



TOQUERVILLE CITY

Water Management & Conservation Plan

April 2025

PREPARED BY:

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Water Management & Conservation Plan 2025

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I. INTRODUCTION

In response to the increasing demands and concerns pertaining to water resources throughout the State of Utah, the state legislature passed the Water Conservation Plan Act in the 2004 legislative session (Section 73-10-32 Utah Code Annotated), further amended in 2023. This Act requires that communities with over 500 connections prepare or update a Water Management and Conservation Plan every five years. Toquerville City last adopted a water conservation plan in 2019. This updated water management and conservation plan is written to address the concerns of leaders and citizens of both Toquerville City and the State of Utah and will build on what previous plans have accomplished. The main reasons for concern regarding water conservation entail being able to meet future water needs, saving citizen's money, being located in a desert, and preserving the environment and natural resources.

In accordance with the Utah State Code this plan provides the following:

- A conservation goal that is in line with the regional conservation goal.
- An implementation plan to reach the conservation goal.

II. DESCRIPTION OF TOQUERVILLE AND MUNICIPAL WATER SYSTEM

Toquerville City is located in Washington County, Utah, approximately 30 miles south of Cedar City, Utah and 20 miles north of St. George, Utah, along Interstate 15. The 2020 U.S. census reported Toquerville had an approximate population of 1,887 residents and it has been projected that as of 2023 they currently have 2,633 residents. The City currently owns and operates its own culinary water system which provides water to the residences and City owned properties in the City. The City currently services approximately 736 residential connections, 14 commercial connections, and 20 city government/institutional connections. The City provides irrigation service to much of the City through the culinary system with government parks and 560 residential connections serviced by Toquerville Secondary Water System, a separate secondary water distribution system managed by Washington County Water Conservancy District.

Toquerville City first completed a water management and conservation plan in 2013. Since that time, several conservation related accomplishments have been implemented or completed and are noted in the Current Conservation Practices Section below.

Toquerville City is growing and is expected to continue to grow. This growth changes the utilization of the land and can put a strain on the water supply and distribution system to meet demands. By means of careful preparation and efficient utilization of the available water supply these increased demands can and will be met.

III. EXISTING WATER RESOURCES

Toquerville City has approximately 539 acre-feet of water that can be diverted annually from the Toquerville Spring and Ash Creek. Table 1 shows the water rights and the total allowable annual withdrawal.

Table 1. Toquerville City Water Rights Summary

| Water Right No. | Source | Duty (ac-ft) |
|------------------|---------------------------------|--------------|
| Toquerville City | | |
| 81-3474 | Toquerville Springs & Ash Creek | 12.38 |
| 81-3475 | Toquerville Springs & Ash Creek | 67.44 |
| 81-3476 | Toquerville Springs & Ash Creek | 93.12 |
| 81-4063 | Toquerville Springs & Ash Creek | 3.84 |
| 81-3546 | Toquerville Spring | 361.98 |
| | Subtotal | 538.76 |

The City currently participates in the Washington County Water Conservancy District (WCWCD) Regional Water Supply Agreement (RWSA) as a solution for additional water sources. The agreement provides the mechanism for water to be supplied by the WCWCD if there is not enough water right or source necessary for growth. This agreement allows the City to purchase water as needed from WCWCD and means they are not limited to their current water rights.

IV. CURRENT WATER USE

Using the population and usage data from Toquerville City, the following data can be found regarding the average usage of culinary water for residential and city connections. The average usage for the residential connections includes some outdoor usage since the secondary irrigation system is not accessible to all residential connections.

This section looks at the last 3 years of data to compare usage (2021-2023).

SECTION VIII – WATER SYSTEM CONSERVATION CHALLENGES

Table 2. Culinary Water Residential Use Summary

| | Connections | Avg. Water Used (gal/conn/day) | Population | Avg. Water Used (gal/person/day) |
|--------------------|-------------|-----------------------------------|------------|-------------------------------------|
| Residential - 2021 | 689 | 238 | 1,945 | 84 |
| Residential - 2022 | 700 | 222 | 2,218 | 70 |
| Residential - 2023 | 710 | 219 | 2,633 | 59 |

Table 3. Culinary Water Commercial Use Summary

| | Connections | Avg. Water Used (gal/conn/day) | Population | Avg. Water Used (gal/person/day) |
|-------------------|-------------|-----------------------------------|------------|-------------------------------------|
| Commercial - 2021 | 11 | 489 | 1,945 | 3 |
| Commercial - 2022 | 11 | 5,811 | 2,218 | 29 |
| Commercial - 2023 | 14 | 5,243 | 2,633 | 28 |

Table 4. Culinary Water Govt/Inst. Use Summary

| | Connections | Avg. Water Used (gal/conn/day) | Population | Avg. Water Used (gal/person/day) |
|-------------------|-------------|-----------------------------------|------------|-------------------------------------|
| Govt/Inst. - 2021 | 20 | 759 | 1,945 | 8 |
| Govt/Inst. - 2022 | 20 | 714 | 2,218 | 6 |
| Govt/Inst. - 2023 | 20 | 302 | 2,633 | 2 |

Table 5. Culinary Water Total Use Summary

| | Connections | Avg. Water Used (gal/conn/day) | Population | Avg. Water used (gal/person/day) |
|-----------------------|-------------|-----------------------------------|------------|-------------------------------------|
| Total Culinary - 2021 | 720 | 256 | 1,945 | 95 |
| Total Culinary - 2022 | 731 | 320 | 2,218 | 105 |
| Total Culinary - 2023 | 744 | 316 | 2,633 | 89 |

The data shows that the average residential usage from 2021-2023 per connection has decreased by approximately 29.8% and the average government usage has decreased by approximately 75%. However, the average commercial usage has increased by approximately 900%. This is likely due to commercial connections not being active all of

2021. The total culinary usage on a per capita basis has decreased by approximately 6.3%.

The following is summary of the average yearly water use in the City:

- Residential Culinary Use -----57.8 million gallons or 177.4 acre – ft
- Commercial Culinary Use -----17.4 million gallons or 53.3 acre – ft
- Govt./Inst. Culinary Use -----4.3 million gallons or 13.2 acre – ft
- Total Culinary Use -----79.5 million gallons or 243.9 acre - ft

V. FUTURE WATER NEEDS

The City has historically averaged a growth rate of approximately 5% per year based on census data from 1980-2020. The City anticipates that the Firelight planned development will increase the population to approximately 10,000 people by 2035, resulting in an annual growth rate of 11.75%. This report assumes that after this development is completed, the City will return to the historic growth rate of 5% after 2035. This projection is shown in Figure 1 below.

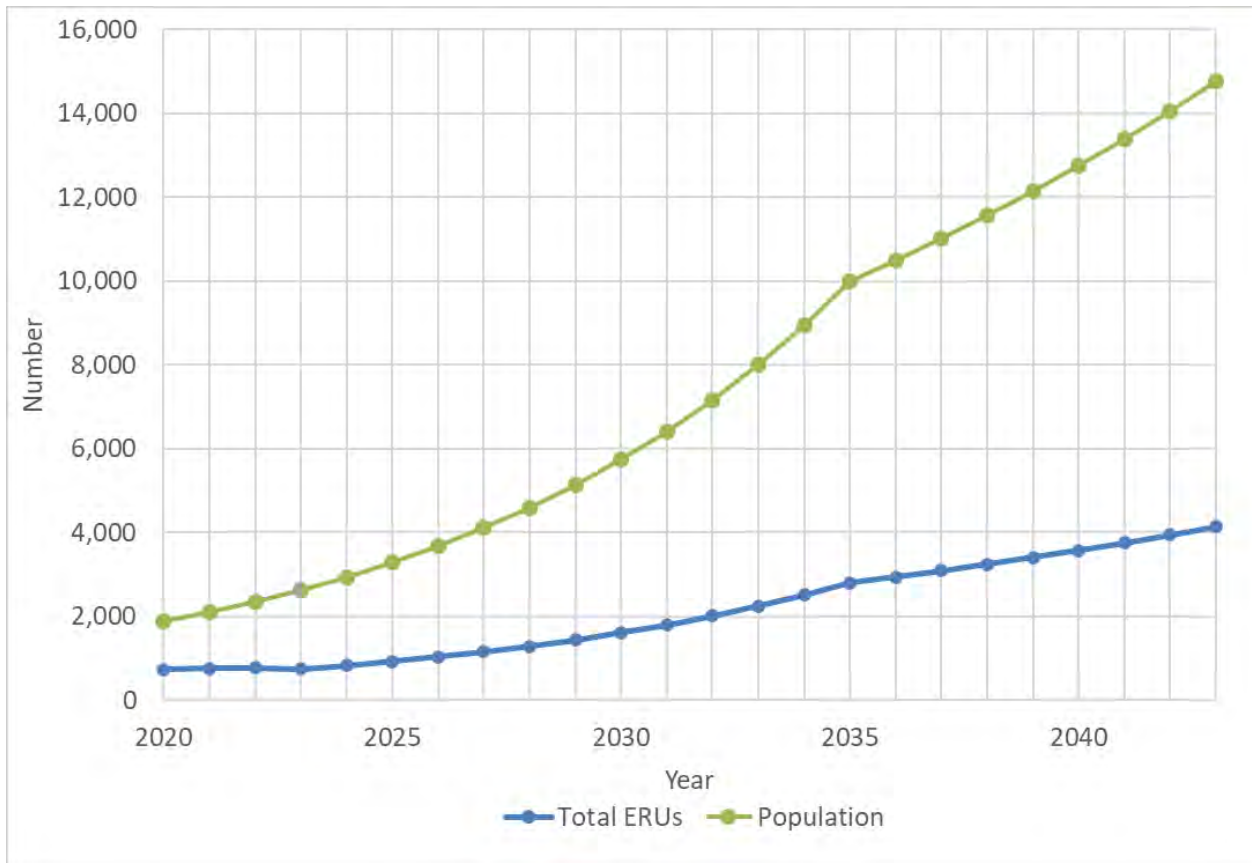


Figure 1. Population Projection

Figure 2 on the following page shows the projected supply demands until year 2060 based on the proposed growth rates above. With this projection, the City will not have adequate

supply to meet demand beginning in 2033. The City's Culinary Water Master Plan provides more detailed projections on the demands caused by future growth and the recommended improvements to handle that future demand. A separate study is also being performed to analyze the most cost-effective choice of obtaining additional Water Rights, though this is not a requirement due to the RWSA mentioned in section III being available as a backup option. Conservation can be a major component to these projections and the recommendations. As water is conserved, it reduces the demand for source and storage.

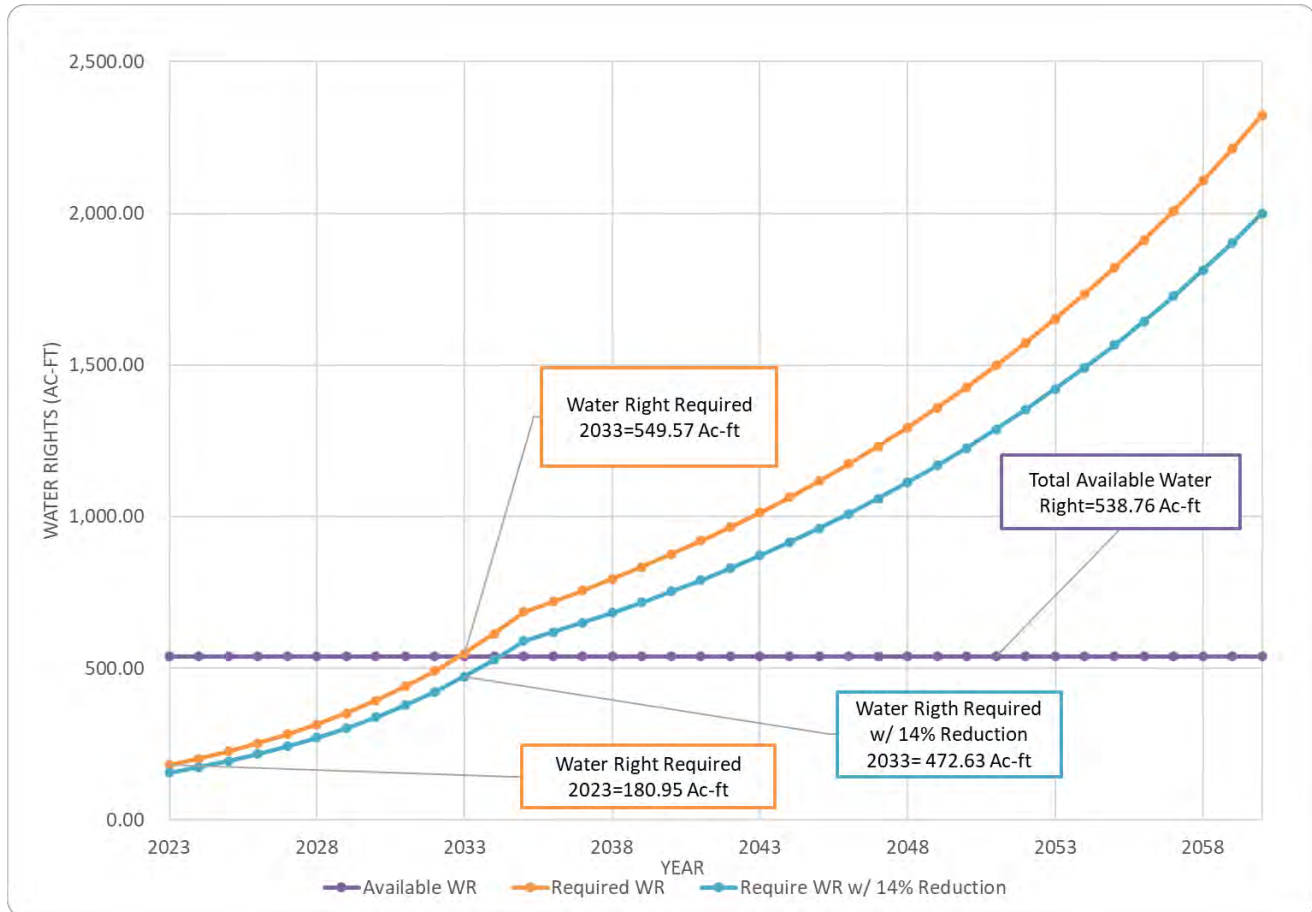


Figure 2. Water Right Projection

VI. WATER CONSERVATION GOALS

The following three goals have been identified to help monitor and track the success of the various programs and conservation measures being implemented.

1. Goal 1 - Reduce the City's per capita usage by 14% by 2030.

This is the regional goal from the Utah Division of Water Resource's that was made in 2019. Using the usage data from 2023 and the projected timeline, usage would be 76.5 gal/person/day by 2030 if this goal is reached. If this goal is reached, the City will have sufficient water rights in 2030 as shown in Figure 2 above without supplementing from WCWCD through the RWSA. It is projected that the City will exceed their current Water

Rights of 539 ac-ft by 2033 if conservation is not increased.

2. Goal 2 - Retain a financially sustainable and well-maintained water system.

The water rate structure determined by the City for the culinary water system should continue to encourage the user to conserve water while still ensuring that revenues meet the financial needs of the water system. Maintenance programs should also keep the system physically maintained.

3. Goal 3 – Enhance and encourage efficient outdoor conservation techniques

The City should maintain or improve the appearance of street landscapes, open spaces, and yards to enhance the beauty of the City while decreasing outdoor usage by choosing water efficient landscaping.

VII. CURRENT CONSERVATION PRACTICES

The City has previously adopted ordinances and implemented conservation practices that work towards these water conservation goals. These ordinances and practices include:

- Implementation of a time-of-day watering schedule to reduce water lost through evaporation.
- Employ a full-time water operator to improve response time in fixing water system problems as they arise.
- Actively uses secondary irrigation water for City owned property with timers to limit use.
- Utilizes plans and resources provided by WCWCD including, but not limited to:
 - Encourages residents to follow and use the WCWCD water conservation guidelines and tools.
 - Provides administration of Irrigation Association landscaping certification testing and the accompanied courses.
 - All users utilizing culinary water for irrigation follow the WCWCD water conservation plan and watering schedule.
- Provides users with information and tips regarding water usage and conservation methods with a brochure accompanying water bill and posted online. This brochure that has been attached as Appendix A.

The City's Fee Schedule, City Code, and other currently adopted conservation practices and ordinances can be found through their website at: [Home | Toquerville City](#)

A. CURRENT PROGRESS & EFFECTIVENESS

The City has implemented all of these conservation practices and tables 2 through 4 show that the efforts have yielded positive results in average usage per connection. They believe they can continue to aid in conservation efforts. Additionally, future development has been designed to be lower impact which should further reduce per capita usage.

VIII. WATER SYSTEM CONSERVATION CHALLENGES

To meet the goals established by the City, some challenges to water conservation need to be addressed. By identifying these areas of concern, new conservation practices can be implemented that can reduce the water usage and water losses in the City's Systems and existing practices can be improved. This section will cover these topics and their associated planned conservation practices.

A. LAND USE AND PLANNING

As land is developed or land use changes throughout the City, the water use will also change. These changes can lead to either increases or decreases in the use of culinary or secondary water or both. For example, if a pasture was converted into an apartment complex, the outdoor water usage would likely drop significantly, but the indoor usage would similarly increase significantly. It is also possible for developments to come in with a large number of rentals and landscaping, pools, etc. and increase the net water usage at the site.

As land becomes developed, a focus will be made to reduce the amount of water used in the new development compared to water that the land was previously using whether it was for outdoor or indoor purposes. Land use ordinances will be put in place to prevent an increase in water usage above historical usage.

In a study published in January 2022 by Hansen, Allen & Luce, Inc. and the Department of Civil and Construction Engineering, BYU, researchers analyzed how landscape irrigation can be better managed. The study focused on the relationships between water use, irrigated area, plant health, and water rate structures. The study found that larger parcels of land required lower water application rates than smaller parcels to achieve comparable plant health metrics. Based on the results of the study the City plans to adjust land use policies to avoid producing small, irregular, and/or disconnected landscaped areas in future buildings and developments.

Based on this research, the City plans to implement the following land-use policies by preparing and/or amending appropriate Land-use ordinances:

- Require new developments to use water efficient landscaping.
- Require new developments to install smart irrigation systems for landscaping.
- Implement a time-of-day watering schedule to reduce water lost through evaporation.

B. IRRIGATION OVERWATERING

In the Hansen, Allen, & Luce study previously referenced, researchers drew conclusions

relating to plant health in correlation to irrigation practices. They found that plant health does not strictly increase with the increase in water application but has an optimum point, and that water application rates above this point reduce overall plant health. They also found that many water users irrigate above this point. From these conclusions, water users should be educated on the adverse effects of overwatering and proper fertilizer application to support healthy lawns, gardens, and fields.

There are resources available to help educate water users on better irrigation practices. Locally the WCWCD has free information on their website regarding better practices for water times and durations as well as other information regarding irrigation and landscaping. Utah State University also provides conservation education materials.

Irrigation for agriculture is a major component of the City's total water use. Reducing overwatering through education and enforcement of watering schedules provides a possibility to significantly reduce to total water usage of the City.

Along with educating users on the negative effects of overwatering, watering schedules should be enforced to help prevent overwatering.

The City plans to mitigate irrigation overwatering through the following avenues:

- Provide links on the City's website to educational materials.
- Send educational flyers or brochures to users by mail.
- Reach out to entities such as the WCWCD and Utah State University to provide additional workshops for residents to attend.
- Enforce existing irrigation watering schedule.

C. LEAKAGE AND LOSSES IN THE SYSTEM

According to the American Water Works Association, leaks make up about 14% of indoor water usage. In Toquerville City this results in approximately 12.5 gallons per person per day. With a population of about 2,633, this results in nearly 12 million gallons a year lost through leaks in the home. Cutting this quantity in half would account for a reduction in residential water usage of about 6%.

A water audit is effective in determining the water distribution system's efficiency. The overall goal is to identify, quantify, and verify water and revenue losses. Once the total losses in the system have been identified, a leak detection program may proceed. Leak detection is a systematic approach to surveying the system and identifying the exact locations of hidden underground leaks. The City launched a water audit in April of 2023 and a leak detection program is ongoing.

It is also effective to educate users on how to check for leaks in their own home. With

the implementation of the City's new metering system, customers can sign up for an app (eye-on-water) to help them detect leaks in their homes. This app enables users to see their water usage on a near real-time basis and can alert the user if the meter tracks an excess amount of water through a 24-hour period.

The City plans to limit leakage and losses in the system by doing the following:

- Continue running the leak detection program to identify the existing losses in the system.
- Provide homeowner's with information on how they can check for leaks and track their metered usage through a QR code that directs them to the appropriate information. This QR code will be distributed by one or more of the following methods:
 - City wide mail
 - Door Hanger
 - Announcement at City Council meeting
 - Flyer at City Hall
 - Attached with utility bill

IX. ADDITIONAL CONSERVATION MEASURES

In addition to the conservation measures based on system challenges discussed above, there are other conservation measures that could be implemented to further help the City reach their goals. This section provides additional programs and actions to be executed to help the City with its conservation goals.

A. PLUMBING FIXTURE REPLACEMENT

Water saving fixtures can provide an inexpensive and long-lasting approach to conservation. Plumbing fixtures can be installed and used without major disruptions in water use habits, making replacement of these fixtures a conventional way to conserve.

Toilets are the highest water-consuming devices in the home, accounting for about 27% of indoor water use. In 1992, the U.S. Congress passed legislation prohibiting construction of certain high flow plumbing fixtures, which brought manufacturing standards down from 3.5 or 5 gallons per flush to 1.6 gallons per flush. Pre-1992 showerheads put out about 5 gpm, whereas post-1992 showerheads put out half that, 2.5 gpm.

Installing a water efficient toilet can range anywhere from \$100 to \$500 per toilet. By replacing high flow toilets, or placing a water-resistant object in the tank to displace a portion of the toilet flush volume, it was determined that a family of 4 would save nearly 40,000 gallons or \$80 a year, according to the current cost of water in Toquerville City. Similarly, replacing old showerheads and faucets would also result in savings over time.

The City plans to encourage plumbing fixture replacement in the system by doing the following:

- Educate homeowner's on the potential savings from replacing fixtures pre-1992 in their homes through a flyer or brochure.

B. IMPROVED EVALUATION OF PROGRESS

To ensure goals are achieved when expected, best management plans must be implemented in a timely manner. Common challenges to this are proper planning and scheduling of best management practices. These challenges have less to do with the system and more to do with coordination of goals. The City plans to implement all conservation practices immediately, and meet to evaluate progress regularly. This evaluation will consist of discussing each of the conservation practices presented in this plan and what action items are still required. It will also measure progress towards goals by:

- Compare current metered average usage to previously evaluated value. With the City moving to smart meters, this can be continuously evaluated by both the City and customers.
- Review the income from water rates against system maintenance costs.
- Review City landscape ordinances and ensuring new development landscape is increasingly efficient.
- Review water rate structure to determine if rate should be adjusted to promote increased conservation.

X. SUMMARY

In conclusion, Toquerville City has the following conservation Goals:

1. Reduce the City's per capita usage by 14% by 2030.
2. Retain a financially sustainable and well-maintained water system.
3. Enhance and encourage efficient outdoor conservation techniques.

The City will achieve these goals by focusing in the following areas:

- Land Use and Planning
- Irrigation Overwatering
- Leakage and Losses in the System
- Plumbing Fixture Replacement
- Improved Evaluation of Progress

In addition to the new focus areas above, the City will continue to follow current conservation measures and practices with improved distribution of educational material on these practices. The City aims to achieve its conservation goals by implementing the measures outlined in this plan and continuing with current efforts.. Implementation of the Best Management Plans outline in this Conservation Plan will begin immediately. Progress will be evaluated by the City.

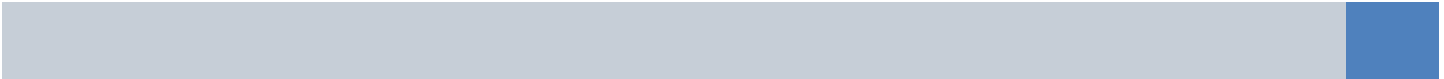
XI. REFERENCES

1. Arens, S., K. Clifford and D. Rumore (2018). Final Workshop Report for Vulnerability Consequences and Adaptation Planning Scenarios (VCAPS) for the Cities of Toquerville, Rockville and Hurricane. Western Water Assessment: Salt Lake City, UT.
2. Shurtz KM, Dicaldo E, Sowby RB, Williams GP. Insights into Efficient Irrigation of Urban Landscapes: Analysis Using Remote Sensing, Parcel Data, Water Use, and Tiered Rates. *Sustainability*. 2022; 14(3):1427. <https://doi.org/10.3390/su14031427>



APPENDIX A

TOQUERVILLE CITY GUIDE TO WATER CONSERVATION BROCHURE



APPENDIX B

EXISTING RATE STRUCTURE

| Existing Residential Water Rate Structure | | | Existing Commercial Water Rate Structure | | |
|--|-------------|--------------|--|-------------|--------------|
| Base Rate \$55.00 ERU/Month Includes 10,000 Gallons | | | Base Rate \$100.00 ERU/Month Includes 0 Gallons | | |
| Overage Steps | | | Overage Steps | | |
| Cost Per 1,000 Gal. | Low Gallons | High Gallons | Cost Per 1,000 Gal. | Low Gallons | High Gallons |
| \$4.00 | 10,001 | 15,000 | \$3.00 | 1 | 10,000 |
| \$6.00 | 15,001 | 20,000 | \$5.00 | 10,001 | 15,000 |
| \$8.00 | 20,001 | & UP | \$10.00 | 15,001 | 20,000 |
| | | | \$15.00 | 20,001 | & UP |
| Usage (Gallons) | Rates | | Usage (Gallons) | Rate | Rate/ERU |
| 5,000 | \$ | 55.00 | 10,000 | \$ 130.00 | \$ 41.94 |
| 10,000 | \$ | 55.00 | 15,000 | \$ 155.00 | \$ 50.00 |
| 10,137 | \$ | 55.55 | 20,000 | \$ 205.00 | \$ 66.13 |
| 15,000 | \$ | 75.00 | 30,000 | \$ 355.00 | \$ 114.52 |
| 20,000 | \$ | 105.00 | 31,405 | \$ 376.08 | \$ 121.31 |
| 30,000 | \$ | 185.00 | 45,000 | \$ 580.00 | \$ 187.10 |

The anticipated average water bill based on historic average usage is highlighted in blue.



APPENDIX C

SURFACE AREA MAP



**TOQUERVILLE CITY
CITY COUNCIL MEETING MINUTES**

**April 2nd, 2025 at 6:00 pm
212 N. Toquer Blvd, Toquerville Utah**

Present: Mayor Justin Sip; Councilman: Chuck Williams, Joey Campbell, Todd Sands, Wayne Olsen, Gary Chaves; Staff: City Manager Ben Billingsley, Assistant City Manager Darrin LeFevre, Recorder/Planning & Zoning Administrator Emily Teaters, City Attorney Kayla Gothard; Planning Commission Chair Valerie Preslar.

A. CALL TO ORDER:

Mayor Sip called the meeting to order at 6:00 p.m. Councilman Olsen led the Pledge of Allegiance. Invocation was led by Councilman Williams.

B. APPROVAL OF AGENDA:

https://www.youtube.com/live/uVuj1uDLVJg?si=dqg2nJ5_39Fld6hl&t=62

1. The Council reviewed the agenda.

Councilman Campbell made a motion to approve the agenda order. Councilman Williams seconded the motion. Motion carried, 5-0. Joey Campbell – aye, Chuck Williams – aye, Todd Sands – aye, Wayne Olsen – aye, Gary Chaves – aye.

2. There were no declarations of conflicts from the Council.

C. CONSENT AGENDA:

<https://www.youtube.com/live/uVuj1uDLVJg?si=QYBTAtEcFoMIvze6&t=77>

1. Review and possible approval of meeting minutes from March 19, 2025, City Council Meeting.

2. Review and possible approval of meeting minutes from March 25, 2025 Special City Council Meeting.

Councilman Sands made a motion to approve the Consent Agenda, both minutes from the 19th and the 25th. Councilman Campbell seconded the motion. Motion carried, 5-0. Joey Campbell – aye, Chuck Williams – aye, Todd Sands – aye, Wayne Olsen – aye, Gary Chaves – aye.

D. CITY DEPARTMENT REPORTS

<https://www.youtube.com/live/uVuj1uDLVJg?si=acycK4r6Jen653Lg&t=117>

1. Ash Creek Special Services District Representative – Mike Chandler
Mike gave an update on the Confluence Park Treatment Plant Site and other ongoing projects in the area, including Toquerville, and addressed questions from the council.

2. Hurricane Valley Fire District Representative – Merlin Spendlove
Merlin provided a report on first-quarter call volumes and gave an update on the Fire District's Wildland Crew.



3. Planning Commission Chair – Valerie Preslar

Valerie and Family Teaters gave a report on behalf of Val, covering some items on the agenda for the next Planning Commission meeting and providing an update on Planning and Zoning.

4. Assistant City Manager – Darrin LeFevre

Darrin provided an update on the development of the Toquer Reservoir and other ongoing engineering projects in Toquerville.

5. City Manager – Ben Billingsley

Ben provided an update on funding for completed City projects, shared the first-quarter report on active criminal cases from the City Prosecutor, and discussed recent website updates.

E. PUBLIC FORUM:

<https://www.youtube.com/live/uVuj1uDLVJg?si=9uTtbz8jchwoYzsm&t=1451>

Jerry Eves, along with Troy Olson and Brian Smith, presented an idea to create a power utility on the north end of the city. Jerry is currently working on the Boulder Ridge development and wants to help bring power generation to Toquerville. The group also responded to questions and comments from the Council.

F. PUBLIC HEARING:

<https://www.youtube.com/live/uVuj1uDLVJg?si=MGqe0BVzqUcv-keC&t=3081>

1. Public input sought on Resolution 2025.XX – A resolution of the City Council of Toquerville City, Utah, adopting the Toquerville City Water Conservation Plan.

Councilman Campbell motioned to move into a public hearing. Councilman Chaves seconded the motion. Motion carried, 5-0. Joey Campbell – aye, Chuck Williams – aye, Todd Sands – aye, Wayne Olsen – aye, Gary Chaves – aye.

There were no comments from the public.

Councilman Williams motioned to close the public hearing. Councilman Campbell seconded the motion. Motion carried, 5-0. Joey Campbell – aye, Chuck Williams – aye, Todd Sands – aye, Wayne Olsen – aye, Gary Chaves – aye.

G. BUSINESS:

1. **Discussion and possible action** on Resolution 2025.XX – Adopting the Toquerville City Water Conservancy Plan.

https://www.youtube.com/live/uVuj1uDLVJg?si=_B62PjwWYlekRnYP&t=3119

Ben provided a brief overview of the Toquerville City Water Conservancy Plan, highlighting five key updates to the posted draft and discussing them with the Council.

Councilman Olsen made a motion to adopt the 2025 Water Conservancy Plan. Councilman Campbell seconded the motion. Motion carried, 5-0. Joey Campbell – aye, Chuck Williams – aye, Todd Sands – aye, Wayne Olsen – aye, Gary Chaves – aye.

2. **Discussion** on PID debt process funds to satisfy performance bond.

https://www.youtube.com/live/uVuj1uDLVJg?si=bbp7hV_H0ZBPGsIT&t=3826

Kayla Gothard presented on the use of PID proceeds to satisfy bonding requirements. The Council and staff discussed this item.

3. **Discussion and possible action** FY25-26 Capital Facilities Plan Project List.

<https://www.youtube.com/live/uVuj1uDLVJg?si=n0hALLFIJsfH0acp&t=6253>

Ben presented a proposed updated project list that removed irrelevant or completed items, highlighted high-priority projects and new initiatives, and identified items needing further clarification. The Council discussed the list, and staff addressed questions.

Councilman Chaves made a motion to adopt the policy and have it up for annual review thereafter. Councilman Campbell seconded the motion. Motion carried, 5-0. Joey Campbell – aye, Chuck Williams – aye, Todd Sands – aye, Wayne Olsen – aye, Gary Chaves – aye.

4. **Discussion and possible action** on Zions Public Finance Municipal Adviser Agreement.

<https://www.youtube.com/live/uVuj1uDLVJg?si=OAPMqZJEbdjw7Y7l&t=7279>

Ben introduced this item to the public and addressed questions from the Council.

Councilman Campbell made a motion to approve the Municipal Advisor Contract between Toquerville City and Zions Public Finance and authorize the mayor to execute the contract. Councilman Williams seconded the motion. Motion carried, 5-0. Joey Campbell – aye, Chuck Williams – aye, Todd Sands – aye, Wayne Olsen – aye, Gary Chaves – aye.

5. Open and Public Meetings Act Training.

<https://www.youtube.com/live/uVuj1uDLVJg?si=oqCqrYWvRYUChGzA&t=7556>

Kalya provided training for the Council.

H. CALENDAR OF EVENTS:

https://www.youtube.com/live/uVuj1uDLVJg?si=FUEXPRde3S2_hnv7&t=8774

Mayor Sip reviewed the calendar of events.

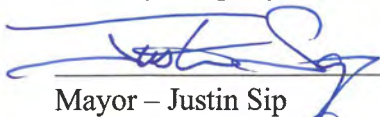
I. CLOSED SESSION:

Not needed.

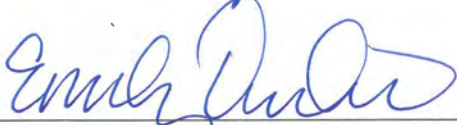
J. ADJOURN:

Councilman Williams motioned to adjourn the meeting. Councilman Campbell seconded the motion. Motion carried, 5-0. Joey Campbell – aye, Chuck Williams – aye, Todd Sands – aye, Wayne Olsen – aye, Gary Chaves – aye.

Mayor Sip adjourned the meeting at 8:28 pm



Mayor – Justin Sip



Attest: City Recorder – Emily Teaters

04/16/2025

Date



TOQUERVILLE CITY COUNCIL

April 2, 2025 at 6:00 p.m.

212 N. Toquer Blvd.
Toquerville, Utah 84774

NOTICE OF PUBLIC HEARING

A PUBLIC HEARING WILL BE HELD ON THE FOLLOWING ITEM(S) DURING THE REGULAR CITY COUNCIL MEETING ON APRIL 2, 2025, CONVENING AT 6:00 P.M.:

1. Public input is sought on Resolution 2025.XX – A resolution of the City Council of Toquerville City, Utah, adopting the Toquerville City Water Conservation Plan.

In compliance with the Americans with Disabilities Act, individuals needing special accommodations (including auxiliary communicative aids and services) during this meeting should notify the City Office (435) 635-1094, at least 48 hours in advance. This notice will be posted on the State website at <http://pmn.utah.gov>, posted on the Toquerville City website at www.toquerville.org, posted at the City Office Building at 212 N Toquer Blvd, the Westfield Road Kiosk, the Cholla Creek Kiosk, and the Trail Ridge Estates Park Kiosk. Posted March 19, 2025, by Toquerville City Recorder, Emily Teaters.

TOQUERVILLE CITY
RESOLUTION 2025.XX



A RESOLUTION OF THE CITY COUNCIL OF TOQUERVILLE CITY, UTAH,
ADOPTING THE TOQUERVILLE CITY WATER CONSERVATION PLAN

WHEREAS, Toquerville City (“City”) is an incorporated municipality duly organized and operating under the laws of the State of Utah.

WHEREAS, Utah State Code 73-10-32 requires that any municipality with over 500 culinary water connections adopt a water conservation plan every five years.

WHEREAS, Toquerville City has over 500 culinary water connections.

WHEREAS, Toquerville City previously adopted its last water conservation plan in 2019.

WHEREAS, the City Council recognizes the importance of maintaining and improving the efficiency of water use within the community to protect the water supply, promote sustainable water usage, and ensure future water availability for all residents.

WHEREAS, Toquerville City has reviewed and updated its water conservation plan to reflect current needs, policies, and strategies for efficient water use;

NOW, THEREFORE, based upon the recommendation of the City’s staff it is hereby resolved by the City Council of Toquerville, Utah as follows:

1. Adoption of Adoption of Water Conservation Plan. Toquerville City hereby adopts the updated Water Conservation Plan, which includes specific actions, goals, and strategies to promote efficient water use and reduce water consumption within the City.
2. Implementation. The City Council directs the City Manager, Public Works Department, and other relevant City departments to take necessary actions to implement the Water Conservation Plan. This includes educating the public on water conservation practices, providing water-saving resources, and adopting appropriate measures to reduce water waste and improve system efficiency.
3. Severability. If any provision or clause of this Resolution or application thereof to any person or entity or circumstance is held to be unconstitutional or otherwise invalid by any court of competent jurisdiction, such invalidity shall not affect other sections, provisions, clauses or applications hereof which can be implemented without the invalid provision(s), clause(s) or application(s) hereof, and to this end the provisions and clauses of this Resolution are declared to be severable.
4. Effective Date. This Resolution shall become effective immediately upon adoption by the City Council.

ADOPTED BY THE TOQUERVILLE CITY COUNCIL, STATE OF UTAH, ON THIS 5TH DAY OF MARCH 2025 ON THE FOLLOWING VOTE:

| | | |
|----------------|-----------------------|---------------------------------|
| Councilmember: | Gary Chaves | AYE___NAE___ABSTAIN___ABSENT___ |
| | John 'Chuck' Williams | AYE___NAE___ABSTAIN___ABSENT___ |
| | Joey Campbell | AYE___NAE___ABSTAIN___ABSENT___ |
| | Todd Sands | AYE___NAE___ABSTAIN___ABSENT___ |
| | Wayne Olsen | AYE___NAE___ABSTAIN___ABSENT___ |

Mayor – Justin Sip

Attest: City Recorder – Emily Teaters



TOQUERVILLE CITY

Water Management & Conservation Plan

January 2025

PREPARED BY:

SUNRISE ENGINEERING
11 North 300 West
Washington, UT 84780
TEL: 435-652-8450



Water Management & Conservation Plan January 2025

MAYOR ----- Justin Sip | justin@toquerville.org
MAYOR PRO TEMPORE----- Gary Chaves | gary@toquerville.org
COUNCIL MEMBER ----- Wayne Olsen | wayne@toquerville.org
COUNCIL MEMBER ----- Chuck Williams | chuck@toquerville.org
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COUNCIL MEMBER ----- Todd Sands | todd@toquerville.org
CITY MANAGER----- Ben Billingsley | ben@toquerville.org
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RECORDER----- Emily Teaters | emily@toquerville.org

PREPARED BY:



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I. INTRODUCTION

In response to the increasing demands and concerns pertaining to water resources throughout the State of Utah, the state legislature has passed and revised the Water Conservation Plan Act in the 2004 legislative session (Section 73-10-32 Utah Code Annotated). This Act requires that communities with over 500 connections prepare or update a Water Management and Conservation Plan every five years. Toquerville City last adopted a water conservation plan in 2019. This updated water management and conservation plan is written to address the concerns of leaders and citizens of both Toquerville City and the State of Utah and will build on what previous plans have accomplished. The main reasons for concern regarding water conservation entail being able to meet future water needs, saving citizen's money, being located in a desert, and preserving the environment and natural resources.

In accordance with the Utah State Code this plan provides the following:

- A conservation goal that is in line with the regional conservation goal.
- An implementation plan to reach the conservation goal.

II. DESCRIPTION OF TOQUERVILLE AND MUNICIPAL WATER SYSTEM

Toquerville City is located in Washington County, Utah, approximately 30 miles south of Cedar City, Utah and 20 miles north of St. George, Utah, along Interstate 15. The 2020 U.S. census reported Toquerville had an approximate population of 1,887 residents and it has been projected that as of 2023 they currently have 2,633 residents. The City currently owns and operates its own culinary water system which provides water to the residences and City owned properties in the City. The City currently services approximately 736 residential connections, 14 commercial connections, and 20 city government/institutional connections. The City provides irrigation service to much of the City through the culinary system with only government parks being serviced by a separate secondary water distribution system.

Toquerville City first completed a water management and conservation plan in 2013. Since that time, several conservation related accomplishments have been implemented or completed and are noted in the Current Conservation Practices Section below.

Toquerville City is growing and is expected to continue to grow. This growth changes the utilization of the land and can put a strain on the water supply and distribution system to meet demands. By means of careful preparation and efficient utilization of the available water supply these increased demands can and will be met.

III. EXISTING WATER RESOURCES

Toquerville City has approximately 539 acre-feet of water that can be diverted annually from the Toquerville Spring and Ash Creek. Table 1 shows the water rights and the total allowable annual withdrawal.

Table 1. Toquerville City Water Rights Summary

| Water Right No. | Source | Duty (ac-ft) |
|------------------|---------------------------------|---------------|
| Toquerville City | | |
| 81-3474 | Toquerville Springs & Ash Creek | 12.38 |
| 81-3475 | Toquerville Springs & Ash Creek | 67.44 |
| 81-3476 | Toquerville Springs & Ash Creek | 93.12 |
| 81-4063 | Toquerville Springs & Ash Creek | 3.84 |
| 81-3546 | Toquerville Spring | 361.98 |
| | Subtotal | 538.76 |

The City currently participates in the Washington County Water Conservancy District (WCWCD) Regional Water Supply Agreement (RWSA) as a solution for additional water sources. The agreement provides the mechanism for water to be supplied by the WCWCD if there is not enough water right or source necessary for growth. This agreement allows the City to purchase water as needed from WCWCD and means they are not limited to their current water rights.

IV. CURRENT WATER USE

Using the population and usage data from Toquerville City, the following data can be found regarding the average usage of culinary water for residential and city connections. The average usage for the residential connections includes outdoor usage since the secondary irrigation system is not accessible to residential connections.

This section looks at the last 3 years of data to compare usage (2021-2023).

SECTION VIII – WATER SYSTEM CONSERVATION CHALLENGES

Table 2. Culinary Water Residential Use Summary

| | Connections | Avg. Water Used (gal/conn/day) | Population | Avg. Water Used (gal/person/day) |
|--------------------|-------------|-----------------------------------|------------|-------------------------------------|
| Residential - 2021 | 689 | 238 | 1,945 | 84 |
| Residential - 2022 | 700 | 222 | 2,218 | 70 |
| Residential - 2023 | 710 | 219 | 2,633 | 59 |

Table 3. Culinary Water Commercial Use Summary

| | Connections | Avg. Water Used (gal/conn/day) | Population | Avg. Water Used (gal/person/day) |
|-------------------|-------------|-----------------------------------|------------|-------------------------------------|
| Commercial - 2021 | 11 | 489 | 1,945 | 3 |
| Commercial - 2022 | 11 | 5,811 | 2,218 | 29 |
| Commercial - 2023 | 14 | 5,243 | 2,633 | 28 |

Table 4. Culinary Water Govt/Inst. Use Summary

| | Connections | Avg. Water Used (gal/conn/day) | Population | Avg. Water Used (gal/person/day) |
|-------------------|-------------|-----------------------------------|------------|-------------------------------------|
| Govt/Inst. - 2021 | 20 | 759 | 1,945 | 8 |
| Govt/Inst. - 2022 | 20 | 714 | 2,218 | 6 |
| Govt/Inst. - 2023 | 20 | 302 | 2,633 | 2 |

Table 5. Culinary Water Total Use Summary

| | Connections | Avg. Water Used (gal/conn/day) | Population | Avg. Water used (gal/person/day) |
|-----------------------|-------------|-----------------------------------|------------|-------------------------------------|
| Total Culinary - 2021 | 720 | 256 | 1,945 | 95 |
| Total Culinary - 2022 | 731 | 320 | 2,218 | 105 |
| Total Culinary - 2023 | 744 | 316 | 2,633 | 89 |

The data shows that the average residential usage from 2021-2023 per connection has decreased by approximately 29.8% and the average government usage has decreased by approximately 75%. However, the average commercial usage has increased by approximately 900%. This is likely due to commercial connections not being active all of

SECTION VIII – WATER SYSTEM CONSERVATION CHALLENGES

2021. The total culinary usage on a per capita basis has decreased by approximately 6.3%.

The following is summary of the average yearly water use in the City:

- Residential Culinary Use -----57.8 million gallons or 177.4 acre – ft
- Commercial Culinary Use -----17.4 million gallons or 53.3 acre – ft
- Govt./Inst. Culinary Use -----4.3 million gallons or 13.2 acre – ft
- Total Culinary Use -----79.5 million gallons or 243.9 acre - ft

V. FUTURE WATER NEEDS

The City has historically averaged a growth rate of approximately 5% per year based on census data from 1980-2020. The City anticipates that the Firelight planned development will increase the population to approximately 10,000 people by 2035, resulting in an annual growth rate of 11.75%. This report assumes that after this development is completed, the City will return to the historic growth rate of 5% after 2035. This projection is shown in Figure 1 below.

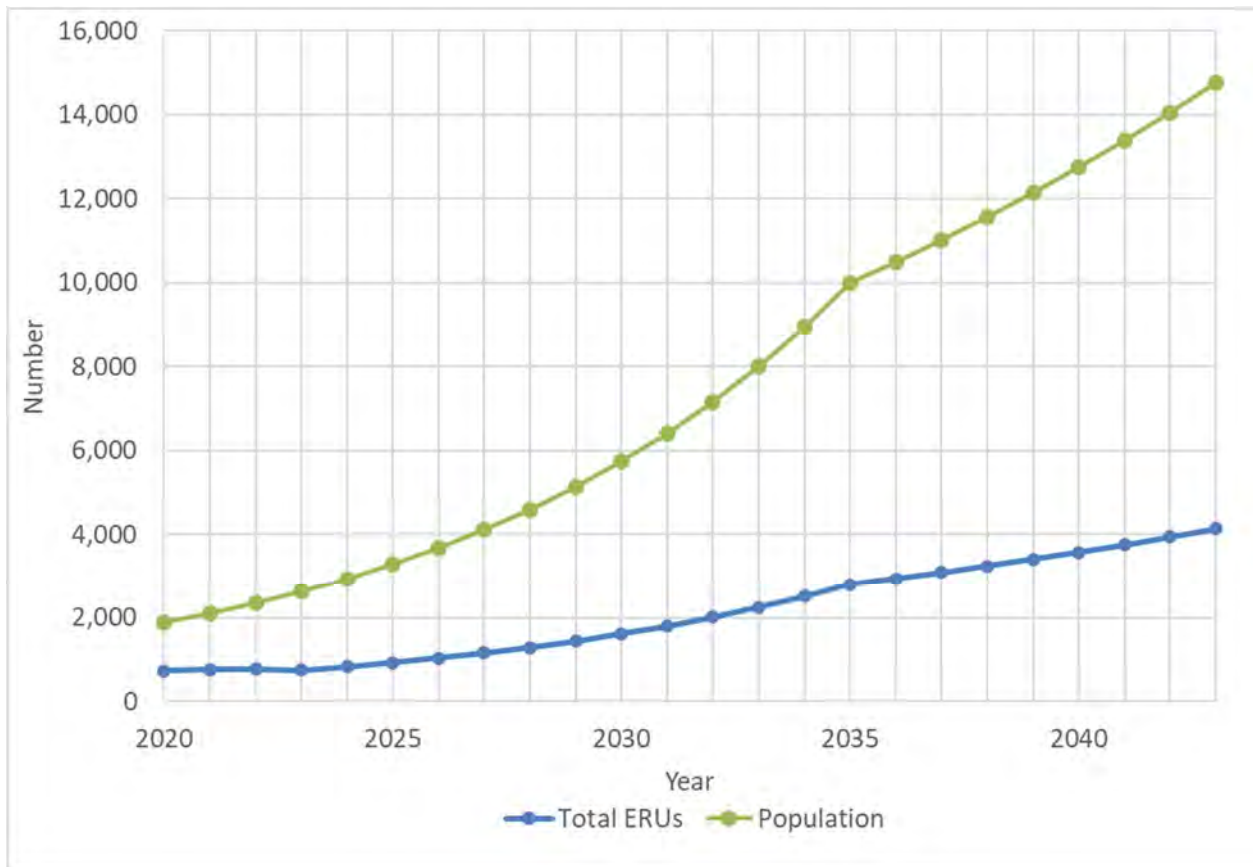


Figure 1. Population Projection

Figure 2 on the following page shows the projected supply demands until year 2060 based on the proposed growth rates above. With this projection, the City will not have adequate

SECTION VIII – WATER SYSTEM CONSERVATION CHALLENGES

supply to meet demand beginning in 2033. The City's Culinary Water Master Plan provides more detailed projections on the demands caused by future growth and the recommended improvements to handle that future demand. A separate study is also being performed to analyze the most cost-effective choice of obtaining additional Water Rights, though this is not a requirement due to the RWSA mentioned in section III being available as a backup option. Conservation can be a major component to these projections and the recommendations. As water is conserved, it reduces the demand for source and storage.

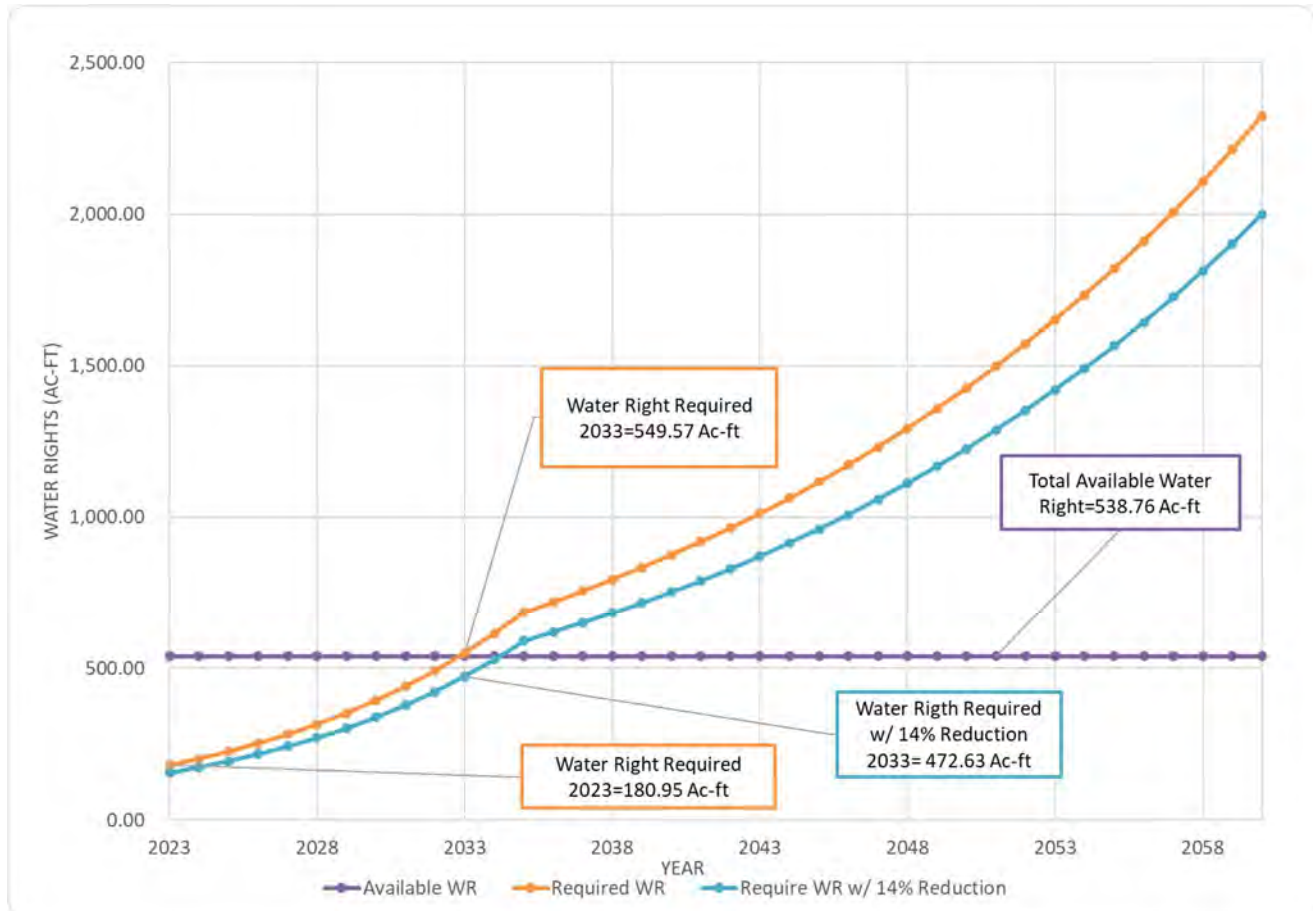


Figure 2. Water Right Projection

VI. WATER CONSERVATION GOALS

The following three goals have been identified to help monitor and track the success of the various programs and conservation measures being implemented.

1. Goal 1 - Reduce the City's per capita usage by 14% by 2030.

This is the regional goal from the Utah Division of Water Resource's that was made in 2019. Using the usage data from 2023 and the projected timeline, usage would be 76.5 gal/person/day by 2030 if this goal is reached. If this goal is reached, the City will have sufficient water rights in 2030 as shown in Figure 2 above without supplementing from WCWCD through the RWSA. It is projected that the City will exceed their current Water

SECTION VIII – WATER SYSTEM CONSERVATION CHALLENGES

Rights of 539 ac-ft by 2033 if conservation is not increased.

2. Goal 2 - Retain a financially sustainable and well-maintained water system.

The water rate structure determined by the City for the culinary water system should continue to encourage the user to conserve water while still ensuring that revenues meet the financial needs of the water system. Maintenance programs should also keep the system physically maintained.

3. Goal 3 – Enhance and encourage efficient outdoor conservation techniques

The City should maintain or improve the appearance of street landscapes, open spaces, and yards to enhance the beauty of the City while decreasing outdoor usage by choosing water efficient landscaping.

VII. CURRENT CONSERVATION PRACTICES

The City has previously adopted ordinances and implemented conservation practices that work towards these water conservation goals. These ordinances and practices include:

- Implementation of a time-of-day watering schedule to reduce water lost through evaporation.
- Employ a full-time water operator to improve response time in fixing water system problems as they arise.
- Actively uses secondary irrigation water for City owned property with timers to limit use.
- Utilizes plans and resources provided by WCWCD including, but not limited to:
 - Encourages residents to follow and use the WCWCD water conservation guidelines and tools.
 - Provides administration of Irrigation Association landscaping certification testing and the accompanied courses.
 - All users utilizing culinary water for irrigation follow the WCWCD water conservation plan and watering schedule.
- Provides users with information and tips regarding water usage and conservation methods with a brochure accompanying water bill and posted online. This brochure that has been attached as Appendix A.

The City's Fee Schedule, City Code, and other currently adopted conservation practices and ordinances can be found through their website at: [Home | Toquerville City](#)

A. CURRENT PROGRESS & EFFECTIVENESS

The City has implemented all of these conservation practices and will continue to do so. They believe they can aid in conservation efforts. However, the City is aware improvements must be made because, according to historic usage, there has not been a reduction in water use. Rather, the average usage per connection and person has

SECTION VIII – WATER SYSTEM CONSERVATION CHALLENGES

increased as shown in tables 2 through 4 in section IV. Future development has been designed to be lower impact which should also reduce per capita usage.

VIII. WATER SYSTEM CONSERVATION CHALLENGES

To meet the goals established by the City, some challenges to water conservation need to be addressed. By identifying these areas of concern, new conservation practices can be implemented that can reduce the water usage and water losses in the City's Systems and existing practices can be improved. This section will cover these topics and their associated planned conservation practices.

A. LAND USE AND PLANNING

As land is developed or land use changes throughout the City, the water use will also change. These changes can lead to either increases or decreases in the use of culinary or secondary water or both. For example, if a pasture was converted into an apartment complex, the outdoor water usage would likely drop significantly, but the indoor usage would similarly increase significantly. It is also possible for developments to come in with a large number of rentals and landscaping, pools, etc. and increase the net water usage at the site.

As land becomes developed, a focus will be made to reduce the amount of water used in the new development compared to water that the land was previously using whether it was for outdoor or indoor purposes. Land use ordinances will be put in place to prevent an increase in water usage above historical usage.

In a study published in January 2022 by Hansen, Allen & Luce, Inc. and the Department of Civil and Construction Engineering, BYU, researchers analyzed how landscape irrigation can be better managed. The study focused on the relationships between water use, irrigated area, plant health, and water rate structures. The study found that larger parcels of land required lower water application rates than smaller parcels to achieve comparable plant health metrics. Based on the results of the study the City plans to adjust land use policies to avoid producing small, irregular, and/or disconnected landscaped areas in future buildings and developments.

Based on this research, the City plans to implement the following land-use policies by preparing and/or amending appropriate Land-use ordinances:

- Require new developments to use water efficient landscaping.
- Require new developments to install smart irrigation systems for landscaping.
- Implement a time-of-day watering schedule to reduce water lost through evaporation.

B. IRRIGATION OVERWATERING

In the Hansen, Allen, & Luce study previously referenced, researchers drew conclusions relating to plant health in correlation to irrigation practices. They found that plant health does not strictly increase with the increase in water application but has an optimum point, and that water application rates above this point reduce overall plant health. They also found that many water users irrigate above this point. From these conclusions, water users should be educated on the adverse effects of overwatering and proper fertilizer application to support healthy lawns, gardens, and fields.

There are resources available to help educate water users on better irrigation practices. Locally the WCWCD has free information on their website regarding better practices for water times and durations as well as other information regarding irrigation and landscaping. Utah State University also provides conservation education materials.

Irrigation for agriculture is a major component of the City's total water use. Reducing overwatering through education and enforcement of watering schedules provides a possibility to significantly reduce to total water usage of the City.

Along with educating users on the negative effects of overwatering, watering schedules should be enforced to help prevent overwatering.

The City plans to mitigate irrigation overwatering through the following avenues:

- Provide links on the City's website to educational materials.
- Send educational flyers or brochures to users by mail.
- Reach out to entities such as the WCWCD and Utah State University to provide additional workshops for residents to attend.
- Enforce existing irrigation watering schedule.

C. LEAKAGE AND LOSSES IN THE SYSTEM

According to the American Water Works Association, leaks make up about 14% of indoor water usage. In Toquerville City this results in approximately 12.5 gallons per person per day. With a population of about 2,633, this results in nearly 12 million gallons a year lost through leaks in the home. Cutting this quantity in half would account for a reduction in residential water usage of about 6%.

A water audit is effective in determining the water distribution system's efficiency. The overall goal is to identify, quantify, and verify water and revenue losses. Once the total losses in the system have been identified, a leak detection program may proceed. Leak detection is a systematic approach to surveying the system and identifying the exact locations of hidden underground leaks. The City launched a water audit in April of 2023 and a leak detection program is ongoing.

It is also effective to educate users on how to check for leaks in their own home. With the implementation of the City's new metering system, customers can sign up for an app (eye-on-water) to help them detect leaks in their homes. This app enables users to see their water usage on a near real-time basis and can alert the user if the meter tracks an excess amount of water through a 24-hour period.

The City plans to limit leakage and losses in the system by doing the following:

- Continue running the leak detection program to identify the existing losses in the system.
- Provide homeowner's with information on how they can check for leaks and track their metered usage through a QR code that directs them to the appropriate information. This QR code will be distributed by one or more of the following methods:
 - City wide mail
 - Door Hanger
 - Announcement at City Council meeting
 - Flyer at City Hall
 - Attached with utility bill

IX. ADDITIONAL CONSERVATION MEASURES

In addition to the conservation measures based on system challenges discussed above, there are other conservation measures that could be implemented to further help the City reach their goals. This section provides additional programs and actions to be executed to help the City with its conservation goals.

A. PLUMBING FIXTURE REPLACEMENT

Water saving fixtures can provide an inexpensive and long-lasting approach to conservation. Plumbing fixtures can be installed and used without major disruptions in water use habits, making replacement of these fixtures a conventional way to conserve.

Toilets are the highest water-consuming devices in the home, accounting for about 27% of indoor water use. In 1992, the U.S. Congress passed legislation prohibiting construction of certain high flow plumbing fixtures, which brought manufacturing standards down from 3.5 or 5 gallons per flush to 1.6 gallons per flush. Pre-1992 showerheads put out about 5 gpm, whereas post-1992 showerheads put out half that, 2.5 gpm.

Installing a water efficient toilet can range anywhere from \$100 to \$500 per toilet. By replacing high flow toilets, or placing a water-resistant object in the tank to displace a portion of the toilet flush volume, it was determined that a family of 4 would save nearly 40,000 gallons or \$80 a year, according to the current cost of water in Toquerville City. Similarly, replacing old showerheads and faucets would also result in savings over time.

The City plans to encourage plumbing fixture replacement in the system by doing the following:

- Educate homeowner's on the potential savings from replacing fixtures pre-1992 in their homes through a flyer or brochure.

B. IMPROVED EVALUATION OF PROGRESS

To ensure goals are achieved when expected, best management plans must be implemented in a timely manner. Common challenges to this are proper planning and scheduling of best management practices. These challenges have less to do with the system and more to do with coordination of goals. The City plans to implement all conservation practices immediately, and meet to evaluate progress regularly. This evaluation will consist of discussing each of the conservation practices presented in this plan and what action items are still required. It will also measure progress towards goals by:

- Compare current metered average usage to previously evaluated value. With the City moving to smart meters, this can be continuously evaluated by both the City and customers.
- Review the income from water rates against system maintenance costs.
- Review City landscape ordinances and ensuring new development landscape is increasingly efficient.
- Review water rate structure to determine if rate should be adjusted to promote increased conservation.

X. SUMMARY

In conclusion, Toquerville City has the following conservation Goals:

1. Reduce the City's per capita usage by 14% by 2030.
2. Retain a financially sustainable and well-maintained water system.
3. Enhance and encourage efficient outdoor conservation techniques.

The City will achieve these goals by focusing in the following areas:

- Land Use and Planning
- Irrigation Overwatering
- Leakage and Losses in the System
- Plumbing Fixture Replacement
- Improved Evaluation of Progress

In addition to the new focus areas above, the City will continue to follow current conservation measures and practices with improved distribution of educational material on these practices. The City is confident that executing the measures discussed in this plan and continuing with what is currently in place they will be able to achieve the City's conservation goals. Implementation of the Best Management Plans outline in this Conservation Plan will begin immediately. Progress will be evaluated by the City.

XI. REFERENCES

1. Arens, S., K. Clifford and D. Rumore (2018). Final Workshop Report for Vulnerability Consequences and Adaptation Planning Scenarios (VCAPS) for the Cities of Toquerville, Rockville and Hurricane. Western Water Assessment: Salt Lake City, UT.
2. Shurtz KM, Dicataldo E, Sowby RB, Williams GP. Insights into Efficient Irrigation of Urban Landscapes: Analysis Using Remote Sensing, Parcel Data, Water Use, and Tiered Rates. *Sustainability*. 2022; 14(3):1427. <https://doi.org/10.3390/su14031427>



APPENDIX A

TOQUERVILLE CITY GUIDE TO WATER CONSERVATION BROCHURE

Utah is the second-driest state in the nation - averaging only 13 inches of water each year. Working together to practice conservation techniques is a huge step toward preserving our most valued resource.

Xeriscape: A way of landscaping that utilizes water-saving plants and landscapes that also save money, time and effort. Xeriscape type plants and landscape designs can be found at local nurseries.

- * Plant drought resistant trees and plants.
- * Limit Lawn Area. A general rule is 10% of landscape in hardscaping (patios, driveways, decks, etc.); 50% in lawn and turf; 40% in shrub, garden and other uses.



Lawns: Most lawns are either bluegrass or fescue. Bluegrass requires more water than fescue to keep looking green.

- * Understand your irrigation system. Know where shut-off valves are located and how to set the timer.
- * Understand how weather affects your lawn. Lawn requires more water in high temperatures and low humidity. Wind also increases water loss. Do not water during winter months or rainy weather.
- * Learn your soil type. Sandy soils do not hold water as long as clay soils. With proper watering you can promote deep-root growth in sandy soils.
- * Fertilization. Fertilizer should only be applied in the Spring and Fall. Apply no more than one pound of nitrogen in one application per 1,000 square feet. Example: 10 lbs of 10-6-4 or 8 lbs of 12-12-12 per application both equal about 1 lb Nitrogen. Lawn will need about four pounds of actual nitrogen or four applications at the suggested rate. Check with local nurseries or landscapers for more specific guidance.

- * Watering. New lawns: irrigate twice a day for first week, once a day for next two weeks, then every other day for the next two weeks. Established lawns: irrigate every 2-3 days during the summer, every 4-5 days in the fall. Set sprinkler time to apply 0.7-1 inch of water each irrigation time. Irrigate early in the morning.

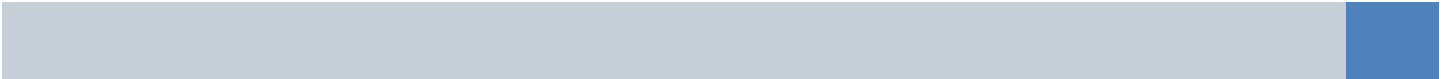
Trees and Shrubs: Use low-water use plants as much as possible. Group plants that have similar water demands.

- * Trees and shrubs should be watered deeply, no more than once a week. They have a much deeper root system.

Run Off: Run off occurs when water is not going into the ground as fast as it is being applied. To help prevent run off:

- * Wet your lawn for 5-10 minutes, then come back an hour later and run sprinklers an additional 20-30 minutes.
- * Aerate lawns twice a year.
- * Apply a light application of organic fertilizer after aeration.
- * De-thatch or aerate to remove thatch build-up.
- * Look at changing areas with run-off to something that can be drip irrigated (shrubs or trees).





APPENDIX B

EXISTING RATE STRUCTURE

| Existing Residential Water Rate Structure | | | Existing Commercial Water Rate Structure | | |
|--|-------------|--------------|--|-------------|--------------|
| Base Rate \$55.00 ERU/Month Includes 10,000 Gallons | | | Base Rate \$100.00 ERU/Month Includes 0 Gallons | | |
| Overage Steps | | | Overage Steps | | |
| Cost Per 1,000 Gal. | Low Gallons | High Gallons | Cost Per 1,000 Gal. | Low Gallons | High Gallons |
| \$4.00 | 10,001 | 15,000 | \$3.00 | 1 | 10,000 |
| \$6.00 | 15,001 | 20,000 | \$5.00 | 10,001 | 15,000 |
| \$8.00 | 20,001 | & UP | \$10.00 | 15,001 | 20,000 |
| | | | \$15.00 | 20,001 | & UP |
| Usage (Gallons) | Rates | | Usage (Gallons) | Rate | Rate/ERU |
| 5,000 | \$ | 55.00 | 10,000 | \$ 130.00 | \$ 41.94 |
| 10,000 | \$ | 55.00 | 15,000 | \$ 155.00 | \$ 50.00 |
| 10,137 | \$ | 55.55 | 20,000 | \$ 205.00 | \$ 66.13 |
| 15,000 | \$ | 75.00 | 30,000 | \$ 355.00 | \$ 114.52 |
| 20,000 | \$ | 105.00 | 31,405 | \$ 376.08 | \$ 121.31 |
| 30,000 | \$ | 185.00 | 45,000 | \$ 580.00 | \$ 187.10 |

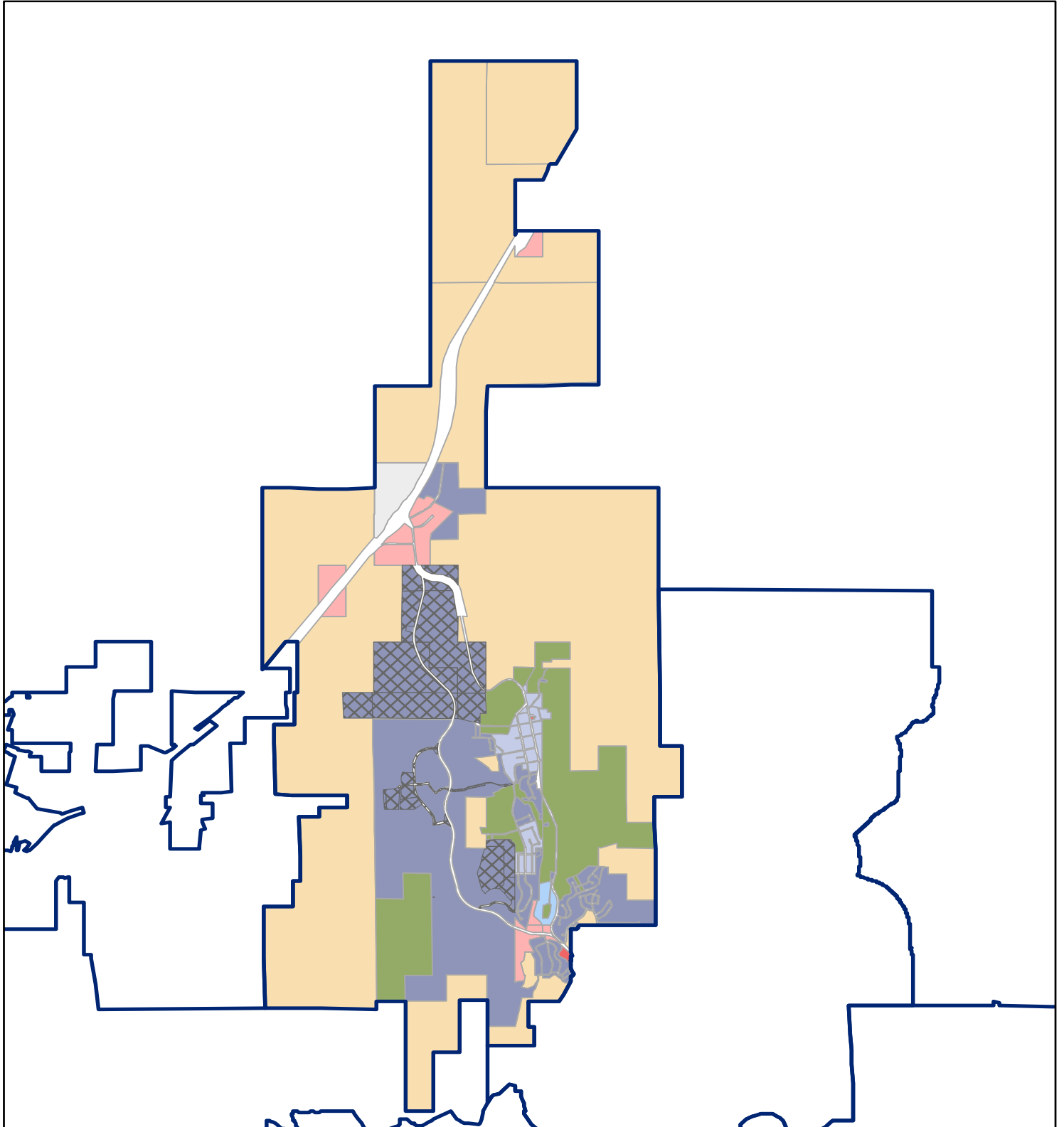
The anticipated average water bill based on historic average usage is highlighted in blue.



APPENDIX C

SURFACE AREA MAP

Toquerville Zoning Districts



12/26/2023, 9:56:32 AM

- Municipalities
- Zoning Districts**
- AGRICULTURAL
- BUSINESS AND MANUFACTURING
- HIGHWAY COMMERCIAL
- NEIGHBORHOOD COMMERCIAL
- R-1-12 SINGLE-FAMILY RESIDENTIAL (12,000 sq. ft. Minimum lot size)
- R-1-15 SINGLE-FAMILY RESIDENTIAL (15,000 sq. ft. Minimum lot size)
- R-1-20 SINGLE-FAMILY RESIDENTIAL (20,000 sq. ft. Minimum lot size)
- MULTIPLE USE
- MASTER PLANNED DEVELOPMENT OVERLAY

