Water System Improvements

Preliminary Engineering Report
Skyline, MN

September 11, 2020

Project No. 20-24060

ISG

Architecture
Engineering
Environmental
Planning

ISGInc.com

REPORT FOR:
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SIGNATURE SHEET

I HEREBY CERTIFY THAT THESE CALCULATIONS WERE 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.

Bryan Petzel, **PE**
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Water System Improvements
Skyline, Minnesota

Engineer's Project Number: 20-24060

Dated this 11 day of September, 2020

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APPENDICES

INTRODUCTION

Scope of Work

The City of Skyline, Minnesota retained ISG to conduct an investigation of the improvements needed to its public water system. ISG is responsible for this Preliminary Engineering Report (PER). The PER comprises the results of our study and presents recommendations to properly upgrade the water system and comply with the current Minnesota Department of Health (MDH) and Ten State Standards requirements.

Background

In 2017, a Water Distribution System Modeling Report was completed for the City of Mankato that found the West Mankato water tower to be at the end of its useful life. Alternatives for tower replacement included an option to connect with the City of Skyline. This would have required a new water tower with capacity for Skyline and West Mankato, a booster station, and water main adjustments, as well as agreements between the two parties for operations and maintenance. The City opted out of the alternative to connect with West Mankato and based on existing conditions of their own system decided to begin the process for upgrading or replacing their infrastructure.

GENERAL INFORMATION

Population

The City of Skyline (City) is located in Blue Earth County, Minnesota. The City has a population of 289 as reported by the 2010 United States Census. Figure 1, shown below, presents the past and projected populations for the City. There has been a steady decline in population since 1980, but the projection for the 2020 census is a slight increase in population. Based on the estimated 2020 data, it is assumed that the City will increase by approximately 2.5% for the next 20 years, as there is no current plans for any City expansion. The City has a total of 123 residential water accounts and no industrial water accounts.

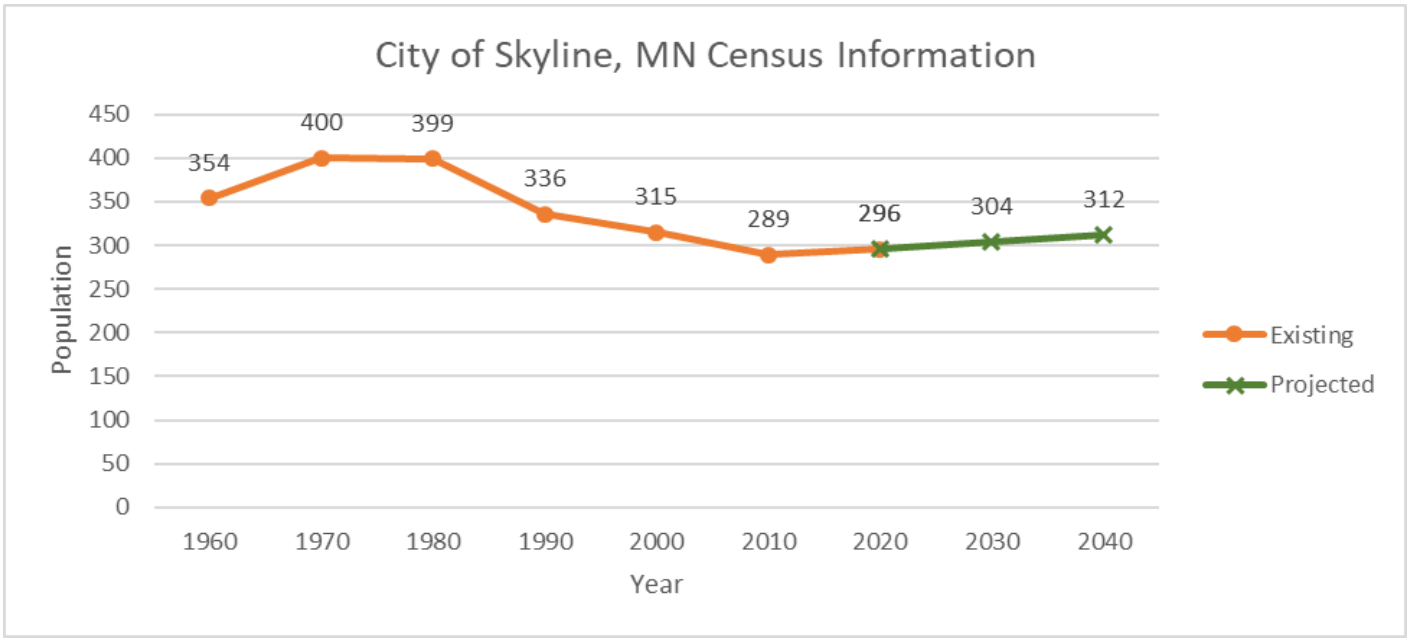


Figure 1: City of Skyline, MN Census Information

Water Usage

The City of Skyline's water supply system consists of two municipal wells, treatment, an elevated storage tank, and a distribution system. Water usage for the last three (3) years is listed in the following table. The average daily water demand has decreased during this period. In 2017, the average daily demand for the system was 16,397 gallons per day. This value was 2,982 gallons per day less in 2019, which is approximately an 18% reduction. Daily usage has reached a maximum of 65,000 gallons, typically occurring during dry summers.

Table 1. City Water Usage

Year	Average Daily Usage (Gallons)	Total Year Usage (Gallons)
2017	16,397	5,984,666
2018	14,966	5,462,614
2019	13,415	4,896,408

Based on the average daily demand of 14,926 gallons over the last 3 years, and a population of 289, the actual water usage is 51.6 gallons per capita per day (GPCD). This is significantly less than Ten State Standards recommendation of 100 GPCD for the design usage rate. This low usage within Skyline could be partly because there are no industrial users in town. Additionally, recent upgrades to the distribution system helps prevent leaks throughout the system.

Any future improvements made to the City's distribution system should be designed to provide fire flow of 500 gallons per minute for one hour. This equates to a demand of 30,000 gallons. Using the average daily demand of 14,926 gallons and fire flow of 30,000 gallons, there is sufficient storage with a 50,000 gallon tank. Utilizing Well 2 (or Well 1 for that matter) during a fire situation, the demand for fire flow from the storage tower reduces to 19,980 gallons, providing significant remaining capacity for daily demands. Based on the information available, the system will be designed around the following demands:

Table 2. Design Water Demands

Water Demandc	Total Gallons per Day (GPD)	Total Gallons per Minute (GPM)
Average Day Demand	14,926	12.4
Maximum Day Demand	65,000	54.2
Fire Flow Demand	-	500

Site Conditions

Appendix A contains a Location Map showing the existing water tower and well locations within the City of Skyline. The water tower property is located in a residential neighborhood, bordered by homes on two (2) sides. The remaining property is heavily wooded and borders a steep ditch on the remaining property edge. The existing tower site poses some difficult constraints as there is limited space available for construction staging and the tower construction. The wells are located to the north of the water tower property, in Willard Vetter Park. The pump house where chemical treatment occurs is also located at the park. Well 1 is located at the pump house and well 2 is located on the opposite side of the park. Site survey was completed and an Existing and Proposed Site Layout is provided within Appendix B.

Soil Conditions

Soil borings were completed on the tower site in two (2) locations, at the existing tower and approximately 100 feet to the east. The borings consisted of similar layers, with sandy lean clay and clayey sand below the top few feet of fill. A few concerns, such as groundwater level and the proximity to a steep ravine, are outlined within the report in Appendix C. No borings were performed at Willard Vetter Park, which could be done to confirm soil suitability.

EXISTING SYSTEM INFORMATION

Water Supply

The City of Skyline derives its water from two municipal wells that draw water from the Tunnel City - Wonewoc Aquifer. Wells 1 and 2 are both currently in use and provide water to the City. Well 1 and Well 2 are both located at Willard Vetter Park, North of the water tower property. Well 1 is located beneath the pump house building onsite and Well 2 is located on the opposite side of the park. These well pumps are capable of pumping directly into the storage tank and the distribution system with no intermediate pumps. Table 3 depicts the well information gathered from the Minnesota Department of Health (MDH) Well Index. The Well Reports available on the MDH site are located in Appendix D.

Table 3. City Well Information

City Well No.	Unique ID	Depth (ft) (well/casing)	Casing Diameter (in)	Pumping Capacity (gpm)	Year Built
1	240110	440/258	8 – 0' to 258'	55	1953
2	147952	501/297	12 – 0' to 263' 8 – 263' to 297'	150	1977

It is a good practice for municipal water wells to be inspected and/or cleaned on approximate five-year cycles. This would include pulling the well pump and inspecting the column pipe, pump and motor. A well inspection was completed on both wells in May 2019. Well 1 was producing 21 gallons per minute, which is a decrease from the original construction information provided by the MDH. Well 2 was producing 167 gallons per minute, which is a slight increase in efficiency from the original documentation. Overall, production has decreased by 17 gallons per minute. The well pumps are at the end of their useful life, could fail at any time, and are in need of replacement. Improvements such as well pump replacement will bring the pumping capacity back up to intended levels and increase the reliability of both wells. The pipe connecting Well 2 to the pump house has been replaced since the original installation, but no further upgrades have been made to the Water Supply.

There is the potential that Well 1's decreased capacity is not due to the pump, and instead is a result of the well needing cleaning and rehabilitation. Well remediation should be considered, as Well 1 is not considered to be a good backup well. The well capacity can barely meet the average demand, which would pose a significant issue for the City if Well 2 were to go down. Remediation of Well 1 or drilling of a new well in the near future should be considered so that the City has a sufficient backup water supply.

Treatment

Skyline's water treatment is located in a small building at the southwest corner of Willard Vetter Park. Wells 1 and 2 feed into the pump house building, the piping combines and water is injected with chemical before leaving the building and providing supply to the water tower and distribution system.

The City's water treatment consists of chemical dosing equipment for chlorine and fluoride. Polyphosphate is not used, but the original construction provided the necessary piping to accommodate this if it was ever needed. Polyphosphate and fluoride

chemicals are contained in 55 gallon drums and located in the main room of the building, while the chlorine gas is in a separate room with only exterior access for safety. There is no secondary containment for the chemicals, but this should be considered for future improvements. All treatment equipment for chemical injection and the well supply pipes within the pump house are the original construction and some corrosion has been noted. Piping needs to be sandblasted and recoated at a minimum, but replacement is the best for longevity of the system.

Storage

The City's water distribution system is pressurized via a multi-leg, cone top storage tank located in the east central area of town, off of South Skyline Drive. The tower location is within a residential area and the property is heavily wooded. This elevated tank has the capacity to hold 50,000 gallons of potable water and has a top of tower height at approximately 134 feet above grade.

The tank was last inspected in November 2018 by Maguire Iron; the report can be found in Appendix E. The tower was constructed in the late 1950's and is showing wear and deterioration. During the inspection, it was found that the tower has several safety components either missing or not up to code requirements. Some of these include a safety climb, secondary access, ventilation, and railings. The safety climb needs a cable style device for all ladders. Hand railings are either missing entirely or are not tall enough to meet OSHA compliance. No secondary access is provided, and no vent opening exists. Furthermore, the four (4) antennas on the tower are severely exceeding the loading limits and blocking proper access around the tower. All telemetry and controls also need replacing. Additional non-compliant items are within the Inspection Report. This inspection revealed paint failures and additional aesthetic concerns as well. The interior of the tank was difficult to see as it was nearly full, but it needs re-coating which would require the tower to be drained and temporary water provided to the City. The riser pipe could be blasted and painted, but pipe replacement is the option that provides the best longevity for the system. There is also some corrosion occurring on the exterior, which would require re-coating of the steel.

The tower has experienced freezing multiple times since it was constructed. In the late 90's, a circulation system was added to prevent freezing conditions from occurring. This recirculation pump is located in a vault underneath the existing water tower. Even with the circulation system, it froze again in 2007, making this a major concern for the City. Overall, the tower and associated components have a great need for rehabilitation and/or replacement due to the existing conditions.

Distribution

Water distribution is achieved through a system of pipes, valves, hydrants, and services. From 1998 to 2005, water mains within the City were replaced and looping was provided to eliminate some dead-end mains and improve water quality in those service areas. All mains are now PVC and range in size from 6" to 8", with a majority of the system consisting of 6" mains. The 6" water main is the minimum size for fire protection, so the City distribution system is sized appropriately for fire flow. Of the 123 service connections, there are no industrial connections and all homes are metered. The distribution system had significant piping upgrades in 2000, including new meters for all connections and rehabilitation of all curb boxes. The City maintains the system by flushing rust from the water mains twice a year and exercises all shut off valves. There are a few valves that are not able to be exercised.

With all the improvements, there have still been a few complaints of low pressure in areas of town. No testing has been completed to determine the actual water pressure in these areas, but this could be done as confirmation for raising the tower height. ISG has the capability to provide a pressure testing device if the City decided to complete testing prior to final water tower design. Without testing, this project would address the low pressure concerns by raising the tower approximately 10 feet, providing an

additional 4.3 psi to the system. However, it should be noted that an increase in existing system pressure may lead to water main breaks. The proposed improvement project includes replacement of the existing watermain at the water tower site to make accommodations for the new tower. No other significant updates to the distribution system are planned with this project.

Electrical and Controls

The City currently has no emergency backup power for any of the water system components. A generator should be considered for their system to power the well pumps and chemical feed pumps. This would be a relatively small generator but be able to provide the City treated water in the event of an extended power outage. All system controls for the wells, chemical feed system, and tower mixing would be replaced and upgraded to include current technologies and monitoring methods.

PROPOSED IMPROVEMENT ALTERNATIVES

The following alternatives provide options for the City to address the system deficiencies noted within recent inspection reports and by the City residents and staff.

Alternative 1: Water Supply and Treatment

This alternative addresses the concerns with the water supply and treatment components of the system. It is anticipated that the integrity of the existing wells will continue to decrease over time. The well pumps, piping from well 1, and treatment piping within the pump house are from the original construction, placing some of the pipes at nearly 70 years old. As these continue to age, an increase in breaks or failures is likely to occur. Aging valves may not function properly during routine maintenance.

With this alternative, the two (2) water source wells would both receive new pumps to maintain the pumping rates in the wells and achieve higher head conditions with a taller tower if the existing pumps cannot meet the new head condition. Well 1 would also need to undergo remediation to ensure the City has enough capacity in both wells. Remediation will be included in this alternative although a new well should also be considered. Since both wells are located at a public park, additional construction requirements would need to be considered such as traffic control, access, safety, and site rehabilitation. The chemical feed systems, including pumps, water supply and treatment pipes and valves within the pump house would all be replaced. Secondary containment of the fluoride and polyphosphate would be included with this alternative as a safety improvement. Electrical and controls for the wells and chemical feed systems would also be upgraded. A backup generator to power both wells and chemical feed pumps would be added at the pump house to maintain the water tower system should they lose power.

This alternative does not address the water tower issues, which would increase future maintenance costs and not address the safety compliance problems discussed in the Inspection Report.

Alternative 2: Water Supply, Treatment, and Water Tower Rehabilitation

The second alternative includes the water supply and treatment improvements discussed in Alternative 1. Alternative 2 also includes rehabilitation of the existing water tower to ensure safety requirements are met and the major deterioration noted within the Inspection Report is addressed. All the safety features discussed in the Inspection Report would be upgraded to meet all OSHA requirements. This includes, but is not limited to, railings, ventilation, safety climbs, and tower accessibility. The tower's riser pipe would be sandblasted and re-coated. During construction and tower rehabilitation, the well pumps would need to provide all of the water demand for the City. Site constraints at the water tower may cause constructability issues, as there is minimal area on-site for construction staging, and easements from adjacent homeowners may be required.

The four (4) tower antennas will require reconfiguration along the railings to provide clear access around the tower. In order to complete this, all antenna owners would need to be involved during the construction process.

Alternative 3: Water Tower Replacement

Alternative 3 includes construction of a new elevated storage tower. This alternative addresses the extensive safety issues, deteriorated riser piping, and failed interior and exterior paint on the existing tower. This would also address the freezing concerns by adding a mixer, and the low pressure concerns within town by raising the tower height by approximately 10 feet. Three locations are being considered for the new tower.

The first location is in the same location as the existing tower. The two well pumps should be able to provide water demand to the City during construction, but a small tank may be necessary to provide some storage while there is no tower as the system could not meet fire flow requirements. The second location is to the East of the existing tower. Trees that are located near the property boundaries have over hanging branches into the proposed tower location and would require some clearing to make the appropriate space for the tank. Both locations will be difficult to access and also require construction easements on the adjacent residential property, but the second location provides a few more access concerns as it is tucked into the corner of the property. The geotechnical report outlines a few concerns with the site's adjacent steep ravine, which would affect the second location, as it is closer to the ravine. The third location is at Willard Vetter Park, to the east of the pump house building. This location provides the best ease of access and constructability. There would be no need for easements onto adjacent properties, but traffic control and safety would become a higher priority. This location would require the addition of watermain piping from the pump house building to the new tower location. The proposed site in Appendix B shows all proposed tower locations.

The proposed elevated storage tower could be one of the following types: pedosphere, hydrocone, fluted column, tank composite, or multi-leg. There are benefits and disadvantages with each of the options. Pedosphere and Hydrocone tanks are the least space intensive at ground level, but require the steel to be repainted. The advantage of a hydrocone is the additional space it allows for antennas. A fluted column tank provides insulation for the riser pipe located inside. This type of tank also has a larger ground area, which could be a space used for multiple purposes, but there are O&M costs for painting the entire tanks steel. A composite tank also has the riser pipe located inside the support column which provides insulation. The composite tank would be the less O&M costs, as there is no steel to paint other than the bowl. A multi-leg tank has the greatest surface area and the greatest O&M costs for painting the steel. Overall, the hydrocone or pedosphere is the best option for the City of Skyline. It takes up minimal footprint at the ground level and allows a large area for antennas, which is a major concern with the current tower and existing antenna users. The primary benefit of this alternative is the longevity this will provide to the City for many years to come.

The new tower would include a mixer to prevent freezing, as this has occurred even with the recirculation pump they currently have. A mixer not only prevents freezing and ice formation, but also improves water quality within the tower by continually providing water circulation. Electrical and control upgrades would be made along with this alternative.

Alternative 4: Water Supply and Treatment Rehabilitation, and Water Tower Replacement

This alternative combines Alternative 1 and Alternative 3, outlined above. The wells, pump house, and valve vault improvements would all occur as in Alternative 1 and the water tower would be replaced with a new tower as in Alternative 3. Electrical, controls, and a backup generator are also included within this alternative.

RECOMMENDED ALTERNATIVE

The recommended option is Alternative 4, including rehabilitation of source wells, treatment pumps and piping replacement, replacement of the water tower, and relocation of the tower to Willard Vetter Park for the reasons described within this report. The two existing well pumps will be replaced and remediation of well 1 will occur to improve capacity. Piping and valves within the existing pump house will be replaced. This includes chemical pumps, chemical piping, and water supply piping and valves. The new tower will have tank mixing and upgraded electrical and controls for the system will be installed with these upgrades. A generator that powers the two wells and chemical feed pumps will be installed at the pump house location.

The largest potential construction problem associated with this project is constructing the water tower on the same site as the existing tank, in either location 1 or location 2. ISG has consulted with multiple contractors and the proposed location 3 is the most acceptable location from a constructability perspective. The other locations would add significant increased cost to the project ($1,000,000+), potentially doubling the cost due to the tight site constraints present at the existing water tower site. There is no staging area available, and easements onto residential property would be required. Assuming a new water tower at location #3, the existing tower could be partially demolished, only to provide use for the cellular carriers. This demolition is included within the scope and cost estimate for the alternative. The existing antennas would not need to be moved to the new tower at Willard Vetter Park, and could still generate a revenue for the City. This selected alternative provides the best option for the City based on cost, constructability, site conditions, and existing antennas.

With the partial demolition of the existing tower, the antennas could still remain at the same location. The tower bowl would be semi-removed and structurally reinforced to provide access to the antennas. The remaining design life of the tower is unknown, but the cellular carriers could perform a structural analysis to provide a better estimate of remaining design life. Further options include constructing a monopole at the water tower site, which would provide the City with revenue from the carriers and allow them to demo the existing water tower at their convenience. If properly designed, the maintenance for monopole's is minimal. As with any alternative, the carriers are required to remove their equipment from the existing tower and provide temporary relocation on their own during construction.

COST SUMMARY

During the project bidding phase, the bid document will be issued with alternates for the water tower, well pump replacement, well remediation, and treatment piping replacement. It should be noted that pending results of the bid opening, the City may elect to move forward with only portions of the noted improvements. Detailed cost estimates for the proposed improvements and the rejected alternatives are located in Appendix F. The estimated cost for the chosen alternative 4 with the tower location at Willard Vetter Park is approximately $1,207,175. If locations 1 or 2 are desired, the cost will significantly increase.

PROJECT FINANCIALS

Anticipated Costs

There are four (4) alternatives provided in this Preliminary Engineering Report for the City of Skyline's consideration. The Preliminary Opinions of Probable Cost for the alternatives range from $367,275 to $1,207,175. The engineer's recommended alternative is Alternative 4 with an Opinion of Probable Cost of $1,207,175. This total includes construction contingencies, engineering fees, and tank inspection services for each alternative.

Existing Connections

There are 123 connections to the City's water system. Current water rates are based on a unit rate of $1.70/unit, with a unit equaling 748 gallons of water. Table 4 includes a summary of the total units used in 2017, 2018, and 2019.

Table 4. Total Annual Unit Summary

Year	Number of Units	Gallons
2017	8,000.89 units	5,984,666
2018	7,302,96 units	5,462,614
2019	6,546.00 units	4,896,408

Potential Funding Sources

STATE REVOLVING LOAN FUND (SRF) DRINKING WATER REVOLVING FUND

The Drinking Water Revolving Fund helps communities build drinking water storage, treatment, and distribution systems that comply with standards in the Safe Drinking Water Act. Loans are amortized up to a maximum of 20 years, or up to 30 years depending on community income requirements. Interest rates are determined by a market rate index or the PFA's bond market rate, whichever is higher, less a 0.25 discount approved by the PFA. Borrowers with a service area population under 2,500 may be entitled to additional discounts. For the purposes of this financial analysis, the interest rate of 2.0% will be used for the 20-year loan term and the rate of 3.0% will be used for the 30-year loan term. The Drinking Water Revolving Fund was applied for in May 2020, with results anticipated in late September.

REVENUE BONDS

Revenue bonds are a common way to finance a public improvement. The revenues collected from utility rates repay the revenue bond. Traditional revenue bonds typically have a higher interest rate than General Obligation Bonds and are typically not recommended as a financing mechanism for this project. Given that interest rates on bonds are currently at historical lows, the City may want to investigate this financing option further.

GENERAL OBLIGATION (GO) BONDS

General Obligation Bonds are backed by the full faith and credit of the subject municipality. Traditionally, GO Bonds are used for capital purchases and improvements that are not associated with enterprise funds which generate revenue; for example, improvements made to water and sewer infrastructure. General Obligation (GO) Bonds are not a suitable funding source for a large-scale utility project like the proposed wastewater system upgrades.

USDA RURAL DEVELOPMENT

USDA Rural Development offers loans and potential grant funding packaged together for utility improvements. The USDA RD grant formula considers the number of households, median household income, current utility rates, existing debt, current operations and maintenance costs, and short-lived assets. To determine grant funding, the loan amount is applied first until the predetermined affordability utility rate is reached. The affordability rate is based on a median household income (MHI). The maximum grant amount that can be awarded for system improvements is 75% of project costs. The City will need to coordinate with Rural Development staff to apply for funding and determine maximum grant eligibility amounts. For the purposes of this financial analysis, an estimated grant award equaling 20% of project costs is used.

RD loans are serviced over a 40-year term at a fixed rate. Current interest rates range from 1.125% to 1.875%. The interest rate of 1.5% will be used for the purpose of this financial analysis. To apply for funding the City must submit a loan application accompanied by a Preliminary Engineering Report/Facility Plan. This existing Facility Plan will need to be updated to meet USDA Rural Development requirements.

Financial Analysis

There are four (4) alternatives provided in this report, the following table provides the options and their opinions of probable cost.

Table 5. Improvement Alternatives Summary

Alternatives	Project	Opinion of Probable Cost
1	Water Supply and Treatment	$367,275
2	Water Supply, Treatment, and Water Tower Rehabilitation	$818,113
3	Water Tower Replacement	$1,074,350
4	Water Supply and Treatment Rehabilitation and Water Tower Replacement and Relocation	$1,207,175

The following items should be considered when reviewing Table 6 through Table 9:

- The analysis is based on 123 billable water connections/accounts
- The estimated rate adjustment is based on the annual total revenue amount required for the added debt. Additional financing analysis should be performed to determine the final rate adjustment.
- The USDA RD grant amount equaling 20% of total project costs is assumed. Final grant amounts—if any—would be determined once funds are obligated. More exploration is needed with RD and funds need to be obligated before the final grant amount is determined.
- The estimated rate adjustment does not factor in any increases in operation and maintenance expenses that may be associated with the proposed improvement.

Table 6. Alternative #1 Financing Analysis, Project Cost $367,275

Program	Interest Rate	Term (Years)	Grant Amount	Loan Amount	Annual Loan Payment	Water Rate Adjustment (Est.)
DWSRF	2.0%	20	$0	$367,275	$22,460	$15.22
DWSRF	3.0%	30	$0	$367,275	$18,740	$12.70
USDA RD (Loan Only)	1.5%	40	$0	$367,275	$12,275	$8.32
USDA RD (Loan + Grant)	1.5%	40	$73,455	$293,820	$9,820	$6.65

Table 7. Alternative #2 Financing Analysis, Project Cost $818,113

Program	Interest Rate	Term (Years)	Grant Amount	Loan Amount	Annual Loan Payment	Water Rate Adjustment (Est.)
DWSRF	2.0%	20	$0	$818,113	$50,035	$33.90
DWSRF	3.0%	30	$0	$818,113	$41,740	$28.28
USDA RD (Loan Only)	1.5%	40	$0	$818,113	$27,350	$18.53
USDA RD (Loan + Grant)	1.5%	40	$163,623	$654,490	$21,880	$14.82

Table 8. Alternative #3 Financing Analysis, Project Cost $1,074,350

Program	Interest Rate	Term (Years)	Grant Amount	Loan Amount	Annual Loan Payment	Water Rate Adjustment (Est.)
DWSRF	2.0%	20	$0	$1,074,350	$65,705	$44.52
DWSRF	3.0%	30	$0	$1,074,350	$54,815	$37.14
USDA RD (Loan Only)	1.5%	40	$0	$1,074,350	$35,910	$24.33
USDA RD (Loan + Grant)	1.5%	40	$214,870	$859,480	$28,730	$19.22

Table 9. Alternative #4 Financing Analysis, Project Cost $1,207,175

Program	Interest Rate	Term (Years)	Grant Amount	Loan Amount	Annual Loan Payment	Water Rate Adjustment (Est.)
DWSRF	2.0%	20	$0	$1,207,175	$73,825	$50.02
DWSRF	3.0%	30	$0	$1,207,175	$61,590	$41.73
USDA RD (Loan Only)	1.5%	40	$0	$1,207,175	$40,355	$27.34
USDA RD (Loan + Grant)	1.5%	40	$241,435	$965,740	$32,280	$21.87

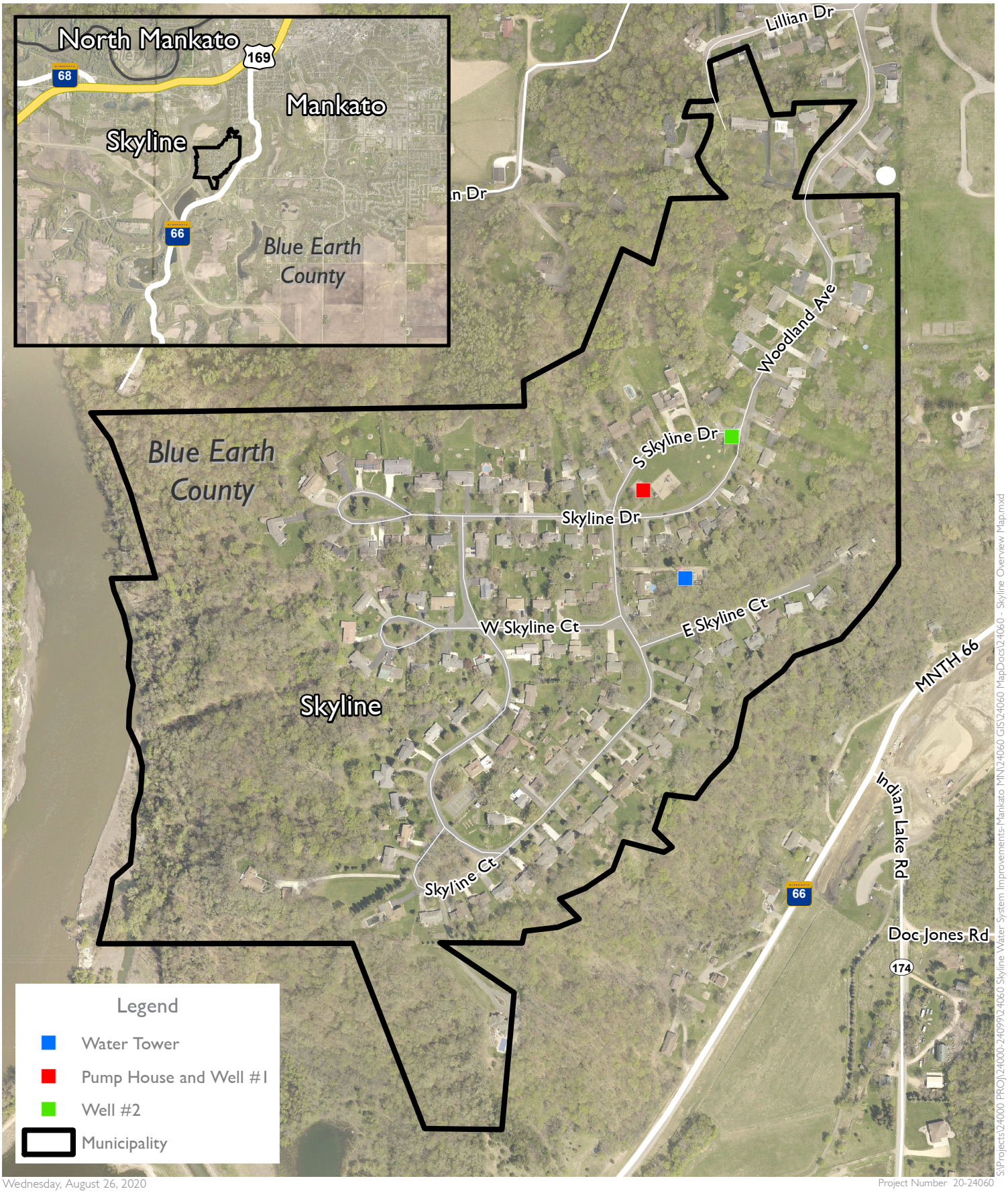
CONCLUSIONS AND PROJECT SCHEDULE

ISG recommends the City pursue Alternative 4, with tower relocation, to address concerns identified throughout the entire water supply, treatment, and storage system. The anticipated project schedule for this alternative is outlined in Table 10. It should be noted that the antenna carriers on the existing tower require a 6-month notice to temporarily relocate their antennas.

Table 10. Preliminary Project Schedule

Month/Year	Task
May 2020	Submit Project to the State Revolving Fund Project Priority List (PPL)
June 2020	Submit Project to the State Revolving Fund Intended Use Plan (IUP)
September/October 2020	Anticipated SRF Application Results
October – December 2020	Design of Project
January 2020	Submit Plan and Specifications to MDH
April/May 2021	Bid Project
June 2021	Award Project
June 2021	Construction Start Date
June 2022	Construction End Date

Appendix A: Location Map



Wednesday, August 26, 2020

Project Number 20-24060

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1 in = 450 ft

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Skyline Overview Map

Skyline Water System Improvements

Skyline, Blue Earth County, Minnesota

Source(s):
Orthophoto (Blue Earth County, 2019)

ISG

Appendix B: Site Plans

SKYLINE DRIVE

BENCHMARK HYDRANT
TNFH = 991.52

S SKYLINE DRIVE

EXISTING WATER VALVE

APPROXIMATE EXISTING WATER LINE, TYP.

EXISTING TRANSFORMER

EXISTING UTILITY POLE

OVERHEAD ELECTRIC

EXISTING LOT LINE

EXISTING TREE LINE

EXISTING WATER TOWER

EXISTING TREE, TYP.

UNDERGROUND TELEPHONE LINE

UTILITY PEDESTAL

ELEV=985.34

EXISTING FENCE, TYP

ELECTRICAL BOX, TYP.

EXISTING STORM MANHOLE

EXISTING STORM DRAIN, TYP.

SCALE: 1" = 20 FEET

EXISTING SITE CONDITIONS

ISG

Architecture + Engineering + Environmental + Planning

CAD FILE NAME 24060 EXISTING SITE CONDITIONS

SKYLINE WATER SYSTEM IMPROVEMENTS
SKYLINE, MN - 09-09-2020
ISG PROJECT NO. 20-24060

ISGInc.com

EXISTING PUMP HOUSE BUILDING

WILLARD VETTER PARK

PROPOSED LOCATION #3

SKYLINE DRIVE

BENCHMARK HYDRANT
TNFH = 991.52

S SKYLINE DRIVE

EXISTING WATER VALVE

EXISTING TRANSFORMER

EXISTING UTILITY POLE

OVERHEAD ELECTRIC

EXISTING LOT LINE

EXISTING TREE LINE

PROPOSED LOCATION #1

EXISTING UTILITY PEDESTAL

EXISTING TREE, TYP.

PROPOSED LOCATION #2

UNDERGROUND TELEPHONE LINE

ELEV=985.34

EXISTING FENCE, TYP

EXISTING ELECTRICAL BOX, TYP.

EXISTING STORM MANHOLE

EXISTING STORM DRAIN, TYP.

PROPOSED WATER TOWER LOCATION

SCALE: 1" = 20 FEET

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Architecture + Engineering + Environmental + Planning

SKYLINE WATER SYSTEM IMPROVEMENTS

SKYLINE, MN - 09-09-2020

ISG PROJECT NO. 20-24060

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CAD FILE NAME 24060 PROPOSED CONCEPT