Roy City Corporation

Roy City Water Conservation Plan 2019

Final - December 2019

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Consulting Engineering

ROY CITY

WATER CONSERVATION PLAN 2019

Final - December 2019

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SECTION 1

INTRODUCTION

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SECTION 1

INTRODUCTION

BACKGROUND

Roy City originally submitted to the Division of Water Resources a water conservation plan in 1999. This document, the *Roy City Water Conservation Plan 2019, November 2019*, is a water conservation plan update as required by the current Water Conservation Act, and is intended to fulfill the requirements for long-term and emergency water conservation plans.

Some of the information for the *Roy City Water Conservation Plan 2019,* was obtained from the *Roy City General Plan (Roy City, 2002)*. In order to make the current water conservation plan complete, applicable information from this source is repeated in this document.

SYSTEM CONTACT INFORMATION

System: Roy Municipal Water System
System ID#: 29016

Address: Roy City
Public Works Department
5460 South 2700 West
Roy City, Utah 84067

Contacts: Ross Oliver, Public Works Director - 801-774-1090
Edward Sorensen, Water System Superintendent - 801-774-1090

SECTION 2

WATER SYSTEM PROFILE

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SECTION 2

WATER SYSTEM PROFILE

HISTORY AND DEMOGRAPHICS

Roy City is located in southwest Weber County, and the City covers an area of about seven square miles. The area, which was first settled in 1873, was initially considered undesirable for settlement because of dry, sandy soils and the lack of a natural water supply. Hand dug wells were often unsuccessful due to the loose caving soils and brackish shallow groundwater. Residents were forced to haul water from nearby Muskrat Springs in nearby Hooper to provide water for themselves and their animals. The water supply for the area was improved in 1882 with the construction of a hand dug canal that conveyed water from the Weber River to the Roy City area. This canal likely served both irrigation and culinary water needs until deeper wells were constructed with drilling rigs in the early 1900's.

The need for a more reliable culinary water supply continued to be a significant factor in the development of Roy City. In 1937 a meeting was called for the purpose of discussing the possibilities of obtaining a culinary water system. The desire for a water system led to incorporation of Roy City on March 23, 1937. Construction of the community-wide culinary water system soon followed.

Roy City's close location to Hill Air Force Base and the Ogden Arsenal led to a housing boom in the 1940s and 1950s, and the community began a rapid change from agricultural to residential land use. Throughout the past forty years, residential growth has continued, and businesses, schools, churches, fire and police departments, sewer and water systems continued to grow or to be expanded to serve the growing population. Roy City now includes a comfortable mix of mostly residential, commercial, and institutional land use.

POPULATION

The rate of development and growth in Roy City has slowed in recent years as the City approaches buildout. The City is now approximately 90 percent fully developed with remaining undeveloped properties scattered in small parcels throughout the City. The majority of the property in Roy City is occupied by existing residential and commercial development, or is permanently preserved as parks and open space.

Population estimates for the past 15 years and projected population at buildout are given in Table 2-1. The population estimates indicate a slow to moderate growth over the past 15 years, with an average annual growth rate of less than 1 percent per year. The buildout population was projected based upon an examination of aerial photographs that demonstrates approximately 90% of the property in Roy City with residential development potential is currently developed. Additional growth through re-development is expected.

TABLE 2-1. POPULATION ESTIMATES

Year	Population[1]
2004	35,200
2005	35,200
2006	34,900
2007	35,300
2008	35,500
2009	36,200
2010	36,900
2011	37,300
2012	37,500
2013	37,600
2014	37,800
2015	38,000
2016	38,100
2017	38,600
2018	38,700
Projected Buildout (2050)	46,000

1. Population estimates were obtained from the United States census archives. The buildout population projection is based upon remaining property available for residential development, and it corresponds approximately to a growth rate of 0.5% over the next 30 years.

SERVICE AREA

Water system facilities and city boundaries are shown on the attached maps in Appendix A. The service area for the Roy City Water System generally corresponds to the city boundaries, although there are a few small areas within the City boundaries that are currently served by Hooper Special Service District. Hooper Special Service District came to serve these small areas within Roy City when these areas with existing homes and existing water service were annexed into the City. Roy City is also served by a secondary water system that is owned an operated by the Roy Water Conservancy District.

Roy City has no current plans to expand their service area beyond their planning boundary. In fact, significant expansion of the service area beyond the planning area boundary is unlikely because Roy City is now bounded by Hooper City on the west, West Haven City on the North, by Ogden City and Riverdale City on the east, and by Sunset City and Clinton City on the south. It is unlikely that the future boundaries of the water system service area will change significantly in the future. It is assumed all additional future water demand will be the result of growth within the current Roy City planning area boundaries.

Culinary Water Connections

The Roy City culinary water system currently provides drinking water to approximately 39,000 people residing in a service area that is defined by the city boundaries. Existing service connections include: 10,600 residential connections; 260 commercial connections; and 70 institutional connections.

Wholesale Water Connections

Roy City delivers water on a wholesale basis to West Haven Special Service District (WHSSD). The current contract provides WHSSD with a maximum of 500 ac-ft per year. Currently, water sales to WHSSD are approximately 150 acre-feet per year. Water delivered to WHSSD is included in source demand projections and supply requirements, but is not included in the per capita water use reported in this document.

Secondary Water Systems

Roy City is supplied by a secondary water system that is owned and operated by Roy Water Conservancy District (RWCD). RWCD currently provides water for outside irrigation to nearly all

of the residential, commercial, and institutional connections in the City. RWCD is physically and operationally independent of the Roy City water system.

WATER SYSTEM DESCRIPTION

Most of the water distribution system service connections are fed from 6-inch and 8-inch diameter water lines. Larger diameter water mains from 10-inch diameter to 18-inch diameter connect water sources to reservoirs and provide the major distribution grid. Most of the water system is ductile iron pipe and PVC pipe. Recently installed pipe has been mostly PVC pipe due to concerns about corrosive soils causing deterioration of ductile iron pipe.

The Roy City Water Department reports that the water distribution system is in generally fair condition with occasional, but manageable, leaks that are repaired as detected. The water distribution system is currently divided into three major pressure zones. Pressure is maintained from connections to Weber Basin Water Conservancy District, booster pumps pumping from storage reservoirs, and pressure reducing valves that separate the pressure zones. Delivery pressures at water services are generally between 50 psi and 90 psi. The water system includes four reservoirs with a combined total capacity of 7 MG. Based upon State Standards, the existing reservoirs are currently exceeding minimum storage volume requirements. The City is planning an additional reservoir to provide for future storage needs.

SUPPLY INVENTORY

Roy City's water sources include four wells owned by the City and wholesale water purchases from Weber Basin Water Conservancy District (WBWCD). The City's wells are designated as the 4000 South Well, 4800 South Well, 5175 South Well, and HAFB Well. Roy City has a long term contract for the purchase of 3,468 acre-feet of culinary water per year from WBWCD. Actual metered amounts obtained from WBWCD have varied in the past ten years from 1645 to 3,230 acre-feet per year. Source capacities by water right and contract are summarized in Table 2-1, and physical source capacities are summarized in Table 2-2. The physical source capacities for the wells are considered the safe yield and the reliable supply. While there has been a regional, long-term trend toward lower ground water levels, overall declines have been marginal and the production capacities of the wells has not been impacted. In recent years, the water levels appear to have stabilized. Groundwater studies for the region indicate no significant long-term concerns about the viability, recharge, and capacity of the aquifer.

TABLE 2-2. SUMMARY OF WATER RIGHTS AND WBWCD CONTRACTS

Source	Annual Supply (ac-ft/yr)	Peak Day Supply (gpm)	Peak Day Supply (MGD)
Roy City Water Rights	9,730	6,030	8.7
WBWCD Contract	3,470	5,380[1]	7.7
Total	13,200	11,410	16.4

1. Assumes an allowable peaking factor of 2.5 from the WBWCD system.

TABLE 2-3. SUMMARY OF PHYSICAL SOURCE CAPACITIES

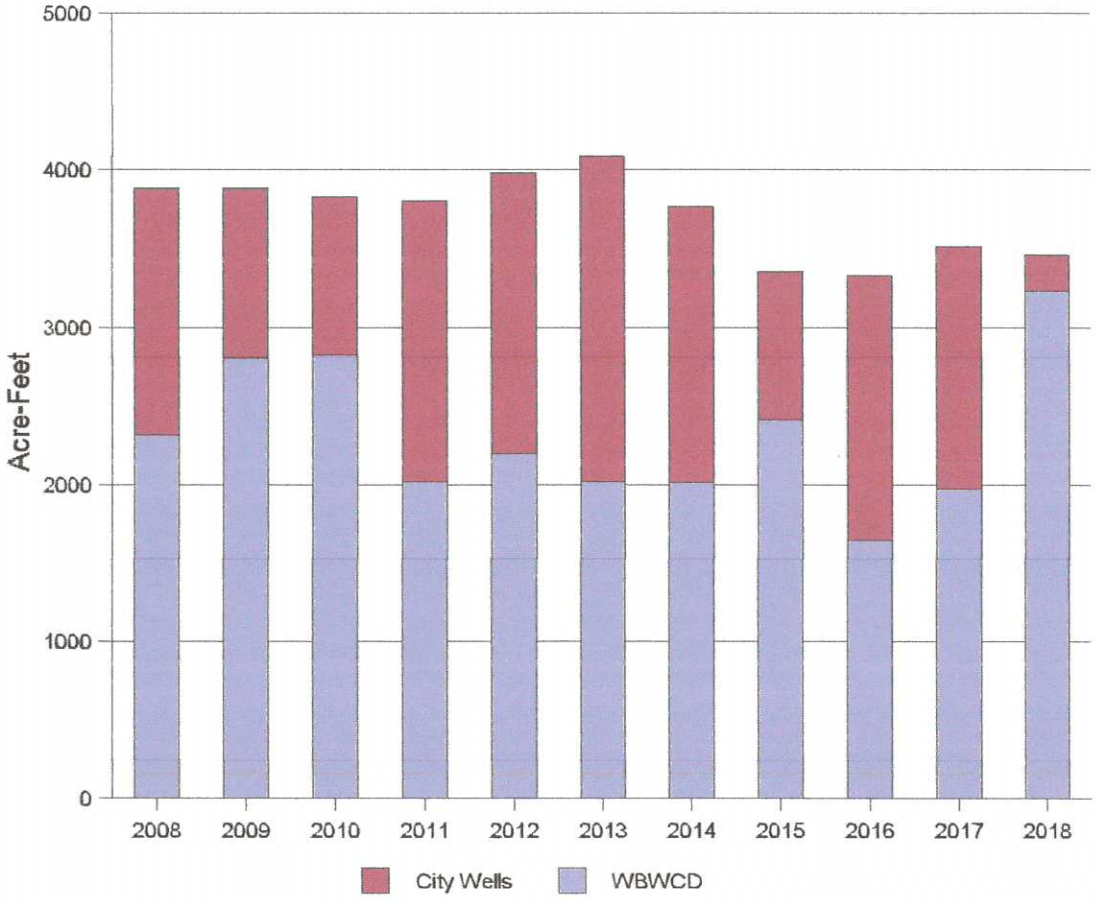
Condition/Source	Annual Supply (ac-ft/yr)	Peak Day Supply (gpm)	Peak Day Supply (MGD)
4000 South Well	2,050[1]	1,900	2.74
4800 South Well	1,300[1]	1,200	1.73
5175 South Well	1,080[1]	1,000	1.44
HAFB Well	1,940[1]	1,800	2.59
WBWCD Purchases	3,470	5,400	7.78
Totals[2]	9,840	11,300	16.28

1. Assumed annual supply capacity is 67% of the peak day physical capacity.
2. The reported totals overstate the physical capacity of the system because the WBWCD connections are closely linked to supply pipelines from the City's storage reservoirs. Therefore, pumping from storage reservoirs decreases the potential flow from WBWCD connections.

COMPARISON OF SUPPLY AND USE

Yearly volumes of water from the City's wells and wholesale water purchases from WBWCD are presented on Figure 2-1. These are the only two source categories for Roy City water sources. A review of the monthly water source totals revealed a number of months where the total water use was unreasonably low. It is suspected that water use at one or more wells was not recorded. Where missing data was suspected, the water use at City's wells was estimated based upon averages of preceding and subsequent years. These adjustments to water use made it difficult to assign values to a specific City well, so they were treated as a single source for the purpose of this report.

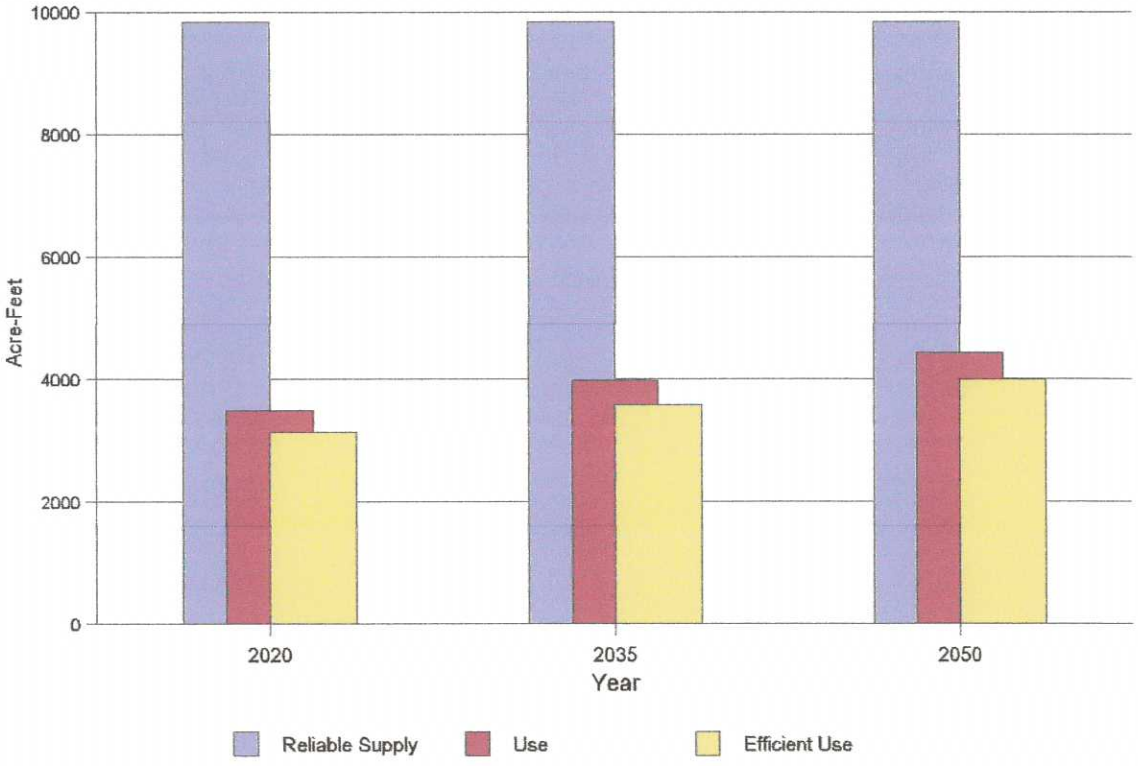
FIGURE 2-1. YEARLY SUPPLY BY SOURCE



Note: Water use amounts in Figure 2-1 include water wholesale water sales to WHSSD.

Water supply and demand was projected for through year 2050 based upon current water demand and efficient use. Efficient use was estimated using a 15% water use reduction (per person) by 2050. Water demand projections are based upon a year 2050 buildout population of 46,000. The projections include the full amount of the wholesale supply contract with WHSSD delivered by year 2025. Supply projections are based upon maintaining existing source capacity. Projections are presented in Figure 2-2.

FIGURE 2-2. PROJECTED WATER DEMAND AND SUPPLY



The projections shown in Figure 2-2 demonstrate that the reliable supply will be adequate for the foreseeable future. Replacement wells may be needed to maintain the reliable supply, but new sources are not anticipated.

WATER MEASUREMENT AND BILLING

Roy City currently meters water through master meters at all sources and through individual meters at services. All customer services are metered. However, some of the water service connections to City-owned facilities are not currently metered. The number of un-metered connections is less than one tenth of one percent of the total connections.

Master Meters at Sources

City-owned wells are equipped with master meters that are connected to a SCADA system. The SCADA system allows nearly continuous monitoring of the pumped flows from the wells and results can be recorded at set intervals. Records of monthly production have historically been maintained. Recently, the City has begun collecting daily metered volumes. Water system personnel frequently compare meter readings to pump capacity to evaluate meter accuracy.

Water meters at the WBWCD connections are owned and maintained by WBWCD. The District provides Roy City with monthly readings. The City has recently begun recording daily readings during peak demand months. The City is currently working with WBWCD to develop a system that will provide the City with daily meter readings. WBWCD is responsible for evaluating meter accuracy.

Meters at Water Service Connections

Roy City meters water at customer connections for billing. Meters are read and customers are billed bi-monthly. The City has an on-going program of replacing old and worn water meters. In 2015 the City began installing radio read meters, which facilitate more frequent readings of the meters and provide opportunities for better informing customers about water use. The City requires installation of radio read meters in all new developments and has budgeted approximately $200,000 per year for replacing existing meters. Approximately one-half of the meters have now been replaced or converted to radio-read. Conversion of all meters to radio-read should be completed before 2025.

Radio read meters also have the capability for recording readings for very short intervals making it possible to flag suspected leaks and provide better water use information to customers. Currently, nearly all of the existing meters are all in good condition. If a resident or a member of the water system staff suspects a meter is inaccurate, the meter is removed and tested by the City.

SYSTEM WATER LOSS CONTROL

Roy City measures water use at sources and at nearly all individual connections. The totals measured at the source meters and at the service connections can be compared to provide an indication of system losses. Comparison of the metered volumes for 2018 indicated that the un-metered water losses totaled 275 acre-feet or approximately 8.5% of the total from the system sources. Most of this un-metered water is being used at City facilities. Other significant discharges of un-metered water may include water discharged from hydrants for City construction projects, fire hydrant testing and system leaks. Soils in Roy City are relatively impermeable so significant system leaks tend to show up quickly on the ground surface. City personnel are trained to identify leaks and complete repairs as soon as possible.

WATER RATES

Roy City has established water rates that generate sufficient income to fund the operation, maintenance, and capital improvement costs of the water system. Water rates are the same for all customer classes. Bi-monthly charges for each service connection consist of a base rate which is set by the meter size and a four tiered water volume charge based upon actual water use as determined from meter readings. Water meters are read bi-monthly except for occasional winter months when access to the meters is difficult due to the snow cover. The rate structure is given below:

1) Base Rate = $22.77 per month

2) Volume Charge = $0.86 per 1000 gallons (first 18,000 gallons)
   Volume Charge = $1.54 per 1000 gallons (next 12,000 gallons)
   Volume Charge = $1.75 per 1000 gallons (next 10,000 gallons)
   Volume Charge = $2.00 per 1000 gallons (over 40,000 gallons)

SECTION 3

WATER USE

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SECTION 3

WATER USE

CURRENT WATER USE BY CONNECTION TYPE

Water use data were obtained from the records available from the Utah Division of Water Rights database and from Roy City billing reports. The Roy City water system supplies only potable water. Secondary water from Roy Water Conservancy District is available to approximately 90% of the existing service area. Roy City requires all new developments to connect to secondary water for irrigation. Metered water use records available in electronic files for individual connection types were insufficient to determine outdoor use by connection type. An overall estimate of outdoor potable use was made based upon monthly master meter records at water sources. Water use by connection type for 2018 is presented in Tables 3-1 and 3-2.

TABLE 3-1. METERED WATER USE BY CONNECTION TYPE (2018)

Connection Type	Number of Connections	Annual Water Use (ac-ft)	Avg. Water Use per Connection (ac-ft)
Residential	10,538	2,532.1	0.24
Commercial	255	433.7	1.70
Industrial	0	0	0.00
Institutional	68	53.6	0.79
Totals	10,861	3019.4	0.28

1. Water use does not include Roy City water use at un-metered connections or other system losses.

TABLE 3-2. ESTIMATED INDOOR & OUTDOOR WATER USE BY CONNECTION TYPE

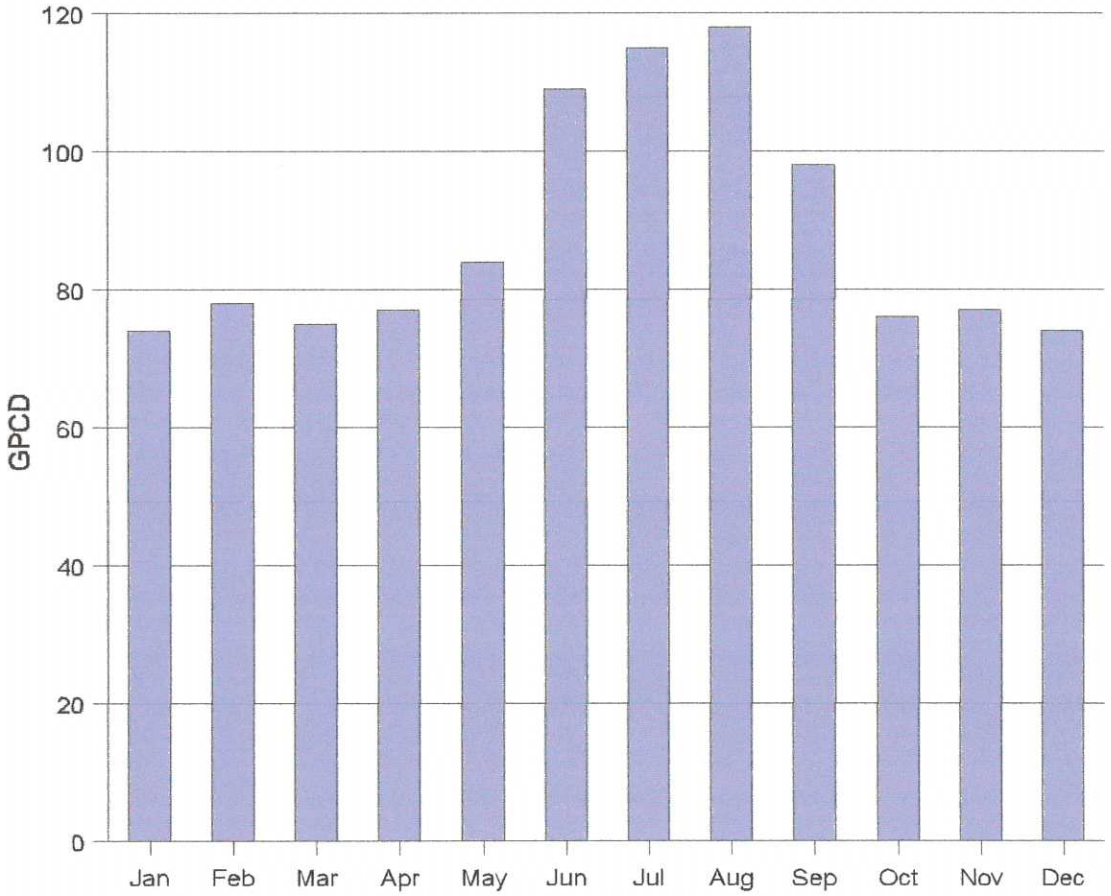
Connection Type	Indoor Use (Winter) (gpcd)	Potable Outdoor Use (gpcd)	Total (gpcd)
Residential	49.3	9.1	58.4
Commercial	7.1	2.9	10.0
Industrial	0.0	0.0	0.0
Institutional	0.8	0.4	1.2
Totals	57.2	12.4	69.6

1. Roy City population in 2018 was approximately 38,700.
2. All water use is potable water. These estimates do not include Roy City water use at un-metered connections or other system losses.

SEASONAL WATER USE

Monthly records show an expected seasonal water use pattern consistent with most of the outside irrigation being supplied by a secondary water system. The maximum seasonal demands still occur in summer months, but the peak summer water usage is much lower than it would be without a secondary water system. The average seasonal pattern was used to eliminate the irrigation variations caused by weather. The average seasonal use pattern for the past ten years is illustrated on Figure 3-1.

FIGURE 3-1. SEASONAL WATER USE PATTERN



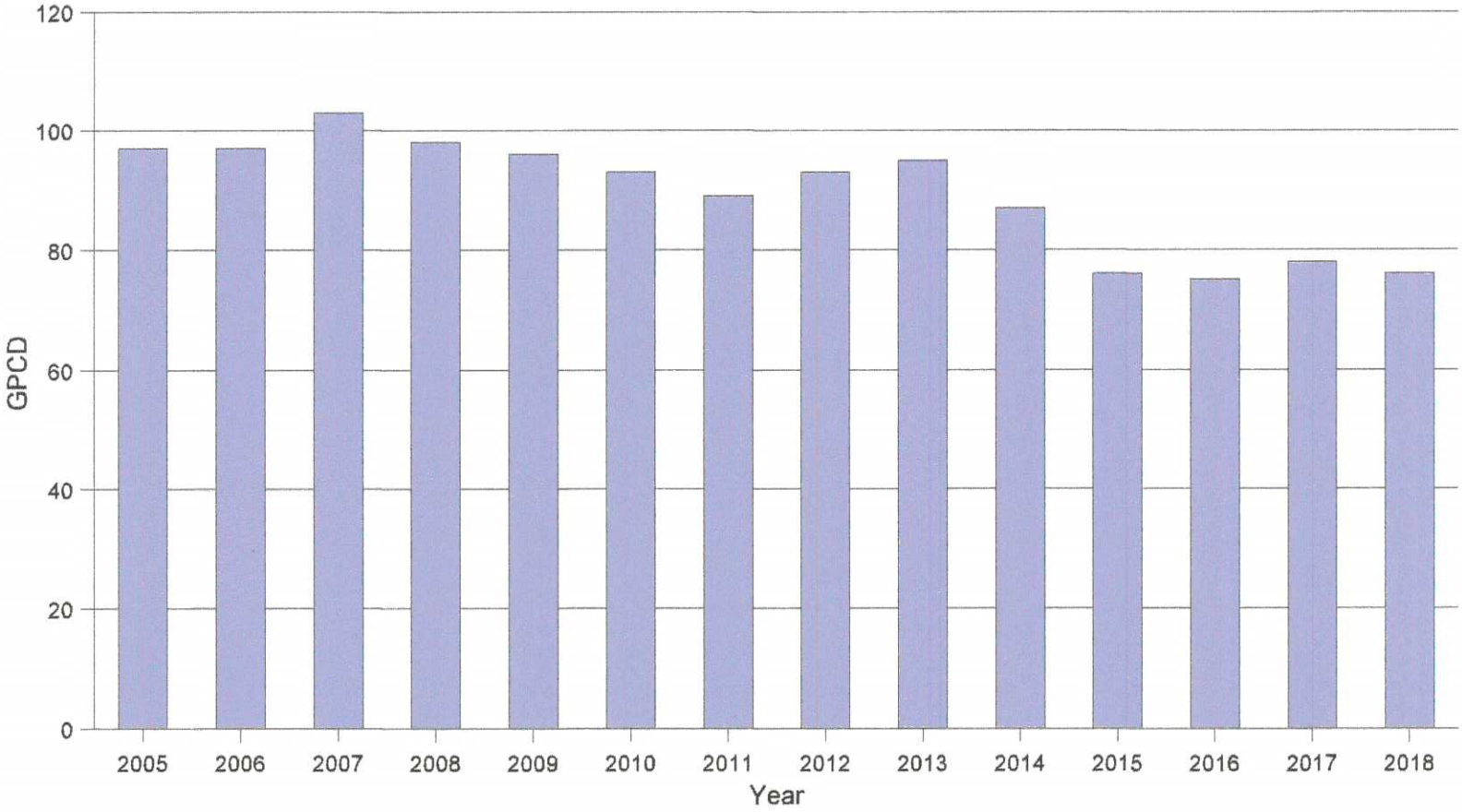
ESTIMATED USE OF OUTDOOR POTABLE WATER

Average water use, as calculated from master meters at the sources, is 75.7 gpcd for the winter months. Average water use for irrigation season is 100.2 gpcd. The difference is 24.5 gpcd. With a 2018 population of 38,700 and a 180 day irrigation season, the estimated outdoor potable water use is approximately 520 acre-feet. This corresponds to irrigation of approximately 175 acres which appears reasonable.

WATER USE TRENDS

Water use records from master meters were evaluated and analyzed for conservation trends. For a few months during the period of record, the existing water use values that were unreasonable. The unreasonable values were replaced with appropriate averages. The long-term water use trend shows decreasing per capita water use. It should be noted that the per capita water use includes residential water use, commercial water use, institutional water use, and other water system losses. The trend in water use since 2005 is illustrated in Figure 3-2.

FIGURE 3-2. WATER USE TRENDS



SECTION 4

CONSERVATION PRACTICES

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CONSERVATION PRACTICES

CONSERVATION PLAN RESPONSIBILITIES

Persons responsible for implementing conservation practices and meeting efficiency goals are listed below:

Conservation Coordinator - Edward Sorensen, 801-774-1090

- Program implementation
- Pubic education
- Efficiency goals

Public Works Director - Ross Oliver, 801-774-1090

- Staffing/Personnel
- Budgets

City Manager - Matt Andrews, 801-774-1000

- Administration

CURRENT WATER CONSERVATION MEASURES

Current water conservation measures include: 1) Public education; 2) Development ordinances requiring secondary water services; 2) Water rates based upon metered water use at service connections; 3) A water meter replacement program; 4) Leak detection and repair for pipelines and service connections; and 5) Pipeline replacements.

Public Education

Roy City provides a water conservation booth at their annual Roy Days celebration. The booth includes explanations of water conservation benefits and water saving measures. Pamphlets

describe various water conservation practices that residents can use to reduce their water use are provided. Costs of distributing water conservation information is estimated at less than $500.

Roy City provides a monthly newsletter. Several times a year, water conservation articles are included in the newsletter. Roy City will include information about rebates offered by Weber Basin Water Conservancy District for water saving products.

Development Ordinances

Roy City Municipal Code (Section 8-2A-15) requires new development to be served by secondary water systems. Ordinances also allow the use of drought tolerant plants and landscaping with minimal irrigation requirements.

Water Rates

Roy City's water rates are structured to generate sufficient income and to discourage water waste by charging for the amount of water used. The effectiveness of Roy City's rate structure as water conservation measures is unknown. Available literature indicates that water rates similar to Roy City's are somewhat effective in reducing peak period demand associated with outside watering, but have limited impact on indoor water use.

Water Meter Replacement

Roy City has an on-going program of replacing old and worn water meters. In 2015, the City beginning installing radio read meters which will make more frequent reading of the meters feasible. The radio read meters record readings for very short intervals, making it possible to flag suspected leaks and provide better water use information to customers. Currently, most of the existing meters are all in good condition. If a resident or City employee suspects a meter is inaccurate, the meter is removed, tested by the City, and replaced if warranted. Roy City currently budgets approximately $200,000 per year for meter replacement. Once the conversion to radio read meters is complete, the meter replacement costs will decrease significantly.

Leak Detection and Repair

City maintenance personnel monitor waterline locations for signs of leaks, and promptly repair any detected leaks. In addition, water reservoirs are inspected periodically for leaks and other

problems. Leaks in pipelines and at services are usually detect at the ground surface. Roy City currently budgets approximately $60,000 per year for leak detection and repair.

Pipeline Replacement

Aging waterlines with repeated leaks are identified and scheduled for replacement. Replacement is scheduled based upon the capital facilities plan, availability of funds, and opportunities for coordination with roadway maintenance. Roy City has an on-going program of replacing aged and corroded waterlines. Expenditures are expected to approximately $400,000 to $600,000 per year. More than half of this amount has been designated for replacement of existing ductile iron waterlines that have deteriorated due to age or corrosive soils. The beginning of the pipeline replacement over a decade ago corresponds to a significant reduction in per capita water use.

ADDITIONAL WATER CONSERVATION MEASURES

Additional water conservation measures that are planned for implementation by Roy City within the next 5 years are presented below.

1. **Implement a landscaping efficiency public education program that encourages efficient watering of lawns and gardens, landscaping with drought resistant plants, and other water saving practices.** If residents can be encouraged thorough public education to adopt water saving practices, the water savings can be significant. Research by the Utah Division of Water Resources indicates that a typical household in the Salt Lake City area can reduce outdoor water use by approximately 25,000 gallons per year by efficient watering of lawns and gardens (Utah Division of Water Resources, 2002). Roy City is served by an independent secondary water system, the potential reduction in outdoor water use for the city's culinary water system is much less 25,000 gallons per year. However, the potential reduction in water use is still significant.

   Cost of the public education program will be minimal if the current City newsletter, web site, and social media are used to provide information. Resources for a public education program are available on-line from the Utah Division of Water Resources at http://www.conservewater.utah.gov. This web site includes numerous water saving tips, guidelines for outside watering, and provides links to other water conservation web sites. Water saving tips from the Division of Water Resources web site are provided in Appendix B.

   Implementation Schedule - By July 2021

2. **Form a Water Conservation Committee.** A water conservation committee consisting of community leaders, city staff, and residents could assist with the public education program, identify water use concerns, and recommend water conservation measures.

   Implementation Schedule - By June 2020

3. **Maintain electronic records of metered water use at individual connections.** When sufficient data is available, water use metered at service connections can be analyzed and compared to water use metered at the water sources. Results of this comparison can may help determine the water system losses significant volumes through non-metered connections, faulty meters, or un-detected leaks.

   Implementation Schedule - By Jan. 2023

4. **Review potential new ordinances** for the following: 1) Water waste prohibition; and 2) Model landscape ordinance.

   Implementation Schedule - By July 2022

BASIS FOR SELECTION OF WATER CONSERVATION MEASURES

Roy City is approaching development build-out. Water conservation measures were selected with the understanding that targeting existing residents will be more effective than modifications to development related standards. Water conservation efforts and funding are targeted on public education, better water metering, and replacing aging (and potentially leaky) waterlines.

WATER CONSERVATION GOALS

The goal of Roy City water conservation plan is to reduce future per capita water use 15% by year 2030. The State of Utah has established region-specific M&I water use goals for the State. Roy City is within the Weber River planning area and the regional goal is a reduction from 250 gpcd to 200 gpcd (by Year 2030), an overall 20% reduction in per capita use. It is difficult to apply this goal directly to Roy City because about 90% of the non-potable water use within the City is supplied by a separate secondary water system. It is anticipated that water conservation from more efficient irrigation and water conscious landscaping will provide the majority of the water use reduction. A goal of reducing Roy City's per capita water use 15% is generally consistent with the regional goal if the potential reductions to indoor vs. outdoor water use are considered. It is anticipated that this goal can be achieved by continuing existing water conservation measures and additional measures as described above.

Progress toward these goals will be evaluated by metering water use and tracking water use per capita. Results will be made available in subsequent water conservation plan updates.

COST ANALYSIS

Successful water conservation measures, with the exception of eliminating leaks and spills, will decrease the water sales revenue received by the water system department. Most of the costs associated with the Roy City water system are fixed, meaning that most costs are incurred regardless of increases or decreases in water demand. Examples of these fixed costs include: bond payments, labor costs; sampling and testing costs; billing and report costs; and wholesale water purchases from WBWCD. Wholesale water purchased from WBWCD represents the City's largest water source and the contract with WBWCD requires payment for a fixed volume of water even when demand is less than that amount. The only significant cost that varies with the amount of water produced is the pumping posts from City's wells and reservoirs, and this is only a small fraction of the total system operating costs.

Although water conservation will decrease water sales revenue, the City should consider the potential long-term benefits of conservation. The benefits of conservation include reduction in future capital costs for new facilities and preservation of water resources. Conservation and increased reliance on the City's wells could also lead to future opportunities to reduce the contract volume amount with WBWCD. This option has been explored, but WBWCD is opposed to changes in the contract quantity and payment structure at this time. This could change in the future as water resources become more scarce and more valuable.

Water conservation will benefit residents of Roy City through lower water utility bills. Reducing water use by an average of 5 gpcd will reduce the annual water bill for a typical residential connection by approximately $6 per year. With approximately 11,000 residential connections, this equates to a total savings of approximately $66,000 per year.

WATER CONSERVATION PLAN UPDATE

The water conservation plan should be reviewed and updated periodically. It is recommended that the plan be reviewed by the Public Works Director and the Water System Manager on an annual basis to determine if an update is necessary. Factors that should be considered in the annual review include development trends, progress toward conservation goals, water use trends, and the financial stability of the water utility. The Water Conservation Plan should be updated if significant changes to these factors are noted. An overall update of the water conservation plan is required at no less than every 5 years.

SECTION 5

EMERGENCY WATER CONSERVATION PLAN

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EMERGENCY WATER CONSERVATION PLAN

OVERVIEW

This emergency water conservation is brief summary of recommended steps that may be taken in response to a the loss of a water source or a key facility. The City has developed a more a more detailed and comprehensive emergency response plan as required by the federal regulations (Public Health Security and Bioterrorism Preparedness and Response Act of 2002). Roy City Municipal Code, section 8-2A-4, allows the mayor to limit water use in the event of water scarcity.

CLASSIFICATION OF EMERGENCY

The level of emergency will be classified according to the impact of the event upon the City's water sources and the remaining source capacity available to meet system demands. Average and peak demands as defined in Section 2 of this document can be used as guidelines for classifying the emergency. It will be the responsibility of the Roy City public works director to determine the classification of the emergency and the level or response required. Given below are suggested emergency classification descriptions and the recommended responses.

Level 1 - Normal (Routine)

Description: Water sources are meeting peak day demands, and the combination of water sources and storage reservoirs are meeting peak hour demands.

Response: No response beyond normal operation procedures is required.

Level 2 - Alert (Minor Emergency)

Description: Water sources are unable to meet the peak day demand.

Response is as follows:

- Monitor the situation on a 24-hour basis
- Notify personnel as needed
- Notify Mayor and City Council

- Review applicable plans and standard operating procedures
- Review status of equipment and supplies
- Eliminate irrigation of city property
- Notify the public and request voluntary conservation

Level 3 - Major Emergency

Description: Water sources are unable to meet the average day demand.

Response is as follows:

- Accelerate repairs or procurement of needed equipment
- Place personnel on standby status
- Contact outside resources for additional assistance or emergency connections to neighboring communities
- Prohibit all outside water use and strictly enforce conservation policies
- Notify the public and request voluntary conservation

Level 3 - Disaster

Description: Water sources capacity is less than 75% of the average day demand.

Response is as follows:

- Request outside assistance as necessary
- Bring equipment and supplies to full operation status
- Notify public and explain the urgency of voluntary conservation
- Physically restrict water supplies to (in order of importance) non-essential city facilities, commercial businesses, residential areas, any other "non-life support" areas while insuring supplies to hospitals, nursing homes, and other health care facilities.
- If unable to maintain service to all areas, establish drinking water distribution points, ration remaining water, and arrange for trucks, trailers, and water tanks for water distribution.

REFERENCES

WASATCH CIVIL
Consulting Engineering

REFERENCES

Roy City, August 2002. *Roy City General Plan*.

State of Utah, Division of Drinking Water, 2019. *Utah Public Drinking Water Standards*, R309, Facility Design and Operation. Utah Drinking Water Board and the Utah Division of Drinking Water.

State of Utah, Division of Water Resources, July 2002. *Identifying Residential Water Use. Survey Results and Analysis of Residential Water Use for Thirteen Communities in Utah.*

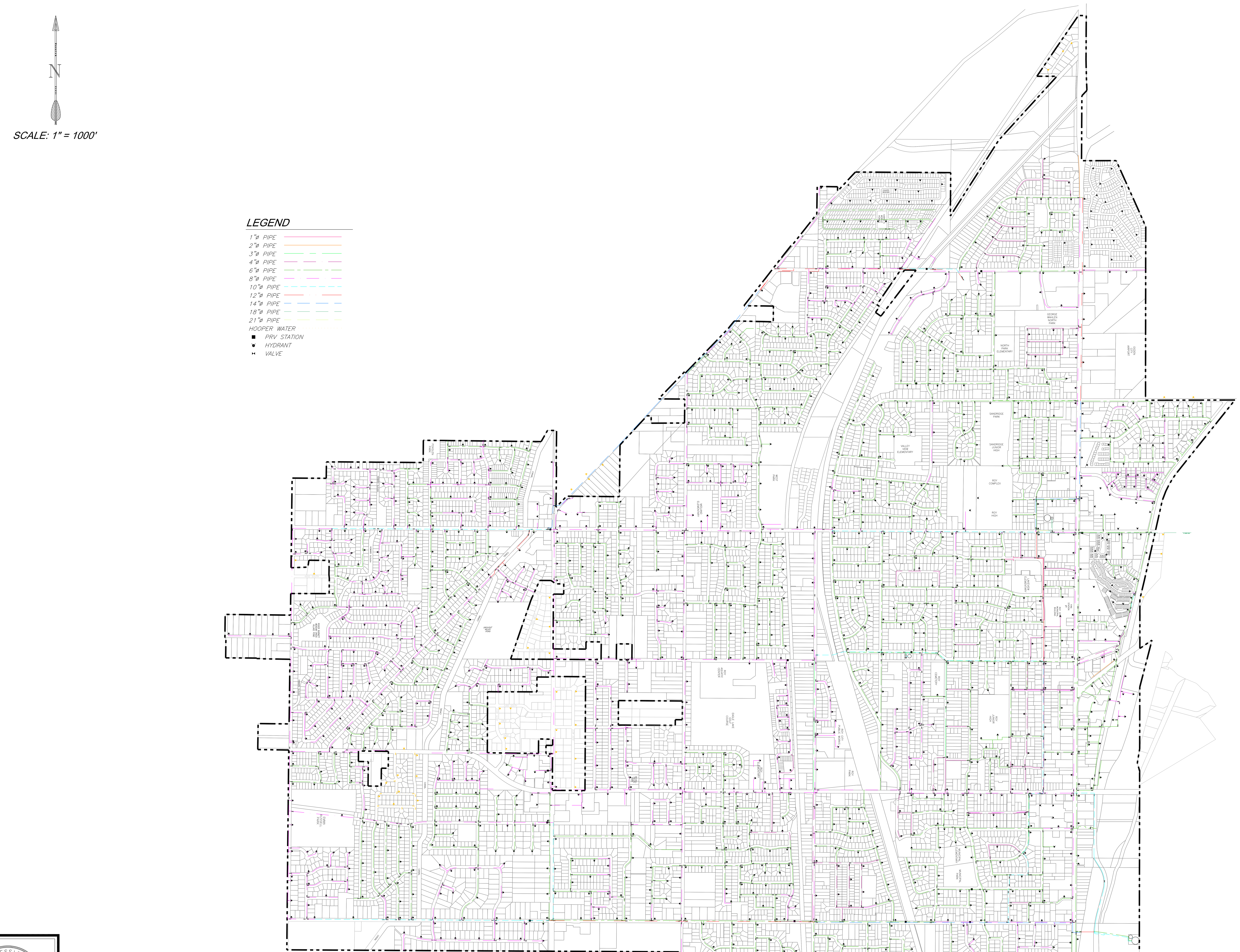
State of Utah, Division of Water Resources, 2019. Web Site - http://www.conservewater.utah.gov.

State of Utah, Water Conservation Act, Revised 2004 (Utah State Legislature House Bill 71).

APPENDIX A

WATER SYSTEM MAPS

WASATCH CIVIL
Consulting Engineering



W:\01-RC\100-WATER\WATER CONSERVATION PLAN 2019.DWG

LICENSED PROFESSIONAL ENGINEER
NO. 270657
JOHN D. BJERREGAARD
STATE OF UTAH

PROJECT ENGINEER STAMP

WASATCH CIVIL
Consulting Engineering
1150 SOUTH DEPOT DRIVE, SUITE 225
OGDEN, UTAH 84404 (801) 775-9191

REV.	DATE	APPR.	

DESIGNED J.D.B. DATE AUG. 25, 2019
DRAWN C.C.S. SCALE: 1"=1000'
CHECKED J.D.B.

ROY CITY CORPORATION

WATER CONSERVATION PLAN

SHEET: 1 OF 1 SHEETS

APPENDIX B

WATER CONSERVATION TIPS

WASATCH CIVIL
Consulting Engineering

Note: The following water saving tips were obtained from the Utah State Division of Water Resources web site at http://conserverwater.utah.gov.

Tips for Saving Water Indoors

- Perform an annual maintenance check on your evaporative (swamp) cooler. Check for and fix any leaks you find.
- Wash only full loads in your washing machine, or adjust the water level to reflect the size of the load.
- Pay attention to your water bill and become familiar with your water meter. Use them to track your water use and detect leaks.
- Purchase appliances that offer water and energy-efficient cycle options.
- Fix leaky plumbing fixtures, faucets and appliances in the house.
- Show children how to turn off the faucets completely after each use.
- Locate your master water shut-off valve so that water can be saved if a pipe bursts.
- Install aerators on every faucet. This could save you as much as 1 gallon every minute you use them.
- Be aware! Listen for drips and leaks around the house.

Tips for Saving Water in the Bathroom

- Switch to an ultra low-flow showerhead. This could save you as much as 2.5 gallons every minute you shower.
- Take shorter showers, try to keep it under 5 minutes.
- Install ultra-low-flush toilets or place a plastic bottle filled with water or sand in your toilet tank to reduce the amount of water used in each flush.
- Put dye tablets or food coloring in your toilet tank and wait to see if the color appears in the bowl (without flushing). If it does, you have a leak!
- Check to assure that your toilet's flapper valve doesn't stay open after flushing.
- When taking a bath, start filling the tub with the drain already plugged instead of waiting first for the water to get warm. Adjust the temperature as the tubs begins to fill.
- *Turn the faucet off while you shave, brush your teeth and lather up your hands.*
- Don't use the toilet as a garbage can. Place a trash can next to the toilet and use it instead.
- Buy an electric razor or fill the sink with a little water to rinse your razor, instead of rinsing in running water.

- Take a short shower instead of a bath. While a five minute shower uses a 12 to 25 gallons, a full tub requires about 70 gallons.

Tips for Saving Water in the Kitchen

- If you wash dishes by hand, fill one half of the sink with soapy water and the other with clean water instead of letting the water run.
- Place a pitcher of water in the refrigerator instead of letting the tap run to get a cool drink.
- Water your houseplants with water saved from washing your fruits and vegetables, waiting for the water to warm up, or even when you clean your fish tank!
- Select one glass to use for drinking each day. If you do this, your dishwasher will take longer to fill up and it will not need to be run as frequently.
- Thaw foods in the refrigerator or in a bowl of hot water instead of using running water.
- Let your pots and pans soak instead of letting the water run while you clean them.
- Purchase an instant water heater for your kitchen sink so you don"t waste water while it heats up.
- Scrape the food on your dishes into the garbage instead of using water to rinse it down the disposal.

Tips for Saving Water Outdoors

- Try planting drought-tolerant and regionally adapted plants in areas that are hard to water or that receive little use. This may include narrow strips near sidewalks or driveways and steep hills.
- Cover pools and spas to avoid evaporation.
- Sweep your driveways and sidewalks with a broom instead of spraying them off with a hose.
- Check outdoor faucets, pipes, hoses and pools for leaks.
- Change your lawn mower to a 3-inch clipping height and try not to cut off more than one-third of the grass height when you mow.
- Consider replacing infrequently used lawn areas with low-water use plants or ground covers.
- Apply as little fertilizer to your lawn as possible. Applying fertilizer increases water consumption and actually creates more mowing for you! Use iron-based fertilizers to simply "green-up" your lawn instead.
- Recycle and reuse the water in fountains and other ornamental water fixtures.

- Check the level in your pool using a grease pencil. Your pool shouldn't lose more than ¼-inch each day. If it is losing more than this, check elsewhere for leaks.
- Avoid bursting or freezing pipes by winterizing your outdoor spigots.
- Use a bucket of soapy water to wash your car, or simply place a shut-off nozzle on the end of your hose.

Tips for Saving Water in your Landscape

- Visually inspect your sprinkler system once a month during daylight hours. Check and fix any tilted, clogged or broken heads. Although watering at night is recommended, you won't notice problems with your system unless you see it in operation.
- Avoid watering your landscape during the hottest hours of the day (10 am until 6 pm) to minimize evaporation.
- Water your landscape in cycles by reducing the number of minutes on your timer and using multiple start times spaced one hour apart. This allows the water to soak into the soil and avoids runoff.
- Water your lawn only when it needs it. If you leave footprints on the grass, it is usually time to water.
- Turn your sprinkler system off during or after a rainstorm and leave it off until the plants need to be watered again.
- Consider installing an automatic rain shutoff device on your sprinkler system.
- Install drip irrigation systems for trees, shrubs and flowers.
- Check your sprinkler valves for leaks when checking all your heads.
- Avoid watering your lawn on windy days.
- Try to add more days between watering. Allowing your lawn to dry out between watering creates deeper roots and allows you to water deeper and less often.
- Place a rain gauge in your backyard to monitor rainfall and irrigation.
- Set the kitchen timer when you water by hose.
- Test soil moisture with a soil probe or screwdriver before you water. If the soil is moist, don"t water!
- Watch out for broken sprinklers, open hydrants, broken pipes and any other significant water losses in your community. Be sure to notify the property owner or the water district of the problem.
- Make sure the water coming out of your sprinklers is not misting and drifting away in the wind. This is usually caused by too high of pressure. If necessary, install a pressure reducer on your sprinkler line.
- Turn back your automatic timers in the spring and fall. Water only once or twice a week during the spring and fall.

Tips for Saving Water when Planting

- Plant your garden when temperatures are cooler and plants require less water. This is also less stressful for the plants.
- Use a thick layer of mulch around landscape plants and on bare soil surfaces. This reduces evaporation, promotes plant growth and reduces weeds.
- Collect the runoff from your roof in a barrel and use it on your plants and garden.
- Arrange plants in your garden according to watering need. This is called "Hydrozoning".
- Remove weeds from the garden. This helps cut down on excess water consumption due to plant competition.
- Don't overreact and try to drown the brown spots in your lawn. Simply moisten the area up a bit and the grass will green up in a few days.
- Create a compost pile and use it in your yard to add needed nutrients and organic matter to the soil.
- Don't over-water your plants. Learn how much water they need and how best to apply just the right amount

APPENDIX C

CITY COUNCIL RESOLUTION

WASATCH CIVIL
Consulting Engineering

Resolution 20-5

A RESOLUTION ADOPTING A WATER CONSERVATION PLAN UPDATE FOR ROY CITY

WHEREAS, Roy City has adopted and maintains a Water Conservation Plan; and

WHEREAS, The State of Utah requires Roy City to review and update its Water Conservation Plan at last every five years; and

WHEREAS, Roy City staff has prepared and updated the Water Conservation Plan which is attached hereto as Exhibit "A"; and

WHEREAS, a public hearing was held as required by law; and

WHEREAS, the Roy City Council has determined that adopting the attached updated Water Conservation Plan is in the best interest of the City of Roy

NOW THEREFORE, be it resolved by the Roy City Council that the updated Roy City Water Conservation Plan attached hereto and incorporated herein by reference, is hereby adopted and becomes effective immediately upon passage this 21 day of January, 2020.

Robert Dandoy
Mayor

Attest:

Morgan Langholf
City Recorder

Councilmember Wilson aye
Councilmember Paul aye
Councilmember Burrell aye
Councilmember Jackson aye
Councilmember Saxton aye

APPENDIX D

PUBLIC NOTIFICATION AND MEETING MINUTES

WASATCH CIVIL
Consulting Engineering

Mayor
• Robert Dandoy

City Manager
• Matt Andrews

Council Members
• Jan Burrell
• Joe Paul
• Bryon Saxton
• Ann Jackson
• Diane Wilson

ROY CITY COUNCIL MEETING AGENDA

JANUARY 21, 2020 – 5:00 P.M.

ROY CITY COUNCIL CHAMBERS – 5051 SOUTH 1900 WEST

A. Welcome & Roll Call
B. Moment of Silence
C. Pledge of Allegiance
D. Motion to go into Closed Meeting to Discuss the Character, Professional Competence, or Physical or Mental Health of Individual(s)
A Closed Meeting is to be held in the Administration Conference room
E. Consent Items
(These items are considered by the City Council to be routine and will be enacted by a single motion. If discussion is desired on any particular consent item, that item may be removed from the consent agenda and considered separately)

1. Approval of December 3, 2019 Roy City Council Meeting Minutes

F. Action Items

1. **PUBLIC HEARING**- Roy City Water Conservation Plan Update
    a. Resolution 20-5 Adopting a Water Conservation Plan Update for Roy City

G. Public Comments *This is an opportunity to address the Council regarding concerns or ideas on any topic. To help allow everyone attending this meeting to voice their concerns or ideas, please consider limiting the amount of time you take. We welcome all input and recognize some topics make take a little more time than others. If you feel your message is complicated and requires a lot of time to explain, then feel free to email your thoughts to admin@royutah.org. Your information will be forwarded to all council members and a response will be provided.*

H. City Manager & Council Report

I. Adjournment

In compliance with the Americans with Disabilities Act, persons needing auxiliary communicative aids and services for these meetings should contact the Administration Department at (801) 774-1020 or by email: admin@royutah.org at least 48 hours in advance of the meeting.

Pursuant to Section 52-4-7.8 (1)(e) and (3)(B)(ii) "Electronic Meetings" of the Open and Public Meetings Law, Any Councilmember may participate in the meeting via teleconference, and such electronic means will provide the public body the ability to communicate via the teleconference. The anchor location shall be the Roy City Council Chambers located at 5051 South 1900 West, Roy Utah.

Certificate of Posting

The undersigned, duly appointed City Recorder, does hereby certify that the above notice and agenda was posted in a public place within the Roy City limits on this 17th day of January, 2020. A copy was also provided to the Standard Examiner and posted on the Roy City Website and Utah Public Notice Website on the 17th day of January, 2020.

Morgan Langholf
City Recorder

Visit the Roy City Web Site @ www.royutah.org
Roy City Council Agenda Information – (801) 774-1020

1. **Approval of the December 3, 2019 City Council Minutes**

Councilmember Paul motioned to approve the December 3, 2019 City Council Minutes with the notated amendments. Councilmember Burrell seconded the motion. All Councilmembers voted "Aye." The motion carried.

F. Action Items

1. PUBLIC HEARING—Regarding the Roy City Water Conservation Plan Update

City Attorney, Andy Blackburn, explained the need for this update, stating that the City was required by law to have this plan in place. Additionally, State law required the City to hold a public hearing every five years to make any necessary changes to the plan. Staff discovered this mandate in December 2019 and submitted plan to the State in order to meet the requirements of the law. However, the public hearing was still needed and if there were any suggested amendments from the Council those could be passed by Resolution. In addition to staff review, the plan submitted in December was reviewed by Wasatch Civil Engineering.

Councilmember Wilson noted there were changes that still needed to be made. The Council indicated that the plan should come back later for further review.

Councilmember Paul motioned to go into a public hearing to discuss the Roy City Water Conservation Plan Update. Councilmember Burrell seconded the motion. All Councilmembers voted "Aye." The motion carried.

No comments were made by the public at this time.

Councilmember Burrell motioned to close a public hearing to discuss the Roy City Water Conservation Plan Update. Councilmember Wilson seconded the motion. All Councilmembers voted "Aye." The motion carried.

Councilmember Paul motioned to approve Resolution No. 20-5 Updating the Roy City Water Conservation Plan. Councilmember Jackson seconded the motion. A roll call vote was taken. All Councilmembers voted "Aye." The motion carried.

G. Public Comments

Mayor Dandoy opened floor for public comments.

Jamie Larsen, a resident on 5700 South, discussed concerns about a City-owned facility near her home that produced significant sound and light pollution into her yard. There were also issues with trash near the fence that bordered the property in question. Ms. Larsen wished to convey her frustration over the matter and felt that despite communicating these concerns with the Council in the past, action still had not been taken.

Ms. Larsen also discussed a speed hump that successfully mitigated speed; however, a new issue had since arisen due to the installation of a different, third speed bump that was recently installed on 5700 South. She was concerned about the height of the speed bump in question and the level of damage it was causing vehicles.