DRINKING WATER IMPACT FEE FACILITY PLAN AND IMPACT FEE ANALYSIS

(HAL Project No.: 415.02.100)

DRAFT

January 2021

SANTAQUIN CITY

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IMPACT FEE CERTIFICATION

An Impact Fee Certification will be included with the final report.

IMPACT FEE SUMMARY

PURPOSE OF STUDY

The **purpose** of the Impact Fee Facility Plan (IFFP) and Impact Fee Analysis (IFA) is to comply with the requirements of the Utah Impact Fees Act by identifying demands placed on the existing drinking water system by new development and by identifying the means by which the City will meet these new demands. The Santaquin City Drinking Water System Master Plan has been used in support of this analysis. There are several growth-related capital facilities anticipated to be needed in the next 10 years, so the calculated impact fee is based on anticipated capital facility projects as well as existing excess capacity and documented historic costs.

The impact fee **service area** is the drinking water system service area, which includes the current city boundary and potential expansion areas as identified in the City's Drinking Water Master Plan.

LEVEL OF SERVICE

The existing and proposed **level of service** for the drinking water system includes the following:

Level of Service

- Indoor Source Capacity: 500 gpd/ERC (Peak Day)
- Indoor Source Volume: 0.336 ac-ft/ERC (Annual Demand)
- Indoor Storage Capacity: 300 gallons/ERC (Equalization), 60 gallons/ERC (emergency), and 77.3 gallons/ERC (fire flow), or 437.3 gallons/ERC total
- Outdoor Source Capacity: 8.0 gpm/irr-ac (Peak Day)
- Outdoor Source Volume: 4.0 ac-ft/irr-ac (Annual Demand)
- Outdoor Storage Capacity: 9,200 Gallons/irr-ac
- Distribution Capacity: 40 psi minimum during peak day demand conditions, 30 psi minimum during peak instantaneous conditions, and a redundant source for indoor water
- Source Redundancy: The indoor demand of 500 gpd/ERC must be able to be met by the drinking water system with any source out of service.

Fire Suppression

- Minimum Fire Flow (buildings smaller than 3,600 sq. ft.): 1,000 gpm for 2 hours
- Minimum Fire Flow (buildings 3,600 sq. ft. and larger): 1,500 gpm for 2 hours
- Minimum Pressure: 20 psi residual during peak day + fire flow event

IMPACT FEE CALCULATION

The existing system served about 5,380 equivalent residential connections at the end of 2019. Projected **growth** adds 2,080 equivalent residential connections in the next 10 years for a total of 7,460 connections or equivalent.

The costs calculated for the capacity required for growth in the next 10 years comes from the proportional historical buy-in costs of **excess capacity** in existing facilities and **new projects** required entirely to provide capacity for new development.

The **drinking water impact fee** is calculated based on the buy-in cost for facilities which have capacity remaining and the estimated cost of projects required to support future growth. These costs were added together and divided by the number of equivalent residential connections (ERCs) that are projected to be added within the next 10 years.

Components of the impact fee are presented in Table S-1.

Table S-1
Proposed Impact Fee by Component

Component	Per Typical Residential Connection
Source	$557.10
Storage	$472.47
Distribution	$95.98
Planning	$20.44
Facilities	$33.95
Total	**$1,180**

CHAPTER 1 INTRODUCTION

PURPOSE AND SCOPE

Santaquin City is experiencing rapid growth. To ensure availability of funds for growth-related infrastructure projects, an Impact Fee Facility Plan (IFFP) and Impact Fee Analysis (IFA) were commissioned by the City.

This report identifies those items that the Utah Impact Fees Act specifically requires, including demands placed upon existing facilities by new development and the proposed means by which the municipality will meet those demands.

IMPACT FEE COLLECTION

An impact fee is a one-time charge on new development to pay for that portion of a public facility that is required to support that new development. Impact fees enable local governments to finance public facility improvements necessary for growth, without burdening existing customers with costs that are exclusively attributable to growth.

In order to determine the appropriate impact fee, the cost of the facilities associated with future development must be proportionately distributed. As a guideline in determining the “proportionate share”, the fee must be found to be roughly proportionate and reasonably related to the impact caused by the new development.

MASTER PLANNING

A Drinking Water System Master Plan was prepared in conjunction with this analysis. This master plan is incorporated by reference into this analysis.

The master plan for the City’s drinking water system is more comprehensive than the IFA. It provides the basis for the IFA as well as identifies all Capital Facilities required of the Drinking Water System for the 20-year planning range, including maintenance, repair, replacement, and growth-related projects. The recommendations made within the master plan are in compliance with current City policies and standard engineering practices.

A hydraulic model of the drinking water system was prepared to aid in the analyses performed to complete the Drinking Water System Master Plan. The model was used to assess existing performance, to establish a proposed level of service and to confirm the effectiveness of the proposed capital facility projects to maintain the proposed level of service over the next 10 years.

CHAPTER 2 SYSTEM DEMAND AND CAPACITY

GENERAL

The purpose of this section is to identify the current level of service, characterize the facilities of the existing system, and determine the remaining capacity of these facilities.

Santaquin's existing drinking water system is comprised of a distribution network, water storage facilities, and water sources. These facilities are found within 6 pressure zones. Figure 2-1 illustrates the existing water system and its service area.

EXISTING EQUIVALENT RESIDENTIAL CONNECTIONS AND IRRIGATED ACREAGE

Water demands from non-residential water users, such as commercial, industrial, or civic water users have been determined in terms of an Equivalent Residential Connection (ERC). The use of ERCs is a common engineering practice used to describe the entire system's usage based on a common unit of measurement. An ERC is equal to the average demand of one single-family, detached residential connection. Using ERCs for analysis is a way to allocate existing and future demands over non-residential land uses.

Santaquin operates a separate pressurized irrigation system that serves certain areas of the City. Outside of the pressurized irrigation system service area, customers irrigate from the drinking water system. In these areas, the City considers outdoor water demand in terms of irrigated acres.

At the end of 2019, the City was estimated to have 5,380 ERCs and 125 irrigated acres served by the drinking water system.

LEVEL OF SERVICE

The City has established a level of service for the Drinking Water System. It establishes the sizing criteria for the City's distribution (pipelines), source, storage facilities, and water rights. The level of service standards are shown below:

Level of Service

- Indoor Source Capacity: 500 gpd/ERC (Peak Day)
- Indoor Source Volume: 0.336 ac-ft/ERC (Annual Demand)
- Indoor Storage Capacity: 300 gallons/ERC (Equalization), 60 gallons/ERC (emergency), and 77.3 gallons/ERC (fire flow), or 437.3 gallons/ERC total
- Outdoor Source Capacity: 8.0 gpm/irr-ac (Peak Day)
- Outdoor Source Volume: 4.0 ac-ft/irr-ac (Annual Demand)
- Outdoor Storage Capacity: 9,200 Gallons/irr-ac
- Distribution Capacity: 40 psi minimum during peak day demand conditions, 30 psi minimum during peak instantaneous conditions, and a redundant source for indoor water
- Source Redundancy: The indoor demand of 500 gpd/ERC must be able to be met by the drinking water system with any source out of service.

Summit Ridge Well
Z11 W Pump Station
Cemetery Well
Z11E Tank (1.09 MG)
Z11W Tank (1.14 MG)

NOT TO SCALE
Z12 E Pump Station
Z12E Tank (1.04 MG)

NOT TO SCALE
To/From Z10 and Z11 distribution (separate pipes)
From Cemetery Well to Chlorinator
Z11 E Pump Station
Z10 Tank (0.49 MG)
To/From Z11 Tank
Altitude valve fills Z10 tank from Z11 tank as necessary
From Chlorinator to Z11 Tank
Chlorinator
From Springs

N

0 2,750 5,500 11,000 Feet

Legend

- Pump Stations
- Water Well
- Tank
- Water PRV
- Spring Box

Pipe Diameter (in)

- 4
- 6
- 8
- 10
- 12
- 14
- 16
- City Boundary

Pressure Zones

- Zone 10
- Zone 10W
- Zone 11E
- Zone 11W
- Zone 12E
- Zone 9N

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SANTAQUIN DRINKING WATER MASTER PLAN

EXISTING DRINKING WATER SYSTEM

FIGURE 2-1

Date: 9/5/2020
Document Path: H:\Projects\415 - Santaquin\02.100 - Culinary Water Master Plan\GIS\Working\IFFP DW Figure 2-1 Existing System.mxd

Fire Suppression

- Minimum Fire Flow (buildings smaller than 3,600 sq. ft.): 1,000 gpm for 2 hours
- Minimum Fire Flow (buildings 3,600 sq. ft. and larger): 1,500 gpm for 2 hours
- Minimum Pressure: 20 psi residual during peak day + fire flow event

Some Utah cities have found that peak day water use in multi-family dwelling units tends to be slightly lower than surrounding single-family dwellings, possibly because there are fewer occupants per unit in multi-family developments than there are in single-family developments. However, there is nothing in law or City code that restricts water use or occupancy levels in multi-family units as compared to single-family units. Master plan infrastructure was designed under the assumption that multi-family units will use as much water as single-family units on the peak day. That being the case, it is recommended that all residential units be treated as one ERC for impact fee purposes.

METHODOLOGY USED TO DETERMINE EXISTING SYSTEM CAPACITY

Each component of the Drinking Water System was assessed a capacity in terms of gallons per minute (for peak day source), acre-feet per year (for annual source), or gallons (for storage). Demands on each component were computed by applying the level of service to the amount of ERCs and irrigated areas served by each component. The difference between the capacity of the component and the demand on the component is the component's remaining capacity, which can be used to serve either ERCs or irrigated acres. A hydraulic model was developed for the purpose of assessing system operation and distribution capacity.

WATER SOURCE AND REMAINING CAPACITY

Drinking water sources in Santaquin include a series of springs and three wells, as described in Table 2-1.

Table 2-1
Demand and Capacity of Existing Drinking Water Sources

Source	Existing Zone	Peak Day Source Capacity (gpm)[1]	Annual Source Capacity[2] (ac-ft)
Cemetery Well	11E	740	597
Center Street Well[3]	10	490	395
Springs 2-5	11E	700	1,129
Summit Ridge Well	11W	2,625	2,117
Total		**4,555**	**4,238**
Demand at Level of Service[4]		**2,748**	**2,248**
Capacity Remaining		**+1,807**	**+1,990**

1. Peak Day Well capacity assumes the well runs 21 hours per day.
2. Annual Source Capacity assumes the well runs an average of 12 hours per day.
3. The Center Street Well is currently used in the PI system. It can be used in the drinking water system in the event of an emergency.
4. See Table 3-4 and page 3-5 of the Drinking Water Master Plan

There are no existing deficiencies and there is excess capacity remaining for peak day and average yearly source requirements.

WATER SOURCE REDUNDANCY

Table 2-2 shows a comparison of the capacity of the system drinking water system with its largest source (Summit Ridge Well) out of service, and the system indoor demand at the level of service.

Table 2-2
Demand and Capacity of Existing Drinking Water Sources - Redundancy

Source	Existing Zone	Peak Day Source Capacity (gpm)
Cemetery Well	11E	740
Center Street Well	10	490
Springs 2-5	11E	700
Summit Ridge Well	11W	0
Source Capacity - Redundancy		**1,930**
Indoor Demand at Level of Service (gpm)[1]		**1,868**
Capacity Remaining (gpm)		**+62**
Capacity Remaining (%)		**3.2%**

1. See Table 3-6 of the Drinking Water Master Plan

There is a remaining capacity of 62 gpm in the drinking water system when considering source redundancy.

Table 2-3 shows the demand and capacity of the City's pump stations. Demands listed in Table 2-3 are the demands that would be required if one source to the zone went out of service (to comply with the redundancy requirement of the level of service).

Table 2-3
Existing Drinking Water Pump Stations

Name	From Zone	To Zone	Pumps	Rated Capacity (gpm)	Demand (gpm)	Capacity Remaining (gpm)	Capacity Remaining (%)
Summit Ridge Booster	10	11W/10W	1 @ 1,000 gpm	1,000 gpm	954	+46	4.6%
Canyon Road Booster	10	11E/12E	2 @ 1,200 gpm	1,200 gpm	0[1]	+1,200	100%
Zone 12E Booster	11E	12E	3 @ 500 gpm	1,000 gpm	320	+680	68.0%
				Total	1,274	1,926	-

1. The City uses Canyon Road Booster to improve operations and save energy, but it is not required to meet level of service demands in the zones it serves.

The Canyon Road Booster is considered to have 100% of capacity remaining because the demands in Zone 11E and 12 can be met either by the Springs or by the Cemetery Well if the pump station is not running. The booster station is housed in the same building as the City's Zone 11E PI pump station, and was constructed at the same time to save money and provide for operational flexibility. It will become necessary as growth continues east of I-15.

STORAGE FACILITIES AND REMAINING CAPACITY

Santaquin currently operates four concrete water storage tanks totaling 3.76 MG. Table 2-4 shows the capacity of each tank and the storage demand of the system. Demands were calculated by applying the level of service to the ERCs served by each tank. The fire flow storage requirements are sufficient to meet the required fire flows provided by the local fire authority as per IFC.

Table 2-4
Demand and Capacity of Existing Storage Tanks

Tank and Zone	Volume (MG)	Storage Requirement (MG)	Remaining Capacity (MG)	Remaining Capacity (%)
Zone 11W	1.14	3.45	+0.31	8.2%
Zone 10[1]	0.49			
Zone 11E[1]	1.09			
Zone 12E[1]	1.04			
Total	**3.76**	**3.45**	**+0.31**	**8.2%**

1. Tanks in Zone 10, 11E, and 12E are hydraulically connected and can work together to provide storage to those zones. The Zone 11W tank cannot use capacity from the other tanks, and therefore must be considered separately from the others.

There are 0.31 MG of storage capacity remaining in the drinking water system. The proposed solution in the Drinking Water Master Plan is to construct a tank in Zone 10. See Chapters 4 and 7 of the master plan report for more details.

DISTRIBUTION SYSTEM

Pipe diameters range from 4 inches to 16 inches, with the majority being 6 and 8 inches in diameter. The function of the larger pipes in the system is to fill the storage tanks and meet peak day and fire flow demands. Smaller pipes facilitate local distribution. Figure 2-1 illustrates the existing distribution pipelines. A hydraulic model was used to identify areas with existing deficiencies. Deficiencies are described in Chapter 5 of the Master Plan report. Costs to fix these deficiencies are not impact fee-eligible and are not considered in this report. The model was also used to identify pipes required for future growth. These projects are impact fee-eligible and are discussed further in Chapter 3.

OPERATIONS FACILITY

In 2016, Santaquin City constructed a public works operations facility to support the operation and maintenance of the City's drinking water, pressurized irrigation water, sanitary sewer, and street systems.

CHAPTER 3 IMPACT FEE FACILITY PLAN AND ANALYSIS

This section relies on the data presented in the previous sections to calculate a proposed impact fee based on an appropriate buy-in cost of available existing excess capacity previously purchased by the City, and the cost of projects needed to support projected growth.

The projected costs of the drinking water system projects are presented. Also included in this section are the possible revenue sources that the City may consider to fund the recommended projects.

GROWTH PROJECTIONS

The development of impact fees requires growth projections over the next ten years. Growth projections for Santaquin were made by incorporating the growth rate presented in the Master Plan. Total growth projections for the City through 2029 are summarized in Table 3-1.

Table 3-1
Growth Projections

Year	ERCs
2020	5,380
2021	5,560
2022	5,750
2023	5,940
2024	6,140
2025	6,340
2026	6,550
2027	6,770
2028	6,990
2029	7,220
2030	7,460
10-year Difference	**+2,080**

The existing system served about 5,380 ERCs at the beginning of 2020. Projected growth adds 2,080 ERCs in the next 10 years for a total of 7,460 ERCs.

COST OF EXISTING FACILITIES

This section contains a discussion of the excess capacity remaining within existing facilities, as well as the portion of the cost of those facilities that is eligible to be repaid using impact fees. Historic costs were obtained from the City's 2013 Culinary Water System Impact Fee Facilities Plan (JUB, 2013) and from Santaquin City Records.

Source Facilities

Capacity in existing source facilities that has not been consumed by existing users is eligible to be reimbursed by impact fees. The impact fee-eligible cost of existing source facilities is summarized in table 3-2.

Table 3-2
Impact Fee Eligible Cost of Existing Source Facilities

Project	Cost	Funded by Santaquin (%)	Capacity Remaining (%)	Impact Fee Eligible Cost[3]
Canyon Road Booster	$1,112,903.04	100%	100%[1]	$1,112,903.04
Totals	**$1,112,903.04**	**-**	**-**	**$1,112,903.04**

1. See Table 2-3.
2. See Table 2-2. The capacity of all sources were considered together for purposes of redundancy.
3. Calculated as (cost) * (% funded by Santaquin) * (% capacity remaining)

Storage Facilities

The City does not have records of costs paid for existing storage facilities.

Distribution Facilities

Capacity in existing distribution facilities that has not been consumed by existing users is eligible to be reimbursed by impact fees. The impact fee-eligible cost of existing distribution facilities is summarized in Table 3-3.

Table 3-3
Impact Fee Cost of Existing Distribution Facilities

Project	Cost	Funded by Santaquin (%)	Capacity Remaining[1] (%)	Impact Fee Eligible Cost[2]
Harvest View 8” Line	$57,470.00	100%	71%	$40,873.73
12” Summit Ridge PRV	$19,869.70	100%	71%	$14,131.70
12-inch pipes installed 2013 and earlier[3]	$140,060.00	100%	71%	$99,613.26
16-inch pipes installed 2013 and earlier[3]	$852,151.00	100%	71%	$606,065.53
Totals	**$1,069,550.70**	**-**	71%	**$760,684.21**

1. Capacity remaining in existing system distribution facilities was conservatively estimated as the difference between the existing irrigated ERC count (5,380) and the projected ERC count at 2060 (18,630).
2. Calculated as (cost) * (% funded by Santaquin) * (% capacity remaining)
3. Historic costs are document in the City’s 2013 Impact Fee Facilities Plan (JUB, 2013). See Appendix A.

Operations Facility

Because the operations facility is a necessary component of the drinking water system, the cost attributable to new development is eligible to be reimbursed by impact fees. The cost of the operations facility attributable to the drinking water system is summarized in Table 3-4.

Table 3-4
Cost of Existing Operations Facility

Project	Cost	Funded by Santaquin (%)	Attributable to Drinking Water System (%)	Cost Attributable to Drinking Water System
Totals	**$2,530,000**	**100%**	**25%[1]**	**$632,500**

1. 25% of construction costs are considered attributable to the drinking water system.

COST OF FUTURE FACILITIES

The facilities and costs presented in Table 3-5 and shown on Figure 3-1 are proposed projects essential to maintain the current level of service while accommodating future growth within the next 10 years. The facility sizing for the future proposed projects was based on the proposed level of service with growth projections provided by the City and hydraulic modeling. The proposed impact fee will be based both on costs of existing projects and the projected cost of future construction projects. Detailed information on these projects and their estimated cost is included in the City's drinking water master plan report.

Table 3-5
Estimated Cost of Future Facilities

Project	Map ID	Source	Distribution	Storage	Total	Capacity Added
Foothill Village Booster Station	1	$600,000	$0	$0	$600,000	1,000 gpm pumping
Zone 11E Pipe Upsizing	2	$0	$52,000	$0	$52,000	Distribution[1]
Zone 10 system expansion (2 MG tank, pump station, pipeline)	3	$900,000	$459,000	$3,036,000	$4,395,000	Distribution[1] 1,500 gpm pumping 2.5 MG storage
Zone 10 Well	4	$1,584,000	$0	$0	$1,584,000	1,500 gpm source[2]
Total		**$3,084,000**	**$511,000**	**$3,036,000**	**$6,631,000**	**Distribution 2,500 gpm pumping 1,500 gpm source 2.5 MG storage**

1. Transmission capacity for each pipeline is not explicitly accounted for in this table.
2. It is assumed that a new well would yield approximately 1,500 gpm.

IMPACT FEE UNIT CALCULATION

Only those costs attributed to the new growth in the next 10 years can be included in the impact fee. The following sections describe the impact fee calculation for each component.

See Tables 7-2, 7-3, and 7-4 of the Drinking Water Master Plan for detailed descriptions of each project

Project 2

Upsize pipes as development occurs

Project 3

Install pipe

Project 3

1,500 gpm pump station

P

2.5 MG Tank

W

Project 4

Drill well

P

Project 1

Foothill Village Booster Station

N

0 2,000 4,000 8,000 Feet

Legend

- W — Proposed Well
- P — Pump Station
- P — Booster Station
- Proposed Tank
- Existing Tank
- Existing PRV
- Existing Spring Box
- Existing Water Line

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Document Path: H:\Projects\415 - Santaquin\02.100 - Culinary Water Master Plan\GIS\Working\IFFP DW Figure 3-1 IFFP Projects.mxd

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SANTAQUIN DRINKING WATER IMPACT FEE FACILITIES PLAN

DRINKING WATER SYSTEM IMPACT FEE FACILITIES PLAN

FIGURE 3-1

Source

Projected growth in the system will require the construction of a new drinking water pump station in Zone 11W and an additional well. The source impact fee was calculated by combining the available buy-in capacity and cost of existing source facilities with the capacity and projected cost of planned future sources. This calculation is needed for both water source production (wells) and source conveyance (pump stations). See Table 3-6.

Table 3-6
Source Impact Fee Unit Calculation

	Wells			Pump Stations		
	Existing[1]	**Future[2]**	**Total**	**Existing[3]**	**Future[2]**	**Total**
Eligible Cost	$0	$1,584,000	$1,584,000	$1,112,903.04	$1,500,000	$2,612,903.04
Capacity (gpm)	62	1,500	1,562	1,926	2,500	4,426
Well impact (per gpm)[4]:			$1,014.08	Pump Impact (per gpm)[4]:		$590.35
Well impact (per ERC)[5]:			$352.11	Pump Impact (per ERC)[5]:		$204.98
Total Source Impact (per ERC)						**$557.10**

1. See Tables 2-2, 2-3, and 3-2
2. See Table 3-5
3. See Tables 2-3 and 3-2
4. Calculated as the sum of existing and future eligible costs divided by the sum of existing and future eligible capacity
5. Calculated at a proposed level of service of 500 gpd/ERC or 0.347 gpm/ERC

Expected source costs by time period are listed in Table 3-7. Source facilities are expected to support growth for more than 10 years. The portion of their costs attributable to growth outside of the 10-year planning window is not impact fee-eligible.

Table 3-7
Source Cost by Time Period

Time Period	ERCs served	Buy-in Cost	Growth Cost	Total Cost
Existing	5,380	$0.00	$0.00	$0.00
Next 10 years	2,080	$214,606.46	$944,154.07	$1,158,760.53
Beyond 10 years	11,170	$898,296.58	$2,139,845.93	$3,038,142.51
Total	**18,630**	**$1,112,903.04**	**$3,084,000.00**	**$4,196,903.04**

Storage

Projected growth in Zone 11W requires construction of a new tank. The approach taken in the master plan is to construct a Zone 10 facility that will relieve some of the demands currently being placed on the Zones 11W and 11E tanks. This will allow growth to continue across the system.

The storage impact fee was calculated as shown in Table 3-8.

Table 3-8
Storage Impact Fee Unit Calculation

	Existing[1]	Future[2]	Total
Eligible Cost	$0	$3,036,000	$3,036,000
Capacity (gal)	310,000	2,500,000	2,810,000
		Storage impact (per gal)[3]	**$1.08**
		Storage impact (per ERC)[4]	**$472.47**

1. See Table 2-4
2. See Table 3-5
3. Calculated as the sum of existing and future eligible costs divided by the sum of existing and future eligible capacity
4. Calculated at the proposed level of service of 437.3 gal/ERC. Includes 77.3 gallons of fire storage, which was computed by dividing the 2060 fire storage requirement (1.44 MG) by the projected 2060 ERC count (18,630).

Expected storage costs by time period are listed in Table 3-9. Storage facilities are expected to support growth for more than 10 years. The portion of their costs attributable to growth outside of the 10-year planning window is not impact fee-eligible.

Table 3-9
Storage Cost by Time Period

Time Period	ERCs served	Buy-in Cost	Growth Cost	Total Cost
Existing	5,380	$0.00	$0.00	$0.00
Next 10 years	2,080	$0.00	$982,739.15	$982,739.15
Beyond 10 years	11,170	$0.00	$2,053,260.85	$2,053,260.85
Total	**18,630**	**$0.00**	**$3,036,000.00**	**$3,036,000.00**

Distribution

Several distribution projects will be required to support growth through the 10-year planning period. The portion of the impact fee for these projects is shown in Table 3-10.

Table 3-10
Distribution Impact Fee Calculation

	Existing[1]	Future[2]	Total
Eligible Cost	$760,684.21	$511,000	$1,271,684.21
Capacity (ERCs)[3]	13,250	13,250	13,250
Distribution Impact (per ERC)[4]			**$95.98**

1. See Table 3-3
2. See Table 3-5
3. Distribution infrastructure is sized to accommodate future users through year 2060. A remaining capacity of 13,250 ERCs was calculated as the projected year 2060 ERCs (18,630) minus ERCs existing at the beginning of year 2020 (5,380). This calculation is appropriate even for existing projects due to their recent construction date.
4. Calculated as the sum of existing and future eligible costs divided by the sum of existing and future eligible capacity

Expected distribution costs by time period are listed in Table 3-10. Distribution facilities are expected to support growth for more than 10 years. The portion of their costs attributable to growth outside of the 10-year planning window is not impact fee-eligible.

Table 3-11
Distribution Cost by Time Period

Time Period	ERCs served	Buy-in Cost	Growth Cost	Total Cost
Existing	5,380	$308,866.49	$0.00	$308,866.49
Next 10 years	2,080	$119,413.07	$80,217.36	$199,630.43
Beyond 10 years	11,170	$641,271.14	$430,782.64	$1,072,053.78
Total	**18,630**	**$1,069,550.70**	**$511,000.00**	**$1,580,550.70**

Planning

The planning portion of the impact fee was calculated as shown in Table 3-12. Portions of the City's 2020 master plan study that are attributable to growth (approximately 50% of total expenditures) are impact fee eligible. 100% of costs associated with the Impact Fee Facility Plan and Impact Fee Analysis are impact fee eligible.

Table 3-12
Planning Component of Impact Fee

Planning Document	Cost	% of Plan Associated with Growth	Cost Associated with Growth	ERCs Served	Cost per ERC
2020 Water Master Plan	$62,294	50%	$31,147	2,080	$14.97
2020 IFFP and IFA	$11,362	100%	$11,362	2,080	$5.46
Total	**$73,656**	**-**	**$42,509**	**2,080**	**$20.44**

All of these costs are anticipated to be recovered within the 10-year planning window.

Facilities

The impact fee cost for the public works facility was calculated as shown in Table 3-13.

Table 3-13
Facilities Impact Fee Unit Calculation

	Existing facility
Eligible Cost[1]	$632,500
ERCs at Year 2060[2]	18,630
Facilities Impact (per ERC)[3]	**$33.95**

1. See Table 3-4
2. The facility will serve customers throughout the planning horizon.
3. Calculated as the cost divided by the ERCs served at year 2060.

Table 3-14 shows the cost of the public works facility attributable to each time period.

Table 3-14
Facilities Cost by Time Period

Time Period	ERCs served	Buy-in Cost
Existing	5,380	$182,654.32
Next 10 years	2,080	$70,617.28
Beyond 10 years	11,170	$379,228.40
Total	**18,630**	**$632,500.00**

TOTAL IMPACT FEE UNIT CALCULATION

The proposed drinking water system impact fee for one ERC is **$1,180**. See Table 3-15.

Table 3-15
Total Proposed Impact Fee per
Typical Single-Family Connection

Component	Per Typical Residential Connection
Source	$557.10
Storage	$472.47
Distribution	$95.98
Planning	$20.44
Facilities	$33.95
Total	**$1,180**

The impact fee has been calculated based on 1 ERC which would correspond to a standard ¾" or 1" meter. Larger meters are assumed to serve more than 1 ERC and will have a higher corresponding impact fee. Table 3-16 indicates the impact fee rate schedule based on water meter size. The ERC factor is calculated based on American Water Works Association (AWWA) rated capacity for each meter size.

Table 3-16
Proposed Drinking Water
Impact Fee Based on Meter Size

Water Meter Size	ERC	Impact Fee
¾" or 1"	1.00	$1,180
1 ½ "	3.33	$3,929
2"	5.33	$6,289
3"	10.00	$11,799
4"	16.67	$19,669
6"	33.33	$39,327
8"	53.33	$62,926

NONSTANDARD IMPACT FEE CALCULATION

If situations arise where one customer wishes to use multiple meters, or it appears that the proposed fees by meter size in Table 3-13 will not lead to a fair and equitable result, the City may instead calculate impact fees according to the following formula:

Impact fee = (Peak Day Water use [gpd]) / (500 gpd/ERC) * ($1,180/ERC)

For example, a customer who would use 20,000 gallons of water on the peak day would have an impact fee calculated as follows:

Impact fee = (20,000 gpd) / (500 gpd/ERC) * ($1,180/ERC) = $47,200

COSTS BY TIME PERIOD

Table 3-17 is a summary of the existing and future facility costs by drinking water system component and by time period. Existing costs are those costs attributed to capacity currently being used by existing connections. Costs attributed to the next 10 years are costs for the existing capacity or new capacity for the assumed growth in the next 10 years. Costs attributed to beyond 10 years are costs for the existing capacity or new capacity for the assumed growth beyond 10 years.

Table 3-17
Facility Cost by Time Period

	Existing	Next 10 Years	Beyond 10 Years	Total
Source	$0.00	$1,158,760.53	$3,038,142.51	$4,196,903.04
Storage	$0.00	$982,739.15	$2,053,260.85	$3,036,000.00
Distribution	$308,866.49	$199,630.43	$1,072,053.78	$1,580,550.70
Planning	$0.00	$42,509.00	$0.00	$42,509.00
Facilities	$182,654.32	$70,617.28	$379,228.40	$632,500.00
Total Cost	**$491,520.81**	**$2,454,256.39**	**$6,542,685.53**	**$9,488,462.74**

REVENUE OPTIONS

Utah Code 11-36a-302(2) requires a local political subdivision to generally consider all revenue sources to finance the impacts on system improvements, including grants, bonds, interfund loans, impact fees, and anticipated or accepted dedications of system improvements. This impact fee facilities plan considers each of these options. An expanded discussion on options the City has to generate revenue is included in this section for reference.

Revenue options for the recommended projects include: general obligation bonds, revenue bonds, State/Federal grants and loans, user fees, and impact fees. Although this analysis focuses on impact fees, the City may need to consider a combination of these funding options. The following discussion describes each of these options.

General Obligation Bonds through Property Taxes

This form of debt enables the City to issue general obligation bonds for capital improvements and replacement. General Obligation (G.O.) Bonds would be used for items not typically financed through the Water Revenue Bonds (for example, the purchase of water source to ensure a sufficient water supply for the City in the future). G.O. bonds are debt instruments backed by the full faith and credit of the City which would be secured by an unconditional pledge of the City to levy assessments, charges or ad valorem taxes necessary to retire the bonds. G.O. bonds are the lowest-cost form of debt financing available to local governments and can be combined with other revenue sources such as specific fees, or special assessment charges to form a dual security through the City's revenue generating authority. These bonds are supported by the City as a whole, so the amount of debt issued for the water system is limited to a fixed percentage of the real market value for taxable property within the City. G.O. Bonds must be approved through a citizen vote. For growth related projects this type of revenue places an unfair burden on existing residents as they had previously paid for their level of service.

Revenue Bonds

This form of debt financing is also available to the City for utility related capital improvements. Unlike G.O. bonds, revenue bonds are not backed by the City as a whole, but constitute a lien against the water service charge revenues of a Water Utility. Revenue bonds present a greater risk to the investor than do G.O. bonds, since repayment of debt depends on an adequate revenue stream, legally defensible rate structure /and sound fiscal management by the issuing jurisdiction. Due to this increased risk, revenue bonds generally require a higher interest rate than G.O. bonds, although currently interest rates are at historic lows. This type of debt also has very specific coverage requirements in the form of a reserve fund specifying an amount, usually expressed in terms of average or maximum debt service due in any future year. This debt service is required to be held as a cash reserve for annual debt service payment to the benefit of bondholders. Typically, voter approval is not required when issuing revenue bonds. For growth related projects this type of revenue places an unfair burden on existing residents as they had previously paid for their level of service.

State/Federal Grants and Loans

Historically, both local and county governments have experienced significant infrastructure funding support from state and federal government agencies in the form of block grants, direct grants in aid, interagency loans, and general revenue sharing. Federal expenditure pressures and virtual elimination of federal revenue sharing dollars are clear indicators that local government

may be left to its own devices regarding infrastructure finance in general. However, state/federal grants and loans should be further investigated as a possible funding source for needed water system improvements.

It is also important to assess likely trends regarding federal / state assistance in infrastructure financing. Future trends indicate that grants will be replaced by loans through a public works revolving fund. Local governments can expect to access these revolving funds or public works trust funds by demonstrating both the need for and the ability to repay the borrowed monies, with interest. As with the revenue bonds discussed earlier, the ability of infrastructure programs to wisely manage their own finances will be a key element in evaluating whether many secondary funding sources, such as federal/state loans, will be available to the City.

Not charging impact fees, or significantly lowering them could be viewed negatively from the perspective of State/Federal funding agencies. Charging a proper impact fee signals to these agencies that the community is using all possible means to finance the projects required to provide vital services to their residents.

User Fees

Similar to property taxes on existing residents, user fees to pay for improvements related to new growth-related projects places an unfair burden on existing residents as they had previously paid for their level of service.

Impact Fees

As discussed in Section 1, an impact fee is a one-time charge to a new development for the purpose of raising funds for the construction of improvements required by the new growth and to maintain the current level of service. Impact fees in Utah are regulated by the Impact Fee Statute and substantial case law. Impact fees are a form of a development exaction that requires a fee to offset the burdens created by the development on existing municipal services. Funding the future improvements required by growth through impact fees does not place the burden on existing residents to provide funding of these new improvements.

REFERENCES

JUB Engineers. 2013. “Santaquin City Culinary Water System Impact Fee Facilities Plan.”

APPENDIX A

Historic Project Costs
(JUB, 2013 and City Records)

Drinking Water Infrastructure projects (City records)

Project	Cost to City	Funding Source
Main Zone/11 E Booster Pump	$ 1,112,903.04	Impact Fees
Installed 8" CW line within Harvest View Drive	$ 57,470.00	Impact Fees
Installed 12" PRV in Summit Ridge Parkway	$ 19,869.70	Impact Fees

APPENDIX C – DETAILS OF PIPES WITH RESERVE CAPACITY

Table C-1. Existing Culinary Water Pipes Reserve Capacity Detail

Pipe Segment ID	Dia (in)	Segment Length (ft)	Existing Flow (GPM)	Buildout Flow (GMP)	% of Capacity Available for Growth	% of Cost Funded by City	Year Built	% of Cost Eligible for Impact Fee Reimburse-ment	Estimated Present Day Project Cost ($)	Ratio of ENR CPI for Year Built to Current Year	Estimated Historic Project Cost Eligible for Impact Fee Reimbursement ($)	Actual Known Historic Project Costs Eligible for Impact Fee Reimbursement ($)
Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	Col 9	Col 10	Col 11	Col 12	Col 13
											= Col 9 x 10 x 11	
P11547	10	863		545	100%	100%		100%	$59,554			
P11747	10	1034		555	100%							
P12283	10	329	18	108	84%							
P47	10	1207	19	593	97%							
P253	10	163	19	620	97%							
P45	10	814	19	620	97%							
366	10	145	19	628	97%							
P121	10	939	19	628	97%							
P11677	10	225	21	644	97%	100%	1992	97%	$15,518	0.5266	$7,904	
P1439	10	2509	21	690	97%	100%	2002	97%	$173,087	0.6906	$115,877	
P11583	10	982	25	317	92%	-100%		-92%	$67,751			
328	10	985	32	113	71%							
P11595	10	1058	39	750	95%	100%	2002	95%	$73,030	0.6906	$47,785	
P415	10	197	39	750	95%	100%	2002	95%	$13,593	0.6906	$8,894	
330	10	4317	72	334	79%							
P251	10	112	72	637	89%							
284	10	575	132	228	42%	100%		42%	$39,696			
207	10	583	309	469	34%							
P12629	10	272	440	1433	69%							
279	10	195	459	807	43%	100%	1992	43%	$13,427	0.5266	$3,047	
P73	10	391	472	806	41%	100%	1992	41%	$26,945	0.5266	$5,879	
P12627	10	232	493	1583	69%							
280	10	47	493	1659	70%							
P87	10	1775	652	2179	70%							
198	10	512	657	937	30%	100%	1992	30%	$35,335	0.5266	$5,565	
199	10	48	657	944	30%	100%	1992	30%	$3,305	0.5266	$529	
218	10	424	678	1143	41%	100%	2002	41%	$29,256	0.6906	$8,217	
P117	10	1984	706	2199	68%							
282	10	592	755	1782	58%	100%	1992	58%	$40,827	0.5266	$12,397	
203	10	697	768	1209	36%	100%	1992	36%	$48,065	0.5266	$9,223	
204	10	281	789	1228	36%							
221	10	424	893	1366	35%	100%	2002	35%	$29,263	0.6906	$6,999	
283	10	590	1008	2692	63%	100%	1992	63%	$40,717	0.5266	$13,411	
P393	10	1502	1022	1074	5%	100%	1992	5%	$103,631	0.5266	$2,643	
196	10	974	1022	1664	39%	100%	1992	39%	$67,213	0.5266	$13,664	
P11445	10	162	1022	1664	39%	100%	1992	39%	$11,164	0.5266	$2,270	
P12615	10	996	1022	1664	39%	100%	1992	39%	$68,703	0.5266	$13,967	
P53	10	62	1022	1664	39%	100%	1992	39%	$4,244	0.5266	$863	
220	10	842	1279	1338	4%	100%	2002	4%	$58,105	0.6906	$1,782	
P11447	10	1171	1641	2273	28%	100%	1992	28%	$80,806	0.5266	$11,832	
Total for all existing 10 inch pipes											**$280,914**	
Total Length:	**31,206**											
Weighted Average of all Pipes Listed:					**67%**							
Length of Impact Fee Eligible	**15,007**											
Weighted Average of Impact Fee Eligible Pipes:					**53%**							

Pipe Segment ID	Dia (in)	Segment Length (ft)	Existing Flow (GPM)	Buildout Flow (GMP)	% of Capacity Available for Growth	% of Cost Funded by City	Year Built	% of Cost Eligible for Impact Fee Reimburse-ment	Estimated Present Day Project Cost ($)	Ratio of ENR CPI for Year Built to Current Year	Estimated Historic Project Cost Eligible for Impact Fee Reimbursement ($)	Actual Known Historic Project Costs Eligible for Impact Fee Reimbursement ($)
Col 1	**Col 2**	**Col 3**	**Col 4**	**Col 5**	**Col 6**	**Col 7**	**Col 8**	**Col 9**	**Col 10**	**Col 11**	**Col 12**	**Col 13**
											= Col 9 x 10 x 11	
B2291	12	627		289	100%	100%	2002	100%	$51,373	0.6906	$35,479	
B2199	12	171		344	100%	100%	2002	100%	$13,981	0.6906	$9,655	
P1443	12	1903		476	100%	100%	2002	100%	$156,079	0.6906	$107,789	
P203	12	520	1	7	83%							
P205	12	581	4	14	74%							
P207	12	686	13	101	87%							
P1441	12	2262	21	1008	98%	100%	2002	98%	$185,517	0.6906	$125,436	
P11683	12	873	30	137	78%	100%	2002	78%	$71,586	0.6906	$38,733	
P11997	12	391	41	308	87%	100%	2002	87%	$32,062	0.6906	$19,181	
P209	12	292	52	114	55%							
P41	12	22	66	116	43%							
P12001	12	684	66	165	60%	100%	2002	60%	$56,088	0.6906	$23,199	
B1829	12	363	73	150	52%	100%	2002	52%	$29,766	0.6906	$10,587	
P359	12	31	210	424	51%							
P321	12	38	219	433	49%	100%		49%	$3,149			
P11689	12	169	267	487	45%	100%	2002	45%	$13,866	0.6906	$4,335	
P11623	12	1189	313	939	67%	100%	1992	67%	$97,514	0.5266	$34,235	
P12799	12	38	393	704	44%	100%	2002	44%	$3,149	0.6906	$962	
P12801	12	37	393	704	44%	100%	2002	44%	$3,050	0.6906	$932	
P107	12	321	430	1158	63%							
P11861	12	689	432	1099	61%							
B2271	12	1354	476	765	38%	100%	2002	38%	$111,061	0.6906	$28,941	
P227	12	380	508	655	22%							
P11875	12	20	515	1488	65%	100%	2002	65%	$1,607	0.6906	$726	
P223	12	260	528	654	19%							
B2277	12	1372	641	808	21%	100%	2002	21%	$112,488	0.6906	$16,020	
P365	12	125	707	906	22%	100%	1992	22%	$10,283	0.5266	$1,188	
P11769	12	460	923	1102	16%	100%	2002	16%	$37,728	0.6906	$4,220	
197	12	643	984	1405	30%	100%	1992	30%	$52,742	0.5266	$8,321	
P11873	12	17	1178	1488	21%	100%	2002	21%	$1,427	0.6906	$206	
P315	12	60	1178	1488	21%							
P12729	12	647	1571	5118	69%	100%	2002	69%	$53,087	0.6906	$25,410	
P12385	12	769	1571	8769	82%	100%	2002	82%	$63,050	0.6906	$35,743	
B2299	12	728	1575	2999	47%	100%	2002	47%	$59,680	0.6906	$19,568	
B2301	12	409	1575	2999	47%	100%	2002	47%	$33,530	0.6906	$10,994	
P11729	12	597	1924	4940	61%	100%	2008	61%				$40,769
P11725	12	599	1988	4525	56%	100%	2008	56%				$40,926
P11723	12	425	2206	4345	49%	100%	2008	49%				$29,015
P61	12	42	2873	5683	49%	100%	1992	49%	$3,460	0.5266	$901	
256	12	1217	2873	5683	49%	100%	1992	49%	$99,786	0.5266	$25,987	
255	12	390	2873	5684	49%	100%	1992	49%	$31,980	0.5266	$8,329	
254	12	217	2873	5684	49%	100%	1992	49%	$17,753	0.5266	$4,623	
253	12	330	2873	5684	49%	100%	1992	49%	$27,035	0.5266	$7,041	
252	12	984	2873	5684	49%	100%	1992	49%	$80,672	0.5266	$21,009	
P381	12	32	2873	5684	49%	100%	1992	49%	$2,616	0.5266	$681	
P83	12	538	2874	5685	49%	100%	1992	49%	$44,141	0.5266	$11,494	
P424	12	243	2874	5685	49%	100%	1992	49%	$19,885	0.5266	$5,178	
P11833	12	430	2916	4645	37%	100%	2008	37%				$29,350
P51	12	76	3365	4008	16%	100%	1992	16%	$6,216	0.5266	$524	
Total for all existing 12 inch pipes											**$494,179**	**$140,060**
Total Length:		**25,250**										
Weighted Average of all Pipes Listed:					**62%**							
Length of Impact Fee Eligible		**21,408**										
Weighted Average of Impact Fee Eligible Pipes:					**62%**							

Pipe Segment ID	Dia (in)	Segment Length (ft)	Existing Flow (GPM)	Buildout Flow (GMP)	% of Capacity Available for Growth	% of Cost Funded by City	Year Built	% of Cost Eligible for Impact Fee Reimburse-ment	Estimated Present Day Project Cost ($)	Ratio of ENR CPI for Year Built to Current Year	Estimated Historic Project Cost Eligible for Impact Fee Reimbursement ($)	Actual Known Historic Project Costs Eligible for Impact Fee Reimbursement ($)
Col 1	**Col 2**	**Col 3**	**Col 4**	**Col 5**	**Col 6**	**Col 7**	**Col 8**	**Col 9**	**Col 10**	**Col 11**	**Col 12**	**Col 13**
											= Col 9 x 10 x 11	
B1241	14	24		444	100%	100%	2002	100%	$2,454	0.6906	$1,695	
P13	14	1010	1607	5282	70%	100%	1992	70%	$102,030	0.5266	$37,380	
P11491	14	224	2942	4376	33%	100%	2008	33%	$22,584	0.8780	$6,499	
Total of all existing 14 inch pipes											**$45,573**	
Total Length:		**1,258**										
Weighted Average of all Pipes Listed:					**64%**							
Length of Impact Fee Eligible		**1,258**										
Weighted Average of Impact Fee Eligible Pipes:					**64%**							
B2309	16	526		545	100%	100%	2002	100%	$64,221	0.6906	$44,351	
P11549	16	1687		545	100%	100%	2002	100%	$205,790	0.6906	$142,120	
P411	16	224		545	100%	100%	2002	100%	$27,279	0.6906	$18,839	
SR1	16	942		545	100%	100%	2002	100%	$114,887	0.6906	$79,342	
P201	16	1356	39	93	58%							
326	16	788	43	211	80%							
P12619	16	795	155	392	60%							
P11615	16	1211	359	557	36%							
P367	16	954	707	906	22%	100%	1992	22%	$116,412	0.5266	$13,446	
B2187	16	341	1226	2208	44%	100%	2002	44%	$41,578	0.6906	$12,767	
SR1439	16	294	1401	2494	44%	100%	2002	44%	$35,844	0.6906	$10,850	
P11607	16	2660	1571	5118	69%	100%	2002	69%	$324,532	0.6906	$155,339	
P12727	16	426	1571	5118	69%	100%	2002	69%	$51,923	0.6906	$24,853	
B2193	16	433	1575	2987	47%	100%	2002	47%	$52,826	0.6906	$17,244	
P11681	16	3974	2452	2814	13%	100%	2008	13%				$440,979
P12737	16	707	2452	3513	30%	100%	2008	30%				$78,433
P397	16	64	2873	5684	49%	100%	1992	49%	$7,747	0.5266	$2,018	
P11493	16	1993	2942	3912	25%	100%	2008	25%				$221,150
P11609	16	566	2942	5433	46%	100%	2008	46%				$62,775
P11727	16	309	2942	5433	46%	100%	2008	46%				$34,289
P12445	16	131	2942	5767	49%	100%	2008	49%				$14,526
Total of all existing 16 inch pipes:											**$334,698**	**$852,151**
Total Length:		**20,379**										
Weighted Average of all Pipes Listed:					**50%**							
Length of Impact Fee Eligible		**16,229**										
Weighted Average of Impact Fee Eligible Pipes:					**49%**							