980
1985
1990
1995
2000
2005
2010
2015
2020
0
5
10
15
20
25
30
35
40
Level, ft
Maximum
Minimum

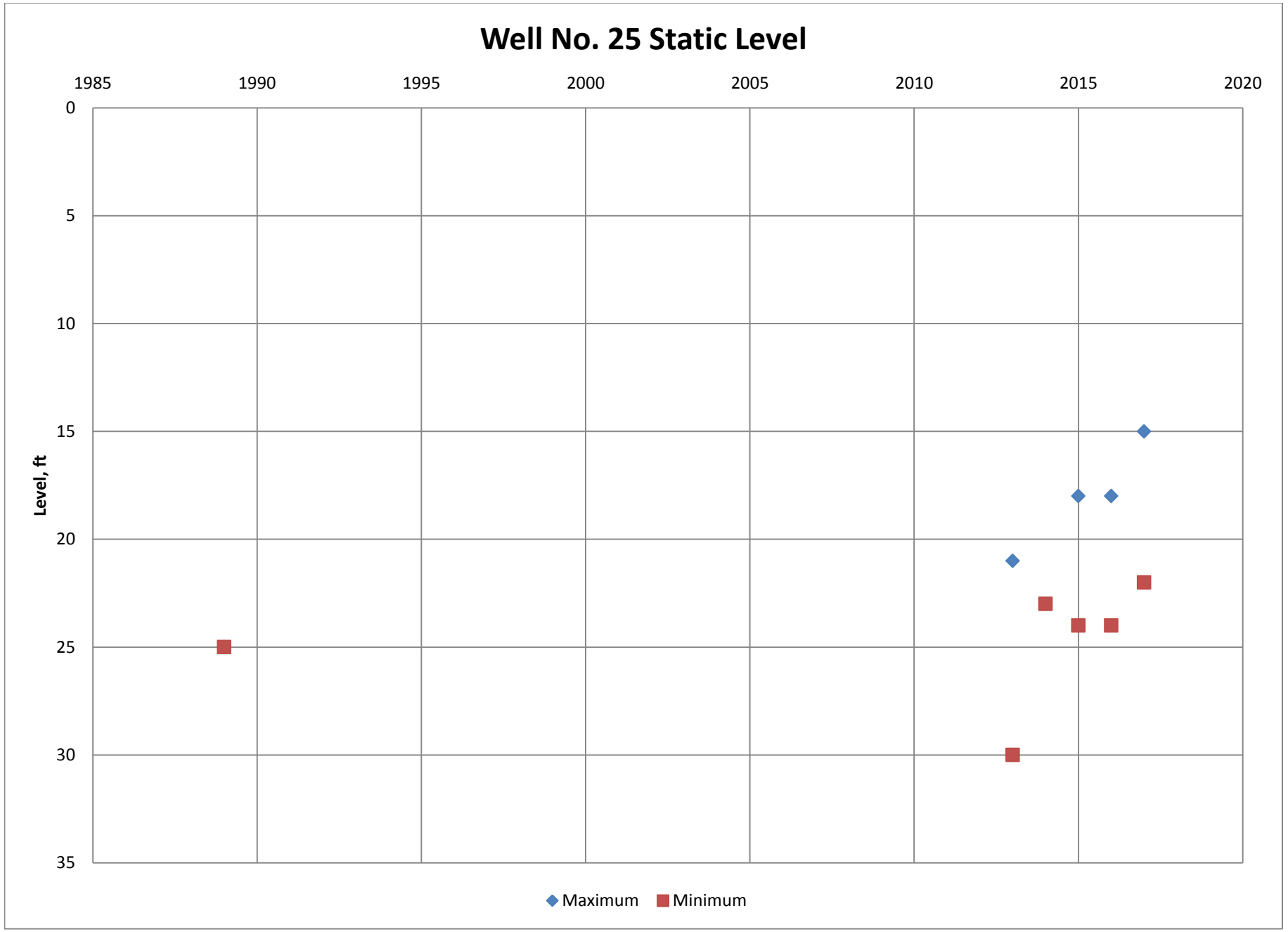

Well No. 20 Static Level
1960
1970
1980
1990
2000
2010
2020
0
5
10
15
20
25
30
Level, ft
Maximum
Minimum

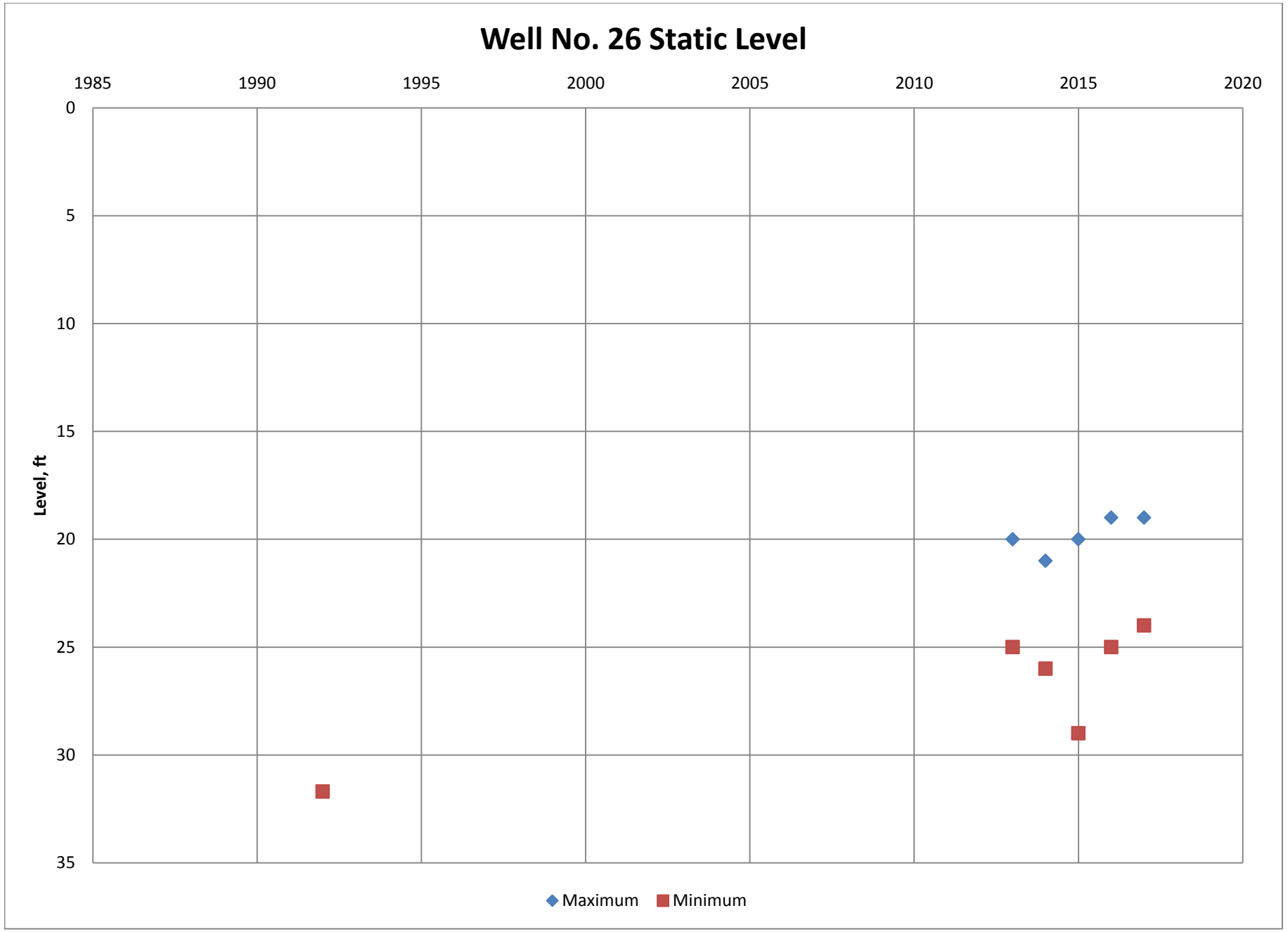

Well No. 21 Static Level
1960
1970
1980
1990
2000
2010
2020
0
5
10
15
20
25
30
Level, ft
Maximum
Minimum

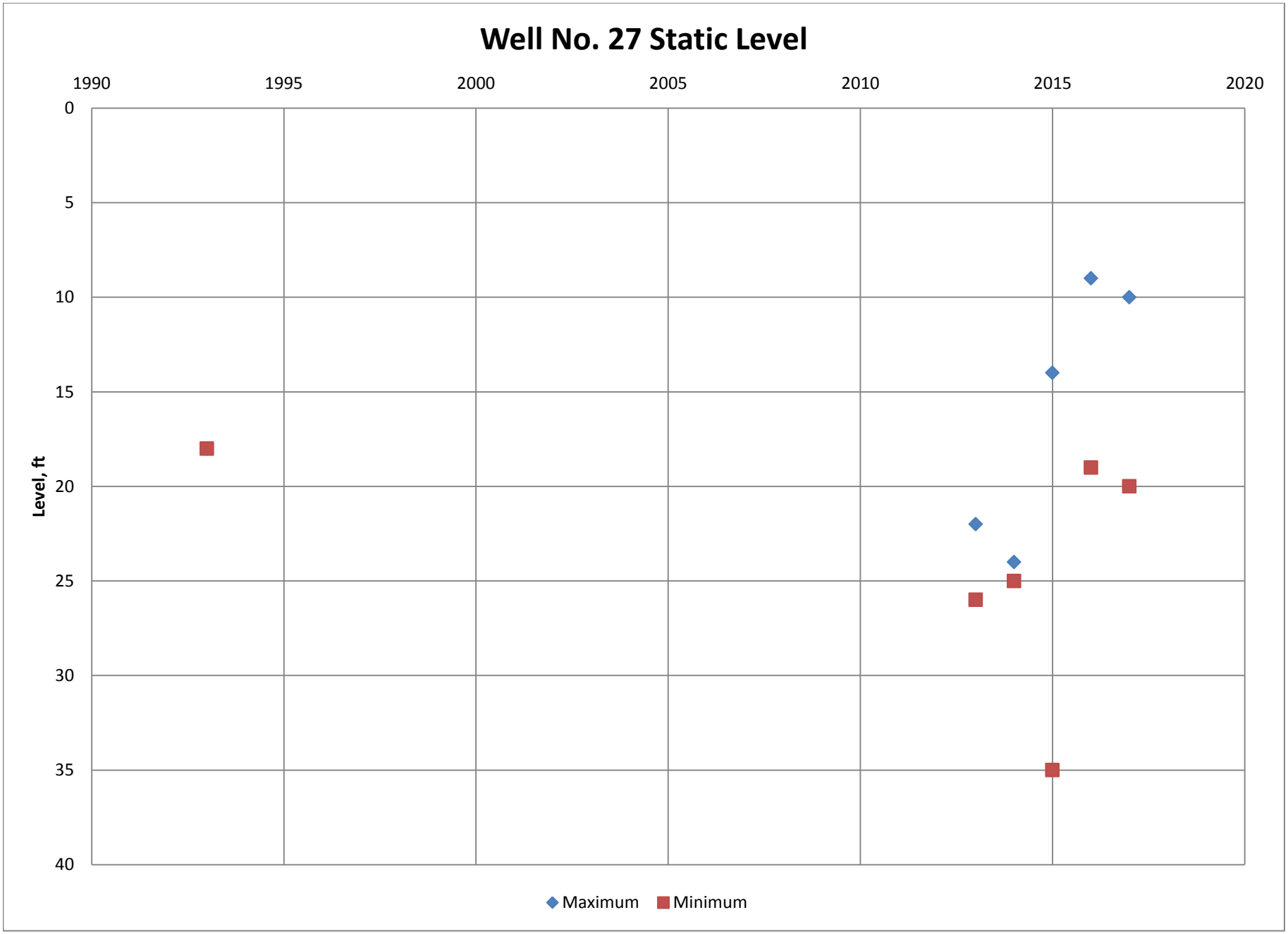

Well No. 22 Static Level
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
0
5
10
15
20
25
30
35
Level, ft
Maximum
Minimum


Well No. 23 Static Level
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
0
5
10
15
20
25
30
Level, ft
Maximum
Minimum


Well No. 24 Static Level
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
0
5
10
15
20
25
30
35
40
Level, ft
Maximum
Minimum


Well No. 25 Static Level
1985
1990
1995
2000
2005
2010
2015
2020
0
5
10
15
20
25
30
35
Level, ft
Maximum
Minimum


Well No. 26 Static Level
1985
1990
1995
2000
2005
2010
2015
2020
0
5
10
15
20
25
30
35
Level, ft
Maximum
Minimum


Well No. 27 Static Level
1990
1995
2000
2005
2010
2015
2020
0
5
10
15
20
25
30
35
40
Level, ft
Maximum
Minimum

Well Static Level

Well 4		Well 6		Well 15/25		Well 18		Well 19		Well 20	
Date	Static	Date	Static	Date	Static	Date	Static	Date	Static	Date	Static
11/15/2001	86	01/28/1997	57	11/13/2001		11/19/2001	25	11/09/2001	20	11/09/2001	20
11/17/2003	86	11/17/1986		12/15/2003		06/21/2006	27	12/15/2003	22	12/15/2003	23
10/05/2006	85	10/06/2003	87	10/06/2006		01/15/2004	25	01/16/2014	22	01/16/2004	22
		12/15/2003	70			01/12/2002		05/16/2004	22	04/25/2005	22
		02/12/2001	59			10/06/2006		10/06/2006	22	10/06/2006	24
		01/12/2005	62								
		10/05/2006	66								

Well 21		Well 22		Well 23		Well 24		Well 26		Well 27	
01/28/1997	21	11/19/2001	22	11/19/2001		12/15/2004	27	12/15/2003	29	12/15/2003	26
11/28/2001	20	12/15/2003	24	03/12/2001		01/12/2005	25	01/16/2004	26	01/16/2004	26
12/15/2003	23	01/16/2001	22	10/06/2006		10/06/2006	26	01/12/2005	28	01/12/2005	26
01/20/2001	25	10/06/2006	23					10/06/2006		10/06/2006	25
01/12/2005	21										
10/06/2006	24										

Appendix 4: Capital Improvement Plan

Appendix 4

Five Year CIP

The New Ulm Public Utilities Water Division Capital Improvement Plan that will be approved December 26, 2017 contains several items that will affect New Ulm's Municipal wells. The Wells and Reservoirs Account has a recurring $50,000 each year for annual well rehabilitation and also has in 2018 an additional $177,000 amount for completing rehabilitation of our two Mount Simon wells. In that same account for 2018, $250,000 is budgeted for slope stabilization at our 3 MG reservoir.

In 2019 there is money in the Wells and Reservoirs account for Wellfield Mitigation and Well Rehabilitation for wells 15,18,19,20,21,22,23,24,25,26 and 27. It is estimated that this work will be bonded for $2.9 million. This $2.9 million project could result in New Ulm Water Department reducing the total number of wells in the Minnesota River flood plain. This same line item shows $1,000,000 for a new Mount Simon well, but that will be removed because it is expected that improvements in the existing wells and lowering demand.

In 2020 the Wells and Reservoirs account contains $300,000 to either repair or replace the raw water lines from the wellfields to the treatment plant.

Even though this is a 5year CIP the PUC Commissioners only formally approve the budget for the year upcoming. It is possible that the $2.9 Million project may be split up over 3 or 4 years if a bond that size would result in a 24% water rate increase (in that eventuality) the projects would be paid out of cash on hand in the year they are completed.

New Ulm Public Utilities
Water Division
Capital Improvement Plan

Account	*Historical Actual* 2016	*Budget* 2017	Budget 2018	2019	2020	2021	2022	2023
740-5517-510000 Land								
740-5517-520000 Building Improvements	7,504							
Office Floor Covering Replacement				15,000				
Contribution to restroom facilities at Nehls Park				25,000				
740-5517-520020 Treatment Plant Improvements	6,162					100,000	100,000	100,000
Conversion to Sodium Hypochlorite Generation - rebudget item		185,000	300,000					
740-5517-530000 Construction in progress								
740-5517-530325 Wells and reservoirs								
Annual well rehabilation			50,000	50,000	50,000	50,000	50,000	50,000
Raw Water Line Condition Assessment					300,000			
Wellfield Flood Mitigation and Well Rehabilitation**				2,900,000				
Additional well **				1,000,000				
Well #4 and #6 Rehabilitation		50,000	177,000					
Slope Stabilization at 3 MG Reservoir			250,000					
740-5577-530000 Construction in progress								
740-5577-530230 Meters and regulators	141,927							
Meter and transmitter replacement program		150,000	125,000	125,000	125,000	125,000	125,000	125,000
Pump and Pressure tank at Cottonwood St.		20,000						
740-5577-530310 Hydrants and accessories								
740-5577-530320 Mains & accessories								
Milford Heights trunk water main				90,000				
20th Street water main			110,000					
740-5577-530330 Flood Grant project								
740-5577-540000 Vehicles	17,833							
Unit #90 - 2008 Ford F150, 4wd					35,000			
Unit #91 - 2016 Ford Service Truck								
Unit #92 - 2011 Dodge Ram pickup							31,500	
Unit #93 - 2007 Dodge Dakota pickup				35,000				
Unit #94 - 2017 Dodge 4wd pickup								
Unit #95 - 2002 Ford F-450, Utility/Crane truck			95,000					
Unit #96 - 2015 Freightliner								
Unit #97 - 1 ton dump truck			40,500					
Unit #98 - 2016 Ford F250 pickup								
Unit #99 - 2001 Freightliner FL-80 tandem dump truck					120,000			
740-5577-550010 Office furniture & equipment				18,200				
740-5577-550015 Machinery & equipment	27,027	10,000		10,000	15,000	15,000	15,000	15,000
Backhoe				126,000				
740-5577-550020 Tools and work equipment								
GIS software and equipment		12,600	13,500					
740-5577-550055 Computer hardware								
740-5577-550056 Computer software								
Total Capital Replacements	$ 200,453	$ 427,600	$ 1,161,000	$ 4,394,200	$ 645,000	$ 290,000	$ 321,500	$ 290,000

** Potential 2019 bonded project in conjunction with Electric Fund bonding

Appendix 5: Emergency Telephone List

Emergency Telephone List

Emergency Response Team	Name	Work Telephone	Alternate Telephone
Emergency Response Lead	George I Brown Jr	507-359-8279	219-405-8243
Alternate Emergency Response Lead	Larry Pelzel	507-359-8229	507-828-3071
Water Operator	Joel Johnson	507-359-8291	507-276-4237
Alternate Water Operator	Derek Nelson	507-359-8291	507-276-7156
Public Communications	City Manager Brian Gramentz	507-359-8238	507-304-2760

State and Local Emergency Response Contacts	Name	Work Telephone	Alternate Telephone
State Incident Duty Officer	Minnesota Duty Officer	800/422-0798 Out State	651-649-5451 Metro
County Emergency Director	Brown County Laine Sletta	507-233-6644	507-233-6600
County Emergency Director	Nicollet County Justin Block	507-934-7874	
National Guard	Minnesota Duty Officer	800/422-0798 Out State	651-649-5451 Metro
Mayor/Board Chair	Mayor Bob Beussman	507-359-8251	
Fire Chief	Paul Macho	507-359-8225	507-276-9601
Sheriff		507-233-6700	
Police Chief	Myron Weiland	507-233-6750	
Ambulance		911	
Hospital	New Ulm Medical Center	507-217-5000	800-795-1211
Doctor or Medical Facility	New Ulm Medical Center	507-217-500	800-795-1211

State and Local Agencies	Name	Work Telephone	Alternate Telephone
MDH District Engineer	Amy Lynch	507-344-2713	507-990-2159
MDH	Drinking Water Protection	651-201-4700	
State Testing Laboratory	Minnesota Duty Officer	800/422-0798 Out State	651-649-5451 Metro
MPCA	Regional Office	507-389-5977	
DNR Area Hydrologist	Lucas Youngsma	507-537-7258	
Brown County Water Planner	John Knisley	507-233-6600	507-233-6640
Nicollet County Water Planner	Mandy Landkamer	507-934-7070	

Utilities	Name	Work Telephone	Alternate Telephone
Electric Company	Public Utilities Commission	507-359-8295	507-359-8264
Gas Company	Public Utilities Commission	507-359-8289	507-359-8264
Telephone Company	NU-Telecom	507-354-5465	
Gopher State One Call	Utility Locations	800-252-1166	651-454-0002
Highway Department	District Office # 7	507-304-6100	1-800-657-3747

Mutual Aid Agreements	Name	Work Telephone	Alternate Telephone
Neighboring Water System	N/A		
Emergency Water Connection	N/A		
Materials	MDC	507-359-8292	
MNWARN	MNWARN	1-800-367-6792	

Technical/Contracted Services/Supplies	Name	Work Telephone	Alternate Telephone
MRWA Technical Services	MN Rural Water Association	800-367-6792	
Well Driller/Repair	Schaefer Well Co.	507-354-2614	
Pump Repair	Schaefer Well Co.	507-354-2614	
Electrician	Full Service Electric	507-359-2009	
Plumber	Klassen Plumbing	507-359-9616	

Backhoe	PUC	507-359-8264	
Chemical Feed	Hawkins Chemical Co.	651-730-1115	
Meter Repair	In-House	507-359-8279	
Generator	Katolight Co.	1-800-325-5450	
Valves	MDC	507-359-8292	
Pipe & Fittings	MDC	507-359-8292	
Water Storage	Water/Steam Dept	507-359-8/279	
Laboratory	Minnesota Valley Testing Lab	507-354-8517	
Engineering firm	City Engineering Dept	507-359-8244	

Communications	Name	Work Telephone	Alternate Telephone
News Paper	The Journal	5074-359-2911	
Radio Station	KNUJ	507-359-2921	
School Superintendent	ISD 88	507-359-8401	
Lutheran School Supt	Minnesota Valley Lutheran	507-354-6851	
Catholic School Supt	NU Area Catholic Schools	507-354-2719	507-354-4511
Property & Casualty Insurance	LMIT	507-359-8233	

Critical Water Users	Name	Work Telephone	Alternate Telephone
Hospital Critical Use: Patient Care	New Ulm Medical Center	507-217-5000	
Nursing Home Critical Use: Patient Care	Oak Hills Assisted Living	507-359-2026	
Public Shelter Critical Use: Drinking Water	Vogel Arena	507-359-8347	507-359-8350
Public Shelter Critical Use: Drinking Water	NU Civic Center	507-233-8400	
Public Shelter Critical Use: Drinking Water	Community Center	507-359-8340	

Appendix 6: Cooperative Agreements for Emergency Services

No agreements are feasible at this time.

Appendix 7: Municipal Critical Water Deficiency Ordinance

ORDINANCE NO. 247

AN EMERGENCY ORDINANCE PROVIDING FOR THE CONSERVATION OF THE WATER SUPPLY OF THE CITY OF NEW ULM AND FOR PENALTIES FOR VIOLATION HEREUNDER

Preamble:

This Ordinance is passed as an emergency measure upon recommendations of the City Manager and upon findings by the City Council of the City of New Ulm, that an emergency exists, requiring the preservation of the water supply of the City all in the interests of public health, public safety, and general welfare of the City.

THE CITY OF NEW ULM DOES ORDAIN:

SECTION I:

Whenever the City Manager, with the advice of the Fire Chief and the Superintendent of the Public Utilities of the City, shall determine that a shortage of the water supply threatens the City or any part thereof, the City Manager may by notice published in the legal newspaper of the City of New Ulm limit the times and hours during which water from the municipal system may be used for sprinkling and such other uses as may be specified in the said notice.

SECTION II:

Following publication of said notice, any person, firm or corporation, who shall cause or permit water to be used contrary to the provisions of said notice, shall be guilty of a misdemeanor and shall be punished by a fine of not more than Twenty Five ($25.00) Dollars or by imprisonment for not more than ten (10) days.

SECTION III:

Continued violation shall be cause for discontinuance of water service without notice in addition to the penalties as aforesaid.

SECTION IV:

This Emergency Ordinance shall take effect and be in force immediately after its passage, approval and publication in the official newspaper of the City of New Ulm.

Passed by the City Council of the City of New Ulm, this 15th day of July 1969.

W.F. Huevelmann
Acting President of the City Council

Attest:

Andrew Bastian–City Clerk

Approved by the Mayor of the City of New Ulm, this 15th day of July, 1969.

James R. Seifert – Mayor

Officially published in the New Ulm Daily Journal July 15, 1969.

trunk, or kept in some other area of the vehicle not normally occupied by the driver or passengers, if the motor vehicle is not equipped with a trunk. For the purpose of this section, a utility or glove compartment shall be deemed to be within the area occupied by the driver or passengers.

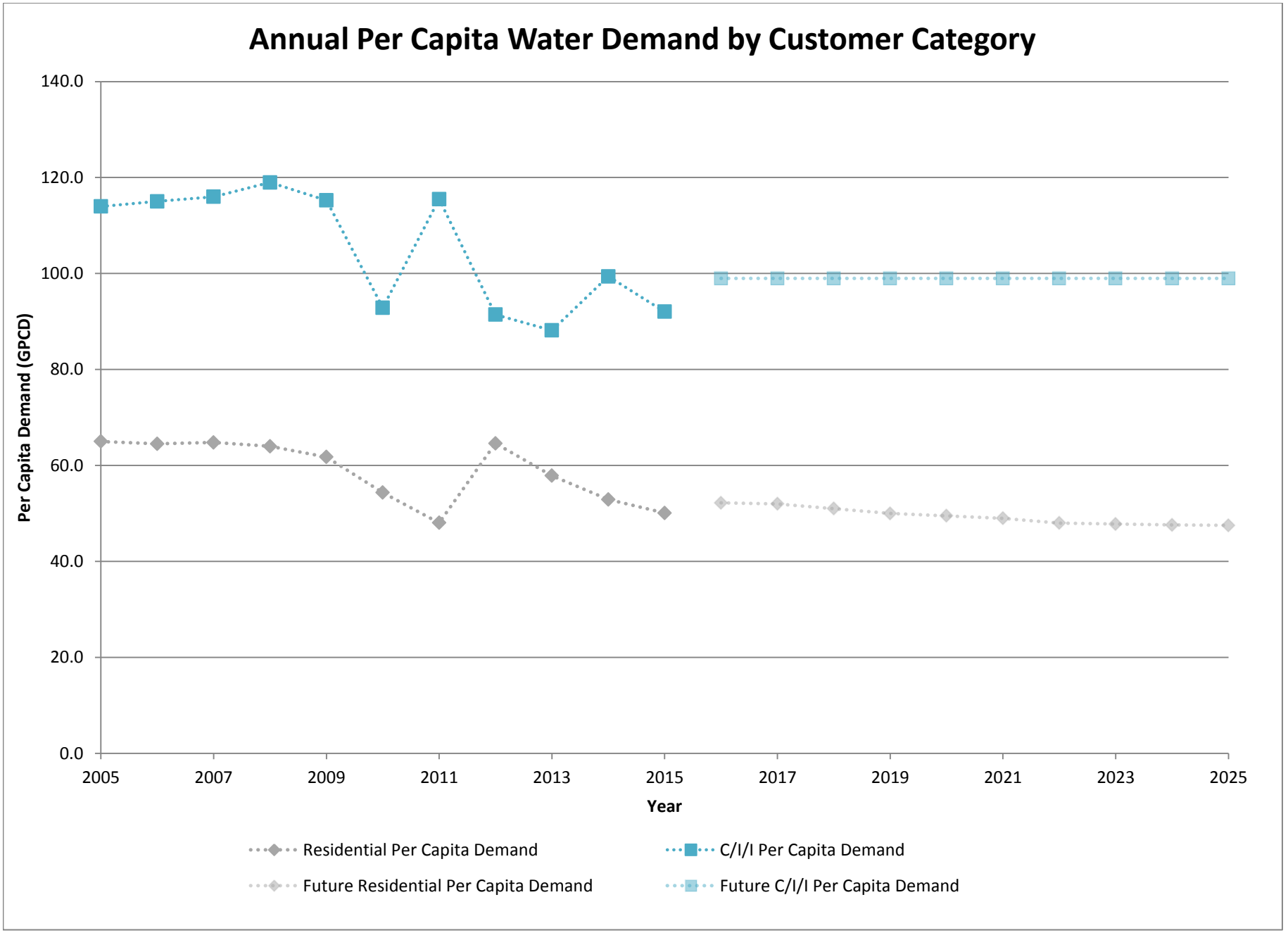
Section 8.87. Habitation of vehicles upon public property.

Subdivision 1. Use of vehicle as dwelling. It is unlawful for any person to park or locate any motor vehicle, trailer, or recreational vehicle within or upon any right-of-way or public property for use as a place of dwelling or habitation, or for any person to use or occupy such a motor vehicle, trailer, or recreational vehicle within or upon any right-of-way or public property as a place of temporary or permanent habitation or dwelling.

Subd. 2. Penalty. Each day of violation of this section shall be a petty misdemeanor.

Section 8.88. Water conservation order. Whenever the City Manager, with the advice of the Fire Chief and the Superintendent of Utilities, shall determine that a shortage of the water supply threatens the City or any part thereof, the City Manager may, by notice published in the official newspaper of the City of New Ulm, limit the times and hours during which water from the municipal system may be used for lawn-sprinkling and such other uses as may be specified in the said notice. Following publication of such notice, it is unlawful for any person to cause or permit water to be used contrary to the provisions of the notice, and such violation shall be a petty misdemeanor. Continued violation shall, in addition to the aforesaid penalty, be cause for discontinuance of water service without notice to the property on which the violations occurred.

Appendix 8: Graph showing annual per capita water demand for each customer category during the last ten-years


Annual Per Capita Water Demand by Customer Category
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Per Capita Demand (GPCD)
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
2025
Year
Residential Per Capita Demand
C/I/I Per Capita Demand
Future Residential Per Capita Demand
Future C/I/I Per Capita Demand

Appendix 9: Water Rate Structure

NEW ULM PUBLIC UTILITIES COMMISSION
SCHEDULE OF WATER RATES
Effective January 1, 2014 Billing

GENERAL RATE PROVISIONS

Connection Charges

Connections, service lines and meters and their installation are the responsibility of the customer. A connection or transfer charge as determined in the Public Utilities Commission Schedule of Fees and Charges will be charged for new connections or transfers.

Billings

All bills shall be rendered monthly and shall be payable at net through the due date shown on the bill. Bills paid after the due date shall be subject to a late payment penalty of five percent (5%) of the amount of the bill.

Delinquency and Disconnection of Services

If any bill is unpaid after the due date, the customer shall be considered delinquent and service is subject to disconnection (minimum bill of $50). Disconnection charge as determined in the PUC Schedule of Fees and Charges shall be paid by the delinquent customer before service is restored.

Minnesota Sales and Use Tax

The current Minnesota Sales and Use Tax applicable to nonexempt service rendered shall be added to the monthly bills calculated under these rate schedules.

Resale

Service shall not be taken under the rate schedules for the purpose of resale. The PUC reserves the right to refuse service to customers not in compliance with this provision.

Rate Class Assignment

Rate classification for new accounts will be assigned based on projected usage information supplied by the customer as well as functional use and water pattern data. Existing accounts will be reviewed for classification changes in January of each year based on the prior years' usage and the existing rate schedule. These changes will be effective with the February billing.

METER CHARGES FOR ALL CLASSES

The meter charge is a per meter equivalent (based on a standard 5/8" meter).

5/8" or ¾" meter (1.0)	$10.10 per meter
1" meter *(1.4)*	$14.14 per meter
1 ½" meter *(1.8)*	$18.18 per meter
2" meter *(2.9)*	$29.29 per meter
3" meter *(11.0)*	$111.10 per meter
4" meter *(14.0)*	$141.40 per meter
6"meter *(21.0)*	$212.10 per meter
8" meter *(29.0)*	$292.90 per meter

RESIDENTIAL SERVICE RATE

Any single family private residence or farm, furnished through one meter and residential buildings with multiple units furnished through individual meters.

Rate

Block 1 – up to 5,000 gallons ..... $3.78 per 1,000 gallons
Block 2 – over 5,000 gallons ..... $4.73 per 1,000 gallons
Minimum Bill ..... Same as Meter Charge

SMALL COMMERCIAL SERVICE RATE

Any business that does not qualify as an Industrial customer and has an annual average water consumption of less than 30,000 gallons per month furnished service through one or multiple meters at one location. Applies to any residential building or complex with multiple units furnished service through one meter.

Rate

Block 1 – up to 9,000 gallons ..... $3.40 per 1,000 gallons
Block 2 – over 9,000 gallons ..... $3.74 per 1,000 gallons
Minimum Bill ..... Same as Meter Charge

* *If multiple meters are installed at the PUC option, only one meter will be billed a customer charge.*

LARGE COMMERCIAL SERVICE RATE

Any business that does not qualify as an Industrial customer and has annual average water consumption of at least 30,000 gallons per month furnished service through one or multiple meters at one location. Applies to any residential building or complex with multiple units furnished service through one meter.

Rate

Block 1 – up to 100,000 gallons ..... $3.40 per 1,000 gallons
Block 2 – over 100,000 gallons ..... $3.74 per 1,000 gallons
Minimum Bill ..... Same as Meter Charge

* *If multiple meters are installed at the PUC option, only one meter will be billed a customer charge.*

INDUSTRIAL SERVICE RATE

Any business that serves as a manufacturing, processing or like purpose facility at one location and also has an annual average monthly consumption of at least 840,000 gallons. Service may be provided through a single meter or multiple meters.

Rate

Block 1 – up to 556,000 gallons ..... $2.98 per 1,000 gallons
Block 2 – over 556,000 gallons ..... $3.14 per 1,000 gallons
Minimum Bill ..... Same as Meter Charge

MUNICIPAL/PUC SERVICE RATE

Any municipal or PUC facility. Service may be provided through a single meter or multiple meters at one location.

Rate

Block 1 – up to 53,000 gallons ..... $3.75 per 1,000 gallons
Block 2 – over 53,000 gallons ..... $4.70 per 1,000 gallons
Minimum Bill ..... Same as Meter Charge

TEMPORARY WATER SERVICE RATE

Applies to all non-municipal/PUC customers for the purpose of supplying water service from a fire hydrant.

Rate

All water used during the month..... $3.84 per 1000 gallons
Customer Charge ¾" – 1" ..... $100.00 per month
Customer Charge 1 ½" – 3" ..... $150.00 per month
Minimum Bill ..... Same as Customer Charge

BULK WATER LOADING STATION RATE

Applies to all water supplied through the bulk water loading station

Rate

All water used during the month..... $5.00 per 1000 gallons
Deposit for Key..... $100 per key

Appendix 10: Adopted or proposed regulations to reduce demand or improve water efficiency

No regulations drafted at this time

Appendix 11: Implementation Checklist

Description of Planned Action	Implementation Date	Completion Date
Continue to track unaccounted for water and perform leak detection surveys.	Ongoing	
Continue to track residential per capita use	Ongoing	
Conduct audience-appropriate water conservation education and outreach.	Ongoing	
Measure static water levels.	Monthly for each production well.	
Well rehab	Annually as needed.	
Reduce outdoor water use	Study in the future for potential opportunities.	
Provide education for water saving fixtures and appliances.	Ongoing	

Appendix 12: Sources of Information for Table 10

The New Ulm Part 1 Wellhead Protection Plan Amendment dated January 2016 and approved by the Minnesota Health Department states:

- A surface hydrologic feature must be included with the conjunctive delineation if the data elements listed under MR 4720.5400 document that a hydraulic connection occurs between it and the aquifer used by the public water supply well.
- Based upon the stable isotope data provided by the MDH, there does not appear to be a direct connection with the Minnesota River.
- It has been determined that a conjunctive delineation for the New Ulm municipal wells is not warranted at this time.

Part I Wellhead Protection Plan Amendment

Wellhead Protection Area Delineation
Drinking Water Supply Management Area Delineation
Well and Drinking Water Supply Management Area Vulnerability Assessments

Public Water Supplier 1080003
January 2016

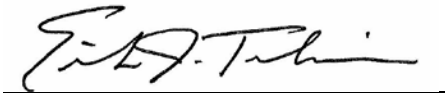
SOURCEWATER SOLUTIONS

Part I Wellhead Protection Plan Update
New Ulm Public Utilities
New Ulm, Minnesota
January 2016

Public Water Supplier 1080003

Source Water Solutions, LLC

I hereby certify that this report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Geologist under the laws of the State of Minnesota.



Erik J. Tomlinson, PG, LEED AP

Date: January 11, 2016 Lic. No.: 46739

Source Water Solutions, LLC
221 McCarron St.
St, Paul, MN 55113

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Glossary of Terms

Data Element. A specific type of information required by the Minnesota Department of Health to prepare a wellhead protection plan.

Drinking Water Supply Management Area (DWSMA). The area delineated using identifiable land marks that reflects the scientifically calculated wellhead protection area boundaries as closely as possible (Minnesota Rules, part 4720.5100, subpart 13).

Drinking Water Supply Management Area (DWSMA) Vulnerability. An assessment of the likelihood that the aquifer within the DWSMA is subject to impact from land and water uses within the wellhead protection area. It is based upon criteria that are specified under Minnesota Rules, part 4720.5210, subpart 3.

Emergency Response Area (ERA). The part of the wellhead protection area that is defined by a one-year time of travel within the aquifer that is used by the public water supply well (Minnesota Rules, part 4720.5250, subpart 3). It is used to set priorities for managing potential contamination sources within the DWSMA.

Inner Wellhead Management Zone (IWMZ). The land that is within 200 feet of a public water supply well (Minnesota Rules, part 4720.5100, subpart 19). The public water supplier must manage the IWMZ to help protect it from sources of pathogen or chemical contamination that may cause an acute health effect.

Wellhead Protection (WHP). A method of preventing well contamination by effectively managing potential contamination sources in all or a portion of the well's recharge area.

Wellhead Protection Area (WHPA). The surface and subsurface area surrounding a well or well field that supplies a public water system, through which contaminants are likely to move toward and reach the well or well field (Minnesota Statutes, section 103I.005, subdivision 24).

Well Vulnerability. An assessment of the likelihood that a well is at risk to human-caused contamination, either due to its construction or indicated by criteria that are specified under Minnesota Rules, part 4720.5550, subpart 2.

Acronyms

CWI - County Well Index

CMTS – Mt. Simon Sandstone

DNR - Minnesota Department of Natural Resources

EPA - United States Environmental Protection Agency

MDA - Minnesota Department of Agriculture

MDH - Minnesota Department of Health

MGS - Minnesota Geological Survey

MnDOT - Minnesota Department of Transportation

MPARS - MNDNR Permitting and Reporting System

MPCA - Minnesota Pollution Control Agency

NUPUC - New Ulm Public Utilities Commission

PLS - Public Land Survey

QBAA - Quaternary Buried Artesian Aquifer

SWCD - Soil and Water Conservation District

UMN - University of Minnesota

USGS - United States Geological Survey

1.0 Public Water Supply Profile

The following persons are the contacts for the New Ulm Public Utilities Wellhead Protection Plan.

1.1 Wellhead Protection Manager

George Brown
Water/District Energy Supervisor
New Ulm Public Utilities
306 North German Street
New Ulm, MN 56073
Telephone: 507.359.8279

Email: George.Brown@ci.new-ulm.mn.us

1.2 Wellhead Protection Plan Consultant

Erik J. Tomlinson, PG
Source Water Solutions, LLC
221 McCarron Street
St. Paul, MN 55113
Telephone: 612.701.7343

Email: erik@sourcewater-solutions.com

2.0 Introduction

Source Water Solutions, LLC and SEH were retained by the New Ulm Public Utilities Commission (NUPUC) (PWSID 1080003) to complete an update to the NPUC's wellhead protection (WHP) plan. The work was performed in accordance with the Minnesota Wellhead Protection Rule, Parts 4720.5100 to 4720.5590.

This report presents the delineation of the wellhead protection area (WHPA), the drinking water supply management area (DWSMA), and the vulnerability assessments for the public water supply wells and DWSMAs. **Figure 1** shows the boundaries for the wellhead protection areas (WHPAs) and the boundary for the DWSMA. The WHPAs are defined by a 20-year time of travel. **Figure 2** shows the emergency response areas (ERA), which are defined by a 1-year time of travel and the Inner Wellhead Protection Management Zone (IWPMZ), a 200 foot radius around each well. Definitions of rule-specific terms that are used are provided in the "Glossary of Terms."

This report also documents the technical information that was required to prepare this portion of the WHP Plan in accordance with the Minnesota Wellhead Protection Rule. Additional technical information is available from Minnesota Department of Health (MDH).

The municipal water supply wells included in the WHP Plan are listed in **Table 1**.

Table 1 - Water Supply Well Information

Well No.	Unique Well No.	Use/Status	Year Constructed	Casing Diam. (in)	Casing Depth (ft)	Total Depth (ft)	Aquifer Formation	Vulnerability
Well 4	430604	Primary	4/2/1987	12	216	247	Cretaceous Undiff	Not Vulnerable
Well 6	241335	Primary	2/1/1965	24	203	212	CMTS	Vulnerable
Well 15	188651	Primary	2/16/1982	12	53	67	QBAA	Vulnerable
Well 18	241337	Primary	11/11/1960	12	125	147	QBAA	Vulnerable
Well 19	241338	Primary	3/1/1965	12	144	168	QBAA	Not Vulnerable
Well 20	209604	Primary	2/28/1969	20x16	140	170	QBAA	Not Vulnerable
Well 21	209605	Primary	2/27/1969	20x17	137	167	QBAA	Not Vulnerable
Well 22	241339	Primary	1971	36x16x18	64	83	QBAA	Not Vulnerable
Well 23	241340	Primary	8/30/1971	30x16x12	152	195	CMTS	Not Vulnerable
Well 24	209603	Primary	8/18/1971	36x30	60	71	QBAA	Not Vulnerable
Well 25	511075	Primary	8/11/1989	12	46	62	QBAA	Vulnerable
Well 26	513011	Primary	8/6/1992	12	73	96	QBAA	Not Vulnerable
Well 27	520956	Primary	10/8/1993	12	122	162	QBAA	Vulnerable

3.0 Assessment of the Data Elements

MDH staff met with representatives of the public water supplier in April 2014 for a scoping meeting that identified the data elements required to prepare Part I of the WHP Plan Update. **Table 2** presents the assessment of these data elements, relative to the present and future implications of planning items, as specified in Minnesota Rules, part 4720.5210. The Scoping Decision Notice is provided as **Appendix A**.

Table 2 - Assessment of Data Elements

	Present and Future Implications				Data Source
	Use of the Well (s)	Delineation Criteria	Quality and Quantity of Well Water	Land and Groundwater Use in DWSMA	
Precipitation					
Average monthly and annual precipitation	L	H	L	M	Midwestern Regional Climate Center
Geology					
Maps and geologic descriptions	M	H	H	H	MGS, USGS, Mankato State University, Consultant Reports
Subsurface data	M	H	H	H	MGS, MDH, DNR, Consultant Reports
Borehole geophysics	M	H	H	H	MGS, Consultant Reports
Surface geophysics	L	L	L	L	MGS, Consultant Reports
Maps and soil descriptions	L	M	L	M	USDA SURGGO
Water Resources					
Watershed units	L	M	L	M	DNR
List of public waters	L	M	L	M	DNR
Local Floodplains	L	M	M	M	FEMA
Land Use					
Parcel boundaries map	L	H	L	M	Brown County, Nicollet County
Political boundaries map	L	H	L	M	DNR
PLS map	L	H	L	L	DNR
Public Utility Services					
Transportation routes and corridors	L	H	M	M	MnDOT, City of New Ulm
Storm/sanitary sewers and PWS system map	L	L	M	M	City of New Ulm
Public drainage systems map or list	L	M	M	M	DNR, Brown County, Nicollet County
Records of well construction, maintenance, and use	H	H	H	H	City of New Ulm, CWI, MDH files
Surface Water Quantity					
Stream flow data	L	L	M	L	USGS, MPCA, DNR
Ordinary high water mark data	L	L	L	M	DNR
Permitted withdrawals	M	L	M	M	DNR, City of New Ulm
Protected levels/flows	M	L	M	M	DNR, MPCA
Water use conflicts	M	M	M	M	DNR, MPCA
Groundwater Quantity					
Permitted withdrawals	H	H	H	H	DNR
Groundwater use conflicts	H	H	H	H	DNR, City of New Ulm
Water levels	H	H	H	H	DNR, MPCA, MDA, MDH, City of New Ulm
Surface Water Quality					
Monitoring data summary	L	L	M	M	MPCA

	Use of the Well (s)	Delineation Criteria	Quality and Quantity of Well Water	Land and Groundwater Use in DWSMA	
Groundwater Quality					
Monitoring data	H	H	H	H	MPCA, MDH, City of New Ulm
Isotopic data	H	H	H	H	MPCA, MDH, MDA, USGS, County, UMN
Tracer studies	L	L	L	L	None Available
Contamination site data	H	M	H	H	MPCA, MDA
MPCA and MDA spills/release reports	H	L	H	H	MPCA, MDA

Definitions Used for Assessing Data Elements:

High (H) - the data element has a direct impact
Moderate (M) - the data element has an indirect or marginal impact
Low (L) - the data element has little if any impact
Acronyms used in this report are listed on page ii, after the "Glossary of Terms."

3.1 Precipitation

Precipitation Data was obtained from the Midwestern Regional Climate Center website. Monthly data was available from January-October 2010 at the NEW ULM2 SE station (USC00215887) and from November 2010 through December 2014 at the New Ulm 3SE (MN) station (USC00215888). The data is provided below in **Table 3**. Precipitation data can be used for determining local recharge for the groundwater model.

Table 3 - Precipitation Data

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
2010	1.00	0.70	1.61	2.51	2.63	8.49	3.52	3.31	7.68	1.92	1.75	2.66	37.78
2011	0.83	1.54	2.58	2.35	5.04	4.51	3.74	1.15	0.80	0.40	0.12	1.10	24.16
2012	0.87	2.09	2.15	2.39	12.39	1.04	2.02	1.64	0.70	1.06	0.85	1.81	29.01
2013	0.83	0.93	2.05	5.32	2.91	6.55	0.86	1.09	2.25	3.38	0.44	1.32	27.93
2014	0.75	1.19	1.43	4.60	4.72	9.75	1.01	3.91	1.54	1.18	0.80	1.08	31.96

Note: All values are in inches.

3.2 Geological Information

The local and regional geologic and hydrogeologic conditions influence the delineation of the WHPAs for the public water supply wells. By characterizing these conditions, the geometry, location and magnitude of groundwater recharge and discharge areas, and the groundwater flow direction of the source water aquifer could be determined or estimated.

Existing geological maps, reports, and studies that were used are listed in the References section of the plan. Through the use of public-domain well records and local and regional geologic studies and publications, the geology and hydrogeology of the area have been evaluated and reviewed to aid in the WHPA delineations and vulnerability assessments. These resources were provided by the City, the MDH, and the Minnesota Geological Survey (MGS). The surficial and bedrock geology data and descriptions for Brown County were provided in a preliminary Draft format by the MGS as they are currently developing a Geologic Atlas for Brown County. The City has no additional geologic

information from logs or borehole geophysical records of wells, borings, or exploration test holes, nor additional information from surface geophysical studies. A surficial geology map is presented as **Figure 3** and a bedrock geologic map is presented as **Figure 4**. Geologic cross-sections were created through the study area and are provided as **Figures 5 and 6**. The cross-section locations are depicted on **Figure 4**. Additional cross sections were produced by the MDH and are provided in **Appendix A**.

Surficial Geology

Pleistocene age glacial deposits comprising of approximately 7 to 340 feet of sand and clay are found in the New Ulm area. Glacial deposits cover almost the entire Minnesota River watershed and contain the most widely used aquifers. The glacial deposits are predominantly till, an unsorted mixture of clay, silt, sand and gravel. Sand and gravel beds found in the till are the most widely used aquifers in the watershed. The sand and gravel lenses are commonly thin and discontinuous, but provide water supplies adequate for most uses (HMS 2005).

The following surficial geologic descriptions were taken from the Nicollet County Geologic Atlas (Meyer et al., 2011) and correlated with the preliminary Draft Brown County Geologic Atlas data (MGS 2015). The units have been grouped together based upon depositional environment and geologic material and are shown in **Figures 3 and 4**. Generally speaking, the units have been grouped below into the conceptual model layers used to construct the groundwater flow model.

Layer 1: Shallow Alluvial deposits and Glacial Till

(Qf) Loamy sand and gravel sand—Includes gravel and beds of silt loam and silty clay loam. Contains variable amounts of translocated and disseminated organic debris. Forms fan-shaped deposits at the base of steep slopes and at the mouths of modern streams. *Alluvial fan sediment.*

(Qh) Silt to clay—Mapped in depressions, typically characterized by a thick, black, upper soil horizon; may include sand and organic materials near shore; laminated in places. Deposited in ponded water in modern or drained lakes. *Modern lake sediment.*

(Qa) Sand and gravel with silt and clay—Interbedded with layers of predominantly sand and gravel. Fine-grained sediment may also form discrete beds or occur in the upper part of the deposit (fining-up sequences). Deposited by modern streams in channels and floodplains. Many modern streams re-occupy glacial channels so the unit may be coarser-grained in places because of reworking of glacial stream sediment. Also includes areas of decomposing organic material and fine-grained sediment deposited by slack water in a floodplain setting. Channel may be scoured to expose bedrock in some locations. *Floodplain alluvium.*

(Qc) Clay to boulders—Primarily clay to sand and gravel with local rock fragments where bedrock crops out (see Plate 2, *Bedrock Geology*); deposited on steep slopes by wet and dry gravitational failure. Resembles the material from which it was derived—Des Moines lobe and older, loamy tills, and sand and gravel—except where sorting by gravity and water resulted in material with a different texture than the parent material. *Colluvium.*

Conceptual Model Layers 2 and 3: *Upper Glacofluvial Outwash Aquifer (Layer 2) and the Lower Glaciofluvial Outwash Aquifer (Layer 3) within the Minnesota River valley*

(Qt) Sand and gravelly sand with silt and clay—Well sorted, fining up; forms a nearly level surface with some areas of streamlined bars and shallow channels, locally filled with fine-grained sediment that lies above the modern floodplain; the general elevation of the individual surfaces are expressed numerically from oldest to youngest. Terraces with various elevations are interpreted to have formed during the incision of glacial River Warren. The broad valley was created during one or

possibly two catastrophic discharge events from glacial Lake Agassiz and obscured any prior valleys in the same location.. *Alluvial terrace deposits.*

(Qs) Sand, gravelly sand, and cobbly gravel—Poorly sorted; collapsed; typically faulted and folded, and commonly interbedded with, or capped by, sandy to loamy diamicton (mudflow sediment) and silt (lake sediment). Boulders are present locally. Deposited by running water and gravity in crevasses or low areas on the ice surface, or within or at the mouth of subglacial tunnels. *Collapsed and Buried collapsed stream sediment.*

(Qt) Diamicton associated with the Des Moines lobe (Heiberg Member of the New Ulm Formation**)**—Unsorted sediment with a loam matrix that contains clasts of gravel, scattered cobbles, and rare boulders; the term *till* is used where the sediment was deposited directly by the ice, *glacial sediment* where modified, *diamicton* where no genesis is implied. Typically yellow- brown where oxidized and dark gray where unoxidized.

Bedrock Geology

Generally, the depth to bedrock in the New Ulm area ranges from 7 to 340 feet. The top of bedrock elevation ranges from 615 to 897 feet above mean sea level (MSL). According to the well records of the New Ulm municipal wells, bedrock was encountered at depths ranging from 30 (Municipal Well 6) to 185 feet (Municipal Well 19).

The bedrock descriptions below are displayed on **Figure 4** and are listed below from most recent to oldest. Data was compiled from the Nicollet County Geologic Atlas and preliminary Draft Brown County Geologic Atlas. The first (youngest) bedrock encountered in the New Ulm area is:

Conceptual Model Layers 2 and 3**:** Cretaceous Shale (Layer 2) and the Cretaceous Sandstone (Layer 3) outside of the former Glacial River Warren valley limits

(Kd) *Dakota Formation (Upper Cretaceous)* - Interbedded sandstone, siltstone, and mudstone. Sandstone is quartzose and can be white, gray, brown, or orange in color, and have clasts of white kaolinite, biotite, and black lignite. Sand grains are fine- to coarse-grained and angular to subrounded. It is generally friable, with minor iron oxide and calcite cement. Mudstone is dark gray to brown, mostly non-calcareous, with light brown to white silty laminations. The formation is as thick as 275 feet (84 meters) and unconformably overlies the undifferentiated unit (Ka), Paleozoic bedrock, and Precambrian crystalline rock at elevations between 700 and 1,150 feet (213 to 351 meters) above sea level.

(Ka) *Undifferentiated (Lower to Upper Cretaceous)*—Red-brown to pale olive mudstone, siltstone, and interbedded yellow-gray, very fine- to medium-grained sandstone containing small flakes of black lignite. Generally friable, but does contain iron-rich concretions and intergranular carbonate and pyrite cement.

(Cm) *Mt. Simon Sandstone (Middle Cambrian)*—Fine- to coarse-grained, well rounded, white to light gray to pale yellowish-brown, quartzose sandstone with thin interbeds of white and green feldspathic shale and siltstone. Interbeds of shale and siltstone are common in the upper one-third of the formation where it is transitional with the Eau Claire Formation. The sandstone is generally very friable to poorly cemented. The Mt. Simon Sandstone is less than 200 feet (61 meters) thick. The formation is present in the eastern part of Brown County.

(Pp) *Ultramafic to intermediate composition plug-like intrusion (Proterozoic)*- Unit was mapped on the basis of small, sharp, positive magnetic anomalies that are similar to the anomalies created by units <mc and <md, and also to anomalies in east-central Minnesota that range from ultramafic

pyroxene-olivine hornblendite to gabbronorite, diorite, and granodiorite (for example Boerboom, 2014).

(Amg) *Morton Gneiss—Felsic composition (Archean)*— This unit is dominated by a paleosome of biotite monzonite to tonalite orthogneiss with amphibolitic rafts, and a granitoid neosome that occurs as irregular stringers and dikes that commonly contain megacrystic orthoclase. Continues to the north and west into Renville and Redwood Counties, and to the northeast into Nicollet County.

(Ang) *Granite near New Ulm (Archean)*—Dusky red, coarse-grained, porphyritic-trachytoid biotite granite. Exposed in the Minnesota River valley floor just east of New Ulm, where it is unconformably overlain by basal conglomerate of the Sioux Quartzite; the deep red color is likely the product of weathering beneath the quartzite. This granite is inferred to be Archean in age, based on general similarity in texture to the Fort Ridgely granite and to other late Archean porphyritic granites exposed in the Minnesota River valley to the northwest near Ortonville.

This geological information was used to verify hydrogeologic boundaries used in the original WHPP model (HMS 2001), were incorporated into the delineation of the WHPA and used to assess DWSMA vulnerability. Also, the construction information about the public water supply wells was used in conjunction with groundwater quality data to assess well vulnerability.

3.3 Land Use Information

Parcel boundaries, road centerlines, and U.S. Public Land Survey coordinates were used to define the boundaries of the DWSMA.

Parcel and political boundaries are depicted in **Figures 1 and 2**. This information was primarily used to delineate the DWSMA and determine whether the limits of the DWSMA cross political boundaries. Specific land uses and zoning within and adjacent to the DWSMA will be reviewed, evaluated, assessed, and presented in Part II of the Plan Update.

Figures included in this Plan depict the major transportation routes and corridors within and surrounding New Ulm. However, sanitary and storm sewer coverage and presence of large-scale pipelines within the DWSMA will be examined in Part II of the Plan.

3.4 Water Quantity Information

Since other high capacity wells in the New Ulm area influence the groundwater flow field of the source water aquifers, high capacity private and public wells were evaluated and assessed in detail during the delineations of the WHPAs for the City's public water supply wells. In addition, specific information related to the construction, maintenance, and use of the municipal wells has been compiled, utilized, and presented in the Plan (**Table 1**). This information was also used in delineating the WHPAs and completing the vulnerability assessments.

Groundwater pumping information from high capacity wells was obtained from the MNDNR Permitting and Reporting System (MPARS). The annual pumping reported by the Public Water Supplier was used in determining the daily volume of water that is discussed in Section 5 of this document (**Tables 6 and 7**). Furthermore, MPARS data, combined with well construction records from the CWI, were used to identify additional high capacity wells to be included in delineating the WHPA. The locations and daily volumes were cross checked with those in the existing groundwater model. The pumping volumes were updated as appropriate. These wells constitute flow boundaries (**Table 7**).

The primary wells used by the NUPUC public water supply system currently rely upon two source water aquifers – the Quaternary Buried Artesian Aquifer (QBAA) and the Cretaceous Mt. Simon/Cretaceous Undifferentiated Sandstone aquifer.

Municipal Wells 4, 6 and 23 are open to the Cretaceous Mt. Simon/Cretaceous Undifferentiated Sandstone bedrock aquifer. Wells 15, 18, 19, 20, 21, 22, 24, 25, 26, and 27 are completed in the QBAA. Well logs are included as **Appendix B**. The existing groundwater wells appear adequate to meet the City's current and future water demand. Within the next two years, the NUPUC has budgeted to investigate the feasibility of replacing Well 19 due to a partial screen collapse. However, no specific plans as to how or when Well 19 may be replaced are currently in place.

The NUPUC has provided the 2009-2013 water use and pumping volume records presented in this Plan to determine an appropriate discharge rate for the wells in delineating the WHPAs. In addition, the City has estimated a projected increase in groundwater use for 2018. These records are provided in **Table 6**.

Currently, there are no known, significant groundwater-use conflicts between the NUPUC and other parties.

3.5 Water Quality Information

Groundwater quality information was used to update well vulnerability. The quality of the groundwater in the source water aquifers, and in the New Ulm area specifically, must be evaluated and assessed for this Plan. Groundwater contamination and undesirable groundwater quality will directly impact the public water supply system. Certain naturally-occurring constituents in the groundwater also provide information that can be used to determine the vulnerability of the source water aquifer. The NUPUC publishes an annual consumer confidence report (New Ulm Public Utilities Drinking Water Report) that contains water quality data collected over the course of the year.

The overall quality of groundwater in New Ulm is good. No contaminants were detected at levels that violated federal drinking water standards. Some were detected in trace amounts that were below legal limits. The New Ulm Public Utilities 2013 Drinking Water Report is available on the City website.

4.0 General Descriptions

4.1 Description of the Water Supply System

The public water supplier currently obtains its drinking water supply from thirteen (13) primary groundwater wells. **Table 1** summarizes information regarding the GRPUC wells.

4.2 Description of the Hydrogeologic Setting

The description of the hydrologic setting for the aquifer used to supply drinking water is presented in **Table 4** and discussed in further detail below.

Table 4 - Description of Hydrogeologic Setting

Aquifer	Attribute	Descriptor	Data Source
Upper Glaciofluvial Outwash Aquifer (QBAA)	Aquifer Material	Sand and Gravel	CWI Well Logs, MGS, Original WHPP
	Porosity	0.25	Original WHPP
	Aquifer Thickness	16 ft.	City Well Logs (Well 25)
	Stratigraphic Top Elevation	755 feet AMSL	City Well Logs (Well 25)
	Stratigraphic Bottom Elevation	739 feet AMSL	City Well Logs (Well 25)
	Hydraulic Confinement	Confined	City Well Logs
	Transmissivity (T)	Reference Value: 9,270 ft^2/day	The reference value for the transmissivity of the Upper Glaciofluvial Outwash Aquifer was determined from pumping tests on New Ulm Well 25. The analysis was provided as part of the Aquifer Test Plan and approved on January 28, 2015.
	Hydraulic Conductivity (K)	Reference Value: 132.4 ft/day	See above.
	Groundwater Flow Field	Flow to the northeast (0.02), south of the Minnesota River and to the southwest (0.01), north of the Minnesota River.	Measured from model results. Flow generally toward the Minnesota River.
Lower Glaciofluvial Outwash Aquifer (QBAA)	Aquifer Material	Sand and Gravel	CWI Well Logs, MGS, Original WHPP
	Porosity	0.25	Original WHPP
	Aquifer Thickness	8-52 ft.	City Well Logs (Wells 20 and 23)
	Stratigraphic Top Elevation	659-669 feet AMSL	City Well Logs (Wells 20 and 23)
	Stratigraphic Bottom Elevation	617-651 feet AMSL	City Well Logs (Wells 20 and 23)
	Hydraulic Confinement	Confined	City Well Logs
	Transmissivity (T)	Reference Value/Range: 4,800 ft^2/day (2,420-8,000 ft^2/day)	The reference value for the transmissivity of the Lower Glaciofluvial Outwash Aquifer was determined from pumping tests on New Ulm Wells Well 20 and 23. The analysis was provided as part of the Aquifer Test Plan and approved on January 28, 2015.
	Hydraulic Conductivity (K)	Reference Value/Range: 89 ft/day (44.8-148.1 ft/day)	See above.
	Groundwater Flow Field	Flow to the northeast (0.005), south of the Minnesota River and to the southwest (0.006),	Measured from model results. Flow generally toward the Minnesota River.

Aquifer	Attribute	Descriptor	Data Source
		north of the Minnesota River.	
Mt. Simon Sandstone/ Undifferentiated Cretaceous Aquifer	Aquifer Material	Sandstone	CWI Well Logs, MGS, Original WHPP
	Primary Porosity	0.20	Original WHP Plan
	Aquifer Thickness	9-33 ft	City Well Logs (Wells 4 and 6: Open hole thickness)
	Stratigraphic Top Elevation	636-646 feet AMSL	City Well Logs (Wells 4 and 6)
	Stratigraphic Bottom Elevation	613-627 feet AMSL	City Well Logs (Wells 4 and 6: End of Boring)
	Hydraulic Confinement	Confined	City Well Logs
	Transmissivity (T)	Reference Value/Range: 340 ft^2/day (298-359 ft^2/day)	The reference value for the transmissivity of the Mt. Simon/Cretaceous Sandstone Aquifer was determined from pumping tests on New Ulm's Well 4. The pump test analysis was provided as part of the Aquifer Test Plan and approved on January 28, 2015.
	Hydraulic Conductivity (K)	Reference Value/Range: 20 ft/day (17.5-21.1 ft/day)	See above.
	Groundwater Flow Field	Flow to the northeast (0.002), south of the Minnesota River and to the southwest (0.0008), north of the Minnesota River.	Measured from model results. Flow generally toward the Minnesota River.

The primary wells used by the NUPUC public water supply system currently rely upon two source water aquifers – a Quaternary Buried Artesian Aquifers (QBAA) and the Cretaceous Mt. Simon/Cretaceous Undifferentiated Sandstone aquifer. The QBAA has properties that vary spatially, therefore the conceptual model, as described above in **Table 4** and Section 3.2, and the numerical model, discussed in Section 5.2, divide the QBAA in to the upper and lower glaciofluvial aquifers.

Municipal Wells 4, 6 and 23 are open to the Cretaceous Mt. Simon/Cretaceous Undifferentiated Sandstone bedrock aquifer. Wells 15, 18, 19, 20, 21, 22, 24, 25, 26, and 27 are completed in the QBAA. Municipal well information including location, construction information, and aquifer is presented in **Table 1**.

Municipal well information including location, construction information, and aquifer is presented in **Table 1.**

5.0 Delineation of the Wellhead Protection Area

5.1 Delineation Criteria

The boundaries for each of the City's WHPAs are shown in **Figure 1**. **Table 5** describes how the delineation criteria that are specified under Minnesota Rules, part 4720.5510, were addressed.

Table 5 - Description of WHPA Delineation Criteria

Criterion	Descriptor	How the Criterion was Addressed
Flow Boundary	Local Lakes and Rivers: Minnesota River, Cottonwood River, Swan Lake, local streams, creeks and ditches	The rivers and lakes provided boundary conditions to the model that extended to and included these natural boundaries. They were included in the model and helped set the regional groundwater flow and water balance.
Flow Boundary	Other High-Capacity Wells **Table 7**	The pumping amounts were determined based on the averaged 2003-2011 pumped volumes for the well identified in **Table 7**. The pumping amounts of these high-capacity wells were included in the methods used for the delineation.
Daily Volume of Water Pumped	See **Table 6**	Pumping information was obtained from the Minnesota Department of Natural Resources Appropriations Permit 1979-6207. The annual pumped volumes were converted to a daily volume pumped by a well.
Groundwater Flow Field	(Glacial) South to South-East Flow (Bedrock) East-Northeast Flow See **Figure 11**	The model calibration process addressed the relationship between the calculated versus observed groundwater flow field. Gradients are provided in **Table 4**.
Aquifer Transmissivity (T)	Reference Value: Upper Glaciofluvial: 9,720 ft^2/day Lower Glaciofluvial: 4,800 ft^2/day Cretaceous/CMTS Sandstone: 340 ft^2/day	The reference value for the transmissivity of the Upper and Lower Glaciofluvial and Cretaceous Sandstone Aquifers were determined from pumping tests and other data provided in the City's Original WHP Plan. Uncertainty regarding T was addressed as described in Section 5.4.
Time of Travel	20 years	The public water supplier selected a 20 year time of travel.

Information provided by the public water supplier was used to identify the maximum volume of water pumped annually by each well over the previous five-year period, as shown in **Table 6**. Also, the projected 2018 pumping rate is shown. Previous pumping values have been reported to the DNR, as required by the public water supply's Groundwater Appropriation Permits (Permit Numbers 1965-0873 and 1971-0331). Maximum daily volume of discharge, used as an input parameter in the model, was calculated by dividing the greatest annual pumping volume by 365 days.

Table 6 - Annual Volume of Water Discharged from Water Supply Wells

Well Name	Unique Number	2009	2010	2011	2012	2013	Projected 2018*	Maximum Daily Volume (gal/day)	Maximum Daily Volume (m^3/day)
Well 4	430604	2,774,000	***36,689,000***	5,105,000	19,655,000	11,501,000	11,613,302	100,518	380.46
Well 6	241335	237,000	3,848,000	57,459,000	***79,476,000***	22,330,000	22,548,043	217,742	824.16
Well 15	188651	21,803,000	4,487,000	10,327,000	***23,183,000***	599,000	604,849	63,515	240.40
Well 18	241337	5,362,000	5,563,000	12,907,000	***59,281,000***	40,164,000	40,556,185	162,414	614.74
Well 19	241338	***103,428,000***	40,547,000	18,303,000	19,406,000	62,953,000	63,567,710	283,364	1,072.53
Well 20	209604	***154,833,000***	80,815,000	153,492,000	67,525,000	78,320,000	79,084,762	424,200	1,605.60
Well 21	209605	92,924,000	96,080,000	119,212,000	51,293,000	146,850,000	***148,283,929***	406,257	1,537.68
Well 22	241339	***39,088,000***	3,537,000	5,853,000	11,223,000	18,216,000	18,393,872	107,090	405.34
Well 23	241340	157,594,000	182,703,000	***221,317,000***	171,862,000	191,982,000	193,856,624	606,348	2,295.03
Well 24	209603	***34,865,000***	24,326,000	7,486,000	26,424,000	270,000	272,636	95,521	361.55
Well 25	511075	20,045,000	16,220,000	***21,496,000***	13,644,000	1,005,000	1,014,813	58,893	222.91
Well 26	513011	30,306,000	***59,604,000***	54,518,000	49,606,000	19,946,000	20,140,764	163,299	618.09
Well 27	520956	170,353,000	172,098,000	***177,167,000***	163,502,000	110,169,000	111,244,754	485,389	1,837.20

- Volumes above expressed as gallons unless otherwise noted. ***Bold*** indicates greatest annual pumping volume.

* Projected total annual volume was calculated based upon 2013 per capita water usage and projected based upon 2018 population projections for New Ulm (Source: MN State Demographer). Projected well volume distribution ratio was calculated based upon 2013 pumping ratios.

In addition to the wells used by the public water supplier, **Table 7** shows other high-capacity wells, within five miles of the City wells. Pumping data was obtained from MPARS.

Table 7 - Other Permitted High-Capacity Wells

Unique Number	Permittee	Permit	Use	Aquifer	Reported Withdrawal (MGY)				
					2011	2010	2009	2008	2007
553997	HOFFMAN, DONALD T	2000-4016	Livestock Watering	QBAA	5,300,000	5,000,000	4,800,000	5,400,000	5,500,000
133181	NEW ULM COUNTRY CLUB	2002-4134	Golf Course Irrigation	KRET	4,800,000	6,199,999	7,099,999	3,200,000	4,699,999
133098*	NEW ULM COUNTRY CLUB	2002-4134	Golf Course Irrigation	NA*	0	0	0	0	0
133038*	NEW ULM COUNTRY CLUB	2002-4134	Golf Course Irrigation	NA*	0	0	0	0	0
645289	NEW ULM COUNTRY CLUB	2002-4134	Golf Course Irrigation	CMTS	14,000,000	11,899,999	12,899,999	7,800,000	4,300,000

*No well record available in MDH County Well Index.

5.2 Method Used to Delineate the Wellhead Protection Area

Conceptual Model

The groundwater flow system had been conceptualized in the original WHPP as a three layer system, two aquifers separated by a semi-confining to confining unit. The original conceptual model is still valid and no major changes to the existing model were necessary as part of this amendment. The existing groundwater model has three layers representing from top to bottom:

Layer 1: The Shallow Alluvial deposit or the Glacial Till, outside of the former Glacial River Warren valley limits,

Layer 2: The Upper Glaciofluvial Outwash aquifer (within the Minnesota River valley) or the Cretaceous Shale, outside of the former Glacial River Warren valley limits, and

Layer 3: The Lower Glaciofluvial Outwash aquifer (within the Minnesota River valley) or the Cretaceous Sandstone, outside of the former Glacial River Warren valley limits (HMS, 2005).

The refinements made to the existing model are described in more detail below.

Porous Media Delineation Method (Numerical Model)

MODFLOW is the name that has been given the USGS Modular Three-Dimensional Ground-Water Flow Model. Because of its ability to simulate a wide variety of systems, its extensive publicly available documentation, and its rigorous USGS peer review, MODFLOW has become the worldwide standard ground-water flow model. MODFLOW is used to simulate systems for water supply, containment remediation, and mine dewatering. MODFLOW is most appropriate in those situations where a relatively precise understanding of the flow system is needed to make a decision. MODFLOW was developed using the finite-difference method. The finite-difference method permits a physical explanation of the concepts used in construction of the model.

Ground-water flow within the aquifer is simulated in MODFLOW using a block-centered finite-difference approach. Layers can be simulated as confined, unconfined, or a combination of both. Flows from external stresses such as flow to wells, areal recharge, evapotranspiration, flow to drains, and flow through riverbeds can also be simulated.

The original version of the MODFLOW model was built using the USGS modular groundwater flow model by HMS in 2005. A regional model that covered approximately 7,000 square miles was developed and a local model was extracted and used to more accurately model the local groundwater system near New Ulm. The existing local MODFLOW model developed by HMS for NUPUC's original Part I was provided by the MDH and updated as appropriate.

The Groundwater Vistas Version 6.77 Build 8 software package was used to run the existing local model of the system.

The WHPA delineation was completed using the particle tracking MODPATH code. Particles were released from each municipal well and tracked backwards for a time period of 7,300 days (20 years).

Grid Development/Refinement

Because MODFLOW is a block centered finite-difference model, a grid must be defined over the model domain. The grid spacing and size of cells varies across the model domain. In areas where impact from pumping and accuracy will not impact the capture zones, cells are approximately 400 x 400 meters. In areas where the accuracy of groundwater contours and the delineation of particle tracks require greater accuracy (around pumping wells) the grid spacing is approximately 3 x 3 meters.

Boundary Conditions

Constant head boundaries were assigned to the north, south, east and west boundaries of the existing model. River and drain boundaries were used to represent the water bodies in the model. Boundary conditions for local lakes and rivers were not updated from the original model. As part of

this amendment, wells were modeled as analytic elements rather than boundary conditions. **Figure 7** shows the boundary conditions used to represent natural features in the model. Model files are provided as **Appendix E**.

Transmissivity
Transmissivity values for the Upper and Lower Glaciofluvial and Cretaceous sandstone aquifers were calculated based on the analysis of well pump tests conducted on wells completed in each aquifer. An aquifer test plan for each aquifer was submitted to and approved by the MDH. The transmissivity values in the ATPs were used as a starting point for refining the model. Those values are referenced above in **Table 4**.

A polygon shapefile was created to differentiate areas of similar and dissimilar hydraulic conductivity values. The zones for Layer 1 are depicted in **Figure 8,** Layer 2 in **Figure 9,** and Layer 3 in **Figure 10**.

Porosity
A porosity of 0.25 was used for the outwash aquifers and 0.20 for the Cretaceous sandstone aquifer.

Aquifer Recharge
Annual recharge rates to surficial materials in the New Ulm area model domain is estimated to range between 0.06 and 1.14 inches per year. These values were used in the original calibrated model and were compared to the USGS recharge values (Delin, et al, 2007) for the area. The values used in the original model were within the range of recharge values identified by the USGS. The recharge values and polygons used in the original model were more representative of the localized conditions. Therefore, the model recharge values were not changed as part of this amendment.

5.3 Results of Model Calibration and Sensitivity Analysis

Model calibration is a procedure that compares the results of a model based on estimated input values to measured or known values. This procedure can be used to define model validity over a range of input values, or it helps determine the level of confidence with which model results may be used. As a matter of practice, groundwater flow models are usually calibrated using water elevation or flux.

The original model was previously calibrated, and remained so as the model was updated for the re-delineation. Additional calibration was not necessary for this amendment.

Model sensitivity is the amount of change in model results caused by the variation of a particular input parameter. The direction and extent of the modeled capture zone may be sensitive to any of the input parameters:

- The pumping rate directly affects the volume of the aquifer that contributes water to the well. An increase in pumping rate leads to an equivalent increase in the volume of aquifer within the capture zone, proportional to the porosity of the aquifer materials. However, the pumping rate is based on the results presented in **Table 5** and, therefore, is not a variable factor that will influence the delineation of the WHPA.

- The direction of groundwater flow determines the orientation of the capture area. Variations in the direction of groundwater flow will not affect the size of the capture zone but are important for defining the areas that are the source of water to the well. The calibrated potentiometric map that is produced by the New Ulm WHPP model closely matches that generated by

contouring static water level data. Therefore, the direction of groundwater flow should not have a significant effect on WHPA delineation given the current knowledge of hydraulic head distribution in the aquifer.

- A hydraulic gradient of zero produces a circular capture zone, centered on the well. As the hydraulic gradient increases, the capture zone changes into an elliptical shape, with the well centered on the down-gradient focal point. The hydraulic gradient was determined by using water level elevations that were taken from wells that have verified locations. Generally, the accuracy of the hydraulic gradient determination is directly proportional to the amount of available data that describes the distribution of hydraulic head in the aquifer.

- The aquifer thickness and porosity influence the size and shape of the capture zone. A decrease in either thickness or porosity causes a linear, proportional increase in the areal extent of the capture zone. Aquifer thickness was verified in the area of study based upon boring and geophysical log data. The aquifer thickness in the area of study is relatively well defined, therefore is not a variable that will change to influence the WHPA delineation. A change in porosity will affect the delineation of the WHPA, however, the value used in the model for the aquifers are relatively accepted, and therefore is not a variable that will change to influence the WHPA delineation.

- Aquifer permeability will influence the size and shape of the capture zone. Permeability defines the relative proportions of the capture zone width to length. A decrease in permeability decreases the length of the capture zone and increases the distance to the stagnation point, making the capture zone more circular in shape, centered at the well. During sensitivity analysis, as the K value increased, the capture zone increased slightly. Results of the sensitivity analysis are presented in **Figure 13**. The K values used during the sensitivity analysis are included below in **Table 8**.

5.4 Conjunctive Delineation

The MDH "Guidance For Preparing A Conjunctive Delineation" document (MDH 2006) states that "there are several reasons why a conjunctive delineation may be needed versus using only the capture zone for a well. First, the definition of the term WHPA includes the surface area through which contaminants may travel to reach a public water supply well. Second, all potential pathways by which contaminants may enter a well, including those attributed to surface water, must be addressed in a wellhead protection plan. Finally, the interaction between surface water and groundwater must be determined to provide a technically defensible delineation."

A surface hydrologic feature must be included with the conjunctive delineation if the data elements listed under MR 4720.5400 document that a hydraulic connection occurs between it and the aquifer used by the public water supply well, unless an assimilative capacity boundary exists. Indicators of a hydraulic connection include water chemistry data, geologic and hydraulic data, and the conceptual model of the hydrogeologic setting in the drinking water supply management area.

The Minnesota River flows through the 20 year capture zone of the City's wells. The presence of tritium in some as well as VOCs in one of the City's municipal wells provides an indication of direct recharge. Additional chemical and isotopic data was provided by the MDH and provided in **Appendix G**. The ratios of ^{18}O and ^{2}H in the raw well water sample deviate from the meteoric water line (**Appendix G**). There was not chemical or isotopic data available from the Minnesota River near

the municipal wells and therefore, not sufficient data available to distinguish the seasonal variability of the well water and compare to that of the Minnesota River.

Due to the lack of chemical and isotopic data from the Minnesota River, a definitive tracing of the surface water resource was not possible.

Rather than using the minimum 10 year zone of capture, the NUPUC chose a 20 year zone of capture for their WHPA. It is expected that this time of travel provides sufficient protection to the City's wells and likely includes a large amount of land area that would be included had a conjunctive delineation been completed.

Based upon the stable isotope data provided by the MDH (**Appendix G**), there does not appear to be a direct connection with the Minnesota River. The well water samples fall along the global meteoric water line which indicates that the water samples were composed primarily of recharge that entered the aquifer without undergoing significant evaporation.

It has been determined that a conjunctive delineation for the New Ulm municipal wells is not warranted at this time. Over the life of this plan, however it is recommended that additional sampling of the City wells and Minnesota River be completed and the need for a conjunctive delineation be reassessed during the next Plan Update. This recommendation is discussed in more detail in Section 8.0 of this report.

Table 9- Sensitivity Analysis Variables

Model Run Name	Description	Layer	Kh Value (m/day)	Kv Value (m/day)	Results
Kx2	The K value used in the calibrated delineation was doubled.	L1	**Zone 1** 1.22 **Zone 2** 1.78 **Zone 3** 18.28 **Zone 4** 24.40	**Zone 1** 0.12 **Zone 2** 0.18 **Zone 3** 1.83 **Zone 4** 2.44	The capture zones increased in size, at least slightly, in all directions. Largest increase was to the northeast and east. DWSMA was delineated to include sensitivity analysis results/capture zone. See **Figure 13**. Note: K zones are depicted in **Figures 8, 9 and 10**.
		L2	**Zone 1** 0.06 **Zone 2** 80.74	**Zone 1** 0.006 **Zone 2** 0.0006	
		L3	**Zone 1** 12.20 **Zone 2** 54.27	**Zone 1** 12.2 **Zone 2** 6.10	
Kdiv2	The K value used in the calibrated delineation was divided by 2.	L1	**Zone 1** 0.31 **Zone 2** 0.45 **Zone 3** 4.54 **Zone 4** 6.10	**Zone 1** 0.031 **Zone 2** 0.045 **Zone 3** 0.46 **Zone 4** 0.61	The capture zones reduced in size, at least slightly, in all directions. Largest decrease was to the northeast and east. DWSMA was delineated to include sensitivity analysis results/capture zone. See **Figure 13**. Note: K zones are depicted in **Figures 8, 9 and 10**.
		L2	**Zone 1** 0.02 **Zone 2** 20.19	**Zone 1** 0.0015 **Zone 2** 0.0002	
		L3	**Zone 1** 3.05 **Zone 2** 13.57	**Zone 1** 3.05 **Zone 2** 1.52	

6.0 Delineation of the Drinking Water Supply Management Area

Boundaries used to delineate the Drinking Water Supply Management Area (DWSMA) are described above in Section 3.2. The DWSMA boundary was defined using the following features **(Figure 1):**

- public land surveys (including township, range, and section boundaries),
- roadway centerlines,
- shorelines, and
- property lines (Brown and Nicollet County parcel data).

A GIS shapefile of the DWSMA is provided in **Appendix D.**

7.0 Vulnerability Assessments

The Part I wellhead protection plan includes the vulnerability assessments for the public water supply wells and the DWSMA. These vulnerability assessments are used to help define potential contamination sources within the DWSMA and to select appropriate measures for reducing the risk that they present to the public water supply.

7.1 Assessment of Well Vulnerability

Evaluation Criteria/Methodology - Minnesota Rule 4720.5210 requires a vulnerability assessment of the wells used by the public water supplier. The protocol for determining well vulnerability is described in the MDH document entitled Methodology for Phasing Wells into Minnesota's Wellhead Protection Program, which was approved by the US Environmental Protection Agency (EPA) as part of its review of Minnesota's wellhead protection program description. The MDH uses the protocol to maintain a database defining the potential vulnerability of community and non-community public water supply wells.

The vulnerability assessment for each well used by the public water supplier is listed in **Table 1** and is based upon the following criteria:

1) Does the well construction meet current state Well Code specifications (Minnesota Rules, part 4725) and the well itself provide a pathway for contaminants to enter the aquifer used by the public water supplier;

2) Do the geologic conditions at the well site include a cover of geologic materials over the aquifer that is sufficient to retard or prevent the vertical movement of contaminants;

3) Have any of the human-caused contaminants regulated under the federal Safe Drinking Water Act been detected at levels indicating that the well itself serves to draw contaminants into the aquifer as a result of pumping.

4) What is the water chemistry (Tritium, Stable Isotope, Nitrate, Chloride, and Cl/Br analysis), when it exists, of water from each well.

A numeric score is assigned to each well based on the results of the four areas of evaluation. A cutoff score is used to define wells that are most likely to be vulnerable based on their construction, geologic setting, and sampling history. Printouts of the vulnerability score sheets for the wells used by the Public Water Supplier are presented in **Appendix F**.

Results of the well vulnerability analysis – The MDH Source Water Protection (SWP) Vulnerability rating for New Ulm's municipal wells determined Wells 6, 15, 18, 25 and 27 to be vulnerable and Wells 4, 19, 20, 21, 22, 23, 24, and 26 to be not vulnerable. Well vulnerability for each well is identified in **Table 1** above.

The L-scores and sensitivity ratings are based upon the overlying surficial geology and the presence of any protective confining units as identified above. The wells identified as vulnerable may have a very low to low geologic sensitivity and high L-score, however the vulnerability was overridden because the well water had a detection of tritium or VOCs, or there may be well construction information missing (i.e. grout information). The MDH scoring sheets are presented as **Appendix F**.

7.2 Assessment of Drinking Water Supply Management Area Vulnerability

The vulnerability of the DWSMA is shown in **Figure 11** and is based upon the following information:

The DWSMA vulnerability was developed based upon assessing geologic sensitivity, as well as incorporating available tritium data. The following additional guidelines were used to determine the vulnerability of the City's DWSMA:

- Areas of low geologic sensitivity but tritium present should be of moderate vulnerability.

Boring logs available for wells within the DWSMA were reviewed for the presence of clay thicknesses. Geologic cross-sections were developed and are included as **Figures 5 and 6**. Additional cross-sections were provided by MDH and can be found in **Appendix A**.

MDH guidance (MDH, 1997) was followed in determining the DWSMA vulnerability. L-scores were calculated based upon DNR geologic sensitivity guidelines for wells within the DWSMA that extended to 50 feet or greater. The L-scores were calculated based upon unconsolidated material and not on shale bedrock thickness. Wells 4 and 6 are bedrock wells however, and potential shale thickness as well as the well depth was taken into account when assessing vulnerability near these wells.

The surficial geology and L-scores were used to determine geologic sensitivity for the zones of contribution in the DWSMA for wells completed in the buried glacial drift aquifers. The calculation of L-scores and how they relate to geologic sensitivity is discussed in Section 7.1 above. The surficial geology to the east of the Minnesota River is made up primarily of clay and till. The L-scores in this area also identified it as having a low geologic sensitivity. The surficial geology to the west of the Minnesota River is made up primarily of sand and gravel outwash. The L-scores in this area identified it as having a moderate geologic sensitivity. Therefore, the area of the DWSMA west of the Minnesota River was determined to have a low vulnerability to pollution and the area east of the River was determined to have a moderate vulnerability to pollution.

Due to the presence and thickness of shale confining units, the CMTS aquifer near Well 4 is determined to be of low vulnerability to contamination. However due to the presence of tritium at Well 6, the zone of contribution to well 6 is determined to be of moderate vulnerability to contamination.

8.0 Recommendations

The following plan implementation action item recommendations have been made for the Public Water Supplier to consider. Each recommendation is referenced to the plan implementation category under which it can be incorporated. Each recommendation will be further evaluated during the preparation of the Part II WHP Plan Update.

Plan Implementation Category – Data Collection

Item 1 – Work Cooperatively with Neighboring Municipalities Regarding Wellhead Protection

The DWSMA that was delineated as part of this project extends beyond the New Ulm municipal boundaries. While developing and implementing Part II of the City's WHPP, it is recommended that the City collaborate and cooperate with municipalities in which the City's DWSMA extends to. As the City cannot dictate land use activities outside of its jurisdiction, it can work closely with surrounding municipalities as land uses change and decisions are made that may impact the City's water supply.

Item 2 – Work Cooperatively with Neighboring Stakeholder Groups and Local Governmental Units

There are additional stakeholders and local governmental units (LGUs) that may be found within the City's DWSMA boundary. It is recommended that as the City and/or LGUs plan to make changes that may affect land use within the DWSMA boundary, that attempts be made to work collaboratively together to meet each of their needs and/or goals.

Item 3 – Additional Chemical and Stable Isotope Sampling/Analysis

It is recommended that the water from the City's Wells 19, 22, 23, 24, and 25 be analyzed for their tritium content using an enriched detection method to determine whether there is a component of aquifer water that is coming from the infiltration of precipitation. MDH will pay for the analytical costs of this analysis.

It is also recommended that the City work with the MDH Hydrologist to develop a sampling plan and determine additional samples to collect from the City's wells and the Minnesota River. These may include samples for stable isotopes of oxygen (O^{18}) and deuterium (H^2) as well as chloride, bromide, and nitrate+nitrite nitrogen. Samples should be collected on a quarterly basis for one to two years so that seasonal variations in the surface water signature of the City well water can be better determined. MDH will pay for the analytical costs of these samples. If the analyses indicate that the well water contains a component of surface water recharge, then additional sampling of surface water bodies within the DWSMA and deeper wells believed to be pumping from groundwater not under the influence of surface water will be needed to determine the component of surface water influence. The recommended additional sampling should be addressed in Part II of this Plan Update.

Plan Implementation Category – Contingency Planning

Item 1- Addressing the potential movement of contamination toward the community well(s).

The MDH recommends that if contaminants are ever detected in a municipal water supply well, the Public Water Supplier work with the MDH to perform an evaluation of whether to continue pumping the impacted well(s). Turning off a well may alter the movement of contamination to other pumping

wells and compound the problem. Therefore, it is very important to include this recommendation in the contingency plan.

9.0 Standard of Care

The interpretations presented in this report are based on local data collected during this study and previous studies, such as current and historical pumping tests and regional data collected from governmental agencies. Data collected and analyzed by others and used in this report may not be precise or accurate. This Plan does not account for any variations that may occur between points of exploration; geologic and hydrogeologic conditions likely differ across the study area. Also, it must be noted that seasonal and cyclical fluctuations in the hydrogeologic characteristics and properties of the aquifers will occur.

The scope of this report and the corresponding groundwater flow model and calculations is limited to the delineation of capture zones for the New Ulm Public Utilities municipal wells. Use of the groundwater flow model by other parties or for other purposes is not advised. Use or modification of the model for purposes other than the delineation of capture zones must be done with caution and a full understanding of the inherent assumptions and limitations of the data.

This Plan represents our understanding of the significant aspects of the local geologic and hydrogeologic conditions; the conclusions are based on our hydrogeologic and engineering judgment, understanding and perspective, and represent our professional opinions. These opinions were arrived at in accordance with the currently accepted standard of care for geologic and engineering practices at this time and location. No warranty is implied or intended.

10.0 Selected References

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Fetter, C. W. (1988). Applied Hydrogeology, Merrill Publishing Company, Columbus, OH.
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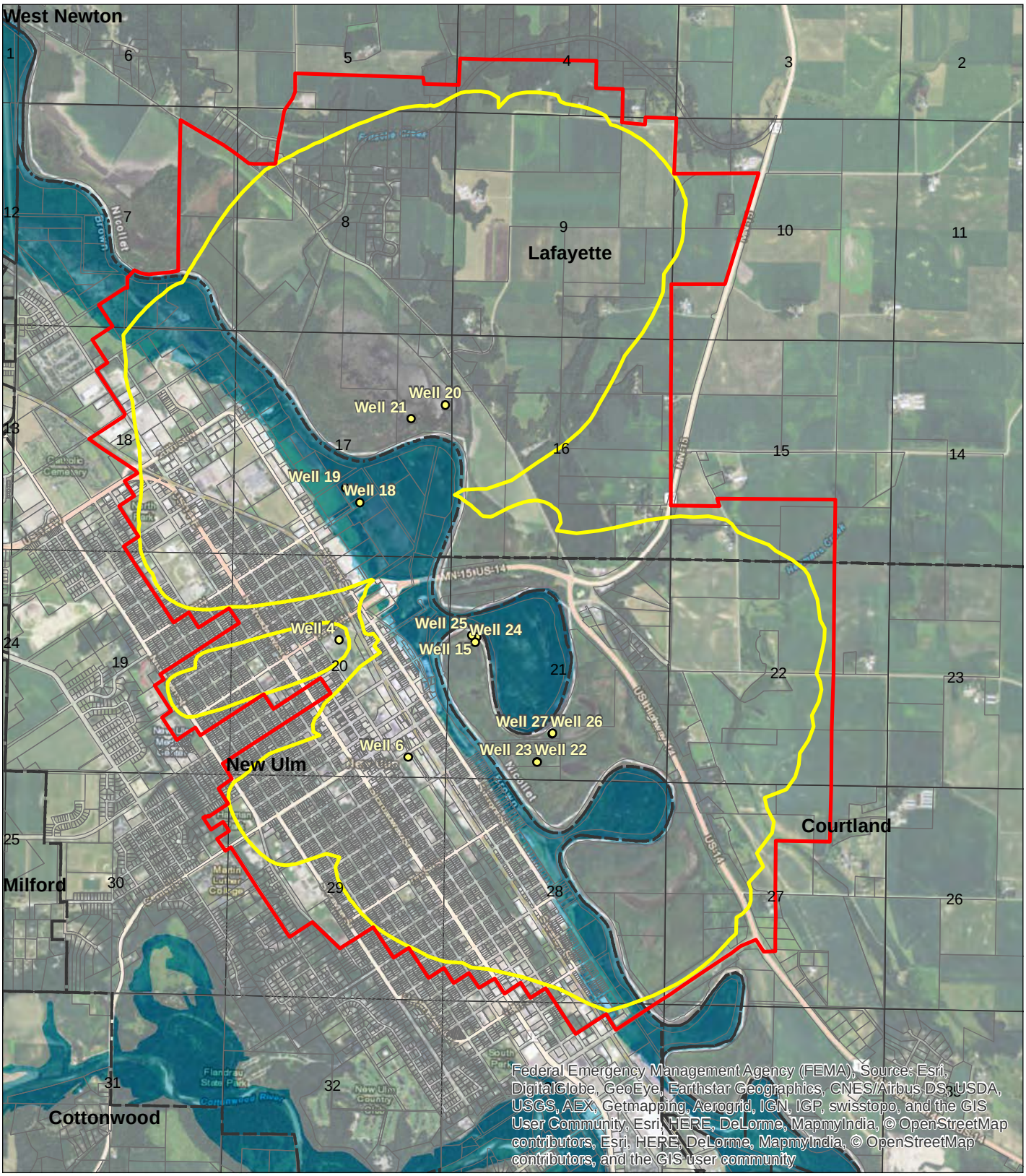
MDH County Well Index, (2015), Database created and maintained by the Minnesota Geological Survey, the University of Minnesota, and the Minnesota Department of Health.

List of Figures



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Phone: (612) 701.7343

Legend

- Municipal Wells
- DWSMA
- WHPA (20-Yr)
- Municipal Boundary
- Parcel Boundary
- Section (Township 110N Range 30W)
- 100 Year Flood Zones

0 275 550 1,100 1,650 Meters

Figure 1

WHPA and DWSMA

New Ulm Wellhead Protection Plan

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Legend

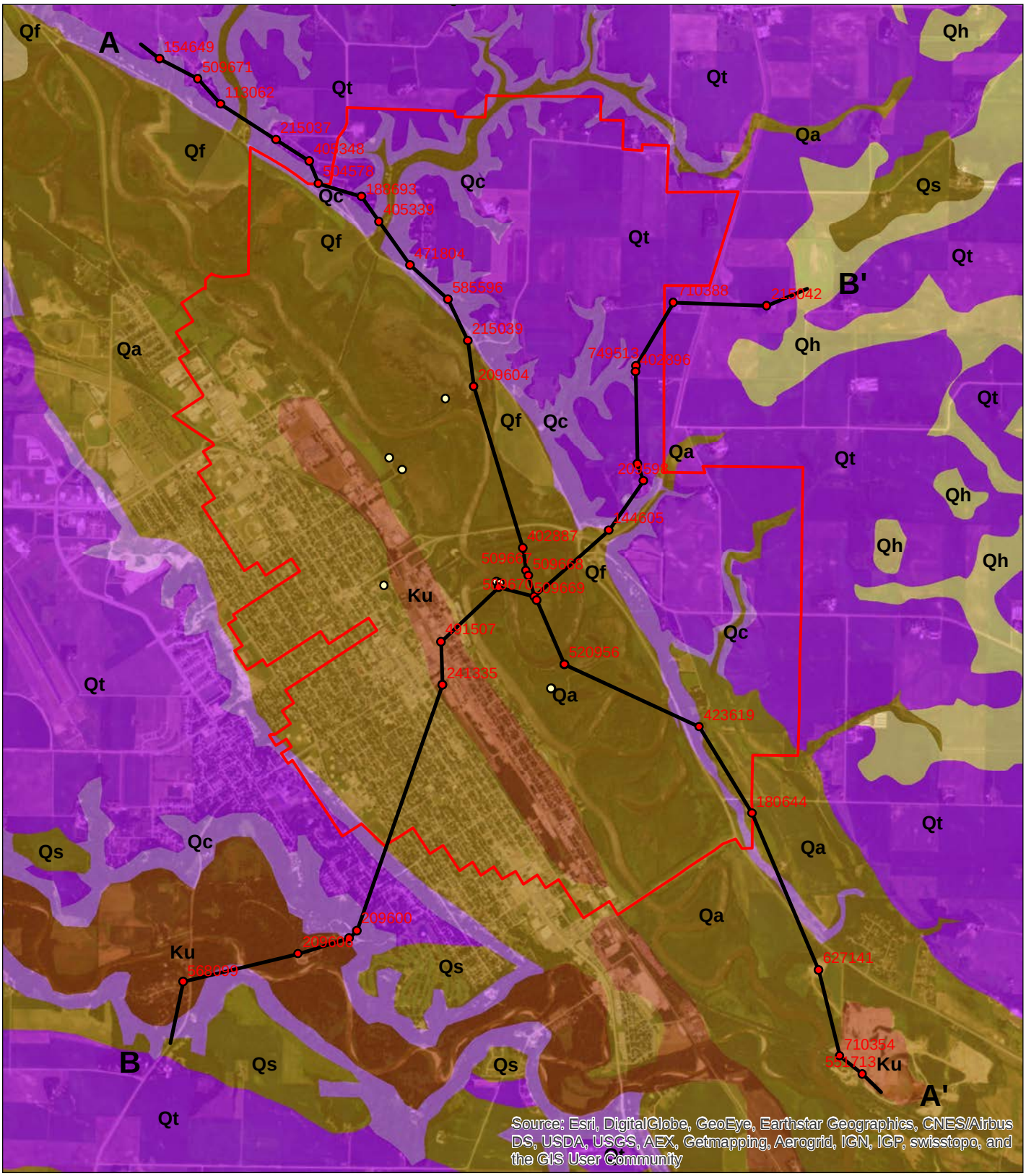
- Municipal Wells
- IWMZ
- ERA (1-Yr.)
- Municipal Boundary
- Parcel Boundary
- 100 Year Flood Zones

0 115 230 460 690 Meters

Figure 2

ERAs and IWMZs

New Ulm Wellhead Protection Plan



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Legend

Surficial Material
- Clay
- Diamicton
- Silt
- Sand
- Bedrock

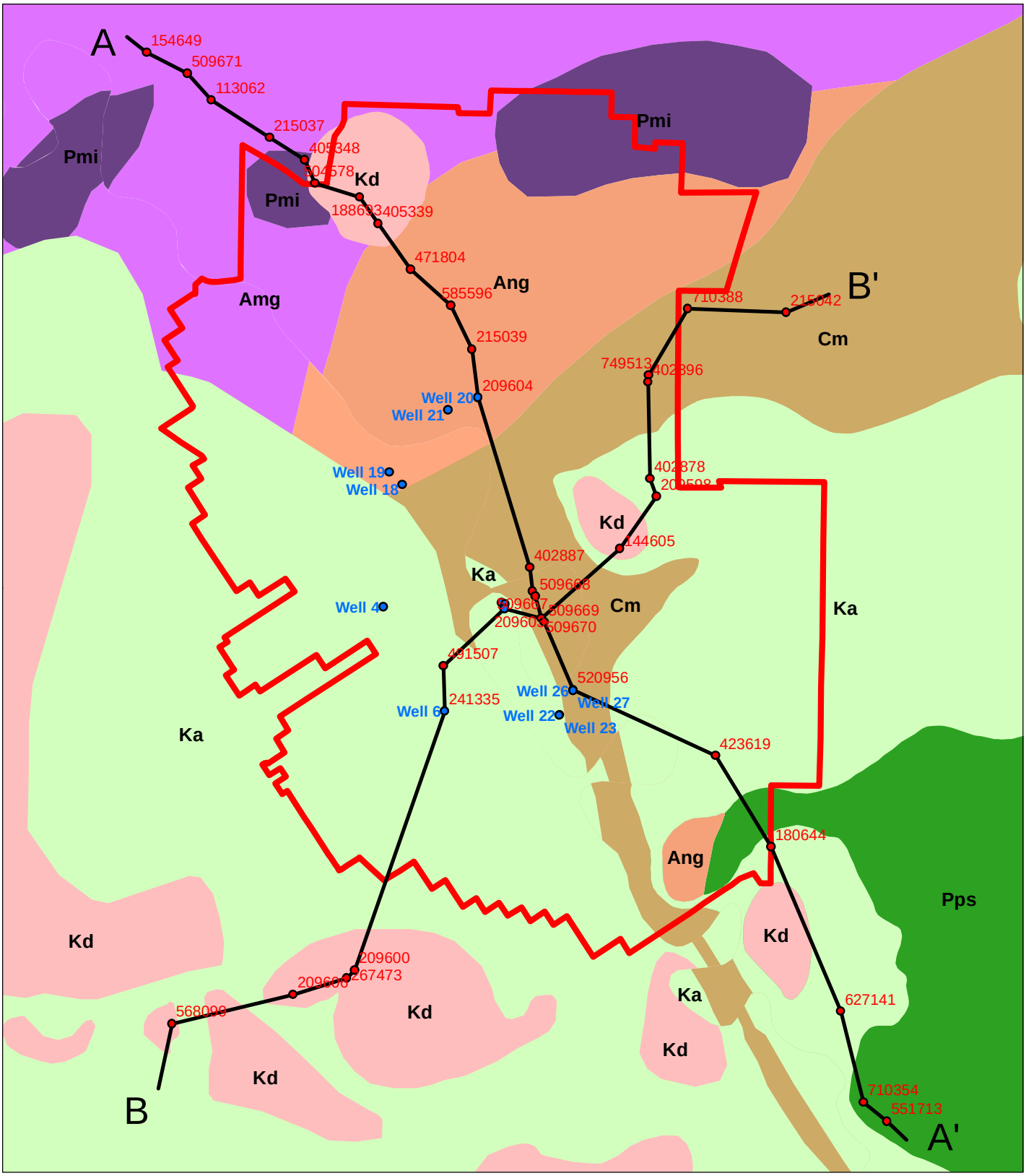
- Cross Section Wells
- Cross Section Line
- Municipal Wells
- DWSMA

0 550 1,100 2,200 Meters

Figure 3

Surficial Geology

New Ulm Wellhead Protection Plan



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Legend

Unit Name

- Dakota Formation (Kd)
- Undifferentiated Cretaceous (Ka)
- Mt. Simon Sandstone (Cm)
- Sioux Quartzite (Pps)
- Mafic-Ultramafic Intrusion (Pmi)
- Granite at New Ulm (Ang)
- Morton Gneiss (Amg)

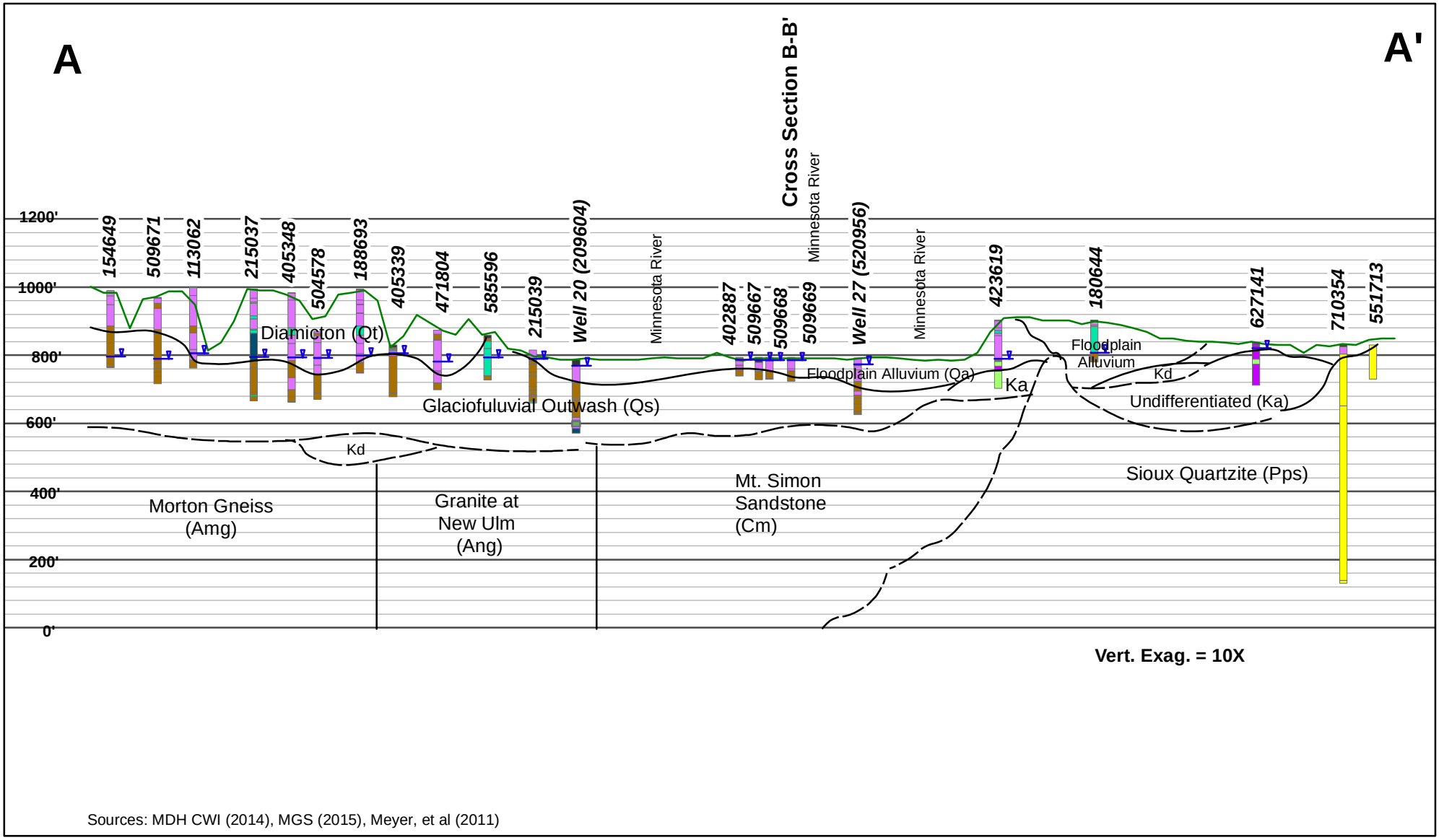
- Municipal Wells
- CrossSectionWells
- Cross Section Line
- DWSMA

0 265 530 1,060 1,590 Meters

Figure 4

Bedrock Geology

New Ulm Wellhead Protection Plan



Sources: MDH CWI (2014), MGS (2015), Meyer, et al (2011)

Figure 5

Cross Section A-A'

New Ulm Wellhead Protection Plan

Legend

Primary Lithology

- Fill
- Soil
- Clay
- Hardpan
- Sand
- Gravel
- Pebbles
- Boulders
- Shale
- Sandstone
- Quartzite
- Static Water Level
- Ground Surface Elevation
- Elevation (ft MSL)

0 550 1,100 2,200 3,300 4,400 Meters

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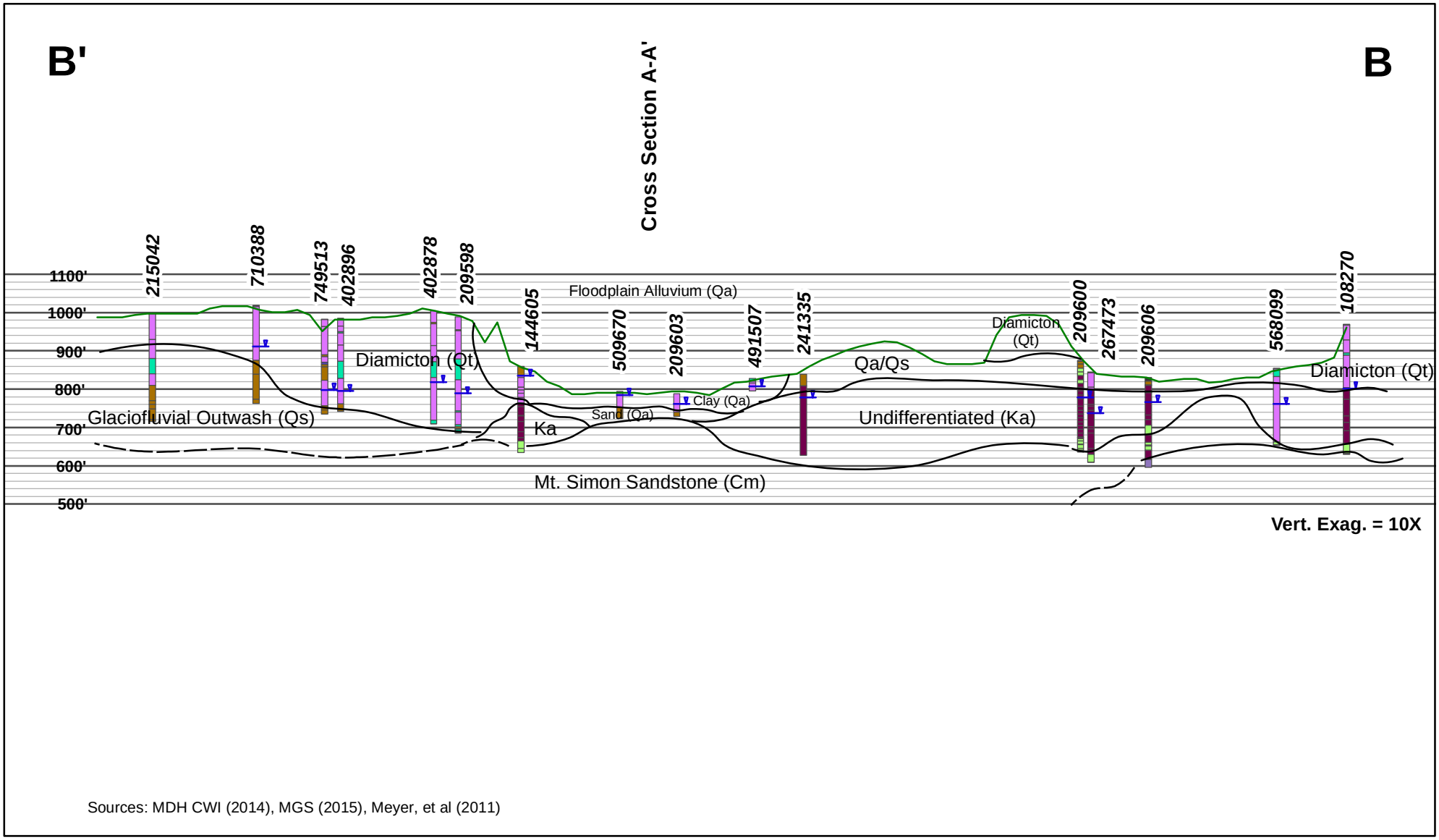

Sources: MDH CWI (2014), MGS (2015), Meyer, et al (2011)

Figure 6

Cross Section B-B'

New Ulm Wellhead Protection Plan

Legend

Primary Lithology

- Fill
- Soil
- Clay
- Hardpan
- Sand
- Gravel
- Pebbles
- Cobble
- Boulders
- Regolith
- Shale
- Sandstone
- Conglomerate
- Granite

- Static Water Level
- Ground Surface Elevation
- Elevation (ft MSL)

0 370 740 1,480 2,220 2,960 Meters

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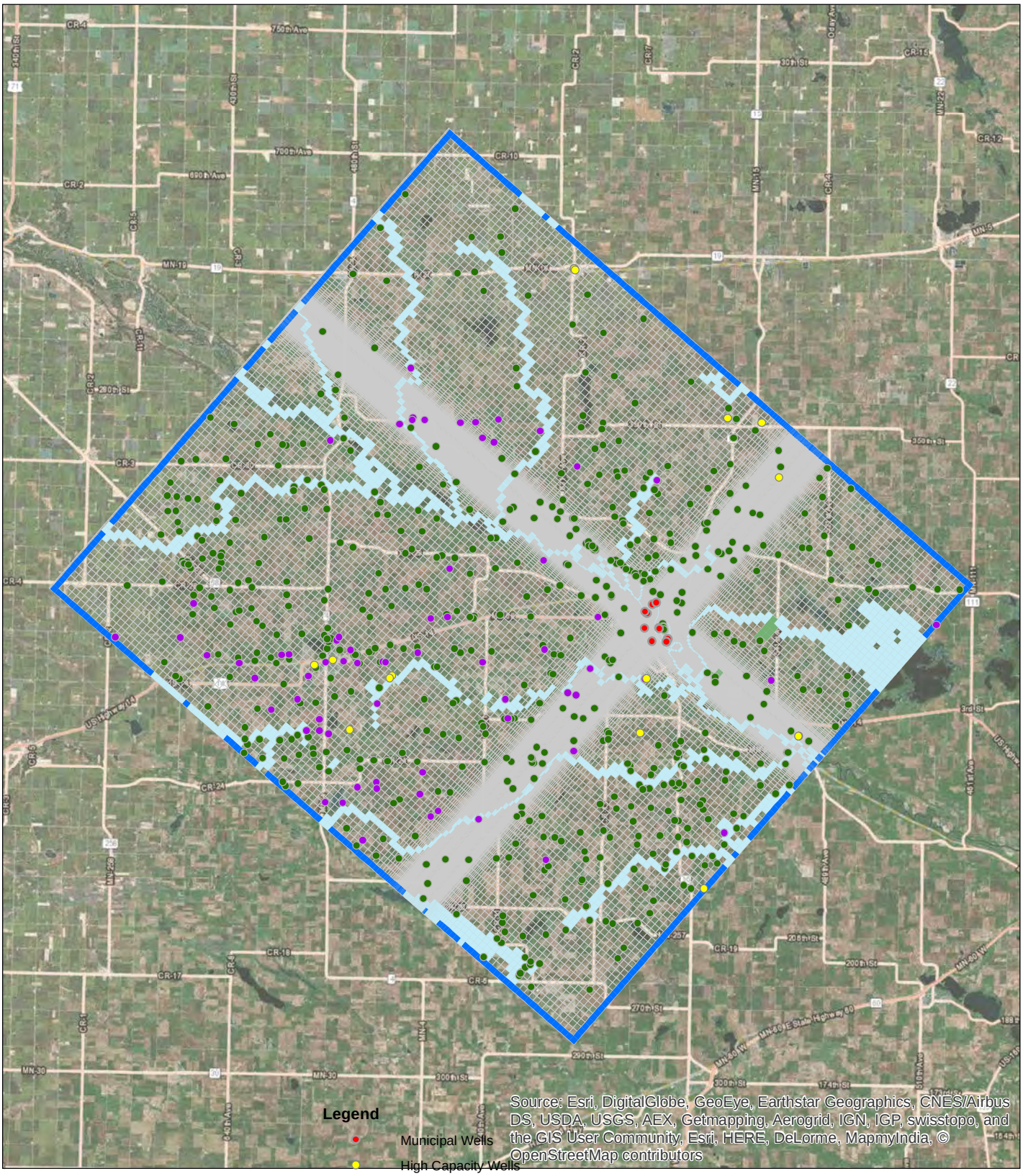

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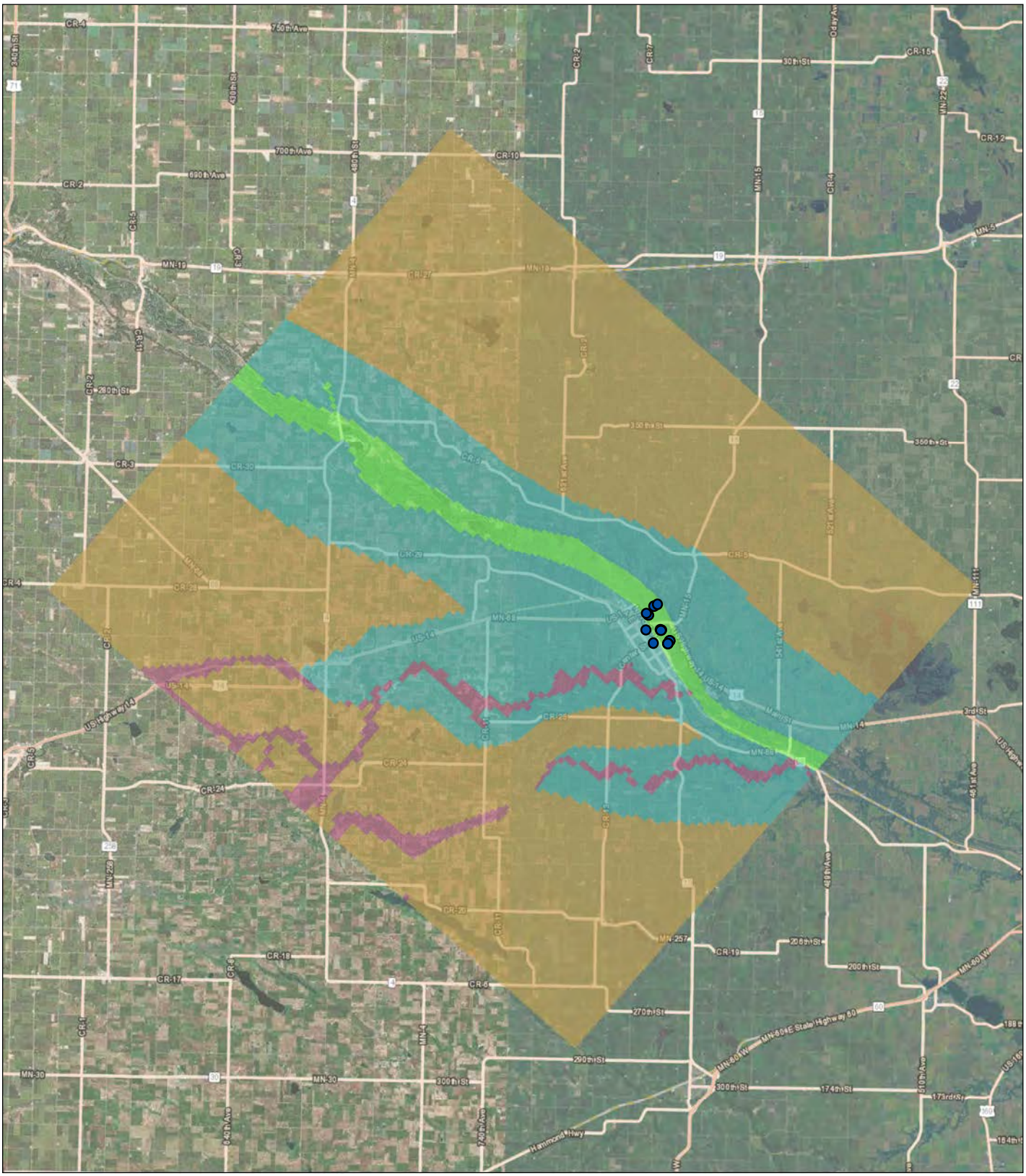
Figure 7

Model Boundary Conditions

New Ulm Wellhead Protection Plan



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Legend

K (m/d)

- 0.61 (Zone 1)
- 0.89 (Zone 2)
- 9.14 (Zone 3)
- 12.19 (Zone 4)

Municipal Wells

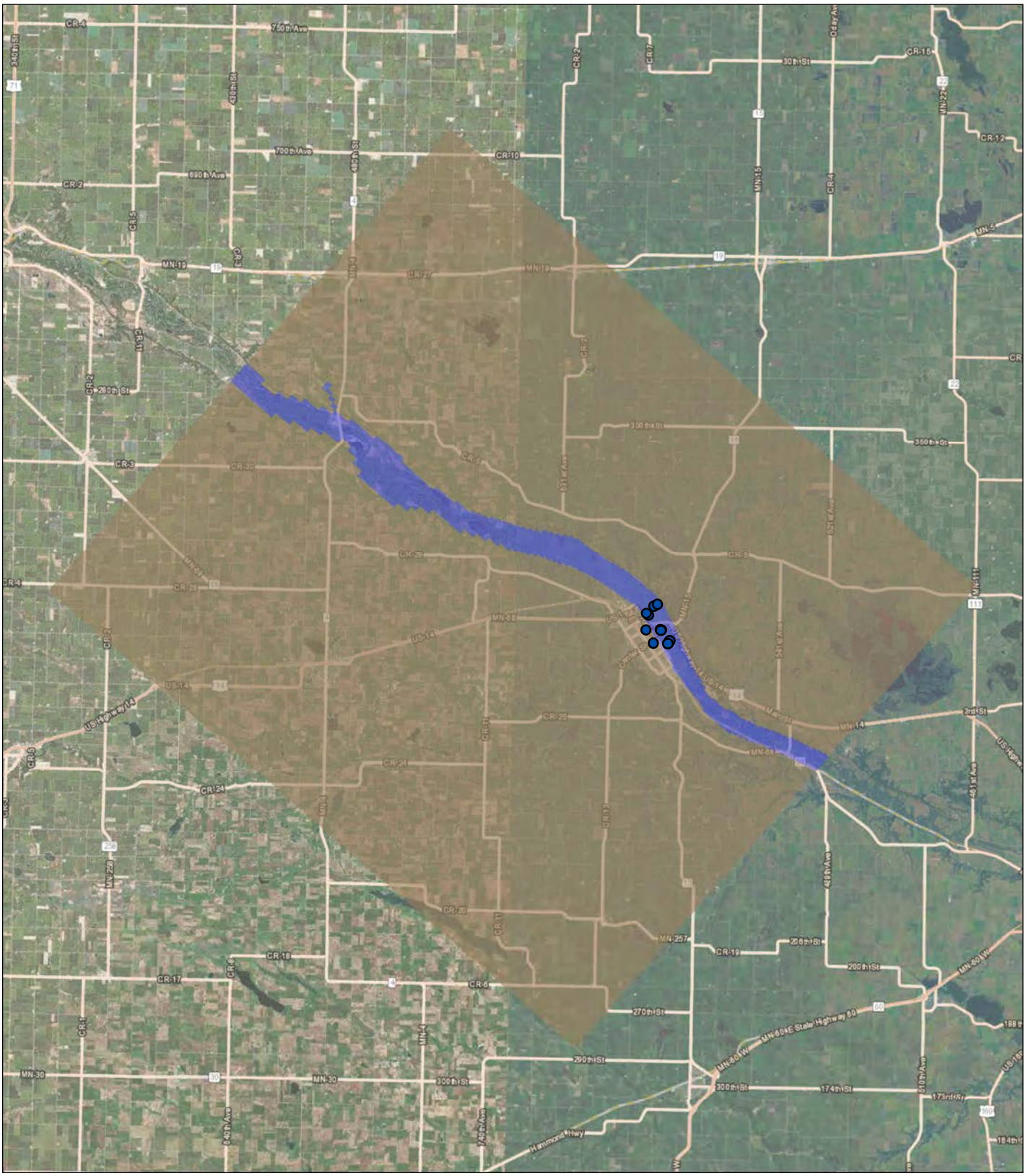
N W E S

0 2,200 4,400 8,800 13,200 Meters

Figure 8

Layer 1
Hydraulic Conductivity
Zones

New Ulm Wellhead
Protection Plan



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Legend

K (m/d)

- 0.03 (Zone 1)
- 40.37 (Zone 2)

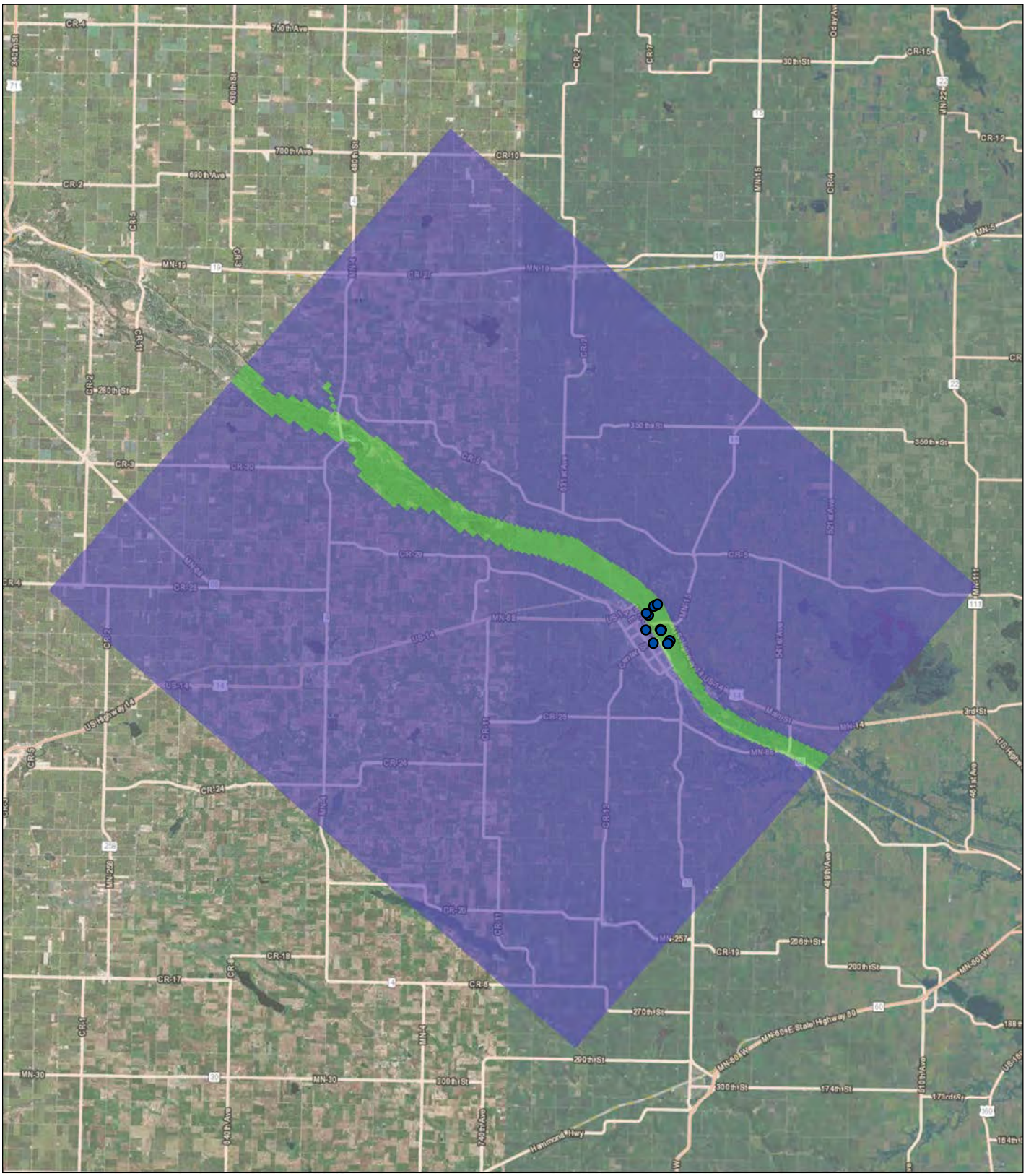
Municipal Wells

0 2,200 4,400 8,800 13,200 Meters

Figure 9

Layer 2
Hydraulic Conductivity
Zones

New Ulm Wellhead
Protection Plan



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Legend

K (m/d)

- 6.1 (Zone 1)
- 27.13 (Zone 2)

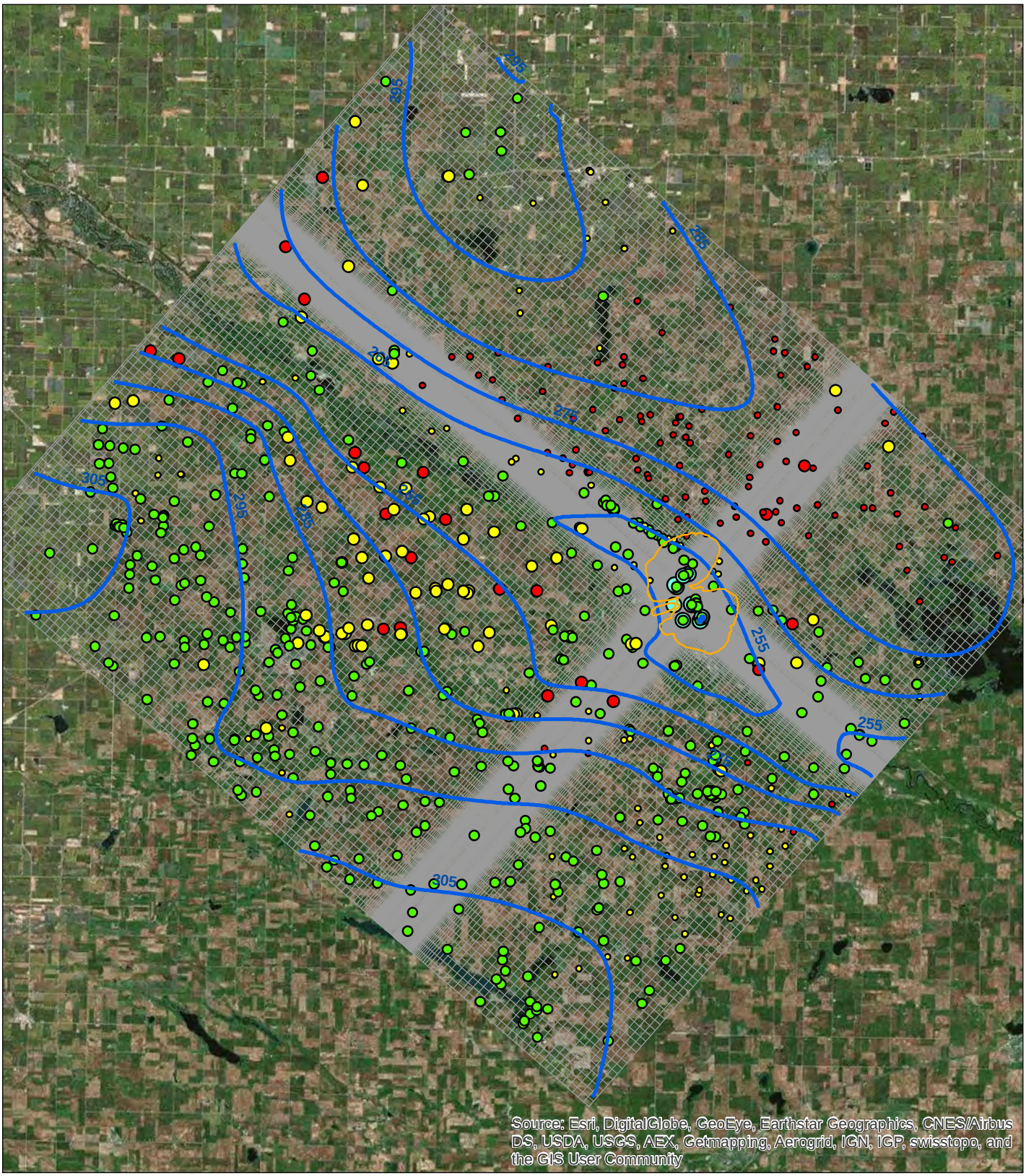
Municipal Wells

0 2,200 4,400 8,800 13,200 Meters

Figure 10

Layer 3
Hydraulic Conductivity
Zones

New Ulm Wellhead
Protection Plan



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Legend

Calibration Residual (m)
- -41.6 - -18.0
- -17.9 - -9.0
- -8.9 - 9.0
- 9.1 - 18.0
- 18.1 - 35.6

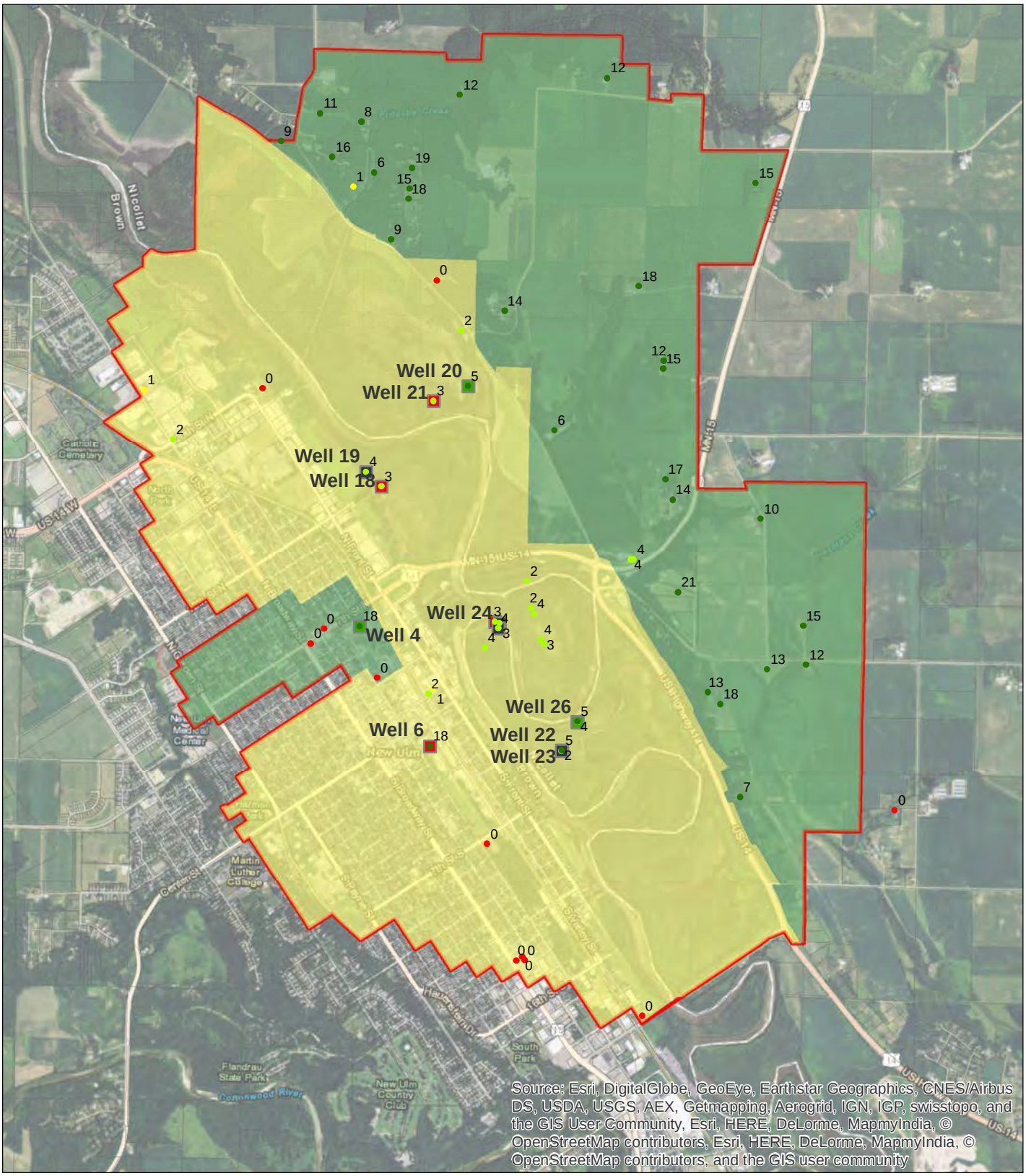
WHPA
Municipal Wells
Layer 3 Contour Elev (m)
Model Grid

0 1,800 3,600 7,200 10,800 Meters

Figure 11

Regional Calibration Targets and Contours

New Ulm Wellhead Protection Plan



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Legend

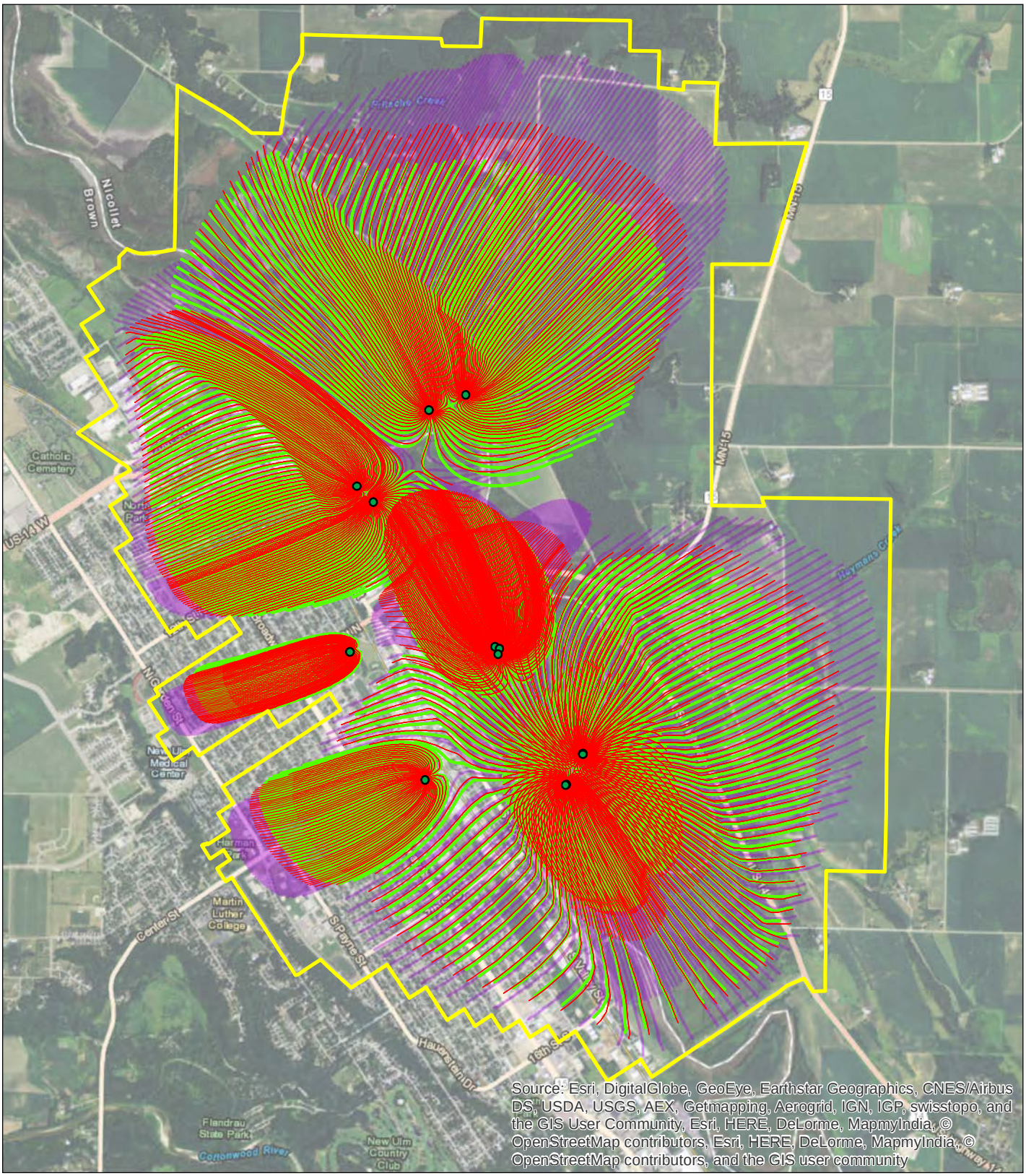
Geologic Sensitivity	Municipal Well Tritium	Vulnerability
High	Yes	Low
Moderate	No	Moderate
Low	Unknown	
Very Low		

0 265 530 1,060 1,590 Meters

Figure 12

DWSMA Vulnerability

New Ulm Wellhead Protection Plan



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Legend

- Municipal Wells
- DWSMA
- Modeled 20 Yr. Capture Zone
- Kdiv2 20yr Capture Zone
- Kx2 20yr Capture Zone

0 145 290 580 870 Meters

Figure 13

Sensitivity Analysis Results

New Ulm Wellhead Protection Plan

Appendix A

Scoping Decision Notice

SCOPING DECISION NOTICE No. 1
(Vulnerable Setting)

The purpose for the first Scoping Meeting, as required by Minnesota Rules, part 4720.5310, is to discuss the information necessary for preparing the Part I Report of a Wellhead Protection Plan. The Part I Report identifies the area that provides the source of drinking water for the public water supply (PWS) so that the PWS can develop land use or management practices to protect their groundwater resource from contamination. Specifically, the Part I Report documents the delineation of the wellhead protection area (WHPA), the delineation of the drinking water supply management area (DWSMA), and assesses the vulnerability of the PWS well(s) and DWSMA.

The wellhead rule (Minnesota Rules, part 4720.5310) refers to the information required for wellhead planning as data elements. This form lists the data elements stated in Minnesota Rules, part 4750.5400. The Minnesota Department of Health (MDH) uses this form to designate which data elements are needed to prepare the Part I Report, based on the hydrogeological setting, vulnerability of the wells, and aquifer information known at the time of the Scoping 1 Meeting.

Name of Public Water Supply **New Ulm Public Utilities (PWSID = 1080003)**		**Date** May 6, 2014
Name of the Wellhead Protection Manager Mr. George Brown, Water Superintendent		
Address 310 First North Street	**City** New Ulm	**Zip** 56073
Unique Well Numbers 430604 (Well 4), 241335 (Well 6), 188651 (Well 15), 241337 (Well 18) 241338 (Well 19), 209604 (Well 20), 209605 (Well 21), 241339 (Well 22), 241340 (Well 23), 209603 (Well 24), 511075 (Well 25), 513011 (Well 26), 520956 (Well 27)		**Phone** 507-276-3317

Instructions for Completing the Scoping No. 1 Form

N	D	V	S	
X				N = If this box is checked with an "X," this data element is **NOT** necessary for the **Part I Report** of your Wellhead Protection Plan. This data element may be identified later at the Scoping 2 Meeting and used for the Part 2 Report. Please go to the next data element.

N	D	V	S	
	X			D = If this box is checked with an "X," the preparer of the Part I Report is **required** to use this information for the **DELINEATION** of the WHPA or the DWSMA. If there is no check in the "S" box, this information is available in the public domain or is on file at MDH.

N	D	V	S	
		X		V = If this box is checked with an "X," the preparer of the Part I Report is **required** to use this information for the **VULNERABILITY** assessment of the PWS well(s) or the DWSMA. If there is no check in the "S" box, this information is available in the public domain or is on file at MDH.

N	D	V	S	
			X	S = If this box is checked with an "X," the PWS **must SUBMIT** the information to MDH.

DATA ELEMENTS ABOUT THE PHYSICAL ENVIRONMENT

A. PRECIPITATION

N	D	V	S	
	X			A.1: An existing map or list of local precipitation gauging stations. Public Domain or MDH Required for Delineation

Technical Assistance Comments: Precipitation values can be used to determine the local recharge in the groundwater model. The map can be used to determine the closest gauging station. The locations of the gauging stations are available in the public domain.

N	D	V	S	
	X		X	A.2: An existing table showing the average monthly and annual precipitation, in inches, for the preceding five years. Required for Delineation + must be submitted to MDH

Technical Assistance Comments: This information may be used for determining local recharge for the groundwater model. This information may be available in the public domain if there is a local gauging station, or may be obtained from the local wastewater treatment plant.

B. GEOLOGY

N	D	V	S	
	X	X	X	B.1: An existing geologic map and a description of the geology, including aquifers, confining layers, recharge areas, discharge areas, sensitive areas as defined in Minnesota Statutes, section 103H.005, subdivision 13, and groundwater flow characteristics. Required for Delineation + Vulnerability + must be submitted

Technical Assistance Comments: Information of this type is required to characterize the geologic and hydrogeologic setting of the PWS well field(s). This information is used to define aquifer geometry, location and magnitude of the recharge and discharge areas, and groundwater flow information. Aquifer tests or alternatives listed in MN Rules, part 4720.5510, subpart 6, can be used to help characterize flow in the aquifer. Reference all information used to develop the conceptual model of the geologic setting and submit to MDH only the information not available in the public domain.

N	D	V	S	
	X	X	X	B.2: Existing records of the geologic materials penetrated by wells, borings, exploration test holes, or excavations, including those submitted to the department.

Technical Assistance Comments: Information of this type may be useful to refine the understanding of the geologic and hydrogeologic setting on a local basis. Submit only if the PWS or city has information of test drilling or site investigations conducted by the city that are not available in the public domain.

N	D	V	S	
	X	X	X	B.3: Existing borehole geophysical records from wells, borings, and exploration test holes.

Technical Assistance Comments: Information from geophysical records may provide additional information about aquifer thickness, well construction, and water level information at a local scale. Submit only if the information is not available in the public domain.

N	D	V	S	
	X	X	X	B.4: Existing surface geophysical studies.

Technical Assistance Comments: Information from geophysical studies may be useful to refine the understanding of the geology on a local basis. Submit only if the information is not available in the public domain.

C. SOILS

N	D	V	S	
	X	X		C.1: Existing maps of the soils and a description of soil infiltration characteristics. Required to be used for delineation + Vulnerability

Technical Assistance Comments: This information is in the public domain and can be used to delineate the WHPA and assess the vulnerability of the DWSMA because it indicates the underlying geology.

N	D	V	S	
X				C.2: A description or an existing map of known eroding lands that are causing sedimentation problems. Not needed for Part 1 Report

Technical Assistance Comments:

D. WATER RESOURCES

N	D	V	S	
	X			D.1: An existing map of the boundaries and flow directions of major watershed units and minor watershed units. Must be used for delineation

Technical Assistance Comments: This information is in the public domain and may be used to delineate the surface water contribution area of the WHPA.

N	D	V	S	
	X	X		D.2: An existing map and a list of public waters as defined in Minnesota Statutes, section 103G.005, subdivision 15, and public drainage ditches. must be used for delineation + vulnerability

Technical Assistance Comments: This information is in the public domain and may be used to delineate the surface water contribution area of the WHPA and determine the vulnerability of the DWSMA.

N	D	V	S	
X				D.3: The shoreland classifications of the public waters listed under sub-item (2), pursuant to part 6120.3000 and Minnesota Statutes, sections 103F.201 to 103F.221.

Technical Assistance Comments: Not for Part I reporting

N	D	V	S	
X				D.4: An existing map of wetlands regulated under Chapter 8420 and Minnesota Statutes, section 103G.221 to 103G.2373. Not for Part I reporting

Technical Assistance Comments:

N	D	V	S	
	X	X	X	D.5: An existing map showing those areas delineated as floodplain by existing local ordinances. must be submitted

Technical Assistance Comments: This information may be helpful in delineating the WHPA and DWSMA. It can be used in determining well and DWSMA vulnerability. An electronic format of the map is preferable.

DATA ELEMENTS ABOUT THE LAND USE

E. LAND USE

N	D	V	S	
	X		X	E.1: An existing map of parcel boundaries. must be used and submitted

Technical Assistance Comments: This information may be helpful in delineating the DWSMA, if available. If this information is provided, identification numbers must be provided for each parcel. An electronic format for the map is preferable.

N	D	V	S	
	X		X	E.2: An existing map of political boundaries. must be used + submitted

Technical Assistance Comments: Please provide this information if the boundaries have been updated/changed. This information may be helpful in delineating the DWSMA. An electronic format for the map is preferable.

N	D	V	S	
	X			E.3: An existing map of public land surveys, including township, range, and section.

Technical Assistance Comments: This information is available in the public domain and may be helpful in delineating the DWSMA.

N	D	V	S	
X				E.4: A map and an inventory of the current and historical agricultural, residential, commercial, industrial, recreational, and institutional land uses and potential contaminant sources.

Technical Assistance Comments: Not required for Part I reporting

not used in part I reporting

N	D	V	S	E.5: An existing, comprehensive land-use map.
X				

Technical Assistance Comments:

N	D	V	S	E.6: Existing zoning map.
X				

Technical Assistance Comments:

F. PUBLIC UTILITY SERVICES

N	D	V	S	F.1: An existing map of transportation routes or corridors.
	X			

Technical Assistance Comments: This information is available in the public domain and may be helpful in delineating the DWSMA.

N	D	V	S	F.2: An existing map of storm sewers, sanitary sewers, and the public water supply systems.
	X		X	

Technical Assistance Comments: Do not submit a map of the storm sewers and sanitary sewers. Describe the difference in how much water is pumped and how much is sold. The difference is the leakage that may be used as recharge in the groundwater model.

N	D	V	S	F.3: An existing map of gas and oil pipelines used by gas and oil suppliers.
X				Not for part I report

Technical Assistance Comments:

N	D	V	S	F.4: An existing map or list of public drainage systems.
	X	X		

Technical Assistance Comments: This information is available in the public domain and may be helpful in delineating the DWSMA.

N	D	V	S	F.5: An existing record of construction, maintenance, and use of the public water supply well(s) and other wells within the DWSMA.
	X	X	X	

Technical Assistance Comments: If the information is different than that on file with MDH, please provide 1) the pumping rates for the current and previous years and the projected annual pumping rates for the next five years for each well in the PWS; and 2) well record(s) for the PWS well(s). Information about the PWS well(s) may affect the vulnerability assessment due to rehabilitation/reconstruction of a well or changes in pumping rates.

DATA ELEMENTS ABOUT WATER QUANTITY

G. SURFACE WATER QUANTITY

N	D	V	S	
	X	X		G.1: An existing description of high, mean, and low flows on streams. Delineation + Vulnerability

Technical Assistance Comments: This information is available in the public domain and may be used to determine hydraulic connections between surface water bodies and the aquifer(s) of concern.

N	D	V	S	
	X			G.2: An existing list of lakes where the state has established ordinary high water marks.

Technical Assistance Comments: This information is available in the public domain. The information may be used to determine the WHPA.

N	D	V	S	
	X	X	X	G.3: An existing list of permitted withdrawals from lakes and streams, including source, use, and amounts withdrawn.

Technical Assistance Comments: Only required if different from the DNR database. Surface water bodies may be in direct hydraulic connection with the aquifer(s) of concern and withdrawals may affect water levels in both the surface water and adjacent groundwater systems.

N	D	V	S	
	X			G.4: An existing list of lakes and streams for which state protected levels or flows have been established.

Technical Assistance Comments: This information is available in the public domain and may be used to determine hydraulic connections between surface water bodies and the aquifer(s) of concern.

N	D	V	S	
	X	X	X	G.5: An existing description of known water-use conflicts, including those caused by groundwater pumping.

Technical Assistance Comments: Please notify MDH of surface water/well interference problems of which the PWS is aware. Conflicts between use of groundwater resources and surface water bodies would indicate a hydrologic boundary that would need to be considered in delineating the WHPA.

Delineation + vulnerability

H. GROUNDWATER QUANTITY

N	D	V	S	
	X	X	X	H.1: An existing list of wells covered by state appropriation permits, including amounts of water appropriated, type of use, and aquifer source.

Technical Assistance Comments: Please submit this information for wells that are not permitted by the DNR because this information may be useful in identifying the hydrologic boundary conditions that could affect the size and shape of the WHPA boundaries.

N	D	V	S	
	X	X	X	H.2: An existing description of known well interference problems and water-use conflicts.

Technical Assistance Comments: Please notify MDH of well interference problems of which the PWS is aware. Interference problems with other wells, if present, likely indicate a hydrologic boundary that would need to be considered in making the WHPA delineation.

N	D	V	S	
	X	X	X	H.3: An existing list of state environmental boreholes, including unique well number, aquifer measured, years of record, and average monthly levels.

Technical Assistance Comments: Only submit monthly water level measurements (with unique well numbers and dates) that are not in the public domain.

DATA ELEMENTS ABOUT WATER QUALITY

I. SURFACE WATER QUALITY

N	D	V	S	
X				I.1: An existing map or list of the state water quality management classification for each stream and lake. Not used in Part I report

Technical Assistance Comments:

N	D	V	S	
		X	X	I.2: An existing summary of lake and stream water quality monitoring data, including: 1. bacteriological contamination indicators; 2. inorganic chemicals; 3. organic chemicals; 4. sedimentation; 5. dissolved oxygen; and 6. excessive growth or deficiency of aquatic plants.

Technical Assistance Comments: This information can be used to evaluate surface water/groundwater interactions and aquifer water quality. Submit if the PWS has information that is not available in the public domain.

J. GROUNDWATER QUALITY

N	D	V	S	
	X	X	X	J.1: An existing summary of water quality data, including: 1) bacteriological contamination indicators; 2) inorganic chemicals; and 3) organic chemicals.

Technical Assistance Comments: Submit if the PWS has information that is not available in the public domain because the information may help explain groundwater flow paths.

N	D	V	S	
	X	X	X	J.2: An existing list of water chemistry and isotopic data from wells, springs, or other groundwater sampling points.

Technical Assistance Comments: Submit if the PWS has information that is not available in the public domain because the information may help explain groundwater flow paths.

N	D	V	S	
	X	X	X	J.3: An existing report of groundwater tracer studies.

Technical Assistance Comments: Submit if the PWS has information that is not available in the public domain because the information may help explain groundwater flow paths.

N	D	V	S	
		X	X	J.4: An existing site study and well water analysis of known areas of groundwater contamination.

Technical Assistance Comments: Submit if the PWS has information on contaminant sources not available in the public domain because these reports may contain additional geologic or hydrogeologic information.

N	D	V	S	
X				J.5: An existing property audit identifying contamination.

Technical Assistance Comments:

N	D	V	S	
	X	X		J.6: An existing report to the Minnesota Department of Agriculture and the Minnesota Pollution Control Agency of contaminant spills and releases.

Technical Assistance Comments: Notify MDH of reports on spills or contaminant releases that are on file with the PWS or city but are not in the public domain. These reports do not need to be submitted but MDH staff would like to review reports.

not needed for Part I

New Ulm Public Utilities
Summary of Data Request
Specific Data to be Provided to MDH by PWS

As discussed during the first Scoping Meeting on April 15, 2014, the public water supply (PWS) will provide the following information for Part I of their Wellhead Protection Plan to the Minnesota Department of Health. The number of the data element that refers to the information needed to prepare the Part I Report is listed in the parenthesis at the end of each request.

1) PWS well information: Use Tables 1 and 2, the well records for the PWS wells, and a map showing the locations of all the PWS wells, to review the accuracy of 1) all PWS well construction, 2) well locations, and 3) pumping information. (F.5)

   Table 1 lists well use and construction for each of the PWS wells. Have you reconstructed any wells? Are there well records for reconstructed wells?

   The enclosed map shows the locations of the primary public water supply wells. Please let us know if you feel the wells are not correctly located. These locations must be used to delineate your wellhead protection areas.

   Table 2 shows the available pumping information and indicates what information the PWS needs to provide for the delineation of the capture zone. Please provide 1) the pumping data for 2012 and 2013 that was sent to the Minnesota Department of Natural Resources, 2) whether this rate was measured or estimated, and 3) the projected annual pumping amounts for the next five years.

2) Provide a copy of any aquifer test or specific capacity information for the PWS wells that was obtained during well construction, maintenance, or repair. (B.1)

3) Is there an existing map of parcel and/or political boundaries that could be used for defining the Drinking Water Supply Management Area (DWSMA)? If you wish to use parcel lines, please provide the parcel identification number for each parcel boundary along with the map. Have the city boundaries changed? If the city boundaries have changed, please provide the new boundaries. The boundaries of the DWSMA may be larger if political boundaries are used instead of the parcel boundaries. (E.1 and E.2)

4) If there are private well records, soil boring reports, geophysical studies, or water level measurements in your files that MDH staff did not identify at the scoping meeting and that would be available for MDH staff to review and copy, please notify MDH. (B.2, B.3, B.4, and H.3)

5) Identify reports that you have on file relating to leaks/contamination sites that may be a concern to your drinking water supply that MDH may review and copy. (J.4)

6) If your files contain water chemistry data, such as bacteria, virus, inorganic, organic, or isotopic results from wells or other groundwater sampling points, that are not currently available to MDH, that MDH may review and copy, please notify MDH. (J.1 and J.2)

7) Identify reports you have in your files relating to groundwater tracer studies that have been conducted. (J.3)

8) Provide information about other high-capacity wells in your area that may not be permitted and are not listed on the attached Table 3. (H.1)

9) Describe any conflicts over water use that the PWS has been involved with, such as 1) private wells that went dry (or well interference) or 2) springs or wetlands that were affected. Was the Department of Natural Resources involved in resolving the conflict? (G.5 and H.2)

10) Describe the annual amount of water lost due to leaks in the distribution system. Can you identify specific parts of the distribution system where this loss occurs? (F.2)

11) If local precipitation information is not available in the public domain within a couple of miles and in the same geomorphic setting, please provide average monthly precipitation values from the wastewater treatment facility during the preceding five years. (A.2)

12) Identify any other reports about surface water withdrawals or surface water monitoring data from lakes, streams, or wetlands that are not in the public domain that MDH staff could review and copy. (G.3 and I.2)

Table 1 - Public Water Supply Well Information
New Ulm Public Utilities, New Ulm, Minnesota

Local Well Name	Unique Number	Use/ Status[1]	Casing Diameter (inches)	Casing Depth (feet)	Well Depth (feet)	Date Constructed/ Reconstructed	Well Vulnerability	Aquifer
Well 4	430604	P	12	216	247	04/02/1987	Vulnerable	Cretaceous Undiff.
Well 6	241335	P	24	293	212	02/1965	Vulnerable	Mt. Simon
Well 15	188651	P	12	53	67	02/16/1982	Not Vulnerable	Quaternary Buried Artesian Aquifer
Well 18	241337	P	12	125	147	11/11/1960	Not Vulnerable	Quaternary Buried Artesian Aquifer
Well 19	241338	P	12	144	168	03/1965	Not Vulnerable	Quaternary Buried Artesian Aquifer
Well 20	209604	P	20 x 16	140	170	02/28/1969	Not Vulnerable	Quaternary Buried Artesian Aquifer
Well 21	209605	P	20 x 16	137	167	02/27/1969	Vulnerable	Quaternary Buried Artesian Aquifer
Well 22	241339	P	36x16x18	64	83	1971	Not Vulnerable	Quaternary Buried Artesian Aquifer
Well 23	241340	P	30x16x12	152	195	08/30/1971	Not Vulnerable	Mt. Simon
Well 24	209603	P	36 x 30	60	71	08/18/1971	Not Vulnerable	Quaternary Buried Artesian Aquifer
Well 25	511075	P	12	46	62	08/11/1989	Vulnerable	Quaternary Buried Artesian Aquifer
Well 26	513011	P	12	73	96	08/06/1992	Not Vulnerable	Quaternary Buried Artesian Aquifer
Well 27	520956	P	12	122	162	10/08/1993	Vulnerable	Quaternary Buried Artesian Aquifer

Note: 1. Primary (P) or Emergency Backup (E) Well

Table 2 - Annual Volume of Water Pumped from PWS Wells (gallons)

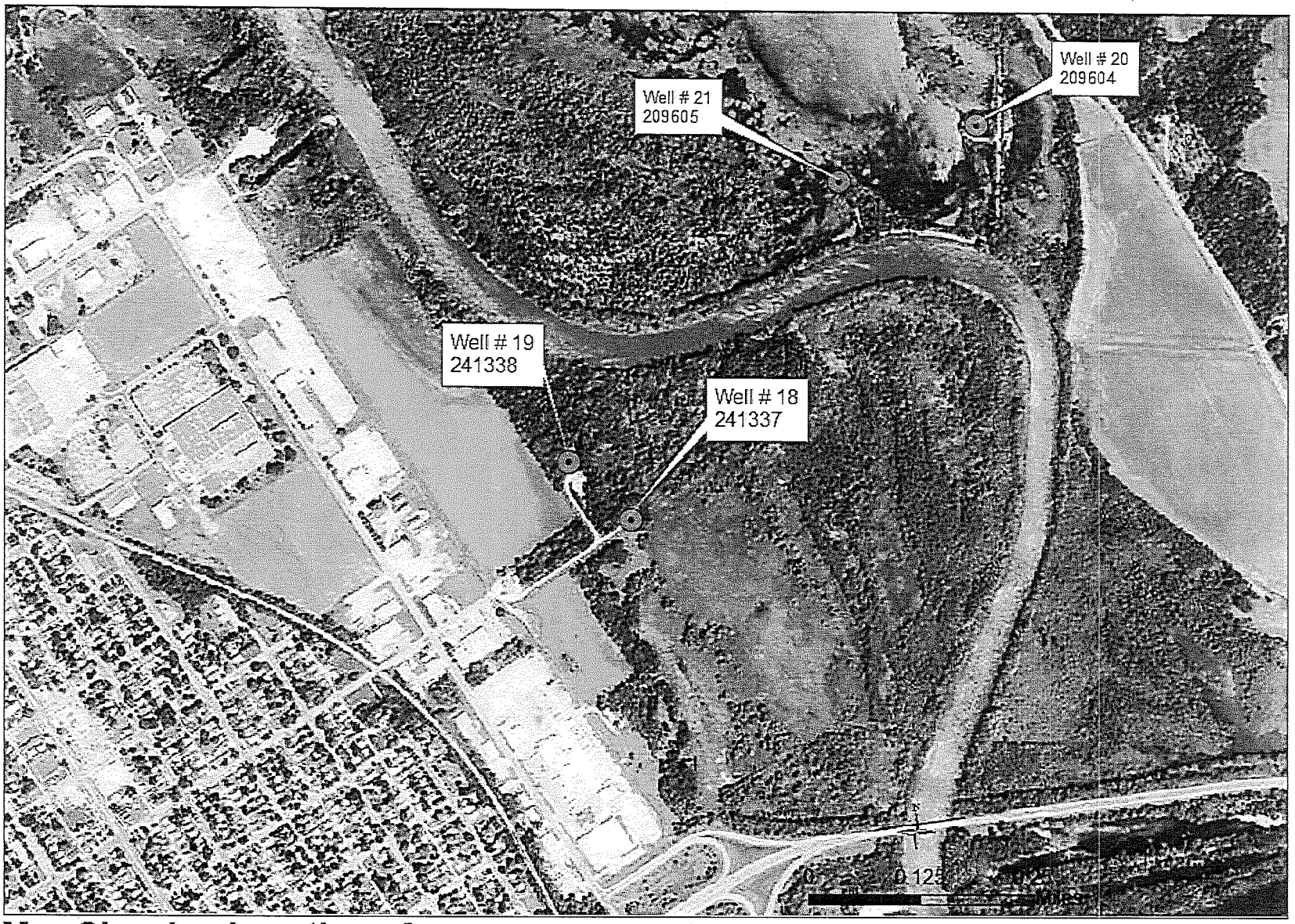
Well Name/ Number	2009	2010	2011	2012	2013	Projected* 2019
Well 4 (430604)	2,800,000	36,700,000	5,100,000	*	*	
Well 6 (241335)	200,000	3,800,000	57,500,000	*	*	
Well 15 (188651)	21,800,000	4,500,000	12,100,000	*	*	
Well 18 (241337)	5,400,000	5,600,000	12,900,000	*	*	
Well 19 (241338)	103,428,000	40,547,000	18,303,000			
Well 20 (209604)	154,833,000	80,815,000	192,545,000			
Well 21 (209605)	92,924,000	96,080,000	19,212,000			
Well 22 (241339)	39,088,000	5,537,000	5,853,000			
Well 23 (241340)	157,594,000	182,703,000	216,144,000			
Well 24 (209603)	34,865,000	24,326,000	7,559,000			
Well 25 (511075)	20,045,000	16,220,000	21,496,000			
Well 26 (513011)	30,306,000	59,604,000	54,518,000			
Well 27 (520956)	170,353,000	172,098,000	177,167,000			

Source: DNR State Water Use Database System.

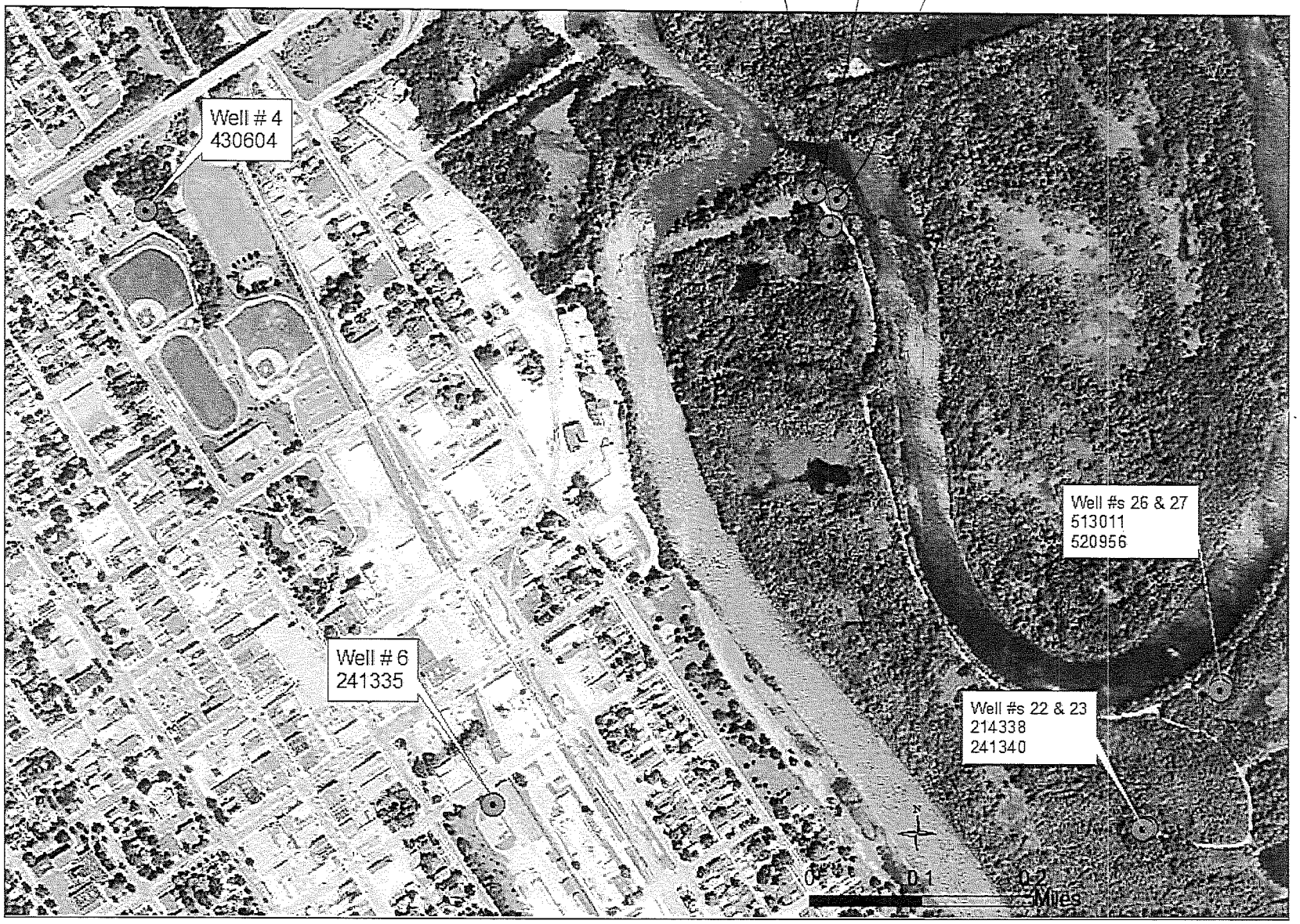
* Data to be provided by the city.

Table 3 - Permitted High-Capacity Wells
DNR State Water Use Database System

Unique Number	Well Name	DNR Permit Number	Aquifer	Use	Annual Volume of Water Pumped (Gallons)
133181	1	2002-4134	Cretaceous Undiff.	New Ulm Country Club	7,100,000
645289	4	2002-4134	Cretaceous Undiff.	New Ulm Country Club	12,900,000



Map Showing Location of
New Ulm Public Water Supply Wells

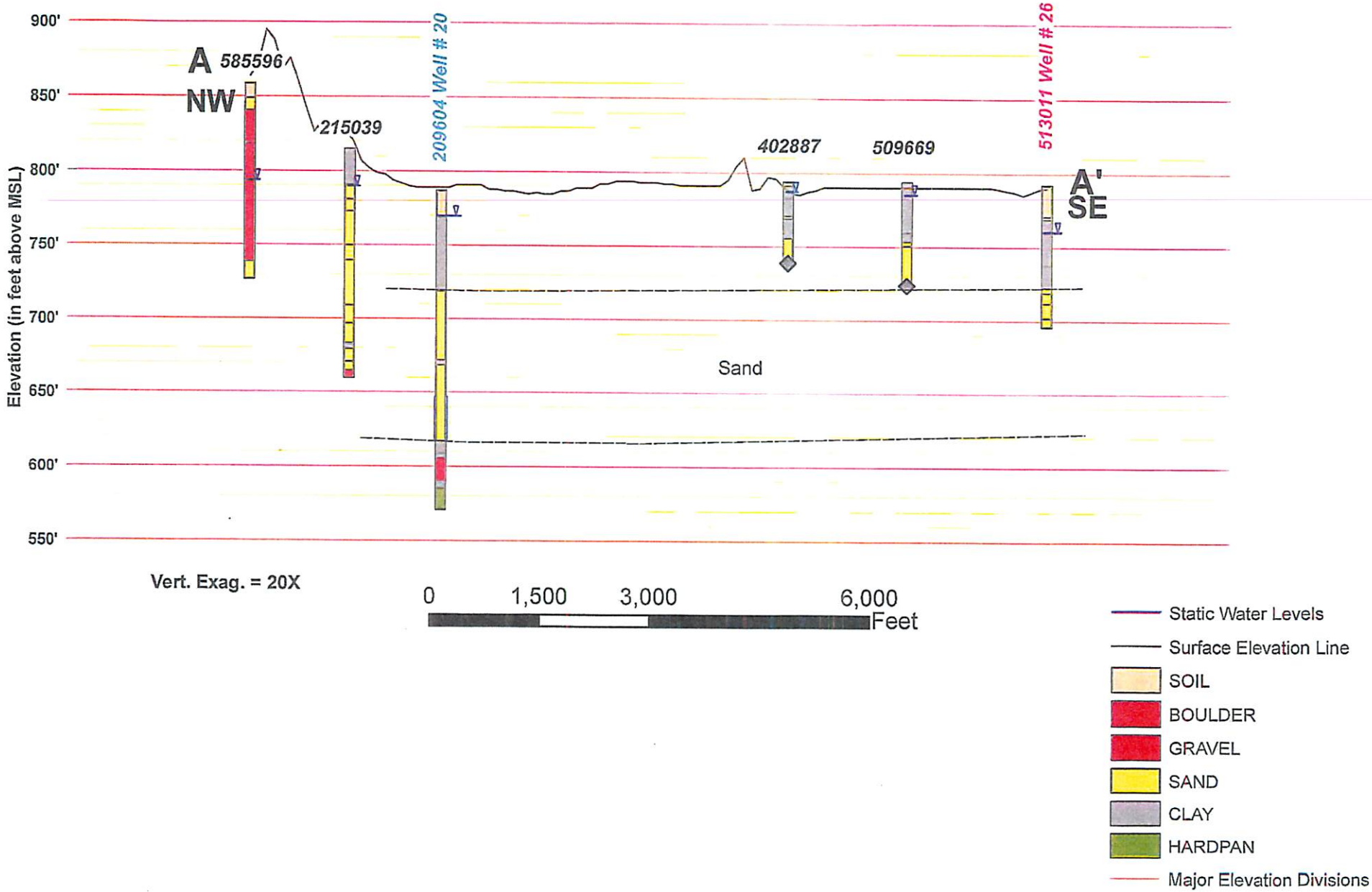


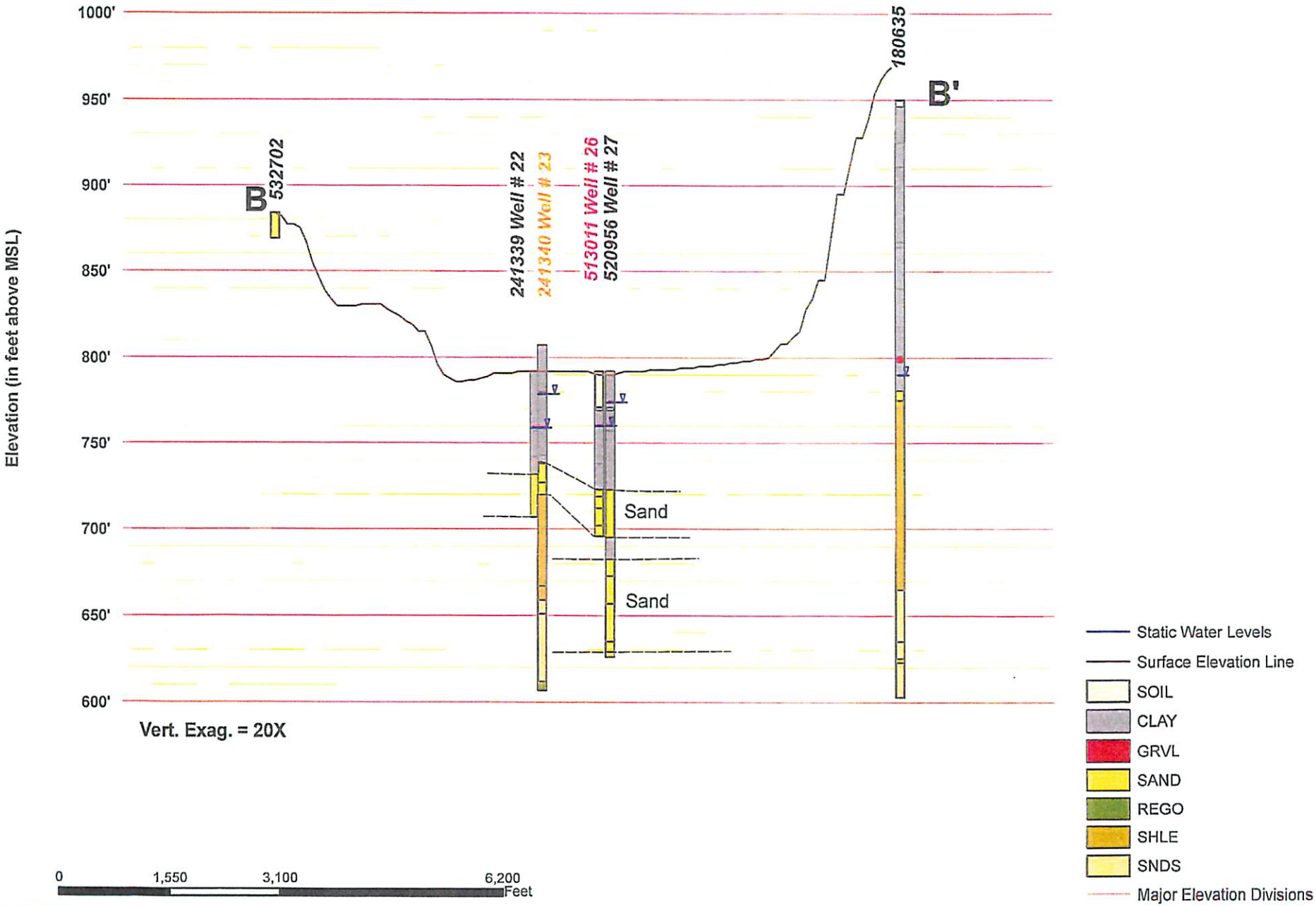
Map Showing Location of
New Ulm Public Water Supply Wells

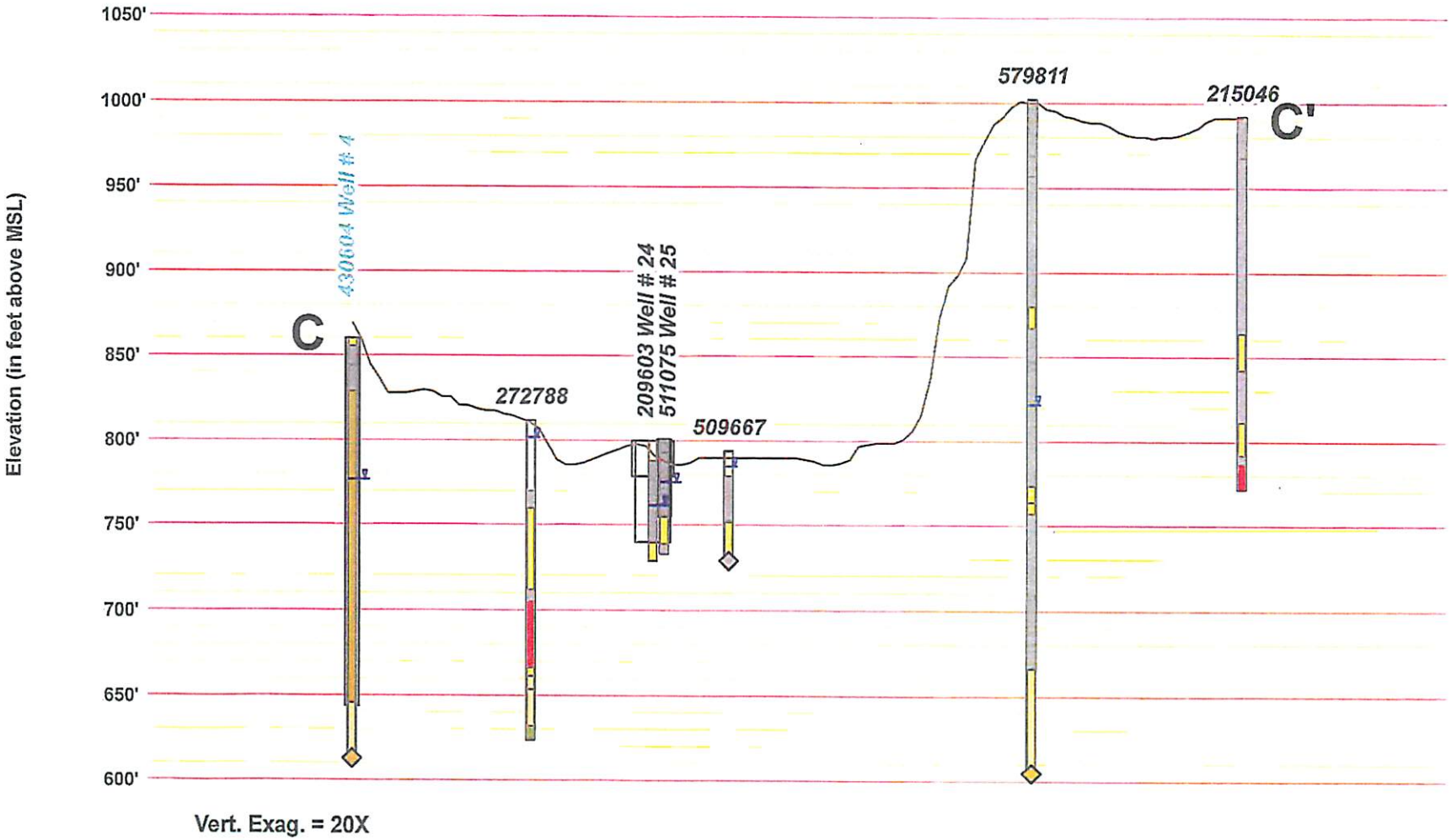
Trends of Cross Sections

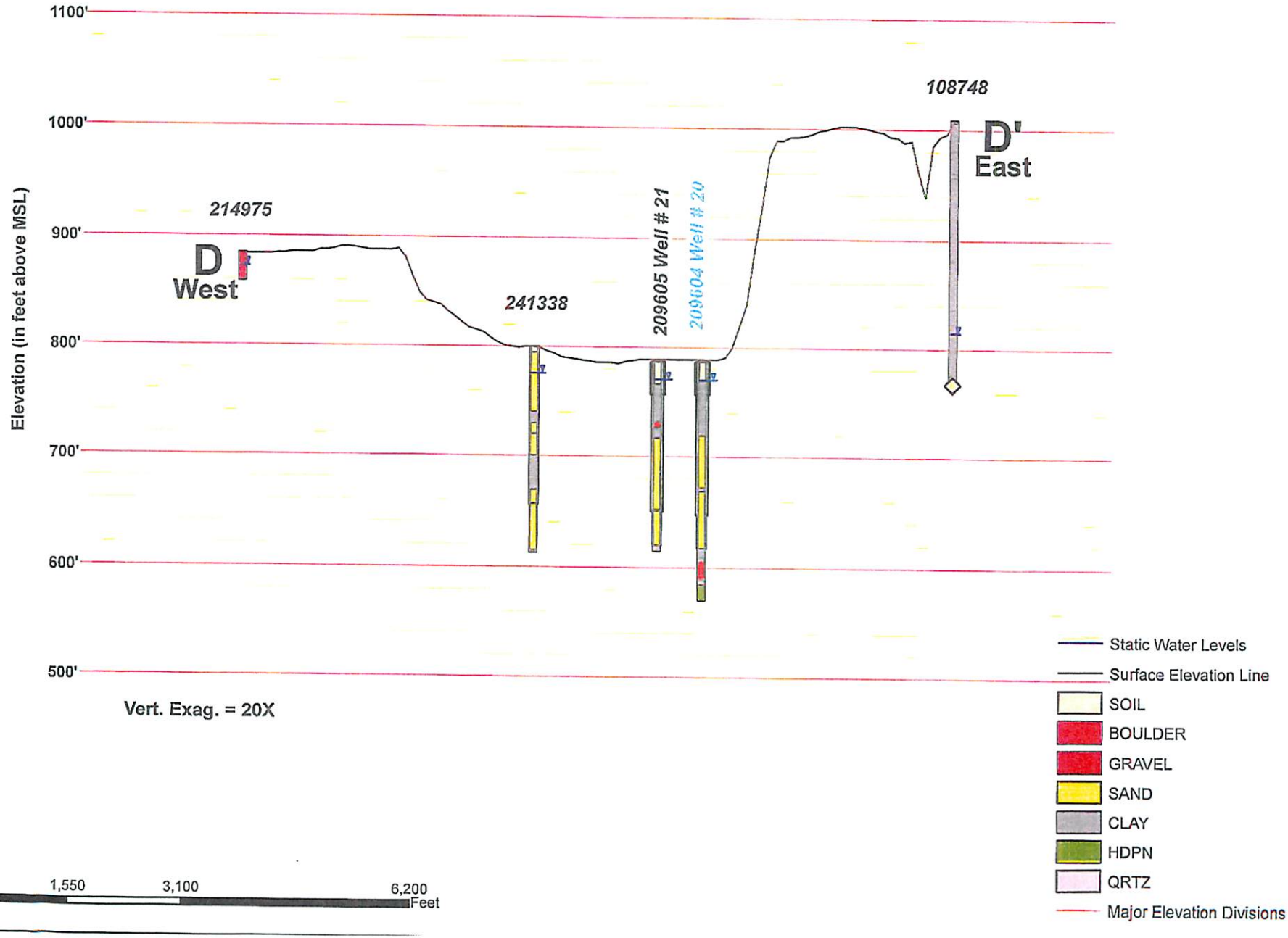
water well

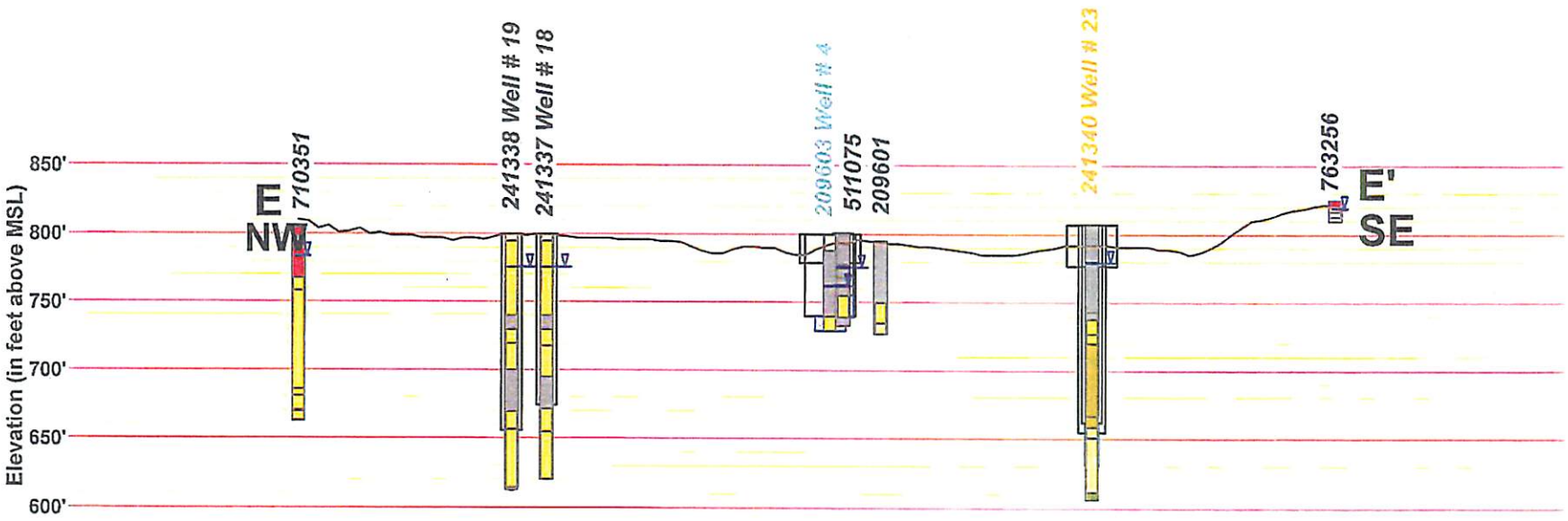
Trends of Cross section


900'
850'
800'
750'
700'
650'
600'
550'
Elevation (in feet above MSL)
A
NW
585596
215039
209604 Well # 20
402887
509669
513011 Well # 26
A'
SE
Sand
Vert. Exag. = 20X
0
1,500
3,000
6,000
Feet
Static Water Levels
Surface Elevation Line
SOIL
BOULDER
GRAVEL
SAND
CLAY
HARDPAN
Major Elevation Divisions


Elevation (in feet above MSL)
1000'
950'
900'
850'
800'
750'
700'
650'
600'
B
532702
241339 Well # 22
241340 Well # 23
513011 Well # 26
520956 Well # 27
180635
B'
Sand
Sand
Vert. Exag. = 20X
0
1,550
3,100
6,200
Feet
Static Water Levels
Surface Elevation Line
SOIL
CLAY
GRVL
SAND
REGO
SHLE
SNDS
Major Elevation Divisions


Elevation (in feet above MSL)
1050'
1000'
950'
900'
850'
800'
750'
700'
650'
600'
C
C'
430604 Well # 4
272788
209603 Well # 24
511075 Well # 25
509667
579811
215046
Vert. Exag. = 20X
0
1,550
3,100
6,200
Feet


1100'
1000'
900'
800'
700'
600'
500'
Elevation (in feet above MSL)
214975
D
West
241338
209605 Well # 21
209604 Well # 20
108748
D'
East
Vert. Exag. = 20X
0
1,550
3,100
6,200
Feet
Static Water Levels
Surface Elevation Line
SOIL
BOULDER
GRAVEL
SAND
CLAY
HDPN
QRTZ
Major Elevation Divisions



Vert. Exag. = 20X

0 1,550 3,100 6,200 Feet

- Static Water Levels
- Surface Elevation Line
- SOIL
- COBBLE
- GRAVEL
- SAND
- SILT
- CLAY
- REGOLITH
- SHALE
- QUARTZITE
- SANDSTONE
- UNK
- Major Elevation Divisions

Appendix B

Well Logs

Unique No. 00241334

County Name Brown

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Update Date 2003/11/07

Entry Date 1992/10/06

Township Name	Township	Range	Dir	Section	Subsection
	110	30	W	20	ACCBBC

Well Name NEW ULM 4

Well Owner's Name NEW ULM OLD 4

NEW ULM MN 56073

Contact's Name NEW ULM PUBLIC UTILITIES

NEW ULM MN 56073

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
NO RECORDS			0	246

USGS Quad New Ulm

Aquifer:

Elevation 870

Alt Id:

Report Copy

Well Depth 246 ft. | Depth Completed 246 ft. | Date Well Completed 1918/00/00

Drilling Method

Drilling Fluid

Well Hydrofractured? ☐ Yes ☐ No

From ft. to ft.

Use Community Supply (municipal)

Casing | Drive Shoe? ☐ Yes ☐ N | Hole Diameter

Casing Diameter 24 in. to 231 ft | Weight(lbs/ft)

Screen Y | Open Hole From ft. to ft.

Make | Type

Diameter	Slot	Length	Set	Fitting
		15	231 ft. to 246 ft	

Static Water Level 90 ft. from Land surface | Date 1918/00/00

PUMPING LEVEL (below land surface)

ft. after hrs. pumping g.p.m.

Well Head Completion

Pitless adapter mfr | Model

Casing Protection ☐ 12 in. above grade

☐ At-grade(Environmental Wells and Borings ONLY)

Grouting Information | Well grouted? ☐ Yes ☐ No

Nearest Known Source of Contamination

ft. | direction | type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed | Date Installed

Mfr name

Model | HP | Volts

Drop Pipe Length ft. | Capacity g.p.m

Type T

Any not in use and not sealed well(s) on property? ☐ Yes ☐ No

Was a variance granted from the MDH for this Well? ☐ Yes ☐ No

Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. MDH

License Business Name

Name of Driller

Unique No. 00430604	MINNESOTA DEPARTMENT OF HEALTH **WELL AND BORING RECORD** *Minnesota Statutes Chapter 1031*	Update Date 2003/11/21
County Name Brown		Entry Date 1992/10/06

Township Name	Township	Range	Dir	Section	Subsection	Well Depth		Depth Completed		Date Well Completed
	110	30	W	20	ACCBBD	247	ft.	247	ft.	1987/04/02

Well Name	NEW ULM 4	**Lic. Or Reg. No.**	08258	**Name of Driller**	KUCK, D.
USGS Quad	New Ulm **Elevation** 860	**Aquifer**	CMTS	**Alternative Id**	65-0873

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO	STRAT	LITH PRIM	LITH SEC	LITH MINOR
SAND	BROWN	SOFT	0	5	QFUB	SAND		
QFUB = Sand	SAND = Sand							
SANDY CLAY	YELLOW	SOFT	5	16	QLUY	CLAY	SAND	
QLUY = Clay & sand	CLAY = Clay				SAND = Sand			
SANDY CLAY	BLUE	SOFT	16	31	QLUG	CLAY	SAND	
QLUG = Clay & sand	CLAY = Clay				SAND = Sand			
SHALE	VARIED	SOFT	31	214	CAMB	SHLE		
CAMB = Cambrian,Undifferentiated	SHLE = Shale							
SANDSTONE	WHITE	SOFT	214	247	CMTS	SNDS		
CMTS = Mt.Simon	SNDS = Sandstone							
HALE SMERY	BROWN		247	247	PCRG	SHLE		
PCRG = Pre-Croixan Regolith	SHLE = Shale							

Unique No. 00241335

County Name Brown

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Update Date 2003/11/21

Entry Date 1992/10/06

Township Name	Township	Range	Dir	Section	Subsection
	110	30	W	20	DDCABC

Well Depth 212 ft. | Depth Completed 212 ft. | Date Well Completed 1965/00/00

Well Name NEW ULM 6

Drilling Method Cable Tool

Well Owner's Name NEW ULM 6

NEW ULM MN 56073

Drilling Fluid

Well Hydrofractured? ☐ Yes ☐ No

From ft. to ft.

Contact's Name NEW ULM PUBLIC UTILITIES

NEW ULM MN 56073

Use Community Supply (municipal)

Casing Drive Shoe? ☐ Yes ☐ N

Hole Diameter

Casing Diameter 24 in. to 203 ft

Weight(lbs/ft)

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
SAND & CLAY			0	30
CRETACEOUS DEPOSITS			30	212

Screen U

Make

Type

Open Hole From ft. to ft.

Static Water Level 60 ft. from Land surface Date /19/65

PUMPING LEVEL (below land surface)

ft. after hrs. pumping g.p.m.

Well Head Completion

Pitless adapter mfr Model

Casing Protection ☐ 12 in. above grade

☐ At-grade(Environmental Wells and Borings ONLY)

Grouting Information Well grouted? ☐ Yes ☐ No

Nearest Known Source of Contamination

ft. direction type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Mfr name

Model HP 25 Volts

Drop Pipe Length ft. Capacity g.p.m

Type S

Any not in use and not sealed well(s) on property? ☐ Yes ☐ No

Was a variance granted from the MDH for this Well? ☐ Yes ☐ No

Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 96460

License Business Name

Name of Driller

REMARKS, ELEVATION, SOURCE OF DATA, etc.

THE INTERPRETATION FROM 30 TO 212 FEET IS OUR BEST GUESS

WE NEED SAMPLES AND GAMMA LOGS TO KNOW WHAT IS REALLY THERE.

USGS Quad: New Ulm Elevation 839

Aquifer: KRET Alt Id: 1080003S02

Report Copy

HE-01205-06 (Rev. 9/96)

Unique No. 00188651
County Name Nicollet

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 1031

Update Date 2003/05/21
Entry Date 2002/12/26

Township Name	Township	Range	Dir	Section	Subsection
	110	30	W	21	BCBD

Well Name CITY OF NEW ULM 15

Well Depth 67 ft. | Depth Completed 67 ft. | Date Well Completed 1982/02/16

Drilling Method Non-specified Rotary

Drilling Fluid

Well Hydrofractured? ☐ Yes ☐ No
From ft. to ft.

Use Community Supply (municipal)

Casing Drive Shoe? ☐ Yes ☑ N

Hole Diameter
in. to 67 ft

Casing Diameter Weight(lbs/ft)
12 in. to 53 ft

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
FILL	BLACK	SOFT	0	12
CLAY	GRAY		46	50
CLAY	BLUE	SOFT	46	46
COARSE SAND	BROW	SOFT	50	62
WOOD	BLACK	SOFT	62	63
SANDY SHALE	WHITE	SOFT	66	67
COARSE SAND	BROW	SOFT	66	66

Screen Y | Open Hole From ft. to ft.

Make JOHNSON Type L

Diameter	Slot	Length	Set	Fitting
12	60	16	53 ft. to 62 ft	
12	60	16	63 ft. to 67 ft	

Static Water Level ft. from Land surface Date 1982/02/16

PUMPING LEVEL (below land surface)
ft. after hrs. pumping g.p.m.

Well Head Completion
Pitless adapter mfr Model
Casing Protection ☐ 12 in. above grade
☐ At-grade(Environmental Wells and Borings ONLY)

Grouting Information Well grouted? ☑ Yes ☐ No

Material	From	To (ft.)	Amount(yds/bags)	
G	0	25	3	Y

Nearest Known Source of Contamination
200 ft. direction N type BOW
Well disinfected upon completion? ☑ Yes ☐ No

Pump ☐ Not Installed Date Installed
Mfr name FLINT & WALLING
Model HP 30 Volts 460
Drop Pipe Length 60 ft. Capacity g.p.m
Type S

Any not in use and not sealed well(s) on property? ☐ Yes ☐ No

Was a variance granted from the MDH for this Well? ☐ Yes ☐ No

USGS Quad: New Ulm Elevation 794
Aquifer: Alt Id: 1080003S03

Well CONTRACTOR CERTIFICATION Lic. Or Reg. No.
License Business Name
Name of Driller

Report Copy

Unique No. 00241337
County Name Brown

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 1031

Update Date 2003/11/07
Entry Date 1998/01/29

Township Name	Township	Range	Dir	Section	Subsection
	110	30	W	17	DCBABA

Well Depth 179 ft. | Depth Completed 147 ft. | Date Well Completed 1960/11/11

Well Name NEW ULM 18

Drilling Method Cable Tool

Well Owner's Name NEW ULM 18
NEW ULM MN 56073

Drilling Fluid

Well Hydrofractured? ☐ Yes ☐ No
From ft. to ft.

Contact's Name NEW ULM PUBLIC UTILITIES
NEW ULM MN 56073

Use Community Supply (municipal)

Casing Drive Shoe? ☐ Yes ☐ N

Hole Diameter

Casing Diameter 12 in. to 125 ft

Weight(lbs/ft)

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
TOP SOIL			0	5
SAND & GRAVEL			5	60
CLAY			60	70
SAND & GRAVEL			70	82
FINE SAND			82	105
CLAY	BLUE		105	128
SAND & GRAVEL			128	145
FINE SAND			145	179

Screen Y

Open Hole From ft. to ft.

Make Type

Diameter	Slot	Length	Set	Fitting
	22	122	ft. to 147 ft	

Static Water Level 19 ft. from Land surface Date 1960/11/11

PUMPING LEVEL (below land surface)
ft. after hrs. pumping g.p.m.

Well Head Completion
Pitless adapter mfr Model
Casing Protection ☐ 12 in. above grade
☐ At-grade(Environmental Wells and Borings ONLY)

Grouting Information Well grouted? ☐ Yes ☐ No

Nearest Known Source of Contamination
ft. direction type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed Y
Mfr name
Model HP 15 Volts
Drop Pipe Length ft. Capacity 286 g.p.m
Type T

Any not in use and not sealed well(s) on property? ☐ Yes ☐ No

Was a variance granted from the MDH for this Well? ☐ Yes ☐ No

USGS Quad: New Ulm Elevation 809
Aquifer: QBAA Alt Id: 71-0331

Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. MDH
License Business Name
Name of Driller

Report Copy

HE-01205-06 (Rev. 9/96)

Unique No. 00241338

County Name Brown

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Update Date 2003/11/21

Entry Date 1998/01/29

Township Name	Township	Range	Dir	Section	Subsection
	110	30	W	17	DBCCBB

Well Depth 187 ft. | Depth Completed 187 ft. | Date Well Completed 1965/03/00

Well Name NEW ULM 19

Drilling Method Cable Tool

Drilling Fluid

Well Hydrofractured? ☐ Yes ☐ No

From ft. to ft.

Well Owner's Name NEW ULM 19

NEW ULM MN 56073

Contact's Name NEW ULM PUBLIC UTILITES

NEW ULM MN 56073

Use Community Supply (municipal)

Casing **Drive Shoe?** ☐ Yes ☐ N

Hole Diameter

Casing Diameter **Weight(lbs/ft)**

12 in. to 144 ft

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
TOP SOIL			0	5
SAND & GRAVEL			5	60
CLAY			60	70
SAND & GRAVEL			70	80
FINE SAND			80	100
CLAY	BLUE		100	130
SAND & GRAVEL			130	143
FINE SAND			143	185
QUARTZITE			185	187

Screen Y

Open Hole From ft. to ft.

Make Type

Diameter	Slot	Length	Set	Fitting
100	13	144	ft. to 157 ft	
60	20	167	ft. to 187 ft	

Static Water Level 19 ft. from Land surface Date 1953/03/00

PUMPING LEVEL (below land surface)

133 ft. after 12 hrs. pumping 450 g.p.m.

Well Head Completion

Pitless adapter mfr Model

Casing Protection ☐ 12 in. above grade

☐ At-grade(Environmental Wells and Borings ONLY)

Grouting Information Well grouted? ☐ Yes ☐ No

Nearest Known Source of Contamination

ft. direction type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed Y

Mfr name

Model HP 20 Volts

Drop Pipe Length ft. Capacity 450 g.p.m

Type T

Any not in use and not sealed well(s) on property? ☐ Yes ☐ No

Was a variance granted from the MDH for this Well? ☐ Yes ☐ No

REMARKS, ELEVATION, SOURCE OF DATA, etc.

DATA SOURCE - CITY FILES USING AN "AS BUILT" DIAGRAM

USGS Quad: New Ulm Elevation 808

Aquifer: MTPL Alt Id: 71-0331

Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. MDH

License Business Name

Name of Driller MUELLER BROS.

Report Copy

Unique No. 00209604
County Name Nicollet

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 1031

Update Date 2003/11/07
Entry Date 1988/04/13

Township Name	Township	Range	Dir	Section	Subsection
	110	30	W	17	ADAACD

Well Depth 216 ft. | Depth Completed 170 ft. | Date Well Completed 1969/02/28

Well Name NEW ULM 20

Drilling Method Cable Tool

Contact's Name NEW ULM 20
NEW ULM MN 56073

Contact's Name NEW ULM PUBLIC UTILITIES
NEW ULM MN 56073

Drilling Fluid

Well Hydrofractured? ☐ Yes ☐ No
From ft. to ft.

Use Community Supply (municipal)

Casing Drive Shoe? ☐ Yes ☐ N

Hole Diameter

Casing Diameter Weight(lbs/ft)
20 in. to 30 ft
16 in. to 140 ft

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
FILL			0	18
CLAY			18	68
SAND & GRAVEL			68	115
CLAY	BLUE		115	118
SAND & GRAVEL			118	170
CLAY			170	178
CLAY & GRAVEL			178	181
BOULDERS & GRAVEL			181	197
CLAY & GRAVEL			197	202
HARDPAN			202	216

Screen Y | Open Hole From ft. to ft.

Make Type L

Diameter	Slot	Length	Set	Fitting
12	30	140 ft. to 170 ft		

Static Water Level 17 ft. from Land surface Date 1969/02/28

PUMPING LEVEL (below land surface)
83 ft. after 18 hrs. pumping 754 g.p.m.

Well Head Completion
Pitless adapter mfr Model
Casing Protection ☐ 12 in. above grade
☐ At-grade(Environmental Wells and Borings ONLY)

Grouting Information Well grouted? ☑ Yes ☐ No

Material	From	To (ft.)	Amount(yds/bags)	
G	0	30	30	S

Nearest Known Source of Contamination
ft. direction type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Mfr name
Model HP Volts
Drop Pipe Length ft. Capacity g.p.m
Type

Any not in use and not sealed well(s) on property? ☐ Yes ☐ No

Was a variance granted from the MDH for this Well? ☐ Yes ☐ No

REMARKS, ELEVATION, SOURCE OF DATA, etc.

SCREEN IS 9 FT. OF 30 SLOT, 2 FT. OF 40 SLOT, AND 19 FT. OF 80 SLOT.

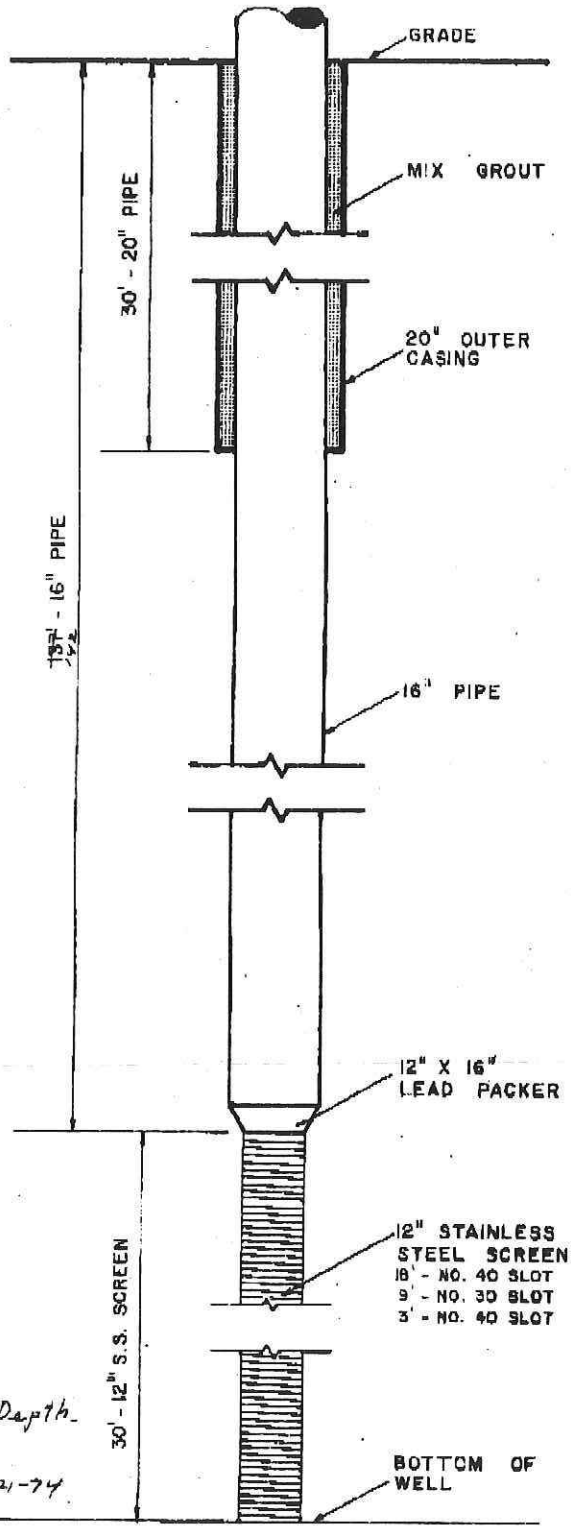
USGS Quad: New Ulm Elevation 791
Aquifer: QBAA Alt Id: 65-0873

Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 62012
License Business Name
Name of Driller GIBSON, R.

Report Copy

HE-01205-06 (Rev. 9/96)

CITY WELL NO. 21
NEW ULM, MINNESOTA



Well is to be raised 5'
Total Depth 172

5 - 10
2 - 5
Bnd 3'6
Sub 10
73' 6" Total Depth

23'-1" to water - 3-21-74

unique # 209605

WELL AND PUMP INFORMATION

STATE I.D.# 209605

Well No. 21 Depth 172' Date Drilled about 2/69

Casing Diameter 30' of 20" 142' of 16" in. Length 142' ft.

Screen is 12" S.S. 30' long
18' of # 40 Slot
9 of # 30 Slot
3 of # 40 Slot

Original Capacity 750 gpm

Static Water Level 25' ft.

Pumping Water Level _____ ft.

Drawdown _____ ft. Date Put Into Service about 3/69

Map DD 86

WELL LOG

0-21 ft - fill
21-55 ft - blue clay
55-61 ft - Gravel
61-70 ft - blue clay
70-135 ft - Sand/Gravel
135-136 ft - Clay
136-167 ft - Sand/Gravel
167-172 ft - Clay

Pump:

Make Grundfos SP-120-3 Type Submersible Motor 460V 40 Franklin hp

Bowl Size _____ in. Capacity 350 To 800 gpm

Shaft Size _____ in. Length _____ ft.

Serial No. _____

Motor RPM _____

greatest eff. for this pump is between 650 GPM and 750 GPM. never pump more than 800 GPM and should have 28' to 30' of water above pump. Pump is set at 104'

Repairs, pumping tests, comments:

5/5/77 – Replace the Following parts – 3-8"x 10' T/C Column Pipe
1-8"x5' T/C Column Pipe, 1-1"x5' shaft, 1-1"x1¼"
Sleeve, 6 Rubber bearings, 6-1in Shaft Couplings,
1-1"x1¼" Step Coupling

2/6/78 – 1-12 EHC-3stage 9 3/5 Johnson Bowl assy –
1-8"x 10' 250 wall Column Pipe
1-8"x5' " " " "
5-8" brass bearing retainers Complete.
5-1½" shaft assy.

8-20-82 – Repienate well with acid,
Install Submersible pump and motor
Grundfos SP120-3 Pump head 40 HP Franklin
motor.

5-15-85 – added 20' of pipe so pump would be
in 28' to 30' of water – replaced 80' of pipe, pipe was
pitted and threads were bad. see copie of parts 5-24-85
1-40 HP Franklin motor N.C. under warranty
2 – diffuser see bill 5-24-85 for add. parts

- Well 21 -

Depth - 171 ft
Date Drilled - Feb. 27, 1969
Casing Diameter - 16 X 12
Original Cap. - 750 GPM
Static Water level - 24 ft
Draw down 27.5 ft.

30 ft of 12" screen
142 ft of 16 in Pipe
30 ft of 20" pipe

0 - 21 ft. - Fill
21 - 55 ft. Blue clay
55 - 61 ft. gravel
61 - 70 ft Blue clay
70 - 135 ft Sand & Gravel
135 - 136 ft. Clay
136 - 167 ft. Sand & Gravel
167 - 172 ft Clay

Repairs

March 18 - 1974 - Pulled Pump

MAY 5, 1977 - Pulled Pump
35 ft of 8" T&C column pipe
1 in. shaft 5 ft Long
1 - 1 in X 1¼ in sleeve
6 rubber Bearings
1 in. X 1¼ in step coupling

Feb. 6, 1978 - 12 EHC - 3 stage 9⅜ Johnson Bowls Assembly
85 ft. of 250 Wall Colum pipe
5 - 8 in Brass Bearing retainers
5 - 1½ in. shaft Assemblys

August 20, 1982 - Installed S.P. 120 - 3 Grundfos pump end
80 ft. #4-3 electrical wire
70 ft 5 in Black line pipe
Rejevanate Well will Acid & Jetted

Unique No. 00241339
County Name Nicollet

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 1031

Update Date 2003/11/07
Entry Date 1992/10/06

Township Name	Township	Range	Dir	Section	Subsection
	110	30	W	21	CDDBDB

Well Depth 85 ft. | Depth Completed 83 ft. | Date Well Completed 1972/00/00

Well Name NEW ULM 22

Drilling Method Cable Tool

Well Owner's Name NEW ULM 22
NEW ULM MN 56073

Drilling Fluid | Well Hydrofractured? ☐ Yes ☐ No
From ft. to ft.

Contact's Name NEW ULM PUBLIC UTILITIES
NEW ULM MN 56073

Use Community Supply (municipal)

Casing | Drive Shoe? ☐ Yes ☐ N | Hole Diameter

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
GUMBO			0	35
CLAY	BLUE		35	50
CLAY	YELLO		50	60
WATERSAND			60	85

Casing Diameter / Weight(lbs/ft)
36 in. to 28 ft
30 in. to 55.7 ft
18 in. to 63 ft

Screen Y | Open Hole From ft. to ft.
Make Type L

Diameter	Slot	Length	Set	Fitting
50	12	63	ft. to 75 ft	
40	8	75	ft. to 83 ft	

Static Water Level 33 ft. from Land surface Date 1972/00/00

PUMPING LEVEL (below land surface)
ft. after hrs. pumping g.p.m.

Well Head Completion
Pitless adapter mfr Model
Casing Protection ☑ 12 in. above grade
☐ At-grade(Environmental Wells and Borings ONLY)

Grouting Information Well grouted? ☐ Yes ☐ No

Nearest Known Source of Contamination
ft. direction type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed Y
Mfr name
Model HP Volts
Drop Pipe Length ft. Capacity g.p.m
Type S

Any not in use and not sealed well(s) on property? ☐ Yes ☐ No

Was a variance granted from the MDH for this Well? ☐ Yes ☐ No

Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. MDH
License Business Name
Name of Driller BERGERSON

REMARKS, ELEVATION, SOURCE OF DATA, etc.
WELL WAS PUT INTO SERVICE 1-19-1972.

USGS Quad: New Ulm Elevation 807
Aquifer: QBAA Alt Id: 71-0331

Report Copy

Unique No. 00241340

County Name Nicollet

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 1031

Update Date 2003/11/21

Entry Date 1992/10/06

Township Name	Township	Range	Dir	Section	Subsection
	110	30	W	21	CDDBDB

Well Depth	Depth Completed	Date Well Completed
206 ft.	195 ft.	1971/00/00

Well Name NEW ULM 23

Drilling Method Cable Tool

Well Owner's Name NEW ULM 23

NEW ULM MN 56073

Drilling Fluid

Well Hydrofractured? ☐ Yes ☐ No

From ft. to ft.

Contact's Name NEW ULM PUBLIC UTILITIES

NEW ULM MN 56073

Use Community Supply (municipal)

Casing **Drive Shoe?** ☐ Yes ☐ N

Hole Diameter

Casing Diameter **Weight(lbs/ft)**

30 in. to 30 ft

16 in. to 152 ft

12 in. to 145 ft

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
GUMBO			0	27
SANDY GUMBO			27	64
CLAY & GRAVEL			64	69
WATER SAND & GRAVEL			69	80
MUDDY SAND & GRAVEL			80	87
SHALE	WHITE		87	140
SHALE	RED		140	148
GRAVEL WATER SAND			148	156
SANDROCK			156	195
SHALE	RED		195	200

Screen Y

Open Hole From ft. to ft.

Make Type L

Diameter	Slot	Length	Set	Fitting
8	30	146	ft. to 176 ft	

Static Water Level 28 ft. from Land surface Date /19/84

PUMPING LEVEL (below land surface)

ft. after hrs. pumping g.p.m.

Well Head Completion

Pitless adapter mfr Model

Casing Protection ☑ 12 in. above grade

☐ At-grade(Environmental Wells and Borings ONLY)

Grouting Information Well grouted? ☐ Yes ☐ No

Nearest Known Source of Contamination

ft. direction type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed Y

Mfr name

Model HP 40 Volts

Drop Pipe Length ft. Capacity g.p.m

Type T

Any not in use and not sealed well(s) on property? ☐ Yes ☐ No

Was a variance granted from the MDH for this Well? ☐ Yes ☐ No

REMARKS, ELEVATION, SOURCE OF DATA, etc.

NO INTERPRETATION FOR 156 TO 200 FEET.

WE NEED SAMPLES AND GAMMA LOGS TO FIND OUT WHAT IS REALLY THERE.

USGS Quad: New Ulm Elevation 807

Aquifer: Alt Id: 71-0331

Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. MDH

License Business Name

Name of Driller BERGERSON

Report Copy

HE-01205-06 (Rev. 9/96)

Unique No. 00209603
County Name Nicollet

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 1031

Update Date 2003/11/07
Entry Date 1988/04/13

Township Name	Township	Range	Dir	Section	Subsection
	110	30	W	21	BCCAAA

Well Depth 71 ft. | Depth Completed 71 ft. | Date Well Completed 1971/08/18

Well Name NEW ULM 24

Drilling Method Cable Tool

Well Owner's Name NEW ULM 24

NEW ULM MN 56073

Drilling Fluid | Well Hydrofractured? ☐ Yes ☐ No From ft. to ft.

Contact's Name NEW ULM PUBLIC UTILITIES

NEW ULM MN 56073

Use Community Supply (municipal)

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
FILL			0	12
CLAY			12	60
SAND & GRAVEL			60	71

Casing | Drive Shoe? ☐ Yes ☐ N | Hole Diameter

Casing Diameter | Weight(lbs/ft)

36 in. to 21 ft

30 in. to 60 ft

Screen Y | Open Hole From ft. to ft.

Make | Type L

Diameter	Slot	Length	Set	Fitting
18		11	60 ft. to 71 ft	

Static Water Level 38 ft. from Land surface | Date 1971/08/18

PUMPING LEVEL (below land surface)
51.25 ft. after 10.5 hrs. pumping 530 g.p.m.

Well Head Completion
Pitless adapter mfr | Model
Casing Protection ☐ 12 in. above grade
☐ At-grade(Environmental Wells and Borings ONLY)

Grouting Information Well grouted? ☑ Yes ☐ No

Material	From	To (ft.)	Amount(yds/bags)
G	0	21	30 S

Nearest Known Source of Contamination
ft. direction type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed | Date Installed Y
Mfr name PEERLESS
Model | HP 50 | Volts 230
Drop Pipe Length 50 ft. | Capacity 600 g.p.m
Type T

Any not in use and not sealed well(s) on property? ☐ Yes ☐ No

Was a variance granted from the MDH for this Well? ☐ Yes ☐ No

USGS Quad: New Ulm | Elevation 799
Aquifer: QBAA | Alt Id: 71-0331

Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 62012
License Business Name
Name of Driller GIBSON, E.

Report Copy

HE-01205-06 (Rev. 9/96)

Unique No. 00511075
County Name Nicollet

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 1031

Update Date 2003/11/07
Entry Date 1992/10/06

Township Name	Township	Range	Dir	Section	Subsection
	110	30	W	21	BCACCC

Well Depth 68 ft. | Depth Completed 62 ft. | Date Well Completed 1989/08/11

Well Name NEW ULM 25

Drilling Method Non-specified Rotary

Well Owner's Name NEW ULM 25

NEW ULM MN 56073

Drilling Fluid: Bentonite

Well Hydrofractured? ☐ Yes ☐ No
From ft. to ft.

Contact's Name NEW ULM PUBLIC UTILITIES

NEW ULM MN 56073

Use Community Supply (municipal)

Casing — Drive Shoe? ☐ Yes ☑ N

Hole Diameter: 0 in. to 62 ft

Casing Diameter: 12 in. to 46 ft — Weight(lbs/ft)

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
FILL	BROW		0	1
TOPSOIL	BLACK		1	2
CLAY	BROW		2	8
CLAY	GRAY		8	23
CLAY	BLUE		23	33
SOFT CLAY W/LENSES OF	BLU/W		33	38
CLAY	BLUE		38	46
SAND AND GRAVEL	VARIE		46	62
CLAY	BLUE		62	68

Screen Y — Open Hole From ft. to ft.

Make JOHNSON — Type L

Diameter	Slot	Length	Set	Fitting
12	30	18.2	46 ft. to 62 ft	

Static Water Level 25 ft. from Land surface — Date 1989/08/11

PUMPING LEVEL (below land surface)
39.5 ft. after 24 hrs. pumping 500 g.p.m.

Well Head Completion
Pitless adapter mfr MONITOR — Model 8PS1214W
Casing Protection ☑ 12 in. above grade
☐ At-grade(Environmental Wells and Borings ONLY)

Grouting Information Well grouted? ☑ Yes ☐ No

Material	From	To (ft.)	Amount(yds/bags)	
G	10	46	1.75	Y

Nearest Known Source of Contamination
ft. direction type
Well disinfected upon completion? ☑ Yes ☐ No

Pump ☐ Not Installed — Date Installed Y
Mfr name GRUNDFOS
Model 375-S-2504 — HP 25 — Volts 230
Drop Pipe Length 35 ft. — Capacity 300 g.p.m
Type S

Any not in use and not sealed well(s) on property? ☐ Yes ☐ No

Was a variance granted from the MDH for this Well? ☐ Yes ☐ No

USGS Quad: New Ulm — Elevation 801
Aquifer: QBAA — Alt Id: 71-0331

Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 91353
License Business Name
Name of Driller HEJTMANEK, D.

Report Copy

HE-01205-06 (Rev. 9/96)

Unique No. 00513011

County Name Nicollet

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Update Date 2003/11/07

Entry Date 1993/06/14

Township Name	Township	Range	Dir	Section	Subsection
	110	30	W	21	CDAADB

Well Name NEW ULM 26

Well Owner's Name NEW ULM 26

NEW ULM MN 56073

Contact's Name NEW ULM PUBLIC UTILITIES

NEW ULM MN 56073

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
FILL/CLAY/GRAVEL	YELLO		0	21
TOPSOIL	BLACK		21	23
CLAY/PEBBLES	BROW		23	32
CLAY	BLACK		32	54
CLAY STICKY			54	69
SAND	BLUE		69	73
SAND	BLUE		73	80
SAND	BLUE		80	90
SAND	GRAY		90	96

REMARKS, ELEVATION, SOURCE OF DATA, etc.

1200 SE OF HWY. 14, 15, THEN DOWN SERVICE ROAD

USGS Quad: New Ulm Elevation 795

Aquifer: QBAA Alt Id: 71-0331

Report Copy

Well Depth 96 ft. Depth Completed 96 ft. Date Well Completed 1992/08/06

Drilling Method Non-specified Rotary

Drilling Fluid: Other

Well Hydrofractured? ☐ Yes ☐ No From ft. to ft.

Use Community Supply (municipal)

Casing Drive Shoe? ☐ Yes ☐ N

Casing Diameter 12 in. to 73 ft Weight(lbs/ft) 3.75

Hole Diameter 0 in. to 73 ft

Screen Y

Open Hole From ft. to ft.

Make JOHNSON Type L

Diameter	Slot	Length	Set	Fitting
10	25	3	73 ft. to 76 ft	
10		20	76 ft. to 96 ft	

Static Water Level 32 ft. from Land surface Date 1992/08/06

PUMPING LEVEL (below land surface)

44.5 ft. after hrs. pumping 500 g.p.m.

Well Head Completion

Pitless adapter mfr Model

Casing Protection ☑ 12 in. above grade

☐ At-grade(Environmental Wells and Borings ONLY)

Grouting Information Well grouted? ☑ Yes ☐ No

Material	From	To (ft.)	Amount(yds/bags)
G	0	73	

Nearest Known Source of Contamination

150 ft. direction E type BOW

Well disinfected upon completion? ☑ Yes ☐ No

Pump ☑ Not Installed Date Installed N

Mfr name

Model HP Volts

Drop Pipe Length ft. Capacity g.p.m

Type

Any not in use and not sealed well(s) on property? ☐ Yes ☑ No

Was a variance granted from the MDH for this Well? ☐ Yes ☐ No

Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 91353

License Business Name

Name of Driller VERDECK, D.

Unique No. 00520956

County Name Nicollet

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 1031

Update Date 2003/11/21

Entry Date 1993/10/27

Township Name	Township	Range	Dir	Section	Subsection
	110	30	W	21	CDAADB

Well Depth 166 ft. | Depth Completed 162 ft. | Date Well Completed 1993/10/08

Well Name NEW ULM 27

Drilling Method Non-specified Rotary

Well Owner's Name NEW ULM 27

NEW ULM MN 56073

Drilling Fluid: Bentonite

Well Hydrofractured? ☐ Yes ☐ No From ft. to ft.

Contact's Name NEW ULM PUBLIC UTILITIES

NEW ULM MN 56073

Use Community Supply (municipal)

Casing Drive Shoe? ☐ Yes ☐ N

Casing Diameter 12 in. to 122 ft Weight(lbs/ft) 49.56

Hole Diameter
0 in. to 122 ft
0 in. to 162 ft

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
FILL CLAY	YELLO		0	21
TOPSOIL	BLACK		21	23
CLAY STICKY	BLUE		23	35
CLAY	BLACK		35	69
SAND	GRAY		69	97
SHALEY CLAY	BLACK		97	109
SAND	BROW		109	119
SAND	GRY/B		119	135
SAND	GRY/B		135	157
SAND	GRY/B		157	163
SANDSTONE	BRN/W		163	166

Screen Y | Open Hole From ft. to ft.

Make JOHNSON Type L

Diameter	Slot	Length	Set	Fitting
10	30	40	122 ft. to 162 ft	

Static Water Level 18 ft. from Land surface Date 1993/10/08

PUMPING LEVEL (below land surface)
25.6 ft. after 48 hrs. pumping 525 g.p.m.

Well Head Completion
Pitless adapter mfr Model
Casing Protection ☐ 12 in. above grade
☐ At-grade(Environmental Wells and Borings ONLY)

Grouting Information Well grouted? ☑ Yes ☐ No

Material	From	To (ft.)	Amount(yds/bags)	
G	0	122	4.25	Y

Nearest Known Source of Contamination
ft. direction type
Well disinfected upon completion? ☑ Yes ☐ No

Pump ☑ Not Installed Date Installed N
Mfr name
Model HP Volts
Drop Pipe Length ft. Capacity g.p.m
Type

Any not in use and not sealed well(s) on property? ☐ Yes ☑ No

Was a variance granted from the MDH for this Well? ☐ Yes ☐ No

REMARKS, ELEVATION, SOURCE OF DATA, etc.

NO INTERPRETATION FOR 163 TO 166 FEET.

WE NEED SAMPLES AND GAMMA LOGS TO FIND OUT WHAT IS REALLY THERE.

USGS Quad: New Ulm Elevation 795

Aquifer: QBAA Alt Id: 71-0331

Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 91353

License Business Name

Name of Driller VERDECK, D.

Report Copy

HE-01205-06 (Rev. 9/96)

Appendix C

Aquifer Test Plans

Environmental Health Division
Drinking Water Protection Section
Source Water Protection Unit
P.O. Box 64975
St. Paul, Minnesota 55164-0975

Determination of Aquifer Properties and Aquifer Test Plan (DAP-ATP) Form

Public Water Supply ID:	1080003	PWS Name:	New Ulm Public Utilities Commission (NUPUC)

Contact Information for Person Completing this Form

Name:	Erik J. Tomlinson (Source Water Solutions, LLC)
Address:	221 McCarron St.
City, State, Zip:	St. Paul, MN 55113
Phone, Fax, e-mail:	p: 612.701.7343 e: erik@sourcewater-solutions.com

Aquifer Properties Determination Methods

- [x] 1) An existing pumping test that meets the requirements of wellhead protection rule part 4720.5520 and that was previously conducted on a well connected to the public water supply system.
- [x] 2) An existing pumping test that meets the requirements of wellhead protection rule part 4720.5520 and that was previously conducted on another well in a hydrogeologic setting determined by the department to be equivalent.
- [ ] 3) A proposed new test to be conducted on a new or existing well connected to the public water supply system and that meets the requirements for larger-sized water systems (wellhead protection rule part 4720.5520). A test plan must be approved before conducting the test.
- [ ] 4) A proposed new test to be conducted on a new or existing public well connected to the public water supply system and that meets the requirements for smaller-sized water systems (wellhead protection rule part 4720.5530). A test plan must be approved before conducting the test.
- [ ] 5) An existing pumping test that does not meet the requirements of wellhead protection rule part 4720.5520 and that was previously conducted on: 1) a public water supply well or 2) another well in a hydrogeologic setting determined by the department to be equivalent.
- [ ] 6) Existing specific capacity test(s) conducted on the public water supply well(s) or specific capacity tests conducted on other wells in a hydrogeologic setting determined by the department to be equivalent.
- [ ] 7) An existing published transmissivity value.

- Include all test data and analysis documentation with the estimated transmissivity, ft^2/day, when the aquifer properties determination method is; 1, 2, 5, 6, or 7, listed above.
- Attach detailed aquifer test plan for methods 3 or 4.

Submitted by: Erik J. Tomlinson	Prof. License: PG46739	Date: 1/28/15

To request this document in another format, please call our Section Receptionist (651/201-4700) or Division TTY (651/201-5797).

Rationale for: 1) Aquifer Properties Determination or 2) Proposed New Test

Briefly describe the rationale for: 1) selected method to determine aquifer properties from existing data, **or** 2) a new aquifer test to be conducted on the pumped well referenced below. Include unique well numbers of all wells that were (or will be) monitored during data collection. How does the existing or proposed test deviate from the ideal. (e.g. rate, duration, no. of obwells, interfering wells, etc.) Attach documentation as necessary.

Aquifer Name:	QBAA (Quaternary Buried Artesian Aquifer)	☑ Confined	☐ Unconfined	☐ Fractured Rock

No new pump test information was identified since the original WHPP.

The aquifer transmissivity of the upper glaciofluvial outwash deposit (near Well 25) was estimated to be 9,271 ft2/day (i.e. 861 m2/d). Using an average model thickness of 70 ft., a horizontal hydraulic conductivity of 132.4 ft/day and vertical hydraulic conductivity of 13.24 ft/day was used.

A transmissivity for the lower glacial outwash aquifer, near Wells 20 and 23 of 4,800 ft2/d was used based on a Kh geometric mean value of 89 ft/d and an average model thickness of 54 ft. Kv for the lower glacial outwash aquifer is 8.9 ft/d.

See attached summary table and analysis of previous aquifer tests conducted for the QBAA near New Ulm.

Proposed New Test Information Summary

Pumped Well Name (Unique Number):	See Attached Table	**Test Duration (Hours):**	See attached Table
Location: **X, Y (meters) UTM-Z15N or Lat-Lon (decimal degrees) datum: NAD83**	UTM NAD83-Z15N Well 20 x: 384189 y: 4910237 Well 21 x: 383945 y: 4910135 Well 25 x: 384413 y: 4908554	**Pump Type:**	NA
		Discharge Rate:	See attached Table
Number of Observation Wells:	1 (Well 25 test, 107 ft. away)	**Flow Rate Measuring Device Type:**	NA

- A map showing the location of the pumping well and observation well(s) must be included.

List the unique number of each public water supply well to which this DAP-ATP Form applies

520956	241339				
188651	209603				
241337	511075				
241338	511301				
209604	520956				
209605					

Reviewed by:	**Approved:** ◯ **Yes** ◯ **No**	**Approval Date:**

Table 1

Summary of Pump Test Analyses
At the City of New Ulm Wells

	Thickness (ft)	Well Number	Transmissivity (ft^2/day)	Hydraulic Conductivity (ft/day)	Pump Test Description	Pump Test Method Analysis Method	Aquifer Condition	Remarks	Q (gpm)	Model Layer
Sand & Gravel Aquifer	52	#20	8,000	154	2 day test conducted by Keys Well Co. March 1969. No Observation Wells. No recovery Observation	Step Drawdown	Confined		750 - 950	3
	31	#21	23,784	767	Same as above	Step Drawdown	Confined	Suspicious data. Step Drawdown in Well Log shows 66 ft of drawdown after 18 hrs of pumping at 750gpm. Drawdown during pump test did not exceed 40 ft	750 - 1000	3
	47	#23	2,420	51	360 mn pumping test. 180 mn recovery test. Test conducted by Hickock & Associates in November 1971. No Observation Wells. No recovery Observation	Step Drawdown	Confined		200	3
	30	#25	9271	309	24-hr pumping test was conducted by Liesch at Well #25 on August 10, 1989, followed by a 24-hr recovery. One 2-inch observation well located 107 ft away.	Theis Recovery	Confined		500	2

WELL ID: 00209604

INPUT

Construction:	
Casing dia. (d_c)	12 Inch
Annulus dia. (d_w)	18 Inch
Screen Length (L)	30 Feet
Depths to:	
water level (DTW)	15.5 Feet
Top of Aquifer	118 Feet
Base of Aquifer	170 Feet
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	Sand and Gravel Mixe
ASSUMED S =	0.0004 d'less

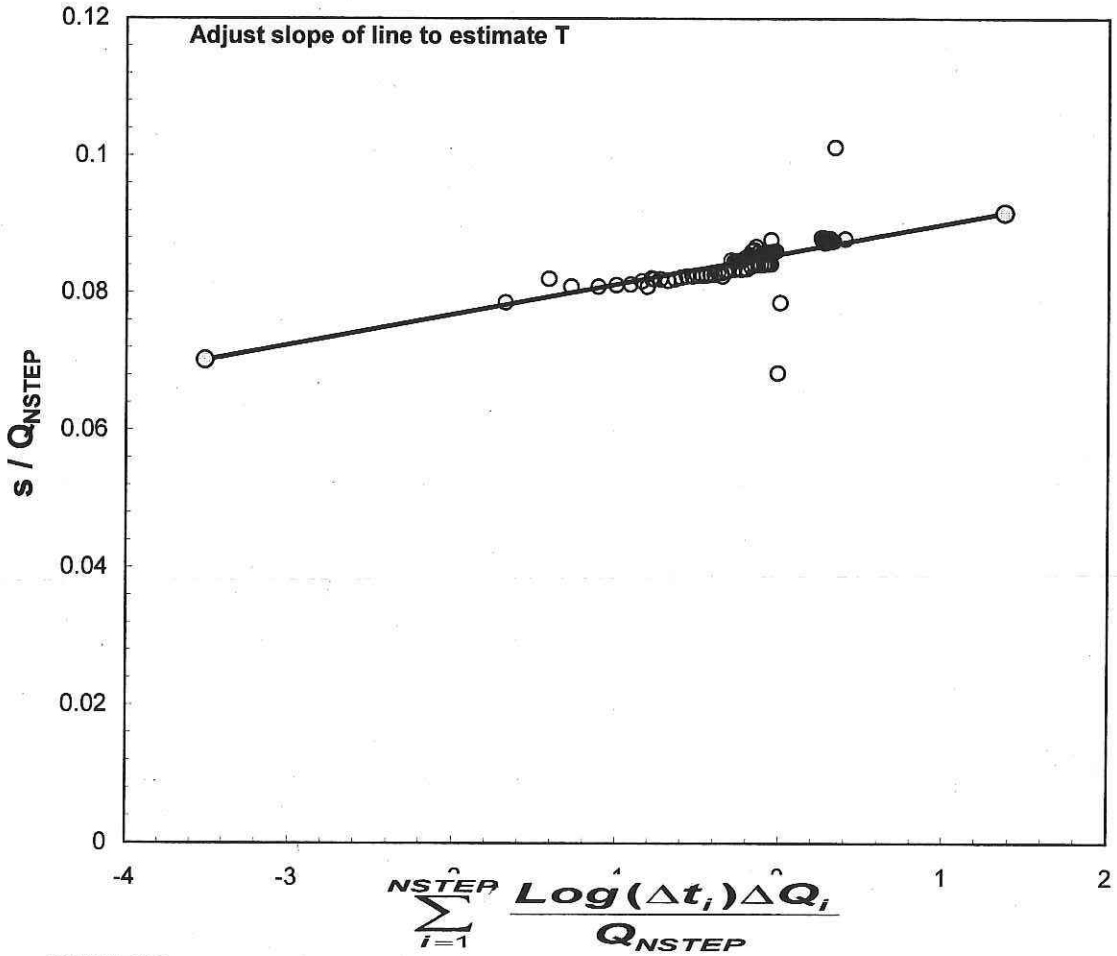
Local ID: New Ulm Well# 20
Date: 03/01/1969
Time: 12:59

COMPUTED

Aquifer thickness = 52 Feet

Input is consistent.

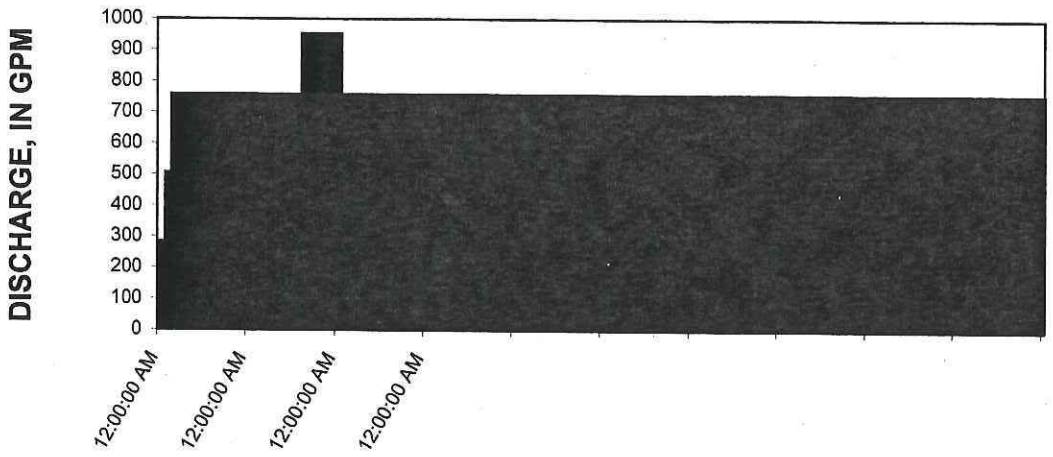
K =	154 Feet/Day
T =	7998 Feet2/Day
S =	0.0004 d'less
$K_{annular}$ =	8 Feet/Day
Skin =	7 d'less

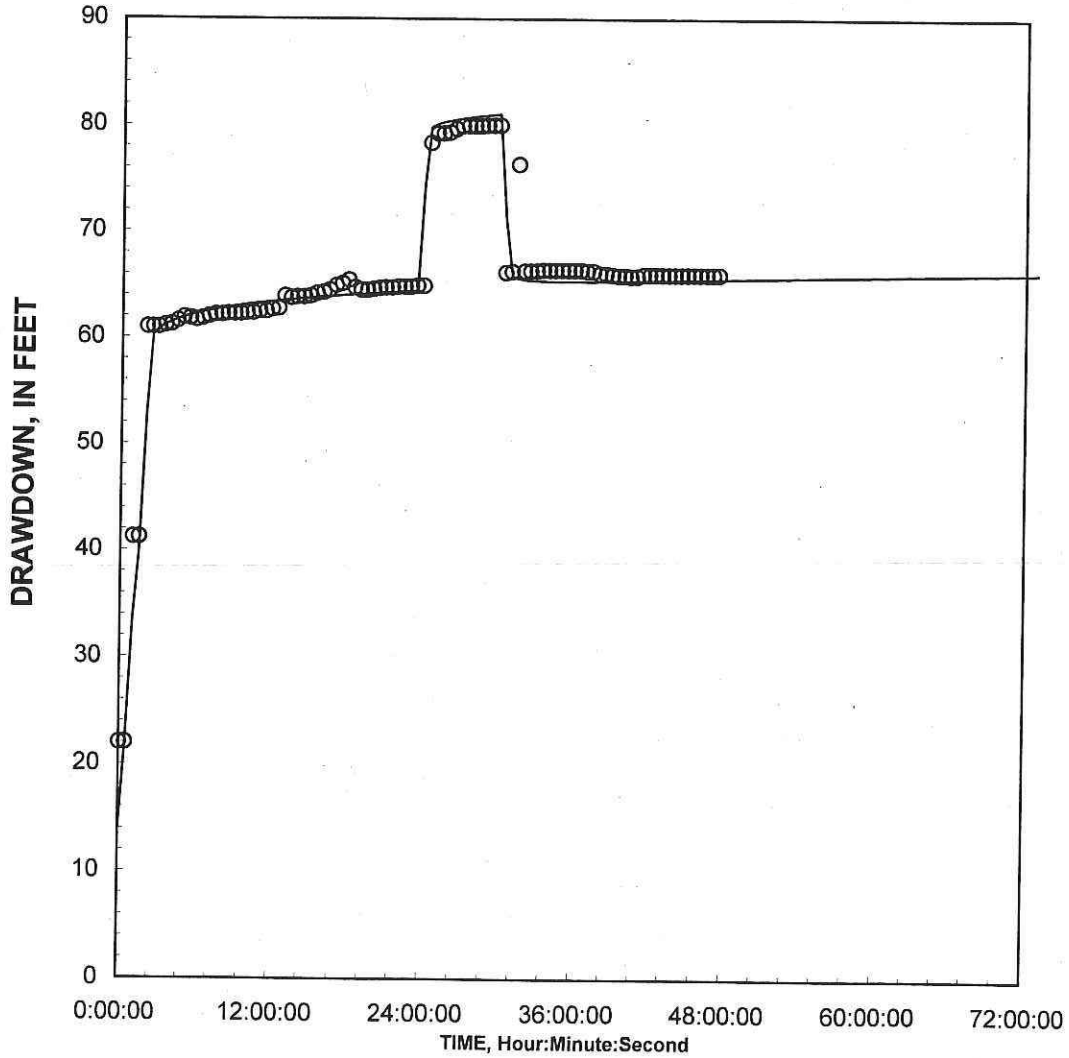


REMARKS: Step-drawdown analysis of single-well aquifer test

Test from New Ulm Well #20, New Ulm Public Utilities, MN - Performed by Keys Well Co in March 1969
KANNULAR is estimated by fitting simulated drawdowns to measured drawdowns in a secondary plot. A reasonable storage value must be assigned by the user because storage and KANNULAR cannot be estimated independently. The estimate of T is not affected by changes in estimates of storage and KANNULAR.

WELL ID: 00209604





Reduced Data

Entry	Time, Hr:Min:Sec	Water Level Feet	Entry	Time, Hr:Min:Sec	Water Level Feet
1	12:59:00	15.50	51	13:30:00	93.83
2	13:00:00	37.50	52	14:00:00	94.75
3	13:30:00	37.50	53	14:30:00	94.75
4	14:00:00	56.75	54	15:00:00	94.83
5	14:30:00	56.75	55	15:30:00	95.17
6	15:00:00	76.50	56	16:00:00	95.42
7	15:30:00	76.50	57	16:30:00	95.42
8	16:00:00	76.50	58	17:00:00	95.42
9	16:30:00	76.67	59	17:30:00	95.42
10	17:00:00	76.75	60	18:00:00	95.50
11	17:30:00	77.08	61	18:30:00	95.50
12	18:00:00	77.42	62	19:00:00	95.50
13	18:30:00	77.33	63	19:30:00	81.67
14	19:00:00	77.17	64	20:00:00	81.75
15	19:30:00	77.33	65	20:30:00	91.83
16	20:00:00	77.50	66	21:00:00	81.83
17	20:30:00	77.67	67	21:30:00	81.83
18	21:00:00	77.67	68	22:00:00	81.83
19	21:30:00	77.75	69	22:30:00	81.92
20	22:00:00	77.75	70	23:00:00	81.92
21	22:30:00	77.75	71	23:30:00	81.92
22	23:00:00	77.83	72	0:00:00	81.92
23	23:30:00	77.83	73	0:30:00	81.92
24	0:00:00	78.00	74	1:00:00	81.92
25	0:30:00	78.00	75	1:30:00	81.92
26	1:00:00	78.17	76	2:00:00	81.83
27	1:30:00	78.25	77	2:30:00	81.83
28	2:00:00	79.42	78	3:00:00	81.58
29	2:30:00	79.25	79	3:30:00	81.58
30	3:00:00	79.33	80	4:00:00	81.50
31	3:30:00	79.33	81	4:30:00	81.42
32	4:00:00	79.42	82	5:00:00	81.42
33	4:30:00	79.67	83	5:30:00	81.33
34	5:00:00	79.75	84	6:00:00	81.33
35	5:30:00	80.00	85	6:30:00	81.50
36	6:00:00	80.42	86	7:00:00	81.50
37	6:30:00	80.58	87	7:30:00	81.50
38	7:00:00	80.92	88	8:00:00	81.50
39	7:30:00	80.25	89	8:30:00	81.50
40	8:00:00	80.00	90	9:00:00	81.50
41	8:30:00	80.00	91	9:30:00	81.50
42	9:00:00	80.08	92	10:00:00	81.50
43	9:30:00	80.17	93	10:30:00	81.50
44	10:00:00	80.25	94	11:00:00	81.50
45	10:30:00	80.25	95	11:30:00	81.50
46	11:00:00	80.33	96	12:00:00	81.50
47	11:30:00	80.33	97	12:30:00	81.50
48	12:00:00	80.33	98	#N/A	#N/A
49	12:30:00	80.42			
50	13:00:00	80.42			

WELL ID: 00209605

INPUT

Construction:	
Casing dia. (d_c)	12 Inch
Annulus dia. (d_w)	18 Inch
Screen Length (L)	30 Feet
Depths to:	
water level (DTW)	15 Feet
Top of Aquifer	136 Feet
Base of Aquifer	167 Feet
Annular Fill:	
across screen -- Coarse Sand	
above screen -- Bentonite	
Aquifer Material -- Gravel	
ASSUMED S =	0.0004 d'less

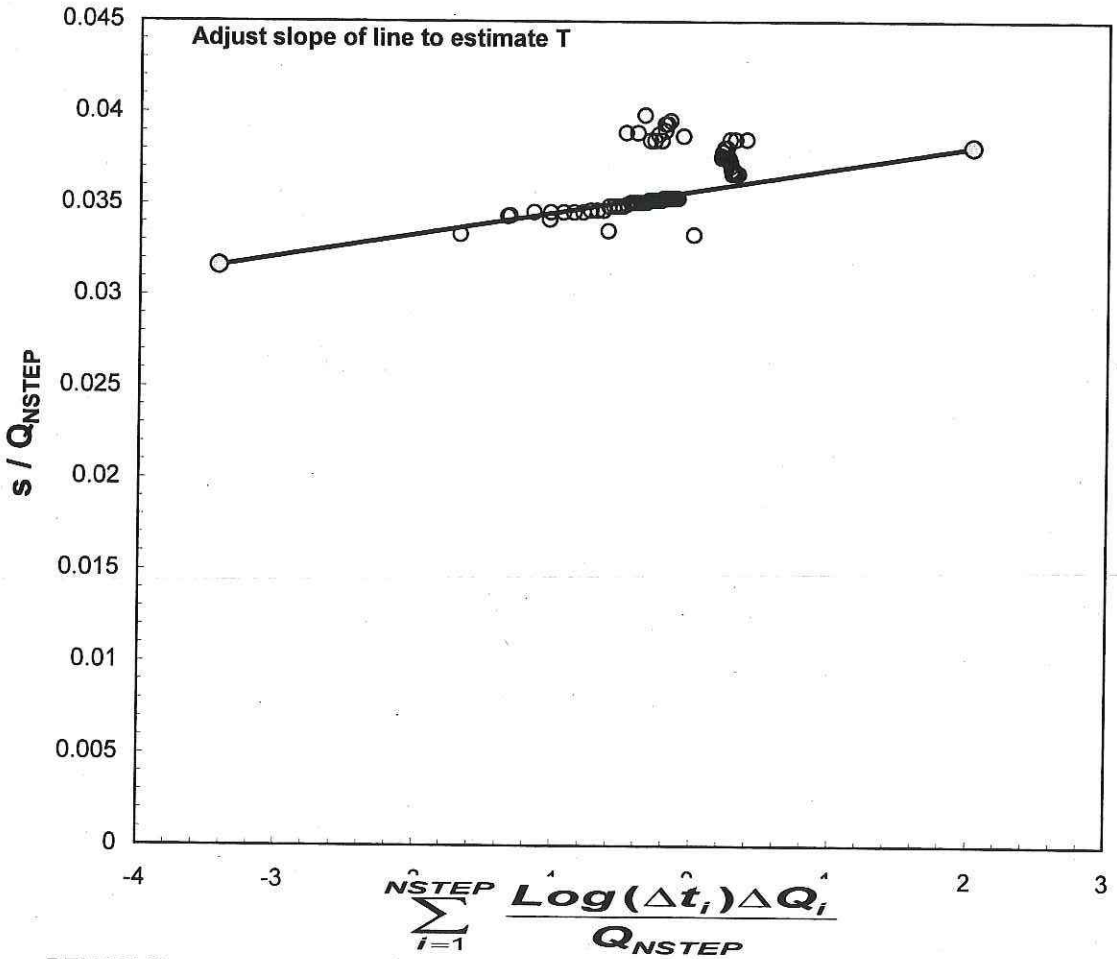
Local ID: New Ulm Well# 21
Date: 03/01/1969
Time: 14:29

COMPUTED

Aquifer thickness = 31 Feet

Input is consistent.

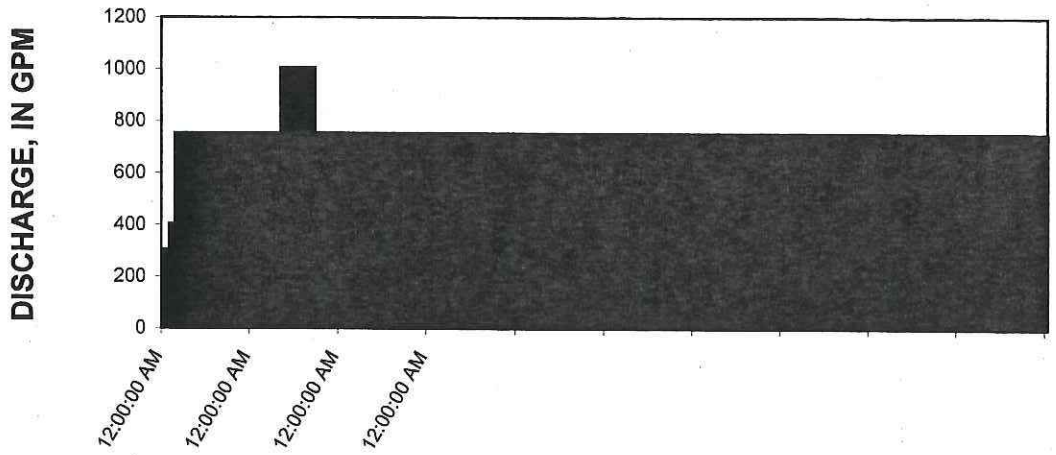
K =	946 Feet/Day
T =	29318 Feet2/Day
S =	0.0004 d'less
$K_{annular}$ =	20 Feet/Day
Skin =	20 d'less

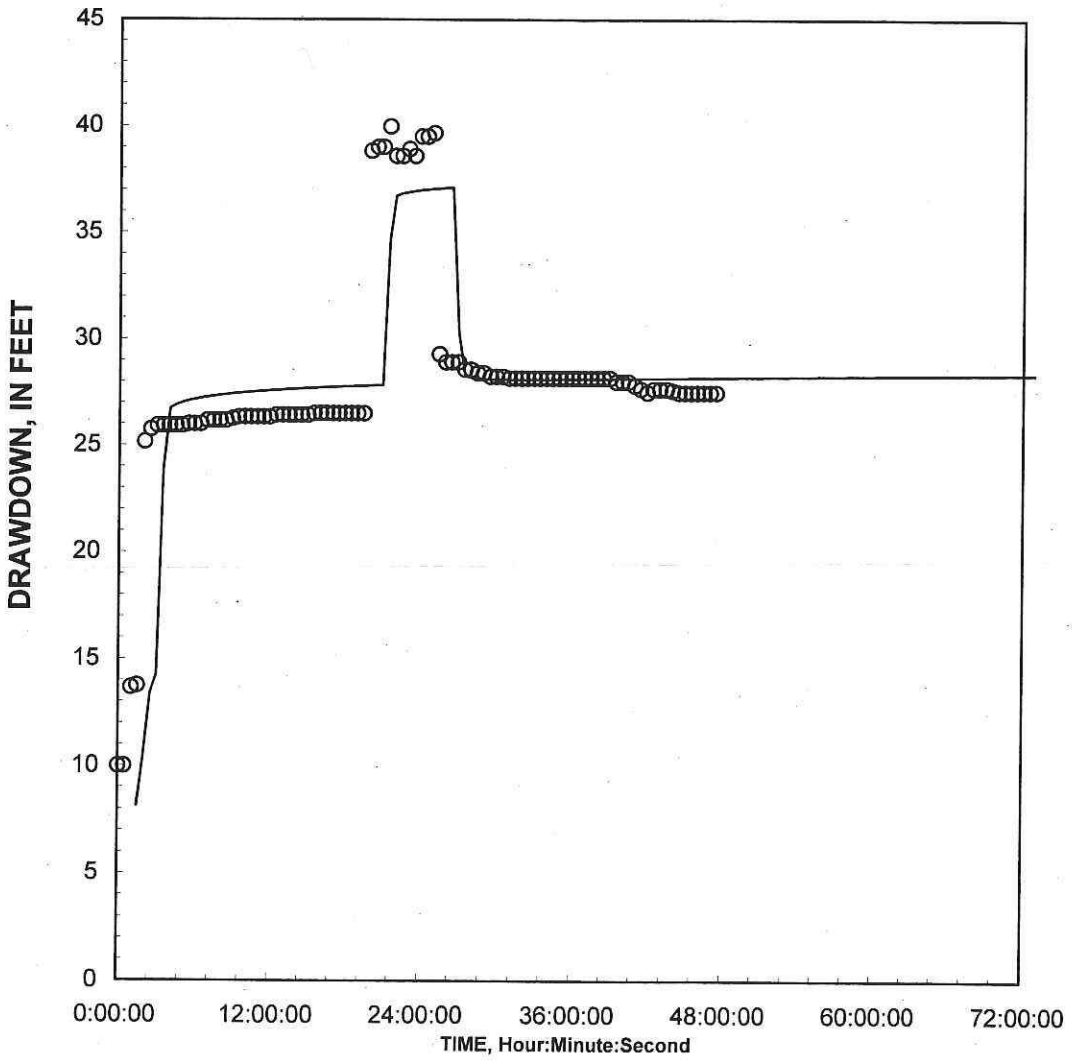


REMARKS: Step-drawdown analysis of single-well aquifer test

Test from New Ulm Well #21, New Ulm Public Utilities, MN - Performed by Keys Well Co in March 1969
KANNULAR is estimated by fitting simulated drawdowns to measured drawdowns in a secondary plot. A reasonable storage value must be assigned by the user because storage and KANNULAR cannot be estimated independently. The estimate of T is not affected by changes in estimates of storage and KANNULAR.

WELL ID: 00209605





Reduced Data

Entry	Time, Hr:Min:Sec	Water Level Feet	Entry	Time, Hr:Min:Sec	Water Level Feet
1	14:29:00	15.00	51	15:00:00	54.50
2	14:30:00	25.00	52	15:30:00	54.67
3	15:00:00	25.00	53	16:00:00	44.29
4	15:30:00	28.67	54	16:30:00	43.92
5	16:00:00	28.75	55	17:00:00	43.92
6	16:30:00	40.17	56	17:30:00	43.92
7	17:00:00	40.75	57	18:00:00	43.58
8	17:30:00	40.92	58	18:30:00	43.58
9	18:00:00	40.92	59	19:00:00	43.42
10	18:30:00	40.92	60	19:30:00	43.42
11	19:00:00	40.92	61	20:00:00	43.25
12	19:30:00	40.92	62	20:30:00	43.25
13	20:00:00	41.00	63	21:00:00	43.25
14	20:30:00	41.00	64	21:30:00	43.17
15	21:00:00	41.00	65	22:00:00	43.17
16	21:30:00	41.17	66	22:30:00	43.17
17	22:00:00	41.17	67	23:00:00	43.17
18	22:30:00	41.17	68	23:30:00	43.17
19	23:00:00	41.17	69	0:00:00	43.17
20	23:30:00	41.25	70	0:30:00	43.17
21	0:00:00	41.33	71	1:00:00	43.17
22	0:30:00	41.33	72	1:30:00	43.17
23	1:00:00	41.33	73	2:00:00	43.17
24	1:30:00	41.33	74	2:30:00	43.17
25	2:00:00	41.33	75	3:00:00	43.17
26	2:30:00	41.33	76	3:30:00	43.17
27	3:00:00	41.42	77	4:00:00	43.17
28	3:30:00	41.42	78	4:30:00	43.17
29	4:00:00	41.42	79	5:00:00	43.17
30	4:30:00	41.42	80	5:30:00	43.17
31	5:00:00	41.42	81	6:00:00	43.00
32	5:30:00	41.42	82	6:30:00	43.00
33	6:00:00	41.50	83	7:00:00	43.00
34	6:30:00	41.50	84	7:30:00	42.83
35	7:00:00	41.50	85	8:00:00	42.67
36	7:30:00	41.50	86	8:30:00	42.50
37	8:00:00	41.50	87	9:00:00	42.67
38	8:30:00	41.50	88	9:30:00	42.67
39	9:00:00	41.50	89	10:00:00	42.67
40	9:30:00	41.50	90	10:30:00	42.58
41	10:00:00	41.50	91	11:00:00	42.50
42	10:30:00	53.83	92	11:30:00	42.50
43	11:00:00	54.00	93	12:00:00	42.50
44	11:30:00	54.00	94	12:30:00	42.50
45	12:00:00	54.96	95	13:00:00	42.50
46	12:30:00	53.58	96	13:30:00	42.50
47	13:00:00	53.58	97	14:00:00	42.50
48	13:30:00	53.92	98	#N/A	#N/A
49	14:00:00	53.58			
50	14:30:00	54.50			

WELL ID: 00241340

INPUT

Construction:	
Casing dia. (d_c)	12 Inch
Annulus dia. (d_w)	24 Inch
Screen Length (L)	30 Feet
Depths to:	
water level (DTW)	26.7 Feet
Top of Aquifer	148 Feet
Base of Aquifer	195 Feet
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	Sand and Gravel Mixe
ASSUMED S =	0.0004 d'less

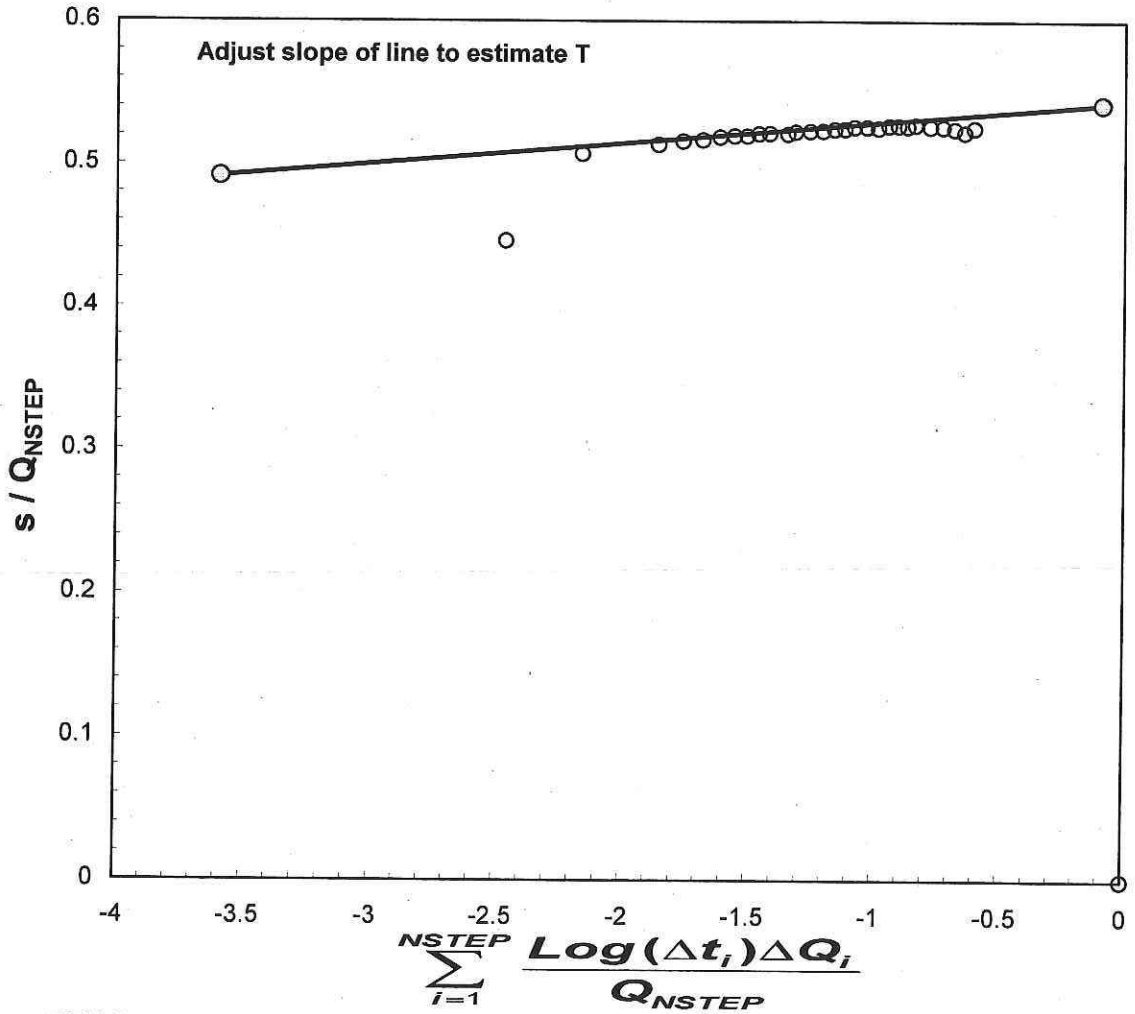
Local ID: New Ulm Well# 23
Date: 11/11/71 9:00 AM
Time: 9:00

COMPUTED

Aquifer thickness = 47 Feet

Input is consistent.

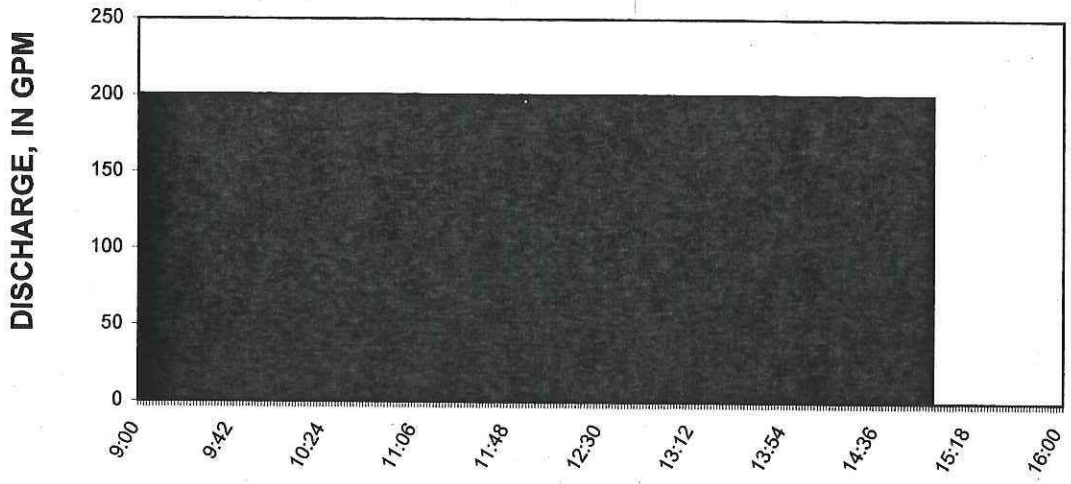
K =	51 Feet/Day
T =	2418 Feet2/Day
S =	0.0004 d'less
$K_{annular}$ =	2 Feet/Day
Skin =	20 d'less

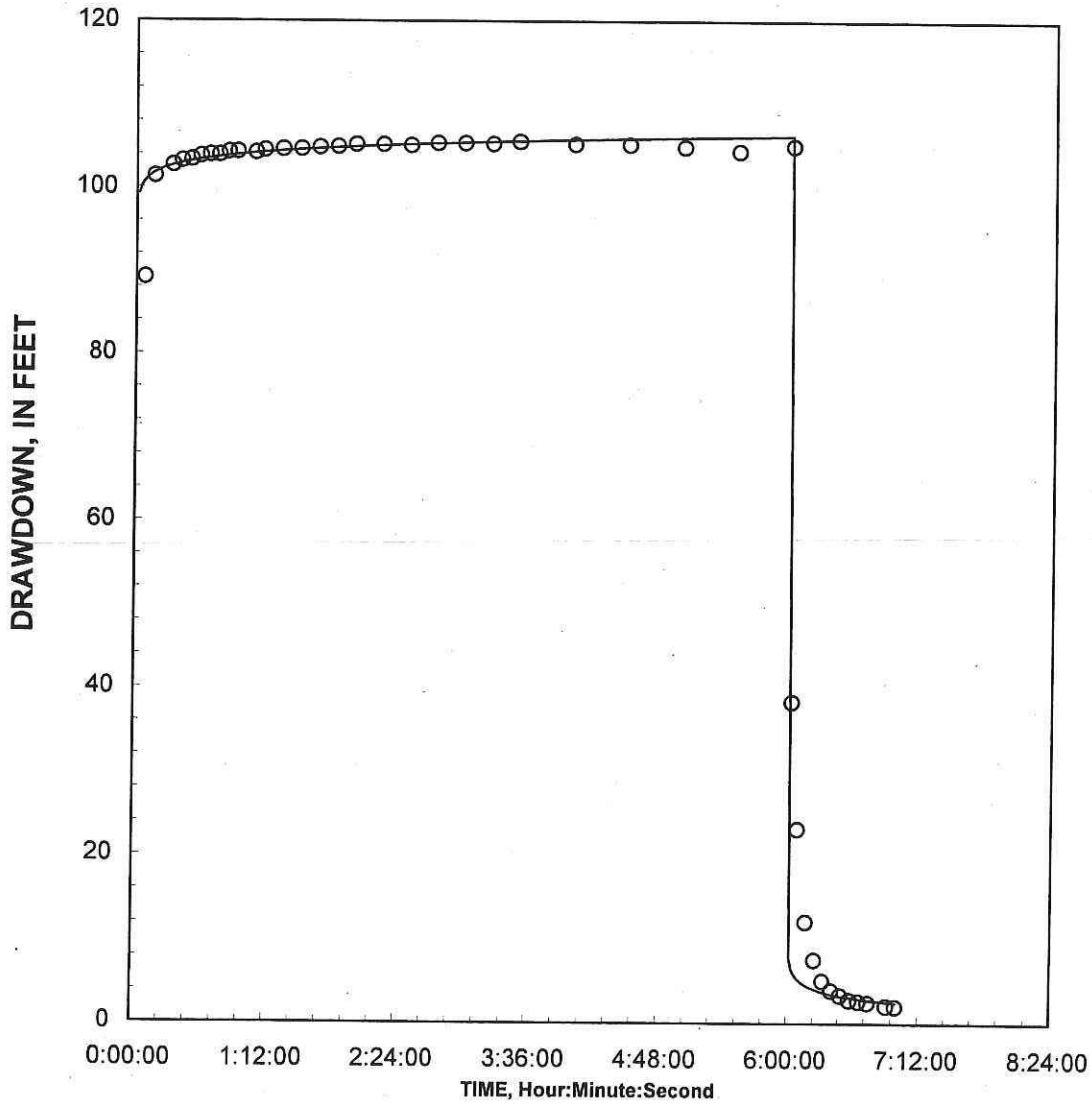


REMARKS: Step-drawdown analysis of single-well aqui

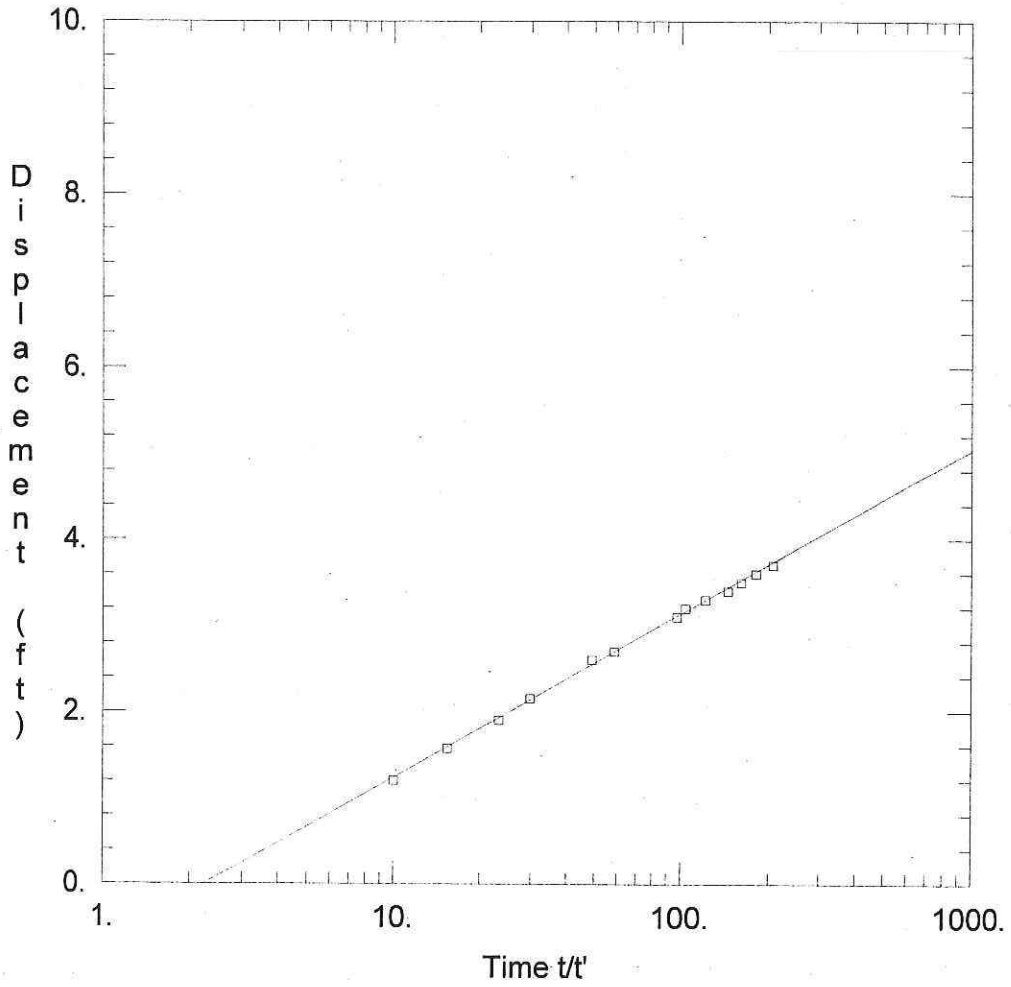
Test from New Ulm Well #23, New Ulm Public Utilities, MN - Hickock & Associates
KANNULAR is estimated by fitting simulated drawdowns to measured drawdowns in a secondary plot. A reasonable storage value must be assigned by the user because storage and KANNULAR cannot be estimated independently. The estimate of T is not affected by changes in estimates of storage and KANNULAR.

WELL ID: 00241340





ifer test



WELL TEST ANALYSIS

Data Set: E:\0__Project\14\02\01\001\Analysis\PUMP TEST\Well 25 Theis Recovery.aqt
Date: 09/11/05 Time: 17:52:06

PROJECT INFORMATION

Company: HMS, Inc.
Client: NUPUC
Test Location: New Ulm
Test Well: Well 25
Test Date: 8/10/1989

AQUIFER DATA

Saturated Thickness: 15. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
Well 25	0	0

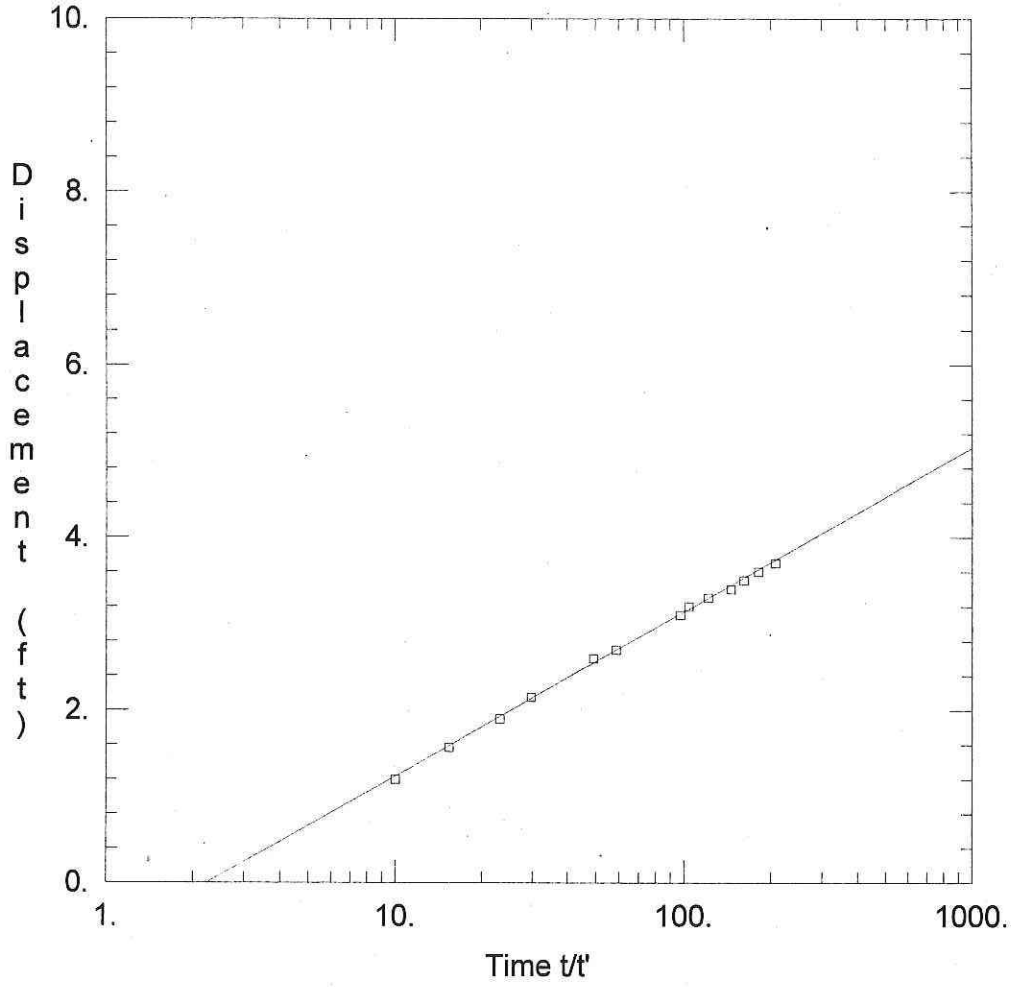
Observation Wells

Well Name	X (ft)	Y (ft)
OW 1	107	0

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 6.936E+04 gal/day/ft S' = 2.246



WELL TEST ANALYSIS

Data Set: E:\0__Project\14\02\01\001\Analysis\PUMP TEST\Well 25 Theis Recovery.aqt
Date: 09/11/05 Time: 17:50:53

PROJECT INFORMATION

Company: HMS, Inc.
Client: NUPUC
Test Location: New Ulm
Test Well: Well 25
Test Date: 8/10/1989

AQUIFER DATA

Saturated Thickness: 15. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
Well 25	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
OW 1	107	0

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

$T = 9270.9\ ft^2/day$ S' = 2.246

Environmental Health Division
Drinking Water Protection Section
Source Water Protection Unit
P.O. Box 64975
St. Paul, Minnesota 55164-0975

Determination of Aquifer Properties and Aquifer Test Plan (DAP-ATP) Form

Public Water Supply ID:	1080003	PWS Name:	New Ulm Public Utilities Commission (NUPUC)

Contact Information for Person Completing this Form

Name:	Erik J. Tomlinson (Source Water Solutions, LLC)
Address:	221 McCarron St.
City, State, Zip:	St. Paul, MN 55113
Phone, Fax, e-mail:	p: 612.701.7343 e: erik@sourcewater-solutions.com

Aquifer Properties Determination Methods

- [x] 1) An existing pumping test that meets the requirements of wellhead protection rule part 4720.5520 and that was previously conducted on a well connected to the public water supply system.
- [x] 2) An existing pumping test that meets the requirements of wellhead protection rule part 4720.5520 and that was previously conducted on another well in a hydrogeologic setting determined by the department to be equivalent.
- [ ] 3) A proposed new test to be conducted on a new or existing well connected to the public water supply system and that meets the requirements for larger-sized water systems (wellhead protection rule part 4720.5520). A test plan must be approved before conducting the test.
- [ ] 4) A proposed new test to be conducted on a new or existing public well connected to the public water supply system and that meets the requirements for smaller-sized water systems (wellhead protection rule part 4720.5530). A test plan must be approved before conducting the test.
- [ ] 5) An existing pumping test that does not meet the requirements of wellhead protection rule part 4720.5520 and that was previously conducted on: 1) a public water supply well or 2) another well in a hydrogeologic setting determined by the department to be equivalent.
- [ ] 6) Existing specific capacity test(s) conducted on the public water supply well(s) or specific capacity tests conducted on other wells in a hydrogeologic setting determined by the department to be equivalent.
- [ ] 7) An existing published transmissivity value.

- Include all test data and analysis documentation with the estimated transmissivity, ft^2/day, when the aquifer properties determination method is; 1, 2, 5, 6, or 7, listed above.
- Attach detailed aquifer test plan for methods 3 or 4.

Submitted by: Erik J. Tomlinson	Prof. License: PG46739	Date: 1/28/15

To request this document in another format, please call our Section Receptionist (651/201-4700) or Division TTY (651/201-5797).

Rationale for: 1) Aquifer Properties Determination or 2) Proposed New Test

Briefly describe the rationale for: 1) selected method to determine aquifer properties from existing data, **or** 2) a new aquifer test to be conducted on the pumped well referenced below. Include unique well numbers of all wells that were (or will be) monitored during data collection. How does the existing or proposed test deviate from the ideal. (e.g. rate, duration, no. of obwells, interfering wells, etc.) Attach documentation as necessary.

Aquifer Name:	QBAA (Quaternary Buried Artesian Aquifer)	☑ Confined	☐ Unconfined	☐ Fractured Rock

No new pump test information was identified since the original WHPP.

The aquifer transmissivity of the upper glaciofluvial outwash deposit (near Well 25) was estimated to be 9,271 ft2/day (i.e. 861 m2/d). Using an average model thickness of 70 ft., a horizontal hydraulic conductivity of 132.4 ft/day and vertical hydraulic conductivity of 13.24 ft/day was used.

A transmissivity for the lower glacial outwash aquifer, near Wells 20 and 23 of 4,800 ft2/d was used based on a Kh geometric mean value of 89 ft/d and an average model thickness of 54 ft. Kv for the lower glacial outwash aquifer is 8.9 ft/d.

See attached summary table and analysis of previous aquifer tests conducted for the QBAA near New Ulm.

Proposed New Test Information Summary

Pumped Well Name (Unique Number):	See Attached Table	**Test Duration (Hours):**	See attached Table
Location: **X, Y (meters) UTM-Z15N or Lat-Lon (decimal degrees) datum: NAD83**	UTM NAD83-Z15N Well 20 x: 384189 y: 4910237 Well 21 x: 383945 y: 4910135 Well 25 x: 384413 y: 4908554	**Pump Type:**	NA
		Discharge Rate:	See attached Table
Number of Observation Wells:	1 (Well 25 test, 107 ft. away)	**Flow Rate Measuring Device Type:**	NA

- A map showing the location of the pumping well and observation well(s) must be included.

List the unique number of each public water supply well to which this DAP-ATP Form applies

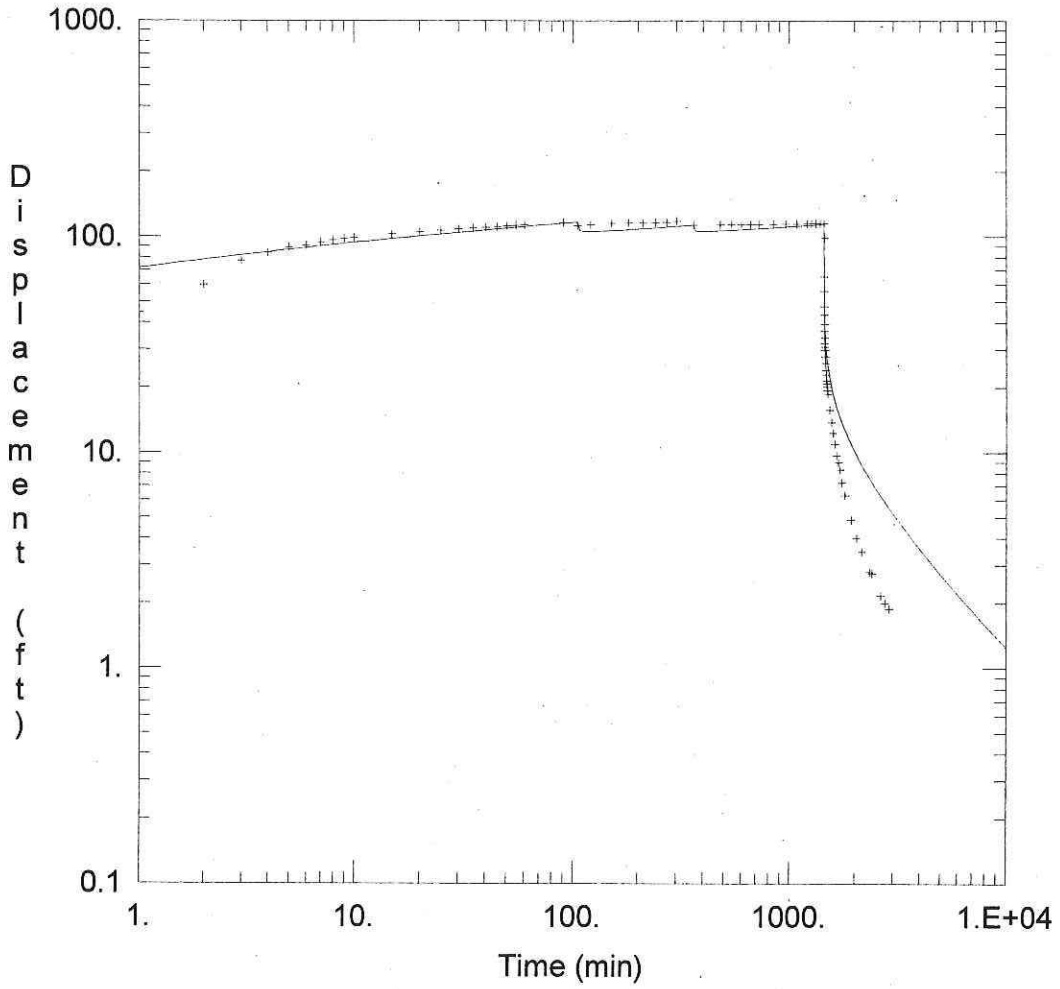
520956	241339				
188651	209603				
241337	511075				
241338	511301				
209604	520956				
209605					

Reviewed by:	**Approved:** ◯ **Yes** ◯ **No**	**Approval Date:**

Table 1 (Cont.)

Summary of Pump Test Analyses
At the City of New Ulm Wells

	Thickness (ft)	Well	Transm. (ft^2/day)	Hydraulic Conduct. (ft/day)	Pump Test Description	Pump Test Method Analysis Method	Aquifer Conditions	Remarks	Q (gpm)	Model Layer
Cretaceous Sandstone	17	#4	298	18	24-hr pumping test was conducted by driller (?) at Well #4 on April 7-8, 1987, followed by a 24-hr recovery. Water levels measured in Well #4 (pumping well) and Old Well # 4 (observation well), located 87 ft away.	Cooper-Jacob Pumping	Confined	Used Well 4 Data	160 - 200	3
	17	#4	344	20	Same as above.	Theis Recovery	Confined	Used Well 4 Data	160 - 200	3
	17	#4	359	21	Same as above	Theis Pumping	Confined	Used Old Well 4 Data	160 - 200	3
	17	#4	344	20	Same as above	Theis Recovery	Confined	Used Old Well 4 Data	160 - 200	3



WELL TEST ANALYSIS

Data Set: E:\0__Project\14\02\01\001\Analysis\PUMP TEST\Well #4 - April 7-8 1987 - Well#4.aqt
Date: 09/12/05 Time: 11:17:25

PROJECT INFORMATION

Company: HMS, Inc.
Client: NUPUC
Test Location: New Ulm
Test Well: New Ulm #4
Test Date: 4/7/1987

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
New Ulm #4	0	0

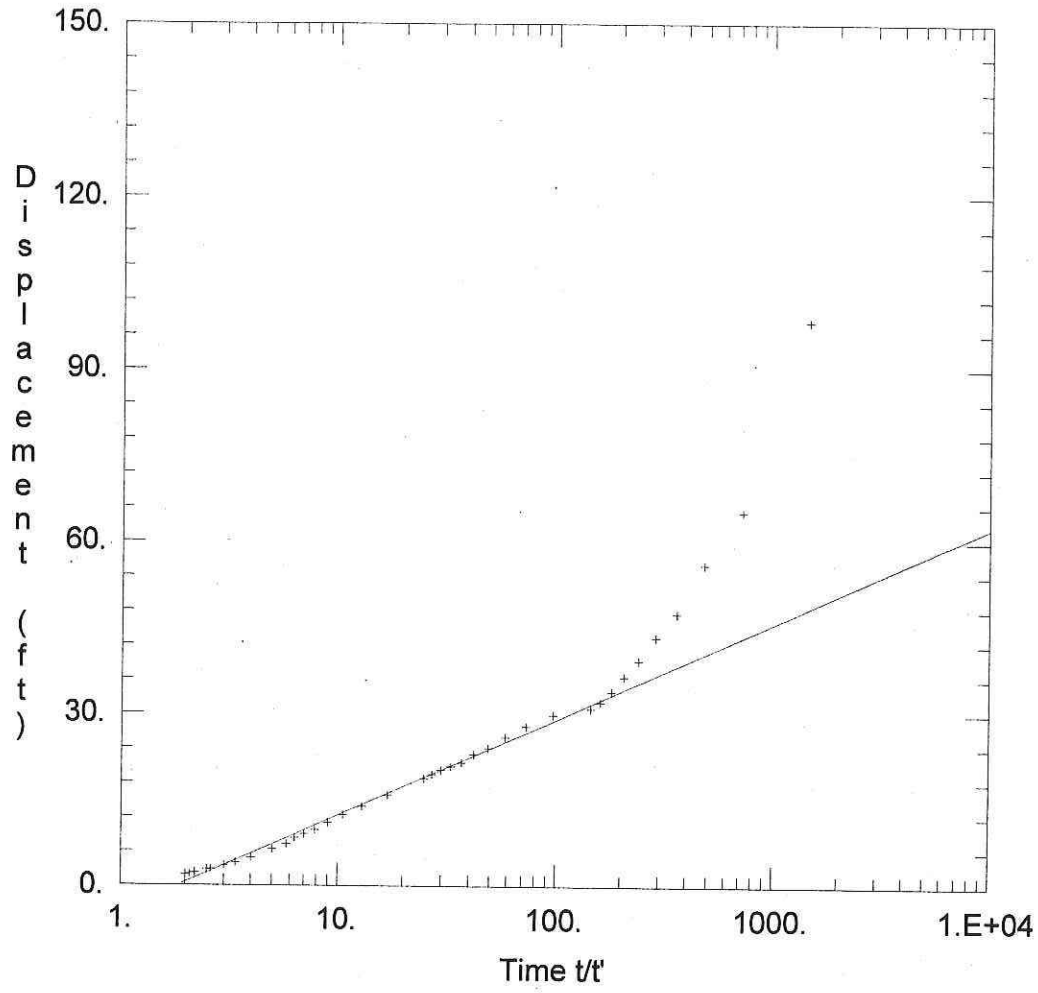
Observation Wells

Well Name	X (ft)	Y (ft)
Well #4	0.5	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 315.8 ft^2/day
S = 0.001248
Kz/Kr = 1.
b = 50. ft



WELL TEST ANALYSIS

Data Set: E:\...\Well #4 - April 7-8 1987 - Well#4 recovery.aqt
Date: 09/12/05 Time: 11:45:51

PROJECT INFORMATION

Company: HMS, Inc.
Client: NUPUC
Test Location: New Ulm
Test Well: New Ulm #4
Test Date: 4/7/1987

AQUIFER DATA

Saturated Thickness: 50. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
New Ulm #4	0	0

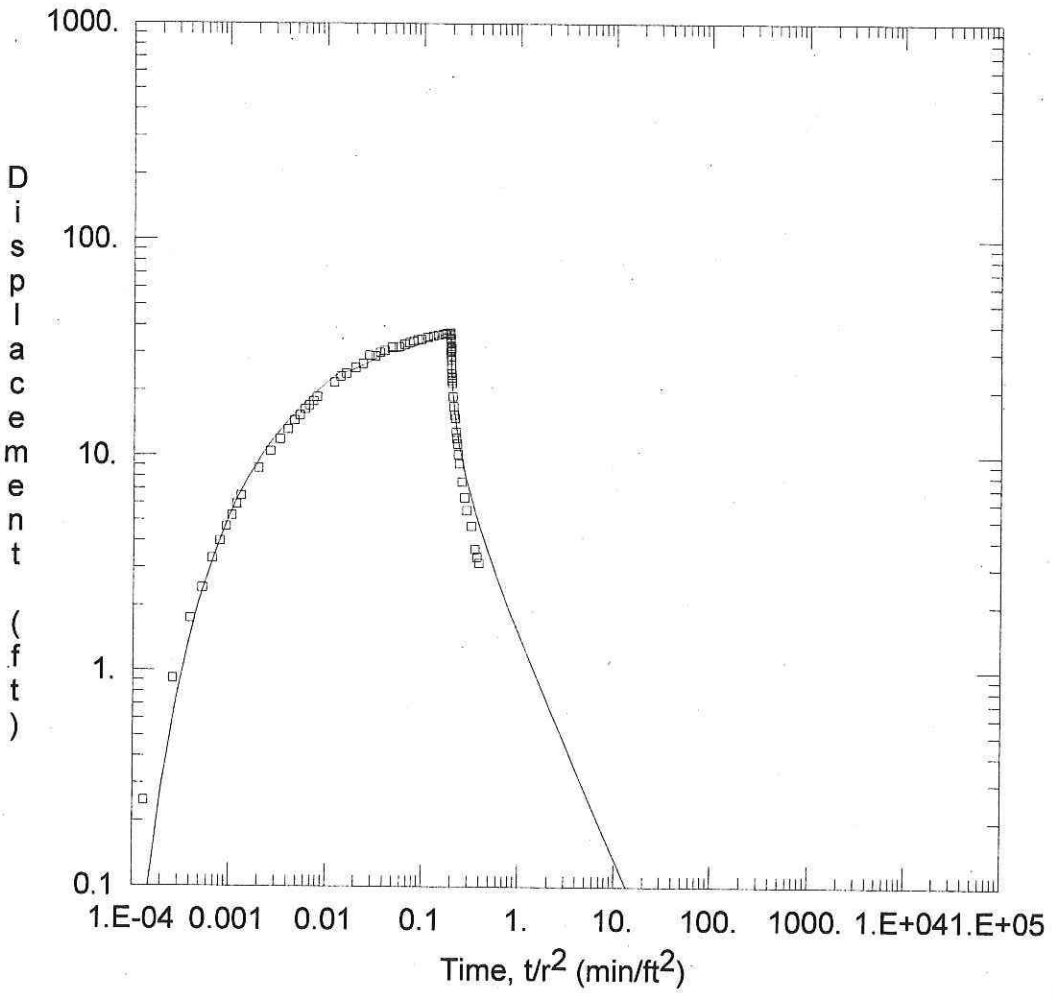
Observation Wells

Well Name	X (ft)	Y (ft)
Well #4	0.5	0

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 344.1 ft^2/day S' = 1.855



WELL TEST ANALYSIS

Data Set: E:\0__Project\14\02\01\001\Analysis\PUMP TEST\Well #4 - April 7-8 1987 - Old #4.aqt
Date: 09/12/05 Time: 11:18:03

PROJECT INFORMATION

Company: HMS, Inc.
Client: NUPUC
Test Location: New Ulm
Test Well: New Ulm #4
Test Date: 4/7/1987

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
New Ulm #4	0	0

Observation Wells

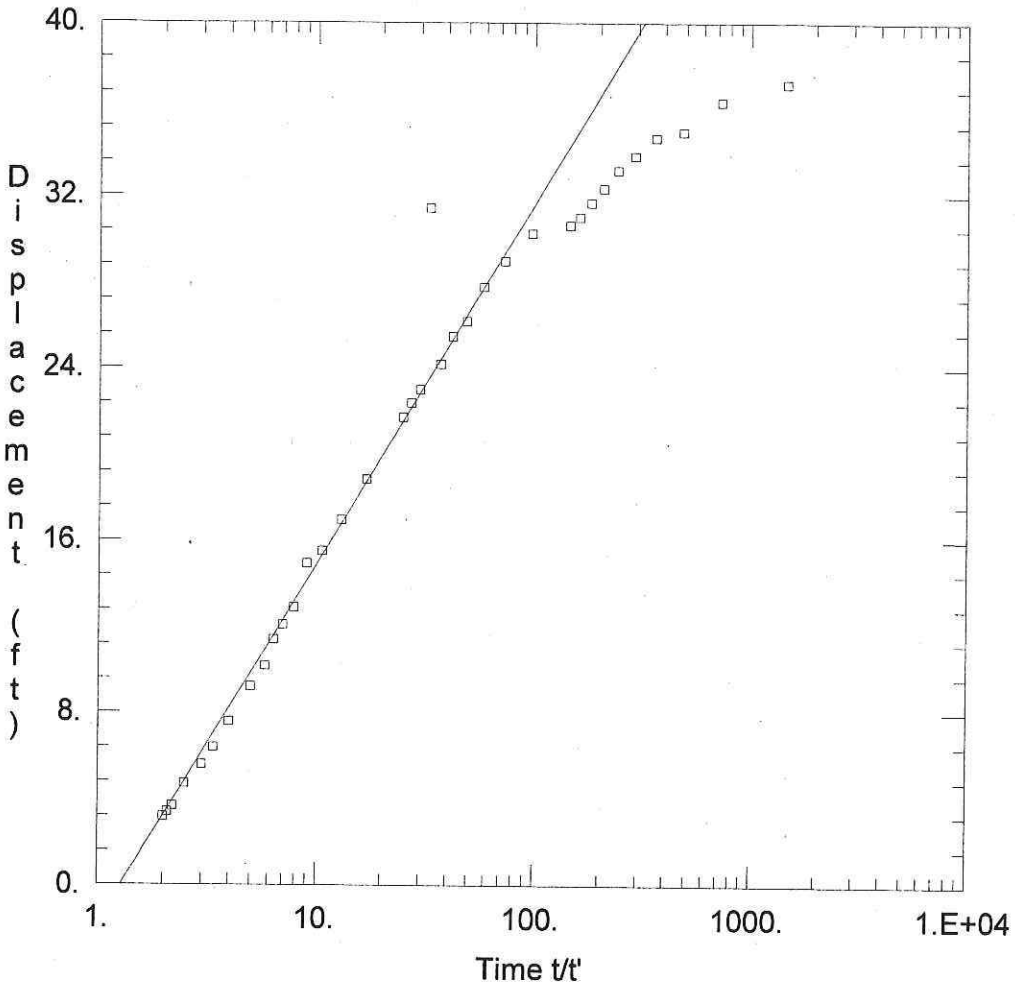
Well Name	X (ft)	Y (ft)
□ Old #4	87	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 358.9 ft^2/day
Kz/Kr = 1.

S = 0.0004582
b = 50. ft



WELL TEST ANALYSIS

Data Set: E:\...\Well #4 - April 7-8 1987 - Old #4 recovery.aqt
Date: 09/12/05 Time: 11:37:25

PROJECT INFORMATION

Company: HMS, Inc.
Client: NUPUC
Test Location: New Ulm
Test Well: New Ulm #4
Test Date: 4/7/1987

AQUIFER DATA

Saturated Thickness: 50. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
New Ulm #4	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
Old #4	87	0

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 343.6 ft^2/day S' = 1.292

Appendix D

Model Files (CD)

Appendix E

GIS Shapefiles (CD)

Appendix F

Vulnerability Assessments

625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating

PWSID: 1080003 | TIER: 2
SYSTEM NAME: New Ulm | WHP RANK:
WELL NAME: Well #4 | UNIQUE WELL #: 00430604

COUNTY: Brown | TOWNSHIP NUMBER: 110 RANGE: 30 W | SECTION: 20 | QUARTERS: B

CRITERIA		DESCRIPTION	POINTS
Aquifer Name(s)	:	Cretaceous, Undifferentiated	
DNR Geologic Sensitivity Rating	:	Very low	0
L Score	:	18	
Geologic Data From	:	Well Record	
Year Constructed	:	1987	
Construction Method	:	Rotary/Drilled	0
Casing Depth	:	216	5
Well Depth	:	247	
Casing grouted into borehole?		Yes	0
Cement grout between casings?		Not applicable	0
All casings extend to land surface?		Yes	0
Gravel - packed casings?		No	0
Wood or masonry casing?		No	0
Holes or cracks in casing?		No	0
Isolation distance violations?			0
Pumping Rate	:	140	5
Pathogen Detected?			NOT VULNERABLE
Surface Water Characteristics?			NOT VULNERABLE
Maximum nitrate detected	:	<.4 12/01/1987	NOT VULNERABLE
Maximum tritium detected	:	<.8 04/21/2014	NOT VULNERABLE
Non-THMS VOCs detected?			0
Pesticides detected?			0
Carbon 14 age	:	Unknown	0
Wellhead Protection Score	:		10
Wellhead Protection Vulnerability Rating	:		NOT VULNERABLE
Vulnerability Overridden	:		

COMMENTS
KRET INFERRED FROM BROWN COUNTY ATLAS

625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating

PWSID: 1080003 TIER: 2
SYSTEM NAME: New Ulm WHP RANK:
WELL NAME: Well #6 UNIQUE WELL #: 00241335

COUNTY: Brown TOWNSHIP NUMBER: 110 RANGE: 30 W SECTION: 20 QUARTERS: D

CRITERIA		DESCRIPTION		POINTS
Aquifer Name(s)	:	Mt. Simon		
DNR Geologic Sensitivity Rating	:	Very low		0
L Score	:	18		
Geologic Data From	:	Well Record		
Year Constructed	:	1965		
Construction Method	:	Cable Tool/Bored		0
Casing Depth	:	203		5
Well Depth	:	212		
Casing grouted into borehole?		Unknown		0
Cement grout between casings?		Not applicable		0
All casings extend to land surface?		Yes		0
Gravel - packed casings?		No		0
Wood or masonry casing?		No		0
Holes or cracks in casing?		No		0
Isolation distance violations?				0
Pumping Rate	:	190		5
Pathogen Detected?				0
Surface Water Characteristics?				0
Maximum nitrate detected	:	<.05 09/24/2014		0
Maximum tritium detected	:	1.71 04/21/2014		VULNERABLE
Non-THMS VOCs detected?		Benzene	09/21/1991	VULNERABLE
Pesticides detected?				0
Carbon 14 age	:	Unknown		0
Wellhead Protection Score	:			10
Wellhead Protection Vulnerability Rating	:			VULNERABLE
Vulnerability Overridden	:			Bruce Olsen 12/15/2005 08:37:43

COMMENTS
GEOLOGY INFERRED FROM WELL #4 (430604)

625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating

PWSID: 1080003 TIER: 2
SYSTEM NAME: New Ulm WHP RANK:
WELL NAME: Well #15 UNIQUE WELL #: 00188651

COUNTY: Brown TOWNSHIP NUMBER: RANGE: SECTION: QUARTERS:

CRITERIA		DESCRIPTION	POINTS
Aquifer Name(s)	:	Quaternary Buried Artesian	
DNR Geologic Sensitivity Rating	:	Low	20
L Score	:	3	
Geologic Data From	:	Well Record	
Year Constructed	:	1982	
Construction Method	:	Rotary/Drilled	0
Casing Depth	:	53	10
Well Depth	:	67	
Casing grouted into borehole?		Yes	0
Cement grout between casings?		Not applicable	0
All casings extend to land surface?		Yes	0
Gravel - packed casings?		No	0
Wood or masonry casing?		No	0
Holes or cracks in casing?		No	0
Isolation distance violations?			0
Pumping Rate	:	150	5
Pathogen Detected?			0
Surface Water Characteristics?			0
Maximum nitrate detected	:	<.4 10/02/1991	0
Maximum tritium detected	:	3.94 04/21/2014	VULNERABLE
Non-THMS VOCs detected?			0
Pesticides detected?			0
Carbon 14 age	:	Unknown	0
Wellhead Protection Score	:		35
Wellhead Protection Vulnerability Rating	:		VULNERABLE
Vulnerability Overridden	:		

COMMENTS

625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating

PWSID: 1080003 | TIER: 2
SYSTEM NAME: New Ulm | WHP RANK:
WELL NAME: Well #18 | UNIQUE WELL #: 00241337

COUNTY: Brown | TOWNSHIP NUMBER: 110 RANGE: 30 W | SECTION: 17 | QUARTERS: D

CRITERIA		DESCRIPTION	POINTS
Aquifer Name(s)	:	Quaternary Buried Artesian	
DNR Geologic Sensitivity Rating	:	Low	20
L Score	:	3	
Geologic Data From	:	Well Record	
Year Constructed	:	1960	
Construction Method	:	Cable Tool/Bored	0
Casing Depth	:	125	10
Well Depth	:	147	
Casing grouted into borehole?		Unknown	0
Cement grout between casings?		Not applicable	0
All casings extend to land surface?		Yes	0
Gravel - packed casings?		No	0
Wood or masonry casing?		No	0
Holes or cracks in casing?		No	0
Isolation distance violations?			0
Pumping Rate	:	235	5
Pathogen Detected?			0
Surface Water Characteristics?			0
Maximum nitrate detected	:	<1 10/01/1969	0
Maximum tritium detected	:	8 04/21/2014	VULNERABLE
Non-THMS VOCs detected?			0
Pesticides detected?			0
Carbon 14 age	:	Unknown	0
Wellhead Protection Score	:		35
Wellhead Protection Vulnerability Rating	:		VULNERABLE
Vulnerability Overridden	:		

COMMENTS

625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating

PWSID: 1080003 TIER: 2
SYSTEM NAME: New Ulm WHP RANK:
WELL NAME: Well #19 UNIQUE WELL #: 00241338

COUNTY: Brown TOWNSHIP NUMBER: 110 RANGE: 30 W SECTION: 17 QUARTERS: D

CRITERIA		DESCRIPTION	POINTS
Aquifer Name(s)	:	Quaternary Buried Artesian	
DNR Geologic Sensitivity Rating	:	Low	15
L Score	:	4	
Geologic Data From	:	Well Record	
Year Constructed	:	1965	
Construction Method	:	Cable Tool/Bored	0
Casing Depth	:	144	10
Well Depth	:	168	
Casing grouted into borehole?		Unknown	0
Cement grout between casings?		Not applicable	0
All casings extend to land surface?		Yes	0
Gravel - packed casings?		No	0
Wood or masonry casing?		No	0
Holes or cracks in casing?		No	0
Isolation distance violations?			0
Pumping Rate	:	140	5
Pathogen Detected?			0
Surface Water Characteristics?			0
Maximum nitrate detected	:	<1 10/01/1969	0
Maximum tritium detected	:	Unknown	0
Non-THMS VOCs detected?			0
Pesticides detected?			0
Carbon 14 age	:	Unknown	0
Wellhead Protection Score	:		30
Wellhead Protection Vulnerability Rating	:		NOT VULNERABLE
Vulnerability Overridden	:		

COMMENTS

625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating

PWSID: 1080003 | TIER: 2
SYSTEM NAME: New Ulm | WHP RANK:
WELL NAME: Well #20 | UNIQUE WELL #: 00209604

COUNTY: Brown | TOWNSHIP NUMBER: 110 RANGE: 30 W | SECTION: 17 | QUARTERS: ACDA

CRITERIA		DESCRIPTION	POINTS
Aquifer Name(s)	:	Quaternary Buried Artesian	
DNR Geologic Sensitivity Rating	:	Very low	15
L Score	:	5	
Geologic Data From	:	Well Record	
Year Constructed	:	1969	
Construction Method	:	Cable Tool/Bored	0
Casing Depth	:	140	10
Well Depth	:	170	
Casing grouted into borehole?		Yes	0
Cement grout between casings?		Yes	0
All casings extend to land surface?		Yes	0
Gravel - packed casings?		No	0
Wood or masonry casing?		No	0
Holes or cracks in casing?		No	0
Isolation distance violations?			0
Pumping Rate	:	325	5
Pathogen Detected?			NOT VULNERABLE
Surface Water Characteristics?			NOT VULNERABLE
Maximum nitrate detected	:	<1 02/01/1973	NOT VULNERABLE
Maximum tritium detected	:	<.8 04/21/2014	NOT VULNERABLE
Non-THMS VOCs detected?			0
Pesticides detected?			0
Carbon 14 age	:	Unknown	0
Wellhead Protection Score	:		30
Wellhead Protection Vulnerability Rating	:		NOT VULNERABLE
Vulnerability Overridden	:		

COMMENTS

625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating

PWSID: 1080003 TIER: 2
SYSTEM NAME: New Ulm WHP RANK:
WELL NAME: Well #21 UNIQUE WELL #: 00209605

COUNTY: Brown TOWNSHIP NUMBER: 110 RANGE: 30 W SECTION: 17 QUARTERS: ACDC

CRITERIA		DESCRIPTION	POINTS
Aquifer Name(s)	:	Quaternary Buried Artesian	
DNR Geologic Sensitivity Rating	:	Low	20
L Score	:	3	
Geologic Data From	:	Well Record	
Year Constructed	:	1969	
Construction Method	:	Cable Tool/Bored	0
Casing Depth	:	137	10
Well Depth	:	167	
Casing grouted into borehole?		Yes	0
Cement grout between casings?		Yes	0
All casings extend to land surface?		Yes	0
Gravel - packed casings?		No	0
Wood or masonry casing?		No	0
Holes or cracks in casing?		No	0
Isolation distance violations?			0
Pumping Rate	:	500	5
Pathogen Detected?			NOT VULNERABLE
Surface Water Characteristics?			NOT VULNERABLE
Maximum nitrate detected	:	<1 02/01/1973	NOT VULNERABLE
Maximum tritium detected	:	.85 04/21/2014	NOT VULNERABLE
Non-THMS VOCs detected?			0
Pesticides detected?			0
Carbon 14 age	:	Unknown	0
Wellhead Protection Score	:		35
Wellhead Protection Vulnerability Rating	:		NOT VULNERABLE

Vulnerability Overridden :

COMMENTS

625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating

PWSID: 1080003 | TIER: 2
SYSTEM NAME: New Ulm | WHP RANK:
WELL NAME: Well #22 | UNIQUE WELL #: 00241339

COUNTY: Brown | TOWNSHIP NUMBER: 110 RANGE: 30 W | SECTION: 21 | QUARTERS:

CRITERIA		DESCRIPTION	POINTS
Aquifer Name(s)	:	Quaternary Buried Artesian	
DNR Geologic Sensitivity Rating	:	Low	20
L Score	:	2	
Geologic Data From	:	Well Record	
Year Constructed	:	1971	
Construction Method	:	Cable Tool/Bored	0
Casing Depth	:	64	10
Well Depth	:	83	
Casing grouted into borehole?		Unknown	0
Cement grout between casings?		Unknown	5
All casings extend to land surface?		Yes	0
Gravel - packed casings?		No	0
Wood or masonry casing?		No	0
Holes or cracks in casing?		No	0
Isolation distance violations?			0
Pumping Rate	:	160	5
Pathogen Detected?			0
Surface Water Characteristics?			0
Maximum nitrate detected	:	<.4 10/02/1991	0
Maximum tritium detected	:	Unknown	0
Non-THMS VOCs detected?			0
Pesticides detected?			0
Carbon 14 age	:	Unknown	0
Wellhead Protection Score	:		40
Wellhead Protection Vulnerability Rating	:		NOT VULNERABLE
Vulnerability Overridden	:		

COMMENTS

625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating

PWSID: 1080003 TIER: 2
SYSTEM NAME: New Ulm WHP RANK:
WELL NAME: Well #23 UNIQUE WELL #: 00241340

COUNTY: Brown TOWNSHIP NUMBER: 110 RANGE: 30 W SECTION: 21 QUARTERS:

CRITERIA		DESCRIPTION	POINTS
Aquifer Name(s)	:	Mt. Simon	
DNR Geologic Sensitivity Rating	:	Very low	15
L Score	:	5	
Geologic Data From	:	Well Record	
Year Constructed	:	1971	
Construction Method	:	Cable Tool/Bored	0
Casing Depth	:	152	10
Well Depth	:	195	
Casing grouted into borehole?		Unknown	0
Cement grout between casings?		Unknown	5
All casings extend to land surface?		Yes	0
Gravel - packed casings?		No	0
Wood or masonry casing?		No	0
Holes or cracks in casing?		No	0
Isolation distance violations?			0
Pumping Rate	:	490	5
Pathogen Detected?			0
Surface Water Characteristics?			0
Maximum nitrate detected	:	<.4 10/02/1991	0
Maximum tritium detected	:	Unknown	0
Non-THMS VOCs detected?			0
Pesticides detected?			0
Carbon 14 age	:	Unknown	0
Wellhead Protection Score	:		35
Wellhead Protection Vulnerability Rating	:		NOT VULNERABLE
Vulnerability Overridden	:		

COMMENTS

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MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating

PWSID: 1080003 TIER: 2
SYSTEM NAME: New Ulm WHP RANK:
WELL NAME: Well #24 UNIQUE WELL #: 00209603

COUNTY: Brown TOWNSHIP NUMBER: 110 RANGE: 30 W SECTION: 21 QUARTERS: BCDB

CRITERIA		DESCRIPTION	POINTS
Aquifer Name(s)	:	Quaternary Buried Artesian	
DNR Geologic Sensitivity Rating	:	Low	15
L Score	:	4	
Geologic Data From	:	Well Record	
Year Constructed	:	1971	
Construction Method	:	Cable Tool/Bored	0
Casing Depth	:	60	10
Well Depth	:	71	
Casing grouted into borehole?		Yes	0
Cement grout between casings?		Yes	0
All casings extend to land surface?		Yes	0
Gravel - packed casings?		No	0
Wood or masonry casing?		No	0
Holes or cracks in casing?		No	0
Isolation distance violations?			0
Pumping Rate	:	140	5
Pathogen Detected?			0
Surface Water Characteristics?			0
Maximum nitrate detected	:	<.4 10/02/1991	0
Maximum tritium detected	:	Unknown	0
Non-THMS VOCs detected?			0
Pesticides detected?			0
Carbon 14 age	:	Unknown	0
Wellhead Protection Score	:		30
Wellhead Protection Vulnerability Rating	:		NOT VULNERABLE
Vulnerability Overridden	:		

COMMENTS

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MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating

PWSID: 1080003 | TIER: 2
SYSTEM NAME: New Ulm | WHP RANK:
WELL NAME: Well #25 | UNIQUE WELL #: 00511075

COUNTY: Brown | TOWNSHIP NUMBER: 110 RANGE: 30 W | SECTION: 1 | QUARTERS:

CRITERIA		DESCRIPTION	POINTS
Aquifer Name(s)	:	Quaternary Buried Artesian	
DNR Geologic Sensitivity Rating	:	Low	20
L Score	:	3	
Geologic Data From	:	Well Record	
Year Constructed	:	1989	
Construction Method	:	Rotary/Drilled	0
Casing Depth	:	46	20
Well Depth	:	62	
Casing grouted into borehole?		Yes	0
Cement grout between casings?		Not applicable	0
All casings extend to land surface?		Yes	0
Gravel - packed casings?		No	0
Wood or masonry casing?		No	0
Holes or cracks in casing?		No	0
Isolation distance violations?			0
Pumping Rate	:	135	5
Pathogen Detected?			0
Surface Water Characteristics?			0
Maximum nitrate detected	:	<.4 10/02/1991	0
Maximum tritium detected	:	Unknown	0
Non-THMS VOCs detected?			0
Pesticides detected?			0
Carbon 14 age	:	Unknown	0
Wellhead Protection Score	:		45
Wellhead Protection Vulnerability Rating	:		VULNERABLE

Vulnerability Overridden :

COMMENTS

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MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating

PWSID: 1080003 | TIER: 2
SYSTEM NAME: New Ulm | WHP RANK:
WELL NAME: Well #26 | UNIQUE WELL #: 00513011

COUNTY: Brown | TOWNSHIP NUMBER: 110 RANGE: 30 W | SECTION: 21 | QUARTERS: DBD

CRITERIA		DESCRIPTION	POINTS
Aquifer Name(s)	:	Quaternary Buried Artesian	
DNR Geologic Sensitivity Rating	:	Low	15
L Score	:	4	
Geologic Data From	:	Well Record	
Year Constructed	:	1992	
Construction Method	:	Rotary/Drilled	0
Casing Depth	:	73	10
Well Depth	:	96	
Casing grouted into borehole?		Yes	0
Cement grout between casings?		Not applicable	0
All casings extend to land surface?		Yes	0
Gravel - packed casings?		No	0
Wood or masonry casing?		No	0
Holes or cracks in casing?		No	0
Isolation distance violations?			0
Pumping Rate	:	210	5
Pathogen Detected?			NOT VULNERABLE
Surface Water Characteristics?			NOT VULNERABLE
Maximum nitrate detected	:	<.05 09/24/2014	NOT VULNERABLE
Maximum tritium detected	:	<.8 04/21/2014	NOT VULNERABLE
Non-THMS VOCs detected?			0
Pesticides detected?			0
Carbon 14 age	:	Unknown	0
Wellhead Protection Score	:		30
Wellhead Protection Vulnerability Rating	:		NOT VULNERABLE

Vulnerability Overridden :

COMMENTS

625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating

PWSID: 1080003 TIER: 2
SYSTEM NAME: New Ulm WHP RANK:
WELL NAME: Well #27 UNIQUE WELL #: 00520956

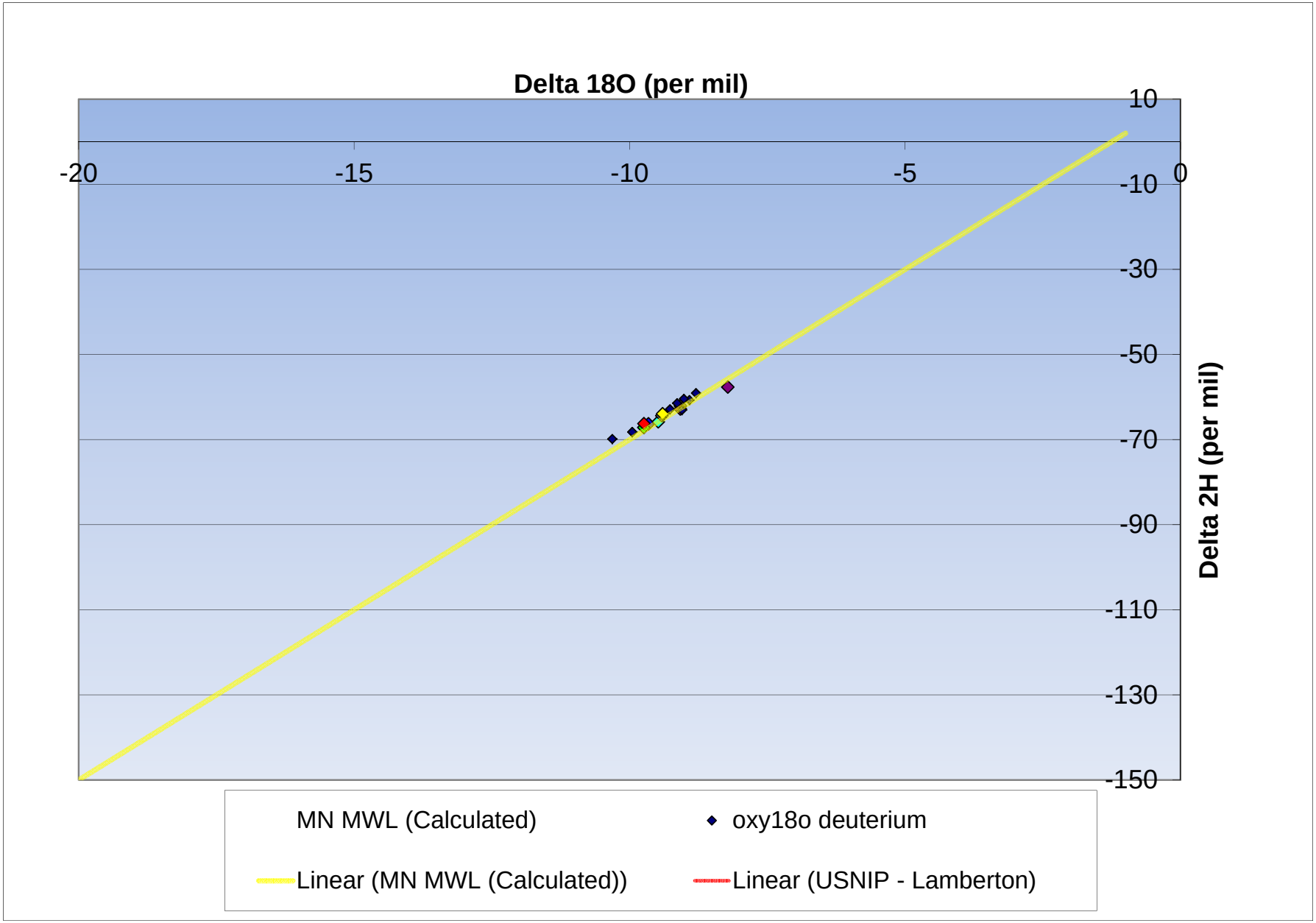
COUNTY: Brown TOWNSHIP NUMBER: 110 RANGE: 30 W SECTION: 21 QUARTERS: DBD

CRITERIA		DESCRIPTION	POINTS
Aquifer Name(s)	:	Quaternary Buried Artesian	
DNR Geologic Sensitivity Rating	:	Very low	15
L Score	:	5	
Geologic Data From	:	Well Record	
Year Constructed	:	1993	
Construction Method	:	Rotary/Drilled	0
Casing Depth	:	122	10
Well Depth	:	162	
Casing grouted into borehole?		Yes	0
Cement grout between casings?		Not applicable	0
All casings extend to land surface?		Yes	0
Gravel - packed casings?		No	0
Wood or masonry casing?		No	0
Holes or cracks in casing?		No	0
Isolation distance violations?			0
Pumping Rate	:	560	10
Pathogen Detected?			0
Surface Water Characteristics?			0
Maximum nitrate detected	:	<.05 09/24/2014	0
Maximum tritium detected	:	1.5 04/21/2014	VULNERABLE
Non-THMS VOCs detected?			0
Pesticides detected?			0
Carbon 14 age	:	Unknown	0
Wellhead Protection Score	:		35
Wellhead Protection Vulnerability Rating	:		VULNERABLE
Vulnerability Overridden	:		

COMMENTS

Appendix G

Isotope Data


Delta 18O (per mil)
-20
-15
-10
-5
0
10
-10
-30
-50
-70
-90
-110
-130
-150
Delta 2H (per mil)
MN MWL (Calculated)
oxy18o deuterium
Linear (MN MWL (Calculated))
Linear (USNIP - Lamberton)

Appendix C

Potential Contaminant Source Inventory

Appendix C - Table 11
MPCA's "What's in My Neighborhood" (Figure 9)
Part II Wellhead Protection Plan
New Ulm, Minnesota

PCSI ID	Parcel ID	ACTIVITY	Status	NAME	ID	ADDRESS	CITY	Zip Code	Coordinate Location Method	DWSMA Vunerability
1	-	Tank Site	Inactive	Caterpillar Paving Products Inc	638	2120 Broadway St N	New Ulm	56073	Address Matching House Number	Moderate
2	-	Tank Site	Inactive	Dittrich Specialties	711	2110 N Broadway	New Ulm	56073	Address Matching House Number	Moderate
3	00157003200320	Leak Site	Closed*	J & R Schugel Trucking Inc	3246	2026 N Broadway	New Ulm	56073	Address Matching House Number	Moderate
4	00157003200320	Tank Site	Active	J & R Schugel Trucking Inc	677	2026 N Broadway	New Ulm	56073	Address Matching House Number	Moderate
5	-	Tank Site	Active	Aggregate Industries	119629	1716 N Front St	New Ulm	56073	GPS - Other	Moderate
6	00157003200330	Tank Site	Inactive	Riblet Products Inc	657	2010 N Broadway PO Box 82	New Ulm	56073	Address Matching House Number	Moderate
7	-	Tank Site	Inactive	3m Electrical Production Plant	667	1617 N Front St	New Ulm	56073	Address Matching House Number	Moderate
8	-	Tank Site	Inactive	Stadick Body Shop	11492	1719 N Minnesota St	New Ulm	56073	Address Matching House Number	Moderate
9	-	Leak Site	Closed*	3m Plant	6634	1700 N Minnesota St	New Ulm	56073	Address Matching House Number	Moderate
10	-	Tank Site	Active	3m Electrical Products Division	52402	1700 N Minnesota St	New Ulm	56073	Address Matching House Number	Moderate
11	00100108312120	Leak Site	Closed*	Happy Joes Pizza	16548	1700 N Broadway St	New Ulm	56073	Digitized - Map Tool	Moderate
12	-	Leak Site	Closed*	Kraft Transport Facility	10583	1414 N Front St	New Ulm	56073	Address Matching House Number	Moderate
13	-	Leak Site	Closed*	Kraft Transportation Center	7048	1414 N Front St	New Ulm	56073	Address Matching House Number	Moderate
14	-	Tank Site	Inactive	Kraft Transport (truck Garage)	716	1414 N Front St	New Ulm	56073	Address Matching House Number	Moderate
15	00100108213130	Leak Site	Closed*	Caseys General Store No 1745	16090	1600 N Broadway	New Ulm	56073	Digitized - Map Tool	Moderate
16	00100108213130	Leak Site	Closed*	Paul Sabatino Property	5370	1600 N Broadway	New Ulm	56073	Digitized - Map Tool	Moderate
17	00100108213130	Tank Site	Active	Caseys General Store #1745	18832	1600 N Broadway	New Ulm	56073	Digitized - Map Tool	Moderate
59	-	State Assessment Site	Inactive	Firmenich Inc.	SA2062	100 N Valley St	New Ulm	56073	Address Matching House Number	Moderate
80	00100206414141	State Assessment Site	Active	Minnesota St. Parking Lot	SA141	109 Minnesota St S	New Ulm	56073	Digitized - Map Tool	Moderate
83	00100206414141	Voluntary Investigation & Cleanup (VIC)	Active	City Center Apartments	VP31180	109 S Minnesota St	New Ulm	56073	Digitized - Map Tool	Moderate
22	-	RCRA Cleanup	Inactive	Minnesota Valley Test Lab	MND981779671	1126 N Front St	New Ulm	56073	Address Matching House Number	Moderate
53	-	Voluntary Investigation & Cleanup (VIC)	Inactive	Bene Tech Inc	VP5380	129 N Front St	New Ulm	56073	Digitized-DRG	Moderate
23	00100108013130	Leak Site	Closed*	New Ulm Quickmart	16432	1400 N Broadway	New Ulm	56073	Digitized - Map Tool	Moderate
24	00100108013130	Leak Site	Closed*	Spur Service Station	2367	1400 N Broadway	New Ulm	56073	Digitized - Map Tool	Moderate
25	00100108013130	Tank Site	Active	New Ulm Quick Mart	649	1400 N Broadway	New Ulm	56073	Digitized - Map Tool	Moderate
26	00132500105055	Tank Site	Active	MR Paving & Excavating Shop/Office	125130	1000 N Front St	New Ulm	56073	Address Matching House Number	Moderate
27	00132500105055	Leak Site	Closed*	Dittrich Of Minnesota	1776	1000 N Front St	New Ulm	56073	Address Matching House Number	Moderate
28	00132500104040	Tank Site	Active	D & A Truck Line Inc	12837	926 N Front St	New Ulm	56073	Address Matching House Number	Moderate
29	00132500101010	Contaminated Soil Treatment Facility	Inactive	Duane Lambrecht	PRE0384	810 N Front St	New Ulm	56073	Address Matching House Number	Moderate
30	00132500101010	Contaminated Soil Treatment Facility	Inactive	Duane Lambrecht	PRE0387	810 N Front St	New Ulm	56073	Address Matching House Number	Moderate
31	00132500101010	Contaminated Soil Treatment Facility	Inactive	Shelton Products	PRE0482	810 N Front St	New Ulm	56073	Address Matching House Number	Moderate
32	00132500101010	Leak Site	Closed*	Shelter Products Inc	8868	810 N Front St	New Ulm	56073	Address Matching House Number	Moderate
33	00132500101010	Tank Site	Inactive	Shelter Products Inc	671	810 N Front St	New Ulm	56073	Address Matching House Number	Moderate
34	-	Tank Site	Active	New Ulm Motors Inc	633	1224 N Broadway	New Ulm	56073	Address Matching House Number	Moderate
35	-	Tank Site	Active	Pagel Ford	54739	1224 N Broadway	New Ulm	56073	Address Matching House Number	Moderate
36	-	Leak Site	Closed*	New Ulm Truck Station	2624	S Jct Th 14 & 15	New Ulm	56073	Zip Code Centroid	Moderate
37	-	Tank Site	Inactive	New Ulm Truck Station	8516	S Jct Th 14 & 15	New Ulm	56073	Zip Code Centroid	Moderate
38	-	Tank Site	Inactive	Terrys Auto Service	20422	1227 N Broadway	New Ulm	56073	Address Matching House Number	Moderate
39	00100111800100	Leak Site	Closed*	Public Supply Well Contamination	129	Address Unknown	New Ulm	56073	Zip Code Centroid	Moderate
40	-	Tank Site	Active	Mn Department Of Transporation	55335	58418 County Road 21	New Ulm	56073	Zip Code Centroid	Moderate
41	-	Leak Site	Closed*	Mndot Truck Station Dist #7	2184	Trunk Highway 15	New Ulm	56073	Interpolation Unknown	Moderate
42	-	Tank Site	Inactive	Star Bulk Transport Inc	632	821 N Front St	New Ulm	56073	Address Matching House Number	Moderate
43	-	Tank Site	Active	Cook Sanitation & Recycling	55668	16 Minnecon Dr	New Ulm	56073	Address Matching House Number	Moderate
44	00100100601010	Leak Site	Closed*	Rader Sandblasting	9570	600 N Front St	New Ulm	56073	Address Matching House Number	Moderate
45	-	Tank Site	Active	Northside Gargage	55850	5 4th North St	New Ulm	56073	Address Matching House Number	Moderate
46	-	Tank Site	Active	Holiday Growers	648	116 3rd North St	New Ulm	56073	Address Matching House Number	Moderate
47	-	Tank Site	Active	Gag Sheet Metal	125285	106 3rd St N	New Ulm	56073	Address Matching House Number	Moderate
48	-	Tank Site	Inactive	Minnesota Valley Transport Inc	52013	301 N Water St	New Ulm	56073	Address Matching House Number	Moderate
49	-	Tank Site	Active	Schumacher Francis	670	301 N Water St	New Ulm	56073	Address Matching House Number	Moderate
50	-	Tank Site	Active	Farmers Coop of Hanska Burdick Location	125151	201 N Water St	New Ulm	56073	Address Matching House Number	Moderate
51	00100100311110	Leak Site	Closed*	Former Green House	16520	310 N Valley St	New Ulm	56073	Address Matching House Number	Moderate
54	-	Voluntary Investigation & Cleanup (VIC)	Inactive	Bene Tech Tract A	VP5381	129 N Front St	New Ulm	56073	Digitized-DRG	Moderate

Appendix C - Table 11
MPCA's "What's in My Neighborhood" (Figure 9)
Part II Wellhead Protection Plan
New Ulm, Minnesota

PCSI ID	Parcel ID	ACTIVITY	Status	NAME	ID	ADDRESS	CITY	Zip Code	Coordinate Location Method	DWSMA Vunerability
107	00100207904040	Voluntary Investigation & Cleanup (VIC)	Inactive	Hy-Vee Foods	VP4530	1315 S Broadway	New Ulm	56073	Digitized-DRG	Moderate
108	00100207904040	Voluntary Investigation & Cleanup (VIC)	Inactive	Hy-Vee Foods	VP4531	1315 S Broadway	New Ulm	56073	Digitized-DRG	Moderate
55	-	Tank Site	Inactive	Bene-tech Inc	688	129 N Front St	New Ulm	56073	Digitized-DRG	Moderate
109	00100207904040	Voluntary Investigation & Cleanup (VIC)	Inactive	Hy-Vee Taco John's	VP4532	1315 S Broadway	New Ulm	56073	Digitized-DRG	Moderate
57	-	Leak Site	Closed*	Benetech Inc	7704	100 N Front St	New Ulm	56073	Address Matching House Number	Moderate
58	-	Leak Site	Closed*	Firmenish	5008	N 1st St & N Front St	New Ulm	56073	Address Matching House Number	Moderate
21	00100108901010	State Assessment Site	Active	New Ulm North Broadway	SA289	1601 N Broadway St	New Ulm	56073	Digitized - Map Tool	Moderate
52	-	Voluntary Investigation & Cleanup (VIC)	Inactive	Consolidated Container Corp	VP12680	209 3rd St S	New Ulm	56073	Digitized-DRG	Moderate
20	00100105001010	Voluntary Investigation & Cleanup (VIC)	Inactive	German Heights Townhomes	VP7890	407 15th St S	New Ulm	56073	Digitized - Map Tool	Moderate
62	00100106908080	Leak Site	Closed*	Clark Service Station #937	9018	326 N Broadway	New Ulm	56073	Digitized - Map Tool	Moderate
63	00100106908080	Leak Site	Closed*	Jiffy Mart	11025	326 N Broadway	New Ulm	56073	Digitized - Map Tool	Moderate
64	00100106908080	Tank Site	Inactive	Jiffy Mart	707	326 N Broadway	New Ulm	56073	Digitized - Map Tool	Moderate
65	-	Tank Site	Inactive	Dr Ann Rotramel	17621	309 N Minnesota St	New Ulm	56073	Address Matching House Number	Moderate
66	00100106911110	Leak Site	Closed*	Broadway House Parking Lot	10143	300 N Broadway 514 N 3rd St	New Ulm	56073	Zip Code Centroid	Moderate
67	00100106911110	Tank Site	Active	Broadway House Parking Lot	20057	300 N Broadway 514 N 3rd St	New Ulm	56073	Zip Code Centroid	Moderate
68	-	Tank Site	Active	City of New Ulm Public Utilities	687	310 1st St N	New Ulm	56073	Address Matching House Number	Moderate
69	00160700103030	Leak Site	Closed*	City Of New Ulm - City Garage	1294	300 1st North St	New Ulm	56073	Digitized - Map Tool	Moderate
70	00160700103030	Tank Site	Inactive	City Of New Ulm	54183	300 1st North St	New Ulm	56073	Digitized - Map Tool	Moderate
71	00160700103030	Tank Site	Inactive	City Of New Ulm	643	300 1st North St	New Ulm	56073	Digitized - Map Tool	Moderate
72	00100110304040	Leak Site	Closed*	Martinka Motor	11471	219 N Broadway	New Ulm	56073	Digitized - Map Tool	Moderate
73	00100110304040	Tank Site	Inactive	Martinka Garage	11353	219 N Broadway	New Ulm	56073	Digitized - Map Tool	Moderate
74	-	Leak Site	Closed*	Gutenhaus	15268	127 N Minnesota St	New Ulm	56073	Address Matching House Number	Moderate
75	-	Tank Site	Active	Associated Milk Producers Inc	52814	312 Center St	New Ulm	56073	Address Matching House Number	Moderate
76	-	Leak Site	Closed*	New Ulm CP Rail Property	18291	1st S St and S Valley St	New Ulm	56073	Digitized - Map Tool	Moderate
77	-	Tank Site	Inactive	Lees Service	658	26 S Minnesota St	New Ulm	56073	Address Matching House Number	Moderate
78	-	Tank Site	Inactive	Formerly Retzlaff Auto Dealer	19596	12 N Broadway	New Ulm	56073	Address Matching House Number	Moderate
79	-	Tank Site	Inactive	A2 Zinnia Wedding & Event Florist	683	15 S Broadway	New Ulm	56073	Address Matching House Number	Moderate
60	00100100110030	CERCLIS Site	Inactive	New Ulm Gas Mfg Site	MND982068355	See location description	New Ulm	56073	Digitized-DRG	Moderate
81	00100206414141	Leak Site	Open*	City of New Ulm Parking Lot	19304	109 Minnesota St S	New Ulm	56073	Digitized - Map Tool	Moderate
82	00100206414141	Petroleum Brownfield	Active	City Center Apartments	4566	109 Minnesota St S	New Ulm	56073	Digitized - Map Tool	Moderate
18	00132500106060	State Assessment Site	Inactive	Demolition Dump	SA7236	See location description	New Ulm	56073	Digitized-DRG	Moderate
84	00100206611110	Leak Site	Closed*	Budget Mart	10676	15 S Broadway	New Ulm	56073	Digitized - Map Tool	Moderate
85	00100206611110	Tank Site	Active	Budget Mart #5112	704	15 S Broadway	New Ulm	56073	Digitized - Map Tool	Moderate
86	00100206713130	Leak Site	Closed*	Dicks Texaco & Towing	5588	101 S Broadway St	New Ulm	56073	Digitized - Map Tool	Moderate
87	00100206713130	Tank Site	Active	Dicks Auto Repair & Towing LLC	708	101 S Broadway St	New Ulm	56073	Digitized - Map Tool	Moderate
88	00123000000028	Tank Site	Inactive	Culligan Water Conditioning	682	400 S Valley St	New Ulm	56073	Digitized - Map Tool	Moderate
89	00123000000028	Leak Site	Closed*	Former Cities Service Bulk Facility	18299	400 S Valley St	New Ulm	56073	Digitized - Map Tool	Moderate
90	00123000000020	Leak Site	Closed*	Madsen Oil Bulk Plant	15442	5th S Valley	New Ulm	56073	Zip Code Centroid	Moderate
91	-	State Assessment Site	Inactive	Minnesota Steel Drum Company	SA7237	See location description	New Ulm	56073	Digitized-DRG	Moderate
19	00132500106060	Unpermitted Dump Site	Inactive	Demolition Dump	REM03898	See location description	New Ulm	56073	Digitized-DRG	Moderate
93	00157037300130	Leak Site	Closed*	Saint Paul Lutheran School	17360	126 S Payne	New Ulm	56073	Digitized - Map Tool	Moderate
94	00157037300130	Tank Site	Active	Saint Pauls Lutheran School	12921	126 S Payne	New Ulm	56073	Digitized - Map Tool	Moderate
95	00177000101010	Leak Site	Closed*	City of New Ulm Recreation Center	18808	122 S Garden St	New Ulm	56073	Digitized - Map Tool	Moderate
96	00177000101010	Tank Site	Active	City of New Ulm Recreation Center	11491	122 S Garden St	New Ulm	56073	Digitized - Map Tool	Moderate
97	00157037400140	Tank Site	Active	Jefferson MIddle School	662	318 Payne St S	New Ulm	56073	Address Matching House Number	Moderate
98	00157037400140	Leak Site	Closed*	New Ulm Jefferson Elementary School	1341	Between Payne St & Garden St	New Ulm	56073	Interpolation Unknown	Moderate
99	00100202703030	Leak Site	Closed*	Origo Inc	17138	1220 S Valley St	New Ulm	56073	Address Matching House Number	Moderate
100	00100202703030	Tank Site	Active	ORIGO	124773	1220 S Valley St	New Ulm	56073	Address Matching House Number	Moderate
101	00100202501010	Leak Site	Closed*	Conoco Station	14836	1400 S Valley St	New Ulm	56073	Address Matching House Number	Moderate
102	00100202501010	Leak Site	Closed*	Harmening Oil	17895	1400 S Valley St	New Ulm	56073	Address Matching House Number	Moderate
103	00100202501010	Leak Site	Closed*	Harmening Oil Company	5165	1400 S Valley St	New Ulm	56073	Address Matching House Number	Moderate
104	00100202501010	Tank Site	Active	Harmening Oil & Trucking Inc	5711	1400 S Valley St	New Ulm	56073	Address Matching House Number	Moderate

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Part II Wellhead Protection Plan
New Ulm, Minnesota

PCSI ID	Parcel ID	ACTIVITY	Status	NAME	ID	ADDRESS	CITY	Zip Code	Coordinate Location Method	DWSMA Vunerability
105	-	Tank Site	Inactive	New Ulm Bus Lines Inc	669	1400 S Minnesota St	New Ulm	56073	Address Matching House Number	Moderate
106	00100202301010	Leak Site	Closed*	Former Turbis Oil Bulk Plant	6715	1600 S Valley St	New Ulm	56073	Address Matching House Number	Moderate
92	-	Unpermitted Dump Site	Inactive	Minnesota Steel Drum Co	REM04617	See location description	New Ulm	56073	Digitized-DRG	Moderate
56	-	Voluntary Investigation & Cleanup (VIC)	Inactive	Kraft Cold Storage	VP6740	See location description	New Ulm	56073	Digitized-DRG	Moderate
61	00100100110030	Voluntary Investigation & Cleanup (VIC)	Inactive	New Ulm Gas Manufacturing	VP0260	See location description	New Ulm	56073	Digitized-DRG	Moderate
110	-	Tank Site	Inactive	New Ulm Motel & Motor Mart	646	1427 S Broadway	New Ulm	56073	Address Matching House Number	Moderate
111	00100205001010	Leak Site	Closed*	German Heights Aprtments	9906	421 15th St S	New Ulm	56073	Address Matching House Number	Moderate
112	-	Petroleum Brownfield	Inactive	New Ulm Steel and Recycling	3750	218 19th South St	New Ulm	56073	Address Matching House Number	Moderate

* Information updated from Petroleum Program (downloaded 2016)

Appendix C - Table 12
Detailed Tank Information MPCA's "What's in My Neighborhood" (Figure 9)
Part II Wellhead Protection Plan
New Ulm, Minnesota

PCSI ID	Database ID	Tank No.	Above or Under Ground Tank	Stored Product	Capacity (Gallons)	Status of Tank	Registration Date	ADDRESS	CITY	ZIP CODE
1	638	001	Under Ground	Fuel Oil	10000	Removed	05-Jun-86	2120 Broadway St N	New Ulm	56073
		002								
		003								
2	711	001	Under Ground	Diesel	10000	Removed	24-Mar-86	2110 N Broadway	New Ulm	56073
4	677	004	Under Ground	Used Or Waste Oil	2500	Closed In-Place	10-Dec-98	2026 N Broadway	New Ulm	56073
		005		Diesel	12000	Active	27-Jan-99			
		003		Used Or Waste Oil	1500	Closed In-Place	15-Apr-86			
		001		Diesel	15000	Removed				
		002		Motor Oil	500	Closed In-Place				
5	119629	1001	Above Ground	Diesel	2000	Active	17-Feb-00	1716 N Front St	New Ulm	56073
		1005		Other Substance	300					
		1003		Gasoline	500					
		1004		Used Or Waste Oil	350					
		1007		Other Substance	300					
		1008			1500	Removed				
		1009			500	Active				
		1010			1000					
		1011		Fuel Oil						
		1002								
		1006		Other Substance	300					
6	657	091	Under Ground	Fuel Oil	500	Removed	13-May-86	2010 N Broadway PO Box 82	New Ulm	56073
		093		Gasoline						
		092		Fuel Oil						
7	667	002	Under Ground	Fuel Oil	4000	Removed	07-May-86	1617 N Front St	New Ulm	56073
		001			15000					
		003			30000					
8	11492	001	Under Ground	Gasoline	1000	Removed	15-Nov-87	1719 N Minnesota St	New Ulm	56073
10	52402	1002	Above Ground	Other Substance	500000	Active	01-Jun-93	1700 N Minnesota St	New Ulm	56073
		1001		Fuel Oil	200000	Removed	05-Jun-90			
14	716	002	Under Ground	Fuel Oil	6000	Removed	12-May-86	1414 N Front St	New Ulm	56073
		001		Diesel	10000					
		003		Used Or Waste Oil	265					
17	18832	001	Under Ground	Gasoline	10000	Removed	09-Dec-94	1600 N Broadway	New Ulm	56073
		002								
25	649	002	Under Ground	Gasoline	10000	Active	29-Apr-86	1400 N Broadway	New Ulm	56073
		004		Diesel	6000	Removed				
		003		Gasoline		Active				
		001			10000					
26	125130	`3	Above Ground	Used Or Waste Oil	2000	Active	02-Jul-09	1000 N Front St	New Ulm	56073
		`2		Gasoline	1000					
		`1		Diesel	2000					
28	12837	D02	Under Ground	Used Or Waste Oil	2000	Active	04-Apr-89	926 N Front St	New Ulm	56073
		DF1		Diesel	10000					
		M03		Motor Oil	560					
33	671	001	Under Ground	Diesel	1500	Removed	08-May-86	810 N Front St	New Ulm	56073
34	633	001	Under Ground	Fuel Oil	1001	Removed	10-Jun-86	1224 N Broadway	New Ulm	56073
		1001	Above Ground	Motor Oil	220	Active	15-Jan-93			
		1002								
		1003		Transmission Fluid						
		1004		Used Or Waste Oil	265					
		003	Under Ground		1001	Removed	10-Jun-86			
		002		Fuel Oil						
35	54739	1002	Above Ground	Motor Oil	200	Active	22-Apr-94	1224 N Broadway	New Ulm	56073
		1001								
		1003		Transmission Fluid						

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Detailed Tank Information MPCA's "What's in My Neighborhood" (Figure 9)
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PCSI ID	Database ID	Tank No.	Above or Under Ground Tank	Stored Product	Capacity (Gallons)	Status of Tank	Registration Date	ADDRESS	CITY	ZIP CODE
37	8516	001	Under Ground	Diesel	10000	Removed	20-Feb-86	S Jct Th 14 & 15	New Ulm	56073
		002		Alcohol Blend	550					
38	20422	003	Under Ground	Alcohol Blend	8000	Removed	12-Dec-97	1227 N Broadway	New Ulm	56073
		001			4000					
		002			6000					
		004		Gasoline	300		23-Jun-99			
40	55335	1001	Above Ground	Diesel	4000	Active	02-Aug-96	58418 County Road 21	New Ulm	56073
		1003		Chemical Other Or Unspecified	250	Removed	05-Jun-00			
		1002		Used Or Waste Oil	280	Active				
42	632	001	Under Ground	Diesel	2000	Removed	13-Jun-86	821 N Front St	New Ulm	56073
		002		Gasoline	1000					
43	55668	1001	Above Ground	Diesel	250	Active	28-Aug-98	16 Minnecon Dr	New Ulm	56073
		1002		Used Or Waste Oil						
45	55850	1001	Above Ground	Used Or Waste Oil	150	Active	11-Jun-99	5 4th North St	New Ulm	56073
46	648	001	Under Ground	Fuel Oil	5950	Removed	31-May-86	116 3rd North St	New Ulm	56073
47	125285	`2	Above Ground	Diesel	1000	Active	05-Feb-10	106 3rd St N	New Ulm	56073
		`1		Gasoline						
48	52013	1002	Above Ground	Diesel	3000	Removed	07-Sep-94	301 N Water St	New Ulm	56073
		1001			1000		29-May-90			
49	670	1005	Above Ground	Used Or Waste Oil	250	Active	07-Sep-94	301 N Water St	New Ulm	56073
		1007		Diesel	1000		28-Dec-94			
		1006		Petroleum Other	250		07-Sep-94			
		1004		Used Or Waste Oil						
		1003								
		1002								
		1001								
50	125151	`1	Above Ground	Diesel	2000	Active	29-Jul-09	201 N Water St	New Ulm	56073
55	688	001	Under Ground	Diesel	9600	Removed	07-Feb-86	129 N Front St	New Ulm	56073
		002			6000					
64	707	002	Under Ground	Gasoline	7500	Removed	24-Mar-86	326 N Broadway	New Ulm	56073
		001								
65	17621	001	Under Ground	Gasoline	500	Removed	10-May-93	309 N Minnesota St	New Ulm	56073
67	20057	001	Under Ground	Fuel Oil	500	Removed		300 N Broadway 514 N 3rd St	New Ulm	56073
68	687	`1	Above Ground	Petroleum Other	850	Active	22-Sep-08	310 1st St N	New Ulm	56073
		`2		Diesel	500					
		1007		Chemical Other Or Unspecified	1100	Removed	29-Apr-02			
		1006			3500					
		1012		Fuel Oil	200000	Active				
		1005		Petroleum Other	500					
		1004								
		1001		Chemical Other Or Unspecified	1900	Removed				
		`3		Chemical Acidic	4000	Active	21-Nov-11			
70	54183	1001	Above Ground	Other Substance	10000	Temporarily Closed		300 1st North St	New Ulm	56073
		1002								
71	643	1002	Above Ground	Asphalt	6000	Temporarily Closed	26-May-92	300 1st North St	New Ulm	56073
		004	Under Ground	Kerosene	500	Removed	05-Jun-86			
		1001	Above Ground	Asphalt	6000	Temporarily Closed	26-May-92			
		002	Under Ground	Diesel	1000	Removed	05-Jun-86			
		003		Gasoline						
		001			2000					
73	11353	001	Under Ground	Gasoline	400	Removed	23-Oct-87	219 N Broadway	New Ulm	56073
		002		Used Or Waste Oil	500		21-Jan-98			
75	52814	1004	Above Ground	Other Substance	3000	Active	28-Aug-96	312 Center St	New Ulm	56073
		1001		Chemical Caustic	1500		24-Dec-90			
		1002		Chemical Acidic						
		1003		Chemical Caustic	3800	Removed				

Appendix C - Table 12
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Part II Wellhead Protection Plan
New Ulm, Minnesota

PCSI ID	Database ID	Tank No.	Above or Under Ground Tank	Stored Product	Capacity (Gallons)	Status of Tank	Registration Date	ADDRESS	CITY	ZIP CODE
77	658	002	Under Ground	Gasoline	2000	Removed	15-May-86	26 S Minnesota St	New Ulm	56073
		004			10000					
		001			2000					
		003			4000					
78	19596	002	Under Ground	Gasoline	500	Removed	06-May-96	12 N Broadway	New Ulm	56073
		001			1000					
79	683	001	Under Ground	Gasoline	6000	Removed	12-Feb-86	15 S Broadway	New Ulm	56073
		002			8000					
85	704	002	Under Ground	Diesel	10000	Removed	02-Sep-87	15 S Broadway	New Ulm	56073
		003		Alcohol Blend						
		001								
87	708	002	Under Ground	Gasoline	10000	Temporarily Closed	26-Mar-86	101 S Broadway St	New Ulm	56073
		001			6000	Removed				
		003				Temporarily Closed				
		004		Used Or Waste Oil	550	Removed				
88	682	001	Under Ground	Gasoline	1000	Removed	21-Apr-86	400 S Valley St	New Ulm	56073
94	12921	001	Under Ground	Fuel Oil	6000	Removed	26-Jun-89	126 S Payne	New Ulm	56073
96	11491	001	Under Ground	Fuel Oil	20000	Removed	19-Nov-87	122 S Garden St	New Ulm	56073
97	662	002	Under Ground	Fuel Oil	15300	Removed	16-May-86	318 Payne St S	New Ulm	56073
		453			8000		22-Sep-89			
100	124773	`33	Above Ground	Other Substance	30000	Active	18-Oct-11	1220 S Valley St	New Ulm	56073
		`28			10000		08-Feb-08			
		`30			2000					
		`31			1500	Closed In-Place				
		`26			10000	Active				
		`32			30000		18-Oct-11			
		`29			9000		08-Feb-08			
		`27			10000					
		`18			20240	Removed	08-Jan-08			
		`23			10000					
		`25				Active				
		`19			23720	Removed				
		`17			20240					
		`24			10000		08-Jan-80			
		`2			23720		08-Jan-08			
		`9			10000	Active				
		`10			11100	Removed				
		`11			6700					
		`8			10000					
		`7			22510					
		`6								
		`5			27850					
		`1			5900					
		`3			18315					
		`20			23720					
		`12			13100					
		`13			7400					
		`14								
		`15								
		`16			20240					
		`22			10000					
		`21								
		`4			18315					

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Part II Wellhead Protection Plan
New Ulm, Minnesota

PCSI ID	Database ID	Tank No.	Above or Under Ground Tank	Stored Product	Capacity (Gallons)	Status of Tank	Registration Date	ADDRESS	CITY	ZIP CODE
104	5711	`1	Under Ground	Diesel	4000	Active	11-Dec-14	1400 S Valley St	New Ulm	56073
		106		Gasoline	6000		01-Jun-92			
		101			3000	Removed	10-Feb-86			
		105		E-10 - 10% ethanol & 90% gas	6000	Active	01-Jun-92			
		104		Diesel						
		103			3000	Removed	10-Feb-86			
		102		Gasoline						
		1005	Above Ground	Fuel Oil	10000	Active	30-May-90			
		1001		Gasoline	20000					
		1009		Alcohol Blend	1000					
		1008		Kerosene	4000					
		1006		Fuel Oil	10000					
		1004			14000					
		1013		Diesel	11750		14-Sep-94			
		1002		Gasoline	10000		30-May-90			
		1014		Other Substance	4000		14-Sep-94			
		1010		Diesel	10000					
		10PD								
		1012			12000					
		1003		Gasoline	10000		30-May-90			
		1007		Aviation Gas						
105	669	001	Under Ground	Gasoline	1000	Removed	08-May-86	1400 S Minnesota St	New Ulm	56073
		003		Diesel	12000					
		002			10000					
110	646	002	Under Ground	Gasoline	4000	Removed	30-May-86	1427 S Broadway	New Ulm	56073
		003			2000					
		001			10000					
		004			1000					

Appendix C - Table 13
MPCA's Spills (Figure 10)
Part II Wellhead Protection Plan
New Ulm, Minnesota

PCSI ID	PROGRAM ID	PREFERRED ID	INTEREST NAME	Address	Spill Reported Date	Initial Cause	Spill Quantity Released	Spill Units	Spill Product	Spill Location
113	183136	25720	URBAN - INDUSTRIAL (ON RP'S LOADING DOCK)	2120 N Broadway	5/22/1997	UNKNOWN	0	Unknown	Unknown	Business
114	183198	25794	Caterpillar Paving Products on loading dock	2108 N BROADWAY	5/22/1997	FIRE	0	Gallons	Chemical, Other (See Remarks)	Air
115	75408451	93717	American Art Stone	2025 North Broadway	8/4/2015 15:07	-	20	Gallons	Hydraulic Fluid	Soil
116	425753	69526	Forst Transfer animal fat spill from tanker	405 19th Ave North	4/9/2007 7:07	-	300	Gallons	Vegetable/animal oil	Paved, Not Street
117	344918	65928	DM & E Railroad	1500 N Front St	9/26/2003	-	-	-	-	-
118	391996	67867	Hanska Grain Elevator, Corn pile waste complaint	Water Street	8/8/2006 6:19	-	-	Unknown	Other (Described In Remarks)	Storm Sewer
119	187445	30428	3M	1700 N Minnesota St	5/19/1999	EQUIPMENT FAILURE	300	Gallons	Antifreeze, Glycols, Deicers	Street, Parking Lot
120	187445	30428	3M	1700 N Minnesota St	5/19/1999	EQUIPMENT FAILURE	300	Gallons	Antifreeze, Glycols, Deicers	Street, Parking Lot
121	342472	65377	3M - New Ulm, Electrical Products Division	1700 N Minnesota St	8/18/2005 5:00	-	1000	Gallons	Other (Described In Remarks)	Business
122	61064258	82371	3M - New Ulm - hydraulic oil spill to concrete	1700 North Minnesota Street	10/1/2010 10:14	-	15	Gallons	Hydraulic Fluid	Paved, Not Street
123	54355742	72668	3M - New Ulm, Electrical Products Division, epox	1700 North Minnesota Street	2/15/2008 8:12	-	10	Pounds	Other (Described In Remarks)	Business
124	67196585	88642	3M wastewater release outside Bldg 10	1700 North Minnesota Street	8/9/2013 13:15	-	300	Gallons	Sewage Or Wastewater	Storm Sewer
125	180470	22792	KRAFT GENERAL FOODS TRANSPORT DIVISION	1414 N Front St	12/21/1995	SEMI COLLAPSED	15	Gallons	Light Fuel Oil and Diesel	-
126	227836	52460	Casey's General Store	1600 N Broadway	6/25/2000	-	20	Gallons	Gasoline Unleaded	Street, Parking Lot
127	227836	52460	Casey's General Store	1600 N Broadway	6/25/2000	-	20	Gallons	Gasoline Unleaded	Street, Parking Lot
128	175664	17603	MINNESOTA VALLEY TESTING	1126 N FRONT St	4/14/1993	SPILL IN HOOD	4	Unknown	Chemical Solvent	-
129	170626	8888	DITTRICH OF MINNESOTA	1000 N Front St	9/22/1989	UST	0	Unknown	Petroleum, Unspecified	-
130	170626	8888	DITTRICH OF MINNESOTA	1000 N Front St	9/22/1989	UST	0	Unknown	Petroleum, Unspecified	-
131	55147661	74224	Kentucky Fried Chicken cooking oil spill	1301 N Broadway Street	10/31/2008 8:11	-	7	Gallons	Vegetable/animal oil	Paved, Not Street
132	179851	22130	AL JOHNSON TRUCKING INC	Highway 15	8/15/1995	SEMI ROLLOVER	40	Gallons	Light Fuel Oil and Diesel	-
133	177198	19282	KLOSSNER COOP OIL	Highway 15	4/13/1994	TWO CUSTOMERS SPILLE	8	Gallons	Gasoline Regular	-
134	183088	25669	UNKNOWN	810 N Front St	5/9/1997	WEATHER	0	Unknown	Unknown	Not Applicable
135	183088	25669	UNKNOWN	810 N Front St	5/9/1997	WEATHER	0	Unknown	Unknown	Not Applicable
136	55170108	74260	Dustin Scharbach-dumping complaint-auto fluids	1014 North Broadway Street	7/4/2008 8:10	-	-	Unknown	Motor/Lube Oil;Trans/Eng Fluid	Street or Highway
137	56390009	75920	Resident ? New Ulm FD	523 N Front St	2/8/2009 9:15	-	5	Gallons	Gasoline	Soil
138	186253	29144	MINNESOTA VALLEY TRANSPORT	301 N Water St	9/29/1998	OVERFILL	0	Unknown	Light Fuel Oil and Diesel	Soil
139	291077	61139	Intersection	3rd St N & Front St	5/20/2004 4:00	-	-	-	-	-
140	180510	22834	FARMERS COOP HANSKA	201 N WATER St	1/6/1996	STRUCTURAL FAILURE I	0	Unknown	Food	-
141	56530725	76255	Ileagal dumping of Industrial waste into storm swr	north spring st between 1 and 2nd n	8/5/2009 9:16	-	4000	Gallons	Other (Described In Remarks)	Storm Sewer
142	181905	24374	WASTE WATER FACILITY	306 N German	9/13/1996	HUMAN ERROR	125	Gallons	Acid/Base Chemicals	Street, Parking Lot
143	386175	67669	City of New Ulm - Water Treatment Plant, abandonme	3rd North & German St	7/11/2006 6:14	-	2	Barrels	Unknown	Not Applicable
144	170140	5645	City of New Ulm - Goosetown Fire Station	1st Avenue & Valley Street	7/24/1989	UST	0	Unknown	Petroleum, Unspecified	-
145	174941	16823	NEW ULM WHOLESALE GROCERY	201 1st St	9/23/1992	MECHANICAL	0	Unknown	Other (Described In Remarks)	-
146	188591	5507	NEW ULM CITY OF	300 1st North St	7/7/1989	UST	0	Unknown	Petroleum, Unspecified	-
147	188591	5507	NEW ULM CITY OF	300 1st North St	7/7/1989	UST	0	Unknown	Petroleum, Unspecified	-
148	179394	21644	NEW ULM PUBLIC UTILITIES	310 1st St N	6/5/1995	BAILER MALFUNCTION	0	Unknown	Other (Described In Remarks)	-
149	445495	70870	City of New Ulm - Public Utilities	310 1st North St	8/7/2007 7:15	-	15	Gallons	Acid/Base Chemicals	Sanitary Sewer
150	63737855	84918	New Ulm Municipal Power Plant	310 1st North	8/16/2012 12:08	-	-	Small Amount	Acid/Base Chemicals	Soil
151	172871	14598	LAND O LAKES	3rd St N	3/20/1991	ABANDONED DRUMS	30	Unknown	Agri Pesticide Or Fertilizer	-
152	64776893	86236	Marketplatz Mall- sewage to the parking lot	101 North German Street	1/11/2013 13:13	-	5	Gallons	Sewage Or Wastewater	Paved, Not Street
153	179600	21865	AMPI PLANT	312 Center St	7/8/1995	??	300	Gallons	Chemical Acidic	-
154	171064	12605	UNKNOWN	312 Center St	11/7/1989	UNKNOWN/UNDERGROUND	0	Unknown	Petroleum, Unspecified	-
155	53815466	71341	AMPI - New Ulm milk to storm	312 Center Street	10/30/2007 7:16	-	200	Gallons	Food	Stream Or River
156	170106	5608	UNKNOWN	CENTER & GERMAN St	7/19/1989	UST	0	Unknown	Petroleum, Unspecified	-
157	312840	62854	Origo Warehouse	222 1st St S	12/30/2004 4:00	-	-	Unknown	Other (Described In Remarks)	Stream Or River
158	172111	13754	BENGSTON BROTHERS TRUCKING	Highway 14 W and 20th St N	6/5/1990	TRUCK ACCIDENT	60	Gallons	Light Fuel Oil and Diesel	-
159	172287	13951	MINNESOTA DEPARTMENT OF TRANSPORTATION	SEVEN miles N.OF NEW ULM on HIGHWA	8/13/1990	ACCIDENT	150	Gallons	Unknown	-
160	431555	69796	NTA Limited - diesel fuel in New Ulm	Hwy 14 and Hwy 15	5/22/2007 7:15	-	50	Gallons	Light Fuel Oil and Diesel	Street or Highway
161	229527	53607	New Ulm FD	Hwy 14 and Hwy 15	12/28/2000	-	150	Gallons	Light Fuel Oil and Diesel	Soil
162	182908	25470	MIELKE OIL	Hwy 14 and Hwy 15	4/17/1997	TRAFFIC ACCIDENT	8000	Gallons	Petroleum, Unspecified	Street, Parking Lot
163	182908	25470	MIELKE OIL	Hwy 14 and Hwy 15	4/17/1997	TRAFFIC ACCIDENT	8000	Gallons	Petroleum, Unspecified	Soil
164	189428	21260	FARMER	ROUTE 3	5/26/1994	HITCH ON SPRAYER BRO	360	Gallons	Agri Pesticide Or Fertilizer	-

Appendix C - Table 13
MPCA's Spills (Figure 10)
Part II Wellhead Protection Plan
New Ulm, Minnesota

PCSI ID	PROGRAM ID	PREFERRED ID	INTEREST NAME	Address	Spill Reported Date	Initial Cause	Spill Quantity Released	Spill Units	Spill Product	Spill Location
165	170099	5601	JEFFERSON ELEMENTARY	BTWN PAYNE & GARDEN St	7/19/1989	UST	0	Unknown	Petroleum, Unspecified	-
166	212216	50285	M.R. Paving & Excavating	Hwy 14, 15 miles E of New Ulm	10/26/1999	Semi-transport	25	Gallons	Light Fuel Oil and Diesel	Street, Parking Lot
167	228880	53170	Tom Gieseke Homestead	RR 3 Box 190	10/21/2000	Milkhouse Waste	-	Unknown	Manure	Soil
168	228880	53170	Tom Gieseke Homestead	RR 3 Box 190	10/21/2000	Milkhouse Waste	-	Unknown	Food	Soil
169	232326	55528	Cottonwood River	Address Unknown	9/28/2001 1:00	-	-	Unknown	Manure	Stream Or River
170	238414	57246	Minnesota River	County 27 bridge	7/2/2002 2:00	-	150	Gallons	Light Fuel Oil and Diesel	Sewer
171	262419	58815	sewage overflow-Cty of New Ulm	Spring St and 14th N	4/2/2003 3:00	-	100	Gallons	Sewage Or Wastewater	Soil
172	310494	62657	Morgan Creek/ Blue Earth County	Were Creek crosses Hwy 68	1/19/2005 5:00	-	-	Unknown	Unknown	Stream Or River
173	412775	68744	Ground Zero wash bay grit spill	Between 12 & 13 Av N, between Minne	12/13/2006 6:12	-	250	Gallons	Other (Described In Remarks)	Street or Highway
174	428476	69624	Crystal Valley Coop - hydraulic oil	along hwy 15, 1/4 n of cty rd 20	4/29/2007 7:09	-	2	Gallons	Hydraulic Fluid	Paved, Not Street
175	445578	70889	Tri-State Grease and Tallow crude veg. oil spill	12 South St & Valley Street interse	8/7/2007 7:13	-	-	Unknown	Vegetable/animal oil	Gravel Road
176	53769172	71210	Schutz Plumbing & Htg wastewater release @ New Ulm	20th Street Lift Station	9/10/2007 7:12	-	30	Gallons	Sewage Or Wastewater	Storm Sewer
177	54649722	73257	New Ulm - gasoline spill to street	intersection of 20th south and Sout	6/20/2008 8:14	-	18	Gallons	Gasoline	Street or Highway
178	55507718	74668	Residential Gasoline Spill - New Ulm	End of Driveway	2/8/2009	-	10	Gallons	Gasoline	Street or Highway
179	232675	55782	Unknown trucking company	Highway 14 - 2 Mi So. of New Ulm	11/5/2001 1:00	-	75	Gallons	Light Fuel Oil and Diesel	Street, Parking Lot
180	314677	63012	Unknown - car in swamp	155th Avenue So. of County Road 257	4/18/2005 5:00	-	-	Small Amount	Motor/Lube Oil;Trans/Eng Fluid	Wetland
181	342456	65363	AMPI Butter Plant Fire	Minnesota River	8/8/2005 5:00	-	-	Unknown	Other (Described In Remarks)	Storm Sewer
182	57326755	76882	Farmer Trucking - Diesel Fuel	5 miles south of New Ulm on Hwy 15	12/3/2009 9:14	-	30	Gallons	Light Fuel Oil and Diesel	Soil
183	60551185	81456	Traffic accident involving tanker of road sealant	mi. post 106, Hwy 14	7/26/2010 10:11	-	200	Gallons	Asphalt	Ditch
184	65878245	86734	Danielson property alley - sewer complaint	between Center St and 1st North	3/15/2013 13:16	-	-	Unknown	Sewage Or Wastewater	Paved, Not Street
185	305578	62307	AMPI butter fire	Center St	12/1/2004 4:00	-	3000000	Pounds	Food	Stream Or River
186	313715	62932	Ridgeway on German	715 S German St	4/4/2005 5:00	-	-	-	-	-
187	408056	68411	Kwik Trip Store 432 gasoline spill	15212 South Broadway Street	11/6/2006 6:08	-	5	Gallons	Gasoline	Paved, Not Street
188	54161852	72022	Cliff Viessman at Origo - edible tallow	1220 South Valley	1/31/2008 8:10	-	900	Gallons	Other (Described In Remarks)	Stream Or River
189	54161855	72023	Origo and Cliff Viessman - Edible Tallow	1220 South Valley	1/31/2008 8:08	-	600	Gallons	Other (Described In Remarks)	Stream Or River
190	237514	57069	Conoco - City of New Ulm Fire Dept	1400 South Valley	6/30/2002 2:00	-	175	Gallons	Light Fuel Oil and Diesel	Soil
191	53922515	71654	Caller's residence, storm water complaint	1213 South State Street	10/31/2007 7:06	-	-	Unknown	Other (Described In Remarks)	Storm Sewer
192	295680	61582	Creative Touch Landscape-fertilizer	421 15th S	7/31/2004 4:00	-	3	Gallons	Agri Pesticide Or Fertilizer	Sewer
193	67083846	88458	Industrial WW - Firmenich New Ulm	1911 South Valley	10/15/2013 13:15	-	200	Gallons	Sewage Or Wastewater	Storm Sewer
194	75865174	93959	New Ulm Steel and Recycling	282 19th South Street	8/24/2015 15:14	-	-	Unknown	Used Or Waste Oil	Soil

Appendix C - Table 14
EPA Class V and MDH Located Wells (Figure 11)
Part II Wellhead Protection Plan
New Ulm, Minnesota

EPA-Registered-Class-V-Wells

PSCI-ID	WStype	Status	UIC_ID	Name	Address	City	State	ZipCode
195	5X26	Proposed-Well-(associated-with-permit-application-only)	MN-015-5X26-0001	INTERSTATE-POWER-AND-LIGHT-COMPANY	1ST-NORTH-STREET-AND-NORTH-VALLEY-STREET-(NW-CORNER)-,-New-Ulm,-MN,-56073			
196	5X28	Permanently-Abandoned-and-Approved-by-State-(closed)	MN-015-5X28-0029	SCHAEFER-WELL-COMPANY	58374-COUNTY-ROAD-21,-New-Ulm,-MN,-56073			

MDH-Verified-County-Well-Index

PCSI-ID	Unique Number	Well Name	Depth Drilled	Use Code	Aquifer	Water Table (ft-bgs)	Water Table (amsl)	Elevation	Status Code	Township	Range	Section	Subsection
197	00585566	BRANDEL,-FRANCIS	262	DO	QBAA	190	803	993	A	110	30	4	DCCACD
198	W0007089	-	0	-	-	0	0	998	-	110	30	4	CDDDBB
199	W0007090	-	0	-	-	0	0	989	-	110	30	4	DCCDBB
200	00481153	ALLEN	187	DO	QBAA	74	801	875	A	110	30	8	AAABA
201	00180609	KLINGER,-KENNETH	225	DO	QBAA	190	788	978	A	110	30	8	BABCCB
202	W0007109	-	0	-	-	0	0	892	-	110	30	8	AACBBD
203	00504581	LUX,-DENNIS	167	DO	QBAA	49	797	846	A	110	30	8	BADAAC
204	W0008017	-	0	UN	-	0	0	918	-	110	30	8	ABDB
205	W0008020	-	0	UN	-	0	0	976	-	110	30	8	BCAA
206	00188693	BUSHARD,-DALE	246	PS	MTPL	195	799	994	A	110	30	8	BDBADC
207	00415186	BUSHARD,-DALE	344	DO	QBAA	187	797	984	A	110	30	8	ACADAC
208	W0007118	-	0	-	-	0	0	998	-	110	30	9	BCACCB
209	00186072	THOMPSON,-JERRY	110	DO	QBAA	27	813	840	A	110	30	8	ACBCDC
210	W0007111	-	0	-	-	0	0	818	-	110	30	8	BDDADA
211	W0007119	-	0	-	-	0	0	1000	-	110	30	10	BDCBBB
212	00627561	NELSON,-EUGENE-&-JUDY	264	DO	QBAA	192	811	1003	A	110	30	10	BCDAAA
213	00405339	VAN-ROEKEL,-RICK	152	DO	QBAA	24	806	830	A	110	30	8	BDDDCC
214	00645254	KRAL,-TERRY-&-LANAYE	351	DO	QBAA	208	780	988	A	110	30	8	ACDDBB
215	00452675	BUSHARD,-DALE	361	DO	QBAA	180	815	995	A	110	30	8	ACDDCC
216	W0007108	-	0	-	-	0	0	814	-	110	30	8	CAABBD
217	W0007112	-	0	-	-	0	0	989	-	110	30	8	DBAADD
218	00471804	DRAHOTA,-RONALD-A.	175	DO	QBAA	92	782	874	A	110	30	8	DBDBCB
219	W0007110	-	0	-	-	0	0	959	-	110	30	8	DADCCB
220	W0007117	-	0	-	-	0	0	976	-	110	30	8	DDADAB
221	W0007114	-	0	-	-	0	0	858	-	110	30	8	DDBDBC
222	00585596	THOMPSON,-RONALD	132	DO	QBAA	65	794	859	A	110	30	8	DDBDCB
223	00108748	ZENK,-DAVID	242	DO	QBUA	195	814	1009	A	110	30	9	DCADDD
224	00509672	WALSER,-DAVE	325	DO	QBAA	190	805	995	A	110	30	9	CCDCCA
225	W0007130	-	0	-	-	0	0	882	-	110	30	16	BBBBDC
226	00784237	WALSER,-LORI	240	DO	QBAA	81	804	885	A	110	30	16	BBBACC
227	00215039	FRITSCHE,-FRED	155	DO	QWTA	25	790	815	A	110	30	17	AAADBB
228	00798045	STILLWELL,-BLAKE	170	DO	-	21	799.40002	820.40002	-	110	30	17	AAADBB
229	00749513	ZENK,-TIM	248	DO	QBAA	185	798	983	A	110	30	16	AACADC

Appendix C - Table 14
EPA Class V and MDH Located Wells (Figure 11)
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PCSI-ID	Unique Number	Well Name	Depth Drilled	Use Code	Aquifer	Water Table (ft-bgs)	Water Table (amsl)	Elevation	Status Code	Township	Range	Section	Subsection
230	W0007131	-	0	-	-	0	0	891	-	110	30	16	BBCDAC
231	00402896	ZENK,-TIM	243	AB	QBAA	190	795	985	S	110	30	16	AACDDB
232	00209604	NEW-ULM-20	216	PC	QBAA	17	770	787	A	110	30	17	ADADAB
233	00710351	WESSELMANN,-MIKE	143	DO	QBAA	22	784	806	A	110	30	17	BCBCAC
234	00214916	ELIXIR-INDUSTRIES	149	AB	QBUA	75	790	865	S	110	30	18	ACBCDB
235	00209605	NEW-ULM-21	172	PC	QBAA	17	770.5	787	A	110	30	17	ADCABB
236	00691492	SAUER,-ERNST-JR.	137	DO	QBAA	51	800	851	A	110	30	16	CABAAA
237	00214948	RIBLET	147	CO	QBAA	70	795	865	A	110	30	18	DBACAB
238	00556057	MW-3	31	MW	QBAA	18	826	844	A	110	30	18	DADACB
239	00555997	MW-1	26	MW	QBAA	18	830	848	A	110	30	18	DADBDC
240	00556056	MW-2	25	MW	QBAA	18	830	848	A	110	30	18	DADCAA
241	00241338	NEW-ULM-19	187	PC	QBAA	24	776	800	A	110	30	17	DBCCBB
242	00402878	WELLNER,-JIM	295	DO	QBAA	185	819	1004	A	110	30	16	DACDAA
243	00241337	NEW-ULM-18	179	PC	QBAA	24	776	800	A	110	30	17	DCBABA
244	00209598	OAK-HAVEN-MOBILE-HOME-CT	303	PN	QBAA	200	789	989	A	110	30	16	DDABCD
245	00215046	WELLNER,-ALTON	220	DO	QBAA	0	0	992	A	110	30	15	CDCBBA
246	00444671	NEW-ULM-TRUCK-STATION	224	DO	CMTS	24	835	859	A	110	30	21	ABADBA
247	00144605	NEW-ULM-TRUCK-STATION/MN	224	DO	CMTS	24	835	859	A	110	30	21	ABADBA
248	00254582	-	0	-	-	0	0	795	-	110	30	21	BBCA
249	00251583	NEW-UMN-TW	0	-	-	0	0	788	-	110	30	21	BBDBDA
250	00402887	NEW-ULM-TW-2	55	AB	QBAA	7	787	794	S	110	30	21	BBDADA
251	00251584	NEW-ULM-TW	0	-	-	0	0	786	-	110	30	21	BBDADC
252	00251582	NEW-ULM-TW	0	-	-	0	0	792	-	110	30	21	BBCADC
253	00251585	NEW-ULM-TW	0	-	-	0	0	786	-	110	30	21	BBDDBB
254	00251581	NEW-ULM-TW	0	-	-	0	0	790	-	110	30	21	BBCCBA
255	00579811	BUSHARD,-DALE	397	DO	CMTS	180	822	1002	A	110	30	21	AADCAC
256	00509667	NEW-ULM-TW-5	65	AB	QBAA	9	785	794	S	110	30	21	BDBBCB
257	00509668	NEW-ULM-OB-5	64	OB	QBAA	9	785	794	A	110	30	21	BDBBCD
258	W0006388	-	0	UN	-	0	0	799	-	110	30	21	ACAC
259	00511075	NEW-ULM-25	68	PC	QBAA	25	775.70001	801	A	110	30	21	BCBDDB
260	00241336	NEW-ULM-15	57	PC	QBAA	24	789.09998	813.09998	I	110	30	21	BCBDDB
261	00188651	NEW-ULM-15	67	PC	QBAA	0	0	800	A	110	30	21	BCACCB
262	00659464	GLAWE,-REED	299	DO	CMTS	195	797	992	A	110	30	22	BDADDB
263	00430604	NEW-ULM-4	247	PC	CMTS	83	784	867	A	110	30	20	BDDAAA
264	00209603	NEW-ULM-24	71	PC	QBAA	38	761.70001	800	A	110	30	21	BCCAAA
265	00490814	MW-2	25	AB	QWTA	15	875	890	S	110	30	20	BDCABD
266	00241334	NEW-ULM-4	246	PC	-	90	780	870	U	110	30	20	ACCBBC
267	00509670	NEW-ULM-OB-6	70	OB	QBAA	9	785	794	A	110	30	21	BDCBDD
268	00485106	MW-5	25	AB	QWTA	14	875	889	S	110	30	20	BDCCBD
269	00509669	NEW-ULM-TW-6	70	AB	QBAA	9	785	794	S	110	30	21	BDCCAA
270	00209601	NEW-ULM-TW-2	68	TW	-	0	0	795	-	110	30	21	BCCDCB

Appendix C - Table 14
EPA Class V and MDH Located Wells (Figure 11)
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New Ulm, Minnesota

PCSI-ID	Unique Number	Well Name	Depth Drilled	Use Code	Aquifer	Water Table (ft-bgs)	Water Table (amsl)	Elevation	Status Code	Township	Range	Section	Subsection
271	W0006892	-	0	-	-	0	0	968	-	110	30	22	BCDDDA
272	00272788	BURDICK-GRAIN-CO.	188	CO	CMTS	10	802	812	A	110	30	20	DAABBB
273	00402852	ZENK,-BILL	192	DO	QBAA	150	820	970	A	110	30	22	DBBBBC
274	00509678	SCHMITZ,-CHARLES	350	DO	CMTS	185	788	973	A	110	30	22	CABACA
275	00430603	NEW-ULM-TW-FILTER-PLANT	230	AB	CMTS	98	772	870	S	110	30	20	DBBDCA
276	00688446	MW-11	26	AB	QBUA	14	807.5	821	S	110	30	20	DACAAA
277	W0007441	-	0	-	-	0	0	971	-	110	30	22	CBCAAA
278	00491509	MW-3	25	AB	QWTA	20	803	823	S	110	30	20	DACABD
279	00180635	MUELLER,-LOUIS	347	DO	CMTS	160	790	950	A	110	30	22	CBCABC
280	00491507	MW-1	32	AB	QWTA	20	808	828	S	110	30	20	DACACC
281	W0007877	-	0	-	-	0	0	968	-	110	30	22	CBCADA
282	00481146	DAUER,-MARK	325	DO	CMTS	148	802	950	A	110	30	22	CBDCBB
283	00520956	NEW-ULM-27	166	PC	QBAA	18	774.09998	792	A	110	30	21	CDAADB
284	00513011	NEW-ULM-26	96	PC	QBAA	32	760.29999	792	A	110	30	21	CDAADB
285	00241335	NEW-ULM-6	212	PC	CMTS	60	779	839	A	110	30	20	DDCABC
286	00241339	NEW-ULM-22	85	PC	QBAA	33	759	792	A	110	30	21	CDDBDB
287	00241340	NEW-ULM-23	206	PC	CMTS	28	779	807	A	110	30	21	CDDBDB
288	W0007180	-	0	-	-	0	0	938	-	110	30	27	BABBAB
289	00532697	BROWN-CO.	53	EL	-	0	0	923	A	110	30	29	BAADAA
290	00627122	BUEGLER,-DARREN	335	DO	-	160	781	941	A	110	30	27	BABBCB
291	W0006906	-	0	-	-	0	0	939	-	110	30	27	BABBCC
292	00532696	BROWN-CO.	42	EL	-	0	0	923	A	110	30	29	BAADAD
293	00423619	WILKE,-STEVE	200	DO	PUDF	113	790	903	A	110	30	27	BBADC
294	00798042	BRIGGS,-KEVIN-&-NICOLE	184	DO	-	121	790.09998	911.09998	-	110	30	27	BDBBAB
295	00609784	WELCOME-TO-OUR-HOME	25	EL	-	0	0	848	A	110	30	28	BCBDAC
296	W0007179	-	0	-	-	0	0	901	-	110	30	27	BDCDAD
297	W0006903	-	0	-	-	0	0	900	-	110	30	27	CAAABC
298	00180644	ECKSTEIN,-BRADLEY	124	DO	QBUA	96	808	904	A	110	30	27	DBBBCC
299	00533314	-	33	AB	QWTA	29	863.5	892	S	110	30	28	CDBCBC
300	00533315	-	32	AB	QWTA	25	864	889	S	110	30	28	CDBCCB
301	00533313	-	33	AB	QWTA	29	863.5	892	S	110	30	28	CCADDB
302	00214970	GEISHARDT,-WALLACE	206	DO	CMTS	30	785	815	A	110	30	33	AABCAD

Appendix C - Table 15
MDH Unlocated Wells (Figure 12)
Part II Wellhead Protection Plan
New Ulm, Minnesota

Unique Number	Well Name	Use	Date Drilled	Water Table (ft bgs)	Water Table (amsl)	Status	Township	Range	Direction	Section	Subsection
00764058	FINKE, TOM	DO	20081003	-	-	A	110	30	W	8	ACD
00272873	NEW ULM TEST HOLE 1	TW	19670619	-	-	A	110	30	W	17	-
00154630	CITY OF NEW ULM	OB	19891103	28	-	A	110	30	W	21	BAB
00458659	MNDOT MW-1	AB	19891219	16.8	-	S	110	30	W	21	ACC
00576198	MW -2	MW	19970120	-	-	A	110	30	W	20	-
00576197	MIDWAY OIL COMPANY	MW	19970120	-	-	A	110	30	W	20	-
00576199	MW-1	MW	19970120	-	-	A	110	30	W	20	-
00209599	MN.HWY DEPT.		19610815	9	-	A	110	30	W	21	
00243641	CITY OF NEW ULM	OB	19660310	9	-	U	110	30	W	19	DBA
00465893	MW-1	AB	19900730	18	-	S	110	30	W	20	DBD
00643531	MW-6D	AB	20000630	-	-	S	110	30	W	20	DAC
00643530	MW-2D	AB	20000630	-	-	S	110	30	W	20	DAC
00513023	MW	MW	19920731	-	-	A	110	30	W	21	DBD
00688447	MW 12	AB	20021219	-	-	S	110	30	W	20	DDB

Appendix C - Table 16
MDA's "What's In My Neighborhood" (Figure 13)
Part II Wellhead Protection Plan
New Ulm, Minnesota

Case file #	INVLOCID	Site Name	Inv. Type	Inv. Status	Date Closed	Contaminant	Location Descr.	Corr. Action Type	Remediation Method
CF-11395	17609	NTA LIMITED	Emergency	Closed	7/22/2007	Unknown	East of New Ulm, Hwy 14 and 15	Unknown	Unknown
KDR125000224	181101001838	CRYSTAL VALLEY COOP	Emergency	Closed	9/6/2011	Unknown	New Ulm	Unknown	Unknown
CF-8459	14884	DAKOTA MINNESOTA & EASTERN RR	Emergency	Closed	12/29/2003	Fertilizer	1101 N FRONT ST	-	-
0000002520	-	Comprehensive	Comprehensive	Closed	2/5/1996	Pesticides & Fertilizer	-	-	-
0000007297	-	Voluntary	Voluntary	Closed	2/13/1997	Unknown	-	-	-
0000007358	-	Voluntary	Voluntary	Closed	12/23/1998	Unknown	-	-	-
0000015630	-	Emergency	Emergency	Closed	8/31/2004	Fertilizer	New Ulm	-	-
0000000318	-	Comprehensive	Comprehensive	Closed	2/5/1996	Unknown	-	-	-
0000016645	-	Comprehensive	Comprehensive	Closed	12/20/2006	Fertilizer	AB-	-	-

Appendix C - Table 17
DWS 377 Potential Contaminant Source Index
Part II Wellhead Protection Plan
New Ulm, Minnesota

PCSI_ID	PIN	FAC_NAME	ADDRESS	CITY	ZIPS_CODE	PCS_C	STATUS_C	MAT_C	PROGRAM_ID	TOTAL	COMMENT	DWS_ID	GW_DWS_VUL	SW_DWS_VUL	PRIORITY_C	UTM Zone 15N x Coordinate (m)	UTM Zone 15N Y Coordiante (m)
1	-	Caterpillar Paving Products Inc	2120 Broadway St N	New Ulm	56073	UST	I	F000	638	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=1902	377	Moderate	-	1	381833.6572	4910242.777
2	-	Dittrich Specialties	2110 N Broadway	New Ulm	56073	UST	I	F000	711	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214599	377	Moderate	-	1	381855.6198	4910209.638
3	00157003200320	J & R Schugel Trucking Inc	2026 N Broadway	New Ulm	56073	LUST	C	F000	3246	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214576	377	Moderate	-	1	382033.4947	4909934.654
4	00157003200320	J & R Schugel Trucking Inc	2026 N Broadway	New Ulm	56073	UST	A	F000	677	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214576	377	Moderate	-	1	382033.4947	4909934.654
5	-	Aggregate Industries	1716 N Front St	New Ulm	56073	AST	A	F000	119629	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=58045931	377	Moderate	-	1	382838.6075	4909890.518
6	00157003200330	Riblet Products Inc	2010 N Broadway PO Box 82	New Ulm	56073	UST	I	F000	657	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214562	377	Moderate	-	1	382066.0439	4909884.12
7	-	3m Electrical Production Plant	1617 N Front St	New Ulm	56073	UST	I	F000	667	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=55615	377	Moderate	-	1	382921.227	4909767.141
8	-	Stadick Body Shop	1719 N Minnesota St	New Ulm	56073	UST	I	F000	11492	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=54829	377	Moderate	-	1	382406.381	4909589.527
9	-	3m Plant	1700 N Minnesota St	New Ulm	56073	LUST	C	F000	6634	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=229406	377	Moderate	-	1	382424.6591	4909584.785
10	-	3m Electrical Products Division	1700 N Minnesota St	New Ulm	56073	AST	A	F000	52402	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=229406	377	Moderate	-	1	382424.6591	4909584.785
11	00100108312120	Happy Joes Pizza	1700 N Broadway St	New Ulm	56073	LUST	C	F000	16548	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=212232	377	Moderate	-	1	382328.2414	4909550.103
12	-	Kraft Transport Facility	1414 N Front St	New Ulm	56073	LUST	C	F000	10583	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=56140	377	Moderate	-	1	383080.5921	4909547.23
13	-	Kraft Transportation Center	1414 N Front St	New Ulm	56073	LUST	C	F000	7048	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=56140	377	Moderate	-	1	383080.5921	4909547.23
14	-	Kraft Transport (truck Garage)	1414 N Front St	New Ulm	56073	UST	I	F000	716	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=56140	377	Moderate	-	1	383080.5921	4909547.23
15	00100108213130	Caseys General Store No 1745	1600 N Broadway	New Ulm	56073	LUST	C	F000	16090	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=226233	377	Moderate	-	1	382390.8802	4909441.217
16	00100108213130	Paul Sabatino Property	1600 N Broadway	New Ulm	56073	LUST	C	F000	5370	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=226233	377	Moderate	-	1	382390.8802	4909441.217
17	00100108213130	Caseys General Store #1745	1600 N Broadway	New Ulm	56073	UST	A	F000	18832	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=226233	377	Moderate	-	1	382390.8802	4909441.217
18	00132500106060	Demolition Dump	See location description	New Ulm	56073	PCS	I	W100	SA7236	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=170182	377	Moderate	-	1	383507.4377	4909436.501
19	00132500106060	Demolition Dump	See location description	New Ulm	56073	DMP	I	W100	REM03898	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=170182	377	Moderate	-	1	383507.4377	4909436.501
20	00100105001010	German Heights Townhomes	407 15th St S	New Ulm	56073	PCS	I	C001	VP7890	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=173197	377	Moderate	-	1	382631.9761	4909419.692
21	00100108901010	New Ulm North Broadway	1601 N Broadway St	New Ulm	56073	PCS	A	W100	SA289	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=73323536	377	Moderate	-	1	382350.1039	4909397.608
22	-	Minnesota Valley Test Lab	1126 N Front St	New Ulm	56073	PCS	I	C001	MND981779671	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=57381	377	Moderate	-	1	383274.3256	4909251.966
23	00100108013130	New Ulm Quickmart	1400 N Broadway	New Ulm	56073	LUST	C	F000	16432	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=187895	377	Moderate	-	1	382536.6906	4909210.985
24	00100108013130	Spur Service Station	1400 N Broadway	New Ulm	56073	LUST	C	F000	2367	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=187895	377	Moderate	-	1	382536.6906	4909210.985
25	00100108013130	New Ulm Quick Mart	1400 N Broadway	New Ulm	56073	UST	A	F000	649	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=187895	377	Moderate	-	1	382536.6906	4909210.985
26	00132500105055	MR Paving & Excavating Shop/Office	1000 N Front St	New Ulm	56073	AST	A	F000	125130	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=2368	377	Moderate	-	1	383365.8939	4909171.312
27	00132500105055	Dittrich Of Minnesota	1000 N Front St	New Ulm	56073	LUST	C	F000	1776	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=240874	377	Moderate	-	1	383367.4814	4909110.987
28	00132500104040	D & A Truck Line Inc	926 N Front St	New Ulm	56073	UST	A	F000	12837	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=50436	377	Moderate	-	1	383422.7573	4909026.351
29	00132500101010	Duane Lambrecht	810 N Front St	New Ulm	56073	PCS	I	F000	PRE0384	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214570	377	Moderate	-	1	383491.1972	4908993.583
30	00132500101010	Duane Lambrecht	810 N Front St	New Ulm	56073	PCS	I	F000	PRE0387	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214570	377	Moderate	-	1	383491.1972	4908993.583
31	00132500101010	Shelton Products	810 N Front St	New Ulm	56073	PCS	I	F000	PRE0482	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214570	377	Moderate	-	1	383491.1972	4908993.583
32	00132500101010	Shelter Products Inc	810 N Front St	New Ulm	56073	LUST	C	F000	8868	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214570	377	Moderate	-	1	383491.1972	4908993.583
33	00132500101010	Shelter Products Inc	810 N Front St	New Ulm	56073	UST	I	F000	671	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214570	377	Moderate	-	1	383491.1972	4908993.583
34	-	New Ulm Motors Inc	1224 N Broadway	New Ulm	56073	UST	A	F000	633	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214542	377	Moderate	-	1	382660.5772	4908992.531
35	-	Pagel Ford	1224 N Broadway	New Ulm	56073	AST	A	F000	54739	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214542	377	Moderate	-	1	382660.5772	4908992.531
36	-	New Ulm Truck Station	S Jct Th 14 & 15	New Ulm	56073	LUST	C	F000	2624	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=220021	377	Moderate	-	1	384995.3939	4909030.543
37	-	New Ulm Truck Station	S Jct Th 14 & 15	New Ulm	56073	UST	I	F000	8516	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=220021	377	Moderate	-	1	384995.3939	4909030.543
38	-	Terrys Auto Service	1227 N Broadway	New Ulm	56073	UST	I	F000	20422	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=227561	377	Moderate	-	1	382636.6621	4908981.061
39	00100111800100	Public Supply Well Contamination	Address Unknown	New Ulm	56073	LUST	C	F000	129	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=70606115	377	Moderate	-	1	382340.1717	4908967.323
40	-	Mn Department Of Transporation	58418 County Road 21	New Ulm	56073	AST	A	F000	55335	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=230450	377	Moderate	-	1	385057.9772	4908955.946
41	-	Mndot Truck Station Dist #7	Trunk Highway 15	New Ulm	56073	LUST	C	F000	2184	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=241072	377	Moderate	-	1	385047.6393	4908931.834
42	-	Star Bulk Transport Inc	821 N Front St	New Ulm	56073	UST	I	F000	632	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=52535	377	Moderate	-	1	383489.8964	4908902.214
43	-	Cook Sanitation & Recycling	16 Minnecon Dr	New Ulm	56073	AST	A	F000	55668	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=7653	377	Moderate	-	1	383938.1297	4908695.151
44	00100100601010	Rader Sandblasting	600 N Front St	New Ulm	56073	LUST	C	F000	9570	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=245503	377	Moderate	-	1	383583.5267	4908689.071
45	-	Northside Gargage	S 4th North St	New Ulm	56073	AST	A	F000	55850	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=230698	377	Moderate	-	1	383797.3256	4908435.441
46	-	Holiday Growers	116 3rd North St	New Ulm	56073	UST	A	F000	648	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214555	377	Moderate	-	1	383972.932	4908403.261
47	-	Gag Sheet Metal	106 3rd St N	New Ulm	56073	AST	A	F000	125285	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=57594664	377	Moderate	-	1	383955.5947	4908392.456
48	-	Minnesota Valley Transport Inc	301 N Water St	New Ulm	56073	AST	I	F000	52013	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=8647	377	Moderate	-	1	383946.9394	4908381.371
49	-	Schumacher Francis	301 N Water St	New Ulm	56073	AST	A	F000	670	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=8647	377	Moderate	-	1	383946.9394	4908381.371
50	-	Farmers Coop of Hanska Burdick Location	201 N Water St	New Ulm	56073	AST	A	F000	125151	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=56454242	377	Moderate	-	1	383997.5812	4908330.444
51	00100100311110	Former Green House	310 N Valley St	New Ulm	56073	LUST	C	F000	16520	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=205592	377	Moderate	-	1	383786.101	4908311.588
52	-	Consolidated Container Corp	209 3rd St S	New Ulm	56073	PCS	I	C001	VP12680	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=52382	377	Moderate	-	1	383794.2493	4908267
53	-	Bene Tech Inc	129 N Front St	New Ulm	56073	PCS	I	C001	VP5380	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=171968	377	Moderate	-	1	383935.4121	4908201.263
54	-	Bene Tech Tract A	129 N Front St	New Ulm	56073	PCS	I	C001	VP5381	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=171968	377	Moderate	-	1	383935.4121	4908201.263
55	-	Bene-tech Inc	129 N Front St	New Ulm	56073	UST	I	F000	688	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=171968	377	Moderate	-	1	383935.4121	4908201.263
56	-	Kraft Cold Storage	See location description	New Ulm	56073	PCS	I	C001	VP6740	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=171934	377	Moderate	-	1	384002.5936	4908128
57	-	Benetech Inc	100 N Front St	New Ulm	56073	LUST	C	F000	7704	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=244014	377	Moderate	-	1	384021.3938	4908117.263
58	-	Firmenish	N 1st St & N Front St	New Ulm	56073	LUST	C	F000	5008	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=242388	377	Moderate	-	1	384016.1892	4908114.085
59	-	Firmenich Inc.	100 N Valley St	New Ulm	56073	PCS	I	W100	SA2062	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=4559	377	Moderate	-	1	383876.9873	4908091.389
60	00100100110030	New Ulm Gas Mfg Site	See location description	New Ulm	56073	PCS	I	C001	MND982068355	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=171704	377	Moderate	-	1	383913.2814	4908079.5
61	00100100110030	New Ulm Gas Manufacturing	See location description	New Ulm	56073	PCS	I	C001	VP0260	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=171704	377	Moderate	-	1	383913.2814	4908079.5
62	00100106908080	Clark Service Station #937	326 N Broadway	New Ulm	56073	LUST	C	F000	9018	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214596	377	Moderate	-	1	383277.8656	4908073.853
63	00100106908080	Jiffy Mart	326 N Broadway	New Ulm	56073	LUST	C	F000	11025	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214596	377	Moderate	-	1	383277.8656	4908073.853
64	00100106908080	Jiffy Mart	326 N Broadway	New Ulm	56073	UST	I	F000	707	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214596	377	Moderate	-	1	383277.8656	4908073.853
65	-	Dr Ann Rotramel	309 N Minnesota St	New Ulm	56073	UST	I	F000	17621	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=225669	377	Moderate	-	1	383417.0945	4908048.58
66	00100106911110	Broadway House Parking Lot	300 N Broadway 514 N 3rd St	New Ulm	56073	LUST	C	F000	10143	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=227358	377	Moderate	-	1	383311.8261	4908043.743
67	00100106911110	Broadway House Parking Lot	300 N Broadway 514 N 3rd St	New Ulm	56073	UST	A	F000	20057	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=227358	377	Moderate	-	1	383311.8261	4908043.743
68	-	City of New Ulm Public Utilities	310 1st St N	New Ulm	56073	AST	A	F000	687	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=248	377	Moderate	-	1	383775.8662	4907959.71
69	00160700103030	City Of New Ulm - City Garage	300 1st North St	New Ulm	56073	LUST	C	F000	1294	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214550	377	Moderate	-	1	383708.7114	4907954.909
70	00160700103030	City Of New Ulm	300 1st North St	New Ulm	56073	AST	I	F000	54183	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214550	377	Moderate	-	1	383708.7114	4907954.909
71	00160700103030	City Of New Ulm	300 1st North St	New Ulm	56073	UST	I	F000	643	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214550	377	Moderate	-	1	383708.7114	4907954.909
72	00100110304040	Martinka Motor	219 N Broadway	New Ulm	56073	LUST	C	F000	11471	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214051	377	Moderate	-	1	383302.1842	4907907.45
73	00100110304040	Martinka Garage	219 N Broadway	New Ulm	56073	UST	I	F000	11353	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214051	377	Moderate	-	1	383302.1842	4907907.45
74	-	Gutenhaus	127 N Minnesota St	New Ulm	56073	LUST	C	F000	15268	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=248758	377	Moderate	-	1	383546.7253	4907846.433
75	-	Associated Milk Producers Inc	312 Center St	New Ulm	56073	AST	A	F000	52814	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=8510	377	Moderate	-	1	383841.4506	4907837.278
76	-	New Ulm CP Rail Property	1st S St and S Valley St	New Ulm	56073	LUST	C	F000	18291	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=59172765	377	Moderate	-	1	384059.4534	4907755.413
77	-	Lees Service	26 S Minnesota St	New Ulm	56073	UST	I	F000	658	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214563	377	Moderate	-	1	383667.1992	4907668.04
78	-	Formerly Retzlaff Auto Dealer	12 N Broadway	New Ulm	56073	UST	I	F000	19596	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=227233	377	Moderate	-	1	383533.6846	4907653.026

Appendix C - Table 17
DWS 377 Potential Contaminant Source Index
Part II Wellhead Protection Plan
New Ulm, Minnesota

PCSI_ID	PIN	FAC_NAME	ADDRESS	CITY	ZIPS_CODE	PCS_C	STATUS_C	MAT_C	PROGRAM_ID	TOTAL	COMMENT	DWS_ID	GW_DWS_VUL	SW_DWS_VUL	PRIORITY_C	UTM Zone 15N x Coordinate (m)	UTM Zone 15N Y Coordinate (m)
79	-	A2 Zinnia Wedding & Event Florist	15 S Broadway	New Ulm	56073	UST	I	F000	683	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214581	377	Moderate	-	1	383556.362	4907620.486
80	00100206414141	Minnesota St. Parking Lot	109 Minnesota St S	New Ulm	56073	PCS	A	W100	SA141	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=67191374	377	Moderate	-	1	383772.1804	4907574.214
81	00100206414141	City of New Ulm Parking Lot	109 Minnesota St S	New Ulm	56073	LUST	A	F000	19304	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=67191374	377	Moderate	-	1	383772.1804	4907574.214
82	00100206414141	City Center Apartments	109 Minnesota St S	New Ulm	56073	PCS	A	F000	4566	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=67191374	377	Moderate	-	1	383772.1804	4907574.214
83	00100206414141	City Center Apartments	109 S Minnesota St	New Ulm	56073	PCS	A	C001	VP31180	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=68574568	377	Moderate	-	1	383772.3352	4907574.004
84	00100206611110	Budget Mart	15 S Broadway	New Ulm	56073	LUST	C	F000	10676	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214594	377	Moderate	-	1	383624.823	4907564.789
85	00100206611110	Budget Mart #5112	15 S Broadway	New Ulm	56073	UST	A	F000	704	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214594	377	Moderate	-	1	383624.823	4907564.789
86	00100206713130	Dicks Texaco & Towing	101 S Broadway St	New Ulm	56073	LUST	C	F000	5588	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214597	377	Moderate	-	1	383644.6147	4907516.599
87	00100206713130	Dicks Auto Repair & Towing LLC	101 S Broadway St	New Ulm	56073	UST	A	F000	708	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214597	377	Moderate	-	1	383644.6147	4907516.599
88	00123000000028	Culligan Water Conditioning	400 S Valley St	New Ulm	56073	UST	I	F000	682	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214580	377	Moderate	-	1	384267.9015	4907442.109
89	00123000000028	Former Cities Service Bulk Facility	400 S Valley St	New Ulm	56073	LUST	C	F000	18299	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=59186362	377	Moderate	-	1	384267.734	4907441.95
90	00123000000020	Madsen Oil Bulk Plant	5th S Valley	New Ulm	56073	LUST	C	F000	15442	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=248840	377	Moderate	-	1	384315.0257	4907379.556
91	-	Minnesota Steel Drum Company	See location description	New Ulm	56073	PCS	I	W100	SA7237	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=170183	377	Moderate	-	1	384046.1557	4907328
92	-	Minnesota Steel Drum Co	See location description	New Ulm	56073	DMP	I	W100	REM04617	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=170183	377	Moderate	-	1	384046.1557	4907328
93	00157037300130	Saint Paul Lutheran School	126 S Payne	New Ulm	56073	LUST	C	F000	17360	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=223125	377	Moderate	-	1	383010.7702	4907042.383
94	00157037300130	Saint Pauls Lutheran School	126 S Payne	New Ulm	56073	UST	A	F000	12921	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=223125	377	Moderate	-	1	383010.7702	4907042.383
95	00177000101010	City of New Ulm Recreation Center	122 S Garden St	New Ulm	56073	LUST	C	F000	18808	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=63342280	377	Moderate	-	1	382863.7675	4906879.848
96	00177000101010	City of New Ulm Recreation Center	122 S Garden St	New Ulm	56073	UST	A	F000	11491	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=63342280	377	Moderate	-	1	382863.7675	4906879.848
97	00157037400140	Jefferson Middle School	318 Payne St S	New Ulm	56073	UST	A	F000	662	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=51608	377	Moderate	-	1	383101.6039	4906839.891
98	00157037400140	New Ulm Jefferson Elementary School	Between Payne St & Garden St	New Ulm	56073	LUST	C	F000	1341	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=248528	377	Moderate	-	1	383098.7122	4906839.363
99	00100202703030	Origo Inc	1220 S Valley St	New Ulm	56073	LUST	C	F000	17138	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=55105	377	Moderate	-	1	384878.092	4906496.422
100	00100202703030	ORIGO	1220 S Valley St	New Ulm	56073	AST	A	F000	124773	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=55105	377	Moderate	-	1	384878.092	4906496.422
101	00100202501010	Conoco Station	1400 S Valley St	New Ulm	56073	LUST	C	F000	14836	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=51238	377	Moderate	-	1	384965.082	4906369.172
102	00100202501010	Harmening Oil	1400 S Valley St	New Ulm	56073	LUST	C	F000	17895	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=51238	377	Moderate	-	1	384965.082	4906369.172
103	00100202501010	Harmening Oil Company	1400 S Valley St	New Ulm	56073	LUST	C	F000	5165	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=51238	377	Moderate	-	1	384965.082	4906369.172
104	00100202501010	Harmening Oil & Trucking Inc	1400 S Valley St	New Ulm	56073	UST	A	F000	5711	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=51238	377	Moderate	-	1	384965.082	4906369.172
105	-	New Ulm Bus Lines Inc	1400 S Minnesota St	New Ulm	56073	UST	I	F000	669	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=8529	377	Moderate	-	1	384658.7497	4906155.925
106	00100202301010	Former Turbis Oil Bulk Plant	1600 S Valley St	New Ulm	56073	LUST	C	F000	6715	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=243483	377	Moderate	-	1	385127.8006	4906130.882
107	00100207904040	Hy-Vee Foods	1315 S Broadway	New Ulm	56073	PCS	I	C001	VP4530	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=172171	377	Moderate	-	1	384581.6566	4906129.5
108	00100207904040	Hy-Vee Foods	1315 S Broadway	New Ulm	56073	PCS	I	C001	VP4531	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=172171	377	Moderate	-	1	384581.6566	4906129.5
109	00100207904040	Hy-Vee Taco John's	1315 S Broadway	New Ulm	56073	PCS	I	C001	VP4532	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=172171	377	Moderate	-	1	384581.6566	4906129.5
110	-	New Ulm Motel & Motor Mart	1427 S Broadway	New Ulm	56073	UST	I	F000	646	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=214553	377	Moderate	-	1	384572.9628	4906068.826
111	00100205001010	German Heights Aprtments	421 15th St S	New Ulm	56073	LUST	C	F000	9906	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=245637	377	Moderate	-	1	384778.8084	4906053.772
112	-	New Ulm Steel and Recycling	218 19th South St	New Ulm	56073	PCS	I	F000	3750	1	http://cf.pca.state.mn.us/wimn/siteInfo.cfm?siteid=1227	377	Moderate	-	1	385215.0459	4905748.078
113	-	URBAN - INDUSTRIAL (ON RP'S LOADING DOC	2120 N Broadway	New Ulm	56073	SPL	U	-	25720	1	SMOKING 55 GALLON CONTAINER ON LOADING DOCK. WASTE MATERIALS REPORTED TO BE PAINT THINNER, GLOVES, MASKS. FD ON SCENE.	377	Moderate	-	1	381764.91	4910331.219
114	-	Caterpillar Paving Products on loading dock	2108 N BROADWAY	New Ulm	56073	SPL	U	C000	25794	1	HAVE A SMOKING BARREL ON LOADIND DOCK WITH PAINT THINNER, RUBBER GLOVES AND MASKS. ONE PERSON PROBLEMS BREATHING.	377	Moderate	-	1	381824.7467	4910240.717
115	-	American Art Stone	2025 North Broadway	New Ulm	56073	SPL	U	W710	93717	1	Caller reporting a spill happened between 3:00 & 4:00 yesterday but he wasn't notified until around 7:15 today. A truck was hauling rock aggregate and when it lifted up the box to dump it blew a hydraulic line onto the class 5 gravel in the yard. It pool	377	Moderate	-	1	382025.749	4909923.777
116	-	Forst Transfer animal fat spill from tanker	405 19th Ave North	New Ulm	56073	SPL	U	A000	69526	1	Caller reporting leak from tanker. Tanker disconnected while going down road and is leaking due to damage. RP is in the process of cleanup. RP will need to transfer to another tank.	377	Moderate	-	1	382376.0998	4909861.588
117	-	DM & E Railroad	1500 N Front St	New Ulm	56073	SPL	U	-	65928	1	**No file** Caller reporting car derail in New Ulm. 3 cars are tipped and have a small leak in one. 5 cars have derailed. Why train derailed has not been determined as yet. Cars have not been identified for vertain as to what they carry.	377	Moderate	-	1	382934.7024	4909755.865
118	-	Hanska Grain Elevator, Corn pile waste comp	Water Street	New Ulm	56073	SPL	U	-	67867	1	caller said there is rotting corn that is piled next to the river, the caller thinks it may be draining into the Minnesota River.	377	Moderate	-	1	383150.7573	4909656.239
119	-	3M	1700 N Minnesota St	New Ulm	56073	SPL	U	W710	30428	1	A SMALL PIN HOL LEAK IN CHILLER RELEASED PRODUCT FOR LAST 30 DAYS SPILL MOST LIKELY WASHED TO MINNESOTA RIVER. TAKEN OUT OF SERVICE	377	Moderate	-	1	382390.0697	4909625.652
120	-	3M	1700 N Minnesota St	New Ulm	56073	SPL	U	W710	30428	1	A SMALL PIN HOL LEAK IN CHILLER RELEASED PRODUCT FOR LAST 30 DAYS SPILL MOST LIKELY WASHED TO MINNESOTA RIVER. TAKEN OUT OF SERVICE	377	Moderate	-	1	382390.0697	4909625.652
121	-	3M - New Ulm, Electrical Products Division	1700 N Minnesota St	New Ulm	56073	SPL	U	-	65377	1	Caller reporting sprinklers went off during a small fire. Water made it to storm sewer. Caller reports fire was very small so had little contaminants in water. Fire Department was at scene. Associated Spill: SP 64017	377	Moderate	-	1	382390.0697	4909625.652
122	-	3M - New Ulm - hydraulic oil spill to concrete	1700 North Minnesota Street	New Ulm	56073	SPL	U	W710	82371	1	Conference call, caller's reporting a 15 gallon hydraulic oil spill from a compactor when a hose broke. All contained on concrete immediately after the release. RP is in the process of cleaning up. Paul's contact # 651-737-3622	377	Moderate	-	1	382390.0697	4909625.652
123	-	3M - New Ulm, Electrical Products Division,	1700 North Minnesota Street	New Ulm	56073	SPL	U	-	72668	1	Caller reporting filter failure caused spill of material from filter to roof. Spill has been cleaned and containerized.	377	Moderate	-	1	382390.0697	4909625.652
124	-	3M wastewater release outside Bldg 10	1700 North Minnesota Street	New Ulm	56073	SPL	U	W000	88642	1	Personnel added a material to the loop for cleaning out rust, causing it to foam up and overflow the cooling tower. Water went into the storm water drain and 1/2 mile to the river. Put down mats and contained some around the towers.	377	Moderate	-	1	382390.0697	4909625.652
125	-	KRAFT GENERAL FOODS TRANSPORT DIVISIO	1414 N Front St	New Ulm	56073	SPL	U	F000	22792	1	*NO FILE*	377	Moderate	-	1	383064.1102	4909559.251
126	-	Casey's General Store	1600 N Broadway	New Ulm	56073	SPL	U	F000	52460	1	Customer had ruptured tank. Contained and cleaned up with hazmat bags; to sun-dry for reuse.	377	Moderate	-	1	382379.8691	4909403.399
127	-	Casey's General Store	1600 N Broadway	New Ulm	56073	SPL	U	F000	52460	1	Customer had ruptured tank. Contained and cleaned up with hazmat bags; to sun-dry for reuse.	377	Moderate	-	1	382379.8691	4909403.399

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Part II Wellhead Protection Plan
New Ulm, Minnesota

PCSI_ID	PIN	FAC_NAME	ADDRESS	CITY	ZIP5_CODE	PCS_C	STATUS_C	MAT_C	PROGRAM_ID	TOTAL	COMMENT	DWS_ID	GW_DWS_VUL	SW_DWS_VUL	PRIORITY_C	UTM Zone 15N x Coordinate (m)	UTM Zone 15N Y Coordiante (m)
128	-	MINNESOTA VALLEY TESTING	1126 N FRONT St	New Ulm	56073	SPL	U	S000	17603	1	Bumped satellite container under hood. Solvent spill clean-up ki will go to Aptus.	377	Moderate	-	1	383260.0841	4909258.845
129	-	DITTRICH OF MINNESOTA	1000 N Front St	New Ulm	56073	SPL	U	F000	8888	1	-	377	Moderate	-	1	383347.7561	4909124.023
130	-	DITTRICH OF MINNESOTA	1000 N Front St	New Ulm	56073	SPL	U	F000	8888	1	-	377	Moderate	-	1	383347.7561	4909124.023
131	-	Kentucky Fried Chicken cooking oil spill	1301 N Broadway Street	New Ulm	56073	SPL	U	A000	74224	1	RP's drains were plugged & waste water was dumped in the cooking waste oil and overflowed into the alley. Caller advised RP to put flor dri down on spill to stop it from going into storm drain and now has a question on disposal of flor dri.	377	Moderate	-	1	382575.0684	4909072.978
132	-	AL JOHNSON TRUCKING INC	Highway 15	New Ulm	56073	SPL	U	F000	22130	1	*FILE WITH DK*	377	Moderate	-	1	384892.0802	4909043.167
133	-	KLOSSNER COOP OIL	Highway 15	New Ulm	56073	SPL	U	F000	19282	1	*NO FILE*	377	Moderate	-	1	384892.0802	4909043.167
134	-	UNKNOWN	810 N Front St	New Ulm	56073	SPL	U	-	25669	1	BARRLES FOUND ON ABOVE LISTED PROPERTY AFTER FLOOD WATERS HAVE RECEEDED. NO LABELS ON CONTAINERS UNSURE OD CONTENTS.	377	Moderate	-	1	383482.0837	4908920.512
135	-	UNKNOWN	810 N Front St	New Ulm	56073	SPL	U	-	25669	1	BARRLES FOUND ON ABOVE LISTED PROPERTY AFTER FLOOD WATERS HAVE RECEEDED. NO LABELS ON CONTAINERS UNSURE OD CONTENTS.	377	Moderate	-	1	383482.0837	4908920.512
136	-	Dustin Scharbach-dumping complaint-auto fl	1014 North Broadway Street	New Ulm	56073	SPL	U	F000	74260	1	Caller reports that person works on vehicles and than dumps fluids to the ground (driveway). Spill goes down short driveway and alley to storm sewer. This has been going on for some time, better than ten years. Caller will also contact local police about	377	Moderate	-	1	382787.288	4908781.804
137	-	Resident ? New Ulm FD	523 N Front St	New Ulm	56073	SPL	U	F000	75920	1	Ruptured gas tank on a van about 5 gallons has mixed with snow melt. No longer spilling. RP is at a relatives home. The total estimated amount of snow melt gas mix is 150 gallons.	377	Moderate	-	1	383673.4022	4908627.799
138	-	MINNESOTA VALLEY TRANSPORT	301 N Water St	New Ulm	56073	SPL	U	F000	29144	1	TRUCKS HAVE BEEN OVERFILLING MANY TIMES AND NOTHING IS DONE FOR CLEAN UP. MINNESOTA RIVER IS VERY CLOSE.	377	Moderate	-	1	383944.3092	4908391.954
139	-	Intersection	3rd St N & Front St	New Ulm	56073	SPL	U	-	61139	1	**No file** Caller reporting that the RP's truck was hauling hydraulic equipment and a piece fell off his flat bed causing the release. A public works crew contained the material with floor-dri and will clean it up. No assistance needed.	377	Moderate	-	1	383872.7492	4908330.496
140	-	FARMERS COOP HANSKA	201 N WATER St	New Ulm	56073	SPL	U	A000	22834	1	Structural failure of a 200,000 bushel capacity grain elevator. product spilled onto the surrounding river bank and into the MN R	377	Moderate	-	1	384003.4498	4908273.386
141	-	Ileagal dumping of Industrial waste into storm	north spring st between 1 and 2nd n	New Ulm	56073	SPL	U	-	76255	1	Caller caught two guys dumping old fish water from tanks on a flat bed while filling the tanks with fresh water. The water was complete with fins, blood, scales, most of which is still on the parking lot, and some went to the storm sewer. The guys we	377	Moderate	-	1	383939.4392	4908209.47
142	-	WASTE WATER FACILITY	306 N German	New Ulm	56073	SPL	U	C000	24374	1	HYDROFLOUROUS ACID	377	Moderate	-	1	383533.0235	4908120.966
143	-	City of New Ulm - Water Treatment Plant, ab	3rd North & German St	New Ulm	56073	SPL	U	-	67669	1	Two 55 gallon barrels were found sitting on the control structure of a pond on top of the grate, the barrels said 10W30 oil the barrels are empty, the Police are coming to take pictures. There is no sheen, or sign of a spill.	377	Moderate	-	1	383538.4631	4908106.166
144	-	City of New Ulm - Goosetown Fire Station	1st Avenue & Valley Street	New Ulm	56073	SPL	U	F000	5645	1	-	377	Moderate	-	1	383900.4208	4908038.716
145	-	NEW ULM WHOLESALE GROCERY	201 1st St	New Ulm	56073	SPL	U	-	16823	1	-	377	Moderate	-	1	383843.5536	4907993.75
146	-	NEW ULM CITY OF	300 1st North St	New Ulm	56073	SPL	U	F000	5507	1	-	377	Moderate	-	1	383774.2318	4907955.842
147	-	NEW ULM CITY OF	300 1st North St	New Ulm	56073	SPL	U	F000	5507	1	-	377	Moderate	-	1	383774.2318	4907955.842
148	-	NEW ULM PUBLIC UTILITIES	310 1st St N	New Ulm	56073	SPL	U	-	21644	1	*NO FILE*	377	Moderate	-	1	383765.543	4907950.194
149	-	City of New Ulm - Public Utilities	310 1st North St	New Ulm	56073	SPL	U	C000	70870	1	A line is leaking from bad valve on outside of containment area outside. Material is going to sanitary and being diluted. WCEC is enroute; eta 1800.	377	Moderate	-	1	383765.543	4907950.194
150	-	New Ulm Municipal Power Plant	310 1st North	New Ulm	56073	SPL	U	C000	84918	1	Gary advised that RP takes readings every 2 hours, ph alarm at 7:30 pm, started going down at 4:00 am. A coupling started to leak, part went to the ground & part went into sanitary sewer system. The pump is off. RP put soda ash on it to neutralize it.	377	Moderate	-	1	383765.543	4907950.194
151	-	LAND O LAKES	3rd St N	New Ulm	56073	SPL	U	C010	14598	1	-	377	Moderate	-	1	383246.5288	4907920.486
152	-	Marketplatz Mall- sewage to the parking lot	101 North German Street	New Ulm	56073	SPL	U	W000	86236	1	2 story building, broken sanitary sewer pipe coming from the first floor and is ruptured dumping raw sewage onto the parking lot. Hard to judge the amount of ice and raw sewage, est 40 - 50 gallons icing up. Went down and took photographs of the busted	377	Moderate	-	1	383680.2639	4907889.909
153	-	AMPI PLANT	312 Center St	New Ulm	56073	SPL	U	C000	21865	1	*NO FILE*	377	Moderate	-	1	383909.878	4907882.203
154	-	UNKNOWN	312 Center St	New Ulm	56073	SPL	U	F000	12605	1	-	377	Moderate	-	1	383909.878	4907882.203
155	-	AMPI - New Ulm milk to storm	312 Center Street	New Ulm	56073	SPL	U	A000	71341	1	Caller reporting valved air valve caused release to storm drain that leads to the Minnesota River. Release will not be recovered. AMPI spoke with City Public Works. Public Works advised that recovery was not possible.	377	Moderate	-	1	383909.878	4907882.203
156	-	UNKNOWN	CENTER & GERMAN St	New Ulm	56073	SPL	U	F000	5608	1	-	377	Moderate	-	1	383756.2813	4907780.003
157	-	Origo Warehouse	222 1st St S	New Ulm	56073	SPL	U	-	62854	1	Accidently ran a tank over and it went down the sewer. They have bought a plug for the sewer. The sewer is currently being cleaned out in cooperation with the AMPI butter fire.	377	Moderate	-	1	383978.021	4907761.076
158	-	BENGSTON BROTHERS TRUCKING	Highway 14 W and 20th St N	New Ulm	56073	SPL	U	F000	13754	1	-	377	Moderate	-	1	383472.7781	4907589.451
159	-	MINNESOTA DEPARTMENT OF TRANSPORTA	SEVEN miles N.OF NEW ULM on HIGHWA	New Ulm	56073	SPL	U	-	13951	1	-	377	Moderate	-	1	383472.7781	4907589.451
160	-	NTA Limited - diesel fuel in New Ulm	Hwy 14 and Hwy 15	New Ulm	56073	SPL	U	F000	69796	1	State Patrol reporting that semi trailer came off the cab, diesel fuel spilled from the refrigeration unit on the trailer and is on the highway. State Patrol is going to have the local Fire Department put down sand. Truck was hauling farm chemicals, unkno	377	Moderate	-	1	383472.7781	4907589.451
161	-	New Ulm FD	Hwy 14 and Hwy 15	New Ulm	56073	SPL	U	F000	53607	1	Caller stated that he responded to a accident near there town, the vehicule was a truck that jack knifed and had spilled 150 gal of diesel from the saddle tanks. Caller believes that road conitions caused the accident.	377	Moderate	-	1	383472.7781	4907589.451

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162	-	MIELKE OIL	Hwy 14 and Hwy 15	New Ulm	56073	SPL	U	F000	25470	1	TANKER IN ACCIDENT, ROLLED OVER AND ON FIRE. POSSIBLY ETHANOL IN TRUCK UNSURE. SAND BAGS BEING PUT DOWN TO CONTAIN PRODUCT.	377	Moderate	-	1	383472.7781	4907589.451
163	-	MIELKE OIL	Hwy 14 and Hwy 15	New Ulm	56073	SPL	U	F000	25470	1	TANKER IN ACCIDENT, ROLLED OVER AND ON FIRE. POSSIBLY ETHANOL IN TRUCK UNSURE. SAND BAGS BEING PUT DOWN TO CONTAIN PRODUCT.	377	Moderate	-	1	383472.7781	4907589.451
164	-	FARMER	ROUTE 3	New Ulm	56073	SPL	U	C010	21260	1	*NO FILE*	377	Moderate	-	1	383472.7781	4907589.451
165	-	JEFFERSON ELEMENTARY	BTWN PAYNE & GARDEN St	New Ulm	56073	SPL	U	F000	5601	1	-	377	Moderate	-	1	383472.7781	4907589.451
166	-	M.R. Paving & Excavating	Hwy 14, 15 miles E of New Ulm	New Ulm	56073	SPL	U	F000	50285	1	Accident involving semi-tractor transport. Release of an estimated 20-25 gallons of diesel fuel, from onboard saddle tanks, to road surface. FD constructed sand dike to contain spill; SP on scene.	377	Moderate	-	1	383472.7781	4907589.451
167	-	Tom Gieseke Homestead	RR 3 Box 190	New Ulm	56073	SPL	U	A050	53170	1	Landowner advised to report incident to SDO. MS. Tina Rosenstein, Nicollet County Environmental Services (ES) investigated release. Manure, milkhouse waste impacted tile line and discharged to twp drainway. No standing/moving water rpt'dly in ditch. R	377	Moderate	-	1	383472.7781	4907589.451
168	-	Tom Gieseke Homestead	RR 3 Box 190	New Ulm	56073	SPL	U	A000	53170	1	Landowner advised to report incident to SDO. MS. Tina Rosenstein, Nicollet County Environmental Services (ES) investigated release. Manure, milkhouse waste impacted tile line and discharged to twp drainway. No standing/moving water rpt'dly in ditch. R	377	Moderate	-	1	383472.7781	4907589.451
169	-	Cottonwood River	Address Unknown	New Ulm	56073	SPL	U	A050	55528	1	**No file** Caller received a report from New Ulm DNR staff of foam on the river that smells like manure. Foam has built up high enough that it is touching over-hanging trees. No evidence of a fish kill.	377	Moderate	-	1	383472.7781	4907589.451
170	-	Minnesota River	County 27 bridge	New Ulm	56073	SPL	U	F000	57246	1	**No file** Material on river thought to be related to a spill at the Conoco gas station this past weekend. Local FD & PD have responded, FD diked to prevent further impact on the waterway. Weekend spill DO # 39209.	377	Moderate	-	1	383472.7781	4907589.451
171	-	sewage overflow-Cty of New Ulm	Spring St and 14th N	New Ulm	56073	SPL	U	W000	58815	1	**NO FILE** Overflow from manhole to ditch adjacent to railroad tracks; in the woods. Contained, soaked in. Water, no solids. Cause unknown.	377	Moderate	-	1	383472.7781	4907589.451
172	-	Morgan Creek/ Blue Earth County	Were Creek crosses Hwy 68	New Ulm	56073	SPL	U	-	62657	1	caller said that when driving over the Creek yesterday, the water is green. Caller said there is a vineyard in the area. The area is for small acreage type farms.	377	Moderate	-	1	383472.7781	4907589.451
173	-	Ground Zero wash bay grit spill	Between 12 & 13 Av N, between Minne	New Ulm	56073	SPL	U	-	68744	1	A truck with a tank that is used to cleanout grease pits burst open spilling its content the product is up an alley and is seeping into garages and yards.	377	Moderate	-	1	383472.7781	4907589.451
174	-	Crystal Valley Coop - hydraulic oil	along hwy 15, 1/4 n of cty rd 20	New Ulm	56073	SPL	U	W710	69624	1	Caller reporting spill of hydraulic fluid due to hose rupture while loading another equipment with dry fertilizer. Spill cleaned up with absorbent. Some went onto pavement and gravel.	377	Moderate	-	1	383472.7781	4907589.451
175	-	Tri-State Grease and Tallow crude veg. oil spi	12 South St & Valley Street interse	New Ulm	56073	SPL	U	A000	70889	1	DNR drove by and saw company working on a spill and called PD. PD contacted FD. The cap came off a recirculation pump and it pumped vegetable oil out onto the gravel ground, along side the railroad tracks and into the street. The spill was contained befo	377	Moderate	-	1	383472.7781	4907589.451
176	-	Schutz Plumbing & Htg wastewater release @	20th Street Lift Station	New Ulm	56073	SPL	U	W000	71210	1	Septic hauler from a local pump shop had 2100 gallons in his tank only 30 gallons spilled. Put a little pressure on hose in manhole and hose came out. The pressure was shut down right away. Some went on the street. Can't do anything. It went down curb	377	Moderate	-	1	383472.7781	4907589.451
177	-	New Ulm - gasoline spill to street	intersection of 20th south and Sout	New Ulm	56073	SPL	U	F000	73257	1	Caller reporting an individual lost his gas tank off his truck spilling material to street. Fire department put absorbents down and cleaned spill. Foam was put down on the what remained. Absorbents were taken by individual for disposal.	377	Moderate	-	1	383472.7781	4907589.451
178	-	Residential Gasoline Spill - New Ulm	End of Driveway	New Ulm	56073	SPL	U	F000	74668	1	Resident with leaking gas tank parked in driveway, gasoline Spill to Curb. FD on scene.	377	Moderate	-	1	383472.7781	4907589.451
179	-	Unknown trucking company	Highway 14 - 2 Mi So. of New Ulm	New Ulm	56073	SPL	U	F000	55782	1	**No file** Truck / car accident. Saddle tanks ruptured and fuel burned off, Hwy is still a little slick so they will be putting down sand. No trucking company info due to cab being burned up. Truck driver was taken to the hospital.	377	Moderate	-	1	383472.7781	4907589.451
180	-	Unknown - car in swamp	155th Avenue So. of County Road 257	New Ulm	56073	SPL	U	F000	63012	1	Caller reports that vehicle (van) rolled over and spilled engine oil into swamp. Oil has not been recovered. Owner (RP) of vehicle has not been determined (possible theft).	377	Moderate	-	1	383472.7781	4907589.451
181	-	AMPI Butter Plant Fire	Minnesota River	New Ulm	56073	SPL	U	-	65363	1	Caller reporting that butter is still coming up through the storm sewer from the spill at butter plant last winter (report 66145) and making it to the river. Citizens are complaining that something needs to be done.	377	Moderate	-	1	383472.7781	4907589.451
182	-	Farmer Trucking - Diesel Fuel	5 miles south of New Ulm on Hwy 15	New Ulm	56073	SPL	U	F000	76882	1	Caller reporting semi hauling pigs hit guard rail and is leaking fuel from saddle tank. Tractor part of the semi is just off bridge. No leak to river at this time. They are containing spill at this time.	377	Moderate	-	1	383472.7781	4907589.451
183	-	Traffic accident involving tanker of road seal	mi. post 106, Hwy 14	New Ulm	56073	SPL	U	W100	81456	1	Caller reporting a spill at mile post 106, hwy 14 , east of new ulm, in the ditch. No injuries. A private party hauling biodegradable road sealantpulling a trailer with a tanker on it, 200 gallons spilled in the ditch, trailer upside downContact on Troop	377	Moderate	-	1	383472.7781	4907589.451
184	-	Danielson property alley - sewer complaint	between Center St and 1st North	New Ulm	56073	SPL	U	W000	86734	1	Caller had reported a sewer leak in January, a gal from the 'Mankato office' was out to check it out and RP cleaned up at that time. Caller noticed the plug that should be in the sewage pipe by Column C is on the concrete one foot away.	377	Moderate	-	1	383472.7781	4907589.451

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Part II Wellhead Protection Plan
New Ulm, Minnesota

PCSI_ID	PIN	FAC_NAME	ADDRESS	CITY	ZIP5_CODE	PCS_C	STATUS_C	MAT_C	PROGRAM_ID	TOTAL	COMMENT	DWS_ID	GW_DWS_VUL	SW_DWS_VUL	PRIORITY_C	UTM Zone 15N x Coordinate (m)	UTM Zone 15N Y Coordiante (m)
185	-	AMPI butter fire	Center St	New Ulm	56073	SPL	U	A000	62307	1	**No file** Fire in Butter plant, as much as 3, 000,000 pounds of butter either on fire or melted. Is running out of building, thru storm drains into the Minnesota River.	377	Moderate	-	1	382754.9805	4907122.445
186	-	Ridgeway on German	715 S German St	New Ulm	56073	SPL	U	-	62932	1	sewer lift pump failed and the water came out of the cover. Caller was called and have another Company to suck out the sewage and replace the pump. City personel on the scene.	377	Moderate	-	1	384310.113	4906939.081
187	-	Kwik Trip Store 432 gasoline spill	15212 South Broadway Street	New Ulm	56073	SPL	U	F000	68411	1	Caller reporting customer overfill. Flor dri used to absorb/clean.	377	Moderate	-	1	384058.5212	4906813.309
188	-	Cliff Viessman at Origo - edible tallow	1220 South Valley	New Ulm	56073	SPL	U	-	72022	1	See Duty Officer report 94012.	377	Moderate	-	1	384858.7741	4906568.799
189	-	Origo and Cliff Viessman - Edible Tallow	1220 South Valley	New Ulm	56073	SPL	U	-	72023	1	Caller reporting employee error in pulling hose caused spill to storm sewer and possibly river. Caller checked outfall and noticed some material. Caller not sure on cleanup. Spill might be up to 600 gallons. Material solidifies when cold.	377	Moderate	-	1	384858.7741	4906568.799
190	-	Conoco - City of New Ulm Fire Dept	1400 South Valley	New Ulm	56073	SPL	U	F000	57069	1	One of the pumps was leaking from below. The spill is contained in a gravel lot.	377	Moderate	-	1	384987.5334	4906372.799
191	-	Caller's residence, storm water complaint	1213 South State Street	New Ulm	56073	SPL	U	-	71654	1	Caller reporting business is washing their trucks and water is going to alley and down drain. Caller reports water is white in color and ends up in caller's alley and to storm. Caller has contacted city, business was advised but they keep doing the same t	377	Moderate	-	1	384329.1148	4906167.7
192	-	Creative Touch Landscape-fertilizer	421 15th S	New Ulm	56073	SPL	U	C010	61582	1	**No file** A hose blew off a tank while the RP was applying the material at the apartment. The impacted storm drain is located at 16th & German. RP told the caller that the spill was 3 gallons and their method of clean-up was to wash away the material.	377	Moderate	-	1	384776.7775	4906078.514
193	-	Industrial WW - Firmenich New Ulm	1911 South Valley	New Ulm	56073	SPL	U	W000	88458	1	A hose flopped off a truck when operator was dumping from tank to sanitary; the material ran a ten feet to a storm sewer, 200 ft to the river. Will recover what they can from the surface, but won't get anything from the sewer.	377	Moderate	-	1	385365.5836	4905814.467
194	-	New Ulm Steel and Recycling	282 19th South Street	New Ulm	56073	SPL	U	F000	93959	1	Caller reporting a backhoe started on fire when a fuel line ruptured. There was 75 gallons of diesel in it at the time. There is now > 5 gallons on the ground mixed in with water from the past rain and water from the fire truck. RP is will dike up po	377	Moderate	-	1	385193.7557	4905728.752
195	00193537103020	INTERSTATE POWER AND LIGHT COMPANY	1ST NORTH STREET AND NORTH VALLEY STR	New Ulm	56073	INJWLL	C	W000	MN-015-5X26-0001	1	Proposed Well (associated withpermit application only)	377	Moderate	-	1	382925.7992	4907219.189
196	-	SCHAEFER WELL COMPANY	58374 COUNTY ROAD 21	New Ulm	56073	INJWLL	C	W000	MN-015-5X28-0029	1	Permanently Abandoned and Approved by State (closed)	377	Low	-	1	385267.3551	4908943.219
197	06.104.1900	BRANDEL, FRANCIS	41260 581ST AVE	New Ulm	56073	WEL	A	-	00585566	1	Minnesota Well Index Located Well	377	Low	-	1	385179	4912426
198	06.104.1400		41344 581ST AVE	New Ulm	56073	WEL	U	-	W0007089	1	Minnesota Well Index Located Well	377	Low	-	1	384976	4912425
199	06.104.1900		41260 581ST AVE	New Ulm	56073	WEL	U	-	W0007090	1	Minnesota Well Index Located Well	377	Low	-	1	385176	4912405
200	06.108.2700	ALLEN	-	New Ulm	56073	WEL	A	-	00481153	1	Minnesota Well Index Located Well	377	Low	-	1	384132	4912307
201	06.108.1900	KLINGER, KENNETH	41153 597TH AVE	New Ulm	56073	WEL	A	-	00180609	1	Minnesota Well Index Located Well	377	Low	-	1	383140	4912175
202	06.108.2750		-	New Ulm	56073	WEL	U	-	W0007109	1	Minnesota Well Index Located Well	377	Low	-	1	383892	4912119
203	06.108.1905	LUX, DENNIS	41424 595TH LN	New Ulm	56073	WEL	A	-	00504581	1	Minnesota Well Index Located Well	377	Low	-	1	383432	4912116
204	06.108.2100		-	New Ulm	56073	WEL	U	-	W0008017	1	Minnesota Well Index Located Well	377	Low	-	1	383729.474	4912111.994
205	06.108.0500		41401 597TH AVE	New Ulm	56073	WEL	U	-	W0008020	1	Minnesota Well Index Located Well	377	Low	-	1	383028.213	4911904.083
206	06.108.0700	BUSHARD, DALE	59562 414TH LN	New Ulm	56073	WEL	A	-	00188693	1	Minnesota Well Index Located Well	377	Low	-	1	383225	4911867
207	06.661.0135	BUSHARD, DALE	-	New Ulm	56073	WEL	A	-	00415186	1	Minnesota Well Index Located Well	377	Low	-	1	383792	4911788
208	06.109.0200		41688 581ST AVE	New Ulm	56073	WEL	U	-	W0007118	1	Minnesota Well Index Located Well	377	Low	-	1	384465	4911776
209	06.108.3600	THOMPSON, JERRY	41427 595TH LN	New Ulm	56073	WEL	A	-	00186072	1	Minnesota Well Index Located Well	377	Low	-	1	383523	4911754
210	06.108.1200		41520 595TH LN	New Ulm	56073	WEL	U	-	W0007111	1	Minnesota Well Index Located Well	377	Low	-	1	383443	4911691
211	06.110.0300		57711 412TH ST	New Ulm	56073	WEL	U	-	W0007119	1	Minnesota Well Index Located Well	377	Low	-	1	386252	4911682
212	06.110.0300	NELSON, EUGENE & JUDY	57711 412TH ST	New Ulm	56073	WEL	A	-	00627561	1	Minnesota Well Index Located Well	377	Low	-	1	386233.086	4911680.315
213	06.108.1300	VAN ROEKEL, RICK	41544 595TH LN	New Ulm	56073	WEL	A	-	00405339	1	Minnesota Well Index Located Well	377	Low	-	1	383376	4911652
214	06.661.0120	KRAL, TERRY & LANAYE	41465 593RD AVE	New Ulm	56073	WEL	A	-	00645254	1	Minnesota Well Index Located Well	377	Low	-	1	383773.399	4911639.64
215	06.661.0110	BUSHARD, DALE	41475 593RD AVE	New Ulm	56073	WEL	A	-	00452675	1	Minnesota Well Index Located Well	377	Low	-	1	383765.494	4911566.64
216	06.108.1800		-	New Ulm	56073	WEL	U	-	W0007108	1	Minnesota Well Index Located Well	377	Low	-	1	383300	4911526
217	06.661.0090		41523 593RD AVE	New Ulm	56073	WEL	U	-	W0007112	1	Minnesota Well Index Located Well	377	Low	-	1	383842	4911476
218	06.661.0135	DRAHOTA, RONALD A.	-	New Ulm	56073	WEL	A	-	00471804	1	Minnesota Well Index Located Well	377	Low	-	1	383640	4911280
219	06.109.0200		41688 581ST AVE	New Ulm	56073	WEL	U	-	W0007110	1	Minnesota Well Index Located Well	377	Low	-	1	384046	4911193
220	06.108.4400		59038 COUNTY ROAD 21	New Ulm	56073	WEL	U	-	W0007117	1	Minnesota Well Index Located Well	377	Moderate	-	1	384200	4911025
221	06.108.4400		59038 COUNTY ROAD 21	New Ulm	56073	WEL	U	-	W0007114	1	Minnesota Well Index Located Well	377	Moderate	-	1	383952	4911002
222	06.108.4400	THOMPSON, RONALD	59038 COUNTY ROAD 21	New Ulm	56073	WEL	A	-	00585596	1	Minnesota Well Index Located Well	377	Moderate	-	1	383967	4910988
223	06.109.0800	ZENK, DAVID	58093 418TH LN	New Ulm	56073	WEL	A	-	00108748	1	Minnesota Well Index Located Well	377	Low	-	1	385402	4910948
224	06.109.0505	WALSER, DAVE	-	New Ulm	56073	WEL	A	-	00509672	1	Minnesota Well Index Located Well	377	Low	-	1	384449	4910772
225	06.116.0100		42064 581st AVE	New Ulm	56073	WEL	U	-	W0007130	1	Minnesota Well Index Located Well	377	Low	-	1	384283	4910661
226	06.116.0100	WALSER, LORI	42064 581st AVE	New Ulm	56073	WEL	A	-	00784237	1	Minnesota Well Index Located Well	377	Low	-	1	384331.7535	4910655.245
227	06.117.0405	FRITSCHE, FRED	-	New Ulm	56073	WEL	A	-	00215039	1	Minnesota Well Index Located Well	377	Moderate	-	1	384139	4910631
228	06.117.0405	STILLWELL, BLAKE	-	New Ulm	56073	WEL	U	-	00798045	1	Minnesota Well Index Located Well	377	Moderate	-	1	384143.0536	4910626.366
229	06.116.0405	ZENK, TIM	42300 STATE HIGHWAY 15	New Ulm	56073	WEL	A	-	00749513	1	Minnesota Well Index Located Well	377	Low	-	1	385577.623	4910418.079
230	06.116.0300		-	New Ulm	56073	WEL	U	-	W0007131	1	Minnesota Well Index Located Well	377	Low	-	1	384402	4910401
231	06.116.0405	ZENK, TIM	42300 STATE HIGHWAY 15	New Ulm	56073	WEL	C	-	00402896	1	Minnesota Well Index Located Well	377	Low	-	1	385574	4910364
232	06.117.0300	NEW ULM 20	-	New Ulm	56073	WEL	A	-	00209604	1	Minnesota Well Index Located Well	377	Moderate	-	1	384188.3091	4910232.29
233	00100120205050	WESSELMANN, MIKE	1925 WATER ST N	New Ulm	56073	WEL	A	-	00710351	1	Minnesota Well Index Located Well	377	Moderate	-	1	382727.704	4910222.543
234	00109000101015	ELIXIR INDUSTRIES	2100 BROADWAY ST N	New Ulm	56073	WEL	C	-	00214916	1	Minnesota Well Index Located Well	377	Moderate	-	1	381890	4910210
235	06.117.0300	NEW ULM 21	-	New Ulm	56073	WEL	A	-	00209605	1	Minnesota Well Index Located Well	377	Moderate	-	1	383942.6221	4910130.412
236	06.116.0800	SAUER, ERNST JR.	58560 COUNTY ROAD 21	New Ulm	56073	WEL	A	-	00691492	1	Minnesota Well Index Located Well	377	Low	-	1	384802.071	4909923.451
237	-	RIBLET	-	New Ulm	56073	WEL	A	-	00214948	1	Minnesota Well Index Located Well	377	Moderate	-	1	382095	4909858
238	00100104300010	MW-3	1700 MINNESOTA ST N	New Ulm	56073	WEL	A	-	00556057	1	Minnesota Well Index Located Well	377	Moderate	-	1	382566.6229	4909692.977
239	00100104300010	MW-1	1700 MINNESOTA ST N	New Ulm	56073	WEL	A	-	00555997	1	Minnesota Well Index Located Well	377	Moderate	-	1	382525.4885	4909669.667
240	00100104300010	MW-2	1700 MINNESOTA ST N	New Ulm	56073	WEL	A	-	00556056	1	Minnesota Well Index Located Well	377	Moderate	-	1	382535.0866	4909658.013
241	00199500027050	NEW ULM 19		New Ulm	56073	WEL	A	-	00241338	1	Minnesota Well Index Located Well	377	Moderate	-	1	383466.5875	4909629
242	06.116.1300	WELLNER, JIM	58162 428TH LN	New Ulm	56073	WEL	A	-	00402878	1	Minnesota Well Index Located Well	377	Low	-	1	385591	4909575

Appendix C - Table 17
DWS 377 Potential Contaminant Source Index
Part II Wellhead Protection Plan
New Ulm, Minnesota

PCSI_ID	PIN	FAC_NAME	ADDRESS	CITY	ZIPS_CODE	PCS_C	STATUS_C	MAT_C	PROGRAM_ID	TOTAL	COMMENT	DWS_ID	GW_DWS_VUL	SW_DWS_VUL	PRIORITY_C	UTM Zone 15N x Coordinate (m)	UTM Zone 15N Y Coordiante (m)
243	00199500028060	NEW ULM 18		New Ulm	56073	WEL	A	-	00241337	1	Minnesota Well Index Located Well	377	Moderate	-	1	383572.1479	4909526.603
244	06.116.1100	OAK HAVEN MOBILE HOME CT	58167 428th LN	New Ulm	56073	WEL	A	-	00209598	1	Minnesota Well Index Located Well	377	Low	-	1	385642.729	4909431.539
245	06.115.1200	WELLNER, ALTON	42924 577TH AVE	New Ulm	56073	WEL	A	-	00215046	1	Minnesota Well Index Located Well	377	Low	-	1	386268	4909297
246	-	NEW ULM TRUCK STATION	-	New Ulm	56073	WEL	A	-	00444671	1	Minnesota Well Index Located Well	377	Low	-	1	385346	4909007
247	-	NEW ULM TRUCK STATION/MN	-	New Ulm	56073	WEL	A	-	00144605	1	Minnesota Well Index Located Well	377	Low	-	1	385346	4909007
248	04.021.0100		-	New Ulm	56073	WEL	U	-	00254582	1	Minnesota Well Index Located Well	377	Moderate	-	1	384381	4908859
249	04.021.0100	NEW UMN TW	-	New Ulm	56073	WEL	U	-	00251583	1	Minnesota Well Index Located Well	377	Moderate	-	1	384519	4908856
250	04.021.1110	NEW ULM TW-2	-	New Ulm	56073	WEL	C	-	00402887	1	Minnesota Well Index Located Well	377	Moderate	-	1	384610	4908854
251	04.021.1110	NEW ULM TW	-	New Ulm	56073	WEL	U	-	00251584	1	Minnesota Well Index Located Well	377	Moderate	-	1	384579	4908850
252	04.021.0100	NEW ULM TW	-	New Ulm	56073	WEL	U	-	00251582	1	Minnesota Well Index Located Well	377	Moderate	-	1	384374	4908833
253	04.021.0100	NEW ULM TW	-	New Ulm	56073	WEL	U	-	00251585	1	Minnesota Well Index Located Well	377	Moderate	-	1	384529	4908822
254	04.021.0100	NEW ULM TW	-	New Ulm	56073	WEL	U	-	00251581	1	Minnesota Well Index Located Well	377	Moderate	-	1	384252	4908811
255	04.021.0615	BUSHARD, DALE	43252 WINDHAVEN LN	New Ulm	56073	WEL	A	-	00579811	1	Minnesota Well Index Located Well	377	Low	-	1	385681	4908775
256	00146500000010	NEW ULM TW-5		New Ulm	56073	WEL	C	-	00509667	1	Minnesota Well Index Located Well	377	Moderate	-	1	384635	4908662
257	00146500000010	NEW ULM OB-5		New Ulm	56073	WEL	A	-	00509668	1	Minnesota Well Index Located Well	377	Moderate	-	1	384658	4908618
258	-		-	New Ulm	56073	WEL	U	-	W0006388	1	Minnesota Well Index Located Well	377	Moderate	-	1	385221.094	4908571.883
259	04.021.1110	NEW ULM 25	-	New Ulm	56073	WEL	A	-	00511075	1	Minnesota Well Index Located Well	377	Moderate	-	1	384381	4908566
260	04.021.1110	NEW ULM 15	-	New Ulm	56073	WEL	I	-	00241336	1	Minnesota Well Index Located Well	377	Moderate	-	1	384381	4908566
261	04.021.1110	NEW ULM 15	-	New Ulm	56073	WEL	A	-	00188651	1	Minnesota Well Index Located Well	377	Moderate	-	1	384413	4908554
262	04.022.0215	GLAWE, REED	57556 COUNTY ROAD 21	New Ulm	56073	WEL	A	-	00659464	1	Minnesota Well Index Located Well	377	Low	-	1	386569.116	4908534.473
263	00122000000120	NEW ULM 4		New Ulm	56073	WEL	A	-	00430604	1	Minnesota Well Index Located Well	377	Low	-	1	383420.4602	4908533.248
264	04.021.1110	NEW ULM 24	-	New Ulm	56073	WEL	A	-	00209603	1	Minnesota Well Index Located Well	377	Moderate	-	1	384403	4908517
265	00100105814140	MW 2	700 MINNESOTA ST N	New Ulm	56073	WEL	C	-	00490814	1	Minnesota Well Index Located Well	377	Low	-	1	383164.91	4908515.661
266	00122000000120	NEW ULM 4		New Ulm	56073	WEL	U	-	00241334	1	Minnesota Well Index Located Well	377	Low	-	1	383408	4908509
267	00146500000010	NEW ULM OB-6		New Ulm	56073	WEL	A	-	00509670	1	Minnesota Well Index Located Well	377	Moderate	-	1	384706	4908439
268	00100107208080	MW-5	600 BROADWAY ST N	New Ulm	56073	WEL	C	-	00485106	1	Minnesota Well Index Located Well	377	Low	-	1	383071.852	4908410.959
269	00146500000010	NEW ULM TW-6		New Ulm	56073	WEL	C	-	00509669	1	Minnesota Well Index Located Well	377	Moderate	-	1	384727	4908407
270	04.021.1110	NEW ULM TW-2	-	New Ulm	56073	WEL	U	-	00209601	1	Minnesota Well Index Located Well	377	Moderate	-	1	384307	4908380
271	04.022.0200		-	New Ulm	56073	WEL	U	-	W0006892	1	Minnesota Well Index Located Well	377	Low	-	1	386185	4908328
272	00107100001010	BURDICK GRAIN CO.	200 WATER ST N	New Ulm	56073	WEL	A	-	00272788	1	Minnesota Well Index Located Well	377	Moderate	-	1	384023.3713	4908310.777
273	04.022.1005	ZENK, BILL	57531 COUNTY ROAD 21	New Ulm	56073	WEL	A	-	00402852	1	Minnesota Well Index Located Well	377	Low	-	1	386590	4908259
274	04.022.1002	SCHMITZ, CHARLES	57703 COUNTY ROAD 21	New Ulm	56073	WEL	A	-	00509678	1	Minnesota Well Index Located Well	377	Low	-	1	386314	4908225
275	00122000000120	NEW ULM TW-FILTER PLANT		New Ulm	56073	WEL	C	-	00430603	1	Minnesota Well Index Located Well	377	Low	-	1	383544	4908167
276	-	MW-11	-	New Ulm	56073	WEL	C	-	00688446	1	Minnesota Well Index Located Well	377	Moderate	-	1	383982.5076	4908132.571
277	04.022.1001		-	New Ulm	56073	WEL	U	-	W0007441	1	Minnesota Well Index Located Well	377	Low	-	1	385983	4908095
278	00100100101010	MW-3	107 FRONT ST N	New Ulm	56073	WEL	C	-	00491509	1	Minnesota Well Index Located Well	377	Moderate	-	1	383944.63	4908091.398
279	04.022.1010	MUELLER, LOUIS	58009 COUNTY ROAD 21	New Ulm	56073	WEL	A	-	00180635	1	Minnesota Well Index Located Well	377	Low	-	1	385893	4908066
280	-	MW-1	-	New Ulm	56073	WEL	C	-	00491507	1	Minnesota Well Index Located Well	377	Moderate	-	1	383906.407	4908052.68
281	04.022.1015		43778 SPRUCE HAVEN LN	New Ulm	56073	WEL	U	-	W0007877	1	Minnesota Well Index Located Well	377	Low	-	1	385991	4908032
282	04.022.1015	DAUER, MARK	43778 SPRUCE HAVEN LN	New Ulm	56073	WEL	A	-	00481146	1	Minnesota Well Index Located Well	377	Low	-	1	385981	4907979
283	04.021.1110	NEW ULM 27	-	New Ulm	56073	WEL	A	-	00520956	1	Minnesota Well Index Located Well	377	Moderate	-	1	384966	4907857
284	04.021.1110	NEW ULM 26	-	New Ulm	56073	WEL	A	-	00513011	1	Minnesota Well Index Located Well	377	Moderate	-	1	384961.8834	4907854.704
285	-	NEW ULM 6	-	New Ulm	56073	WEL	A	-	00241335	1	Minnesota Well Index Located Well	377	Moderate	-	1	383919	4907683
286	04.021.1110	NEW ULM 22	-	New Ulm	56073	WEL	A	-	00241339	1	Minnesota Well Index Located Well	377	Moderate	-	1	384850.5738	4907649.896
287	04.021.1110	NEW ULM 23	-	New Ulm	56073	WEL	A	-	00241340	1	Minnesota Well Index Located Well	377	Moderate	-	1	384849.5041	4907648.086
288	04.027.0400		-	New Ulm	56073	WEL	U	-	W0007180	1	Minnesota Well Index Located Well	377	Low	-	1	386248	4907488
289	00100210600100	BROWN CO.	14 STATE ST S	New Ulm	56073	WEL	A	-	00532697	1	Minnesota Well Index Located Well	377	Moderate	-	1	383393.1974	4907435.622
290	04.027.0500	BUEGLER, DARREN	43996 SPRUCE HAVEN LN	New Ulm	56073	WEL	A	-	00627122	1	Minnesota Well Index Located Well	377	Low	-	1	386186.1504	4907428.303
291	04.027.0500		43996 SPRUCE HAVEN LN	New Ulm	56073	WEL	U	-	W0006906	1	Minnesota Well Index Located Well	377	Low	-	1	386199	4907417
292	00100210600100	BROWN CO.	14 STATE ST S	New Ulm	56073	WEL	A	-	00532696	1	Minnesota Well Index Located Well	377	Moderate	-	1	383386.5774	4907414.152
293	04.027.0600	WILKE, STEVE	57930 US HIGHWAY 14	New Ulm	56073	WEL	A	-	00423619	1	Minnesota Well Index Located Well	377	Low	-	1	386123	4907320
294	04.027.0100	BRIGGS, KEVIN & NICOLE	57906 US HIGHWAY 14	New Ulm	56073	WEL	U	-	00798042	1	Minnesota Well Index Located Well	377	Low	-	1	386231.1459	4907079.751
295	00162500101010	WELCOME TO OUR HOME	715 GERMAN ST S	New Ulm	56073	WEL	A	-	00609784	1	Minnesota Well Index Located Well	377	Moderate	-	1	384325	4906988
296	-		-	New Ulm	56073	WEL	U	-	W0007179	1	Minnesota Well Index Located Well	377	Moderate	-	1	386365	4906754
297	04.027.2500		57585 446TH ST	New Ulm	56073	WEL	U	-	W0006903	1	Minnesota Well Index Located Well	377	Low	-	1	386490	4906652
298	04.027.2500	ECKSTEIN, BRADLEY	57585 446TH ST	New Ulm	56073	WEL	A	-	00180644	1	Minnesota Well Index Located Well	377	Low	-	1	386575	4906579
299	00100207904040		1315 BROADWAY ST S	New Ulm	56073	WEL	C	-	00533314	1	Minnesota Well Index Located Well	377	Moderate	-	1	384573.194	4906185
300	00100207904040		1315 BROADWAY ST S	New Ulm	56073	WEL	C	-	00533315	1	Minnesota Well Index Located Well	377	Moderate	-	1	384590.477	4906161.432
301	00100207904040		1315 BROADWAY ST S	New Ulm	56073	WEL	C	-	00533313	1	Minnesota Well Index Located Well	377	Moderate	-	1	384531.715	4906160.175
302	00100201901010	GEISHARDT, WALLACE		New Ulm	56073	WEL	A	-	00214970	1	Minnesota Well Index Located Well	377	Moderate	-	1	385427	4905768
303	06.661.0120	FINKE, TOM	41465 593RD AVE	New Ulm	56073	WEL	A	-	00764058	1	Minnesota Well Index Unlocated Well	377	Low	-	1	383759	4911655
304	00160700103030	MW-1		New Ulm	56073	WEL	I	-	00465893	1	Minnesota Well Index Unlocated Well	377	Moderate	-	1	383708	4908040
305	-	MW-6D	-	New Ulm	56073	WEL	I	-	00643531	1	Minnesota Well Index Unlocated Well	377	Moderate	-	1	383903	4908037
306	-	MW-2D	-	New Ulm	56073	WEL	I	-	00643530	1	Minnesota Well Index Unlocated Well	377	Moderate	-	1	383903	4908037
307	04.021.1405	MW	43252 WINDHAVEN LN	New Ulm	56073	WEL	A	-	00513023	1	Minnesota Well Index Unlocated Well	377	Moderate	-	1	385296	4908011
308	00158018201070	MW 12	219 CENTER ST	New Ulm	56073	WEL	I	-	00688447	1	Minnesota Well Index Unlocated Well	377	Moderate	-	1	383898	4907837
309	06.117.0200	NEW ULM TEST HOLE 1	500 LAFAYETTE RD	New Ulm	56073	WEL	A	-	00272873	1	Minnesota Well Index Unlocated Well	377	Moderate	-	1	383445	4909949
310	-	CITY OF NEW ULM	-	New Ulm	56073	WEL	A	-	00154630	1	Minnesota Well Index Unlocated Well	377	Moderate	-	1	384722	4909025
311	-	MNDOT MW-1	-	New Ulm	56073	WEL	I	-	00458659	1	Minnesota Well Index Unlocated Well	377	Moderate	-	1	385105	4908417
312	00122000000120	MW -2	-	New Ulm	56073	WEL	A	-	00576198	1	Minnesota Well Index Unlocated Well	377	Low	-	1	383426	4908345
313	00122000000120	MIDWAY OIL COMPANY	-	New Ulm	56073	WEL	A	-	00576197	1	Minnesota Well Index Unlocated Well	377	Low	-	1	383426	4908345
314	00122000000120	MW-1	-	New Ulm	56073	WEL	A	-	00576199	1	Minnesota Well Index Unlocated Well	377	Low	-	1	383426	4908345
315	00146500000010	MN.HWY DEPT.	-	New Ulm	56073	WEL	A	-	00209599	1	Minnesota Well Index Unlocated Well	377	Moderate	-	1	384999	4908313
316	00157017800490	CITY OF NEW ULM	-	New Ulm	56073	WEL	A	-	00243641	1	Minnesota Well Index Unlocated Well	377	Moderate	-	1	382131	4908268

Part II Wellhead Protection Plan Update

Potential Contaminant Inventory, Goals and Management Strategy

Public Water Supplier No. 1080003
SEH No. NULPU 130982 4.00

April 28, 2017

Potential Contaminant Inventory, Goals and Management Strategy
Part II Wellhead Protection Plan UpdatePart II Wellhead Protection Plan Update

Public Water Supplier No. 1080003
SEH No. NULPU 130982

April 28, 2017

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Glossary of Terms

Additional acronyms follow this glossary of terms.

Data Element. A specific type of information required by the Minnesota Department of Health to prepare a wellhead protection plan.

Drinking Water Supply Management Area (DWSMA). The area delineated using identifiable land marks that reflects the scientifically calculated wellhead protection area boundaries as closely as possible (Minnesota Rules, part 4720.5100, subpart 13).

Drinking Water Supply Management Area (DWSMA) Vulnerability. An assessment of the likelihood that the aquifer within the DWSMA is subject to impact from land and water uses within the wellhead protection area. It is based upon criteria that are specified under Minnesota Rules, part 4720.5210, subpart 3.

Emergency Response Area (ERA). The part of the wellhead protection area that is defined by a one-year time of travel within the aquifer that is used by the public water supply well (Minnesota Rules, part 4720.5250, subpart 3). It is used to set priorities for managing potential contamination sources within the DWSMA.

Inner Wellhead Management Zone (IWMZ). The land that is within 200 feet of a public water supply well (Minnesota Rules, part 4720.5100, subpart 19). The public water supplier must manage the IWMZ to help protect it from sources of pathogen or chemical contamination that may cause an acute health effect.

Surface Water Contribution Area (SWCA). In a conjunctive delineation, the geographic area that may provide recharge to the aquifer within the well capture zone, attributed to: 1) the presence of a surface hydraulic feature; and 2) the runoff of precipitation or meltwater.

Wellhead Protection (WHP). A method of preventing well contamination by effectively managing potential contamination sources in all or a portion of the well's recharge area.

Wellhead Protection Area (WHPA). The surface and subsurface area surrounding a well or well field that supplies a public water system, through which contaminants are likely to move toward and reach the well or well field (Minnesota Statutes, section 103I.005, subdivision 24).

Well Vulnerability. An assessment of the likelihood that a well is at risk to human-caused contamination, either due to its construction or indicated by criteria that are specified under Minnesota Rules, part 4720.5550, subpart 2.

Acronyms

DNR	Minnesota Department of Natural Resources
EPA	United States Environmental Protection Agency
ERA	Emergency Response Area
ft	Feet
gpm	Gallons per Minute
in	Inches
IWMZ	Inner Wellhead Protection Management Zone
MDA	Minnesota Department of Agriculture
MDH	Minnesota Department of Health
MGS	Minnesota Geological Survey
MNDNR	Minnesota Department of Natural Resources
MnDOT	Minnesota Department of Transportation
MPARS	MNDNR Permitting and Reporting System (formerly known as SWUDS)
MPCA	Minnesota Pollution Control Agency
MWI	Minnesota Well Index
NPMS	National Pipeline Mapping System
NUPUC	New Ulm Public Utilities Commission
PCSI	Potential Contaminant Source Inventory
PLS	Public Land Survey
PWSID	Public Water Supply Identification Number.
RCRA	Resource Conservation and Recovery Act
SWCD	Soil and Water Conservation District
TTHM	Trihalomethane

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Part II Wellhead Protection Plan Update

Potential Contaminant Inventory, Goals and Management Strategy

Prepared for City of New Ulm

1.0 Introduction

1.1 Background

The wellhead protection (WHP) plan for the City of New Ulm was prepared in cooperation with the Minnesota Department of Health (MDH). It contains specific actions that the City will take to fulfill WHP requirements that are specified under Minnesota Rules, part 4720.5100 to 4720.5590. Also, the support that Minnesota state agencies, federal agencies, Nicollet County and Brown County will provide is presented to identify their roles in protecting the City's drinking water supply. The plan is effective for 10 years after the approval date specified by MDH and the City is responsible for implementing its WHP plan of action as described in chapter 9 of this report. Furthermore, the City will evaluate the status of plan implementation at least every two and one half years to identify whether its WHP plan is being implemented on schedule.

1.2 Report Contents

This report is Part II of a Wellhead Protection Plan for the City of New Ulm, and includes the following:

- A review of the data elements.
- The results of the potential contaminant source inventory.
- A review of changes, issues, problems, and opportunities related to the public water supply and the identified potential contaminant sources.
- A detailed discussion of the potential contaminant source management strategies and corresponding goals, objectives, and action plans.
- A review of the wellhead/source water protection evaluation program
- An alternative water supply contingency strategy.

1.3 Appendices Content

Much of the technical information that was used to prepare this plan is contained in the appendices but is summarized in the main body of this plan.

Appendix A contains the Scoping Decision Notice No. 2 along with the assessment of data elements (and supporting data) used to prepare this plan.

Appendix B contains the Part I of the plan completed in 2016. Part I of the plan is summarized in Chapter 3. In Part I of the plan, the Wellhead Protection Area (WHPA) and Drinking Water Supply Management Area (DWSMA) were delineated, and vulnerability assessments of the wells and corresponding DWSMA were amended based on updated data available on the source water aquifer used by the municipal wells.

Appendix C contains the inventory of potential contamination sources that may present a risk to the City's drinking water. This part of the plan is Identified in Chapter 2 and discussed in Chapter 4 in terms of assigning risk to the City's water supply and is discussed as issues, problems or opportunities summarized in Chapter 6. The following tables are included as part of Appendix C:

- Table 11 MPCA's "What's in My Neighborhood"
- Table 12 Detailed Tank Information MPCA's "What's in My Neighborhood"
- Table 13 MPCA's Spills
- Table 14 EPA Class V and Minnesota Department of Health - Located Wells
- Table 15 MDH Unlocated Wells
- Table 16 MDA's "Agricultural Chemical Incidents"
- Table 17 DWS 377 Potential Contaminant Source Index

Appendix D contains the contingency strategy to provide for an alternate water supply if there is a disruption caused by contamination or mechanical failure. This part of the plan is discussed in Chapter 11.

Appendix E contains the Inner Wellhead Management Zone (IWMZ) – Potential Contaminant Source Inventory (PCSI) Report.

Appendix F contains the MDH Public Water Supply Sources Report for Old Municipal Wells (OMW).

1.4 General Information

Public Water Supply

- Name: New Ulm PUC Water/Steam Department PWSID #: 1080003
- Address: 310 First North Street
- Telephone: 507-359-8279 Fax #: 507-359-8208

Wellhead Protection Manager

- Name: George Brown
- Address: 310 First North Street
- Telephone: 507-359-8294 Email: George.Brown@ci.new-ulm.mn.us

The municipal water supply wells included in the WHP Plan are listed in Table 1.

Table 1
Water Supply Well Wells Included in WHP

Well No.	Unique Well No.
4	430604
6	241335
15	188651
18	241337
19	241338
20	209604
21	209605
22	241339
23	241340
24	209603
25	511075
26	513011
27	520956

Note: All wells are Primary status

2.0 Identification and Assessment of the Data Elements

The data elements that are included in this plan document the need for the WHP measures that will be implemented to help protect the City's water supply from potential sources of contamination. The City met with representatives from MDH on two occasions to discuss the data elements that are specified in Minnesota Rules, part 4720.5400, for preparing a WHP plan.

The first scoping meeting that was held in April, 2014 and addressed the data elements that were needed to support the delineation of the WHPA, the DWSMA, and the well and DWSMA vulnerability assessments. The second scoping meeting that was held on April 26, 2016 and discussed the data elements required to 1) identify potential risks to the public water supply and 2) develop effective management strategies to protect the public water supply in relation to the well and DWSMA vulnerability. The results of each meeting were communicated to the City by MDH through a formal scoping decision notice.

Each data element is required to be assessed for its impact on 1) the use of the public water supply well, 2) delineation of the WHPA, 3) the quality and quantity of water supplying the public water supply wells, and 4) land and groundwater uses within the DWSMA. This information is found in Appendix B.

The availability of the information relating to each data element that is used in this plan was evaluated by staff from the MDH and the City of New Ulm. During the evaluation process the City of New Ulm determined if the data element was considered an issue, concern or opportunity that the City of New Ulm must address in this plan. If this is found to be the case during data evaluation and assessment, the information will be discussed in Chapter 4 and found in Appendix C. Actions that are needed to address deficiencies found during the data element assessment process in either the quality or the amount of data are included in the plan of action (Chapter 9).

2.1 Required Data Elements

2.1.1 Physical Environment

2.1.1.1 Precipitation

This data element does not apply because there is no direct hydraulic connection between surface waters and the aquifer serving this water supply system.

2.1.1.2 Geology

Geology is a required data element and was described in Part I WHPP. Detailed geologic information is included in the Part 1 WHPP (Appendix B).

2.1.1.2.1 *Surficial Geology*

Surface elevation of the DWSMA ranges from upland City Topography, approximately 1000 feet mean sea level (msl), to approximately 800 feet msl where the Minnesota River intersects the DWSMA. Pleistocene age glacial deposits comprising of approximately 7 to 340 feet of sand and clay are found in the New Ulm area. Glacial deposits cover almost the entire Minnesota River watershed and contain the most widely used aquifers. The glacial deposits are predominantly till, an unsorted mixture of clay, silt, sand and gravel. Sand and gravel beds found in the till are the most widely used aquifers in the watershed. The sand and gravel lenses are commonly thin and discontinuous, but provide water supplies adequate for most uses (HMS 2005).

2.1.1.2.2 *Bedrock Geology*

Generally, the depth to bedrock in the New Ulm area ranges from 7 to 400 feet. The top of bedrock elevation ranges from 615 to 897 feet msl. According to the well records of the New Ulm municipal wells, bedrock was encountered at depths ranging from 30 (Municipal Well 6) to 185 feet (Municipal Well 19). The unit and depth of the uppermost bedrock unit depends on location within the DWSMA. The uppermost bedrock units are (1) Dakota Formation, an interbedded sandstone, siltstone, and mudstone, (2) Undifferentiated (Lower to Upper Cretaceous) red-brown to pale olive mudstone, siltstone and interbedded yellow-gray, very fine- to medium-grained sandstone (3) Sioux Quartzite. Underlying layers (1) and (2) consist of varying thicknesses of Geologic Units similar to those found in the Twin Cities Basin. These layers, which thin and tapper westward, include the Tunnel City Group, Wonewoc, Eu Claire, and Mt. Simon Sandstone. Underlying these layers are metamorphic and crystalline Archean and Precambrian units (MGS 2015, Meyer, et al 2011, HMS 2001, HMS 2005, and MNDNR 2011).

2.1.1.3 Soils

This data element does not apply because there is no direct hydraulic connection between surface waters and the aquifer serving this water supply system.

2.1.1.4 Water Resources

This data element does not apply because there is no direct hydraulic connection between surface waters and the aquifer serving this water supply system. Water Resources information for Watershed boundaries, public watercourses, public ditch/altered natural watercourses and public water basins are shown on Figure 8.

2.1.2 Land Use

The City of New Ulm is a municipality located at the eastern boundary of Brown County. The New Ulm DWSMA is transected by the Minnesota River (Figures 1 and 2). The Minnesota River marks the County line between Brown County to the west and Nicolette County to the East. Municipal limits of the City of New Ulm are entirely located within Brown County. Across

the river to the east, rural and agricultural land from Nicollet County make up the eastern sections of the New Ulm DWSMA. The DWSMA includes most of the incorporated area of the City of New Ulm and is located in Minnesota Township 110, Range 30W and includes parts of sections 7-27. A detailed breakdown of land use within the DWSMA is included in Chapter 4.2 Table 5.

2.1.2.1 Parcels & Boundaries

Figure 3 shows the boundaries of parcels, municipalities, and public land surveys within the DWSMA and the municipal boundary for the City of New Ulm. Parts of the DWSMA east of the Minnesota River are located outside of the City's municipal boundaries in Courtland and Lafayette Townships.

2.1.2.2 Potential Contaminant Sources

Mapping and an inventory of the current and historical agricultural, residential, commercial, industrial, recreational, and institutional land uses and potential contaminant sources have been completed and are listed in Appendix C, depicted on Figures 9, 10, 11, 12, 13 and described in detail in Chapter 4. The inventory, mapping and management of land uses and potential sources of contamination for the DWSMA reflect what is known about these data elements, as follows:

Moderate Vulnerability

1. All potential contaminant sources as listed on Moderate Vulnerability PCSI Requirements
2. Land use/land cover map and table
3. Inventory of the IWMZ

Low Vulnerability

1. All potential contaminant sources as listed on Low Vulnerability PCSI Requirements
2. A land use/land cover map and table; and
3. Inventory of the IWMZ

2.1.2.3 Land Cover, Zoning and Land Use

Zoning for the drinking water supply management area is under the ordinances, planning, and jurisdiction of both the Brown County Planning and Zoning Department and the Nicollet County Planning and Zoning Department. The Brown County and Nicollet County Zoning maps can be found as Figure 6-1 and 6-2 and also on the corresponding county websites. Land cover and historic land use and their associated land classes pertaining to the New Ulm DWSMA are depicted in Figures 4 and 5.

Figure 4 National Land Cover Dataset

- Woody Wetlands
- Developed, Open Space
- Deciduous Forest
- Cultivated Crops
- Herbaceous
- Hay/Pasture
- Evergreen Forest

- Emergent Herbaceous Wetlands
- Developed, Low Intensity
- Open Water
- Barren Land
- Developed, High Intensity
- Developed, Medium Intensity
- Shrub/Scrub

Figure 5 Historic Land Use (1969 Interpreted Land Use).

- Cultivated
- Extractive
- Forested
- Marsh
- Non/Mix Residential
- Pasture and Open
- Transportation
- Urban Residential
- Water

2.1.2.4 Public Utility Services

The following public utility services were identified in conjuncture with the City of New Ulm.

- Transportation routes or corridors. Transportation Routes are depicted in Figure 1.
- Public water supply systems. Public water supply systems are available at the city office.
- Stormwater systems. Stormwater utilities are depicted in Figure 7.
- Sanitary systems. Sanitary systems are available at the city office.
- Gas and oil pipelines – None are depicted on The National Pipeline Mapping System (NPMS) Public Viewer within DWSMA. Northern Natural Gas Company pipelines located in Brown County are depicted in Figure 6-1.
- Public drainage systems. Public Drainage systems are depicted in Figure 8.
- Construction, maintenance and use of public water supply and other wells.

2.1.3 Water Quantity

2.1.3.1 Surface Water Quantity

This data element does not apply because there is no direct hydraulic connection between surface waters and the aquifer serving this water supply system.

2.1.3.2 Groundwater Quantity

The City of New Ulm presently meets the water demand of the distribution area and groundwater levels are adequate and is within the permitted appropriations that is administered by the Minnesota Department of Natural Resources. To the City's knowledge there are no other high capacity wells or water quantity conflicts within the DWSMA. The City

of New Ulm has begun planning for additional water quantity requests that may come from future residential and industrial demands.

2.1.4 Water Quality

2.1.4.1 Surface Water Quality

This data element does not apply because there is no direct hydraulic connection between surface waters and the aquifer serving this water supply system.

2.1.4.2 Groundwater Quality

This data element must be considered in the management of the DWSMA, and shall include:

Summary of water quality data is included in chapter 4.1, including: 1. bacteriological contamination indicators; 2. inorganic chemicals; and 3. organic chemicals; and, can also be found on the City website containing the 2014 and 2015 Water Quality Report. The City of New Ulm provides its drinking water from 13 municipal wells from depths 62 to 247 feet below surface. The water is presently treated for groundwater conditions and any changes in general chemistry may indicate the well water is being recharged from non-groundwater sources such as improperly sealed wells or surface water.

2.2 Assessment of Data Elements

The types of potential contamination sources that may exist within the DWSMA were derived from the information collected to satisfy the data element requirements. The results of the assessment of DWSMA and well vulnerability and the presence or absence of human-caused contaminants in the source water were used to guide the risk assessment to potential sources of contamination.

Generally, the quality of the source water aquifers utilized for the New Ulm public water supply is good; the water supply is free of harmful contaminants and pollutants. The public water supply system has always remained in full compliance with all state and federal drinking water regulations.

3.0 Delineation of the Wellhead Protection Area, Drinking Water Supply Management Area and Vulnerability Assessments

3.1 WHPA and DWSMA Delineation

The boundaries of the WHPA and DWSMA and the DWSMA vulnerability are shown in Figure 1 and well vulnerability is listed below in Table 2. A detailed description of the process used for 1) delineating the WHPA and the DWSMA, and 2) preparing the vulnerability assessments of the City water supply well(s) and DWSMA is presented in the Part I report found in Appendix B.

Table 2
Water Supply Well Information

Well No.	Unique Well No.	Date Constructed/ Reconstructed	Aquifer	Total Depth (ft)	Casing Depth (ft)	Casing Diameter (in)	CapaCity (gpm)	Vulnerability
4	430604	4/2/1987	Cretaceous Undiff	247	216	12	69.8	Not Vulnerable
6	241335	2/1/1965	CMTS	212	203	24	151.2	Vulnerable
15	188651	2/16/1982	QBAA	67	53	12	44.1	Vulnerable
18	241337	11/11/1960	QBAA	179	125	12	112.8	Vulnerable
19	241338	3/1/1965	QBAA	187	144	12	196.8	Not Vulnerable
20	209604	2/28/1969	QBAA	216	140	20x16	294.6	Not Vulnerable
21	209605	2/27/1969	QBAA	172	137	20x17	282.1	Not Vulnerable
22	241339	1971	QBAA	85	63	36x16x18	74.4	Not Vulnerable
23	241340	8/30/1971	CMTS	206	152	30x16x12	421.0	Not Vulnerable
24	209603	8/18/1971	QBAA	71	60	36x30	66.3	Not Vulnerable
25	511075	8/11/1989	QBAA	68	46	12	40.9	Vulnerable
26	513011	8/6/1992	QBAA	96	73	12	113.4	Not Vulnerable
27	520956	10/8/1993	QBAA	166	122	12	337.1	Vulnerable

Note: All wells are Primary status

The WHPAs are defined by a 20-year time of travel. Rather than using the minimum 10 year zone of capture, the New Ulm Public Utilities Commission (NUPUC) chose a 20 year zone of capture for their WHPA. It is expected that this time of travel provides sufficient protection to the City's wells and likely includes a large amount of land area that would be included had a conjunctive delineation been completed. Figure 1 and Figure 2 also show the emergency response areas (ERAs), which are defined by a 1-year time of travel. The IWMZ is the area within a 200-foot radius around each well. Definitions of rule-specific terms that are used are provided in the "Glossary of Terms."

3.2 DWSMA Vulnerability Assessment

The significance of this assessment relative to the likelihood that a contaminant may move from a potential source to the source water aquifer is summarized below in terms of a travel time. Generally, the higher the vulnerability rating, the greater the risk that a released contaminant may result in contaminated drinking water. These ratings are show in Figure 2 and were determined using geologic, soils, and groundwater chemistry information.

- Very high vulnerability indicates that vertical recharge to the source water aquifer occurs over a time period of hours to weeks.

- High vulnerability indicates that vertical recharge to the source water aquifer occurs over a time period of weeks to years.
- Moderate vulnerability indicates that vertical recharge to the source water aquifer occurs over a time period of years to several decades.
- Low vulnerability indicates that vertical recharge to the source water aquifer occurs over a time period of several decades to a century
- Very low vulnerability indicates that vertical recharge to the source water aquifer occurs over a time period that exceeds a century.

4.0 Assigning Risk to Potential Contamination Sources

The types of potential contamination sources that may exist within the DWSMA were derived from the information collected to satisfy the data element requirements (Chapter 2). The 1) results of the assessment of DWSMA and well vulnerability and 2) the presence or absence of human-caused contaminants in the source water were used to guide the risk assessment to potential sources of contamination. Potential Contamination sources are discussed in chapter 4.2 and chapter 4.3 in Table 3, 4 and 5. Table 3 indicates the risk that the City of New Ulm has assigned to potential point sources of contamination that are located within the IWMZ. Table 4 indicates the risk that the City of New Ulm has assigned to potential point sources of contamination that are located in the remainder of the DWSMA beyond the IWMZ whereas, Table 5 indicates this risk attributed potential non-point sources of contamination.

4.1 Contaminants of Concern

Generally, the quality of the source water aquifers utilized for the New Ulm public water supply is good; harmful contaminants were detected below Minnesota drinking water guidelines. The public water supply system has always remained in full compliance with all state and federal drinking water regulations.

Samples from the City of New Ulm public water supply system are routinely collected and analyzed by the MDH as required under the Minnesota Public Water Supply Program and the federal *Safe Drinking Water Act*. The samples are tested for microorganisms, inorganic compounds, organic chemicals, pesticides and herbicides, and radioactive contaminants. No contaminants were detected at levels that violated federal drinking water standards; however copper was in exceedance of the federal action level. Some constituents were detected in trace amounts that were below legal limits such as Alpha Emmiters, Barium, Fluoride, Haloacetic Acids, Nitrate, TTHM (By-product of drinking water disinfection). There are currently no issues related to the quality of the water obtained by the public water supply wells. The NUPUC publishes an annual consumer confidence report (New Ulm Public Utilities Drinking Water Report) that contains water quality data collected over the course of the year.

4.2 Issues, Problems, and Opportunities related to Potential Contaminant Sources

An overview of required data elements are discussed in Chapter 2, Identification and Assessment of the Data Elements. Local, State, and Federal databases were assessed in determining potential contaminant sources to satisfy required data elements. From these requirements, the following sources were identified for the DWSMA.

4.2.1 The Aquifer

The source water aquifers were found in the part 1 WHPP to have low and moderate vulnerabilities and should remain relatively unaffected by current land use activities with the exception of Potential Contaminant Sources identified as part of this plan.

4.2.2 Land Use

Zoning for the drinking water supply management area is under the ordinances, planning, and jurisdiction of both the Brown County Planning and Zoning Department and the Nicollet County Planning and Zoning Department. New Ulm Public Utilities Commission is unaware of any proposed large-scale land use changes within the DWSMA that could potentially impact the municipal wells or source water aquifers. Changes in land use have the potential to introduce pathways or sources of contamination to the source water aquifers. Land Use and Zoning within the DWSMA is depicted on Figures 5 and 6.

4.2.3 Well Water

The Minnesota Department of Health provided a database with indexed wells within the DWSMA to be included as part of this PCSI. Wells within the DWSMA may extend into the source water aquifer and if improperly constructed or maintained could transmit pollutants into the aquifer. Wells inventoried from the MDH are included in Appendix C – Table 14 and depicted on Figure 11. Wells with poor location accuracy are presented on Figure 12 and detailed in Appendix C - Table 15. Old Municipal well data is included as part of the MDH Public Water Supply Sources Report - OMW summary **Appendix F**.

4.2.4 Disposal Wells

The Environmental Protection Agency (EPA) maintains an inventory of Class V shallow disposal wells. There are no known active Class V wells within the DWSMA; although, two Class 5 wells were identified as part of a dataset belonging to the EPA (September 2016) within the DWSMA. These wells were a closed well to Schaefer Well Company and a proposed well to Interstate Power Company. Additionally, the previous Wellhead Protection Plan Part II Identified a closed Class V well associated with the Minnesota Department of Transportation (MnDOT) garage that was not registered in the EPAs database. EPA registered Class V wells are included in Appendix C – Table 14 and depicted on Figure 11.

4.2.5 Minnesota Pollution Control Agency Potential Contaminant Source Inventory

The Minnesota Pollution Control Agency (MPCA) provides multiple state wide databases inventorying potential contaminant sources as part of their GIS ready “What’s in my Neighborhood” database and Spills database and relevant listing types are included below. The MPCA Spills database provides an address that was used to geocode registered Spills within the City of New Ulm. MPCA “What’s in My Neighborhood” database is provided in GIS form and mapped using the following methodology for locating. There are a variety of methods that the MPCA employs to located sites. Those used for sites within the search area for this report include; Address Matching House Number, Digitized-DRG, Digitized - Map Tool, Zip Code Centroid, Interpolation Unknown, and GPS – Other. These location methods are considered reliable aside from Zip Code Centroid and Interpolation Unknown. Nearly all of these sites which were located by the MPCA using Zip code centroid were relocated by The City of New Ulm as part of the previous Part II Wellhead protection Plan (2005) and Short Elliott Hendrickson, Inc. (SEH 2016) based on address mapping or field knowledge.

4.2.5.1 MPCA Spill Listings

In the State of Minnesota, spills that may cause pollution, such as spills of toxic, flammable, corrosive and dangerous industrial chemicals, are required to be reported. Spills of any quantity are required to be reported, with the exception of petroleum that has a reporting threshold of greater than five-gallons. A concern expressed by the New Ulm Public Utilities Commission is emergency response, coordination, and documentation of any such spill that may occur within the DWSMA. Spills are depicted in Figure 10 and detailed in Appendix C - Table 13.

4.2.5.2 Tank Sites

Underground and above ground storage tanks used to store large quantities of liquid chemicals and potentially hazardous substances are considered high risks for groundwater contamination. If Leaking or ruptured, these tanks could release large quantities of chemicals into the subsurface, which could eventually enter the source water aquifers and public water supply wells. Tank sites are depicted in Figure 9 and detailed in Appendix C– Table 11.

4.2.5.3 Leak Sites

Leaking storage tanks sites also pose a high risk for groundwater contamination. As discussed in the previous section, these sites have had a storage tank release its contents into or onto the ground. Although many have been “cleaned” and “closed” by the MPCA, some of these sites may still have remaining soil and/or groundwater contamination. Leak sites are depicted in Figure 9 and detailed in Appendix C– Table 11.

4.2.5.4 VIC Sites

The MPCA Voluntary Investigation and Cleanup (VIC) Program database lists properties with known or suspected environmental contamination. The VIC sites include sites or facilities, which present a substantial danger to the public health, welfare, or the environment in the state of Minnesota. The Voluntary Investigation and Cleanup (VIC) Program is a non-petroleum brownfield program. VIC provides technical assistance to buyers, sellers, developers or local governments seeking to voluntarily investigate or clean up contaminated land. Properties often enter the VIC program in preparation for sale, financing or redevelopment. Voluntary parties that complete investigation and / or cleanup activities under MPCA oversight can receive liability assurances that protect them from future Superfund liability. In some cases, the MPCA may use institutional controls as part of the overall site remedy and notify interested parties of any property use conditions or restrictions. VIC sites are depicted in Figure 9 and detailed in Appendix C– Table 11.

4.2.5.5 CERCLIS Site

CERCLIS sites are places that are listed in the federal Comprehensive Environmental Response, Compensation and Liability Information System. This means that they are or were suspected of being contaminated. The CERCLIS database contains information on preliminary assessments, site inspections, and cleanup activities for these sites. After CERCLIS sites are investigated, they may be elevated to state or federal Superfund lists, or it may be determined that no action is necessary. CERCLIS sites are depicted in Figure 9 and detailed in Appendix C – Table 11.

4.2.5.6 State Assessment Site

Superfund projects occur where known or suspected environmental contamination threatens public health, welfare or the environment. The Superfund Program identifies, investigates and determines appropriate cleanup plans for these sites. Superfund projects often occur at abandoned or uncontrolled sites, for instance, where the business that polluted a site no

longer exists. Federal Superfund sites are on the U.S. Environmental Protection Agency's National Priority List (NPL), while State Superfund sites are on Minnesota's Permanent List of Priorities (PLP). MPCA staff may work with Environmental Protection Agency (EPA) staff or other state agencies to investigate and clean up these sites.. State Assessment Sites are depicted in Figure 9 and detailed in Appendix C– Table 11.

4.2.5.7 Unpermitted Dump

Unpermitted dump sites are landfills that never held a valid permit from the MPCA. Generally, these dumps existed prior to the permitting program established with the creation of the MPCA in 1967. These dumps are not restricted to any type of waste, but were often old farm or municipal disposal sites that accepted household waste. State assessment staff have investigated many of these dump sites. Dump sites are depicted in Figure 9 and detailed in Appendix C– Table 11.

4.2.5.8 Petroleum Brownfield

Petroleum Brownfield sites are places that may have been contaminated with petroleum due to a past or current leak. Petroleum Brownfields program staff assesses the risk associated with petroleum contamination at these sites and then provide technical assistance to help get the site cleaned up, developed, and/or transferred to a new owner. Petroleum Brownfields are depicted in Figure 9 and detailed in Appendix C– Table 11.

4.2.5.9 Contaminated Soil Treatment Facility

Contaminated soil treatment facilities are places that the MPCA has approved or permitted to take petroleum-contaminated soils from leak sites and provide treatment through a number of different processes. The processes include thermal treatment (usually by roasting soils at high temperatures), composting, or thin-spreading soils and allowing natural microorganisms to biodegrade the petroleum. Contaminated soil treatment facility sites are depicted in Figure 9 and detailed in Appendix C– Table 11.

4.2.5.10 RCRA Cleanup

Resource Conservation and Recovery Act (RCRA) Cleanup Sites are places where an existing business with a hazardous waste license or permit may have released hazardous waste to the environment. RCRA Cleanup staff investigates these sites and determine if cleanup is needed. Cleanups may occur at facilities that have current hazardous waste licenses or permits (hazardous waste generators or TSDs (see Hazardous Waste). They may also occur at interim status facilities, which at one time applied to be TSDs, but did not complete the permitting process. RCRA Cleanup sites are depicted in Figure 9 and detailed in Appendix C– Table 11.

4.2.6 Department of Agriculture

These points presented in Figure 13 and detailed in Appendix C – Table 16 represent emergencies and locations of spills and investigations managed by the Minnesota Department of Agriculture. Those found to be located within the DWSMA do not represent a concern for the WHPP. The New Ulm Public Utilities Commission has identified emergency response, coordination, and documentation to potential spills and events to be a concern. Future spills and investigations pose a potential contaminant source but all current Department of Agriculture events are either closed or irrelevant for the purpose of this report.

4.3 Inventory Results and Risk Assessment

A map and description of the locations of potential contamination sources are presented in Appendix C and Figures 9, 10, 11, and 13. Also included is 1) a summary of the results for the IWMZ is listed in Table 3, and 2) for the remainder of the DWSMA in Table 4.

The priority assigned to each type of potential contamination source addresses 1) the number inventoried, 2) its proximity to a City well, 3) the capability of local geologic conditions to absorb a contaminant, 4) the effectiveness of existing regulatory controls, and 5) the time required for the City of New Ulm to obtain cooperation from governmental agencies that regulate it.

A high (H) risk potential implies that the potential source type has the greatest likelihood to negatively impact the City water supply and should receive highest priority for management.

A moderate (M) risk potential implies that the potential source type may have an impact on the City water supply and should receive an intermediate priority for management.

A low (L) risk potential implies that a potential source type may have a marginal or negligible impact on the City water supply and should receive a low priority for management.

4.3.1 Data Accuracy and Limitations

For this plan, the NUPUC has attempted to identify and specifically locate as many potential contaminant sources as possible and feasible given the current level of information and available resources. However, some potential contaminant sources may exist within the DWSMA that have not yet been identified or accurately located. Prior to 2005, the City preformed a detailed review of unlocatable listings for the PCSI. Updated locations gained from this exercise were included in this plan.

Table 3
Potential Contamination Sources and Assigned Risk for the IWMZ

Source Type	Total	Level of Risk
Sewer, buried, approved materials, tested, serving one building, or two or less single-family residences	1	Moderate
Sewer, buried, collector, municipal, serving a facility handling infectious or pathological wastes, open-jointed or unapproved materials	1	Moderate
Storm water drain pipe, 8 inches or greater in diameter	2	Moderate
Storm water drain pipe, 12 inches or greater	1	Moderate
Electrical transformer storage area, oil-filled	14	Low
Gravel pocket or French drain for clear water drainage only	10	Moderate
Hazardous substance multiple storage tanks or containers for residential retail sale or use, no single tank or container exceeding 56 gal. or 100 lbs., but aggregate volume exceeding	1	Moderate
Ordinary high water level of a stream, river, pond, lake, reservoir, or drainage ditch (holds water six months or more)	6	Moderate
Pit or unfilled space more than four feet in depth	2	Moderate
Operating well	11	Low
Unused, unsealed well or boring	2	Moderate
Monitoring well	2	Moderate

Table 4
Potential Point Contamination Source Type and Assigned Risk

Potential Contaminant Source Type	Number Within DWSMA and Level of Risk	Status of Potential Contaminant Source	Level of Risk and Attachment Type
Class 5 Wells	3	Closed	Moderate
MDH registered Wells	106	Varies	Moderate
Unlocated MDH Wells	14	Varies	Moderate
Department of Agriculture Spill Incidents	9	Closed	Moderate
MPCA Spill Listings	82	1 Active	Moderate
VIC Sites	10	1 Active	Moderate
Unpermitted Dump	2	Inactive	Moderate
Petroleum Brownfield	2	1-Active	Moderate
Cerclis Site	1	Inactive	Moderate
State Assessment Site	5	1-Active	Moderate
Leak Sites	39	1 Open	Moderate
Tank Sites	49	26 Active	Moderate
Contaminated Soil Treatment Facility	3	Inactive	Moderate
RCRA Cleanup	1	Inactive	Moderate
Storage Tanks	We are assuming each home/farm site may have a storage tank for fuel.	varies	Moderate
Chemical Storage	We are assuming each home/farm site may have chemicals used for ag./turf applications.	varies	Moderate

Table 5
Nonpoint Sources of Potential Contamination and Assigned Risk

(Based on DWSMA Vulnerability)

Land Use Category	Total Acres	Level of Risk
Emergency Response Area (ERA)		
Developed, High Intensity	183.90	Moderate – High (Potential for Zoning Conflicts)
Developed, Medium Intensity	535.35	Moderate – High (Potential for Zoning Conflicts)
Developed, Low Intensity	212.23	Moderate – High (Potential for Zoning Conflicts)
Emergent Herbaceous Wetlands	1984.19	Low
Deciduous Forest	266.79	Low
Developed, Open Space	320.18	Low
Woody Wetlands	1022.60	Low
Open Water	4236.10	Low
Cultivated Crops	865.84	Low

Land Use Category	Total Acres	Level of Risk
Drinking Water Supply Management Area (minus ERA)		
Developed, High Intensity	6609.39	Moderate – High (Potential for Zoning Conflicts)
Developed, Medium Intensity	24607.59	Moderate – High (Potential for Zoning Conflicts)
Developed, Low Intensity	31065.48	Moderate – High (Potential for Zoning Conflicts)
Emergent Herbaceous Wetlands	23184.24	Low
Deciduous Forest	24179.48	Low
Developed, Open Space	20705.30	Moderate – High (Potential for Zoning Conflicts)
Woody Wetlands	13736.02	Low
Open Water	31555.66	Low
Cultivated Crops	70911.78	Low
Barren Land	1587.52	Low
Evergreen Forest	78.22	Low
Hay/Pasture	5289.33	Low
Herbaceous	3968.74	Low
Shrub/Scrub	245.30	Low

5.0 Impact of Land and Water Use Changes on the Public Water Supply Wells

The City estimates that the following changes to the physical environment, land use, surface water, and groundwater may occur over the ten-year period that the WHP plan is in effect. This is needed to determine whether new potential sources of contamination may be introduced in the future and to identify future actions for addressing these anticipated sources. Land and water use changes may introduce new contamination sources or result in changes to groundwater use and quality. The anticipated changes may occur within the jurisdictional authority of the City, although some may not. The following table describes the anticipated changes to the physical environment, land use, and surface water or groundwater in relationship to 1) the influence that existing governmental land and water programs and regulations may have on the anticipated change, and 2) the administrative, technical, and financial considerations of the City of New Ulm and property owners within the DWSMA.

Table 6
Expected Land and Water Use Changes

Expected Change (Physical Environment, Land Use, Surface Water, Ground Water)	Impact of the Expected Change On the Source Water Aquifer	Influence of Existing Government Programs and Regulations on the Expected Change	Administrative, Technical, and Financial, Considerations due to the Expected Change
Well Siting and installation of new municipal well	Potential increase in water demand with City development.	Assessment and update to MnDNR Permitting and Reporting Systems	Development and technical construction costs.
No changes to the physical makeup of the aquifer are expected.	No changes, therefore, no impact.	No changes, therefore, existing programs or regulations are adequate.	Because there are no expected changes to the physical makeup of the aquifer no additional administrative, technical or financial considerations required.
No changes are expected in the surface	No changes, therefore, no impact.	No changes, therefore, existing programs or	Because there are no expected changes no

Expected Change (Physical Environment, Land Use, Surface Water, Ground Water)	Impact of the Expected Change On the Source Water Aquifer	Influence of Existing Government Programs and Regulations on the Expected Change	Administrative, Technical, and Financial, Considerations due to the Expected Change
and groundwater sources or in the land uses within the DWMSA.		regulations are adequate.	additional administrative, technical or financial considerations required.
No changes are expected in the land uses within the DWMSA.	No changes, therefore, no impact.	No changes, therefore, existing programs or regulations are adequate.	Because there are no expected changes no additional administrative, technical or financial considerations required.

6.0 Issues, Problems and Opportunities

6.1 Identification of Issues, Problems and Opportunities

The City of New Ulm has identified water and land use issues, problems and opportunities related to 1) the aquifer used by the City water supply wells, 2) the quality of the well water, or 3) land or water use within the DWSMA. The City assessed 1) input from public meetings and written comments that it received, 2) the data elements identified by MDH during the scoping meetings, and 3) and the status and adequacy of the City's official controls and plans on land use and water uses, as well as those of local, state, and federal government programs. The results of this effort are presented in the following table which defines the nature and magnitude of contaminant source management issues in the City's DWSMA. Identifying the issues, problems and opportunities as well as resource needs enables the City to: 1) take advantage of opportunities that may be available to make effective use of existing resources, 2) set meaningful priorities for source management and 3) solicit support for implementing specific source management strategies.

6.2 Comments Received

There have been several occasions for local governments, state agencies and the general public to identify issues and comment on the City's WHP plan. At the beginning of the planning process, local units of government were notified that the City was going to develop its WHP plan and were given the opportunity to identify issues, as well as to comment. A public information meeting was held to review the results of the delineation of the WHP area, DWSMA, and the vulnerability assessments. Also, a public hearing was held before the completed WHP plan was sent to MDH for state agency review and approval. The following issues were identified during comment periods:

Table 7
Issues, Problems and Opportunities

Issue Identified	Impacted Feature	Problem Associated with the Identified Issue	Opportunity Associated with the Identified Issue	Adequacy of Existing Controls to Address the Issue
It is always difficult to foresee or plan for every threat or potential contaminant source which may affect New Ulm in the future.	Aquifer, DWSMA, Well Water Quality	The City may not be prepared technically or financially to address potential threats unknown to them at this time.	If a critical issue or potential contaminant threat becomes an issue in the future for the City, the City can ask for assistance from the various state agencies to promptly take action to prevent this contaminant source from contaminating their drinking water supply. Grants dollars may also be available to help cover various cost and equipment.	Not applicable at this time.
The City of New Ulm has limited resources/staff availability to implement the wellhead protection plan.	Aquifer DWSMA Well Water Quality	With limited resources implementing the WHP plan will be a challenge for the City of New Ulm.	Form partnerships with the Township, County and State agencies who have controls in the DWSMA so they can help with implementation.	Not applicable
Portions of DWSMA is entirely outside the City limits and fall within two Counties.	Aquifer, DWSMA, Well Water Quality	Water is recharging the City's aquifer from lands outside the City limits. The City has no land use controls or authority over these areas.	The City will need to work cooperatively with Nicollet and Brown County and surrounding townships to ensure smart land use decisions are made within the City's DWSMA.	Nicollet and Brown County must cooperate on zoning authority over this area and work to provide valuable assistance in land use issues.
Spill response equipment/expertise are not readily available.	Aquifer, Well Water Quality	The City and first responders are not prepared to adequately respond to a spill within their DWSMA.	The City and first responders can work cooperatively with local and state government to develop and implement a spill response plan to handle issues which may arise within the DWMSA.	Adequate controls exist at the state level however greater awareness and tools are necessary at the City of New Ulm.
Potential of significant flooding events to submerge wells	Well-Water Quality Accessibility Well Usage	Flooding restricts access to wells impeding emergency response, access, and usage. Furthermore, surface water may overtake top of well impacting water quality.	The City may pursue planning in the event of a significant flood.	Not applicable at this time
The City contains old municipal and private: observation test, and domestic wells which may or may not have been properly sealed.	Aquifer, Water Quality	Wells which have not been sealed according to MDH standards may provide a pathway for pollutants to enter into the aquifer.	With the assistance of MDH the City can locate, assess and seal the wells if they pose a threat to the City's drinking water supply.	MDH Well Management has the ability to require the City to properly address unused improperly sealed wells. The City can utilize the MDH WHP grant program to seal the wells.

7.0 Existing Authority and Support Provided by Local, State and Federal Governments

In addition to its own controls, the City of New Ulm will have to rely upon partnerships formed with local units of government, state agencies, and federal agencies with regulatory controls or resource management programs in place to help implement its WHP plan. The level of support that a local, state, and federal agency can provide to help offset the risk that is presented by a potential contamination source will depend up on its legal authority as well as the resources that are available to local governments.

7.1 Existing Controls and Programs of the City of New Ulm

The City has identified the following legal controls and/or programs that it has in-place that can be used to support the management of potential contamination sources within the DWSMA.

Table 8
Controls and Programs of the City of New Ulm

Type of Control	Program Description
Zoning Ordinance and Conditional Use Permits	Sets standards and orderly growth of various land uses within the City limits and allows the City to apply permit conditions to land uses they deem necessary.
Connection to City Services (Water and Sewer)	City requires residents to connect to City water and sewer when feasible.

7.2 Local Government Controls and Programs

The following departments or programs within Nicollet and Brown County may be able to assist the City with issues relating to potential contamination sources that 1) have been inventoried or 2) may result from changes in land and water use within the DWSMA.

Table 9
Local Agency Controls and Programs

Government Unit	Name of Control/Program	Program Description
Brown Soil & Water Conservation District	Reinvest In Minnesota (RIM) Reserve	The Reinvest in Minnesota (RIM) Reserve Program strives to protect and improve water quality by encouraging landowners to retire environmentally sensitive land from agricultural production. Eligible lands include land with significant risk of groundwater degradation from activities conducted at or near the land surface.
	Conservation Reserve Enhancement Program	Convert marginal cropland adjacent to the Minnesota River and associated water bodies out of production to reduce flooding, improve water quality, and increase wildlife habitat.
	Erosion Control and Water Management Program	Program provide funds to Soil and Water Conservation Districts for the implementation of conservation practices that protect and improve water quality by controlling soil erosion and reducing sedimentation.
	Additional programs	Additional programs are available that support the protection and improvement of Brown County waters.
Federal Programs as part of the Brown Soil & Water Conservation District	Conservation Reserve Program (CRP)	CRP provides technical and financial assistance to eligible farmers and ranchers to address soil, water, and related natural resource concerns on their lands in an environmentally beneficial and cost-effective manner.
	Environmental Quality Incentives Program (EQIP)	EQIP provides financial and technical assistance to agricultural producers in order to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, reduced soil erosion and sedimentation or improved or created wildlife habitat.
	Additional Programs	Additional programs are available that support the protection and improvement of Brown County waters.

Government Unit	Name of Control/Program	Program Description
Nicollet Soil & Water Conservation District	Programs include: State Cost Share Program Seven Mile Creek Watershed Partnership District Tree Program Rush River Project Reinvest in Minnesota (RIM) Program Wetlands Conservation Act (WCA) Environmental Quality Incentive Program (EQIP) Conservation Reserve Program (CRP)	Promotes the protection of water and soil resources in the county through educational programs, cost sharing and collaboration with other location, state and federal agencies.
Brown County Planning and Zoning Department	Zoning and Conditional Use Permits	Sets standards and orderly growth of various land uses within the County and allows the County to apply permit conditions to land uses they deem necessary.
Nicollet County Planning and Zoning Department	Planning & Zoning Advisory Commission	Sets standards and orderly growth of various land uses within the County and allows the County to apply permit conditions to land uses they deem necessary.
Brown County Emergency Preparation & Response	Brown County Emergency Management Office and Brown County Public Health.	Responsible for developing and maintaining the county Emergency Operations Plans (EOP). Potential to work with this program to develop emergency response to spills.
Nicollet County Emergency Management	Hazardous Materials	Directs response and handles hazardous materials that are associated with emergency incidents.

7.3 State Agency and Federal Agency Support

MDH will serve as the contact for enlisting the support of other state agencies on a case-by-case basis regarding technical or regulatory support that may be applied to the management of potential contamination sources. Participation by other state agencies and the federal government is based on legal authority granted to them and resource availability. Furthermore, MDH 1) administers state regulations that affect specific potential sources of contamination and 2) can provide technical assistance for property owners to comply with these regulations.

The following table identifies specific regulatory programs or technical assistance that state and federal agencies may provide to the City of New Ulm to support implementation of its WHP plan. It is likely that other opportunities for assistance may be available over the ten-year period that the plan is in effect due to changes in legal authority or increases in funding granted to state and federal agencies. Therefore, the table references opportunities available when the City's WHP plan was first approved by MDH.

Table 10
State and Federal Agency Controls and Programs

Government Unit	Type of Program	Program Description
MN Dept. of Health	State Well Code (MR Chapter 4725)	MDH has authority over the construction of new wells and sealing of wells. MDH staff in the Well Management Program offers technical assistance for enforcing well construction, maintaining setback distances for certain contamination sources, and well sealing.
MN. Dept. of Health	Wellhead Protection	MDH can provide technical and financial assistance to the City for WHP activities and can help identify technical and financial support that other governmental agencies can provide to assist with managing potential contamination sources.
MN Dept. of Natural Resources	Water Appropriation Permitting (MR Chapter 6115) Shoreland	DNR can require that anyone requesting an increase in existing permitted appropriations or to pump groundwater must address concerns of the impacts to drinking water if these concerns are include in a WHP plan. Establishes special requirements for land use and soil disturbances within shoreland areas along protected waters.
MN Pollution Control Agency (MPCA)	Feedlot Rules Registered Storage Tank Program Stormwater Program	Establishes minimum state-wide standards for feedlot regulations and regulates feedlots >1000 animal units. MPCA administers the programs dealing with storage tank regulations and stormwater management.
MN Dept. of Agriculture (MDA)	Nutrient and Chemical Programs	MDA administers the programs which regulate the storage and application of nutrients and chemicals (pesticides and herbicides) and provide in field technical advice to farmers located within the DWSMAs.
U.S. Dept. of Agriculture (USDA)	Farm Bill Programs	The local USDA Service Center can provide technical and financial support for individuals and farmers through the Farm Bill.
Environment Protection Agency (EPA)	Shallow Disposal Well Program	EPA has the regulatory authority over Class V Injections Well or also known as Shallow Disposal Wells.

8.0 Goals

Goals define the overall purpose for the WHP plan as well as the end points for implementing objectives and their corresponding actions. The WHP team identified the following goals after considering the impacts that 1) changing land and water uses, over time, have presented to drinking water quality and 2) future changes have that may need to be addressed to protect the community's drinking water:

- The overall GOAL of the City of New Ulm is to promote public health, economic development and community infrastructure by maintaining a potable drinking water supply for all residents of the community, both now and into the future.

9.0 Objectives and Plan of Action

Objectives provide the focus for ensuring that the goals of the WHP plan are met and that priority is given to specific actions that support multiple outcomes of plan implementation.

Both the objectives and the wellhead protection measures (actions) that support them are based on assessing 1) the data elements (Chapter 2), 2) the potential contaminant source inventory (Chapter 4 and Appendix C), 3) the impacts that changes in land and water use present (Chapter 5), and 4) issues, problems, and opportunities related to administrative, financial, and technical considerations (Chapter 4 and 5).

9.1 Objectives

The following objectives have been identified to support the goals of the WHP plan for the City of New Ulm:

A. Create awareness and general knowledge about the importance of WHP in the New Ulm Community and the City of New Ulm DWSMA.

B. Properly inventory and manage potential contaminant sources to protect the drinking water supply for the City of New Ulm.

C. Gather additional information within the DWSMA in order to better understand the size and vulnerability of the DWSMA.

D. Effectively track and report the implementation efforts and wellhead protection plan progress to all governing authorities.

E. Manage the Inner Wellhead Management Zone to prevent contamination of the aquifer near the public supply wells.

F. Effectively prepare the City of New Ulm for disruptions to the water distribution system.

G. Develop local land use controls and partner with local units of government to better protect the aquifer used by the City of New Ulm.

9.2 WHP Measures and Action Plan

The WHP team has identified WHP measures that will be implemented by the City, over the 10-year period that the WHP plan is in effect, and are based upon the factors discussed in previous chapters. The objective that each measure supports is noted, as well as 1) the lead party and any cooperators, 2) the anticipated cost for implementing the measure, and 3) the year or years in which it will be implemented.

The following categories are used to further clarify the focus that each WHP measure provides as well as help to organize the measures listed in the action plan:

- Data Collection
- IWMZ Management
- Land Use Management
- Potential Contamination Source Management
- Public Education and Outreach
- Reporting and Evaluation

- Water Use and Contingency Strategy

9.3 Establishing Priorities

WHP measures reflect the administrative, financial, and technical requirements needed to address the risk to water quality or quantity presented by each type of potential contamination source. Not all of these measures can be implemented at the same time, so the WHP team assigned priority to each. A number of factors must be considered when WHP action items are selected and prioritized (part 4720.5250, subpart 3):

- Contamination of the public water supply wells by substances that exceed federal drinking water standards
- Quantifiable levels of contamination resulting from human activity
- The location of potential contaminant sources relative to the wells.
- The number of each potential contaminant source identified and the nature of the potential contaminant associated with each source
- The capability of the geologic material to absorb a contaminant
- The effectiveness of existing controls
- The time required to get cooperation from other agencies and cooperators
- The resources needed: staff, money, time, legal, and technical

Based upon the factors listed above, the WHP team has identified WHP measures that will be implemented by the City over the 10-year period that this plan is in effect and assigned an appropriate priority ranking.

The objective that each measure supports is noted as well as 1) the lead party and any cooperators, 2) the anticipated cost for implementing the measure and 3) the year or years in which it will be implemented. The following table lists each measure that it will implement over the ten-year period that the City's WHP plan is in effect, as well as the priority that it has assigned to each measure.

Measure	Priority	Public Education and Outreach	Objective Addressed	City Measure Unless Cooperator is Noted	Cost	Implementation time frame									
						2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
1	High	The City of New Ulm will notify the residents and businesses in New Ulm that the City has an approved wellhead protection plan and share with them the general themes included in the plan. The City will share this information through their City newsletter and through a direct mailing to the landowners with potential contaminant sources within the DWSMA.	A	MDH	Distribution Cost	•									
2	Medium	The City will distribute copies of the MDH publication, "Well Owner's Handbook" to private well owners within the DWASMA and maintain copies of the publication at the New Ulm City Hall, and New Ulm Public Utilities office. If a Well owner is interested, they may take a copy for their reference.	A	MDH	Distribution Cost	As needed									
3	Medium	Wellhead Protection Members will work with the City of New Ulm to provide WHP educational materials on the City's website.	A		Staff Time			•					•		
4	Medium	The City of New Ulm will distribute water conservation educational information to residents via city newsletter or utility mailing.	A	SWCD, MDH, MRWA	Staff Time						•				
5	Medium	The City of New Ulm will continue mailing to all water system users, the annual New Ulm Public Utilities Consumer Confidence Report that provides information about the City's water system and water quality levels.	A		Staff Time	•	•	•	•	•	•	•	•	•	•

Measure	Priority	Public Education and Outreach	Objective Addressed	City Measure Unless Cooperator is Noted	Cost	Implementation time frame									
						2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
6	Medium	The City of New Ulm will contact the Minnesota Department of Transportation for authorization on including applicable DWSMA signage on State roadways.	A	MnDOT			•	•							
7	Medium	The City of New Ulm will install/maintain WHP signage within and where appropriate for the DWSMA which creates public awareness regarding the boundaries of the DWSMA pending MnDOT approval. Potential to seek MDH SWP grant and dependent on grant funding.	A	Pending MnDOT Approval	Staff and Signage Costs				•	•					

Measure	Priority	Potential Contaminant Source Management	Objective Addressed	City Measure Unless Cooperator is Noted	Cost	Implementation time frame									
						2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
8	High	Educate UST owners about basic UST requirements by sending copies of the MPCA Fact Sheets, "Underground Storage Tanks: Are you doing the Big Five?" and "What Tank Owners Need to Know About the Underground Storage Tank Rules"	B	MPCA	Distribution Cost			•							
9	High	Promote and encourage the identification and sealing of abandoned or unused wells and the proper management of active wells within the DWSMA. If requested provide educational materials to all property owners in the DWSMA on how to manage private wells. Use OMW summary (Appendix F) to assist search and documentation of old wells. Potentially apply for an MDH grant to assist with sealing private wells if there are wells which need to be sealed within the DWMSA.	B	MDH	Variable	As Needed									
10	High	Mail the County Highway Department, MnDOT and Township a map of the DWSMA and ask that they take into consideration this area when they are conducting road construction or maintenance projects (i.e. storm water or diversions, fuel and construction equipment management and maintenance, chemical use, etc.). This is especially important within the Inner Wellhead Management Zone and the moderate vulnerability area of the WHPA.	B	MnDOT	Staff Time			•							
11	Low	If a new appropriation permit or high capacity well is being proposed in or within 1.5 miles of the DWSMA, or within the area of influence as determined by the DNR, cooperate with DNR and MDH Hydrologists as requested to help assess any potential impacts on the public water supply well or aquifer used. If impacts are identified, cooperatively work with the high capacity well owner, DNR, and MDH Hydrologist to identify options to resolve any potential impacts.	B	MDH, DNR	Staff Time	As Needed									

Measure	Priority	Potential Contaminant Source Management	Objective Addressed	City Measure Unless Cooperator is Noted	Cost	Implementation time frame									
						2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
12	Low	Class V Wells If a Class V Well is identified, notify the MDH Planner of the location of the Class V well so they can report it to EPA.	B	MDH, USEPA	Staff Time	As Needed									
13	Low	Review and update as needed the well inventory (spreadsheet and map) and other potential contaminant source inventory (spreadsheet (s) and map(s)) during plan implementation. Review the status of existing PCSIs and add any new PCSIs identified in the DWSMA. Potential to seek MDH SWP Grant.	B	MDH	Staff Time						•				
14	High	It is always difficult to foresee or plan for the future. The City will use its planning and management capabilities within this plan to help respond to new/unknown source water protection issues that may impact the quality or quantity of its drinking water in the future.	B		Staff Time	On-going									

Measure	Priority	Land Use Management	Objective Addressed	City Measure Unless Cooperator is Noted	Cost	Implementation time frame									
						2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
15	High	Continue to develop and maintain a line of communication between the City and Nicollet and Brown County in order to remain abreast of any land use changes which are pending within the City's DWSMA. In addition, request that Nicollet and Brown Co. review their existing land use ordinances to determine if appropriate measures are in place to protect the City's drinking water source.	G, C	Nicollet and Brown Co., MDH,	Staff Time		•								
16	High	Send a letter to Nicollet and Brown Co. requesting the formal opportunity to provide comments on pending landuse changes within the DWSMA and a one mile radius around the DWSMA.	G, C	Nicollet and Brown Co., MDH	Staff Time			•		•		•		•	

Measure	Priority	IWMZ Management	Objective Addressed	City Measure Unless Cooperator is Noted	Cost	Implementation time frame									
						2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
17	High	Implement and monitor the WHP Measures and Findings in IWMZ Inventories. Most recently completed on 08/01/2016 and can be found in Appendix E.	B, E	MDH	Staff Time			•			•			•	
18	High	Work with MDH to ensure that setback distances for new potential contamination sources are met.	B, E	MDH	Staff Time	On-going									
19	High	Assist MDH staff in completing future Inner Wellhead Management Zone Inventories for the public water supply wells.	B, E	MDH	Staff Time					•					•

Measure	Priority	Emergency Contingency and Planning	Objective Addressed	City Measure Unless Cooperator is Noted	Cost	Implementation time frame									
						2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
20	High	Send a DWSMA map and letter requesting assistance from the City of New Ulm and County Emergency Response staff to help develop increased communication between emergency response staff and the City. Clear protocols on how emergency staff shall respond to spills within the DWMSA is the desired outcome. State agencies as well as non-profit organizations such as the Minnesota Rural Water Association may be able to provide valuable insight.	F	MDH, MPCA, Nicollet and Brown County	Staff Time and Distribution Cost			•	•						
21	High	Explore the option of providing training to local First Responders to enable them to be better prepared to respond to emergencies which directly affect the City's drinking water supply (i.e. spills etc…).	F	MPCA, Nicollet and Brown County	Training Costs	As needed									
22	High	Encourage local first response agencies to include PWS staff in hazardous materials training and proper response to spills.	F		Staff Time	On-going									
23	Medium	The City of New Ulm will work with the Minnesota DNR to approve an updated Water Supply Conservation Plan.	F	MnDNR	Staff Time		•								
24	High	In year two of the plan, The Public Water Supply (PWS) should consider sampling for the following parameters when sampling the Minnesota River; nitrate, ammonia, chloride, bromide, sulfate, stable isotopes, TOC, special metal scan, field measurement, e. coli, and tritium. Sampling should occur simultaneously with the sampling of the public water supply wells. The PWS wells should be sampled for the above parameters also. Sampling should occur quarterly over a one year period.	C	MDH	Staff Time		•	•							

Measure	Priority	Wellfield Analysis and Floodplain Management	Objective Addressed	Cooperators	Cost	Implementation Time Frame									
						2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
25	High	The City of New Ulm will continue conducting wellfield and infrastructure assessments (into 2017) to develop strategies to manage and mitigate risks associated with Municipal Wells located in the Minnesota River floodplain.	F	MDH, Consultant	Assessment Fee	•									
26	High	The City of New Ulm will implement floodplain management strategies or infrastructure changes developed during the wellfield and infrastructure assessment. Potential to seek MDH SWP grant and dependent on grant funding.	F	MDH, Consultant	Infrastructure Cost			•		•					

Measure	Priority	Evaluation and Reporting	Objective Addressed	Cooperators	Cost	Implementation Time Frame									
						2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
27	Medium	<u>Implementation, Tracking and Reporting Activities</u> Maintain a "WHP folder" that contains documentation of WHP activities you have completed.	D	MDH	Staff Time	•	•	•	•	•	•	•	•	•	•
28	High	<u>WHP Program Evaluation Plan Reporting:</u> Complete an Evaluation Report every 2.5 years (or as needed) that evaluates the "progress of plan of action and the impact of a (any) contaminant release on the aquifer supplying the public water supply well" MN WHP Rule 4720.5270. This evaluation will be mailed to the MDH Planner upon completion.	D	MDH	Staff Time			•			•			•	

10.0 Evaluation Program

The success of the wellhead protection source management program must be evaluated in order to determine whether the plan is actually accomplishing what the City of New Ulm PUC set out to do. In chapter 9.1, Objective D provides the mechanism for determining whether WHP action items are achieving the intended result or whether they need to be modified to address changing administrative, technical, or financial resource conditions within the DWSMA. Evaluation is used to support plan implementation and is required under Minnesota Rules, part 4720.5270, prior to amending the City's WHP plan. The City has identified the following procedures that it will use to evaluate the success of implementing its WHP plan:

1. The City of New Ulm Public Utilities will continue to cooperate with the Minnesota Department of Health in the annual monitoring of the water supply to determine whether the management strategies are having a positive effect and to identify water quality problems that may arise that must be addressed.
2. Members of the wellhead protection team, City of New Ulm Public Utilities Commission members, and the WHP plan manager will drive through the drinking water supply management area on a regular basis to identify any changes in land use or potential contaminant source management practices which may adversely impact the public water supply.
3. The wellhead protection team will meet on an as-needed basis to review the results of each strategy implemented during the previous plan year and identify, and discuss whether modifications are needed for those strategies, and additional strategies for the coming plan year. Each of the goals addressed in chapter 9.1 will be measured for performance based on reports, programs, and other related activities.
4. The wellhead protection plan manager will make a written report every 2.5 (or as needed) years to the City of NUPUC regarding progress in implementing the wellhead protection management objectives, and the measure of success in meeting each goal stated in Chapter 9.1 of this plan. The annual reports will be compiled and used to review the overall progress in implementing source management strategies when the City of New Ulm Public Utilities wellhead protection plan is updated in 10 years. A copy of the report will be sent to the Minnesota Department of Health Source Water Protection Unit in St. Paul, MN and another copy will be placed in the City of New Ulm Public Utilities Wellhead Protection file.
5. As needed, briefings to the New Ulm City Council or PUC, in order to provide the basis for documenting whether each action step for that year was implemented, not feasible, or needs further assistance.
6. The City will assess the results of each action item that has been taken annually to determine whether the action item has accomplished its purpose or whether modification is needed. Assessment results will be presented in the annual report to the New Ulm PUC.
7. Every 2.5 years (or as needed) the City will prepare a written report that documents how it has assessed plan implementation and the action items that were carried out. The report will be presented to MDH at the first scoping meeting that it will hold with the City to begin amending the WHP plan.

11.0 Contingency Strategy

The City of New Ulm Public Utilities *Water Supply Conservation Plan* was submitted to the MDNR, Division of Waters, and Appropriation Permit Program and the approval letter may be found in **Appendix D**. As of 2016, this plan is currently in the process of being updated. The plan contains the required elements of the MN Wellhead Protection Rule and is accepted as an equivalent to an Alternative Water Supply/Contingency Plan as defined in 4720.5280. Implementation of the Plan has begun with the aid and assistance of local emergency management agencies. A copy of the current or draft Plan is available for review at the office of the Water/Steam Department Supervisor or by contacting George Brown at 507-359-8294.

12.0 References

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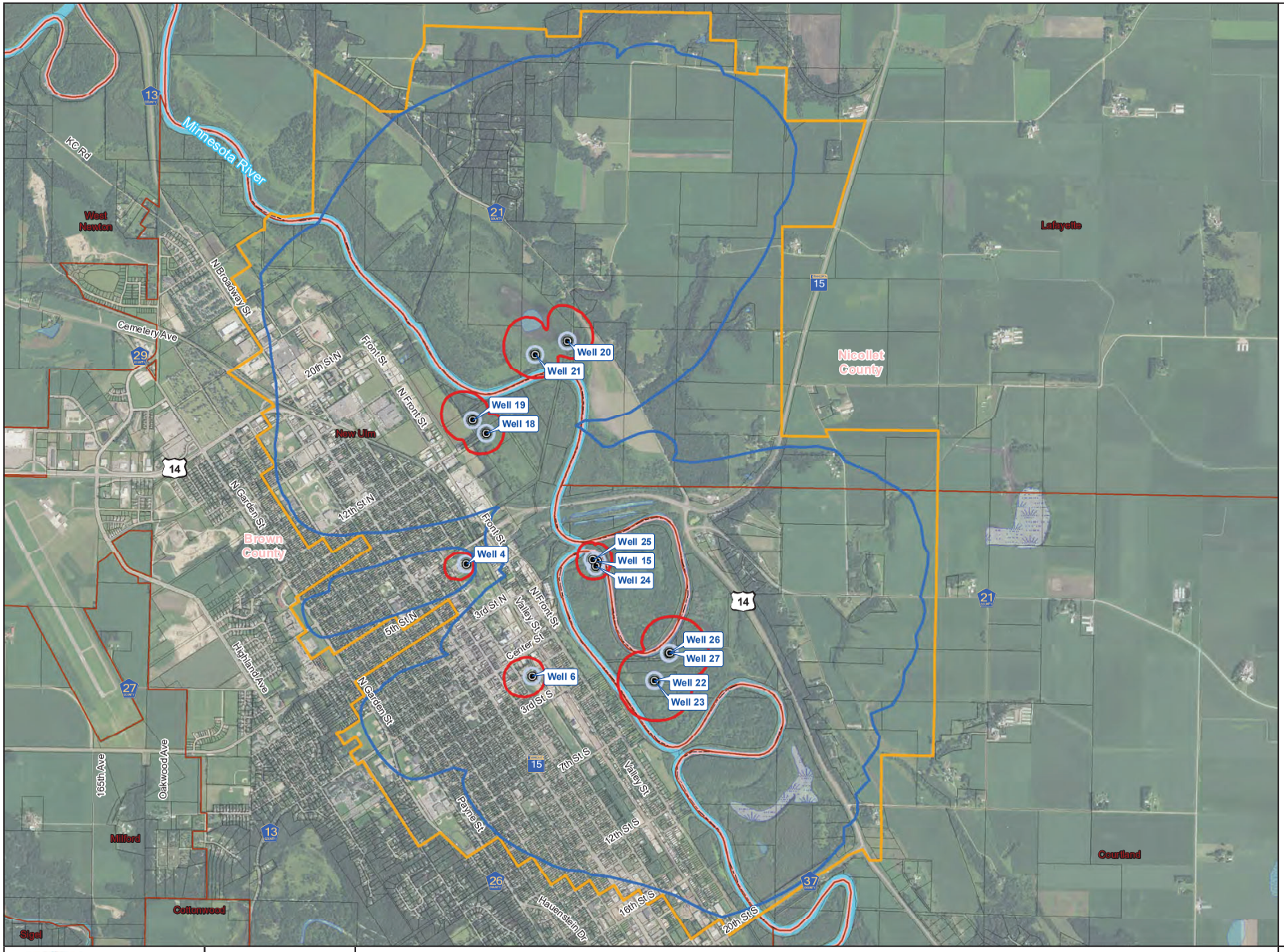
List of Figures



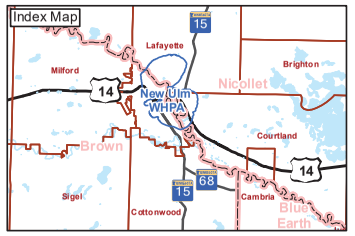
Legend

New Ulm Wellhead Protection Plan Features

- Public Water Supply Well
- Wellhead Protection Area (WHPA)
- Drinking Water Supply Management Area (DWSMA)
- Emergency Response Area
- Inner Wellhead Management Zone

Minnesota Admin Boundaries

- County Boundaries
- Municipality Boundaries
- Parcel Boundaries



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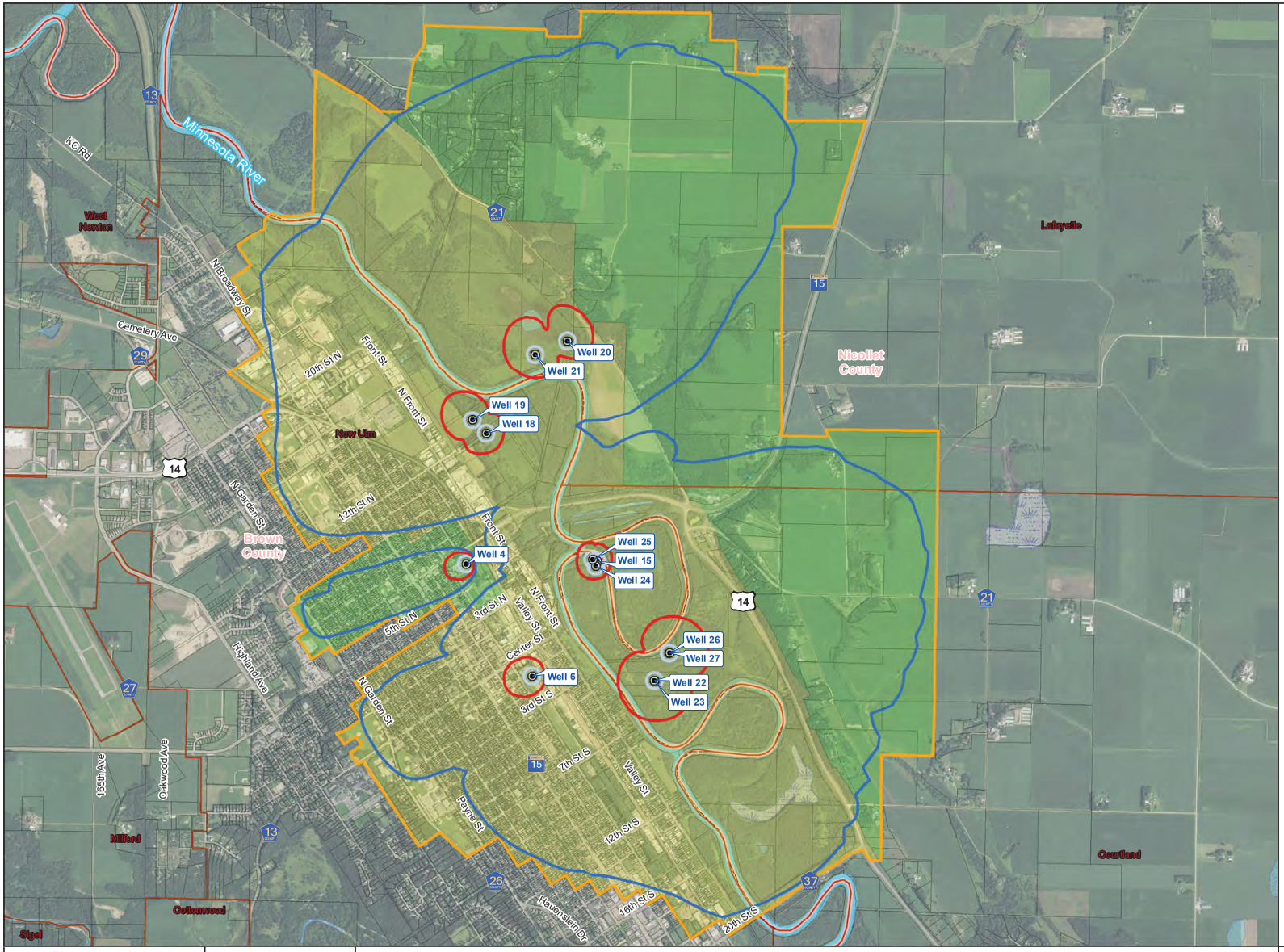
Source: ESRI, MDH, MPCA, MnDOT MnDNR, SeH, MnGeo WMS Service

WELLHEAD PROTECTION PLAN
Part II
New Ulm, Minnesota

WHPA and DWSMA

Figure 1



Legend

New Ulm Wellhead Protection Plan Features

- Public Water Supply Well
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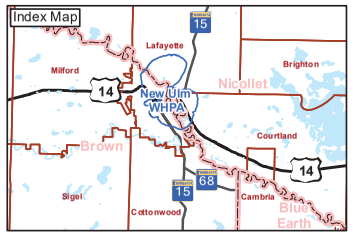
Minnesota Admin Boundaries

- County Boundaries
- Municipality Boundaries
- Parcel Boundaries

DWSMA Vulnerability

- Moderate Vulnerability
- Low Vulnerability



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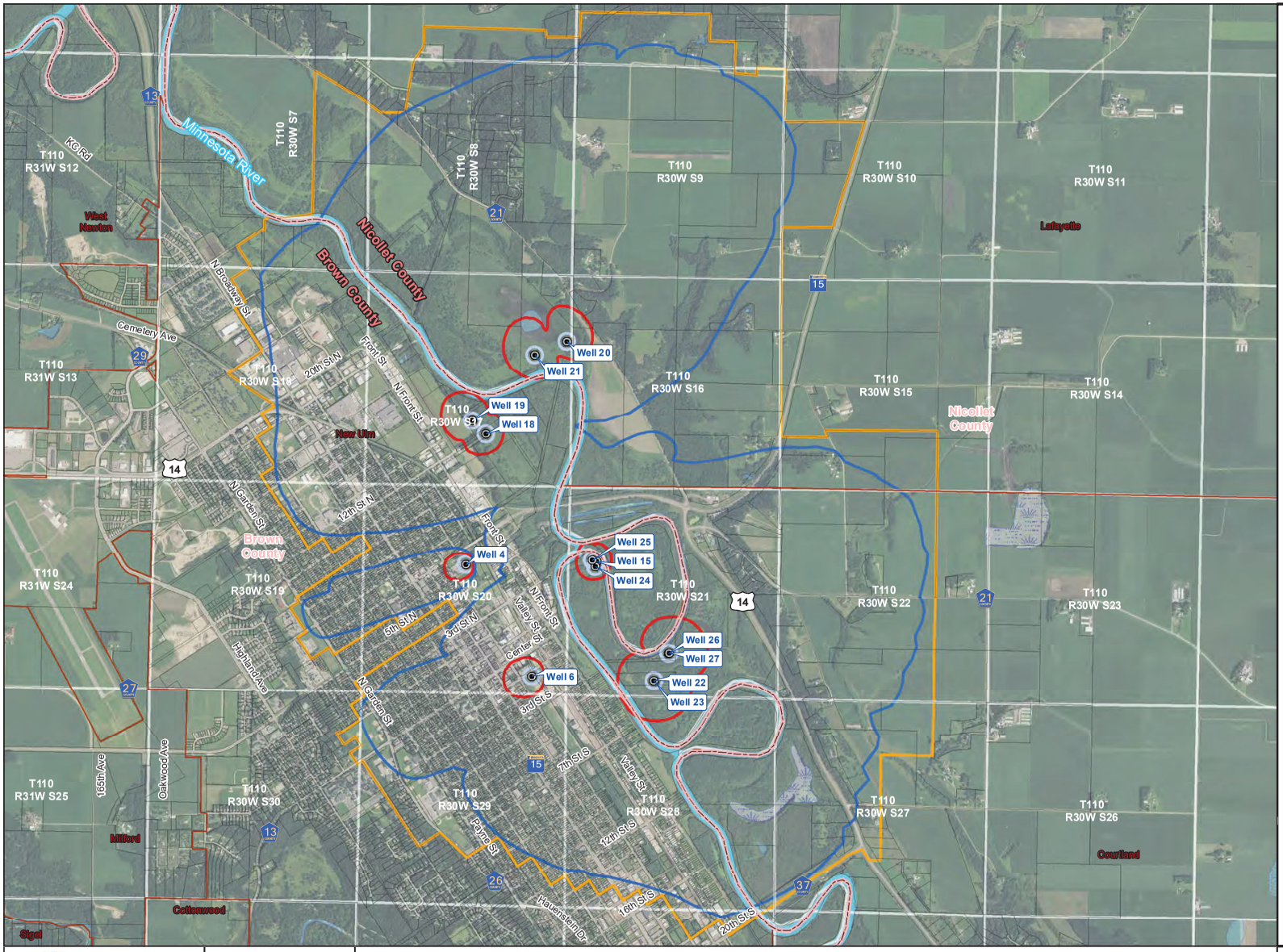
WELLHEAD PROTECTION PLAN
Part II
New Ulm, Minnesota

DWSMA Vulnerability

Figure 2



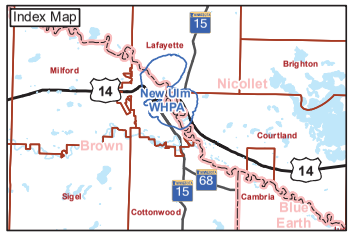
Legend

New Ulm Wellhead Protection Plan Features

- Public Water Supply Well
- Wellhead Protection Area (WHPA)
- Drinking Water Supply Management Area (DWSMA)
- Emergency Response Area
- Inner Wellhead Management Zone

Minnesota Admin Boundaries

- County Boundaries
- Municipality Boundaries
- Parcel Boundaries
- Public Land Survey (TRS)



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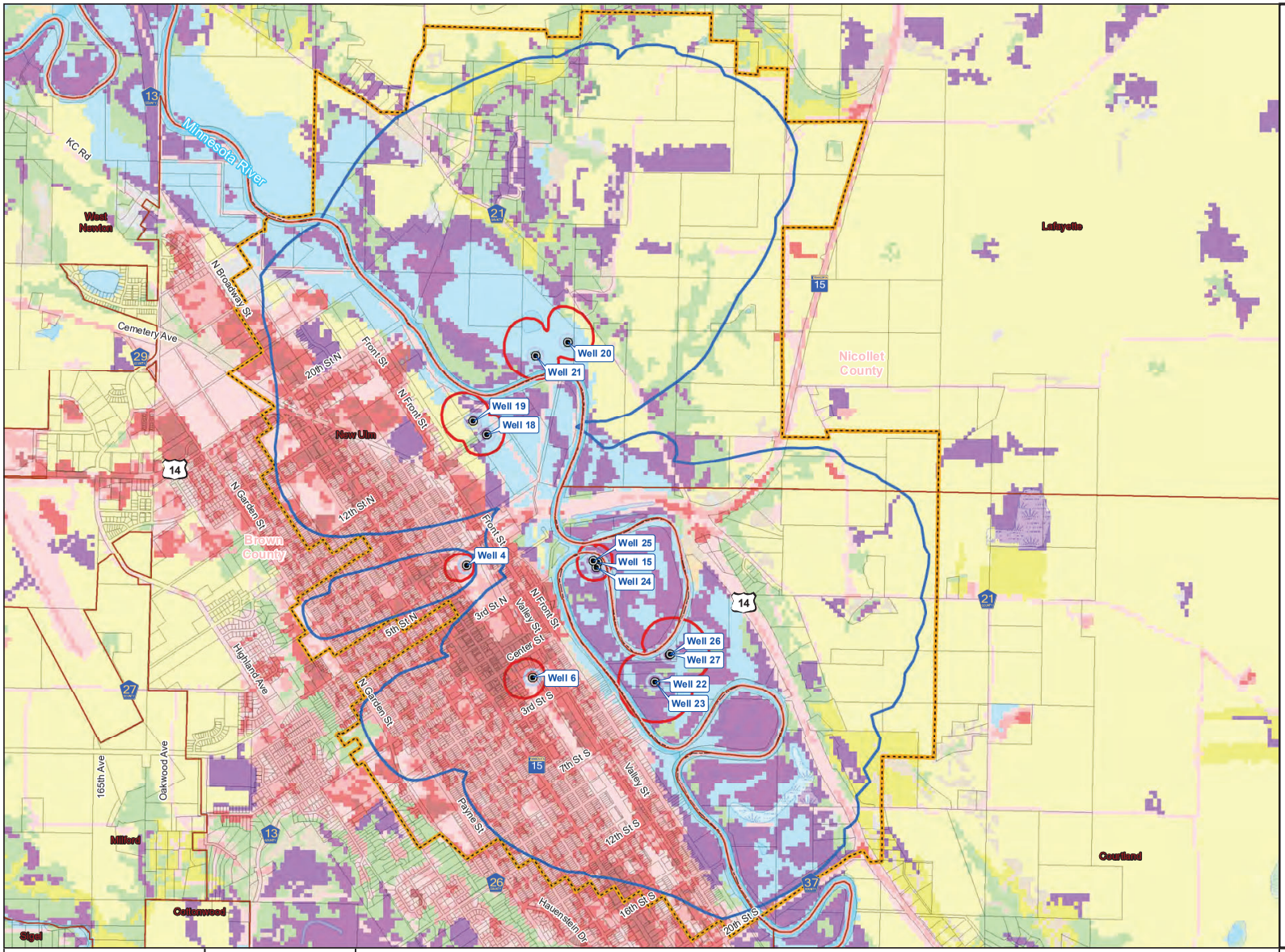
WELLHEAD PROTECTION PLAN
Part II
New Ulm, Minnesota

Political Boundaries

Figure 3



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New Ulm Wellhead Protection Plan Features

- Public Water Supply Well
- Wellhead Protection Area (WHPA)
- Drinking Water Supply Management Area (DWSMA)
- Emergency Response Area
- Inner Wellhead Management Zone

Minnesota Admin Boundaries

- County Boundaries
- Municipality Boundaries
- Parcel Boundaries

NLCD Land Cover Class

- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land (Rock/Sand/Clay)
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands

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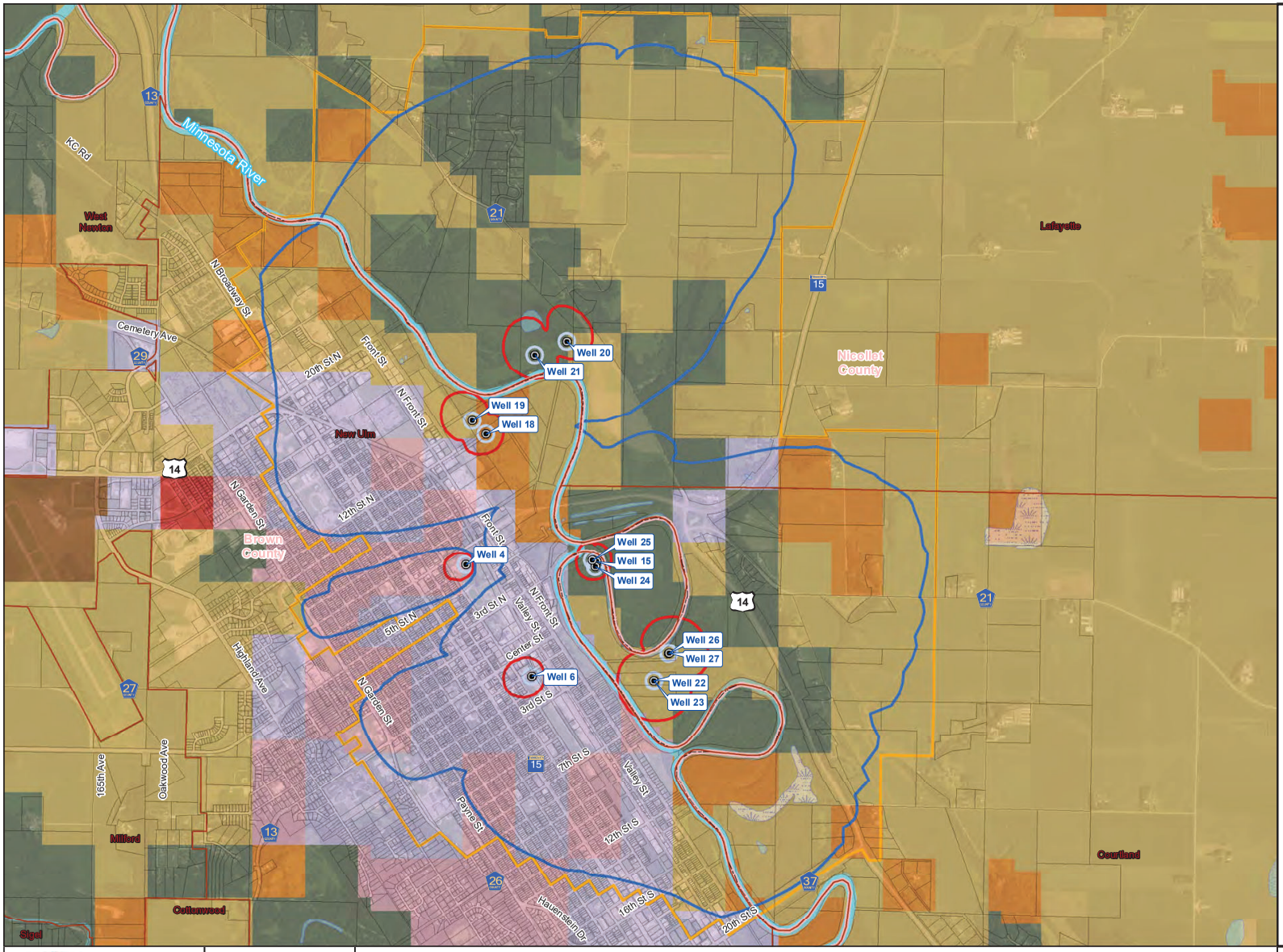
WELLHEAD PROTECTION PLAN
Part II
New Ulm, Minnesota

2011 NLCD Land Cover

Figure 4



Legend

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Minnesota Admin Boundaries

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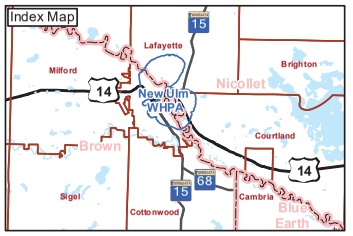
1969 Minnesota Land Use

- CULTIVATED
- EXTRACTIVE
- FORESTED
- MARSH
- NON/MIX RESIDENTIAL
- PASTURE AND OPEN
- TRANSPORTATION
- URBAN RESIDENTIAL
- WATER



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WELLHEAD PROTECTION PLAN
Part II
New Ulm, Minnesota

1969 Land Use

Figure 5

Brown County Zoning

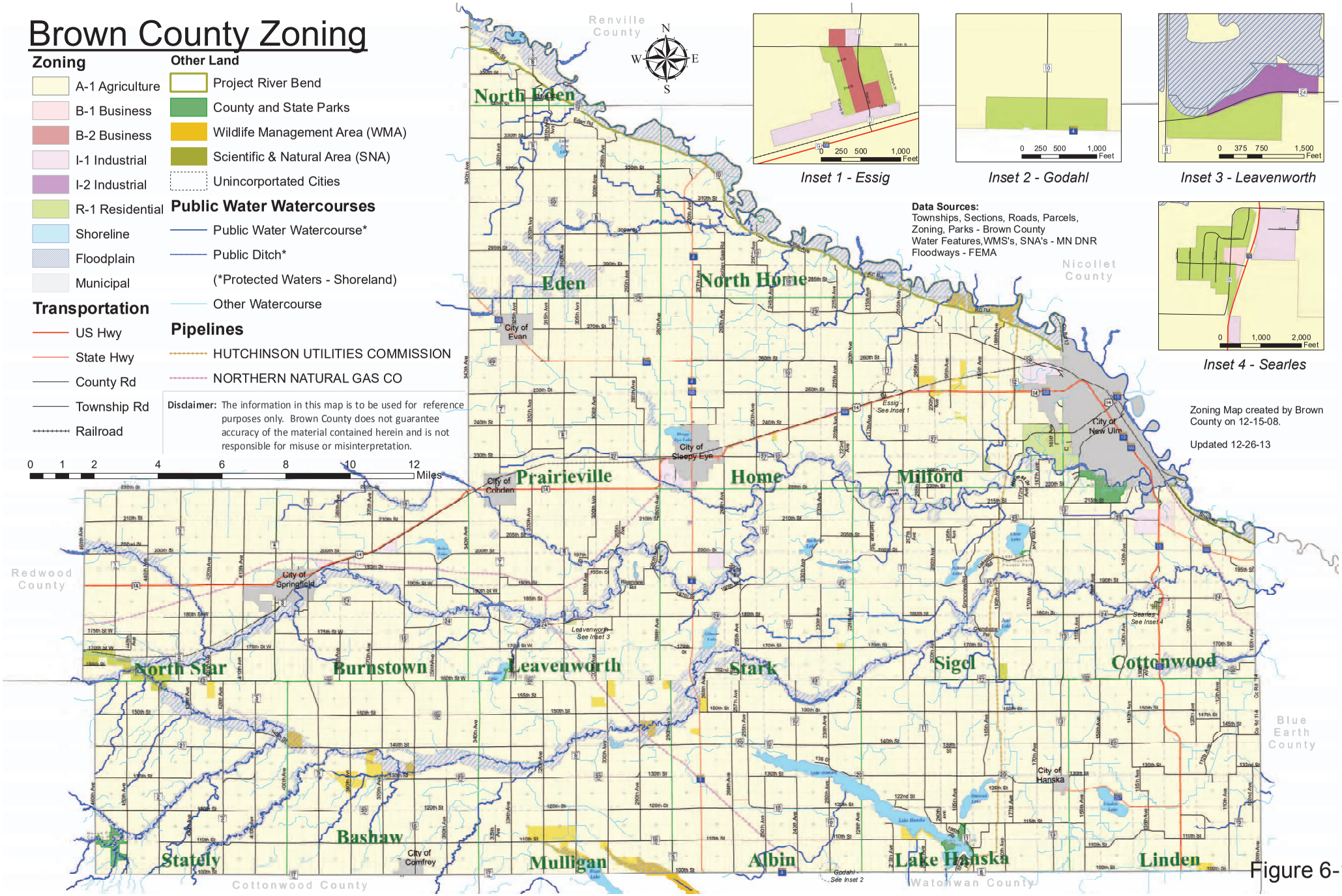
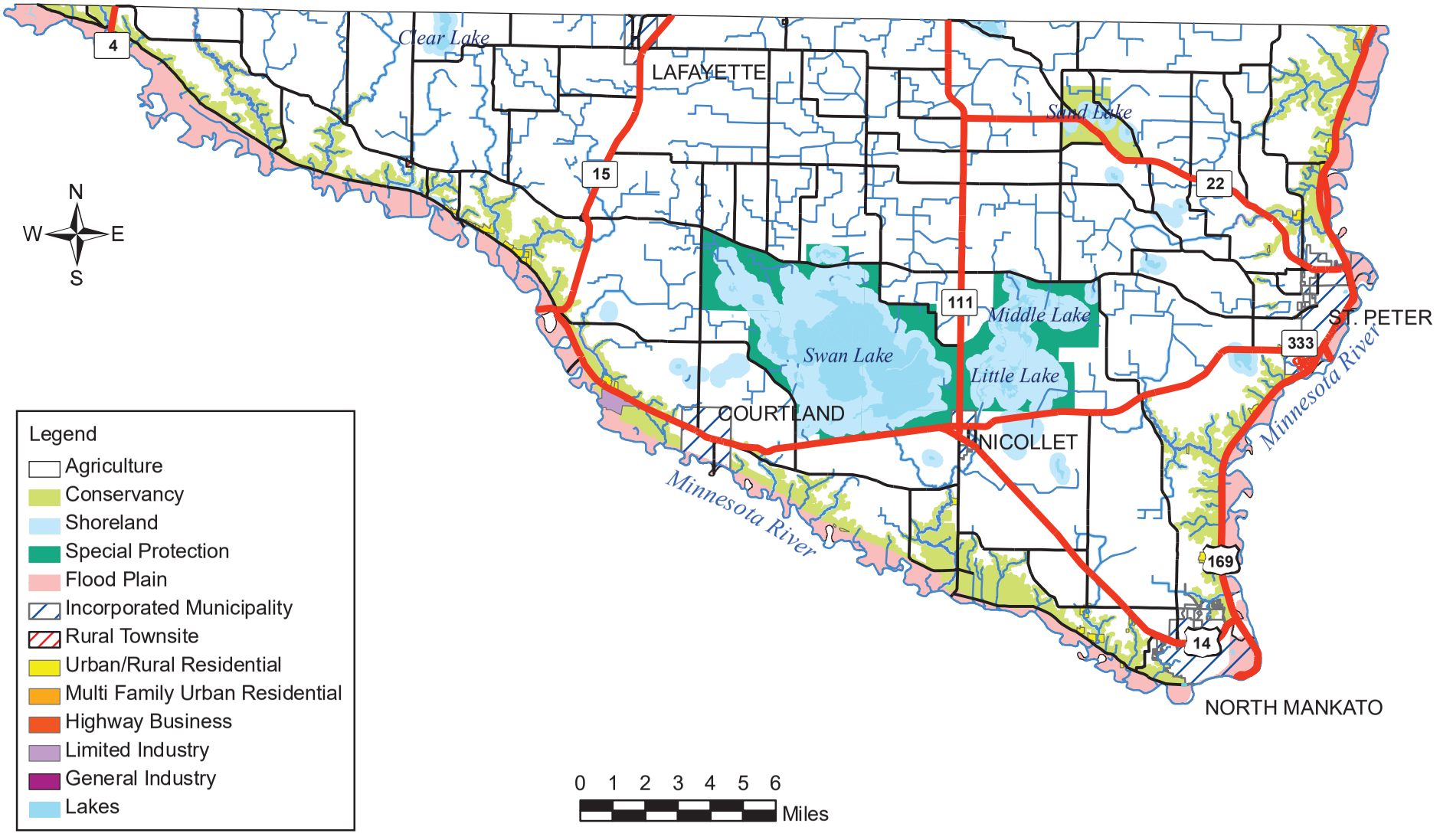


Figure 6-1

Nicollet County Zoning



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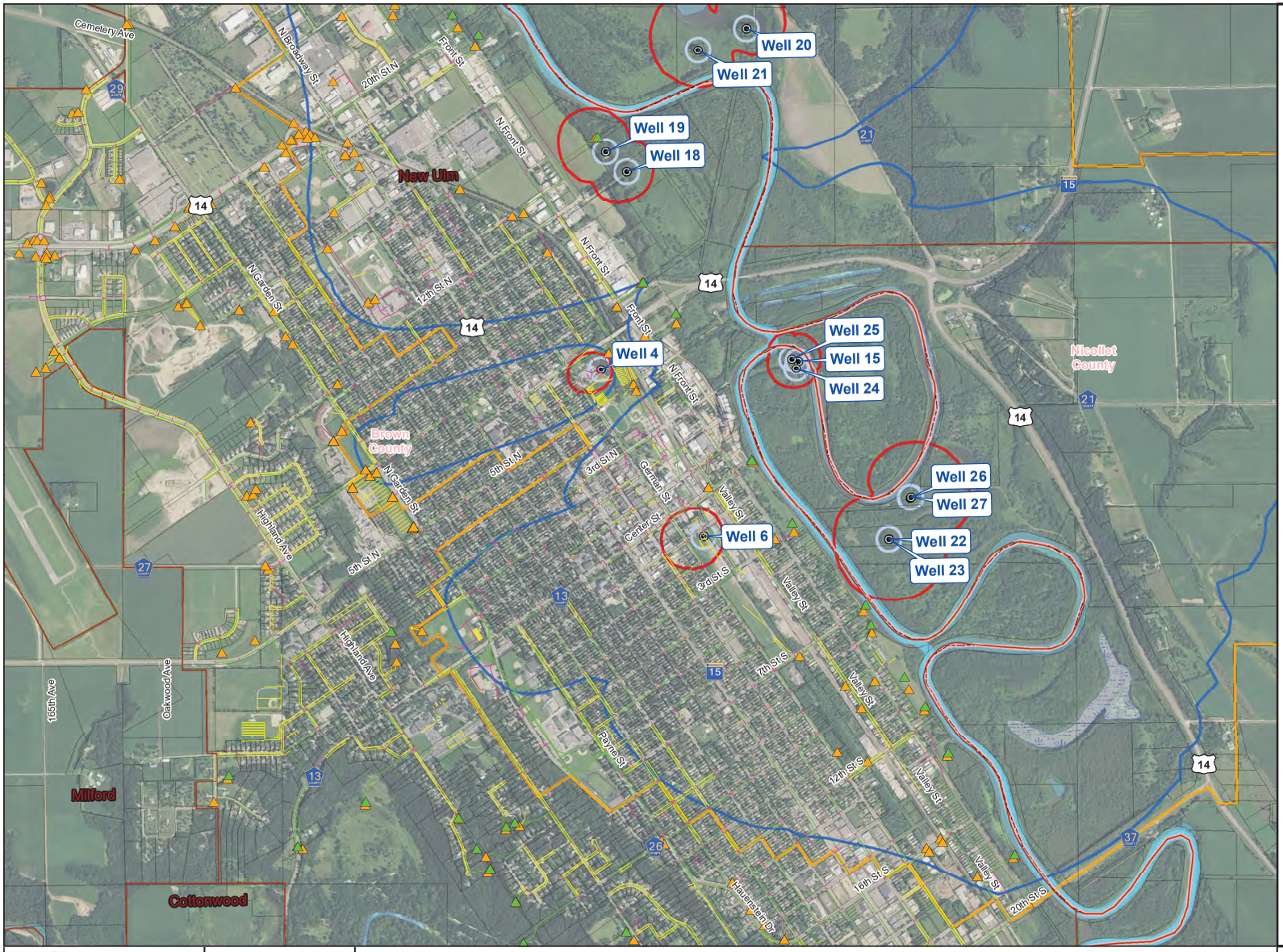

Legend

New Ulm Wellhead Protection Plan Features

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Minnesota Admin Boundaries

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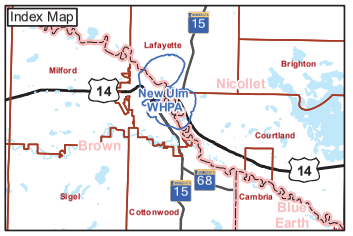
New Ulm Stormwater Utilities

- Stormwater Outfall
- Stormwater Appron
- St-MHs
- St-Main
- St-Culvert Pipe
- St-Leads
- Drain Tile



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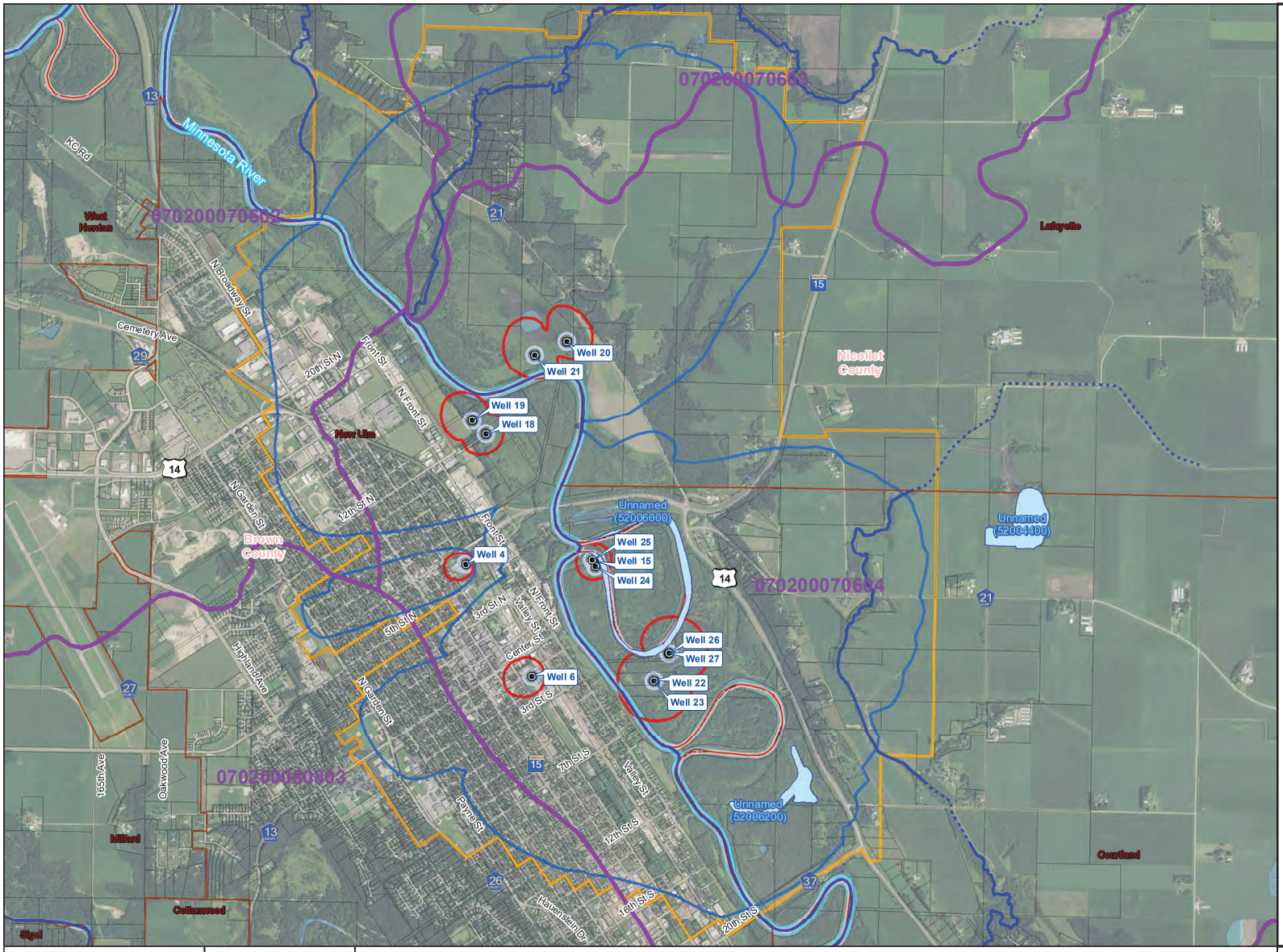
WELLHEAD PROTECTION PLAN
Part II
New Ulm, Minnesota

Stormwater Utilities

Figure 7



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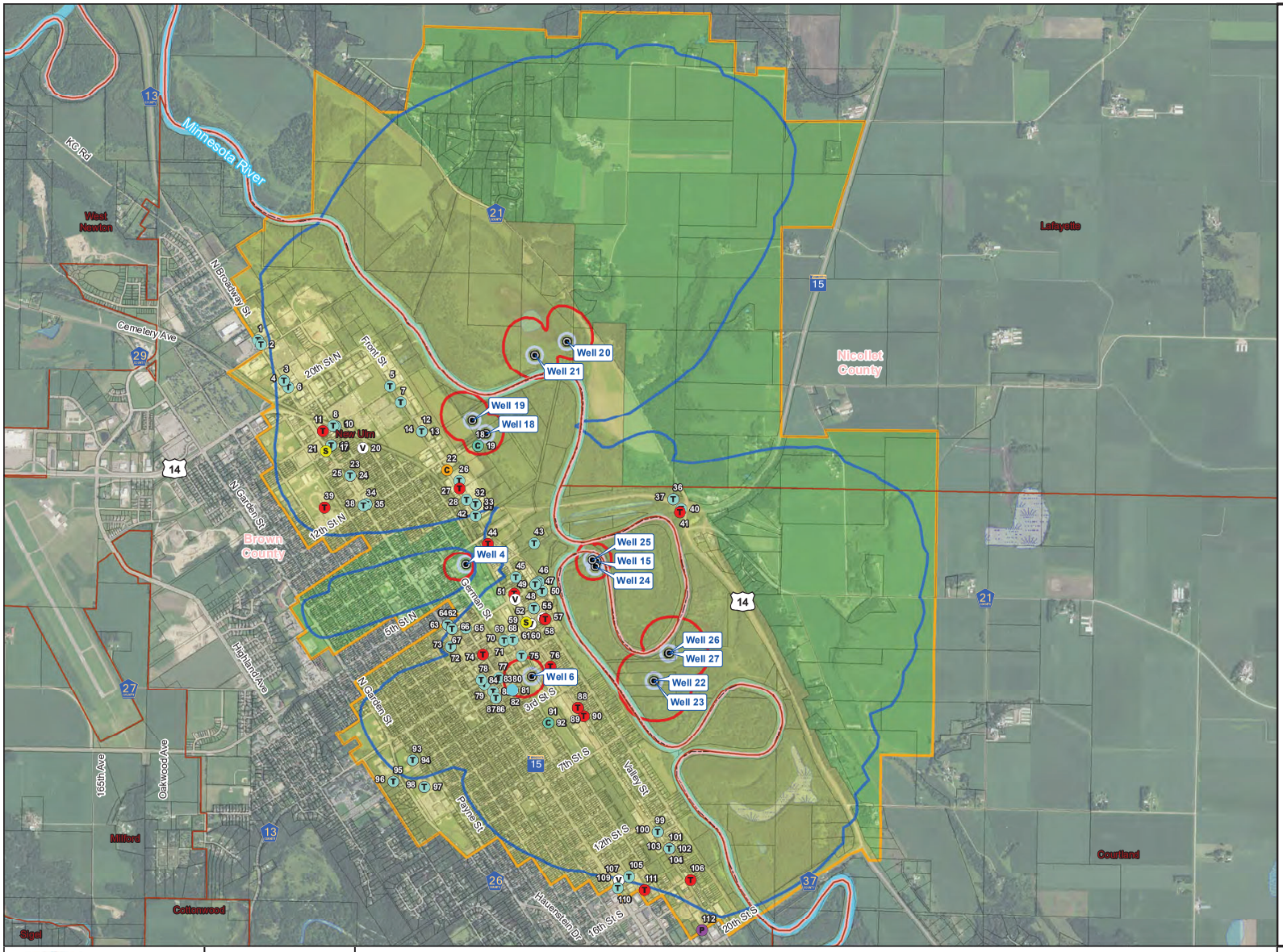
WELLHEAD PROTECTION PLAN
Part II
New Ulm, Minnesota

Public Drainage Systems

Figure 8



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Minnesota Admin Boundaries

- County Boundaries
- Municipality Boundaries
- Parcel Boundaries

DWSMA Vulnerability

- Moderate Vulnerability
- Low Vulnerability

Investigation & Cleanup

- Petroleum Brownfield
- State Assessment Site
- Voluntary Investigation & Cleanup (VIC)
- CERCLIS Site
- Unpermitted Dump Site
- Contaminated Soil Treatment Facility
- RCRA Cleanup

Tanks & Leaks

- Leak Site
- Tank Site

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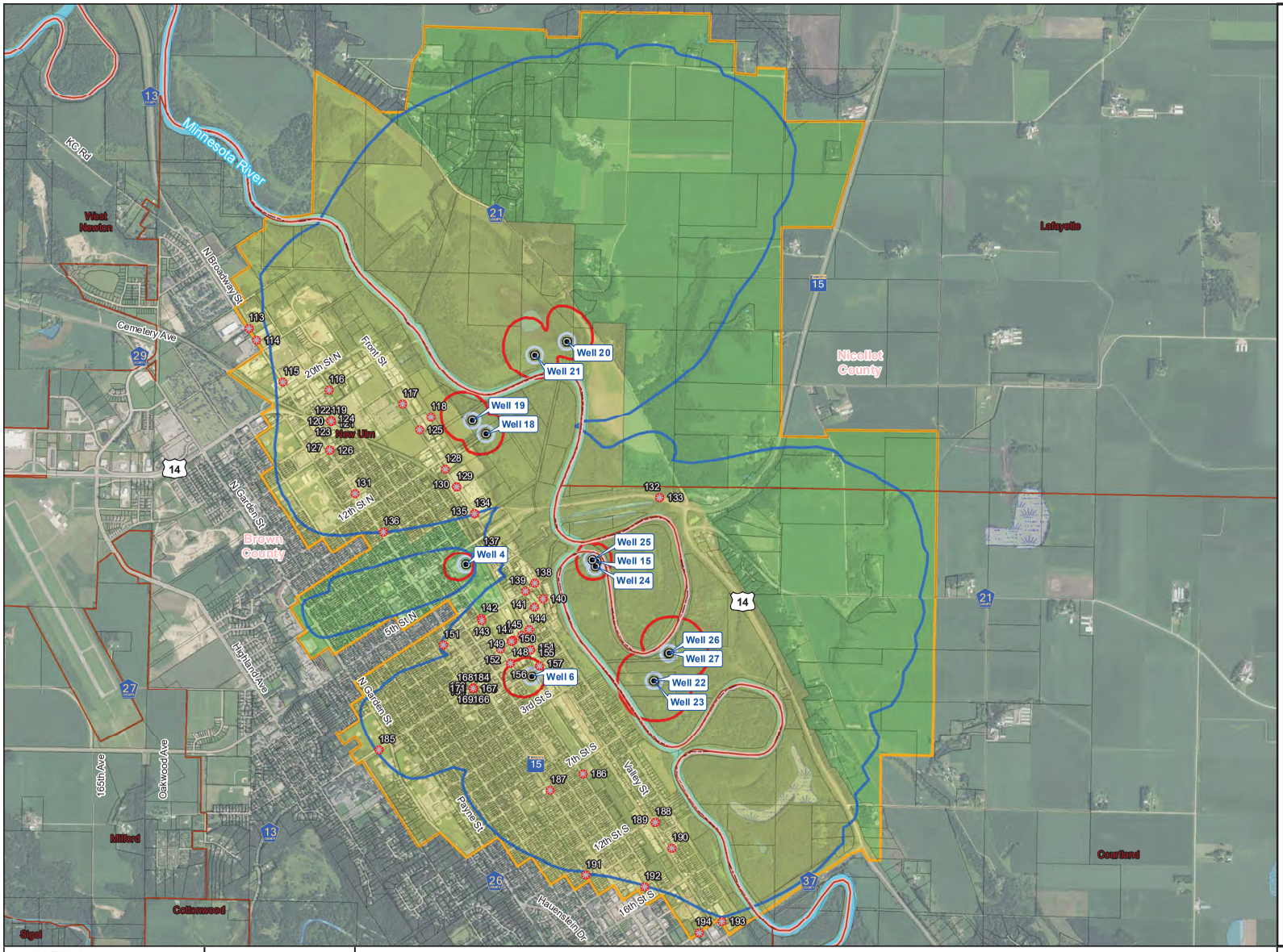
WELLHEAD PROTECTION PLAN
Part II
New Ulm, Minnesota

MPCA's "What's in My Neighborhood"

Figure 9



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Minnesota Admin Boundaries

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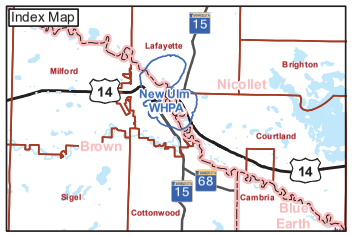
- Parcel Boundaries

DWSMA Vulnerability

- Moderate Vulnerability
- Low Vulnerability

Minnesota Pollution Control Agency (MPCA)

- Spill Location (Address Geocoded)



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SEH
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110
PHONE: (651)490-2000
FAX: (651) 490-2150
WATTS: 800-325-2065
www.sehinc.com

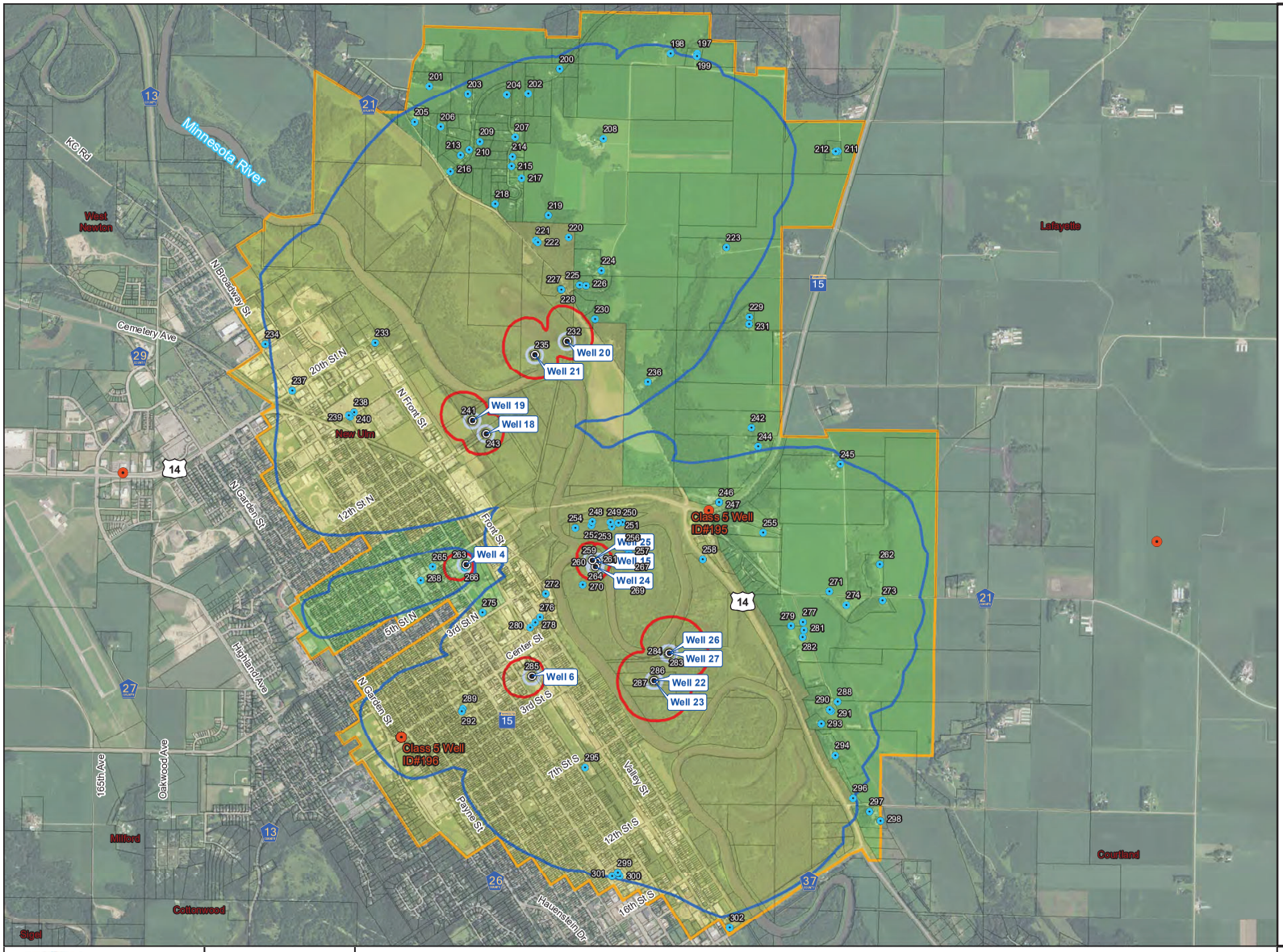
Project: Nulpu 130982
Print Date: 10/24/2016

Map by: Msherrill
Projection: UTM Zone 15N
Source: ESRI, MDH, MPCA, MnDOT MnDNR, SeH, MnGeo WMS Service Minnesota Land Management IS

WELLHEAD PROTECTION PLAN
Part II
New Ulm, Minnesota

MPCA SPILLS

Figure 10



Legend

New Ulm Wellhead Protection Plan Features

- Public Water Supply Well
- Wellhead Protection Area (WHPA)
- Drinking Water Supply Management Area (DWSMA)
- Emergency Response Area
- Inner Wellhead Management Zone

Minnesota Admin Boundaries

- County Boundaries
- Municipality Boundaries
- Parcel Boundaries

DWSMA Vulnerability

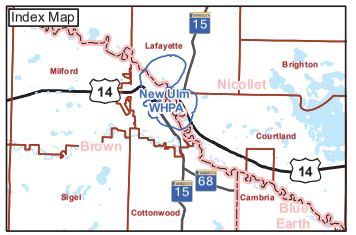
- Moderate Vulnerability
- Low Vulnerability

Environmental Protection Agency

- Class 5 Well (EPA, MDH Georectified)

County Well Index

- Well Location



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SEH
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110
PHONE: (651)490-2000
FAX: (651) 490-2150
WATTS: 800-325-2065
www.sehinc.com

Project: Nulpu 130982
Print Date: 10/24/2016

Map by: Msherrill
Projection: UTM Zone 15N
Source: ESRI, MDH, MPCA, MnDOT MnDNR, SeH, MnGeo WMS Service Minnesota Land Management IS

WELLHEAD PROTECTION PLAN
Part II
New Ulm, Minnesota

Minnesota Well Index (MWI)

Figure 11

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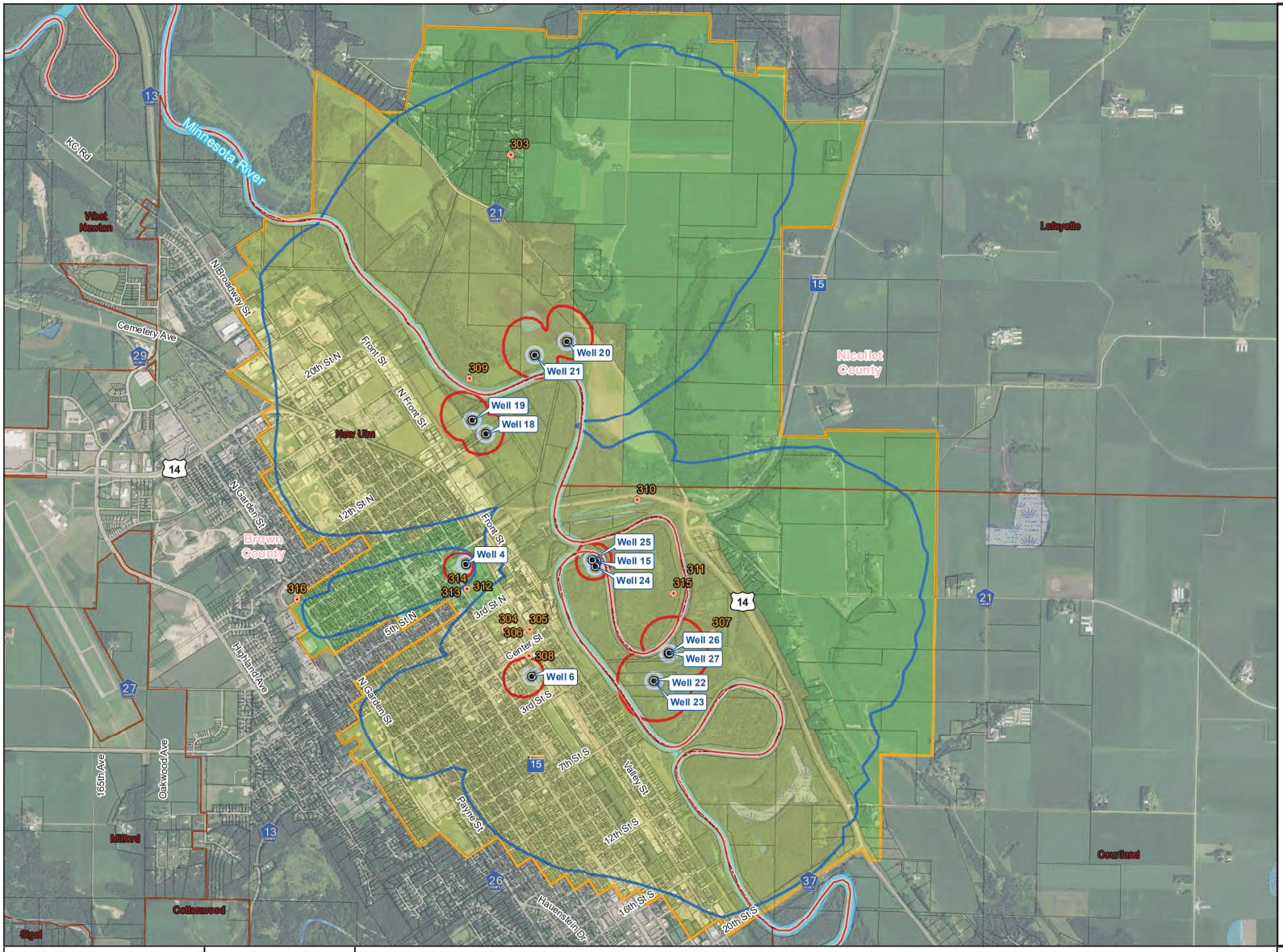


Legend

New Ulm Wellhead Protection Plan Features

- Public Water Supply Well
- Wellhead Protection Area (WHPA)
- Drinking Water Supply Management Area (DWSMA)
- Emergency Response Area
- Inner Wellhead Management Zone

Minnesota Admin Boundaries

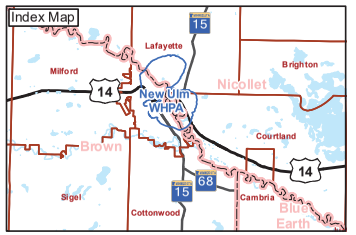
- County Boundaries
- Municipality Boundaries
- Parcel Boundaries

DWSMA Vulnerability

- Moderate Vulnerability
- Low Vulnerability

County Well Index

- Well Location (Unverified Location)



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SEH
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110
PHONE: (651)490-2000
FAX: (651) 490-2150
WATTS: 800-325-2065
www.sehinc.com

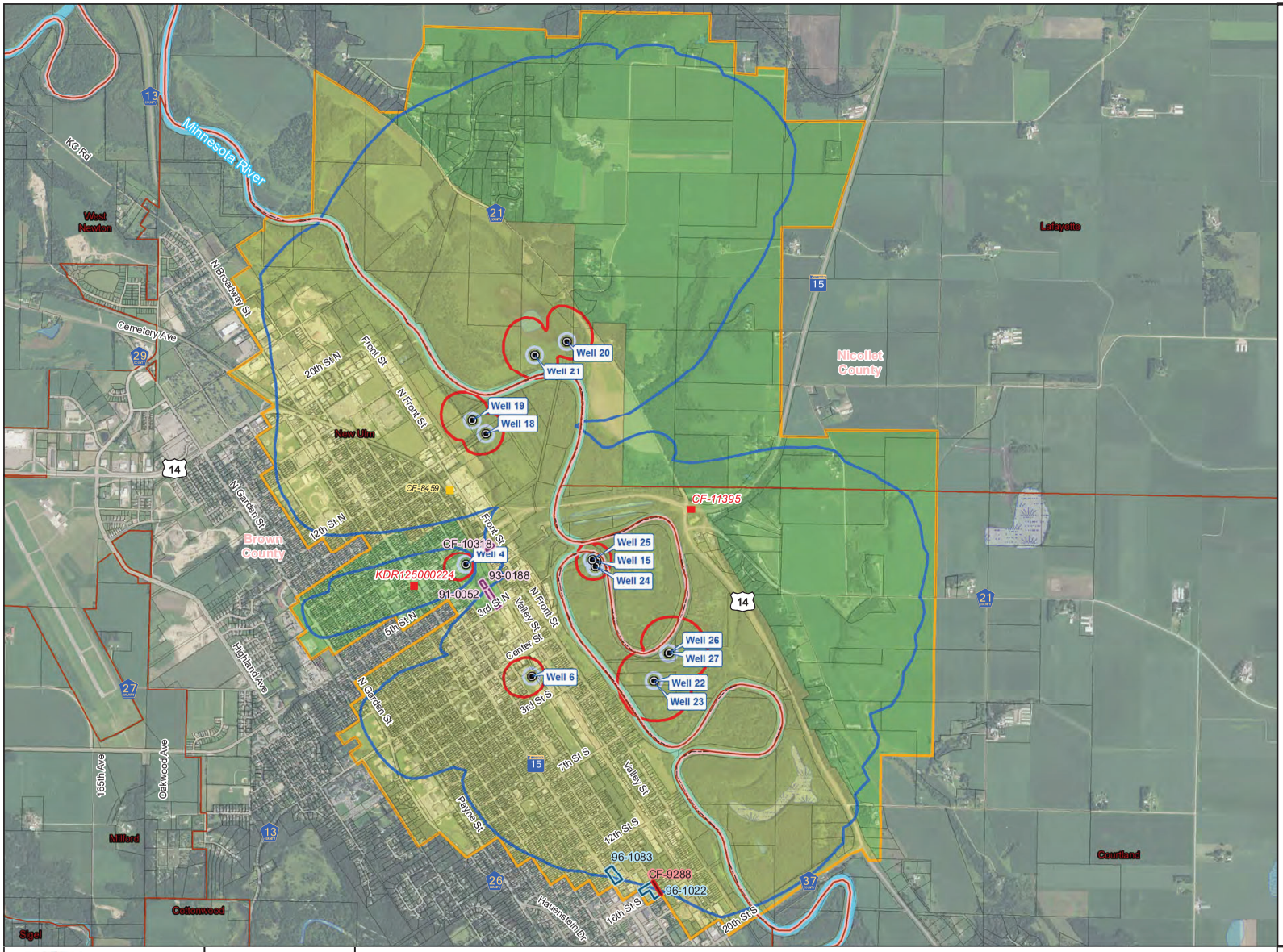
Project: Nulpu 130982
Print Date: 12/14/2016

Map by: Msherrill
Projection: UTM Zone 15N
Source: ESRI, MDH, MPCA, MnDOT MnDNR, SeH, MnGeo WMS Service Minnesota Land Management IS

WELLHEAD PROTECTION PLAN
Part II
New Ulm, Minnesota

Unverified County Well Index Locations

Figure 12



Legend

New Ulm Wellhead Protection Plan Features

- Public Water Supply Well
- Wellhead Protection Area (WHPA)
- Drinking Water Supply Management Area (DWSMA)
- Emergency Response Area
- Inner Wellhead Management Zone

Minnesota Admin Boundaries

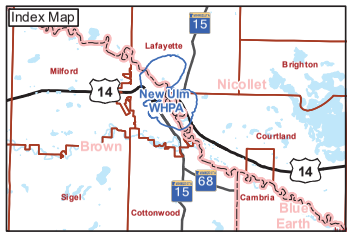
- County Boundaries
- Municipality Boundaries
- Parcel Boundaries

DWSMA Vulnerability

- Moderate Vulnerability
- Low Vulnerability

Agricultural Chemical Incidents

- Comprehensive
- Emergency
- Voluntary
- Old Emergency Incidents
- Small Spills & Investigations



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SEH
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110
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www.sehinc.com

Project: Nulpu 130982
Print Date: 10/24/2016

Map by: Msherrill
Projection: UTM Zone 15N
Source: ESRI, MDH, MPCA, MnDOT MnDNR, SeH, MnGeo WMS Service Minnesota Land Management IS

WELLHEAD PROTECTION PLAN
Part II
New Ulm, Minnesota

Agricultural Chemical Incidents

Figure 13

Appendix A

Scoping Decision Notice and Assessment of Data Elements

May 10, 2016

Protecting, maintaining and improving the health of all Minnesotans

Mr. George Brown, Jr.
Water/District Energy Department Supervisor
New Ulm Public Utilities
310 First North Street
New Ulm, Minnesota 56073

Dear Mr. Brown:

Subject: Scoping 2 Decision Notice and Meeting Summary – New Ulm Public Utilities – PWSID 1080003

This letter provides notice of the results of the second scoping meeting held with you, Christine Carlson, Mark Sherrill, and Jeff Ledin (Short Elliot Hendrickson, Inc.), and me on April 26, 2016, at New Ulm Water Treatment Plant regarding Part II of your wellhead protection (WHP) plan. During the meeting, we discussed data elements that must be compiled and assessed to prepare the part of the WHP plan related to the management of potential contaminants in the approved drinking water supply management area. The enclosed Scoping 2 Decision Notice lists the data elements that were discussed at the meeting. The data elements must be compiled and assessed in terms of their present and future implications on the 1) use of the well(s), 2) quality and quantity of water supplying the public water supply well(s), and 3) land and groundwater uses in the drinking water supply management area. We also discussed a summary of planning issues that were identified during the Part I WHP Plan development process which should be considered for inclusion in your Part II WHP Plan.

New Ulm Public Utilities has met the requirements to distribute copies of the first part of the WHP plan to local units of government and hold an informational meeting for the public. The New Ulm Public Utilities will have until January 3, 2017, to complete its WHP plan.

If a data element is marked on the enclosed notice as a data element that must be used and it does not exist, it is helpful if your plan notes this. MDH understands Short Elliott Hendrickson Inc., will be working with you to develop a draft of the remainder of the WHP plan. I will be contacting you to review the progress of the development of Part II of your plan. If you have any questions regarding the enclosed notice, contact me by email at Amanda.Strommer@state.mn.us or by phone at (507) 476-4241.

Sincerely,

Amanda Strommer

Amanda Strommer, Planner
Environmental Health Division
1400 East Lyon Street
Marshall, Minnesota 56258-2529

AS:ds-b
Enclosures
cc: Christine Carlson, SEH
Mark D. Sweers, MDH Engineer, Mankato District Office
Brian Gramentz, City Manager, City of New Ulm
Ron Struss, Minnesota Department of Agriculture

SCOPING 2 DECISION NOTICE
Moderately Vulnerable DWSMA

Remainder of the Wellhead Protection Plan

Name of Public Water Supply:		**Date:**
New Ulm Public Utilities	PWSID 1080003	May 10, 2016
Name of the Wellhead Protection Manager:		
Mr. George Brown, Jr., Water/District Energy Department Supervisor		
Address:	**City:**	**Zip:**
310 First North Street	New Ulm	56073
Unique Well Numbers:		**Phone:**
430604 (Well 4), 241335 (Well 6), 188651 (Well 15), 241337 (Well 18), 241338 (Well 19), 209604 (Well 20), 209605 (Well 21), 241339 (Well 22), 241340 (Well 23), 209603 (Well 24), 511075 (Well 25), 513011 (Well 26), 520956 (Well 27)		(507) 276-3317

Instructions for Completing the Scoping 2 Form

N	R	S	
X			**N = Not required.** If this box is checked, this data element is **NOT** necessary for your wellhead protection plan because it is not needed or it has been included in the first scoping decision notice. **Please go to the next data element**.

N	R	S	
	X		**R = Required for the remainder of the plan.** If this box is checked, this data **MUST** be used for the "**remainder of the plan**."

N	R	S	
		X	**S = Submit to MDH.** If this box is checked, this data element **MUST** be included in your **wellhead protection plan and submitted to MDH**. If there is **NO** check mark in the **"S"** box but there is an **"X"** in the **"R"** box, this data element **MUST** be included in your plan, but should **NOT be submitted to MDH**. This box will only be checked if MDH does not have access to this data element. This will help to reduce the cost by reducing the amount of paper and time to reproduce the data element.

DATA ELEMENTS ABOUT THE PHYSICAL ENVIRONMENT

PRECIPITATION

N	R	S	
X			An existing map or list of local precipitation gauging stations.

Technical Assistance Comments:

N	R	S	
X			An existing table showing the average monthly and annual precipitation in inches for the preceding five years.

Technical Assistance Comments:

GEOLOGY

N	R	S	
	X		An existing geologic map and a description of the geology, including aquifers, confining layers, recharge areas, discharge areas, sensitive areas as defined in Minnesota Statutes, section 103H.005, subdivision 13, and groundwater flow characteristics.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.

N	R	S	
	X		Existing records of the geologic materials penetrated by wells, borings, exploration test holes, or excavations, including those submitted to the department.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.

N	R	S	
	X		Existing borehole geophysical records from wells, borings, and exploration test holes.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect the geology of the area(s).

N	R	S	
	X		Existing surface geophysical studies.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect the geology of the area(s).

SOILS

N	R	S	
X			Existing maps of the soils and a description of soil infiltration characteristics.

Technical Assistance Comments:

N	R	S	
X			A description or an existing map of known eroding lands that are causing sedimentation problems.

Technical Assistance Comments:

WATER RESOURCES			
N	R	S	An existing map of the boundaries and flow directions of major watershed units and minor watershed units.
X			
Technical Assistance Comments:			
N	R	S	An existing map and a list of public waters as defined in Minnesota Statutes, section 103G.005, subdivision 15, and public drainage ditches.
X			
Technical Assistance Comments:			
N	R	S	The shoreland classifications of the public waters listed under subitem (2), pursuant to part 6120.3000 and Minnesota Statutes, sections 103F.201 to 103F.221.
X			
Technical Assistance Comments:			
N	R	S	An existing map of wetlands regulated under Chapter 8420 and Minnesota Statutes, section 103G.221 to 103G.2373.
X			
Technical Assistance Comments:			
N	R	S	An existing map showing those areas delineated as floodplain by existing local ordinances.
X			
Technical Assistance Comments:			

DATA ELEMENTS ABOUT THE LAND USE

LAND USE			
N	R	S	An existing map of parcel boundaries.
	X	X	
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing map of political boundaries.
	X	X	
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing map of public land surveys including township, range, and section.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			

N	R	S	A map and an inventory of the current and historical agricultural, residential, commercial, industrial, recreational, and institutional land uses and potential contaminant sources.
	X	X	

Technical Assistance Comments: The inventory, mapping and management of land uses and potential sources of contamination for all the Drinking Water Supply Management Areas(s) must reflect what is known about these data elements, as follows:

Moderate Vulnerability

1) All potential contaminant sources as listed on the attachment;
2) a land use/land cover map and table; and
3) an inventory of the Inner Wellhead Management Zone (IWMZ).

Low Vulnerability

1) All potential contaminant sources as listed on the attachment (inventory wells *25 to 400 feet in depth of the open interval or screened section of the well)* and wells of undocumented or unknown depths for the potential contaminant source inventory];
2) a land use/land cover map and table; and
3) an inventory of the Inner Wellhead Management Zone (IWMZ).

As a starting point, MDH will provide a land cover map and table from federal data bases. This data set must be used unless an alternative electronic data set that is more current and detailed is available.

Management strategies must be developed for all land uses and potential sources of contamination.

N	R	S	An existing comprehensive land-use map.
	X	X	

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	Existing zoning map.
	X	X	

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

PUBLIC UTILITY SERVICES

N	R	S	An existing map of transportation routes or corridors.
	X		

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	An existing map of storm sewers, sanitary sewers, and public water supply systems.
	X	X	

Technical Assistance Comments: It is not necessary to include a map of your public water supply system in your plan if you feel it would pose a threat to the security of your system. An existing map of the storm sewers and sanitary sewers in the Drinking Water Supply Management Area(s) must be included in the wellhead protection plan and must also be submitted to MDH as part of the approval.

N	R	S	An existing map of the gas and oil pipelines used by gas and oil suppliers.
	X	X	

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	An existing map or list of public drainage systems.
	X		

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	An existing record of construction, maintenance, and use of the public water supply well and other wells within the drinking water supply management area.
	X		

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.

DATA ELEMENTS ABOUT WATER QUANTITY

SURFACE WATER QUANTITY

N	R	S	An existing description of high, mean, and low flows on streams.
X			

Technical Assistance Comments:

N	R	S	An existing list of lakes where the state has established ordinary high water marks.
X			

Technical Assistance Comments:

N	R	S	An existing list of permitted withdrawals from lakes and streams, including source, use, and amounts withdrawn.
X			

Technical Assistance Comments:

N	R	S	An existing list of lakes and streams for which state protected levels or flows have been established.
X			

Technical Assistance Comments:

N	R	S	An existing description of known water-use conflicts, including those caused by groundwater pumping.
X			

Technical Assistance Comments:

GROUNDWATER QUANTITY

N	R	S	An existing list of wells covered by state appropriation permits, including amounts of water appropriated, type of use, and aquifer source.
	X		

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	An existing description of known well interference problems and water use conflicts.
	X	X	

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	An existing list of state environmental bore holes, including unique well number, aquifer measured, years of record, and average monthly levels.
	X		

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

DATA ELEMENTS ABOUT WATER QUALITY

SURFACE WATER QUALITY

N	R	S	An existing map or list of the state water quality management classification for each stream and lake.
X			

Technical Assistance Comments:

N	R	S	An existing summary of lake and stream water quality monitoring data, including: 1. bacteriological contamination indicators; 2. inorganic chemicals; 3. organic chemicals; 4. sedimentation; 5. dissolved oxygen; and 6. excessive growth or deficiency of aquatic plants.
X			

Technical Assistance Comments:

GROUNDWATER QUALITY

N	R	S	An existing summary of water quality data, including: 1. bacteriological contamination indicators; 2. inorganic chemicals; and 3. organic chemicals.
	X		

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	An existing list of water chemistry and isotopic data from wells, springs, or other groundwater sampling points.
	X		

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	An existing report of groundwater tracer studies.
	X		

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	An existing site study and well water analysis of known areas of groundwater contamination.
	X		

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.

N	R	S	An existing property audit identifying contamination.
	X		

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	An existing report to the Minnesota Department of Agriculture and the Minnesota Pollution Control Agency of contaminant spills and releases.
	X		

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

New Ulm Scoping 2 Meeting
Wellhead Protection (WHP) Planning Issues Summary

Drinking Water Protection Issues Identified to Date:

(1) The MDH Source Water Protection (SWP) Vulnerability rating for New Ulm's municipal wells determined Wells 6, 15, 18, 25 and 27 to be vulnerable and Wells 4, 19, 20, 21, 22, 23, 24, and 26 to be not vulnerable.

(2) The surficial geology to the east of the Minnesota River is made up primarily of clay and till. The L-scores in this area also identified it as having a low geologic sensitivity. The surficial geology to the west of the Minnesota River is made up primarily of sand and gravel outwash. The L-scores in this area identified it as having a moderate geologic sensitivity. Therefore, the area of the DWSMA west of the Minnesota River was determined to have a low vulnerability to pollution and the area east of the River was determined to have a moderate vulnerability to pollution.

(3) Due to the presence and thickness of shale confining units, the aquifer near Well 4 is determined to be of low vulnerability to contamination. However due to the presence of tritium at Well 6, the zone of contribution to well 6 is determined to be of moderate vulnerability to contamination.

(4) The overall quality of groundwater in New Ulm is good. No contaminants were detected at levels that violated federal drinking water standards. Some were detected in trace amounts that were below legal limits.

(5) Due to the tritium samples and proximity of Wells 6, 18, and 19 to potential impacts from stormwater the Part 2 Wellhead Protection Plan should provide a map of the city stormwater outlets in the moderately vulnerable area.

(6) There may be a need to evaluate the berms around the wells in the floodplain and ensure they meet well code.

(7) The Drinking Water Supply Management Area (DWSMA) contains a low vulnerable groundwater capture area and a moderately vulnerable groundwater capture area. Please make special note of the Potential Contaminant Source Inventory (PCSI) Requirements for these two areas.

Old Municipal Well Information:

Old municipal well reports have been completed. Old municipal wells exist which need to be inventoried and managed appropriately.

Sanborn Maps:

☒ Sanborn Maps are available for this area
☐ Sanborn Maps are not available for this area.

Required WHP Measures from MDH:

1) Wells in the DWSMA that need be inventoried should range in depth from 25 to 400 feet.
2) In year two of the plan, the Public Water Supply (PWS) should consider sampling for the following parameters when sampling the Minnesota River; nitrate, ammonia, chloride, bromide, sulfate, stable isotopes, TOC, special metal scan, field measurement, e. coli, and tritium. Sampling should occur simultaneously with the sampling of the public water supply wells. The PWS wells should be sampled for the above parameters also. Sampling should occur quarterly over a one year period.
3) Create a map with the locations of city stormwater outlets in the moderately vulnerable area.

The Part I Wellhead Protection Plan outlined the following recommendations:

Plan Implementation Category – Data Collection

Item 1 – Work Cooperatively with Neighboring Municipalities Regarding Wellhead Protection
The DWSMA that was delineated as part of this project extends beyond the New Ulm municipal boundaries. While developing and implementing Part II of the city's WHPP, it is recommended that the city collaborate and cooperate with municipalities in which the city's DWSMA extends to. As the city cannot dictate land use activities outside of its jurisdiction, it can work closely with surrounding municipalities as land uses change and decisions are made that may impact the city's water supply.

Item 2 – Work Cooperatively with Neighboring Stakeholder Groups and Local Governmental Units
There are additional stakeholders and local governmental units (LGUs) that may be found within the City's DWSMA boundary. It is recommended that as the city and/or LGUs plan to make changes that may affect land use within the DWSMA boundary that attempts be made to work collaboratively together to meet each of their needs and/or goals.

Item 3 – Additional Chemical and Stable Isotope Sampling/Analysis
It is recommended that the water from the city's Wells 19, 22, 23, 24, and 25 be analyzed for their tritium content using an enriched detection method to determine whether there is a component of aquifer water that is coming from the infiltration of precipitation. Contingent on funding assistance from MDH for sampling and analysis.

It is also recommended that the city work with the MDH Hydrologist to develop a sampling plan and determine additional samples to collect from the city's wells and the Minnesota River. These may include samples for stable isotopes of oxygen (O18) and deuterium (H2) as well as chloride, bromide, and nitrate+nitrite nitrogen. Samples should be collected on a quarterly basis for one to two years so that seasonal variations in the surface water signature of the city well water can be better determined. MDH will pay for the analytical costs of these samples. If the analyses indicate that the well water contains a component of surface water recharge, then additional sampling of surface water bodies within the DWSMA and deeper wells believed to be pumping from groundwater not under the influence of surface water will be needed to determine the component of surface water influence. The recommended additional sampling should be addressed in Part II of this Plan Update.

Plan Implementation Category – Contingency Planning

Item 1- Addressing the potential movement of contamination toward the community well(s).
MDH recommends that if contaminants are ever detected in a municipal water supply well, the Public Water Supplier work with MDH to perform an evaluation of whether to continue pumping the impacted well(s). Turning off a well may alter the movement of contamination to other pumping wells and compound the problem. Therefore, it is very important to include this recommendation in the contingency plan.

Other:

This document is intended to be a summary of issues identified to date and is ***not intended to replace the required data elements identified in the Scoping 2 Decision Notice*** *nor is it intended to be an exhaustive list of all potential drinking water issues.*

Scoping 2 Decision Notice Attachment
Potential Contaminant Source Inventory Requirements

Low Vulnerable DWSMA

The following current and historical potential contaminant sources and related codes and activity status and related codes are required to be included in the potential contaminant source inventory. All potential contaminant sources must be assigned an activity status and related code using state program descriptors or local knowledge.

Potential Contaminant Sources (PCS)	PCS Codes
Large Capacity Cesspool (potential Class V)	CVLCC
Large Capacity Waste Water Disposal Site (potential Class V)	CVWWD
Motor Vehicle Waste Disposal Well (potential Class V)	CVMVW
Wells	WEL

Activity Status; Codes; and Descriptions

Status	Code	Description
Active	A	PCS is operative or in use. Examples: Animal feedlot is active. Well is in use or has maintenance permit.
Closed	C	PCS is inactive and is not open from a regulatory viewpoint. Example: Leaking storage tank site or landfill is closed.
Inactive	I	PCS is present but not currently active. Examples: Gravel pit is inactive. Well is un-used.
Removed	R	PCS has been removed. Example: Underground storage tank has been removed.
Unknown	U	Activity status of the PCS is not known definitely or has not been evaluated. Examples: Class V site status unknown. Well is thought to be sealed, but no official sealing record has been identified.

Scoping 2 Decision Notice Attachment
Potential Contaminant Source Inventory Requirements

Moderately Vulnerable DWSMA

The following current and historical potential contaminant sources and related codes, materials and related codes, and activity status and related codes are required to be included in the potential contaminant source inventory. In cases where a materials identification is required, a materials designation and code must be assigned. All potential contaminant sources must be assigned an activity status and related code using state program descriptors or local knowledge.

Potential Contaminant Sources (PCS) Material	PCS Codes Material Codes
Above-Ground Storage Tank - Greater than 1100 gallons	AST
Chemicals	C000
Fertilizers	A050
Fuels, gases, and oils	F000
Hazardous substances	C001
Solvents and coatings	S000
Waste	W000
Agricultural Drainage Well (potential Class V)	ADW
Disposal Well (potential Class V)	DISWLL
Industrial Drainage Well (potential Class V)	INDW
Large Capacity Cesspool (potential Class V)	CVLCC
Large Capacity Waste Water Disposal Site (potential Class V)	CVWWD
Leaking Underground Storage Tank	LUST
Misc. Injection Well (potential Class V)	INJWLL
Motor Vehicle Waste Disposal Well (potential Class V)	CVMVW
Pipeline Facility	PLFAC
Potential Contamination Site[1]	PCS
Recharge Well (potential Class V)	RWLL
Reinjection Well (potential Class V)	RIWLL
Solid Waste Management Site	SWMS
Special Drainage Well (potential Class V)	SPDW
Spills	SPL
Storage or Preparation Area	STOR
Chemicals (include RMP facilities here)	C000
Fertilizers	A050
Fuels, gases, and oils	F000
Hazardous substances (include TRIS facilities here)	C001
Solvents and coatings	S000
Waste	W000

Potential Contaminant Sources (PCS) **Material**	**PCS Codes** **Material Codes**
Stormwater Injection Well (potential Class V)	SWI
Suspected Contaminant of Concern	SCC
Chemical	C000
Food, agricultural, and consumer products	A000
Fuels, gases, and oils	F000
Materials and minerals	M000
Pathogens	P000
Solvents and coatings	S000
Waste	W000
Underground Storage Tank	UST
Chemicals	C000
Fertilizers	A050
Fuels, gases, and oils	F000
Hazardous substances	C001
Solvents and coatings	S000
Waste	W000
Wells	WEL

Footnotes:

[1]Potential Contamination Sites (PCS) include the following:

Brownfields (BMS)
Delisted State Superfund Sites (DPLP)
Federal Superfund Sites (NPL)
Hazardous Waste Investigative/cleanup (HWIC)
No Further Remedial Action Planned (NFRAP)
State Superfund Sites (PLP)
Suspected Hazardous Waste Site (CERCL)
Voluntary Investigative Cleanup (VIC)

Activity Status; Codes; and Descriptions

Status	Code	Description
Active	A	PCS is operative or in use. Examples: Animal feedlot is active. Well is in use or has maintenance permit.
Closed	C	PCS is inactive and is not open from a regulatory viewpoint. Example: Leaking storage tank site or landfill is closed.
Inactive	I	PCS is present but not currently active. Examples: Gravel pit is inactive. Well is un-used.
Removed	R	PCS has been removed. Example: Underground storage tank has been removed.
Unknown	U	Activity status of the PCS is not known definitely or has not been evaluated. Examples: Class V site status unknown. Well is thought to be sealed, but no official sealing record has been identified.

Appendix B

Part I Wellhead Protection Plan