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MEMORANDUM

To: Honorable Mayor Danielowski
Members of the City Council
City of Big Lake

From: Jared Voge, P.E.
Assistant City Engineer

Date: December 5, 2016

Subject: Water Supply Plan 2016-2018
Big Lake, Minnesota
BMI Project No. R21.112221

As required by the Minnesota Department of Natural Resources under Minnesota Statue M.S.103G.291, a Water Supply Plan has been prepared. The purpose of the Water Supply Plan is to 1) implement long term water sustainability and conservation measures; and 2) develop critical emergency preparedness measures and define those which will be implemented in case of a water crisis. Please find enclosed the City of Big Lake's Water Supply Plan 2016-2018.

A resolution certifying and authorizing the City of Big Lake to submit a Water Supply Plan to the Department of Natural Resources has been enclosed for council consideration. We recommend that the City Council adopt the enclosed resolution.

If you have any questions on the above, please call.

Enclosure

By approving this item on the Consent Agenda, Council would be approving a RESOLUTION certifying and authorizing the City of Big Lake to submit a Water Supply Plan to the Department of Natural Resources.

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CITY OF BIG LAKE
MINNESOTA

A general meeting of the City Council of the City of Big Lake, Minnesota was called to order by Mayor Raeanne Danielowski at 6:30 p.m. in the Council Chambers of City Hall, Big Lake, Minnesota, on Wednesday, December 14, 2016. The following Council Members were present: Raeanne Danielowski, Seth Hansen, Duane Langsdorf, Scott Marotz, and Mike Wallen. A motion to adopt the following resolution was made by Council Member _____ and seconded by Council Member _____.

CITY OF BIG LAKE
RESOLUTION NO. 2016-XX

RESOLUTION CERTIFYING AND AUTHORIZING THE CITY OF BIG LAKE TO SUBMIT A WATER SUPPLY PLAN TO THE DEPARTMENT OF NATURAL RESOURCES AS REQUIRED

WHEREAS, pursuant to requirements of the Department of Natural Resources, certification of the Water Supply Plan is required by the City. The Water Supply Plan addresses the anticipated future water supply, potential impact to resources, and emergency preparedness measures to be taken by the City in case of a water crisis.

NOW THEREFORE, BE IT RESOLVED By the City Council of Big Lake Minnesota:

1. The Council hereby certifies the Water Supply Plan.
2. The Council authorizes submittal of the Water Supply Plan to the Department of Natural Resources

Adopted by the Big Lake City Council this 14th day of December, 2016.

_____
Mayor Raeanne Danielowski

Attest:

_____
Gina Wolbeck, City Clerk

The following Council Members voted in favor:
The following Council Members voted against or abstained:

Whereupon the motion was duly passed and executed.

STATE OF MINNESOTA)
)SS.
COUNTY OF SHERBURNE)

The foregoing instrument was acknowledged before me this _____ day of December, 2016 by the Mayor and City Clerk of the City of Big Lake, a Minnesota municipal corporation, on behalf of the corporation.

_____
Notary Public

Local Water Supply Plan Template
Third Generation for 2016-2018

Formerly called Water Emergency & Water Conservation Plan

Cover photo by Molly Shodeen

MNDNR

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.

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This information is available in an alternative format upon request.

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DEPARTMENT OF NATURAL RESOURCES – DIVISION OF ECOLOGICAL AND WATER RESOURCES AND METROPOLITAN COUNCIL

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 webpage at http://www.dnr.state.mn.us/gwmp/areas.html

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 www.mndnr.gov/watersupplyplans
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 webpage http://www.metrocouncil.org/Handbook/Plan-Elements/Water-Resources/Water-Supply.aspx. All out-state water suppliers do *not* need to complete the content addressed in Part 4.
7. Use the Plan instructions and Checklist document to insure all data is complete and attachments are included. This will allow for a quicker approval process. www.mndnr.gov/watersupplyplans
8. Plans should be submitted electronically – no paper documents are required. https://webapps11.dnr.state.mn.us/mpars/public/authentication/login
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)	**1979-3190**
Ownership	☒ Public or ☐ Private
Metropolitan Council Area	☐ Yes or ☒ No (Sherburne County)
Street Address	**160 Lake Street North**
City, State, Zip	**Big Lake, MN 55309**
Contact Person Name	Mike Goebel
Title	Public Works Director
Phone Number	(763) 263-2268
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:

The category "Water Used for Non-Essential" shall be the water use category "Other". Other water used describes water used for non-essential purposes. The total water delivered is the sum of the residential, commercial/industrial/institutional, other, and water supplier services water usage.

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	8671	8500	2934	293	36.8	0.0	0	342.4	379.8	9.9%	1.041	3.72	8/7/2005	94.5	122.4
2006	9035	8700	3104	355	47.2	0.0	0	420.9	468.3	10.1%	1.283	4.40	7/9/2006	111.7	147.5
2007	9277	9030	3344	370	80.6	0.0	0	503.3	563.1	10.6%	1.543	4.55	7/1/2007	112.2	170.8
2008	9446	9030	3987	342	94.8	0.0	0	465.1	509.5	8.7%	1.396	4.11	6/24/2008	103.8	154.6
2009	9521	9030	3313	337	76.0	0.0	0	454.0	540.8	16.0%	1.482	3.93	6/3/2009	102.2	164.1
2010	10060	9030	3287	292	65.6	0.0	0	403.1	507.9	20.6%	1.392	3.85	5/31/2010	88.5	154.1
2011	10164	10060	3361	272	66.9	0.0	0	362.5	435.7	16.8%	1.194	2.89	6/30/2011	74.2	118.7
2012	10334	10060	3361	268	84.4	0.0	0	408.0	478.6	14.7%	1.311	3.78	7/12/2012	73.0	130.3
2013	10402	10060	3375	249	114.2	0.0	0	401.6	453.0	11.3%	1.241	3.34	6/25/2013	67.7	123.4
2014	10587	10060	4662	237	68.6	0.0	0	309.0	372.1	16.9%	1.019	2.74	7/22/2014	64.4	101.3
2015	10671	10600	4976	201	81.8	0.0	0	293.5	408.0	28.1%	1.118	2.59	7/1/2015	51.9	105.5
Avg. 2010-2015	10370	9978	3837	253	80	0	0	362.9	443	18.1%	1.21	3.20	N/A	70.0	122.2

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

See Glossary for definitions

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, Wholesale)	Amount Used (Gallons per Year)	Percent of Total Annual Water Delivered	Implementing Water Conservation Measures? (Yes/No/Unknown)
Cargill	Commercial	17,590,000	6.0%	Unknown
Water Treatment Plant	Commercial	8,825,000	3.0%	Unknown
Trailer Park	Commercial	4,905,000	1.7%	Unknown
Holiday gas station	Commercial	3,611,000	1.2%	Unknown
Irrigation (Townhomes)	Residential	2,982,000	1.0%	Unknown
Remmele #30	Commercial	2,621,000	0.9%	Unknown
Lakeside Park	Commercial	2,502,000	0.9%	Unknown
Russels	Commercial	2,214,000	0.8%	Unknown
Shores of Mitchell	Commercial	2,152,000	0.7%	Unknown
Remmele #40	Commercial	2,054,000	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 Amount of Residuals	Disposal Process for Residuals	Do You Reclaim Filter Backwash Water?
WTP 1	2007	5,700,000	Gravity dual media (sand and anthracite) filtration	Fe/Mn removal, radionuclide remoal, fluoridation, chlorination, polyphosphate addition	N/A	Sewer	Yes
Total	NA	5,700,000	N/A	N/A	N/A	Sewer	N/A

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)
2	Elevated storage	N/A	Steel	200,000
3	Elevated storage	N/A	Steel	500,000
4	Elevated storage	2005	Steel	1,000,000
WTP Clearwell/Reservoir	Other - Ground	2007	Concrete	900,000
Total	NA	NA	NA	2,600,000

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):

The City of Big Lake currently has 1,700,000 gallons of elevated storage in three steel spheroidal storage tanks, and 900,000 gallons of storage within the water treatment plant clearwell. The water treatment plant has a generator at the treatment plant allowing water to be pumped into the distribution system during a power failure. The total storage within the system is 2,600,000 gallons. Typically, it is desired to maintain a storage capacity greater than the average day demand (based on Ten States Standards). In 2016, the average day demand is projected to be 1,172,598 gallons per day. Using the Ten States Standards and comparing the average day demand to total storage capacity, there is a surplus of 1,427,402 gallons in 2016. By 2025, the projected average day demand is 1.46 MGD yielding a storage surplus of 1.165 MG. Over the next 10 year, storage capacity is adequate. By 2040, the average day demand is projected to be 1,976,894 gallons per day, yielding a storage surplus of 623,106 gallons. Future projections indicate the storage capacity for Big Lake is adequate for average day demand through 2040.

There is one water treatment plant in Big Lake with a capacity of 5.7 MGD based on the treatment plants operating for 20 hours per day. It is common to operate water treatment plants for 20 hours per day to allow for backwashing and maintenance. Typically, water treatment plants are sized to treat the maximum daily demand projected for a community. By 2025, the peak day demand is projected to be 4.10 MGD. By these standards, there is 1.6 MGD of capacity left in the treatment plant. Within the next 10 years, there is adequate treatment capacity for the City of Big Lake. Long-term water use projections indicate the peak day demand will reach 5.25 MGD by 2040. However, the treatment plant has the capacity of 5.7 MGD. It may be beneficial to increase treatment plant capacity shortly after 2040.

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	Well No. 1	220959	1957	550	210	Active	Yes
Groundwater	Well No. 2	217948	1967	695	230	Active	Yes
Groundwater	Well No. 3	163648	1980	810	300	Emergency Only	Yes
Groundwater	Well No. 4	523954	1993	860	192	Active	Yes
Groundwater	Well No. 5	659386	2001	626	178	Active	Yes
Groundwater	Well No. 6	705488	2004	505	202	Active	Yes
Groundwater	Well No. 7	763778	2008	608	220	Active	Yes

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 is potential interference between well number 7 and local irrigation systems.

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?

The community of Big Lake, MN has grown substantially over the last 10 years; increasing in population by 1,910 people, a 22% increase from 2005 to 2015. Likewise, the population served within the City of Big Lake increase by 18% from 2005 to 2015. It is expected that the population served will increase through 2040 and the population served will equal the total population within the City of Big Lake.

The average total per capita water demand from 2005 through 2015 is 136 gallons per capita per day (gpcd). Historically, there has been some very high water usage recorded in the City of Big Lake. In 2007, the total per capita usage reached 171 gpcd. Several years have usages around 150 gpcd. However, the average of the last 5 years is 122 gpcd, indicating that the water usage per capita is decreasing. This could be due to several factors such as water efficient devices, education, and reduced water usage. Another factor could be that the population served has remained consistent for several years. This could be caused by people moving into the city limits but using water from a private well.

During the last 10 years, the residential water usage has decreased while the population has increased. The average per capita demand for residential users during the last 10 years was 70 gpcd. This has decreased significantly from a peak in 2007 of 112 gpcd. The trend shows a reducing residential per capita water usage.

Average daily demand has remained steady over the last 10 years, yielding a value of 1.27 million gallons per day. Historically, the year with the highest average demand was 2007 with an average day demand of 1.543 MGD. Since 2007, the average day demand has decreased to 1.118 MGD. This could be due to water efficiency programs and structures as noted earlier. In addition, it can be seen that the population served has remained consistent for the last several years. A stable population served allows for a stable or steady average day demand.

The maximum day demand has slightly declined over the last 10 years. The max day demand averaged 3.63 MGD. Over the last 5 years (from 2010 to 2015), the max day demand has decreased to an average of 3.20 MGD. The peak max day demand occurred in 2007 at 4.55 MGD. Historically, the max daily demand has occurred in the summer months (May through September, with most occurring in June and July) when water usage is highest. A reduction in the max day demand could be due to an increased precipitation the last couple of years. During years of drought, max day water demand tends to spike as more people irrigate lawns. In addition, max day demand has reduced from increased education about water efficiency and water efficient devices.

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	11,726	11,726	100	1.173	3.571
2017	12,049	12,049	100	1.205	3.650
2018	12,374	12,374	100	1.237	3.733
2019	12,700	12,700	100	1.270	3.808
2020	13,042	13,042	100	1.304	3.886
2021	13,356	13,356	100	1.336	3.965
2022	13,685	13,685	100	1.369	4.044
2023	14,016	14,016	100	1.402	4.115
2024	14,348	14,348	100	1.435	4.201
2025	14,656	14,656	100	1.466	4.280
2030	16,343	16,343	100	1.634	4.670
2040	19,769	19,769	100	1.977	3.954

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:

Future water demands were projected based on the increase in population. Population projections were calculated by linear regression using historic data from the Minnesota State Demographer. The linear regression took into account the historic city population to county population ratio. Population projections assumed the population would increase at a linear rate after 2015 and that the county population would increase linearly after 2015. It was assumed that the projected service area population would equal the projected total population. The City would require all new residents to connect to city water supply and not allow new private wells in town. As the service area population increased, the average day demand increased. Ten States Standards was used for demand projections with a per capita use of 100 gallons per capita per day (gpcd). The max day demand was projected by calculated a peaking factor based on the projected population. The peaking factor was calculated based on Ten States Standards. The peaking factor is based on population and increases with an increase in population. As the peaking factor increases, the projected maximum day demand will also increase.

E. Resource Sustainability

Monitoring – *Key DNR Benchmark*

Complete Table 8 by inserting information about source water quality and quantity monitoring efforts. List should include all production wells, observation wells, and source water intakes or reservoirs. Add rows to the table as needed. Find information on groundwater level monitoring program at: http://www.dnr.state.mn.us/waters/groundwater_section/obwell/index.html

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
220959 (Well No. 1)	☒ 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
217948 (Well No. 2)	☒ 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
163648 (Well No. 3)	☒ 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
523954 (Well No. 4)	☒ production well ☐ observation well	☐ routine MDH sampling	☐ continuous ☐ hourly	☒ SCADA ☐ grab sampling

MN Unique Well # or Surface Water ID	Type of monitoring point	Monitoring program	Frequency of monitoring	Monitoring Method
	☐ source water intake ☐ source water reservoir	☒ routine water utility sampling ☐ other	☐ daily ☒ monthly ☐ quarterly ☐ annually	☐ steel tape ☐ stream gauge
659386 (Well No. 5)	☒ 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
705488 (Well No. 6)	☒ 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
763778 (Well No. 7)	☒ 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

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.

Provide water level data graphs for each well in **Appendix 3** for the life of the well, or for as many years as water levels have been measured. See DNR website for Date Time Water Level http://www.dnr.state.mn.us/groundwater/hydrographs.html

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
220959	Mt. Simon-Fond Du Lac	8.5	☐ Falling ☒ Stable ☐ Rising	Monthly
217948	Mt. Simon-Fond Du Lac	13	☐ Falling ☐ Stable ☒ Rising	Monthly
163648	Mt. Simon-Red Clastics	25	☐ Falling ☒ Stable ☐ Rising	Monthly
523954	Mt. Simon	17	☐ Falling ☒ Stable ☐ Rising	Monthly
659386	Mt. Simon-Red Clastics	4.5	☐ Falling ☐ Stable ☒ Rising	Monthly
705488	Mt. Simon-Fond Du Lac	15.5	☐ Falling ☒ Stable ☐ Rising	Monthly
763778	Mt. Simon-Hinckley	20.5	☐ Falling ☒ Stable ☐ Rising	Monthly

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 be impacted by permitted water withdrawals. If known, 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 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.

Table 10. Natural resource impacts

Resource Type	Resource Name	Risk	Risk Assessed Through	Describe Resource Protection Threshold*	Mitigation Measure or Management Plan	Describe How Changes to Thresholds are Monitored
☒ River or stream	Elk River	☒ Flow/water level decline ☒ Degrading water quality trends and/or MCLs exceeded ☐ Impacts on endangered, threatened, or special concern species habitat or other natural resource impacts ☐ Other: _____	☐ GIS analysis ☐ Modeling ☐ Mapping ☒ Monitoring ☐ Aquifer testing ☐ Other: ___	Lower limit on acceptable flow in river. Water quality outside an acceptable range.	☐ Revise permit ☒ Change groundwater pumping ☒ Increase conservation ☐ Other	Monitor river level and compare to historic records to determine trends in flow and level. Monitor water quality and compare to historic data to determine changes in water quality from normal.
☐ Calcareous fen	N/A	☐ Flow/water level decline ☐ Degrading water quality trends and/or MCLs exceeded ☐ Impacts on endangered, threatened, or special concern species habitat or other natural resource impacts ☐ Other: _____	☐ GIS analysis ☐ Modeling ☐ Mapping ☐ Monitoring ☐ Aquifer testing ☐ Other: ___	N/A	☐ Revise permit ☐ Change groundwater pumping ☐ Increase conservation ☐ Other	N/A
☒ Lake	Big Lake	☒ Flow/water level decline ☒ Degrading water quality trends and/or MCLs exceeded ☐ Impacts on endangered, threatened, or special concern species habitat or other natural resource impacts ☐ Other: _____	☐ GIS analysis ☐ Modeling ☒ Mapping ☒ Monitoring ☐ Aquifer testing ☐ Other: ___	Lower limit on acceptable lake level. Water Quality outside acceptable range.	☐ Revise permit ☒ Change groundwater pumping ☒ Increase conservation ☐ Other	Monitor lake levels and compare to historic records to determine lake level trends. Monitor water quality and compare to historic records to determine trends. There is a strong potential that excessive water withdrawals may have a significant

Resource Type	Resource Name	Risk	Risk Assessed Through	Describe Resource Protection Threshold*	Mitigation Measure or Management Plan	Describe How Changes to Thresholds are Monitored
						impact on surface water levels.
☒ Wetland	McDowall Lake	☒ Flow/water level decline ☒ Degrading water quality trends and/or MCLs exceeded ☐ Impacts on endangered, threatened, or special concern species habitat or other natural resource impacts ☐ Other: _____	☐ GIS analysis ☐ Modeling ☒ Mapping ☒ Monitoring ☐ Aquifer testing ☐ Other: ___	Lower limit on acceptable lake level. Water Quality outside acceptable range.	☐ Revise permit ☐ Change groundwater pumping ☒ Increase conservation ☐ Other	Monitor lake levels and compare to historic records to determine lake level trends. Monitor water quality and compare to historic records to determine trends. There is a strong potential that excessive water withdrawals may have a significant impact on surface water levels.
☒ Lake	Beaudry Lake	☒ Flow/water level decline ☒ Degrading water quality trends and/or MCLs exceeded ☐ Impacts on endangered, threatened, or special concern species habitat or other natural resource impacts ☐ Other: _____	☐ GIS analysis ☐ Modeling ☒ Mapping ☒ Monitoring ☐ Aquifer testing ☐ Other: ___	Lower limit on acceptable lake level. Water Quality outside acceptable range.	☐ Revise permit ☐ Change groundwater pumping ☒ Increase conservation ☐ Other	Monitor lake levels and compare to historic records to determine lake level trends. Monitor water quality and compare to historic records to determine trends. There is a strong potential that excessive water withdrawals may have a significant impact on surface water levels.
☒ Wetland	McDowall Lake	☒ Flow/water level decline ☒ Degrading water quality	☐ GIS analysis ☐ Modeling ☐ Mapping ☒ Monitoring	Lower limit on acceptable lake level.	☐ Revise permit ☐ Change groundwater pumping	Monitor lake/wetland levels and compare to historic records

Resource Type	Resource Name	Risk	Risk Assessed Through	Describe Resource Protection Threshold*	Mitigation Measure or Management Plan	Describe How Changes to Thresholds are Monitored
		trends and/or MCLs exceeded ☐ Impacts on endangered, threatened, or special concern species habitat or other natural resource impacts ☐ Other: _____	☐ Aquifer testing ☐ Other: ___		☒ Increase conservation ☐ Other	to determine trends. Monitor water quality and compare to historic records to determine trends. There is a strong potential that excessive water withdrawals may have a significant impact on surface water levels.
☐ Trout stream	N/A	☐ Flow/water level decline ☐ Degrading water quality trends and/or MCLs exceeded ☐ Impacts on endangered, threatened, or special concern species habitat or other natural resource impacts ☐ Other: _____	☐ GIS analysis ☐ Modeling ☐ Mapping ☐ Monitoring ☐ Aquifer testing ☐ Other: ___	N/A	☐ Revise permit ☐ Change groundwater pumping ☐ Increase conservation ☐ Other	N/A
☒ Aquifer	Mt. Simon-Fond Du Lac	☒ Flow/water level decline ☒ Degrading water quality trends and/or MCLs exceeded ☐ Impacts on endangered, threatened, or special concern species habitat or other natural resource impacts ☐ Other: _____	☐ GIS analysis ☐ Modeling ☐ Mapping ☒ Monitoring ☒ Aquifer testing ☐ Other: ___	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	☐ Revise permit ☒ Change groundwater pumping ☒ Increase conservation ☐ Other	Compare new monitoring data to any existing data and determine trends in aquifer levels. Compare any new maps with existing maps to see if aquifer levels have changed or maintained the same levels. Three City wells are connected to this aquifer. Another drinking water

Resource Type	Resource Name	Risk	Risk Assessed Through	Describe Resource Protection Threshold*	Mitigation Measure or Management Plan	Describe How Changes to Thresholds are Monitored
						management area may overlaps this aquifer. There is a strong potential that excessive water withdrawals will have an impact on aquifer levels.
☒ Aquifer	Mt. Simon-Red Clastics	☒ Flow/water level decline ☒ Degrading water quality trends and/or MCLs exceeded ☐ Impacts on endangered, threatened, or special concern species habitat or other natural resource impacts ☐ Other: _____	☐ GIS analysis ☐ Modeling ☐ Mapping ☒ Monitoring ☒ Aquifer testing ☐ Other: ___	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	☐ Revise permit ☒ Change groundwater pumping ☒ Increase conservation ☐ Other	Compare new monitoring data to any existing data and determine trends in aquifer levels. Compare any new maps with existing maps to see if aquifer levels have changed or maintained the same levels. Two City wells are connected to this aquifer. Another drinking water management area may overlaps this aquifer. There is a strong potential that excessive water withdrawals will have an impact on aquifer levels.
☒ Aquifer	Mt. Simon-Hinckley	☒ Flow/water level decline ☒ Degrading water quality trends and/or MCLs exceeded ☐ Impacts on endangered, threatened, or	☐ GIS analysis ☐ Modeling ☐ Mapping ☒ Monitoring ☒ Aquifer testing ☐ Other: ___	Lower limit on acceptable aquifer level. Decline at one or more monitoring wells. Withdrawals that exceed	☐ Revise permit ☒ Change groundwater pumping ☒ Increase conservation ☐ Other	Compare new monitoring data to any existing data and determine trends in aquifer levels. Compare any new maps with existing maps to

Resource Type	Resource Name	Risk	Risk Assessed Through	Describe Resource Protection Threshold*	Mitigation Measure or Management Plan	Describe How Changes to Thresholds are Monitored
		special concern species habitat or other natural resource impacts ☐ Other: _____		some percent of the total amount available from a source		see if aquifer levels have changed or maintained the same levels. One City well is connected to this aquifer. Another drinking water management area may overlaps this aquifer. There is a strong potential that excessive water withdrawals will have an impact on aquifer levels.
☒ Aquifer	Mt. Simon	☒ Flow/water level decline ☒ Degrading water quality trends and/or MCLs exceeded ☐ Impacts on endangered, threatened, or special concern species habitat or other natural resource impacts ☐ Other: _____	☐ GIS analysis ☐ Modeling ☐ Mapping ☒ Monitoring ☒ Aquifer testing ☐ Other: ___	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 during well pumping.	☐ Revise permit ☒ Change groundwater pumping ☒ Increase conservation ☐ Other	Compare new monitoring data to any existing data and determine trends in aquifer levels. Compare any new maps with existing maps to see if aquifer levels have changed or maintained the same levels. One City well is connected to this aquifer. Another drinking water management area may overlaps this aquifer. There is a strong potential that excessive water withdrawals will have an impact on aquifer levels.

Resource Type	Resource Name	Risk	Risk Assessed Through	Describe Resource Protection Threshold*	Mitigation Measure or Management Plan	Describe How Changes to Thresholds are Monitored
☒ Endangered, threatened, or special concern species habitat, other natural resource impacts	Blanding's Turtle	☐ Flow/water level decline ☐ Degrading water quality trends and/or MCLs exceeded ☒ Impacts on endangered, threatened, or special concern species habitat or other natural resource impacts ☐ Other: _____	☐ GIS analysis ☐ Modeling ☐ Mapping ☒ Monitoring ☐ Aquifer testing ☐ Other: ___	Reduced habitat for turtles. Declining turtle population.	☐ Revise permit ☐ Change groundwater pumping ☒ Increase conservation ☐ Other	Blanding's Turtles have been found nearby. Continue to monitor habitat levels and increase conservation.

* Examples of thresholds: 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.

Wellhead Protection (WHP) and Surface 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 Surface Water Protection Plans

Plan Type	Status	Date Adopted	Date for Update
WHP	☐ In Process ☒ Completed ☐ Not Applicable	Part I: 2014 Part II: 2016	Part I: 2024 Part II: 2026
SWP	☐ In Process ☐ Completed ☒ Not Applicable	NA	NA

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	Well 8: 2018 Well 9: 2020	Add additional well capacity
Water Storage Facilities	☐ No action planned - adequate ☒ Repair/replacement ☐ Expansion/addition	2016 – 2022	Maintenance on existing water towers
Water Treatment Facilities	☒ No action planned - adequate ☐ Repair/replacement ☐ Expansion/addition		
Distribution Systems (pipes, valves, etc.)	☐ No action planned - adequate ☒ Repair/replacement ☐ Expansion/addition	As needed	Replace/fix water mains and services as needed.
Pressure Zones	☒ No action planned - adequate ☐ Repair/replacement ☐ Expansion/addition		

System Component	Planned action	Anticipated Construction Year	Notes
Other:	☐ No action planned - adequate ☐ Repair/replacement ☐ Expansion/addition		

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	Big Lake	Well No. 8	500 – 1000	2018	None
Groundwater	Big Lake	Well No. 9	500 – 1000	2020	none
Surface Water	N/A	N/A	N/A	N/A	N/A
Interconnection to another supplier	N/A	N/A	N/A	N/A	N/A

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. Federal 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.

Do you have a federal emergency response plan? Yes ☒ No ☐

If yes, what was the date it was certified? **May 14, 2004**

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

Table 15. Emergency Preparedness Plan contact information

Emergency Response Plan Role	Contact Person	Contact Phone Number	Contact Email
Emergency Response Lead	MIKE GOEBEL	763-263-2268	MIKE@CI.BIG-LAKE.MN.US
Alternate Emergency Response Lead	CHARLIE GAMMON	763-263-2268	CHARLIE@BIG-LAKE.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**. A template is available at www.mndnr.gov/watersupplyplans

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
NONE	NA	NA	NA
NONE	NA	NA	NA
NONE	NA	NA	NA
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
NA	NA	NA	NA	NA
NA	NA	NA	NA	NA
NA	NA	NA	NA	NA
NA	NA	NA	NA	NA
NA	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.)

None

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 (GDP)	Short-Term Emergency Demand Reduction Potential (GPD)
Residential	1	742,000	0
C/I/I	2	225,000	0
Non-Essential	3	151,000	151,000
TOTAL	NA	1,118,000	151,000

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	None
☒ 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	None
☒ Governor's critical water deficiency declared	☒ Website ☐ Email list serve ☒ Social media (e.g. Twitter, Facebook)	☒ Daily ☒ Weekly ☐ Monthly ☐ Annually	None

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.

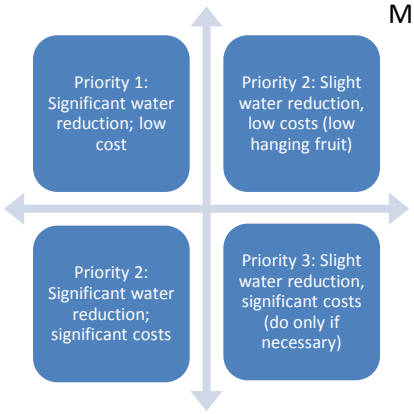
Irrespective of whether a critical water deficiency control is in place, does the public water supply utility, city manager, mayor, or emergency manager have standing authority to implement water restrictions? Yes ☒ No ☐

If yes, cite the regulatory authority reference: City Council/City Administration (in the event of an emergency and City Council cannot act).

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

N/A

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 use 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.

N/A

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?

Changing water rates helps to decrease water demand. As water rates increase, water demand decreases. There is a reduction of per capita demand and the average day and max day demand also decreased from the 2006 plan commitments.

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 and lake levels ☐ Other: _____	☒ Increase promotion of conservation measures ☐ Other: _____

Objective	Triggers	Actions
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	☐ Describe

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 Waters 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 monitoring is done on as "As needed" basis. The goal is to implement a regular leak detection-monitoring schedule within the next 10 years.

Water Audits - are intended to identify, quantify, and verify water and revenue losses. The volume of unaccounted-for water should be evaluated each billing cycle. The American Water Works Association (AWWA) recommends that ten percent or less of pumped water is unaccounted-for water. Water audit procedures are available from the AWWA and MN Rural Water Association www.mrwa.com . Drinking Water Revolving Loan Funds are available for purchase of new meters when new plants are built.

What is the date of your most recent water audit? January 1, 2016

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: 2015

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

Annual water loss has remained steady with an average of 15% over the last 10 years. Increased leak detection and repairing leaks when found, will be done in a timely manner. A leak detection schedule will be implemented. Replacing old and aging infrastructure with new. Replacing old water mains with new water mains. Efficiencies will be increase wherever possible to reduce the amount of water that goes unmetered. The goal is to reduce the water losses to less than 10% over the next 10 years.

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. AWWA also recommends that water suppliers conduct regular water audits to ensure accountability. 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	4,779	4,779	4,779	As needed	Variable/As needed

Customer Category	Number of Customers	Number of Metered Connections	Number of Automated Meter Readers	Meter testing intervals (years)	Average age/meter replacement schedule (years
Commercial	183	183	183	As needed	Variable/As needed
Industrial	14	14	14	As needed	Variable/As needed
TOTALS	4,976	4,976	4,976	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.

N/A

Table 24. Water source meters

	Number of Meters	Meter testing schedule (years)	Number of Automated Meter Readers	Average age/meter replacement schedule (years
Water source (wells/intakes)	7	As needed	N/A	Variable/As needed
Treatment plant	1	As needed	1	Variable/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? 86 g/person/day

Describe the water use trend over that timeframe:

The residential water demand has been decreasing over the last 10 years. A peak in residential water demand occurred in 2007 at 112 gal/cap/day. Residential water usage has decreased resulting in a decreasing residential demand. Residential water demand shows a continuing trend of a decreasing demand. With residential demand making up a majority of the water demand for the City, the total demand has also seen a decrease over the last 10 years. In 2015, the residential demand was 51.9 gpcd.

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.	Ongoing. The goal is to continue monitoring and changing codes as needed to best reduce water demand.
☐ 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: Odd/even watering	Ongoing.
☐ 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	Ongoing. Achieve less than a 10% unaccounted for water in 10 years.
☐ 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. Provide information to consumers on how to reduce water demand.
☒ Describe other plans: Educational information sent out to consumers. Fee updates.	Ongoing. Continue to educate consumers on the importance of saving water and reducing demand. Update water fees as necessary.

Objective 3: Achieve at least a 1.5% per year water reduction for Institutional, Industrial, Commercial, and Agricultural GPCD over the next 10 years or a 15% reduction in ten years.
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	Within 10 years, have enhanced meters on major industries.
☐ 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)	As needed on a yearly basis.
☐ 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.)	
☐ Train employees how to conserve water	
☐ Implement a notification system to inform non-residential customers when water availability conditions change.	
☐ 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. Proposed plumbing code 4714.1702.1 http://www.dli.mn.gov/PDF/docket/4714rule.pdf	
☐ 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 per capita demand has been decreasing over the last 10 years and is projected continue a decrease over the next 10 years. By 2025, a residential per capita demand of less than 70 is projected. However, it is not possible to achieve very low per capita demands since the population will continue to increase. It is most likely that the per capita demand will reach a terminal point and level off. Water conservation measures coupled with a stable population has helped decrease water demand.

The total per capita demand has also decreased over the last 10 years to approximately 100 gpcd. Future projections indicate the linear trend has the demand at less than 80 gpcd by 2025. Similar to the residential demand, the total demand should level off as population increases faster than water conservation. Water conservation measures coupled with a stable population has helped decrease water demand.

The C/I/I demand has remained consistent over the last 10 years. There is a projected slight increase to over 50 gpcd by 2025. This could be due to increased industrial demands as the community grows and an increase in institutional demand as the school system grows.

Objective 5: Reduce Peak Day Demand so that the Ratio of Average Maximum day to the Average Day is 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: 2.84

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 a Conservation Water Rate Structure and/or a Uniform Rate Structure with a Water Conservation Program

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: 1,000 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: February 24, 2016

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 (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 ☐ Odd/even day watering	☐ Service charge based on water volume ☐ 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:

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?

Evaluate water demands (both total and residential) to determine trends. Continue to monitor aquifer levels using monitoring wells to see how groundwater levels are changing.

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.

A. 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

Regulations Utilized	When is it applied (in effect)?
	☐ 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 ☐ 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

B. 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 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.):

Rain gardens help conserve water and reduce storm water runoff in to nearby surface water.

C. 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	Water quality	1	☒ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Press releases to traditional local news outlets (e.g., newspapers, radio and TV)	Education about water conservation and water quality	As needed	☒ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Social media distribution (e.g., emails, Facebook, Twitter)	Education about water conservation and water quality	As needed	☒ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Paid advertisements (e.g., billboards, print media, TV, radio, web sites, etc.)	Education about water conservation and water quality	As needed	☒ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Presentations to community groups			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Staff training	Education about water conservation and water quality. How to be more water efficient.	As needed	☒ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Facility tours	Education about water conservation and water quality	As needed	☒ 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	Education about water conservation and water quality	As needed	☒ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Direct mailings (water audit/retrofit kits, showerheads, brochures)			☐ Ongoing ☐ Seasonal

Education Methods	General summary of topics	#/Year	Frequency
			☐ 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	Information about the wastewater and water treatment plants	As needed	☒ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Demonstration projects (landscaping or plumbing)			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
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: http://www.biglakemn.org/index.asp?SEC=B5D193FB-0742-4D92-93B8-C1570CAB01E0&Type=B_BASIC)	Information about education and water conservation.	Ongoing and daily on the website	☒ 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			☐ Ongoing

Education Methods	General summary of topics	#/Year	Frequency
			☐ 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:

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	NA	NA
☐ Comprehensive planning that guides development in vulnerable drinking water supply management areas	NA	NA
☐ Zoning overlay	NA	NA
☐ Other:	NA	NA

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 – see Part 1C

Appendix 2: Water level monitoring plan – see Part 1E

Appendix 3: Water level graphs for each water supply well - see Part 1E

Appendix 4: Capital Improvement Plan - see Part 1E

Appendix 5: Emergency Telephone List – see Part 2C

Appendix 6: Cooperative Agreements for Emergency Services – see Part 2C

Appendix 7: Municipal Critical Water Deficiency Ordinance – see Part 2C

Appendix 8: Graph showing annual per capita water demand for each customer category during the last ten-years – see Part 3 Objective 4

Appendix 9: Water Rate Structure – see Part 3 Objective 6

Appendix 10: Adopted or proposed regulations to reduce demand or improve water efficiency – see Part 3 Objective 7

Appendix 11: Implementation Checklist – summary of all the actions that a community is doing, or proposes to do, including estimated implementation dates – see www.mndnr.gov/watersupplyplans

Appendix 1

Minnesota Unique Well Number

220959

County Sherburne
Quad Big Lake
Quad ID 137C

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 04/17/1988
Update Date 03/10/2014
Received Date

Well Name	Township	Range	Dir	Section	Subsection
BIG LAKE 1	33	27	W	19	ACCDCB

Elevation 942 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact 35 LAKE ST S BIG LAKE MN 55309
Well BIG LAKE MN 55309

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
LOAM	0	9	BLACK	
WATER SAND	9	18		
CLAY	18	42		
HARDPAN	42	55		
CLAY	55	65		
HARDPAN	65	75		
SHALE	75	80	GRY/GRN	
SHALE & SANDSTONE	80	116		
SANDSTONE	116	165		
SHALE	165	170	PINK	
SANDSTONE	170	185		
SHALE, GREEN GRAY	185	210	VARIED	

Remarks

OLD PA NO. 67-0174.
location by engineer's survey, confirmed with MDH GPS

Well Depth 210 ft. **Depth Completed** 210 ft. **Date Well Completed** 03/00/1957

Drill Method **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 12 in. To 104 ft. **Weight** lbs./ft. **Hole Diameter** 12 in. To 210 ft.

Open Hole From 104 ft. To 210 ft.

Screen? ☐ **Type** **Make**

Static Water Level
23 ft. land surface Measure 03/00/1957

Pumping Level (below land surface)
43.4 ft. hrs. Pumping at 350 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 25 Volt
Length of drop pipe ft Capacity 250 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 Eau Claire Formation Aquifer Mt.Simon-Fond
Last Strat Fond du Lac Formation Depth to Bedrock 75 ft
Located by Minnesota Department of Health
Locate Method Digitized - scale 1:24,000 or larger (Digitizing Table)
System UTM - Mad83, Zone 15, Meters X 441571 Y 5020611
Unique Number Verification Other, note in Inpute Date 04/12/1995

Angled Drill Hole

Well Contractor
Renner Max Well Co. 27246
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

217948

County Sherburne
Quad Big Lake
Quad ID 137C

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 12/01/1990
Update Date 03/10/2014
Received Date

Well Name	Township	Range	Dir	Section	Subsection
BIG LAKE 2	33	27	W	19	ADCDDD

Elevation 942 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact 35 LAKE ST S BIG LAKE MN 55309
Well BIG LAKE MN 55309

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
DRIFT	0	105		
SANDSTONE	105	155		SOFT
SANDSTONE	155	180		HARD
RED SHALE &	180	183	RED	
RED SANDSTONE &	183	225	RED	
RED SHALE &	225	230	RED	

Remarks

location by engineer's survey, confirmed with MDH GPS

Well Depth 230 ft. **Depth Completed** 230 ft. **Date Well Completed** 06/28/1967

Drill Method **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	Hole Diameter
12 in. To 105 ft.	lbs./ft.	12 in. To 230 ft.

Open Hole From 105 ft. To 230 ft.

Screen? ☐ **Type** **Make**

Static Water Level
17 ft. land surface Measure 06/27/1967

Pumping Level (below land surface)
60 ft. 8 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

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 30 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 Mt.Simon Sandstone Aquifer Mt.Simon-Fond
Last Strat Fond du Lac Formation Depth to Bedrock 105 ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:24,000)
System UTM - Mad83, Zone 15, Meters X 442060 Y 5020564
Unique Number Verification Other, note in Inpute Date 12/07/2000

Angled Drill Hole

Well Contractor
Mc Alpine Brothers 86270
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Well Index Report **217948**

Printed on 08/24/2016
HE-01205-15

Minnesota Unique Well Number

163648

County Sherburne
Quad Monticello
Quad ID 138D

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 12/01/1990
Update Date 03/10/2014
Received Date

Well Name	Township	Range	Dir	Section	Subsection
BIG LAKE 3	33	27	W	19	CBCCBA

Elevation 932 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact 35 LAKE ST S BIG LAKE MN 55309
Well BIG LAKE MN 55309

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND GRAVEL	0	15		SOFT
CLAY	15	35	BLUE	MEDIUM
SAND GRAVEL	35	45	VARIED	SOFT
CLAY SAND	45	72	VARIED	SOFT
SANDSTONE SHALE	72	110	RED	MEDIUM
SANDSTONE SHALE	110	120	GREEN	MEDIUM
SANDSTONE	120	128	WHITE	MEDIUM
SANDSTONE	128	158	WHITE	MEDIUM
SHALE	158	170	ORANGE	MEDIUM
SHALE	170	185	RED	HARD
SANDSTONE	185	187	WHT/GRY	HARD
SANDSTONE	187	200	WHT/GRY	HARD
SHALE	200	220	RED	HARD
SANDSTONE	220	240	GRAY	HARD
SHALE	240	245	RED	HARD
SANDSTONE	245	260	GRAY	HARD
SHALE	260	265	RED	HARD
SANDSTONE	265	280	GRAY	HARD
SHALE	280	285	RED	HARD
SANDSTONE	285	300	RED/GRY	HARD

Remarks

GAMMA LOGGED 1-13-1998. M.G.S. NO. 1550.
SAME AS UNIQUE NO. 163649.

Well Depth 300 ft. **Depth Completed** 300 ft. **Date Well Completed** 06/06/1980

Drill Method Non-specified Rotary **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	Hole Diameter
12 in. To 119 ft.	lbs./ft.	12 in. To 300 ft.

Open Hole From 119 ft. To 300 ft.

Screen? ☐ **Type** **Make**

Static Water Level
12.5 ft. land surface Measure 06/06/1980

Pumping Level (below land surface)
32 ft. 5 hrs. Pumping at 925 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		ft.	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 Mt.Simon-Red
Last Strat Solor Church Formation Depth to Bedrock 72 ft
Located by Minnesota Department of Health
Locate Method GPS SA Off (averaged)
System UTM - Mad83, Zone 15, Meters X 440592 Y 5020291
Unique Number Verification Information from Inpute Date 05/30/2001

Angled Drill Hole

Well Contractor

Licensee Business	Lic. or Reg. No.	Name of Driller
Ingleside Engr.	27355	HOLMEN, G

Minnesota Unique Well Number

523954

County Sherburne
Quad Big Lake
Quad ID 137C

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 08/16/1993
Update Date 03/10/2014
Received Date

Well Name	Township	Range	Dir	Section	Subsection
BIG LAKE 4	33	27	W	20	CDDAAA

Elevation 937 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Well 19800 181ST ST NW BIG LAKE MN 55309
Contact 35 LAKE ST S BIG LAKE MN 55309

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND	0	15	BROWN	SOFT
SAND & GRAVEL	15	33	BROWN	SOFT
CLAY	33	38	BROWN	MEDIUM
SAND & GRAVEL	38	43	BROWN	MEDIUM
CLAY & GRAVEL	43	61	BROWN	MEDIUM
SHALE/SANDSTONE	61	73	BROWN	MEDIUM
SHALE/SANDSTONE	73	98	TAN/BRN	SOFT
SANDSTONE/SHALE	98	105	TAN/BRN	SOFT
SANDSTONE	105	187	TAN/BRN	SOFT
SANDSTONE	187	191	TAN	SOFT
SANDSTONE/SHALE	191	192	RED	MEDIUM

Remarks

WORK COMPLETED WITH SEH ENGINEERING.

Well Depth 192 ft. **Depth Completed** 192 ft. **Date Well Completed** 07/23/1993

Drill Method Cable Tool **Drill Fluid** Water

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

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

Casing Type Step down **Joint** Welded
Drive Shoe? **Yes** ☒ **No** ☐ **Above/Below** 2.6 ft.

Casing Diameter		Weight		Hole Diameter	
12 in. To	125 ft.	49.6 lbs./ft.		18 in. To	192 ft.
18 in. To	82.6 ft.	70.6 lbs./ft.			

Open Hole From 125 ft. To 192 ft.

Screen? ☐ **Type** **Make**

Static Water Level
16.1 ft. land surface Measure 07/16/1993

Pumping Level (below land surface)
69 ft. 8 hrs. Pumping at 1250 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	Cubic yards	0 ft.	125 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 Eau Claire Formation Aquifer Mt.Simon
Last Strat Fond du Lac Formation Depth to Bedrock 61 ft
Located by Minnesota Department of Health
Locate Method GPS SA Off (averaged)
System UTM - Mad83, Zone 15, Meters X 443035 Y 5019929
Unique Number Verification Information from Inpute Date 11/21/2000

Angled Drill Hole

Well Contractor
Renner E.H. Well 71015 COX, A.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

659386

County Sherburne
Quad Monticello
Quad ID 138D

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 11/15/2001
Update Date 03/10/2014
Received Date

Well Name	Township	Range	Dir	Section	Subsection
BIG LAKE 5	33	28	W	13	CDAAAB

Elevation 945 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Well 196TH ST & MANITOU LM BIG LAKE MN 55309
Contact 160 LAKE ST N BIG LAKE MN 55309

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND & GRAVEL	0	27	BROWN	SOFT
CLAY & GRAVEL	27	38	GRAY	SOFT
COARSE	38	71	GRY/BRN	SOFT
SAND STONE	71	131	WHITE	SOFT
SANDSTONE	131	146	WHITE	SOFT
SANDSTONE	146	152	BROWN	M.HARD
SANDSTONE & SHALE	152	155	GRAY	M.HARD
SANDSTONE	155	156	GRY/BRN	M.HARD
SHALE	156	158	RED	MEDIUM
SANDSTONE	158	173	GRY/BLK	MEDIUM
SHALE	173	176	RED	MEDIUM
SHALE	176	178	RED	MED-HRD

Remarks

WELL ADDRESS: INTERSECTION 196TH ST & MANITOU ST.

Well Depth 178 ft. **Depth Completed** 178 ft. **Date Well Completed** 05/25/2001

Drill Method Dual Rotary **Drill Fluid** Water

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

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

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

Casing Diameter		Weight
24 in. To	78 ft.	lbs./ft.

Open Hole From ft. To ft.

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

Diameter	Slot/Gauze	Length	Set	
16 in.	30	100 ft.	78 ft.	178 ft.

Static Water Level
22 ft. land surface Measure 05/25/2001

Pumping Level (below land surface)
81.3 ft. 24 hrs. Pumping at 800 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
60 feet East Direction Septic tank/drain field 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 Mt.Simon-Red
Last Strat Solor Church Formation Depth to Bedrock 71 ft
Located by Minnesota Department of Health
Locate Method GPS SA Off (averaged)
System UTM - Mad83, Zone 15, Meters X 439762 Y 5021770
Unique Number Verification Information from Inpute Date 12/11/2002

Angled Drill Hole

Well Contractor

Licensee Business	Lic. or Reg. No.	Name of Driller
Traut M.J. Well Co.	71536	TONY/ED

Minnesota Unique Well Number

705488

County Sherburne
Quad Big Lake
Quad ID 137C

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date
Update Date 02/04/2015
Received Date 09/03/2004

Well Name	Township	Range	Dir	Section	Subsection
BIG LAKE 6	33	27	W	20	ABCCBA

Elevation 936 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Well GLENWOOD AV BIG LAKE MN 55309
Contact 160 LAKE ST N BIG LAKE MN 55309

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
FINE SAND	0	5	BROWN	SOFT
COARSE SAND	5	22	BROWN	SOFT
GRAVEL & CLAY	22	25	BROWN	SOFT
SAND, GRAVEL &	25	47	BROWN	SFT-MED
SAND, CLAY & GRAVEL	47	57	BROWN	SFT-MED
SANDY CLAY & SAND	57	59	BROWN	SFT-MED
SANDY CLAY & SAND	59	61	BROWN	SFT-MED
ROCK, GRAVEL &	61	66	BROWN	SFT-MED
ROCK, GRAVEL, SAND	66	71	BROWN	SOFT
SANDSTONE, SHALE,	71	76	BRN/GRY	SOFT
SAND	76	80	TAN/BRN	SOFT
SANDSTONE	80	81	TAN	SOFT
SANDSTONE, SHALE	81	84	TAN	SOFT
SANDSTONE W/IRON	84	85	TAN/BRN	SOFT
SANDSTONE W/SHALE	85	90	TAN/GRY	SOFT
SANDSTONE W/SHALE	90	94	TAN/GRY	SOFT
SANDSTONE	94	95	TAN	SFT-MED
SANDSTONE	95	100	TAN	SOFT
SANDSTONE	100	105	TAN	SOFT
SANDSTONE/SHALE	105	107	TAN/GRY	SOFT
SANDSTONE	107	111	TAN	SOFT
SANDSTONE	111	112	TAN	SOFT
SANDSTONE	112	114	TAN	SOFT
SANDSTONE	114	120		SOFT
SANDSTONE	120	125	TAN	SOFT
SANDSTONE	125	130	TAN	SOFT
SANDSTONE	130	135	TAN	SOFT
SANDSTONE	135	140	TAN	SOFT
SANDSTONE	140	145	LT. GRY	SOFT
SANDSTONE	145	150	LT. GRY	SOFT
SANDSTONE	150	155	TAN/BRN	SOFT
SANDSTONE	155	160	TAN	SOFT
SANDSTONE	160	165	TAN	SOFT
SANDSTONE	165	170	TAN/YEL	SOFT
SANDSTONE	170	175	TAN	SOFT
SANDSTONE	175	179	TAN/YEL	SOFT
SANDSTONE W/SHALE	179	180	VARIED	SFT-MED
SANDSTONE W/SHALE	180	183	TAN/WHT	SFT-MED
SHALE	183	184	RED	SOFT
SANDSTONE W/SHALE	184	189	VARIED	SFT-MED
SANDSTONE	189	193	PNK/GRY	M.HARD
SHALE	193	194	RED	SOFT
SANDSTONE W/SHALE	194	202	VARIED	MED-HRD

Remarks
GAMMA LOGGED 6-9-2004. M.G.S. NO. 4326. GAMMA LOGGED BY JIM TRAEN.

Well Depth 202 ft. **Depth Completed** 202 ft. **Date Well Completed** 06/23/2004

Drill Method Dual Rotary **Drill Fluid** Water

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

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

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

Casing Diameter	Weight	Hole Diameter
18 in. To 110 ft.	lbs./ft.	17 in. To 200 ft.

Open Hole From 0 ft. To ft.

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

Diameter	Slot/Gauze	Length	Set
12 in.	10	10 ft.	110 ft. 202 ft.

Static Water Level
18 ft. land surface Measure 06/10/2004

Pumping Level (below land surface)
79 ft. 4 hrs. Pumping at 600 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
250 feet West Direction Septic tank/drain field 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 Mt.Simon-Fond
Last Strat Fond du Lac Formation Depth to Bedrock 73 ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:12,000)
System UTM - Mad83, Zone 15, Meters X 443107 Y 5021022
Unique Number Verification Information from Inpute Date 06/16/2004

Angled Drill Hole

Well Contractor
Traut, Mark J. Wells 73646 TRAUT, T.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

763778

County Sherburne
Quad Big Lake
Quad ID 137C

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 07/09/2008
Update Date 04/16/2015
Received Date 11/14/2008

Well Name	Township	Range	Dir	Section	Subsection
CITY OF BIG	33	27	W	20	ADAAAA

Elevation 935 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Well BIG LAKE MN 55309

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
TOP SOIL	0	3	BLACK	SOFT
SAND & GRAVEL	3	18	BROWN	MEDIUM
SAND, GRAVEL,	18	23	BROWN	HARD
SANDY CLAY	23	28	BROWN	HARD
SAND W/GRAVEL	28	38	BROWN	MEDIUM
SAND, GRAVEL,	38	45	BROWN	HARD
SAND, GRAVEL,	45	61	BROWN	HARD
UNCONSOLIDATED	61	63	TAN	MEDIUM
CONSOLIDATED GRN	63	95	TAN	MEDIUM
CONSOLIDATED GRN	95	98		
SANDSTONE W/	98	100	TAN	MEDIUM
SANDSTONE W/	100	104	TAN	MEDIUM
SANDSTONW/ SOME	104	106	TAN	MEDIUM
SANDSTONE COARSE	106	111	TAN	SOFT
SANDSTONE COARSE	111	115	TAN	SOFT
SANDSTLIGHT	115	120	TAN	MEDIUM
SANDSTONELOOSE W/	120	125	TAN	MEDIUM
SANDSTONE LOOSE	125	179	TAN	SOFT
SANDSTONE W/	179	198	TAN/PNK	MEDIUM
SANDCEMENTED W/	198	203	TAN	HARD
RED/WHITE/GREEN	203	205	VARIED	MEDIUM
SANDSTOW/GREEN &	205	219	PNK/TAN	MEDIUM
SHALE	219	220	RED	MEDIUM

Remarks

GAMMA LOGGED 8-4-2008. M.G.S. NO. 4857. LOGGED BY JIM TRAEN.
WELL#7

Well Depth 220 ft. **Depth Completed** 220 ft. **Date Well Completed** 07/17/2008

Drill Method Dual Rotary **Drill Fluid** Bentonite

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

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

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

Casing Diameter	Weight	Hole Diameter
18 in. To 109 ft.	lbs./ft.	23 in. To 220 ft.
24 in. To 64 ft.	lbs./ft.	

Open Hole From ft. To ft.

Screen? ☒ **Type** other **Make** JOHNSON

Diameter	Slot/Gauze	Length	Set
12 in.	40	118 ft.	101 ft. 219 ft.

Static Water Level
20.8 ft. land surface Measure 07/18/2008

Pumping Level (below land surface)
94.7 ft. 24 hrs. Pumping at 550 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
	8.5 Cubic yards	ft.	109 ft.

Nearest Known Source of Contamination
400 feet South 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 Eau Claire Formation Aquifer Mt.Simon-
Last Strat Fond du Lac Formation Depth to Bedrock 61 ft
Located by Minnesota Department of Health
Locate Method GPS SA Off (averaged)
System UTM - Mad83, Zone 15, Meters X 443860 Y 5020899
Unique Number Verification Info/GPS from data Inpute Date 06/19/2008

Angled Drill Hole

Well Contractor
Mark J Traut Wells, Inc. 1404 BURROUGHS, T
Licensee Business Lic. or Reg. No. Name of Driller

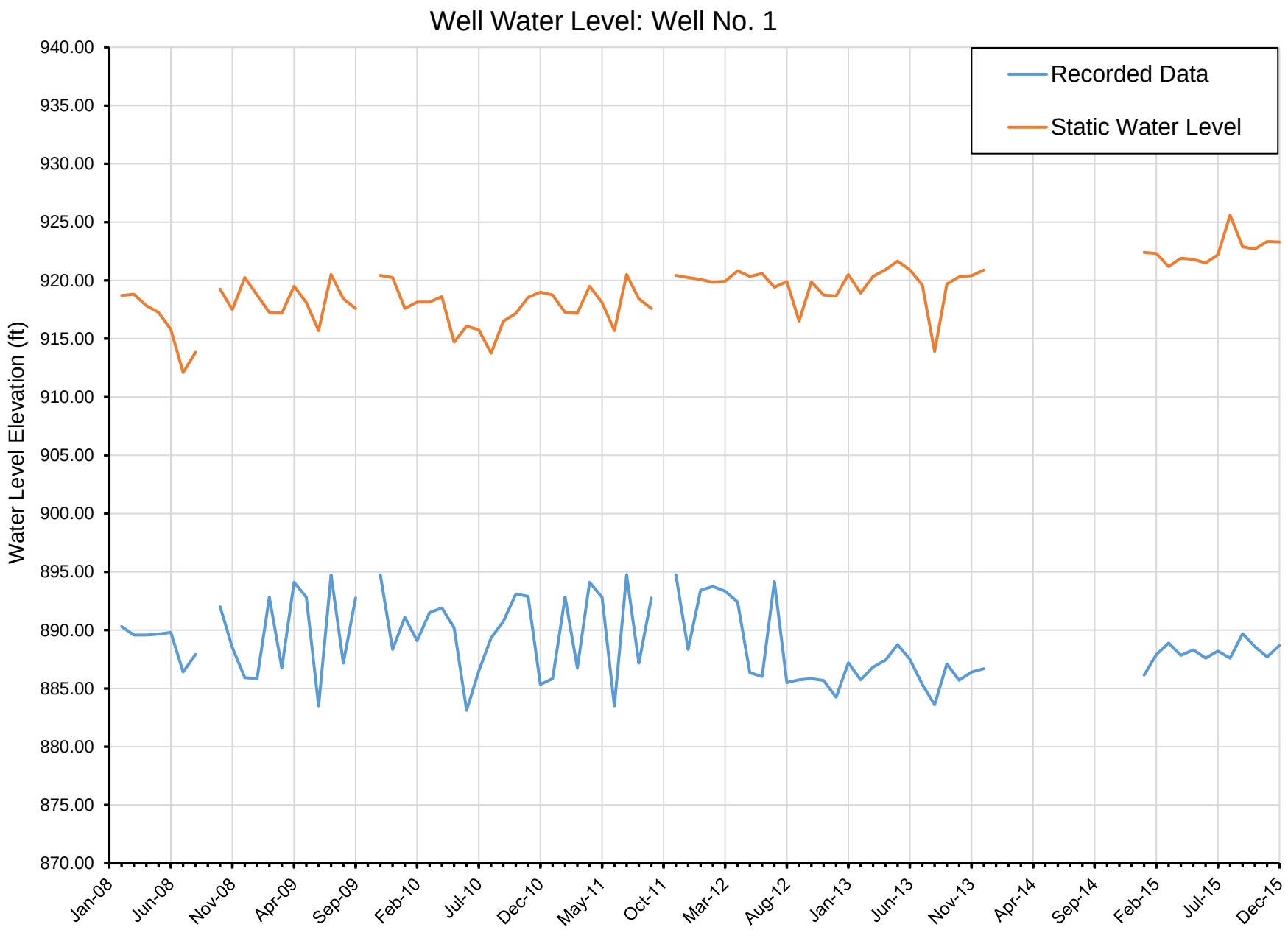
Appendix 2

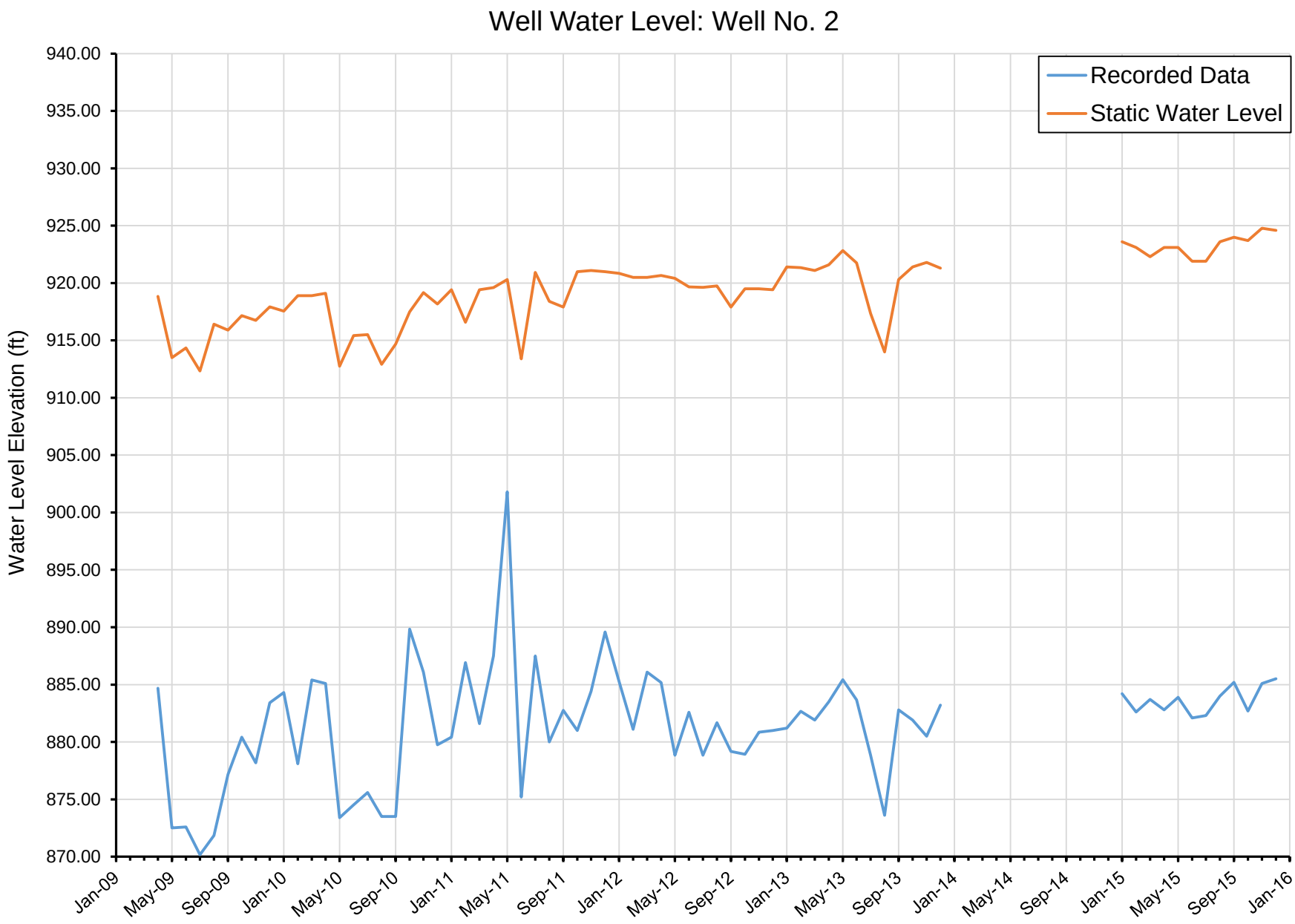
Water Level Monitoring

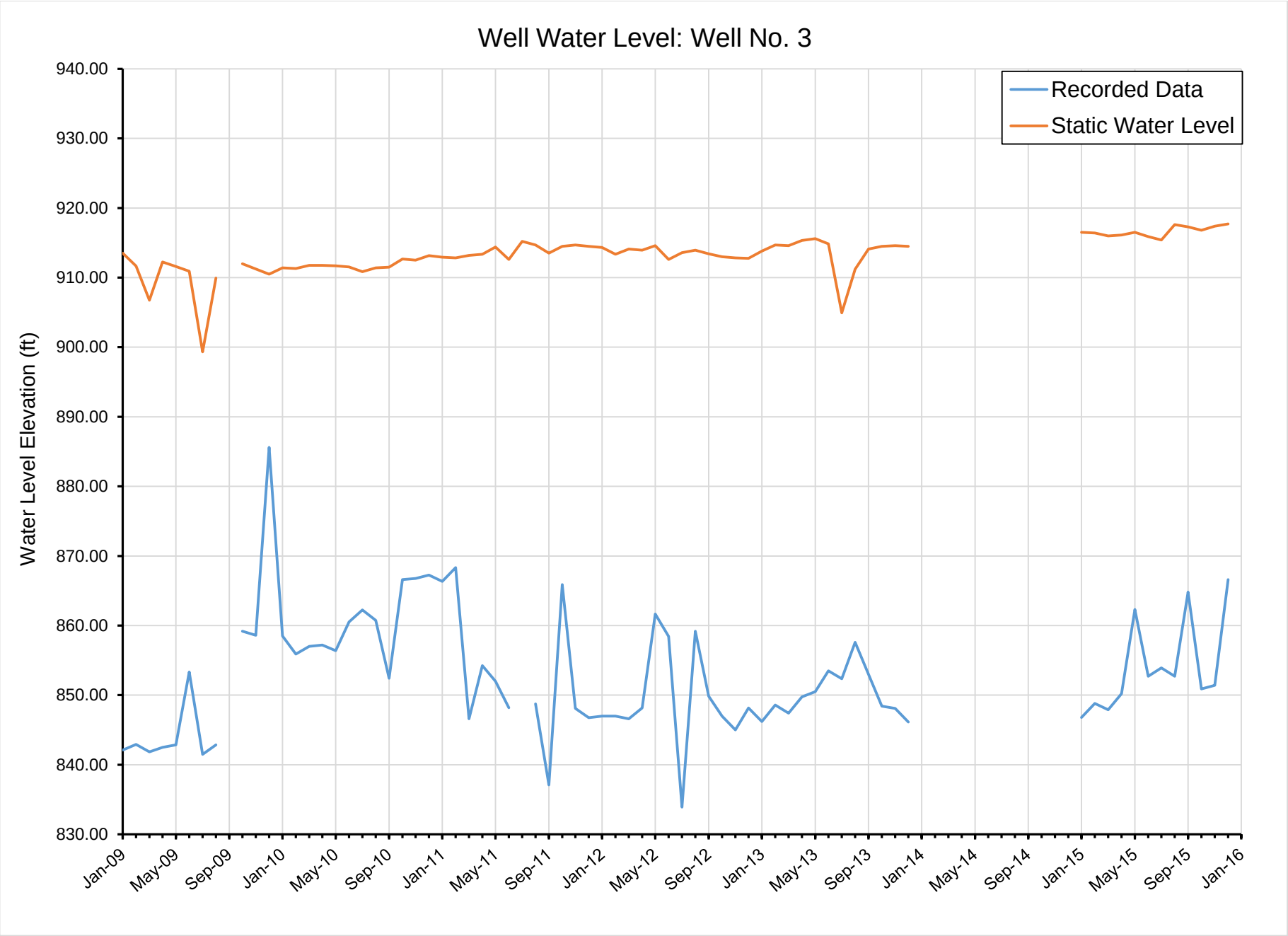
The City of Big Lake continually monitors well water levels monthly using SCADA. The well water levels are measured at the well sites. The information is saved for use by the City for planning purposes and monitoring well water levels.

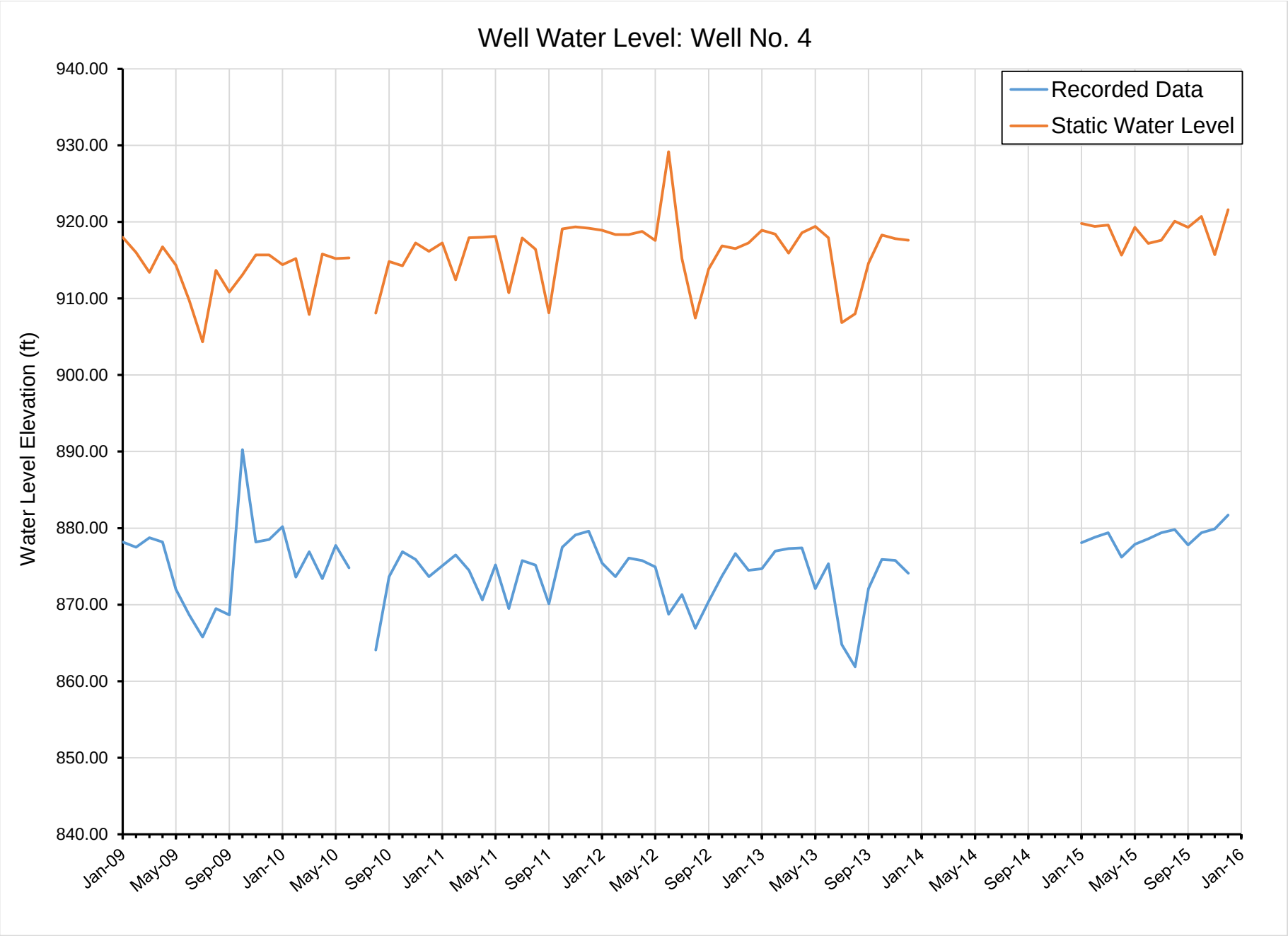
Rosemount Water Level Monitoring Plan					
Unique Well Number	**Local Name**	**Type**	**Location**	**Monitoring Frequency**	**Monitoring Method**
220959	Well No. 1	Production	301 Minnesota Ave.	Monthly	SCADA
217948	Well No. 2	Production	601 Minnesota Ave. E.	Monthly	SCADA
163648	Well No. 3	Production	Lakeshore Drive	Monthly	SCADA
523954	Well No. 4	Production	17901 198th Ave.	Monthly	SCADA
659386	Well No. 5	Production	196th St and Manitou St.	Monthly	SCADA
705488	Well No. 6	Production	17901 205th Ave. NW	Monthly	SCADA
763778	Well No. 7	Production	20055 177th Street NW.	Monthly	SCADA

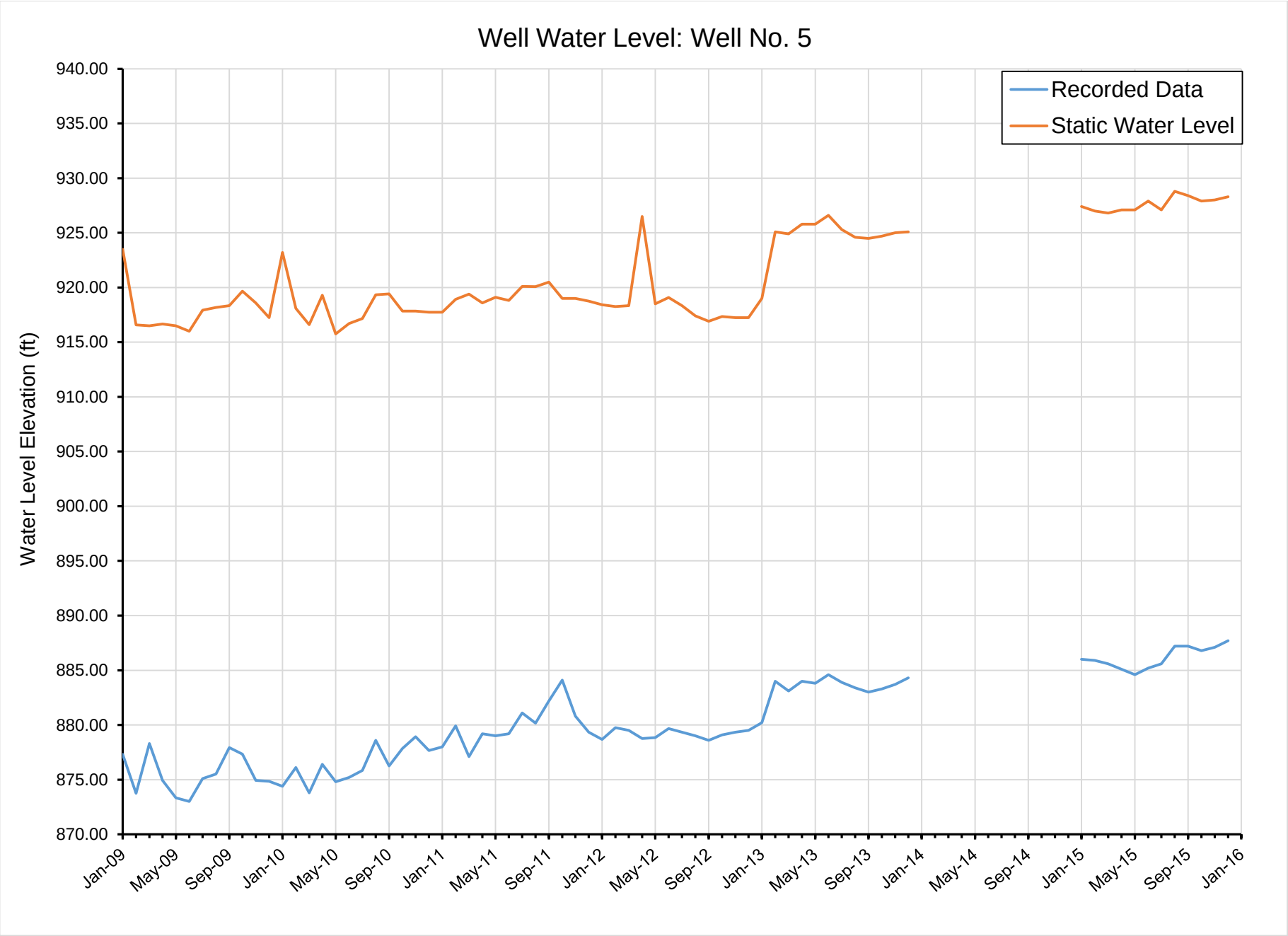
Appendix 3

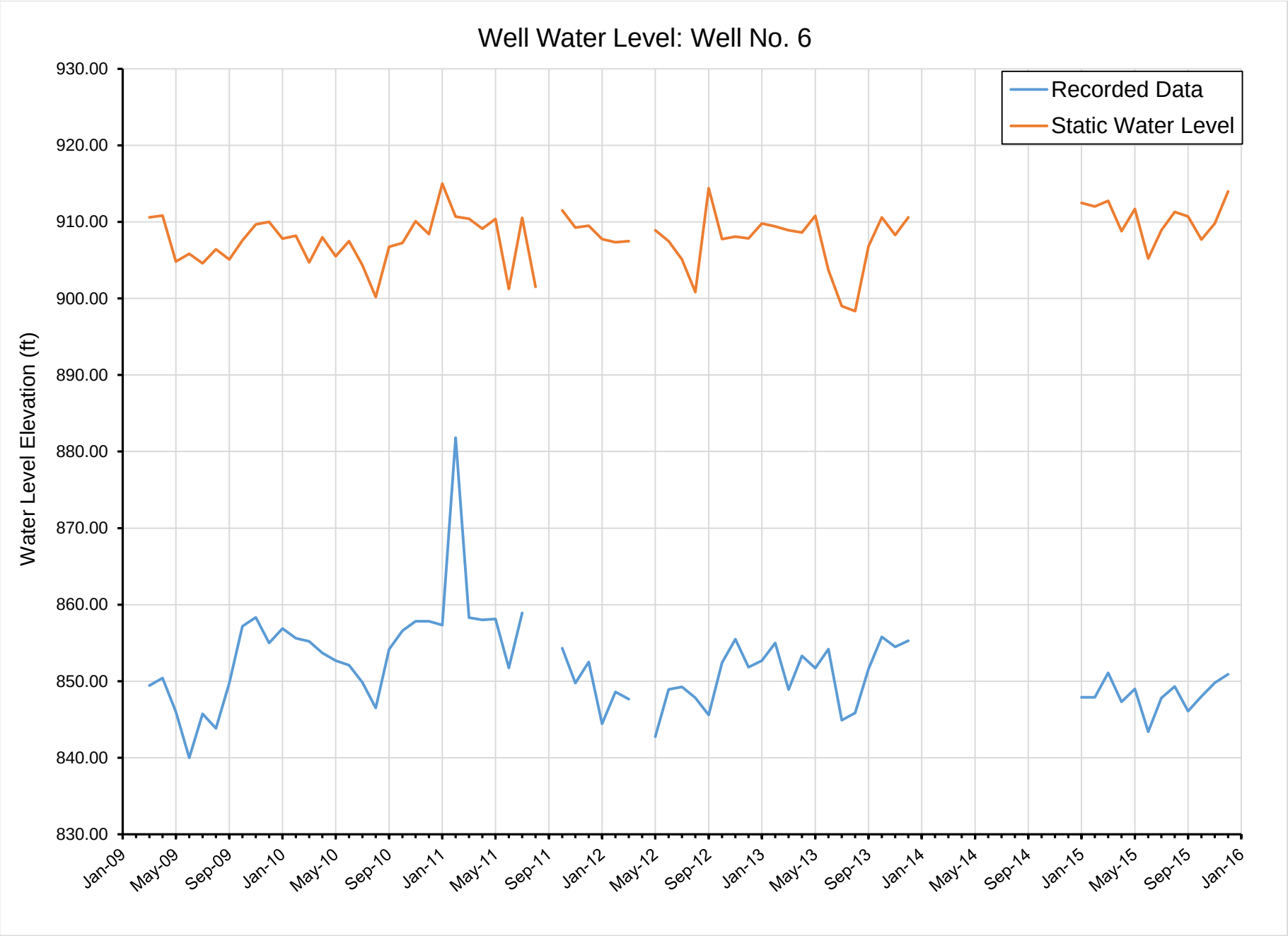

Well Water Level: Well No. 1
Recorded Data
Static Water Level
Water Level Elevation (ft)
940.00
935.00
930.00
925.00
920.00
915.00
910.00
905.00
900.00
895.00
890.00
885.00
880.00
875.00
870.00
Jan-08
Jun-08
Nov-08
Apr-09
Sep-09
Feb-10
Jul-10
Dec-10
May-11
Oct-11
Mar-12
Aug-12
Jan-13
Jun-13
Nov-13
Apr-14
Sep-14
Feb-15
Jul-15
Dec-15

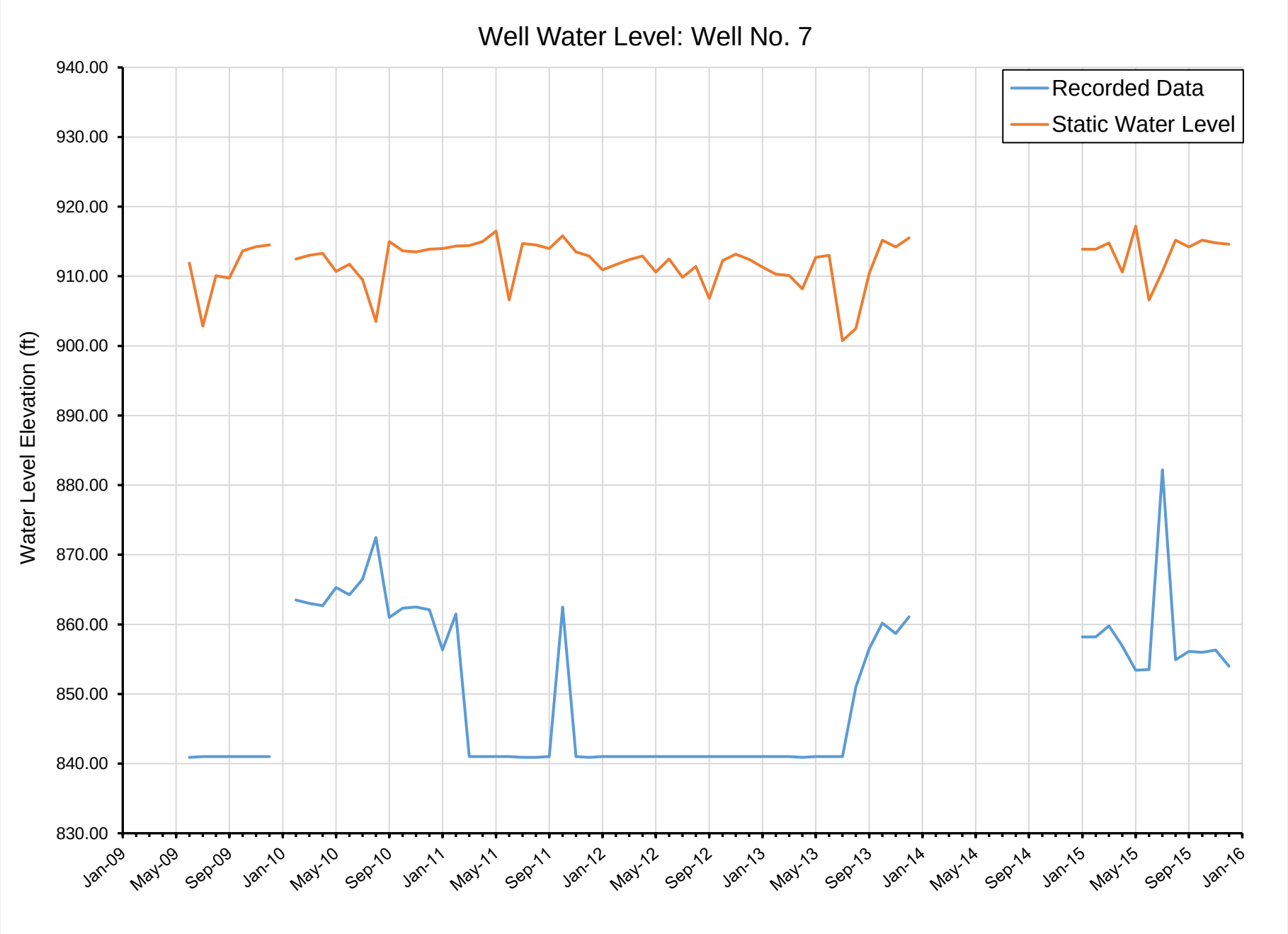

Well Water Level: Well No. 2
Recorded Data
Static Water Level
Water Level Elevation (ft)
940.00
935.00
930.00
925.00
920.00
915.00
910.00
905.00
900.00
895.00
890.00
885.00
880.00
875.00
870.00
Jan-09
May-09
Sep-09
Jan-10
May-10
Sep-10
Jan-11
May-11
Sep-11
Jan-12
May-12
Sep-12
Jan-13
May-13
Sep-13
Jan-14
May-14
Sep-14
Jan-15
May-15
Sep-15
Jan-16


Well Water Level: Well No. 3
Recorded Data
Static Water Level
Water Level Elevation (ft)
940.00
930.00
920.00
910.00
900.00
890.00
880.00
870.00
860.00
850.00
840.00
830.00
Jan-09
May-09
Sep-09
Jan-10
May-10
Sep-10
Jan-11
May-11
Sep-11
Jan-12
May-12
Sep-12
Jan-13
May-13
Sep-13
Jan-14
May-14
Sep-14
Jan-15
May-15
Sep-15
Jan-16


Well Water Level: Well No. 4
Recorded Data
Static Water Level
Water Level Elevation (ft)
940.00
930.00
920.00
910.00
900.00
890.00
880.00
870.00
860.00
850.00
840.00
Jan-09
May-09
Sep-09
Jan-10
May-10
Sep-10
Jan-11
May-11
Sep-11
Jan-12
May-12
Sep-12
Jan-13
May-13
Sep-13
Jan-14
May-14
Sep-14
Jan-15
May-15
Sep-15
Jan-16


Well Water Level: Well No. 5
Recorded Data
Static Water Level
Water Level Elevation (ft)
940.00
935.00
930.00
925.00
920.00
915.00
910.00
905.00
900.00
895.00
890.00
885.00
880.00
875.00
870.00
Jan-09
May-09
Sep-09
Jan-10
May-10
Sep-10
Jan-11
May-11
Sep-11
Jan-12
May-12
Sep-12
Jan-13
May-13
Sep-13
Jan-14
May-14
Sep-14
Jan-15
May-15
Sep-15
Jan-16


Well Water Level: Well No. 6
Recorded Data
Static Water Level
Water Level Elevation (ft)
930.00
920.00
910.00
900.00
890.00
880.00
870.00
860.00
850.00
840.00
830.00
Jan-09
May-09
Sep-09
Jan-10
May-10
Sep-10
Jan-11
May-11
Sep-11
Jan-12
May-12
Sep-12
Jan-13
May-13
Sep-13
Jan-14
May-14
Sep-14
Jan-15
May-15
Sep-15
Jan-16


Well Water Level: Well No. 7
Recorded Data
Static Water Level
Water Level Elevation (ft)
940.00
930.00
920.00
910.00
900.00
890.00
880.00
870.00
860.00
850.00
840.00
830.00
Jan-09
May-09
Sep-09
Jan-10
May-10
Sep-10
Jan-11
May-11
Sep-11
Jan-12
May-12
Sep-12
Jan-13
May-13
Sep-13
Jan-14
May-14
Sep-14
Jan-15
May-15
Sep-15
Jan-16

Appendix 4

City of Big Lake, Minnesota
2015 through 2022 - By Department

Dept	Description	Funding Source	2015	2016	2017	2018	2019	2020	2021	2022	Totals
Water Enterprise Fund											
	Misc Equipment Replacement Fund	Water Operations	5,000	5,000	10,000	10,000	10,000	10,000	10,000	10,000	70,000
	GPS Mapping $30K split 5 dept	Water Operations		6,000							6,000
	Water Meter replacement Fund	Water Operations	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	80,000
	Water Tower 2 Maintenance	Water Operations		12,000							12,000
	Replace 1999 4x2 #199 (water/Sewer)$30K	Water Operations		15,000							15,000
	Replace 2005 Chev 2500 #45	Water Operations						50,000			50,000
	Well #8	Revenue Bonds				1,200,000					1,200,000
	Well #9 as needed	Revenue Bonds						700,000			700,000
	Computer replacement fund	Water Operations			3,000	3,000	3,000	3,000	3,000	3,000	18,000
	Water Tower 3 Maintenance	Water Operations			12,000						12,000
	Water Tower 4 Maintenance	Water Operations				15,000					15,000
	Used Pickup $10K split 5 dept	Water Operations			2,000		2,000				4,000
	Water Enterprise Fund Total		$ 15,000	$ 48,000	$ 37,000	$ 1,238,000	$ 25,000	$ 773,000	$ 23,000	$ 23,000	$ 2,182,000
Sewer Enterprise Fund											
	Misc Equipment Replacement Fund	Sewer Operations	5,000	5,000	10,000	10,000	10,000				-
	GPS Mapping $30K split 5 dept	Sewer Operations		6,000							40,000
	Replace 1999 4x2 #199 (water/Sewer)$30K	Sewer Operations		15,000							6,000
	Replace 2002 Chev 2500 #42	Sewer Operations			50,000						15,000
	WWTP Expansion - Phase II	Revenue Bonds					17,000,000				50,000
	Jet Vac Machine $350K (sewer/storm sewer)	Sewer Operations	350,000								17,000,000
	Highway 25/CR 14 Utility Extension	Sewer Operations					700,000				350,000
	Used Pickup $10K split 5 dept	Sewer Operations			2,000		2,000				700,000
	Replace 1981 trailer jet machine #180	Sewer Operations				100,000					4,000
	Replace 1981 Generator #80	Sewer Operations							100,000		100,000
	Replace 1981 Generator #81	Sewer Operations							100,000		100,000
	Replace 2011 John Deere Mower #311	Sewer Operations							50,000		50,000
	Replace Floor Sweeper #308	Sewer Operations							6,000		6,000
	Replace Ford Dump Truck #196	Sewer Operations						170,000			170,000
	Replace Meyers Jet Machine #180	Sewer Operations				100,000					100,000
	Replace 2002 Generator #52	Sewer Operations									-
	Sewer Enterprise Fund Total		$ 355,000	$ 26,000	$ 62,000	$ 210,000	$ 17,712,000	$ 170,000	$ 256,000	$ -	$ 18,791,000
Storm Sewer Enterprise Fund											
	Misc Equipment Replacement Fund	Storm Operations	5,000	5,000	5,000	5,000	7,500	5,000	5,000	7,500	-
	Jet Vac Machine $350K (sewer/storm sewer)	Storm Operations	50,000								45,000
	GPS Mapping $30K split 5 dept	Storm Operations		6,000							50,000
	Replace 2006 Sweeper #126	Storm Operations			150,000						6,000
	Used Pickup $10K split 5 dept	Storm Operations			2,000		20,000				150,000
	Storm Sewer Enterprise Fund Total		$ 55,000	$ 11,000	$ 157,000	$ 5,000	$ 27,500	$ 5,000	$ 5,000	$ 7,500	$ 273,000
Liquor Store Enterprise Fund											
	New Carpeting - Liquor Store	Liquor Operations	10,000	1,500	1,500	1,500	1,500				-
	Upgrade Cash registers	Liquor Operations	-	1,000	1,000	1,000	1,000				16,000
	New Counters	Liquor Operations	-	1,000	1,000	1,000	10,000				4,000
	Upgrade Security System	Liquor Operations		1,500	1,500	15,000	15,000				13,000
	Led Ceiling Lights	Liquor Operations	-	2,000	2,000	2,000	2,000				33,000
	Liquor Store Enterprise Fund Total		$ 10,000	$ 7,000	$ 7,000	$ 20,500	$ 29,500	$ -			8,000
											$ 74,000
Total General Fund and Enterprise Funds			$ 757,650	$ 1,086,170	$ 7,815,183	$ 3,008,900	$ 18,290,000	$ 1,470,000	$ 871,000	$ 775,500	$ 34,074,403

Appendix 5

Attachment 5
Big Lake
Emergency Telephone List

Emergency Response Team	Name	Work Telephone	Alternate Telephone
Emergency Response Lead	Mike Goebel	763-263-2268	763-286-3012
Alternate Emergency Response Lead	Charlie Gammon	763-263-2268	320-761-1909
Water Operator	Charlie Gammon	763-263-2268	320-761-1909
Alternate Water Operator	Mike Goebel	763-263-2268	763-286-3012
Public Communications	Mike Goebel	763-263-2268	763-286-3012

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	Gary Peterson	763-241-2500	1-800-433-5245
National Guard	Minnesota Duty Officer	800/422-0798 Out State	651-649-5451 Metro
Mayor/Board Chair	Raeanne Danielowski	763-263-3801	763-263-2107
Fire Chief	Paul Nemes	763-263-3456	
Sheriff	Joel Brott	763-765-3001	800-433-5229
Police Chief	Joel Scharf	763-263-2500	763-263-2522
Ambulance	Police Department	763-263-2500	763-263-2522
Hospital	Police Department	763-263-2500	763-263-2522
Doctor or Medical Facility	Police Department	763-263-2500	763-263-2522

State and Local Agencies	Name	Work Telephone	Alternate Telephone
MDH District Engineer			
MDH	Drinking Water Protection	651-201-4700	
State Testing Laboratory	Minnesota Duty Officer	800/422-0798 Out State	651-649-5451 Metro
MPCA			
DNR Area Hydrologist	Roger Stradal	320-233-7850	
County Water Planner			

Utilities	Name	Work Telephone	Alternate Telephone
Electric Company	Xcel energy	1-320-255-8681	612-321-7449
Gas Company	Center Point Energy	612-321-5354	1-888-367-6671
Telephone Company	Connections	763-262-4100	
Gopher State One Call	Utility Locations	800-252-1166	651-454-0002
Highway Department			

Mutual Aid Agreements	Name	Work Telephone	Alternate Telephone
Neighboring Water System			
Emergency Water Connection			
Materials			

Technical/Contracted Services/Supplies	Name	Work Telephone	Alternate Telephone
MRWA Technical Services	MN Rural Water Association	800-367-6792	
Well Driller/Repair	Traut Well Drilling	1-800-728-5091	1-320-250-5127
Pump Repair	Davis	763-560-5200	612-850-9105
Electrician	Westrum Electric	763-263-2298	763-263-2298
Plumber	Northern Plumbing	763-263-8995	612-910-2784
Backhoe	Brenteson Companies	763-263-3100	912-889-1781
Chemical Feed	FeedRite Controls	612-331-9100	612-670-2908

Meter Repair			
Generator	Interstate	612-854-5511	612-859-0487
Valves	Davis	763-560-5200	612-850-105
Pipe & Fittings	Davis	763-560-5200	612-850-105
Water Storage			
Laboratory	Water Laboratories	763-441-7509	
Engineering firm			

Communications	Name	Work Telephone	Alternate Telephone
News Paper	West Sherburne Tribune	763-263-3602	
Radio Station	KMOM Radio	763-295-1070	
School Superintendent	Steve Westerberg	763-262-5218	
Property & Casualty Insurance			

Critical Water Users	Name	Work Telephone	Alternate Telephone
Hospital Critical Use:			
Nursing Home Critical Use:			
Public Shelter Critical Use:			

Appendix 6

Cooperative Agreements for Emergency Water Services

The City of Big Lake does not currently have any Cooperative Agreements for Emergency Water Services. There are no communities close enough to justify an emergency interconnection.

Appendix 7

CHAPTER 8 MUNICIPAL UTILITIES

Section 800 - Water Works

800.01 Name. The water works of this City shall be under the supervision of the City's Public Works Director.

800.02 Director of Public Works. There is hereby continued the office of Director of Public Works, and the Director of Public Works shall be subjected to control and direction of the Council who shall appoint the Director of Public Works.

800.03 Director of Public Works Duties. The Director of Public Works shall be charged with the following duties:

A. To install the water mains, pipes and accessories as he or she may be instructed to do by the Council and if so directed by the Council, under the supervision of the City Administrator.

B. To perform such other works and duties as may be assigned to him or her by the Council, or the City Administrator.

800.04 Contract Assumed. The rules, regulations and water rates set forth in this Chapter, or authorized by this Chapter, shall be considered a part of the contract with every person who is supplied with water through the water works department system of this City. Every person by taking water shall be considered as expressing his or her consent to be bound thereby.

800.05 Application for Service. Every person desiring a supply of water shall make application in writing therefore to the Director of Public Works on such form as may be prescribed for that purpose. Blanks for such applications shall be furnished at the Office of the City Administrator or at the Office of the Director of Public Works. The application shall state fully the uses to which the water is to be applied. If the applicant is not the owner of the premises the written consent of the owner must accompany the application. In all cases the owner of the premises shall be held responsible for all rates and rents of the premises. When more than one tenant is supplied through one service pipe, the application for supply of the premises shall be made by the owner, and the owner shall be held responsible for all supplies through such service pipe, but one bill shall be made for each meter installation.

800.06 Excavations. No person shall make any excavations in any street or highway within ten feet of any laid water pipe, while the ground is frozen, or dig up or uncover so as to expose to the frost any water pipe or sewers of the City, except by permission of the Council. No person shall make any excavation in any street or highway, for the purpose of laying water pipe, or tap any water or surface pipe laid down, without written permission from the Public Works Director, or the Council, and all plumbing work required in a building, or for other purposes must be completed to the lines of the street, before any excavation shall be made in the street for the purposes of connecting with the mains.

800.07 Connection Process.

Subd. 1 Permit. Any person desiring to make connection to the City Water Works system shall apply to the City for a permit for the connection and if the Public Works Director of the City or its agent grants such permission then an application shall be submitted and along with the application shall be submitted plans, specifications and other information as may be desired by the Public Works Director together with a permit fee in the amount set by the Council in the fee schedule adopted from time to time by the Council.

Subd. 2 Penalty. Any person, firm or corporation who commences work of any kind for which a permit is required under this Chapter without first having received the necessary permit, shall, when subsequently securing the permit, be required to pay double the fees provided by this Chapter for the permit and shall be subject to all the penal provisions of this Chapter.

Subd. 3 License.

A. Permits shall only be issued when the applications show that the work is to be done by the persons, firms or corporations who have been duly licensed to engage in the business of water installation within the City, and who have paid the required fee and filed the bonds and insurance certificates required under this Chapter hereof.

B. Before any person, firm or corporation shall be licensed to engage in the business of water installation within the City the person, firm or corporation shall make application to the City for a license, shall pay the fee established by the Council in the fee schedule, and shall file with the City Administrator the following bond and insurance requirements:

1. A surety bond in the face amount of twenty thousand dollars ($20,000.00) payable to the City of Big Lake, approved by the City Council, conditioned that the City will be saved, harmless of any loss, damage, cost or expense, by reason of any work performed under this Chapter or by reason of improper or inadequate performance or compliance with the terms of this Chapter by holder of a license or his or her agent or employees;

2. A certificate of insurance or copies of public liability and property damage insurance policies approved by the City Council containing a provision that the bond shall not be canceled within ten (10) days written notice to the City Administrator, or showing coverages of not less than fifty thousand dollars ($ 50,000,00) for injuries including accidental death to any one person and subject to the same limit for each person in an amount of not less than one hundred thousand dollars ($100,000,000) on account of any one accident, and property damage insurance in the amount of not less than fifty thousand dollars ($50,000.00).

C. The City Council may revoke any license at any time if the licensee shall violate the provisions of this or any other Chapter of the City Code. No licensee shall allow his or her

name to be used for any person for the purpose of doing any work within the City pertaining to this Chapter.

Subd. 4 Inspection. No permit shall be issued until the installation shall be inspected by the plumbing inspector of the City and altered, if necessary to conform to the Minnesota Plumbing code, to the extent necessary to permit a proper and safe connection to the municipal water system. Upon completion of the work, a copy of the permit shall be signed and dated by the individual making the water installation, and delivered to the City Hall, or the Director of Public Works, or the Inspector. The plumbing inspector shall sign the permit to show that the work and material conform to the City Code.

800.08 Water Connections. Water shall not be turned on to any building, or private service type, except under the order in writing of the Public Works Director or the Council or the City Administrator, until the applicant shall have paid for the connection from the street mains to the street line in the amount as the Council may from time to time establish in the fee schedule. Plumbers are strictly prohibited from turning water into any service pipe except upon the order or permission of the City Administrator or Public Works Director. This rule shall not be construed to prevent any plumber from emitting water into test pipes for testing purposes only.

800.09 Maintenance. All persons taking water shall keep their own service pipes, stop-cocks and apparatus in good repair and protected from frost, at their own risk and expense, from the water main through the end of the service pipe inside the house or building. All persons taking water shall prevent any unnecessary waste of water. All the expense relating to the introduction of water from the water main into buildings of private premises shall be paid for by the owner.

800.10 Inspection. Every person taking water shall permit the Public Works Director or the City Engineer or the Director of Public Works at all reasonable hours to enter their premises or buildings to examine the pipes and fixtures, and the manner in which the water is used, and they must at all times, frankly and without concealment, answer all questions put to them relative to its consumption.

800.11 Claims Against City. It is expressly stipulated by the City that no claim shall be made against it by reason of breaking or freezing of any mains, service pipe, or service cocks, nor if from any cause the supply of water should fail, nor from any other purpose that may be deemed necessary. The right shall hereby be reserved to cut off the supply of water at any time, for the purpose of repairs or any other necessary purpose, any permit granted or regulation to the contrary notwithstanding. Whenever it shall become necessary to shut off the water supply within any district of the City, the Director of Public Works shall, if practicable, give notice to each consumer within the City, of the time when the supply shall be shut off.

800.12 Turning off Water. When the water has been turned off by the order of the Public Works Director, or City Administrator, no consumer or plumber shall turn it on without the written consent of the Public Works Director or the City Administrator.

800.13 Hydrants. All hydrants erected within and by the City for fire extinguishing purposes, shall hereby be declared to be public hydrants. Except for the Director of Public Works, no person other

than members of the fire department of the City, and then only for the uses and purposes of the department, shall open any hydrant, or remove, or attempt to remove therefrom any matter or thing designated or intended for the protection of the hydrant or in any manner interfere or intermeddle with any hydrant. The Public Works Director of the City or its agent may grant any suitable person permission to open any hydrant, and draw water therefrom, in which event such person shall not open the hydrant to any greater extent, nor keep the hydrant open any greater length of time, nor draw water therefrom for any other purpose, not in any greater quantity than as may be specified in the permit. No person authorized to open hydrants shall delegate his or her authority to another nor let out or permit any person to take the wrenches furnished him or her, nor permit the wrenches to be taken from any house of the City, except for purposes strictly connected with the fire department, or as they accompany fire fighting equipment at fires.

800.14 Private Use of Hydrants. No hydrants, except public drinking fountains, shall be placed within the limits of any streets, unless such hydrants are securely closed and protected against general use, and no drinking fountain shall be erected for public use which have openings by which they can be used as a source of domestic supply.

800.15 Private Hydrants. If proprietors of lumber yards, manufacturing establishments, halls, stores, elevators, warehouses, hotels or public buildings, who are regular customers of the water works, wish to lay large pipes with hydrants and hoses couplings to be used only in the case of fire, they shall be permitted to connect with street mains at their own expense, upon application to the City Council, and under its direction. The customers shall be allowed the use of water for fire purposes only, free of charge, but all valves admitting water to the pipes must be sealed, for which a sealing charge in the amount set in the fee schedule shall be made. If the sealing is, at any time, broken or defaced, the Public Works Director or the City Council shall be notified immediately.

800.16 Abutting and Benefited Property. When petitions shall be granted by the City Council for the extension of water mains or the water system, the City Council shall assess the abutting property or benefited area for all or a portion of the cost of the improvement pursuant to the Minnesota Statutes.

800.17 Request for Disconnection. Any person wishing to discontinue the supply of water from the City water works or desiring a change in his or her application as to change of premises or otherwise, must give notice thereof at the office of the Director of Public Works or the City Administrator at least five (5) days previous to such change.

800.18 Rates and Rents Assessed. All rates and rents for water consumption shall be charged directly to the owner of the real estate on which the water shall be consumed and billings paid by owners within thirty (30) days after period of consumption. Bills shall be paid promptly when due at the office of the City Administrator or to the utility billing contractor. The City Administrator shall, in case bills are not paid when due, add a penalty identified in the City Fee Schedule to the amount of the bills and collect the bills. In case of a failure to pay the bills by the fourth month, notice shall be given by mail to the owner of the real estate upon which the water has been consumed, and if, the bill shall not have been paid, the amount of the bill shall be certified to the County Auditor, to be included with the taxes against the real estate involved and to be collected therewith. In addition, after notice to the owner and resident of the premises, the City may proceed with shutting off the water supply to the premises as provided in subsection 800.22 of this Code.

800.19 Payment Dates. All rates and rents shall be payable when due. The rates and rents for users of the City shall be due monthly.

800.20 Discontinuance of Water Service.

Subd. 1. Non-payment. If rates or rents are not paid within thirty (30) days after they become due, the City, upon recommendation from the Public Works Director, may order the water shut off; and it shall not be turned on again until the bills, together with a fee as set in the fee schedule for the cost of turning off the service, and an additional fee is paid to turn on the water. No water shall be shut off until the owner and/or tenant shall have been given notice and a chance to be heard. No water shall be shut off from October 15 until the following April 15 if part of the premise's primary heat source except in compliance with the Cold Weather Rule, M.S. 216B.097, as amended.

Subd. 2. **Vacated Properties**. The purpose of this Subdivision is to prevent property loss and strain on City water and sewer systems caused by unattended water use in vacant residential units. A residential unit in which the occupant has vacated with no intent to return is considered vacant for purposes of this ordinance. A residential unit in which the occupant is absent for an extended period of time but intends to return on a date certain is not vacant. Water service shall not be shut off, except in the case of an emergency, at a vacant property until the owner or tenant, if the City is aware of a landlord-tenant relationship, has been sent a notice by first class mail. The notice shall state that the City has reasonable belief that the premises served is vacant and that if the owner or tenant does not respond within ten (10) days that the residential unit is supplied with adequate heat, the City may order the water shut off and it shall not be turned on again until the water shut off charge and water turn on charge as set in the fee schedule have been paid, unless the charges are waived by the City Council.

800.21 Rates and Rents. Water rates established by the City Council for metered water service shall be as set out in the fee schedule.

800.22 Enforcement. Each police officer shall report to the head of the Public Works Director all cases of leakage, waste or unnecessary profusion in the use of water, and each violation of any law of

this City relative to the water works thereof, which may come to his or her knowledge or notice, and the police shall each enforce the observation of this Chapter so far as any of them have authority under the laws of this City.

800.23 Violations. Whenever the rules and regulations of this Chapter are violated, the water shall be shut off, subject to the limitations of this Chapter. If two or more parties are receiving water from the same service pipe, the meter of the party involved in the violation shall be removed from service, and not installed again except by the order of the Public Works Director or the City Administrator and on payment of all arrears of rents, together with a fee as set in the fee schedule for removing and reinstallation of the meter. If for any reason digging is required to shut off service, curb-stop charges shall be proportionate to the costs.

800.24 Changing Regulations. The right shall be reserved by the City Council to change the rules, regulations and water rates from time to time as they deem it advisable, and to the Public Works Director to make special rates and contracts in all special cases.

800.25 Base Fee for New Residential Structures. For new residential structures, the City Council will set a fee each year to charge new residential structures.

800.26 Testing of Meters. When a consumer makes a complaint that the bill of any past services has been excessive, the City shall, upon written request, have such meter re-read. If the consumer remains dissatisfied and desires that the meter be tested, said consumer shall then make a deposit of $150.00 and the City shall test the meter. The consumer shall, if he/she so desires, be present when such test is made. In case a test should show an error of over five percent (5%) of the water consumed in favor of the City, the deposit will be refunded to the consumer and a correctly registering meter will be installed and the date of the written request and the minimum charge shall not be affected. In case the test shows an accurate measurement of water or an error in favor of the consumer, the amount deposited shall be retained by the City to cover the expenses of making such test.

800.27 Water Use Restrictions; Penalties. In order to protect the health, safety, and general welfare of the residents of the City of Big Lake, the following regulations shall apply:

Subd. 1 Definition: "Water Shortage" means the City's production of water is less than the consumption of water by users so that the Municipal water supply is less than the minimal levels necessary to adequately provide fire protection for the City and potable water for the residents' drinking and sanitary needs.

Subd. 2 Water Shortage Determination: The City Council shall determine from time to time by resolution when there is a water shortage within the City's Municipal water system. In case of emergency, the City Administrator may determine a water shortage exists and institute restrictions without a Council resolution; provided, that such a determination and restrictions shall only be effective until the Administrator determines the emergency has ended or the next Council meeting, whichever occurs first. Depending upon the cause and severity of the shortage, additional limitations may be placed on the use of water from the City water supply

system for lawn and garden sprinkling, irrigation, car washing, air conditioning, and other uses of water as specified by the City Administrator's notification.

Subd. 3 Notification of Water Shortage: Whenever a water shortage exists, the City Administrator may notify users of the Municipal water system that additional use restrictions are being implemented. The notice shall be posted on the City's bulletin board, Official City Website, government cable channel, may be published in the newspaper of general circulation within the City, and may be broadcast by television and radio stations. The notice shall include the following information:

A. Uses of the Municipal water system which will be restricted.
B. Times during which the restrictions will apply.
C. Whether the use restrictions will be absolute or vary depending upon location or identification of property.
D. When the restrictions will be implemented and when they will terminate.
E. Fees and Penalties for noncompliance.

Subd. 4 Fees and Penalties: One or more of the following may be imposed for violating water restrictions:

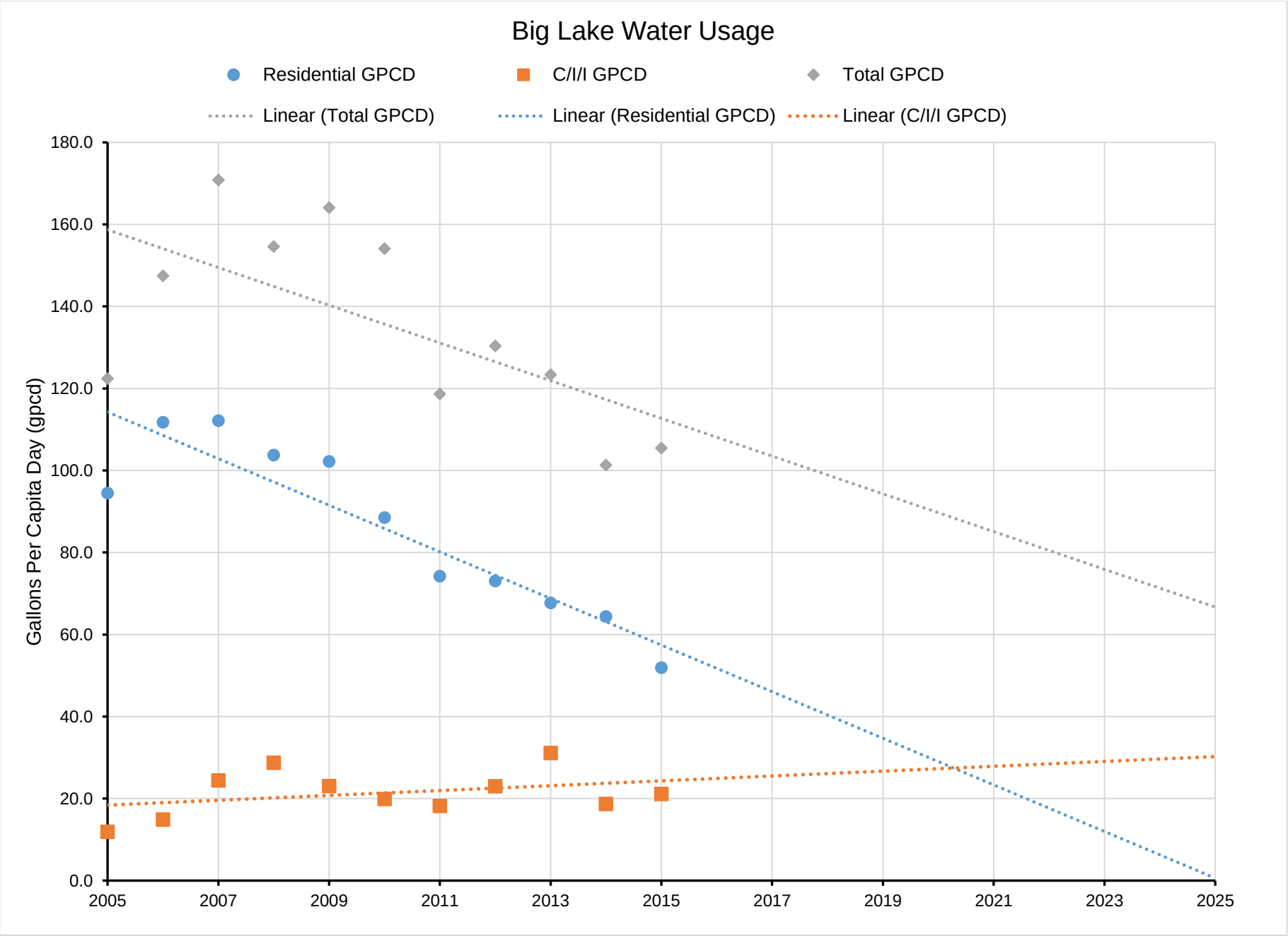
A. Fees for violating water usage restrictions shall be added to the water bill of the offending property according to the following schedule:

First violation within a calendar year -	warning only
Second violation within a calendar year -	$25.00
Third violation within a calendar year -	$50.00
Fourth violation within a calendar year -	$100.00
Fifth violation within a calendar year -	$250.00

B. Failure to comply with water usage restrictions may constitute cause for the discontinuance of water service.

C. Failure to comply with water usage restrictions shall be a misdemeanor punishable by the maximum time allowed by law for each offense.

Appendix 8


Big Lake Water Usage
Residential GPCD
C/I/I GPCD
Total GPCD
Linear (Total GPCD)
Linear (Residential GPCD)
Linear (C/I/I GPCD)
Gallons Per Capita Day (gpcd)
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
2025

Appendix 9

2016 FEE SCHEDULE

Adopted: December 09, 2015 (effective Jan. 1, 2016)
Amended: February 24, 2016

Code	Description	Amount	
GENERAL FEES:			
Administrative Citations			
140.07	1st Offense	$	75.00
	2nd Offense within 12 months of most recent similar offense	$	150.00
	3rd Offense within 12 months of most recent similar offense	$	300.00
Alcohol Beverage Tasting Event Fee			
	Alcohol Beverage Tasting Event - Lake Liquors - Two (2) hour limit- Per hour fee	$	75.00
Animal Licensing			
380.02	Dog License - lifetime	$	10.00
310.01	Dangerous Dog Registration	$	300.00
Adult Use			
380	Adult Use/Principal - per year	$	1,000.00
	Adult Use/Accessory - per year	$	2,000.00
Assessments			
	Assessment Searches/Utility Billing History Search - Per Tax Parcel	$	25.00
	Delinquent Account Certification Fees - Per Tax Parcel	$	20.00
	Delinquent Account Certification interest - Per Tax Parcel		6.00%
	Snow Removal Violation plus contractor invoice - Per Property	$	163.00
	Weed/Grass Violation plus contractor invoice - Per Property	$	196.00
	Administrative fee for Developer- Requested Chapter 429 Improvement Bonding Projects		1.00%
Collection			
	Recovery Service Fee	$	20.00
Compost Site - Municipal Recycling Board (MRB)			
MRB	Commercial User Fee - 1st card - (windshield stickers) per calendar year	$	500.00
	Commerical User Fee additional access cards - (windshield stickers) per additional card per year	$	250.00
	Sherburne County Residential User one per family	No Fee	
	Electronic Key-Card Replacement Fee	$	5.00
	Non Sherburne County Residents will no longer be able to utilize Sherburne County Sites	Not Allowed	
Dock License			
560.03	Dock License per year	$	350.00
Document Services - (includes sales tax)			
	Binded Big Lake City Code Book	$	50.00
	Comprehensive Plan	$	50.00
	Copies - letter size (8.5" x 11") per sheet	$	0.25
	Downtown Design Standards	$	5.00
	Map - Plat 11" x 14"	$	1.00
	Park Plan	$	15.00
Events Permits			
	Event Permit Review Fee	$	25.00
	In addition to the fee for the permit review, additional cost for police, clean up, deposit or incidental expenses may be charged		
False Alarm Fee - Alarm System			
325	1st violation within calendar year - waived	waived	
	2nd violation within calendar year - waived	waived	
	3rd violation within calendar year - waived	waived	
	4th violation within calendar year	$	50.00
	5th violation within calendar year	$	100.00
	Further violations within calendar year	$	200.00
Farmers Market			
	Farmers Market Application Fee - per year	$	75.00
Fireworks			
396	Fireworks permit application fee	$	25.00

2016 FEE SCHEDULE

Adopted: December 09, 2015 (effective Jan. 1, 2016)
Amended: February 24, 2016

Code	Description	Amount	
Gambling			
370.05	Investigation Fee - Lawful Gambling application	$	100.00
Garden Plot			
	Garden Plot Fee - per year	$	25.00
Hunting Permits			
530.01.4	Hunting on Privately Owned Property Permit	waived	
Junked Autos			
340.02	Special Use Permit - Junked Autos - 6 month	$	75.00
	One time 3 month extension	$	125.00
Late Fee			
	Late Payment Fee for non utitily billing - Per Month		1.50%
Liquor Licenses			
400.04	Liquor License - per year	$	4,000.00
	Wine License - per year	$	500.00
	Sunday License - per year	$	200.00
	Brewpub License - per year	$	500.00
	Brewpub Off-Sale License - per year	$	100.00
	Temporay License - per event	$	25.00
420.01	Beer License (3.2%) - per year	$	75.00
	Taproom License - per year	$	500.00
	Small Brewer Off-Sale License - per year	$	100.00
Liquor Licenses Investigation Fee-New Liquor License Application			
400.04	Liquor License	$	1,000.00
	Brewpub, Taproom, Small Brewer License	$	500.00
	Wine License	$	500.00
420.05	Beer - (3.2%) Malt Liquor	$	100.00
Massage License			
390	Therapeutic Massage License Application & 1st year	$	100.00
	Therapeutic Massage License after 1st year	$	75.00
Park Shelter			
	Park Shelter Rental fee - per day	$	30.00
Parking Fines			
620.12	Improper parking	$	25.00
	Prohibited parking	$	25.00
	Fire Lane parking	$	25.00
	Snow Removal parking	$	50.00
	Fire Hydrant parking	$	50.00
	No Parking (12:01 to 8:00am 11/01 to 4/15)	$	50.00
	Handicapped parking	$	200.00
Parking Passes			
Seasonal	Resident - Vehicle only - May through October	$	10.00
	Resident - Vehicle & Trailer - May through October	$	20.00
	Non-Resident - Vehicle only - May through October	$	30.00
	Non-Resident - Vehicle & Trailer - May through October	$	40.00
	Farmers Market - Wednesdays - May through September	waived	
	Music in the Park - Thursdays - June through August	waived	
Daily Pass	Vehicle only - May through October	$	5.00
	Vehicle & Trailer May through October	$	15.00
Peddler/Transient Merchant Permits			
320.03	Peddler/Transient Merchant application	$	25.00
	Peddler/Transient Merchant Permits - per day/per person	$	10.00
	(No fee is required for Solicitor Registrations)		

2016 FEE SCHEDULE

Adopted: December 09, 2015 (effective Jan. 1, 2016)
Amended: February 24, 2016

Code	Description	Amount
Police Department Fees		
	Police Reports/Copies (includes sales tax)- Non Subject of Police Data up to 100 pages - Per Page	$ 0.25
	Police Reports/Copies (includes sales tax)- Non Subject of Police Data 101 pages or more	Actual cost
	Police Reports/Copies - Data requested by crime victim/subject of data	waived
	Traffic Safety Diversion Program Fee	As set by Court
	Police Squad - Per Hour	$ 25.00
	Fingerprinting (free for adoptions)	$ 10.00
	Photo CD (includes sales tax) - Per Copy	$ 15.00
	DVD (includes sales tax) - Per Copy	$ 15.00
	Gas Drive Off Fee	$ 30.00
	Impound Release Fee	$ 50.00
Property Violations - also see Assessments		
	Snow Removal Violations plus contractor invoice - Per Property	$ 163.00
	Weed/Grass Violation plus contractor invoice - Per Property	$ 196.00
Revolving		
	Revolving Loan Application Fee - EDA	1% of loan
Rental Housing Registration		
910.07	Single Family units	$ 50.00
	Duplex units	$ 80.00
	Multifamily building containing three (3) dwelling units	$ 320.00
	Multifamily dwelling units additional charge/ unit after original three (3) units	$ 13.00
	Re-inspection fee - see staff billing rates	Staff billing rates
Return Check		
	Return check fee	$ 30.00
Right of Way		
1400.1	Right of Way Permit Fee	$ 150.00
Room Rentals		
	Meeting Room Use - (on a case by case basis)	Actual cost
Signs		
1300	Permanent Sign Fee - Including Wall Mount and Pylon	$ 100.00
	Temporary Sign Fee - days allowed based on code - (plus escrow listed below)	$ 50.00
	***One fee waiver allowed for all City of Big Lake non-profit events	
	Temporary Sign Fee - Escrow	$ 100.00
	Sign Code Violation - Per Offense	$ 50.00
Staff/Equipment Billing Rates		
	(includes Hourly fringe plus overhead cost)	
	Accounting Clerk	$ 90.00
	Building & Inspections	$ 120.00
	City Administrator	$ 160.00
	City Clerk	$ 100.00
	Clerical/Support	$ 80.00
	Community Development Director	$ 140.00
	Finance Director	$ 140.00
	City Planner	$ 100.00
	Consultant Planner	$ 160.00
	Liquor Store Manager	$ 120.00
	Police Department Staff	
	Police Investigator	$ 120.00
	Police Lieutenant	$ 140.00
	Police Officer	$ 110.00
	Police Chief	$ 190.00
	Reserve Officer	$ 25.00

2016 FEE SCHEDULE
Adopted: December 09, 2015 (effective Jan. 1, 2016)
Amended: February 24, 2016

Code	Description	Amount
	Public Work Staff	
	Maintenance	$ 80.00
	Fleet Mechanic	$ 90.00
	Foreman	$ 110.00
	Director	$ 150.00
	Equipment charge - per hour	
	Air Compressor	$ 36.00
	Chain Saw	$ 29.50
	Dump Truck	$ 64.50
	Hydrant Meter	$ 47.50
	Jet Rodder	$ 45.50
	Jet/Vac	$ 211.00
	Lawn Mower	$ 36.00
	Loader	$ 120.50
	Pickup Truck	$ 36.00
	Skid Steer	$ 65.00
	Small Tools Miscellaneous	$ 7.00
	Street Sweeper	$ 42.00
	Tandem Dump Truck	$ 120.50
	Trailer	$ 45.50
	Weed Whip	$ 29.00
	Equipment charge - per day	
	Tapping Machine	$ 66.00
	Tapping Machine Tap	$ 28.00
	Sign Rental	$ 4.50
Street		
710.01	Street Excavation Permit Fee	$ 223.00
	Street Excavation Permit Escrow - As determined by city engineer	
Street Light		
830	Street Light Utility System Fee Residental Unit - Per Month	$ 3.00
	Street Light Utility System Fee Non -Residental Unit - Per Front Footage/Month	$ 0.042
Tobacco		
350.03	Tobacco License per Calendar year	$ 100.00
Trash Hauler		
335.02	Trash Hauler License - Per Calendar Year	$ 150.00
Traveling		
310.01	Traveling Shows permit	$ 25.00

BUILDING PERMIT FEES

900.03	**Building Permits Fees - 2011 MN Statute 326B.153 Fee Schedule**	
	Administrative Fee - Permit Refund	$ 25.00
	Basement Refinish	$ 150.00
	Building Permit	1997 UBC Fee Table
	Plan Review	65% of Permit Fee
	Plan Review - Duplicate Plan	25% of Permit Fee
	Plan Review - Accessory Structure	65% of Permit Fee
	Plan Review Revisions - Per Hour	$ 50.00
	Air Conditioner	$ 50.00
	Deck Permit - Residential	$ 150.00
	Demo	$ 100.00
	Fence Permit > 6' (Zoning)	$ 55.00
	Fence Permit < 6'	1997 UBC Fee Table
	Fireplace	$ 100.00
	Fire Suppression	2% of Job Value
	Fire Suppression Plan Review	65% of Permit Fee

2016 FEE SCHEDULE
Adopted: December 09, 2015 (effective Jan. 1, 2016)
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Code	Description	Amount
	Furnace Replacement	$ 50.00
	After Hours / Weekend Inspection Minimun 2 hours - Per Hour	$ 63.25
	Investigation Fee	100% of Permit Fee
	Water heater Replacement	$ 50.00
	Lawn Irrigation - Residential Permit	$ 50.00
	Lawn Irrigation - Comm Permit	$ 100.00
	Mechanical (New Residential)	$ 150.00
	Mechanical (Remodel, Addition)	$ 100.00
	Mechanical (New Commercial)	2% of Job Value
	Mechanical (Remodel, Addition - Comm)	2% of Job Value
	Mechanical Plan Check Fee	50% of Permit Fee
	Moving Structure	$ 100.00
	Moving Structure - Site Inspection	$ 50.00
	Permit Card - Copy Replacement	$ 5.00
	Plumbing Residential (New Homes)	$ 200.00
	Plumbing Residential (Remodel, Addition)	$ 100.00
	Plumbing Commercial (New)	2% of Job Value
	Plumbing Commercial (Remodel, Addition)	1.25% of Job Value
	Re-Inspection Fee	$ 50.00
	Roofing (Residential)	$ 100.00
	Roofing (Commercial)	1997 UBC Fee Table
	Seed/Sod Fee - (plus escrow listed below)	$ 140.00
	Seed/Sod Fee - Escrow	$ 1,860.00
	Siding - Residential	$ 100.00
	Window Replacement - Residential	$ 100.00
	Swimming Pools	$ 150.00
	Water Softer	$ 50.00

PLANNING/ZONING FEES

In addition to the fees listed, City Engineer, City Attorney, Planning Consultant, or other consultant fees will be charged on an actual cost basis and will be pass through to developer's escrow account.

Amendments - Ordinance or Comprehensive Plan - (plus escrow listed below)	$	325.00
Amendments - Ordinance or Comprehensive Plan - Escrow	$	1,000.00
Appeals	$	600.00
Annexations - Residentials	$	1,000.00
Annexations - Commercial/Industrial		waived
Concept Plan - (plus escrow listed below)	$	100.00
Concept Plan Escrow	$	1,000.00
Conditional Use Permit (CUP) Resident/Commercial/Industrial/Signs - (plus escrow listed below)	$	400.00
Conditional Use Permit Resident/Commercial/Industrial/Signs - Escrow	$	1,000.00
Environmental Review (EAW/AUAR) - (plus escrow listed below)	$	500.00
Environmental Review (EAW/AUAR) Escrow	$	1,000.00
Home Occupation Permit	$	150.00
Interim Use Permit - (plus escrow listed below)	$	500.00
Interim Use Permit Escrow	$	1,000.00
Park &Trail Dedication - must be paid at time of application and before issuance of building permit	10% of Land Value or	
*All new subdivisions must satisfy park dedication requirements (land and/or cash) as determined by the City Council		
Parking Pad Administrative Permit	$	25.00
Planned Unit Development (PUD) - (plus escrow listed below)	$	750.00
Planned Unit Development (PUD) Escrow	$	3,000.00
Plat - Final - (plus escrow listed below)	$	300.00
Plat - Final Escrow	$	3,000.00
Plat - Preliminary - (plus escrow listed below)	$	300.00
Plat - Preliminary Escrow	$	5,000.00
Recording Fee - Includes Administration cost	$	66.00

2016 FEE SCHEDULE

Adopted: December 09, 2015 (effective Jan. 1, 2016)
Amended: February 24, 2016

Code	Description	Amount	
	Rezoning	$	500.00
	Site Plan Reviews - (plus escrow listed below)	$	100.00
	Site Plan Reviews Escrow	$	1,500.00
	Subdivisions Administrative (lot combination)	$	300.00
	Subdivisions Administrative - Escrow	$	1,000.00
	Subdivisions Simple - (plus escrow listed below)	$	500.00
	Subdivisions Simple Escrow	$	3,000.00
	Tax Abatement Districts - (plus escrow listed below)	$	500.00
	Tax Abatement Districts Escrow	$	5,000.00
	Temporary Use Permits (1st one for non-profit or community events - within City Limits - waived)	$	50.00
	Tax Increment Financing (TIF) Districts - (plus escrow listed below)	$	500.00
	Tax Increment Financing (TIF) Districts Escrow	$	10,000.00
	Vacations - (plus escrow listed below)	$	500.00
	Vacations Escrow	$	1,000.00
	Variances - Residential/Commercial/Industrial - (plus escrow listed below)	$	350.00
	Variances - Residential/Commercial/Industrial - Escrow	$	1,500.00
	Wetland Application - plus actual cost	$	500.00

WATER/SEWER/STORM SEWER FEES:

	Water Rates - Residental		
800.21	0 - 6,500 gallons monthly usage - Per 1,000 gallons	$	3.89
	over 6,500 gallos monthly usage - Per 1,000 gallons	$	4.86
	Monthly Fixed Fee	$	6.67
	Water Rates - Multi-Family		
	0 - 88,600 gallons monthly usage - Per 1,000 gallons	$	3.89
	over 88,600 gallons monthly usage - Per 1,000 gallons	$	4.86
	Monthly Fixed Fee	$	15.33
	Water Rates - Irrigation		
	0 - 88,600 gallons monthly usage - Per 1,000 gallons	$	3.89
	over 88,600 gallons monthly usage - Per 1,000 gallons	$	4.86
	Monthly Fixed Fee	$	15.33
	Water Rates - Commercial		
800.21	0 - 51,000 gallons monthly usage - Per 1,000 gallons - plus sales tax	$	2.40
	over 51,000 gallons monthly usage - Per 1,000 gallons - plus sales tax	$	2.65
	Monthly Fixed Fee - based on meter size - see chart below all rates per month fee:		
	5/8" - 1"	$	6.67
	1 1/2 "	$	9.52
	2"	$	15.33
	3"	$	58.15
	4"	$	74.01
	6"	$	111.01
	8"	$	153.30
	Water Service Fees		
	Water Access Charges (WAC)- anticipated daily use of water less than 25,000 gallons - Per Unit	$	3,585.00
	Water Access Charges (WAC)- for multi-tenant buildings greater than 4 units - Per Unit	$	2,200.00
	Water Access Charges (WAC) - anticipated daily use of water greater than 25,000 gallons - Per Unit	Determined by City Engineer	
	Water Availability Charge -parcels that have city water available but are not connected - Fee Per Year	$	50.00
800.07	Water Inspections - New Hook-up	$	75.00
800.07	Water Inspections - Repair	$	35.00

2016 FEE SCHEDULE

Adopted: December 09, 2015 (effective Jan. 1, 2016)
Amended: February 24, 2016

Code	Description	Amount
800.18	Water Late Charges - Per Monthly billing	10% or $5, whichever is greater
	Water Meters - Residential	$ 290.00
	Water Meter Certificate of Ocuupancy Inspection	$ 40.00
	Water Meter Siding Inspection	$ 40.00
800.2	Water Shut Off Charge - at owners request	$ 30.00
800.2	Water Turn On Charge - at owners request	$ 30.00
800.2	Water Shut Off Charge - delinquency - 2 employees always sent for safety reasons	$ 60.00
800.2	Water Turn On Charge - delinquency - 2 employees always sent for safety reasons	$ 60.00
	Water Test Fee - State of MN - Per Month	$ 0.53
	Water Trunk Area Fee - Per Acre	$ 1,650.00
800.27	Water Use Restrictions - 1st violation within calendar year	waived
	Water Use Restrictions - 2nd violation within calendar year	$ 25.00
	Water Use Restrictions - 3rd violation within calendar year	$ 50.00
	Water Use Restrictions - 4th violation within calendar year	$ 100.00
	Water Use Restrictions - 5th violation within calendar year	$ 250.00
	Utility - Change of Ownership/Service Processing	$ 30.00
	Utility - Meter Reading (owner requested)	$ 30.00
	Utility - New Account	$ 5.00
	Sewer Rates - Residental	
810.17	Per 1,000 gallons of monthly usage based on Nov - April average usage of water	$ 7.68
	Monthly Fixed Fee	$ 11.00
	Sewer Rates - Multi - Family	
810.17	Per 1,000 gallons of monthly usage - based on Nov - April average usage of water	$ 7.68
	Monthly Fixed Fee	$ 11.00
	Sewer Rates - Commercial	
810.17	Per 1,000 gallons of monthly usage based on Nov - April average usage of water	$ 7.68
	Monthly Fixed Fee	$ 17.40
	Sewer usage will be determined as follows for new accounts and non-winter residents:	
	New Owner - Existing Property: Nov - April average usage of owner or from previous owner	
	New Owner - New Construction: Usage will be based on 4,000 gallons	
	Non-winter Residents: Usage will be based on 4,000 gallons	
	Sewer Service Fees	
	Sewer Access Charges (SAC)- anticipated daily use of water less than 25,000 gallons - Per Unit	$ 5,325.00
	Sewer Access Charges (SAC)- for multi-tenant buildings greater than 4 units - Per Unit	$ 3,235.00
	Sewer Access Charges (SAC) - anticipated daily use of water greater than 25,000 gallons - Per Unit	Determined by City Engineer
	Sewer Inspections - New Hook-up	$ 75.00
	Sewer Inspections - Repairs	$ 35.00
810.19	Sewer Late Charges - Per Monthly billing	10% or $5, whichever is greater
	Sanitary Sewer Trunk Area Fee - Per Acre	$ 5,330.00
	Storm Sewer Service Fees	
820	Storm Sewer Drainage Utility Fee - Properties less than 1 acre - Per Month	$ 4.93
	Storm Sewer Drainage Utility Fee - Properties greater than 1 acre - Per Month	$4.93 per month/acre
	Storm Sewer Trunk Area Fee - developments where storm water is contained within the plat boundary	waived

Appendix 10

Appendix 10

The City of Big Lake does not have any formal regulations. However, they do recommend several water conservation techniques shown below. They may implement a lawn irrigation ordinance in the future.

http://www.biglakemn.org/index.asp?SEC=B5D193FB-0742-4D92-93B8-C1570CAB01E0&DE=31C4637A-D46B-4BF6-AAE0-49E7FC52F359&Type=B_BASIC

SECTION 1026 – GRADING, FILLING AND EXCAVATING

SECTION

1026.01: Permit Required
1026.02: Application and Required Information
1026.03: Technical Reports
1026.04: Issuance of Permit
1026.05: Conditions of Permit
1026.06: Security
1026.07: Failure to Comply
1026.08: Completion of Operation
1026.09: Operations in Process
1026.10: Erosion and Drainage
1026.11: Grading, Filling and Excavation within Shoreland District

1026.01: PERMIT REQUIRED:

Subd. 1. Except for City land grading, filling and excavating operations, and in cases where a grading and drainage plan for a private development has been approved as part of a subdivision or other development plan approved by the City, or as may be otherwise stipulated by this Ordinance, any person who proposes to add landfill or extract sand, gravel, black dirt, or other natural material from the land or grade land shall apply for a permit as specified below:

Cubic Yards of Landfill or Land to be Excavated/Graded	Permit Requirement
1 to 50 cubic yards	MPCA Storm Water Permit / No City Permit
50 – 250 cubic yards	MPCA Storm Water Permit and Administrative permit as provided in Section 1003 of this Ordinance
Greater than 250 cubic yards	MPCA Storm Water Permit and Interim Use Permit as provided in Section 1010 of this Ordinance

Subd. 2. Notwithstanding the requirements of this Section, no permit will be required for depositing landfill or excavation/grading on a lot for which a building permit has been issued for construction thereon provided that there is compliance with this Section, and such activity is in accordance with an approved grading plan and/or building permit.

Subd. 3. Excavations for agricultural purposes and gardening are exempt from the requirements of this Section.

Subd. 4. Activities which qualify as mining operations shall be subject to this Section.

Subd. 5. Except for mining activities, land filling and land excavation/grading operations are an allowable activity within all zoning districts.

1026.02: APPLICATION AND REQUIRED INFORMATION: Any person desiring a permit hereunder shall file an application on such forms as shall be provided by the Zoning Administrator. Such application shall be accompanied by a fee as set forth by City Council resolution and a large scale copy and reduced scale (11 by 17 inches) copy of detailed written and graphic materials fully explaining the proposed land filling or land excavation operation. The number of copies of said maps and materials shall be determined by the Zoning Administrator. The scale of such materials shall be the minimum necessary to ensure legibility. The request shall be considered as being officially submitted and complete when the applicant has submitted and complied with all the following required information, as applicable and specified by the Zoning Administrator:

Subd. 1. The name and address of the applicant.

Subd. 2. The name and address of the owner of the land.

Subd. 3. The address and legal description of the land involved.

Subd. 4. The purpose of the landfill or excavation/grading activity.

Subd. 5. A description of the type and amount of material to be placed upon or excavated/graded from the premises.

Subd. 6. The source of fill material.

Subd. 7. The highway, street or streets, or other public ways in the City upon and along which any material is to be hauled or carried.

Subd. 8. An estimate of the time required to complete the landfill or excavation/grading.

Subd. 9. A site location map and certificate of survey of the entire subject site.

Subd. 10. A site plan showing present topography (with a minimum interval of one (1) foot) and also including boundary lines for all properties, water courses, wetlands and other significant features within three hundred fifty (350) feet.

Subd. 11. A site plan showing the proposed finished grade (with a minimum interval of one (1) foot) and landscape plan. All sites over one (1) acre shall submit an erosion control plan prepared by a licensed professional engineer. Final grade shall not adversely affect the surrounding land or the development of the site on which the landfill is being conducted. Topsoil shall be of a quality capable of establishing normal vegetative growth.

Subd. 12. A plan and/or statement demonstrating the proposed activity will in no way jeopardize the public health, safety, and welfare or is appropriately fenced to provide adequate protection. All sites over one (1) acre shall submit an erosion control plan prepared by a licensed professional engineer.

Subd. 13. A statement that the applicant will comply with all conditions prescribed by the City.

Subd. 14. A written right-of-entry is provided to the Zoning Administrator to enter the land for the purpose of determining compliance with all applicable conditions imposed on the operation.

Subd. 15. When required by the State of Minnesota an approval by the State to impound the waters or to make the excavation described in the application.

Subd. 16. Other information as may be specified by the Zoning Administrator.

1026.03: TECHNICAL REPORTS: The Zoning Administrator shall immediately, upon receipt of a completed application, as determined by preliminary staff review, forward a copy thereof to the City Engineer and the City Building Official. Where protected watersheds, floodplains, and/or protected wetlands are in question, the Minnesota Department of Natural Resources, Army Corps of Engineers, and Sherburne County Soil and Water Conservation District shall also be contacted. These technical advisors shall be requested to prepare reports, as applicable, for the City Council and/or Zoning Administrator.

1026.04: ISSUANCE OF PERMIT: Upon receiving information and reports from the City staff and other applicable agencies, as applicable, a public hearing shall be scheduled before the Planning Commission which shall forward a commendation to the City Council. The City Council shall take formal action on the application and as to whether, and when, and under what conditions such permit for a landfill or excavation/grading activity is to be issued to the applicant.

1026.05: CONDITIONS OF PERMIT:

Subd. 1. Landfill Operations.

1. Under no circumstances shall any landfill operation be conducted or permitted if the contents of the landfill or any part thereof shall consist of garbage, animal or

vegetable refuse, poisons, contaminants, chemicals, decayed material, filth, sewage or similar septic or biologically dangerous material deemed to be unsuitable by the City.

2. Unless expressly extended by permit, the hours of operation shall be limited to seven o'clock (7:00) AM to seven o'clock (7:00) PM, Monday through Saturday.

Subd. 2. Land Excavation/Grading Operations.

1. Site Development and Restoration Plan. An extractive use site development and restoration plan must be developed, approved, and followed over the course of operation of the site. The plan must address dust, noise, possible pollutant discharges, hours and duration of operation, and anticipated vegetation and topographic alterations. It must also identify actions to be taken during operation to mitigate adverse environmental impacts, particularly erosion, and must clearly explain how the site will be rehabilitated after extractive activities end.

2. The City, as a prerequisite to the granting of a permit, or after a permit has been granted, may require the applicant to whom such permit is issued, or the owner or user of the property on which the excavation/grading is located to:

   a. Properly fence the excavation.

   b. Slope the banks, and otherwise properly guard to keep the excavation in such condition as not to be dangerous from caving or sliding banks.

   c. Properly drain, fill in or level the excavation, after the extraction has been completed so as to render it usable, seeding where required to avoid erosion and an unsightly mark on the landscape and to make the same safe as the City shall require.

   d. Keep the excavation/grading within the limits for which the particular permit is granted.

   e. Remove excavated/graded material from the excavation, away from the premises upon and along such highways, streets or other public ways as the City shall order and direct.

   f. Retain and store top soil from the site in question and to utilize such materials in the restoration of the site.

3. Unless expressly extended by permit, the hours of operation shall be limited to seven o'clock (7:00) AM to seven o'clock (7:00) PM, Monday through Saturday.

1026.06: SECURITY: The City shall require either the applicant or the owner or user of the property on which the landfill or excavation/grading is occurring to post a security in such form and sum as determined by the City Attorney or City Council. The amount of the security shall be sufficient to cover the City's extraordinary cost and expense of repairing, from time to time, any highways, streets or other public ways where such repair work is made necessary by the special burden resulting from hauling and travel in transporting fill or excavated material. The amount of the security shall also be sufficient to insure compliance with all requirements of this Section, and the particular permit, and to pay the expense the City may incur as a result of the permit.

1026.07: FAILURE TO COMPLY: The City may, for failure of any person to comply with any requirement made of them in writing under the provisions of such permit, as promptly as same can reasonably be done, proceed to cause said requirement to be complied with, and the cost of such work shall be certified as an assessment against the property whereon the landfill or excavation/grading operation is located, or the City may at its option proceed to collect such costs by an action against the person to whom such permit has been issued, and their superiors if a bond exists. In the event that landfilling or excavation/grading operations requiring a permit are commenced prior to City review and approval, the City may require work stopped and all necessary applications filed and processed. In such cases, application fees shall be double the normal charge.

1026.08: COMPLETION OF OPERATION:

Subd. 1. All landfill and excavation/grading operations shall be completed within one hundred eighty (180) days of the issuance of the permit. Upon completion, the permit holder shall notify the Zoning Administrator in writing of the date of completion. If additional time beyond the one hundred eighty (180) days is needed for completion, the permit holder may apply to the Zoning Administrator and upon a satisfactory showing of need, the Zoning Administrator may grant an extension of time. If such extension is granted, it shall be for a definite period. Extensions shall not be granted in cases where the permit holder fails to show that good faith efforts were made to complete the landfill or excavation/grading operation within one hundred eighty (180) days and that failure to complete the operation was due to circumstances beyond the permit holder's control, such as shortage of fill or excavated material, teamster's strike, unusually inclement weather, illness or other such valid and reasonable excuse for non-completion. In the event a request for an extension is denied, the permit holder shall be allowed a reasonable time to comply with other provisions of this Section relating to grading, leveling and seeding or sodding. What constitutes such "reasonable time" shall be determined by the Zoning Administrator after inspecting the premises.

Subd. 2. At the completion of a landfill or excavation/grading operation, the premises shall be graded, leveled, and seeded or sodded with grass. The grade shall be such elevation with reference to any abutting street or public way as the City shall prescribe in the permit. The site shall also conform to such prerequisites as the City may determine with reference to storm water drainage runoff and storm water passage or flowage so that the landfill

or excavation cannot become a source of, or an aggravation to, storm water drainage conditions in the area. The Zoning Administrator shall inspect the project following completion to determine if the applicant has complied with the conditions required thereof. Failure of such compliance shall result in the withholding of any building permits for the site and notice of such withholding shall be filed in the office of the Sherburne County Recorder for the purposes of putting subsequent purchasers on notice.

1026.09: OPERATIONS IN PROCESS: All landfill and excavation/grading operations for which a permit has previously been issued shall terminate such operations on the date specified by the permit.

1026.10: EROSION AND DRAINAGE:

Subd. 1. Every applicant for a building permit, subdivision approval, or a grading permit to allow land disturbing activities shall adhere to erosion control measure standards and specifications contained in the Metropolitan Council Publication "Minnesota Urban Small Sites Best Management Practices (BMP) Manual), as may be amended, or as approved by the City Engineer.

Subd. 2. No land shall be developed and no use shall be permitted that results in water runoff causing flooding, erosion, or deposit of sediment on adjacent properties. Such runoff shall be properly channeled into a storm drain, watercourse, ponding area, or other public facilities subject to the review and approval of the City Engineer.

Subd. 3. All residential, commercial, industrial, and institutional developments shall satisfy the provisions of the City's Subdivision Ordinance in regard to storm water management.

Subd. 4. In the case of all single family lots, multiple family lots, business, industrial and institutional developments, the drainage and erosion control plans shall be subject to the City Engineer's written approval. No modification in grade and drainage flow through fill, cuts, erection of retaining walls or other such actions shall be permitted until such plans have been reviewed and received written approval from the City Engineer.

Subd. 5. Proposed erosion control measures may be approved by the City Engineer as part of grading plan review. Erosion control may be specified by the City Engineer as part of a site survey for individual building permits. Erosion control measures may also be specified by the City Engineer as needed and deemed appropriate during the construction and post-construction periods separate from the above.

Subd. 6. All storm sewer inlets which are functioning during construction shall be protected so that sediment laden water not enter the conveyance system without first being filtered or otherwise treated to remove sediment.

Subd. 7. All on-site storm water conveyance channels shall be designed and constructed to withstand the design volume of storm water with appropriate stabilization to prevent scour and erosion. Erosion controls must be provided at the outlets of all storm sewer pipes.

Subd. 8. All temporary and permanent erosion and sediment control practices shall be maintained and repaired to assure the continued performance of their intended function.

Subd. 9. Tracking. Each site shall have graveled roads, access drives and parking areas of sufficient width and length to prevent sediment from being tracked onto public or private roadways. Any sediment reaching a public or private road shall be removed by street cleaning (not flushing) before the end of each workday.

Subd. 10. Seeding. All disturbed ground left inactive for seven (7) or more days shall be stabilized by seeding or sodding or by mulching or covering or other equivalent control measure approved by the City Engineer.

Subd. 11. Sites Over Ten (10) Acres. For sites with more ten (10) acres disturbed at one time, or if a channel originates in the disturbed area, one or more temporary or permanent sedimentation basins shall be constructed. Each sedimentation basin shall have a surface area of at least one percent of the area draining to the basin and at least one meter (three (3) feet) of depth and constructed in accordance with accepted design specifications. Sediment shall be removed to maintain a depth of one meter (three (3) feet). The basin discharge rate shall also be sufficiently low as to not cause erosion along the discharge channel or the receiving water.

Subd. 12. Sites Ten (10) Acres or Under. For sites with ten (10) acres or less disturbed at one time, silt fences, straw bales, or equivalent control measures shall be placed along all side slope and down slope sides of the site. If a channel or area of concentrated runoff passes through the site, silt fences shall be placed along the channel edges to reduce sediment reaching the channel. The use of silt fences, straw bales, or equivalent control measures must include a maintenance and inspection schedule.

Subd. 13. Removal. All temporary erosion control devices including silt fence, gravel, hay bales or other measures shall be removed from the construction site by the applicant and properly disposed of or recycled. This removal and disposal must occur within thirty (29) days of the establishment of permanent vegetative cover on the disturbed area.

Subd. 14. Site Dewatering. Water pumped from the site shall be treated by temporary sedimentation basins, grit chambers, sand filters, upflow chambers, hydro-cyclones, swirl concentrators or other appropriate controls as appropriate. Water may not be discharged in a manner that causes erosion or flooding of the site or receiving channels of a wetland. All dewatering shall be in accordance with all applicable county, state, and federal rules and regulations. Minnesota Department of Natural Resources regulations regarding appropriate permits shall also be strictly adhered to.

Subd. 15. Waste and Material Disposal. All waste and unused building materials (including garbage, debris, cleaning wastes, waste water, toxic materials or hazardous materials) shall be properly disposed of off-site and not allowed to be carried by runoff into a receiving channel or storm sewer system.

Subd. 16. Unless approved by the City Engineer, the top of the foundation and garage floor of all structures shall be at least eighteen (18) inches above the grade of the crown of the street.

Subd. 17. The City's Building Official or City Engineer may issue stop work orders for any violation of this Ordinance.

1026.11: GRADING, FILLING AND EXCAVATING WITHIN SHORELAND DISTRICTS.

Subd. 1. Topographic Alterations/Grading and Filling.

1. Grading and filling and excavations necessary for the construction of structures, sewage treatment systems, and driveways under validly issued construction permits for these facilities shall not require the issuance of a separate grading and filling permit. However, the grading and filling standards in this Section must be incorporated into the issuance of permits for construction of structures, sewage treatment systems, and driveways.

2. Grading for public roads and parking areas shall be regulated by Section 1065 (Shoreland Management District) of this Ordinance.

3. Notwithstanding Items 1 and 2 above, a grading and filling permit shall be required for:

    a. The movement of more than ten (10) cubic yards of material on steep slopes or within shore or bluff impact zones.

    b. The movement of more that fifty (50) cubic yards of material outside of steep slopes and shore and bluff impact zones.

4. The following considerations and conditions must be adhered to during the issuance of construction permits, grading and filling permits, conditional use permits, variances, and subdivision approvals:

    a. Grading or filling in any type 2, 3, 4, 5, 6, 7, or 8 wetland must be evaluated to determine how extensively the proposed activity would affect the following functional qualities of the wetland: (This evaluation must also include a determination of whether the wetland alterations being proposed requires permits, reviews, or approval by other local, state or

federal agencies such as a watershed district, the Minnesota Department of Natural Resources or the United States Army Corps of Engineers. The applicant shall be so advised.)

(1) Sediment and pollutant trapping and retention.

(2) Storage of surface runoff to prevent or reduce flood damage.

(3) Fish and wildlife habitat.

(4) Recreational uses.

(5) Shoreline or bank stabilization.

(6) Noteworthiness, including special qualities such as historic significance, critical habitat for endangered plant and animals, or others.

b. Alterations must be designed and conducted in a manner that ensures only the smallest amount of bare ground shall be exposed for the shortest time possible.

c. Mulches or similar materials must be used, where necessary, for temporary bare soil coverage, and a permanent vegetation of cover must be established as soon as possible.

d. Methods to minimize soil erosion and to trap sediments before they reach any surface water feature must be used.

e. Altered areas must be stabilized to acceptable erosions control standards consistent with the field office technical guides of the local soil and water conservation districts and the United States Soil Conservation Service.

f. Fill or excavated material must not be placed in a manner that creates an unstable slope.

g. Plans to place fill or excavated material on steep slopes must be reviewed by qualified professionals for continued slope stability and must not create finished slopes of thirty (30) percent or greater.

h. Fill or excavated material must not be placed in bluff impact zones.

i. Any alterations below the ordinary high water level of public waters must first be authorized by the commissioner under Minn. Stat. 105.42 as amended.

j. Alterations of topography must only be allowed if they are accessory to permitted or conditional uses and do not adversely affect adjacent or nearby properties.

k. Placement of natural rock riprap, including associated grading of the shoreline and placement of a filter blanket, shall be permitted if the finished slope does not exceed three (3) feet horizontal to one (1) foot vertical, the landward extent of the riprap is within ten (10) feet of the ordinary high water level, and the height of the riprap above the ordinary high water level does not exceed three (3) feet.

l. Setbacks for Processing Machinery. Processing machinery must be located consistent with Shoreland District setback standards for structure from the ordinary high water levels of public waters and from bluffs.

SECTION 1027 – LANDSCAPE, SCREENING AND TREE PRESERVATION

SECTION

1027.01: Purpose
1027.02: General Mandatory Landscaping and Maintenance
1027.03: Required Landscaping
1027.04: Required Screening
1027.05: Financial Guarantee
1027.06: Tree Preservation

1027.01: PURPOSE: The purpose of this Section is to establish standards for the installation of screening, landscaping and the preservation of woodlands to protect the general health, safety, and welfare of the City.

1027.02: GENERAL MANDATORY LANDSCAPING AND MAINTENANCE:

Subd. 1. All exposed ground areas, including street boulevards (landscaped portion of right-of-way), and areas not devoted to off-street parking, drives, sidewalks, patios or other such improvements shall be landscaped with sod, seed, shrubs, other ornamental landscape materials and trees except that trees shall not be planted in boulevard portions of the public right-of-way, within sixty (60) days after a building is constructed on a lot. A final certificate of occupancy may be issued upon compliance with this Section. (Ord. 2003-05).

1. Temporary erosion control measures shall be installed and maintained until establishment of sod, seed and/or permanent erosion control measures are in place and functioning properly.

Subd. 2. All landscaped areas shall be maintained by the property owner and kept neat, clear and uncluttered, and where landscaping is required as part of City approvals, any plant material which is diseased or dies shall be replaced with like kind of the original size by the property owner. No landscaped area shall be used for the parking of vehicles or for the storage or display of materials, supplies or merchandise, unless specifically approved by the City.

Subd. 3. Fences, retaining walls and/or plantings placed upon utility easements or public right-of-way are subject to removal if required for maintenance or improvement of the utility. In such cases, costs for removal and restoration shall be the responsibility of the property owner.

Subd. 4. Slopes and Berms. Final grades with a slope ratio of greater than three (3) to one (1) shall not be permitted without approval of the City Engineer and/or Building Official

and shall contain approved treatment such as special seed mixtures or reforestation, terracing, or retaining walls. Berming used to provide required screening shall not have slopes in excess of three (3) to one (1).

Subd 5. Maintenance.

1. Maintenance of the landscape and screening shall be the responsibility of the individual property owner.

2. The color of screening walls or fences shall be uniform along the entire length and shall be a muted, earth tone color. Any modifications to the screening wall or fence shall require the approval of the Zoning Administrator.

3. All repairs to screening or walls shall be consistent with the original design in regard to location and appearance.

4. Replacement of landscape materials or plantings shall be consistent with the original landscape/screen design or as approved by the Zoning Administrator.

5. All repair or plant replacement shall be done within forty-five (45) days of written notification from the City.

Subd. 6. Landscape Guarantee: All new plants shall be guaranteed for twelve (12) months from the time planting has been completed. All plants shall be alive, of good quality, and disease free at the end of the warranty period or be replaced. Any replacements shall be warranted for twelve (12) months from the time of planting.

Subd. 7. Timing/Responsibility of Installation. Weather permitting, all buffer, berm, and/or plantings shall be constructed or planted prior to the issuance of a final certificate of occupancy.

1027.03: REQUIRED LANDSCAPING: (Ord. 2003-05); (Ord. 2004-19, 8/11/04).

Subd. 1. Landscaping – All Uses. Prior to approval of a building permit for a new principal structure or addition, all uses shall be subject to the landscape provisions required herein.

1. Commercial, industrial, public, semi-public, institutional, multiple family residential, parking lots for five (5) or more vehicles and utility uses shall be required to submit a site landscape plan for approval by the City prior to issuance of a building permit. Said landscape plan shall be developed by a nurseryman or landscape professional and demonstrate an emphasis upon the boundary or perimeter of the proposed site at points adjoining a public right-of-way, other property and the immediate perimeter of the structure.

2. All landscaping incorporated in said plan shall conform to the following standards and criteria: The type of materials shall be appropriate for the site conditions (soils, climate, groundwater, manmade irrigation, grading, etc.).

3. To the extent possible, native drought-resistant plant materials/trees shall be utilized.

4. Commercial, industrial, multi-family, public, semi-public, institutional uses shall install irrigation systems to ensure survivability of landscape materials.

Subd. 2. The complement of trees fulfilling the requirements of this Section shall be not less than twenty-five (25) percent deciduous and not less than twenty-five (25) percent coniferous. (Ord. 2003-05).

1. Number of Trees. The minimum number of overstory trees on any given site shall be as follows:

   a. Single Family Uses. Two (2) trees per dwelling unit to be located in the front yard.

   b. Multiple Family Uses. Residential structures containing two (2) or more units shall contain as a minimum: One (1) tree per dwelling unit.

   c. Non-Residential Uses. Non-residential uses shall contain at a minimum the greater of:

      (1) One (1) tree per one thousand (1,000) square feet of gross building floor area; or

      (2) One (1) tree per fifty (50) lineal feet of site perimeter.

   d. Overstory Trees. An equivalent of up to fifty (50) percent of the required number of overstory trees may be substituted with the use of overstory trees in combination with ornamental trees and/or shrubs. In such case, not less than three (3) ornamental trees/shrubs shall be provided for each one (1) required overstory tree substituted.

2. Minimum Size: All plants must at least equal the following minimum size:

	Potted/Bare Root	**Or**	**Balled and Burlapped**
Shade Trees	2 ½ inch diameter		2 ½ inch diameter
Ornamental Trees	1 ½ inch diameter		2 inch diameter
Evergreen Trees	---		6 feet
Tall shrubs/hedge material	3 - 4 feet		3 – 4 feet
Low shrubs, deciduous • Evergreen • Spreading evergreen	18 – 24 inches 18 – 24 inches 18 – 24 inches		24 – 30 inches 24 – 30 inches 18 – 24 inches

3. Spacing:

   a. Plant material centers shall not be located closer than three (3) feet from a side property line or twelve (12) feet from a front property line and shall not be planted to conflict with public plantings, drainage and utility easements, sidewalks, trails, fences, parking areas, and driveways based on the judgment of the Zoning Administrator.

   b. Where plant materials are planted in two (2) or more rows, plantings shall be staggered in rows unless otherwise approved by the Zoning Administrator.

4. Types Of New Trees/Shrubs: All tree and plant species shall be indigenous to the appropriate hardiness zone and physical characteristics of the site. Suitable tree and plant species for complying with this Section are identified in the following tables or as approved by the Zoning Administrator.

Coniferous Shrubs		
Aborvitae, Juniper, Mugo Pine, and Yew		
Deciduous Shrubs		
Barberry	Forsythia	Snowberry
Chokeberry	Honeysuckle	Spirea
Coralberry	Lilac	Sumac
Cotoneaster	Ninebark	Viburnum
Currant	Potentilla	Willow
Dogwood	Rose	
Euonymus	Serviceberry	

Coniferous Trees	Scientific Name
Fir, Douglas	Pseudotsuga menziesii glauca
Fir, White	Abies concolor
Hemlock, Canada (Eastern)	Tsuga canadensis
Pine: Austrian, White, Ponderosa, Red (Norway) and Scotch	Pinus nigra, strobes, ponderosa, resinosa, sylvestris
Redcedar, Eastern	Juniperous virginiana
Spruce: Black Hills, Norway, White, Japanese	Picea glauca, pungens, abies, glauca
Deciduous Trees	**Scientific Name**
Ash, Blue, Marshall Seedless, Summit, White	Fraxinus quadrangulata, pennsylvanica 'Marshalls Seedless,' 'Summit,' Fraxinus americana
Catalpa	Catalpa speciosa
Cherry, Black	Prunus serotina
Coffeetree	Gymnocladus dioicus
Ginkgo	Ginkgo biloba
Hackberry	Celtis occidentalis
Honeylocust: Skyline, Imperial	Gleditsia triacanthos 'Skyline,' 'Imperial'
Linden: American, Greenspire, Litttleleaf, Redmund	Tilia Americana, cordata 'Greenspire,' cordata, Americana 'Redmund'
Maple: Autumn Blaze, Norway, Red (and cultivars)	Acer 'Autumn Blaze,' plantanoides, rubrum
Oak: Bur, Pin, Red, Scarlet, Swamp White, White	Quercus macrocarpa, palustris, rubra, coccinea, bicolor, alba
Ornamental Trees	**Scientific Name**
Birch, River	Betula nigra
Chokecherry, Amur	Prunus maacki
Chokecherry, Shubert's	Prunus virginiana 'Shubert'
Crabapple	Malus spp.
Dogwood, Pagoda	Cornus alternifolia
Hawthorn	Crataegus spp.
Ironwood	Ostrya virginiana
Lilac, Japanese tree	Syringa reticulata
Mountain Ash: American, European, Korean, Oak-Leaved, Showy	Sorbus americana, aucuparia, alnifolia, hybrida, decora
Nannyberry	Viburnum lentago
Plum: American, Canada	Prunus americana, nigra
Serviceberry	Amelanchier spp.

5. Sod and Ground Cover. All areas not otherwise improved in accordance with approved site plans shall have a minimum depth of four (4) inches of topsoil (black dirt consisting of not more than thirty-five (35) percent sand) and be sodded including boulevard areas located two (2) feet behind the back of curb (for erosion control). (Ord. 2010-04, 07/28/10). Exceptions to these criteria may be approved by the Zoning Administrator as follows:

a. Seed may be provided in lieu of sod in any of the following cases:

(1) Where the seed is applied to future expansion areas as shown on approved plans.

(2) Where the seed is applied adjacent to natural areas or wetlands. (Seed mixture to be approved by the City Engineer).

(3) Where the seed is applied to low maintenance areas along side principal arterials (U.S. Highway 10) as defined by the Comprehensive Plan.

b. Undisturbed areas containing existing viable natural vegetation which can be maintained free of foreign and noxious plant materials.

c. Areas designated as open space or future expansion areas properly planted and maintained with prairie grass or wild flowers. Seed mixture to be approved by the City Engineer.

d. Use of mulch materials such as bark, wood chips and decorative block in support of shrubs and foundation plantings.

e. For single-family residential properties, portions of rear yards which lie beyond thirty (30) feet of the lot's principal building may be seeded, except in cases where the rear yard abuts a public street. Where a rear yard abuts a public street, that portion of the rear yard within thirty (30) feet of the lot line shall be sodded. Proper erosion control measures shall be implemented and maintained until vegetation is established.

6. Storm water management ponds shall be seeded with native wetland species as approved by the City Engineer. The perimeter of "dry ponds" shall be landscaped with plants and wildflower seed/stock subject to the approval of the City Engineer.

7. To achieve ornamental grass, a minimum depth of four (4) inches of topsoil (black dirt consisting of not more than thirty-five (35) percent sand) shall be placed on the affected areas before seeding. A minimum depth of two (2) inches of topsoil shall be placed on the affected areas before sodding. Ornamental grass shall be guaranteed for a full two (2) years from the time planting is completed.

8. Before a certificate of occupancy is issued, any area of the lot determined to be subject to erosion shall be sodded and staked. Areas needing erosion protection shall be determined by the Building Official or City Engineer.

9. Design (except for pond slopes which shall be subject to the review and approval of the City Engineer):

   a. The landscape plan must show some form of designed site amenities (i.e., composition of plant materials, and/or creative grading, decorative lighting, exterior sculpture, etc.) which are largely intended for aesthetic purposes.

   b. All areas within the property lines (or beyond, if site grading extends beyond) shall be treated. All exterior areas not paved or designated as roads, parking, or storage must be planted into ornamental vegetation (lawns, ground covers, or shrubs) unless otherwise approved by the Zoning Administrator.

   c. Existing topographical and vegetative features, including the general location of significant trees shall be shown on the plan.

   d. Plantings, including the required minimum number of overstory trees, ornamental trees, shrubs, flowers and ground cover materials.

   e. Turf slopes in excess of three to one (3:1) are prohibited.

   f. All ground areas under the building roof overhang must be treated with a decorative mulch and/or foundation planting.

   g. All commercial, industrial, public, semi-public, institutional and multi-family (three or more units attached), buildings must have an exterior water spigot and irrigation system to ensure that landscape maintenance can be accomplished.

   h. Trees and shrubs shall not be planted in the right-of-way except for designated parkways and streets as determined by the City Council.

   i. All plants required as part of an approved landscaping plan shall be maintained and kept alive. Dead plants shall be replaced in accordance with the approved landscape plan.

Subd. 3. Landscaping. In addition to landscaping, screening and/or fencing criteria outlined in this Section, the following standards shall apply to parking areas for five (5) or more vehicles.

1. All parking lots for five (5) or more vehicles shall provide plantings or surfacing material in all areas bordering the parking area. No landscaping shall interfere with the view of the street for driver's entering or exiting the premises. Landscaping shall be subject to the thirty (30) foot clear view triangle

requirements outlined in Section 1041.04 Subd. 6 (General Lot and Yard Requirements – Clear View Triangle) of this Ordinance. This requirement shall not apply to off-street parking areas for single family or two family dwelling units with direct street access to garages.

1027.04: REQUIRED SCREENING:

Subd. 1. Non-Residential Uses. Where any business, industrial, institutional, essential service, utility or public use (i.e., structure, parking or storage) abuts property zoned for residential use, said building/facility shall provide screening along the boundary of the residential property. Screening shall also be provided where a facility is across the street from a residential zone, but not on that side of a business, industry or institutional building considered to be the front (as determined by the Zoning Administrator). The screening specifically required by this Section shall consist of a greenbelt strip, buffer yard or other screening as provided for below.

1. A greenbelt planting strip shall consist of evergreen trees and/or deciduous trees and plants and shall be a minimum of ten (10) feet in width and of a sufficient density to provide a visual screen and reasonable buffer. This planting strip shall be designed to provide visual screening to achieve a seventy-five (75) percent opacity year round and to a minimum height of six (6) feet. The grade for determining height shall be the grade elevation of the building or use for which the screening is providing protection, unless otherwise established by the Zoning Administrator. The planting plan and type of plantings shall require the approval of the Zoning Administrator. Said greenbelt strip shall be irrigated unless exempted by the City Council.

2. A fence or earth berm may also be installed, but not in lieu of the greenbelt plant materials. Earth berms may be used but shall also be planted with landscape screening materials. A fence shall be constructed of masonry, brick, steel, vinyl or wood, except as otherwise provided herein. Such fence shall provide a solid screening effect and shall be a minimum of six (6) feet in height. The grade for determining height shall be the grade elevation of the building or use for which the screening is providing protection, unless otherwise established by the Zoning Administrator. The design and materials used in constructing a required screen shall be subject to the approval of the Zoning Administrator. The use of plastic, vinyl or wood slats in combination with chain-link fence shall not be considered as a permitted screening method.

Subd. 2. Multiple Family Uses. Where multi-family buildings of three (3) or more units abut property zoned or developed with a less dense residential use, the higher density residential use shall provide screening along all off-street parking and formal outdoor recreational activity areas and between multi-family and single-family units to mitigate possible adverse impacts. Housing of similar types and densities shall not be subject to special screening requirements for formal outdoor recreational activity areas.

Subd. 3. Buffer Yards. Buffer yards shall be located along lot lines for residential lots that abut major collector or arterial roads, railroad right of way or overhead power lines. (Ord. 2003-05)

1. Buffer Yard Requirements. Except as may be approved by the City Council and except for lots of record and preliminary platted lots having legal standing established on July 20, 2002 (effective date of Ordinance), lots which border major collector, arterial street, overhead power lines or railroad right-of-way shall provide a minimum twenty (20) foot buffer yard in addition to the required lot width and depth requirements of the underlying zoning district, to screen homes from said streets, power lines or railroad right-of-way. (Ord. 2003-05).

2. Landscape/Screening Plan Required. For new subdivisions, a comprehensive landscape and screening plan shall be submitted and said plan shall identify all proposed buffer screening in both plan and sectional view.

3. Buffer Yard Landscape Design Standards.

   a. Plantings. All designated buffer yards must be seeded or sodded except in areas of steep slopes where natural vegetation is acceptable, and planted with trees and shrubs as approved by the Zoning Administrator. All plantings within designated buffer yards shall adhere to the following:

      (1) Plant material centers shall not be located closer than three (3) feet from a fence line or property line, and shall not conflict with public plantings, sidewalks, trails, easements etc.

      (2) Landscape screen plant material shall be planted in two (2) or more rows. Plantings shall be staggered in rows unless otherwise approved by the Zoning Administrator.

      (3) Deciduous shrubs shall not be planted more than four (4) feet on center, and/or evergreen shrubs shall not be planted more than three (3) feet on center.

      (4) Deciduous trees intended for screening shall be planted not more than forty (40) feet apart. Evergreen trees intended for screening shall be planted not more than fifteen (15) feet apart.

   b. Walls And Fences: All walls and fences erected within designated buffer yards shall adhere to the following:

      (1) Only walls and fences formally approved as part of the subdivision and site plan process shall be permitted.

(2) At least fifty (50) percent of the street side of a screening fence shall be landscaped with plant materials. Plant materials shall be at least equal to the fence height.

(3) Exposed fences shall run a maximum length of fifty (50) feet between landscaping areas or clusters.

(4) Fences and landscaping shall not be located within the "Clear View Triangle" as defined in Section 1001 (Rules and Definitions) of this Ordinance.

c. Earth Berms. Earth berms within designated buffer yards:

(1) Shall not exceed a three to one (3:1) slope unless approved by the City Engineer.

(2) Shall contain no less than four (4) inches of topsoil.

(3) Landscaping proposed in conjunction with berms shall be planted in a manner that does not result in a single row of plants along the top of the berm. Landscaping shall be grouped and provided to accomplish visual interest as well as screening. (Ord. 2003-05).

Subd. 4. Screening of Mechanical Equipment. All rooftop and ground mounted mechanical equipment of residential buildings having three (3) units or more and of non-residential buildings and/or equipment shall comply with the following standards:

1. All rooftop and ground mounted mechanical equipment shall be screened so as to mitigate noise and view of said equipment in compliance with Section 1032 (Performance Standards) of this Ordinance.

2. All rooftop and ground mounted mechanical equipment shall be designed (including exterior color) and located so as to be aesthetically harmonious and compatible with the building.

a. Rooftop mechanical equipment shall not exceed the building height standards by more than ten (10) feet.

b. All rooftop and ground mounted equipment shall be painted or color clad to match the building or screened form view with secured fencing or parapets in a harmonious color.

c. Screening of and landscaping around the equipment may be required where the design, color, and location of the equipment are found to not

effectively buffer noise or provide aesthetic harmony and compatibility. Screening shall be constructed of durable materials which are aesthetically compatible with the structure and which may be an integral part of the structure. Applicable requirements for access to the equipment shall be observed in the design and construction of the screening.

3. All loading, service utility, mechanical equipment and outdoor storage areas shall be completely screened from all public roads and adjacent properties and shall be designed to be compatible with the architectural treatment of the principal building.

1027.05: FINANCIAL GUARANTEE: A financial guarantee in the form of a performance bond, letter of credit or other form acceptable to the City Attorney, shall be provided by the applicant prior to the issuance of any permit for land alteration.

Subd. 1. The amount of the guarantee shall be one hundred twenty five (125) percent of the estimated cost to furnish and plant materials including irrigation, mulch, and other landscape materials. The estimated cost shall be provided by the applicant subject to approval by the City. The estimated cost shall be at least as much as the reasonable amount charged by nurseries for the furnishing and planting of all landscape and/or screening materials. The City reserves the right in its sole discretion to determine the estimated cost in the event the applicant's estimated cost is not approved.

Subd. 2. The security shall be maintained for at least one (1) year after the date that the last landscape materials have been planted. Upon a showing by the applicant and such inspection as may be made by the City, that portion of the security may be released by the City equal to one hundred twenty five (125) percent of the estimated cost of the landscape materials which are alive and healthy at the end of such year. Any portion of the security not entitled to be released at the end of the year shall be maintained and shall secure the applicant's responsibility to remove and replant landscape materials which are not alive or are unhealthy at the end of such year and to replant missing trees. Upon completion of replanting said landscape materials, the entire security may be released.

1027.06: TREE PRESERVATION: Prior to the issuance of building permits for all new and/or expanded multiple-family residential, commercial, industrial, and institutional uses, a tree preservation plan shall be submitted. The plan and its implementation shall be in accordance with the requirements as outlined in the City's Subdivision Ordinance and shall be subject to the review and approval of the City Engineer and Zoning Administrator. The City Council may exempt an applicant from the submission of a tree preservation plan upon demonstration that such a plan is not considered relevant to the site in question.

Appendix 11

Minnesota Water Supply Plan Instructions & Checklist 2016-2018

Public Water Suppliers

All public water suppliers in Minnesota that operate a public water distribution system, serve more than 1,000 people and/or all cities in the seven-county metropolitan area, must have a water supply plan approved by the Department of Natural Resources (DNR). Water supply plans must be updated and submitted to the DNR for approval every ten years. This requirement, in place since the 1990s, is designed to encourage communities to deal proactively with providing sustainable drinking water for citizens, businesses, and industry.[1]

These plan updates will be due between 2016 and 2018; the DNR will be notifying communities of the due date for each specific city water plan. All sections of the water supply plan must be completed in order for the plan to be approved. A checklist is included with these instructions on pages 4 and 5.

What is New?

- Plans can be submitted through Minnesota DNR Permitting and Reporting System (MPARS).
- DNR Hydrologists will be meeting with clusters of communities rather than individually. In the Twin Cities metropolitan area, Metropolitan Council staff will also provide technical assistance and in Greater MN, staff from MN Rural Waters Association will join us.
- There is a greater emphasis on water conservation/demand reduction and on developing rate structures that encourage conservation.
- Simplified reporting: More tables with check boxes; less writing required.
- Part 4 of the plan, required for communities in the seven-county metropolitan area, now reflects the Twin Cities metropolitan area Master Water Supply Plan
- Resources - can be found at www.mndnr.gov/watersupplyplans including copies of sample rate structures, conservation ordinances, education programs, water level recording forms, certificate of adoption, and other items as well as links to useful conservation web pages.

Submitting a Plan for DNR Approval

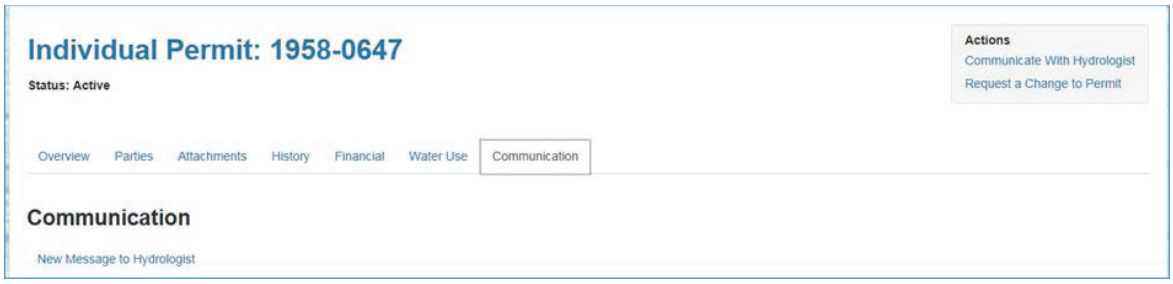
Preferably, please submit plans electronically to:

https://webapps11.dnr.state.mn.us/mpars/public/authentication/login

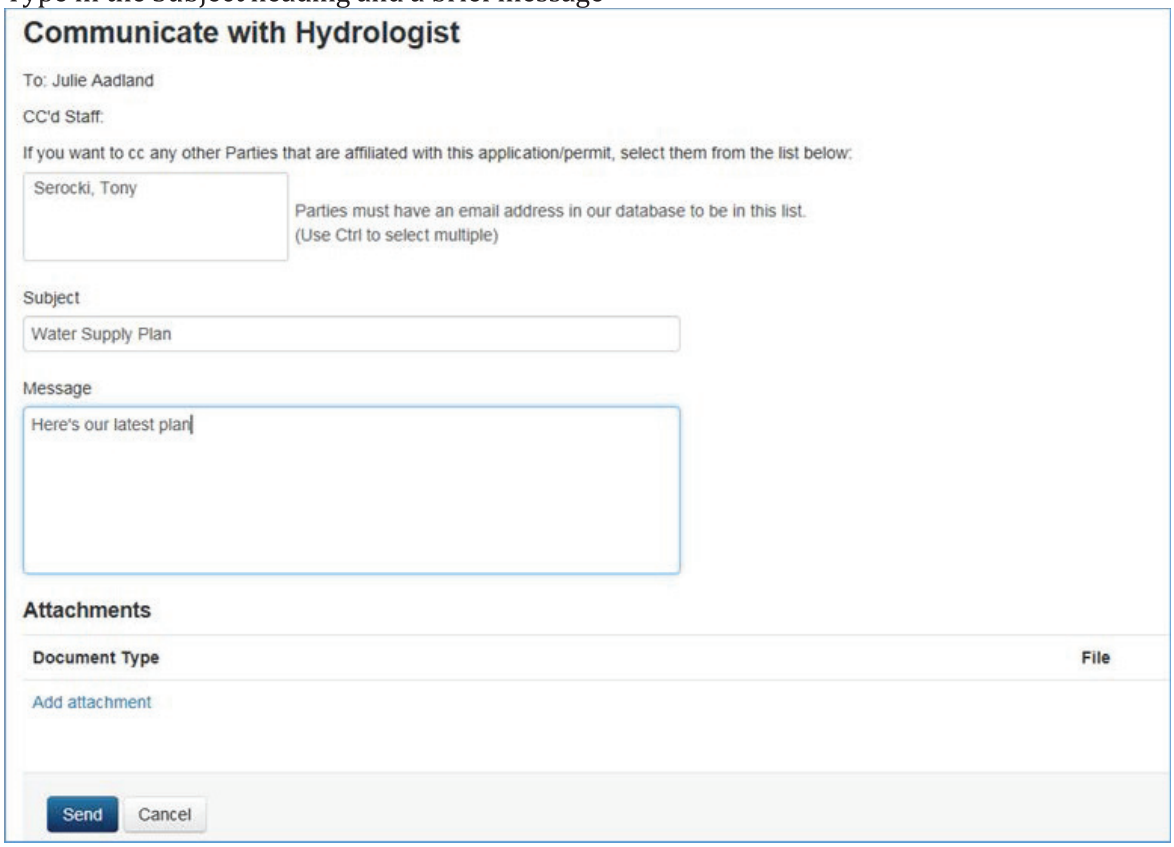
Steps for electronic submission:

1. Follow the above link and log into MPARS.
2. From your Account Overview Permits Tab, click on your primary Water Supply Permit Number.
3. Then click on Communication Tab.
4. Click New Message to Hydrologist (under Communication heading)

[1] see Minn. Stat. 103G.291



5. Type in the Subject heading and a brief message



6. Click Add Attachment
7. Under Document Type drop down, select Water Supply Plan
8. Click choose file and attach your Water Supply Plan - Naming convention: WSP_cityname_permitnumber_date.doc
   Please include list of all permit numbers associated with this Water Supply in the message field
9. Hit Send at the bottom of the page

Or submit completed plans to:

DNR Waters
Water Permit Programs Supervisor
500 Lafayette Road
St. Paul, MN 55155-4025

Plans for communities in the seven-county metropolitan area will be automatically shared with the Metropolitan Council.

If you have questions regarding water supply plans, please call (651) 259-5034 or e-mail questions to wateruse.dnr@state.mn.us

Twin Cities Metropolitan Area Requirements

All communities that operate a public water supply system within the seven county Twin Cities metropolitan area, even those with fewer than 1,000 people, must complete a local water supply plan and submit it to the Metropolitan Council, adjacent communities, and the county for review and comment. These plans include completion of Part 4 of the local water supply plan template.

Please submit plans to DNR Ecological and Water Resources Division as described above. Plans for communities in the seven-county metropolitan area will be shared with the Metropolitan Council.

Final Plan Adoption by City or Board

Communities give the plan preliminary approval subject to DNR review and, for communities in the seven-county metropolitan area, by Metropolitan Council review.

If the DNR or Metropolitan Council have recommended changes, the community should incorporate them into the plan or respond before the plan is finally adopted.

Communities and utility boards must officially adopt the plan after it is approved by the DNR and, for metro communities, reviewed by Metropolitan Council.

A template of a city certification of adoption is found at www.mndnr.gov/watersupplyplans

Water Supply Plan Checklist

All sections of the plan must be completed in order for the plan to be approved. The following checklist can be used to make sure all elements of the plan have been completed.

Part 1. Water Supply System Description and Evaluation

☑	Table 1. DNR Water Appropriation Permit Number & Utility Contact Information
☑	Table 2. Historic Water Demand (Part 1, A)
☑	Table 1. Large volume users (Part 1, A)
☑	Table 2. Water treatment capacity and treatment processes (Part 1, B
☑	Table 3. Storage capacity, as of the end of the last calendar year (Part 1, B)) & discussion of current and future storage capacity needs
☑	Table 4. Water sources & status (Part 1, C) & discussion of limitations
☑	Table 5. Projected annual water demand (Part 1, D) & discussion of water use trends & projection method
☑	Table 6. Source water quality monitoring (Part 1, E)
☑	Table 9. Water level data (Part 1, E)
☑	Table 10. Natural resource impacts (Part 1, E)
☑	Table 11. Status of Wellhead Protection and Source Water Protection Plans (Part 1, E)
☑	Table 12. Adequacy of Water Supply System (Part 1, F)
☑	Table 13. Proposed future installations/sources (Part 1, F)
☑	Table14. Alternative water sources (Part 1, F)
☑	Appendix 1: Well records and maintenance summaries
☑	Appendix 2: Water level monitoring plan
☑	Appendix 3: Water level graphs for each water supply well
☑	Appendix 4: Capital Improvement Plan

Part 2. Emergency Planning and Response Procedures

☑	Table 15. Emergency response plan contact information (Part 2, A) & Y/N questions
☑	Table 16. Interconnections with other water supply systems to supply water in an emergency (Part 2, C) & Y/N questions
☑	Table 17. Utilizing Surface Water as an Alternative Source (Part 2, C) & discussion of additional emergency water provisions
☑	Table 18. Water use priorities (Part 2, C)
☑	Table 19. Emergency demand reduction conditions, triggers and actions (Part 2, C)
☑	Table 20. Plan to Inform Customers Regarding Conservation Requests, Water Use Restrictions, and Suspensions (Part 2, C) & discussion of restriction authority
☑	Appendix 5: Emergency Telephone List
☑	Appendix 6: Cooperative Agreements for Emergency Services
☑	Appendix 7: Municipal Critical Water Deficiency Ordinance

Part 3. Water Conservation Plan

☑	Table 21. Implementation of previous ten-year Conservation Plan (Part 3, A) & discussion of progress and results
☑	Table 22. Short and long-term demand reduction conditions, triggers & actions (Part 3, A)
☑	Y/N & discussion of leak detection monitoring , water audits & water loss (Part 3, B)
☑	Table 23. Customer Meters (Part 3, B)
☑	Table 24. Water Source Meters (Part 3, B)
☑	Y/N & discussion of water use trends in residential GPCD (Part 3, B)
☑	Table 25. Strategies and timeframe to reduce residential per capita demand (Part 3, B)
☑	Table 26. Strategies and timeframe to reduce institutional, commercial, industrial, and agricultural and non-revenue use demand (Part 3, B)
☑	Describe trends in customer use categories (Part 3, B)
☑	Calculate ratio of maximum day demand to average day demand (Part 3, B)
☑	Table 27. Rate structures for each customer category (add additional rows as needed)
☑	Table 28. Additional strategies to Reduce Water Use & Support Wellhead Protection (Part 3, B)
☑	Discuss how you will track success (Part 3, B)
☑	Table 29. Regulations for short-term reductions in demand and long-term improvements in water efficiencies (Part 3, B)
☑	Table 30. Retrofitting programs (Part 3, B)
☑	Table 31. Current and Proposed Education Programs (Part 3, C) and discussion of future education plans
☑	Appendix 8: Graph showing annual per capita water demand for each customer category during the last ten-years
☑	Appendix 9: Water Rate Structure
☑	Appendix 10: Adopted or proposed regulations to reduce demand/improve water efficiency
☑	Appendix 11: Implementation Checklist

Part 4. Items Metropolitan Area Water Suppliers

☐	Table 32. Alternative Approaches (Part IV, D)
☐	Complete Technical Assistance question

Plan Submittal and Adoption

☑ Follow MPARS submission guidelines on page 1 of this document (preferred) or
Mail to: DNR Ecological & Water Resources
Water Permit Programs Supervisor
500 Lafayette Road
St. Paul, MN 55155-4032 Or e-mail to http://www.dnr.state.mn.us/mpars/index.html

☐ *(Metro communities with less than 1,000 people only)*
Follow MPARS submission guidelines on page 1 of this document (preferred) or
Mail to: Metropolitan Council
Reviews Coordinator
390 N Robert St
St. Paul, MN 55101 Or e-mail to ReviewsCoordinator@metc.state.mn.us

Certification of Plan Adoption Date: