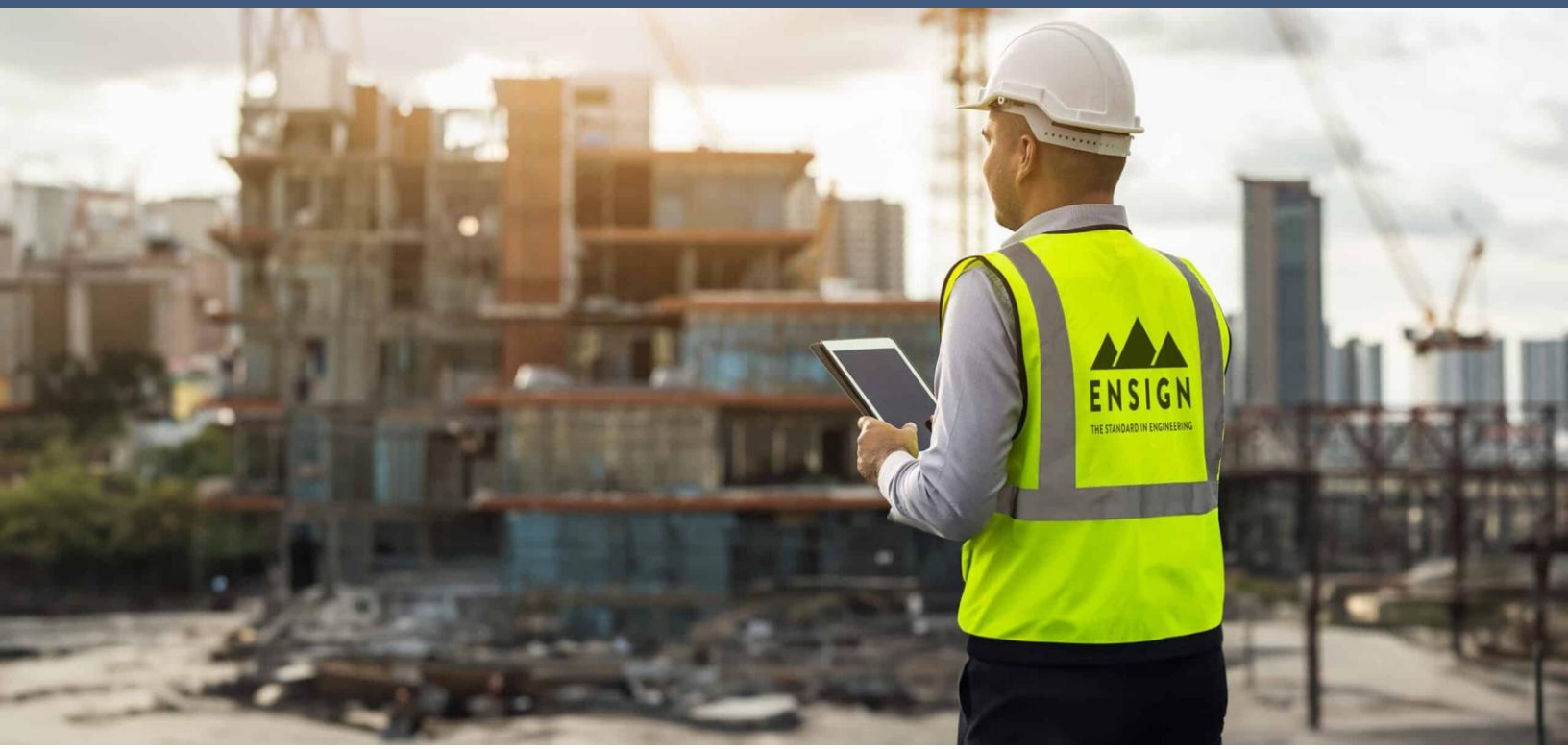
Enoch City Culinary Water Impact Fee Facilities Plan – 2025 Update



October 2025

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Table of Contents

Figures

Tables

Appendices

Executive Summary

The *Enoch City Culinary Water Impact Fee Facilities Plan – 2025 Update* has been prepared to evaluate the City's existing culinary water system, establish required Levels of Service (LOS), and identify the facilities necessary to serve projected growth through the planning horizon. This Impact Fee Facilities Plan (IFFP) provides the technical and legal foundation required under Utah Code §11-36a and Utah Administrative Code R309-510 to support the preparation and adoption of a legally defensible culinary water impact fee.

Enoch City is experiencing sustained residential growth with limited commercial expansion. Population is projected to increase from approximately 8,461 residents in 2024 to nearly 12,000 residents by 2034, with Equivalent Residential Connections (ERCs) increasing from approximately 2,717 to more than 4,000 over the same period. This growth places increasing demand on the City's water system and necessitates planned infrastructure expansion to maintain adopted service standards.

This IFFP documents existing system conditions across source, storage, and distribution infrastructure. The evaluation indicates that the City currently maintains adequate pressure and fire-flow performance and possesses surplus storage capacity under existing demand conditions. However, existing source capacity operates below the adopted LOS when evaluated against peak-day demand requirements, indicating that additional source development will be required as growth continues. Storage capacity is projected to remain sufficient through approximately 2036, after which additional storage will be required to meet adopted standards.

The plan establishes LOS standards consistent with Division of Drinking Water regulations, AWWA guidance, and local operational criteria and applies those standards to identify required capital improvements. Planned improvements include a phased well development program, construction of a new 4.0-million-gallon storage tank, and targeted distribution system improvements to support future growth and long-term reliability.

Planned facilities were evaluated for impact fee eligibility in accordance with Utah Code §11-36a. The Impact Fee Analysis establishes a maximum legally defensible culinary water impact fee of **$30,227.81 per ERC**, representing the upper legal limit under state law. Adoption of this plan does not obligate the City to adopt the maximum fee, and the City Council may elect to adopt a lower fee based on policy considerations.

Section 1 Introduction

The **Enoch City Culinary Water Impact Fee Facilities Plan – 2025 Update** has been prepared to evaluate the capacity of the City's existing water system and identify the facilities required to support continued growth through the 2034 planning horizon. This document establishes the engineering, regulatory, and financial foundation necessary for preparing a defensible Impact Fee Analysis (IFA) in accordance with **Utah Code 11-36a** and the **Utah Administrative Code R309-510**. The plan is intended for use by City Council, City administration, and supporting engineering firms as a unified reference for long-range water system planning and decision-making.

Enoch City continues to experience sustained residential and commercial expansion, with population projected to increase from approximately 8,461 residents in 2024 to almost 12,000 residents by 2034.This growth places increasing demand on the City's water sources, storage facilities, and distribution network. The purpose of this Impact Fee Facilities Plan is to evaluate existing system performance, establish clear Level of Service (LOS) standards, and determine the improvements required to maintain reliable service and regulatory compliance as growth continues.

This IFFP is structured to:

- Document existing system conditions across sources, storage, and distribution facilities.
- Establish LOS standards consistent with **DDW requirements**, **AWWA guidance**, and local operational expectations.
- Evaluate current system capacity against these LOS standards to identify deficiencies attributable to growth.
- Define capital improvements needed to maintain LOS for both existing and future users.
- Provide the legally required foundation for determining **impact fee-eligible facilities** under Utah Code 11-36a.

By presenting system needs in a clear and data-driven manner, this report is intended to support policy decisions by the City Council, facilitate coordination with engineering partners, and ensure that future development contributes its proportionate share to the expansion of Enoch City's culinary water system.

Source:

Section 2 Existing System Analysis

This section provides a comprehensive assessment of Enoch City's existing culinary water system, including its service area, water sources, storage facilities, and distribution infrastructure. The purpose of this analysis is to document the current physical condition and operational capacity of the system as the baseline for evaluating future needs under the Impact Fee Facilities Plan. By examining the geographic extent of the service area, the performance and reliability of active groundwater wells, the adequacy of existing storage tanks, and the configuration of the distribution network, this section establishes the foundation for determining whether the City's current facilities meet the required Level of Service (LOS) and where deficiencies may emerge as growth continues. The information presented here supports subsequent demand projections, capacity evaluations, and capital improvement planning

2.1 Service Area Description

The Enoch City1 is located in Iron County, Utah, immediately north of Cedar City, as shown in **Exhibit 1 – Vicinity and Boundary Map**. The figure illustrates the municipal boundary of Enoch City in relation to the surrounding jurisdictions, including Cedar City to the south and the Central Iron County Water Conservancy District (CICWCD) boundary extending west and north of the city. Major transportation corridors such as Lund Highway are also identified to provide regional context.

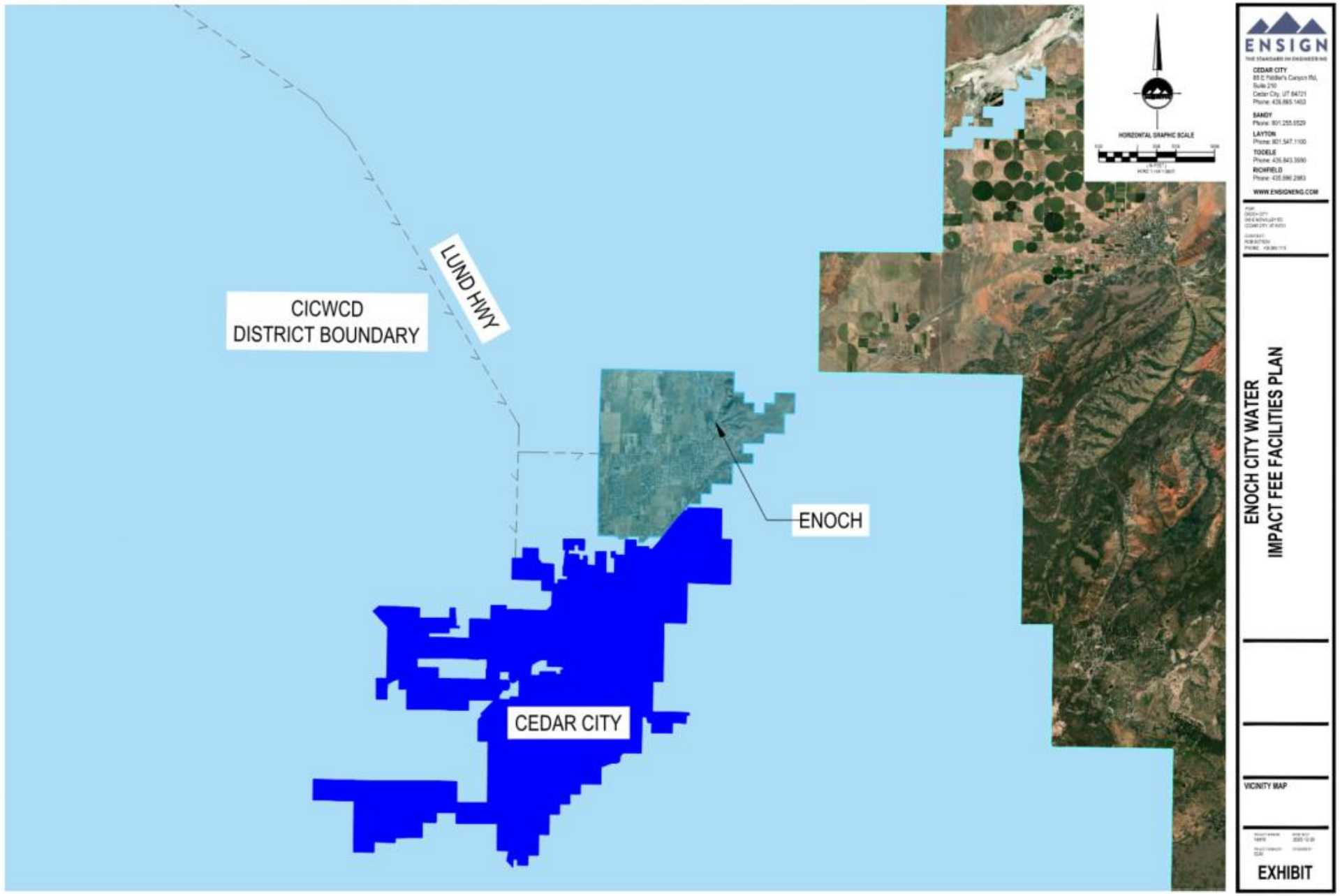

Figure 2-1 Service Area Map

Enoch City's service area encompasses the incorporated limits of Enoch and includes both developed and developing residential zones, as well as areas identified for future growth under the City's General Plan. The proximity to Cedar City creates a shared regional demand on water resources and groundwater aquifers, making coordination with CICWCD and neighboring municipalities essential for long-term water planning.

This boundary serves as the planning limit for the Impact Fee Facilities Plan (IFFP) and defines the area within which existing and future culinary water infrastructure will be evaluated. The IFFP considers existing service conditions and projected growth within this boundary to determine future water source, storage, and distribution needs in accordance with **Utah Administrative Code R309-510** and the **Impact Fees Act (Utah Code 11-36a)**.

2.2 Existing Water Sources

The Enoch City currently operates multiple groundwater wells that provide culinary water supply for the community. The locations of these wells are shown in **Exhibit 2 – Existing Source Locations**, and their respective production capacities are summarized in **Table 3-1**. These wells draw from the Cedar Valley aquifer system and represent the primary sources of potable water for the City's distribution network.

Figure 2-2 Existing Sources Map

As shown in **Table 2-1**, Enoch City's total available source capacity is approximately **2,535 gallons per minute (GPM)**, supplied by seven active wells: Anderson Well, Homestead Well, Iron Works Well, Little Eden Well, Norm Grimshaw Well, Tank (BLM) Well, and Ravine Tank Well. Among these, the Iron Works and Norm Grimshaw Wells provide the highest production rates at 600 GPM and 450 GPM, respectively. The combination of these wells ensures system redundancy and improved operational flexibility during peak demand conditions or maintenance events.

Table 2-1 Summary of Existing Sources

Well	Source Capacity
Anderson Well	175 GPM
Homestead Well	260 GPM
Iron Works Well	600 GPM
Little Eden Well	350 GPM
Norm Grimshaw Well	450 GPM
Tank Well (BLM)	250 GPM
Ravine Well Tank Well BLM	450 GPM
Total	2,535 GPM
Average	362 GPM

In accordance with **Utah Administrative Code R309-510-7**, each source is required to reliably meet system demand while maintaining sufficient standby capacity to account for the largest source being offline. The city routinely monitors individual well performance to verify sustained production rates and to ensure compliance with the Division of Drinking Water (DDW) operating standards.

Enoch's source portfolio is generally adequate to meet current system demands; however, ongoing population growth and increasing water use will continue to place pressure on existing production capacity. Periodic well performance testing and aquifer recharge evaluation are recommended to ensure long-term reliability of these sources and to identify potential future needs for additional production wells or source development.

2.3 Storage Facilities

Enoch City's culinary water system is supported by three major storage tanks strategically located throughout the service area, as shown in **Exhibit 3 – Existing Storage Facilities Map**. These tanks provide the required storage volume for equalization, fire suppression, and emergency operations, ensuring stable system pressures and adequate water availability under varying demand conditions.

Figure 2-3 Storage Facilities Map

As summarized in **Table 2-2**, the City's total available storage capacity is approximately **5.75 million gallons (MG)**. The system includes the **BLM Tank (1.75 MG)**, the **New Tank (2.00 MG)**, and the **Old Tank (2.00 MG)**. The combined storage capacity supports daily operations and system redundancy by allowing the City to rotate tanks for maintenance while maintaining sufficient volume to meet demand.

Table 2-2 Existing Storage Facilities

Tank Name	Storage Capacity (Million Gallons)
BLM Tank	1.75
New Tank	2.00
Old Tank	2.00
Total (MG)	**5.75**

In accordance with **Utah Administrative Code R309-510-8**, public water systems must maintain adequate storage to satisfy equalization, fire suppression, and emergency requirements. The City's existing storage inventory currently meets these criteria under normal operating conditions and provides additional resiliency for short-term supply interruptions. The geographic distribution of the tanks also enhances hydraulic balance across the City's pressure zones, minimizing excessive head loss and ensuring consistent service pressures for customers.

Regular inspection and maintenance of the tank structures are performed to ensure compliance with Division of Drinking Water (DDW) standards and AWWA guidelines for storage facility integrity and disinfection. As the City continues to grow, periodic review of storage adequacy will be necessary to ensure that available capacity aligns with projected system demands and future pressure zone expansion.

2.4 Distribution System

The City's culinary water distribution system consists of approximately 310,002.00 linear feet of pressurized pipelines ranging from 4-inch through 16-inch in diameter. These pipes convey water from the City's water sources and storage facilities to individual service connections throughout the service area. The system includes transmission mains that transport water between pressure zones as well as local distribution pipelines that provide service to residential, commercial, and public facilities.

Table 2-3 Distribution Pipe Summary

Material	Diameter	Length (LF)
PVC	4"	5,726.00
PVC	6"	102,505.00
PVC	8"	115,691.57
PVC	10"	15,436.00
PVC	12"	42,081.70
PVC	16"	19,667.00
Ductile Iron	6"	3,634.00
Ductile Iron	8"	4,673.43
Ductile Iron	12"	587.30
	TOTAL PIPE	**310,002.00**

The 6-inch and 8-inch diameter pipes make up the majority of the system, representing the primary distribution network supplying most residential areas. The 10-, 12-, and 16-inch mains function as transmission corridors that move water between zones and connect major storage and supply facilities. The smaller 4-inch pipes primarily serve localized areas or older parts of the system where development predates modern design standards.

This inventory forms the basis for the hydraulic model used in the subsequent evaluation of pressure and velocity performance. The pipe lengths and segment counts reflect WaterCAD's hydraulic modeling network, which divides pipes into multiple computational segments for improved accuracy.

Additional distribution system appurtenances—including valves, air-vacuum assemblies, blow-offs, PRVs, and hydrants—are present throughout the system. While these are essential to the operation and maintenance of the network, they are not typically summarized in the system inventory table, as they do not affect LOS calculations. However, they are included in the hydraulic model where applicable (e.g., PRVs and control valves). A more detailed inventory of appurtenances is provided in the project cost section for capital planning purposes.

This summary establishes the physical framework of the existing distribution system. The following section evaluates the performance of this system under existing peak-demand conditions through a detailed Level of Service (LOS) analysis.

Source:

Section 3 System Demand Analysis

This section evaluates the existing and projected water demands that drive the capacity requirements of Enoch City's culinary water system. It establishes the baseline conditions using current population, historical water use, and Equivalent Residential Connections (ERCs), and then applies growth projections to estimate future system demands through the 2034 planning horizon. The analysis includes average day, peak day, and peak instantaneous demands, ensuring compliance with Utah Administrative Code R309-510 and the Impact Fees Act. By quantifying both present and future demand, this section provides the essential basis for determining required source capacity, storage volume, and distribution system performance in subsequent sections of the Impact Fee Facilities Plan.

3.1 Current Population

The Enoch City has experienced steady population growth over the past several years, consistent with regional development trends in Iron County. As shown in **Table 3-1 – Current and Projected Population**, the City's population increased from approximately **7,374 residents in 2020** to an estimated **8,461 residents in 2024**, reflecting an average annual growth rate of **3.5 percent**. This rate of growth aligns with recent residential development activity and building permit data collected by the city.

Table 3-1 Population Projections

	Year	Projected Population	Residential Growth Rate
Actual	2020	7,374.0	3.50%
	2021	7,632.0	3.50%
	2022	7,899.0	3.50%
	2023	8,175.0	3.50%
	2024	8,461.0	3.50%
Projected	2025	8,757.0	3.50%
	2026	9,064.0	3.50%
	2027	9,381.0	3.50%
	2028	9,710.0	3.50%
	2029	10,050.0	3.50%
	2030	10,401.0	3.50%
	2031	10,765.0	3.50%
	2032	11,142.0	3.50%
	2033	11,532.0	3.50%
	2034	11,936.0	3.50%
	2035	12,354.0	3.50%

Population projections developed for this Impact Fee Facilities Plan (IFFP) assume a continued **3.5 percent residential growth rate** through the planning horizon year of **2035**. Under these assumptions, the City's population is projected to reach approximately **12,354 residents by 2035**, nearly doubling the 2020 population.

These growth assumptions are consistent with regional forecasts prepared by the **Utah Governor's Office of Planning and Budget (GOPB)** and reflect Enoch's position as a rapidly expanding residential community within the Cedar Valley area. The population estimates incorporate anticipated subdivision development and infill within existing city limits, as identified in the City's General Plan.

In accordance with **Utah Administrative Code R309-510-4**, population data used in facility planning must be based on reliable, documented sources to ensure defensible demand projections. The 2024 population estimate of 8,461 residents will be used as the baseline for evaluating existing system demands, while the 2034 projection of 11,936 residents will serve as the design horizon for future capacity and facility planning within this IFFP.

3.2 Equivalent Residential Connections (ERCs)

Equivalent Residential Connections (ERCs) are used to express the total demand placed on the water system by both residential and non-residential users in standardized residential units. ERCs provide a consistent metric for evaluating system capacity, water use, and future infrastructure needs. One ERC typically represents the average water demand of a single-family residential connection under normal operating conditions.

As shown in **Table 3-2 – Actual and Projected ERCs**, Enoch City currently serves an estimated **2,717 ERCs in 2024**, representing a modest increase from 2,601 ERCs in 2023. Historical fluctuations between 2020 and 2023 reflect the timing of new subdivision completions, meter installations, and occasional inactive service accounts. Despite minor short-term variations, the overall ERC trend demonstrates steady long-term growth consistent with the City's population projections.

Table 3-2 Equivalent Residential Connections (ERCs)

	Year	Total ERC's
Actual	2020	2,856.00
	2021	2,665.00
	2022	2,649.00
	2023	2,601.00
	2024	2,717.00
Projected	2025	2,824.00
	2026	2,937.00
	2027	3,053.00
	2028	3,176.00
	2029	3,305.00
	2030	3,440.00
	2031	3,583.00
	2032	3,733.00
	2033	3,891.00
	2034	4,057.00
	2035	4,235.00

ERC projections for the planning horizon were developed based on the same **3.5 percent annual residential growth rate** used for population forecasting. Under this assumption, the number of ERCs is projected to increase from approximately **2,824 in 2025** to **4,235 by 2035**, reflecting more than a twofold increase in system demand over the next decade. These projections account for both new residential development and limited commercial or institutional expansion consistent with historical water use patterns.

The ERC projections will be used throughout this Impact Fee Facilities Plan (IFFP) to estimate system demand under average day, peak day, and maximum day conditions, and to determine the portion of facility costs that are impact fee eligible. This approach aligns with **Utah Administrative Code R309-510-4** and the **Impact Fees Act (Utah Code 11-36a)**, which require facility planning and cost allocation to be based on defensible, growth-related demand factors.

3.3 Water Usage Data

An evaluation of historical water use provides a basis for estimating current system demands and assessing overall system performance. As shown in **Table 3-3 – Historical Water Use**, Enoch City's total annual culinary water consumption has ranged from approximately **419 million to 494 million gallons per year** over the past five years (2020–2024). These values reflect a combination of residential, commercial, industrial, and institutional uses throughout the City's service area.

Table 3-3 Historical Water Use (gal/year)

Water Usage (Gallon/year)						
	Year	Residential	Commercial	industrial growth	instituional	Total
Actual	2020	388,280,175.66	4,246,116.85	11,001,450.87	90,915,129.72	**494,442,873.10**
	2021	399,907,301.47	4,382,983.24	4,382,983.24	50,539,544.31	**459,212,812.26**
	2022	399,926,853.81	7,244,142.56	21,119,787.65	12,940,391.42	**441,231,175.44**
	2023	401,028,302.39	9,662,115.47	651,744.72	8,400,989.44	**419,743,152.02**
	2024	452,160,934.39	14,142,860.42	625,674.93	10,717,941.92	**477,647,411.67**

Residential water use represents the largest share of total demand, accounting for roughly **85–95 percent** of annual system consumption. In 2024, residential use totaled **452.2 million gallons**, an increase of approximately 13 percent compared to 2020. This growth closely aligns with the population and ERC increases observed during the same period, indicating consistent per-connection usage trends.

Non-residential demands, including commercial, industrial, and institutional uses, make up a smaller proportion of total consumption but contribute to variations in year-to-year totals. For example, commercial usage increased from **4.2 million gallons in 2020** to **14.1 million gallons in 2024**, reflecting recent business development along main corridors. Institutional demand—primarily from schools, parks, and municipal facilities—averaged around **35 million gallons per year**, with some variation due to irrigation and maintenance cycles.

Overall, the City's total water use decreased slightly between 2020 and 2023 before rebounding in 2024, likely due to climate variability, conservation practices, and the timing of new development connections. The most recent year of data (2024) shows a total usage of **477.6 million gallons**, which will be used as the baseline year for calculating average day and peak day demands in subsequent sections.

In accordance with **Utah Administrative Code R309-510-4**, historical demand data are used to verify the adequacy of existing sources, storage, and distribution facilities under current operating conditions. This data-driven approach ensures that future planning and impact fee calculations are based on documented, measurable water use trends rather than assumptions.

3.4 Future Growth Projections

Understanding both existing and projected water demand is critical to ensuring Enoch City's water system can continue to meet future growth while maintaining adequate capacity and operational reliability. As shown in **Table 3-3 – Historical Water Use** and **Table 3-4 – Projected Water Demand**, the City's culinary water consumption has shown consistent long-term growth, driven primarily by residential development and moderate commercial expansion.

Between 2020 and 2024, total annual water use ranged from approximately **419 million to 494 million gallons per year**, averaging around **458 million gallons annually**. Residential consumption represents the majority of total usage—typically between **85 and 95 percent**—while commercial, industrial, and institutional uses make up the remaining balance. The total water use in 2024 was approximately **477.6 million gallons**, which serves as the baseline year for future demand projections.

Table 3-4 Projected Water Demand

	Water Usage (Gallon/year)					
	Year	Residential	Commercial	Industrial	instituional	Total
Projected	2025	470,275,860.00	15,840,004.00	700,756.00	12,004,095.00	**498,820,715.00**
	2026	489,116,524.00	17,740,805.00	784,847.00	13,444,587.00	**521,086,763.00**
	2027	508,712,001.00	19,869,702.00	879,029.00	15,057,938.00	**544,518,670.00**
	2028	529,092,532.00	22,254,067.00	984,513.00	16,864,891.00	**569,196,003.00**
	2029	550,289,568.00	24,924,556.00	1,102,655.00	18,888,678.00	**595,205,457.00**
	2030	572,335,821.00	27,915,503.00	1,234,974.00	21,155,320.00	**622,641,618.00**
	2031	595,265,313.00	31,265,364.00	1,383,171.00	23,693,959.00	**651,607,807.00**
	2032	619,113,429.00	35,017,208.00	1,549,152.00	26,537,235.00	**682,217,024.00**
	2033	643,916,973.00	39,219,273.00	1,735,051.00	29,721,704.00	**714,593,001.00**
	2034	669,714,221.00	43,925,586.00	1,943,258.00	33,288,309.00	**748,871,374.00**
	2035	696,544,984.00	49,196,657.00	2,176,449.00	37,282,907.00	**785,200,997.00**

Projected water use was estimated using the ERC growth assumptions presented in **Table 3-4 Projected Water Demand**, based on a **3.5 percent annual residential growth rate** and a **0.5 percent non-residential growth rate**. Under these assumptions, the number of ERCs is anticipated to increase from **2,850 in 2025** to **4,235 by 2035**. Correspondingly, total annual water demand is projected to increase from approximately **498 million gallons in 2025** to **785 million gallons in 2035**, reflecting more than a twofold increase in system demand over the 10-year planning horizon.

While residential growth remains the dominant driver of system expansion, non-residential water use is also projected to increase significantly—particularly in the commercial and light industrial sectors. Commercial demand is expected to grow from **19.4 million gallons in 2025** to over **450 million gallons by 2035**, representing an expanding local economy and additional service connections along major corridors.

Table 3-5 Projected Equivalent Residential Connections (ERCs)

	Year	Total ERC's
Projected	2025	2,824.00
	2026	2,937.00
	2027	3,053.00
	2028	3,176.00
	2029	3,305.00
	2030	3,440.00
	2031	3,583.00
	2032	3,733.00
	2033	3,891.00
	2034	4,057.00
	2035	4,235.00

These projections form the foundation for evaluating system capacity in later sections of this Impact Fee Facilities Plan (IFFP). In accordance with **Utah Administrative Code R309-510-4**, demand projections are based on reliable, documented data and are used to assess whether existing sources, storage, and distribution facilities are sufficient to meet the City's future needs.

Source:

Section 4 Required Level of Service (LOS)

The Level of Service (LOS) defines the minimum design and operational standards that Enoch City must maintain to provide reliable culinary water service to existing and future users. These standards are used to evaluate the adequacy of existing facilities and to identify system improvements required to meet projected growth. Establishing a consistent LOS is also necessary for determining the portion of future infrastructure costs that are impact fee eligible in accordance with **Utah Code 11-36a** and **Utah Administrative Code R309-510**.

The LOS standards presented in this section reflect a combination of Division of Drinking Water (DDW) regulations, **AWWA** design guidance, **Utah Fire Marshal** requirements, and local operating experience. These values represent the *required* level of service that the City will maintain throughout the planning period to ensure safe, adequate, and sustainable water delivery.

4.1 Source Capacity Level of Service

Enoch City's required source capacity is based on the total production volume necessary to meet the **Peak Day Demand (PDD)** for all active and projected connections. Based on the City's historical data from the **Utah Division of Drinking Water WaterLink System Report (PWS ID 622)**, the City's current source capacity standard is **1,572 gallons per day per Equivalent Residential Connection (ERC)**, equivalent to approximately **1.09 gallons per minute per ERC**.

In accordance with **Utah Administrative Code R309-510-7**, public water systems must demonstrate sufficient source capacity to meet projected PDD while maintaining adequate standby capacity in the event that the largest source is out of service. Enoch City will continue to maintain this standard by ensuring that combined well production meets or exceeds the total PDD requirement at all times, even when the largest well is offline.

This standard provides a consistent benchmark for evaluating both existing and future source requirements in the **System Capacity Evaluation** section of this report.

4.2 Storage Capacity Level of Service

Adequate storage capacity ensures that the City can meet daily operating fluctuations, fire suppression requirements, and emergency conditions without service interruptions. Based on Enoch City's adopted design criteria, the required storage volume is **522 gallons per ERC**.

In accordance with **Utah Administrative Code R309-510-8**, total system storage must include:

- **Equalization Storage** – to balance fluctuations between average day and peak day demand (commonly 25% of Average Day Demand).

- **Fire Flow Storage** – to provide sufficient water volume to sustain required fire flows for the specified duration.
- **Emergency Storage** – to provide a reserve supply for system outages, typically 25–50% of Average Day Demand depending on reliability and local conditions.

The City's existing total storage volume (5.75 MG) currently satisfies these requirements under existing demand conditions. As growth continues, the City will evaluate whether additional storage is required to maintain this standard and to provide reliable fire and emergency capacity.

4.3 Distribution and Pressure Level of Service

The City's distribution system is designed and operated in accordance with **Utah Administrative Code R309-105-9** and **AWWA M31: Distribution System Requirements for Water Utilities**. These standards require that:

- Normal operating pressures are maintained between **40 psi and 100 psi** at all service connections.
- During maximum day demand with fire flow conditions, the minimum residual pressure must not drop below **20 psi** at any location in the system.
- The system must provide sufficient looping and isolation valving to minimize service disruption and maintain consistent pressures across all zones.

These standards ensure both public health protection and reliable service delivery across varying elevation zones within the city.

Pipe velocity is evaluated as a **planning-level operational indicator** to assess long-term system performance and capacity constraints under projected demand conditions. While elevated velocities may indicate reduced hydraulic efficiency or limited operational flexibility, **velocity is not an adopted level-of-service standard and is not regulated under state or federal drinking water requirements**. Velocity is therefore used in this study solely to support system planning, prioritization of improvements, and evaluation of growth-related capacity needs, and not as a measure of regulatory compliance.

4.4 Fire Flow Level of Service

Fire flow requirements are established in coordination with the **Utah Fire Marshal's Office** and local fire protection authorities. For planning purposes, the following minimum standards are applied:

- **Residential Zones:** 1,500 gallons per minute (gpm) for a minimum duration of **two (2) hours**.

These criteria are consistent with the **Utah Fire Marshal's Recommended Fire Flow Requirements** and **AWWA Manual M31**, ensuring adequate fire protection while maintaining regulatory compliance under R309-510-8.

4.5 System Redundancy and Reliability

In addition to meeting the capacity standards defined above, Enoch City's water system is designed to maintain reliability during routine maintenance and emergency events. The City's operational goal is to provide sufficient source and storage capacity to meet all demands with the **largest single source out of service**.

This redundancy standard is consistent with **Utah Administrative Code R309-510-7(2)(b)**, which requires systems to demonstrate sufficient capacity under loss-of-source conditions. Additional redundancy is achieved through the City's interconnected well system, looped distribution mains, and multiple storage facilities that balance pressures across the service area.

Future infrastructure improvements identified in this IFFP will continue to emphasize system resiliency, including emergency backup power for critical wells, additional looping of key transmission lines, and coordination with regional water providers to maintain service continuity under varying operating conditions.

4.6 Summary of Level of Service Standards

The Level of Service standards defined herein establish the foundation for evaluating system sufficiency and identifying impact fee-eligible projects. In summary:

- **Source Capacity LOS:** 1,572 gpd/ERC (1.09 gpm/ERC), per Utah DDW WaterLink data.
- **Storage Capacity LOS:** 522 gpd/ERC, including equalization, fire, and emergency storage.
- **Pressure LOS:** 40–100 psi normal range; 20 psi minimum during fire flow.
- **Fire Flow LOS:** 1,500 gpm for 2 hours
- **Redundancy LOS:** Meet PDD with largest source offline per R309-510-7(2)(b).

These LOS criteria will be applied in the subsequent **System Capacity Evaluation** section to determine whether the City's existing water system meets or exceeds the required standards and to identify where new infrastructure will be needed to support projected growth.

The Level of Service standards defined in this section establish the performance benchmarks for Enoch City's culinary water system. These standards represent the required minimum service levels that must be maintained as the community continues to grow. The following section, **System Capacity Evaluation**, compares the City's existing water sources, storage, and

distribution facilities against these Level of Service criteria to determine current system adequacy and identify future improvement needs.

Source:

Section 5 System Capacity Evaluation

The purpose of the System Capacity Evaluation is to determine whether Enoch City's existing culinary water facilities—specifically source and storage components—are adequate to meet current and projected system demands in accordance with the Level of Service (LOS) standards established in Section 4. This analysis compares existing system performance against required capacities for average day, peak day, and projected growth conditions.

5.1 Source Capacity Evaluation

Adequate source capacity ensures that sufficient water can be supplied to meet the **Peak Day Demand (PDD)** and **Peak Instantaneous Demand (PID)**, while maintaining operational redundancy when the largest source is out of service.

As shown in **Table 5-1 – Source Capacity Evaluation**, Enoch City's total available source production is approximately **0.93 gpm per ERC** under current conditions, compared to a required capacity of **1.09 gpm per ERC** as defined in the City's Level of Service standards. This indicates that the City's current source capacity is operating at approximately **85 percent of the required standard**.

Table 5-1 Required Source Capacity vs. Current Source Capacity

Demand Category	Current	Required	Sufficient Percentage
Average Day Demand	0.66	0.77	
Peak Day Demand	0.93	1.09	**85%**
Peak Instantaneous Demand	1.32	1.54	

In accordance with **Utah Administrative Code R309-510-7**, public water systems must have sufficient source capacity to meet projected PDD requirements while maintaining reliability with the largest source offline. Based on this evaluation, the City's current production capacity remains adequate for present demand; however, system expansion will be required within the next several years to maintain compliance as growth continues.

At the projected growth rate outlined in the System Demand Analysis, Enoch's total ERCs are expected to increase to approximately **4,235 by 2035**, corresponding to a required source capacity exceeding current available production. Additional source development—such as drilling a new well or rehabilitating existing wells—is expected to be necessary before the end of the planning horizon to maintain the required LOS and ensure redundancy.

5.2 Storage Capacity Evaluation

Storage facilities provide critical operational flexibility and ensure that the system can meet fluctuating daily demands, provide adequate fire suppression, and maintain service during emergencies or source interruptions.

As shown in **Table 5-2 – Storage Capacity Evaluation**, Enoch City currently maintains a total usable storage volume of **5.75 million gallons (MG)** across its three active tanks. The required storage volume is calculated using the adopted LOS of **522 gallons per ERC**, as defined in Section 4.2.

Table 5-2 Required Storage Capacity vs. Current Storage Capacity

	Year	Storage Required	Current Storage	Percent Used
Actual	2020	3,226,109.00	3,750,000.00	**86%**
	2021	3,215,838.00	3,750,000.00	**86%**
	2022	3,265,785.00	3,750,000.00	**87%**
	2023	3,292,428.00	3,750,000.00	**88%**
	2024	3,433,055.00	5,750,000.00	**60%**
Projected	2025	3,566,039.00	5,750,000.00	**62%**
	2026	3,705,711.00	5,750,000.00	**64%**
	2027	3,849,509.00	5,750,000.00	**67%**
	2028	4,000,517.00	5,750,000.00	**70%**
	2029	4,157,976.00	5,750,000.00	**72%**
	2030	4,322,645.00	5,750,000.00	**75%**
	2031	4,495,046.00	5,750,000.00	**78%**
	2032	4,674,941.00	5,750,000.00	**81%**
	2033	4,863,327.00	5,750,000.00	**85%**
	2034	5,059,730.00	5,750,000.00	**88%**
	2035	5,266,947.00	5,750,000.00	**92%**

In 2024, the City required approximately **3.44 MG** of storage capacity, meaning that only **60 percent** of the available volume was in use. This indicates that the City's current storage system exceeds existing operational requirements and provides substantial reserve capacity for short-term growth.

Looking forward, the analysis projects that the required storage volume will increase from **3.59 MG in 2025** to **5.0 MG by 2035**. This represents a steady increase corresponding with projected ERC growth. Based on the existing storage of 5.75 MG, the system will reach approximately **99 percent utilization by 2037**, and will experience a **deficiency beginning in 2038**, when storage demand exceeds capacity by approximately **0.38 MG**.

In accordance with **Utah Administrative Code R309-510-8**, Enoch City will be required to plan for additional storage capacity prior to this point to maintain compliance with the established LOS for equalization, fire flow, and emergency storage. Potential options include construction of an additional storage tank or the expansion of existing facilities to provide the necessary volume.

5.3 Distribution System Capacity Evaluation

The City's culinary water distribution system was evaluated to assess its ability to meet adopted service standards under current and near-term operating conditions. The evaluation was performed using a calibrated hydraulic model representing **maximum day demand with simultaneous fire-flow conditions (MDD + Fire Flow)**, consistent with accepted engineering practice for assessing system capacity and performance.

5.3.1 Fire Flow and Pressure Performance

Modeling results indicate that **100 percent of the distribution system meets adopted fire-flow and pressure requirements**. Fire-flow availability was evaluated at a minimum of **1,500 gallons per minute (gpm) with a residual pressure of 20 pounds per square inch (psi)**, and all analyzed locations satisfied this criterion. In addition, the system was evaluated under non-fire-flow conditions and was found to maintain a minimum of **30 psi during peak day demand** and **40 psi under normal operating conditions**. These results demonstrate that the system has been developed in accordance with adopted standards and provides adequate capacity to support existing and planned service demands.

5.3.2 Velocity Evaluation and Operational Considerations

In addition to evaluating pressure and fire-flow performance, the City assessed pipe velocities during modeled **maximum day demand with simultaneous fire-flow conditions** as an indicator of long-term system performance and future capacity constraints. While fire-flow events are short in duration, excessively high velocities during these conditions can increase headloss, reduce operational flexibility, and contribute to accelerated wear of pipelines, fittings, and appurtenances. For planning purposes, velocities **approaching or exceedingly approximately 12 feet per second during fire-flow conditions** were identified as an upper operational threshold beyond which system performance becomes increasingly constrained. Hydraulic modeling indicates that several existing **6-inch distribution mains operate near this threshold**, while **4-inch distribution mains exceed this velocity** under projected fire-flow demand scenarios.

These elevated velocities occur only during emergency conditions and **do not represent a regulatory violation or a failure to meet adopted level-of-service standards**, as fire-flow and pressure requirements are otherwise satisfied throughout the system. However, the results

indicate limited hydraulic capacity within these pipe segments and reduced flexibility to accommodate additional demand. As future development increases system loading, these constraints are expected to become more pronounced without targeted capacity improvements.

These findings are used solely to inform long-term planning, prioritization, and capital improvement needs and are not intended to establish regulatory limits or adopted velocity standards.

The velocity values referenced in this section are used solely as **planning-level indicators** to identify relative system constraints under projected demand and emergency operating conditions. These values are not intended to represent regulatory limits, adopted level-of-service standards, or design requirements, and should not be interpreted as compliance thresholds.

5.3.3 Capacity Findings and Planning Implications

Based on the results of the capacity evaluation, the City concludes that the distribution system provides **adequate hydraulic capacity and pressure to meet adopted service standards** over the **5- to 10-year planning horizon**. No system-wide capacity deficiencies were identified. Localized areas experiencing elevated velocities during fire-flow events are considered **operational and service-reliability considerations**, rather than regulatory or LOS failures.

These findings directly inform the City's Capital Improvement Plan by identifying targeted opportunities for system reinforcement, including strategic pipeline upsizing and future pressure-support infrastructure. Improvements identified in the CIP are intended to enhance long-term system reliability and resiliency while maintaining compliance with adopted standards. Portions of these improvements address existing system conditions and are therefore not anticipated to be impact-fee eligible, while others may support future growth depending on location and nexus.

Source:

Section 6 Capital Improvement Plan

The Capital Improvement Plan (CIP) identifies the infrastructure projects necessary for Enoch City to maintain its adopted **Level of Service (LOS)** and meet projected growth through the 2034 planning horizon. The projects outlined in this section address the deficiencies identified in the **System Capacity Evaluation** and are prioritized based on timing, necessity, and regulatory compliance under **Utah Administrative Code R309-510** and the **Impact Fees Act (Utah Code 11-36a)**.

The CIP includes planned source and storage improvements required to sustain system reliability and performance. Future distribution improvements will be incorporated following completion of the ongoing hydraulic modeling and network evaluation.

6.1 Planned System Improvements

The City's Capital Improvement Plan (CIP) identifies the water system improvements required to maintain the adopted Level of Service (LOS) and support projected growth through the 2034 planning horizon. These improvements address the source, storage, and distribution needs identified in the System Capacity Evaluation and are structured to ensure that Enoch City remains in compliance with Utah Administrative Code R309-510 and the Impact Fees Act (Utah Code 11-36a). The planned projects focus on expanding production capacity through new wells, increasing storage volume with a new 4.0 MG tank, and implementing targeted distribution system upgrades based on ongoing hydraulic modeling. Together, these improvements form a comprehensive strategy to enhance system reliability, ensure adequate fire flow and operational flexibility, and provide the capacity needed to serve both existing users and future development in a financially sustainable manner.

6.1.1 Source Development

To maintain the adopted level of service of **1.09 gallons per minute per equivalent residential connection (gpm/ERC)**, additional groundwater source capacity is required as system demands increase. Based on the source capacity evaluation, expansion of production well capacity is necessary to meet projected needs and maintain compliance with adopted service standards.

It is recommended that **two new production wells be constructed within the next two years**, followed by the construction of **one additional well approximately every other year**, for a total of **five new wells**. For planning purposes, each well is assumed to provide an average yield of **approximately 450 to 500 gpm**, consistent with the performance of existing sources. This

phased approach allows source capacity to be added incrementally while maintaining system reliability and alignment with projected growth.

6.1.2 Storage Expansion

To address the projected storage deficiency identified in Section 6.2, the city plans to construct a **4.0 million-gallon (MG) water storage tank** by **2037**. The additional storage will ensure compliance with the adopted LOS standard of 522 gallons per ERC and provide capacity for equalization, emergency, and fire flow demands.

The new storage facility will be strategically located to enhance hydraulic performance and balance pressure between existing zones. The estimated construction cost for the tank is **$11.1 million**, excluding professional services, administration, and contingency costs.

Costs shown are planning-level estimates and reflect the growth-related portion of improvements where applicable. Implementation timing is subject to funding availability and system prioritization.

6.1.3 Distribution System Improvements

The distribution system evaluation identified select pipe segments that operate at **elevated velocities during projected fire-flow conditions**, indicating capacity constraints under high-demand scenarios. Although existing fire-flow and pressure standards are generally met, sustained high velocities reduce hydraulic efficiency, increase headloss, and limit the system's ability to reliably accommodate future growth while maintaining acceptable operational performance.

To address these conditions, the Capital Improvements Plan includes targeted distribution system upgrades focused on reducing velocities and improving long-term system reliability. **Upgrading existing 4-inch water mains to a minimum diameter of 8 inches is classified as a high-importance improvement**, as these segments exceed upper operational velocity thresholds and provide limited hydraulic flexibility as demand increases. These upgrades are necessary to maintain acceptable system performance under projected build-out conditions.

In addition, **existing 6-inch mains located within residential areas are recommended for upgrade to at least 8 inches** where hydraulic modeling indicates elevated velocities approaching upper operational thresholds. While these segments generally perform adequately under existing conditions, upsizing would improve system resiliency and provide additional capacity for future development. Accordingly, these improvements are considered **lower priority** and are anticipated to be implemented on an opportunistic basis when funding is available or when construction efficiencies can be achieved.

High-importance distribution improvements, including upgrades of existing 4-inch mains to a minimum of 8 inches, are prioritized for implementation to maintain system performance under growth, while lower-priority 6-inch to 8-inch upgrades may be implemented opportunistically when funding is available or when cost savings are realized from other capital projects.

6.2 Cost Estimates

The total estimated cost for the planned capital improvements is approximately **$22.15 Million**, inclusive of construction, engineering design, administrative services, and contingencies. A detailed breakdown of cost estimates will be provided in **Appendix A** of this report, in accordance with AWWA M54 cost development guidelines and current Utah bid averages.

These estimates are planning-level and reflect 2025 dollars. Future updates to the City's IFFP should include cost escalation adjustments based on inflation, construction market conditions, and final design specifications.

Costs shown are planning-level estimates and reflect the growth-related portion of improvements where applicable. Implementation timing is subject to funding availability and system prioritization.

6.3 Funding Sources

To ensure that planned improvements can be implemented within a financially sustainable framework, Enoch City anticipates using a combination of external and internal funding sources. These may include state and federal loan programs, local impact fees, and direct City contributions.

6.3.1 State Revolving Fund (SRF)

The **Utah Division of Drinking Water (DDW)** administers the Drinking Water State Revolving Fund, which provides low-interest loans and principal forgiveness for eligible drinking water projects. Projects that improve system reliability, ensure compliance with DDW standards, or address capacity deficiencies are typically prioritized.

Enoch City's well development program and 4.0 MG tank project both qualify for SRF funding consideration due to their direct link to maintaining the required LOS and ensuring long-term public health protection.

6.3.2 Community Impact Board (CIB)

The **Utah Permanent Community Impact Fund Board (CIB)** provides low-interest loans and grants to communities impacted by mineral resource development. CIB funding may be pursued to supplement SRF financing or cover a portion of project design and construction costs. Enoch City has historically been eligible for CIB consideration and may leverage this program to reduce the overall debt burden on the culinary water system.

6.3.3 Division of Drinking Water (DDW) Funding Programs

In addition to SRF assistance, the Division of Drinking Water administers several competitive grant and emergency funding programs that support system improvements addressing health, safety, or compliance issues. The city will continue to coordinate with DDW to pursue available opportunities for funding portions of the well development program and future source protection improvements.

6.3.4 City-Funded Impact Fees

Impact fees collected under **Utah Code 11-36a** will serve as a critical local funding source for growth-related infrastructure. These fees will ensure that new development pays a proportionate share of system expansion costs, particularly for the planned 4.0 MG tank and future source improvements. Impact fee revenues may also be used as matching funds for SRF or CIB loans, further improving project affordability.

6.4 Summary

Enoch City's planned capital improvements are designed to sustain reliable service, meet future demand, and maintain compliance with state drinking water standards through 2035.

- **New Water Tank (4.0 MG)** – Required by 2033 to meet projected storage LOS; estimated cost $11.1 million (construction).
- **Well Development Program (5 Wells)** – One well per year for the next two years, then a new well every other year to achieve source capacity LOS; total cost approximately $6.8 million.
- **Total Program Cost (Including Professional Services, Admin, and Contingency):** ~$22.15 million.
- **Distribution Improvements:** 4-inch pipes to be upsized to 8 Inch totally $2.1 million.

The combination of SRF, CIB, DDW, and local impact fee funding will provide the financial foundation to implement these improvements while maintaining affordable water rates for Enoch City residents.

Costs shown are planning-level estimates and reflect the growth-related portion of improvements where applicable. Implementation timing is subject to funding availability and system prioritization.

Source:

Section 7 Impact Fee Facility Classification

The purpose of this section is to identify and classify Enoch City's planned culinary water system improvements as **Impact Fee Facilities (IFFs)** in accordance with **Utah Code 11-36a**, which governs the preparation of Impact Fee Facilities Plans (IFFPs). This classification determines which capital projects identified in the City's Capital Improvement Plan (CIP) provide **additional system capacity** required to maintain the adopted Level of Service (LOS) for **future development**, as established in Section 4 of this report. Only the portion of each project that increases system capacity beyond the needs of existing users may be funded with impact fees. Projects that restore, replace, or correct existing deficiencies must be funded through other City resources and are not impact fee-eligible.

The classifications presented in this section are based on the LOS standards defined in Section 4 and the capacity evaluations performed in Section 5. This ensures that all determinations are consistent, transparent, and legally defensible under Utah's Impact Fees Act.

7.1 Definition and Legal Framework

Under **Utah Code 11-36a-102(8)**, an *impact fee facility* is defined as "a public facility that is designed to provide service capacity to future development." Furthermore, **Utah Code 11-36a-302(1)(a)** requires that impact fees may only be spent on public facilities identified in an Impact Fee Facilities Plan (IFFP) and that these facilities must provide the same level of service for future users as that provided to existing users.

Accordingly, only the portion of a facility that increases system capacity beyond existing service levels may be funded with impact fees. Projects that restore, replace, or maintain existing system functionality are considered **non-impact fee-eligible** and must be funded through other City revenue sources.

7.2 Facility Eligibility Criteria

Each project included in the City's Capital Improvement Plan (CIP) was evaluated against the LOS standards established in **Section 4** of this report and the capacity findings in **Section 6.0**. Impact fee eligibility was determined based on the proportion of each project's total cost that directly benefits new development or maintains LOS for future users.

The classification process uses the following principles:

- If a facility **adds new capacity** beyond the existing LOS, that portion is **impact fee-eligible**.

- If a facility **restores** the current LOS (i.e., corrects an existing deficiency), that portion is **non-eligible**.
- If a facility benefits both existing and future users, eligibility is assigned proportionally based on the ratio of growth-related demand to total system demand.

Professional services, administrative costs, and contingencies are included proportionally within the same eligibility percentages as the construction cost.

7.3 Facility Classification by Type

This section identifies and classifies each planned capital improvement as an Impact Fee Facility (IFF) in accordance with **Utah Code 11-36a**, which requires that only the portion of a facility that provides capacity to **future development** may be funded with impact fees. The classifications presented below are based on the Level of Service (LOS) standards established in Section 4 and the capacity findings summarized in Section 5. This ensures a consistent, legally defensible method for determining the growth-related share of each project included in the City's Capital Improvement Plan (CIP).

7.3.1 Source Facilities (Well Development Program)

The source capacity evaluation in Section 5 determined that Enoch City's existing groundwater wells provide **0.93 gpm per ERC**, compared to the required LOS of **1.09 gpm per ERC** defined in Section 4. This represents a current deficiency of approximately **15 percent**, which must be resolved to maintain LOS under Utah Administrative Code **R309-510-7**.

To meet the LOS for both existing and future ERCs, the city plans to construct **five production wells**, each expected to yield 450–500 gpm. Because **15 percent** of the required capacity is needed to correct an existing deficiency, only **85 percent** of the well development program is attributable to future growth and is therefore **impact fee-eligible**. The remaining **15 percent** benefits existing users and must be funded through non-impact-fee sources such as utility revenues, loans, or grants.

This classification ensures compliance with the statutory requirement that impact fees may only be used to fund the portion of a project that provides service capacity to new development

7.3.2 Storage Facilities (4.0 MG Tank)

The storage analysis in Section 5 concluded that the City's existing **5.75 million gallons** of storage capacity satisfies LOS requirements through approximately **2036**, but becomes insufficient by **2037**, when the required volume for projected ERCs exceeds existing capacity. Because the deficiency arises exclusively due to **future growth**, the planned **4.0 MG storage tank** provides new capacity needed to maintain the LOS defined in Section 4.

Therefore, the **storage tank is classified as 100 percent impact fee-eligible**, as the project increases system capacity solely to accommodate future users and does not correct any existing deficiency.

This classification is consistent with **Utah Code 11-36a-302**, which permits the use of impact fees for facilities that expand capacity to serve additional development.

7.3.3 Distribution Facilities

Distribution system improvements are included in this Impact Fee Facilities Plan to ensure the system can maintain acceptable hydraulic performance as future development occurs. Hydraulic modeling indicates that while existing distribution facilities generally meet adopted fire-flow and pressure requirements, certain pipe segments experience capacity limitations associated with elevated velocities under projected demand conditions.

Planned distribution improvements consist primarily of upsizing existing **4-inch and 6-inch water mains to a minimum diameter of 8 inches**. Upgrades to 4-inch mains are classified as **high-importance improvements**, as these segments exhibit the greatest hydraulic constraints and provide limited flexibility as system demands increase. In addition, select **6-inch to 8-inch upgrades** in residential areas are included to provide additional capacity and operational resiliency where elevated velocities are projected; however, these improvements are considered **lower-priority** and may be implemented on an opportunistic basis when funding is available or when efficiencies are realized through other capital projects.

Because these distribution improvements are driven by a combination of **existing system conditions and future growth**, the **growth-related portion** of each project is classified as **impact fee eligible** and allocated using the **cost recovery method**, consistent with Utah Code §11-36a. Any portion of a project that corrects existing system deficiencies or provides benefits unrelated to future development will be funded through non-impact-fee sources.

7.4 Summary of Impact Fee Eligibility

Based on the evaluation of existing facilities, adopted levels of service, and projected future demand, the projects identified in this Impact Fee Facilities Plan were reviewed for impact fee eligibility. **Source capacity improvements** are partially eligible based on the existing system's level of service relative to adopted standards, while **storage, treatment, and pumping facilities** are fully eligible as they are required to serve future growth.

Distribution system improvements, including upsizing existing **4-inch and 6-inch water mains to a minimum of 8 inches**, are included to address elevated velocities under projected build-out conditions and to ensure the system can accommodate future development while maintaining

acceptable hydraulic performance. Although these pipe segments generally meet current fire flow and pressure requirements, the recommended upgrades are driven by future demand and system capacity considerations. Accordingly, the **growth-related portion** of these distribution improvements is **impact fee eligible** and allocated using the **cost recovery method**, with any portion addressing existing deficiencies funded through non-impact-fee sources.

Projects identified as lower priority, such as certain **6-inch to 8-inch upgrades**, may be implemented on an opportunistic basis when funding is available or when higher-priority projects are completed under budget. Inclusion of these projects in the Capital Improvements Plan does not obligate immediate construction and does not increase impact fee collection beyond what is necessary to meet adopted levels of service.

Impact fee revenues will be accounted for and expended in accordance with Utah Code §11-36a and may be used only for the public facilities and facility categories identified in this Impact Fee Facilities Plan and Impact Fee Analysis.

Section 8 Impact Fee Analysis

This section outlines the methodology used to determine the maximum culinary water impact fee for Enoch City based on the remaining value of existing system assets and the cost of future improvements required to serve new development. The analysis includes an evaluation of the existing system's depreciated replacement value (Equity Buy-In Method) and the cost of new wells, treatment facilities, and pumping infrastructure needed to maintain the current level of service as growth occurs (Cost Recovery Method). These two components are combined to establish the maximum legally defensible impact fee per ERC in accordance with Utah Code 11-36a.

Costs shown are planning-level estimates and reflect the growth-related portion of improvements where applicable. Implementation timing is subject to funding availability and system prioritization.

8.1 Equity Buy-in Method

The Equity Buy-In Method is used in this Impact Fee Analysis to determine the proportionate share of the remaining value of Enoch City's existing culinary water system that is attributable to future development. Utah Code 11-36a-302 allows equity buy-in fees when the existing system has available capacity that will be consumed by new users, and Utah Code 11-36a-304 requires that such fees be based on the current replacement cost of facilities, adjusted for depreciation. To apply this method, the existing distribution system was evaluated to determine a representative system age. The City's water distribution network consists of pipe segments constructed over multiple decades; therefore, the system was grouped into age categories of 10, 20, and 40 years, representing 25 percent, 50 percent, and 25 percent of the system, respectively. This results in a weighted average system age of 22.5 years, which was used to calculate remaining useful life for all distribution components.

Table 8-1 Age

Average Distribution System Age		
Age Group	Percent of System	Weighed Age Contribution
10 years	25%	2.5 years
20 years	50%	10 years
40 years	25%	10 years
Total	**100%**	**22.5 years**

Each major asset type—including PVC pipe, ductile iron pipe, fire hydrants, blow-offs, and air-vac assemblies—was assigned an industry-standard useful life. The remaining useful life percentages were then calculated based on the weighted average age of 22.5 years. Storage facilities were evaluated separately using their actual construction year. The BLM tank, constructed in 2002, has 23 years in service under a 60-year design life; the older tank constructed in 1980 has 45 years in service under the same design life; and the new tank constructed in 2024 has one year in service under a 50-year design life. Replacement costs for all system components were established using current cost data and recent construction estimates. These replacement costs were multiplied by the remaining useful life percentages to determine the depreciated (remaining) system value attributable to future ERCs.

Table 8-2 Useful life of Tanks

Structure Name	Year complete	Years in use	Useful life span
BLM tank	2002	23	60
Old Tank	1980	45	60
New Tank	2024	1	60

Based on this evaluation, the depreciated value of the existing culinary water distribution and storage system is $39,287,685.66. This value represents the amount of system equity remaining in the existing facilities. In accordance with the Utah Impact Fees Act, this remaining value must be allocated across the number of ERCs currently being served by the system, which total 2,717 ERCs. Dividing the depreciated system value by the number of existing ERCs results in a maximum allowable equity buy-in impact fee of $14,459.95 per ERC. This value represents the proportionate share of the remaining system equity that new development must contribute in order to use capacity that has already been constructed and funded by existing users.

Table 8-3 Equity Buy-in Method Impact Fee

Equity buy-in Method					
Material	Useful life	System Age	Remaining Useful life	Replacement Cost	Depreciated Value (remaining cost)
PVC	75	22.5	70%	$ 41,957,706.26	$ 29,370,394.38
Ductile Iron	60	22.5	63%	$ 1,557,424.77	$ 973,390.48
Fire Hydrant	50	22.5	55%	$ 3,720,024.00	$ 2,046,013.20
Blow-offs	40	22.5	44%	$ 418,502.70	$ 183,094.93
Air-Vac	30	22.5	25%	$ 620,004.00	$ 155,001.00
BLM tank	60	23	62%	$ 3,237,500.00	$ 1,996,458.33
old tank	60	45	25%	$ 3,700,000.00	$ 925,000.00
new tank	60	1	98%	$ 3,700,000.00	$ 3,638,333.33
				Grand Total	$ 39,287,685.66

The equity buy-in method presented herein complies with Utah Code requirements by ensuring that impact fees are based on a reasonable, proportionate methodology; that new development is not charged for existing deficiencies; and that only the remaining value of facilities with available capacity is included in the fee calculation. This impact fee represents the maximum defensible amount that can be attributed to existing system value within the culinary water system.

Although certain distribution segments experience elevated velocities under emergency conditions, the distribution system as a whole provides adequate capacity to meet adopted LOS standards and therefore contains available capacity that may be utilized by future development.

8.2 Future Cost Recovery Method

The Cost Recovery Method is used in this Impact Fee Analysis to allocate the cost of planned capital improvements that are required to maintain Enoch City's existing level of service as growth continues through the planning horizon. Utah Code 11-36a-302 permits the recovery of capital facility costs from new development when a project is constructed specifically to serve future ERCs. All projects included in this section represent new source, treatment, and pumping facilities that will be constructed to meet projected demands between 2024 and 2034. Because these facilities are new and will not correct existing deficiencies, 100 percent of their cost is eligible for recovery from future development except for the well. Since the there is an existing deficiency of 15%, only 85% can be calculated towards the Cost Recovery Method.

Table 8-4 Cost Recovery Method

Project Name	Total Cost	Current LOS	Cost Eligible for recovery
Well #1	$ 1,365,000.00	85%	$ 1,160,250.00
Well #2	$ 1,365,000.00	85%	$ 1,160,250.00
Well #3	$ 1,365,000.00	85%	$ 1,160,250.00
Well #4	$ 1,365,000.00	85%	$ 1,160,250.00
Well #5	$ 1,365,000.00	85%	$ 1,160,250.00
Distribution System Upgrades	$ 2,133,000.00	100%	$ 2,133,000.00
Chlorination Building	$ 826,800.00	100%	$ 826,800.00
Booster Station	$ 1,267,500.00	100%	$ 1,267,500.00
4 Million Gallon Water Tank	$ 11,100,375.00	100%	$ 11,100,375.00
		Grand Total	**$ 21,128,925.00**

Enoch City anticipates constructing five new source wells, each with an estimated cost of $1,365,000, for a combined source development cost of $7,500,000. In addition, the City plans to construct a new chlorination building at $826,800, providing required treatment capacity for the anticipated growth areas. A new booster station, with a projected construction cost of $1,267,500.00, will be installed to maintain system pressures and level of service within the expanding portions of the system. Each of these facilities is expected to have a 50-year useful

life, and because they are new assets constructed to serve future users, the full capital cost of each project is included in the impact fee calculation. The total eligible cost for cost recovery is therefore $21,128,925.00, as shown in the table above.

The cost recovery calculation is based on ERC growth projected between 2024 and 2034. The current number of ERCs is 2,717, and the projected number of ERCs in 2034 is 4,057. The ERCs attributable to growth during the planning period are therefore:

$$Future\ ERCs = 4{,}057 - 2{,}717 = 1{,}340$$

Because all projects included in this section are growth-related and provide future system capacity, their total cost of $20,421.616.00 is allocated across the ERCs projected to be added between 2024 and 2034. The maximum cost recovery fee is calculated as follows:

$$\frac{\$21{,}128{,}925.00}{1{,}340\ ERC} = \$\ 15{,}767.85\ per\ ERC$$

This value represents the proportionate cost of the new wells, chlorination buildings, and booster station that will be required to maintain the City's existing level of service for future connections. In accordance with Utah Code 11-36a-304, only the portion of the project cost that benefits future development is included, and no cost associated with correction of existing system deficiencies is allocated to new development. The result of the above calculation represents the maximum legally defensible cost recovery impact fee for these planned capital facilities.

8.3 Maximum Justifiable Impact Fee Determination

The cost recovery method is used to allocate the cost of capital facilities that are required to serve both existing development and projected future growth. For purposes of this Impact Fee Analysis, cost recovery calculations are based on projected growth occurring between **2024 and 2034**, which aligns with the planning horizon for identified capital improvements and the timing of anticipated system expansion.

Under this method, only the portion of each facility that provides capacity for future development is included in the impact fee calculation. Costs attributable to correcting existing system deficiencies are excluded from impact fee eligibility and are assumed to be funded through non-impact-fee revenue sources. This approach ensures compliance with Utah Code §11-36a by maintaining a clear and proportional nexus between new development and the facilities required to serve that growth.

8.3.1 Equity Buy-in Fee

The Equity Buy-In Fee represents the proportional share of remaining value in Enoch City's existing culinary water system that must be contributed by new development. This fee is calculated in accordance with Utah Code 11-36a-302 and 11-36a-304, which allow a local

government to allocate a portion of the depreciated replacement cost of existing facilities to future users when those facilities contain excess capacity. Enoch City's distribution system, storage facilities, and appurtenances were evaluated using weighted system age, standard useful life assumptions, and current replacement costs to determine the remaining value available for new ERCs to buy into. Based on this analysis, the depreciated value of existing culinary water assets totals $39,287,685.66. Dividing this remaining value by the City's existing ERC count of 2,717 results in an equity buy-in cost of **$14,459.95 per ERC**. This value reflects the portion of existing system equity attributable to future growth and represents the maximum allowable impact fee component associated with the Equity Buy-In Method.

8.3.2 Cost Recovery Method

The Cost Recovery Method allocates the cost of new capital facilities that are required to maintain Enoch City's existing level of service as future development occurs. In accordance with Utah Code 11-36a-302, the full cost of improvements that provide additional system capacity may be assigned to new growth when such improvements are constructed solely to serve future ERCs. Enoch City anticipates the need for multiple new facilities over the planning horizon, including five new source wells, a chlorination building, and a new booster station. Each facility has a 50-year useful life and is considered 100 percent growth-related, resulting in a total growth-eligible cost of **$21,128,925.00**. The cost recovery calculation divides this total amount by the number of ERCs projected to be added between 2024 and 2034 1,340 ERCs, yielding a maximum cost recovery fee of **$15,767.85 per ERC**. This value represents the proportional share of future capital improvements attributable to growth and forms the second component of the total impact fee.

8.3.3 Maximum Justifiable Impact Fee

The maximum culinary water impact fee for Enoch City is determined by combining the results of the Equity Buy-In Method and the Cost Recovery Method. The Equity Buy-In Fee reflects the remaining value in the City's existing culinary water system that is available for new development to buy into. As summarized above, this analysis identified a depreciated system value of $39,287,685.66 which, when divided by the City's current 2,717 ERCs, results in an equity buy-in cost of **$14,459.95 per ERC**.

The Cost Recovery Method identifies the growth-related cost of new facilities that must be constructed to meet projected demand between 2024 and 2034. Enoch City anticipates constructing five new wells, a chlorination building, and a booster station, resulting in a total growth-eligible capital cost of $21,128,925.00. This cost is allocated across the ERCs expected

to be added during the planning horizon. Based on a projected ERC increase of 1,340 ERCs, the resulting cost recovery fee is **$15,767.85 per ERC**, as described in the preceding section.

To determine the maximum legally defensible culinary water impact fee, the equity buy-in cost and the cost recovery fee are combined. The calculation is shown below:

$$Maximum\ Ipact\ Fee\ per\ ERC = \$14{,}459.95 + \$15{,}767.85 = \$30{,}227.81$$

This calculated value represents the maximum legally defensible impact fee under Utah Code 11-36a and does not obligate the City to adopt the full amount.

This combined value represents the maximum justifiable culinary water impact fee for Enoch City under Utah Code 11-36a. It reflects both the proportional share of existing system value attributable to new development and the cost of future facilities required to maintain the City's level of service as growth occurs. This value constitutes the highest fee the City may lawfully assess; the City Council may elect to adopt a lower fee based on policy considerations but may not adopt a fee exceeding this calculated maximum.

Section 9 Conclusion and Recommendations

This Impact Fee Facilities Plan evaluates Enoch City's culinary water system and identifies the facilities required to maintain adopted Levels of Service as growth occurs through the planning horizon. The analysis demonstrates that while the City's existing system generally meets current pressure, fire-flow, and storage requirements, additional source and storage capacity will be necessary to support projected growth and maintain compliance with state drinking water standards.

The system capacity evaluation confirms that existing groundwater sources provide approximately 85 percent of the required peak-day source capacity under adopted LOS criteria, indicating a need for phased source development to maintain system reliability. Storage capacity currently exceeds required levels but is projected to become insufficient as growth continues, supporting the need for a future 4.0-million-gallon storage tank. The distribution system meets adopted LOS standards, with targeted improvements identified to support future demand and long-term operational performance.

The Capital Improvement Plan outlines a coordinated program of source development, storage expansion, and distribution system upgrades designed to ensure reliable service, regulatory compliance, and system resiliency. These improvements are structured to be implemented incrementally and in coordination with available funding sources, including state and federal loan programs, grants, and locally adopted impact fees.

Facilities identified in this plan were evaluated for impact fee eligibility in accordance with Utah Code §11-36a. The resulting Impact Fee Analysis establishes the maximum legally defensible culinary water impact fee by allocating the remaining value of existing system assets and the cost of growth-related capital improvements to future development. This approach ensures that new development pays a proportionate share of infrastructure costs while avoiding the allocation of existing system deficiencies to future users.

This plan provides the technical, financial, and legal basis necessary for City Council consideration of a culinary water impact fee. While the plan establishes a maximum justifiable impact fee, the City retains discretion to adopt a lower fee based on policy objectives, affordability considerations, or implementation strategy. Adoption of this Impact Fee Facilities Plan will position Enoch City to proactively manage growth, maintain adopted service standards, and ensure long-term sustainability of the culinary water system.

Appendix A

PROJECT TITLE:	PROJECT NUMBER:	
Enoch City Water Impact Fee Facilites Plan	14418	
LOCATION:	DATE:	
Enoch City	December 20, 2025	
FOR:		
Enoch City		
ESTIMATED BY:	CHECKED BY:	APPROVED BY:
R. Ogden	C. Nielson	

Buried Concrete Tank

Phase	Category	Low Estimate ($)	Average Estimate ($)	High Estimate ($)	Notes
Phase 0	Land Acquisition	$ 100,000.00	$ 115,000.00	$ 130,000.00	Purchase or easements for tank site
Phase 1	Feasibility & Predesign	$ 125,000.00	$ 143,750.00	$ 162,500.00	Site evaluation, hydraulic integration, preliminary layouts
Phase 2	Design & Permitting	$ 1,000,000.00	$ 1,150,000.00	$ 1,300,000.00	Survey, Geotech, 60–100% design, permitting, bid support
Phase 3	Construction	$ 6,000,000.00	$ 6,900,000.00	$ 7,800,000.00	Tank construction, sitework, piping, electrical, access
Phase 4	Construction Admin & Commissioning	$ 200,000.00	$ 230,000.00	$ 260,000.00	Engineering during construction, testing, startup
Phase 5	Contingency (30%)	$ 2,227,500.00	$ 2,561,625.00	$ 2,895,750.00	Buried tank and geotechnical risk allowance
	TOTAL	**$ 9,652,500.00**	**$ 11,100,375.00**	**$ 12,548,250.00**	Total Project Cost (TPC)

Chlorination Building

Phase	Category	Low Estimate ($)	Average Estimate ($)	High Estimate ($)	Notes
Phase 0	Land Acquisition	$ 75,000.00	$ 90,000.00	$ 150,000.00	Assumed co-located with tank or existing facility
Phase 1	Feasibility & Predesign	$ 20,000.00	$ 24,000.00	$ 40,000.00	Disinfection approach, siting, preliminary layouts
Phase 2	Design & Permitting	$ 60,000.00	$ 72,000.00	$ 120,000.00	Survey, Geotech, building + process + electrical design
Phase 3	Construction	$ 300,000.00	$ 360,000.00	$ 600,000.00	Building, equipment, piping, electrical, controls
Phase 4	Construction Admin & Commissioning	$ 75,000.00	$ 90,000.00	$ 150,000.00	Engineering during construction, startup, testing
Phase 5	Contingency (30%)	$ 159,000.00	$ 190,800.00	$ 318,000.00	Site, chemical system, and utility uncertainty
	TOTAL	**$ 689,000.00**	**$ 826,800.00**	**$ 1,378,000.00**	Total Project Cost (TPC)

Well (x5)

Phase	Category	Low Estimate ($)	Average Estimate ($)	High Estimate ($)	Notes
Phase 0	Land / Easements	$ 100,000.00	$ 120,000.00	$ 150,000.00	If new parcel or access easements needed (set to 0 if on City land)
Phase 1	Feasibility & Siting	$ 50,000.00	$ 60,000.00	$ 75,000.00	Hydro review, siting, preliminary water rights/coordination, planning
Phase 2	Design, Permitting & Procurement	$ 150,000.00	$ 180,000.00	$ 225,000.00	Survey, Geotech, DDW review, bid support, electrical/SCADA design
Phase 3	Construction	$ 500,000.00	$ 600,000.00	$ 750,000.00	Drilling, casing, screen, pump, wellhead, site, power, controls
Phase 4	Admin, Testing & Commissioning	$ 75,000.00	$ 90,000.00	$ 112,500.00	Construction admin, testing, startup, as-builts
Phase 5	Contingency (30%)	$ 262,500.00	$ 315,000.00	$ 393,750.00	Higher if geology uncertain or deep/rock drilling expected
	TOTAL	**$ 1,137,500.00**	**$ 1,365,000.00**	**$ 1,706,250.00**	Total Project Cost (TPC)

Booster Pump Station

Phase	Category	Low Estimate ($)	Average Estimate ($)	High Estimate ($)	Notes
Phase 0	Land / Easements	$ 75,000.00	$ 93,750.00	$ 105,000.00	0 if on existing City parcel; otherwise purchase/easements
Phase 1	Feasibility & Predesign	$ 30,000.00	$ 37,500.00	$ 42,000.00	Pumping concept, hydraulic check, siting, preliminary electrical/SCADA
Phase 2	Design & Permitting	$ 125,000.00	$ 156,250.00	$ 175,000.00	Survey, Geotech, 60–100% design, permitting, bid support
Phase 3	Construction	$ 500,000.00	$ 625,000.00	$ 700,000.00	Building, pumps/VFDs, piping, electrical, controls, site improvements
Phase 4	Construction Admin & Commissioning	$ 50,000.00	$ 62,500.00	$ 70,000.00	Submittals/RFIs, inspections, startup, performance testing
Phase 5	Contingency (30%)	$ 234,000.00	$ 292,500.00	$ 327,600.00	Higher if power extension/site complexity is high
	TOTAL	**$ 1,014,000.00**	**$ 1,267,500.00**	**$ 1,419,600.00**	Total Project Cost (TPC)

4 inch to 8 inch Distribution Upgrade

Phase	Category	Low Estimate ($)	Average Estimate ($)	High Estimate ($)	Notes
Phase 1	Feasibility / Predesign	$ 30,000.00	$ 36,000.00	$ 42,000.00	Alignment confirmation, constraints, preliminary sizing
Phase 2	Design / Permitting / Bid	$ 120,000.00	$ 144,000.00	$ 168,000.00	Survey as needed, design, specs, bid support
Phase 3	Construction	$ 1,320,000.00	$ 1,584,000.00	$ 1,848,000.00	Based on unit costs (see table below)
Phase 4	Construction Admin & Closeout	$ 60,000.00	$ 72,000.00	$ 84,000.00	CA, testing oversight, record drawings
Phase 5	Contingency (30%)	$ 247,500.00	$ 297,000.00	$ 346,500.00	Buried utilities, pavement, unknowns
	TOTAL	**$ 1,777,500.00**	**$ 2,133,000.00**	**$ 2,488,500.00**	Total Project Cost (TPC)

6 inch to 8 inch Distribution Upgrade

Phase	Category	Low	Average Estimate ($)	High	Notes
Phase 1	Feasibility / Predesign	$ 5.00	$ 6.00	$ 7.50	Alignment confirmation, constraints, preliminary design criteria
Phase 2	Design / Permitting / Bid	$ 20.00	$ 24.00	$ 30.00	Survey as needed, plans/specs, bid support
Phase 3	Construction	$ 220.00	$ 264.00	$ 330.00	Open-cut replacement in typical paved ROW
Phase 4	Construction Admin & Closeout	$ 10.00	$ 12.00	$ 15.00	CA, testing oversight, record drawings
Phase 5	Contingency (30%)	$ 76.50	$ 91.80	$ 114.75	Utility conflicts, pavement scope, rock/groundwater
	TOTAL (per LF)	**$ 331.50**	**$ 397.80**	**$ 497.25**	All-in planning unit cost
	Grand Total	**$ 18,820,500.00**	**$ 22,152,675.00**	**$ 26,365,600.00**	Excluding the 6 inch to 8 inch and is 5 total wells

The cost estimates presented in this appendix are **planning-level opinions of probable cost** prepared for use in long-range capital planning and impact fee analysis. These estimates are based on generalized assumptions regarding facility size, typical construction methods, regional unit costs, and recent project experience, and are not intended to represent final construction costs or bid prices.

The estimates do not reflect detailed design, site-specific conditions, contractor means and methods, or market conditions at the time of construction. Actual project costs may vary due to factors including, but not limited to, final design requirements, geotechnical conditions, utility conflicts, material availability, labor market conditions, inflation, and regulatory requirements. Costs will be refined as projects advance through detailed engineering design, permitting, and bidding.

Accordingly, the cost estimates included herein should be used solely for **planning, comparison, and impact fee allocation purposes**, and should not be interpreted as guaranteed costs, construction budgets, or commitments to construct specific improvements.

The cost estimates presented do not include future cost escalation beyond the planning horizon and will be refined as projects advance through detailed design, permitting, and bidding or as market conditions change.