Appendix 5B

Water Resources

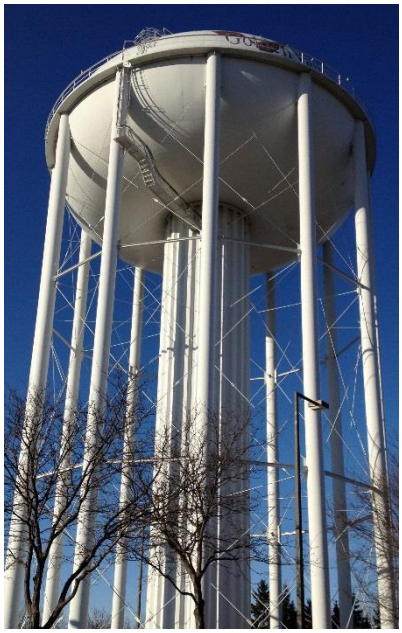
Joint Water Commission Water Supply Plan

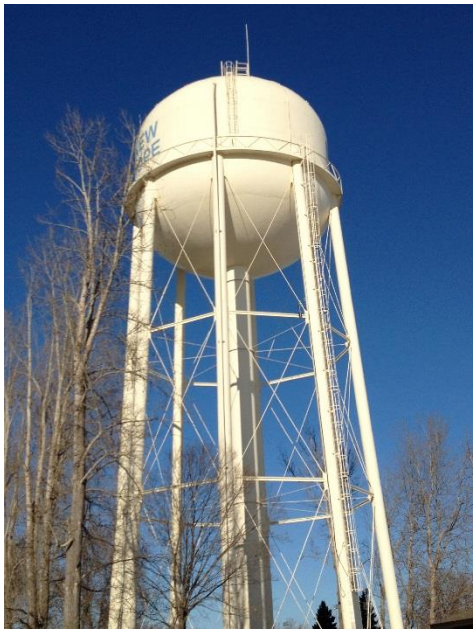
119 pages

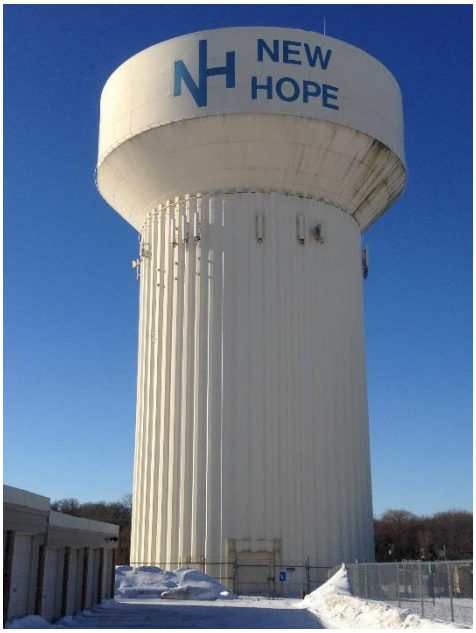
Water Supply Plan
Joint Water Commission
Serving Crystal, Golden Valley, and New Hope, Minnesota

January 3, 2019

Formerly called Water Emergency & Water Conservation Plan







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

This information is available in an alternative format upon request.

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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
City of Crystal	
DNR Water Appropriation Permit Number(s)	**NA**
Ownership	☒ Public or ☐ Private
Metropolitan Council Area	☒ Yes or ☐ No (and county name)
Street Address	**4141 Douglas Road**
City, State, Zip	**Crystal, MN, 55422**
Contact Person Name	Mark Ray
Title	Public Works Director/City Engineer
Phone Number	763-531-1160
MDH Supplier Classification	Municipal
City of Golden Valley	
DNR Water Appropriation Permit Number(s)	**NA**
Ownership	☒ Public or ☐ Private
Metropolitan Council Area	☒ Yes or ☐ No (and county name)
Street Address	**7800 Golden Valley Road**
City, State, Zip	**Golden Valley, MN, 55427**
Contact Person Name	Jeff Oliver
Title	City Engineer
Phone Number	763-593-8034
MDH Supplier Classification	Municipal
New Hope	
DNR Water Appropriation Permit Number(s)	**NA**
Ownership	☒ Public or ☐ Private
Metropolitan Council Area	☒ Yes or ☐ No (and county name)
Street Address	**4401 Xylon Avenue North**
City, State, Zip	**New Hope, MN, 55428**
Contact Person Name	Bernie Weber
Title	Director of Public Works
Phone Number	763-592-6772
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:

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

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB
Year	Crystal Pop.	Golden Valley Pop.	New Hope Pop.	Total Pop. Served	Crystal Connections	Golden Valley Connections	New Hope Connections	Total Connections	Crystal Residential Water Delivered (MG)	Golden Valley Residential Water Delivered (MG)	New Hope Residential Water Delivered (MG)	Total Residential Water Delivered (MG)	Crystal C/I/I Water Delivered (MG)	Golden Valley C/I/I Water Delivered (MG)	New Hope C/I/I Water Delivered (MG)	Total C/I/I Water Delivered (MG)	Total Water Delivered (MG)	Wholesale Deliveries (MG)	Total Water Billed by MPLS (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	22,595	20,510	20,747	63,852	7,355	6,927	5,179	19,461	633.700	612.975	585.633	1832.308	13.592	363.996	202.345	579.933	2412.241		2,610.98			7.6	7.15	17.5	July 19	78.6	112.0
2006	22,700	20,700	20,900	64,300	7,389	6,991	5,217	19,597	667.269	631.312	559.213	1859.794	13.617	377.093	185.057	575.767	2435.561		2,632.546			7.5	7.21	18.6	July 3	79.2	112.2
2007	22,800	20,900	21,000	64,700	7,790	7,059	5,242	20,091	663.008	654.717	569.194	1886.919	13.53	385.952	185.296	584.778	2471.697		2,677.100			7.7	7.33	18.2	July 12	79.9	113.2
2008	21,658	20,317	20,595	62,570	7,804	7,139	5,618	20,561	463.500	627.803	535.082	1626.385	87.65	400.131	178.306	666.087	2292.472		2,489.391			7.9	6.82	16.5	August 21	71.2	109.0
2009	21,835	20,508	20,661	63,004	7,761	7,150	5,617	20,528	559.410	636.446	525.945	1721.801	99.62	370.433	175.315	645.368	2367.169		2,851.111			17.0	7.81	16.8	July 28	74.9	124.0
2010	22,151	20,371	20,339	62,861	7,814	7,143	5,625	20,582	529.000	547.476	489.112	1565.588	89	340.404	148.629	578.033	2143.621		2,139.712			-0.2	5.86	10.6	August 28	68.2	93.3
2011	22,361	20,595	20,557	63,513	7,802	7,144	5,619	20,565	487.000	554.757	479.058	1520.815	88	380.016	145.857	613.873	2134.688		2,714.213			21.4	7.44	17.8	August 17	65.6	117.1
2012	22,523	20,773	20,726	64,022	7,810	7,139	5,616	20,565	534.550	632.683	509.373	1676.606	122	376.887	158.032	656.919	2333.525		2,640.132			11.6	7.23	15.4	July 17	71.7	113.0
2013	22,588	20,845	20,787	64,220	7,818	7,141	5,621	20,580	488.560	556.132	481.225	1525.917	87.33	362.820	132.181	582.331	2108.248		2,315.208			8.9	6.34	10.9	July 19	65.1	98.8
2014	22,605	20,866	20,792	64,263	7,826	7,149	5,634	20,609	457.750	516.707	453.216	1427.673	84.4	290.980	120.248	495.628	1923.301		2,163.746			11.1	5.93	12.5	August 9	60.9	92.2
2015	22,852	21,571	21,225	65,648	7,791	7,148	5,646	20,585	444.000	499.155	440.376	1383.531	80	287.984	128.78	496.764	1880.295		2,083.212			9.7	5.71	8.77	July 24	57.7	86.9
2016	23,028	21,367	20,877	65,272	7,805	7,157	5,652	20,614	438.000	486.605	442.138	1366.743	70	282.112	135.583	487.695	1854.438		2,091.469			11.3	5.73	9.52	July 21	57.4	87.8
5-yr Avg. 2012-2016	22,719	21,084	20,881	64,685	7,810	7,147	5,634	20,591	472.572	538.256	465.266	1476.094	88.7	320.16	134.96	543.85	2019.96		2,258.75			10.5	6.19	11.4	--	62.6	93.7

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

See Glossary for detailed definitions. The following are notes for clarification:

Column E Total Population Served = B + C + D
Columns J – R: Water Delivered equals water sold (from billing records of each community)
Column M = J + K + L
Column Q = N + O + P
Column R = M + Q
Column S: JWC does not provide wholesale water to others
Column T, U, and Y: all JWC consumptive use at this time is provided by Minneapolis. If the emergency wells are utilized, the volume pumped from the wells will be added to the water pumped column. At this time, JWC meters the water discharging into the Golden Valley and Crystal Reservoirs only, and does not have supply meters in the Golden Valley and Crystal Booster Pump Stations that pump from the reservoirs to the JWC system. Therefore, slight daily discrepancies are possible between the volume delivered from Minneapolis and the volume pumped to JWC communities on any given day – if the starting and ending water level in the reservoirs were allowed to change drastically over a 24 hour period. In actual operational practice, the JWC regularly refills the reservoirs to the starting levels each day. JWC is investigating the feasibility of installing flow meters on the booster stations to address this slight discrepancy.
Column V Water Supplier Services: Defined as water used for lawn irrigation, golf courses and park irrigation, car washes, ornamental fountains, and other non-essential uses. Currently JWC communities do not accurately and consistently quantify this volume of water. JWC intends to revisit a consistent means for each member community to detail this usage for future years.
Column X = T/365
Column W = (T-(R+V))/T
Column AA = M/(365*E)
Column BB = R/(365*E)

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

Crystal Large Customers	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)
1 CRYSTAL VILLAGE APARTMENTS	(MULTI) RESIDENTIAL	10,865,000	0.56%	UNKNOWN
2 CRYSTAL CARE CENTER	COMMERCIAL	6,344,000	0.32%	UNKNOWN
3 KENTUCKY LANE APARTMENTS	(MULTI) RESIDENTIAL	6,344,000	0.32%	UNKNOWN
4 CEDARWOOD APARTMENTS	(MULTI) RESIDENTIAL	6,144,000	0.31%	UNKNOWN
5 WINNETKA VILLAGE	(MULTI) RESIDENTIAL	5,943,000	0.30%	UNKNOWN
6 CAVANAGH SENIOR APARTMENTS	(MULTI) RESIDENTIAL	4,386,000	0.22%	UNKNOWN
7 6300 27TH AVE N	(MULTI) RESIDENTIAL	4,243,000	0.22%	UNKNOWN
8 HEATHERS ESTATES	(MULTI) RESIDENTIAL	4,011,000	0.21%	UNKNOWN
9 CEDARWOOD APARTMENTS	(MULTI) RESIDENTIAL	3,975,000	0.20%	UNKNOWN
10 THE HEATHERS MANOR	(MULTI) RESIDENTIAL	3,794,000	0.19%	UNKNOWN

Golden Valley Large Customers	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)
1 GENERAL MILLS	COMMERCIAL	16,274,000	2.1%	UNKNOWN
2 GOLDEN VALLEY REHAB CENTER	COMMERCIAL	15,419,000	2.0%	UNKNOWN
3 HONEYWELL	COMMERCIAL	13,057,000	1.7%	UNKNOWN
4 HONEYWELL	COMMERCIAL	10,615,000	1.4%	UNKNOWN
5 TENNANT		10,220,000	1.3%	UNKNOWN
6 LIBERTY CARTON		5,802,000	0.75%	UNKNOWN
7 DOVER HILL	RESIDENTIAL	4,893,000	0.64%	UNKNOWN
8 GENERAL MILLS JFB	COMMERCIAL	4,516,000	0.59%	UNKNOWN
9 COURAGE CENTER	COMMERCIAL	4,510,000	0.59%	UNKNOWN
10 HIDDEN LAKES	COMMERCIAL	3,654,000	0.48%	UNKNOWN

New Hope Large Customers	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)
1 AVTEC FINISHING	COMMERCIAL	12,167,700	0.62%	UNKNOWN
2 ST THERESE	COMMERCIAL	11,258,500	0.58%	UNKNOWN
3 DAKOTA GROWERS PASTA COMPANY	COMMERCIAL	10,375,200	0.53%	UNKNOWN
4 TRADEWINDS LP	COMMERCIAL	5,628,400	0.29%	UNKNOWN
5 ST THERESE	RESIDENTIAL	5,105,600	0.26%	UNKNOWN
6 NORTH RIDGE SKILLED LLC	COMMERCIAL	5,004,600	0.26%	UNKNOWN
7 EMERALD POINTE	RESIDENTIAL	4,472,600	0.23%	UNKNOWN
8 PHEASANT PARK APTS	RESIDENTIAL	4,294,200	0.22%	UNKNOWN
9 HY-VEE	COMMERCIAL	4,258,700	0.22%	UNKNOWN
10 NEW HOPE VILLAGE APTS	RESIDENTIAL	4,228,800	0.22%	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?
*Water is treated by the City of Minneapolis before transfer to JWC. Most of the water delivered to JWC is treated at Minneapolis Water's Fridley Plant. Treatment includes filtration, membrane filtration, fluoridation, and disinfection.							

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)
Golden Valley	Elevated storage	1962	Steel	1,500,000
New Hope1	Elevated storage	1959	Steel	500,000
New Hope 2	Elevated storage	1968	Steel	1,500,000
Golden Valley 1	Ground storage	1962	Concrete	4,500,000
Golden Valley 2	Ground storage	1965	Concrete	4,500,000
Crystal 1	Ground storage	1964	Concrete	4,500,000
Crystal 2	Ground storage	1964	Concrete	4,500,000
Crystal 3	Ground storage	1964	Concrete	10,000,000
Total	NA	NA	NA	31,500,000

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 existing storage and supply rates are adequate for the projected growth.

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)
Interconnection	City of Minneapolis	NA			NA	Wholesale interconnection, main water source	Yes
Groundwater	New Hope Well	00203542	1959	972	422	Emergency	No
Groundwater	Crystal Well 1	00806181	2014	1800	405	Emergency	No
Groundwater	Crystal Well 2	00806182	2014	1500	420	Emergency	No

Limits on Emergency Interconnections

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

Emergency wells only to be operated in the case of an emergency.

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?

Population Served: Stable. Total per capita, average day, and max day demands decreasing due to low flow fixtures and education.

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 Crystal	Projected Population Golden Valley	Projected Population New Hope	Projected Total Per Capita Water Demand (GPCD)	Projected Average Daily Demand (MGD)	Projected Maximum Daily Demand (MGD)
2016	64,362	22,568	20,871	20,923	102	6.565	13.130
2017	65,567	22,604	21,970	20,993	102	6.688	13.376
2018	66,553	22,640	22,850	21,063	102	6.788	13.577
2019	67,589	22,676	23,780	21,133	102	6.894	13.788
2020	68,900	23,000	24,800	21,100	102	7.028	14.056
2021	69,203	23,030	24,900	21,273	102	7.059	14.117
2022	69,403	23,060	25,000	21,343	102	7.079	14.158
2023	69,603	23,090	25,100	21,413	102	7.100	14.199
2024	69,803	23,120	25,200	21,483	102	7.120	14.240
2025	70,003	23,150	25,300	21,553	102	7.140	14.281
2030	71,100	23,300	25,800	22,000	102	7.252	14.504
2040	73,600	23,800	26,700	23,100	102	7.507	15.014

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

*Populations in Table 7 updated December 2018 based on information and comments provided by the Metropolitan Council. Although the demands have increased slightly due to the higher projected populations, the system still has adequate capacity to accommodate these additional demands based on historical Max Daily Demands of nearly 19 MGD.

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:

A linear population trend was used to interpolate population based on historic values and Met Council projections. A total per capita average daily demand of 102 was used for conservative planning purposes, since 4 of the last 10 years exceeded this value.

A maximum day to average day ratio of 2.0 is used for planning purposes. The historic high maximum day demand has been in the 17 – 19 MGD range.

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
JWC C-W1 00806181	☒ 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
JWC C-W2	☒ 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
New Hope 1 00203542	☒ 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
203542 DNR Obwell 27011	OPCJ	10 feet	☐ Falling ☒ Stable ☐ Rising	MM/DD/YY:____ MM/DD/YY:____ MM/DD/YY:____
216060 DNR Obwell 27041	CWOC	5 feet	☐ Falling ☒ Stable ☐ Rising	MM/DD/YY:____ MM/DD/YY:____ MM/DD/YY:____
JWC C-W1 00806181	OPCJ	NA	☐ Falling ☐ Stable ☐ Rising	MM/DD/YY:____ MM/DD/YY:____ MM/DD/YY:____
JWC C-W2 008006182	OPCJ	NA	☐ Falling ☐ Stable ☐ Rising	MM/DD/YY:____ MM/DD/YY:____ MM/DD/YY:____
New Hope 1 00203542	OPCJ	NA	☐ Falling ☐ Stable ☐ Rising	MM/DD/YY:____ MM/DD/YY:____ MM/DD/YY:____

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	Mississippi 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: ___	Declining water or ecosystem quality due to intensive overdevelopment or recreational use.	☐ Revise permit ☐ Change groundwater pumping ☐ Increase conservation ☒ Other	Water treatment and quality monitoring is performed by Minneapolis.
☐ Calcareous fen		☐ 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: ___		☐ Revise permit ☐ Change groundwater pumping ☐ Increase conservation ☐ Other	
☐ Lake		☐ Flow/water level decline	☐ GIS analysis		☐ Revise permit	

Resource Type	Resource Name	Risk	Risk Assessed Through	Describe Resource Protection Threshold*	Mitigation Measure or Management Plan	Describe How Changes to Thresholds are Monitored
		☐ Degrading water quality trends and/or MCLs exceeded ☐ Impacts on endangered, threatened, or special concern species habitat or other natural resource impacts ☐ Other: _____	☐ Modeling ☐ Mapping ☐ Monitoring ☐ Aquifer testing ☐ Other: ___		☐ Change groundwater pumping ☐ Increase conservation ☐ Other	
☒ Wetland		☐ 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: ___	Decline in aquatic ecosystem diversity, productivity, and stability. Harm to human health or negative impact on recreational uses and aesthetics.	☐ Revise permit ☐ Change groundwater pumping ☐ Increase conservation ☒ Other	The Army Corps of Engineers, the MnDNR, and any local government unit in charge of the Wetland Conservation Act approve or deny changes to wetland areas.
☐ Trout stream		☐ Flow/water level decline ☐ Degrading water quality trends and/or MCLs exceeded	☐ GIS analysis ☐ Modeling ☐ Mapping ☐ Monitoring		☐ Revise permit ☐ Change groundwater pumping ☐ Increase conservation ☐ Other	

Resource Type	Resource Name	Risk	Risk Assessed Through	Describe Resource Protection Threshold*	Mitigation Measure or Management Plan	Describe How Changes to Thresholds are Monitored
		☐ Impacts on endangered, threatened, or special concern species habitat or other natural resource impacts ☐ Other: _____	☐ Aquifer testing ☐ Other: ___			
☐ Aquifer		☐ 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: ___		☐ Revise permit ☐ Change groundwater pumping ☐ Increase conservation ☐ Other	
☒ Endangered, threatened, or special concern species habitat, other natural resource impacts	Northern long-eared bat, Rusty patched bumble bee, Snuffbox mussel, Higgins eye pearlymussel	☐ Flow/water level decline ☐ Degrading water quality trends and/or MCLs exceeded ☒ Impacts on endangered, threatened, or special	☐ GIS analysis ☐ Modeling ☐ Mapping ☒ Monitoring ☐ Aquifer testing ☐ Other: ___	DNR tracking will indicate declining levels of endangered or threatened species.	☐ Revise permit ☐ Change groundwater pumping ☐ Increase conservation ☒ Other	DNR monitors and communicates endangered and threatened species.

Resource Type	Resource Name	Risk	Risk Assessed Through	Describe Resource Protection Threshold*	Mitigation Measure or Management Plan	Describe How Changes to Thresholds are Monitored
		concern species habitat or other natural resource impacts ☐ Other: _____				

* 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.

Table 10 Notes:

The JWC is aware that there are numerous surface water features within the 3-community service area that have a potential to be impacted by groundwater removals – if JWC were ever to pump groundwater from their emergency wells. The JWC communities will continue to support regional groundwater/surface water data collection to provide a better understand the nature of potential surface water impacts (if any) that would occur from sustained pumping from the 3 JWC emergency wells, if they ever needed to be utilized for a longer term duration. At this time JWC does not have any plans to utilize these wells for anything except an emergency backup due to a catastrophic failure of the Minneapolis system. Prior to utilizing the wells (even for an emergency), the JWC will notify MDH as required in the Emergency Supply Operations Memorandum (copy attached in Appendix 6).

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		Emergency wells only
SWP	☒ In Process ☐ Completed ☐ Not Applicable	2008	2018 Update in process

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		
Water Storage Facilities	☐ No action planned - adequate ☒ Repair/replacement ☐ Expansion/addition	Ongoing maintenance and repair	Tower repair/ replacement: 2028, 2035, 2041
Water Treatment Facilities	☒ No action planned - adequate ☐ Repair/replacement ☐ Expansion/addition		
Distribution Systems (pipes, valves, etc.)	☐ No action planned - adequate ☒ Repair/replacement ☐ Expansion/addition	Ongoing maintenance and repair	Pipe and valve replacement as necessary
Pressure Zones	☒ No action planned - adequate ☐ Repair/replacement ☐ Expansion/addition		
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	NA				
Surface Water	Existing Source				
Interconnection to another supplier	Previously evaluated – not feasible due to incompatible system high water levels (neighboring systems require pumping up to the JWC system)				

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					
☐ Surface Water						
☐ Reclaimed stormwater						
☐ Reclaimed wastewater						
☐ Interconnection to another supplier						

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? _____

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 Crystal	MARK RAY	763-531-1160	MARK.RAY@ CRYSTALMN.GOV
Emergency Response Lead Golden Valley	MARC NEVINSKI	763-593-8008	MNEVINSKI@GOLDENVALLEYMN.GOV
Emergency Response Lead New Hope	BERNIE WEBER	763-592-6766	BWEBER@CI.NEW-HOPE.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
ST. LOUIS PARK	(2) 6-INCH 700 GPM (1 MGD)	EMERGENCY USE ONLY	TRUCK WITH VALVE KEY

GPM – Gallons per minute MGD – million gallons per day

Table 17. Utilizing ground water as an alternative source

Ground Water Source Name	Capacity (GPM)	Capacity (MGD)	Treatment Needs	Note Any Limitations On Use
CRYSTAL NO. 1	1800	2.6	CHLORINE INJECTION	NOTIFY MDH
CRYSTAL NO. 2	1500	2.2	CHLORINE INJECTION	NOTIFY MDH
NEW HOPE	962	1.4	CHLORINE INJECTION	NOTIFY MDH

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

There is a water supply well in New Hope adjacent to the north water tower. The well is estimated to be able to produce up to 1.4 MGD and could be used by the JWC on a continuous basis in an emergency. Emergency wells listed in Table 6 are also available as emergency water sources. In the event of contamination of the Mississippi River, mixing of groundwater and surface water (though it may produce an aesthetically unpleasant mixture) may be acceptable during an emergency. In addition, portable water treatment plants can be brought in to treat local lake water. Bottled water distribution may also be utilized.

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	4,002,000	2,401,200
Institutional	-	609,000	456,000
Commercial	2 (IF<10,000GPD, ELSE 5)	1,700,000	1,275,000
Industrial	2 (IF<10,000GPD, ELSE 5)	50,000	37,500
Irrigation	-	37,000	37,000
Wholesale	-	0	0
Non-Essential	6	31,000	31,000
TOTAL	NA	NA	

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 Emergency groundwater wells (only if complete failure of Minneapolis supply) ☐ 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_6___ ☐ 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 Elimination of low priority users and restriction on other users ☒ 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	JWC Communities, Minneapolis Water
☒ 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	JWC Communities, Minneapolis Water
☒ Governor's critical water deficiency declared	☐ Website ☐ Email list serve ☐ Social media (e.g. Twitter, Facebook)	☐ Daily ☐ Weekly ☐ Monthly ☐ Annually	JWC Communities, Minneapolis Water

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**.

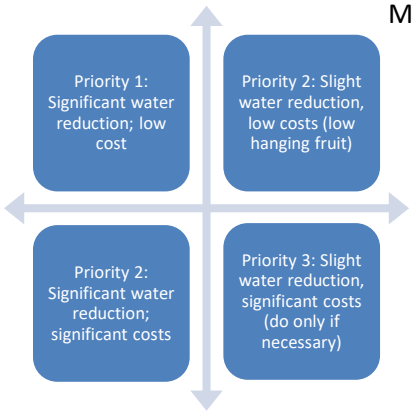
If no, the municipality must adopt such an official control within 6 months of submitting this WSP and submit it to the DNR as an amendment to this WSP.

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 Code (Refer to Appendix 7).

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

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.

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

2009 Plan Commitments (page 33 and following of 2009 WSP)	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
Education on benefits of low flow fixtures (e.g. for toilet, faucets, appliances, showerheads, dish washers, washing machines, irrigation systems, rain barrels, water softeners, etc.)	☒ Yes ☐ No
Updated radio read meter technology and billing software	☒ Yes ☐ No

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

Decreased usage as shown in Table 2 above.

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: _____
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: __Minneapolis___	☐ 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 ☐ **(close at 10.5)**

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

Leak detection done as needed and with CIP project and major maintenance efforts.

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? __2017_____

Frequency of water audits: ☒ **yearly** ☐ **other (specify frequency) _____**
Leak detection and survey: ☐ **every year** ☐ **every other year** ☒ **periodic as needed**
Year last leak detection survey completed: _2017_

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

Water loss is close to the 10% goal. Over the next 5 years, JWC will investigate the feasibility of: (1) providing a consistent method of metering or estimating water supply services usage (each community recording in same way), and (2) installing meters in the booster pump stations to compare water provided by Minneapolis to JWC usage on a daily basis.

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	20,240	20,088	20,088	NA	8 / 20
Irrigation meters	207	205	205	10	8 / 20
Institutional	107	143	143	10	8 / 20
Commercial	601	710	710	10	8 / 20
Industrial	21	21	21	10	8 /20
Public facilities	6	6	6	10	8 / 20
Other	-	-	-	-	-
TOTALS	21,182	21,173	21,173	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.

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)				___ / ___
2 Pump houses	4	20	4	2013_ / 20_

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? _63 g/person/day

Describe the water use trend over that timeframe:

Water usage has been slowly declining over that timeframe.

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

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

Strategy to reduce residential per capita demand	Timeframe for completing work
☐ Revise city ordinances/codes to encourage or require water efficient landscaping.	
☒ Revise city ordinance/codes to permit water reuse options, especially for non-potable purposes like irrigation, groundwater recharge, and industrial use. Check with plumbing authority to see if internal buildings reuse is permitted	25 years
☐ Revise ordinances to limit irrigation. Describe the restricted irrigation plan:	
☐ Revise outdoor irrigation installations codes to require high efficiency systems (e.g. those with soil moisture sensors or programmable watering areas) in new installations or system replacements.	
☒ Make water system infrastructure improvements	Present and ongoing
☐ Offer free or reduced cost water use audits) for residential customers.	
☒ Implement a notification system to inform customers when water availability conditions change.	In place and ongoing
☐ 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	ongoing
☐ Conduct audience-appropriate water conservation education and outreach.	
☐ Describe other plans	

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	ongoing
☐ 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)	
☐ 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.	ongoing
☐ 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.

All trends down due to conservation by residents and cost of water. Commercial trend not as not as steep of a trend down, and varies based on weather conditions and economy for that year.

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: 2.1

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: _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	☐ Uniform ☐ Odd/even day watering	☒ Service charge based on water volume ☐ Declining block ☐ Flat ☐ Other (describe)

Customer Category	Conservation Billing Strategies in Use *	Conservation Neutral Billing Strategies in Use **	Non-Conserving Billing Strategies in Use ***
	☐ Drought surcharge ☐ Use water bill to provide comparisons ☐ Service charge not based on water volume ☐ 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:

JWC communities meeting benchmarks

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.) **Existing**
☐	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: Participate in regional surface water/groundwater efforts

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

Per capita water use, max day to average day ratio

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 ☐ 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

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

Per capita water use decreasing

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			☐Ongoing ☐Seasonal ☐Only during declared emergencies
Press releases to traditional local news outlets (e.g., newspapers, radio and TV)			☐Ongoing ☐Seasonal ☐Only during declared emergencies
Social media distribution (e.g., emails, Facebook, Twitter)			☐Ongoing ☐Seasonal ☐Only during declared emergencies
Paid advertisements (e.g., billboards, print media, TV, radio, web sites, etc.)			☐Ongoing ☐Seasonal ☐Only during declared emergencies
Presentations to community groups			☐Ongoing

Education Methods	General summary of topics	#/Year	Frequency
			☐Seasonal ☐Only during declared emergencies
Staff training			☐Ongoing ☐Seasonal ☐Only during declared emergencies
Facility tours			☐Ongoing ☐Seasonal ☐Only during declared emergencies
Displays and exhibits			☐Ongoing ☐Seasonal ☐Only during declared emergencies
Marketing rebate programs (e.g., indoor fixtures & appliances and outdoor practices)			☐Ongoing ☐Seasonal ☐Only during declared emergencies
Community news letters			☐Ongoing ☐Seasonal ☐Only during declared emergencies
Direct mailings (water audit/retrofit kits, showerheads, brochures)			☐Ongoing ☐Seasonal ☐Only during declared emergencies
Information kiosk at utility and public buildings			☐Ongoing ☐Seasonal ☐Only during declared emergencies
Public service announcements			☐Ongoing ☐Seasonal ☐Only during declared emergencies
Cable TV Programs			☐Ongoing ☐Seasonal

Education Methods	General summary of topics	#/Year	Frequency
			☐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:)			☐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 ☐Seasonal ☐Only during declared emergencies

Education Methods	General summary of topics	#/Year	Frequency
Other:			☐Ongoing ☐Seasonal ☐ Only during declared emergencies

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

JWC communities will consider feasibility of website water conservation tips

Part 4. ITEMS FOR METROPOLITAN AREA COMMUNITIES

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

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

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

A. Water Demand Projections through 2040

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

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

B. Potential Water Supply Issues

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

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

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

C. Proposed Alternative Approaches to Meet Extended Water Demand Projections

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

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

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

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

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

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

Source Water Protection Strategies

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

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

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

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

Technical assistance

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

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

GLOSSARY

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

premises, and to issue commands to the meter to perform specific tasks such as disconnecting or restricting water flow.

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

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

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

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

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

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

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

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

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

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

Acronyms and Initialisms

AWWA – American Water Works Association

C/I/I – Commercial/Institutional/Industrial

CIP – Capital Improvement Plan

GIS – Geographic Information System

GPCD – Gallons per capita per day

GWMA – Groundwater Management Area – North and East Metro, Straight River, Bonanza,

MDH – Minnesota Department of Health

MGD – Million gallons per day

MG – Million gallons

MGL – Maximum Contaminant Level

MnTAP – Minnesota Technical Assistance Program (University of Minnesota)

MPARS – MN/DNR Permitting and Reporting System (new electronic permitting system)

MRWA – Minnesota Rural Waters Association

SWP – Source Water Protection

WHP – Wellhead Protection

APPENDICES TO BE SUBMITTED BY THE WATER SUPPLIER

Appendix 1: Well records and maintenance summaries – 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

CLAY W/COARSE SAND (BA	LT. GR	MEDIUM	144	150
CLAY & BASAL	RED/B	MEDIUM	150	155
CLAY WITH SANDSTONE	RED/B	MEDIUM	155	160
CEMENTED SANDSTONE	TAN	MEDIUM	160	170
CEMENTED SANDSTONE/FI	DK. TA	MEDIUM	170	175
CEMENTED SANDSTONE	TAN	SOFT	175	180
CEMENTED SANDSTONE	TAN	SOFT	180	193
LIMESTONE	TAN	HARD	193	195
LIMESTONE	TAN	HARD	195	197
CEMENTED SANDSTONE	TAN	MEDIUM	197	200
LIMESTONE	RED/T	MEDIUM	200	203
SHALE	GREE	HARD	203	204
CEMENTED SANDSTONE	TAN	MEDIUM	204	205
LIMESTONE/SANDSTONE L	TAN	HARD	205	206
LIMESTONE	TAN	SOFT	206	207
LIMESTONE/SHALE LENSE	TAN/G	MEDIUM	207	208
LIMESTONE	TAN/R	HARD	208	210
LIMESTONE	RED/T	HARD	210	235
LIMESTONE	RED/T	HARD	235	240
LIMESTONE	RED	HARD	240	245
LIMESTONE	RED	HARD	245	250
LIMESTONE	RED	HARD	250	255
LIMESTONE	RED	HARD	255	260
LIMESTONE	RED	HARD	260	265
LIMESTONE	RED	HARD	265	270
LIMESTONE	RED	HARD	270	275
LIMESTONE	RED	HARD	275	280
LIMESTONE	RED	HARD	280	285
LIMESTONE	RED	HARD	285	290
LIMESTONE	RED	HARD	290	295
LIMESTONE	RED	HARD	295	300
LIMESTONE	RED	HARD	300	305
LIMESTONE	RED	HARD	305	310
LIMESTONE	RED/T	HARD	310	320
SANDSTONE/SHALE LENSE	VARIE	MED-HRD	320	325
SANDSTONE	RED/T	SOFT	325	326
SANDSTONE	RED/T	SOFT	326	330
SANDSTONE	TAN	SOFT	330	335
SANDSTONE	TAN	SOFT	335	340
SANDSTONE	TAN	SOFT	340	345
SANDSTONE	RED/T	SOFT	345	350
SANDSTONE	RED	HARD	350	351
SANDSTONE	RED	HARD	351	355

SANDSTONE	TAN	SOFT	355	360
SANDSTONE	TAN	SOFT	360	365
SANDSTONE	TAN	SOFT	365	370
SANDSTONE	TAN	SOFT	370	375
SANDSTONE	TAN	SOFT	375	380
SANDSTONE	TAN	SOFT	380	385
SANDSTONE	TAN	SOFT	385	390
SANDSTONE	TAN	SOFT	390	395
SANDSTONE	TAN	SOFT	395	402
SHALE & SANDSTONE LEN	GRN/G	MEDIUM	402	405

REMARKS, ELEVATION, SOURCE OF DATA, etc.

GAMMA LOGGED 9-17-2014. M.G.S. NO. 5439. GAMMA LOGGED BY JIM TRAEN.

DRILLERS: BUTCH GAUSTAD AND JASON JOHNSON

USGS Quad	Minneapolis North	Elevation	890
Aquifer:	OPCJ	Alt Id:	5439

Report Copy

Drop Pipe Length ft. Capacity g.p.m

Type

Any not in use and not sealed well(s) on property? ☐ Yes ☑ No

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

Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 1404

License Business Name

Name of Driller SEE REMARKS

HE-01205-06 (Rev. 9/96)

Unique No. 00806182

County Name Hennepin

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Update Date 2015/02/12

Entry Date 2014/09/16

Township Name	Township	Range	Dir	Section	Subsection
	118	21	W	17	ADDDCB

Well Depth 420 ft. **Depth Completed** 420 ft. **Date Well Completed** 2014/11/10

Well Name JWC C-W2

Drilling Method Dual Rotary

Contact's Name JWC C-W2
7800 GOLDEN VALLEY RD
GOLDEN VALLEY MN 55427

Drilling Fluid Water

Well Hydrofractured? ☐ Yes ☑ No

From ft. to ft.

Use community supply(municipal)

Casing **Drive Shoe?** ☑ Yes ☐ N

Hole Diameter
in. t 420 ft

Casing Diameter **Weight(lbs/ft)**

24	in. t	159	ft	94.62
18	in. t	220	ft	70.59

Screen N

Open Hole From 220 ft. to 420 ft.

Make Type

Static Water Level 51 ft. from Land surface Date 2014/11/05

PUMPING LEVEL (below land surface)
99 ft. after 24 hrs. pumping 1500 g.p.m.

Well Head Completion
Pitless adapter mfr Model
Casing Protection ☑ 12 in. above grade
☐ At-grade(Environmental Wells and Borings ONLY)

Grouting Information Well grouted? ☑ Yes ☐ No

Material	From	To (ft.)	Amount(yds/bags)	
D		159	20	S
G		220	15	Y

Nearest Known Source of Contamination
150 ft. direction W type SEW
Well disinfected upon completion? ☑ Yes ☐ No

Pump ☑ Not Installed Date Installed N
Mfr nam
Model HP Volts

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
SAND AND GRAVEL	BROW	SOFT	0	4
CLAY	YEL/B	SOFT	4	7
MEDIUM SAND	BROW	SOFT	7	24
SAND AND GRAVEL	BROW	SOFT	24	30
FINE TO MEDIUM SAND	BROW	SOFT	30	35
SAND AND GRAVEL	BROW	SOFT	35	40
SAND AND GRAVEL WELL	BROW	SOFT	40	45
MEDIUM SAND & GRAVEL	BROW	SOFT	45	65
GRAVEL WELL SORTED	BROW	SOFT	65	81
CLAY	BROW	MEDIUM	81	85
CLAY AND ROCK	BROW	MED-HRD	85	90
COARSE SAND AND GRAV	RED/B	SOFT	90	104
GRAVEL WELL SORTED	RED/B	SOFT	104	113
REWORKED SANDSTONE &		SFT-MED	113	145
COARSE SAND & GRAVEL L	BROW	SOFT	145	146
COARSE SAND & GRAVEL L	BROW	SOFT	146	147
SANDSTONE TAN AND SHA		MEDIUM	147	150
SHALE	RED	MEDIUM	150	161
CHIPPY SANDSTONE	TAN	MEDIUM	161	195
RED DOLOMITE W/SHALE L	RED/G	HARD	195	199
RED DOLOMITE W/SHALE L	RED/G	HARD	199	200
DOLOMITE	RED	HARD	200	210
CHIPPY SANDSTONE	WHITE	HARD	210	213
DOLOMITE	RED	HARD	213	315
SANDY DOLOMITE	RED	MED-HRD	315	318
DOLOMITE & SANDSTONE	VARIE	MED-HRD	318	321
SANDY DOLOMITE	RED	MED-HRD	321	323
SANDSTONE WHT W/GRN	WHT/G	SFT-MED	323	325
WHT SANDSTONE W/V. LIT	WHT/G	SFT-HRD	325	328
WHT SANDSTONE W/V. LIT	WHT/G	SFT-MED	328	339
CHIPPY SANDSTONE	RED	MED-HRD	339	343
SANDSTONE CREAM		SFT-MED	343	347

SANDSTONE CHIPPY	RED	MED-HRD	347	354
SANDSTONE CREAM		SOFT	354	355
SANDSTONE CREAM RED		MEDIUM	355	359
SANDSTONE RED CREAM		MEDIUM	359	389
FINE SANDSTONE & SHALE		SOFT	389	390
CREAM SANDSTONE W/GR		MEDIUM	390	399
V. FINE SANDSTONE CRM		SOFT	399	400
CREAM SANDSTONE AND		SFT-MED	400	405
CREAM SANDSTONE W/GR		MED-HRD	405	412
CREAM SANDSTONE W/GR		MED-HRD	412	413
HARD RED SS W/SOFT CR	RED/T	MED-HRD	413	415
SILTSTONE	RED	V.HARD	415	418
RED DOLOMITE AND CREA	TAN	MEDIUM	418	419
FINE CREAM SANDSTONE		MEDIUM	419	420

REMARKS, ELEVATION, SOURCE OF DATA, etc.

GAMMA LOGGED 9-25-2014. MG.S. NO. 5441. LOGGED BY JIM TRAEN.

DETAILED LOG FROM BRIAN TRAUT.

DRILLERS: BRIAN TRAUT, NICK ANDERSON, & JASON JOHNSON.

USGS Quad	Minneapolis North	Elevation	892.7
Aquifer:	OPCJ	Alt Id:	5441

Report Copy

Drop Pipe Length ft. Capacity g.p.m

Type

Any not in use and not sealed well(s) on property? ☐ Yes ☑ No

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

Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 1404

License Business Name

Name of Driller SEE REMARKS

HE-01205-06 (Rev. 9/96)

Unique No. 00203542
County Name Hennepin

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

Update Date 2015/07/06
Entry Date 1991/08/24

Township Name	Township	Range	Dir	Section	Subsection
	118	21	W	7	DCBACA

Well Depth 422 ft. **Depth Completed** 422 ft. **Date Well Completed** 1959/06/30

Well Name NEW HOPE 1

Drilling Method Cable Tool

Well Owner's Name NEW HOPE 1
47TH N AV
NEW HOPE MN 55428

Drilling Fluid

Well Hydrofractured? ☐ Yes ☐ No
From ft. to ft.

Contact's Name CITY OF NEW HOPE

NEW HOPE MN 55428

Use community supply(municipal)

Casing **Drive Shoe?** ☐ Yes ☐ N

Hole Diameter

Casing Diameter **Weight(lbs/ft)**
24 in. t 213 ft
16 in. t 315 ft

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
GLACIAL DRIFT			0	45
CLAY AND ROCKS			45	78
BROWN CLAY, GRAVEL AN			78	113
CLAY AND STONES			113	170
RED SHALE AND STONES			170	181
ST. PETER SANDROCK-SH			181	202
ST. PETER SANDROCK-SH			202	205
SHAKOPEE/ONEOTA LIMER			205	339
JORDAN SANDROCK			339	422

Screen N **Open Hole** From 315 ft. to 422 ft.

Make Type

Static Water Level 75 ft. from Land surface Date 1988/07/09

PUMPING LEVEL (below land surface)
90.1 ft. after 9 hrs. pumping 1000 g.p.m.

Well Head Completion
Pitless adapter mfr Model
Casing Protection ☑ 12 in. above grade
☐ At-grade(Environmental Wells and Borings ONLY)

Grouting Information Well grouted? ☑ Yes ☐ No

Material	From	To (ft.)	Amount(yds/bags)
Y			

Nearest Known Source of Contamination
ft. direction type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed Y
Mfr nam
Model HP 75 Volts
Drop Pipe Length ft. Capacity E+03 g.p.m
Type T

Any not in use and not sealed well(s) on property? ☐ Yes ☐ No

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

REMARKS, ELEVATION, SOURCE OF DATA, etc.

DNR OB WELL 27011.

GAMMA LOGGED 12-14-2011. LOGGED FOR MDH.

WELL TV BY BERGERSON-CASWELL WELL CO.

USGS Quad Osseo Elevation 927
Aquifer: OPCJ Alt Id: 59-0795

Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 27058
License Business Name
Name of Driller

Report Copy

Appendix 2

Water Level Monitoring Plan

Appendix 2: JWC Water Level Monitoring Plan

Implementation Date	Community Action
Current-Future	Continue to support local and regional groundwater and surface water research. Continue to review DNR collected water level readings for the New Hope Monitoring Well.
2018	Work with SCADA provider to program a recording and reporting screen for aquifer levels from existing transducers. Begin recording static water levels in JWC emergency wells. Based on the lack of seasonal fluctuation observed in MDNR Obwell 203542, it appears that recording the water levels once or two times per year would be sufficient, but begin to capture and record monthly water levels.

Appendix 3

Water Level Graphs for Each Water Supply Well

All JWC wells are restricted to emergency use only.
Water levels have not been measured or recorded regularly.
Refer to MNDNR Obwell 203542 for historical water level data in the area.

Appendix 4

Capital Improvement Plan

City of Golden Valley, Minnesota

Capital Plan

2018 thru 2022

PROJECTS BY DEPARTMENT

Department	Project #	2018	2019	2020	2021	2022	Total
Joint Water Commission							
Replace Trunk Valves -GV, CRY, NH	*14-027*	180,000	180,000	180,000	180,000	180,000	*900,000*
SCADA Updates	*14-029*	35,000				35,000	*70,000*
North Tower Blast and Repaint-New Hope	*15-003*	275,000					*275,000*
Install 48" Gate Valve at the JWC Reservoir	*15-006*	160,000					*160,000*
Replacements at Pump Station-Golden Valley	*16-001*	120,000		120,000		120,000	*360,000*
Inspect and Clean Reservoir-Crystal; Golden Valley	*16-006*				45,000		*45,000*
Replacements at Pump Station-Crystal	*17-003*		174,000			174,000	*348,000*
Rehab PCCP Pipe-GV, CRY, NH	*18-001*	10,000	10,000	10,000	10,000	10,000	*50,000*
South Tower Blast and Repaint-New Hope	*18-002*	10,000		1,602,000			*1,612,000*
Replace Swampcoolers	*19-001*			40,000			*40,000*
Effluent Meters at Reservoir	*19-002*	75,000	75,000				*150,000*
Joint Water Commission Total		**865,000**	**439,000**	**1,952,000**	**235,000**	**519,000**	***4,010,000***
GRAND TOTAL		**865,000**	**439,000**	**1,952,000**	**235,000**	**519,000**	***4,010,000***

City of Golden Valley, Minnesota

Capital Plan

2018 thru 2022

PROJECTS BY FUNDING SOURCE

Source	Project #	2018	2019	2020	2021	2022	Total
Joint Water Commission							
Replace Trunk Valves -GV, CRY, NH	*14-027*	180,000	180,000	180,000	180,000	180,000	*900,000*
SCADA Updates	*14-029*	35,000				35,000	*70,000*
North Tower Blast and Repaint-New Hope	*15-003*	275,000					*275,000*
Install 48" Gate Valve at the JWC Reservoir	*15-006*	80,000					*80,000*
Replacements at Pump Station-Golden Valley	*16-001*	60,000	60,000	60,000	60,000	60,000	*300,000*
Inspect and Clean Reservoir-Crystal; Golden Valley	*16-006*				45,000		*45,000*
Replacements at Pump Station-Crystal	*17-003*	58,000	58,000	58,000	58,000	58,000	*290,000*
Rehab PCCP Pipe-GV, CRY, NH	*18-001*	10,000	10,000	10,000	10,000	10,000	*50,000*
South Tower Blast and Repaint-New Hope	*18-002*	544,000	534,000	534,000			*1,612,000*
Replace Swampcoolers	*19-001*			40,000			*40,000*
Effluent Meters at Reservoir	*19-002*	75,000	75,000				*150,000*
Joint Water Commission Total		**1,317,000**	**917,000**	**882,000**	**353,000**	**343,000**	***3,812,000***
GRAND TOTAL		**1,317,000**	**917,000**	**882,000**	**353,000**	**343,000**	***3,812,000***

Project # 14-027

Project Name **Replace Trunk Valves -GV, CRY, NH**

Department Joint Water Commission
Contact
Type Unassigned
Useful Life
Category Water Infrastructure

Description

Replace trunk valves that do not operate and/or close completely. This will be a combined project for cost efficiencies.

LOCATION: Golden Valley, Crystal, New Hope
Actual replacement/repair will occur in 2017 & 2019. Each valve is $60,000.

Justification

Replace trunk valves that are not fully operational or operated properly so that the portions of the JWC watermain system can be shut down for repair. Replace three valves every year prioritized based on the PCCP Analysis GIS Date to better isolate main lines with highest critically.

Expenditures	2018	2019	2020	2021	2022	Total
Infrastructure Improvements	180,000	180,000	180,000	180,000	180,000	900,000
Total	**180,000**	**180,000**	**180,000**	**180,000**	**180,000**	**900,000**

Funding Sources	2018	2019	2020	2021	2022	Total
Joint Water Commission	180,000	180,000	180,000	180,000	180,000	900,000
Total	**180,000**	**180,000**	**180,000**	**180,000**	**180,000**	**900,000**

Project # 14-029

Project Name **SCADA Updates**

Department Joint Water Commission
Contact
Type Unassigned
Useful Life
Category Water Infrastructure

Description

Replace Supervisory Control and Data Acquisition (SCADA) Computers and Software Upgrades,

Justification

The SCADA System is five years old and needs to be updated. This system monitors the flows and infrastructure systems needed for a drinking water supply system.

Expenditures	2018	2019	2020	2021	2022	Total
Infrastructure Improvements	35,000				35,000	70,000
Total	**35,000**				**35,000**	**70,000**

Funding Sources	2018	2019	2020	2021	2022	Total
Joint Water Commission	35,000				35,000	70,000
Total	**35,000**				**35,000**	**70,000**

Project # 15-003

Project Name **North Tower Blast and Repaint-New Hope**

Department Joint Water Commission
Contact
Type Unassigned
Useful Life
Category Water Infrastructure

Description

Interior and Exterior structure repairs to Elevated North Tower, along with blasting and repaint.

Justification

After careful site investigation, the North Tower interior wet area needs to be blasted and repainted.

LOCATION: New Hope

Expenditures	2018	2019	2020	2021	2022	Total
Infrastructure Improvements	275,000					275,000
Total	**275,000**					**275,000**

Funding Sources	2018	2019	2020	2021	2022	Total
Joint Water Commission	275,000					275,000
Total	**275,000**					**275,000**

Project # 15-006

Project Name **Install 48" Gate Valve at the JWC Reservoir**

Department Joint Water Commission
Contact
Type Unassigned
Useful Life
Category Unassigned

Description

Install 48" valve on the Minneapolis 48" main that delivers water to the JWC Golden Valley Reservoir.

Justification

Installation of a 48" main will ensure delivery of water from Minneapolis from either direction to allow for increased insurance of water to the reservoir site.

Expenditures	2018	2019	2020	2021	2022	Total
Infrastructure Improvements	160,000					160,000
Total	**160,000**					**160,000**

Funding Sources	2018	2019	2020	2021	2022	Total
Joint Water Commission	80,000					80,000
Total	**80,000**					**80,000**

Project # **16-001**

Project Name **Replacements at Pump Station-Golden Valley**

Department Joint Water Commission
Contact
Type Unassigned
Useful Life
Category Unassigned

Description

Replace two pumps, motors and motor starters at Joint Water Commission -Golden Valley pump station

Justification

Continue with pump, motor, and motor starter upgrades at the Joint Water Commission -Golden Valley pump station. Two of the four remaining pumps are 50 years old and need to be upgraded.

Expenditures	2018	2019	2020	2021	2022	Total
Infrastructure Improvements	120,000		120,000		120,000	360,000
Total	**120,000**		**120,000**		**120,000**	**360,000**

Funding Sources	2018	2019	2020	2021	2022	Total
Joint Water Commission	60,000	60,000	60,000	60,000	60,000	300,000
Total	**60,000**	**60,000**	**60,000**	**60,000**	**60,000**	**300,000**

Project # **16-006**

Project Name **Inspect and Clean Reservoir-Crystal; Golden Valley**

Department Joint Water Commission
Contact
Type Unassigned
Useful Life
Category Water Infrastructure

Description

Clean and inspect reservoirs at Crystal (2017) and Golden Valley (2021).

Justification

Periodically concrete reservoirs require structural inspection and cleaning.

Expenditures	2018	2019	2020	2021	2022	Total
Infrastructure Improvements				45,000		45,000
Total				**45,000**		**45,000**

Funding Sources	2018	2019	2020	2021	2022	Total
Joint Water Commission				45,000		45,000
Total				**45,000**		**45,000**

Project # **17-003**

Project Name **Replacements at Pump Station-Crystal**

Department Joint Water Commission
Contact
Type Unassigned
Useful Life
Category Water Infrastructure

Description

Replacement of the 300 hp motor, pump and motor starter for Pump #3 at the Crystal Pump Station with a new energy efficient motor, pump and "soft start" starter.

LOCATION: Crystal

Actual replacement will be in 2019.

Justification

The current motor and pump were installed in 1963. They will be replaced with an energy efficient motor to reduce electrical demand at the station and the installation of a "soft start"starter will allow the motor to ramp up to full operating speed decreasing stress on the motor.

Expenditures	2018	2019	2020	2021	2022	Total
Infrastructure Improvements		174,000			174,000	348,000
Total		**174,000**			**174,000**	**348,000**

Funding Sources	2018	2019	2020	2021	2022	Total
Joint Water Commission	58,000	58,000	58,000	58,000	58,000	290,000
Total	**58,000**	**58,000**	**58,000**	**58,000**	**58,000**	**290,000**

Project # **18-001**

Project Name **Rehab PCCP Pipe-GV, CRY, NH**

Department Joint Water Commission
Contact
Type Unassigned
Useful Life
Category Unassigned

Description

Based on the 2016 Study and Analysis of the Joint Water cities PCCP condition assessment certain projects will be need to be periodically tested.

Justification

Testing of the pipes will allow staff to plan for large replacement projects based on the results of the testing.

Expenditures	2018	2019	2020	2021	2022	Total
Infrastructure Improvements	10,000	10,000	10,000	10,000	10,000	50,000
Total	**10,000**	**10,000**	**10,000**	**10,000**	**10,000**	**50,000**

Funding Sources	2018	2019	2020	2021	2022	Total
Joint Water Commission	10,000	10,000	10,000	10,000	10,000	50,000
Total	**10,000**	**10,000**	**10,000**	**10,000**	**10,000**	**50,000**

Project # **18-002**

Project Name **South Tower Blast and Repaint-New Hope**

Department Joint Water Commission
Contact
Type Unassigned
Useful Life
Category Unassigned

Description

Interior and Exterior structure repairs to Elevated South Tower, along with blasting and repaint. An insoection in 2018 will be done.

Justification

After careful site investigation, the South Tower needs to be blasted and repainted.

LOCATION: New Hope

Actual work to be done in 2020.

Expenditures	2018	2019	2020	2021	2022	Total
Planning/Design	10,000					10,000
Infrastructure Improvements			1,602,000			1,602,000
Total	**10,000**		**1,602,000**			**1,612,000**

Funding Sources	2018	2019	2020	2021	2022	Total
Joint Water Commission	544,000	534,000	534,000			1,612,000
Total	**544,000**	**534,000**	**534,000**			**1,612,000**

Project # **19-001**

Project Name **Replace Swampcoolers**

Department Joint Water Commission
Contact
Type Unassigned
Useful Life
Category Unassigned

Description

Replace swamp coolers at the Crystal pump station.

Justification

The swamp coolers at the Crystal pump station provide the cooling of the interior of the pump room and were installed in 1963 and are reaching the end of their life cycle.

Expenditures	2018	2019	2020	2021	2022	Total
Infrastructure Improvements			40,000			40,000
Total			**40,000**			**40,000**

Funding Sources	2018	2019	2020	2021	2022	Total
Joint Water Commission			40,000			40,000
Total			**40,000**			**40,000**

Project # **19-002**

Project Name **Effluent Meters at Reservoir**

Department Joint Water Commission
Contact
Type Unassigned
Useful Life
Category Unassigned

Description

Install meters on the effluent pipes leaving the Golden Valley Reservoir.

Justification

Currently, there is no way to monitor how much water is leaving the reservoir, other than by estimating the draw down on the tank levels. Effluent valves would allow for accurate readings that could be tied into the SCADA system.

Expenditures	2018	2019	2020	2021	2022	Total
Infrastructure Improvements	75,000	75,000				150,000
Total	**75,000**	**75,000**				**150,000**

Funding Sources	2018	2019	2020	2021	2022	Total
Joint Water Commission	75,000	75,000				150,000
Total	**75,000**	**75,000**				**150,000**

WATER UTILITY

PROFILE AND BUDGET SUMMARY

As part of the Joint Water Commission, the City of Crystal purchases water from the City of Minneapolis.

Budget Impact

- **$102,498 increase (3.5%) in the budget**
  - **$65,229 (64%) water purchase cost.**
  - **$12,857 (12.5%) employee wages and benefits.**

Rates

- **Increased in July 2015 by $1 per 1,000 gallons.**
- **Plan no additional increases until January 2018, and no foreseeable issues in holding rates constant.**

Projects

- 2017: Phase 16 water main and hydrant replacement. Utility truck (#427)
- 2018: Gate valve and hydrant replacement ($100,000)
- 2019 and beyond: Replace water mains ($600,000) and hydrants ($100,000) with the intent to combine street, water and sanitary sewer projects. Replace equipment.

2017 GOALS AND OBJECTIVES

- Continue to provide for a safe and reliable water supply.
- Continue to integrate InfraMAP into routine maintenance activities.
- Water main replacement in Phase 16.

city of golden valley

Capital Improvement Program 2017-2021

Water and Sanitary Sewer Utility Section

A five-year projection of the Water and Sanitary Sewer Fund reveals some potential financial challenges the City may have to address. The contract pricing with the City of Minneapolis and Golden Valley-Crystal-New Hope Joint Water Commission was renewed in 2013. The Metropolitan Council Environmental Services (MCES) surcharge program related to inflow and infiltration will have a direct affect on rates as it requires the City to make improvements to the sanitary system that will reduce the rate of inflow and infiltration into the system.

Fees from the City's utility bill are the main source of revenue.

City of Golden Valley, Minnesota

Capital Plan

2017 thru 2021

PROJECTS BY DEPARTMENT

Department	Project#	Priority	2017	2018	2019	2020	2021	Total
Water & Sewer Systems								
Sanitary Sewer & Water Line Repair/Recon.	*W&SS-001*	n/a	870,000	500,000	500,000	500,000	500,000	*2,870,000*
Sewer Jet Truck	*W&SS-012*	n/a		190,000				*190,000*
Multiquip Portable Generator	*W&SS-041*	n/a					10,000	*10,000*
Mill and Overlay Water/Sewer Repairs	*W&SS-051*	n/a	50,000					*50,000*
Portable Generator	*W&SS-052*	n/a		10,000				*10,000*
Televising and Electroscan Equipment	*W&SS-053*	n/a		225,000				*225,000*
Rubber Tired Excavator	*W&SS-056*	n/a	245,000					*245,000*
Step Van	*W&SS-060*	n/a		80,000				*80,000*
Radio Meter Reading System	*W&SS-063*	n/a	355,000	355,000	355,000	100,000		*1,165,000*
Utility Building Locker Room Repair/Upgrades	*W&SS-065*	n/a	100,000					*100,000*
Valve Replacement/Watermain Lining	*W&SS-066*	n/a					100,000	*100,000*
Tractor Loader Backhoe	*W&SS-070*	n/a		150,000				*150,000*
I-394 Inflow/Infiltration Project	*W&SS-074*	n/a		300,000		300,000		*600,000*
Sewer Flow Meters	*W&SS-076*	n/a				35,000		*35,000*
Asset Management Software	*W&SS-079*	n/a	30,000					*30,000*
Asset Management Equipment	*W&SS-080*	n/a	20,000					*20,000*
800 MHz Radios	*W&SS-081*	n/a			40,000			*40,000*
Water & Sewer Systems Total			**1,670,000**	**1,810,000**	**895,000**	**935,000**	**610,000**	***5,920,000***
GRAND TOTAL			**1,670,000**	**1,810,000**	**895,000**	**935,000**	**610,000**	***5,920,000***

Water — Enterprise Fund

Public Purpose: This budget pays for maintenance and operation of the water system to our customers. Tasks within the maintenance and operations functions include:

- Water main break repair and restoration; water samples and education; hydrant flushing, testing and repairs; valve maintenance; meter reading, repairs and installations; and water purchases from the city of Minneapolis through the Joint Water Commission.
- A portion of utility billing personnel, supplies and equipment for monthly utility bill processing.
- The expanding emphasis on long-term system maintenance of the aging water system requires conservation of funds for future capital maintenance and reconstruction projects.

Goals for the 2017 Budget

- Review infrastructure replacement needs and water conservation rates for the billing system
- Keep entire water system operating at peak efficiency
- Repair water main breaks timely and efficiently to minimize the impact to customers
- Complete the 2017 infrastructure project in perspective with the Pavement Management Strategy

Performance Measures

(Water System)	2015 Actual	2016 Estimate	2017 Projected
Billed (Million Gallons Water)	685	685	690
Accounts Billed Annually	67,473	67,473	67,500
Main Breaks Repaired	24	30	30
Final Meter Readings	325	325	325
Transponder conv / Meter Repairs	13	30	30

Staffing Levels:

Number of Employees (FTE)	2014	2015	2016	2017
Water	3.79	3.91	3.91	3.65

Budget Summary:

- The major changes in the Water Budget for 2017 are outlined as follows:
- The overall budget has increased $764,964 largely due to the water infrastructure improvements within the project proposed for 2017 (Northwood North project #985).
- The operating budget for 2017 has increased by approximately $13,764 over 2016.
- An estimated increase of $64,775 for the New Hope's portion of the JWC's water budget.
- A $4,018 increase in the IT department charge.
- Bond interest expense increase of $21,203.
- Supply equipment repair increased $6,300 due to replacement of older meters failing
- A $77,841 decrease in the Central Garage charge.
- Outside contracting charges decreased $7,270 due to reduction in water break spoil disposal cost

Appendix 5

Emergency Telephone List

Not Included for Data Privacy –
All Utility staff has access to a current call-out list

Appendix 6

Cooperative Agreements for Emergency Services

Golden Valley and Crystal belong to MNWARN (not attached)
MDH Emergency Operations Memo (attached)

city of golden valley
7800 Golden Valley Road
Golden Valley, MN 55427

March 17, 2015

Brian Noma, PE
Minnesota Department of Health
625 Robert Street North
P.O. Box 64975
St. Paul, MN 55164

Subject: Joint Water Commission Emergency Supply Operations Memorandum Approval

Dear Mr. Noma:

Enclosed please find the Joint Water Commission's Emergency Supply Operations Memorandum for the Emergency Wells in Crystal, New Hope, and Golden Valley. The memo outlines the procedures for alternating between normal use, emergency well testing, and emergency well service. The Joint Water Commission approves the operations plan dated March 12, 2015.

If you have any questions, please contact R.J. Kakach at 763.593.8043.

Sincerely,

Thomas D. Burt
City Manager

Enclosures

C: Jeff Oliver, City Engineer
Wayne Houle, City of Crystal
Bob Paschke, City of New Hope
Steve Nelson, Bolton & Menk, Inc.
Bert Tracy, Public Works Maintenance Manager
R.J. Kakach, Engineer

G:\PROJECTS\JWC Emergency Water Supply (14-07)\Corres\Emergency Supply Operations Memo Cover Letter.doc

EMERGENCY SUPPLY OPERATIONS MEMORANDUM

TO: Brian Noma
Minnesota Department of Health

FROM: Steve Nelson

DATE: March 12, 2015

RE: Emergency Well Supply
Systems Operation Memo
BMI No. N22.107452

1.0 Introduction

The Minnesota Department of Health (MDH) asked that the Joint Water Commission (JWC) develop a written protocol outlining standard operations for their emergency well supply system and how they would operate during and switch between normal service, emergency well testing, and emergency service modes. To facilitate these modes of operation and switching between them, the JWC is including changes to piping and the addition of chlorine closets at each of the their three facilities.

The following sections list standard operations for the Crystal, Golden Valley, and New Hope pumping facilities as they pertain to:

1. Normal Service;
2. Emergency Well Testing; and
3. Emergency Service

The figures associated with each of the following sections depict piping changes, chlorine closet additions and the valve positions and type of water in the piping systems during each of the above listed operational modes.

The final section of this memorandum addresses "Operational Details" related to the emergency supply mains, flushing hydrants, well testing and chlorination.

2.0 Crystal

The attached "JWC Crystal Pump Station" schematic represents the piping changes, chlorine closet additions as well as valve positions and type of water in the piping systems during each of the three modes described below.

2.1 Crystal - Normal Service

During normal service the emergency supply line is filled with normal JWC pumped water just like the rest of JWC's distribution system. To initiate the condition, the flushing hydrant near each well (C-W1 and C-W2) and the emergency system distribution flushing hydrant (near the street in front of the HSP building) will be opened as required. The water quality (free and total chlorine and hardness) can be used to verify that the system has been filled with normal JWC pumped water.

The valve positions for sustaining this mode are shown on the referenced figure.

2.2 Crystal - Emergency Well Testing

The JWC will test the wells once per year, or as often as quarterly, to verify that the wells and chlorine feed system can produce water that passes a bacteriological test.

During emergency well testing mode the wells will each be pumped and the valve positions and roto-meters operated to chlorinate the well water in the pump station and then route it through the emergency system distribution flushing hydrant as shown on the referenced figure. Flow rates and chlorine feed rates will be recorded and bacteriological samples will be collected and sent to the MDH for testing.

2.3 Crystal - Emergency Service

During emergency well service mode the wells will each be pumped and the valves positions and roto-meters operated to chlorinate the well water in the pump station and then route it into the reservoir to be pumped by the reservoirs High Service Pumps (HSPs) into the JWC distribution system, as shown on the referenced figure.

3.0 Golden Valley

The attached "JWC Golden Valley Pump Station" schematic represents the piping changes, chlorine closet additions as well as valve positions and type of water in the piping systems during each of the three modes described below.

3.1 Golden Valley - Normal Service

During normal service the emergency supply line is filled with normal JWC pumped water just like the rest of JWC's distribution system. To initiate the condition the flushing hydrant near the well and the emergency system distribution flushing hydrant (north of the HSP building) will be opened as required. The water quality (free and total chlorine as well as hardness) can be used to verify that the system has been filled with normal JWC pumped water.

The valve positions for sustaining this mode are shown on the referenced figure.

3.2 Golden Valley - Emergency Well Testing

The JWC will test the well quarterly, or as required by the MDH, to verify that the well and chlorine feed system can produce water that passes a bacteriological test.

During emergency well testing mode the well will be pumped and the valve positions and the roto-meter operated to chlorinate the well water in the pump station and then route it through the emergency system distribution flushing hydrant as shown on the referenced figure. Flow rates and the chlorine feed rate will be recorded and bacteriological samples will be collected and sent to the MDH for testing.

3.3 Golden Valley - Emergency Service

During emergency well service mode the well will be pumped and the valves positions and the roto-meter operated to chlorinate the well water in the pump station and then route it into the reservoir to be pumped by the reservoir's High Service Pumps (HSPs) into the JWC distribution system as shown on the referenced figure.

4.0 New Hope

The New Hope Wellhouse will be renovated as shown in the "Emergency Supply Pumps/Piping/Electrical/Chemical" project manual. The changes include addition of a chlorine closet as well as piping and valves.

4.1 New Hope - Normal Service

During normal service the yard piping (up to the flushing hydrant just outside the wellhouse) will be filled with JWC pumped water just like the rest of JWC's distribution system. The check valve in the wellhouse and distribution system pressure will sustain this mode of operation.

4.2 New Hope - Emergency Well Testing

The JWC will test the well quarterly, or as required by the MDH, to verify that the well and chlorine feed system can produce water that passes the bacteriological test.

During emergency well testing mode the well will be pumped, the well house gate valve will be open and the roto-meter operated to chlorinate the well water in the wellhouse and then route it through the flushing hydrant. Flow rates and the chlorine feed rate will be recorded and bacteriological samples will be collected and sent to the MDH for testing.

4.3 New Hope - Emergency Service

During emergency well service mode the well will be pumped, the well house gate valve will be open and the roto-meter operated to chlorinate the well water in the pump station and then route it into the the JWC distribution system.

5.0 Operational Details

Operational details related to the emergency supply mains, flushing hydrants, well testing and chlorination are addressed below.

5.1 Flushing Hydrants and the Switch between Modes of Operation

The JWC will flush each well through a nearby hydrant for 20 minutes prior to routing the well water to the emergency supply piping and the distribution system. Valves on the branch to the flushing hydrants will also allow for treated Minneapolis water to be flushed through these same hydrants in order to fill and charge the emergency line with normal JWC distribution system drinking water and pressure.

Field Order No. 1 (FO1) for the "JWC Emergency Wells Water Supply Lines" project adds the valves, tees, and hydrants required to accommodate such flushing.

5.2 Potential for Freezing of Emergency Lines

The JWC does not anticipate any freezing problems for the Emergency Water Supply Lines. They track the frost level each winter and have not had frost down to that level in the past. Only if there is an indication that frost levels are reaching the bury depths of an emergency line, would the JWC plan to flush that emergency line during winter months.

5.3 Impact of Run Time on Emergency Well Classification

The JWC is aware that after thirty-three or more (33+) hours of use in a year, the MDH may reclassify a well as an active (non-emergency) well.

- ***Run Time ACTION ITEM - The JWC must notify the MDH within 24 hours of passing the 24 hour run-time mark on a given well.***

Once a well is re-classified as non-emergency, for a given year, that well would require regular testing by the MDH.

5.4 MDH Notification Requirements for Well Testing

The JWC will provide the MDH with 30 day's notice prior to any testing of a well's water quality.

5.5 Anticipated Operational Duration of Chlorine Cylinders

Chlorine will be fed at a rate that allows for complete oxidation of each well's iron and manganese content plus enough additional chlorine to approach break point chlorination (8:1 CL2:NH3 ratio). The anticipated feed rates and operational duration of two 150 pound cylinders, for each well (flowing at the indicated rate for 24 hours per day), are tabulated below. After the pair of cylinders are depleted of chlorine, the automatic switch over between that pair of cylinders and the back-up pair of cylinders would be triggered. The chemical supplier would then have the same number of days (operational duration) to switch out the two depleted cylinders.

Well Number / Flow Rate (gpm)	Anticipated Combined Feed Rate from Two 105 lb Cylinders (ppd)	Anticipated Operational Duration for Two 150 lb Cylinders (days)
C-W1 / 1,800	94	3.2
C-W2 / 1,500	99	3.0
GV-W1 / 1,500 *	99 *	3.0 *
NH-1 / 1,100	32.4	9.3

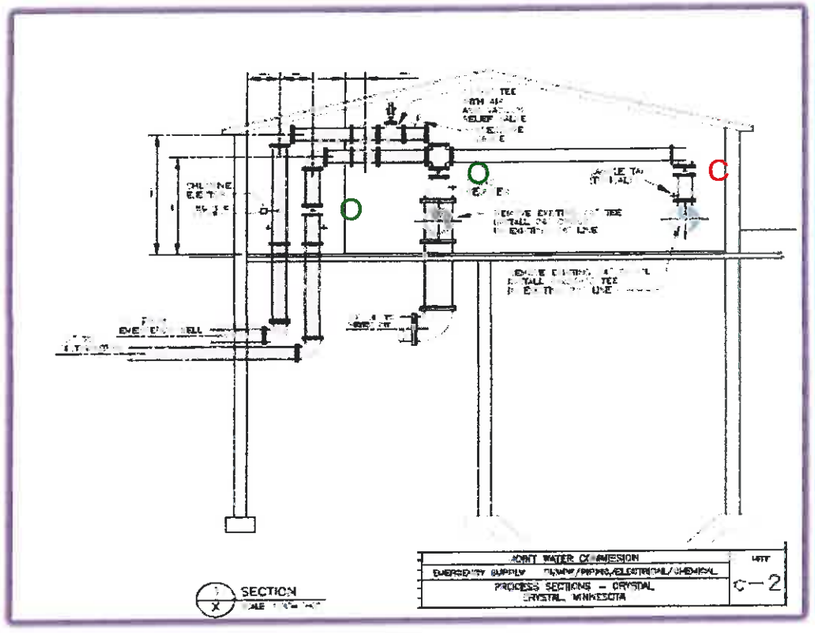
* - Well GV-W1 has not been drilled yet; values listed are assumed.

5.6 Communications Protocol

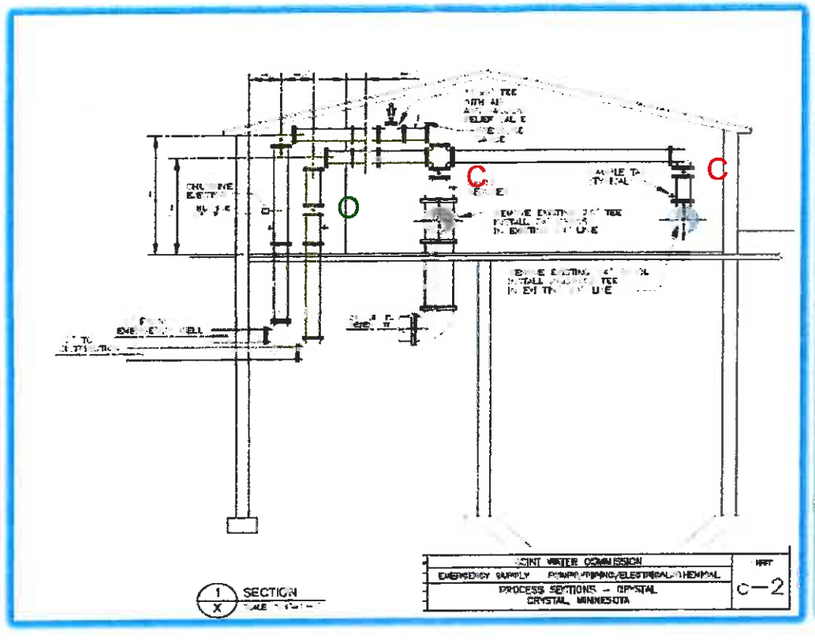
The JWC is still in the process of developing communications protocol pertaining to the initiation of Emergency Service. The protocol will address the required communications with Minneapolis Water Works, the JWC water customers, and the MDH.

JWC Crystal Pump Station

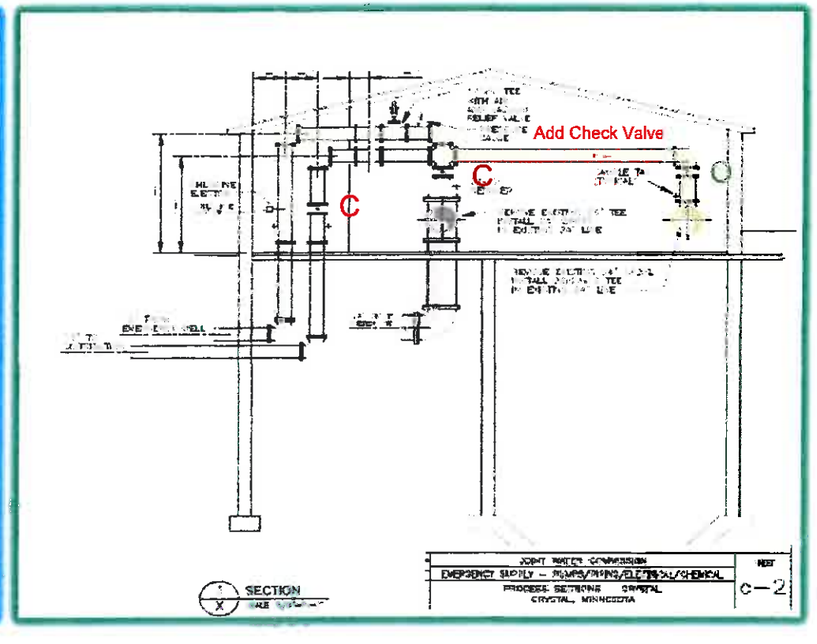
Piping Changes to Accommodate Emergency Service Wells



Normal Service



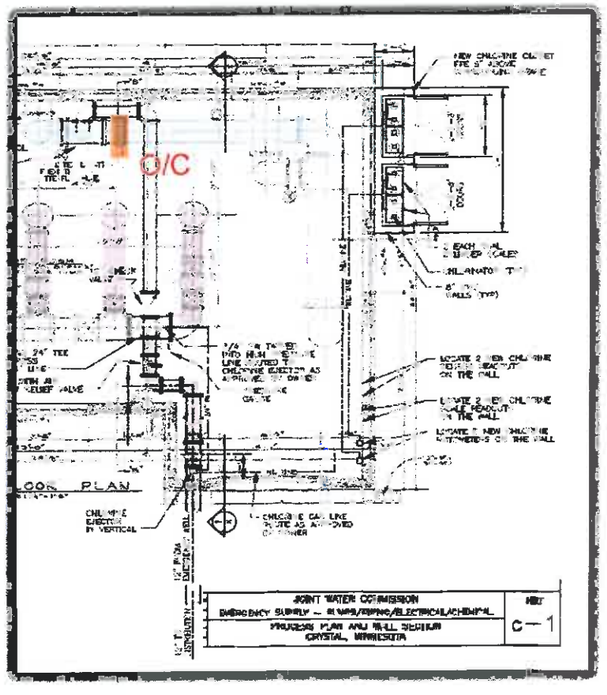
Emergency Well Testing



Emergency Service

LEGEND:

- Pumped JWC Water
- Incoming Mpls Water
- Raw Well Water
- Chlorinated Well Water
- C — Closed Valve
- O — Open Valve

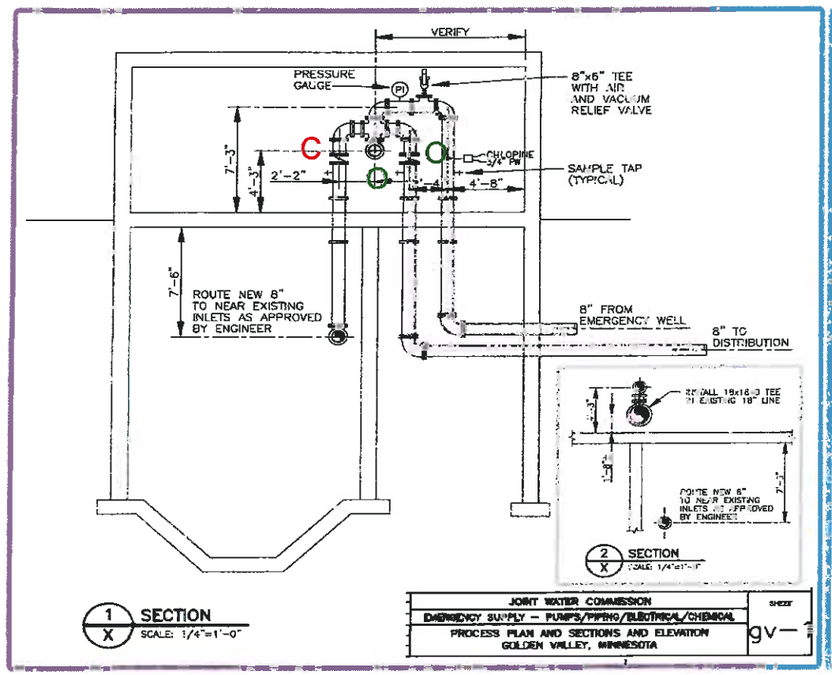


Normal Service - Plan View

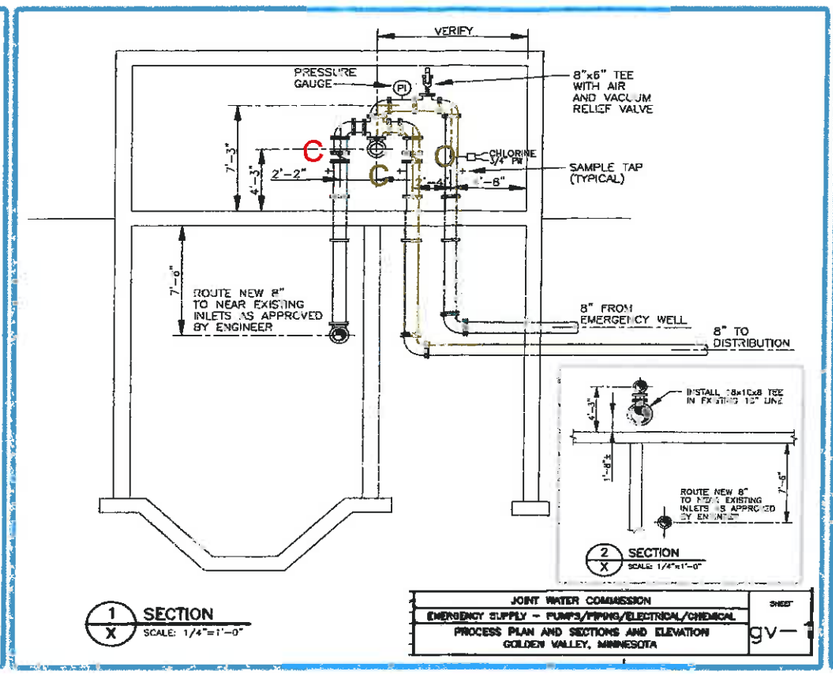
Bolton & Menk
Steve Nelson
January 2015

JWC Golden Valley Pump Station

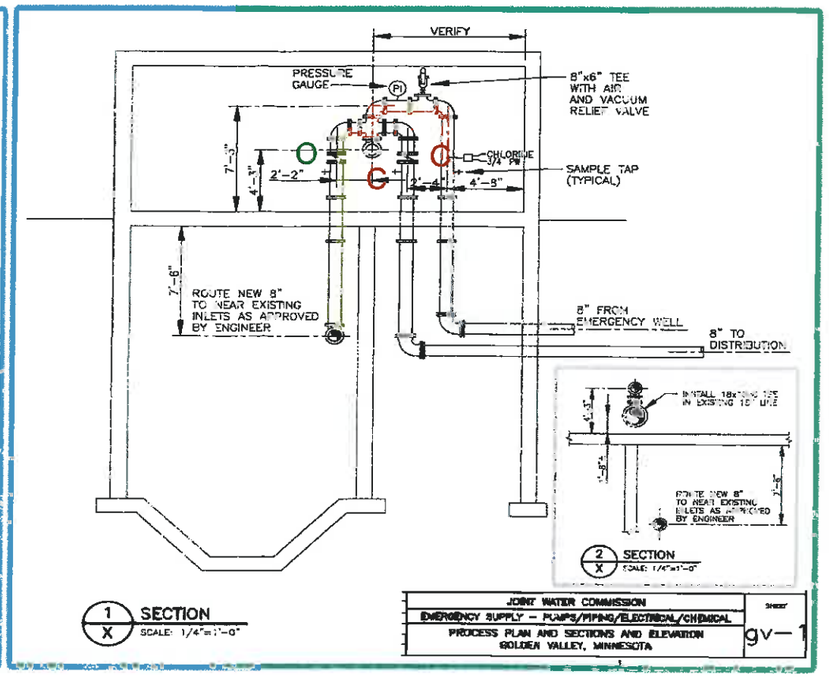
Piping Changes to Accommodate Emergency Service Wells



Normal Service



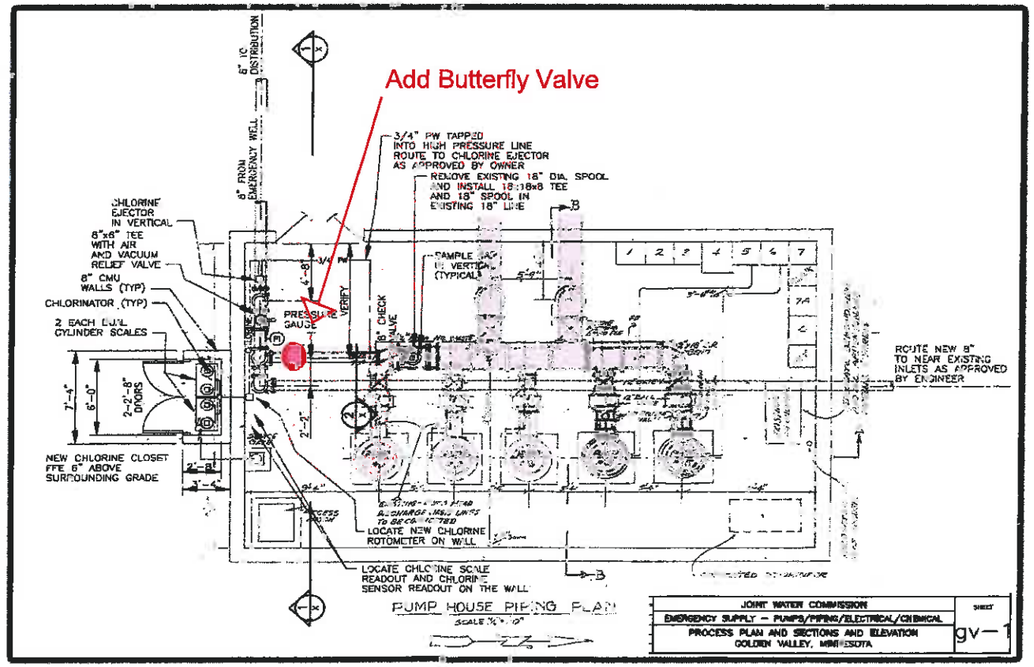
Emergency Well Testing



Emergency Service

LEGEND:

- Pumped JWC Water
- Incoming Mpls Water
- Raw Well Water
- Chlorinated Well Water
- C Closed Valve
- O Open Valve



Normal Service - Plan View

Appendix 7

Municipal Critical Water Deficiency Ordinance

715.29. Restrictions against sprinkling; other limitations of water use. Water customers and consumers are governed by the applicable regulations promulgated by the city of Minneapolis as to the limitations in the time and manner of using water and such other applicable regulations promulgated by the joint water commission affecting the preservation, regulations and protection of the water supply. If the city council determined that a shortage of water supply threatens the city, the council may by resolution limit the times and hours during which water may be used from the water system. It is unlawful to cause or permit water to be used for anything other than in home use during the period covered by the resolution. A daily penalty will be charged for this violation as provided in appendix IV. Charges will be added to that person's next utility bill.

715.31. Applications. Subdivision 1. Applications for service installations and for water service are made to the city on printed forms as provided by the city. (Amended, Ord. No. 2011-1, Sec. 12)

Subd. 2. Applications for service installations and for water service must be made by the owner or agent of the property to be served and state the size and location of service connection required. The applicant must, at the time of making application, pay to the city the amount of fees or deposit required for the installation of the service connection set in appendix IV. Applications for services larger than one inch must be accompanied by two sets of plans or sketches indicating preferred location or service pipe and size of service based on building demand.

Subd. 3. When service connections have been installed, application for water service may be made to the city, either by the owner, agent, tenant or occupant of the premises. (Amended, Ord. No. 2011-1, Sec. 12)

Subd. 4. The size of water service connections and meters must be approved by the superintendent. The water service may not be less than the size of the service pipe from the main to the curb stop. To better serve the building over a longer period of time, and because of future water usage such as yard irrigation systems, swimming pools and dishwashers, it is recommended that a one inch service pipe be the smallest service size. All services up to two inch must be type K copper with flared fittings for one inch and three part compression connection fittings approved by the superintendent for two inch diameter copper. Services larger than two inch must be ductile iron class 52 type designated by the city of Crystal standard specifications for water mains for the current year.

Subd. 5. A meter yoke will be furnished to the contractor or plumber at the time a connection permit is issued. (Amended, Ord. No. 2011-1, Sec. 12)

Subd. 6. The plumber must notify the inspection department within 24 hours after piping is complete and ready for meter and remote radio transmitter installation, giving street address and permit number. (Amended, Ord. No. 2011-1, Sec. 12)

Subd. 7. Water billing starts at the time of installation of the water meter, or if the meter is not installed, seven days after completion of outside piping, the billing will be calculated upon the minimum quarterly rate prorated on a monthly basis.

715.33. Service charges. Subdivision 1. A permit must be obtained from the city to connect to the existing water service leads at the curb stop box and interior plumbing. Permits will be issued only to a plumber licensed by the city. (Amended, Ord. No. 2011-1, Sec. 13)

CITY OF CRYSTAL

ORDINANCE #2017 - 05

AN ORDINANCE AMENDING CHAPTER 7 OF THE CRYSTAL CITY CODE

The City of Crystal ordains:

ARTICLE I. Chapter VII, Section 700 of the Crystal City Code is hereby amended by deleting the ~~stricken~~ material and adding the double-underlined material as follows:

Section 700 - Storm sewer utility

700.01. Storm sewer system; statutory authority; utilities superintendent. Minnesota Statutes, section 444.075, authorizes cities to impose just and reasonable charges for the use and availability of storm sewer facilities ("charges"). By this section, the city elects to exercise such authority. The city utilities superintendent shall discharge the responsibilities imposed by this chapter, together with such other duties as may be required or assigned to that person.

700.03. Findings and determinations. In providing for such charges, the findings and determinations set out in this subsection are made.

a) In the exercise of its governmental authority and in order to promote the public health, safety, convenience and general welfare, the city has constructed, operated and maintained a storm sewer system ("the system"). This section is adopted in the further exercise of such authority and for the same purposes.

b) The system, as constructed, heretofore has been financed and paid for through the imposition of special assessments and ad valorem taxes. Such financing methods were appropriate to the circumstances at the time they were used. It is now necessary and desirable to provide an alternative method of recovering some or all of the future costs of improving, maintaining and operating the system through the imposition of charges as provided in this section.

c) In imposing charges, it is necessary to establish a methodology that undertakes to make them just and equitable. Taking into account the status of completion of the system, past methods of recovering system costs, the topography of the city and other relevant factors, it is determined that it would be just and equitable to assign responsibility for some or all of the future costs of operating, maintaining and improving the system on the basis of the expected storm water runoff from the various parcels of land within the city during a standard one-year rainfall event.

d) Assigning costs and making charges based upon typical storm water runoff cannot be done with mathematical precision but can only be accomplished within reasonable and practical limits. The provisions of this section undertake to establish a reasonable and practical methodology for making such charges.

700.05. Rates and charges. Subdivision 1. Residential equivalent factor. Rates and charges for the use and availability of the system are to be determined through the use of a "residential equivalent factor" ("REF"). For the purposes of this section, one REF is defined as the ratio of the average volume of surface water runoff coming from one acre of land and subjected to a particular use, to the average volume of runoff coming from one acre of land subjected to typical single-family residential use within the city during a standard one-year rainfall event.

by the city by the 25th day of the applicable month, a penalty of 10% of the billed amount will be added to the billed amount. The city may certify an unpaid bill, together with costs and interest, to the taxpayer services division manager for collection together with taxes against the property served as authorized by Minnesota Statutes, sections 279.03 and 444.075. This certification will be made regardless of who applied for sewer services, whether it was the owner, tenant or other person. Applications for sewer service will contain an explanation in clear language that unpaid sewer bills will be collected with real estate taxes in the following year. The city may also bring a civil action or pursue other remedies to collect unpaid charges. (Added, Ord. No. 94-14, Sec. 2)

Subd. 2. Fees and interest. ~~Definitions. For purposes of this subsection, the term "sewer charges" means and includes without limitation sewer rate charges, permit charges, availability charges, connection charges and any rate or charge authorized by Minnesota Statutes, section 444.075 or imposed by this section.~~ When unpaid charges are certified for collection with taxes the term "charges" includes a certification fee set by appendix IV and interest on the unpaid charges at the annual rate set by appendix IV. (Added, Ord. No. 94-14, Sec. 2)

710.21. Special rates; senior citizens and disabled persons. The city council may by resolution establish maximum sewer and water use rates for senior citizens and disabled persons, qualifications for, and the method of administering such special rates.

ARTICLE IV. Chapter VII, Section 715 of the Crystal City Code is hereby amended by deleting the ~~stricken~~ material and adding the double-underlined material as follows:

Section 715 - City water system

715.01. Utilities superintendent. The ~~city manager may appoint~~ a city utilities superintendent ~~who~~ is to discharge the responsibilities imposed by this section, together with such other duties as may be required or assigned to that person~~.~~, and shall be referred to in this section as the "superintendent."

715.03. General operation. The municipal water system is to be operated as a public utility and convenience from which revenue will be derived under the management and control of the city council, subject to the provisions of the agreement of the joint water commission. The system is to be operated and maintained in such a manner as to provide its service with maximum efficiency.

715.05. Use of water restricted to authorized persons. It is unlawful to make, construct or install a water service installation or make use of a water service that is connected to the water system except in the manner provided in this section.

715.07. Damage to water system. It is unlawful to remove or damage a structure, appurtenance or property of the water system, or fill or partially fill any excavation, or raise or open any gate constructed or maintained for the water system.

715.09. (Reserved, Ord. No. 2011-1, Sec. 8)

715.11. Deficiency of water; shutting off water. The city is not liable for a deficiency or failure in the supply of water to consumers. In case of fire, or alarm of fire, or in making repairs or construction of new works, water may be shut off and ~~kept~~ shut may remain off as long as deemed necessary by the superintendent, or its designee.

715.13. Supply from one service. Not more than one housing unit or building may be supplied from one service connection except by special permission of the superintendent, or its designee.

715.15. Tapping of mains prohibited. It is unlawful for a person except one employed or authorized by the city to tap a distribution main or pipe of the water supply system or insert stopcocks or ferrules therein.

715.17. Repair of leaks. The consumer or owner must maintain the service pipe from the building side of the curb stop or building side of the building gate valve into the house or building. In the case of failure upon the part of a consumer or owner to repair a leak occurring in the service pipe within 24 hours after verbal or written notice from the superintendent, the water will be ~~shut~~ off disconnected and will not be turned on until a penalty charge has been paid and the leak repaired. If the waste of water is great or if damage is likely to result from the leak, the water may be ~~turned~~ off disconnected immediately pending repairs. The maintenance responsibility of the consumer or owner begins where connection is made into the curb stop. The curb stop and the service connection extending beyond the curb stop into the city's main are owned by the city. (Amended, Ord. No. 2011-1, Sec. 9)

715.19. Abandoned services.

a) Service installations that have been abandoned to not be used by property owner in the foreseeable future or have not been used for three years may be disconnected and plugged at the main by the city at the discretion of the city, and the related expense of the city will be charged to the property as an unpaid utility bill. (Amended, Ord. No. 2011-1, Sec. 10)

b) As an alternative, at the discretion of the city engineer, or its designee, the owner may pay to the city the Alternative Service Abandonment Fee shown in appendix IV. This fee relieves the owner of any future responsibility for the abandoned water service instead of plugging the main at the owner's expense. (Added, Ord. No. 2011-1, Sec. 10)

c) When buildings are reconstructed or redeveloped and it is desired to increase or change the old water service, connections with the mains may not be made until all old services have been removed and the main plugged by the owner's authorized contractor after said contractor obtains the required utility street cut permit from the city, and any related expense of the city will be charged to the property as an unpaid utility bill. (Amended, Ord. No. 2011-1, Sec. 10)

715.21. Excavation and construction requirements.

a) An excavation for the water system may not be made until a permit for the connection has been issued by the superintendent, or its designee. The permit fee is set in appendix IV.

b) Excavations for making a tap from city water mains must conform to Federal Register Part 2 Department of Labor, Occupational Safety and Health Administration, 29 CFR 1926, Occupational Safety and Health Standards - Excavations: Final Rule. The excavations must extend to a depth at least 12 inches lower than the bottom of the water main. Ample clear space must be allowed for insertion of tapping machine. Excavations must be safe. If not determined safe by the tapper a tap may not be made. A safe ladder must be furnished by the contractor for use of entry, tapping, inspection and exiting.

c) In compliance with the Minnesota ~~p~~Plumbing ~~c~~Code, separation of water service pipes and sewer service pipes must be no less than ten feet apart horizontally or may be placed in a common trench if the bottom of the water service pipe is kept at a minimum of 12 inches above the top of the sewer pipe at all points and the water pipe is placed on a solid shelf at one side of the common trench. A common trench may also be used without the separation requirements if the sewer pipe is of ductile iron, schedule 40 plastic, or SDR35 ASTM D3034 plastic pipe and the water pipe is of copper or ductile iron.

715.23. Private water supplies. Subdivision 1. No connections. It is unlawful to connect a water pipe of the water system with a pump, well, tank or piping that is connected with any other source of water supply. If such cross connections are found to exist, the owner or the owner's plumber must give notice to the superintendent, or its designee, and make an immediate correction of the problem. Failure to correct the problem will result in the discontinuation of the city's water supply ~~by the superintendent~~.

Subd. 2. New private wells prohibited. It is unlawful to construct or install a new private water well within the city. Existing private water wells may continue to be used and maintained until such time as they are required to be sealed under Minnesota Statutes, section 103I.301 or other applicable law.

715.25. Use confined to premises. It is unlawful to permit water from the water system to be used for any purpose, except upon that person's premises unless written consent is obtained from the superintendent, or its designee.

715.27. Connections beyond city boundaries. Where water mains of the city are in any street or alley adjacent to or outside the corporate limits of the city, the city may issue permits to the owners or occupants of properties adjacent or accessible to the water mains to make proper water service pipe connections with the water mains of the city, and to be supplied with water in conformity with the applicable provisions of this section and subject to the contract for the supply of water between the city and the city of Minneapolis or other municipalities. (Amended, Ord. No. 2011-1, Sec. 11)

715.29. Restrictions against sprinkling; other limitations of water use. Water customers and consumers are governed by the applicable regulations promulgated by the city of Minneapolis as to the limitations in the time and manner of using water and such other applicable regulations promulgated by the joint water commission affecting the preservation, regulations and protection of the water supply. If the city council determined that a shortage of water supply threatens the city, the council may by resolution limit the times and hours during which water may be used from the water system. If there is a critical water deficiency or other emergency affecting water availability, the city manager or mayor may order temporary measures to reduce water demands until the council has an opportunity to meet and determine the need to extend, expand, or discontinue the measures. It is unlawful to cause or permit water to be used for anything other than in home use during the period covered by the order issued by the city manager or mayor, or by the council resolution. A daily penalty will be charged for this violation as provided in appendix IV. Charges will be added to that person's next utility bill.

715.31. Applications. Subdivision 1. Applications for service installations and for water service are made to the city on printed forms as provided by the city. (Amended, Ord. No. 2011-1, Sec. 12)

Subd. 2. Applications for service installations and for water service must be made by the owner or agent of the property to be served and state the size and location of service connection required. The applicant must, at the time of making application, pay to the city the amount of fees or deposit required for the installation of the service connection set in appendix IV. Applications for services larger than one inch must be accompanied by two sets of plans or sketches indicating preferred location or service pipe and size of service based on building demand.

Subd. 3. When service connections have been installed, application for water service may be made to the city, either by the owner, agent, tenant or occupant of the premises. (Amended, Ord. No. 2011-1, Sec. 12)

Subd. 4. The size of water service connections and meters, along with the installation thereof, must be approved by the superintendent, or its designee. ~~The water service may not be less than the size of the service pipe from the main to the curb stop. To better serve the building over a longer period of time, and because of future water usage such as yard irrigation systems, swimming pools and dishwashers, it is recommended that a one inch service pipe be the smallest service size. All~~

length. All joints shall be left uncovered until inspected. Minimum size connection with the water mains shall be one (1) inch in diameter.

Subdivision 5. Private Water Supplies

No water pipe of the City water system shall be connected with any pump, well, pipe, tank or any device that is connected with any other source of water supply and when such are found, the City shall notify the owner or occupant to disconnect the same and, if not immediately done, the City water shall be turned off. Before any new connections to the City system are permitted, the City shall ascertain that no crossconnections will exist when the new connection is made. When a building is connected to "City Water" the private water supply may be used only for such purposes as the City may allow.

Subdivision 6. Water Emergencies

A. Whenever in the judgment of the City Manager or his/her designee the water pressure and available water in the municipal water system reaches a level which endangers the public health or safety of residents and other persons in the City, the City Manager or his/her designee may declare a state of water emergency which shall continue until such time as the City Manager or his/her designee shall determine that the danger to public health or safety no longer exists. Forthwith upon the declaration of a state of water emergency notice thereof shall be given to the news media, and all orders of the City Manager or his/her designee issued pursuant thereto shall be enforced after one (1) hour has elapsed from the time of such notice.

B. During the existence of a state of water emergency the City Manager or his/her designee may by order, (1) prohibit any sprinkling, irrigation or other utilization of water from the City's municipal water system for lawn, grass or turf, or (2) prohibit sprinkling, irrigation or other utilization of water from the City's municipal water system for lawn, grass or turf, except in those areas stated in the notice that such utilization of water may be used on odd or even numbered days of the month.

C. Upon written request and approval by the City Manager or his/her designee and subject to such terms and conditions imposed by the City Manager or his/her designee with respect to such approval, the following persons may be authorized to sprinkle, irrigate or otherwise utilize water from the City's municipal water system at times other than permitted in Subparagraph B hereof:

    1. Any person owning or operating a commercial or business enterprise whose economic well-being is dependent upon sprinkling, irrigating or watering of a lawn, grass or turf owned, leased or operated by it;

    2. Employees and agents of the City, in such instances wherein lawn, grass or turf used for play fields or areas owned or operated by the City require more frequent watering to prevent unreasonable damage thereto;

3. Owners and lessees (their employees and agents) of lands newly sodded or grass seeded which requires sprinkling or irrigation to prevent loss of new sod, seed or immature turf or grasses.

D. Unlawful Act. It is a petty misdemeanor for any Person to violate any Provision of this Subdivision.

Subdivision 7. Fire Hydrants on Public Easements

In order to properly provide for adequate fire protection on privately developed property (in any zoning district) where no plat is involved (and therefore no publicly dedicated streets within which watermains and fire hydrants can be provided for), there is hereby established the requirement that in all of such non-platted areas of development the owner of the property sought to be thus developed shall provide and dedicate to the City, without cost to the City, and as consideration for the granting of any permits respecting the development of or building upon said land, perpetual easements permitting the location therein of watermains and fire hydrants in accordance with locations established and approved by the City Manager or his/her designee. Following the establishment of such easements the City shall cause to be constructed therein watermains and fire hydrants as appropriate and sufficient to adequately protect the persons and properties in the area to be served by the same. The cost of said watermains and fire hydrants shall be borne and paid by the owner or owners of the property or properties served thereby, and if said obligation is not voluntarily discharged by said owner, then the City shall have the option of calling a public hearing and assessing the cost of said construction as a public improvement in accordance with the provisions of Minnesota Statutes 429.01 et seq. Following the construction of said improvements the responsibility for the inspection and maintenance of said watermains and hydrants shall rest with the Public Works Department. The property owner or owners shall pay for such services at an annual rate set by resolution of the Council for each hydrant plus the actual cost of labor and materials involved in the making of such repairs (including an overhead administrative allowance respecting any such labor cost). In the event that the owner or occupant of any properties thus served by the type of fire hydrants and watermains covered by this Subdivision shall desire to use water from said hydrants other than for the purpose of combating or controlling a fire or other emergency, then, and in such event such owner or occupant must make application to the Public Works Department for such purpose.

Subdivision 8. Opening Hydrants

It is unlawful for any person, other than members of the Department of Public Safety or other person duly authorized by the City, in pursuance of lawful purpose, to open any fire hydrant or attempt to draw water from the same or in any manner interfere therewith. It is also unlawful for any person so authorized to deliver or suffer to be delivered to any other person any hydrant key or wrench, except for the purposes strictly pertaining to their lawful use.

Subdivision 9. Water Meters

All water meters shall be purchased by the property owner. Maintenance of all meters shall be performed by the City. Cost of all repairs of water meters not resulting from normal usage shall be the responsibility of the property owner. Any

Sec. 5-8. - Water sprinkling ban.

(a) *Purpose.* The city council has determined that in certain drought conditions it may become necessary for the protection of the health, welfare and safety of the citizens of New Hope to conserve the water supply of the city by imposing a water sprinkling ban on all residential, commercial and industrial lawn and garden vegetation. Also, New Hope's contract with the City of Minneapolis for the purchase of water requires the imposition of a water sprinkling ban at the direction of the City of Minneapolis. The purpose of this section is to set forth the nature and extent of the regulations controlling any sprinkling ban imposed by the council.

(b) *Resolution imposing ban.* All water sprinkling bans shall be imposed by adoption of a resolution at any regular or special meeting of the New Hope City Council. The resolution shall set forth the duration of the ban, whether the ban shall be partial or absolute, if a partial ban, whether it shall apply to lawns and boulevards only or also to gardens, new sod and/or new tree saplings, the days or schedule when sprinkling will be permitted under a partial ban, and any other regulations that the city council deems reasonable and appropriate. Said ban shall become effective immediately upon the adoption of said resolution.

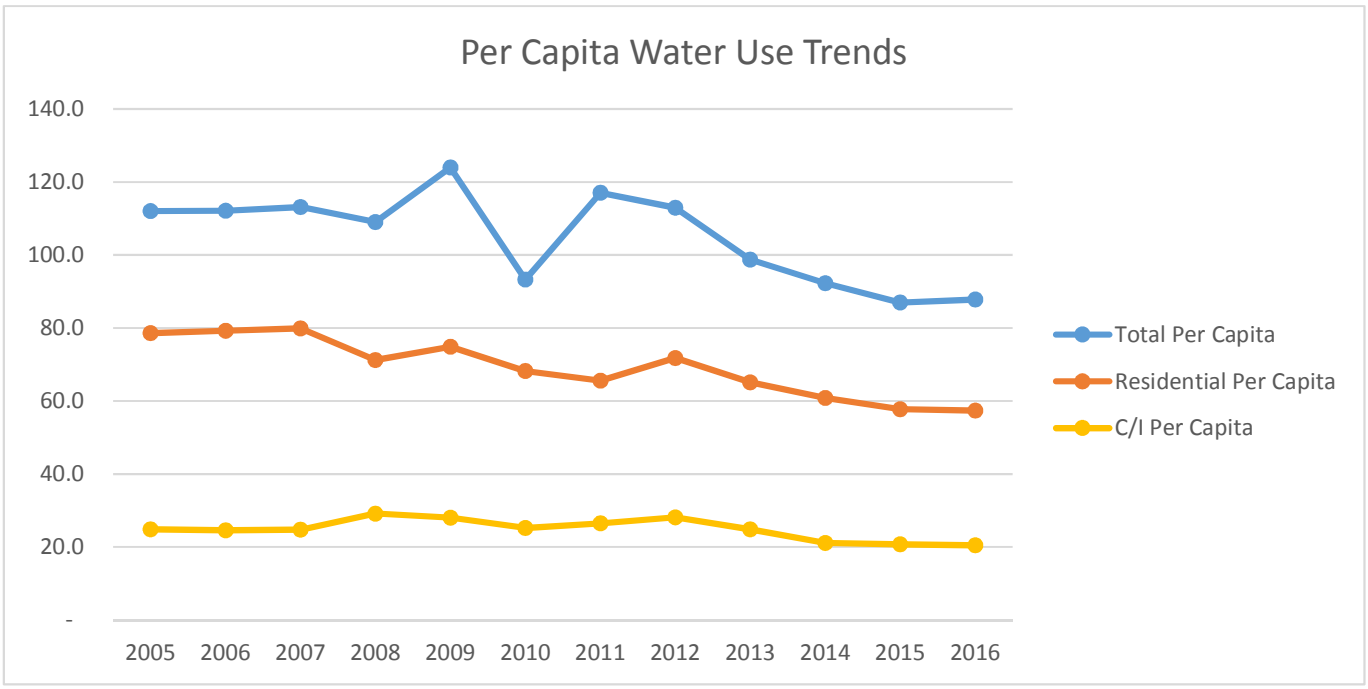
(c) *Notice of ban.* The resolution imposing the sprinkling ban shall be published once in the official newspaper of the city, and conspicuously posted in four places throughout the city. Any deficiencies in this notice requirement shall not invalidate the ban.

(d) *Enforcement.* A violation of this section shall be a petty misdemeanor. However, a first offense shall not result in the issuance of a ticket. The owner, any occupant of legal age or party responsible for the water billing shall be first issued a warning ticket upon the first violation of the water sprinkling ban. A warning letter mailed by regular mail, attached to an e-mail or delivered personally to the occupant of the property or the individual responsible for the water billing at the violating property shall satisfy the warning notice requirement of this section. Each act of violation and each day a violation occurs or continues constitutes a separate offense.

(Ord. No. 88-13; Ord. No. 15-13, § 1, 12-14-2015)

Appendix 8

Graph Showing Annual Per Capita Water Demand for Each Customer Category During the Last Ten Years


Per Capita Water Use Trends
140.0
120.0
100.0
80.0
60.0
40.0
20.0
-
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Total Per Capita
Residential Per Capita
C/I Per Capita

Appendix 9

Water Rate Structure

City of Crystal 2017 Proposed Fee Schedule - Utility Section

Dept.	Type	JDE Account Code	Description	2015 Fee	2016 Fee	2017 Fee	Percentage Increase	Comments
Water	Other	0505.4655	Water charge per 1,000 gallons in tier 1	5.50	5.50	5.50	0.00%	per 1,000 gallons
Water	Other	0505.4655	Water charge per 1,000 gallons in tier 2	5.90	5.90	5.90	0.00%	per 1,000 gallons
Water	Other	0505.4655	Water charge per 1,000 gallons in tier 3	6.30	6.30	6.30	0.00%	per 1,000 gallons
Water	Other	0505.4655	Water charge for water used for irrigation	6.30	6.30	6.30	0.00%	per 1,000 gallons
Water	Other	0505.4655	Water charge for water used through a hydrant meter	6.30	6.30	6.30	0.00%	per 1,000 gallons
Water	Other	0505.4655	City owned water fountains will no longer be metered, but will be charged for one unit of water per year. Past experience with metered fountains showed usage of less than one unit per year.	5.50	5.50	5.50	0.00%	per 1,000 gallons
Water	Other	0505.4644	Emergency Well Surcharge	0.21	0.21	0.21	0.00%	per 1,000 gallons

Residential Tier Sizes

Tier 1	1,000 gallon units in tier	0 to 30 units
Tier 2	1,000 gallon units in tier	31 to 60 units
Tier 3	1,000 gallon units in tier	over 60 units

Commercial / Industrial / Institutional Tier Sizes

		Meter Size					
		1" or less	1 1/2"	2"	3"	4"	6"
Tier 1	1,000 gallon units in tier	0 to 30	0 to 90	0 to 120	0 to 240	0 to 480	0 to 960
Tier 2	1,000 gallon units in tier	31 to 60	91 to 180	121 to 240	241 to 480	481 to 960	961 to 1,920
Tier 3	1,000 gallon units in tier	over 60	over 180	over 240	over 480	over 960	over 1,920

Water	Other	0505.4655	MN Safe Water Testing Fee	1.59	1.59	1.59	0.00%	per quarter
Water	Other	0505.4655	Water service charge for meters of 1 inch or less	4.80	4.80	4.80	0.00%	per quarter
Water	Other	0505.4655	Water service charge for 1 1/2 inch meters	15.30	15.30	15.30	0.00%	per quarter
Water	Other	0505.4655	Water service charge for 2 inch meters	19.15	19.15	19.15	0.00%	per quarter
Water	Other	0505.4655	Water service charge for 3 inch meters	38.30	38.30	38.30	0.00%	per quarter
Water	Other	0505.4655	Water service charge for 4 inch meters	76.60	76.60	76.60	0.00%	per quarter
Water	Other	0505.4655	Water service charge for 6 inch meters	153.20	153.20	153.20	0.00%	per quarter

City of Crystal 2017 Proposed Fee Schedule - Utility Section

Dept.	Type	JDE Account Code	Description	2015 Fee	2016 Fee	2017 Fee	Percentage Increase	Comments
Water	Other	0505.4655	Fire Line - 2"	12.00	12.12	12.12	0.00%	per quarter
Water	Other	0505.4655	Fire Line - 3"	19.05	19.05	19.05	0.00%	per quarter
Water	Other	0505.4655	Fire Line - 4"	28.00	28.00	28.00	0.00%	per quarter
Water	Other	0505.4655	Fire Line - 6"	37.90	37.90	37.90	0.00%	per quarter
Water	Other	0505.4655	Fire Line - 8"	46.75	46.75	46.75	0.00%	per quarter
Water	Other	0505.4655	Fire Line - 10"	56.35	56.35	56.35	0.00%	per quarter
Sewer	Other	0510.4655	Sewer charge - metered, non-residential	2.21	2.32	**2.43**	**4.74%**	per 1,000 gallons
Sewer	Other	0510.4655	Sewer charge - metered, non-residential minimum	50.00	52.50	**55.15**	**5.05%**	per quarter
Sewer	Other	0510.4655	Sewer charge - non-metered, non-residential minimum	50.00	52.50	**55.15**	**5.05%**	per quarter
Sewer	Other	0510.4655	Sewer charge - non-commercial - MAC Airport (1/2 of non-residential minimum)	25.00	26.25	**27.58**	**5.07%**	per quarter
Sewer	Other	0510.4655	Sewer charge - school, minimum per classroom	16.15	16.95	**17.75**	**4.72%**	per quarter
Sewer	Other	0510.4655	Sewer charge - residential	50.00	52.50	**55.15**	**5.05%**	per quarter
Sewer	Other	0510.4695	Sewer - senior/disability discount	9.50	9.98	**10.48**	**5.01%**	per quarter
Sewer	Other	0510.4698	Sewer - senior/disability rental rebate	9.50	9.98	**10.48**	**5.01%**	per quarter
Sewer	Other	0510.4902	Sewer - failed sump pump inspection	100.00	100.00	**100.00**	**0.00%**	per month
Storm	Other	0515.4655	Single-family residential	12.60	13.50	**16.50**	**22.22%**	per quarter
Storm	Other	0515.4655	Two-family residential	12.60	13.50	**16.50**	**22.22%**	per quarter
Storm	Other	0515.4655	Cemetaries & vacant land, per acre	3.15	3.38	**4.13**	**22.22%**	per quarter
Storm	Other	0515.4655	Parks & railroads, per acre	9.45	10.13	**12.38**	**22.22%**	per quarter
Storm	Other	0515.4655	Schools, institutional uses & airport, per acre	15.75	16.88	**20.63**	**22.22%**	per quarter
Storm	Other	0515.4655	Multi-family residential and churches, per acre	37.80	40.50	**49.50**	**22.22%**	per quarter
Storm	Other	0515.4655	Storm drainage - commercial, per acre	315.00	337.50	**412.50**	**22.22%**	per quarter
Storm	Other	0515.4655	Storm drainage - commercial, per Residential Equivalency Factor	63.00	67.50	**82.50**	**22.22%**	per quarter
St Lights	Other	0520.4655	Street lights - commercial (per business)	4.80	4.90	**5.00**	**2.04%**	per quarter
St Lights	Other	0520.4655	Street lights - single-family residential	4.80	4.90	**5.00**	**2.04%**	per quarter
St Lights	Other	0520.4655	Street lights - multi-family residential (per unit)	3.60	3.68	**3.75**	**2.04%**	per quarter
Recycle	Other	0525.4655	Recycling - single-family residential	10.65	10.65	**10.75**	**0.94%**	per quarter

Administration

Assessing

Communications

Community Development

Finance

Fire

Parks & Recreation

Police

Public Works

2017 CRYSTAL UTILITY RATES

9

Utility Billing

The city bills for water, sanitary sewer, storm drainage, street lights and recycling services. Billing is done on a quarterly basis with one third of the city billed each month. The month of a customer's utility bill is determined by their location in the city. Customers moving into the city must contact utility billing to set up an account and customers moving out must contact utility billing to arrange for a final bill.

Payments may be made in person at City Hall, by mail, in drop boxes at City Hall, 4141 Douglas Dr., and the Community Center, 4800 Douglas Dr., or by automatic payment plan.

Customers who sign up for the automatic payment plan, pay their bills through electronic fund transfer form their checking or savings account. They continue to receive a utility bill with service information, the amount due and the date of withdrawal. Funds are automatically withdrawn from the checking or savings account on the stated date. Customers enroll in the automatic payment plan by filling out an enrollment form and may withdraw from participation at any time by notifying the utility billing department in writing.

Utility billing contact information:

Utility Billing
City of Crystal
4141 Douglas Drive North
Crystal, MN 55422-1696

Phone: 763-531-1114

Residential Utility Charges Billed Quarterly

Utility rates are reviewed annually and set to provide the funding needed for the operation, maintenance and capital improvement of the utility systems.		
Water service charge		$4.80
Minnesota State Water Testing Fee		$1.59
Water consumption in 1,000 gallon units	Tier #1: 0 to 30 units	$5.50 per unit
	Tier #2: 31 to 60 units	$5.90 per unit
	Tier #3: Over 61 units	$6.30 per unit
Sanitary sewer charge		$55.15
Senior/disabled sanitary sewer charge		$44.67
Storm drainage		$16.50
Street lights		$5
Recycling		$10.75

Commercial Utility Charges Billed Quarterly

Commercial, industrial and institutional customers have larger diameter water meters and use more water due to the size and nature of their operations. They pay the same charge per unit of water used, but have a

larger numbers of units of water in Tier #1 and Tier #2, depending on the size of their water meter. They also pay a higher water service charge, depending on the size of their water meter. Sewer charges are based on the amount of water used and billed at the rate of $2.43 per unit of water. Storm drainage charges are billed at the rate of $412.50 per acre times the acreage of the property of at the rate of $82.50 per residential equivalency factor.

Understanding And Paying Your Utility Bill

City utility bills (**not to be confused with** private utility bills), include charges for water usage, sanitary sewer, street lights, storm drainage, and recycling.

Paying Your Bill

Utility bills cover three months and are mailed quarterly. You can pay by mail or in person, or sign up for automatic payment.

By Mail or In Person: Tear off the top half of your bill and mail it to the City of Golden Valley (see address on the right side of the bill) or put it in the drop box located near the front door of City Hall along with a check or cash (no credit cards). Payment must be received on or before the date listed (postmark date is not acceptable) to avoid a 10% penalty fee.

VIEW OR PAY CITY UTILITY BILL

No fees, it's free! View or pay bill online anytime. Multiple payment options available. Pay multiple accounts in one transaction. Set up automatic payments by due date. Sign up for email or text reminders.

Understanding Your Bill

Account Summary

The information in the "Account Summary" box on the right side of your bill is an itemized report of the amount you owe.

Billing: This is the amount of your last utility bill. If your bill is higher this time, you are using more water.

Payments: This is the amount you paid on your last bill. More than likely, you have paid the bill in full and your payment will be equal to your previous bill.

Adjustments & Penalties: If there are any adjustments to your bill, or if you were late with your last payment, the amount you are penalized or credited will show up here.

Balance Forward: This is the total amount due since your previous bill, including payments, adjustments or penalties.

Current Charges: This is the amount you owe for current services used.

Total Amount Due: This is the amount you need to pay by the due date printed on your bill.

Fee Breakdown

Besides the actual service (such as delivery of water), your fees fund maintenance and improvement of the City's utilities systems as a whole.

Water: Golden Valley buys its water from the City of Minneapolis. The amount you owe for water depends on the number of gallons you used during the billing period. There is a minimum charge based on meter size for the first 1,000 gallons used. After that, water rates are $6 per 1,000 gallons of water per quarter up to 79,000 gallons used. For usage over 79,000 gallons, the rate is $6.03 per 1,000 gallons per quarter. The Emergency Water Supply fee is 30 cents per 1,000 gallons.

Sewer: Residents are charged for each billing period to cover costs for the disposal and treatment of sewage via metrowide sewage treatment plants operated by Metropolitan Council Environmental Services. Sewer rates are based on how much wastewater residents put into the system, which is measured by winter water consumption. Rates are $62.15 for those that use 5,000 gallons of water or less, $67.11 for those that use 6,000 to 15,000 gallons, $73.02 for 16,000 to 19,000 gallons, $84.15 for 20,000 to 25,000 gallons, $110.25 for 26,000 to 39,000 gallons, $126.96 for 40,000 to 59,000 gallons, $134.76 for 60,000 to 79,000 gallons, $154.41 for 80,000 to 99,000 gallons, and $183.26 for 100,000 gallons or more.

Irrigation Accounts: Accounts are billed monthly (April-Nov). For all accounts, any water usage will be billed with the water rates listed above..

State Testing Fees: The State charges Golden Valley to test its water for impurities. This $1.59 fee is set by the Minnesota Department of Health and sent to them as a pass-through.

Recycling: Part of Golden Valley's weekly curbside recycling program is funded by Hennepin County. Your $14 quarterly fee covers the remainder of the program as well as the City's Spring Brush Pick-Up and Fall Leaf Drop-Off.

Storm Drainage: This $22 quarterly fee is based on acreage and type of property use (typical residential lot is 1/3 acre). It covers the cost for water quality ponds, storm drainage, street cleaning, projects included in the City's surface water management plan, and improvements made to the City systems that coincide with the pavement management program.

Street Lights: Residents who directly benefit from a standard street light are charged for half the cost of operating the light (tax revenue covers the rest). Fees are $10.80-$11.13 per quarter for ornamental lights and $7.05-$7.56 per quarter for overhead lights.

Cert: This administrative fee is charged annually to residents who aren't paying their utility bills. The fee is then certified to their property tax bill.

Understanding Meter Readings

Utility Billing Clerk
763-593-8016

Enterprise Funds

The City's water, sanitary sewer, storm sewer, and recycling funds are handled as enterprise funds. This means the amount you pay for those utilities covers the cost of providing the service, maintenance and repair of each system, and any improvements to the system. Taxes do not fund anything related to those utilities.

7800 Golden Valley Road, Golden Valley, MN 55427
763-593-8000 | TTY: 763-593-3968

City of New Hope, Minnesota

4401 Xylon Avenue North
New Hope, MN 55428
Telephone: 763-531-5100
Website: www.ci.new-hope.mn.us

Utility Billing

2017 Utility Rates

The New Hope City Council approved the utility rates for 2016 at its meeting on December 12, 2016. The rates are in the table below:

Contact
Utility Billing
Phone: 763-592-6760
Email

		2016	**2017**
Water	Base fee	$7.30	**$7.67**
	State water testing fee	$0.53	**$0.53**
	Emergency water supply/repair fee (revised 7/1/15)	$0.50/1,000 gal.	**$0.50/1,000 gal.**
	1,000-10,000 gallons	$5.38/1,000 gal.	**$5.65/1,000 gal.**
	10,001-20,000 gallons	$5.85/1,000 gal.	**$6.14/1,000 gal.**
	More than 20,001 gallons and irrigation	$6.58/1,000 gal.	**$6.91/1,000 gal.**
	Commercial	$5.50/1,000 gal.	**$5.78/1,000 gal.**
Sewer	Minimum sewer charge (includes 1,000 gallons)	$6.82	**$7.33**
	Each additional 1,000 gallons	$4.53	**$4.87**
	Treatment surcharge	$0.46/1,000 gal.	**$0.49/1,000 gal.**

Winter sewer charges are based on actual water used during December, January, February and March. Summer sewer charges are based on the previous winter's average or actual water used, whichever is lower.

Appendix 10

Adopted or Proposed Regulations to Reduce Demand or Improve Water Efficiency

CITY OF CRYSTAL

ORDINANCE #2017 - 05

AN ORDINANCE AMENDING CHAPTER 7 OF THE CRYSTAL CITY CODE

The City of Crystal ordains:

ARTICLE I. Chapter VII, Section 700 of the Crystal City Code is hereby amended by deleting the ~~stricken~~ material and adding the double-underlined material as follows:

Section 700 - Storm sewer utility

700.01. Storm sewer system; statutory authority; utilities superintendent. Minnesota Statutes, section 444.075, authorizes cities to impose just and reasonable charges for the use and availability of storm sewer facilities ("charges"). By this section, the city elects to exercise such authority. The city utilities superintendent shall discharge the responsibilities imposed by this chapter, together with such other duties as may be required or assigned to that person.

700.03. Findings and determinations. In providing for such charges, the findings and determinations set out in this subsection are made.

a) In the exercise of its governmental authority and in order to promote the public health, safety, convenience and general welfare, the city has constructed, operated and maintained a storm sewer system ("the system"). This section is adopted in the further exercise of such authority and for the same purposes.

b) The system, as constructed, heretofore has been financed and paid for through the imposition of special assessments and ad valorem taxes. Such financing methods were appropriate to the circumstances at the time they were used. It is now necessary and desirable to provide an alternative method of recovering some or all of the future costs of improving, maintaining and operating the system through the imposition of charges as provided in this section.

c) In imposing charges, it is necessary to establish a methodology that undertakes to make them just and equitable. Taking into account the status of completion of the system, past methods of recovering system costs, the topography of the city and other relevant factors, it is determined that it would be just and equitable to assign responsibility for some or all of the future costs of operating, maintaining and improving the system on the basis of the expected storm water runoff from the various parcels of land within the city during a standard one-year rainfall event.

d) Assigning costs and making charges based upon typical storm water runoff cannot be done with mathematical precision but can only be accomplished within reasonable and practical limits. The provisions of this section undertake to establish a reasonable and practical methodology for making such charges.

700.05. Rates and charges. Subdivision 1. Residential equivalent factor. Rates and charges for the use and availability of the system are to be determined through the use of a "residential equivalent factor" ("REF"). For the purposes of this section, one REF is defined as the ratio of the average volume of surface water runoff coming from one acre of land and subjected to a particular use, to the average volume of runoff coming from one acre of land subjected to typical single-family residential use within the city during a standard one-year rainfall event.

by the city by the 25th day of the applicable month, a penalty of 10% of the billed amount will be added to the billed amount. The city may certify an unpaid bill, together with costs and interest, to the taxpayer services division manager for collection together with taxes against the property served as authorized by Minnesota Statutes, sections 279.03 and 444.075. This certification will be made regardless of who applied for sewer services, whether it was the owner, tenant or other person. Applications for sewer service will contain an explanation in clear language that unpaid sewer bills will be collected with real estate taxes in the following year. The city may also bring a civil action or pursue other remedies to collect unpaid charges. (Added, Ord. No. 94-14, Sec. 2)

Subd. 2. Fees and interest. ~~Definitions. For purposes of this subsection, the term "sewer charges" means and includes without limitation sewer rate charges, permit charges, availability charges, connection charges and any rate or charge authorized by Minnesota Statutes, section 444.075 or imposed by this section.~~ When unpaid charges are certified for collection with taxes the term "charges" includes a certification fee set by appendix IV and interest on the unpaid charges at the annual rate set by appendix IV. (Added, Ord. No. 94-14, Sec. 2)

710.21. Special rates; senior citizens and disabled persons. The city council may by resolution establish maximum sewer and water use rates for senior citizens and disabled persons, qualifications for, and the method of administering such special rates.

ARTICLE IV. Chapter VII, Section 715 of the Crystal City Code is hereby amended by deleting the ~~stricken~~ material and adding the double-underlined material as follows:

Section 715 - City water system

715.01. Utilities superintendent. The ~~city manager may appoint~~ a city utilities superintendent ~~who~~ is to discharge the responsibilities imposed by this section, together with such other duties as may be required or assigned to that person~~.~~, and shall be referred to in this section as the "superintendent."

715.03. General operation. The municipal water system is to be operated as a public utility and convenience from which revenue will be derived under the management and control of the city council, subject to the provisions of the agreement of the joint water commission. The system is to be operated and maintained in such a manner as to provide its service with maximum efficiency.

715.05. Use of water restricted to authorized persons. It is unlawful to make, construct or install a water service installation or make use of a water service that is connected to the water system except in the manner provided in this section.

715.07. Damage to water system. It is unlawful to remove or damage a structure, appurtenance or property of the water system, or fill or partially fill any excavation, or raise or open any gate constructed or maintained for the water system.

715.09. (Reserved, Ord. No. 2011-1, Sec. 8)

715.11. Deficiency of water; shutting off water. The city is not liable for a deficiency or failure in the supply of water to consumers. In case of fire, or alarm of fire, or in making repairs or construction of new works, water may be shut off and ~~kept~~ shut may remain off as long as deemed necessary by the superintendent, or its designee.

715.13. Supply from one service. Not more than one housing unit or building may be supplied from one service connection except by special permission of the superintendent, or its designee.

715.15. Tapping of mains prohibited. It is unlawful for a person except one employed or authorized by the city to tap a distribution main or pipe of the water supply system or insert stopcocks or ferrules therein.

715.17. Repair of leaks. The consumer or owner must maintain the service pipe from the building side of the curb stop or building side of the building gate valve into the house or building. In the case of failure upon the part of a consumer or owner to repair a leak occurring in the service pipe within 24 hours after verbal or written notice from the superintendent, the water will be ~~shut~~ off disconnected and will not be turned on until a penalty charge has been paid and the leak repaired. If the waste of water is great or if damage is likely to result from the leak, the water may be ~~turned~~ off disconnected immediately pending repairs. The maintenance responsibility of the consumer or owner begins where connection is made into the curb stop. The curb stop and the service connection extending beyond the curb stop into the city's main are owned by the city. (Amended, Ord. No. 2011-1, Sec. 9)

715.19. Abandoned services.

a) Service installations that have been abandoned to not be used by property owner in the foreseeable future or have not been used for three years may be disconnected and plugged at the main by the city at the discretion of the city, and the related expense of the city will be charged to the property as an unpaid utility bill. (Amended, Ord. No. 2011-1, Sec. 10)

b) As an alternative, at the discretion of the city engineer, or its designee, the owner may pay to the city the Alternative Service Abandonment Fee shown in appendix IV. This fee relieves the owner of any future responsibility for the abandoned water service instead of plugging the main at the owner's expense. (Added, Ord. No. 2011-1, Sec. 10)

c) When buildings are reconstructed or redeveloped and it is desired to increase or change the old water service, connections with the mains may not be made until all old services have been removed and the main plugged by the owner's authorized contractor after said contractor obtains the required utility street cut permit from the city, and any related expense of the city will be charged to the property as an unpaid utility bill. (Amended, Ord. No. 2011-1, Sec. 10)

715.21. Excavation and construction requirements.

a) An excavation for the water system may not be made until a permit for the connection has been issued by the superintendent, or its designee. The permit fee is set in appendix IV.

b) Excavations for making a tap from city water mains must conform to Federal Register Part 2 Department of Labor, Occupational Safety and Health Administration, 29 CFR 1926, Occupational Safety and Health Standards - Excavations: Final Rule. The excavations must extend to a depth at least 12 inches lower than the bottom of the water main. Ample clear space must be allowed for insertion of tapping machine. Excavations must be safe. If not determined safe by the tapper a tap may not be made. A safe ladder must be furnished by the contractor for use of entry, tapping, inspection and exiting.

c) In compliance with the Minnesota ~~p~~Plumbing ~~c~~Code, separation of water service pipes and sewer service pipes must be no less than ten feet apart horizontally or may be placed in a common trench if the bottom of the water service pipe is kept at a minimum of 12 inches above the top of the sewer pipe at all points and the water pipe is placed on a solid shelf at one side of the common trench. A common trench may also be used without the separation requirements if the sewer pipe is of ductile iron, schedule 40 plastic, or SDR35 ASTM D3034 plastic pipe and the water pipe is of copper or ductile iron.

715.23. Private water supplies. Subdivision 1. No connections. It is unlawful to connect a water pipe of the water system with a pump, well, tank or piping that is connected with any other source of water supply. If such cross connections are found to exist, the owner or the owner's plumber must give notice to the superintendent, or its designee, and make an immediate correction of the problem. Failure to correct the problem will result in the discontinuation of the city's water supply ~~by the superintendent~~.

Subd. 2. New private wells prohibited. It is unlawful to construct or install a new private water well within the city. Existing private water wells may continue to be used and maintained until such time as they are required to be sealed under Minnesota Statutes, section 103I.301 or other applicable law.

715.25. Use confined to premises. It is unlawful to permit water from the water system to be used for any purpose, except upon that person's premises unless written consent is obtained from the superintendent, or its designee.

715.27. Connections beyond city boundaries. Where water mains of the city are in any street or alley adjacent to or outside the corporate limits of the city, the city may issue permits to the owners or occupants of properties adjacent or accessible to the water mains to make proper water service pipe connections with the water mains of the city, and to be supplied with water in conformity with the applicable provisions of this section and subject to the contract for the supply of water between the city and the city of Minneapolis or other municipalities. (Amended, Ord. No. 2011-1, Sec. 11)

715.29. Restrictions against sprinkling; other limitations of water use. Water customers and consumers are governed by the applicable regulations promulgated by the city of Minneapolis as to the limitations in the time and manner of using water and such other applicable regulations promulgated by the joint water commission affecting the preservation, regulations and protection of the water supply. If the city council determined that a shortage of water supply threatens the city, the council may by resolution limit the times and hours during which water may be used from the water system. If there is a critical water deficiency or other emergency affecting water availability, the city manager or mayor may order temporary measures to reduce water demands until the council has an opportunity to meet and determine the need to extend, expand, or discontinue the measures. It is unlawful to cause or permit water to be used for anything other than in home use during the period covered by the order issued by the city manager or mayor, or by the council resolution. A daily penalty will be charged for this violation as provided in appendix IV. Charges will be added to that person's next utility bill.

715.31. Applications. Subdivision 1. Applications for service installations and for water service are made to the city on printed forms as provided by the city. (Amended, Ord. No. 2011-1, Sec. 12)

Subd. 2. Applications for service installations and for water service must be made by the owner or agent of the property to be served and state the size and location of service connection required. The applicant must, at the time of making application, pay to the city the amount of fees or deposit required for the installation of the service connection set in appendix IV. Applications for services larger than one inch must be accompanied by two sets of plans or sketches indicating preferred location or service pipe and size of service based on building demand.

Subd. 3. When service connections have been installed, application for water service may be made to the city, either by the owner, agent, tenant or occupant of the premises. (Amended, Ord. No. 2011-1, Sec. 12)

Subd. 4. The size of water service connections and meters, along with the installation thereof, must be approved by the superintendent, or its designee. ~~The water service may not be less than the size of the service pipe from the main to the curb stop. To better serve the building over a longer period of time, and because of future water usage such as yard irrigation systems, swimming pools and dishwashers, it is recommended that a one inch service pipe be the smallest service size. All~~

Section 3.20:
Rules and Regulations Relating to Water Service

Subdivision 1. Deficiency of Water and Shutting Off Water

The City is not liable for any deficiency or failure in the supply of water to customers whether occasioned by shutting the water off for the purpose of making repairs or connections or by any other cause whatever. In case of fire, or alarm of fire, water may be shut off to insure a supply for fire fighting. In making repairs or construction of new works, water may be shut off at any time and kept off so long as may be necessary.

Subdivision 2. Repair of Leaks

It is the responsibility of the consumer or owner to maintain the service pipe from the curb stop into the house or other building. In case of failure upon the part of any consumer or owner to repair any leak occurring in his service pipe within twenty-four (24) hours after oral or written notice has been given the owner or occupant of the premises, the water may be shut off and will not be turned on until a reconnection charge has been paid and the water service has been repaired. When the waste of water is great or when damage is likely to result from the leak, the water will be turned off if the repair is not proceeded with immediately.

Subdivision 3. Abandoned Services Penalties

All service installations connected to the water system that have been abandoned or, for any reason, have become useless for further service shall be disconnected at the main or as directed by the City Manager or his/her designee. The owner of the premises, served by this service, shall pay the cost of the excavation. The owner or his agent shall perform the actual disconnection. When new buildings are erected on the site of old ones, and it is desired to increase the old water service, a new permit shall be taken out and the regular tapping charge shall be made as if this were a new service. It is unlawful for any person to cause or allow any service pipe to be hammered or squeezed together at the ends to stop the flow of water, or to save expense in improperly removing such pipe from the main. Also, such improper disposition thereof shall be corrected by the City and the cost incurred shall be borne by the person causing or allowing such work to be performed.

Subdivision 4. Service Pipes

Every service pipe must be laid in such manner as to prevent rupture by settlement. The service pipe shall be placed not less than seven and one-half feet below the surface in all cases so arranged as to prevent rupture and stoppage by freezing. All service pipes two (2) inches or smaller shall be copper. Frozen service pipes between the curb stop and the building shall be the responsibility of the owner. Service pipes must extend from the curb stops to the inside of the building; or if not taken into a building then to the hydrant or other fixtures which they are intended to supply. A valve, the same size as the service pipe, shall be placed close to the inside wall of the building, ahead of the meter and well protected from freezing. Joints on copper tubing shall be flared or compression-fitted, and kept to a minimum. Not more than one joint shall be used for a service up to seventy feet in

length. All joints shall be left uncovered until inspected. Minimum size connection with the water mains shall be one (1) inch in diameter.

Subdivision 5. Private Water Supplies

No water pipe of the City water system shall be connected with any pump, well, pipe, tank or any device that is connected with any other source of water supply and when such are found, the City shall notify the owner or occupant to disconnect the same and, if not immediately done, the City water shall be turned off. Before any new connections to the City system are permitted, the City shall ascertain that no crossconnections will exist when the new connection is made. When a building is connected to "City Water" the private water supply may be used only for such purposes as the City may allow.

Subdivision 6. Water Emergencies

A. Whenever in the judgment of the City Manager or his/her designee the water pressure and available water in the municipal water system reaches a level which endangers the public health or safety of residents and other persons in the City, the City Manager or his/her designee may declare a state of water emergency which shall continue until such time as the City Manager or his/her designee shall determine that the danger to public health or safety no longer exists. Forthwith upon the declaration of a state of water emergency notice thereof shall be given to the news media, and all orders of the City Manager or his/her designee issued pursuant thereto shall be enforced after one (1) hour has elapsed from the time of such notice.

B. During the existence of a state of water emergency the City Manager or his/her designee may by order, (1) prohibit any sprinkling, irrigation or other utilization of water from the City's municipal water system for lawn, grass or turf, or (2) prohibit sprinkling, irrigation or other utilization of water from the City's municipal water system for lawn, grass or turf, except in those areas stated in the notice that such utilization of water may be used on odd or even numbered days of the month.

C. Upon written request and approval by the City Manager or his/her designee and subject to such terms and conditions imposed by the City Manager or his/her designee with respect to such approval, the following persons may be authorized to sprinkle, irrigate or otherwise utilize water from the City's municipal water system at times other than permitted in Subparagraph B hereof:

    1. Any person owning or operating a commercial or business enterprise whose economic well-being is dependent upon sprinkling, irrigating or watering of a lawn, grass or turf owned, leased or operated by it;

    2. Employees and agents of the City, in such instances wherein lawn, grass or turf used for play fields or areas owned or operated by the City require more frequent watering to prevent unreasonable damage thereto;

3. Owners and lessees (their employees and agents) of lands newly sodded or grass seeded which requires sprinkling or irrigation to prevent loss of new sod, seed or immature turf or grasses.

D. Unlawful Act. It is a petty misdemeanor for any Person to violate any Provision of this Subdivision.

Subdivision 7. Fire Hydrants on Public Easements

In order to properly provide for adequate fire protection on privately developed property (in any zoning district) where no plat is involved (and therefore no publicly dedicated streets within which watermains and fire hydrants can be provided for), there is hereby established the requirement that in all of such non-platted areas of development the owner of the property sought to be thus developed shall provide and dedicate to the City, without cost to the City, and as consideration for the granting of any permits respecting the development of or building upon said land, perpetual easements permitting the location therein of watermains and fire hydrants in accordance with locations established and approved by the City Manager or his/her designee. Following the establishment of such easements the City shall cause to be constructed therein watermains and fire hydrants as appropriate and sufficient to adequately protect the persons and properties in the area to be served by the same. The cost of said watermains and fire hydrants shall be borne and paid by the owner or owners of the property or properties served thereby, and if said obligation is not voluntarily discharged by said owner, then the City shall have the option of calling a public hearing and assessing the cost of said construction as a public improvement in accordance with the provisions of Minnesota Statutes 429.01 et seq. Following the construction of said improvements the responsibility for the inspection and maintenance of said watermains and hydrants shall rest with the Public Works Department. The property owner or owners shall pay for such services at an annual rate set by resolution of the Council for each hydrant plus the actual cost of labor and materials involved in the making of such repairs (including an overhead administrative allowance respecting any such labor cost). In the event that the owner or occupant of any properties thus served by the type of fire hydrants and watermains covered by this Subdivision shall desire to use water from said hydrants other than for the purpose of combating or controlling a fire or other emergency, then, and in such event such owner or occupant must make application to the Public Works Department for such purpose.

Subdivision 8. Opening Hydrants

It is unlawful for any person, other than members of the Department of Public Safety or other person duly authorized by the City, in pursuance of lawful purpose, to open any fire hydrant or attempt to draw water from the same or in any manner interfere therewith. It is also unlawful for any person so authorized to deliver or suffer to be delivered to any other person any hydrant key or wrench, except for the purposes strictly pertaining to their lawful use.

Subdivision 9. Water Meters

All water meters shall be purchased by the property owner. Maintenance of all meters shall be performed by the City. Cost of all repairs of water meters not resulting from normal usage shall be the responsibility of the property owner. Any

remote type meter in need of replacement by reason of normal usage shall be furnished and installed by the City, and the City shall thereafter own such meter.

Subdivision 10. Code Requirement

All piping, connections and appurtenances shall be installed and performed strictly in accordance with the Minnesota Plumbing Code. Failure to install or maintain the same in accordance therewith, or failure to have or permit required inspections shall, upon discovery by the City, be an additional ground for termination of water service to any consumer.

Subdivision 11. Additional Rules and Regulations

The Council may, by resolution, adopt such additional rules and regulations relating to placement, size and type of equipment as it, in its discretion, deems necessary or desirable. Copies of such additional rules and regulations shall be kept on file in the office of the City Manager or his/her designee, and uniformly enforced.

Source: City Code
Effective Date: 6-30-88

Sec. 5-8. - Water sprinkling ban.

(a) *Purpose.* The city council has determined that in certain drought conditions it may become necessary for the protection of the health, welfare and safety of the citizens of New Hope to conserve the water supply of the city by imposing a water sprinkling ban on all residential, commercial and industrial lawn and garden vegetation. Also, New Hope's contract with the City of Minneapolis for the purchase of water requires the imposition of a water sprinkling ban at the direction of the City of Minneapolis. The purpose of this section is to set forth the nature and extent of the regulations controlling any sprinkling ban imposed by the council.

(b) *Resolution imposing ban.* All water sprinkling bans shall be imposed by adoption of a resolution at any regular or special meeting of the New Hope City Council. The resolution shall set forth the duration of the ban, whether the ban shall be partial or absolute, if a partial ban, whether it shall apply to lawns and boulevards only or also to gardens, new sod and/or new tree saplings, the days or schedule when sprinkling will be permitted under a partial ban, and any other regulations that the city council deems reasonable and appropriate. Said ban shall become effective immediately upon the adoption of said resolution.

(c) *Notice of ban.* The resolution imposing the sprinkling ban shall be published once in the official newspaper of the city, and conspicuously posted in four places throughout the city. Any deficiencies in this notice requirement shall not invalidate the ban.

(d) *Enforcement.* A violation of this section shall be a petty misdemeanor. However, a first offense shall not result in the issuance of a ticket. The owner, any occupant of legal age or party responsible for the water billing shall be first issued a warning ticket upon the first violation of the water sprinkling ban. A warning letter mailed by regular mail, attached to an e-mail or delivered personally to the occupant of the property or the individual responsible for the water billing at the violating property shall satisfy the warning notice requirement of this section. Each act of violation and each day a violation occurs or continues constitutes a separate offense.

(Ord. No. 88-13; Ord. No. 15-13, § 1, 12-14-2015)

Maintain your property the watershed-friendly way

A guide for commercial and common ownership communities

Information for property managers and homeowners associations on steps you can take on your property to protect lakes and streams and improve water quality.

Get information on:

- ✓ Inspecting and maintaining ponds and storm drainage systems to ensure they function as designed.
- ✓ Setting up turf maintenance and snow/ice control contracts.
- ✓ Taking steps to minimize pollutants in ponds, lakes and streams.

Inside:

WMWA
West Metro Water Alliance

May 2015

Appendix 11

Implementation Checklist – Summary of All the Actions that a Community is doing, or Proposes to do, Including Estimated Implementation Dates

Appendix 11: Implementation Checklist – summary of all the actions that JWC communities are doing, or proposes to do, including estimated implementation dates

Implementation Date	Community Action
Current-Future	Continue leak detection Regular supply, storage & distribution facility repair/replace strategies. PCCP Pipe evaluation and rehabilitation on JWC trunk system. Continue to evaluate effectiveness of existing billing systems. Supply and billing meters are calibrated/repaired/replaced regularly.
2018	Begin recording static water levels in JWC emergency wells.
2018 - 2020	Review Water Supplier Services category and evaluate feasibility of consistent method to meter/estimate and record this currently unaccounted for water.
2018 - 2020	Evaluate cost/benefit of website information on water conservation tips
2018 - 2022	Evaluate feasibility of installing supply meters at the Crystal and Golden Valley Booster Stations.