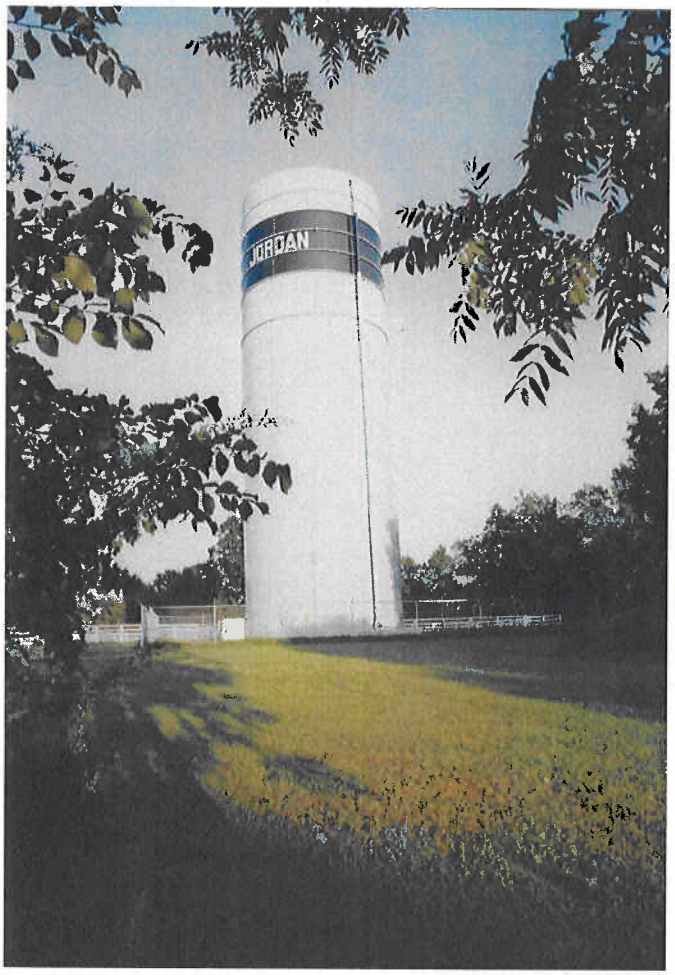

Appendix B
Water Plan

DRAFT

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BONESTROO, INC.
Consulting Engineers & Surveyors

12224 Nicollet Avenue
Burnsville, MN 55337
(952) 890-0509

November 2007

2007 WATER COMPREHENSIVE PLAN

for

JORDAN, MINNESOTA

T17.22215

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

Signature: Lana Tullis Typed or Printed Name: Lana Tullis

Date 11/8/07 Reg. No. 41450

BOLTON & MENK, INC.
CONSULTING ENGINEERS AND LAND SURVEYORS

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EXECUTIVE SUMMARY

A. GENERAL

The purpose of this report is to provide the City of Jordan with the necessary information regarding the City's water supply, treatment, storage and distribution system sot the City can establish priorities, plan, fund and implement required future water system improvements.

B. WATER USE PROJECTIONS

Current population projections indicate that the City of Jordan will grow from a population of approximately 5,000 to approximately 15,000 by the year 2030. Water use projections associated with the population growth projections indicated the following 2030 Design Water Demands:

- Average Day Demand: 1.50 MGD
- Peak Day Demand: 3.38 MGD

C. EVALUATION OF EXISTING FACILITIES

The existing water system for the City of Jordan includes four water supply wells, one water treatment facility with a planned expansion, three water booster stations, three water storage facilities with a combined volume of 1.3 million gallons and a distribution system ranging from 6-in to 16-in in diameter. The following tables summarize the existing infrastructure and associated capacity to meet the projected average and peak day demands.

1. Water Supply

Note in Table ES.1 that Well No. 8 is proposed for construction in 2007-2008. Upon completion of this well, Well No. 3 will be abandoned. Therefore, additional capacity provided by Well No. 3 is not included in the evaluation. Table ES.2 summarizes the average and peak capacity of the existing wells. Due to a restriction placed on the Mt. Simon-Hinckley aquifer by the Minnesota Department of Natural Resources, the allowable average day volume pumped from Wells No. 7 and No. 8 will increase with population. The restriction allows only 75 gallons per capita per day.

TABLE ES.1
WATER SUPPLY WELL SUMMARY

Parameter	Well No. 5	Well No. 6	Well No. 7	Well No. 8
Unique Well No.	462924	596649	693065	*TBD*
Location	107 4th St. W.	West & 7th St.	107 4th St. W.	*407 West St.*
Year Constructed	1991	1999	2003	*2007/2008*
Static Water Level (ft.)	14	26	33	
Well Pump Capacity (gpm)	450	750	1,100	*1,400 gpm*
Casing Diameter (inches)	12	12	18	*24*
Casing Depth (ft.)	225	220	370	
Overall Well Depth (ft.)	290	295	547	*600*
Aquifer	Ironton / Galesville	Ironton / Galesville	Mt. Simon – Hinckley	*Mt. Simon-Hinckley*
Pump Type	Submersible	Submersible	Submersible	*Submersible*
Motor Size	25 HP	40 HP	60 HP	*75 HP*
Limitations to Use	Maximum 16 hr/day operation		Maximum 75 gpcd from Mt. Simon-Hinckley aquifer	
Comments	Well No. 5 and 6 combined capacity is 900 gpm			

TABLE ES.2
PROJECTED WATER SUPPLY REQUIREMENTS

Year	Average Day		Peak Day		Well(s) Required
	Demand (MGD)	Firm Capacity (MGD)	Demand (MGD)	Total Capacity (MGD)	
2010	0.72	1.40	1.62	3.86	0
2015	0.92	1.55	2.06	3.86	0
2020	1.11	1.70	2.50	3.86	0
2025	1.31	1.84	2.94	3.86	0
2030	1.50	1.99	3.38	3.86	0

2. Water Treatment

The City of Jordan is currently served by one existing water treatment facility. The evaluation included a planned expansion for construction in 2008. The water treatment capacity is summarized below. It is recommended that the water treatment capacity meet or exceed the projected peak day demand.

TABLE ES.3
WATER TREATMENT FACILITY SUMMARY

Pressure Zone	Water Treatment Facility No. 1 (existing facility)	Water Treatment Facility No. 1 (w/ expansion)
Location	107 West Fourth St.	107 West Fourth St.
Year Constructed	1991 w/ 2008 expansion	1991 / 2008
Peak Treatment Capacity	1,152 gpm 1.38 MGD	2,652 gpm 3.18 MGD
Associated Wells	3, 5, 6 & 7	5, 6, 7 & 8

3. Booster Stations and Pressure Zones

The distribution system operates with three pressure zones; low, intermediate and high. The equivalent ground elevation for each of these zones is summarized in Table ES.4. Three existing water booster stations are used to transfer water from the lower to the upper pressure zones. Details regarding the existing booster station are summarized in Table ES.5. The need for additional booster stations is driven by increased development in the high pressure zone.

TABLE ES.4
WATER DISTRIBUTION PRESSURE ZONES

Pressure Zone	Ground Elevation
Low System	860 ft
Intermediate System	900 ft
High System	970 ft

TABLE ES.5
WATER BOOSTER PUMP STATIONS

Name	Booster Pump Station No. 1	Booster Pump Station No. 2	Booster Pump Station No. 3
Location	Sunset Drive	Water/East Street	Hope Avenue
Purpose	Transfer Water to Intermediate Zone	Transfer Water to Valley Electric and Maple Lane Area	Transfer Water to High Pressure Zone
Year Constructed	1991	1992	2006
Number of Pumps	2 @ 450 gpm	2 @ 450 gpm 1 @ 1,250 gpm	1 @ 500 gpm 2 @ 1,000 gpm
Firm Pumping Capacity[1]	450 gpm	450 gpm	1,000 gpm
Max. Pumping Capacity[2]	650 gpm	1,250 gpm	
Back-up power supply	Portable Generator Hook-Up	Portable Generator Hook-Up	Diesel Generator

1 Firm pumping capacity is based on the largest, normally operating pump, out of service.
2 Maximum pumping capacity for both pumps running at Booster Station No. 1 will produce approximately 650 gpm. It is not feasible for all three pumps to operate at the same time, therefore the maximum capacity is the largest pump.

4. Water Storage

Existing water storage facilities are summarized in Table ES.6. The existing 1.3 million gallons storage is adequate for demand through approximately 2017, however, storage needs in the high pressure zone must be met as this area develops, regardless of the overall volume requirements.

TABLE ES.6
EXISTING WATER STORAGE FACILITIES

Parameter	No. 1	No. 2	No. 3
Location	386 Sunset Drive	521 Broadway St. S	185th & Timberline Court
Capacity (gallons)	300,000	500,000	500,000
Year Constructed	1971	1991	2005
Support Type	Pedestal	Standpipe	Pedestal
High Water Level El. (ft)	962.0	1003.5	962.0
Pressure Zone Served	Low	Intermediate	Low

5. Distribution System

A proposed "road map" for expanding the existing distribution system is included in Appendix B. This indicates recommended sizes for trunk lines.

D. WATER EMERGENCY CONSERVATION PLAN UPDATE

The City of Jordan completed a Water Emergency Conservation Plan in October 2007. This plan is included as Appendix C.

E. RECOMMENDATION AND IMPLEMENTATION

Table ES.7 provides a summary of the proposed improvements and anticipated implementation schedule. Although several items, such as water supply and water treatment capacity, are tied to overall demand throughout the city, the need for booster stations, pressure reducing valve stations and water storage, are dictated in part by the pressure zone in which development first occurs. Therefore, the proposed schedule may vary considerably depending upon the pattern of development.

Estimated construction costs are included with each proposed improvement. The costs presented are reflective of 2007 costs and have not been inflated to the anticipated year of construction.

TABLE ES.7
SUMMARY OF PROPOSED WATER SYSTEM IMPROVEMENTS

Item	Year[1]	Estimated Cost[3]
Water Distribution Improvements[2]	2008-2030	$ 200,000/yr
Well No. 8	2008	$ 300,000
Water Treatment Facility No. 1 Expansion	2008	$ 5,000,000
500,000 Gallon Elevated Storage	2010-2015	$ 1,500,000
Pressure Reducing Valve Station No. 1	2010	$ 150,000
Booster Pump Station No. 4	2012	$ 750,000
Pressure Reducing Valve Station No. 2	2015	$ 150,000
Booster Pump Station No. 5	2017	$ 750,000
Well No. 9	2027	$ 350,000
Well No. 10	2027	$ 350,000
Water Treatment Facility No. 2	2027	$ 8,000,000
Well No. 11	2030+	--
300,000 Gallon Standpipe	2030+	--
500,000 Gallon Elevated Storage	2030+	--

[1] Estimated date on when infrastructure must be completed. Schedule may vary considerably depending on the amount and location of growth.
[2] Watermain costs are estimated at $200,000 per year.
[3] Estimated Cost presented in 2007 dollars.

SECTION 1

INTRODUCTION

A. PURPOSE

This report provides the City of Jordan with necessary information regarding the City's water supply, treatment, storage, and distribution system. This information can be used to establish priorities, plan, fund and implement required future water system improvements.

B. REPORT ORGANIZATION

To adequately address the major areas that are evaluated, the report is organized in six sections as shown below:

Section 1: Introduction.

Section 2: Projection of future water use.

Section 3: Evaluation of existing major water system components.

Section 4: Analysis of distribution system.

Section 5: Recommended water system improvements.

Section 6: Summary of the 2007 Water Emergency Conservation Plan.

Section 7: Summary of recommendations and implementation plan.

SECTION 2

WATER USE PROJECTIONS

A. PURPOSE

Water use projections form the basis of planning for future water infrastructure needs. The City of Jordan is located in the mid-eastern edge of Scott County and is experiencing tremendous growth which is requiring expansion of the water supply, storage, and distribution system. In order to project future water demands, average day water use must be evaluated and projected. In addition, maximum day to average day water use ratios must be determined in order to project the future maximum day water usage.

This section will provide an analysis of land use trends based on comprehensive plan projections, population growth trends, historical water usage, and projection of future average to peak water demands.

B. SERVICE AREA AND PLANNING PERIOD

The water service planning area is shown in Appendix B. This area includes the existing City limits, as well as projected growth areas through 2030 and estimated ultimate growth boundaries.

For the purposes of this study, year 2030 will be utilized as the design year in order to plan for future development. A larger study area or Ultimate Growth area is also shown in Appendix B, however, due to uncertainty with regard to planning this far ahead, detailed growth projection and recommended improvements are not provided to serve the ultimate growth area.

C. POPULATION PROJECTION

Population estimates in this report are consistent with the draft 2008 Comprehensive Plan prepared by Municipal Development Group. Recent historical connections and population are presented in Table 2.1. A recent increase in the residential growth rate can be seen in this table. The City of Jordan has increased 67% in the past 10 years. Table 2.2 summarizes the projected

increase through the next 20 years. As indicated by this table, the City of Jordan is expected to triple in size, from 5,000 to 15,000, in the next 20 years.

TABLE 2.1
HISTORICAL CONNECTIONS AND POPULATION DATA

Year	Connections	Population
1997	--	3,000
1998	--	3,000
1999	--	3,637
2000	--	3,833
2001	--	4,100
2002	1,241	4,240
2003	1,386	4,500
2004	1,448	4,750
2005	1,550	4,900
2006	1,620	5,000

TABLE 2.2
CONNECTION AND POPULATION PROJECTIONS

Year	Connections	Population
2010	2,571	7,200
2015	3,327	9,150
2020	4,111	11,100
2025	5,019	13,050
2030	6,000	15,000

D. HISTORICAL WATER USAGE

Historical water data is an important tool for determining trends and helping to assist the City in determining if there are problems within the system. The average daily per capita consumption and the maximum day to average day ratio are tools for determining future flows. Historical water usage for 1997 through 2006 is presented in Table 2.3.

TABLE 2.3
HISTORICAL WATER DEMAND

Year	Avg. Day (MGD)	Estimated Population	Avg. Day per Capita (gpcd)	Max Day (MGD)	Peaking Factor (Max. Day / Avg. Day)
1997	0.32	3,000	107	--	--
1998	0.33	3,000	110	--	--
1999	0.37	3,637	102	0.64	1.73
2000	0.38	3,833	99	0.76	2.00
2001	0.42	4,100	102	0.90	2.14
2002	0.39	4,240	92	0.76	1.95
2003	0.46	4,500	102	1.03	2.24
2004	0.41	4,750	86	0.78	1.90
2005	0.42	4,900	86	1.04	2.48
2006	0.48	5,000	96	1.13	2.35
		Average	98		2.10

The average amount of water pumped has steadily increased over the ten-year period and correlates with increasing population over the same time frame. The average day demand for the City has remained relatively flat over the ten-year period averaging nearly 100 gallons per capita per day (gpcd).

Peaking factors such as the maximum day to average day ratio are a tool for calculating peak flows. Table 2.3 also provides a summary of the maximum day to average day ratio for the ten-

year period. As presented, the average maximum day to average day ratio is nearly 2.1. The highest ratios were experienced in recent years (2005 and 2006).

The monthly breakdown of the total amount of water pumped from the wells for a five-year period is shown in Table 2.4 and Figure 2.2.

TABLE 2.4
MONTHLY WATER PUMPED (MG)

Month	Year					
	2002	**2003**	**2004**	**2005**	**2006**	**2007**
January	10.24	12.17	9.84			
February	9.30	11.36	9.87			
March	10.70	10.08	10.08			
April	10.69	10.25	11.02			
Maray	13.39	13.40	13.11			
June	13.92	15.96	15.13			
July	17.48	18.37	16.38			
August	14.13	24.72	16.66			
September	14.37	18.67				
October	11.77	13.39				--
November	10.73	10.19				--
December	12.01	9.68				--
Total	**148.73**	**168.24**				--

The amount of water pumped has steadily increased as the City has increased in population. An important tool the City can use to determine if the amount of water being pumped is reasonable, is to determine the unaccounted for water. Unaccounted for water is the difference between the total water pumped and the total water sold. Unaccounted for water may include items such as; leaks in the distribution system, under-registering meters, flushing hydrants, fire fighting purposes, ice rinks, and unmetered City use (water for City parks, street cleanings, etc.). The City should estimate the amount of unmetered water usage as best as possible to determine if there are any problems within the distribution system such as leaking pipes and under registering

meters. Typically, if unaccounted for water is 15 percent or greater, the City should take measures to identify the source and reduce the amount of unaccounted for water.

Water pumped, water sold for residential and commercial users, and unaccounted for water is presented in Table 2.5. As indicated, the unaccounted for water has decreased since 2000 and remained less than 15 percent since 2002. The City installed a new metering system in late 2002/early 2003 and water sold data was estimated for 2002.

TABLE 2.5
UNACCOUNTED FOR WATER

Year	Water Pumped (MG)	Residential Water Sales (MG)	Commercial Water Sales (MG)	Unaccounted for Water (MG)	Percent Difference (%)
1997	117.42	--	--	--	--
1998	121.35	--	--	--	--
1999	135.00	--	--	--	--
2000	140.70	93.62	--	47.08	33.5
2001	151.66	112.20	--	39.46	26.0
2002	140.68	113.16	22.52	5.00	3.55
2003	169.36	127.24	20.03	22.09	13.0
2004	150.90	122.28	20.86	7.76	5.14
2005	152.12	121.38	21.56	9.18	6.03
2006	174.14	120.83	32.09	21.22	12.19

Determining unaccounted for water is an important tool and it is recommended that the City determine this on a monthly or bi-monthly basis. Reducing the amount of unaccounted for water will save on the amount of water pumped and on wear and tear on the well pumps.

E. WATER USE PROJECTIONS

Future water demands have been developed using the background data discussed above. As shown in Table 2.3, the average per capita water usage has averaged 98 gpcd. Average day water use projections are based on a per capita use rate of 100 gpcd. Peak day demand has been

projected with a maximum to average day ratio of 2.25, which is higher than the average of 2.10 shown in Table 2.3 but lower than the maximum day to average day ratios observed in 2001, 2003, 2005 and 2006. The recent increase in peak to average day demands may be attributed to an increase in lawn watering for new home and commercial construction.

Table 2.6 presents the projected water used demand through the year 2030 and a preliminary estimate for the current ultimate study area.

TABLE 2.6
WATER USE DEMAND PROJECTIONS

Year	Service Area Population	Average Day Demand (MGD)[1]	Maximum Day Demand (MGD)[2]
2010	7,200	0.72	1.62
2015	9,150	0.92	2.06
2020	11,100	1.11	2.50
2025	13,050	1.31	2.94
2030	15,000	1.50	3.38

[1] Average day demand based on 100 gpcd total water usage.
[2] Maximum day demand based on maximum to average day ratio of 2.25

The average and maximum daily demands calculated in Table 2.6 are used to determine the adequacy of the existing wells, storage facilities and treatment facilities and will determine when additional wells, storage facilities and treatment facilities are required.

SECTION 3

EVALUATION OF EXISTING FACILITIES

A. GENERAL

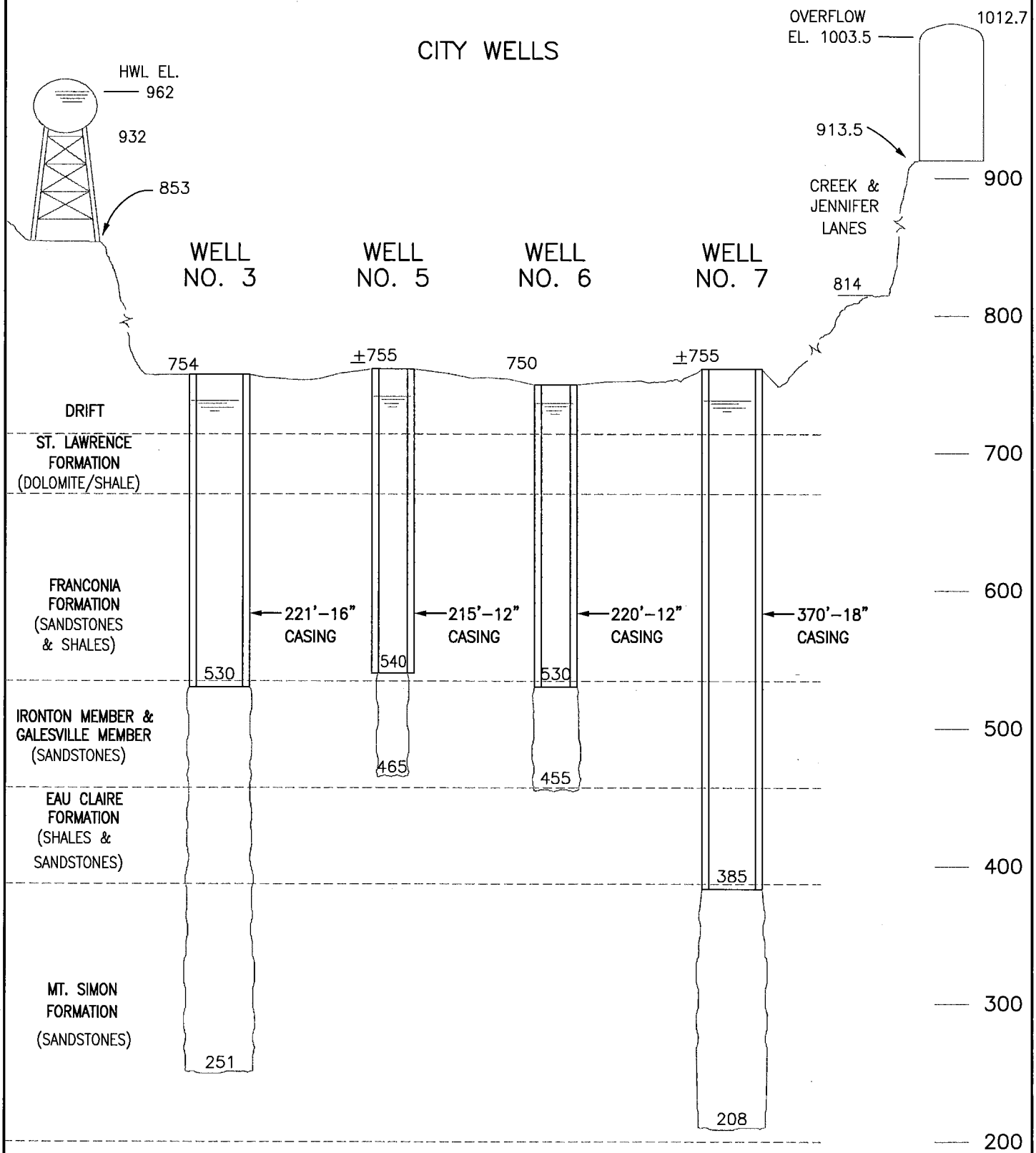
This Section provides a summary of existing water supply, treatment, storage and water distribution facilities for the City of Jordan. The existing water system in Jordan consists of four municipal wells, two elevated tanks and one standpipe, one treatment facility and a distribution system with a network of water mains ranging from 6 to 14 inches in diameter. One additional water supply well proposed for construction in 2008 has also been included in the evaluation. Performance of the distribution system will be discussed further in Section 4.

B. WATER SUPPLY

1. General

The City of Jordan currently obtains water from four wells, Well Nos. 3, 5, 6 and 7. A fifth well, Well No. 8, was recently released for construction. Existing well locations are shown in Appendix A. All existing wells pump to the existing water treatment facility where the water is treated and then pumped to the distribution system.

Well No. 3 draws water from the Ironton/Galesville and the Mt. Simon aquifer formations whereas Wells No. 5 and 6 draw water only from the Ironton/Galesville formation. Well No. 7 and the proposed Well No. 8 draw from the Mt. Simon-Hinkley aquifer. Upon completion of Well No. 8, Well No. 3 will be abandoned. A summary of the well information is presented in Table 3.1. Figure 3.1 provides a summary of the well depths in relation to the geologic formations as indicated by the well logs.



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BURNSVILLE, MN CHASKA, MN AMES, IA

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CITY OF JORDAN, MINNESOTA

CITY WELLS

LOGS OF EXISTING WATER SUPPLY WELLS

TABLE 3.1
WATER SUPPLY WELL SUMMARY

Parameter	Well No. 5	Well No. 6	Well No. 7	Well No. 8
Unique Well No.	462924	596649	693065	*TBD*
Location	107 4th St. W.	West & 7th St.	107 4th St. W.	*407 West St.*
Year Constructed	1991	1999	2003	*2007/2008*
Static Water Level (ft.)	14	26	33	
Well Pump Capacity (gpm)	450	750	1,100	*1,400 gpm*
Casing Diameter (inches)	12	12	18	*24*
Casing Depth (ft.)	225	220	370	
Overall Well Depth (ft.)	290	295	547	*600*
Aquifer	Ironton / Galesville	Ironton / Galesville	Mt. Simon - Hinckley	*Mt. Simon-Hinckley*
Pump Type	Submersible	Submersible	Submersible	*Submersible*
Motor Size	25 HP	40 HP	60 HP	*75 HP*
Limitations to Use	Maximum 16 hr/day operation		Maximum 75 gpcd from Mt. Simon-Hinckley aquifer	
Comments	Well No. 5 and 6 combined capacity is 900 gpm			

2. Well Capacity

The Recommended Standards for Water Works (Ten State Standards) indicate the average day demand should be met with the firm capacity. Firm capacity is determined as the pumping capacity with the largest well out of service. In addition, the average daily well output is normally calculated based on operating for 20 hours per day to allow 4 hours per day for aquifer recharges. Peak day demands should be met using the total well capacity, also calculated using 20 hours of pumping per day.

Wells No. 3, 5 and 6 are located in the Ironton/Galesville aquifer formation and influence each other during pumping, thereby, reducing the amount of water that can be pumped from the wells. Typically, maximum day demands can be met by operating wells 20-24

hours per day, however, for Well Nos. 3, 5 and 6 this time frame must be shortened to 16 hours per day to allow for the wells to "rest". As determined in a previous water study, the combination of these wells can pump 900 gpm, which is based on pumping for 16 hours/day. At 900 gpm, the peak production from these three wells is 864,000 gallons per day.

The City's newest wells, Well No. 7 and the proposed Well No. 8 are in the Mt. Simon-Hinckley aquifer system. The Minnesota Department of Natural Resources (DNR) limits the amount of water that can be pumped from this aquifer. The City of Jordan's average permitted volume from the aquifer (Well No. 7 and No. 8) is determined by multiplying the population by 75 gallons per capita per day. This water use restriction is applied on an annual basis and therefore limits the average day pumping capacity, but does not impact the peak day pumping capacity. As the population grows, the permitted average day pumping from Well No. 7 and Well No. 8 also increases. At a population of 17,600, the average day pumping from the Mt. Simon-Hinckley aquifer is 1.32 MG, which is equivalent to the firm capacity, or the largest well (Well No. 8) out-of-service.

Peak pumping capacity for Well No. 7 is 1,100 gpm for 20 hours, or 1.32 MGD. Well No. 8 has a proposed pumping capacity of 1,400 gpm. Based on operation for 20 hrs/day, the peak pumping capacity for Well No. 8 is 1.68 MGD. Combined with Wells 3, 4 and 6, the total peak day pumping capacity is 3.86 MGD.

Firm pumping capacity is based on the proposed Well No. 8, which is the largest well, out-of-service. Therefore, the 900 gpm maximum for 16 hours/day from Well Nos. 3, 5 and 6 (0.864 MGD) plus 75 gallons per capita per day (up to a maximum of 1.32 MGD) from Well No. 7 would be the firm capacity. Prior to completion of the proposed Well No. 8, the firm pumping capacity is 0.864 MGD.

The total capacity of all wells can be utilized to meet peak day demands. Including proposed Well No. 8, the maximum daily pumping capacity is 3.86 MGD. The pumping capacity per well is summarized in Table 3.3.

TABLE 3.2
EXISTING WELL CAPACITY – AVERAGE DAY

Year	Population	Wells 5 & 6 (MGD)[1]	Well 7 (MGD)[2]	Firm Pumping Capacity (MGD)[3]
2010	7,200	0.864	0.540	1.40
2015	9,150	0.864	0.686	1.55
2020	11,100	0.864	0.833	1.70
2025	13,050	0.864	0.979	1.84
2030	15,000	0.864	1.125	1.99

[1] Maximum pumping rate for Wells No. 5 and 6 combined is 900 gpm with a 16 hr/day maximum.
[2] Wells drawing from the Mr. Simon-Hinckley aquifer (Wells No. 7 & 8) are limited to 75 gpcd.
[3] Firm pumping capacity calculated with the largest well (Well No. 8) out of service.

TABLE 3.3
EXISTING WELL CAPACITY – PEAK DAY

Well(s)	Pumping Rate (gpm)	Duration (hrs/day)	Daily Pumping (MGD)
No. 5 & No. 6 (combined)	900	16	0.86
No. 7	1,100	20	1.32
No. 8	1,400	20	1.68
TOTAL	3,400	--	3.86

Based on the population projections presented in Section 2, no new wells are required to meet the 2030 projected average day and peak day demands. A comparison of the projected demands and the existing water supply capacities are summarized in Table 3.4.

TABLE 3.4
PROJECTED WATER SUPPLY REQUIREMENTS

Year	Average Day		Peak Day		Well(s) Required
	Demand (MGD)	Firm Capacity (MGD)	Demand (MGD)	Total Capacity (MGD)	
2010	0.72	1.40	1.62	3.86	0
2015	0.92	1.55	2.06	3.86	0
2020	1.11	1.70	2.50	3.86	0
2025	1.31	1.84	2.94	3.86	0
2030	1.50	1.99	3.38	3.86	0

3. Wellhead Protection

Wellhead protection is a method of preventing contamination of public water supplies by managing potential contaminant sources in the area that contributes to a public water supply well. Land uses relative to commercial, industrial and underground storage of chemicals and petroleum are considered higher risks to ground water protection than permanent open spaces, parks, farmland and low-density residential lots. All public water suppliers are required to implement wellhead protection measures. The Minnesota Department of Health (MDH) was granted authority to implement wellhead protection and rules governing wellhead protection were adopted in November of 1997.

The City of Jordan completed a wellhead protection plan in March 2002, which is referred to as Part 1. Part 2 of the wellhead protection plan was completed in September 2003. Parts 1 and 2 addressed Well Nos. 3, 5 and 6. A wellhead protection plan for Well No. 7 was completed in July 2007.

Wells No. 3, 5 & 6

As mentioned earlier, Well No. 3 draws water from the Ironton/Galesville and the Mt. Simon aquifer formations whereas Wells No. 5 and 6 draw water only from the Ironton/Galesville formation. Unconsolidated deposits above bedrock generally characterize the geology of area around the City. These unconsolidated deposits consist

of alluvial deposits in the main part of the Minnesota River Valley and glacial drift to the south and east of the bluff line that demarcates the river valley (Lusardi, 1998, 1999). These deposits are 30 to 40 feet thick in the area of the Jordan wells but are thicker south and east of the bluff line. The deep bedrock aquifers are geologically protected from surficial processes such as precipitation, snowmelt, surface water interactions and land use. Due to the amount of geologic protection for the City's wells, it is determined that Well Nos. 3, 5 and 6 are nonvulnerable. In addition, the wells meet the construction standards of the State Well Code and are not considered a likely avenue for contamination to reach the aquifers from which they pump.

C. WATER TREATEMENT

In 1991 a 1,152 gpm (1.66 MGD) water treatment facility was constructed for the City of Jordan to remove iron and manganese from the ground water. The filtration plant is a Centrol™ design that efficiently distributes raw water into four concrete filter cells from a central column. Other facility components include an aerator, detention tank, clearwell and backwash tank. The aerator removes unwanted and troublesome dissolved gases and begins to oxidize the iron and manganese in the raw water. Following aeration, chlorine or potassium permanganate is added to react with the iron and manganese and allow it to settle in the detention tank. Potassium permanganate may be added after the detention tank to further oxidize the manganese prior to entering the filter. As the water enters the filters, the oxidized iron and manganese are captured by the filter media and removed from the water. The filtrate then enters the clearwell where it is eventually pumped via the high service pumps to the system. The clearwell provides a temporary location to store finished water for backwash purposes and reduces on/off cycling of the high service pumps. After a certain amount of run time, the filters require backwashing to remove the oxidized iron and manganese and the backwash water is stored in the backwash holding tank where the oxidized material is allowed to settle and the clear water is returned to the head of the treatment facility. The material is pumped from the backwash tank to the sanitary sewer.

In 2003, the treatment facility was upgraded to meet new radium requirements. The improvements included replacing the existing media with greensand and anthracite and installing an air backwash system. These improvements did not provide additional treatment capacity.

A water treatment facility expansion is currently in the design phase which will increase the treatment capacity by 1,500 gpm (2.16 MGD), for a total treatment capacity of 3.86 MGD. This based on filter capacities of 2.0 gpm/ft^2 and 24 hours/day operation. However, it is not practical to operate the treatment facility for more than 20 hours per day. Therefore, an actual peak treatment capacity is 3.18 MGD. Based on production of 3.18 MGD, the treatment facility will have capacity through the 2027 design projection.

TABLE 3.5
WATER TREATMENT FACILITY SUMMARY

Pressure Zone	Water Treatment Facility No. 1 (existing facility)	Water Treatment Facility No. 1 (w/ expansion)
Location	107 West Fourth St.	107 West Fourth St.
Year Constructed	1991 w/ 2008 expansion	1991 / 2008
Peak Treatment Capacity	1,152 gpm 1.38 MGD	2,652 gpm 3.18 MGD
Associated Wells	3, 5, 6 & 7	5, 6, 7 & 8

The current treatment facility site has some limiting factors that limit the potential for expansion. There is a limited amount of space for expansion of the treatment facility and as discussed previously, the well field has a limited amount of capacity. New wells located outside of this zone of influence could be piped to the facility; however the construction costs of this would be cost prohibitive. Additionally, the electrical service to the facility is not adequate and would require upgrading. Because of these issues, it is proposed to locate a second treatment facility at the Scott County Fairgrounds. The advantage of this is that the raw water lines for the new wells can be run directly to the new facility thereby limiting the cost of raw water lines.

D. WATER BOOSTER PUMP STATIONS

The City currently has three booster pump stations to distribute water to the intermediate zone. This has previously been referred to as the upper system. Information on the existing booster pump stations and their capacity is presented in Table 3.6.

TABLE 3.6
WATER BOOSTER PUMP STATIONS

Name	Booster Pump Station No. 1	Booster Pump Station No. 2	Booster Pump Station No. 3
Location	Sunset Drive	Water/East Street	Hope Avenue
Purpose	Transfer Water to Intermediate Zone	Transfer Water to Valley Electric and Maple Lane Area	Transfer Water to High Pressure Zone
Year Constructed	1991	1992	2006
Number of Pumps	2 @ 450 gpm	2 @ 450 gpm 1 @ 1,250 gpm	1 @ 500 gpm 2 @ 1,000 gpm
Firm Pumping Capacity[1]	450 gpm	450 gpm	1,000 gpm
Max. Pumping Capacity[2]	650 gpm	1,250 gpm	
Back-up power supply	Portable Generator Hook-Up	Portable Generator Hook-Up	Diesel Generator

1 Firm pumping capacity is based on the largest, normally operating pump, out of service.
2 Maximum pumping capacity for both pumps running at Booster Station No. 1 will produce approximately 650 gpm. It is not feasible for all three pumps to operate at the same time, therefore the maximum capacity is the largest pump.

The three existing booster stations provide adequate capacity for the current areas served. However, additional booster stations are required to serve the growth in the High Pressure Zone. It is anticipated that two additional booster pump stations area required to serve the 2030 service area indicated in Appendix B.

E. WATER STORAGE

Existing storage facilities in the City of Jordan consist of one 300,000-gallon elevated water tower, one 500,000-gallon standpipe, and one 500,000 gallon elevated water tower for a total combined storage volume of 1.3 million gallons. Existing storage locations are summarized in Table 3.7.

TABLE 3.7
EXISTING WATER STORAGE FACILITIES

Parameter	No. 1	No. 2	No. 3
Location	386 Sunset Drive	521 Broadway St. S	185th & Timberline Court
Capacity (gallons)	300,000	500,000	500,000
Year Constructed	1971	1991	2005
Support Type	Pedestal	Standpipe	Pedestal
High Water Level El. (ft)	962.0	1003.5	962.0
Pressure Zone Served	Low	Intermediate	Low

The principal purpose of storage is to provide the ability to equalize pumping rates during periods of variable rate of demand. Adequate storage permits a reduction in the size of pumps required to supply a community because peak demands are diminished by the reserves provided by the storage. Other reasons for providing storage include:

- Fire protection
- Emergency requirements (pump failures, power failures, etc.)
- To equalize pressure in the distribution system

Two methods are available to address minimum recommended storage volumes. These methods use the Average Day Criteria or the Maximum Day, Fire Protection and Emergency Storage Criteria. The recommended additional required storage is based on the higher of the two methods. Average Day Criteria govern based on current water use patterns.

1. Average Day Criteria

Generally, the minimum recommended standard, without fire protection, is equal to the average day demand (Recommended Standards for Water Works, 1997 and adopted by the Minnesota Department of Health). By this standard, the City will have a storage deficit of 100,000 gallons in 2025 and climbs to a storage deficit of 400,000 gallons by 2030 as shown in Table 3.8.

TABLE 3.8
PROJECTED STORAGE REQUIREMENTS
AVERAGE DAY CRITERIA

Year	Average Day Demand (MGD)		Existing Storage (MG)	Storage Deficit (gallons)
	Actual Estimate	Rounded Up		
2010	0.67	0.70	1.30	None
2015	0.88	0.90	1.30	None
2020	1.09	1.10	1.30	None
2025	1.39	1.40	1.30	100,000
2030	1.69	1.70	1.30	400,000

2. Maximum Day, Fire Protection and Emergency Storage Criteria

Another approach is to consider the individual storage components needed for equalization, fire demand, and emergency reserve versus the available water supply production facilities. The water production and storage must be considered together, since an increase in production may decrease the amount of water storage required. Water storage requirements using this approach are summarized in Table 3.9. This approach demonstrates that by increasing water supply, storage requirements will actually decrease. This table shows there are a 80,000-gallon deficit in 2025 and a 250,000-gallon deficit by 2030.

Current plans are to add one additional 500,000-gallon elevated storage tank. Although additional storage volume is not required until 2015-2020, a storage facility will be required to serve the high pressure zone. One additional 500,000 gallon elevated storage tank and one, 300,000-gallon standpipe have also been sighted, however, these facilities are not needed prior to the 2030 planning period.

TABLE 3.9
PROJECTED STORAGE REQUIREMENTS
MAXIMUM DAY, FIRE PROTECTION AND EMERGENCY STORAGE CRITERIA

Year		2010	2015	2020	2025	2030
Fire Demand (gpm)[1]		3,500	3,500	3,500	3,500	3,500
Max. Day Demand (gpm)	+	1,045	1,376	1,706	2,176	2,647
Peak Usage (gpm)	=	4,545	4,876	5,206	5,676	6,147
Firm Pumping Supply (gpm)[2]	-	972	1,076	1,181	1,278	1,382
Withdrawal from Storage (gpm)	=	3573	3800	4025	4398	4765
Fire Flow Duration (minutes)	*	180	180	180	180	180
Fire Demand Storage (gallons)	=	643,140	684,000	724,500	791,640	857,700
Emergency Storage (gals)(3)	+	324,000	412,000	500,000	588,000	676,000
Total Storage Needed (gallons)	=	967,140	1,096,000	1,224,500	1,379,640	1,533,700
Current Available Storage (gallons)	-	1,300,000	1,300,000	1,300,000	1,300,000	1,300,000
Net Storage Deficit (gallons)	=	None	None	None	79,640	233,700
Net Storage Deficit Rounded (gals.)		**None**	**None**	**None**	**80,000**	**250,000**

[1] Fire flow requirements vary within the City depending on type and construction of facilities. Fire flow requirements for normal residential development vary between 1000 to 1500 gpm. For multi-family and commercial areas such as the downtown business district, residential apartment areas, schools and industrial areas; flows of 3,500 gpm for 3 hours are generally considered acceptable

[2] Based on current firm capacity.

[3] Emergency storage equals 20% of peak day demand.

F. SUMMARY

To support the anticipated growth projections, the City will need to add new wells, treatment facilities, booster stations and storage facilities. The proposed locations of the facilities are shown in Appendix B.

SECTION 4

DISTRIBUTION SYSTEM ANALYSIS

A. GENERAL

The purpose of this Section is to evaluate major watermain improvements needed to ensure adequate pressure and fire flow are available for both immediate and projected growth.

The analysis of a water system often requires the use of a method of modeling the system.

A model is prepared which simulates the known conditions as closely as possible. This model provides a basis for simulation of future operating conditions of the system. From these simulations, determinations can be made as to the improvements that the system will need.

The water distribution system for the City of Jordan was modeled using the CYBERNET Hydraulic Network Model. The computer network model is used to analyze steady state flows for pipe distribution systems. The information required by the models includes data such as diameter, length, and Hazen-Williams C Factor (the pipes roughness factor) for each pipe in the system. Other data required include ground elevation of pipe junctions, elevated storage water level and water demand on the system.

B. PRESSURE ZONES

Currently, the City operates three pressure zones, the Low, Intermediate and High zones. The maximum elevations that each system will serve are presented in Table 4.1. Pressure zone boundaries are shown in Appendix B. Two pressure reducing valve stations are required to allow water stored in the high zone to be used in the low or intermediate pressure zone. The locations of these proposed facilities are shown in Appendix B.

TABLE 4.1
WATER DISTRIBUTION PRESSURE ZONES

Pressure Zone	Ground Elevation
Low System	860 ft
Intermediate System	900 ft
High System	970 ft

C. MAJOR DISTRIBUTION PLAN SUMMARY

Distribution system planning is a "road-map" to assist the City of Jordan in determining the optimal size and location for future major water distribution improvements. The purpose is to ensure adequate pressure and flow is maintained throughout the entire distribution system at any given time and at the most economical cost. In evaluating and existing system or planning a proposed system, it is important to establish the criteria of operational scenarios against which the system will be compared. Most systems are quite capable of meeting the average day conditions. It is only when the system is subjected to stressed conditions the deficiencies begin to appear. The degree to which the system will be realistically stressed is the challenge in establishing a distribution system analysis criteria. For evaluating a distribution system it is common to check the system under the following conditions:

- Peak hour demand
- Maximum day demand plus needed fire flow

Evaluating a system at peak hour demand gives the system wide performance. Trunk water main sizes for the City of Jordan will be governed by the fire flow requirements. Fire flow is determined at a pressure of 20 psi in order to correlate with the guidelines of the Insurance Services Office (ISO). There are additional criteria for developing the trunk water main improvements that are based upon the "Recommended Standards for Water Works" 2003 Edition, by the Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers. This publication is commonly referred to as "Ten States Standards".

The following factors were considered in determining the required capacity and layout of the proposed trunk water main improvements:

- Proposed location of collector and arterial streets. To the extent possible, the proposed trunk watermains were located along the same alignment as the proposed streets.
- Anticipated flows from domestic, commercial and industrial areas.
- Peak hourly flow.
- Maximum day flow plus needed fire flow.
- Maintain service pressure between 30 to 80 psi.

From the modeling, it was determined that systems of 10-, 12- and 16-inch trunk watermains are required. The areas within the trunk watermain grid would be filled in with smaller diameter watermains (6", 8", 10" and 12") as the areas would develop. The proposed trunk watermains would be connected to the existing City system. The locations of the proposed trunk watermains are shown in Appendix B.

In accordance with City policy for trunk watermains in new development areas, developers would be required to install at least an 8-inch watermain, while the incremental cost increase to a larger diameter watermain would be paid by the City. The associated costs for completing the improvements are estimated to be $200,000 per year.

SECTION 5

PROPOSED FACILITIES

A. WATER SUPPLY

Although additional water supply wells are not required to meet the average day and peak day demands developed in Section 2, it is not feasible for the existing well field to provide water supply for a new water treatment facility. A minimum of two new wells are recommended at the time of construction of a new water treatment facility.

The total, or peak, pumping capacity of the existing well system closely matches the peak treatment capacity of the proposed expansion of the existing Water Treatment Facility; however, the annual average pumping capacity is currently significantly less than the treatment capacity due to aquifer restrictions. As the population increases, more water can be pumped from the Mt. Simon-Hinckley aquifer and treated at the existing Water Treatment Facility.

B. WATER TREATMENT

Additional water treatment capacity will be required as described in Section 3 and the current site has expansion limitations. Due to these limitations, it is proposed that an additional treatment facility be constructed at the Scott County Fairgrounds. This will allow expansion of the treatment system and development of a new well field to serve the treatment facility. The proposed location of the treatment facility is shown in Appendix B.

Although additional water supply capacity is not required prior to 2030, construction of Water Treatment Plant No. 2 is recommended to coincide with development of a second well field. It is not feasible to provide raw water pumping from the proposed new well field location to the existing treatment facility site. A 2,000 gpm facility is proposed for the second treatment facility to serve the City through a peak day demand of approximately 5.6 MGD, or an estimated population of 25,000 based on an average day demand of 100 gpcd and a peaking factor of 2.25.

Similar to the existing Water Treatment Facility No. 1, the facility would be designed to allow for future expansion. By adding on an additional 1,000 gpm to the facility to make it a 3,000-gpm facility, the two WTFs could provide service for an estimated 30,000 residents.

C. BOOSTER STATIONS AND PRESSURE REDUCING STATIONS

Two new booster stations are required in order to serve the Intermediate and High systems. These systems will be similar in design to the existing booster stations and will be sized to provide the required amount of flow to the areas served. The proposed locations of the booster pump stations are shown on the map located in Appendix B. The need for the booster stations is controlled by the areas which are developed rather than the overall increase in population and demand. As development occurs in the high pressure zones, the booster stations will be required to meet the demands associated with the intermediate and high zones.

Details regarding the proposed water booster stations are summarized in Table 5.1.

TABLE 5.1
PROPOSED WATER BOOSTER PUMPING FACILITIES

Name	Booster Pump Station No. 4	Booster Pump Station No. 5
Purpose / Area Served	Transfer from Intermediate to High Pressure Zone	Transfer from Low to High Pressure Zone

D. WATER STORAGE

Based on Section 3, additional water storage capacity is not required to serve the 2025 demands. However, in order to meet the storage requirements for the high pressure zone, a 500,000-gallon elevated storage tank is proposed for the High system. Although not required by the minimum required storage volume calculations, a 300,000 gallon standpipe is sighted for the intermediate pressure zone and a second 500,000 gallon elevated tower is planned for the high pressure zone. Table 5.2 presents the requirements for the storage facilities. The proposed location of the

storage facilities are sited so they provide the required system water pressure for future growth in Jordan and are shown on the map in Appendix B. The scheduling for the two 500,000 gallon elevated towers in the high pressure zone will depend on the location of initial development in this zone.

TABLE 5.2
PROPOSED WATER STORAGE FACILITIES

Type	System Served	Size (gallons)	High Water Elevation (ft.)	Proposed Location
Hydropillar	High	500,000	1085.00	Cty. Rd. 11 and Hwy. 21
Standpipe	Intermediate	300,000	1002.50	W. of Cty. Rd. 59
Hydropillar	High	500,000	1085.00	Naylor Ave and Hwy. 282

SECTION 6

WATER EMERGENCY AND CONSERVATION PLAN

A. GENERAL

This section presents a summary of the 2007 Water Emergency and Conservation Plan. This plan was completed and submitted to the Minnesota Department of Natural Resources (MnDNR) in October 2007. A complete copy of the report is included as Appendix C.

SECTION 7

RECOMMENDATION AND IMPLEMENTATION

A. GENERAL

Based on the 20-year water use projections and a review of the existing water system infrastructure, this Section provides a summary of recommended capital improvements to the water supply, treatment and storage system; an anticipated implementation schedule; and funding options. In addition, a preliminary review of impact on water user rates is included.

B. RECOMMENDED WATER SYSTEM IMPROVEMENTS

The following is a brief summary of the recommended improvements. Estimated costs have been developed in 2007 dollars based on experience with construction of similar projects and engineering judgment. An estimated year for construction has been assigned to each project.

1. Water Supply

New water supply wells, dedicated to the proposed new water treatment facility, are required in conjunction with construction of a new WTF. The proposed water supply implementation schedule and estimated construction cost is presented in Table 7.1.

TABLE 7.1
PROPOSED WATER SUPPLY IMPROVEMENTS

Item	Year	Estimated Cost
Construct Well No. 9	2027	$ 350,000
Construct Well No. 10	2027	$ 350,000
Construct Well No. 11	2030+	$ 350,000

2. Water Treatment

Based on the projected water use demands, additional water treatment capacity, in excess of the currently proposed expansion to Water Treatment Facility No. 1, is not required

until approximately 2027. A new Water Treatment Facility is recommended at a separate site with separate, dedicated wells. An additional expansion to Water Treatment Facility No. 1 is not recommended as there is not adequate water supply in the vicinity due to limitations associated with the Mt. Simon-Hinckley aquifer. The estimated cost for a new water treatment facility is approximately $8.0 million.

3. Pressure Reducing Valve Stations

Two pressure reducing valve stations are required to reduce the pressure of water in the High pressure zone for use in the intermediate and/or low pressure zones. The proposed valve station locations are shown in Appendix B. The need for the valve stations is driven by demand in the high pressure zone rather than total population. Installation of one station is recommended in conjunction with construction of the 500,000 gallon elevated tower to serve the high pressure zone. It is anticipated that the pressure reducing valve stations will be required in 2010 and 2015. The estimated cost for each station is $150,000.

4. Booster Pump Stations

Two new booster stations are required to provide service to the high pressure zone within the 2030 boundary shown in Appendix B. The booster stations will be similar in design to the existing booster stations. The booster stations are needed as development occurs in areas where the existing system cannot provide adequate pressure. The estimated cost for each booster station is $750,000.

5. Water Storage

The proposed water storage works implementation schedule is presented in Table 7.2. The total cost for water storage improvements over the next 20 years is estimated to be $1,500,000.

TABLE 7.2
PROPOSED WATER STORAGE IMPROVEMENTS

Item	Year	Estimated Cost
500,000 Gallon Elevated Tower	2010-2015	$1,500,000
300,000 Gallon Standpipe	2030+	--
500,000 Gallon Elevated Tower	2030+	--

6. Water Distribution System Improvements

We recommend that the City utilize the Major Distribution System Master Plan, (Appendix B) as a "road-map" to determine the optimal size and location of future major water distribution improvements. Since the actual location and phasing of these major distribution system improvements may vary depending on development, the Distribution System Plan should be continually referenced and updated to insure that the plan will continue to be a useful tool to meet the needs of the City. The estimated costs for the additional costs associated with the 10-, 12- and 16-inch watermain is $200,000 per year.

C. IMPLEMENTATION SCHEDULE

Table 7.3 summarizes the proposed implementation schedule and today's estimated cost for each project. The dates listed in Table 7.3 are when the infrastructure improvements are anticipated. The schedule may vary considerably depending upon the amount and location of growth.

TABLE 7.3
SUMMARY OF PROPOSED WATER SYSTEM IMPROVEMENTS

Item	Year[1]	Estimated Cost
Water Distribution Improvements[2]	2008-2030	$200,000/yr
Well No. 8	2008	$300,000
Water Treatment Facility No. 1 Expansion	2008	$5,000,000
500,000 Elevated Storage	2010-2015	$1,500,000
Pressure Reducing Valve Station No. 1	2010	$ 150,000
Booster Pump Station No. 4	2012	$ 750,000
Pressure Reducing Valve Station No. 2	2015	$ 150,000
Booster Pump Station No. 5	2017	$ 750,000
Well No. 9	2027	$350,000
Well No. 10	2027	$ 350,000
Water Treatment Facility No. 2	2027	$ 8,000,000
Well No. 11	2030+	--
300,000 Gallon Standpipe	2030+	--
500,000 Gallon Elevated Storage	2030+	--

[1] Estimated date on when infrastructure must be completed. Schedule may vary considerably depending on the amount and location of growth.
[2] Watermain costs are estimated at $200,000 per year.

D. FUNDING ALTERNATIVES

Several funding options may be available. These are described in the following paragraphs.

1. Small Cities Development Program (SCDP)

The SCDP provides grants for water supply, treatment, storage and distribution projects that principally benefit persons of low-and-moderate income and target "severe" infrastructure problems. The program is very competitive and applications are accepted once per year in October and with grant determinations made by March. Money is provided to local units of government from the Minnesota Department of Trade and Economic Development that receive federal grants from the U.S. Department of Housing and Urban Development (HUD). To use this funding source, Jordan must demonstrate a

51% low and moderate-income population is served by the project. Based on need for growth related improvements, it may be unlikely that the City can pursue this funding. However, before the City eliminates this funding source, the income statistics provided by the Census Bureau should be investigated.

2. Drinking Water Revolving Loan Fund

The State Drinking Water Loan Fund administered through the Public Facilities Authority (PFA) provides financial assistance, primarily in the form of loans, to eligible public drinking water suppliers for construction of water storage, treatment and distribution systems that meet Safe Drinking Water Act standards.

The Authority provides below-market loans with interest rates determined by a Quarterly Set Rate minus discounts based on demographic characteristics of the borrower. The loan period is for 20 years. To become eligible for funding, projects must be included on the Minnesota Department of Health's (MDH) Project Priority List (PPL) and on the Authority's Intended Use Plan (IUP). An applicant must demonstrate it has the financial capability to repay the loan and must issue a general obligation bond to the Authority as security for the loan.

3. Rural Development (RD)- Water Systems for Rural Communities

The objective of the Water and Waste Disposal Systems for Rural Communities program is to provide basic human amenities, alleviate health hazards and promote the orderly growth of the rural areas by providing new and improved rural water and waste disposal facilities. Types of assistance include project grants and loans; the percentage of each being determined by the median household income. Loans are amortized up to a maximum of 40 years. Facilities shall primarily serve rural residents for incorporated communities with populations under 10,000. The applicant must provide evidence of the inability to obtain funding elsewhere. It is very unlikely the City of Jordan will be able to qualify for funding from this agency.

E. FINANCIAL IMPACT

A summary of the proposed impact on water usage rates and average monthly water bills through Year 2030 is presented in the detailed calculations in Appendix D. It is not feasible to project rates beyond a 20-year period due to the many uncertainties involved such as the timing of improvements, growth expectations, etc. Therefore, the proposed rates are calculated through 2030. The table in Appendix D lists the proposed rate increases required to fund the proposed capital improvements.

Assumptions made for the financial projections are as follows:

- All costs are based on today's dollar. User rates have not been adjusted for inflation.
- Operation & Maintenance costs are assumed to increase by 4.0% annually plus an additional $100,000 for operation and maintenance of the water treatment facility in 2008.
- All major capital projects (i.e. greater than $150,000) are financed through loans while all other improvements are financed from fund reserves.
- Debt service for capital improvements is based on securing loans at 5% interest rate and a 20-year term.
- Water use for an average residential customer is estimated to be 85 gallons per capita. This value is used for calculation of average residential monthly water bills.

Proposed financial impacts can be summarized as follows:

- All rates are projected to increase 2.5 percent per year. (Water Availability Charge, Water Usage Charge, Water Connection Fee and Water Area/Capital Charge)
- A positive fund reserve is established throughout the 20-year projection.
- Fund reserve could be used to pay for capital projects.

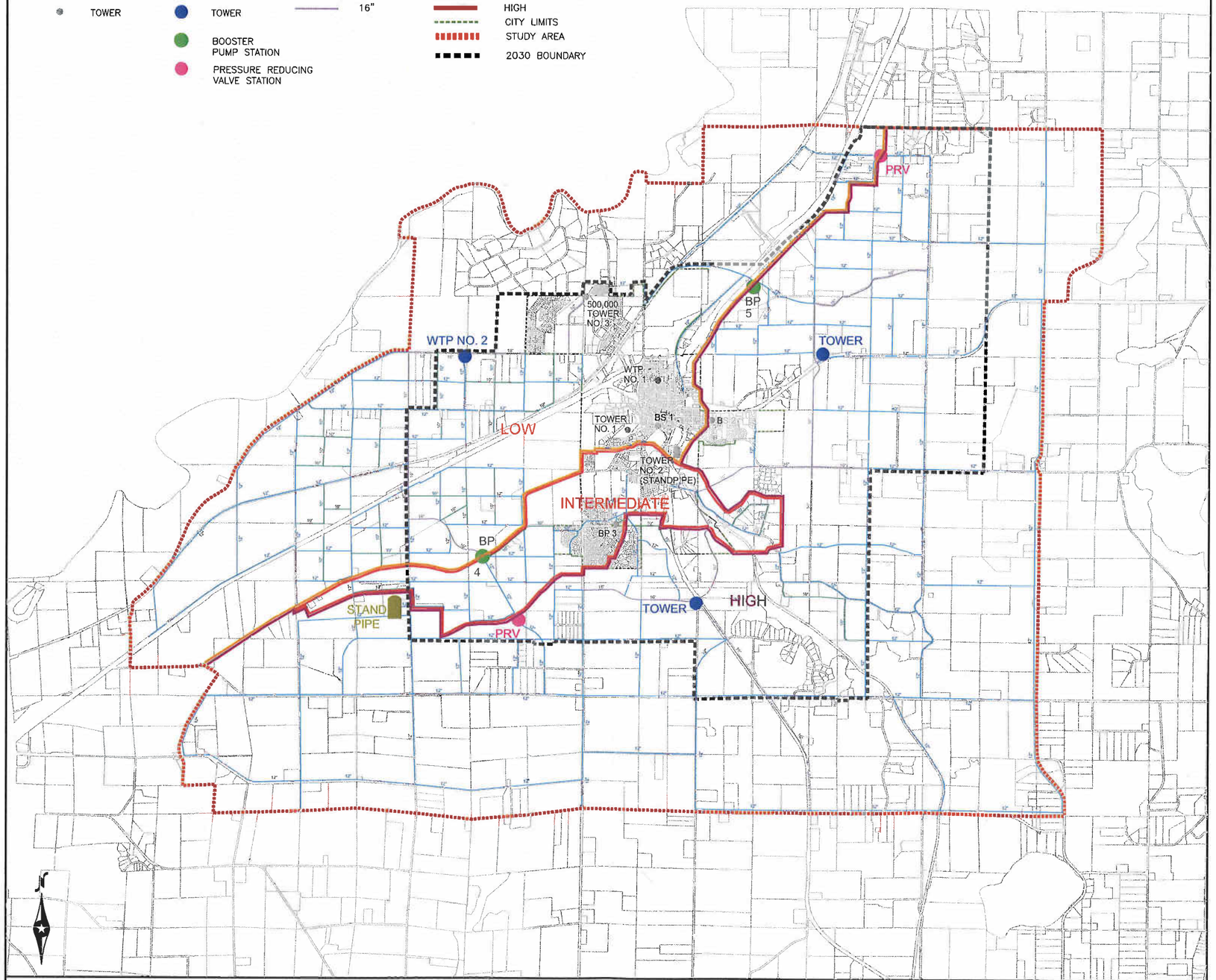
LEGEND

EXISTING SYMBOLS
- STAND PIPE
- TOWER

PROPOSED SYMBOLS
- STAND PIPE
- TOWER
- BOOSTER PUMP STATION
- PRESSURE REDUCING VALVE STATION

PIPE SIZES
- 10"
- 12"
- 16"

BOUNDARIES
- LOW
- INTERMEDIATE
- HIGH
- CITY LIMITS
- STUDY AREA
- 2030 BOUNDARY



BOLTON & MENK, INC.
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BURNSVILLE, MN CHASKA, MN RAMSEY, MN AMES, IA

CITY OF JORDAN
PROPOSED WATER DISTRIBUTION SYSTEM
AND FACILITIES LOCATIONS

APPENDIX A

WATER TREATMENT PROCESS

Water Treatment Process

The original water treatment facility for the city of Jordan, MN was constructed in 1991, to remove iron and manganese from the ground water. The treatment facility was upgraded in 2003 to meet new radium requirements. The treatment facility has a capacity of 1,152gpm (1.66 mgd).

The facility components include an aerator, detention tank, filter cells, clear well and backwash tank. The aerator removes unwanted dissolved gases and begins to oxidize the iron and manganese in the raw water. Following aeration, chlorine or potassium permanganate is added to oxidize the iron and manganese. These oxidized particles settle in a 39,000 gallon detention tank. Following the detention tank, four concrete filters are used to remove remaining iron, manganese and radium. Chlorine gas and fluoride are added to the finished water, which is stored in a 46,000 gallon clear well.

The facility has three high service pumps, each with a capacity of 550 gpm and a backwash pump with a capacity of 750 gpm. The treatment facility has a 39,500 gallon backwash holding tank with a 100 gpm submersible pump.

APPENDIX B

WELL RECORDS

Unique No. 00207133

County Name Scott

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

Update Date 2006/02/17

Entry Date 1989/08/09

Township Name	Township	Range	Dir	Section	Subsection
	114	23	W	19	AACCDB

Well Depth	Depth Completed	Date Well Completed
564 ft.	564 ft.	1950/06/00

Well Name JORDAN 3

Drilling Method

Well Owner's Name
VERNER ST
JORDAN MN

Drilling Fluid

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

Use Community Supply (municipal)

Casing Drive Shoe? ☐ Yes ☐ N

Hole Diameter

Casing Diameter Weight(lbs/ft)
24 in. to 42 ft
16 in. to 221 ft

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
CLAY			0	8
CLAY + SAND			8	33
HARDPAN			33	40
SOAPSTONE			40	42
SHALE + LIMESTONE			42	90
SHALE + LIMESTONE			90	225
SANDSTONE + SHALE			225	292
SHALE + LIMESTONE			292	300
SHALE	RED		300	335
SANDSTONE			335	345
SHALE			345	360
SANDSTONE			360	512
SHALE			512	518
SANDSTONE	WHT/T		518	543
SHALE + SANDSTONE	RED		543	564

Screen N

Open Hole From 221 ft. to 564 ft.

Make Type

Static Water Level 6 ft. from Land surface Date 1950/06/00

PUMPING LEVEL (below land surface)
46 ft. after hrs. pumping 900 g.p.m.

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

Grouting Information Well grouted? ☐ Yes ☐ No

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

Pump ☐ Not Installed Date Installed Y
Mfr name LAYNE
Model HP 0 Volts
Drop Pipe Length ft. Capacity 550 g.p.m
Type T

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

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

Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 62012
License Business Name
Name of Driller

REMARKS, ELEVATION, SOURCE OF DATA, etc.

M.G.S. NO. 73

BETWEEN 4TH & 6TH.

USGS Quad: Jordan West Elevation 770
Aquifer: CFMS Alt Id: 80-6175

Report Copy

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

Unique No. 00462924

County Name Scott

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Update Date 2005/03/11

Entry Date 1993/03/06

Township Name	Township	Range	Dir	Section	Subsection
	114	23	W	19	ACAAAB

Well Depth 287 ft. | Depth Completed 287 ft. | Date Well Completed 1991/01/15

Well Name JORDAN 5

Drilling Method Cable Tool

Well Owner's Name JORDAN 5
107 4TH ST
JORDAN MN 55352

Drilling Fluid: Bentonite

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

Use Community Supply (municipal)

Contact's Name CITY OF JORDAN
210 1ST E ST
JORDAN MN 55352

Casing — Drive Shoe? ☑ Yes ☐ N

Hole Diameter
0 in. to 275 ft
0 in. to 287 ft

Casing Diameter / Weight(lbs/ft)
18 in. to 42 ft — 70.6
12 in. to 215 ft — 49.6

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
SAND & GRAVEL	BROW	SOFT	0	10
COBBLE STONES	GRAY	SOFT	10	20
GRAVEL	GRAY	SOFT	20	30
BROKEN SHAKOPEE	PINK	HARD	30	37
BROKEN SHAKOPEE	PINK	HARD	37	40
SHALE	BLUE	SOFT	40	42
SHAKOPEE DOLOMITE	PINK	HARD	42	45
JORDAN SHALE	GREE		45	67
JORDAN SHALE	GREE		67	70
JORDAN SANDSTONE	PINK		70	85
ST. LAWRENCE SANDSTON	GREE		85	210
FRANCONIA SANDSTONE	GREE		210	217
FRANCONIA SANDSTONE	GREE		217	225
FRANCONIA SANDSTONE	GREE		225	268
IRONTON-GALESVILLE	WHITE		268	287

Screen N — Open Hole From 213 ft. to 287 ft.

Make — Type

Static Water Level 14 ft. from Land surface — Date 1991/01/11

PUMPING LEVEL (below land surface)
96 ft. after hrs. pumping 700 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)	
B	0	213	9	Y

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

Pump ☐ Not Installed — Date Installed
Mfr name
Model — HP — Volts
Drop Pipe Length ft. — Capacity g.p.m
Type

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

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

REMARKS, ELEVATION, SOURCE OF DATA, etc.

M.G.S.NO.2715.

USGS Quad: Jordan West — Elevation 767
Aquifer: CFIG — Alt Id: 80-6175

Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 71015
License Business Name
Name of Driller KOWALIK, J.

Report Copy

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

Unique No. 00596649

County Name Scott

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

Update Date 2006/02/17

Entry Date 1999/08/20

Township Name	Township	Range	Dir	Section	Subsection
	114	23	W	19	ABADCB

Well Name JORDAN 6

Well Owner's Name JORDAN 6
6TH ST
JORDAN MN 55352

Contact's Name CITY OF JORDAN
210 FIRST E ST
JORDAN MN 55352

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
SAND & GRAVEL	BROW	SOFT	0	28
LIMEROCK	PINK	HARD	28	42
SHALE & SANDSTONE	GREE	MEDIUM	42	94
SHALE & SANDSTONE	GREE	MEDIUM	94	208
SANDSTONE	GRAY	MEDIUM	208	220
SANDSTONE	GRAY	MEDIUM	220	283
SANDSTONE	GRAY	MEDIUM	283	295

REMARKS, ELEVATION, SOURCE OF DATA, etc.

M.G.S. NO. 4033. GAMMA LOGGED 5/12/99.

USGS Quad: Jordan West Elevation 750

Aquifer: CIGE Alt Id: 4033

Report Copy

Well Depth 295 ft. Depth Completed 295 ft. Date Well Completed 1999/06/24

Drilling Method Cable Tool

Drilling Fluid: Bentonite

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

Use Community Supply (municipal)

Casing — Drive Shoe? ☑ Yes ☐ N

Casing Diameter				Weight(lbs/ft)
18	in. to	31	ft	70.59
12	in. to	220	ft	49.56

Hole Diameter

in. to 220 ft

in. to 295 ft

Screen N

Make Type

Open Hole From 220 ft. to 295 ft.

Static Water Level 26 ft. from Land surface Date 1999/03/24

PUMPING LEVEL (below land surface)
103 ft. after 8 hrs. pumping 950 g.p.m.

Well Head Completion
Pitless adapter mfr MONITOR Model 7PS1218WB
Casing Protection ☑ 12 in. above grade
☐ At-grade(Environmental Wells and Borings ONLY)

Grouting Information Well grouted? ☑ Yes ☐ No

Material	From	To (ft.)	Amount(yds/bags)	
G	0	220	7	Y

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

Pump ☐ Not Installed Date Installed
Mfr name GOULD
Model 10RJHC HP 40 Volts
Drop Pipe Length 100 ft. Capacity 750 g.p.m
Type S

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

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

Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 62012
License Business Name
Name of Driller RUSSEL, J.

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

Unique No. 00693065

County Name Scott

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

Update Date 2006/02/17

Entry Date / / 0

Township Name	Township	Range	Dir	Section	Subsection
	114	23	W	19	ACAABC

Well Name JORDAN 7

Well Owner's Name JORDAN 7
116 2ND E ST
JORDAN MN 55352

Contact's Name CITY OF JORDAN / CITY HALL
210 FIRTST E ST C/O TOM MIKONEN
JORDAN MN 55352

GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO
FILL	BLACK		0	5
CLAY GRAVEL	BROW		5	15
CLAY GRAVEL	GRAY		15	35
LIMESTONE SHALE	TAN/G		35	37
LIMESTONE SHALE	TAN/G		37	45
LIMESTONE SHALE	BROW		45	50
LIMESTONE SHALE	GREE		50	53
LIMESTONE SHALE	GREE		53	55
LIMESTONE & SHALE	TAN/G	HARD	55	85
LIMESTONE & SHALE	TAN/G	MEDIUM	85	88
SANDSTONE & SHALE	BLK/G	HARD	88	95
LIMESTONE & SHALE	GRN/T	HARD	95	98
LIMESTONE & SHALE	GREE	HARD	98	160
LIMESTONE & SHALE	GRN/T	HARD	160	173
LIMESTONE-SHALE	GREE	HARD	173	218
LIMESTONE-SHALE	BROW	HARD	218	222
LIMESTONE-SHALE	BROW	HARD	222	223
SANDSTONE	TAN/G	MEDIUM	223	233
SHALE & CEMENT	GRN/G	HARD	233	250
SANDSTONE	GRAY	MEDIUM	250	280
SANDSTONE & SHALE LAY	GRAY	MEDIUM	280	288
SANDSTONE & SHALE LAY	GRAY	MEDIUM	288	290
SANDSTONE & SHALE	GRN/T	MEDIUM	290	308
SHALE	RED	HARD	308	313
SHALE	TAN/G	HARD	313	353
SHALE	BROW	HARD	353	355
SHALE	RED	HARD	355	357
SHALE	RED	HARD	357	360
SHALE	GREE	HARD	360	363
SANDSTONE SHALE TAN-W	VARIE	MEDIUM	363	398
SANDSTONE	WHITE	SFT-MED	398	498
SANDSTONE & SHALE TAN-	VARIE	SFT-MED	498	547

Well Depth 547 ft. Depth Completed 547 ft. Date Well Completed 2003/06/20

Drilling Method Multiple methods used

Drilling Fluid

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

Use Community Supply (municipal)

Casing Drive Shoe? ☑ Yes ☐ N

Casing Diameter	Weight(lbs/ft)
24 in. to 37 ft	
18 in. to 370 ft	

Hole Diameter
in. to 37 ft
in. to 370 ft
in. to 547 ft

Screen N

Open Hole From 370 ft. to 547 ft.

Make Type

Static Water Level 30 ft. from Land surface Date 2003/06/20

PUMPING LEVEL (below land surface)
56 ft. after 1 hrs. pumping 500 g.p.m.

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

Grouting Information Well grouted? ☑ Yes ☐ No

Material	From	To (ft.)	Amount(yds/bags)	
G	0	370	20.5	Y

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

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

SHALE	RED	SOFT	547	547

REMARKS, ELEVATION, SOURCE OF DATA, etc.

GAMMA LOGGED 7-10-2003. M.G.S. NO. 4270. ON ORIGINAL WELL LOG: 105-1/2 4TH ST.,

JORDAN, MN 55352.

USGS Quad: Jordan West Elevation 755

Aquifer: CMTS Alt Id: 4270

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. 73646

License Business Name

Name of Driller DAN/ED

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

APPENDIX C

STATIC WATER LEVEL DATA

SPECIFIC CAPACITY CHART

"WELL EFFICIENCY"

WELL NO. 5

YEAR OF CONSTRUCTION _____

WELL DIA. _____ DEPTH _____ SCREEN SLOT _____ LENGTH _____

ORIGINAL S.W.L. _____ ORIG. P.L. _____ ORIG. G.P.M. _____ ORIG. S.C. _____

WELLS

SINCE 1893

THEIN WELL CO.

24 HR. EMERGENCY SERVICE

PUMPS

Clara City, Minn.
(612) 847-3207
1-800-992-8832

Spicer, Minn.
(612) 796-2111

Rochester, Minn.
(507) 288-5554

Date	S.W.L.	G.P.M.	Pumping Level	Draw Down	Specific Capacity	Comments
12-13-6	21'	565	72	51	11.1	

SPECIFIC CAPACITY CHART

"WELL EFFICIENCY"

WELL NO. 6

YEAR OF CONSTRUCTION _____

WELL DIA. _____ DEPTH _____ SCREEN SLOT _____ LENGTH _____

ORIGINAL S.W.L. _____ ORIG. P.L. _____ ORIG. G.P.M. _____ ORIG. S.C. _____

WELLS

SINCE 1893

THEIN WELL CO.

24 HR. EMERGENCY SERVICE

PUMPS

Clara City, Minn.
(612) 847-3207
1-800-992-8832

Spicer, Minn.
(612) 796-2111

Rochester, Minn.
(507) 288-5554

Date	S.W.L.	G.P.M.	Pumping Level	Draw Down	Specific Capacity	Comments
12-13-6	21'	715	81'	60'	11.9	

SPECIFIC CAPACITY CHART

"WELL EFFICIENCY"

WELL NO. 7

YEAR OF CONSTRUCTION _____

WELL DIA. _____ DEPTH _____ SCREEN SLOT _____ LENGTH _____

ORIGINAL S.W.L. _____ ORIG. P.L. _____ ORIG. G.P.M. _____ ORIG. S.C. _____

WELLS

SINCE 1893

THEIN WELL CO.

24 HR. EMERGENCY SERVICE

PUMPS

Clara City, Minn.
(612) 847-3207
1-800-992-8832

Spicer, Minn.
(612) 796-2111

Rochester, Minn.
(507) 288-5554

Date	S.W.L.	G.P.M.	Pumping Level	Draw Down	Specific Capacity	Comments
12-14-6	39.5	1220	69	29.5	42	

APPENDIX D

CAPITAL IMPROVEMENT PLAN FOR THE WATER SYSTEM

PROPOSED IMPLEMENTATION SCHEDULE FOR WATER SYSTEM IMPROVEMENTS

Item	Year
Water distribution improvements	2005-2030
Booster Pump Station	2005
Drill New Well No. 8	2007
Construct 2,000 gpm Treatment Facility	2007
Construct 500,000 gallon Elevated Storage	2008
Booster Pump Station	2008
Pressure Reducing Valve Station No. 1	2008
Booster Pump Station	2009
Pressure Reducing Valve Station No. 2	2015
Construct 300,000 Gallon Standpipe	2015
Drill New Well No. 9	2021
Construct 500,000 Gallon Elevated Storage	2030
Drill New Well No. 10	2031
Drill New Well No. 11	2038

APPENDIX E

EMERGENCY TELEPHONE LIST

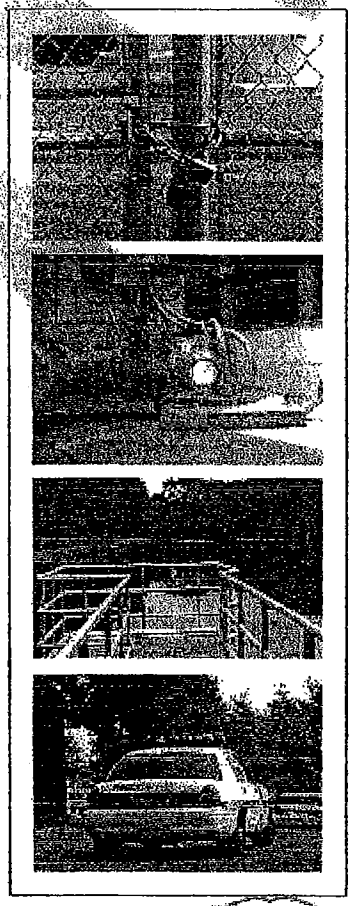
Securing America's Drinking Water

A Report Outlining our Security & Emergency Management Systems

Vulnerability Assessment

Includes

- Contact Information
- Critical Equipment
- Critical Customers
- Redundancy Items
- Security Assessment
- Potential Vulnerabilities
- Existing Countermeasures



Jordan Water Department

Completed By:

Dave Bendzick

952-492-2535

dbendzick@ci.jordan.mn.us

March 16, 2004

technical assistance software made possible by

this report was generated using the software SEMS

Securing America's Drinking Water

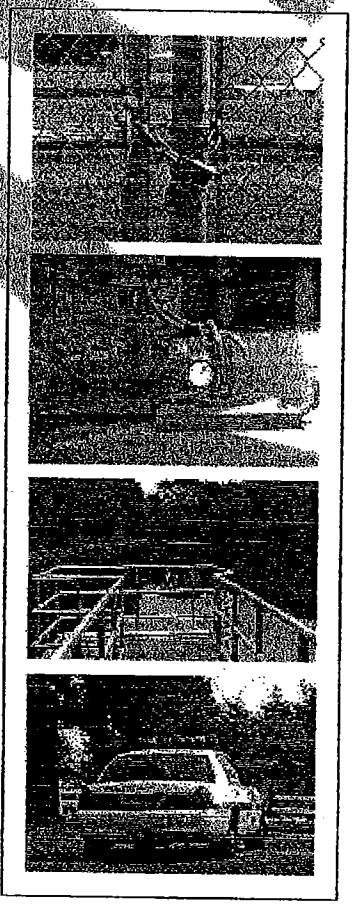
A Report Outlining our Security & Emergency Management Systems

Emergency Response Plan

Based on Our Vulnerability Assessment

Includes

- Emergency Contact Information
- Inventory of Critical Equipment and Customers
- Chain of Command
- Response Procedures, Plans & Actions
- Coordination Activities
- Notification List
- Local Emergency Planning Committee



Jordan Water Department

Completed By:

Dave Bendzick

952-492-2535

dbendzick@ci.jordan.mn.us

March 16, 2004

technical assistance software made possible by RURAL WATER MDH

this report was generated using the software SEMS

Notification List

For Jordan Water Department

Notification / Contact Information

Title	Name	Day Phone	Night Phone	Email
Fire Department	Steve Kochlin	612-968-2205	952-492-3753	No Email Provided
Police Department	Bob Malz	952-492-2009	952-292-8759	No Email Provided
Emergency Medical Service	St. Francis Regional Med. Center	952-403-3000	None	No Email Provided
Local Health Department	Mn. Dept. of Health/Bassam	651-215-0750	None	No Email Provided
State Spill Hotline	Mn Duty Officer	651-649-5451	800-422-0798	No Email Provided
Local Hazmat Team (if any)	Shakopee Fire Department	911	911	No Email Provided
Local / Regional Laboratory	MVTL	800-782-3557	None	No Email Provided
Water System Operators	Jerry Beckius	612-968-2202	952-492-6498	No Email Provided
Water System Operators	Chuck Kaiser	612-968-2203	952-492-6456	No Email Provided

Notification List

For Jordan Water Department

Local Notification

Title	Name	Day Phone	Night Phone	Email
Government Officials	Ron Jabs/Mayor	952-492-8244	952-492-2296	rjabs@worldnet.att.net
Government Officials	Dale Oldenburg/Council	952-492-6050	952-492-2822	No Email Provided
Government Officials	Linda Waite Smith/Adm.	952-492-2535	952-758-9379	lsmith@ci.jordan.mn.us
Hospitals	St. Francis Regional	952-403-3000	952-403-3000	No Email Provided
Hospitals	Queen of Peace	952-758-4431	952-758-4431	No Email Provided
Pharmacy	Otto Drug--Belle Plaine	952-873-6220	None	No Email Provided
Nursing Homes	Valleyview Nursing Home	952-492-6160	None	No Email Provided
Schools	Jordan Public Schools	952-492-6200	None	No Email Provided
Local Hazmat Team (if any)	Shakopee Fire Department	911	911	No Email Provided
Local / Regional Laboratory	MVTL	800-782-3557	None	No Email Provided
Local / Regional Laboratory	UC Laboratory	800-683-9199	None	No Email Provided
Water System Operators	Jerry Beckius	612-968-2202	952-492-6498	No Email Provided

Securing America's Drinking Water

A Report Outlining our Security & Emergency Management Systems

Notification List

For Jordan Water Department

Service / Repair Notification

Title	Name	Day Phone	Night Phone	Email
Electrician	Hennen Electric	952-492-2744	952-492-2218	No Email Provided
Electric Utility Company	Excell Energy	800-641-4400	None	No Email Provided
Gas Utility Company	CenterPoint Minnegasco	612-372-5050	800-722-9326	No Email Provided
Sewer Utility Company	City of Jordan	952-492-2535	Kent-612-210-0979	No Email Provided
Telephone Utility Company	Frontier	952-435-4678	Pete-612-366-1565	No Email Provided
Plumber	South Metro Plumbing	952-492-3392	952-492-2173	No Email Provided
Pump Specialist	Tri State Pump	Mike Nelson-612-478-2000	None	No Email Provided
"Dig Safe" or Local Equivalent	Gopher State One-Call	651-454-0002	651-474-0002	No Email Provided
Soil Excavator / Backhoe Operator	Chard Tiling and Exc.	952-873-6152	952-873-6363	No Email Provided
Power Generator Rentals	Ziegler Rental	952-888-4121	Kieth-952-887-4488	No Email Provided
Chlorinator Rentals	Vessco	952-941-2678	None	No Email Provided
Portable Fencing Rentals	Total Rental	952-445-1022	None	No Email Provided
Equipment Repairman	US Filter	651-766-2700	Jerry-612-616-8159	Jeff-612-202-5584
Chlorinator Repairman	Vessco	952-941-2678	Gary-612-810-0744	No Email Provided
Radio / Telemetry Repair Service	US Filter	651-766-2700	None	No Email Provided
Bottled Water Service	Rademacher Foods	952-492-2044	952-492-3807	No Email Provided
Bulk Water Hauler	David Klingberg	952-492-2042	None	No Email Provided
Pump Supplier	Plant and Flange	763-792-3870	None	No Email Provided
Well Driller	Joe Traut-320-251-5090	Jeff Keys-651-646-7871	None	No Email Provided
Pipe Supplier	Minesota Pipe	651-463-6090	Ron-507-338-6599	No Email Provided
Chemical Supplier	Hawkins Inc.	Shawn Ryan-612-617-8665 Cell 612-963-7060 Home-651-433-	Doug Shipp-612-331-9100	No Email Provided

Securing America's Drinking Water

A Report Outlining our Security & Emergency Management Systems

Notification List

For Jordan Water Department

2643

Notification List

For Jordan Water Department

State Notification

Title	Name	Day Phone	Night Phone	Email
Drinking Water Primary Agency	Mn Dept of Health	651-215-0783	None	No Email Provided
Dept. of Env. Protection	MPCA-Gene Erickson	651-296-7296	800-657-3864	No Email Provided
Department of Health	Bassam Banat	651-215-0783	None	No Email Provided
Emergency Mgmt. Agency	Tim O'Laughlin	952-496-8181	952-873-6477	No Email Provided
Hazmat Hotline	Scott County Dispatch	952-445-1411	911	No Email Provided

Securing America's Drinking Water

A Report Outlining our Security & Emergency Management Systems

Notification List

For Jordan Water Department

Other Notification

Title	Name	Day Phone	Night Phone	Email
MVTL	No Name Provided	800-782-3557	None	No Email Provided
HACH Company	No Name Provided	800-227-4224	None	No Email Provided
Bolten and Menk	Kirk Yahnke	507-625-4171-Ext.358	Cell-507-381-2168	No Email Provided
	Herman Dharmarajah	507-625-4171-Ext.104	None	No Email Provided
	Carol Caron	952-890-0509	507-340-8801	No Email Provided
Engineering America	Andy Cunningham	651-477-4041	None	No Email Provided
Davies/Northern Water	Todd Phillips	763-560-5200	612-850-4041	No Email Provided
General Filter	No Name Provided	515-232-4121	None	No Email Provided

Notification List

For Jordan Water Department

Employees Notification

Title	Name	Day Phone	Night Phone	Email
Public Works Director	Dave Bendzick	612-968-2201	952-492-2869	No Email Provided
Maintenance	Jerry Beckius	612-968-2202	952-492-6498	No Email Provided
	Chuck Kaiser	612-968-2203	952-492-6456	No Email Provided
	Steve Kochlin	612-968-2205	952-492-3753	No Email Provided
	Steve Griep	612-968-2215	507-420-5917	No Email Provided

Securing America's Drinking Water

A Report Outlining our Security & Emergency Management Systems

Chain of Command

For Jordan Water Department

Internal Chain of Command

Order	Name	Day Phone	Night Phone	Email
1	Dave Bendzick	952-492-2535	952-492-2869	
2	Jerry Becklus	612-968-2202	952-492-6498	
3	Steve Kochlin	612-968-2205	952-492-3753	
4	Chuck Kaiser	612-968-2203	952-492-6456	
5	Steve Griep	612-968-2215	507-420-5917	
6	Carol Caron	952-890-0509	507-340-8801	
7	Herman Dharmarajah	507-625-4171-Ext.104		
8	Kirk Yahnke	507-625-4171-Ext.358	Cell-507-381-2168	

Securing America's Drinking Water

A Report Outlining our Security & Emergency Management Systems

Chain of Command

For Jordan Water Department

External Chain of Command

Order	Name	Day Phone	Night Phone	Email
1	Linda Waite Smith/Adm.	952-492-2535	952-758-9379	lsmith@ci.jordan.mn.us
2	Ron Jabs/Mayor	952-492-8244	952-492-2296	rjabs@worldnet.att.net
3	Dale Oldenburg/Council	952-492-6050	952-492-2822	
4	Mn. Dept. of Health/Bassam	651-215-0750		
5	Bob Malz	952-492-2009	952-292-8759	
6	Scott County Dispatch	952-445-1411	911	
7	Tim O'Laughlin	952-496-8181	952-873-6477	
8	US Filter	651-766-2700		

APPENDIX F

WATER RATE STRUCTURE

2006

Other Administrative Charges			**2006**	
NSF Check	State Statute	$	25.00	Event
Assessment Search	City Code, Chapter 2	$	15.00	Application
Copies (8 1/2"X 11")	City Code, Chapter 2	$	0.25	Per Copy
Copies (Larger paper)	City Code, Chapter 2	$	0.50	Per Copy
Fax Service	City Code, Chapter 2	$	1.00	Per Page
Notary Service	City Code, Chapter 2	$	2.00	Per Document
City Council Agenda Subscription Service	City Code, Chapter 2	$	75.00	Annual
Planning Commission Agenda Subscription Service	City Code, Chapter 2	$	37.50	Annual
Park Commission Agenda Subscription Service	City Code, Chapter 2	$	37.50	Annual
Zoning Ordinance	City Code, Chapter 2	$	10.00	Per Zone
Subdivision Ordinance	City Code, Chapter 2	$	15.00	Per Copy
Comprehensive Plan	City Code, Chapter 2	$	65.00	Per Copy
Water Comprehensive Plan		$	50.00	
Sewer Comprehensive Plan		$	50.00	
Transportation Comprehensive Plan		$	50.00	
Storm Water Comprehesive Plan		$	50.00	
City Budget	City Code, Chapter 2	$	25.00	Per Copy
NOTE: Plus $ .25 per page				
Hearing Notices	City Code, Chapter 2	$	10.00	Per Copy
NOTE: Plus $ .25 per page				
Annual Financial Statements	City Code, Chapter 2	$	10.00	Per Copy
NOTE: Plus $ .25 per page				
City Code	City Code, Chapter 2	$	10.00	Per Copy
NOTE: Plus $ .25 per page				
Utility Billing List Labels	City Code, Chapter 2	$	125.00	Per Copy
Utility Billing Partial list (1/5 or less)		$	25.00	Per Copy
Maps-City	City Code, Chapter 2	$	2.00	Per Copy
Maps-City if mailed	City Code, Chapter 2	$	3.00	Per Copy
Maps-Zoning, small	City Code, Chapter 2	$	5.00	Per Copy
Maps-Zoning, large	City Code, Chapter 2	$	7.00	Per Copy
Maps-Park Plan	City Code, Chapter 2	$	12.50	Per Copy
Police Reports/Background Checks	City Code, Chapter 2	$	5.00	Per Request
NOTE: Plus $ .25 per page				
Driver's License Report	City Code, Chapter 2	$	7.00	Per Request
NOTE: No charge to Jordan resident				
Multi-Housing Renters Background Checks	City Code, Chapter 2	$	5.00	Per Request
Photographs	City Code, Chapter 2	$	2.00	Per Print
Reserve Police Officers	City Code, Chapter 2	$	12.50	Per Hour
Police Officer		$	50.00	Per Hour
Process Server	City Code, Chapter 2	$	30.00	Event
Audio Tapes	City Code, Chapter 2	$	15.00	Per Tape
Video Tapes	City Code, Chapter 2	$	25.00	Per Tape

Utility Connection & User Fees			
Water Area/Capital Charge	City Code, Chapter 3	$1,380	Connection
Water Connection Charge	City Code, Chapter 3		
Single Family Home		$716	Per Connection
Condominium or Apartment Unit		$583	Per Unit/Connection
Commercial Bldg and Institutional Facilities		$1,592	Per Unit/Connection
Commercial Bldg and Institutional Facilities, multi unit		$716	Per Unit/Connection
Sewer Area/Capital Charge	City Code, Chapter 3	$2,653	Per Connection
Sewer Connection Charge	City Code, Chapter 3		
Single Family Home		$1,592	Per Connection
Condominium or Apartment Unit		$1,008	Per Unit/Connection
Commercial Bldg and Institutional Facilities		$2,017	Per Unit/Connection
Commercial Bldg and Institutional Facilities, multi unit		$1,433	Per Unit/Connection
Storm Water Management Area/Capital Charge	City Code, Chapter 11	$ 4,068	Per Acre
Water Meter Fee	City Code, Chapter 3	$120.00	Per Unit/Connection
Radio Read/Fire Fly Fee	City Code, Chapter 3	$130.00	Per Unit/Connection

NOTE: Units for W & S Connection Charges are based on the units established in the City Code Chapter 3 section 31 Subd. 6.

2006

User Charges			2006	
Water Availability Charge	City Code, Chapter 3	$	7.96	Monthly
Water Usage Charge	City Code, Chapter 3	$	3.18	Per 1,000 Gallons
Sewer Availability Charge	City Code, Chapter 3	$	10.08	Monthly
Sewer Usage Charge	City Code, Chapter 3	$	3.18	Per 1,000 Gallons
Storm Sewer Availability Charge-Single Family Unit	City Code, Chapter 3	$	3.03	Unit/Month
Storm Sewer Availability Charge-All Other per acre	City Code, Chapter 3	$	6.21	Per Acre/Month
Street Maintenance Equipment Fee-Residential Lot	City Code, Chapter 3	$	364.14	Residential Lot
Street Maintenance Equipment Fee-All Non-residential	City Code, Chapter 3	$	5.72	Per Front Foot
Park User Fee - Groups over 25	City Code, Chapter 2	$	50.00	Per event
Park Equipment & Improvement Fee			0.25%	Percent added
(Percent times estimate building value) 1/4 of a percent X value				to building permit
Water Conservation Fines (1st Offense)			$25.00	1st Offense
Water Conservation Fines (2nd Offense)			$50.00	2nd Offense
Water Conservation Fines (3rd or more Offenses)			$100.00	3rd or More
Sump Pump Violation Fine			$100.00	Per Month
Street Lighting Fee (Residential)			$1.53	per lot/month
Street Lighting Fee (Commercial/Industrial)			$3.57	per lot/month
Fire Calls within City(Excluding medical calls)			$350.00	per call

** All utility bills are charged late fees at a rate of 15% per billing period on the entire unpaid balance.

NOTE: Units for W & S monthly availability charges are based on the units established in the City Code Chapter 3 section 31 S

Equipment Charges				
Sweeper/Operator	City Code, Chapter 2	$	108.00	Per Hour/1 Hr Min
Loader/Operator	City Code, Chapter 2	$	110.00	Per Hour/1 Hr Min
Paint Sprayer/Operator	City Code, Chapter 2	$	66.00	Per Hour/1 Hr Min
Dump Truck/Operator	City Code, Chapter 2	$	83.00	Per Hour/1 Hr Min
NOTE: All materials are extra.				
Locator/Operator	City Code, Chapter 2	$	50.00	Per Hour/1 Hr Min
Lawnmower/Operator	City Code, Chapter 2	$	55.00	Per Hour/1 Hr Min
Brush Chipper Operator		$	50.00	Per Hour/1 Hr Min
Frozen Water Line				
First Service per calendar year	City Code, Chapter 2	N/C		
Second and subsequent service per year	City Code, Chapter 2	$	125.00	Per Hour/1 Hr Min
Sewer Camera/Operator	City Code, Chapter 2	$	55.00	Per Hour/1 Hr Min

Other Services

All staff services not otherwise provided for will be invoiced at hourly rate plus 34% for fringe benefits. All out-of-pocket expenses will be invoiced at cost. All bills if not paid within 30 days, interest will be charged at 15% unless already stated.

Effective January 1, 2006

2007

			2007	
Hot Tub/Spa (5,000 gallons or more)		$	50.00	Application
Pools(5,000 gallons or more)		$	50.00	Application
Residential Reroofs		$	50.00	Application
Residential Residing		$	50.00	Application
Underground Sprinkler System		$	50.00	Application
Water Heater		$	15.00	Application
All other permits and fees related to building permits are per the State Building Code, 1997 Edition.				Application
Other Administrative Charges				
NSF Check	State Statute	$	25.00	Event
Assessment Search	City Code, Chapter 2	$	15.00	Application
Copies (8 1/2"X 11")	City Code, Chapter 2	$	0.25	Per Copy
Copies (Larger paper)	City Code, Chapter 2	$	0.50	Per Copy
Fax Service	City Code, Chapter 2	$	1.00	Per Page
Notary Service	City Code, Chapter 2	$	2.00	Per Document
City Council Agenda Subscription Service	City Code, Chapter 2	$	75.00	Annual
Planning Commission Agenda Subscription Service	City Code, Chapter 2	$	50.00	Annual
Park Commission Agenda Subscription Service	City Code, Chapter 2	$	50.00	Annual
Zoning Ordinance	City Code, Chapter 2	$	10.00	Per Zone
Subdivision Ordinance	City Code, Chapter 2	$	15.00	Per Copy
Comprehensive Plan	City Code, Chapter 2	$	65.00	Per Copy
Water Comprehensive Plan		$	50.00	
Sewer Comprehensive Plan		$	50.00	
Transportation Comprehensive Plan		$	50.00	
Storm Water Comprehensive Plan		$	65.00	
City Budget	City Code, Chapter 2	$	25.00	Per Copy
NOTE: Plus $ .25 per page				
Hearing Notices	City Code, Chapter 2	$	10.00	Per Copy
NOTE: Plus $ .25 per page				
Annual Financial Statements	City Code, Chapter 2	$	10.00	Per Copy
NOTE: Plus $ .25 per page				
City Code	City Code, Chapter 2	$	10.00	Per Copy
NOTE: Plus $ .25 per page				
Utility Billing List Labels	City Code, Chapter 2	$	175.00	Per Copy
Utility Billing Partial list (1/5 or less)		$	50.00	Per Copy
Maps-City	City Code, Chapter 2	$	2.00	Per Copy
Maps-City if mailed	City Code, Chapter 2	$	3.00	Per Copy
Maps-Zoning, small	City Code, Chapter 2	$	5.00	Per Copy
Maps-Zoning, large	City Code, Chapter 2	$	7.00	Per Copy
Maps-Park Plan	City Code, Chapter 2	$	12.50	Per Copy
Police Reports/Background Checks	City Code, Chapter 2	$	5.00	Per Request
NOTE: Plus $ .25 per page				
Driver's License Report	City Code, Chapter 2	$	7.00	Per Request
NOTE: No charge to Jordan resident				
Multi-Housing Renters Background Checks	City Code, Chapter 2	$	5.00	Per Request
Photographs	City Code, Chapter 2	$	2.00	Per Print
Reserve Police Officers	City Code, Chapter 2	$	12.50	Per Hour
Police Officer		$	50.00	Per Hour
Process Server	City Code, Chapter 2	$	30.00	Event
CD with data or maps burned to it	City Code, Chapter 2	$	15.00	Per CD
Video Tapes	City Code, Chapter 2	$	25.00	Per Tape
Utility Connection & User Fees				
Water Connection Charge	City Code, Chapter 3		$1,408	Per Connection
Water Area Capital Charge	City Code, Chapter 3			
Single Family Home			$730	Per Unit
Condominium or Apartment Unit			$595	Per Unit
Commercial Bldg and Institutional Facilities			$1,624	Per Unit
Commercial Bldg and Institutional Facilities, multi unit			$730	Per Unit
Sewer Connection Charge	City Code, Chapter 3		$2,706	Per Connection
Sewer Area Capital Charge	City Code, Chapter 3			
Single Family Home			$1,624	Per Unit
Condominium or Apartment Unit			$1,028	Per Unit
Commercial Bldg and Institutional Facilities			$2,057	Per Unit
Commercial Bldg and Institutional Facilities, multi unit			$1,462	Per Unit

2007

			2007	
Storm Water Management Area/Capital Charges	City Code, Chapter 11			
SWMACC - Single Family Residential	City Code, Chapter 11	$	4,271	Per Acre
SWMACC - High Density Residential	City Code, Chapter 11	$	7,048	Per Acre
SWMACC - Commercial and Industrial	City Code, Chapter 11	$	8,287	Per Acre
Water Meter Fee	City Code, Chapter 3		$125.00	Per Unit/Connection
Radio Reader/Eagle System Fee	City Code, Chapter 3		$135.00	Per Unit/Connection

NOTE: Units for W & S Connection Charges are based on the units established in the City Code Chapter 3 section 31 Subd. 6.

User Charges

Water Availability Charge	City Code, Chapter 3	$	8.12	Monthly
Water Usage Charge	City Code, Chapter 3	$	3.25	Per 1,000 Gallons
Sewer Availability Charge	City Code, Chapter 3	$	10.28	Monthly
Sewer Usage Charge	City Code, Chapter 3	$	3.25	Per 1,000 Gallons
Storm Sewer Availability Charge-Single Family Unit	City Code, Chapter 3	$	3.09	Unit/Month
Storm Sewer Availability Charge-All Other per acre	City Code, Chapter 3	$	6.34	Per Acre/Month
Street Maintenance Equipment Fee-Residential Lot	City Code, Chapter 3	$	371.42	Residential Lot
Street Maintenance Equipment Fee-All Non-residential	City Code, Chapter 3	$	6.01	Per Front Foot
Park User Fee - Groups over 25	City Code, Chapter 2	$	50.00	Per event
Park Equipment & Improvement Fee			0.25%	Percent added
(Percent times estimate building value) 1/4 of a percent X value				to building permit
Water Conservation Fines (1st Offense)			$25.00	1st Offense
Water Conservation Fines (2nd Offense)			$50.00	2nd Offense
Water Conservation Fines (3rd or more Offenses)			$100.00	3rd or More
Sump Pump Violation Fine			$100.00	Per Month
Street Lighting Fee (Residential)			$1.56	per lot/month
Street Lighting Fee (Commercial/Industrial)			$3.64	per lot/month
Fire Calls within City(Excluding medical calls)			$350.00	per call

** All utility bills are charged late fees at a rate of 15% per billing period on the entire unpaid balance.

NOTE: Units for W & S monthly availability charges are based on the units established in the City Code Chapter 3 section 31 Subd. 6.

Equipment Charges

Sweeper/Operator	City Code, Chapter 2	$	108.00	Per Hour/1 Hr Min
Loader/Operator	City Code, Chapter 2	$	110.00	Per Hour/1 Hr Min
Paint Sprayer/Operator	City Code, Chapter 2	$	66.00	Per Hour/1 Hr Min
Dump Truck/Operator	City Code, Chapter 2	$	83.00	Per Hour/1 Hr Min
NOTE: All materials are extra.				
Locator/Operator	City Code, Chapter 2	$	50.00	Per Hour/1 Hr Min
Lawnmower/Operator	City Code, Chapter 2	$	55.00	Per Hour/1 Hr Min
Brush Chipper Operator		$	50.00	Per Hour/1 Hr Min
Frozen Water Line				
First Service per calendar year	City Code, Chapter 2	N/C		
Second and subsequent service per year	City Code, Chapter 2	$	125.00	Per Hour/1 Hr Min
Sewer Camera/Operator	City Code, Chapter 2	$	55.00	Per Hour/1 Hr Min

Other Services

All staff services not otherwise provided for will be invoiced at hourly rate plus 34% for fringe benefits. All out-of-pocket expenses will be invoiced at cost. All bills if not paid within 30 days, interest will be charged at 15% unless already stated.

Effective January 1, 2007

APPENDIX G

WATER ORDINANCE

§ 51.06 WATER CONSERVATION.

(A) The City Council finds that water conservation is critical to the city's welfare and to the efficient and economical provision of safe water. When necessary and in its sole discretion, the city shall enforce restrictions on the use of water outside of any residence or business, other than on permitted days and hours.

(B) Normal use of outside water will be at level 1. At the discretion of the Public Works Director, the restrictions may be raised to level 2 or level 3 dependent upon water availability. A notice containing the provisions of the upgraded level shall be delivered to each property within the city limits and posted in the lobby at city hall. The notice shall include the dates and times that the upgraded level shall commence.

(1) *Level 1.*

(a) There will be no outside use of water during the hours between 10:00 a.m. and 6:00 p.m. year round. In addition, the use of outside water will only be permitted on an odd/even basis. A total ban shall be in effect for properties on the odd side of the street on even numbered days of the month, and for properties on the even side of the street on odd days of the month.

(b) The use of outside water between 10:00 a.m. and 6:00 p.m. daily will be permitted for the watering of shrubs, flowers and plants, and the watering of new sod or seed planted with in the previous 30 days. The property owner must provide evidence of the date of planting. The use of outside water is permitted for the cleaning of vehicles when needed specifically for sanitary purposes. Reasonable recreational use of outside water will be permitted. The Fire Department is exempt from these restrictions when used in the performance of their duties for the city.

(2) *Level 2.* The use of outside water is permitted as listed above, except the permitted days and hours of use shall be set by the Director of Public Works. No recreational use of outside water will be permitted.

(3) *Level 3.* A total ban of the use of all outside water with in the city. The exceptions listed in Level 1 will be permitted. No recreational use of outside water will be permitted.

(C) Any member of the City of Jordan staff may be appointed by the Public Works Director or Chief of Police to enforce this section. City personnel not in uniform shall, upon request, show identification as a City of Jordan employee. The civil administrative penalty for violation of this ordinance will be set by the City Council in the fee schedule, and reviewed on a yearly basis. This penalty may be added to the property owner's city water bill.
(Prior Code, § 3.20) (Am. Ord. 33, Second Series, passed 7-17-2000; Am. Ord. 44, Second Series, passed 7-24-2001; Am. Ord. 62, Second Series, passed - -)

§ 51.07 PRIVATE FIRE HOSE CONNECTIONS.

Owners of structures with self-contained fire protection systems may apply for and obtain permission to connect the street mains with hydrants, large pipes, and hose couplings. They may only do this for use in case of fire, at their own installation expense and at such rates as the Council may adopt by resolution as herein provided.
(Prior Code, § 3.20)

§ 51.08 OPENING HYDRANTS.

(A) It is unlawful for any person, other than members of the Fire Department 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.

(B) It is also unlawful for any person to deliver or cause to be delivered to any unauthorized person any hydrant key or wrench, except for the purposes strictly pertaining to their lawful use.
(Prior Code, § 3.20) Penalty, see § 50.99

§ 51.09 UNMETERED SERVICE.

Unmetered service may be provided for construction, and any other purpose. The service shall be at a duly adopted rate.
(Prior Code, § 3.20)

§ 51.10 READING DEVICE.

Each consumer served by the city water system shall have a meter with a reading device which shall be readable from the outside of the structure in a readily accessible location.
(Prior Code, § 3.20)

§ 51.11 WATER METERS.

(A) (1) All water meters shall be purchased from the city and shall be maintained by the city. The city shall determine the appropriate size of the water meter for each connection. Water meters shall be installed pursuant to city specifications. Costs for water meters in new construction will be billed to the property owner as part of the building permit application. Installation of new meters shall be the responsibility of the property owner. All repairs to water meters not resulting from normal usage shall be the responsibility of the property owner.

(2) All repairs due to normal usage and replacement of non-functioning meters shall be the city's responsibility.

ORDINANCE NO. 62 (2ND SERIES)
CITY OF JORDAN

AN ORDINANCE AMENDING CITY CODE, CHAPTER 3, SECTION 3.20

The City Council of the City of Jordan does ordain:

Chapter 3, Section 3.20, Subd. 6, **Water Conservation** is hereby amended as follows:

Subd. 6. Water Conservation. Water conservation is important and will be observed at all times through the enforcement of a ban on the use of water outside of any residence, business, or structure outside of the permitted days or hours.

Normal use of outside water will be at level 1. At the discretion of the Public Works Director, the restrictions may be raised to level 2 or level 3 dependent upon water availability. A notice containing the provisions of the upgraded level shall be delivered to each property within the city limits and posted in the lobby at city hall. The notice shall include the dates and times that the upgraded level shall commence.

LEVEL 1 - There will be no outside use of water during the hours between 10:00 a.m. and 6:00 p.m. year round. In addition, the use of outside water will only be permitted on an odd/even basis. A total ban shall be in effect for properties on the odd side of the street on even numbered days of the month, and for properties on the even side of the street on odd days of the month.

Exceptions – The use of outside water will be permitted for the watering of shrubs, flowers and plants, and the watering of new sod or seed planted with in the previous 30 days. The use of outside water is permitted for the cleaning of vehicles and any other use needed specifically for sanitary purposes. Reasonable recreational use of outside water will be permitted. The Fire Department is exempt from these restrictions when used in the performance of their duties for the city.

LEVEL 2 – The use of outside water is permitted as listed above, except the permitted days and hours of use shall be set by the Director of Public Works. No recreational use of outside water will be permitted.

LEVEL 3 – A total ban of the use of all outside water with in the city. The exceptions listed in level 1 will be permitted. No recreational use of outside water will be permitted.

Enforcement and Penalties – Any member of the City of Jordan staff may be appointed by the Public Works Director or Chief of Police to enforce this ordinance. City personnel not in uniform shall show upon request, identification showing that they are employed by the City of Jordan. The civil administrative penalty for violation of this ordinance will be set by the city council in the fee schedule, and reviewed on a yearly basis. This penalty may be added to the property owner's city water bill.

DATE: 11/3/2003

BY: Ronald Jabs
Ronald Jabs – Mayor

ATTEST: Linda Waite Smith
Linda Waite Smith – City Administrator

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Water Conservation

During the summer months, water usage is at its peak with homeowners watering lawns and doing yard work. Residents should make every effort to conserve water. The City Council passed an ordinance banning lawn sprinkling from 10:00 a.m. to 6:00 p.m. seven days a week year round for the City of Jordan. Outside of those hours residents may water their lawns based on the odd/even schedule. If your house number is odd, you may water on odd numbered days. If your house number is even, you may water on evened numbered days. Newly sodded or seeded lawns are excluded from this ban. Below are water conservation measures to undertake that will conserve Jordan's water supply and lower your water utility bill.

Saving Water Outdoors:

- Deep soak your lawn. Water infrequently, but thoroughly so that moisture soaks down to the roots, about four to six inches. This encourages deeper, healthier root systems and allows the lawn to go without water for a longer time.
- Water during the cool of the day - late evening, early morning. This helps reduce the amount of water that might be wasted through evaporation.
- Weeds are water thieves and will rob your plants of water and nutrients. Try to keep your lawn and garden weed-free.
- Adjust your lawn mower to a higher setting and mow more frequently. Longer grass blades provide shade and help hold moisture in longer.'
- Position sprinklers so water does not land in the gutters or on any paved roads.
- Use a broom, not a hose to clean driveways and sidewalks.
- Check for leaks in pipes, hoses, faucets, and couplings. Leaks can waste a lot of water.

Violations:

- In the event of violations, an administrative charge per instance will then be applied:
- 1st violation - - - - - $25.00
- 2nd violation - - - - - $50.00
- 3 or more violations - $100.00

Exceptions:

New sod or seeded lawns do need sprinkling more often until their roots develop, but such lawns do not benefit from prolonged soaking. We ask those sprinkling new sod or seeded lawns to consider this in their sprinkling schedules.

We ask everyone's cooperation in observing the sprinkling restrictions. We appreciate all efforts to conserve so everyone will have sufficient water throughout the summer, and an adequate reserve can be kept for fire protection.

APPENDIX H

CONSUMER CONFIDENCE REPORT 2006

CONSUMER CONFIDENCE REPORT

PWSID: 1700003

City of Jordan
2006 Drinking Water Report

The City of Jordan is issuing the results of monitoring done on its drinking water for the period from January 1 to December 31, 2006. The purpose of this report is to advance consumers' understanding of drinking water and heighten awareness of the need to protect precious water resources.

Source of Water

The City of Jordan provides drinking water to its residents from a groundwater source: three wells ranging from 287 to 547 feet deep, that draw water from the Franconia-Ironton-Galesville, Ironton-Galesville-Eau Claire, and Mt. Simon aquifers.

The Minnesota Department of Health has determined that the source(s) used to supply your drinking water is not particularly susceptible to contamination. If you wish to obtain the entire source water assessment regarding your drinking water, please call 651-201-4700 or 1-800-818-9318 (and press 5) during normal business hours. Also, you can view it on line at www.health.state.mn.us/divs/eh/water/swp/swa.

Call 952 492 2535 if you have questions about the City of Jordan drinking water or would like information about opportunities for public participation in decisions that may affect the quality of the water.

Results of Monitoring

No contaminants were detected at levels that violated federal drinking water standards. However, some contaminants were detected in trace amounts that were below legal limits. The table that follows shows the contaminants that were detected in trace amounts last year. (Some contaminants are sampled less frequently than once a year; as a result, not all contaminants were sampled for in 2006. If any of these contaminants were detected the last time they were sampled for, they are included in the table along with the date that the detection occurred.)

Key to abbreviations:
MCLG—Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MCL—Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MRDL—Maximum Residual Disinfectant Level.

MRDLG—Maximum Residual Disinfectant Level Goal.

CONSUMER CONFIDENCE REPORT

PWSID: 1700003

AL—Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirement which a water system must follow.

90th Percentile Level—This is the value obtained after disregarding 10 percent of the samples taken that had the highest levels. (For example, in a situation in which 10 samples were taken, the 90th percentile level is determined by disregarding the highest result, which represents 10 percent of the samples.) Note: In situations in which only 5 samples are taken, the average of the two with the highest levels is taken to determine the 90th percentile level.

pCi/l—PicoCuries per liter (a measure of radioactivity).

ppb—Parts per billion, which can also be expressed as micrograms per liter (µg/l).

ppm—Parts per million, which can also be expressed as milligrams per liter (mg/l).

N/A—Not Applicable (does not apply).

Contaminant (units)	MCLG	MCL	Level Found		Typical Source of Contaminant
			Range (2006)	Average /Result*	
Barium (ppm)	2	2	N/A	.04	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.
Combined Radium (pCi/l) (11/02/2005)	0	5.4	N/A	6.3	Erosion of natural deposits.
Fluoride (ppm)	4	4	.97-1.5	1.26	State of Minnesota requires all municipal water systems to add fluoride to the drinking water to promote strong teeth; Erosion of natural deposits; Discharge from fertilizer and aluminum factories.
Haloacetic Acids (HAA5) (ppb) (09/06/2005)	0	60	N/A	5.8	By-product of drinking water disinfection.
Nitrate (as Nitrogen) (ppm)	10	10	N/A	.66	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
TTHM (Total trihalomethanes) (ppb) (09/06/2005)	0	80	N/A	16	By-product of drinking water disinfection.

Contaminant (units)	Level Found		Typical Source of Contaminant
	Range (2006)	Average/ Result*	
Radon (pCi/l) (11/02/2005)	N/A	268	Erosion of natural deposits.

*This is the value used to determine compliance with federal standards. It sometimes is the highest value detected and sometimes is an average of all the detected values. If it is an average, it may contain sampling results from the previous year.

Radon is a radioactive gas which is naturally occurring in some groundwater. It poses a lung cancer risk when gas is released from water into air (as occurs during showering, bathing, or washing dishes or clothes) and a stomach cancer risk when it is ingested. Because radon in indoor air poses a much greater health risk than radon in drinking water, an Alternative Maximum Contaminant Level (AMCL) of 4,000 picoCuries per liter may apply in states that have adopted an Indoor Air Program, which compels citizens, homeowners, schools, and communities to reduce the radon threat from indoor air. For states without such a program, the Maximum Contaminant Level (MCL) of 300 pCi/l may apply. Minnesota plans to adopt an Indoor Air Program once the Radon Rule is finalized.

Contaminant (units)	MRDLG	MRDL	****	*****	Typical Source of Contaminant
Chlorine (ppm)	4	4	.4-1.3	.93	Water additive used to control microbes.

****Highest and Lowest Monthly Average.
*****Highest Quarterly Average.

Contaminant (units)	MCLG	AL	90% Level	# sites over AL	Typical Source of Contaminant
Copper (ppm) (08/26/2005)	N/A	1.3	.25	0 out of 20	Corrosion of household plumbing systems; Erosion of natural deposits.
Lead (ppb) (08/26/2005)	N/A	15	6	1 out of 20	Corrosion of household plumbing systems; Erosion of natural deposits.

Some contaminants do not have Maximum Contaminant Levels established for them. These "unregulated contaminants" are assessed using state standards known as health risk limits to determine if they pose a threat to human health. If unacceptable levels of an unregulated contaminant are found, the response is the same as if an MCL has been exceeded; the water system must inform its customers and take other corrective actions. In the table that follows are the unregulated contaminants that were detected:

PWSID: 1700003

Contaminant (units)	Level Found		Typical Source of Contaminant
	Range (2006)	Average/ Result	
Sodium (ppm)	N/A	55	Erosion of natural deposits.
Sulfate (ppm)	N/A	124	Erosion of natural deposits.

Compliance with National Primary Drinking Water Regulations

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the U. S. Environmental Protection Agency (EPA) prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium are available from the Safe Drinking Water Hotline at 1-800-426-4791.

DEPARTMENT OF NATURAL RESOURCES - DIVISION OF WATERS and METROPOLITAN COUNCIL
WATER EMERGENCY AND CONSERVATION PLANS

These guidelines are divided into four parts. The first three parts, Water Supply System Description and Evaluation, Emergency Response Procedures and Water Conservation Planning apply statewide. Part IV, relates to comprehensive plan requirements that apply only to communities in the Seven-County Twin Cities Metropolitan Area. If you have questions regarding water emergency and conservation plans, please call (651) 259-5703 or (651) 259-5647 or e-mail your question to wateruse@dnr.state.mn.us. Metro Communities can also direct questions to the Metropolitan Council at watersupply@metc.state.mn.us or (651) 602-1066.

DNR Water Appropriation Permit Number(s)	1980-6175
Name of Water Supplier	City of Jordan
Address	210 East First Street, Jordan, MN 55352
Contact Person	Dave Bendzick
Title	Public Works Director
Phone Number	952-492-2535
E-Mail Address	dbendzick@ci.jordan.mn.us

PART I. WATER SUPPLY SYSTEM DESCRIPTION AND EVALUATION

The first step in any water supply analysis is to assess the current status of demand and supplies. Information in Part I, can be used in the development of Emergency Response Procedures and Conservation Plans.

A. ANALYSIS OF WATER DEMAND.

Fill in Table 1 for the past 10 years water demand. If your customer categories are different than the ones listed in Table 1, please note the changes below.

TABLE 1 Historic Water Demand

Year	Total Population	Population Served	Total Connections	Residential Water Sold (MG)	C/I/I Water Sold (MG)	Wholesale Deliveries (MG)	Total Water Sold (MG)	Total Water Pumped (MG)	Percent Unmetered/ Unaccounted	Average Demand (MGD)	Maximum Demand (MGD)	Residential gallons/ capita/day	Total gallons/ capita/day
1997	3000	3000						117.42		0.32			107.2
1998	3000	3000						121.35		0.33			110.8
1999	3637	3637						135.00		0.37			101.7
2000	3700	3700						140.70		0.38			104.2
2001								151.66		0.42			
2002	4500	4500	1241	113.16	22.52	-	135.68	140.68	3.5	0.39	0.76	69	85.6
2003	3833	3833	1386	127.24	20.03	-	147.28	169.36	13.0	0.46	1.03	91	121.0
2004	4750	4750	1448	122.28	20.86	-	143.14	150.90	5.1	0.41	0.78	71	87.0
2005	4900	4900	1550	121.38	21.56	-	142.94	152.12	6.0	0.42	1.04	68	85.0
2006	5000	5000	1620	120.83	32.09	-	152.92	174.14	12.19	0.48	1.13	66	95.4

MG – Million Gallons **MGD** – Million Gallons per Day **C/I/I-** Commercial, Industrial, Institutional

Residential. Water used for normal household purposes, such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns and gardens.

Institutional. Hospitals, nursing homes, day care centers, and other facilities that use water for essential domestic requirements. This includes public facilities and public metered uses. You may want to maintain separate institutional water use records for emergency planning and allocation purposes.

Commercial. Water used by motels, hotels, restaurants, office buildings, commercial facilities, both civilian and military.

Industrial. Water used for thermoelectric power (electric utility generation) and other industrial uses such as steel, chemical and allied products, food processing, paper and allied products, mining, and petroleum refining.

Wholesale Deliveries. Bulk water sales to other public water suppliers.

Unaccounted. Unaccounted for water is the volume of water withdrawn from all sources minus the volume sold.

Residential Gallons per Capita per Day = total residential sales in gallons/population served/365 days **Total Gallons per Capita per Day** = total water withdrawals/population served/365 days

NOTE: Non-essential water uses defined by Minnesota Statutes 103G.291, include lawn sprinkling, vehicle washing, golf course and park irrigation and other non-essential uses. Some of the above categories also include non-essential uses of water.

Water Use Trends. Discuss factors that influence trends in water demand (i.e. growth, weather, industry, conservation). If appropriate, include a discussion of other factors that affect daily water use, such as use by non-resident commuter employees or large water consuming industry.
Water demand is influenced by seasonal variations of weather.

TABLE 2 Large Volume Users - List the top 10 largest users.

Customer	Gallons per year	% of total annual use
Valley Green, MHC, LLC	6,099,404	4.31
Valley Green, MHC, LLC	2,200,288	1.56
Nelson, Kathy	1,032,185	0.73
PEMBCO	959,828	0.68
Werford Square HOA	844,082	0.59
Theatre Building	771,241	0.545
Miller, Jessamyn	766,498	0.541
Fairbanks, Mary	703,094	0.49
Jordan Middle School	661,207	0.46
Jordan Elementary School	630,677	0.44

B. TREATMENT AND STORAGE CAPACITY.

TABLE 3(A) Water Treatment

Water Treatment Plant Capacity	1,660,000	Gallons per day
Describe the treatment process used (i.e., softening, chlorination, fluoridation, Fe/Mn removal, reverse osmosis, coagulation, sedimentation, filtration, others). Also, describe the annual amount and method of disposal of treatment residuals, if any.		
See Appendix A		

TABLE 3(B) Storage Capacity - List all storage structures and capacities.

Total Storage Capacity		**Average Day Demand** (average of last 5 years)	
1,346,000	Gallons	430,000	Gallons per day
Type of Structure	Number of Structures		Gallons
Elevated Storage	2		800,000
Ground Storage	1		46,000
Other:	1 (Standpipe)		500,000

C. WATER SOURCES. List all groundwater, surface water and interconnections that supply water to the system. Add or delete lines to the tables as needed.

TABLE 4(A) Total Water Source Capacity for System (excluding emergency connections)

Total Capacity of Sources	2900	Gallons per minute
Firm Capacity (largest pump out of service)	1800	Gallons per minute

TABLE 4(B) Groundwater Sources - Copies of water well records and well maintenance information should be included with the public water supplier's copy of the plan in Attachment B. If there are more wells than space provided or multiple well fields, please use the List of Wells template (see Resources) and include as Attachment .

Well # or name	Unique Well Number	Year Installed	Well & Casing Depth (ft)	Well Diameter (in)	Capacity (GPM)	Geologic Unit	Status
3	207133	1950	221	24	600	Ironton - Mt. Simon	Active
5	462924	1991	225	18	450	Ironton - Galesville	Active
6	596649	1999	220	18	750	Ironton - Galesville	Active
7	693065	2003	370	24	1100	Mt. Simon-Hinkley	Active

Status: Active use, Emergency, Standby, Seasonal, Peak use, etc. GPM – Gallons per Minute
Geologic Unit: Name of formation(s), which supplies water to the well

TABLE 4(C) Surface Water Sources

Intake ID	Resource name	Capacity (GPM/MGD)
	N/A	

GPM – Gallons per Minute MGD – Million Gallons per Day

TABLE 4(D) Wholesale or Retail Interconnections - List interconnections with neighboring suppliers that are used to supply water on a **regular basis** either wholesale or retail.

Water Supply System	Capacity (GPM/MGD)	Wholesale or retail
N/A		

GPM – Gallons per Minute MGD – Million Gallons per Day

TABLE 4(E) Emergency Interconnections - List interconnections with neighboring suppliers or private sources that can be used to supply water on an emergency or occasional basis. Suppliers that serve less than 3,300 people can leave this section blank, but must provide this information in Section II C.

Water Supply System	Capacity (GPM/MGD)	Note any limitations on use
N/A		

GPM – Gallons per Minute MGD – Million Gallons per Day

D. DEMAND PROJECTIONS.

TABLE 5 Ten Year Demand Projections

Year	Population Served	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Projected Demand (MGY)
2007	5423	0.54	1.22	445.36
2008	5847	0.58	1.32	480.18
2009	6269	0.63	1.41	514.84
2010	6693	0.67	1.51	549.66
2011	7115	0.71	1.60	584.32
2012	7538	0.75	1.69	619.06
2013	7960	0.79	1.79	653.72
2014	8383	0.84	1.88	688.45
2015	8805	0.88	1.98	723.11
2016	9228	0.92	2.08	757.85

MGD – Million Gallons per Day MGY – Million Gallons per Year

Projection Method. Describe how projections were made, (assumptions for per capita, per household, per acre or other methods used).
Population projections are based on historical demand of 100 gpcd and a peaking factor of 2.25

E. RESOURCE SUSTAINABILITY

Sustainable water use: use of water to provide for the needs of society, now and in the future, without unacceptable social, economic, or environmental consequences.

Monitoring. Records of water levels should be maintained for all production wells and source water reservoirs/basins. Water level readings should be taken monthly for a production well or observation well that is representative of the wells completed in each water source formation. **If water levels are not currently measured each year, a monitoring plan that includes a schedule for water level readings must be submitted as Attachment** .

TABLE 6 Monitoring Wells - List all wells being measured.

Unique well number	Type of well (production, observation)	Frequency of Measurement (daily, monthly etc.)	Method of Measurement (steel tape, SCADA etc.)
207133	Production	Yearly	Manual
462924	Production	Yearly	Manual
596649	Production	Yearly	Manual
693065	Production	Yearly	Manual

Water Level Data. Summarize water level data including seasonal and long-term trends for each ground and/or surface water source. If water levels are not measured and recorded on a routine basis then provide the static water level (SWL) when the well was constructed and a current water level measurement for each production well. Also include all water level data taken during well and pump maintenance.
Static water level data is provided in Appendix C

Ground Water Level Monitoring – DNR Waters in conjunction with federal and local units of government maintain and measure approximately 750 observation wells around the state. Ground water level data are available online www.dnr.state.mn.us/waters. Information is also available by contacting the Ground Water Level Monitoring Manager, DNR Waters, 500 Lafayette Road, St. Paul, MN 55155-4032 or call (651) 259-5700.

Natural Resource Impacts. Indicate any natural resource features such as calcareous fens, wetlands, trout streams, rivers or surface water basins that are or could be influenced by water withdrawals from municipal production wells. Also indicate if resource protection thresholds have been established and if mitigation measures or management plans have been developed.
None

Sustainability. Evaluate the adequacy of the resource to sustain current and projected demands. Describe any modeling conducted to determine impacts of projected demands on the resource.
Well No. 3, 5 & 6 are in Ironton/Galesville aquifer. The City understands that Ironton/Galesville aquifer has limited capacity. But Well No. 7 is in Mt. Simon aquifer, which has adequate capacity.

Source Water Protection 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.	
Date WHP Plan Adopted:	July 17, 2007
Date for Next WHP Update:	2017
SWP Plan:	☐ In Process ☐ Completed ☒ Not Applicable

F. CAPITAL IMPROVEMENT PLAN (CIP)

Adequacy of Water Supply System. Are water supply installations, treatment facilities and distribution systems adequate to sustain current and projected demands? ☐ Yes ☒ No If no, describe any potential capital improvements over the next ten years and state the reasons for the proposed changes (CIP Attachment).
The City is planning to add new wells, elevated water storage and a new water treatment facility to meet future needs. For system improvement schedule see attached Appendix D

Proposed Water Sources. Does your current CIP include the addition of new wells or intakes? ☒ Yes ☐ No If yes, list the number of new installations and projected water demands from each for the next ten years. Plans for new production wells must include the geologic source formation, well location, and proposed pumping capacity.
The City is planning to add new wells.

Water Source Alternatives. If new water sources are being proposed, describe alternative sources that were considered and any possibilities of joint efforts with neighboring communities for development of supplies.
The location of the water supply systems for the City of Jordan and the neighboring communities makes sharing resources difficult. Distribution system and joint development of surface water supply or ground water supply are not currently economical.

Preventative Maintenance. Long-term preventative programs and measures will help reduce the risk of emergency situations. Identify sections of the system that are prone to failure due to age, materials or other problems. This information should be used to prioritize capital improvements, preventative maintenance, and to determine the types of materials (pipes, valves, couplings, etc.) to have in stock to reduce repair time.
The City has a yearly program for watermain flushing and operating valves. Extra materials for water system repairs are available to staff. City staff is trained and capable of performing repairs to the water system.

PART II. EMERGENCY RESPONSE PROCEDURES

Water emergencies can occur as a result of vandalism, sabotage, accidental contamination, mechanical problems, power failures, 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. If your community already has written procedures dealing with water emergencies we recommend that you use these guidelines to review and update existing procedures and water supply protection measures.

Federal Emergency Response Plan

Section 1433(b) of the Safe Drinking Water Act as amended by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (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. **Community water suppliers that have completed the Federal Emergency Response Plan and submitted the required certification to the U.S. Environmental Protection Agency have satisfied Part II, Sections A, B, and C of these guidelines and need only provide the information below regarding the emergency response plan and source water protection plan and complete Sections D (Allocation and Demand Reduction Procedures), and E (Enforcement).**

Provide the following information regarding your completed Federal Emergency Response Plan:

Emergency Response Plan	Contact Person	Contact Number
Emergency Response Lead	Dave Bendzick	952-492-2535
Alternate Emergency Response Lead	Jerry Beckius	612-968-2202
Emergency Response Plan Certification Date	March 17, 2004	

Operational Contingency Plan. An operational contingency plan that describes measures to be taken for water supply mainline breaks and other common system failures as well as routine maintenance is recommended for all utilities. Check here ☐ if the utility has an operational contingency plan. At a minimum a contact list for contractors and supplies should be included in a water emergency telephone list.

Communities that have completed Federal Emergency Response Plans should skip to Section D.

EMERGENCY RESPONSE PROCEDURES

A. **Emergency Telephone List.** A telephone list of emergency contacts must be included as Attachment E to the plan (complete template or use your own list). The list should include key utility and community personnel, contacts in adjacent communities, and appropriate local, state and federal emergency contacts. Please be sure to verify and update the contacts on the emergency telephone list on a regular basis (once each year recommended). 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. Responsibilities and services for each contact should be defined.

B. **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, water well and maintenance records should be maintained in a central secured location so that the records are accessible for emergency purposes and preventative maintenance. 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. Check here ☒ if these records and maps exist and staff can access the documents in the event of an emergency.

C. **Procedure for Augmenting Water Supplies.** List all available sources of water that can be used to augment or replace existing sources in an emergency. 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. Copies of cooperative agreements should be maintained with your copy of the plan and include in Attachment N/A. Be sure to include information on any physical or chemical problems that may limit interconnections to other sources of water. Approvals from the MN Department of Health are required for interconnections and reuse of water.

TABLE 7 (A) Public Water Supply Systems – List interconnections with other public water supply systems that can supply water in an emergency.

Water Supply System	Capacity (GPM/MGD)	Note any limitations on use
None		

GPM – Gallons per Minute MGD – Million Gallons per Day

TABLE 7 (B) - Private Water Sources – List other sources of water available in an emergency.

Name	Capacity (GPM/MGD)	Note any limitations on use
None		

GPM – Gallons per Minute MGD – Million Gallons per Day

D. Allocation and Demand Reduction Procedures. The plan must include procedures to address gradual decreases in water supply as well as emergencies and the sudden loss of water due to line breaks, power failures, sabotage, etc. During periods of limited water supplies public water suppliers are required to allocate water based on the priorities established in Minnesota Statutes 103G.261.

Water Use Priorities (Minnesota Statutes 103G.261)

First Priority. Domestic water supply, excluding industrial and commercial uses of municipal water supply, and use for power production that meets contingency requirements.

NOTE: Domestic use is defined (MN Rules 6115.0630, Subp. 9), as use for general household purposes for human needs such as cooking, cleaning, drinking, washing, and waste disposal, and uses for on-farm livestock watering excluding commercial livestock operations which use more than 10,000 gallons per day or one million gallons per year.

Second Priority. Water uses involving consumption of less than 10,000 gallons per day.

Third Priority. Agricultural irrigation and processing of agricultural products.

Fourth Priority. Power production in excess of the use provided for in the contingency plan under first priority.

Fifth Priority. Uses, other than agricultural irrigation, processing of agricultural products, and power production.

Sixth Priority. Non-essential uses. These uses are defined by Minnesota Statutes 103G.291 as lawn sprinkling, vehicle washing, golf course and park irrigation, and other non-essential uses.

List the statutory water use priorities along with any local priorities (hospitals, nursing homes, etc.) in Table 8. 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. Local allocation priorities 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. In Table 8, list the priority ranking, average day demand and demand reduction potential for each customer category (modify customer categories if necessary).

Table 8 Water Use Priorities

Customer Category	Allocation Priority	Average Day Demand (GPD)	Demand Reduction Potential (GPD)
Residential	1	331,028	
Institutional			
Commercial	2	56,612	
Industrial			
Irrigation			
Wholesale			
Non-essential			
	TOTALS	387,640	

GPD – Gallons per Day

Demand Reduction Potential. The demand reduction potential for residential use will typically be the base demand during the winter months when water use for non-essential uses such as lawn watering do not occur. The difference between summer and winter demands typically defines the demand reduction that can be achieved by eliminating non-essential uses. In extreme emergency situations lower priority water uses must be restricted or eliminated to protect first priority domestic water requirements. Short-term demand reduction potential should be based on average day demands for customer categories within each priority class.

Triggers for Allocation and Demand Reduction Actions. Triggering levels must be defined for implementing emergency responses, including supply augmentation, demand reduction, and water allocation. Examples of triggers include: water demand >100% of storage, water level in well(s) below a certain elevation, treatment capacity reduced 10% etc. Each trigger should have a quantifiable indicator and actions can have multiple stages such as mild, moderate and severe responses. Check each trigger below that is used for implementing emergency responses and for each trigger indicate the actions to be taken at various levels or stages of severity in Table 9.

- ☒ Water Demand
- ☐ Treatment Capacity
- ☐ Storage Capacity
- ☐ Groundwater Levels
- ☐ Surface Water Flows or Levels
- ☒ Pump, Booster Station or Well Out of Service
- ☒ Governor's Executive Order – Critical Water Deficiency (required by statute)
- ☐ Water Main Break
- ☒ Loss of Production
- ☐ Security Breach
- ☐ Contamination
- ☐ Other (list in Table 9)

Table 9 Demand Reduction Procedures

Condition	Trigger(s)	Actions
Stage 1 (Mild)	Treatment plant runs for 20 or more hours for 3 days	There will be no outside use of water between 10 a.m. to 6 p.m. year round. The use of outside water will only be permitted on an odd/even basis. Only limited use of water permitted. See Ordinances Attached
Stage 2 (Moderate)	Treatment plant runs for 20 or more hours for 5 days	The use of outside water is permitted as Stage 1, but the permitted days and hours are set by the Director of Public Works. No recreational use of outside water will be permitted.
Stage 3 (Severe)	Treatment plant runs for 20 or more hours for 7 days	A total ban of the use of all outside water within the city limits.
Critical Water Deficiency (M.S. 103G.291)	Executive Order by Governor & as provided in above triggers	Stage 1: Restrict lawn watering, vehicle washing, golf course and park irrigation and other nonessential uses Stage 2: Suspend lawn watering, vehicle washing, golf course and park irrigation and other nonessential uses

Note: The potential for water availability problems during the onset of a drought are almost impossible to predict. Significant increases in demand should be balanced with preventative measures to conserve supplies in the event of prolonged drought conditions.

Notification Procedures. List methods that will be used to inform customers regarding conservation requests, water use restrictions, and suspensions. Customers should be aware of emergency procedures and responses that they may need to implement.
A notice containing the provision of the upgraded level is delivered to each property owner within the City limits and posted in the lobby of City Hall.

E. Enforcement. Minnesota Statutes require public water supply authorities to adopt and enforce water conservation restrictions during periods of critical water shortages.

Public Water Supply Appropriation During Deficiency.
Minnesota Statutes 103G.291, Subdivision 1.

Declaration and conservation.

(a) If the governor determines and declares by executive order that there is a critical water deficiency, public water supply authorities appropriating water must adopt and enforce water conservation restrictions within their jurisdiction that are consistent with rules adopted by the commissioner.

(b) The restrictions must limit lawn sprinkling, vehicle washing, golf course and park irrigation, and other nonessential uses, and have appropriate penalties for failure to comply with the restrictions.

An ordinance that has been adopted or a draft ordinance that can be quickly adopted to comply with the critical water deficiency declaration must be included in the plan (include with other ordinances in Attachment 7 for Part III, Item 4). Enforcement responsibilities and penalties for non-compliance should be addressed in the critical water deficiency ordinance.
Sample regulations are available at www.dnr.state.mn.us/waters

Authority to Implement Water Emergency Responses. Emergency responses could be delayed if city council or utility board actions are required. Standing authority for utility or city managers to implement water restrictions can improve response times for dealing with emergencies. Who has authority to implement water use restrictions in an emergency?

☒ Utility Manager ☐ City Manager ☐ City Council or Utility Board
☐ Other (describe):

Emergency Preparedness. If city or utility managers do not have standing authority to implement water emergency responses, please indicate any intentions to delegate that authority. Also indicate any other measures that are being considered to reduce delays for implementing emergency responses.
N/A

PART III. WATER CONSERVATION PLAN

Water conservation programs are intended to reduce demand for water, improve the efficiency in use and reduce losses and waste of water. Long-term conservation measures that improve overall water use efficiencies can help reduce the need for short-term conservation measures. Water conservation is an important part of water resource management and can also help utility managers satisfy the ever-increasing demands being placed on water resources.

Minnesota Statutes 103G.291, requires public water suppliers to implement demand reduction measures before seeking approvals to construct new wells or increases in authorized volumes of water. Minnesota Rules 6115.0770, require water users to employ the best available means and practices to promote the efficient use of water. Conservation programs can be cost effective when compared to the generally higher costs of developing new sources of supply or expanding water and/or wastewater treatment plant capacities.

A. Conservation Goals. The following section establishes goals for various measures of water demand. The programs necessary to achieve the goals will be described in the following section.

Unaccounted Water (calculate five year averages with data from Table 1)		
Average annual volume unaccounted water for the last 5 years	13,050,000	gallons
Average percent unaccounted water for the last 5 years	7.99	percent
AWWA recommends that unaccounted water not exceed 10%. Describe goals to reduce unaccounted water if the average of the last 5 years exceeds 10%.		
N/A		

Residential Gallons Per Capita Demand (GPCD)		
Average residential GPCD use for the last 5 years (use data from Table 1)	72.89	GPCD
In 2002, average residential GPCD use in the Twin Cities Metropolitan Area was 75 GPCD. Describe goals to reduce residential demand if the average for the last 5 years exceeds 75 GPCD.		
N/A		

Total Per Capita Demand: From Table 1, is the trend in overall per capita demand over the past 10 years ☐ increasing or ☒ decreasing? If total GPCD is increasing, describe the goals to lower overall per capita demand or explain the reasons for the increase.

Peak Demands (calculate average ratio for last five years using data from Table 1)	
Average maximum day to average day ratio	2.19
If peak demands exceed a ratio of 2.6, describe the goals for lowering peak demands.	
N/A	

B. Water Conservation Programs. Describe all short-term conservation measures that are available for use in an emergency and long-term measures to improve water use efficiencies for each of the six conservation program elements listed below. Short-term demand reduction measures must be included in the emergency response procedures and must be in support of, and part of, a community all-hazard emergency operation plan.

1. **Metering.** The American Water Works Association (AWWA) recommends that every water utility meter all water taken into its system and all water distributed from its system at its customer's point of service. An effective metering program relies upon periodic performance testing, repair, repair and maintenance of all meters. AWWA also recommends that utilities conduct regular water audits to ensure accountability. Complete Table 10 (A) regarding the number and maintenance of customer meters.

TABLE 10 (A) Customer Meters

	Number of Connections	Number of Metered Connections	Meter testing schedule (years)	Average age/meter replacement schedule (years)
Residential	1480	1480		As Needed
Institutional	-	-		-
Commercial	140	140		As Needed
Industrial	-	-		-
Public Facilities	-	-		-
Other	-	-		-
TOTALS	1620	1620		

Unmetered Systems. Provide an estimate of the cost to install meters and the projected water savings from metering water use. Also indicate any plans to install meters.
None

TABLE 10 (B) Water Source Meters

	Number of Meters	Meter testing schedule (years)	Average age/meter replacement schedule (years)
Water Source (wells/intakes)	4		As Needed
Treatment Plant			-

2. **Unaccounted Water.** 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 AWWA recommends a goal of ten percent or less for unaccounted-for water. Water audit procedures are available from the AWWA and MN Rural Water Association.

Frequency of water audits: ☐ each billing cycle ☐ yearly ☒ other: Quarterly

Leak detection and survey: ☐ every year ☐ every years ☐ periodic as needed
Year last leak detection survey completed: The City does not do any leak detection surveys.

Reducing Unaccounted Water. List potential sources and efforts being taken to reduce unaccounted water. If unaccounted water exceeds 10% of total withdrawals, include the timeframe for completing work to reduce unaccounted water to 10% or less.
The spike in unaccounted for water in year 2006 could be due to bad water meters. The city will closely monitor unaccounted for water for the next year. If this amount is still high, then immediate corrective action will be taken.

3. **Conservation Water Rates.** Plans must include the current rate structure for all customers and provide information on any proposed rate changes. Discuss the basis for current price levels and rates, including cost of service data, and the impact current rates have on conservation.

Billing Frequency: ☐ Monthly ☒ Bimonthly ☐ Quarterly
☐ Other (describe):

Volume included in base rate or service charge: 1,000 gallons or cubic feet

Conservation Rate Structures
- ☐ Increasing block rate: rate per unit increases as water use increases
- ☐ Seasonal rate: higher rates in summer to reduce peak demands
- ☐ Service charge or base fee that does not include a water volume

Conservation Neutral Rate Structure
- ☒ Uniform rate: rate per unit is the same regardless of volume

Non-conserving Rate Structures
- ☐ Service charge or base fee that includes a large volume of water
- ☐ Declining block rate: rate per unit decreases as water use increases
- ☐ Flat rate: one fee regardless of how much water is used (unmetered)

Other (describe):

Water Rates Evaluated: ☒ every year ☐ every years ☐ no schedule
Date of last rate change: January 2007

Declining block (the more water used, the cheaper the rate) and flat (one fee for an unlimited volume of water) rates should be phased out and replaced with conservation rates. Incorporating a seasonal rate structure and the benefits of a monthly billing cycle should also be considered along with the development of an emergency rate structure that could be quickly implemented to encourage conservation in an emergency.

Current Water Rates. Include a copy of the actual rate structure in Attachment F or list current water rates including base/service fees and volume charges below.
See Attached

Non-conserving Rate Structures. Provide justification for the rate structure and its impact on reducing demands or indicate intentions including the timeframe for adopting a conservation rate structure.
The rate structure includes a base rate and a usage fee. The usage fee is designed to make the heaviest user pay the most. Users that incorporate water conservation are rewarded with a smaller monthly bill.

4. **Regulation.** Plans should include regulations for short-term reductions in demand and long-term improvements in water efficiencies. Sample regulations are available from DNR Waters. Copies of adopted regulations or proposed restrictions should be included in Attachment G of the plan. Indicate any of the items below that are required by local regulations and also indicate if the requirement is applied each year or just in emergencies.

☒ Time of Day: no watering between 10 am and 6 pm
(reduces evaporation) ☒ year around ☐ seasonal ☐ emergency only
☒ Odd/Even: (helps reduce peak demand) ☒ year around ☐ seasonal ☐ emergency only
☐ Water waste prohibited (no runoff from irrigation systems)
Describe ordinance:
☐ Limitations on turf areas for landscaping (reduces high water use turf areas)
Describe ordinance:
☐ Soil preparation (such as 4"-6" of organic soil on new turf areas with sandy soil)
Describe ordinance:
☐ Tree ratios (plant one tree for every square feet to reduce turf evapotranspiration)
Describe ordinance:
☐ Prohibit irrigation of medians or areas less than 8 feet wide
Describe ordinance:
☐ Permit required to fill swimming pool ☐ every year ☐ emergency only
☒ Other (describe): See Attached Ordinance (Appendix G)

State and Federal Regulations (mandated)

☐ Rainfall sensors on landscape irrigation systems. Minnesota Statute 103G.298 requires "All automatically operated landscape irrigation systems shall have furnished and installed technology that inhibits or interrupts operation of the landscape irrigation system during periods of sufficient moisture. The technology must be adjustable either by the end user or the professional practitioner of landscape irrigation services."

☐ Water Efficient Plumbing Fixtures. The 1992 Federal Energy Policy Act established manufacturing standards for water efficient plumbing fixtures, including toilets, urinals, faucets, and aerators.

Enforcement. Are ordinances enforced? ☒ Yes ☐ No If yes, indicate how ordinances are enforced along with any penalties for non-compliance.
Any member of the City of Jordan staff may be appointed by the Public Works Director or Chief of Police to enforce the ordinance.

5. **Education and Information Programs.** Customers should be provided information on how to improve water use efficiencies a minimum of two times per year. Information should be provided at appropriate times to address peak demands. Emergency notices and educational materials on how to reduce water use should be available for quick distribution during an emergency. If any of the methods listed in the table below are used to provide water conservation tips, indicate the number of times that information is provided each year and attach a list of education efforts used for the last three years.

Current Education Programs	Times/Year
Billing inserts or tips printed on the actual bill	1
Consumer Confidence Reports	2
Local news papers	1
Community news letters	1
Direct mailings (water audit/retrofit kits, showerheads, brochures)	1
Information at utility and public buildings	1
Public Service Announcements	
Cable TV Programs	
Demonstration projects (landscaping or plumbing)	
K-12 Education programs (Project Wet, Drinking Water Institute)	
School presentations	
Events (children's water festivals, environmental fairs)	
Community education	
Water Week promotions	
Information provided to groups that tour the water treatment plant	
Website (include address: www.jordan.govoffice.com	Continually
Targeted efforts (large volume users, users with large increases)	
Notices of ordinances (include tips with notices)	

Emergency conservation notices (recommended)	
Other: See Consumer Confidence Report in Appendix H	

List education efforts for the last three years in Attachment of the plan. Be sure to indicate whether educational efforts are on-going and which efforts were initiated as an emergency or drought management effort.

Proposed Education Programs. Describe any additional efforts planned to provide conservation information to customers a minimum of twice per year (required if there are no current efforts).

A packet of conservation tips and information can be obtained by contacting DNR Waters or the Minnesota Rural Water Association (MRWA). The American Water Works Association (AWWA) www.awwa.org or www.waterwiser.org also has excellent materials on water conservation that are available in a number of formats. You can contact the MRWA 800/367-6792, the AWWA bookstore 800/926-7337 or DNR Waters 651/259-5703 for information regarding educational materials and formats that are available.

6. **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 communities develop a long-term plan to retrofit public buildings with water efficient plumbing fixtures and that the benefits of retrofitting be included in public education programs. You may also want to contact local electric or gas suppliers to see if they are interested in developing a showerhead distribution program for customers in your service area.

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. Describe any education or incentive programs to encourage the retrofitting of inefficient plumbing fixtures (toilets, showerheads, faucets, and aerators) or appliances (washing machines).
None

Plan Approval. Water Emergency and Conservation Plans must be approved by the Department of Natural Resources (DNR) every ten years. Please submit plans for approval to the following address:

DNR Waters
Water Permit Programs Supervisor

or Submit electronically to
wateruse@dnr.state.mn.us.

500 Lafayette Road
St. Paul, MN 55155-4032

Adoption of Plan. All DNR plan approvals are contingent on the formal adoption of the plan by the city council or utility board. Please submit a certificate of adoption (example available) or other action adopting the plan.

Metropolitan Area communities are also required to submit these plans to the Metropolitan Council. Please see PART IV. ITEMS FOR METROPOLITAN AREA PUBLIC SUPPLIERS.

METROPOLITAN COUNCIL

PART IV. ITEMS FOR METROPOLITAN AREA PUBLIC SUPPLIERS

Minnesota Statute 473.859 requires water supply plans 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 required information is contained in Parts I-III of these guidelines. However, the following additional information is necessary to make the water supply plans consistent with the Metropolitan Land Use Planning Act upon which local comprehensive plans are based. Communities should use the information collected in the development of their plans to evaluate whether or not their water supplies are being developed consistent with the Council's Water Resources Management Policy Plan.

Policies. Provide a statement(s) on the principles that will dictate operation of the water supply utility: for example, "It is the policy of the city to provide good quality water at an affordable rate, while assuring this use does not have a long-term negative resource impact."
It is the policy of the City to provide good quality water to its citizens at an affordable cost.

Impact on the Local Comprehensive Plan. Identify the impact that the adoption of this water supply plan has on the rest of the local comprehensive plan, including implications for future growth of the community, economic impact on the community and changes to the comprehensive plan that might result.
None

Demand Projections

Year	Total Community Population	Population Served	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Projected Demand (MGY)
2010	6,693	6,693	0.669	1.506	549.69
2020	10,916	10,916	1.0916	2.456	896.44
2030	16,940	16,940	1.694	3.812	1391.38
Ultimate	24,314	24,314	2.431	5.470	1996.55

Population projections should be consistent with those in the Metropolitan Council's *2030 Regional Development Framework* or the Communities 2008 Comprehensive Plan update. If population served differs from total population, explain in detail why the difference (i.e., service to other communities, not complete service within community etc.).

PLAN SUBMITTAL AND REVIEW OF THE PLAN

The plan will be reviewed by the Council according to the sequence outlined in Minnesota Statutes 473.175. **Prior to submittal to the Council, the plan must be submitted to adjacent governmental units for a 60-day review period.** Following submittal, the Council determines if the plan is complete for review within 15 days. If incomplete, the Council will notify the community and request the necessary information. When complete the Council will complete its review within 60 days or a mutually agreed upon extension. The community officially adopts the plan after the Council provides its comments.

Plans can be submitted electronically to the Council; however, the review process will not begin until the Council receives a paper copy of the materials. Electronic submissions can be via a CD, 3 ½" floppy disk or to the email address below. Metropolitan communities should submit their plans to:

Reviews Coordinator
Metropolitan Council
390 N Robert St
St. Paul, MN 55101

electronically to:
watersupply@metc.state.mn.us

SAMPLE TIP SHEETS

"How Can I Save Water Indoors?" you ask...

In the Bathroom:

- Replace your toilet with a high-efficiency, low-flush toilet that uses only 1.6 gallons per flush. On the average, toilets use about 5 gallons per flush.
- A heavy glass jar can help you save water easily, and at a low cost. An empty pickle jar will work great. Lift off the toilet tank lid and hold the jar in the water until it fills. Place the jar in the tank bottom, away from any moving parts. Put the tank lid back on. You'll be saving some water with every flush.
- Don't use your toilet as a wastebasket. Dead bugs and used facial tissue should go in the trash can, not the toilet.
- Once a year, check for toilet leaks. Lift off the toilet tank lid and drip 10 drops of food coloring into the tank. After 10-15 minutes, check for dye color in the toilet bowl - if you see any dye color, your toilet has a leak. Toilet leaks can waste hundreds of gallons a day.
- Turn the faucet off when brushing your teeth, shaving, or washing your face and you'll save 2-3 gallons of water each minute.
- Use faucets at low volume.
- Install high-efficiency, low-flow faucet aerators that use no more than 2.5 gallons of water per minute. Most faucets use between 3 and 7 gallons per minute.
- Fix leaky faucets right away. Simply replacing the washer may fix the leaks. Even small drips caused by worn washers can waste 20 gallons of water or more a day. Large leaks can waste hundreds of gallons.
- Shorten your shower time - most showers use about 5 gallons of water a minute.
- Install a high-efficiency, low-flow showerhead that uses no more than 2.5 gallons of water per minute.
- When taking a bath, close the tub drain before turning on the water.
- When taking a bath, fill the tub up halfway or less. A full tub can hold more than 50 gallons of water.

"How Can I Save Water Indoors?" you ask...

In the Kitchen:

- Instead of letting the faucet run until the water is cold enough to drink, keep a container of drinking water in the refrigerator. Faucets can use from 3 to 7 gallons of water per minute.
- Clean vegetables and fruits in a pan of water, not under a running faucet. Use a vegetable brush to remove dirt.
- When defrosting food, thaw it in the refrigerator instead of under running water. This may take an extra day or two.
- For your kitchen sink, install a high-efficiency, low-flow faucet aerator that uses no more than 2.5 gallons of water per minute.
- If you wash dishes by hand, fill the sink or a pan with soapy water instead of letting the faucet run while soaping dishes. And don't let the faucet run while rinsing off dishes - rinse dishes in a filled sink or a pan of water.
- Run the dishwasher only when it's fully loaded. Most dishwashers use between 12 and 15 gallons of water, full or empty. When loading the dishwasher, scrape food off of dishes and pots instead of rinsing them.

Other Chores:

- Pre-soak clothes in the washing machine only when absolutely necessary.
- Run the washing machine only when it's fully loaded. Some washing machines have controls that let you select the load size. Washing machines use between 30 and 50 gallons of water per full load.
- If you're thinking about buying a new washing machine, check out front-loading washers. These washers can cost more, but they use 1/3 less water per load than top-loading washing machines.

Remember, use what you need and save the rest!

Information Provided by:
Your Local Water Supplier

"How Can I Save Water Outdoors?" you ask...

- Help your soil to hold the right amount of water:
  - **Clay soil:** Add organic material such as compost or peat moss. Tilling or spading will help loosen the soil. Clay soil absorbs water very slowly, so water only as fast as the soil can absorb. Don't waste water by letting it run off.
  - **Sandy soil:** Water can run through sandy soil so quickly that plants don't have a chance to absorb it. Add organic material to supplement the soil and slow down water flow.
  - **Loamy soil:** Loamy soil is the best. It's combination of sand, silt, and clay. It absorbs water readily and stores it for use by plants.
- Deep-soak your lawn. Water infrequently, but thoroughly so that moisture soaks down to the roots, about four to six inches. This encourages deeper, healthier root systems and allows the lawn to go without water for a longer time.
- Water during the cool of the day - late evening, early morning. This helps reduce the amount of water that might be wasted through evaporation.
- If you don't have an automatic sprinkling system, set a kitchen timer or invest in a sprinkler timer to help prevent over-watering. Outdoor faucets can flow at rates as high as 300 gallons per hour. A lot of water can be wasted in a short period of time if you forget to turn your sprinklers off.
- Weeds are water thieves and will rob your plants of water and nutrients. Try to keep your lawn and garden weed-free - spot spray or remove weeds as they appear.
- If it doesn't grow, don't water it. Position sprinklers so water doesn't land in the gutters or on any paved areas.
- Don't water on windy days. Water will go everywhere except where it is needed.
- Adjust your lawn mower to a higher setting and mow more frequently. Longer grass blades provide shade and help hold moisture in longer.

"How Can I Save Water Outdoors?" you ask...

- Lay mulch around trees and plants at least 1 to 2 inches deep to retain moisture, slow evaporation, and discourage weed growth.
- Consider installing drip irrigation systems around trees and shrubs. Drip systems allow water to flow slowly to roots. This encourages strong root systems. Drip irrigation systems also reduce water loss from evaporation.
- Use a broom, not a hose, to clean driveways, sidewalks, and other hard surfaces.
- Wash your car with a bucket and a sponge. Don't let the hose run while washing your car - and use a hose with a shut-off nozzle to rinse.
- Check for leaks in pipes, hoses, faucets, and couplings. Leaks can waste a lot of water.
- If you own a pool, get a cover for it to help prevent evaporation. An average sized pool can lose about 1000 gallons of water per month. A pool cover can cut this loss by up to 90%.

Remember, use what you need and save the rest!

Information provided by:
Your Local Water Supplier