

MAYFIELD TOWN CULINARY WATER IMPACT FEE ANALYSIS 2023

90 West Main St.
Mayfield, UT 84654

August 2023

PREPARED BY:
Sunrise Engineering



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CERTIFICATION OF IMPACT FEE ANALYSIS BY CONSULTANT

In accordance with Utah Code Annotated, § 11-36a-306, Jesse Ralphs, P.E., on behalf of Sunrise Engineering, Inc., makes the following certification:

I certify that the attached impact fee analysis:

1. Includes only the costs of public facilities that are:
 - a. Allowed under the Impact Fees Act; and
 - b. Actually incurred; or
 - c. Projected to be incurred or encumbered within six years after the day on which each impact fee is paid;

2. Does not include:
 - a. Cost for operation and maintenance of public facilities;
 - b. Costs for qualifying public facilities that will raise the level of service for the facilities, through impact fees, above the level of service that is supported by existing residents;
or
 - c. An expense for overhead, unless the expense is calculated pursuant to a methodology that is consistent with generally accepted cost accounting practices and the methodological standards set forth by the federal Office of Management and Budget for federal grant reimbursement;

3. Offsets costs with grants or other alternate sources of payment; and

4. Complies in each and every relevant respect with the Impact Fees Act.

Dated: August 22, 2023

Sunrise Engineering, Inc.

By: *Jesse Ralphs*

EXECUTIVE SUMMARY

Mayfield Town commissioned this Impact Fee Analysis in conjunction with the Mayfield Town Culinary Water Master Plan Update to properly allocate the cost of the culinary water system improvements to new development. An impact fee is a fee imposed on new development to allocate the cost of expanding public infrastructure to accommodate the new development.

Mayfield Town, which is located approximately 8 miles east of Gunnison in Sanpete County near the geographical center of the State of Utah and has a culinary water system that currently serves a population of approximately 577 people. The culinary water system provides culinary water connections for residential, commercial, and institutional users. The projected annual growth rate for Mayfield Town is 1.50%.

Because new growth places an added burden on the existing system and creates the need for new infrastructure, Utah law allows public water suppliers to charge an impact fee to new development. Not all costs associated with system improvements are allocable to future growth. Some system improvements increase the level of service for existing customers. Only the costs associated with those portions of the system improvements which are allocated to future growth may be considered in calculating a reasonable impact fee. Impact fees are assessed per Equivalent Residential Connection, or ERC.

Mayfield Town has constructed several improvements to its culinary water system which have provided additional capacity on the system. While a portion of these past improvements have increased the level of service for existing customers, the balance is allocable to future growth.

After analyzing each of the projects, the estimated population growth, and determining an equivalent residential connection, this analysis proposes a \$5,121.84 impact fee per ERC as the maximum reasonable impact fee. Mayfield Town may choose to assess a lower impact fee, but the Town may not assess an impact fee higher than that justified by this analysis.

1.0 INTRODUCTION

An impact fee is a fee imposed on new development to “mitigate the impact of the new development on public infrastructure.” Utah Code § 11-36a-102-8(a). Impact fees are subject to the restrictions within the Fifth Amendment of the U.S. Constitution prohibiting the taking of private property for public use without just compensation. To comply with the U.S. Constitution, it is required that there will be an “essential nexus” between the fee imposed and the protected interest, and that the fee imposed be “roughly proportional” to the burden created by the new development. See *Nollan v. California Coastal Commission*, 483 U.S. 825 (1987); and see *Dolan v. Town of Tigard*, 512 U.S. 374 (1994).

The levy of impact fees in Utah is governed by the Utah Impact Fees Act codified as Utah Code § 11-36a. and requires more specific analysis than that required by the U.S. Constitution. Before imposing an impact fee, a municipality or public service provider, such as Mayfield Town, must prepare a written analysis of each impact fee. An impact fee analysis is designed to proportionally allocate to new development that portion of the cost of new facilities that may be required or excess capacity of existing facilities. The impact fee analysis must:

1. Identify the anticipated impact on existing facilities by new development.
2. Identify the anticipated impact on system improvements by anticipated development.
3. Demonstrate how those impacts are reasonably related to the anticipated development.
4. Estimate the proportionate share of costs to be recouped by the impact fee.
5. And identify how the impact fee was calculated. Id. at § 304.

Entities imposing impact fees must also prepare an impact fee facility plan unless excepted by statute. An impact fee facilities plan is not required if the municipality’s general plan, under Utah Code 10-9a-401, contains the elements required by the Impact Fees Act. Id. at § 301. Municipalities serving less than 5,000 people and charging total impact fees of less than \$250,000 annually are not required to prepare an impact fee facilities plan. However, they must ensure that the impact fees “are based upon a reasonable plan that otherwise complies with the common law and [other section of the Impact Fees Act].” Id. at § 301. This Impact Fee Analysis has been prepared in conjunction with the Mayfield Town Culinary Water Master Plan Update in July 2023.

The Utah Supreme Court outlined a set of seven factors which may be considered in determining the reasonableness of an impact fee; these factors are now known as the “Banberry factors.” *Banberry Dev. Corp. v. S. Jordan Town*, 631 P.2d 899, 904 (Utah 1981). However, the Court has subsequently noted that these factors “were merely ‘means to [an] end.’ And the ultimate legal test is whether the impact fees relate to the cost of the benefits conferred on those paying the fees.” *Tooele Assoc. LTD. V. Tooele Town Corp.*, 247 P.3d 371 (Utah 2011) (quoting *Home Builders Ass’n of Utah v. Town of American Fork*, 973 P.2d 425, at ¶120 (Utah 1999)). Nonetheless, this impact fee study will review each of the Banberry factors for the system impact fee. A brief analysis of the Banberry factors is attached to the analysis as Appendix A.

Although the municipality may enact a lower impact fee than that justified by the Impact Fee Analysis, the municipality may not impose a fee higher than that justified in the analysis.

2.0 PURPOSE OF THIS IMPACT FEE ANALYSIS

The purpose of this Impact Fee Analysis is to proportionally allocate to new development the cost of excess capacity in existing public facilities and the projected cost of excess capacity to be provided by

future system improvements that will be required to supply culinary water within the service area of the Mayfield Town culinary water system. A summary of the existing system components with excess capacity is included in Section 6.4 of this analysis.

This impact fee calculates the highest proportionate share of the cost of these public facilities which may be reasonably allocated to new development. Mayfield Town is a public water supplier serving about 577 people and is therefore exempt from providing an impact fee facilities plan. However, the impact fee analysis must be based on a reasonable plan, in this instance the Mayfield Town Culinary Water Master Plan Update dated July 2023.

3.0 METHODOLOGY

The impact fee for the culinary water considers cost recovery for excess capacity of current system components. The Town's current capital facilities plan does not include any anticipated impact fee eligible improvements within the next six years.

Impact fees may not be used for maintenance or repair of the existing system, or for system improvements that increase the level of service to existing system users, unless the improvements provide additional system capacity that directly supports new development. Impact fees may not be used to recoup more than the actual public facility costs incurred or those projected to be incurred "within six years after the day on which each impact fee is paid." Id. at § 306. Also, impact fees must include an offset for grants or other alternative sources of payment and may not include expenses for operation and maintenance or for overhead, unless overhead expenses are calculated using a methodology consistent with generally accepted cost accounting practices and the standards accepted by the Federal Office of Management and Budget for federal grant reimbursement. An impact fee analysis must also identify the cost the existing system users would pay through user fees.

Accordingly, this analysis:

1. Determines the actual cost incurred or to be incurred within six years of the date of this report.
2. Sets forth existing levels of service.
3. Does not include any general overhead expenditures or costs for the operation of the facilities.
4. Offsets for potential grants for proposed projects.
5. Includes an analysis of the prior completed projects which remain impact fee eligible.
6. And includes a user fee credit to account for portions of projects paid for through user fees.

To determine the proportionate share of the cost to new development, this analysis reviews current and past demographic trends and provides a projection for future growth within the Mayfield Town service area for the next 20 years. Capacity of the current system and excess capacity of each new system component that will be used in this analysis are based upon data provided in the Mayfield Town Culinary Water Master Plan Update dated June 2023, prepared by Sunrise Engineering for Mayfield Town. Costs of the proposed public facilities are calculated based upon an engineer's opinion of probable cost.

Because water demands of multi-family, industrial, and commercial connections vary widely, excess capacity of system components is expressed in terms of equivalent residential connections (ERCs), sometimes referred to as estimated residential units (ERUs). An equivalent to what would be used by a

typical single-family residence. ERCs are different for each type of public facility and are more particularly described in Section 6.2 of this analysis.

The determination of the existing Level of Service (LOS) of the current systems is based upon previous project design capacity as well as minimum standards required by current regulations.

4.0 DEMOGRAPHICS AND PROJECTIONS OF FUTURE DEMAND

Mayfield Town has grown at a low to modest rate throughout its history. The average annual growth rate for Mayfield over the last 20 years is about 1% with increasing growth rates in recent years. Mayfield Town anticipates that the increased growth seen in recent years will continue; as such, an average annual growth rate of 1.50% will be used for growth projections developed with this analysis. It is estimated that the Town currently has a population of 577. This impact fee analysis relies upon these growth projections to determine the number of future ERCs to be served by the proposed water system improvements. The projected 20-year population growth is provided in Table 4.1.

Table 4.1 Mayfield Town Projected 20 Year Population

Year	Population Projection	Annual Increase
1990	438	
2000	460	0.49%
2010	496	0.76%
2020	564	1.29%
2022	577	1.15%
2032	670	1.50%
2042	777	1.50%
2052	902	1.50%
2062	1,047	1.50%

5.0 BASIS OF ANALYSIS AND LEVEL OF SERVICE

The basis of analysis of the Town’s culinary water system will be the Division of Drinking Water’s minimum sizing requirements as provided in Section R309-510 of the Utah State Code. Minimum sizing requirements for water source capacity, water rights, and storage capacity are determined, in part, by the system’s location. Within the State, there are six irrigated crop consumptive use zones that vary by climate and annual precipitation. Mayfield falls within Zone 3, which is considered moderate for outdoor watering requirements.

The minimum sizing requirements for systems in Zone 3 are summarized as follows:

1. Water Rights: The system should have sufficient valid water rights for the average yearly demand for the system. The estimated average yearly demand for a system is:
 - a. 146,000 gal/ERC for indoor use (0.45 Ac-Ft)
 - b. 1.66 Ac-Ft per irrigated acre for outdoor use

2. Source Capacity: The system should have sufficient source capacity to be able to meet the anticipated peak day demand. The peak day demand is estimated to be:
 - a. 800 gpd/ERC for indoor use
 - b. 3.39 gpm/irrigated acre for outdoor use
3. Storage Capacity: The system should have sufficient storage capacity to satisfy average day demands for water for indoor and irrigation use, fire flow storage, and emergency storage if deemed appropriate by the water supplier or the Director.
 - a. Average day demands for water are estimated as:
 - i. 400 gal/ERC for indoor use
 - ii. 2,528 gal/irrigated acre for outdoor use
 - b. Fire flow storage volume shall be as required by the local fire code. Fire flow storage volume shall equal:
 - i. 1,500 gpm for a period of two hours, which equates to a total of 180,000 gallons.
4. Treatment Capacity: Continuous disinfection is required of all ground water sources that do not otherwise continuously meet microbiological standards. Surface water, or ground water under the influence of surface water, shall be filtered by conventional or alternative surface water treatment methods and disinfected to achieve Primary Drinking Water Standards as defined in Section R309-200-5.
5. Distribution System Capacity: The distribution system shall have sufficient capacity to maintain the following minimum pressures at all points throughout the system:
 - a. Water systems approved prior to January 1, 2007, are required to maintain a minimum of 20 psi at all locations within their distribution system.
 - b. Water systems, or expansions to water systems that are constructed after January 1, 2007 shall meet the following minimum water pressures at all points of connection:
 - i. 20 psi during conditions of fire flow and fire demand experienced during peak day demand.
 - ii. 30 psi during peak instantaneous demand; and
 - iii. 40 psi during peak day demand.

6.0 CULINARY WATER IMPACT FEE ANALYSIS

This impact fee analysis will determine the proportionate cost of excess capacity provided by previous and future projects that are allocable to future growth. Impact fee calculations may also include the proportionate costs of existing facilities and components that currently have excess capacity. It is recommended that this impact fee analysis be reviewed and updated every five years, at a minimum.

The existing capacity of the current system and the excess capacity of each component that will be used in the Impact Fee Analysis is based on the data provided by the Mayfield Town Culinary Water Master Plan Update dated April 2023. Excess capacity of system components will be expressed in terms of equivalent residential connections (ERCs). The determination of the existing Level of Service (LOS) of the

current distribution system will be based on the design capacity of both the current system and the planned projects.

6.1 CURRENT SYSTEM

There are approximately 261 current connections on the Mayfield Town culinary water system. This includes 258 residential connections, 1 commercial connection, and 2 institutional connections.

6.2 CALCULATION OF AN ERC

Due to the wide variance of water use in residential, commercial, industrial, and institutional connections, an equivalent residential connection (ERC) is used. An Equivalent Residential Connection (ERC) is defined as the amount of culinary water required by an average residential connection. The Utah Division of Drinking Water (DDW) standards state that on average a residential connection is estimated to use 400 gallons per day for indoor use, or approximately 12,000 gallons per month. Since commercial, industrial, and institutional connections can be related to residential usage through an ERC, this number can be used to estimate the amount of source storage and water rights needed for a system using the DDW standards.

6.3 PROJECTED DEMAND

The number of culinary water ERCs expected at the end of the planning period can be calculated using the compound interest formula and inserting the projected growth rate, the existing number of culinary water ERCs, and the 20-year planning period for culinary water improvements.

Based on the 1.5% growth, the Town will have 358 ERCs in 2042. The projected number of ERCs for the 20-year planning period was calculated using the compound interest formula as follows: $Future\ Connections = Current\ Connections \times (1 + rate)^n$ where $n = 20$ years and the growth rate is 1.5% per year. As an example, the future residential ERCs are projected as follows:

$$F = 258 \times (1 + 0.015)^{20} = 347\ ERCs$$

This equation was used to estimate future ERCs for residential, commercial, and institutional connections. The calculated ERCs for each connection type are shown in Table 6.3. The growth rate of 1.5% will also be applied to Institutional, and Commercial, users because it is assumed these types of connections will increase proportionally with the residential population.

Table 6.3. Mayfield Town Current & 20-Year Projected ERCs

Category	Current Connections	ERC/Connection	Total Current ERCs	Total 20 Yr. ERC's
Residential	258	1	258	347
Commercial	1	2	2	3
Institutional	2	3	6	8
		Total	266	358

6.4 EXCESS CAPACITY AND ALLOCABLE COST OF EXISTING FACILITIES

The Mayfield Town Water Improvements Project in 2009 included the construction of a new tank, chlorinator improvements, installation of new SCADA, and the construction of new distribution piping. The Town has also completed a spring improvements project for Lower 12 Mile Spring in 2020. Mayfield

Town also purchased water shares to offset culinary water usage. The portion of grant money that helped pay for these improvements is removed when calculating the actual cost to the Town. Additionally, project components that increase the level of service for the system but that do not increase the capacity of the system have been removed from the calculation of eligible cost (i.e., SCADA, residential meters, etc.) The project components that provide excess capacity to support future growth are listed below.

The excess capacity of each element is determined by calculating the number of ERCs that could be served with the excess capacity. The value per ERC of the excess capacity of each element is determined by dividing the actual documented cost that Mayfield Town incurred for each improvement by the total number of ERCs that the improvement can serve. Appendix B shows the calculations used to determine excess capacity, the portion of the project available for additional growth, and the ERCs the excess capacity can serve.

1. 350,000-gallon Water Tank – 2009: The Town constructed a new 350,000-gallon tank in 2009. The eligible cost incurred by the Town was \$287,004 and the 350,000-gallon tank can support 332 ERCs. The associated cost per ERC is \$864.47
2. Distribution Piping – 2009: Mayfield Town upgraded portions of the core distribution system by installing larger diameter pipes, which provided additional distribution system capacity throughout the system. The eligible cost incurred by the Town for these improvements was \$240,190. Hydraulic modeling of the distribution system indicates that the improvements provided capacity to support an additional 451 ERCs while still meeting the minimum fire flow requirements of 1,500 gpm. The associated cost per ERC is \$532.57.
3. Lower 12-Mile Source Improvements – 2020: The project included the redevelopment of the Lower 12-Mile Spring and improvements to introduce the captured water into the distribution system. The eligible cost incurred by the Town was \$170,688. The reported flow from the spring is approximately 80 gpm which can serve 57 ERCs. The associated cost per ERC is \$2,987.04.
4. Irrigation Water Share Purchase – 2022: The town purchased 5 shares of Irrigation water for \$96,000. The intent of this purchase was to lend water shares to residents in order to offset culinary water usage for outside water. The recommended share for irrigation is to use $\frac{1}{4}$ share per $\frac{1}{2}$ acres for residential lots. This means that the 5 shares will support 40 ERC's estimated outdoor water usage. The associated cost per ERC is \$2,400.00.

A summary of these impact fee eligible system components and associated costs are shown in Table 6.6.

6.5 NEW NEAR-TERM PROJECT

The Town does not currently have a defined impact fee eligible project that it intends to complete within the eligible six-year period. If the Town decides to move forward with any of the future improvements identified in the Master Plan Update, the impact fee analysis can be amended at that time.

6.6 IMPACT FEE CALCULATION

The impact fee calculation is calculated simply by dividing the total allocable cost by the total number of ERCs served by the improvement. The allocable costs are shown in Table 6.6 and explained in Section 6.4.

Table 6.6 Existing System Components with Excess Capacity

Improvement	Eligible Cost Incurred	ERC Served	\$/ERC
350,000 Gal Tank (2009)	\$ 287,004	332	\$ 864.47
Distribution System Upgrades (2009)	\$ 240,190	451	\$ 532.57
Lower 12 Mile Spring Development (2020)	\$ 170,688	57	\$ 2,987.04
Water Share Purchase (2022)	\$ 96,000	40	\$ 2,400.00
	\$ 793,881.57		
			\$ 6,784.08

6.7 CREDITS

Because a portion of future monthly usage rates may be used to service debt payments for current and proposed infrastructure, a reasonable impact fee may account for the portion paid by new users to debt service payments. To calculate the per-ERC credit, a calculation of average contribution per ERC to the debt service payments over the course of the planning period is required.

As new ERCs are added to the system, the portion of user fees allocated to debt service payments will decrease. On average, new ERCs will contribute to debt service payment for 9.01 years. The calculation of the average years of payment, and the average annual portion of user fees are included as Appendix C. It should be noted that additional impact fee eligible projects and debt service may be incurred within the planning period; the impact fee analysis should be updated as these projects occur.

To calculate a reasonable credit, the impact fee eligible annual debt service for each year is divided by the number of ERCs served for each year through the 20-year planning period. The average portion of user fees used for debt service on impact fee eligible projects is \$189.54 annually. The credit is then calculated by multiplying the average portion of annual user fees by the average years an ERC will pay user fees. Thus, the calculated credit (detailed further in Appendix C) is as follows:

$$\text{User Rate Credit} = \$184.49 \times 9.01 \text{ years} = \$1,662.24$$

6.8 RECOMMENDED CULINARY WATER IMPACT FEE

The total impact fee allowable for culinary water is the sum of the allocable costs for excess system capacity and new projects minus the calculated user rate credit. The maximum reasonable impact fee for culinary projects is \$5,121.84.

7.0 CONCLUSION AND RECOMMENDATIONS

Sunrise Engineering recommends the maximum reasonable impact fee for Mayfield Town's culinary water system to be no more than \$5,121.84 per ERC fee provided in Section 6.8. The impact fee is to be in addition to, and separate from, connections fees.

Before enacting the actual impact fee, Mayfield Town should take into consideration the relationship between impact fees and future growth. An impact fee can influence the growth in a community. Higher impact fees discourage growth, while lower impact fees encourage growth but provide reduced funds per ERC and require that growth be subsidized by user rates. For local reference the impact fees of surrounding communities range from \$1,300 to \$6,056. The actual enacted impact fee should reference the calculated impact fee as the basis of the enacted fee to comply with State law and still meet funding requirements.

A residential connection represents 1 ERC, and no residential or commercial connection should pay less than the amount of impact fee charged for a residential connection. It is recommended that the impact fee charged for non-residential connections should equal the amount of the impact fee set for a residential customer times the estimated ERC equivalent of the proposed facility.

The impact fee that is adopted based on this impact fee analysis should be charged to new connections until any of the following events occur:

1. New system improvements (other than those included in Section 6.5) are anticipated within six years, and therefore become eligible for inclusion in the impact fee calculation.
2. The impact fee analysis is otherwise reviewed and updated. It is recommended that it be updated every five years at a minimum.
3. If the excess capacity of the existing system facilities that are included in this analysis is expended.

Mayfield Town has experienced increasing growth over the past two decades and continual growth is expected. In addition to residential growth, the Town should also anticipate commercial and institutional growth which may place additional demands on the culinary water system. This impact fee analysis will help the Town apportion the costs of system improvements and expansion to the new growth that the improvements will serve.

APPENDIX A:

BANBERRY FACTORS ANALYSIS

BANBERRY FACTORS ANALYSIS

Utah Code Ann. 11-36a-304(2) requires that the following factors, also known as the Banberry Factors be considered as applicable in order to verify that the proportionate share of the costs of public facilities are reasonably related to the new development activity.

- a) *The cost of each existing public facility that has excess capacity to serve the anticipated development resulting from the new development activity:*

The cost of each existing public facility that has excess capacity to serve the anticipated development resulting from new development activity is discussed in Section 6.4 for Mayfield Town's culinary water system.

- b) *The cost of system improvements for each public facility:*

There are no projected system improvements for the Mayfield Town Culinary Water System, and this is discussed in Section 6.5.

- c) *Other than impact fees, the manner of financing for each public facility, such as user charges, special assessments, bonded indebtedness, general taxes, or federal grants:*

Each public facility with excess capacity has been funded in part by loans, part by self-funding, and another portion by grant. This analysis only included debt and self-funding of projects in calculating the impact fees.

- d) *The relative extent to which development activity will contribute to financing the excess capacity of and system improvements for each existing public facility, by such means as user charges, special assessments, or payment from the proceeds of general taxes:*

Excess capacity of system improvements is financed in part by impact fees, user fees, and capital projects funds. A user fee credit was calculated for the estimated portion of user rates used to fund debt service payments based on estimated financing for each facility. The credit analysis may be found in Section 6.7 of this analysis. It is again noted that this impact fee analysis should be reviewed and updated regularly to ensure that the fees remain applicable and fair.

- e) *The relative extent to which development activity will contribute to the cost of existing public facilities and system improvements in the future:*

It is not currently anticipated that development activity will contribute to the cost of existing public facilities and future system improvements outside of the allocable costs of current excess capacity and future projects as discussed within this analysis.

- f) *The extent to which the development activity is entitled to a credit against impact fees because the development activity will dedicate system improvements or public facilities that will offset the demand for system improvements, inside or outside the proposed development:*

New development activity should be allowed a credit against impact fees to the extent that the development activity dedicates system improvements or public facilities that offset the demand for system improvements. However, no such dedications have been proposed and none are currently planned. Mayfield Town must address this issue if and when a developer proposes to dedicate new system improvements to offset the demand for the Town to provide those improvements.

g) *Extraordinary costs, if any, in servicing the newly developed properties:*

This factor is not currently applicable to this impact fee analysis.

h) *The time-price differential inherent in fair comparisons of amounts paid at different times:*

The time-price differential of amounts paid at different times related to the impact fee is influenced not only by inflation, but also by the amount that is paid towards the system costs through user fees over time. For this purpose, a user fee credit is recommended in Sections 6.7, if any portion of user fees are used to service debt/bond payments. It is not considered feasible to update the impact fee on an annual basis to account for the time price differential of amounts paid at different times. To ensure that the time-price differential associated with impact fees paid at different times is limited, Mayfield Town should review and update this impact fee analysis at least once every five years.

APPENDIX B:

EXCESS CAPACITY CALCULATIONS

ERC CALCULATIONS 2009 TANK

Available Storage: The Tank has a 350,000-gallon capacity of storage.

Storage Demand:

- a. 400 gal/ERC for indoor use
- b. 2,528 gal/irrigated acre for outdoor use

Residential Use:

Indoor

$$347 \text{ ERCs} \times \frac{400 \text{ gal}}{\text{ERC}} = 138,800 \text{ gal.} \quad 400 \text{ gal/ERC}$$

Outdoor (Assume 100% of New ERCs)

$$218 \text{ ERCs} \times \frac{1 \text{ acre} \times 2528 \text{ gal}}{4 \text{ ERCs irr. acre}} = 137,776 \text{ gal.} \quad 632 \text{ gal/ERC}$$

1032 Total gal/ERC

The number of ERCs the tank can serve is calculated as follows:

$$\frac{\text{Storage}}{\text{Req. Demand}} = \text{ERCs Served}$$

$$\frac{350,000 \text{ gal}}{1,032 \text{ gal}} = 332 \text{ ERCs}$$

ERC CALCULATIONS 2009 DISTRIBUTION PIPING

Distribution piping project excess was determined using system average fire flows from Hydraulic Modeling performed in *InfoWaterPro*.

Pre Project-Average: 1,288.50 gpm

Required Fire Flow: 1,500 gpm

Post-Project Average Fire Flow: 2,131.62 gpm

Project Surplus: Surplus is calculated as follows:

$$\text{Post Project Average} - \text{Required Fire Flow} = \text{Post Project Surplus}$$

$$2,131.62 \text{ gpm} - 1,500 \text{ gpm} = 631.62 \text{ gpm}$$

Source Demand:

- a. 800 gpd/ERC for indoor use
- b. 3.39 gpm/irrigated acre for outdoor use

Residential Use:

Indoor

$$347 \text{ ERCs} \times \frac{800 \text{ gpd}}{\text{ERC}} \times \frac{1 \text{ day}}{24 \text{ hr}} \times \frac{1 \text{ hr}}{60 \text{ min.}} = 192.8 \text{ gpm} \quad 0.56 \text{ gpm/ERC}$$

Outdoor (Assume 100% of New ERCs)

$$218 \text{ ERCs} \times \frac{1 \text{ acre} \times 3.39 \text{ gpm}}{4 \text{ ERCs irr. acre}} = 185 \text{ gpm} \quad 0.85 \text{ gpm/ERC}$$

1.4 Total Indoor & Outdoor required gpm/ERC

The new ERCs the distribution piping can serve is calculated as follows:

$$\frac{\text{Project Surplus}}{\text{Req. Demand}} = \text{ERCs Served}$$

$$\frac{631.62 \text{ gpm}}{1.40 \text{ gpm}} = 451 \text{ ERCs}$$

ERC CALCULATIONS FOR LOWER 12 MILE SPRING IMPROVEMENTS

Available Source: It is reported that the Lower 12 Mile Spring produces 80 gpm.

Source Demand:

- a. 800 gpd/ERC for indoor use
- b. 3.39 gpm/irrigated acre for outdoor use

Residential Use:

Indoor

$$347 \text{ ERCs} \times \frac{800 \text{ gpd}}{\text{ERC}} \times \frac{1 \text{ day}}{24 \text{ hr}} \times \frac{1 \text{ hr}}{60 \text{ min.}} = 192.8 \text{ gpm} \quad 0.56 \text{ gpm/ERC}$$

Outdoor (Assume 100% of New ERCs)

$$218 \text{ ERCs} \times \frac{1 \text{ acre} \times 3.39 \text{ gpm}}{4 \text{ ERCs irr. acre}} = 185 \text{ gpm} \quad 0.85 \text{ gpm/ERC}$$

1.4 Total Indoor & Outdoor required gpm/ERC

The additional ERCs the Spring Improvements can serve is calculated as follows:

$$\frac{\text{New Source}}{\text{Req. Demand}} = \text{ERCs Served}$$

$$\frac{80 \text{ gpm}}{1.40 \text{ gpm}} = 57 \text{ ERCs}$$

ERC CALCULATIONS FOR IRRIGATION SHARES

Available Source: 5 Shares

Average Residential Lot Size: $\frac{1}{4}$ acre / ERC

Required Share: $\frac{1}{4}$ share per $\frac{1}{2}$ acre (1 share per 2 acres) for residential watering.

The additional ERCs the Spring Improvements can serve is calculated as follows:

$$5 \text{ shares} \times 2 \text{ shares per acre} \div \frac{1 \text{ acre}}{4 \text{ ERC}} = 40 \text{ ERCs}$$

APPENDIX C:

ANNUAL USER FEE CREDIT CALCULATION

CALCULATION OF THE AVERAGE YEARS THAT NEW CONNECTIONS WILL PAY
USER FEES WITHIN THE 20 YEAR PLANNING PERIOD

Year	ERCs	New ERCs	Years Remaining in Planning Period	Total Years (Years Remaining x New ERCs)
2022	266	0	20	0
2023	270	4	19	76
2024	274	4	18	73
2025	278	4	17	70
2026	282	4	16	67
2027	287	4	15	64
2028	291	4	14	60
2029	295	4	13	57
2030	300	4	12	53
2031	304	4	11	49
2032	309	5	10	46
2033	313	5	9	42
2034	318	5	8	38
2035	323	5	7	33
2036	328	5	6	29
2037	333	5	5	25
2038	338	5	4	20
2039	343	5	3	15
2040	348	5	2	10
2041	353	5	1	5
2042	358	5	0	0
		92	Total Years	831

	Average Years (Total Years/New ERC's)	9.01
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CALCULATION OF THE AVERAGE ANNUAL PORTION OF THE USER FEE PAID TO PLANNED PROJECTS AND THE USER FEE CREDIT			
Year	ERC's	Annual Eligible Project Debt Service	Portion of User Fee to Projects
2022	266	\$ 51,932.82	\$ 195.24
2023	270	\$ 51,932.82	\$ 192.35
2024	274	\$ 66,156.80	\$ 241.41
2025	278	\$ 66,156.80	\$ 237.85
2026	282	\$ 66,156.80	\$ 234.33
2027	287	\$ 66,156.80	\$ 230.87
2028	291	\$ 66,156.80	\$ 227.46
2029	295	\$ 66,156.80	\$ 224.09
2030	300	\$ 66,156.80	\$ 220.78
2031	304	\$ 58,156.80	\$ 191.22
2032	309	\$ 58,156.80	\$ 188.39
2033	313	\$ 58,156.80	\$ 185.61
2034	318	\$ 58,156.80	\$ 182.86
2035	323	\$ 58,156.80	\$ 180.16
2036	328	\$ 58,156.80	\$ 177.50
2037	333	\$ 58,156.80	\$ 174.88
2038	338	\$ 58,156.80	\$ 172.29
2039	343	\$ 58,156.80	\$ 169.74
2040	348	\$ 58,156.80	\$ 167.24
2041	353	\$ 14,223.98	\$ 40.30
2042	358	\$ 14,223.98	\$ 39.70
(A) Average Portion of Annual User Fee to Planned Projects			\$184.49
(B) Average Years of Payment			9.01
User Fee Credit			\$1,662.24

LOANS AND PAYMENT PLANS			
Loan	Start Year	End Year	Length
2009 Project	2010	2040	30
Lower 12- Mile Project	2024	2053	29
Water Share Purchase	2022	2030	8