

AGENDA
SHAKOPEE PUBLIC UTILITIES COMMISSION
REGULAR MEETING
SEPTEMBER 17, 2018

1. **Call to Order** at 5:00pm in the SPUC Service Center, 255 Sarazin Street.
2. **Approval of Minutes**
3. **Communications**
 - 3a) Shakopee Diversity Alliance Letter
 - 3b) SPU Customer Letter
 - 3c) APPA Mutual Aid Commendation
4. **Approve the Agenda**
5. **Approval of Consent Business**
6. **Bills: Approve Warrant List**
7. **Liaison Report**
8. **Reports: Water Items**
 - 8a) Water System Operations Report – Verbal
 - 8b) 2018 Comprehensive Water Plan – Final Draft
 - C=> 8c) Water Production Dashboard
 - 8d) Resn. #1205 – Setting the Amount of the Trunk Water Charge, Approving of Its Collection and Authorizing Water Service to Certain Property Described As: Windermere Way Second Addition
 - 8e) Resn. #1206 – Approving of the Estimated Cost of Pipe Oversizing on the Watermain Project: Windermere Way
9. **Reports: Electric Items**
 - 9a) Electric System Operations Report – Verbal
 - 9b) MMUA 2018 Minnesota Rodeo
10. **Reports: Human Resources**
11. **Reports: General**
 - C=> 11a) Financial Results for August 2018
 - 11b) Sarazin Flats Easement Agreement
 - 11c) Resn. #1207 – Vacation of Electric Utility Easement Sarazin Flats First Addition
12. **New Business**
13. **Tentative Dates for Upcoming Meetings**

- Regular Meeting	--	October 1
- Mid Month Meeting	--	October 15
- Regular Meeting	--	November 5
- Mid Month Meeting	--	November 19
14. **Adjourn** to 10/1/18 at the SPUC Service Center, 255 Sarazin Street

MINUTES
OF THE
SHAKOPEE PUBLIC UTILITIES COMMISSION
(Regular Meeting)

President Weyer called the regular session of the Shakopee Public Utilities Commission to order at the Shakopee Public Utilities meeting room at 5:00 P.M., September 4, 2018.

MEMBERS PRESENT: Commissioners Joos, Amundson and Weyer. Also present, Liaison Mocol, Utilities Manager Crooks, Finance Director Schmid, Planning & Engineering Director Adams, Electric Superintendent Drent, Water Superintendent Schemel and Marketing/Customer Relations Director Walsh. Commissioners Hennen and Meyer were absent as previously advised.

Motion by Joos, seconded by Amundson to approve the minutes of the August 6, 2018 Commission meeting. Motion carried.

There were no Communication items to report.

President Weyer offered the agenda for approval.

Motion by Amundson, seconded by Joos to approve the agenda as presented. Motion carried.

Motion by Joos, seconded by Amundson to approve the Consent Business agenda as presented. Motion carried.

President Weyer stated that the Consent Items were: Item 8c: Quarterly Nitrate Results and Item 11b: Website Analytics.

The warrant listing for bills paid August 20, 2018 was presented.

Motion by Joos, seconded by Amundson to approve the warrant listing dated August 20, 2018 as presented. Motion carried.

The warrant listing for bills paid September 4, 2018 was presented.

Motion by Amundson, seconded by Joos to approve the warrant listing dated September 4, 2018 as presented. Motion carried.

Liaison Mocol presented her report. At the City Council meeting the preliminary 2019 budget will be presented. The EDA will discuss the selling of four property parcels to developers and the City will be hiring a new Parks and Recreation Director.

Water Superintendent Schemel provided a report of current water operations. The Commission was updated on current construction projects. The construction of Well #23 will initiate the formal bidding process with the bid opening on October 1, 2018.

Item 8b: Resn. #1204 – Rescinding Resolution #1173 and Re-Setting the Amount of the Trunk Water Charge, Approving of Its Collection and Authorizing Water Service to Certain Property Described as: West Shakopee Gateway First Addition.

Motion by Amundson, seconded by Joos to offer Resolution #1204. A Resolution Rescinding Resolution #1173 and Re-Setting the Amount of the Trunk Water Charge, Approving of Its Collection and Authorizing Water Service to Certain Property Described As: West Shakopee Gateway First Addition. Ayes: Commissioners Amundson, Joos and Weyer. Nay: none. Motion carried. Resolution passed.

Item 8c: Quarterly Nitrate Results was received under Consent Business.

Planning and Engineering Director Adams updated the Rahr Malting watermain looping costs. Due to a delay in the project a change order from Ryan Contracting was received.

Motion by Joos, seconded by Amundson to approve change order #1 in the amount of \$37,611 and increase the total construction value with Ryan Contracting to \$252,782. Motion carried.

Electric Superintendent Drent provided a report of current electric operations. An update was provided for current construction projects and the street light LED change outs. Nine electric outages were reviewed. Electric demand continues to reflect the hotter and more humid summer weather conditions, with a peak demand of 96MW.

Utilities Manager Crooks read the August 2018 MMPA Board Meeting Public Summary.

Finance and Administrative Director Schmid reviewed the financial results for July 2018.

Item 11b: Website Analytics was received under Consent Business.

Motion by Joos, seconded by Amundson to adjourn to Commission Goals and Objectives Work Session.

Motion by Joos, seconded by Amundson to reconvene to Regular Session.

President Weyer stated that no official business was conducted or action taken during the Goals and Objectives Work Session.

The tentative commission meeting dates of September 17 and October 1 were noted.

Motion by Joos, seconded by Amundson to adjourn to the September 17, 2018 meeting. Motion carried.


Commission Secretary: John R. Crooks



August 21, 2018

Dear Donor/Volunteer/Supporter of Shakopee Diversity Alliance:

The Shakopee Diversity Alliance (SDA) has conducted its 6th annual International Festival on August 3rd and it was a **super success; thanks to YOU!** Whether you donated money, time, equipment, a gift card, or attended our festival, **WE THANK YOU** 😊

The SDA was started in 2012 initiated by the mayor in the first, "Diversity Summit" with over 144 residents attending. It has since blossomed into a 501c (3) non-profit corporation with all donations tax deductible. This event featured multicultural entertainment on the Huber Park stage, with such varied acts as: Aztec dancers, Chinese dance theater performers and the La Luz Del Mundo Church Choir and more! It also had thirty-one cultural/vendor booths, the Readmobile, an ambulance rig from St. Francis, Park Nicollet Mammogram bus, and Three Rivers had their RV to encourage families to enjoy the many parks and places outdoors. We also had "family priced" ethnic cuisine featuring Mexican beef tacos, Somali sambusas, good 'ole American hot dogs, corn-on-the-cob, and donuts! We had a face painter and a clown for the kids. We didn't even let the thunderstorm and lightening wreck our fun but had to end a little early! **WE COULDN'T HAVE DONE IT WITHOUT YOU!**

The SDA is lead by community volunteers. It is comprised of a board of directors and conducts quarterly community events that educate and deliver needed public information. We hope you'll learn more about the SDA at: www.shakopeediversityalliance.org or visit our Facebook page for future events. Our diversity makes us stronger as a community. "A lot of different flowers make a bouquet." Muslim Origin. Malcolm Forbes defined it as, "Diversity: the art of thinking independently together."

Sincerely,

Terry Hassan/SDA President

thassan@capagency.org 952-212-1867

3b

I know it's a little late-
but really appreciate what
Shakopee Utilities did during
the road construction
project last summer and
the cutting of trees during
this past summer!

The phrase is simple
and the words are few,
but behind them
is a whole lot
of appreciation.

Thanks So Much!

The Barty Family

Hello -

Just wanted to send a long overdue thank you note to strongly voice our appreciation for all that was done through the road repair on our street and cutting down the two trees during this past winter.

Road work this past summer had its moments with a few unexpected problems but Shakopee Public Utilities sure step in promptly to solve them. We live in the area where my neighbor's tree fell on wires plus also where the light pole was bumped into. Your company got the power up quickly.

Seeing what can happen when trees are trimmed or cut down actually makes you nervous. I know the tree trimming company that was part of the road work project or the road work crew didn't want this to happen, but it sure makes you appreciate how fast your crew rectified the issues.

Also appreciated how quickly you fixed the city water that was leaking last fall - I guess it was some small part or connection problem when pipes were replaced earlier. You fixed it and flushed our system very promptly. Due to all the water related ~~settling~~ ground issues and the late season repairs to grass etc was done earlier this summer. It looks

great. We know with large scale projects things can go wrong, but the process of solving them isn't as easy and fast as the Shakopee Public Utilities crews provided.

The crew that came this past winter to take down two trees by the electric wiring next to alley did a wonderful job. Very professional and skilled also did a great job in cleaning up. After the ~~or~~ experience with the different tree cutting company hired for the road construction project - you could really see a difference in skills with your crew when working around power lines. The crew also took the tree down in smaller sections probably for safer results. Very thankful and impressive.

Also wanted to say besides loving the new road - really like the new street lights and enjoy not having overhead wiring on the front of our property.

When we made a request about tree trimming or to see if you ~~you~~ wanted to take them down or what could be done ~~or~~ we were also concerned about the large maple in the back that is tangled in both our service lines and our neighbors. I know I've been informed that the pole was been flagged to be replaced. Not sure if this tree could be trimmed or taken down during winter - might be easier to get to during other seasons or when

pole is replaced. All these wires and large branches make me very concerned, even hiring someone to tackle this tree might be difficult. Your crew was so skilled and I hope you can ease my concerns. Very sorry that our yard has mixed trees and wires together! Was thinking that when the pole was replaced or during that process there might be a chance to do something about this tree.

Again thanks for everything and your great service. As far as our maple in the back let us know if you have any suggestions.

Take Care

Cherie & Randy Bartz

1732 Shakopee Ave E

(952) 445-9073



2451 Crystal Drive
Suite 1000
Arlington, VA 22202-4804
202-467-2900
www.PublicPower.org

August 14, 2018

John Crooks
Utilities Manager
Shakopee Public Utilities
PO Box 470
Shakopee, MN 55379

Dear John:

I am pleased to present an American Public Power Association Mutual Aid Commendation to Shakopee Public Utilities. The Mutual Aid Commendation was established in 2018 to recognize public power utilities that have answered the call for assistance and aided another community in restoring power to its customers.

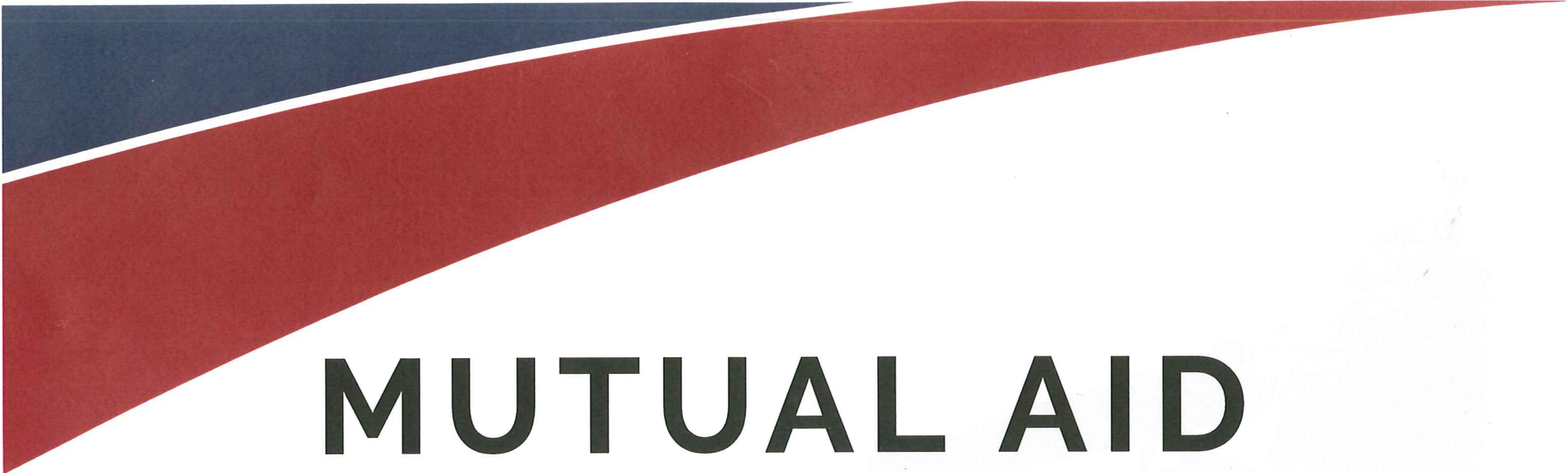
Mutual aid is at the heart of what public power does, and the public power community thanks you for stepping up to help a neighbor in need—whether they are next door or thousands of miles away.

Enclosed is a sample news release that you may wish to use in publicizing your commendation. If you have questions or would like assistance, please contact us at MutualAid@PublicPower.org.

On behalf of the more than 2,000 public power utilities we represent, please accept my thanks.

Sincerely,

Sue Kelly
President & CEO



MUTUAL AID COMMENDATION

Shakopee Public Utilities

In recognition of its support in electric power restoration efforts,
the American Public Power Association recognizes
Shakopee Public Utilities
for providing mutual aid assistance to
City of Fort Worth *Kissimmee*



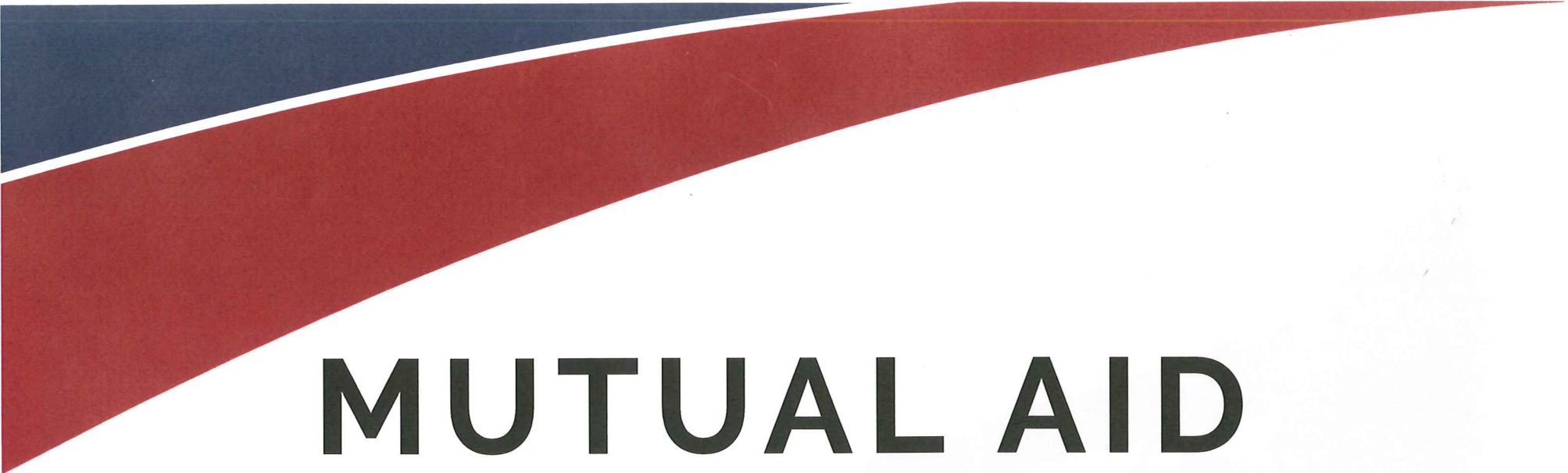
Rick McKinley
Chair, Mutual Aid Working Group



Susan N. Kelly
President & CEO

SEPTEMBER 2017





MUTUAL AID COMMENDATION

Shakopee Public Utilities

In recognition of its support in electric power restoration efforts,
the American Public Power Association recognizes
Shakopee Public Utilities
for providing mutual aid assistance to
City of Fort Worth

lake

Rick McKinley

Rick McKinley
Chair, Mutual Aid Working Group

Susan N. Kelly

Susan N. Kelly
President & CEO

SEPTEMBER 2017



Powering Strong Communities

Use this news release to publicize your commendation locally. Fill in the blanks and put on your own letterhead. Distribute the release to your local newspaper, radio and TV news reporters along with any photos or b-roll you may have. Include an article in your customer and employee newsletters and post the information on your website. More information on the American Public Power Association's mutual aid program available at www.PublicPower.org/MutualAid.

Contact: Tobias Sellier, American Public Power Association
MediaRelations@PublicPower.org
Name and phone number/email of local utility media contact

(UTILITY NAME) RECEIVES NATIONAL COMMENDATION FOR ELECTRIC RESTORATION EFFORTS IN (CITY/STATE/REGION) -or- IN REPOSE TO (WEATHER EVENT)

[City, State] - [Date] — (Utility name) has received a national commendation from the American Public Power Association for its support in electric power restoration efforts in (City/State/Region).

On (Date), (Utility name) sent (Number of people or crews) to assist (Affected utility or community), which suffered widespread outages as a result of (Describe event).

(Provide more detail regarding the work – e.g. testimonials from responding personnel, number of customers restored).

(Provide quote from utility GM describing the value of mutual aid).

(Utility name) participates in the American Public Power Association's Mutual Aid Network, which coordinates with utilities and authorities during widespread power outages.

For more information on [Utility name] and its commitment to mutual aid, visit [website] or PublicPower.org/MutualAid.

###

SHAKOPEE PUBLIC UTILITIES
MEMORANDUM

8b

TO: John Crooks, Utilities Manager
FROM: Joseph D. Adams, Planning & Engineering Director
SUBJECT: 2018 Comprehensive Water Plan
DATE: September 13, 2018



ISSUE

Attached is the final draft of the 2018 Comprehensive Water Plan.

BACKGROUND

The last Comp Water Plan update was 2004. Due to expansion of the city since and projected annexation of various portions of Jackson Township, a new Comp Water Plan is in order to properly prepare for the expected growth in population and commercial activity and the necessary water system improvements to meet the resulting rising demand.

Short Elliot Hendrickson, Inc. was retained by the Commission to do long range system planning for the water system. Staff worked with the consultant to identify major system improvements completed since 2004, changes in development patterns, current zoning and projected land use designations and relevant information contained in the recent City of Shakopee's East End and West End Studies and population projections from the Met Council.

DISCUSSION

The Commission's planning consultant SEH's Chad Katzenberger will present the report and be available for questions.

REQUESTED ACTION

Staff requests the Commission accept the report and direct staff to utilize the information within as a guide when preparing the Commission's Capital Improvement Plans and Water System Operating Budgets going forward.



Comprehensive Water System Plan

2018 Comprehensive Water Plan

Shakopee, Minnesota

SHPUC 140940 | September 13, 2018



Building a Better World
for All of Us®

Engineers | Architects | Planners | Scientists

Comprehensive Water System Plan

2018 Comprehensive Water Plan
Shakopee, Minnesota

SEH No. SHPUC 140940

September 13, 2018

I hereby certify that this 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.


Chad T. Katzenberger, PE

Date: September 13, 2018

License No.: 46613

Short Elliott Hendrickson Inc.
3535 Vadnais Center Drive
St. Paul, MN 55110-5196
651.490.2000



Executive Summary

The purpose of this report is to provide information regarding the Shakopee PUC existing and anticipated water system conditions to aid in capital planning. This report serves as an update to the 2004 Comprehensive Water Plan Update, as population and water use projections have changed since 2004 projections. Existing water supplies, storage tanks and the distribution system were analyzed to establish the current conditions of the water system. Trends from historical water use data were used to determine projection estimates through the year 2040.

The existing Shakopee PUC water system includes groundwater wells, storage tanks, and distribution functions. This report evaluates each category to determine existing and projected water usage.

Existing Facilities Include:

- Eighteen groundwater wells that pump water from the Prairie du Chien-Jordan Sandstone aquifer. Combined the wells have a total supply capacity of 24.4 million gallons a day (MGD) and a reliable supply capacity of 20.3 MGD.
- Four elevated storage tanks with a total storage capacity of 4.25 million gallons (MG).
- Three ground storage tanks with a total storage capacity of 7.0 MG.
- Four pumping stations that supply water to four different pressure zones within the system.

Water facilities are often designed to meet maximum day demands. Historical data shows that over the last 10 years maximum day demands ranged from 9.94 to 16.26. The maximum day demands are often impacted by seasonal conditions such as dry and hot summers, land use patterns and population.

Population projections indicate a large increase in population by the year 2040. This is partially due to the annexation of Jackson Township into the Shakopee City limits. Projected maximum daily demands indicate that additional water supplies and interconnections between pressure zones will be needed to meet future maximum day demands.

Recommended Improvements Include:

- Construction of additional supply wells #23, #24 & #18.
- Construction of new booster station facility to redundant water transfer between the Normal pressure zone and 1st High Pressure Zone utilizing booster pumping and pressure reducing flow control.
- Upgrading Well #9 Booster Station with a flow control valve to allow water to move from First High Zone to Normal Zone.
- Build a booster station in the East Zone to raise the hydraulic grade line to the level of the Second High Zone. (Currently in progress)
- Construction of a 500,000 gallon elevated storage tank be constructed in the western portion of the Second High Pressure Zone
- A 500,000 gallon elevated storage tank be constructed in the central portion of the Second High Pressure Zone
- Trunk water main construction and other water distribution features to accommodate water system expansion and development.

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Comprehensive Water System Plan

2018 Comprehensive Water Plan

Prepared for Shakopee Public Utilities Commission

1 Introduction

The Shakopee Public Utilities Commission (SPUC) water system serves the City of Shakopee, which is a community of approximately 37,000 people located in the Northern part of Scott County. The SPUC provides water service to residences and businesses within the City limits of Shakopee.

SPUC provides water to its customers via eighteen (18) groundwater wells, located throughout the water system. The SPUC water system includes eighteen (18) wells, four (4) elevated storage tanks, three (3) ground storage facilities and two (2) booster stations. SPUC maintains approximately 196 miles of transmission and distribution water mains ranging in size up to 30 inches in diameter.

The customers of SPUC include several numerous industrial and commercial users as well as residential and public users. Currently, approximately 68 percent of the total water consumption is attributed to residential uses.

The City of Shakopee's location with respect to nearby major urban centers, principal transportation corridors, and available lands offers potential for future growth and development. Therefore, proper planning is essential to coordinate the expansion of municipal water system facilities with short term as well as long term needs of the community.

This report summarizes the results of a water system evaluation completed for the Shakopee Public Utilities. The primary purposes of the study were to evaluate the water needs and system expansion required to serve current and future utility customers.

Present and future water needs of the SPUC water system have been evaluated, and recommendations made concerning improvements necessary to maintain an adequate level of water service. Current and future water needs were evaluated over a planning period extending to the year 2040. This report will serve as a plan to guide future expansion and redevelopment of the water system.

1.1 Scope

The study began with an analysis of community development and growth including population, and existing and expected future land uses in Section 3. Section 4 covers water consumption projections, which serve as the foundation for evaluating and identifying recommended improvements to the system. The assumptions and conclusions presented in Section 3 were used to develop projections of water requirements that are presented in Section 4. Section 5 summarizes the evaluation of the water system. Part B of this plan, planned next year, will provide recommended improvements and a capital improvements plan.

Because needs change with time, municipal water system planning is a continuous function. Therefore, the longer term projections and improvements discussed in this report should be reviewed, re-evaluated and modified as necessary, to assure the adequacy of future planning efforts. Proper future planning will help assure that system expansion is coordinated and constructed in the most effective manner.

1.2 Background and Previous Studies

This plan reviews previous water planning studies completed in prior planning periods, first initiated in 1976. Referenced studies include:

- Comprehensive Trunk Water System Study, January 1976
- Fire Flow Study, 1979. Analyzed fire flows and recommended system improvements to improve deficient fire flows.
- County Road No. 17 - 13th Avenue Area Trunk Water Study, 1980
- Water Connection Charge Study, May 1981 with December 1982 Supplement.
- Comprehensive Water Plan, April 1993 (Update to original plan)
- Conservation and Emergency Management Plan (CEMP), October 1996.
- Municipal Water Source Study- Part I, January 1995.
- Municipal Water Source Study - Part II, March 1995.
- Report on Water System Operation and Modifications to Address High Nitrate Levels in Well Water, December 1996.
- 1999 Comprehensive Water Plan Update, July 1999. (Update to 1993 plan and evaluated water system needs for new MUSA Additions)
- Alternative Water Supply Analysis, September 1999
- Water Treatment Plan Feasibility Study, May 2001
- Aquifer Evaluation Report, December 2001. (Utilized test pumping data from Well No. 12 to evaluate Jordan aquifer)
- 2001 Comprehensive Water Plan, December 2001
- East Water Storage Tank Design Report, January 2003
- Water Trunk charge and Connection Charge Analysis, March 2003
- Water Rate Study, Preliminary draft April 2004
- 2004 Comprehensive Water Plan Update, 2004
- Aquifer Sustainability Study, 2005
- 2006 DNR Water Supply Plan, December 2006
- Southeast Area Water Service Report, June 2006

The table below provides a history of water system facility construction.

Table 1-1 – Shakopee PUC Water System Facility Construction Timeline

Year	Facility	Type	Status	Notes
1910	Well No.1	Supply	Inactive	First Well
1910	Wood Storage Tank	Storage	Inactive	First Storage Tank
1940	250K Gal. Spheroid	Storage	Active	Currently Tank No.2
1945	Well No.2	Supply	Active	
1956	Well No.3	Supply	Active	
1966	2.0 MG Reservoir	Storage	Active	Current Tank No.1
1972	Well No.4 & Well No.5	Supply	Active	Installed by Eagle Creek Township
1973	Eagle Creek Water main	Distribution	Active	Connected City to Eagle Creek Wells
1980	1.5 MG Hydropillar	Storage	Active	Current Tank No.3
1980	Well No.6	Supply	Active	Trunk Main Also Constructed (Kmart Project)
1986	Well No.7	Supply	Active	Driven by growth
1989	Well No.8	Supply	Active	Driven by growth
1995	First High Elev. Service	Distribution	Active	Development into higher elevation areas
1995	Well No.9	Supply	Active	Supply to First High Elevation Service Area
1998	Well No.10	Supply	Active	Water to dilute high nitrates from Well Nos. 6&7
1999	SCADA system		Active	First SCADA system added to the system
2000	Trunk Main		Active	Southbridge/101 Trunk main
2001	Well No.11	Supply	Active	
2001	Well No.12	Supply	Active	
2002	Well No.13	Supply	Active	
2002	500K Elevated Storage	Storage	Active	Current Tank No.4
2004	Well No.14	Supply	Active	
2005	Well No.15	Supply	Active	
2005	2.5 MG Ground Storage	Storage	Active	Current Tank No.5
2005	2.5 MG Ground Storage	Storage	Active	Current Tank No.6
2006	Well No.16	Supply	Active	
2007	Well No.17	Supply	Active	
2005	Well No.20	Supply	Active	
2005	Well No.21	Supply	Active	
2015	2.0 MG Ground Storage	Supply	Active	Current Tank No.7

Source: SPUC Records

2 Existing Water System

The Shakopee water system has a long history with the first well being constructed in 1910. This well fed a small network of water main and a wooded storage tank which sustained pressure. The small network of water main continued to grow and extend out as the community grew. The table above shows a sequential history of the expansion and growth of the SPUC water system.

The water system has grown to include seven storage tanks, 18 groundwater supply wells and four pumping stations. The system utilizes four pressure zones: the Normal Zone, First High Zone, East Zone and the Second High Zone. The East Zone has the same hydraulic grade line as the First High Zone. The Second High Zone is also separated out into separate sections. The separation is due to how development has occurred with respect to the elevation of the landscape.

2.1 Supply

Table 2-2 lists Shakopee's groundwater supply wells. Shakopee receives water from deep wells located throughout the water system. Water is accessed from one of three different aquifers including: Prairie du Chien-Jordan Sandstone (CJDN), Franconia-Ironton-Galesville bedrock (CFIG) and Mt. Simon/Hinckley bedrock (CSTLCMTS)

The Prairie du Chien-Jordan Sandstone aquifer has been the primary aquifer option for the City as the Franconia-Ironton-Galesville bedrock aquifer is generally unproductive in the Southwest Metro area and Mt. Simon/Hinckley bedrock aquifer is protected by Minnesota Statutes due to overuse and is also susceptible to radium and slow recharge.

Previous studies investigated the sustainability of the use of the Prairie du Chien-Jordan Sandstone to serve the region. The study concluded that Prairie du Chien-Jordan Aquifer is truncated, encompassed, and isolated in Shakopee. The amount of groundwater available for development is limited to local storage, recharge, and discharge rates. Recharge rates are estimated to be 7.6 to 12.2 Billion Gallons per year (BGY) with recharge potentially decreasing 7% upon future development. Regional access to the water (including users from Prior Lake, Mdewakaton Sioux and Non-municipal users) was expected to reach 28.8 MGD with 65% of the use attributed to Shakopee. Assuming Shakopee would be allocated a similar percentage of the recharge, the average day recharge water available would be roughly 13.5 MGD). Current average day water use in Shakopee is roughly 5.0 MGD. As a result, it appears as though the aquifer has the capacity to meet the future demand of Shakopee. However, care must be taken to ensure the sustainability of the aquifer.

Table 2-1 – Existing Supply Facilities

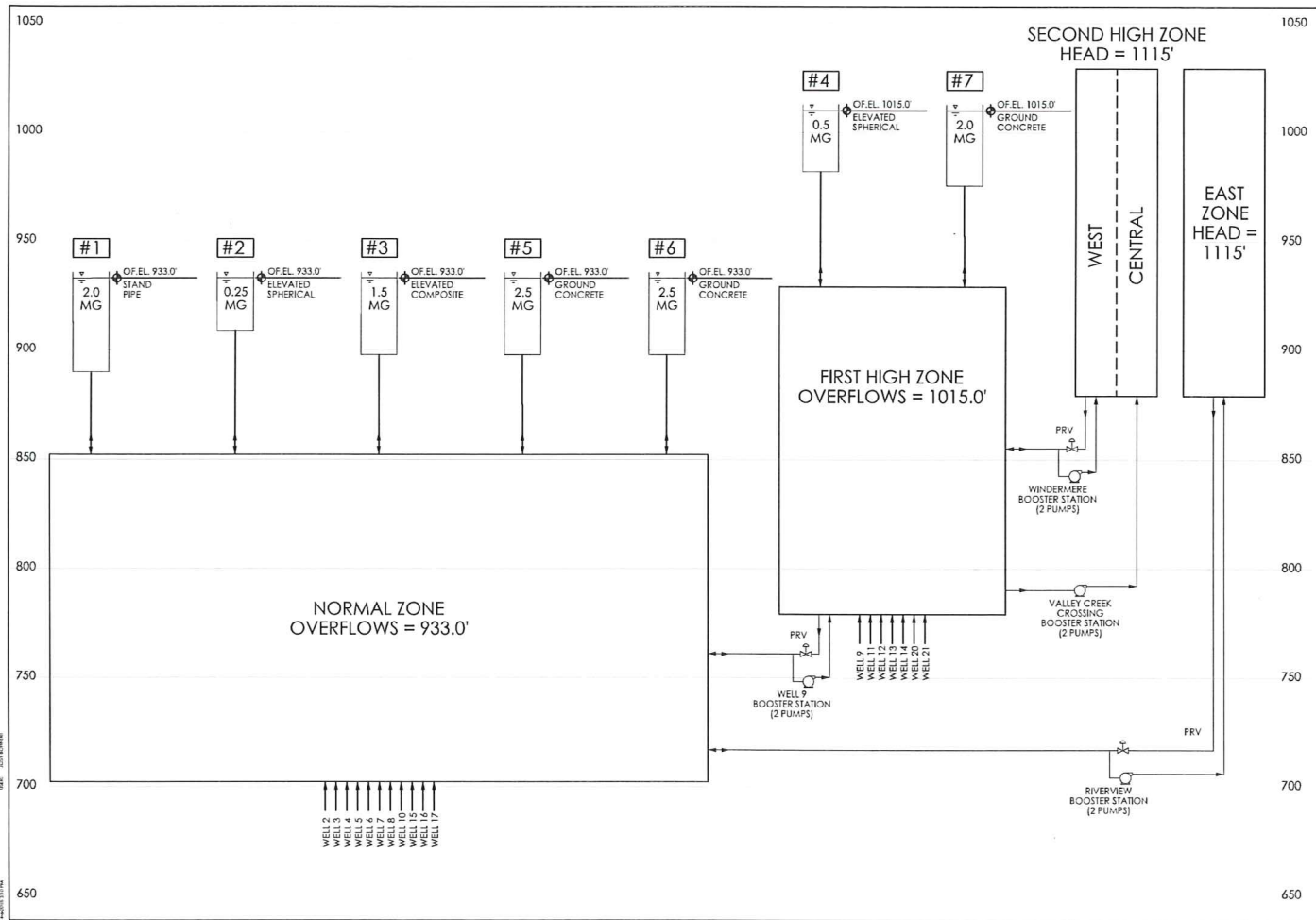
Facility	MN Unique Well #	Year Installed	Pressure Zone	Capacity (gpm)	Well Depth (Feet)	Status
Well 2	206803	1944/2002	Normal	300	525	Active
Well 3	205978	1956	Normal	900	755	Emergency
Well 4	206854	1971	Normal	716	254	Active
Well 5	206855	1971	Normal	850	253	Active
Well 6	180922	1981	Normal	1175	222	Active
Well 7	415975	1986	Normal	1100	218	Active
Well 8	500657	1989	Normal	1100	262	Active
Well 9	554214	1994	1st High	1050	315	Active
Well 10	578948	2001	Normal	1125	800	Active
Well 11	611084	2001	1st High	1000	312	Active
Well 12	626775	2001	1st High	810	352	Active
Well 13	674456	2002	1st High	1036	338	Active
Well 14	694904	2004	1st High	381	597	Active
Well 15	694921	2005	Normal	1150	295	Active
Well 16	731139	2006	Normal	1450	285	Active
Well 17	731140	2007	Normal	1400	290	Active
Well 20	722624	2005	1st High	1142	275	Active
Well 21	722625	2005	1st High	1175	275	Active

Historical well levels are included in appendix (Water Supply Plan).

2.2 Treatment

Shakopee does not utilize filtration plants, water is supplied directly from wells. Chemicals including fluoride and chlorine are injected at each well with PO₄ also utilized at some sites. Each well is equipped with its own chemical feed equipment.

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 DATE: 03/01/2018
 SHEET: 2018-2018-001




 SEH
 STANTEC ENGINEERING GROUP, INC.
 1001 WEST WASHINGTON AVENUE
 SUITE 200
 MINNEAPOLIS, MN 55402

WATER COMPREHENSIVE PLAN
 FOR THE
 SHALOPEE, MINNESOTA

SHEET NO. 2018-2018-001
 DATE: 03/01/2018
 DESIGNED BY: JMR
 CHECKED BY: JMR
 PROJECT: SHALOPEE, MN

WATER TREATMENT PLANT
 SCHEMATIC
 (PART 1)

SHEET
FIGURE 2-1

2.3 Storage

Water storage tanks play an important role in the operation of a water system by sustaining system pressure and supplying water when needed. Four elevated tanks and three ground level reservoirs provide distribution storage for the Shakopee water system. These facilities are noted in Table 2-3. All facilities provide “floating” storage for the system meaning, they supply flow from the tank via gravity.

Table 2-2 – Existing Storage Facilities

Structure Name	Type of Storage Structure	Year Constructed	Primary Material	Overflow Elev. (ft)	Storage Capacity (Gallons)
Tank 1	Elevated	1966	Steel	933	2,000,000
Tank 2	Elevated	1940	Steel	933	250,000
Tank 3	Elevated	1980	Steel	933	1,500,000
Tank 4	Elevated	2002	Steel	1015	500,000
Tank 5	Ground	2005	Steel	933	2,500,000
Tank 6	Ground	2005	Steel	933	2,500,000
Tank 7	Ground	2015	Steel	1015	2,000,000
TOTAL (MG)					11.25

2.4 Pressure Zones

Due to the nature of the land elevations served within the service area of the Shakopee water system, multiple pressure zones have been developed to assure adequate pressure is provided to each customer. Water system pressure will vary around the service area based on land elevations, as well as, to a lesser extent, supply rates and customer demands. In general, as customer demands increase, pressures will decrease, however, the effect of demands on overall system pressures is usually minor. Areas higher in topographic elevation will also tend to exhibit lower water system pressures.

A water distribution system must be designed to provide pressures within a range of minimum and maximum allowable conditions. When system pressure is too low, customers may complain of inadequate water supply, customer meters may tend to record inaccurately, and fire protection will be limited. Pressures that are too high can cause problems with system operation and maintenance, and will tend to cause higher consumption rates by customers. High water system pressures can also increase the amount of water loss, as leakage rates will increase with increases in system pressure. Typical Standards for water system design suggest that a minimum pressure of 35 psi and a maximum pressure of 80 psi be provided at all locations in the service area under normal operating conditions. If service pressures exceed 80 psi State Plumbing code calls for PRV's (Pressure Reducing Valves) be installed at service lines where pressures monitored in the street (Main) exceed 80 psi. Furthermore, water systems are required to be operated so that under fire flow conditions, the residual pressure in the system will not fall below 20 psi at any location.

With this in mind, the Shakopee water system has been designed with three Hydraulic Grade Levels (HGL) and three pressure zones in order to sustain adequate system pressure. A summary of each pressure zone is identified in Table 2-4. The planned pressure zones are shown in Figure 2-1. Due to geographic separation and development timing of the Second high pressure zone (2-HES) this zone is currently divided into two sub regions. The East Zone will be eventually raised and added to the Second High Zone. Though they will operate at the same hydraulic grade, they are not currently connected and do not receive water from the same sources.

Table 2-3 – Pressure Zones

Service Area	Hydraulic Grade Level (HGL)	Lowest Elevation Served (ft)	Highest Elevation Served (ft)
Normal Elevation Service (NES)	933	740	825
First High Elevation Service (1-HES)	1015	800	915
Second High Elevation Service (2-HES) ¹	1115	900	1020
¹ 2-HES is currently separated geographically into three stand-alone pressure zones (West, Central & East)			

2.5 Booster Stations

The Shakopee water system currently has two booster stations, with two additional stations in either the planning or construction phase. The Valley Creek Booster Station transfers water from one pressure zone to another while the other stations transfer water as well as sustain pressure in the corresponding pressure zone. Table 2-5 shows the capacities of the booster pumps at each of the interzone booster pumping stations.

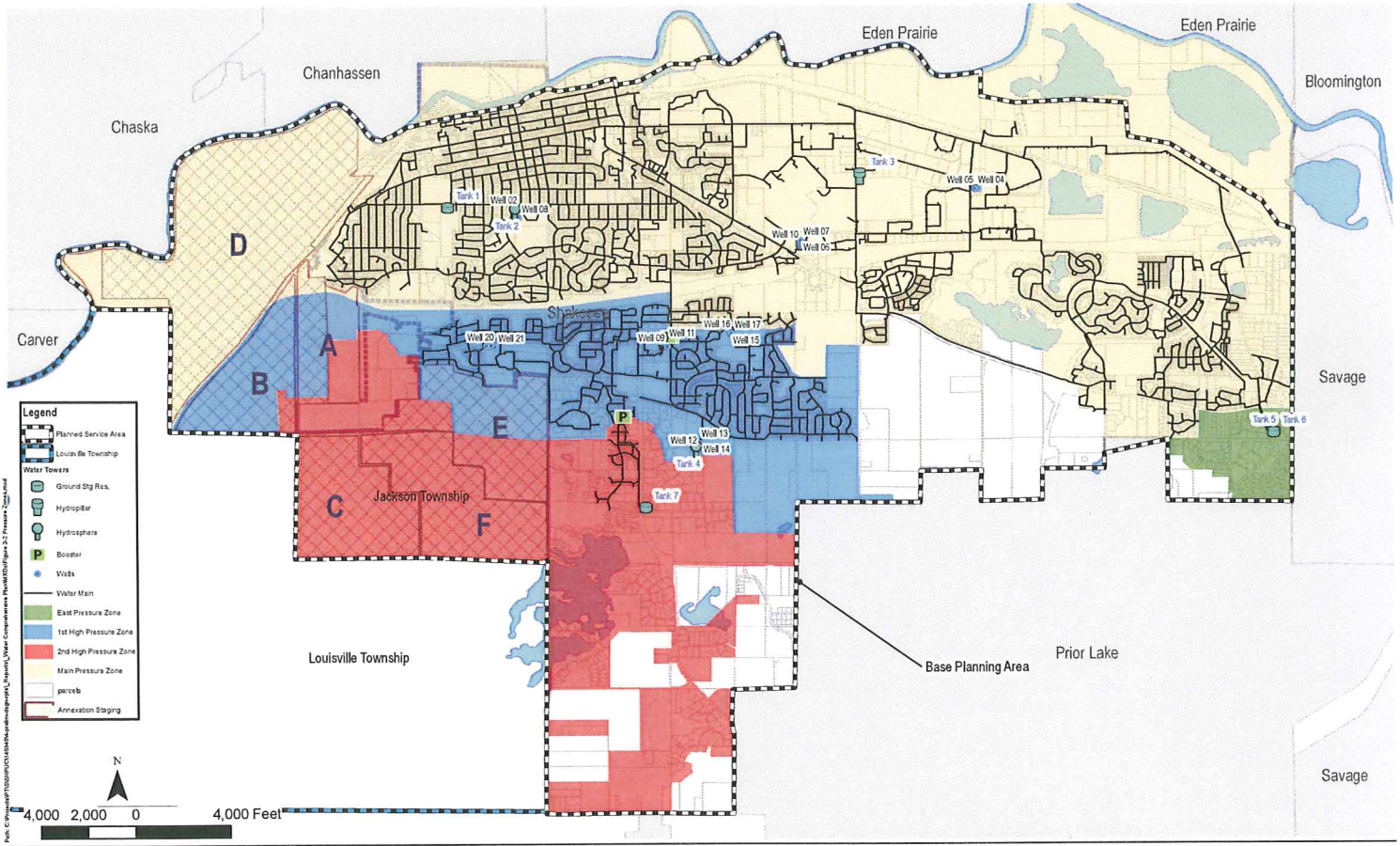
Table 2-4 – Existing Booster Stations

Facility	Function	From Pressure Zone	To Pressure Zone	Pump No.	Capacity (gpm)	Total Station Capacity (MGD)
Well 9 Booster	Zone Transfer	NES	1-HES	1	1000	2.9
				2	1000	
Valley Creek	Zone Transfer/Pressure Sustain	1-HES	2-HES - Central	1	1000	2.9
				2	1000	
*Windermere (West)	Zone Transfer/Pressure Sustain	1-HES	2-HES- West	1	1000	2.9
				2	1000	
*Riverview (East)	Zone Transfer/Pressure Sustain	NES	2-HES- East	1	1000	2.9
				2	1000	
*Future or currently under construction						

2.6 Distribution System

The water distribution system provides a means of transporting and distributing water from the supply sources to Utility customers and other points of usage. The distribution system must be capable of supplying adequate quantities of water at reasonable pressures throughout the service area under a range of operating conditions. Furthermore, the distribution system must be able to provide not only uniform distribution of water during normal and peak demand conditions, but must also be capable of delivering adequate water supplies for fire protection purposes.

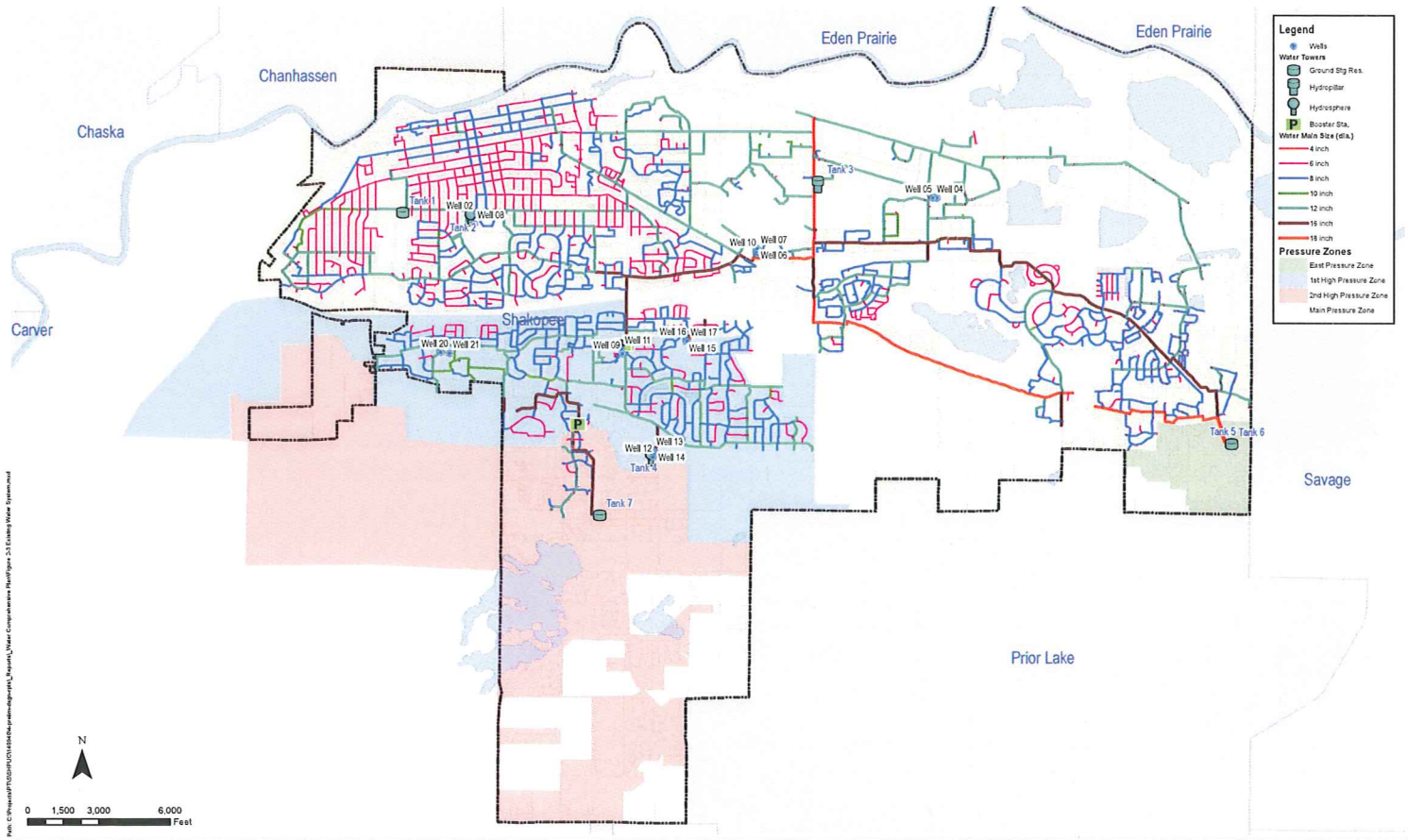
The Shakopee water system is comprised of approximately 186 miles of water mains ranging in size up to 30 inches in diameter as illustrated in Figure 2-2. The current water main size inventory is summarized in Table 2-6 below. Of the 186 miles of water main, thirty-seven percent is 10 inches in diameter or larger which represent the transmission mains in the system. The presence of large water main as exists in the Shakopee water system supports the ability of the water system to transmit large system flows.



The trunk water mains connect the supply and storage facilities with the lateral water mains. The City's current policy requires a trunk water main grid of 12-inch diameter water main in each direction at a half-mile spacing or the equivalent. In general, this policy has been followed south of 101st Avenue. Lateral water mains are typically six or eight inches in diameter in residential areas where water usage and fire flows are minimal. In industrial areas, where there is potential for large volume users and higher fire flows, larger lateral mains are required. City policy requires minimum 12-inch diameter mains in industrial areas and 8-inch diameter in commercial areas.

Table 2-5 – Existing Water System Piping

Pipe Size (inches)	Percent of total (%)	Length (feet)	Length (Miles)
6	29%	305,115	57.8
8	37%	393,276	74.5
10	2%	17,510	3.3
12	25%	260,206	49.3
16	5%	48,042	9.1
18	3%	32,776	6.2
Total	100%	1,056,925	200.2



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Project Number: SHPUC 140940
 Print Date: Print Date: 8/29/2018
 Map by: Proton Source



2018 Comprehensive Water Plan
 Shakopee, Minnesota

FIGURE 2-3
 Existing Water System Model Map

3 Population & Community Growth

This section summarizes the planning assumptions made regarding future service area characteristics for SPUC water service area. To maintain consistency between individual planning efforts, the results of previous planning efforts were reviewed. The input received from local officials and utility staff members was also considered and incorporated.

3.1 Population Forecast

There is generally a close relationship between a community's population and total water consumption volumes. Future water sales can be expected to generally reflect future changes in service area population. Similarly, commercial, public, and industrial water consumption will also tend to vary proportionately with the growth of the community.

Table 3-1 – Historical Population Data

Year	Population	Annual Growth Rate (%)
1970	7,716	-
1980	9,941	2.5%
1990	11,739	1.7%
2000	20,568	5.6%
2010	37,076	5.9%
2015	39,981	1.5%
2017	41,374	1.7%

Source: State Demographer, City of Shakopee Website

The City of Shakopee has experienced an exponential increase in population in the last 20 years, with the population nearly doubling since the year 2000. The City's estimated population in 2015 was 39,981 according to the state demographer. Table 3-1 above summarizes past trends and Table 3-2 below summarizes projected future population of the City. Future population estimates are based on projections provided by Met Council through the year 2040. The City's 2040 comprehensive plan is currently underway, which will review the Met council projections. Upon review and/or suggested modification of the 2040 population projections by City comprehensive planning staff, future water use projections cited in this report can be updated.

Table 3-2 – Projected Population Data

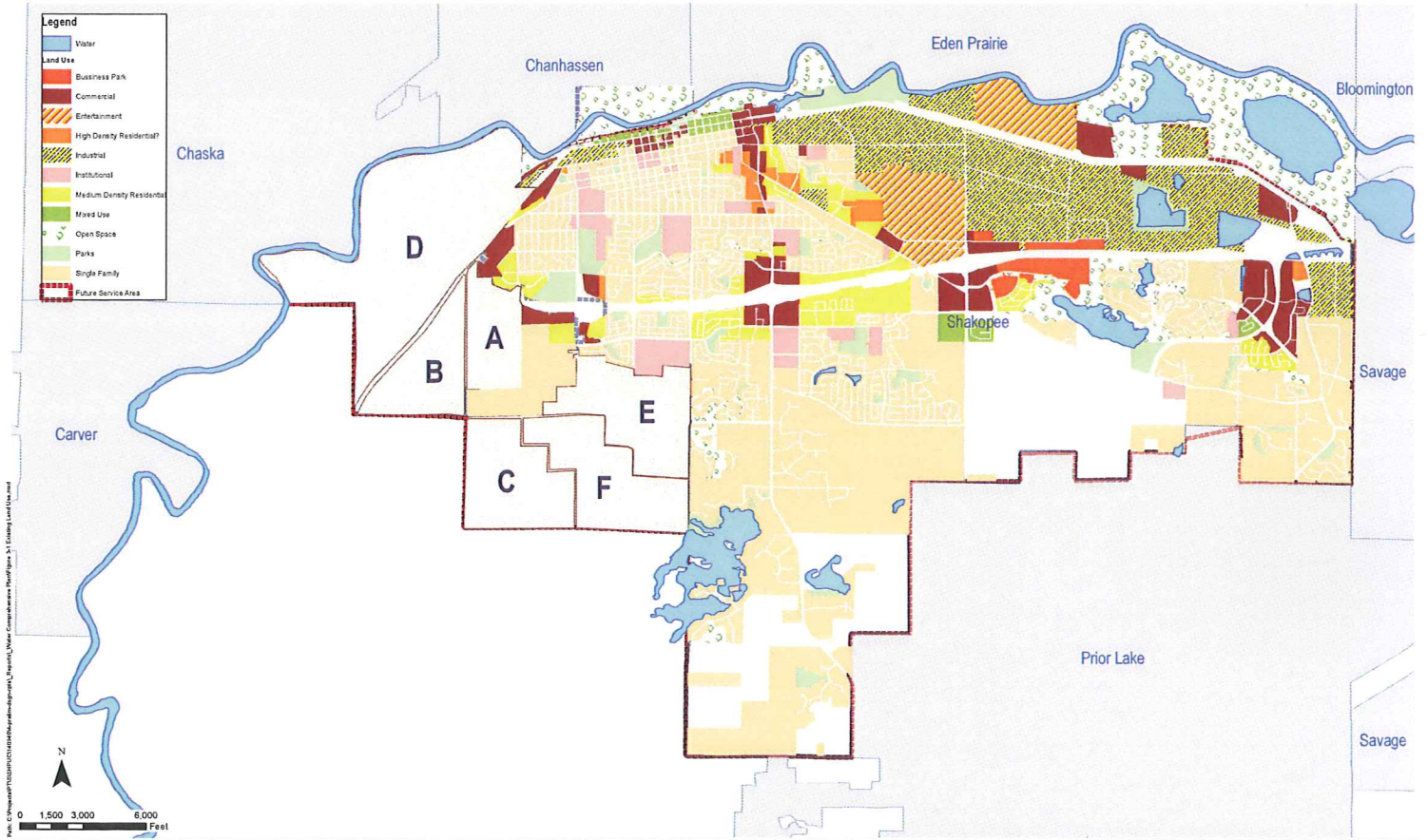
Year	Population	Annual Growth Rate (%)
2020	43,000	1.3%
2025	47,250	1.9%
2030	51,500	1.7%
2035	55,750	1.6%
2040	60,000	1.5%

Source: State Demographer, City of Shakopee Website

Projections noted above indicate SPUC's service area total population is expected to increase to approximately 60,000 people by the year 2040. For this study, in calculating per capita water use, it is assumed that the total percentage of population served by the Water Utility by the year 2040 will be similar to the current service percentage. As a result, future water users will grow at a rate similar to the population growth.

3.2 Existing Land Use

For this study, existing City land use data was reviewed. Figure 3-1 illustrates current land uses and represents the nature and extent of existing development within the City, future growth and land use. The City's existing land use is a diverse mix of historical development patterns flanked by commercial, industrial, entertainment and residential developments. Previously, Shakopee was considered a free standing growth center, but with recent developments, including the new Bloomington Ferry Bridge, suburban development has stretched into Shakopee. This makes Shakopee a rather unique community in that though it includes suburban development, its primary core includes a historic downtown and long established residential, industrial and commercial areas. In addition, the City includes major entertainment venues including Valley Fair Amusement Park and Canterbury Park which attracts visitors from across the Midwest. The seasonal characteristics of these facilitates can create challenges during the summer months, due to single season use.



3.3 Water Service Area

The extent of this water study includes the existing water service area, which is shown in Figure 3-2. The water system will be discussed in more detail in Section 4 (see Figure 4-1 later in the report). The majority of the land within existing city limits is served by water main with the exception of a few select undeveloped areas, as well as tribal held lands. The water system is first expected to grow in the Western portion of the City as portions of Jackson Township are annexed into Shakopee City limits. Figure 3-2 documents the expected sequence of expansion growth with each expansion area labeled A-F with a indicating the first area of development expected.

