SPANISH FORK PUBLIC WORKS

POLICY 4.10

Impact Fee Facilities Plan

POLICY 4.10

List of Tables

List of Figures

4.10.01 Introduction

4.10.01.010 Overview

Impact fees are based on the cost of capital facilities needed to meet the demand from new development. Impact fee eligible facility costs are defined by the Impact Fee Facilities Plan (IFFP). This IFFP only identifies the impact fee-eligible capital facilities projects that have been completed, or at a minimum budgeted or bonded for. The only exceptions are the Public Safety and Parks IFFP, which are solely based on maintaining their respective levels of service (LOS). The Public Safety and Park's IFFP includes projects to show how the LOS will be maintained. There are no other future projects included in the other utility's IFFPs. Transportation, storm water, drinking water, pressurized irrigation, wastewater, public safety, and parks, trails and recreation facilities are included in this plan.

Demographics and Growth

Current population and nonresidential development estimates were used to determine the current level of service (LOS) for each facility type. Future population and nonresidential development projections were used to determine future service needs to achieve the proposed LOS. For all facility types the proposed LOS is the current LOS. The Spanish Fork City 2018 year-end population estimate is 42,077 residents. Spanish Fork's 10-year projection is 51,091 people at the end of 2028. This analysis identifies available infrastructure to serve anticipated new development and, when necessary, new facilities required to be built within the planning horizon.

Power & Light

Spanish Fork City provides electrical power to all residential and non-residential development within the City's boundaries. Spanish Fork City's current and proposed LOS for municipal power is determined based on the design criteria Spanish Fork City has used in designing and expanding the system over the past several years. Using the established design criteria, the current system was evaluated to determine if there is existing excess capacity or existing deficiencies. This report identifies projects that have been completed, or at a minimum, budgeted or bonded for that maintain the current proposed LOS. Spanish Fork City's Power & Light LOS is to provide necessary system-wide capacity of at least 80 percent of designed total capacity. This LOS ensures that system capacity is adequate to maintain service during peak periods.

According to analysis completed by Intermountain Consumer Professional Engineers (ICPE), of the seven substations in the Spanish Fork system, three have adequate existing excess capacity to accommodate expected growth through 2027, one exceeded existing base capacity in 2014 and was upgraded, and one will exceed existing base capacity around 2019. The remaining three substations currently exceed base capacity. Table 1 identifies the impact fee-eligible capital facilities projects that have been completed, or at a minimum budgeted or bonded for this year. The portion of the plan attributable to anticipated new development was estimated by identifying the portion of growth in demand attributable to existing users and deducting that amount from the growth in overall demand.

Table 1
Power & Light Impact Fee Facilities Plan

Project	Approx. Time Frame	Construction Cost	Cost to Development For the Next 10 Years	% Capacity Used by Existing Users	% Capacity for Development For the Next 10 Years
Ivory Development, LLC	2018	$ 63,417	$ 63,417	0.00%	100.00%
Vincent Ridge	2018	$ 16,693	$ 16,693	0.00%	100.00%
Masterplan & Impact Fee Studies	2018	$ 2,360	$ 2,360	0.00%	100.00%
SUVPS Line Rebuild & Upgrade Projects	2018	$ 536,357	$ 91,073	83.02%	16.98%
46 kV 2700 N. Dry Creek to Whitehead Tran. Line	2018	$ 600,000	$ 485,280	19.12%	80.88%
Bonner Sub.	2018	$ 300,000	$ 242,640	19.12%	80.88%
Leland Area Rebuild	2018	$ 20,000	$ 3,396	83.02%	16.98%
US-6 600A Powerhouse Rd to Canyon Rd SR198	2018	$ 250,000	$ 109,200	56.32%	43.68%
Upgrade Bonner to Canyon Rd Sub Tran Line	2018	$ 1,100,000	$ 186,780	83.02%	16.98%
46 kV Reconductor Argyle to Bonner	2018	$ 675,000	$ 114,615	83.02%	16.98%
600 amp Circuit Tie 100 S.	2018	$ 100,000	$ 16,980	83.02%	16.98%
Total		$ 3,663,827	**$ 1,332,434**		**36.37%**

Storm Water

Bowen, Collins & Associates (BC&A) completed a Storm Drain Master Plan (SDMP) in 2012 and an update in 2016 that forms the basis for this IFFP. The master plan addresses the components necessary to a system capable of providing adequate storm water drainage to residents based on best engineering practices and modeling following the City Standards. BC&A modeled the City's system to evaluate the performance of existing facilities under current and future demands. Recommendations for system improvements are based on this model.

The Spanish Fork City Storm Water System current and proposed level of service (LOS) is to provide a storm drain system designed and installed to the criteria identified below:

Minor System

Minor system facilities shall be designed to collect and convey storm water runoff from a 3 hour design storm that has a 10 percent chance of occurring in any given year (commonly referred to as a 10-year design storm, see the SDMP Report). Minor system facilities include the following:

- Catch basins
- Storm drain pipes
- Manholes

Storm drain pipes shall not be smaller than 12 inches in diameter for laterals and 15 inches for mains.

Major System

Major system facilities shall be designed to collect and convey storm water runoff from a 3 hour design storm that has a 1 percent chance of occurring in any given year (commonly referred to as a 100-year design storm, see the SDMP Report). Major system facilities include:

- Streets
- Open channels
- Culverts and bridges
- Retention basins

Low Impact Development Facilities

Low impact development (LID) facilities shall be designed to collect and infiltrate storm water runoff from a 25-year storm with the worst-case intensity that has a 4 percent chance of occurring in any given year (commonly referred to as a 25-year design storm, see the SDMP Report). LID facilities include:

- R-Tanks
- Stormtech
- StormBrixx

Detention Facilities

Detention facilities shall be designed to attenuate peak runoff rates from tributary areas associated with a design storm to a level that meets level of service criteria for existing or planned major and minor system facilities as identified in the SDMP. In an effort to mitigate for increased impacts on storm water facilities from large areas of impervious area, commercial and industrial developments must provide project or local detention facilities that will reduce peak runoff rates from associated development to 0.15 cfs per acre. Public roads in and around commercial and industrial developments typically freely discharge into the storm drain system and are not detained. The combined total peak discharge rates from detained commercial and industrial developments and undetained roads in and around those developments will be similar in magnitude to discharge rates from undetained residential developments.

Table 2 identifies the impact fee-eligible capital facilities projects that have been completed, or at a minimum budgeted or bonded for this year. The portion of the plan attributable to anticipated new development was estimated by identifying the portion of growth in demand attributable to existing users and deducting that amount from the growth in overall demand.

Table 2
Stormwater Impact Fee Facilities Plan

Project	Approx. Time Frame	Construction Cost	Cost to Development For the Next 10 Years	% Capacity Used by Existing Users	% Capacity for Development For the Next 10 Years	% Remaining Capacity for Build-out Development
Eagle Cove LID	2018	$ 247,524	$ 247,524	0.00%	100.0%	0.00%
Newport Village LID	2018	$ 102,458	$ 102,458	0.00%	100.0%	0.00%
Vincent Ridge LID	2018	$ 62,897	$ 62,897	0.00%	100.0%	0.00%
Storm Master Plan & IF Studies	2018	$ 4,000	$ 4,000	0.00%	100.0%	0.00%
CIP-R262 Cemetery LID	2018	$ 39,000	$ 39,000	0.00%	100.0%	0.00%
Total		$ 455,879	$ 455,879		100.0%	

Drinking Water

Spanish Fork City provides drinking water facilities for the benefit of residents in all areas of the community. The current and proposed level of service (LOS) for drinking water facilities is determined by establishing the 2013 drinking water capacity, including identification of existing deficiencies and existing excess capacity in the system.

Hansen Allen & Luce, Inc. (“HAL”) completed a Drinking Water System Master Plan in May 2012 that forms the basis for this IFFP. The master plan addresses the components necessary to a system capable of providing drinking water to system users based on City demand data and standards established by the Utah Division of Drinking Water. HAL modeled Spanish Fork’s drinking water system to evaluate the performance of existing facilities under current and future demands. Recommendations for system improvements are based on this model.

The current LOS for drinking water in Spanish Fork City is to provide adequate water rights, source, storage and delivery to serve users at 241 gallons per day (gpd) per single family residence. This is based on actual usage of existing households in Spanish Fork City. In addition to user consumption, the water system must have adequate capacity to meet fire flows. The fire flow current and proposed LOS is 120,000 gallons.

Table 3 identifies the impact fee-eligible capital facilities projects that have been completed, or at a minimum budgeted or bonded for this year. The portion of the plan attributable to anticipated new development was estimated by identifying the portion of growth in demand attributable to existing users and deducting that amount from the growth in overall demand.

Table 3
Drinking Water Impact Fee Facilities Plan

Project	Approx. Time Frame	Construction Cost	Cost to Development For the Next 10 Years	Total Capacity (gpm/ERCs)	% Capacity Used by Existing Users	% Capacity for Development For the Next 10 Years
Ivory Development, LLC Waterline	2018	$ 11,095	$ 4,899	22,300	0.00%	44.16%
2700 N Trunkline Connection	2018	$ 25,000	$ 11,039	22,300	0.00%	44.16%
Model, Master Plan, & Impact Fee Updates	2018	$ 8,500	$ 8,500	-	0.00%	100.00%
DW Cold Springs/Butler Springs	2018	$ 590,000	$ 245,023	4,567	58.47%	41.53%
Total		$ 634,595	$ 269,461			42.5%

Pressurized Irrigation

Spanish Fork City provides irrigation water to residents of the City via a pressurized irrigation ("PI") water system. The system reduces demand on the drinking water system particularly during the summer by providing irrigation water for outdoor watering. The City's current and proposed LOS is based on current utilization and system design. The LOS is based on demand of 6 gallons per minute for each irrigated acre.

Hansen Allen & Luce, Inc. ("HAL") completed a PI System Master Plan in May 2012 that forms the basis for this IFFP. The master plan addresses the components necessary to a system capable of providing irrigation water to system users based on City demand data. HAL modeled Spanish Fork's PI system to evaluate the

performance of existing facilities under current and future demands. Recommendations for system improvements are based on this model.

Table 4 identifies the impact fee-eligible capital facilities projects that have been completed, or at a minimum budgeted or bonded for this year. The portion of the plan attributable to anticipated new development was estimated by identifying the portion of growth in demand attributable to existing users and deducting that amount from the growth in overall demand.

Table 4
Pressure Irrigation Impact Fee Facilities Plan

Project	Approx. Time Frame	Construction Cost	Cost to Development For the Next 10 Years	% Capacity for Development For the Next 10 Years	% Remaining Capacity for Build-out Development
Newport Village Distribution	2018	$ 8,529	$ 5,759	67.52%	32.48%
Crab Creek Trans Line Bond	2018	$ 123,144	$ 83,149	67.52%	32.48%
PI Masterplan & Impact Fee Studies	2018	$ 8,500	$ 8,500	100.00%	0.00%
Cooling Golf course Booster Pumps	2018	$ 22,486	$ 22,486	100.00%	0.00%
1400 East Tree line road 12" PI Line	2018	$ 100,000	$ 67,522	67.52%	32.48%
Power Corridor Transmission Line	2018	$ 150,000	$ 101,282	67.52%	32.48%
2700 N Trunkline Connection	2018	$ 37,500	$ 25,321	67.52%	32.48%
Total		**$ 450,159**	**$ 314,018**		

Wastewater

Spanish Fork City provides wastewater collection and treatment facilities for the benefit of most residents in Spanish Fork City with the exception of a small service area that is collected by the City of Salem. Spanish Fork City and Mapleton City jointly own wastewater treatment facilities and some wastewater trunk lines that run through Spanish Fork City as part of a number of interlocal agreements. The City's current LOS is based on current utilization and system design. The LOS is

based on domestic production of 150 gpd per single family residential equivalent unit (ERU) with approximately 22 gpd of infiltration per ERU into newly installed pipes (older pipes have a higher infiltration rate) for a total of approximately 172 gpd per ERU.

Bowen, Collins & Associates (BC&A) completed a Wastewater System Master Plan in 2012 that forms the basis for this IFFP. The master plan addresses the components necessary to a system capable of providing adequate wastewater service to residents based on available flow data and best engineering practices. BCA modeled the City's system to evaluate the performance of existing facilities under current and future demands. Recommendations for system improvements are based on this model.

Table 5 identifies the impact fee-eligible capital facilities projects that have been completed, or at a minimum budgeted or bonded for this year. The portion of the plan attributable to anticipated new development was estimated by identifying the portion of growth in demand attributable to existing users and deducting that amount from the growth in overall demand.

Table 5
Wastewater Impact Fee Facilities Plan

Project	Approx. Time Frame	Construction Cost	Cost to Development For the Next 10 Years	% Capacity for Development For the Next 10 Years	% Capacity Used by Existing Users	% Remaining Capacity for Build-out Development
Model, Master Plan & Impact Fee Update	2018	$ 42,000	$ 42,000	100.00%	0.00%	27.64%
WWTP Masterplan & Impact Fee Studies	2018	$ 92,000	$ 92,000	100.00%	0.00%	27.64%
SW Lift Station	2018	$ 1,954,000	$ 527,655	27.00%	2.30%	70.70%
Phosphorus Removal	2018	$ 2,300	$ 146	6.36%	2.30%	91.34%
Total		$ 2,090,300	$ 661,801			

Public Safety

Spanish Fork City provides police and fire facilities for the benefit of residents and property owners in all areas of the community. The current and proposed level of service (LOS) for public safety facilities was established in 2015, and was based on the number of square feet of fire and police buildings per capita for residential development and per square foot for non-residential development. The City's current 15,720 square foot fire/EMS station, located on Main Street and 400 North, and 28,060 square foot police station at 775 West Center Street serve the City. As the City grows and develops, additional fire and police services will be required to maintain the current and achieve the proposed LOS. The proposed LOS is based on the current LOS as defined by square feet of fire/EMS and police facilities per 1,000 population and 1,000 square feet of nonresidential development. The current police facility is sized for build-out of the community. Additional police facilities will not be required. The current fire/EMS facility is sized to achieve the current LOS.

In addition to the physical size of fire/EMS facilities, there is an added consideration to the LOS for fire/EMS facilities based on geographic distribution. Standards for fire response are based on time to reach the incident or area of need. A fire service's rating will be downgraded if the distance between the nearest station and a potential fire or emergency is more than five miles. Beyond this, the rating services use a combination of location, level of training, water system availability, etc. to establish the City's fire service rating[1]. Some newly developed areas are more than five miles from the existing station. As Spanish Fork continues to grow to the east and to the west of the current station location, new stations should be located to ensure appropriate response times and proximity to structures.

The Public Safety Impact Fee Facilities Plan assumes that future development will "buy-in" to the existing police station and that two new fire/EMS facilities will be built on the east and west sides of the City. The two stations will supplement the existing station and the City will be served by a total of 30,000 new square feet of fire/EMS facilities by around 2027. Table 6 identifies the impact fee-eligible capital facilities projects that have been completed or are needed to maintain the current level of service.

[1] The fire service rating is used in establishing individual property owner property insurance rates and therefore are important for residential and nonresidential property owners.

Table 6
Public Safety Impact Fee Facilities Plan

Future Facility	Area (sf)	Cost/SF	Impact Fee Funded SF	Impact Fee Funded Cost
East Side Fire/EMS Station	15,000	$ 215.30	2031	$ 437,274
West Side Fire/EMS Station	15,000	$ 215.30	2,031	$ 437,274
Police Facility Buy-In	28,060	$ 370.72	3,095	$ 1,147,367
Total				$ 2,021,916

Transportation

Spanish Fork City's current and proposed transportation LOS is to provide adequate lane mile and intersection capacity to maintain current and proposed LOS C according to Mountainland Association of Governments (MAG) regional travel model [2].

Table 7 identifies the impact fee-eligible capital facilities projects that have been completed, or at a minimum budgeted or bonded for this year. The portion of the plan attributable to anticipated new development was estimated by identifying the portion of growth in demand attributable to existing users and deducting that amount from the growth in overall demand.

[2] The travel demand model is the accepted model of the Mountainland Association of Governments (MAG), which represents an appropriate planning tool for estimating existing congestion levels and forecasting future congestion levels based on the impacts of growth.

Table 7
Transportation Impact Fee Facilities Plan

Project Location	Approx. Time Frame	Construction Cost	Cost to Development For the Next 10 Years	% Capacity Used by Existing Users	% Capacity for Development For the Next 10 Years
Ivory Development, LLC - Eagle Cove	2018	$ 246,236	$ 246,236	0.00%	100.00%
Ivory Development, LLC - Newport Village	2018	$ 704,341	$ 704,341	0.00%	100.00%
Salisbury Homes - Canyon Vista	2018	$ 24,824	$ 24,824	0.00%	100.00%
Vincent Ridge - 1700 East	2018	$ 448,541	$ 448,541	0.00%	100.00%
Master Plan and Impact Fee Studies	2018	$ 89,400	$ 89,400	0.00%	100.00%
1000 N 400 E Signal	2018	$ 25,000	$ 25,000	0.00%	100.00%
920 S Wall & Landscape	2018	$ 200,000	$ 200,000	0.00%	100.00%
Volunteer Dr Widening	2018	$ 525,000	$ 525,000	0.00%	100.00%
Canyon Creek Guardrail	2018	$ 135,000	$ 135,000	0.00%	100.00%
Total		$ 2,398,341	$ 2,398,341		

Parks, Trails, and Recreation

Spanish Fork City provides park, trail, and recreation facilities for the benefit of residents in all areas of the community. The level of service (LOS) for parks was established in 2011 and trails in 2018 and was determined by establishing the number of acres for parks and linear feet for trails, the level of improvement (landscaping, parking, etc.) per acre or linear foot, and the average number of recreation facilities provided per acre. Table 8 provides a cost per unit for all new development to maintain the LOS.

Table 8
LOS Cost per Unit Based on Acres of Park and Linear Foot of Trail

Item	Cost per Acre	Acres per 1,000 Population	Cost per 1,000 Population	Cost per Capita	Cost per Unit (3.75 ppl/house)
Park Acres*	$ 60,000	5.50	$ 330,108	$ 330.11	$1,237.91
Park Facilities **	$ 37,561	4.28	$ 160,761	$ 160.76	$602.85
Park Improvements **	$ 80,813	4.28	$ 345,880	$ 345.88	$1,297.05
Total	$ 178,374		$ 836,749	$ 836.75	$3,137.81

Item	Cost per LF1	LF per 1,000 Population	Cost per 1,000 Population	Cost per Capita	Cost per Unit (3.75 ppl/house)
Trails *	$ 22.04	1,919	$ 42,292	$ 42.29	$158.59
Trail Improvements **	$ 100.00	1,818	$ 181,800	$ 181.80	$681.75
Total	$ 122.04		$ 224,092	$ 224.09	$840.34

Source: GSBS Richman
* Includes only developed parks and trails
** Includes only developed trails

4.10.01.020 Funding Sources

The City may fund the infrastructure in the IFFP through a combination of different revenue sources.

Federal and State Grants and Donations

Impact fees cannot reimburse costs funded or expected to be funded through federal grants and other funds that the City has received for capital improvements without an obligation to repay. Grants and donations are not currently contemplated in this analysis. If grants become available for construction of facilities, impact fees will be recalculated and an appropriate credit given. Any existing infrastructure funded through past grants has been removed from the system value in the analysis.

Bonds

The costs contained in the IFFP include the cost of bonding, if applicable.

Interfund Loans

Because infrastructure must generally be built ahead of growth, there often arise situations in which projects must be funded ahead of expected impact fee revenues. In some cases, the solution to this issue is bonding. In others, funds from existing user rate revenue will be loaned to the impact fee fund to complete initial construction of the project and will be reimbursed later as impact fees are received. Consideration of potential interfund loans will be included in the impact fee analysis and should also be considered in subsequent accounting for impact fee expenditures.

Impact Fees

It is recommended that impact fees be used to fund growth-related capital projects as they help to achieve the proposed level of service and prevent existing users from subsidizing the capital needs for new growth. Based on this IFFP, an Impact Fee Analysis will be able to calculate a fair and legal fee that new growth should pay to fund the portion of the existing and new facilities that will benefit new development.

Developer Dedications And Exactions

Developer exactions are not the same as grants. Developer exactions may be considered in the inventory of current and future infrastructure. If a developer constructs a facility or dedicates land within the development for system-level infrastructure on the IFFP, the value of the dedication is credited against that particular developer's impact fee liability.

If the value of the dedication/exaction is less than the development's impact fee liability, the developer will owe the balance of the liability to the City. If the value of the improvements dedicated is worth more than the development's impact fee liability, the City must reimburse the difference to the developer from impact fee revenues collected from other developments.

It should be emphasized that the concept of impact fee credits pertains to system level improvements only. For project level improvement (i.e. projects not identified in the impact fee facility plan), developers will be responsible for the construction of the improvements without credit against the impact fee.

4.10.01.030 Certification

I certify that the attached impact fee facilities plan:

1. Includes only the costs of public facilities that are:
    a. Allowed under the Impact Fees Act; and
    b. Actually incurred; or
    c. Projected to be incurred or encumbered within six years after the day on which each impact fee is paid.
2. Does not include:
    a. Costs of operation and maintenance of public facilities;
    b. Costs for qualifying public facilities that will raise the level of service for the facilities, through impact fees, above the level of service that is supported by existing residents; or
    c. An expense for overhead, unless the expense is calculated pursuant to a methodology that is consistent with generally accepted accounting practices and the methodological standards set forth by the federal Office of Management and Budget for federal grant reimbursement; and
3. Complies in each and every relevant respect with the Impact Fees Act.

DocuSigned by:
Chris Thompson
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(Signed by:) Chris Thompson

4.10.02 Demographics and Growth

4.10.02.010 Existing Conditions

Spanish Fork City's 2018 year-end estimated population is 42,077 people living in 11,221 households. Spanish Fork's population is projected to continue to grow by approximately 2.38 percent per year through 2028. Total anticipated population in Spanish Fork in 2028 is 52,089 people living in 13,890 households (assuming household size remains relatively constant). This projected increase in residents will affect levels of service of all Spanish Fork facilities.

Population and household growth is one source of the need for increased infrastructure capacity. Another, growth-related source is the anticipated increase in the number of stores, businesses, and other non-residential uses in the City. Spanish Fork's total land area is 10,457 acres. Table 9 summarizes acres per land use type.

Table 9
End of Year Land Use Summary

Land Use	Acres	Total %	HH	Commercial Square Feet (1,000's)
Residential/Mixed Use	2,718	25.99%	11,221	
General Commercial	467	4.47%		3,601
Industrial	348	3.33%		4,543
Exempt/Civic	1,730	16.54%		
Vacant	3,508	33.55%		
ROW	1,686	16.12%		
Total	10,457	100%		
Total Developed	5,264	50.3%	11,221	8,144

Table 10 is a breakdown of current zoning for the City's estimated acres of developed and developable land.

Table 10
2018 Use by Developed/Developable Zoning (Acres)

Zone	Zone Description	Residential/ Mixed Use	Commercial	Industrial	Exempt/ Civic	Vacant	Total	% of Total
A-E	Exclusive Agriculture	12.96	0.00	0.00	0.26	91.74	104.96	1.2%
BP	Business Park	0.00	1.12	0.00	4.75	92.40	98.27	1.1%
C-1	Neighborhood Commercial	0.00	5.82	0.00	0.24	5.40	11.46	0.1%
C-2	General Commercial	4.44	174.61	0.00	4.45	121.71	305.21	3.5%
C-D	Downtown Commercial	0.26	11.42	0.00	0.00	0.00	11.68	0.1%
C-O	Commercial Office	0.57	21.16	0.00	3.11	26.89	51.73	0.6%
I-1	Light Industrial	4.89	118.72	327.33	507.30	1,221.50	2,179.74	25.0%
I-2	Medium Industrial	1.48	29.95	20.90	0.00	37.23	89.56	1.0%
I-3	Heavy Industrial	0.00	0.00	0.00	0.00	101.43	101.43	1.2%
P-F	Floodplain Hazard Overlay	0.19	0.00	0.00	802.07	110.35	912.61	10.5%
R-1-12	Medium Density Residential	717.17	14.46	0.00	72.53	313.08	1,117.24	12.8%
R-1-15	Medium Density Residential	64.67	0.00	0.00	0.78	102.35	167.80	1.9%
R-1-20	Low Density Residential	0.00	0.00	0.00	0.00	3.26	3.26	0.0%
R-1-30	Low Density Residential	39.02	0.00	0.00	21.06	41.91	101.99	1.2%
R-1-40	Low Density Residential	1.52	0.00	0.00	0.00	0.00	1.52	0.0%
R-1-6	High Density Residential	574.29	4.86	0.00	30.28	128.54	737.97	8.5%

R-1-8	High Density Residential	302.38	3.42	0.00	48.00	9.44	363.24	4.2%
R-1-9	Medium Density Residential	530.00	0.00	0.00	59.17	105.11	694.28	8.0%
R-3	High Density Residential	132.18	0.32	0.00	0.00	70.26	202.76	2.3%
R-5	High Density Residential	0.00	2.03	0.00	0.00	0.00		0.0%
R-O	Residential Office	16.98	11.28	0.00	0.30	0.00	28.56	0.3%
R-R	Rural Residential	314.65	22.53	0.00	126.86	876.52	1,340.56	15.4%
S-C	Shopping Center	0.00	49.78	0.00	0.00	2.65	52.43	0.6%
UV-C	Urban Village Commercial	0.00	0.00	0.00	0.00	38.36	38.36	0.4%

Source: Spanish Fork City, Utah County Assessor's Office, AGRC

Figure 1 illustrates the distribution of vacant land relative to zoning in the City.

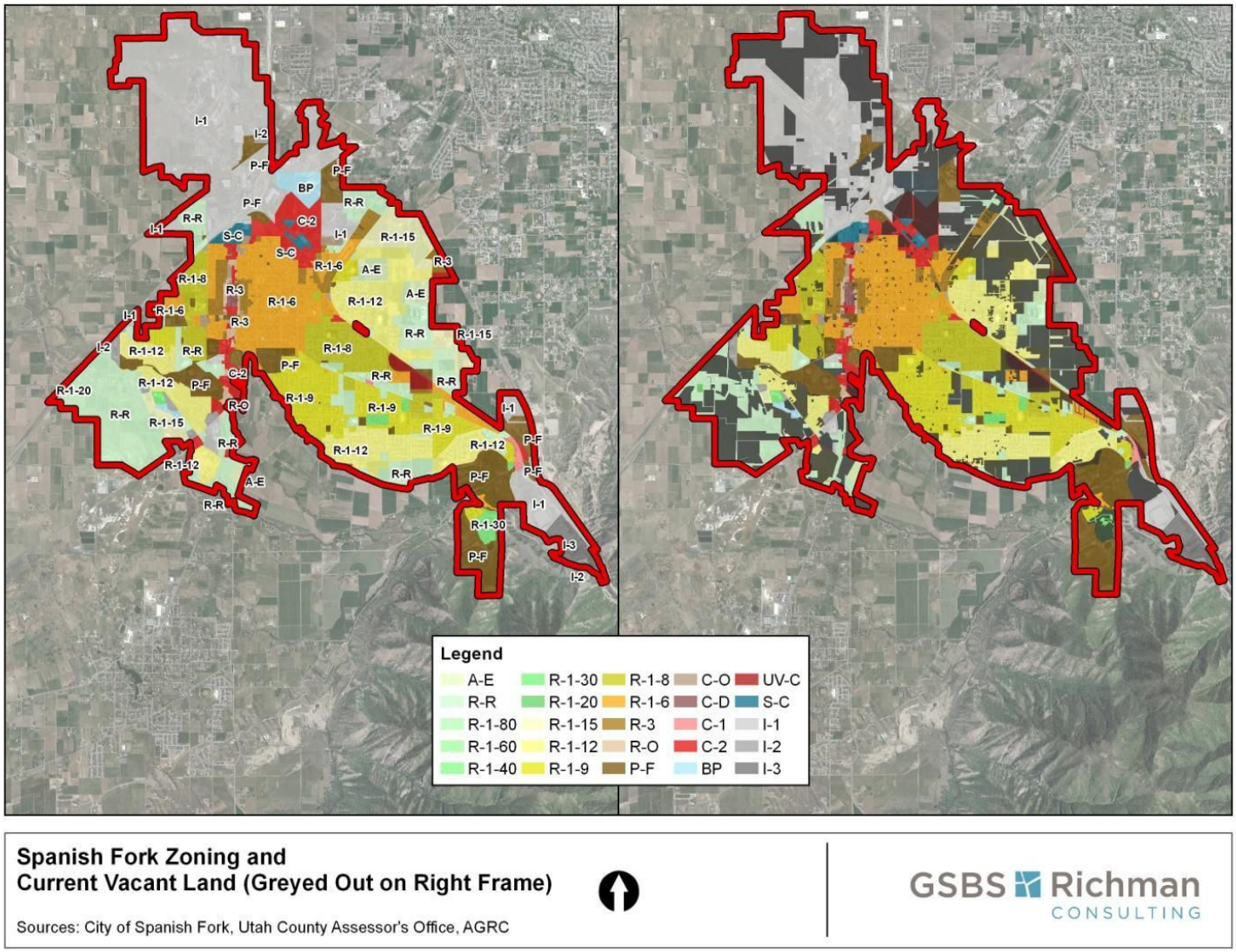

Figure 1
Developable Land by Zoning Designation

The developed area of Spanish Fork is projected to increase to approximately 58 percent of the land area by 2028, an increase of 907 acres. Table 11 identifies the projected development by land use in the City through 2028.

Table 11
Projected New Development

Land Use	Acres	Percent Total	HH	SF (10^3)
Residential/Mixed Use	722	80%	2,670	
General Commercial	55	6%		
Industrial	124	14%		
Exempt/Civic	7	1%		
Total Developed	907	100%	2,625	1,866.39

Source: Spanish Fork City, GSBS Richman

Residential uses continue to represent the largest percentage of land use in the City. Eighty percent of the acreage consumed by development in the next ten years is expected to be developed into residential neighborhoods, six percent into general commercial uses, and 14 percent into industrial uses.

The projected increase in population and nonresidential square footage will place increasing demands on Spanish Fork's power, irrigation, sewer, water, parks, and transportation systems.

4.10.02.020 Population

Table 12 shows an approximate increase in population of 7,200 people since the 2010 Census. Population projections are from the Governor's Office of Management and Budget, Demographics and Economic Analysis Division.

Table 12
End of Year Population 1990 – 2030

	1990	2000	2010	2018	2020	2028	2030
Spanish Fork	11,272	20,246	34,939	42,077	44,623	52,089	54,143
Growth Rate		7.96%	7.26%	2.55%	3.03%	2.09%	2.13%
Mapleton			7,979	9,936	10,762	13,441	13,752
Growth Rate				3.07%	4.16%	2.78%	2.78%
Utah County	263,590	368,536	516,564	653,669	668,564	814,045	833,101
Growth Rate		3.98%	4.02%	2.94%	2.94%	2.46%	2.46%
Spanish Fork as % of Utah County	4.3%	5.5%	6.8%	6.4%	6.7%	6.4%	6.5%

Source: Census, Utah State Governor's Office of Management & Budget

There will be an estimated 13,890 households in 2028, assuming an average household size of 3.75. The average household size used in this analysis is equal to the average household size in the 2010 Census. Changes in household size are difficult to predict. Average household size has been decreasing nationally, in the State of Utah, and in Utah County (0.4, 1.0, and 0.6 percent respectively) and is projected to continue to decrease. In Spanish Fork, the average household size increased by 5 percent between 2000 and 2010.

4.10.02.030 Employment

We estimate there are 10,650 jobs in Spanish Fork. These employees work for businesses located in an estimated 8.14 million square feet of private, nonresidential space. Estimated average gross square footage per employee is 765. This estimate blends industrial, retail, and office uses.

In the ten-year period between 2000 and 2010, Spanish Fork added approximately 666 nonresidential buildings to house 1,446 new jobs. In the period 2010 to 2013, Spanish Fork added an estimated 612 jobs and 410,000 square feet of private, commercial square footage.

Commercial and industrial uses in the city are projected to increase by one million square feet in the ten year period 2018 to 2028.

4.10.02.040 Growth Patterns

The majority of residential growth is anticipated on the few remaining large vacant parcels along Canyon Rd. and 1400 E, north and east of US-6, and the southwest portion of the city. New industrial investment will be concentrated primarily north and west of the interstate surrounding the Spanish Fork – Springville Airport. General commercial growth will likely occur in and around US-6 and I-15 interchange, and along the Main Street corridor, particularly at the southern end. Figure 2 shows the areas of future development for Spanish Fork City.

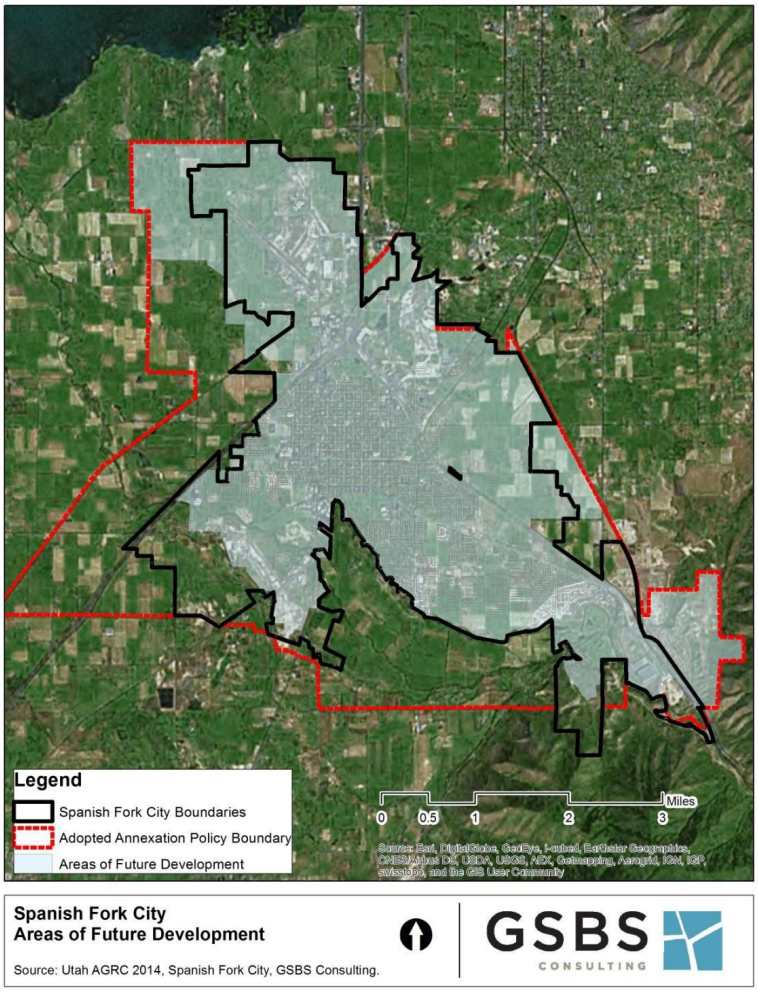

Figure 2
Areas of Future Development

4.10.03 Power

4.10.03.010 Overview

Spanish Fork City provides electrical power to all residential and non-residential development within the City's boundaries. As of October 2013, Spanish Fork's municipal power system provides service to 9,861 residential, 829 commercial and 8 large power accounts. Table 13 identifies the average energy in kilowatt hours (kWh) used per customer by type for the period 2002 through 2012. This information provides an understanding of current and proposed level of service for municipal power.

Table 13
Historic Average Utilization (Kwh) By Customer Type: 2002-2012

	Residential			Commercial			Large User		
Year	Total Usage	Avg./ Customer	Change in Avg.	Total Usage	Avg./ Customer	Change in Avg.	Total Usage	Avg./ Customer	Change in Avg.
2002	51,953,042	7,743		65,590,644	68,111		39,883,941	4,985,493	-
2003	55,921,564	7,903	160	66,039,634	68,935	824	38,991,469	4,873,934	-111,559
2004	57,515,187	7,896	-7	69,732,826	73,558	4,623	41,152,867	5,144,108	270,174
2005	61,422,059	7,984	88	65,208,602	60,772	-12,786	48,484,973	6,060,622	916,514
2006	68,719,195	8,282	298	68,791,416	58,101	-2,671	51,917,637	6,489,705	429,083
2007	78,933,080	9,069	787	72,378,317	63,995	5,894	51,739,018	5,173,902	-1,315,803
2008	81,231,583	8,971	-98	74,231,006	67,421	3,426	49,538,858	4,953,886	-220,016
2009	82,848,135	8,840	-131	75,435,696	69,590	2,169	42,290,829	4,229,083	-724,803
2010	86,314,422	9,105	265	77,416,619	74,439	4,849	42,669,143	4,741,016	511,933
2011	86,263,943	8,997	-108	78,673,950	74,011	-428	45,829,500	5,092,167	351,151
2012	92,372,770	9,511	514	83,302,794	76,848	2,837	47,954,980	5,328,331	236,164

Source: Spanish Fork Municipal Power Utility

For the period 2002 through 2012, the proportion of total consumption, measured in kWh, attributable to residential customers increased from 33 percent in 2002 to 41 percent in 2012. At the same time, demand attributable to commercial and large users has decreased from 42 percent to 37 percent and from 25 percent to 21 percent respectively.

4.10.03.020 Utilization Growth

Residential

Growth in residential demand measured in kWh, as seen in Table 13, has grown by 40 million kWh, or 78 percent, in the ten year period 2002-2012. At the same time the total number of residential customers grew by 3,002, or 45 percent. The average residential customer used approximately 23 percent more power in 2012 than in 2002, indicating that approximately 67 percent of the increase in residentially generated consumption is attributable to new development and 23 percent to increased utilization by existing customers.

Per capita utilization for residential customers averages 2,466 kWh for the three-year period 2010 through 2012. When per capita utilization is applied to average household sizes in Spanish Fork, single family residential utilization averages 9,789 kWh per household and multi-family utilization averages 5,565 kWh per household.

Commercial

Commercial demand measured in kWh, as seen in Table 13, has grown by 17 million kWh, or 27 percent, in the ten year period 2002-2012. At the same time the number of commercial customers grew by 13 percent. The average commercial customer uses approximately 12.8 percent more power in 2012 than in 2002, indicating that approximately 87.2 percent of the increase in commercially generated demand is attributable to new development and 12.8 percent to increased utilization by existing customers.

The three year (2010 – 2012) average per square foot utilization for commercial customers is 11,160 kWh per square foot.

Large Users

Growth in large user demand measured in kWh as seen in Table 13, grew by 8 million kWh, or 20 percent, in the ten year period 2002-2012. At the same time, the number of large user customers has grown by 1 customer, or 13 percent. The average large user customer uses approximately 6.9 percent more power in 2012 than in 2002, indicating that approximately 93.1 percent of the increase in large user generated demand is attributable to new development and 6.9 percent to increased utilization by existing customers.

Per square foot usage for large users varies. Large user impact is calculated on a per applicant basis using the identified value of each Equivalent Residential Unit (ERU) in this analysis.

Summary
Based on the residential, commercial, and large user data, future growth is expected to pay 80.88% of impact fee-eligible infrastructure.

4.10.03.030 Level of Service

Spanish Fork City's current and proposed level of service (LOS) for municipal power is determined based on the design criteria Spanish Fork City has used in designing and expanding the power system over the past several years. Using the established design criteria, the current system was evaluated to determine if there is existing excess capacity or existing deficiencies. As a next step, the need for and cost of required new facilities to maintain the current and achieve the proposed LOS was identified. Spanish Fork City's power LOS is to provide necessary system-wide capacity to ensure that anticipated utilization is no more than 80 percent of total design capacity. This LOS ensures that there is adequate capacity in the system to maintain service during peak periods. The analysis identifies when each substation and group of substations is expected to exceed "base" capacity, 80 percent of total capacity and total capacity. Base capacity is 60 – 72 percent of total capacity.

Table 14 provides current average kWh utilization by land use type. Single family utilization rates are used as the "base amount" and other land use types are measured against this Equivalent Residential Usage ("ERU") amount.

Table 14
Utilization By Land Use - Equivalent Residential Units 2018 And 2028

Land Use	Unit	Average Annual Usage/Unit	ERU	2018	2018	2028	2028
				Units	Total ERUs	Units	Total ERUs
Single Family Residential	DU	9,789	1	10,474	10,474	13,287	13,287
Multi-Family Residential	DU	5,565	0.57	747	426	948	540
Non-Residential Com/Ind	SF	11,160	1.14	8,144	9,284	10,331	11,778
Large User Com/Ind	SF	Calculated based on actual/designed utilization					

Source: Spanish Fork Municipal Power Utility, US Census

Spanish Fork City's municipal power system was evaluated by Intermountain Consumer Professional Engineers, Inc. for an updated Capital Facilities Plan in November 2013. According to the November 2013 Plan, Spanish Fork City's municipal power system load was projected to increase from 63.74 MVA in 2013 to 100.24 MVA in 2023. This projected load exceeds operating standards for the current power system.

As a result of Intermountain Consumer's analysis, a capital facilities plan, identifying approximately $9.2 million in projects to ensure that the system remains within design criteria is proposed for review and approval by the City Council. Table 15 identifies the total projected utilization through 2023 and the impact on the current municipal power system if no improvements are made.

According to the analysis completed by Intermountain Consumer, of the seven substations in the Spanish Fork system two have adequate existing excess capacity to accommodate expected growth through 2023, one was projected to exceed existing base capacity in 2014, and is project to exceed existing base capacity in 2019. The remaining three substations currently exceed base capacity. In order to more accurately meet overall system needs, the substations are combined to provide back up and redundant capacity. There are three combined substation groups. All three groups have adequate capacity to meet current demand. However, as shown in Table 15 (link provided below), projected loads were expected to exceed the base

level MVA for the Canyon Road/Maple Mountain combined substation area in 2014, the North/Whitehead/Woodhouse substation area in 2017 and the Industrial/Argyle substation area in 2018. The entire system will exceed the base MVA in 2017 and exceed 80 percent of total MVA in 2022 if no system improvements are made. There are no existing deficiencies in the system. The Spanish Fork system functions as a single service area although each substation group is evaluated independently.

Table 15
Electric Loads – No Improvements
https://drive.google.com/open?id=1Wg-8wM0vMccgkCtuoRCyZARnO3-DxMoB
Source: Intermountain Consumer Professional Engineers, Draft Electrical Master Plan, November 2013

Existing Excess Capacity

Since the 2013 master plan was completed, a number of capital improvement projects have been completed. As seen in Table 16, there is existing excess capacity (or the opportunity for new development to utilize existing capacity rather than build new) in all three of the substation groups although all three are expected to exceed base capacity as a result of growth in loads during the planning period.

North/Whitehead/Woodhouse

The North/Whitehead/Woodhouse group of substations currently utilizes 68 percent of base capacity and 43 percent of total capacity. This was increased from capacity evaluated in the 2013 master plan as a result of capital improvements installed in 2013 and 2014. As a result of expected growth in usage, the substation group will reach 73 percent of total capacity by 2028. Capacity of the system infrastructure to serve the North/Whitehead/Woodhouse area is required to maintain the current and meet the proposed LOS in the area.

Industrial/Argyle

The Industrial/Argyle group of substations currently utilizes 100 percent of base capacity and 65 percent of total capacity. Electrical energy consumption in the area served by the Industrial/Argyle group of substations is projected to grow at 6.3 percent annually through 2027. As a result of expected growth in usage, the substation group will reach 99 percent of total capacity by 2028. Capacity of the system infrastructure to serve the Industrial/Argyle area is required to maintain the current and meet the proposed LOS in the area.

Canyon Road/Maple Mountain

The Canyon Road/Maple Mountain group of substations utilized 100 percent of base capacity and 76 percent total capacity in 2018. Electrical energy consumption in the area served by the Canyon Road/Maple Mountain group of substations is projected to grow at 2.7 percent annually through 2026. As a result of expected growth in usage, the substation group reached base capacity in 2014. MVA capacity of the system infrastructure to serve the Canyon Road/Maple Mountain area is adequate to meet demand; however, three "reconductor" projects were completed to enhance long term viability of the system and meet overall growth projections in the system. The actual cost of improvements is included in the IFFP.

Table 16
Utilization/Capacity By Substation Group 2013

Group	Base Capacity (MVA)	Total Capacity (MVA)	Usage (MVA)	Base Usage	% Total Capacity Usage	Projected Year Exceed Base Capacity	Usage (MVA)	Estimated Rate of Growth
			2013	2013	2013		2028	
North/Whitehead / Woodhouse	49.50	77.50	26.00	52.5%	33.5%	2026	56.72	5.2%
Industrial/Argyle	20.40	31.76	15.00	73.5%	47.2%	2018	38.59	6.3%
Canyon Road/Maple Mountain	24.00	40.00	26.63	111.0%	66.6%	2014	39.93	2.7%
Total	93.90	149.26	67.63	72.0%	45.3%		135.24	4.6%

Source: Intermountain Consumer Professional Engineers, Draft Electrical Master Plan, November 2013. Updated by Spanish Fork City.

Impact fee eligible projects that have already been constructed that have excess capacity available to 10-year growth are listed in Table 17.

Table 17
Existing Excess Capacity Evaluation

Project	Approx. Time Frame	Construction Cost	Cost to Development For the Next 10 Years	% Capacity Used by Existing Users	% Capacity for Development For the Next 10 Years
Masterplan & Impact Fee Studies	2012-2014	$ 69,631	$ 20,620	70.39%	29.61%
1700 W 1400 S Substation Land	2011	$ 328,548	$ 38,963	88.14%	11.86%
Dry Creek Sub Transformer (SUVPS)	2011	$ 431,164	$ 51,132	88.14%	11.86%
600 Amp Overhead Distribution Line from US6 to the Oaks	2012-2013	$ 219,340	$ 33,658	84.65%	15.35%
Nebo Sub 46kV Str/Bss/Mtr (SUVPS)	2012	$ 85,180	$ 20,313	76.15%	23.85%
Woodhouse/Bonner Sub Trans	2012	$ 31,866	$ 5,535	82.63%	17.37%
46 kV 2700 N Dry Creek to Whitehead Tran Line	2012-2014	$ 389,537	$ 125,546	67.77%	32.23%
2000 N 200 E Railroad Casing	2012	$ 13,043	$ 1,538	88.21%	11.79%
Woodhouse Substation Bussing	2013	$ 54,852	$ 14,566	73.44%	26.56%
Recond. 200E 2000N-2700N FY13-14	2013-2014	$ 117,477	$ 17,921	84.74%	15.26%
North Dist. Overhead FY13-14	2013-2014	$ 230,593	$ 22,780	90.12%	9.88%
UAMPS 1600N 138/46kV Trans. Line Ease.	2013	$ 23,470	$ 7,706	67.17%	32.83%
Legacy Farms 11/1/2012 Electric Devepment Reimbursement Agreement	2013	$ 406,939	$ 23,413	94.25%	5.75%
SUVPS Substation Upgrades	2014	$ 594,057	$ 276,258	53.50%	46.50%

West Dist. Overhead	2014	$ 391,390	$ 39,702	89.86%	10.14%
Woodhouse Substation Expansion	2014	$ 1,015,338	$ 459,437	54.75%	45.25%
Joint Property Ventures 6/16/2015 Reimbursement Agreement	2015	$ 25,805	$ 10,103	60.85%	39.15%
Muhlstein Meadows, LLC 11/17/2015 Electric Devepment Reimbursement Agreement	2015	$ 46,617	$ 13,305	71.46%	28.54%
SUVPS Substation Rebuild Projects	2015	$ 494,748	$ 266,489	46.14%	53.86%
Masterplan & Impact Fee Studies	2015	$ 5,141	$ 3,424	33.40%	66.60%
Wood House Sub Expansion	2015	$ 258,837	$ 139,419	46.14%	53.86%
SUVPS Substation Rebuild Projects	2016	$ 489,852	$ 305,057	37.72%	62.28%
Masterplan & Impact Fee Studies	2016	$ 2,456	$ 1,891	23.00%	77.00%
400 N 2000 E. & 2550 E. Connections	2016	$ 6,174	$ 4,754	23.00%	77.00%
IHC Distribution Line Relocation UG Williams Ln	2016	$ 85,401	$ 28,722	66.37%	33.63%
Parkview Townhomes Ph 1 - 600 Amp Electric Line along Volunteer Dr	2016	$ 84,132	$ 64,780	23.00%	77.00%
SUVPS Substation Rebuild Projects	2017	$ 515,448	$ 367,271	28.75%	71.25%
Masterplan & Impact Fee Studies	2017	$ 2,360	$ 2,079	11.90%	88.10%
400 N 2000 E. & 2550 E. Connections	2017	$ 62,318	$ 54,900	11.90%	88.10%
IHC Distribution Line Relocation UG Williams Ln	2017	$ 44,052	$ 16,952	61.52%	38.48%

46 kV 2700 N. Dry Creek to Whitehead Tran. Line	2017	$ 146,513	$ 104,395	28.75%	71.25%
Bonner Sub.	2017	$ 437,784	$ 311,933	28.75%	71.25%
Masterplan & Impact Fee Studies	2017	$ 2,360	$ 2,079	11.90%	88.10%
SUVPS Line Rebuild & Upgrade Projects	2017	$ 515,448	$ 77,105	85.04%	14.96%
46 kV 2700 N. Dry Creek to Whitehead Tran. Line	2017	$ 624,423	$ 444,919	28.75%	71.25%
Bonner Sub.	2017	$ 1,352,730	$ 963,857	28.75%	71.25%
Leland Area Rebuild	2017	$ 20,000	$ 2,992	85.04%	14.96%
US-6 600A Powerhouse Rd to Canyon Rd SR198	2017	$ 250,000	$ 96,202	61.52%	38.48%
Electric improvements from 1515 E SF Pkwy to 1350 N Hwy 51	2017	$ 121,840	$ 107,337	11.90%	88.10%
600 amp electric line from 640 S to 780 S Main St (605.5 feet)	2017	$ 130,368	$ 114,850	11.90%	88.10%
Salisbury Construction - Parkview Townhomes Phase 2	2017	$ 9,024	$ 7,950	11.90%	88.10%
Canyon Vista Phase 1-4	2017	$ 65,676	$ 57,858	11.90%	88.10%
Legacy Farms C1 & C2	2017	$ 219,746	$ 193,590	11.90%	88.10%
Legacy Farms C3	2017	$ 92,145	$ 81,177	11.90%	88.10%
Legacy Farms Parkway	2017	$ 443,928	$ 391,086	11.90%	88.10%
Parkview Phase 3	2017	$ 33,457	$ 29,475	11.90%	88.10%
Anthem Park	2017	$ 215,355	$ 189,721	11.90%	88.10%
Total		$ 11,206,563	$ 5,614,760		50.10%

4.10.03.040 Impact Fee Facilities Plan

Table 18 identifies the impact fee-eligible capital facilities projects that have been completed, or at a minimum budgeted or bonded for this year. The portion of the plan attributable to anticipated new development was estimated by identifying the portion of growth in demand attributable to existing users and deducting that amount from the growth in overall demand. Planned projects on the map are identified with corresponding project information in the IFFP (Table 18). Projects added to the City's plan since completion of the previous master plan are not included in Figure E001.

Table 18
Impact Fee Facilities Plan

Project	Approx. Time Frame	Construction Cost	Cost to Development For the Next 10 Years	% Capacity Used by Existing Users	% Capacity for Development For the Next 10 Years
Ivory Development, LLC	2018	$ 63,417	$ 63,417	0.00%	100.00%
Vincent Ridge	2018	$ 16,693	$ 16,693	0.00%	100.00%
Masterplan & Impact Fee Studies	2018	$ 2,360	$ 2,360	0.00%	100.00%
SUVPS Line Rebuild & Upgrade Projects	2018	$ 536,357	$ 91,073	83.02%	16.98%
46 kV 2700 N. Dry Creek to Whitehead Tran. Line	2018	$ 600,000	$ 485,280	19.12%	80.88%
Bonner Sub.	2018	$ 300,000	$ 242,640	19.12%	80.88%
Leland Area Rebuild	2018	$ 20,000	$ 3,396	83.02%	16.98%
US-6 600A Powerhouse Rd to Canyon Rd SR198	2018	$ 250,000	$ 109,200	56.32%	43.68%
Upgrade Bonner to Canyon Rd Sub Tran Line	2018	$ 1,100,000	$ 186,780	83.02%	16.98%
46 kV Reconductor Argyle to Bonner	2018	$ 675,000	$ 114,615	83.02%	16.98%
600 amp Circuit Tie 100 S.	2018	$ 100,000	$ 16,980	83.02%	16.98%
Total		$ 3,663,827	$ 1,332,434		36.37%

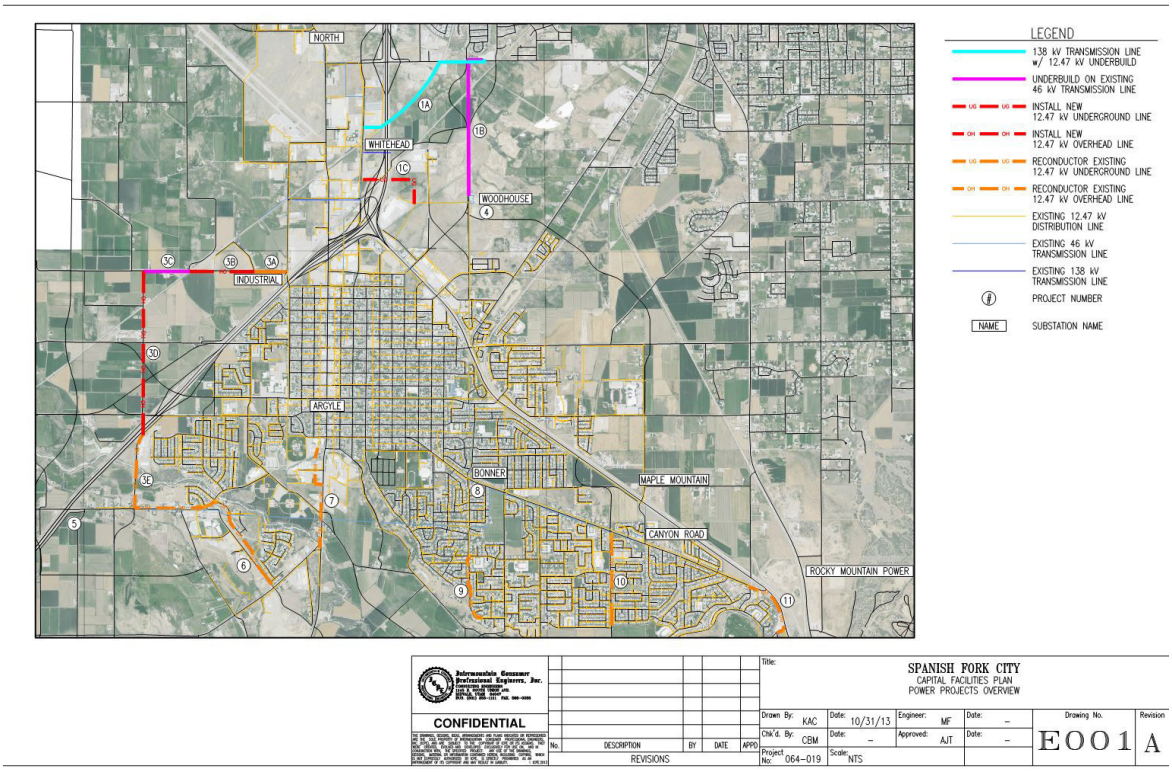

Figure 3
Electrical System and Capital Facilities Plan

4.10.03.050 Maximum Allowable Impact Fee

The maximum allowable impact fee based on the IFFP is provided in Table 19. The actual impact fee will be calculated in the Impact Fee Analysis and include all applicable statutorily required adjustments.

Table 19
Maximum Allowable Power Impact Fee

Total Value of Excess Capacity	$ 5,614,759.79
Total Cost of IFFP	$ 1,332,434.21
# of new ERU	5,421
"Buy-in" Cost/ERU	$ 245.79
IFFP Cost/ERU	$ 1,035.74
Maximum Allowable Impact Fee/ERU	$ 1,281.53

Source: GSBS Richman

4.10.04 Storm Water

Bowen, Collins & Associates (BC&A) completed a Storm Water System Master Plan in 2012 and an update in 2016 that forms the basis for this IFFP. The master plan addresses the components necessary to a system capable of providing adequate storm water drainage to residents based on best engineering practices and modeling following the City's Storm Drainage Manual. BCA modeled the City's system to evaluate the performance of existing facilities under current and future demands. Recommendations for system improvements are based on this model.

4.10.04.010 Current and Proposed Level of Service

The Spanish Fork City Storm Water System current and proposed level of service (LOS) is to provide a storm drain system designed and installed to the criteria identified below:

Minor System
Minor system facilities shall be designed to collect and convey storm water runoff from a 3 hour design storm that has a 10 percent chance of occurring in any given year (commonly referred to as a 10-year design storm, see the SDMP Report). Minor system facilities include the following:

- Catch basins
- Storm drain pipes
- Manholes

Storm drain pipes shall not be smaller than 12 inches in diameter for laterals and 15 inches for mains.

Major System
Major system facilities shall be designed to collect and convey storm water runoff from a 3 hour design storm that has a 1 percent chance of occurring in any given year (commonly referred to as a 100-year design storm, see the SDMP Report). Major system facilities include:

- Streets
- Open channels

- Culverts and bridges
- Retention basins

Low Impact Development Facilities

Low impact development (LID) facilities shall be designed to collect and infiltrate storm water runoff from a 25-year storm with the worst-case intensity that has a 4 percent chance of occurring in any given year (commonly referred to as a 25-year design storm, see City Standards)). LID facilities include:

- R-Tanks
- Stormtech
- StormBrixx

Detention Facilities

Detention facilities shall be designed to attenuate peak runoff rates from tributary areas associated with a design storm to a level that meets level of service criteria for existing or planned major and minor system facilities as identified in the SDMP. In an effort to mitigate for increased impacts on storm water facilities from large areas of impervious area, commercial and industrial developments must provide project or local detention facilities that will reduce peak runoff rates from associated development to 0.15 cfs per acre. Public roads in and around commercial and industrial developments typically freely discharge into the storm drain system and are not detained. The combined total peak discharge rates from detained commercial and industrial developments and undetained roads in and around those developments will be similar in magnitude to discharge rates from undetained residential developments.

System and Project Improvements

The recommended improvements identified in Spanish Fork's Storm Drainage Master Plan Report (SDMP Report) included only storm water system facilities (system improvements) that serve multiple developments. Local storm drain facilities (project improvements), typically associated with single development projects, are not included in the SDMP report nor are they eligible for impact fees. The definition of system improvements and project improvements is presented below.

- Conveyance Facilities – Major storm drain conveyance facilities (system improvements) include pipelines or major channels that typically service multiple developments. Local facilities (project improvements) include smaller storm drain conveyance facilities that typically only serve one development and are used to convey storm water runoff from the design storm to the major conveyance facilities.

- Detention Facilities – A regional detention facility (system improvement) that will attenuate peak runoff from the design storm from multiple developments to levels that can be safely conveyed through existing downstream facilities. A local detention facility (project improvement) will attenuate peak runoff from one development or a single lot.

4.10.04.020 Impact of Growth

New development will occur on approximately 900 acres of currently undeveloped area. The most cost effective way to serve new development is with existing infrastructure with available excess capacity. We assumed that roadway and site LID projects only serve the immediate area's storm water and thus have a capacity of 10 years from the construction completion year, with the understanding that nearly or all of the capacity will be used up at time of project completion. We assumed that regional detention/retention facilities and pipelines have a capacity of 30 years from time of completion. Only those projects with known, impact fee-eligible costs and completion dates were considered.

Table 20 lists specific impact fee eligible projects in the City that have already been constructed that have impact fee-eligible excess capacity to continue to serve future growth.

Table 20
Existing Excess Capacity Evaluation

Project	Approx. Time Frame	Construction Cost	Cost to Development For the Next 10 Years	% Capacity Used by Existing Users	% Capacity for Development For the Next 10 Years
Robert Bagley Storm Drain 3/30/1999	1999	$ 20,131	$ 5,926	67.57%	29.44%
Portola Dev Storm Drain 12/13/1999	1999	$ 114,181	$ 33,611	67.57%	29.44%
LDS Church Storm Drain 12/3/2004	2004	$ 53,369	$ 16,229	51.31%	30.41%
E.S.A.D. Investments Storm Drain 5/1/2004	2004	$ 153,541	$ 46,690	51.31%	30.41%
MitchCo Enterprises Storm Drain 10/9/2006	2006	$ 41,825	$ 13,041	43.57%	31.18%
Storm Water Master Plan - 2012	2012	$ 30,000	$ 12,852	57.16%	42.84%
Storm Water Master Plan - 2014	2014	$ 14,736	$ 8,667	41.18%	58.82%
400 N SR51 Connector Line	2014	$ 30,000	$ 10,079	14.41%	33.60%
CFP-DB8, 1880 E 400 N - Ivory Agree	2014	$ 214,729	$ 72,145	14.41%	33.60%
CFP-R307 1880 E Trunk Line	2014	$ 133,775	$ 44,946	14.41%	33.60%
Storm Masterplan & IF Studies	2015	$ 70,273	$ 46,800	33.40%	66.60%
Sierra Park Regional Detention Basin	2015	$ 124,844	$ 23,894	49.78%	19.14%
Nebo Sub LID & 900 E	2015	$ 536,582	$ 42,417	92.09%	7.91%
Storm Masterplan & IF Studies	2016	$ 10,659	$ 8,207	23.00%	77.00%
Sierra Park Regional Detention Basin	2016	$ 228,853	$ 44,358	47.65%	19.38%
Nebo Sub LID & 900 E	2016	$ 326,754	$ 29,864	90.86%	9.14%
2550E Reg Detention Basin	2016	$ 64,600	$ 3,295	86.22%	5.10%
Larsen Elementary LID ($88,000 District)	2016	$ 36	$ 6	84.60%	15.40%
Storm Masterplan & IF Studies	2017	$ 7,684	$ 6,769	11.90%	88.10%
Larsen Elementary LID	2017	$ 193,860	$ 34,157	82.38%	17.62%
Masterplan & Impact Fee Studies	2017	$ 7,684	$ 6,769	11.90%	88.10%
24" SD line on SF Pkwy from 1375 E to 1625 E	2017	$ 108,937	$ 37,555	4.19%	34.47%
Parkview Townhomes Phase 2	2017	$ 64,550	$ 56,867	11.90%	88.10%
Maple Mountain Estates Phase 1	2017	$ 14,770	$ 13,012	11.90%	88.10%
Canyon Vista Phases 1-4	2017	$ 64,400	$ 56,734	11.90%	88.10%
Legacy Farms C1 & C2	2017	$ 464,920	$ 409,580	11.90%	88.10%
Legacy Farms C3	2017	$ 144,672	$ 127,452	11.90%	88.10%

Legacy Farms SF Parkway	2017	$ 393,059	$ 346,273	11.90%	88.10%
Anthem Park	2017	$ 24,294	$ 21,402	11.90%	88.10%
Maple Mountain Estates Phase 3	2017	$ 76,582	$ 67,466	11.90%	88.10%
Maple Park Phase 1	2017	$ 105,186	$ 92,666	11.90%	88.10%
Total		$ 3,705,175	$ 1,700,193		45.89%

4.10.04.030 Existing and Future Facilities

The SDMP report identifies the recommended capital facility projects needed to provide the desired level of storm drain service to various parts of the City at projected full build-out conditions. Many of those projects will be constructed in phases as development occurs. One of the goals of this IFFP is to identify a list of system improvements that will be completed over the next 10 years to meet the needs of anticipated development, though only constructed, budgeted, or bonded for projects are actually included. Demands placed upon existing storm drain facilities by future development were determined using the process outlined below. Each of the steps were developed as part of the SDMP report and associated analyses. A detailed description of the steps outlined below can be found in the SDMP report.

1. Existing Capacity – The capacities in existing storm drain pipelines were estimated using Manning's equation, pipe size, and slope data provided by the City (See Chapters 3 and 4 of the SDMP report).

2. Existing Flow – The peak flow rates for existing development conditions were estimated using a hydrologic computer model (See Chapters 3 and 4 of the SDMP report).

3. Existing Deficiencies – Existing system capacity deficiency projects are not impact fee eligible and thus not included in Table 21.

4. Future Flow - The peak flow rates for the design storm based on projected full build-out conditions were estimated using a hydrologic computer model (See Chapter 3 and 4 of the SDMP report).

5. Future Demand - Future demands on the storm drain system were identified using the defined level of service, peak flow estimates from the hydraulic

computer model and the estimated capacities for existing system facilities. (see Chapter 5 SDMP Report).

6. Recommended Improvements – Only impact fee eligible projects that have been constructed, budgeted, or bonded are shown in Table 21.

The steps listed above define the "demands placed upon [the] existing public facilities by new development activity; and the proposed means by which the local political subdivision will meet those demands" (Utah Code Ann. § 11-36a-302 (1)(a)(iv)(v)).

4.10.04.040 Impact Fee Facilities Plan

In Chapter 5 of the SDMP Report, capital facility projects needed to provide storm water management service to various parts of the City at projected build-out were identified. Most of those projects will need to be constructed in phases as development occurs. Only infrastructure projects that have been constructed, budgeted for, or bonded for will be considered in the calculation of impact fees to avoid uncertainty surrounding future improvements. Table 21 identifies these projects.

Table 21
Storm Water Impact Fee Facilities Plan, 10-Year Growth

Project	Approx. Time Frame	Construction Cost	Cost to Development For the Next 10 Years	% Capacity Used by Existing Users	% Capacity for Development For the Next 10 Years
Eagle Cove LID	2018	$ 247,524	$ 247,524	0.00%	100.0%
Newport Village LID	2018	$ 102,458	$ 102,458	0.00%	100.0%
Vincent Ridge LID	2018	$ 62,897	$ 62,897	0.00%	100.0%
Storm Master Plan & IF Studies	2018	$ 4,000	$ 4,000	0.00%	100.0%
CIP-R262 Cemetery LID	2018	$ 39,000	$ 39,000	0.00%	100.0%
Total		$ 455,879	$ 455,879		100.0%

4.10.04.050 Maximum Allowable Impact Fee

Table 22 is the maximum allowable impact fee based on the IFFP identified in Table 21 and the excess capacity available to new growth. Spanish Fork City requires payment of the storm water impact fee at plat approval. The final fee will be calculated in the Impact Fee Analysis.

Table 22
Maximum Allowable Storm Drainage Impact Fee

Total Value of Excess Capacity	$ 1,700,193
Total Cost of IFFP	$ 455,879
# of new acres developed	1,131
"Buy-in" Cost/Acre	$ 1,503.01
IFFP Cost/Acre	$ 403.01
Maximum Allowable Impact Fee/Acre	$ 1,906.02

Source: GSBS Richman

4.10.05 Drinking Water

Spanish Fork City's current and proposed level of service (LOS) for drinking water facilities is determined by establishing the 2018 drinking water capacity, including identification of existing deficiencies and existing excess capacity in the system.

Hansen, Allen & Luce, Inc. (HAL) completed a Drinking Water System Master Plan in May 2012 to provide a system capable of providing drinking water to system users based on City demand data and standards established by the Utah Division of Drinking Water. HAL modeled Spanish Fork's drinking water system to evaluate the performance of existing facilities under current and future demands. Recommendations for system improvements are based on this model.

4.10.05.010 Current and Proposed Level of Service

Table 23 summarizes the usage and performance of the current Spanish Fork drinking water system. The system is evaluated by equivalent residential connection (ERC) and in total. An ERC is the average usage of a single-family residential

connection. In the Spanish Fork drinking water system, an ERC uses an average of 0.18 gpm (241 gallons per day) based on source flow meters. Table 23 also summarizes the projected drinking water system usage in the year 2028 based on current usage.

There are five components to a drinking water system: source, storage, distribution, fire suppression, and water rights. Each component of Spanish Fork's drinking water system has a current and proposed LOS. Current and proposed LOS is based on system usage and system design criteria. The IFFP projects and the impact fees are based on actual impact of each ERC on the system. The May 2012 Master Plan identified key system design criteria. An extended period hydraulic model of the system was used to assess current performance and identify future system requirements resulting from growth.

Table 23 summarizes current drinking water system performance and usage data.

Table 23
Current Drinking Water System Performance And Usage

	Per ERC	2018	2028
Total Usage from Sources (ac-ft/yr)		4,099	5,074
Total Metered Usage (ac ft/yr)		3,097	3,834
Total Metered Single Family Res. Connections		10,328	15,644
Total Metered Single Family Res. Usage (ac ft/yr)		2,211	2,737
Total Metered Non-Res. Usage (ac ft/yr)		886	1,097
Unmetered Water (%)		13.40%	2.40%
ERUs	1	15,203	18,337
Average Day Use (gpm)	0.167	2,541	3,065
Peak Day Use (gpm)	0.251	3,812	4,597
Peak Instantaneous Flow (gpm)	0.368	5,590	6,742
Equalization Storage (gallons)	400	6,081,398	7,334,809
Maximum Operating Pressure (psi)	125	125	125
Minimum Operating Pressure (psi)	50	50	50

Water Rights/Source Volume (ac-ft/yr)	0.320	4,865	5,868
Fire Suppression (MG)	1,000 gpm for 2 hours	3.260	3.260

Source: Hansen, Allen & Luce, Inc.

Based on current system performance and system design criteria, Table 24 summarizes the current and proposed source, storage and distribution, fire suppression, and water rights LOS for the Spanish Fork drinking water system facilities for the purpose of calculating the drinking water impact fee.

Table 24
Current And Proposed Drinking Water Level Of Service

Facility	Current and Proposed LOS per ERC
Source (gpm)	0.30
Storage (gallons)	400
Distribution	Maintain pressures between 50 and 125 psi with a maximum pressure fluctuation of 20 psi
Fire Suppression	1,000 gpm for 2 hours
Water Rights (ac-ft/yr)	0.320
Water Rights (gpm)	0.30

Source Level of Service

The existing and proposed LOS for source in the drinking water system is 0.30 gpm per ERC.

Table 25 identifies Spanish Fork's existing drinking water source capacity. The primary drinking water sources are springs. The springs, however, vary in production. Table 25 identifies the average flow of the springs as well as the reliable flow during periods of drought. During normal precipitation years, the springs can handle the entire drinking water system peak-day demand. Drinking water source capacity, however, must be based on the flow available during drier years. For example, Crab Creek Springs was flowing at an average of 700 gpm for the spring of 2014, whereas its normal average flow is 1,400 gpm. The City can use the 2550 East (Canyon Road) Well in the drinking water system in addition to the 1700 East (Canyon Elementary) Well, if necessary. The capacity for the 2550 East (Canyon Road) Well is being accounted for in the pressurized irrigation system and is not

included in Table 25. The total dry-year flow capacity for drinking water system sources is about 5,130 gpm which is roughly equivalent to current peak-day use.

Table 25
Existing Drinking Water System Sources

Source	Average Year Flow (gpm)	Dry Year Flow (gpm)
Crab Creek Springs	1,400	700
Malcomb Springs	2,750	1,350
Cold Springs	1,725	1,380
1700 East (Canyon Elementary) Well	1,700	1,700
Total	7,575	5,130

Source: Hansen, Allen & Luce, Inc.

Storage Level of Service

The existing and proposed LOS for equalization storage in the drinking water system is 400 gallons per ERC. There are three requirements for drinking water storage:

- equalization storage to meet peak demands
- fire suppression storage
- emergency storage

It is assumed that the existing and proposed level of service of 400 gallons per ERC for equalization storage includes emergency storage. Table 26 identifies the current capacity of each storage facility serving the City's drinking water system.

Table 26
Existing Storage Facilities And Capacity

Facility	Equalization (MG)	Fire Suppression (MG)	Total Capacity (MG)
Sterling Hollow Tank 1	2.25	0.75	3.00
Sterling Hollow Tank 2	3.75	1.25	5.00
Malcomb Tank 1	0.64	0.36	1.00

Malcomb Tank 2	1.28	0.72	2.00
Oaks 1	0.04	0.09	0.13
Oaks 2	0.04	0.09	0.13
Total	8.00	3.26	11.26

Source: Hansen, Allen & Luce, Inc.

Distribution Level of Service

The existing and proposed LOS for distribution in the drinking water system is maintaining a minimum pressure of 50 psi and a maximum pressure of 125 psi during normal operating conditions. Additionally, the maximum allowable pressure fluctuation during normal operating conditions is 20 psi.

The distribution system consists of all pipelines, valves, fittings, and other appurtenances used to convey water from the water sources and storage tanks to the water users. The existing drinking water system contains over 190 miles of distribution pipe ranging in size from 2 to 30 inches in diameter (Figure 4).

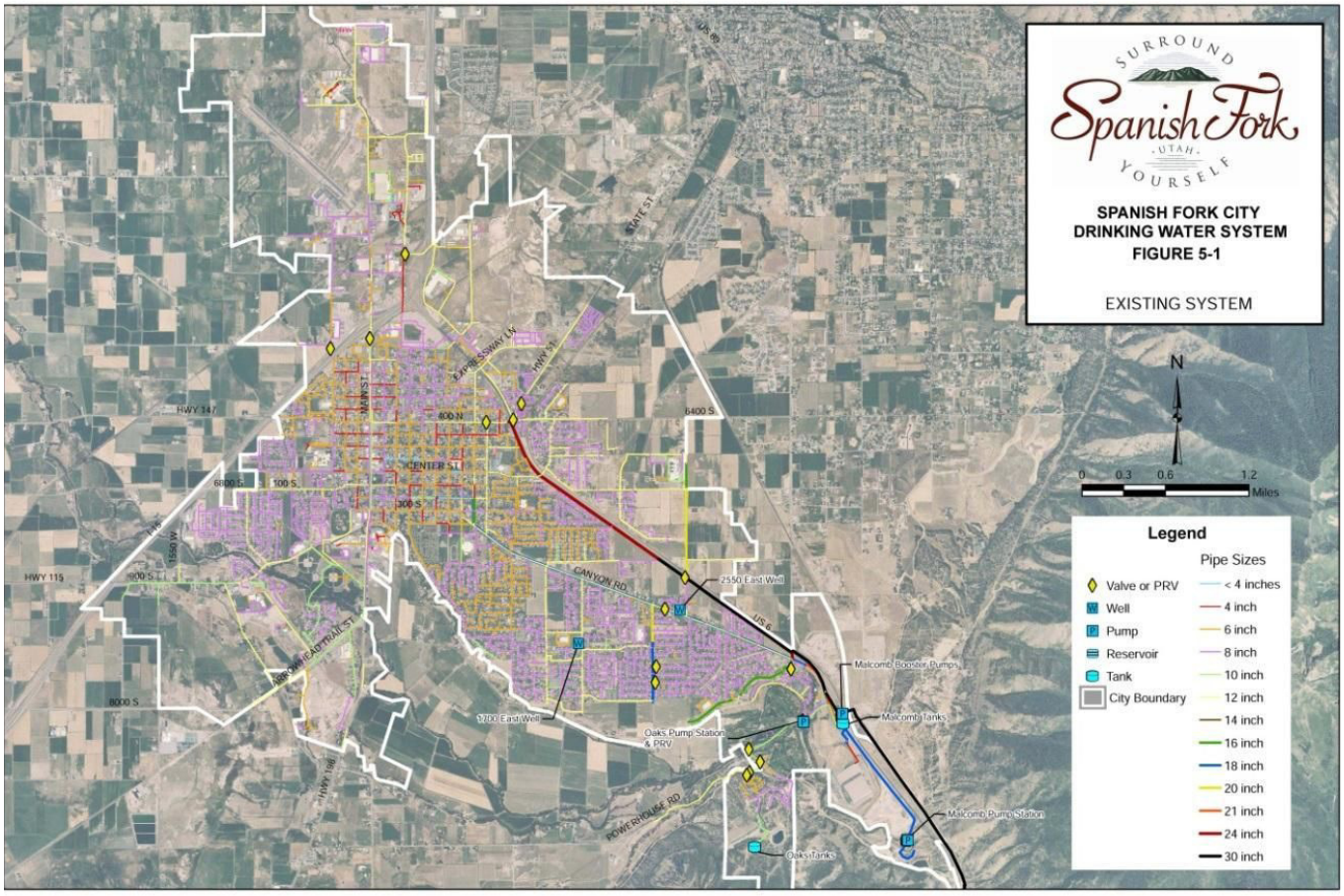

Figure 4
Spanish Fork Drinking Water System

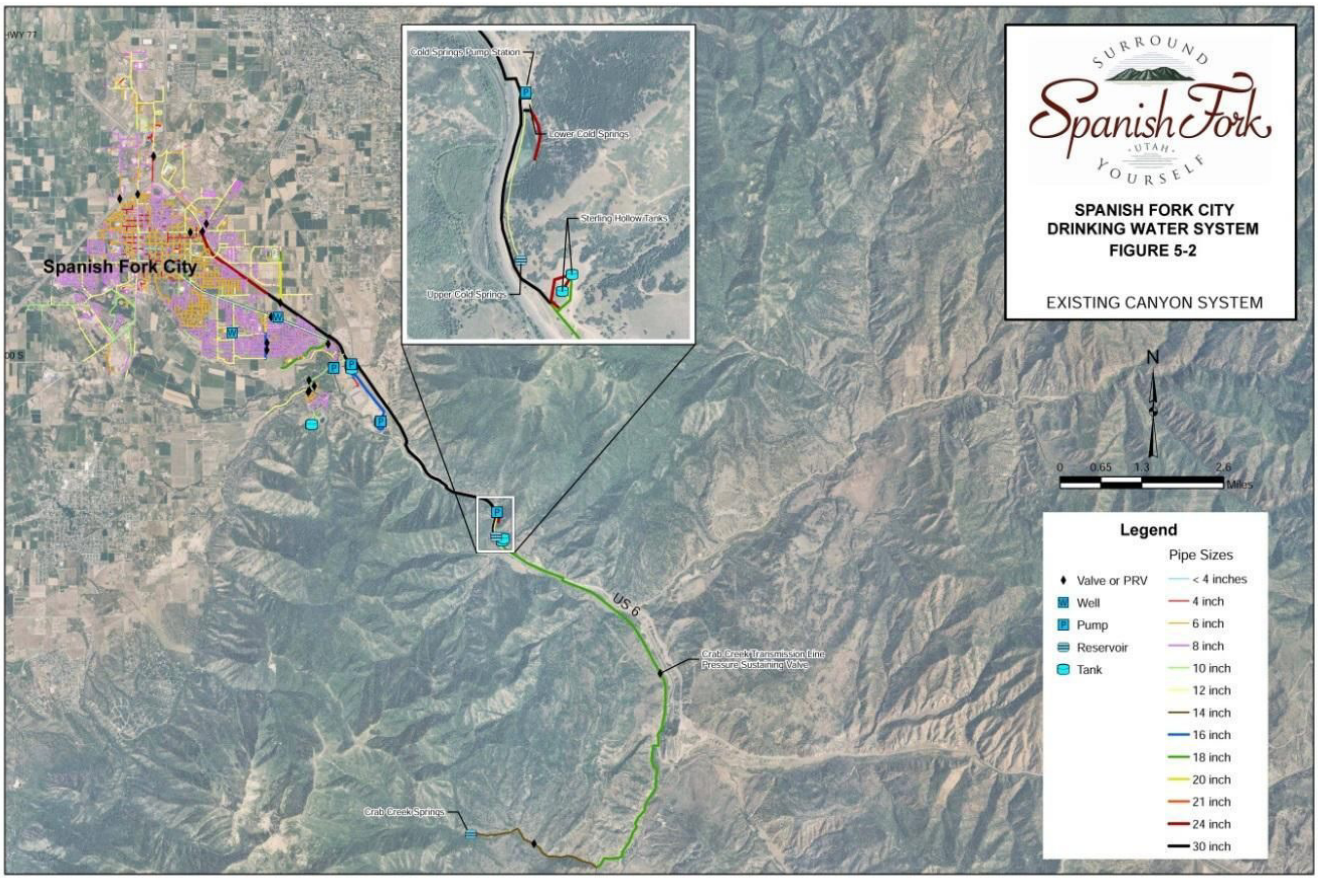

Figure 5
Spanish Fork Drinking Water System (Canyon)

Fire Suppression Level of Service

The existing and proposed LOS for fire suppression in the drinking water system is 1,000 gpm for 2 hours per ERC. Homes larger than 3,600 square feet total, including the garage and non-residential buildings, require a minimum fire flow of 1,500 gpm. The largest fire flow in the system is 8,000 gpm for 4 hours. Removing the majority of the outdoor irrigation demand from the drinking water system by building a pressurized irrigation system has in general increased overall capacity for fire suppression. The total fire suppression storage capacity in the existing system is 3.2 MG, which is sufficient capacity for growth beyond 10 years.

Water Rights Level of Service

The existing and proposed LOS for water rights in the drinking water system is 0.32 ac-ft/yr. The City owns 16,691 ac-ft/yr of water rights for the drinking water system (see Table 27). During a year when precipitation is below normal, the City is able to maintain a level of service of 0.32 ac-ft/yr per ERC. In a dry year, these water rights give the City about 13,200 ac-ft/year. This capacity is sufficient not only for the existing and future anticipated demand in the next ten years, but is sufficient for many years beyond the growth in the 2028 planning horizon.

Table 27
Existing Drinking Water System Water Rights

Type	Normal Year Volume (ac-ft)	Dry Year Year Volume (ac-ft)
River/Springs	7,481	4,573
Wells	9,210	8,665
Total	16,691	13,238

Source: Hansen, Allen & Luce, Inc.

4.10.05.020 Existing Excess Capacity

Source

The existing excess capacity for source is projected to be more than enough through the year 2026 (see Table 28). Anticipated increase in demand from new ERCs will use newly developed source capacity.

Table 28
Source Existing Excess Capacity (gpm)

	Capacity	2018	Difference	2028	Difference
Total	5,130	4,561	569	5,501	-371

Source: Hansen, Allen & Luce, Inc.

Storage

There is existing excess capacity in the drinking water system for equalization storage through 2028. Current excess capacity is summarized in Table 29.

Table 29
Storage Existing Excess Capacity, 2018–2028 (MG)

	Capacity	2018	Difference	2028	Difference
Total	8.00	6.08	1.92	7.33	0.67

Source: Hansen, Allen & Luce, Inc.

Distribution

The capacity for the distribution system was calculated based on the existing and proposed level of service. Using the existing extended-period hydraulic model for the drinking water system, the demand was increased until the existing system reached unacceptable performance during peak instantaneous demand times. Unacceptable performance was defined as a minimum normal operating pressure of 50 psi. The highest pressure drop in the water system during peak instantaneous demand conditions at maximum capacity was predicted by the model to be 20 psi. The maximum capacity of the existing drinking water system was determined to be 22,300 ERCs. Given the existing demand on the system of 14,480 ERCs, the remaining capacity of the distribution system is 7,820 ERCs.

Fire Suppression

The total fire suppression storage capacity in the existing system is 3.2 MG. It is not anticipated that any additional capacity will be needed for future growth in the next 10 years. Removing the majority of the outdoor irrigation demand from the drinking water system by building a pressurized irrigation system has in general increased overall capacity for fire suppression in the distribution system. The City will not include a “buy-in” for this existing capacity in the impact fee. New development payments for this existing capacity are included in the impact fee calculation for equalization storage.

The 2012 Master Plan identified locations where the existing and proposed level of service for fire suppression is not met in specific places in the distribution system. These localized fire flow capacity issues are considered existing system deficiencies and will not be paid for by impact fees.

Water Rights

There is existing excess capacity in the drinking water system for water rights. The City owns 16,691 ac-ft/yr of water rights for the drinking water system. In a dry year, however, these water rights give the City 13,238 ac-ft/yr. This capacity is sufficient not

only for the existing and future anticipated demand in the next ten years, but for many years beyond. Current excess capacity is approximately 8,373 ac-ft/yr. As seen in Table 30 the anticipated increase in demand from new ERCs is anticipated to require approximately 12 percent of available excess capacity.

Table 30
Water Rights Existing Excess Capacity 2018-2028 (ac-ft/yr)

	Capacity	2018	Difference	2028	Difference
Total	13,238	4,865	8,373	5,868	7,370

Source: Hansen, Allen & Luce, Inc.

4.10.05.030 Impact of growth

Increase in demand generated by new development is projected to require additional capacity in sources, storage, distribution system, and water rights. The value of excess capacity that will be used by 10 year growth is summarized in Table 31.

Table 31
Drinking Water Existing Excess Capacity Evaluation

Project	Approx. Time Frame	Construction Cost	Cost to Development For the Next 10 Years	Total Capacity (gpm/ERCs)	% Capacity Used by Existing Users	% Capacity for Development For the Next 10 Years
Source						
Cold Springs Development	2013	$ 2,419,420	$ 1,004,768	4,567	58.47%	41.53%
Crab Creek Transmission Line (77%)	2011	$ 1,897,312	$ 655,475	9,167	29.13%	34.55%
Cold Springs/Butler Springs	2015	$ 117,375	$ 48,745	4,567	58.47%	41.53%
Cold Springs/Butler Springs	2016	$ 99,514	$ 41,327	4,567	58.47%	41.53%
Cold Springs/Butler Springs	2017	$ 1,705	$ 708	4,567	58.47%	41.53%
Storage						

5 MG Water Tank - Sterling Hollow	2008	$ 3,215,705	$ 1,074,827	9,375	48.84%	33.42%
Crab Creek Transmission Line (23%)	2011	$ 566,729	$ 189,425			
Distribution						
2550 E. Trunk Line (MM High School)	2011	$ 174,347	$ 56,478	22,300	26.64%	32.39%
400 N. Trunk Line (Legacy Farms)	2011	$ 52,898	$ 17,136		26.64%	32.39%
Muhlestein Meadows, LLC 11/17/2015 Reimb Agreement	2014	$ 2,780	$ 978		20.35%	35.17%
750 South 2550 East Trunk Line	2013	$ 133,480	$ 45,615		22.61%	34.17%
Main St. 1400 N to 1600 N Trunk Line	2015	$ 215,000	$ 77,924		17.92%	36.24%
Canyon Creek, 12" waterline in Canyon Creek Parkway & Market Place Dr	2016	$ 344,931	$ 131,192		13.86%	38.03%
Mountain Country Foods	2016	$ 15,988	$ 6,081		13.86%	38.03%
12" Line on SF Pkwy from 1375 E to 1625 E	2017	$ 81,975	$ 32,850		9.25%	40.07%
Anthem Park	2017	$ 31,582	$ 12,656		9.25%	40.07%
Legacy Farms Offsite Water & PI	2017	$ 159,650	$ 63,977		9.25%	40.07%
Legacy Farms C3	2017	$ 10,619	$ 4,255		9.25%	40.07%
Legacy Farms SF Parkway	2017	$ 107,137	$ 42,933		9.25%	40.07%
Planning						
Model, Master Plan, & Impact Fee Updates	2013	$ 100,000	$ 50,000	-	50.00%	50.00%
Model, Master Plan, & Impact Fee Updates	2014	$ 20,900	$ 12,540	-	40.00%	60.00%
Model, Master Plan, & Impact Fee Updates	2015	$ 32,748	$ 22,924	-	30.00%	70.00%
Model, Master Plan, & Impact Fee Updates	2016	$ 11,062	$ 8,850	-	20.00%	80.00%

Model, Master Plan, & Impact Fee Updates	2017	$ 1,331	$ 1,198	-	10.00%	90.00%
Total		$9,814,188	$3,602,860			

Source: Spanish Fork Drinking Water System Master Plan, 2012, Hansen, Allen & Luce; GSBS; Spanish Fork City

4.10.05.040 Impact fee facilities plan

Table 32 is the Spanish Fork City Impact Fee Facilities Plan. It identifies the impact fee-eligible capital facilities projects that have been completed, or at a minimum budgeted or bonded for this year. The portion of the plan attributable to anticipated new development was estimated by identifying the portion of growth in demand attributable to existing users and deducting that amount from the growth in overall demand.

Table 32
Drinking Water Impact Fee Facilities Plan

Project	Approx. Time Frame	Construction Cost	Cost to Development For the Next 10 Years	Total Capacity (gpm/ERCs)	% Capacity Used by Existing Users	% Capacity for Development For the Next 10 Years
Ivory Development, LLC Waterline	2018	$ 11,095	$ 4,899	22,300	0.00%	44.16%
2700 N Trunkline Connection	2018	$ 25,000	$ 11,039	22,300	0.00%	44.16%
Model, Master Plan, & Impact Fee Updates	2018	$ 8,500	$ 8,500	-	0.00%	100.00%
DW Cold Springs/Butler Springs	2018	$ 590,000	$ 245,023	4,567	58.47%	41.53%
Total		$ 634,595	$ 269,461			42.5%

4.10.05.050 Maximum allowable impact fee per ERC

Table 33 is the maximum allowable impact fee based on the IFFP identified in Table 32 and excess capacity value identified in Table 31 and an anticipated additional

3,714 ERCs of new development in the next ten years. The final fee will be calculated in the Impact Fee Analysis.

Table 33
Maximum Allowable Impact Fee/ERC

Total Value of Excess Capacity	$ 3,602,860
Total Cost of IFFP	$ 269,461
# of new ERC	$ 3,134
"Buy-in" Cost/ERC	$ 1,150
IFFP Cost/ERC	$ 86
Maximum Allowable Impact Fee/ERC	$ 1,235.77

Source: GSBS Richman

4.10.06 Pressurized Irrigation

Spanish Fork City provides irrigation water to residents of the City via a pressurized irrigation (PI) water system. The system reduces demand on the drinking water system particularly during the summer by providing irrigation water for outdoor use. The system includes two pressure zones: the upper and lower zones. Each zone has both exclusive and shared water sources making the zones interrelated. Hansen, Allen & Luce, Inc. (HAL) completed a Pressurized Irrigation System Master Plan in May 2012 that forms the basis for this IFFP. The master plan addresses the components necessary for a system to respond to variations in demand while maintaining acceptable pressures. System components include pumps, storage facilities, valves and pipes. HAL modeled Spanish Fork's PI system to evaluate the performance of existing facilities under current and future demands. Recommendations for system improvements are based on this model.

4.10.06.010 Current and Proposed Level Of Service

Table 34 summarizes the usage and performance of the current Spanish Fork PI system per irrigated acre and in total. The table includes a projection of usage in 2028 based on existing usage. In the Spanish Fork PI system, the average size of a single family lot is 0.25 acres with a typical irrigated area of 0.15 ac (based on HAL's review of aerial imagery). For single family homes and townhomes, it is recommended that the proposed level of service for irrigated area be 60% of the

total lot size. This matches the existing level of service. Even though larger lots have the potential for a larger percentage of irrigated area, the aerial imagery review revealed that it is typical for larger lots to have larger homes, driveways and other non-irrigated features proportional to the lot size. For multi-family and non-residential lots the recommended level of service is the actual irrigated acres as measured at final plat.

Table 34
Current Pressurized Irrigation Water System Usage And Projected Usage

		2018	2028
Total Usage from Sources (ac-ft/yr)		6,119	7,652
Total Metered Usage (ac ft/yr)		5,669	7,088
Total Metered Single Family Res. Connections		8,866	10,910
Total Metered Single Family Res. Usage (ac ft/yr)		4,108	5,136
Total Metered Non-Res. Usage (ac ft/yr)		1,659	1,952
Unmetered Water		0.0576	0.0576
ERCs	6.7	11,631	14,398
Irrigated Area (ac)	1	1,745	2,160
Average Day Use (Irrigation Season, gpm)	5	8,723	10,799
Peak Day Use (gpm)	6	10,468	12,959
Peak Instantaneous Flow (gpm)	10	17,447	21,598
Equalization Storage (gallons/ac-ft/ac-ft)	9,488	50.8	62.89
Max Operating Pressure (psi)	125	125	125
Min Operating Pressure (psi)	40	40	40
Water Rights/Source Volume (ac-ft/year)	4	6,979	8,639

Source: Hansen Allen & Luce

Table 35 lists the total current and proposed level of service in terms of irrigated acres by lot size. The level of service is 60% of the sum of lot size (for calculations see Table 35).

Table 35
Irrigated Acres By Residential Lot Size

Lot Size	Irrigated Acres	ERC
.25 Acre Single Family Residential Lot *	0.150	1
1 Acre Single Family Residential Lot *	0.60	4
1 Acre of Landscaped Area	1.00	6.67

* Irrigated acres = (lot size) x 0.6
Source: Hansen, Allen & Luce

Similarly, the irrigated acreage level of service for multi-family and non-residential lots is the actual irrigated acreage measured at final plat.

There are four components to a PI system: source, storage, distribution, and water rights. Each component of Spanish Fork's PI system has a current and proposed LOS. Current and proposed LOS is based on system usage and system design criteria. PI projects and the impact fees are based on actual impact of each ERC on the system. The 2012 Master Plan identified key system design criteria. An extended period hydraulic model of the system was used to assess current performance and identify future system requirements resulting from growth.

Based on current system performance and system design criteria, Table 36 summarizes the current and proposed source, storage, distribution, and water rights LOS for the Spanish Fork PI system facilities for the purpose of calculating the PI water impact fee. The LOS is presented per equivalent residential connection (ERC) and per irrigated acre. While the City defines the LOS per irrigated acre, the LOS in terms of ERCs gives an idea of values for a typical residential connection.

Table 36
Current and Proposed PI Water System LOS

Facility	Current and Proposed LOS per ERC	Current and Proposed LOS per Irrigated Acre
Source (gpm)	0.90	6.00
Storage (gallons)	1,423	9,488
Distribution (Pressures)	Maintain pressures between 40 and 125 psi	Maintain pressures between 40 and 125 psi
Distribution (Pressure Fluctuation)	with a maximum pressure fluctuation of 20 psi	with a maximum pressure fluctuation of 20 psi
Distribution (Peak Instantaneous in gpm)	1.50	10.00
Irrigated Acres for Parks & Ret/Det Basins (8.4%)		
Actual Irrigated Acres	0.150	1.00
Total Irrigated Area (acres)	0.150	1.00
Water Rights (ac-ft/yr)	0.60	4.00
Water Rights (gpm)	0.90	6.00

Source Level of Service

The existing and proposed LOS for source in the PI water system is 0.90 gpm per ERC.

Table 37 identifies Spanish Fork's existing PI water source capacity. The primary water source for the PI water system is the Spanish Fork River; however, the City currently supplements with groundwater from wells. The available water from the river varies in production. Table 38 identifies the average flow of all sources as well as the reliable flow during periods of drought. The PI sources are not affected by drought as much as the drinking water system sources because of the reliance on wells and because of access to water from Strawberry Reservoir. Water in wet years can be stored in the reservoir for use during drier years. Still, PI water source capacity should be based on the flow available during drier years to ensure enough water to cover demand is available. The total drought year flow capacity for PI water system sources is about 11,370 gpm which is a little more than current peak day use. The City can use the 1700 East (Canyon Elementary) Well in the PI water system in addition to the 2550 East (Canyon Road) Well, if necessary. The capacity for the 1700

East (Canyon Elementary) Well is being accounted for in the drinking water system for the impact fee facility plan since it is used primarily for drinking water purposes.

Table 37
Existing PI Water System Sources

Source	Average Year Flow at full Capacity (gpm)	Drought Year Flow (gpm)
Darger Springs (Spanish Fork River)	1,000	500
Golf Course Pump Station (Spanish Fork River and Strawberry Reservoir)	4,000	4,000
2550 East (Canyon Rd) Well	1,000	1,000
Cemetery Well #1	500	500
Cemetery Well #2	1,000	1,000
Fairgrounds Shop Well	1,300	1,300
Memorial Well	1,000	1,000
2550 East Pump Station	500	300
Cold Springs	2,275	1,370
R1 Well	400	400
Total	12,975	11,370

Source: Hansen, Allen & Luce

The City anticipates that eventually all of the groundwater source will be used in the drinking water system and the PI system will rely on water from Strawberry Reservoir and Spanish Fork River. The City will need to provide additional Strawberry Reservoir and Spanish Fork River source capacity for new growth in the PI System to replace the groundwater sources currently being used from the drinking water system. The groundwater source will be needed for new growth in the drinking water system.

Storage Level of Service

The City's existing PI system has two open-air storage facilities, both located on the east side of the City. There are three types of storage requirements:

- operational storage to allow for storage capacity for pump operation

- emergency storage to respond to system failures

- equalization storage to ensure peak water demands are met by supplying additional water during high demand and storing water during low demand.

Table 38 identifies the current capacity of each of the storage facilities serving the City's PI system. The Spanish Oaks Reservoir provides 77 ac-ft of operational, emergency, and equalization capacity. The Golf Course Pond provides 24 ac-ft of operational capacity for source. Spanish Fork City's current total storage capacity is 101 ac-ft.

Table 38
Existing Storage Facilities and Capacity

Facility	Capacity (ac-ft)
Spanish Oaks Reservoir	77
Golf Course Pond	24
Total	101

Source: Spanish Fork Pressurized Irrigation System Master Plan, 2012, Hansen, Allen & Luce

Table 39 identifies the existing system storage requirements of 49.5 acre-feet assuming the current LOS of 1,423 gallons per ERC. This LOS assumes that operational storage capacity is adequate to deliver source water at the identified levels for peak day demand, that 25 percent of the peak day demand is available for equalization needs and that approximately 1/3 of the equalization requirement is available for emergency situations. The storage assumptions are based on the performance of the current system.

Table 39 identifies storage requirements for 2028 as 62.9 acre-feet.

Distribution Level of Service

The distribution system consists of all pipelines, valves, fittings, and other appurtenances used to convey water from water sources and storage tanks to water users. The existing PI system contains over 120 miles of distribution pipe ranging in size from 2 to 36 inches in diameter (Figure 6).

The City's current and proposed level of service for distribution is to maintain pressures between 40 and 125 psi at all points in the system under normal operating

conditions. As part of the master planning process, HAL modeled the current delivery system using the 7,438 ERCs on the system at the time the distribution system was installed. HAL then modeled the system incrementally to determine at what point the current and proposed LOS for distribution could not be maintained (i.e., pressures fell below 50 psi). According to the model, the maximum capacity of the existing delivery system is 15,393 ERCs.

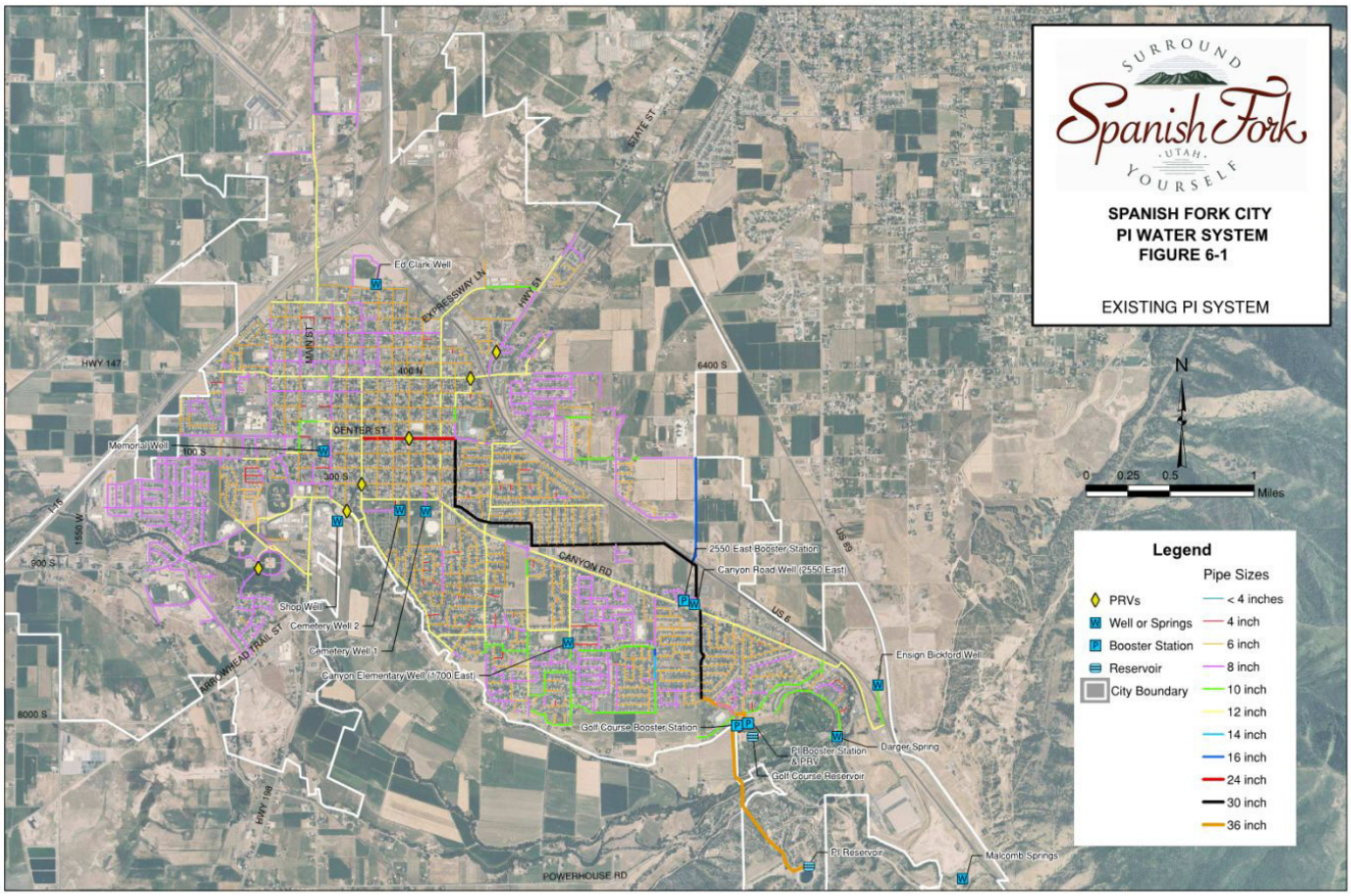

Figure 6
Spanish Fork PI Water System

4.10.06.020 Existing Excess Capacity Source

There is no existing excess capacity in the PI system for source. The total existing source requirement at the existing and proposed LOS for source in the PI water system is 10,468 gpm. The total drought year flow capacity for PI water system sources is about 11,370 gpm. The source requirement in the next 10 years is projected to be approximately 12,960 gpm.

Table 39
Source Existing Excess Capacity 2019–2029 (GPM)

	Capacity	2018	Difference	2028	Difference
Total	11,370	10,468	902	12,959	-1,589

Calculated based on actual utilization and irrigated acres per single-family acre
Source: Spanish Fork Pressurized Irrigation System Master Plan, 2012, Hansen, Allen & Luce

Storage

There is existing excess capacity in the PI system for storage. Current excess capacity is approximately 51.5 ac-ft. As seen in Table 40, the anticipated increase in demand from new ERCs is anticipated to require approximately 51 percent of the available excess capacity.

Table 40
Storage Existing Excess Capacity 2018–2028 (ac-ft)

	Capacity	2018	Difference	2028	Difference
Total	101	50.8	50.2	62.9	38.1

Calculated based on actual utilization and irrigated acres per single-family acre
Source: Spanish Fork Pressurized Irrigation System Master Plan, 2012, Hansen, Allen & Luce

Distribution

There is existing excess capacity in the PI system for distribution. Current excess capacity is approximately 5,643 ERCs. Table 41 indicates that anticipated new development will consume approximately 26.4 percent of the available excess capacity.

Table 41
Distribution Existing Excess Capacity, 2018–2028 (gpm)

	Capacity	2018	Difference	2028	Difference
Total	23,090	17,447	5,643	21,598	1,492

Calculated based on actual utilization and irrigated acres per single-family acre
Source: Spanish Fork Pressurized Irrigation System Master Plan, 2012, Hansen, Allen & Luce

4.10.06.030 Existing Deficiencies

The 2012 Pressurized Irrigation System Master Plan did not identify any issues with the existing system that must be addressed.

4.10.06.040 Impact Of Growth

Table 42 summarizes the excess capacity available in impact fee eligible projects included as part of the impact fee.

Table 42
Pressure Irrigation Existing Excess Capacity Evaluation

Project	Approx. Time Frame	Construction Cost	Cost to Development For the Next 10 Years	Total Capacity (gpm/ERCs)	% Capacity Used by Existing ERCs	% Capacity for Development For the Next 10 Years
Source						
Golf Course PI Pond and Pump Station	2009	$ 957,645	$ 239,970	4,000	74.94%	25.06%
Source Total		$ 957,645	$ 239,970			
Water Rights						
Summit Energy Water Right Purchase	2014	$ 450,588	$ 283,815	173	37.01%	62.99%
Wash Creek Water Right Purchase	2014	$ 60,000	$ 37,793	23		
Spring Creek Water Right Purchase	2014	$ 678,708	$ 427,503	1,120		
Butler Springs Water Right	2014	$ 1,275,000	$ 803,094	1,308		

Purchase						
2016 Strawberry Water Purchases	2016	$ 70,522	$ 70,522	64	0.00%	100.00%
Water Rights Total		$ 2,534,818	$ 1,622,727			
Distribution and Storage						
2550 E. Trunk Line (MM High School)	2011	$ 110,554	$ 52,485	15,393	35.47%	47.47%
400 N. Trunk Line (Legacy Farms)	2011	$ 52,898	$ 25,113		35.47%	47.47%
Citywide Pressurized Irrigation System	2003	$ 20,054,513	$ 3,605,572		58.16%	17.98%
2000 N 200 E. Railroad Casing	2011	$ 13,043	$ 6,192		35.47%	47.47%
Crab Creek Transmission Line	2012	$ 2,486,297	$ 1,219,869		33.30%	49.06%
Mill Rd (Muhlestein Meadows)	2014	$ 47,883	$ 25,233		28.36%	52.70%
Canyon Creek, 12" PI in Canyon Creek Parkway & Marketplace Dr	2015	$ 402,669	$ 220,612		25.52%	54.79%
Line Tail Race at Powerhouse RD	2016	$ 8,311	$ 4,849		20.68%	58.35%
Canyon Road Transmission Line/Crab Creek	2015	$ 993,000	$ 544,039		25.52%	54.79%
E Bench ULS Connection	2017	$ 44,000	$ 27,515		14.99%	62.53%
12" PI Line in Spanish Fork Parkway	2017	$ 81,975	$ 51,262		14.99%	62.53%

Old Mill Line	2017	$ 159,650	$ 99,835		14.99%	62.53%
Legacy Farms Offsite Water & PI	2017	$ 10,619	$ 6,640		14.99%	62.53%
Legacy Farms C3	2017	$ 18,514	$ 11,577		14.99%	62.53%
Legacy Farms SF Parkway	2017	$ 107,137	$ 66,997		14.99%	62.53%
Anthem Park	2017	$ 31,582	$ 19,749		14.99%	62.53%
Distribution and Storage Total		$ 24,622,644	$ 5,987,540			
Planning						
Model, Master Plan & Impact Fee Updates	2013	$ 100,000	$ 50,000		50.00%	50.00%
Model, Master Plan & Impact Fee Updates	2014	$ 20,876	$ 12,526		40.00%	60.00%
Model, Master Plan & Impact Fee Updates	2015	$ 14,428	$ 10,100		30.00%	70.00%
Model, Master Plan & Impact Fee Updates	2016	$ 11,062	$ 8,850		20.00%	80.00%
Model, Master Plan & Impact Fee Updates	2017	$ 11,600	$ 10,440		10.00%	90.00%
Planning Total		$ 157,966	$ 91,915			
Total		$ 28,273,073	$ 7,942,152			

Source: Spanish Fork Pressurized Irrigation System Master Plan, 2012, Hansen, Allen & Luce; GSBS

4.10.06.050 PI Impact Fee Facilities Plan

Service Area

Spanish Fork City's PI system includes two reservoirs and an upper and lower pressure zone. However, because the pressure zones are interrelated and one of the two reservoirs provides all emergency and equalization capacity, the system is treated as a single service area for purposes of imposing an impact fee.

2018–2028 Plan

Table 43 is the Spanish Fork City 2018–2028 Impact Fee Facilities Plan, and it identifies the impact fee-eligible capital facilities projects that have been completed, or at a minimum budgeted or bonded for this year. The portion of the plan attributable to anticipated new development was estimated by identifying the portion of growth in demand attributable to existing users and deducting that amount from the growth in overall demand.

Table 43
Pressure Irrigation Impact Fee Facilities Plan

Project	Approx. Time Frame	Construction Cost	Cost to Development For the Next 10 Years	% Capacity for Development For the Next 10 Years	% Remaining Capacity for Build-out Development
Newport Village Distribution	2018	$ 8,529	$ 5,759	67.52%	32.48%
Crab Creek Trans Line Bond	2018	$ 123,144	$ 83,149	67.52%	32.48%
PI Masterplan & Impact Fee Studies	2018	$ 8,500	$ 8,500	100.00%	0.00%
Cooling Golf course Booster Pumps	2018	$ 22,486	$ 22,486	100.00%	0.00%
1400 East Tree line road 12" PI Line	2018	$ 100,000	$ 67,522	67.52%	32.48%
Power Corridor Transmission Line	2018	$ 150,000	$ 101,282	67.52%	32.48%
2700 N Trunkline Connection	2018	$ 37,500	$ 25,321	67.52%	32.48%
Total		$ 450,159	$ 314,018		

Source: Spanish Fork Pressurized Irrigation System Master Plan, 2012, Hansen, Allen & Luce; GSBS; Spanish Fork City

4.10.06.060 Maximum Allowable Impact Fee Per ERC

The maximum allowable impact fee based on the IFFP and new development is provided in Table 44. The actual impact fee will be calculated in the Impact Fee Analysis and include all applicable statutorily required adjustments.

Table 44
PI Maximum Allowable Impact Fee/ERC

Total Value of Excess Capacity	$6,319,424.67
Total Cost of IFFP	$314,018.20
# of new ERC	2,767
"Buy-in" Cost/ERC	$2,283.45
IFFP Cost/ERC	$113.47
Maximum Allowable Impact Fee/ERC	$2,396.92

Source: GSBS Richman

4.10.07 Wastewater

Spanish Fork City provides wastewater collection and treatment facilities for most residents in Spanish Fork City with the exception of a small service area that is treated by the City of Salem. Spanish Fork City and Mapleton City jointly own wastewater treatment facilities and some wastewater trunk lines that run through Spanish Fork City as part of a number of interlocal agreements. Because of these jointly owned facilities, information pertinent to Mapleton City has been included in this IFFP for reference only. Capacity utilized by Mapleton City customers is not included in this Spanish Fork City IFFP to determine maximum impact fees.

Much of the analysis forming the basis of this IFFP has been taken from the 2011 Wastewater Master Plan (WWMP) completed by Bowen, Collins & Associates (BC&A). As part of the master plan process, BC&A performed hydraulic modeling of Spanish Fork's wastewater collection system to evaluate the performance of existing facilities under current and future demands. Aqua Engineering evaluated the Spanish Fork Wastewater Treatment Plant under current and future developed conditions and developed a wastewater treatment facilities plan that was included in the December 2011 WWMP.

4.10.07.010 Current And Proposed LOS

Current

The following design criteria have been and will be used to establish system standards for service to users of Spanish Fork wastewater system facilities:

- Pipeline Capacity - Spanish Fork City requires that all sewer mains be designed such that the peak flow (including domestic discharge and infiltration) is less than or equal to 75 percent of the pipe's hydraulic capacity,

using a Manning's roughness factor n of 0.013. This ensures capacity in the pipelines to account for inflows into the system during snowmelt or rain events and other unknowns.

- Pump Station Capacity - Based on industry standards and good design practice, it is recommended that peak daily flow to a lift station not exceed 85 percent of the lift station's hydraulic pumping capacity. Allowing for a modest amount of capacity above projected flows accounts for unknowns associated with flow projections and mechanical wear at each lift station. The minimum design standard for lift stations has correspondingly been established to require 15 percent of total capacity be reserved to account for these uncertainties. A single backup pump is required to accommodate mechanical failure of the primary pump and/or potential inflow from storm or snowmelt events.

- Force Mains/Siphons – Force mains and siphons are required to maintain velocities between 3 ft/sec and 7 ft/sec.

- Treatment Plant Capacity - A treatment plant consists of different components. Each component may have different criteria for design depending on the nature of the component. For the majority of treatment related components, design is based on treating the average daily flow during the maximum month. Conversely, conveyance pipelines must be designed based on peak hour flow (function of daily flow and diurnal flow variation). This is the same standard used by the State of Utah Department of Environmental Quality (UDEQ) when rating the overall treatment capacity of a treatment plant.

- Design Flows - The WWMP prepared by BC&A identified historic and projected discharges for the Spanish Fork City and Mapleton City service areas. The level of service for existing flow rates based on master plan data are summarized in Table 45.

Table 45
Wastewater Current LOS - Spanish Fork City And Mapleton City

Item	Spanish Fork City	Mapleton City	Total

Estimated Existing Population	42,077	9,512	51,589
Total Flow (mgd)	3.69	0.63	4.32
Total Metered Res. Usage (mgd)	1.39	0.63	2.02
Total Metered Non-Res. Usage (mgd)	0.44	0.00	0.44
Domestic Wastewater Production (mgd) 2	1.83	0.63	2.46
Total Metered Res. Connections	10,328	2,373	12,701
Equivalent Residential Connections (ERCs) 1	13,563	2,373	15,936
2013 Infiltration	2.34	0.24	2.58
2013 ERCs	12,557	2,261	14,818
Buildout ERCs	27,287		
Infiltration, Maximum Month (mgd)	2.36	0.24	2.60
Average Day, Maximum Month Flow (mgd)	4.19	0.87	5.06
Diurnal Peak Factor	2.1	1.88	
Peak Hour Flow (mgd)	6.20	1.42	7.63
Flows per ERC			*Weighted Average*
Domestic Wastewater Production (gpd/ERC)	134.9	265.3	158.9
Average Day, Maximum Month Flow (gpd/ERC)	309	366.3	319.6
Peak Hour Flow (gpd/ERC)	457.4	599.7	483.6
Average Indoor Water Use (gpd/ERC)	149.9	294.8	176.6
Treatment per Capita 3			
BOD (lb/capita/day)	0.17	0.17	0.17

[1] 2018 ERCs were estimated using the Utah Government Office of Management & Budget (GOMB) population projections and the same service connection data used in the 2011 WWMP by BC&A.
[2] Million gallons per day.
[3] Current infiltration is equal to 107% of domestic flow.
[4] Design parameters for treatment were developed by Aqua Engineering

Proposed

The proposed level of service is the performance standard used to evaluate system needs in the future. The Impact Fee Act indicates that the proposed level of service may:

1. diminish or equal the existing level of service; or

2. exceed the existing level of service if, independent of the use of impact fees, the City implements and maintains the means to increase the level of service for existing demand within six years of the date on which new growth is charged for the proposed level of service.

There are several proposed changes to the existing level of service in the City relative to wastewater treatment; however, these will take effect in future IFFP documents. As discussed in Chapter 7 of the 2011 WWMP, the Utah Division of Water Quality has been developing new criteria for the Utah Pollutant Discharge Elimination System (UPDES) Permit related to the treatment plant's treated discharge. The new permit requirements were released by the State in the spring of 2014. As a result of the new permit requirements, several new projects, not included in the 2011 WWMP but proposed by Aqua Engineering in the meantime, will be included in future IFFP documents. Nutrient removal and UV disinfection projects represent an increase in the proposed level of service for wastewater treatment that will be funded in accordance with the requirements of the Impact Fee Act.

The proposed LOS is summarized in Table 46. This IFFP assumes projected flows of 135 gpd of domestic wastewater production from each new ERC with approximately 21.5 gpd of infiltration per ERC. The planning infiltration rate the City has used is based on an infiltration rate of 200 gpd/(in-diameter mile) and was estimated for Spanish Fork City using historic pipe lengths and pipe diameters used to serve the City. Basically, it is an estimate of infiltration for the City if the City's collection system was constructed with the newest technology and construction methods. The planning I&I is lower than existing I&I, which is 166 gpd/ERC domestic flow and 351 gpd/ERC including I&I. This is the result of lower infiltration rates due to improved construction methods. For new construction, current material and design standards typically plan on an allowance of no more than 400 to 600 gpd/in-dia/mile of installed pipe[3]. However, by assuming an infiltration rate of approximately 200 gpd/(in-diameter mile), the City has assumed that infiltration for new construction will be roughly half the allowable infiltration for modern material and design standards. This compares to a range of 1000 to 4000 gpd/in-dia/mile of expected infiltration for older construction methods.

Table 46

[3] "Chapter 3 – Quantity of Wastewater" *Gravity Sanitary Sewer Design and Construction.* NY, NY: American Society of Civil Engineers

Wastewater Proposed LOS - Spanish Fork City and Mapleton City

Item	Spanish Fork City	Mapleton City	Total
New Population through 10 Years[1]	10,012	3,505	13,517
New Equivalent Residential Connections (ERCs)	3,953	1,132	5,085
New Domestic Wastewater Production (mgd)	0.53	0.3	0.83
New Growth Infiltration, (gpd/ERC)	21.5	21.5	
New Infiltration, Maximum Month (mgd)	0.085	0.024	0.11
Growth in Average Day, Maximum Month Flow (mgd)	0.615	0.324	0.94
Growth in Peak Hour Flow (mgd)	1.20	0.59	1.79
Flows per ERC			*Weighted Average*
Domestic Wastewater Production (gpd/ERC)	134.9	265.3	163.9
Average Day, Maximum Month Flow (gpd/ERC)	156.4	286.8	163.9
Peak Hour Flow (gpd/ERC)	303	519.8	351.3
Average Indoor Water Use (gpd/ERC)	149.9	294.8	176.6
Treatment per Capita			
BOD (lb/capita/day)	0.17	0.17	0.17

[1] 2028 ERCs were projected using GOMB population projections and Spanish Fork City data.
Source: Bowen, Collins & Associates; GSBS Richman

4.10.07.020 Existing Excess Capacity

The wastewater service needs associated with projected future growth will be met through a combination of the available excess capacity in existing facilities and construction of additional capacity in new facilities. To define existing capacity, the system was divided into two different components (collection and treatment). The purpose of this breakdown is to consider the available capacity for each component individually. Excess capacity associated with the collection system and treatment system is described as follows:

Collection

To calculate the percentage of capacity in existing facilities available for future growth, existing and future flows were examined in a hydraulic model for each collection pipeline. The method used to calculate excess capacity available for use by future development is as follows:

- Calculate Flows – The peak flow in each facility was calculated for both existing and future development conditions.

- Identify Total Capacity – Where a facility has capacity in excess of projected flows at buildout, the available capacity in the facility was defined as the difference between existing flows and buildout flows. Where the facility has capacity less than projected flows at buildout, the available capacity in the facility was defined as the difference between existing flows and the facility's maximum capacity. The design capacity of 75 percent of total hydraulic capacity was also calculated.

- Calculate Percent Of Excess Capacity Used By Growth In Remaining Facilities – Where the future flow was less than the capacity of the existing facility, the percent of excess capacity being used in each facility was calculated by dividing the growth in flow in the facility (future flow less existing flow) by the total capacity (existing flow plus available capacity).

- Calculate Excess Capacity For The System As A Whole – Each pipeline in the system has a different quantity of excess capacity to be used by future growth. To develop an estimate of excess capacity on a system wide basis, the capacities of each of these pipelines and their contribution to the system as a whole must be considered. To do this, each pipeline must first be weighted based on its contribution to system. For this purpose, each pipeline has been weighted based on the product of its capacity and length (e.g. 100 gpm of capacity in a 4,000 ft. pipeline contributes more to the system than 100 gpm of capacity in a 300 ft. pipeline). The excess capacity in the system as a whole can then be calculated as the sum of the weighted capacity used by future growth divided by the sum of total weighted capacity in the system.

Based on the method described above, the calculated percentage of existing

capacity of pipelines available to serve new growth is summarized in Table 47. This has been done for both Spanish Fork City collection system facilities and joint collection facilities owned by Spanish Fork City and Mapleton City. This allows the cost of capacity to be more accurately calculated for users in both cities. Also included in Table 47 is a capacity breakdown for recently completed master plan projects. Only completed, budgeted, or bonded projects are included.

Table 47
Wastewater System – Collection Existing Excess Capacity Evaluation

Project	Approx. Time Frame	Construction Cost	Cost to Development For the Next 10 Years	% Capacity Used by Existing Users
Joint Trunk Line				
Mapleton City Share of Joint Trunk Line	2013	$ 507,609	$ -	20.77%
Spanish Fork City Share of Joint Trunk Line	2013	$ 525,279	$ 16,429	17.19%

Joint Trunk Line Total		$ 1,032,888	$ 16,429	37.95%
200 East 36-inch Sewer Trunk	2013	$ 186,783	$ 29,175	5.14%
Longview RR Spur Siphon	2013	$ 258,981	$ 23,386	45.25%
Old Mill Arrowhead Trail Trunkline	2013	$ 224,750	$ 56,637	3.69%
Scenic Development SF Pkwy Trunkline	2015	$ 206,804	$ 100,431	17.22%
Canyon Creek Parkway & SF Pkwy	2016	$ 14,742	$ 3,821	6.22%
SF Sewer EBCO, East Trunkline	2016	$ 665,305	$ 144,513	21.41%
SF Sewer RG Development, East Trunkline	2016	$ 114,145	$ 29,588	6.22%
SF Sewer Arrive Homes, East Trunkline	2016	$ 332,982	$ 86,314	6.22%
SF Sewer Fieldstone, East Trunkline	2016	$ 298,994	$ 72,854	11.84%
Model, Master Plan & Impact Fee Update	2011	$ 43,911	$ 13,385	69.52%
Model, Master Plan & Impact Fee Update	2012	$ 42,228	$ 14,835	64.87%
Model, Master Plan & Impact Fee Update	2013	$ 6,829	$ 3,476	49.10%
Model, Master Plan & Impact Fee Update	2014	$ 27,482	$ 16,164	41.18%
Model, Master Plan & Impact Fee Update	2015	$ 34,798	$ 23,174	33.40%
Model, Master Plan & Impact Fee Update	2016	$ 20,544	$ 15,818	23.00%
Model, Master Plan & Impact Fee Updates	2017	$ 40	$ 35	11.90%
Legacy Farms SF Parkway	2017	$ 17,050	$ 4,559	3.25%
Meadow Creek SF Parkway	2017	$ 51,017	$ 13,642	3.25%
Southwest Lift Station	2017	$ 100,000	$ 86,071	13.93%
Subtotal		$ 2,647,384	$ 737,880	
Total Cost		$ 3,680,272	$ 754,309	

Source: Bowen, Collins & Associates

Treatment

The City's wastewater treatment plant (WWTP) has an existing capacity of 6.0 mgd. Existing peak month, average day flows for existing development are estimated to be 5.06 mgd.Based on projected discharges using the planning infiltration rate used in the master plan, the City will need to plan on expanding the plant to its buildout capacity. It is worth noting that Aqua Engineering (the treatment plant engineer) does not anticipate flows exceeding 5.6 mgd over the next 10 years. As a result, wastewater treatment associated with new growth will be accommodated through remaining capacity at the existing WWTP. Percent of total existing plant capacity to

be used by 10-year growth for Spanish Fork City and Mapleton City were calculated based on reported ownership as indicated in Table 48.

Table 48
Wastewater System - Treatment Existing Excess Capacity Evaluation

City	Original Cost	Plant Capacity (mgd)	Existing Average Day, Maximum Month Flow (mgd)	% to 10-Year Growth	Cost to Development For the Next 10 Years
Spanish Fork City Ownership (73.6%)	$ 10,159,271	4.420	4.191	n/a	n/a
Mapleton City Ownership (26.4%)	$ 3,644,086	1.580	0.869	n/a	n/a
Total	$ 13,803,357	6.000	5.061	15.66%	$ 2,161,605.71

[1] Mapleton excess capacity will need to be purchased by Spanish Fork City as growth occurs.
Source: Bowen, Collins & Associates

Other Assets

The long-term plan for wastewater treatment for Spanish Fork City includes the construction of a new regional treatment plant (see Chapter 7 of the 2011 WWMP). Some land for this future plant has already been purchased and the percentage of flow that is attributable to existing and future growth is indicated in Table 49. In addition, a number of projects at the treatment plant have significantly more capacity than the plant's rated capacity of 6.0 mgd. As a result, these assets are treated separately to evaluate available excess capacity.

Table 49
Wastewater System - Other Assets Existing Excess Capacity Evaluation

Existing Treatment Plant Assets	Original Cost	Capacity (mgd)	% Capacity Used by Existing Users	% to 10-Year Growth	% Remaining Capacity for Build-out Development	Cost to Development For the Next 10 Years
2002 Sludge Dewatering (Belt Press)	$ 449,700	12.3	22.16%	10.10%	67.74%	$ 45,421.00

2003 Secondary Clarifiers	$ 850,000	9	32.08%	16.20%	51.72%	$ 137,660.00
2006 Intermediate Pumping	$ 204,600	8.6	30.60%	18.42%	50.98%	$ 37,684.00
2006 Sludge Thickening	$ 566,856	12.3	17.73%	10.67%	71.59%	$ 60,507.00
2013 Redundant Digester[1]	$ 1,357,329	8	74.57%	7.69%	17.74%	$ 104,343.00
Land for Regional WWTP (Spanish Fork Share only)	$ 1,608,633	12.3	46.42%	5.00%	48.58%	$ 80,431.00
Total	$ 5,037,118					$ 466,046.00

[1] This project was constructed in 2012 to improve the level of service for digester capacity and will provide redundant capacity for the existing treatment plant through its buildout capacity of 8.0 mgd. No redundant capacity was available at the plant. The redundant capacity was installed to improve operation of the existing digester through more frequent maintenance.
[2] Land for the new treatment plant was purchased in 2008 and will be used to replace the existing treatment plant as flows approach 8.0 mgd. Source: Bowen, Collins & Associates

4.10.07.030 Impact Of New Development

New development in Spanish Fork will increase wastewater flows. Estimated new ERCs from new development are summarized in Table 50. Projected flows for the 10-year planning window are summarized in Table 46.

Table 50
Wastewater System - ERC Projections Through 2028

Year	Population at End of Year	Single Family Residential ERCs[1]	Multi Family Residential ERC[1]	Non-residential ERC[1]
2013	36,923	9,182	716	2,659
2014	37,669	9,367	730	2,784
2015	38,528	9,581	747	3,235
2016	39,676	9,867	769	3,331
2017	40,859	10,161	792	3,430

2018	42,077	10,464	816	3,533
2019	43,331	10,775	840	3,638
2020	44,623	11,097	865	3,746
2021	45,494	11,313	882	3,820
2022	46,383	11,534	899	3,894
2023	47,288	11,759	917	3,970
2024	48,212	11,989	935	4,048
2025	49,153	12,223	953	4,127
2026	50,113	12,462	972	4,207
2027	51,091	12,705	991	4,289
2028	52,089	12,953	1,010	4,373

[1] Existing ratio of resident to nonresident based on 2010 residential/nonresidential winter water use billing data and GIS meter data as provided by Spanish Fork City for use in the 2011 WWMP.
Source: Bowen, Collins & Associates; GSBS Richman

4.10.07.040 Future Facilities

Demand placed upon existing system facilities by future development was projected using the process outlined below. Each of the steps was completed as part of this plan's development. More description of the methodology used in the process outlined below can be found in the 2011 WWMP.

- Existing Demand – The demand existing development places on the City's system was estimated based on historic water use and sewer system flow records.

- Existing Capacity – The capacities of existing collection facilities were estimated using size data provided by the City and a hydraulic computer model. The capacity of the existing City treatment plant was developed by Aqua Engineering and is included in the 2011 WWMP.

- Existing Deficiencies – Existing deficiencies in the system were identified by comparing estimated future demand for the defined level of service against calculated capacities. Costs associated with resolving existing deficiencies have not been included as part of the impact fee facilities plan.

- Future Demand - The sewer discharge that future development will add to the system was estimated based on development projections as discussed in the 2011 WWMP.

- Future Deficiencies - Future deficiencies in the collection system were identified using the estimated flows for the defined level of service and results from the computer model. Future deficiencies at the treatment plant were identified using defined level of service and projected plant inflows. Future deficiencies at the WWTP were identified using the defined level of service and project WWTP inflows.

- Recommended Improvements – Needed system improvements were identified to meet demands associated with future development (see Chapter 6 of the 2011 WWMP)

The steps listed above describe the "demands placed upon existing public facilities by new development activity at the proposed level of service; and the means by which the political subdivision or private entity will meet those growth demands" (Section 11-36a-302-1.a of the Utah Code).

4.10.07.050 Impact Fee Facilities Plan

In Chapter 6 and Chapter 7 of the 2011 WWMP, capital facility projects needed to provide service to various parts of the City at projected buildout were identified. Most of these projects will need to be constructed in phases as development occurs.

Table 51 is the Spanish Fork City Impact Fee Facilities Plan, and it identifies the impact fee-eligible capital facilities projects that have been completed, or at a minimum budgeted or bonded for this year. The portion of the plan attributable to anticipated new development was estimated by identifying the portion of growth in demand attributable to existing users and deducting that amount from the growth in overall demand.

Table 51
Wastewater System Impact Fee Facilities Plan

Project	Approx. Time Frame	Construction Cost	Cost to Development For the Next 10 Years	% Capacity for Development For the Next 10 Years	% Capacity Used by Existing Users	% Remaining Capacity for Build-out Development

Model, Master Plan & Impact Fee Update	2018	$ 42,000	$ 42,000	100.00%	0.00%	27.64%
WWTP Masterplan & Impact Fee Studies	2018	$ 92,000	$ 92,000	100.00%	0.00%	27.64%
SW Lift Station	2018	$ 1,954,000	$ 527,655	27.00%	2.30%	70.70%
Phosphorus Removal	2018	$ 2,300	$ 146	6.36%	2.30%	91.34%
Total		$ 2,090,300	$ 661,801			

[1] Once this project is complete, 2.3% of its capacity will be consumed by existing users.
Source: Bowen, Collins & Associates; GSBS Richman; Spanish Fork City

Table 51 identifies the proportionate share of the costs of public facilities that are reasonably related to the new development activity. Included in Table 51 is a breakdown of capacity associated with growth both at full buildout and through the next 10 years. This is necessary because some of the projects identified in the table will be built with capacity to accommodate flows beyond the ten-year growth window.

4.10.07.060 Maximum Allowable Impact Fee Per ERU

The maximum allowable impact fee based on the IFFP and anticipated new development is provided in Table 52. The actual impact fee will be calculated in the Impact Fee Analysis and include all applicable statutorily required adjustments. Note that the impact fee has been divided into components to simplify special calculation of impact fees for non-residential customers (with higher than average treatment requirements).

Table 52
Wastewater Maximum Allowable Impact Fee

	Planning & Collection	Treatment	Total
Total Cost of IFFP	$ 569,655.07	$ 92,146.21	$ 661,801.29
# of new ERC	3,524	3,524	$ 3,524
IFFP Cost/ERC	$ 161.63	$ 26.15	$ 187.78
Total Cost of Collection Existing Excess Capacity	$ 754,309.15	$ -	$ 754,309.15

Total Cost of Treatment Existing Excess Capacity	$ -	$ 2,161,605.71	$ 2,161,605.71
Total Cost of Other Assets Existing Excess Capacity	$ -	$ 466,046.00	$ 466,046.00
# of new ERC	3,524	3,524	3,524
"Buy-in" Cost/ERC	$ 214.03	$ 745.56	$ 959.59
Maximum Allowable Impact Fee/ERC	$ 375.66	$ 771.71	$ 1,147.37

4.10.08 Public Safety

Spanish Fork City provides police and fire/EMS facilities for the benefit of residents in all areas of the community. In 2015, Spanish Fork City established a level of service (LOS) public safety facilities, which they determined by establishing the number of square feet of fire and police buildings attributable to the needs of current residential and nonresidential development.

The LOS for fire/EMS facilities is 198.8 square feet per 1,000 residents and 1.11 square feet per 1,000 square feet of non-residential building space. The LOS for police facilities is 206.3 square feet per 1,000 residents and 0.67 square feet per 1,000 square feet of non-residential building space. The Public Safety Impact Fee is intended to help Spanish Fork maintain this LOS.

4.10.08.010 Current LOS vs. Established LOS (2015)

Table 53 is a summary of the current and established LOS (2015) for fire/EMS and police facilities. The impact fee will be based on the established 2015 LOS, not the 2018 LOS which is shown simply to substantiate a need for additional facilities. Note that the police infrastructure is shown as being constant because when the Justice Center was constructed, the square footage was such that the police facility LOS will be met through buildout, so the fee for that type will solely be excess capacity "buy-in".

Table 53
Public Safety Current and Proposed Level of Service

Facility Type	Residential 2018 LOS	Unit	Non-Residential 2018 LOS	Unit
Fire/EMS Facility	192.9	SF/1,000 Residents	0.93	SF/1,000 SF building
Police Facility	184.2	SF/1,000 Residents	0.67	SF/1,000 SF building

Source: Spanish Fork City, U.S. Census, GSBS

Proportional allocation of the cost of new facilities to various land use types will occur in the Impact Fee Analysis.

4.10.08.020 Existing Facilities

Spanish Fork City is currently served by one fire/EMS facility with a total floor area of 15,720 square feet. The current location of the fire/EMS station represents an existing deficiency. It is not well placed to provide the City's proposed standards for proximity to fire/EMS services. According to these standards, all developed areas should be within a five mile radius of a fire/EMS station. Non-impact fee sources will be used to supplement the existing fire/EMS facility square footage in new facilities located on the east and west sides of the City to achieve the proposed proximity standard for existing and new development.

The City is also served by one police station, sharing a building with the courts. Court facilities are not impact fee eligible. The building, built in 2008 and 2009, has a floor area of 61,000 square feet of which 46 percent or 28,060 square feet is dedicated to the police. This existing police facility was built to serve the community through build-out. Table 54 provides the projected distribution of land uses at build out.

Table 54
Spanish Fork Projected Land Uses At Build-out

	Acres	Percent Total	Population	HH	SF
Residential/Mixed Use	4,474	45%	78,300	16,276	
General Commercial	865	9%			9,791,243
Industrial	1,098	11%			10,519,299
Exempt/Civic	2,269	23%			
Vacant	0	0%			
ROW	1,229	12%			
Total	9,935	100%	78,300	16,276	20,310,542

Source: Spanish Fork City, GSBS

Table 55 represents the 2018 level of fire/EMS and police facility service per resident and per SF of non-residential space. The 2015 level of service calculation can be found in the 2015 Impact Fee Facilities Plan document. The square footage in each facility was multiplied by the percent of the total residentially developed acreage in the City at the LOS horizon to determine the square footage dedicated to serving residential development. The area in each facility dedicated to serving residential development was then divided by the service population level to determine the

fire/EMS and police facility per resident level of service. A similar calculation using building square footage was completed for nonresidential development.

Table 55
Public Safety Facilities LOS Calculation 2017

Facility	SF	SF/ Residential Service	SF/1,000 Residents Served	SF/ Non-Residential Served	SF/ SF of Non-Residential Development Served
Current Fire/EMS Station	15,720	8,118	192.9	7,602	0.93
Police Station	28,060	14,420	184.2	13,640	0.67

*Includes general commercial, industrial and exempt land uses
Source: Spanish Fork City, U.S. Census, GSBS Richman

4.10.08.030 Existing Excess Capacity

The Spanish Fork police force currently includes 35 police officers and related administrative and support personnel. The 28,060 SF of police facility was designed to accommodate 60 police officers and related administrative and support personnel, the anticipated size of the force at community build out. Table 56 provides an estimate of available police facility square footage for build out.

Table 56
Police Facility Excess Capacity

	Residential	Non-Residential	Total
Police Station Total			28,060
Current Utilization	7,751	5,456	13,207
Projected 10 Yr Utilization	9,595	6,707	16,302
Build-Out Projected Utilization	14,420	13,640	28,060
10-Year Estimated Consumption	1,844	1,251	3,095

Source: Spanish Fork City, GSBS

4.10.08.040 Existing Deficiencies

The Spanish Fork fire/EMS facility is currently centrally located on Main Street. Recently developed areas have focused on the eastern and western edges of the community. This puts new development five miles or more from the existing fire/EMS facility, outside of the City's target distance for fire/EMS stations. Future new development is anticipated for the eastern and western areas of the community as well. Spanish Fork City intends to supplement the current fire/EMS facility with two new facilities, one located on the east and one located on the west. The two new facilities will be sized to replace the existing facility and address existing deficiencies and serve future new development.

4.10.08.050 Impact Of Growth

The projected 2028 increase in population of 10,012 people to a total population of 52,089 and nonresidential development of over 1 million square feet to a total commercial square footage of approximately 9.4 million would erode the 2018 fire/EMS level of service as seen in Table 57.

Table 57
Impact of Growth

Facility Type	Current Residential LOS	Population in 10 Yrs	Revised LOS (no new facilities)	Current Non-Residential LOS	10 Yr Non-Residential SF	Revised LOS (no new facilities)
Fire/EMS Facility	192.9	52,089	155.8	0.93	10,010	0.76

Source: GSBS

4.10.08.060 Future Facilities

To serve the 10,012 new residents and 1 million square feet of nonresidential development projected through 2028, additional capacity for fire/EMS facilities is required, as identified in Table 58.

Table 58
Projected New Development Related Facility Needs, 10-Year Growth

Facility Type	Residential LOS	New Residents	Needed to Serve Residential Growth (sq ft)	Non-residential LOS	New SF Nonresidential Space (1000s)	Needed to Serve Nonresidential Growth	Total Growth-Related Facility Need
Fire/EMS Facility	198.8	10,012	1,990	1.11	1,866	2,072	4,062

Source: GSBS Richman

As shown in Table 59, approximately 49 percent of existing fire/EMS facilities serve residential development and 51 percent serve nonresidential development. The cost of new fire/EMS facilities through 2028 will be distributed accordingly.

Table 59
Source of New Development Driven Capacity Need

Facility Type	Total New Required	Residential Required	% Residential	Non Residential Required	% Non-Residential
Fire/EMS	4,062	1,990	48.99%	2,072	51.01%

Source: GSBS

4.10.08.070 Source Of Cost Estimates

Estimated costs of facilities in the Impact Fee Facilities Plan are based on the assumptions included in Table 60. The estimated cost per square foot includes hard and soft construction costs. Land cost is identified separately. Land cost estimates are based on discussions with local developers.

Table 60
Estimated Costs - Public Safety Facilities

Facility Type	Cost per SF	Cost per Acre	FAR	Estimated Acres
Fire/EMS Station	$200	$ 100,000.00	0.15	4.59

Source: GSBS

4.10.08.080 Impact Fee Facilities Plan

A concept plan for future growth is provided in Table 61. Spanish Fork City's current fire/EMS station has a floor area of 15,720 square feet. The current fire station will be supplemented by two fire/EMS stations totaling approximately 30,000 additional square feet or 15,000 square feet each. Only the cost for square footage (amount used in the next 10 years) of the new stations will be collected through impact fees. Other funding sources will be identified and used to fund the remaining balance of these fire/EMS stations. In the event that a bond repaid with property tax is the source of funds for the new facilities, a credit to impact fees may be appropriate.

Table 61
Public Safety Impact Fee Facilities Plan

Future Facility	Area (sf)	2013 Construction Cost	Year	Impact Fee Funded
East Side Fire/EMS Station	15,000	$ 3,229,500	2020	$ 437,274
West Side Fire/EMS Station	15,000	$ 3,229,500	2025	$ 437,274
Total	30,000	$ 6,459,000		$ 874,548

Source: GSBS

4.10.08.090 Calculation Of "Buy-in"

There is existing excess police facility capacity available for use by new development. A buy-in amount has been calculated based on the original cost of construction and the bond amount. Spanish Fork City issued a $22,000,000 sales tax bond in 2008 to fund the public safety/courts building and North Park. $18,000,000 of the original bond amount funded the public safety/courts building. The actual cost of construction was $19,742,211 with an additional $1,742,211 funded through City general funds.

Table 62 provides a breakdown of the original construction and bonding cost attributable to the police facility.

Table 62
Police Facility Original Cost

Item	Amount
Total Bond	$ 22,000,000
Police/Courts Facility	$ 18,000,000
Police/Courts Facility Total Construction Cost	$ 19,746,211
% Court Facility	47%
% Police Facility	53%
Police Station Original Cost	$ 10,402,304

Source: Spanish Fork City

Table 63 provides the amount required per capita for new residential development and per 1,000 SF for new non-residential development for police facilities.

Table 63
Police Facility Buy-in

	Residential	Non-Residential	Total
Square Feet	14,420	13,640	28,060
% of Facility	51.39%	48.61%	100.00%
Cost of Facility	-	-	$10,402,303.95
Per SF Cost of Facility	-	-	$370.72
Cost per capita or 1,000 SF	$68.27	$248.96	

Source: Spanish Fork City; GSBS

Table 64
Public Safety Maximum Allowable Impact Fee

Facility Type	Total Cost	% Residential	Population Served	Fee Per Capita	% Non-Residential	SF Served (1000s)	Fee per 1,000 SF
Fire/EMS IFFP	$ 874,548	48.99%	10,012	$ 42.79	51.01%	1,866	$ 239.02
Police Facility Buy In	$ 10,402,304	51.39%	78,300	$ 68.27	48.61%	20,311	$ 248.96
Total Maximum Fee	$ 11,276,852			$ 111.07			$ 487.98

4.10.09 Transportation

Spanish Fork City provides transportation facilities for the benefit of residents, business owners and visitors in all areas of the community. The current and proposed level of service (LOS) for transportation facilities is based on the Transportation Element of the Spanish Fork General Plan adopted in December 2011 and updated in 2014 by Horrocks Engineers ("Horrocks"). The IFFP identifies the facilities needed to provide transportation facilities to new development.

Only collector and arterial roads owned and operated by the City are considered system-level transportation facilities, which are impact fee eligible. State and federal highways are impact fee eligible only to the extent that local funding is required. State and federal highways are included in the traffic model to ensure that the capacity represented on these roads is accounted for but not included in the IFFP for calculation of required funding. Local streets are project level infrastructure facilities and are built as part of the development and are not included in the IFFP.

Figure 7 is a map of the roadways in Spanish Fork by ownership category. Roads in red are owned and maintained by the City.

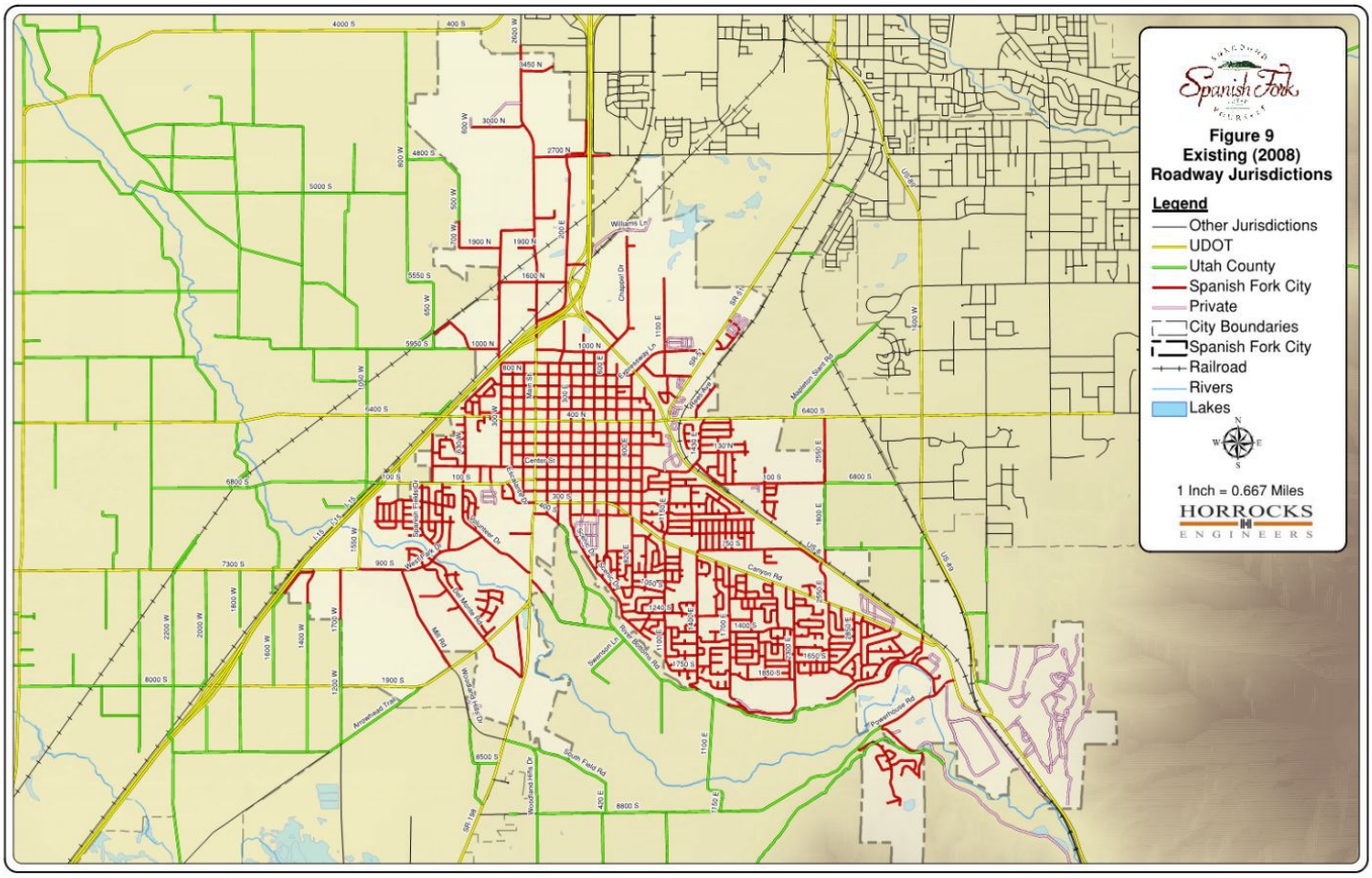

Figure 7
Roadway Jurisdiction

4.10.09.010 Current & Proposed Level Of Service (LOS)

Transportation LOS is defined by a letter grade relating to "flow" of traffic on a highway or through an intersection. Level of service A indicates free flowing traffic with no back up or wait times. By contrast, LOS F indicates extremely congested (or gridlocked) traffic. Spanish Fork City has established LOS C as the acceptable operating condition for their roadways and intersections.

Figure 8 is a map of the roadways in Spanish Fork by 2008 LOS classification. Areas indicated in yellow and red on this map were at LOS D or worse in 2008. These areas represent existing deficiencies.

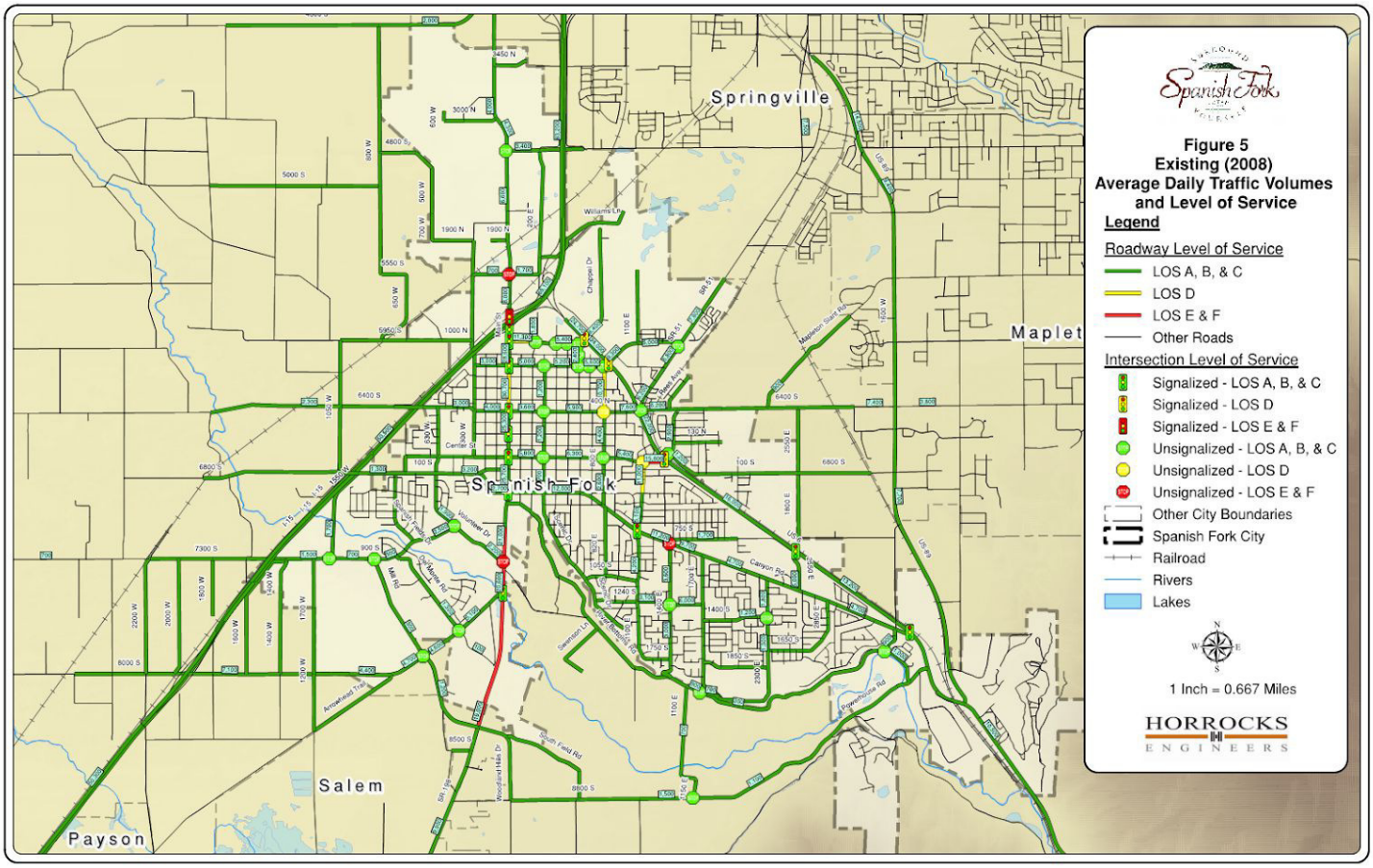

Figure 8
Existing LOS

Using existing traffic and land use data from Spanish Fork City, Horrocks calibrated the model was calibrated to accurately reflect current travel conditions as a baseline. Horrocks then projected future travel demand using future land use maps, socio-economic conditions and Mountainland Association of Governments (MAG) regional travel model. Once the travel demand model was calibrated for existing conditions, planned land uses and socio-economic data were input into the model to predict future roadway traffic volumes and conditions. The resulting output of the travel demand model consisted of projected traffic volumes on all the major streets throughout the City. Figure 9 represents the results of the Horrocks traffic model in 2040 if no capacity expansion projects are completed. Facilities in red and yellow exceed LOS C.

Horrocks modeled and analyzed various alternatives for roadway improvements based on these projected traffic volumes. Horrocks then recommended improvement projects, taking into account various measures of effectiveness, including LOS, delay, and overall safety. Existing (2008) and future (2040) traffic scenarios of Spanish Fork City were modeled in the original Transportation Master Plan.

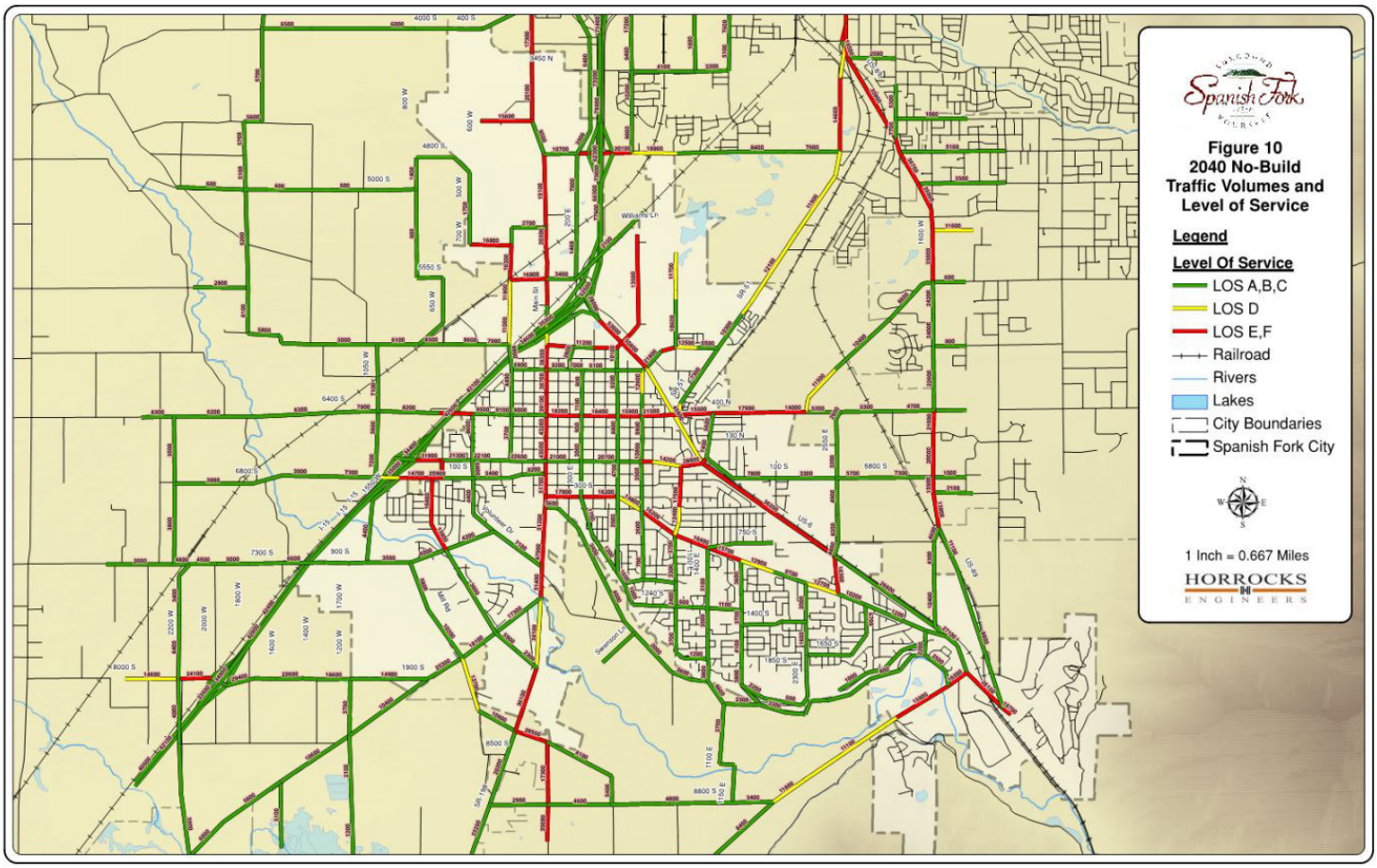

Figure 9
2040 No-Build Conditions

Horrocks used the volume capacities identified in Table 66 to evaluate current and projected LOS of the Spanish Fork transportation system.

Table 65
Transportation LOS Capacity

Functional Classification	Lanes	LOS C (volume)
Arterial	7	43,000
	5	28,500
Collector	3	10,800
	2	9,700

Source: Horrocks, MAG Travel Demand Model

4.10.09.020 Existing Excess Capacity And Existing Deficiencies

A calibrated travel demand model was used to generate current traffic volumes for each segment in Spanish Fork City's current road network. For segments with capacity greater than volume, there is existing excess capacity. For segments with capacity less than volumes, there is an existing deficiency. Significant parts of the existing roadway system do not have adequate capacity to accommodate growth through 2040. The roadways with existing excess capacity are indicated in green in Figure 9. The roadways indicated in yellow and red are roadways with existing deficiencies. These areas are predicted to function at LOS D or worse.

4.10.09.030 Impact Of Growth

Figure 10 shows the recommendations of the 2012 Transportation Master Plan, addressing anticipated needs through 2040. The plan includes a list of projects required to serve the anticipated 64,607 people in Spanish Fork and the anticipated growth for traffic traveling through Spanish Fork from neighboring cities through 2040. The projects included in this plan are intended to provide LOS C throughout the City.

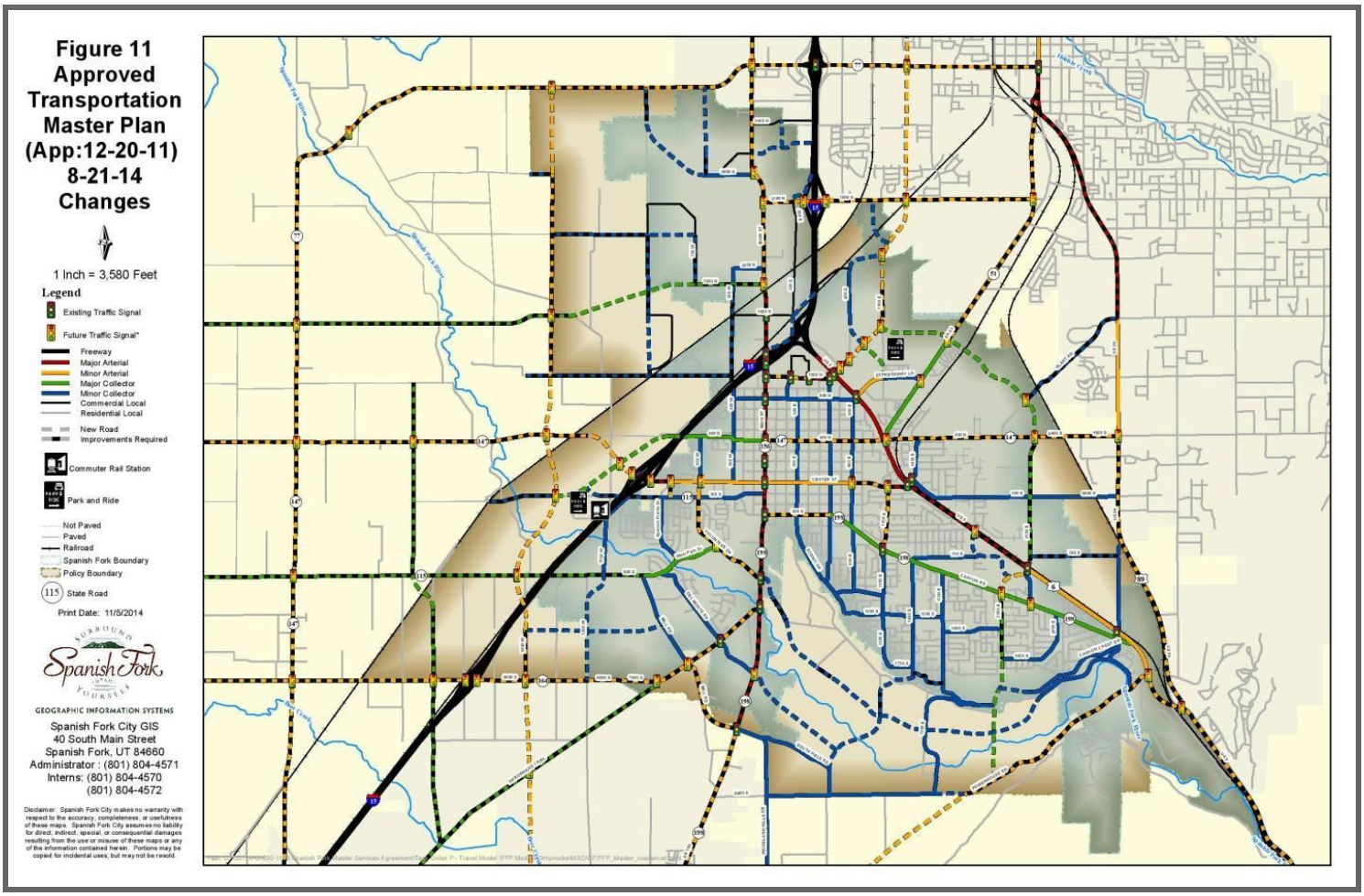

Figure 10
Future Facilities

10-YEAR GROWTH

Table 66 contains an evaluation of existing excess capacity. Table 67 is the Spanish Fork City 2018–2028 Impact Fee Facilities Plan, and it identifies the impact fee-eligible capital facilities projects that have been completed, or at a minimum budgeted or bonded for this year. No future projects are included. The portion of the plan attributable to anticipated new development was estimated by identifying the portion of growth in demand attributable to existing users and deducting that amount from the growth in overall demand.

Table 66
Existing Excess Capacity Evaluation

Project	Approx. Time Frame	Construction Cost	Cost to Development For the Next 10 Years	% Capacity Used by Existing Users	% Capacity for New Development For the Next 10 Years
Widen & Signalize 1000 North	2012	$ 2,230,976	$ 544,792	75.58%	24.42%
New signal 1600 N Main St.	2011	$ 138,000	$ 28,203	79.56%	20.44%
Muhlestein Meadows, LLC 11/17/2015 Reimburse Agree	2014	$ 114,368	$ 22,871	80.00%	20.00%
Spanish Fork Parkway - Phase 1	2014	$ 4,984,205	$ 1,508,497	69.73%	30.27%
New Signal at 2600 E Canyon Rd	2016	$ 180,000	$ -	100.00%	0.00%
Canyon Creek Parkway - Phase 1	2014	$ 5,101,869	$ 1,300,545	74.51%	25.49%
Market Place Dr from Expressway Ln to Chappel Rd	2015	$ 3,186,645	$ 1,024,218	67.86%	32.14%
Academy Park Ph 3, Widening of Mill Road	2015	$ 46,038	$ 30,660	33.40%	66.60%
Parkview Townhomes Ph 1, Widening of Volunteer Dr	2016	$ 175,393	$ 135,048	23.00%	77.00%
Muhlestein Meadows, Widening of Mill Road	2014	$ 114,368	$ 22,871	80.00%	20.00%
Quick Quack, Widening of 1000 North	2015	$ 42,902	$ 13,800	67.83%	32.17%
Master Plan and Impact Fee Studies	2014	$ 16,453	$ 9,677	41.18%	58.82%
Master Plan and Impact Fee Studies	2015	$ 26,315	$ 17,525	33.40%	66.60%
Master Plan and Impact Fee Studies	2016	$ 29,771	$ 22,923	23.00%	77.00%

Master Plan and Impact Fee Studies	2017	$ 48,310	$ 42,560	11.90%	88.10%
Masterplan & Impact Fee Studies - 400 North	2017	$ 95,749	$ 84,352	11.90%	88.10%
1000 N 400 E Signal	2015	$ 5,850	$ 3,896	33.40%	66.60%
1000 N 400 E Signal	2016	$ 24,172	$ 18,612	23.00%	77.00%
920 S Wall & Landscape	2017	$ 220,000	$ 193,813	11.90%	88.10%
Street improvements from 1515 E SF Pkwy to 1625 E	2017	$ 188,811	$ 166,337	11.90%	88.10%
Old Mill Estates Widening of Arrowhead Trail	2017	$ 127,439	$ 112,270	11.90%	88.10%
IFFP Projects in Process - Volunteer Drive	2017	$ 47,217	$ 41,597	11.90%	88.10%
77 - (100% IF) 920 S Wall & Landscape - 2550 East	2017	$ 247,925	$ 218,414	11.90%	88.10%
- Spanish Fork Parkway	2017	$ 772,525	$ 680,570	11.90%	88.10%
Bach Homes - Meadow Creek	2017	$ 540,907	$ 476,523	11.90%	88.10%
Old Mill Capital,LLC/CW Management - Old Mill Estates - Spanish Fork Parkway	2017	$ 650,869	$ 573,396	11.90%	88.10%
Parkview Townhomes Phase 2 - Volunteer Drive	2017	$ 74,027	$ 65,216	11.90%	88.10%
Maple Mountain Estates Phase 1 - 100 South	2017	$ 184,132	$ 162,215	11.90%	88.10%

4.10.09.040 Future Facilities/Impact Fee Facilities Plan

To serve the approximately 10,000 new residents and 1 million square feet of nonresidential development projected through 2028, additional lane miles and intersection capacity are required. However, the City has elected to only include those projects that are completed, or at least, budgeted or bonded for. No future projects are included. The Impact Fee Facilities Plan is shown in Table 67.

Table 67
Impact Fee Facilities Plan

Project Location	Approx. Time Frame	Construction Cost	Cost to Development For the Next 10 Years	% Capacity Used by Existing Users	% Capacity for Development For the Next 10 Years
Eagle Cove Widening	2018	$ 246,236	$ 246,236	0.00%	100.00%
Newport Village Widening	2018	$ 704,341	$ 704,341	0.00%	100.00%
Canyon Vista Widening	2018	$ 24,824	$ 24,824	0.00%	100.00%
Vincent Ridge - 1700 East	2018	$ 448,541	$ 448,541	0.00%	100.00%
Master Plan and Impact Fee Studies	2018	$ 89,400	$ 89,400	0.00%	100.00%
1000 N 400 E Signal	2018	$ 25,000	$ 25,000	0.00%	100.00%
920 S Wall & Landscape	2018	$ 200,000	$ 200,000	0.00%	100.00%
Volunteer Dr Widening	2018	$ 525,000	$ 525,000	0.00%	100.00%
Canyon Creek Guardrail	2018	$ 135,000	$ 135,000	0.00%	100.00%
Total		**$ 2,398,341**	**$ 2,398,341**		

Spanish Fork City's network of arterial and collector streets is treated as a single service area for purposes of imposing an impact fee. The City has determined that only collector and arterial streets will be eligible for impact fee assessment and assumes that developers will build local streets connecting their future development projects with the City circulation network. The maximum allowable impact fee calculation is shown in Table 68.

Table 68
Maximum Allowable Impact Fee Calculation

Total Value of Excess Capacity	$ 7,521,397.21
Total Cost of IFFP	$ 2,398,341.14
Average Increase of PM Peak Hour Trips per Year *	1,650.00
# of New PM Peak Hour Trips	16,500.00
"Buy-in" Cost/PM Peak Hour Trip	$ 455.84
Cost/PM Peak Hour Trip	$ 145.35
Maximum Allowable Impact Fee/PM Peak Hour Trip	$ 601.20

Source: Horrocks, GSBS Richman
*Based on the MAG Traffic Demand Model

Final impact fees by land use will be based on land use. The fee schedule is calculated in the Impact Fee Analysis using ITE trip generation rates.

4.10.10 Parks, Trails, & Recreation

Spanish Fork City provides parks, trails, and recreation facilities for the benefit of residents in all areas of the community. The LOS for parks was determined in 2011 and trails in 2018. Tables 69 and 70 summarize the current and proposed LOS for parks, trails, and recreation facilities for purposes of calculating the parks and trail impact fee.

4.10.10.010 Current Los Vs. Established LOS

Spanish Fork provides a wide range of park and trail facilities funded through federal and state grants, the City's general fund and developer contributions. The City classifies parks as community and neighborhood parks depending on size and focus. The majority of neighborhood parks were developed as a result of developer contributions in exchange for increased density. This practice and source of neighborhood parks is not expected to continue. Neighborhood parks are now anticipated to be provided through mechanisms similar to community parks. In addition, neighborhood parks will be developed in conjunction with storm water detention facilities where appropriate. Community parks have been funded through grants and general fund contributions. Although grant funding is anticipated for some parks and trails on the Capital Facilities Plan, the general fund source will not be available in the future. Impact fees are appropriate to ensure that the current LOS will not be eroded for current residents and to ensure a proportional distribution of costs for the proposed LOS.

The City established the park LOS in 2011 at 4.75 developed park acres per 1,000 people and tails LOS in 2018 at 1,818 feet per 1000 residents. The impact fee will be set to help the City maintain this LOS.

Table 70 identifies the existing inventory of neighborhood and community parks.

Table 69
Park Acreage Inventory - Existing

Park	Developed	Undeveloped	Total
Neighborhood Parks			
Canyon Elementary	2.35	0	2.35
Parkside Estates	2	0	2
Abbie Court	3.7	0	3.7
Whispering Willows	1.3	0	1.3
400 North 1880 East Park	0.94	0	0.94
Subtotal Neighborhood Parks	10.29	0	9.35
Community Parks			
Sports Park	93.30	0.00	93.30
Canyon View Park	24.00	0.00	24.00
Russell Swenson Complex	18.00	0.00	18.00
Centennial Park	11.50	0.00	11.50
North Park	9.50	0.00	9.50
Skate/East Park	8.50	0.00	8.50
Urban Forest Park	0.00	16.00	16.00
Water Park	4.00	0.00	4.00
City Park	4.00	0.00	4.00
Legacy Park 1	0.00	8.00	8.00
Legacy Park 2	0.00	15.50	15.50
River Park	0.00	6.10	6.10
Sierra Park	7.20	0.00	7.20
Canyon Vista Park	0.00	5.90	5.90
Subtotal Community Parks	180.00	51.50	231.50
Total	**190.29**	**51.50**	**240.85**

Source: Spanish Fork Parks Department

Spanish Fork has a total of 241 park acres. Table 70 compares the current LOS and the established LOS in acres per 1,000 residents. The City has utilized impact fees to keep the current LOS as close as possible to the established LOS given the high variability of development, available land, and feasibility. The City has plans to use impact fees within the required timeframe to acquire and develop additional parks to maintain its established level of service.

Table 70
Current vs Established LOS - Community Park Acres

	Developed	Undeveloped
Acres	180.00	51.50
Population	42,077	42,077
Acres/1,000 Population	4.28	1.22
Current LOS	4.28	1.22
Established LOS (2011)	4.75	-

Source: GSBS Richman

As shown on Table 70, the 2018 LOS for developed and undeveloped is lower than the established 2011 LOS.

Table 71 represents the existing inventory of trails in Spanish Fork.

Table 71
Trails Linear Feet Inventory - Existing

Trails	Developed	Undeveloped	Total
100 South	2,900		2,900
Dripping Rock	1,773	591	2,364
Justice Center	1,044		1,044
North Park Connector	9,207		9,207
Reservoir Connector	1,572	3,667	5,239
Urban Forest Trail	2,377		2,377
Spanish Fork River Trail	27,483		27,483
Spanish Fields Trail	1,260		1,260
HWY 6	4,640		4,640
Sports Park Trails	9,088		9,088
Water Park Connector	7,000		7,000
Whispering Willows	768		768
400 North	4,237		4,237
Canyon Road	1,757		1,757
Vincent Ridge	1,375		1,375
Total	76,481	4,258	79,364

Source: Spanish Fork Parks Department

Table 72 compares the current LOS and the established LOS (2018) in linear feet per 1,000 residents. As shown on Table 73, the 2017 LOS for developed and undeveloped is lower than the established 2015 LOS. The City has utilized impact fees to keep the current LOS as close as possible to the established LOS given the high variability of development, available land, and feasibility. The City has plans to use impact fees within the required timeframe to acquire land for and develop additional trails to maintain its established (2015) level of service.

Table 72
2018 LOS - Trails

	Developed	Undeveloped
Linear Feet	76,481	4,258
Population	42,077	42,077
LF/1,000 Population	1,818	101
Current/Proposed LOS	1,818	101

Source: GSBS Richman

Each developed community park in Spanish Fork includes recreational and other improvements. Table 73 identifies the number of improvements by type in each park in the Spanish Fork inventory.

Table 73
Park Facilities Inventory - Existing

	Number						
Park Name	**Ball Field**	**Field Lighting**	**Playground**	**Restrooms / Shelters**	**Sand Volleyball**	**Soccer/ Football**	**Tennis/ Basketball**
Parkside Estates	0	0	1	1	0	0	1
Abbie Court	0	0	1	1	0	0	1
Whispering Willows	0	0	1	0	0	0	0
400 North 1880 East Park	0	0	1	0	0	0	0
Sports Park	10	13	1	5	0	9	12
Canyon View Park	0	0	1	5	1	0	0
Russell Swenson Complex	6	6	1	1	0	0	0
Centennial Park	0	0	1	1	0	4	0
North Park	0	0	3	5	1	0	0
Skate/East Park	1	0	0	0	0	0	0
Urban Forest Park	0	0	0	0	0	0	0
Water Park	0	0	0	2	3	0	1
City Park	0	0	1	1	0	0	0
Legacy Park 1	0	0	0	0	0	0	0
Legacy Park 2	0	0	0	0	0	0	0
Sierra	0	0	2	3	0	2	0
Total Facilities	17	19	14	25	5	15	15

Source: Spanish Fork Parks Department

Table 74 calculates the number and cost of facilities per acre of park.

Table 74
Park Facility Cost

	Ball Field	Field Lighting	Playground	Restrooms/ Shelters	Sand Volleyball	Soccer/ Football	Tennis/ Basketball
Total Facilities	17	19	14	25	5	15	15
Total Developed Acres	190.29	190.29	190.29	190.29	190.29	190.29	190.29
Facilities per 100 Acres	8.93	9.98	7.36	13.14	2.63	7.88	7.88
Cost per Facility	$ 98,000	$ 65,000	$ 100,000	$ 85,000	$ 10,000	$ 6,778	$ 38,000
Cost per Acre	$ 8,755	$ 6,490	$ 7,357	$ 11,167	$ 263	$ 534	$ 2,995

Source: Spanish Fork Parks Department, GSBS Richman

The cost for soccer/football fields includes only bleachers, scoreboards and goal posts. The cost of finishing the field itself is included in the landscaping and irrigation costs. In addition to facilities, Spanish Fork's developed community parks include walkways, parking lots, landscaping and irrigation. The average ratios of these improvements are included in Table 75.

Table 75
Park Improvements LOS/Acre

Item	Average Cost/ 10 Acre Park	Average Cost/ Park Acre
Survey/Engineering	$ 63,880	$ 6,388
Clearing/Grubbing ($4,356/acre)	$ 43,560	$ 4,356
Grading (43,560sq ft. X $0.10)	$ 43,560	$ 4,356
Utilities & Street Improvements	$ 210,000	$ 21,000
Hydro-Seeding (8.7 acres x $ 2,600/acre)	$ 32,670	$ 3,267
Irrigation (8.7 acres x $17,000/acre)	$ 147,900	$ 14,790
Trees/shrubs (120 @ 250)	$ 30,000	$ 3,000
Parking (64 cars @ $1,675/space)	$ 107,200	$ 10,720
Sidewalks ($5.00 per sq.ft. x 13,200)	$ 66,000	$ 6,600
Fencing (6 ft.: 2,640 linear ft. x $21.25)	$ 63,360	$ 6,336
Total	$ 808,130	$ 80,813

Source: Spanish Fork Parks Department

Table 76 shows the cost per unit (3.75 people per house) to maintain the 2011 level of service for only developed parks and trails.

Table 76
Cost per Acre of Park and Linear Foot of Trail

Item	Cost per Acre	Acres per 1,000 Population	Cost per 1,000 Population	Cost per Capita	Cost per Unit (3.75 ppl/house)
Park Acres*	$ 60,000	5.50	$ 330,108	$ 330.11	$1,237.91
Park Facilities **	$ 37,561	4.28	$ 160,761	$ 160.76	$602.85
Park Improvements **	$ 80,813	4.28	$ 345,880	$ 345.88	$1,297.05
Total	$ 178,374		$ 836,749	$ 836.75	$3,137.81

Source: GSBS Richman
* Includes only developed parks and trails

Item	Cost per LF[1]	LF per 1,000 Population	Cost per 1,000 Population	Cost per Capita	Cost per Unit (3.75 ppl/house)
Trails *	$ 22.04	1,919	$ 42,292	$ 42.29	$158.59
Trail Improvements **	$ 100.00	1,818	$ 181,800	$ 181.80	$681.75
Total	$ 122.04		$ 224,092	$ 224.09	$840.34

Source: GSBS Richman
[1]Assumes 10 foot width
* Includes both developed and undeveloped trails
** Includes only developed trails

4.10.10.020 Impact Of Growth

The projected increase in population of approximately 10,000 people will erode the 2018 LOS even further if no projects are completed as seen in Table 77.

Table 77
Impact of Growth on LOS

	LOS (Acres/LF/1,000 Population)	2028	Revised LOS (no build)	% Change
Community Parks	4.28	52,089	3.46	-19.26%
Trails	1,818	52,089	1,468	-19.24%

Source: GSBS Richman

The impact of growth on the LOS for park and trails improvements (landscaping/irrigation/parking) and facilities is proportional to the impact seen in acreage and linear feet. There is no existing excess capacity in Spanish Fork's park and trail system.

4.10.10.030 Future Facilities

To maintain the established LOS and serve the approximately 10,000 new residents in Spanish Fork between 2018 and 2028, additional parks and trails are required. Table 78 identifies the amount of parks and trails needed to achieve the established LOS

Table 78
New Parks/Trails to Maintain Established LOS

Classification	New Population	LOS Developed	LOS Undeveloped	Developed Acres / 1000 Population (Acres)	Undeveloped (Acres)	Total
Community Parks (Acres)	10,012	4.28	1.22	42.85	12.21	55.06
Trails (LF)	10,012	1818	101	18,202	1,011	19,213

Source: GSBS Richman

4.10.10.040 Impact Fee Facilities Plan

The purpose of Spanish Fork Parks and Trails IFFP is to maintain the LOS by planning for and constructing community parks and expanding existing parks as impact fee funds are available and development occurs within the City. Due to the varying nature of development, the exact number, location, size, contents, and value of each park and trail will differ, but the cost to each resident to maintain the level of service will be the same. Table 79 (link provided below) shows the Parks and Trails IFFP project list with associated estimated costs and approximate timeframes for construction.

Table 79
Parks and Trails IFFP
https://drive.google.com/open?id=1WvM-G2IwphpnABmlvU0CXwKokXk7_0k_