ORDINANCE NO. O- -2014

AN ORDINANCE ADOPTING AN IMPACT FEE ENACTMENT IMPOSING A CULINARY WATER IMPACT FEE; PROVIDING FOR THE CALCULATION AND COLLECTION OF SUCH FEE; PROVIDING FOR APPEAL, ACCOUNTING, AND SEVERABILITY OF THE SAME AND OTHER RELATED MATTERS

The City Council ("Council") of Eagle Mountain City, Utah (the "City"), finds that it is in the public interest to adopt this Impact Fee Enactment to address impacts of development upon the City; impose a culinary water impact fee; provide for the calculation and collection of such fee; provide for appeal, accounting, and severability of the same and other related matters.

WHEREAS, the City is a local political subdivision of the State of Utah and has authority pursuant to Utah Code Ann. § 11-36a-101, *et seq*. (the "Impact Fee Act") to mitigate the impact of new development on public facilities by enacting an impact fee; and

WHEREAS, the Council met in regular meeting on November 18, 2014, to convene a public hearing to consider adopting the Impact Fee Facilities Plan (the "Impact Fee Facilities Plan"); and

WHEREAS, the Council considered the input of the public and other participants, and relying on the professional advice and certifications, adopted the Impact Fee Facilities Plan, a copy of which is attached hereto as Exhibit A; and

WHEREAS, the Council finds that the Impact Fee Facilities Plan identifies demands placed upon existing public facilities by new development activity and proposes means by which the City will meet those demands and has generally considered all revenue sources, including impact fees, and anticipated dedication of in-system improvements to finance the impacts on system improvements; and

WHEREAS, the Council finds that the Impact Fee Analysis, a copy of which is attached hereto as Exhibit B, identifies the anticipated impacts on or consumption of existing capacity of public facilities by anticipated development activities, identifies impact on system improvements required by anticipated development activities to maintain the established level of service for each public facility, demonstrates how those anticipated impacts are reasonably related to the anticipated development activities and estimates the proportionate share of the cost for existing capacity that will be recouped and the cost of impacts on system improvements that are reasonably related to the new development activity; and

WHEREAS, the Council finds that the impact fees which are enacted pursuant to this Ordinance ("Impact Fee Enactment") are necessary to achieve an equitable allocation to the costs

borne in the past and to be borne in the future, in comparison to the benefits already received and yet to be received; and

WHEREAS, on October 29, 2014, the City posted notice of the date, time, and place of the public hearing to consider this Impact Fee Enactment in three public places and on the City's official website and mailed notice to all affected entities; and

WHEREAS, on November 5, 2014, the City published notice of the public hearing to consider this Impact Fee Enactment in the Deseret News and Salt Lake Tribune; and

WHEREAS, on November 18, 2014, the Council held a public hearing regarding this Impact Fee Enactment; and

WHEREAS, after careful consideration and review of the comments at the public hearings, the Council has determined that it is in the best interest of the health, safety, and welfare of the inhabitants of the City to adopt this Impact Fee Enactment.

BE IT ORDAINED by the City Council of Eagle Mountain City, Utah:

Section 1. Findings; Authority; Purpose.

The Council finds and determines that growth and development activities in the City will create additional demand and need for culinary water, sanitary sewer, transportation, storm drain, police, parks and recreation and electrical facilities, and the Council finds that persons responsible for growth and development activities should pay a proportionate share of the costs of such planned facilities needed to serve the growth and development activity. The Council further finds that based on the Impact Fee Facilities Plan and Impact Fee Analysis that impact fees are necessary to achieve an equitable allocation to the costs borne in the past and to be borne in the future, in comparison with the benefits already received and yet to be received. The provisions of this Impact Fee Enactment shall be liberally construed in order to carry out the purpose and intent of the Council in establishing the impact fee program.

Section 2. Definitions.

Except as provided below, words and phrases that are defined in the Impact Fee Act shall have the same meaning in this Impact Fee Enactment.

2.1 Allowable credits shall mean the dollar value a developer may be allowed as an offset or a credit against an impact fee if the developer dedicates land for a system improvement, builds and dedicates some or all of a system improvement, or dedicates a public facility that the City and the developer agree will reduce the need for a system improvement. A credit against an impact fee shall be granted for any dedication of real property for, improvements to, or new construction of, any system improvements provided by the developer if the facilities are system improvements, or are dedicated to the Public and offset the need for identified system improvements.

2.2 Applicant shall mean a person or entity required to pay an impact fee under this Impact Fee Enactment.

2.3 Gross Impact Fee shall mean the stated impact fee assessed (prior to the computation of allowable credits, exemptions, or adjustments) for system improvements based on the requirements of this Impact Fee Enactment.

2.4 Impact Fee Agent shall mean the person or persons designated by the City Council to evaluate impact fee applications and calculate gross impact fees, allowable credits, exemptions, adjustments, and net impact fees.

2.5 Impact Fee Applicant or Impact Fee Application shall mean an application submitted by an applicant for development approval that is required to pay an impact fee prior to obtaining subdivision approval or other development approval from the City Council or the building official of the City prior to issuance of a building permit.

2.6 Net Impact Fee shall mean the gross impact fee less all allowable credits, exemptions, adjustments, and credit adjustments required by this Impact Fee Enactment.

2.7 Single Family Residential Unit or Equivalent Residential Unit or ERU shall mean the system improvement capacity required for a dwelling unit intended for the use and occupancy of a single family with no restriction on time of use.

Section 3. Impact Fees Imposed.

3.1 Impact Fees. Based on the Council approval and adoption of the Impact Fee Facilities Plan and Impact Fee Analysis, impact fees shall be imposed on the basis of the Impact Fee Analysis.

3.2 Impact Fees Accounting. The City will establish a separate interest-bearing ledger account for each type of public facility for which impact fees are collected. Interest earned on such account shall be allocated to that account.

(a) *Reporting*. At the end of each fiscal year, the City shall prepare a report on each fund or account showing the source and amount of all monies collected, earned, and received by the fund or account and each expenditure from the fund or account. The report shall identify impact fees by the year in which they were received, the project from which the funds were collected, the system improvements for which the funds were budgeted, and the projected schedule for expenditures. The report shall be in a format developed by the State Auditor that is certified by the City's Chief Financial Officer and shall be transmitted annually to the State Auditor.

(b) *Impact Fee Expenditures*. The City may expend impact fees collected pursuant to this Impact Fee Enactment only for systems improvements that are (i)

public facilities identified in the Impact Fee Facilities Plan; and (ii) of the specific public facilities type for which the fee was collected.

(c) *Time of Expenditure*. Impact fees collected pursuant to this Impact Fee Enactment are to be expended or encumbered for a permissible use within six (6) years of the receipt of those funds by the City. For purposes of this calculation, the first funds received shall be deemed to be the first funds expended.

(d) *Extension of Time*. The City may hold unencumbered fees for longer than six (6) years if the Council identifies in writing (i) an extraordinary and compelling reason why the fees should be held longer than six (6) years; and (ii) an absolute date by which the fees will be expended.

3.3 Refunds. The City shall refund any impact fees paid by a developer, plus interest actually earned when (i) the developer does not proceed with the building activity and files a written request for a refund; (ii) the fees have not been spent or encumbered; (iii) the developer has contributed in excess of their proportional costs; and (iv) no impact has resulted.

3.4 Additional Fees and Costs. The impact fees authorized hereby are separate from and in addition to user fees and other charges lawfully imposed by the City, such as engineering and inspection fees, building permit fees, review fees, and other fees and costs that may not be included as itemized component parts of the impact fee.

3.5 Fees Effective at Time of Payment. Unless the City is otherwise bound by a contractual requirement, the impact fee shall be determined in accordance with the provisions of Section 5 below.

Section 4. Impact Fee Amount and Procedure.

4.1 Impact Fee Imposed. Impact fees are hereby imposed on the basis of the Impact Fee Analysis and shall be paid either as a condition of plat approval, as a condition of the issuance of a building permit, or as a condition to connecting to any current or future system improvements if a plat or building permit is not required in an amount set forth in the Impact Fee Analysis.

4.2 Application Procedure. Each Applicant for development approval shall make application in writing to the City on forms provided for the City for determination of the amount of the required impact fees payable by the Applicant. Each Applicant shall provide all information requested by the City to allow the City to verify the accuracy of the information presented by the Applicant. The Impact Fee Agent shall consider the information presented by the Applicant and determine the gross impact fee, allowable credit, exemptions, adjustments, and net impact fee.

4.3 Impact Fee Amount. The amount of the impact fees imposed hereby shall be the gross amount as set forth in the Impact Fee Analysis.

Section 5. Exemptions, Adjustments, and Credits.

5.1 Exemption. The Council may, on a project-by-project basis, authorize exemptions to the impact fee imposed for development activity that the Council determines to be of broad public purpose to justify the exception, development activities attributable to low-income housing, the state, a school district, or a charter school (the school district and charter school on the same basis).

5.2 Adjustments. The Council shall ensure that the impact fees are imposed fairly and may adjust impact fees at the time the fee is charged to (i) respond to unusual circumstances in specific cases, (ii) respond to a request for a prompt and individualized impact review for the development activities of the state or a school district or a charter school and an offset or credit for a public facility for which an impact fee has been or will be collected, and (iii) permits adjustments of the amount of the impact fee to be imposed on a particular development based upon studies and data submitted by the developer.

5.3 Credits. A developer, including a school district or charter school, shall receive a credit against or proportionate reimbursement of an impact fee if the developer dedicates land for a system improvement, builds and dedicates some or all of a system improvement, or dedicates a public facility that the City and the Developer agree will reduce the need for a system improvement. A credit against the impact fee shall also be given for any dedication of land for, improvements to, or new construction of, any system improvements provided by the developer if the facilities are system improvements, or are dedicated to the public and offset the need for identified system improvements.

Section 6. Service Area.

Service areas are hereby established as set forth on the Impact Fee Facilities Plan and Impact Fee Analysis.

Section 7. Appeal Procedures.

7.1 Application. The appeal procedure applies to challenges to the legality of impact fees, the interpretation and/or application of those fees.

7.2 Request for Information Concerning the Fee. Any person or entity required to pay an impact fee pursuant to this Impact Fee Enactment may file a written request for information concerning the fee with the City. The City will provide the person or entity with the Impact Fee Analysis, Impact Fee Facilities Plan, and other relevant information relating to the impact fee within two weeks after receipt of the request for information.

7.3 Appeals to City Before Payment of Impact Fees. Any affected or potentially affected person or entity who wishes to challenge an impact fee imposed pursuant to this Impact Fee Enactment prior to payment thereof may file a written request for information concerning their fee and the process under the City's appeal procedure.

7.4 Appeal to City After Payment of Impact Fees; Statute of Limitations for Failure to File. Any person or entity that has paid an impact fee pursuant to this Impact Fee Enactment and wishes to challenge the fee shall file a written request for information concerning the fee after having paid the fee and proceed under the City's appeal process. The deadline for filing an appeal shall be as follows:

(a) Within 30 days after the person making the appeal pays the impact fee, they may challenge whether the City complied with the notice requirements of the impact fee with respect to imposition of the impact and the procedure.

(b) Within 180 days after the person making the appeal pays the impact fee, they may challenge whether the city complied with other procedural requirements of the impact fee

(c) Within one (1) year after the person making the appeal pays the impact fee, they may challenge the impact fee.

7.5 Appeal to City. Any developer, landowner, or affected party desiring to challenge the legality of any impact fee, or related fees or exaction under this Impact Fee Enactment, may appeal directly to the City by filing a written challenge with the City before the deadlines provided above.

(a) *Hearing*. An informal hearing will be held not sooner than five (5) days nor more than 25 days after the written appeal to the City is filed.

(b) *Decision*. After the conclusion of the informal hearing, the City shall affirm, reverse, or take action with respect to the challenge or appeal as the City deems appropriate. The decision of the City will be issued within 30 days after the date the written challenge was filed. In light of the statutorily mandated time restrictions, the City shall not be required to provide more than three (3) working days' prior notice of the time, date, and location of the informal hearing, and the inconvenience of the hearing to the challenging party shall not serve as a basis of appeal of any final determination.

7.6 Denial of Due Process. If the City for any reason fails to issue a final decision on a written challenge to an impact fee, its calculation or application, within 30 days after the filing of the challenge with the City, the challenge shall be deemed to have been denied.

7.7 Judicial Review. Nothing in this Impact Fee Enactment shall be interpreted to alter the statutory deadlines before which an action to challenge an impact fee must

be initiated in the district court. After having been served with a copy of the pleadings initiating a court review, the City shall submit to the court the records of the proceedings before the City, including minutes, and if available, a true and correct transcript of any proceedings.

Section 8. Severability. If any section, subsection, paragraph, clause, or phrase of this Impact Fee Enactment shall be declared invalid for any reason, such decision shall not affect the remaining provisions of this Impact Fee Enactment, which shall remain in full force and effect, and for this purpose, the provisions of this Impact Fee Enactment are declared to be severable.

Section 9. Effective Date. The Impact Fee Enactment pursuant to this Impact Fee Ordinance shall take effect on February 16, 2015.

ADOPTED by the City Council of Eagle Mountain City, Utah, this 18th day of November 18, 2014.

EAGLE MOUNTAIN CITY, UTAH

_____

Chris Pengra, Mayor

ATTEST:

_____

Fionnuala B. Kofoed, City Recorder

CERTIFICATION

The above ordinance was adopted by the City Council of Eagle Mountain City on the _____ day of _____, 2014.

Those voting aye:	Those voting nay:
☐ Adam Bradley	☐ Adam Bradley
☐ Donna Burnham	☐ Donna Burnham
☐ Ryan Ireland	☐ Ryan Ireland
☐ Richard Steinkopf	☐ Richard Steinkopf
☐ Tom Westmoreland	☐ Tom Westmoreland

_____
Fionnuala B. Kofoed, CMC
City Recorder

EXHIBIT A

EXHIBIT B

Eagle Mountain City
IMPACT FEE FACILITIES PLAN

Presented to:

Mr. Dave Norman, PE
Public Works Director

EAGLE MOUNTAIN

2545 N Sweetwater Road
Eagle Mountain, UT 84005

June, 2014

Prepared by:

PSOMAS

Sarah Young, PE
4179 Riverboat Road
SLC, UT 84123

In Cooperation with:

Jones & DeMille Engineering

Ted Mickelsen, PE
765 East 340 South
American Fork, UT 84003

Eagle Mountain City
IMPACT FEE FACILITIES PLAN

June 2014

Prepared by:

Psomas Engineering

Sarah Young, PE
4179 Riverboat Road
SLC, UT 84123

In Cooperation with:

Jones and DeMille Engineeirng

Ted Mickelsen, PE
765 East 340 South
American Fork, UT 84003

Table of Contents

3.1 Introduction 3
3.2 Definitions 3
Equivalent Residential Connection (ERC) 3
3.3 Level of Service (LOS) 4
3.4 Existing System 4
3.5 Existing Project Funding 6
3.6 Planning Period and Growth Projections 7
Planning Period 7
Growth Projections 7
3.7 System Improvements 10
Pressure Zones 10
Storage Capacity Improvements 12
City Storage Capacity 12
Recommended Storage Improvements 14
System Capacity Improvements 18
3.8 Current Projects 21
3.9 Facilities Planning 21
Years 2014-2018 22
Year 2019-2024 22
Years Beyond 2024 23
3.10 Conclusion and Recommendations 24

List of Tables

Table 1. Equivalent Residential Connection Conversions 3
Table 2.Total Equivalent Residential Connections and Irrigated Acres (2013) 5
Table 3. Special Improvement Bond Funded Projects 6
Table 4. Projects Funded With Reimbursement Agreements 7
Table 5. City Funded Projects 7
Table 6. Planning Period ERC's 10
Table 7. Pressure Zones 11
Table 8. Existing City Storage Capacity 13
Table 9. Existing City Storage Capacity without Tank #4 Service Area 14
Table 10. Tank #4 Existing Capacity 14
Table 11. Tank #4 Service Area Required Storage Improvements 15
Table 12. City Storage Improvements Required Excluding Tank #4 Service Area 16
Table 13. Existing Source Capacity 17
Table 14. Existing Lots in the North Portion of NSA 20

List of Figures

Figure 1. Eagle Mountain's Water System 6
Figure 2. Population Projections 9
Figure 3. North Potion of NSA 19

Appendix

APPENDIX A. EXHIBITS

Exhibit 3.1 – Eagle Mountain Existing Water System
Exhibit 3.2 – Eagle Mountain Existing System at Buildout
Exhibit 3.3 – Eagle Mountain Current and Planning Period Improvements
Exhibit 3.4 – Eagle Mountain Buildout Projects
Exhibit 3.5 – Eagle Mountain Pressure Zones

APPENDIX B. BUILDOUT PROJECTS COST OPINION

3.1 Introduction

In 2012 a Capital Facilities Plan (CFP) was completed for Eagle Mountain City titled, Eagle Mountain Capital Facilities Plan including Impact Fee Facilities, June 2012. As part of this CFP a water plan, that identified the necessary capital facilities was completed and included as Chapter 3.

Recently Eagle Mountain has been experiencing developmental growth pressures in a portion of the city that has limited water supply due to system operations and limitations and storage capacity. In order to address these issues as well as identify other water system limitations and necessary improvements since the previous CFP was completed, Eagle Mountain has elected to update Chapter 3 of the CFP. Since the previous report was completed the State of Utah Division of Drinking Water Rules now require that these types of plans are to be identified as Impact Fee Facilities Plans. This Impact Fee Facilities Plan is provided as an update to Chapter 3 of the previous CFP and identifies necessary system improvements for a described planning period and through build out.

3.2 Definitions

CUWCD	Central Utah Water Conservancy District
ERC	Equivalent Residential Connection
DDW	Division of Drinking Water
IFFP	Impact Fee Facilities Plan
psi	pounds per square inch
MG	Million Gallons
gpm	gallons per minute
PRV	Pressure Reducing Valve
SSA	South Service Area
NSA	North Service Area
WSA	West Service Area
IFC	International Fire Code

Equivalent Residential Connection (ERC)

For ease of calculations in water master plans, land uses other than residential connections are typically converted to ERC's. For this report, these values were calculated from actual water usage data provided by Eagle Mountain City from 2012 and 2013. See Table 1 for the ERC conversions that were used for this IFFP. This table is for indoor use only; outdoor use is calculated separately and is discussed in a later section.

Table 1. Equivalent Residential Connection Conversions

Type	Eq. ERC
Tank 4 Service Area	1.00
All other Residential	1.00
Commercial	5.06
Institutional	2.53
Condos	0.65
City buildings	1.00

3.3 Level of Service (LOS)

The State of Utah Division of Drinking Water Rules and the IFC govern the minimum Level of Service (LOS) that Eagle Mountain City Water Department provides. The current LOS within the water service areas are stated as follows:

Storage

- 400 gallons of storage per ERC for indoor use
- 2,848 gallons per irrigated acre for outdoor use in Zone 4
- Fire storage 1000 gpm for 2 hours (120,000 gallons)
- Emergency storage based upon an assessment of risk and the desired degree of system dependability

Source

- 800 gallons per day of source capacity per ERC for indoor use
- 3.96 gpm of source per irrigated acre
- DDW defines safe yield of a well as 2/3 of the pump capacity

Minimum Water Pressure Requirements

- 40 psi during peak day demands
- 30 psi during peak instantaneous demands
- 20 psi in during peak day demands with fire

Water Rights

- 0.53 acre-feet of water right per ERC
- 2.5 acre-feet per irrigated acre

Since a few of the system wells are not as reliable, the city has determined that in addition to the State Rules the system will be required to maintain 30 psi at any moment during the modeled peak hour of the peak day scenario, with Well 1 or Well 2 out of service.

3.4 Existing System

Eagle Mountain City currently provides water to customers in the North and South Service Areas (NSA and SSA respectively). White Hills Water Company provides water for the West Service Area (WSA). Since the WSA is not a part of the city water system at this time, evaluation of the system in this area has been excluded from this report. Within the NSA there is a portion of the system defined as the Tank #4 Service Area that is mostly dependent on the water system in that area to meet the demands of that area. See Figure 1 for the location of each service area and Exhibit 3.1 for a map of the existing water system.

From the city's billing information it was determined that there are currently a total of 6,215 connections, the majority of which are residential, but this also includes 23 commercial units, 16

churches, 6 schools and several open space connections. Using actual water use data in 2012 and 2013, all non-residential connections were converted to ERC's for indoor use, and the irrigated acreage was calculated for landscaping, open space, parks, etc. for outdoor use. This was calculated by taking the indoor water use billing data during a winter month (January) for a non-residential connection and dividing it by the indoor winter water use data for a residential connection. Once the ERC's were determined for non-residential uses they were added to the total residential connections, this total equates to 6,057 total ERC's for indoor use in the city. The total ERC number is less than the total city connections of 6,215 since a portion of these connections are for outdoor use only and were included with the irrigated acreage for the city.

The irrigated acreage was determined by taking the difference between the winter month water use and a summer month (July) water use divided by the outdoor use demand required by DDW. See Table 2 for a summary of these connections. The average irrigated acre per ERC for the city was calculated by dividing the total irrigated acres by the total ERC's.

Table 2.Total Equivalent Residential Connections and Irrigated Acres (2013)

Type	No. of Connects	Indoor Eq. ERC/Connect	A. Total Indoor Eq. ERC's	B. Irrigated Acres
Tank 4 Service Area	184	1.00	184	45.00
All other Residential	5369	1.00	5,369	616.46
Commercial	23	5.06	116	20.76
Institutional	22	2.53	56	70.07
Condos	504	0.65	328	30.71
Ranches Master HOA	Not Inc	0.00	0	80.53
Open Space	38	0.00	0	12.09
City Open Space	75	0.00	0	48.79
City buildings	4	1.00	4	0.00
Total	**6219**		**6,057**	**924.42**
		Average Irrigated Acre per ERC (B/A)		**0.1526**

Presently the system does not have a separate secondary irrigation system, so the water for irrigation is supplied from the culinary system.

The city is currently divided into five pressure zones with a majority of the development in zone 1. See Exhibit 3.5 for the pressure zone locations.

As of the date of this report, the city's entire water supply is provided by four wells, one of which is not used due to water quality. Storage is provided by five water tanks totaling 6.6 MG of storage. Three of the tanks are at a common elevation. Tanks 4 and 5 are at higher elevations, Tank 4 serves primarily the north side of SR 73 and Tank 5 serves the lower zones through a PRV. The locations of these tanks are shown in Figure 1.

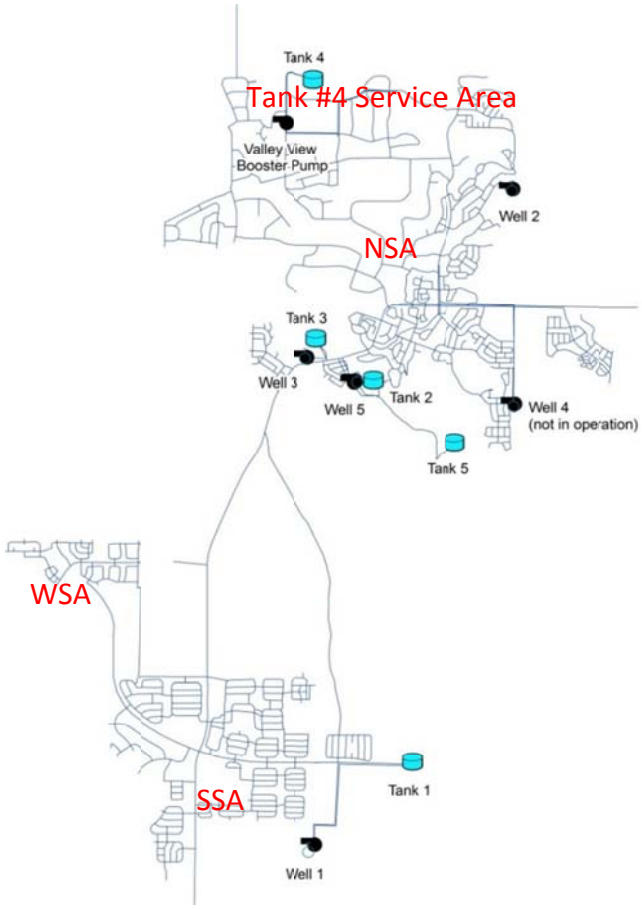


Figure 1. Eagle Mountain's Water System

3.5 Existing Project Funding

Several facilities in the existing system were funded using Special Improvement District (SID) Bonds. Table 3 summarizes the original cost, remaining capacity, and value of the listed improvements. Some of these improvements still have capacity that can be used for future developments.

Table 3. Special Improvement Bond Funded Projects

Year Constructed	Project Name	Cost (Construction Year)	Estimated Capacity (ERU)	Existing Used Capacity	Current Remaining Capacity	Value of Current Capacity (Construction Year)	Original Cost per ERU (Construction Year)	SID Name
1997	1 MG Tank 1	$417,000.00	1064	2000	0	$0.00	$391.98	97-1
1998	Ranches SID - Water and Storage Distribution	$1,800,026.00						98-1
2000	2 MG Reservoir (Tank 3)	$1,359,162.00	2273	1667	606	$362,244	$598.03	2000-1
2000	Ranches Well - Well 2	$825,000.00	1,243	903	340	$225,634	$663.75	2000-1
2013	Ranches Parkway Extension	$71,116.25	831	0	831	$71,116	$85.58	
					Total	$658,993.86		

In addition to SID Bonds other Eagle Mountain Projects have been funded using reimbursement agreements or city funds. See Table 4 and Table 5 for a summary of these projects and their remaining capacities.

Table 4. Projects Funded With Reimbursement Agreements

Year Constructed	Project Name	Cost (Construction Year)	Estimated Capacity (ERU)	Existing Used Capacity	Current Remaining Capacity	Value of Current Capacity (Construction Year)	Original Cost per ERU (Construction Year)
1999	Well 1 Property Agreement	$12,000	2,112	2,000	112	$636	$5.68
2004	Sweetwater Rd 12 inch Waterline (NSA)	$141,306	4,800	2,000	2,800	$82,429	$29.44
2004	Sweetwater Rd 12 inch Waterline (SSA)	$282,613	4,800	1,200	3,600	$211,960	$58.88
2006	Well 3 (SL6)	$750,000	960	667	293	$229,151	$780.88
2006	Well 3 (EMC)	$169,854	960	667	293	$51,896	$176.85
2007	Sunset Drive	$21,000	1,500	160	1,340	$18,760	$14.00
2007	Spyglass Drive	$14,578	1,458	1,700	0	$0	$10.00
2009	Valley View Tank	$1,112,322	468	184	284	$674,999	$2,376.76
2008	Sweetwater Secondary Irrigation	$48,294	1,500	0	1,500	$48,294	$32.20
2013	Well 2 Pump to Waste	$31,135	2,146	1,905	241	$3,501	$14.51
2013	Meadow Ranch Pipe Size Increase	$64,000	831	0	831	$64,000	$77.02
2013	Lone Tree Pipe Size Increase	$66,000	831	0	831	$66,000	$79.42
2014	Evans Ranch Pipe Size Increase	$27,029	831	0	831	$27,029	$32.53
					Total	$1,478,655	

Table 5. City Funded Projects

Year Constructed	Project Name	Cost (construction year)	City Contribution Bond	Developer Contribution	Water Impact Fees	Water Fund	*Reimbursed Money*
2008	Well 4	$ 1,763,179	$122,710	-	$1,640,649	$0	***$ 122,710***
2008	Well 5	$ 852,742	$0	$ 750,000	-	-	-
2010	Pony Express Irrigation Line	$ 128,914	$0	-	-	$ 128,914	***$ 128,914***
2008	Tank 5	$ 1,418,416	$0	-	$ 247,025	$ 1,171,391	***$ 1,171,391***
2008	Tank 5 Waterline	$ 718,302	$0	-	-	$ 718,302	***$ 718,302***
2012	Water System Master & Capital Facility Plan	$ 174,006	$0	-	-	$ 174,006	***$ 174,006***
2010	Porters Crossing	$ 54,034	$0	-	-	$ 54,034	***$ 54,034***
2014	CWP Pipeline Project	$ 3,081,235	$3,081,235	-	-	-	***$ 3,081,235***

3.6 Planning Period and Growth Projections

Planning Period

To evaluate city growth and system improvements as part of this IFFP, a ten year planning period will be used to identify specific system needs. To assist the city in long range planning, additional anticipated projections to build out (year 2060) will also be evaluated.

Growth Projections

In 2009 Eagle Mountain was the country's eighth fastest growing city. It is estimated that by 2024 the population will grow to approximately 41,050 which equates to 9,999 ERC's. By 2060 the city's population is estimated at over 150,000 or in excess of 30,000 ERC's.

Since the growth projections used in the previous CFP to forecast the city's needs were fairly recent, they were compared to the Governor's Office of Planning and Budget, Demographic & Economic Analysis Department (GOPB) 2012 Baseline Projections for this analysis. The recent GOPB numbers projected a higher growth rate in approximately the first ten years then had a slower growth rate after that relative to the previous report. Since this IFFP is focused primarily on the next ten years, the GOPB projections were used. In addition to comparing these numbers with previous report they were also verified with:

- Building Permits Issued
- Forecasted Build-out Population
- Regional Population Patterns
- Current Developments Seeking Approval
- ASWN Planners and Aqua Engineers for the West Service Area

Initially the growth rate in the SSA and the NSA are fairly equal. Around the year 2030 as the NSA is built out, more of the city's population growth will shift more to the SSA. See Figure 2 for the population projections.

(this area intentionally left blank)

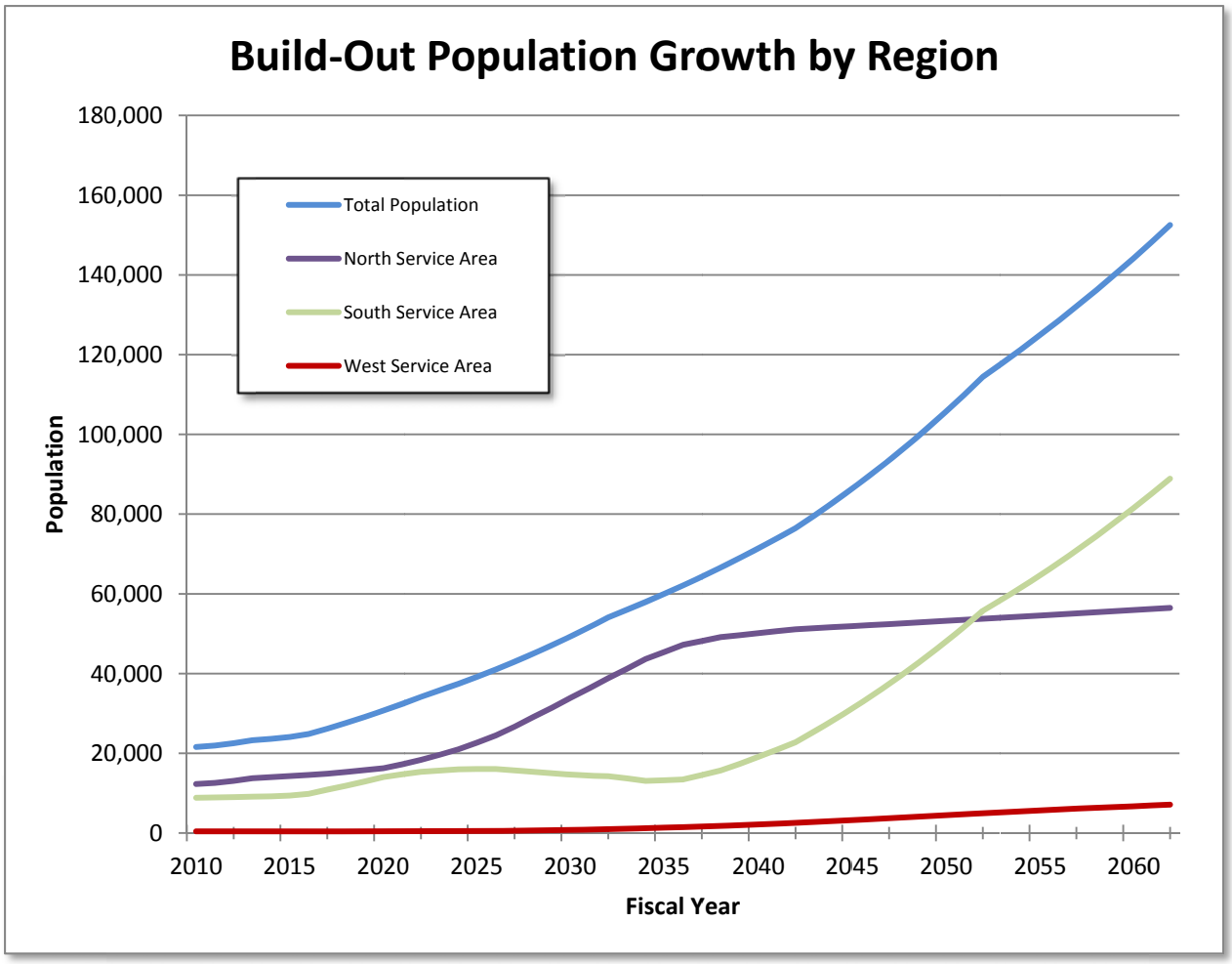


Figure 2. Population Projections

To specifically evaluate the impacts of growth over the planning period, the projected number of ERC's by year, over the planning period, have been identified and included in Table 6 below. To assist the city with long range planning growth, projections in five year increments to 2060 have also been included in the table.

Table 6. Planning Period ERC's

	Year	Population	Added ERC's	Total ERC's
Planning Period	2014	24,831	294	6,347
	2015	26,186	311	6,658
	2016	27,615	328	6,986
	2017	29,121	345	7,331
	2018	30,710	364	7,695
	2019	32,385	384	8,079
	2020	34,152	349	8,429
	2021	35,759	366	8,795
	2022	37,442	383	9,178
	2023	39,205	401	9,579
	2024	41,050	420	9,999
Long Term Projections	2030	54,095		12,829
	2035	64,316		15,129
	2040	76,469		17,962
	2045	93,531		21,823
	2050	114,400		26,250
	2055	132,083		30,206
	2060	152,500		34,774

3.7 System Improvements

Pressure Zones

Eagle Mountain City's water system is divided into five pressure zones. At build out, an additional five pressure zones will be necessary to accommodate the growth, giving a total of ten pressure zones. In the model, the new pressure zones were created to maintain pressures in a desired pressure range of 70-120 psi. However, in some instances this pressure range was expanded, but still within the minimum service level to eliminate the need for additional smaller pressure zones. See Table 7 and Exhibit 3.5 for a summary of the pressure zones.

Table 7. Pressure Zones

Pressure Zone	Served From	HGL	40 psi elevation	70 psi elevation	120 psi elevation	140 psi elevation
Zone 1	Tank 1,2,3	5180	5087.6	5018.3	4902.8	4856.6
Zone 2	PRV	5070	4977.6	4908.3	4792.8	4746.6
Zone 4	Tank 4	5320	5227.6	5158.3	5042.8	4996.6
Zone 5	Tank 5	5370	5277.6	5208.3	5092.8	5046.6
Zone 6	PRV	5078	4985.6	4916.3	4800.8	4754.6
Future Zone 3	Future PRV	4955	4862.6	4793.3	4677.8	4631.6
Future Zone 7	Future Tank	5540	5447.6	5378.3	5262.8	5216.6
Future Zone 8	Future PRV	5540	5447.6	5378.3	5262.8	5216.6
Future Zone 9	Future PRV	5750	5657.6	5588.3	5472.8	5426.6
Future Zone 10	Future Tank	5950	5857.6	5788.3	5672.8	5626.6

Most of the new pressure zones will be created in the undeveloped areas on the eastern side of the city as development moves east up the Lake Mountain area. If some of these areas are determined to be unbuildable, some of these pressure zones may be eliminated.

In addition to the Lake Mountain area, new pressure zones should be created for the Silverlake development and the surrounding undeveloped areas. There are two PRV's proposed for this development; one from the new CWP Pony Express Pipeline (see improvement (2) in section 3.8) that will be installed in 2014, and a second on the existing waterlines at Silverlake Parkway (improvement (5) in section 3.9). When Evans Ranch is constructed, three new PRV's should also be installed such that this development is in the same pressure zone as the Silverlake development.

The final new pressure zone should be situated in the newly annexed area and will serve lots above 5,200 ft. In order for this area to be served by creating only one additional zone and eliminate the need for an additional smaller pressure zone, the pressure range needs to be extended to the maximum peak day pressure range that the LOS allows, 40 psi to 140 psi.

It is also recommended that when further system improvements are made, two existing pressure zone areas be moved from Zone 1 to other zones. The first should occur when the waterline from Tank 5 extends to the Gateway Phase 1 Development (see improvement (14)). A PRV should be installed at the entrance to this development and Gateway Phase 1 could be incorporated into the higher pressure zone 5. This would help increase the pressures in this area to a more desirable level.

The second area that should be moved into another pressure zone includes the area north of SR 73 along Canyon Wash Road and Deerfield Cir (see improvement (8)). By closing the valves at SR 73 and opening the valve at Lake View Lane, the development could be included in Zone 4. This adjustment should not take place until the waterline in SR 73 is installed connecting the two existing valves. Although this move will increase some pressures above 120 psi, it significantly improves the system operational pressures if Well 2 goes off line.

Storage Capacity Improvements

Currently there are five water storage tanks in Eagle Mountain City that provides the total storage capacity for the city's culinary water system

To convert the existing equalization storage capacity of the individual tanks to ERC's, the DDW requires volumes for both fire and emergency storage must first be determined. The fire storage used for this calculation is 1,000 gpm for 2 hours or 120,000 gallons. Although there are larger buildings within the city that require additional fire storage volume, the required fire storage volume for a single event can be analyzed using the entire combined storage volume within the system. Since each tank is assumed to include the minimum fire storage capacity, the total fire storage available for a single event is 600,000 gallons or 5,000 gpm for 2 hours. (840,000 gallons including CUWCD temporary storage) This is enough fire storage to meet the requirements for any size building assuming the larger buildings are equipped with automatic sprinklers.

Once the fire storage is accounted for, the tanks then need to have additional storage set aside for emergencies. The DDW does not have a specific volume requirement to account for this storage. The rule states that "Emergency storage shall be considered during the design process. The amount of emergency storage shall be based upon an assessment of risk and the desired degree of system dependability. The Director may require emergency storage when it is warranted to protect public health and welfare." Since the existing storage facilities have not been planned or constructed with emergency storage considered. The current city emergency storage LOS is 0%. As future storage facilities are planned it's recommended that the city consider 10% to 20% of the storage reserved for emergencies.

After these storage needs are met, the tank is then left with equalization storage. Equalization storage is made up of both indoor and outdoor storage needs. DDW Rule R309-510-8 requires 400 gallons of indoor equalization storage for each ERC and since Eagle Mountain is located in irrigation Zone 4 based on DDW 's Irrigated Crop Consumptive Use Zones Map there is 2,848 gallons per irrigated acre required for outdoor equalization storage. See Equation 1.

Equation 1

$$Irrigated\ area\ X\ 2{,}848\,\frac{gallon}{irr\ ac} + 400gal = \text{Storage/ ERC}$$

Although the storage for the city as a whole will be evaluated using the established LOS criteria, there is a portion of the city on the north side in pressure zone 4 that is served by tank 4 (Tank #4 Service Area) which, as an average, has lager lot sizes than the rest of the city. As such this area will be evaluated independent of the rest of the city as well.

City Storage Capacity

Using the ERCs calculated in Section 3.3, the required equalization storage was determined for the city as whole and compared to the existing available equalization storage. Currently, the entire system serves approximately 6,057 ERC's total in the city. After deducting the required amount for indoor use, the average irrigated acreage was calculated from existing water usage data to be approximately 0.1526

acres per connection. This irrigated acreage was used in equation 1 to determine a total storage volume of 835 gallons/ERC as a minimum LOS for the city.

For the Tank #4 Service Area, the average irrigated acreage was evaluated separately by using actual water usage data from 2010, 2011 & 2012. The irrigated area was calculated to be approximately 0.22 acres per lot. Using equation 1, the total storage volume is 1,027 gallons/ERC as a minimum LOS for the Tank #4 Service Area.

To determine the remaining available storage for the city, the total required storage was deducted from the total available equalization storage and converted to ERC's. The total combined storage of all the existing tanks has the capacity to serve 7,081 ERC's. The required storage was determined using equation 1 and the balance remaining is the remaining volume divided by the storage volume per ERC as calculated above. This indicates that the system, as a whole, has capacity for 1,115 additional ERC's. See Table 8 for a summary of each tank's ERC capacity and the total remaining capacity.

Table 8. Existing City Storage Capacity

Name	High Water Level (ft)	Total Volume (gal)	Fire Storage (gal)	Emergency Storage (gal)	Equalization Storage (gal)	ERC's
Tank 1	5,194.28	1,000,000	120,000	0	880,000	1,054
Tank 2	5,179.06	1,000,000	120,000	0	880,000	1,054
Tank 3	5,179.06	2,000,000	120,000	0	1,880,000	2,253
Tank 4	5,328.50	600,000	120,000	0	480,000	468
Tank 5	5,384.90	2,000,000	120,000	0	1,880,000	2,253
Sub-Total City Storage		**6,600,000**	**600,000**	**0**	**6,000,000**	**7,081**
Required Equalization Storage (Equ. 1 = 6,057 X 400 + 924.42 X 2,848)					**5,055,548**	
Balance Remaining					**944,452**	**1,115**

In addition to the city storage CUWCD has agreed to keep an additional 5 million gallons of storage available through the CWP project for Eagle Mountain emergency storage through the year 2018. This provides reliable back-up for the storage capacity through the year 2018.

Since the Tank #4 service area may be considered separately from the rest of the system, the Table 9 below determines the city storage requirements excluding the Tank #4 service area. The total ERC's for the city, excluding Tank #4 service area, reduces by 184 taking the total from 6057 to 5,873. The total irrigated acreage for the city, excluding Tank #4 Service Area, reduces by 45 taking the total from 924.42 to 879.42 (see Table 2 for Tank #4 service area ERC's and irrigate acreage).

Table 9. Existing City Storage Capacity without Tank #4 Service Area

Name	High Water Level (ft)	Total Volume (gal)	Fire Storage (gal)	Emergency Storage (gal)	Equalization Storage (gal)	ERC's
Tank 1	5,194.28	1,000,000.00	120,000.00	0.00	880,000.00	1,054.39
Tank 2	5,179.06	1,000,000.00	120,000.00	0.00	880,000.00	1,054.39
Tank 3	5,179.06	2,000,000.00	120,000.00	0.00	1,880,000.00	2,252.56
Tank 5	5,384.90	2,000,000.00	120,000.00	0.00	1,880,000.00	2,252.56
Sub-Total City Storage		**6,000,000**	**480,000**	**0**	**5,520,000**	**6,614**
Required Equalization Storage (Equ. 1 = 5,873 X 400 + 879.42 X 2,848)					**4,853,788**	
Balance Remaining					**666,212**	**798**

Tank 5 was constructed at a higher elevation to create another pressure zone. As such, this tank is supplied by booster pumps but is available to the lower zone distribution system through PRV's. Since this tank is available to the lower pressure zone, it is included in the city-wide available storage for both pressure zones.

Tank 4 Service Area is somewhat isolated to the north side of the NSA and the average lot sizes in the area served by Tank 4 are generally larger than the rest of the city. Since this area is currently experiencing substantial growth and is in an area of the water system that can be difficult to serve, it has been evaluated separately for storage capacity to assist the city in planning for development. Considering the larger lots sizes in this area of 0.22 acres per lot and the resulting increase in storage volume required of 1,027 gallons per ERC, Tank 4 has total equalization storage capacity for 468 ERC's.

Table 10. Tank #4 Existing Capacity

Name	High Water Level (ft)	Total Volume (gal)	Fire Storage (gal)	Emergency Storage (gal)	Equalization Storage (gal)	ERC's
Tank 4	5,328.50	600,000	120,000	0	480,000	468
Sub-Total City Storage		**600,000**	**120,000**	**0**	**480,000**	**468**

This currently provides storage for 184 existing lots. There has been an additional 167 lots approved for construction in this service area, but they are not currently connected to the system. Considering this area with only the existing lots, Tank 4 would have remaining storage capacity for the 167 lots approved for construction plus an additional 117 ERC's within this higher-pressure zone area.

Recommended Storage Improvements

Since the majority of the residential growth is concentrated in the Tank #4 Service Area or pressure zone 4, of the NSA, this area was looked at separately. To accommodate for the high growth rate expected for this area, the factors of 1.87 and 0.9 were multiplied by the overall growth rate for the 2014 to 2024 and 2025 to 2060 time spans respectively. This results in a larger population growth rate from 2014 to

2024 and a lower growth rate from 2014 to 2060 relative to the overall city growth rate which is what is expected for this area. The average growth rate from 2014 to 2024 is roughly 10% Exhibit 3.5 shows a potential build out in this area of 1,695 new connections plus industrial areas and a business park. Using the LOS criteria and the average irrigated acreage of 0.22 for this area, the total storage needed for this area at build-out is approximately 2 MG. Table 11 below shows the required timing for the additional storage as well as the population and ERC estimates.

Table 11. Tank #4 Service Area Required Storage Improvements

	Year	Population	ERC	Additional Storage (MG)	Additional Equalization (ERC)	Cumulative Storage (MG)	Capacity (ERC)
Planning Period	2014	894	204			0.60	468
	2015	985	226			0.60	468
	2016	1,085	250			0.60	468
	2017	1,196	276			0.60	468
	2018	1,318	305			0.60	468
	2019	1,453	338			0.60	468
	2020	1,601	368			0.60	468
	2021	1,742	402			0.60	468
	2022	1,895	438			0.60	468
	2023	2,061	477	2	1,831	2.60	2,299
	2024	2,243	520			2.60	2,299
Long Range Planning	2030	3,003	663			2.60	2,299
	2035	3,510	777			2.60	2,299
	2040	4,102	914			2.60	2,299
	2045	4,919	1,099			2.60	2,299
	2050	5,899	1,306			2.60	2,299
	2055	6,715	1,488			2.60	2,299
	2060	7,644	1,695			2.60	2,299

The city storage was analyzed excluding the Tank #4 Service Area because the isolated nature of the Tank #4 Service Area. The population and ERC's were determined by taking the overall city projections and subtracting those estimated for the Tank #4 Service area. As shown in Table 12 below, a 3 MG tank is required to sustain growth through the planning period.

Table 12. City Storage Improvements Required Excluding Tank #4 Service Area

	Year	Population	ERC	Additional Storage (MG)	Additional Equalization (ERC)	Cumulative Storage (MG)	Capacity (ERC)
Planning Period	2014	23,937	6,144			6.00	6,614
	2015	25,201	6,432			6.00	6,614
	2016	26,529	6,736	3	3,451	9.00	10,065
	2017	27,925	7,055			9.00	10,065
	2018	29,392	7,390			9.00	10,065
	2019	30,933	7,742			9.00	10,065
	2020	32,551	8,060			9.00	10,065
	2021	34,018	8,393			9.00	10,065
	2022	35,548	8,740			9.00	10,065
	2023	37,143	9,102			9.00	10,065
	2024	38,807	9,479			9.00	10,065
Long Range Planning	2030	51,092	12,166	2	2,253	11.00	12,317
	2035	60,807	14,352	2	2,253	13.00	14,570
	2040	72,367	17,047	2.5	2,852	15.50	17,421
	2045	88,612	20,725	3	3,451	18.50	20,872
	2050	108,501	24,944	4	4,649	22.50	25,521
	2055	125,368	28,718	3	3,451	25.50	28,972
	2060	144,856	33,079	4	4,649	29.50	33,621

Even though the storage volumes for the SSA can be evaluated using all the tanks, it is primarily served by Tank 1. Currently the SSA has approximately 2,000 connections to the system, more than double the capacity of Tank 1. Currently all the water that is conveyed from the NSA to the SSA is through a single waterline. If this water line fails, the system in the SSA would struggle to keep up with the demands.

As the city continues to add additional storage to the system, consideration for 10 to 20 percent emergency storage should be given when sizing the individual tanks. Along with the new tanks an additional 610,000 gallons should be considered for 20 percent storage in the existing tanks.

By the year 2060, the city will be nearing full build-out and will require a total of approximately 26 million gallons of storage throughout the city. If this projected growth rate is sustained, additional storage will be generally required every 3 to 5 years beyond the planning period. See Table 12 for the storage required and the estimated year the additional storage will be needed for the entire city excluding the Tank #4 Service Area. Source Capacity Improvements

Currently the city system is served by five wells, one of which is not in operation due to water quality issues (Well 4). Additionally, the city has recently signed a new water purchase agreement with Central Utah Water Conservancy District (CUWCD) to purchase up to 15,000 acre-feet of water, of which 2,500

acre-feet is anticipated to be available by July 2014 with the construction of the CWP Pony Express Pump Station and Pipeline.

In conversations with DDW, the safe yield of a well is considered to be two-thirds of the operating point of the pump. Table 13 summarizes the current available source but does not take into consideration the city's water rights. Since all of the sources are located in the same pressure zone and pumped to the existing tanks, the city's source demands can be evaluated for the entire city. The ERC capacity was determined by adding the indoor and outdoor use requirements per ERC and dividing it by the total source capacity.

Table 13. Existing Source Capacity

Source	Quantity (gpm)	Safe Yield (gpm)	ERC'S
Well 1	3,200	2,133	1,812
Well 2	2,200	1,467	1,246
Well 3	1,700	1,133	963
Well 5	3,200	2,133	1,812
CUCWD	1,553	1,553	1,319
Total	11,853	8,419	7,152

With the completion of phase 1 of the CUWCD Pony Express Pump Station (PEPS) and pipeline, Eagle Mountain has enough source capacity to supply the culinary system for the immediate future. Given the projected growth rate of the city, additional source capacity or upgrades to the PEPS will not be likely until approximately the year 2017 by adding an additional pump. Adding the final pump should provide sufficient source throughout the planning period. Beyond the planning period an additional 29,500 gpm of source may be necessary to build-out.

The development of this new source (PEPS) primarily concentrates a majority of the system source in the southern portion of the NSA. This concentration of source leads to system vulnerability if a main line fails between the NSA and SSA or if Well 1 or Well 2 goes out of operation. Either, additional waterlines should be installed to add redundancy between the NSA and SSA and increase the ability to serve all areas of the system, or additional source should be strategically located to serve a larger area.

The additional source capacity required should be accomplished with a combination of the existing and additional purchase agreements with CUWCD and wells. See Table 14 for the anticipated source requirements and timing. When constructing a well there are several unknowns, one of which includes the uncertainty of the well's capacity. Therefore, if the well does not provide the necessary capacity, multiple smaller wells could be constructed over the same time frame to achieve the necessary source requirement.

Table 14. Source Improvements Required Through Build-out

	Year	Population	ERC	Additional Safe Yield (gpm)	Additional Capacity (ERC)	Source Safe Yield (gpm)	Total Capacity (ERC)
Planning Period	2014	24,831	6,347			8,419	7,152
	2015	26,186	6,658			8,419	7,152
	2016	27,615	6,986			8,419	7,152
	2017	29,121	7,331	1553	1,319	9,972	8,471
	2018	30,710	7,695			9,972	8,471
	2019	32,385	8,079			9,972	8,471
	2020	34,152	8,429			9,972	8,471
	2021	35,759	8,795	1,553	1,319	11,525	9,790
	2022	37,442	9,178			11,525	9,790
	2023	39,205	9,579			11,525	9,790
	2024	41,050	9,999			11,525	9,790
Long Range Planning	2030	54,095	12,829	3,500	2,973	15,025	12,763
	2035	64,316	15,129	2,500	2,124	17,525	14,886
	2040	76,469	17,962	3,000	2,548	20,525	17,435
	2045	93,531	21,823	4,500	3,822	25,025	21,257
	2050	114,400	26,250	5,000	4,247	30,025	25,504
	2055	132,083	30,206	4,500	3,822	34,525	29,327
	2060	152,500	34,774	5,500	4,672	40,025	33,998

System Capacity Improvements

Although most of the growth is currently in the northern portion of the city, the NSA as a whole and the SSA were analyzed for future capacity in the system. The addition of the CUWCD source project helps the city system capacity as a whole but is primarily concentrated in the NSA. The SSA, has capacity for additional growth. However, if Well 1 were out of service approximately 266 additional ERC's could be added before the current level of service could not be met. With Well 1 in service this number is much higher. However, as discussed previously, this area is currently supplied with one pipeline, if that were to fail the SSA would not be able to keep up with demands. Recommended system improvements have been identified in sections 3.8 and 3.9.

Since the north portion of the NSA (in pressure zones 1 and 4) are currently experiencing the most growth, it was analyzed for available capacity. Although this area is served from all sources in the city, the operation of the system in this area is most affected by the operation of Well 2. Both the system model and the actual system operations have shown that when Well 2 is out of service there is limited capacity in the area above Cedar View Drive. See Figure 3 for the location of this zone.

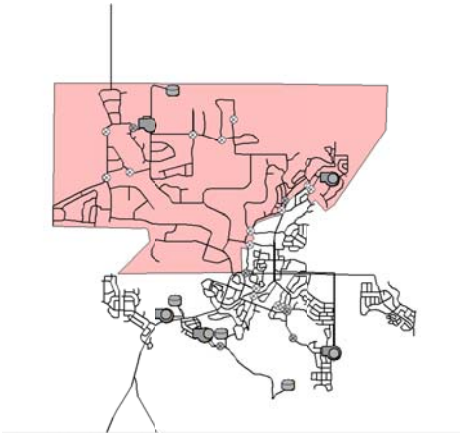


Figure 3. North Potion of NSA

Currently, there are 1,079 lots built in the this area, above the Cedar View Drive, and another 389 lots that have been approved for construction. The additional 389 lots include both vacant lots within existing developments and new developments with final approval. See Table 14 for a summary of the lots that have been included.

(this area intentionally left blank)

Table 14. Existing Lots in the North Portion of NSA

Subdivision/Project	Master Planned	Preliminary Approval	Remaining Vacant Lots w/ Final Approval	Improved Vacant Lots	Existing Homes
Valley View North	66	69	60	12	36
Valley View South			52	2	38
Meadow Ranch V		40		32	
Meadow Ranch 7			16		
Meadow Ranch 1-4				16	149
North Ranch					93
Arrival	148		30		
Clearview Estates	281	50			
Spring Run	1016				
Spring Run Comm/Ind					
Camp Williams					10
Sage Valley				39	59
Cedar Pass Ranch				11	81
Westview Heights				10	39
Northmoor				7	74
Southmoor				47	43
Mt. Airey				4	94
Mt. Airey Village / Spring Valley				30	67
Stonebridge				11	59
Highlands at Ranches					152
Highland on the Green				10	67
RCA Property			Commercial Lots		
Hazard / Patterson Comm/Ind	Commercial & MF				
Meadow Ranch Commercial					
New Elementary School					16
Meadow Ranch Church					2
Rockwell Charter School					
Scenic Mountain Parks	364				
Total Residential ERUs	**1875**	**159**	**158**	**231**	**1079**

Since the operation of Well 2 is critical to providing adequate system pressures in this area, the system was analyzed both with the well operating and with the well out of service.

To meet a desired level of service by providing 30 psi during the peak hour of the peak day with Well 2 out of service, it has been determined in the water model that there is capacity for 84 ERC's in addition to the existing lots and those that have been approved for construction.

With Well 2 operating the system has capacity for an additional approximately 450 lots while meeting the peak day, peak day with fire, and peak instantaneous requirements for the level of service described in section 3.2.

Several improvements have been proposed to provide additional capacity to this area. The impacts these improvements have on the system are summarized in Section 3.8 and 3.9

3.8 Current Projects (2013)

The existing system was analyzed using the WaterCAD software by Bentley. Based on the model, the system currently conforms to the State of Utah DDW Rules and the current established level of service, but has some minor system limitations in a few areas that should be corrected in the near future. At the time of this report, the city has projects under construction that will help alleviate some of the current system capacity and pressure issues. The location of these projects is shown in Exhibit 3.3 and described below:

1) The city is installing a new 24 inch pipeline along Pony Express Parkway that will deliver water from CUWCD's Central Water Project to the city system. This project increases the total amount of source and will alleviate demand pressure on the existing wells.
2) As part of the project described above a new 12 inch PRV is being installed on a 12 inch connection from the new 24 inch pipeline to a location East of Silverlake Parkway. This PRV will add a secondary feed to the development making it less susceptible to system failures. Initially, this PRV will reduce the pressure to match the existing pressures. The existing pressure in this development is currently above the state maximum of 140 psi. This pressure can be reduced when a second PRV from Silverlake Parkway can be installed (see improvement (5)).
3) Another part of the project described in item 1 is adding a parallel 12 inch pipeline along Cedar View Drive. This new pipeline will primarily alleviate low pressures when Well 2 is out of operation, and it also increases the capacity for the areas north of this new pipeline by 365 gpm.
4) CUWCD is currently constructing a pump station to deliver additional source water to Eagle Mountain from their Central Water Project.

The costs for these current city funded projects have been included in Table 6 as the CWP Pipeline Project.

3.9 Facilities Planning

As the city continues to grow the water system will also need to expand in order to keep up with the additional demand caused by new development. From the current land use and zoning plans, a full build-out scenario was created and used to anticipate the pipelines, PRV's, storage and source projects that will be necessary during the planning period and as Eagle Mountain is built-out. This Scenario is summarized in Exhibit 3.2

The needed improvements for the planning period have been phased into 5 year increments: 2014-2018, 2019-2023. To assist the city with long range planning, improvements beyond 2023 have been included; see Exhibit 3.3 for locations of these projects. Some of the immediate projects beyond 2023 are described in this section. Costs for all projects beyond 2023 are given in the Appendix.

In addition to the timing, budgetary project costs have been developed for the necessary improvements. These budgetary costs include materials, construction, and engineering, legal, and right of way acquisitions

These projects have been analyzed, and the timing of the projects is determined based on best available data, current growth projections, and known development plans. If a new development occurs in locations that were not anticipated in the model or growth occurs quicker than anticipated, some projects may need to be initiated sooner than the projections in this report.

Years 2014-2018

In addition to the projects that are under construction (listed in Section 3.8) several other projects will be needed before the year 2018. See the Budgetary Planning Period Project Costs at the end of this section for a summary of costs for these improvements

5) Install a new PRV at Silverlake Parkway. This will reduce pressures in the Silverlake development to desired pressure range. When this new PRV is installed, the PRV from Pony Express Parkway, described in item (2), should be adjusted to match.
   Install 9,500 feet of 16 inch pipe, from the new Pony Express Pipeline to the new pump station north of SR 73 as described in item (7) below. This project will add additional capacity to the Meadow Ranch Zone, above Cedar View Drive. This also adds redundancy to the system and helps with system pressures when well 2 is out of service. This also adds additional capacity in the Meadow Ranch Zone for 552 ERC's. 7(a) Add pump to the PEPS will be needed during this period to provide additional source capacity to the system.
8) Install 1,375 feet of 16 inch pipe along SR 73 connecting Canyon Wash Road and Deerfield Cir. After this improvement is completed the valves should be adjusted switching the North Ranch Subdivision to the upper zone.
9) Install 4,630 feet of 20 inch pipe and 4,800 feet of 12 inch pipe parallel to Pony Express Parkway from the turnout to Tank 3 to Lake Mountain Road. This not only adds redundancy to the SSA making it less susceptible to system failures, but also improves flow from Tanks 2 and 3 to Tank 1.
10) Install 5,000 feet of 16 inch pipe along SR 73 from North Sunset Drive to Shiloh Way. This completes the waterline along SR 73 and adds an additional route for water to be delivered to the areas north of SR 73. In conjunction with improvements (6) and (7) this improvement will add capacity for an additional 162 ERC's to the Meadows Ranch area.
12) Construct a 3 million gallon tank, in the main pressure zone. This tank will provide additional storage capacity for 3,451 ERC's.

Year 2019-2024

13) System improvements north of SR 73 along North Ranches Parkway that includes a new 2.0 million gallon tank, a 1,500 gpm booster station that lifts the water 281 feet, and 4,100 feet of 16 inch pipe. These new improvements will provide the necessary storage at the higher elevations north of SR 73 and is estimated to be needed by 2017. This project not only alleviates the storage deficiencies in the city but also adds additional capacity to the Meadows Ranch Zone. Install 7,000 feet 12 inch pipe from Tank 5 to the Pony Express Parkway through the proposed Gateway subdivision and 12 inch PRV. These improvements will extend the upper pressure zone to Pony Express and open the area adjacent to the pipe for development.

14) 4,500 feet of 12 inch pipe from Sage Valley to Lone Tree West. This will add an additional route for delivery between Pony Express Parkway and SR 73.
15) Add final pump to the PEPS will be needed during this period to provide additional source capacity to the system.
16) Install 4,150 feet of 12 inch waterline to loop the Silverlake Development with the City system.

Years Beyond 2024

There are a few projects that should be completed within 4 to 5 years beyond 2023 and are listed below. Several other projects through build-out have been identified as part of this planning process and are listed with budget costs in Appendix B.

11) Install 7,750 feet of 20 inch pipe and a PRV connecting Tank 5 with the SSA. This adds an additional waterline and redundancy from the NSA and the SSA which currently is dependent on one waterline.
17) The second CUWCD Pump station will be needed beyond 2024. This pump station should be located North of SR73 and be able accommodate the remaining 7,500 acre-feet capacity that will be purchased from Central Utah Water Conservancy District. In addition 7,270 feet of 24 inch pipe will be needed to connect the pump station with the tank listed in improvement (6)
18) 2,200 feet of parallel 12 inch pipe along SR 73. This will eliminate the bottleneck in SR 73 and provide additional capacity for the future CUWCD pump station.
19) Eagle Mountain Blvd Pipeline; 24,000 feet of 16 inch pipe.
20) Construct 32 MG of additional storage.
    a. As part of the new storage, a new storage tank, 8,600 feet of 16 inch pipe, a 1,500 gpm pump station, and a PRV should be constructed at an elevation that would provide for development growth into the hillside of Lake Mountain. If development is further south, another future tank may be a better option but should still be located within the SSA.
21) Construct an additional 37,000 gpm of source or approximately 60,000 acre-feet.

3.10 Conclusion and Recommendations

Like many communities in the west, Eagle Mountain City is growing rapidly with limited resources to acquire and expand its water system to meet the growing needs. The improvements recommended in section 3.8 and 3.9 were outlined based on projected growth rates and anticipated locations of future development. Since growth rates and location of growth may differ from what is anticipated, some improvements may be needed sooner than anticipated.

The current water system complies with the established minimum level of service but is near storage and system capacity. With the anticipation of new development new facilities will need to be constructed to continue to meet the level of service standards. There has been identified and immediate need of system and storage improvements to allow development to continue. Without these improvements the system will struggle to meet the minimum level of service beyond those exiting lots and lots that have been approved.

Beyond the immediate improvements, Eagle Mountain City should begin planning strategic locations for additional storage projects and development of new water sources. As the city continues to grow rapidly, it is recommended that the master plan and Impact Fee Facility Plan be reviewed and updated every couple of years and the system model be kept up to date as new developments are planned.

BUDGETARY PLANNING PERIOD PROJECT COSTS

Years 2014-2018								
Number	Project	Description	Project Cost	% to Growth	% to Repair/Replace	Cost to Growth	Cost to R/R	Alternative Funding
5	Silver Lake PRV	A new 12" PRV Station	$ 105,000	100%	0%	$ 105,000	$ -	$ -
6	Power Corridor Pipeline	9,500 ft of 16" Pipe	$ 1,259,000	100%	0%	$ 1,259,000	$ -	$ -
7(a)	Pony Express PS Expansion	Add additional pump to Pony Express pump station	$ 250,000	100%	0%	$ 250,000	$ -	$ -
8	SR73 16" Water Line	1,375 ft of 16" pipe connecting valves on Canyon Wash and Deerfield Circle	$ 199,100	100%	0%	$ 199,100	$ -	$ -
9	Unity Pass Parallel Pipeline & Pony Express Pipeline	4,630 ft of 20" Pipe (Unity Pass) and 4,800 ft of 12" Pipe (Pony Express)	$ 1,158,000	100%	0%	$ 1,158,000	$ -	$ -
10	SR73 16" Water Line	5,000 ft of 16" pipe North Sunset to N Shiloh Way	$ 622,600	100%	0%	$ 622,600	$ -	$ -
12	3 MG Tank	New Tank and Supply Piping	$ 2,751,000	100%	0%	$ 2,751,000	$ -	$ -
		Sub-Total City Wide (Rounded)	$ 6,340,000			$ 6,340,000		
Years 2019-2023								
Number	Project	Description	Cost	% to Growth	% to Repair/Replace	Cost to Growth	Cost to R/R	Alternative Funding
			Tank #4 Service Area					
7	Meadow Ranch Zone Tank	2.0 Million Gallon Tank,4,100 ft of pipe and 75 hp booster pump in NSA	$ 3,153,700	100%	0%	$ 3,153,700	$ -	$ -
		Sub-Total Tank #4 Service Area (Rounded)	$ 3,150,000			$ 3,150,000		
			City Wide					
13	Tank 5 to Gateway	7,000 ft 12" pipe & PRV	$ 584,400	100%	0%	$ 584,400	$ -	$ -
14	Sage Valley to Lone Tree West	4,500 ft of 12" Pipe	$ 397,200	100%	0%	$ 397,200	$ -	$ -
15	Pony Express PS Expansion	Add final pump to Pony Express pump station	$ 250,000	100%	0%	$ 250,000	$ -	$ -
16	12" Silver Lake Supply Line	4,150 ft of 12" Pipe	$ 410,850	100%	0%	$ 410,850	$ -	$ -
		Sub-Total (Rounded)	$ 1,600,000			$ 1,600,000		
		Total Planning Period Costs	**$ 11,090,000**			**$ 11,090,000**		

APPENDIX A

Exhibits

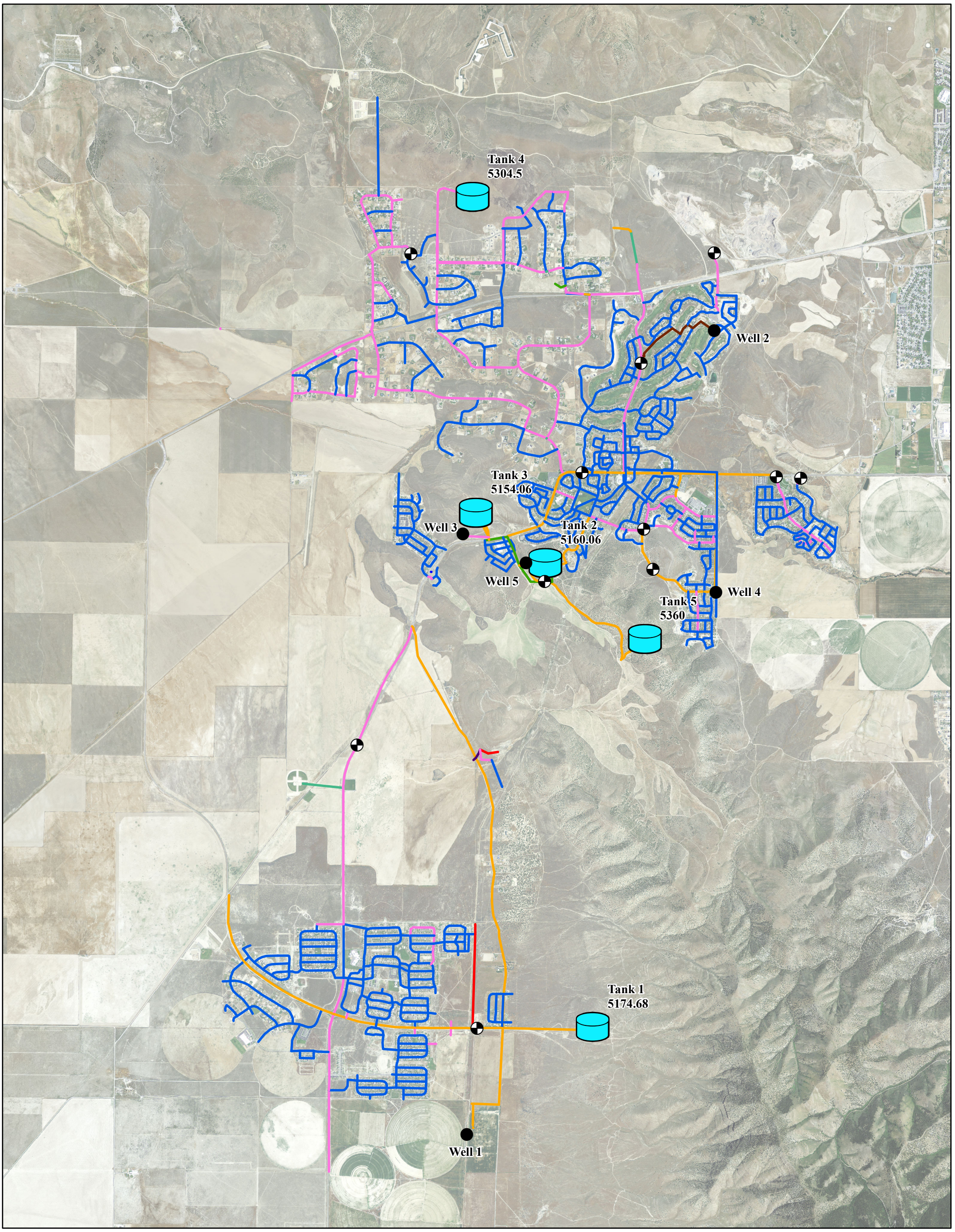


Figure 3.1 Eagle Mountain Existing Water System

Legend

- EXISTING WELL
- TANKS
- PRV
- EXISTING 6"
- EXISTING 8"
- EXISTING 10"
- EXISTING 12"
- EXISTING 14"
- EXISTING 16"
- EXISTING 18"
- EXISTING 20"
- EXISTING 24"

N

0 2,500 5,000 10,000 Feet

EAGLE MOUNTAIN

PSOMAS

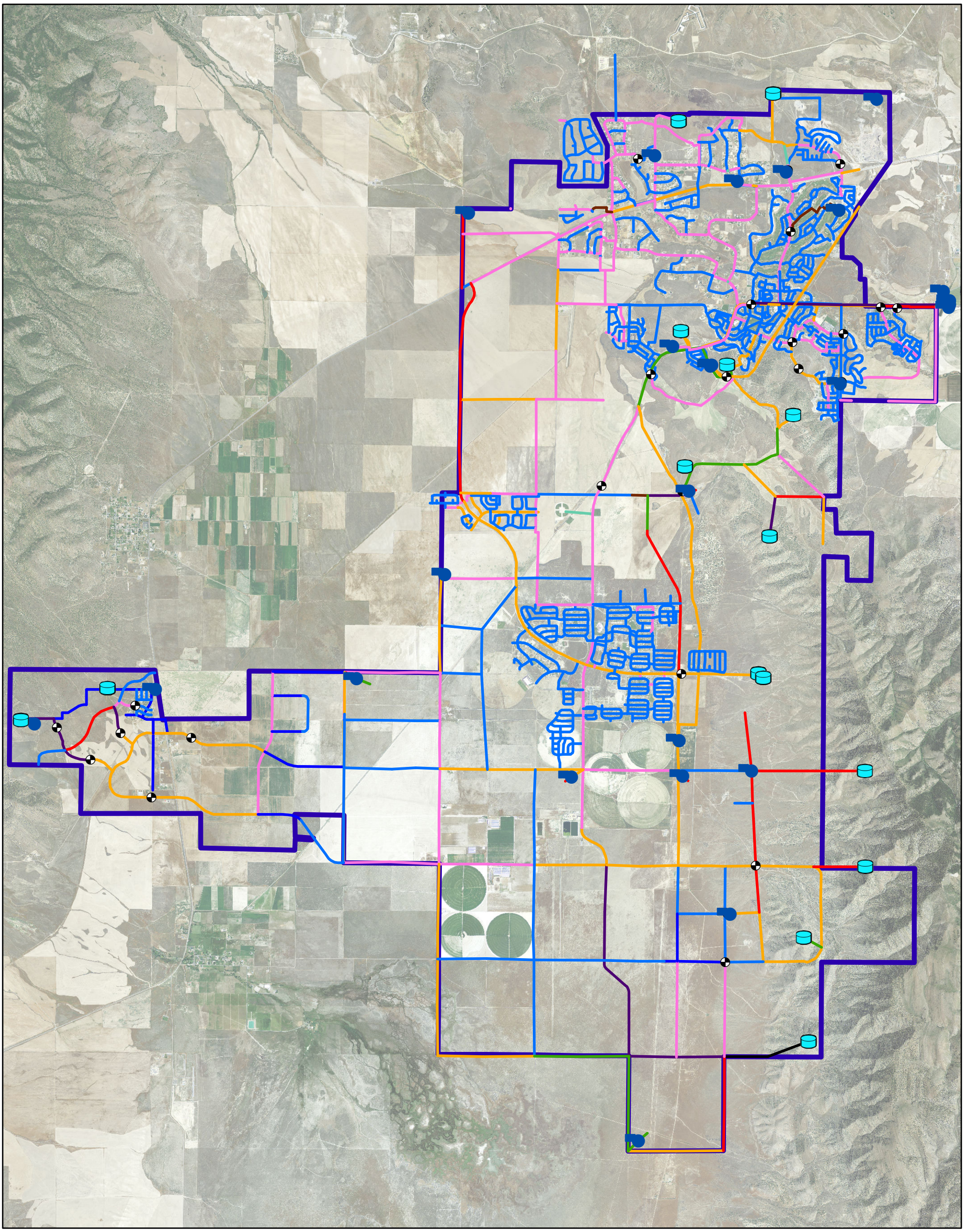


Exhibit 3.2 Eagle Mountain System at Buildout

Legend

- TANKS
- PUMPS
- PRV
- 6" LINE
- 8" LINE
- 10" LINE
- 12" LINE
- 14" LINE
- 16" LINE
- 18" LINE
- 20" LINE
- 24" LINE
- 30" LINE

N

0 2,500 5,000 10,000 Feet

EAGLE MOUNTAIN

PSOMAS

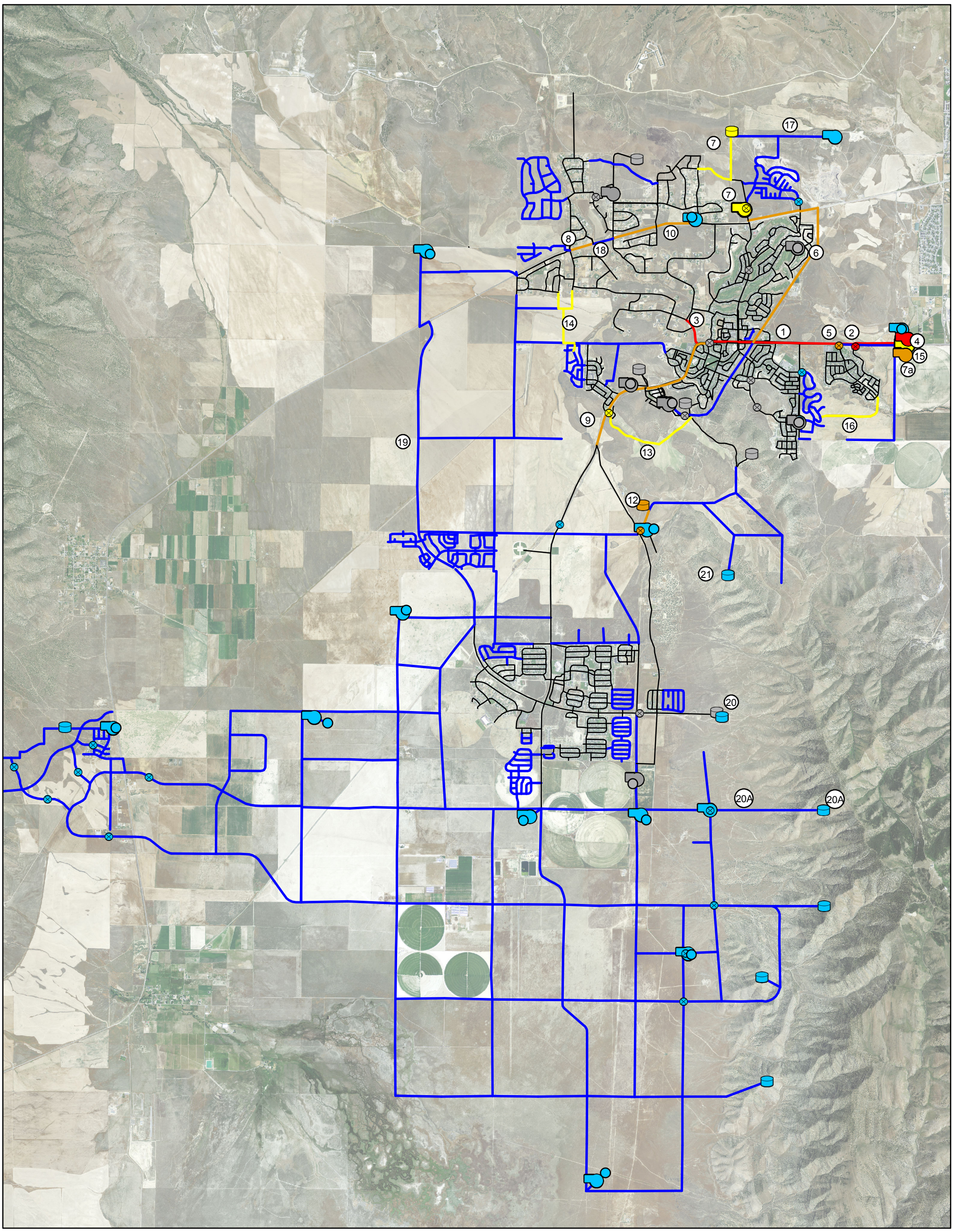


Exhibit 3.3 Eagle Mountain Current and Planning Period Improvements

Legend

- EXISTING TANK
- 2014-2018 TANK
- 2019-2023 TANK
- BEYOND 2023 TANK
- EXISTING WELL
- BEYOND 2023 WELL
- EXISTING PRV
- CURRENT PRV
- 2014-2018 PRV
- 2019-2023 PRV
- BEYOND 2023 PRV
- EXISTING PUMP
- CURRENT PUMP
- 2014-2018 PUMP
- 2019-2023 PUMP
- BEYOND 2023 PUMP
- EXISTING
- CURRENT PIPES
- 2014-2018 PIPES
- 2019-2023 PIPES
- BEYOND 2023 PIPES

N

0 2,500 5,000 10,000 Feet

EAGLE MOUNTAIN

PSOMAS

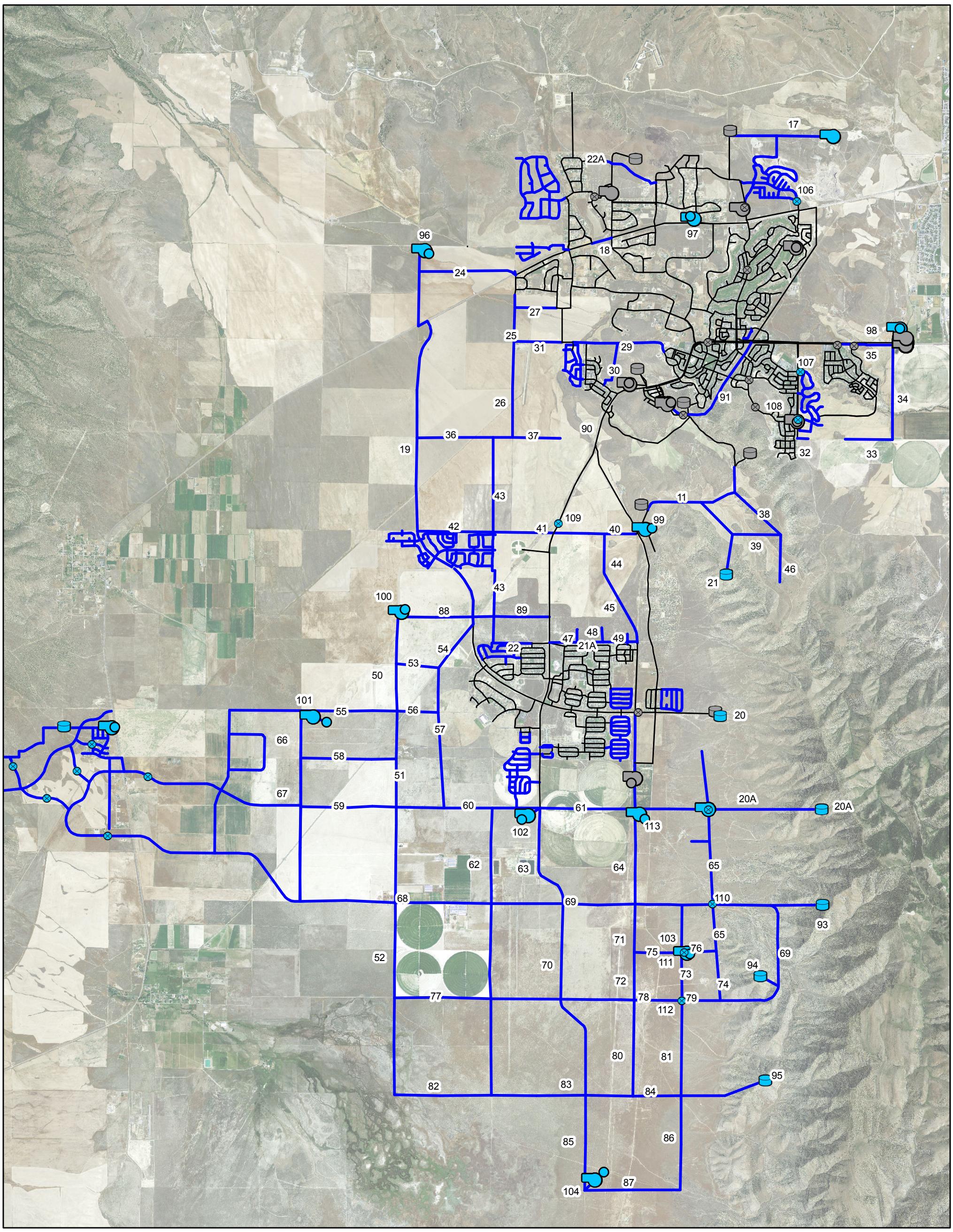


Exhibit 3.4 Eagle Mountain Buildout Improvements

Legend

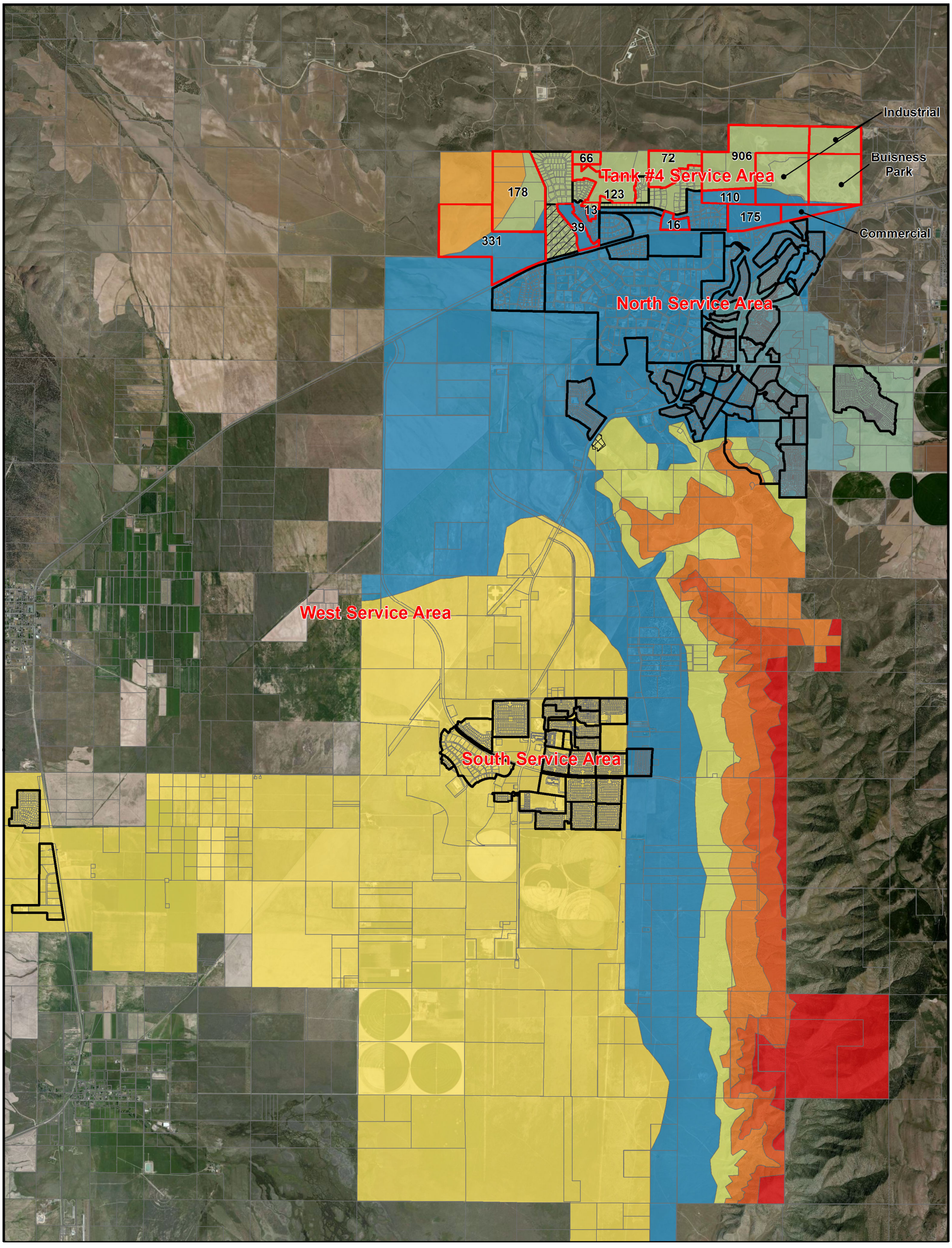
- EXISTING TO 2023 TANKS
- BEYOND 2023 TANK
- EXISTING TO 2023 PRV
- BEYOND 2023 PRV
- EXISTING TO 2023 WELL
- BEYOND 2023 WELL
- EXISTING TO 2023 PUMP
- BEYOND 2023 PUMP
- EXISTING TO 2023 PIPES
- BEYOND 2023 PIPES

N

0 2,500 5,000 10,000 Feet

EAGLE MOUNTAIN

PSOMAS



Exihibit 3.5 Eagle Mountain Pressure Zones

Legend

- Planed Subdivisions
- Existing Subdivisions
- To Be Added To Zone 4
- To Be Added To Zone 5

Red Text= Service Areas

Black Numbers = Planned Connections

Parcels

N

0 3,000 6,000 Feet

Pressure Zone

1 2 3 4 5 6 7 8 9 10

EAGLE MOUNTAIN

PSOMAS

APPENDIX B

Buildout Projects Cost Opinion

EAGLE MOUNTAIN PROPOSED WATER SYSTEM IMPROVEMENTS: 2024 TO BUILD-OUT					
Pipe Projects		**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
11	6,730 ft of 20"pipe and PRV from Tank 5 to SSA	6,730	LF	$ 114	$ 766,270
17	7,270' 24" waterline connecting the CWP waterline to Ranches tank	7,270	LF	$ 209	$ 1,519,430
19	24,000' 16" waterline on Eagle Mountain Blvd	24,000	LF	$ 150	$ 3,600,000
20A	8836' 16" waterline from new well (9) to tank	8,836	LF	$ 120	$ 1,060,320
21	2,500' 24" and 2,500' 16" from tank to SSA transmission line	5,000	LF	$ 135	$ 675,000
21A	4,870' 8" waterline along Bobby Wren Blvd from Pony Express Pkwy to Airport Rd	4,870	LF	$ 66	$ 321,420
22	2,220' 12" waterline along Ball street from existing pipe to ochre lane	2,220	LF	$ 99	$ 219,780
22A	1,550' 12" waterline from Country Dr to Tank 4	1,550	LF	$ 99	$ 153,450
24	5,430' 10" waterline from 16000 West to SR73	5,430	LF	$ 99	$ 537,570
25	5,270' 16" waterline along 15200 West from 7850 North to 7500 North	5,270	LF	$ 116	$ 608,685
26	2,700' 12" waterline along 15200 West from 7500 North to 7330 North	2,700	LF	$ 99	$ 267,300
27	3,100' 8" waterline along 7800 15200 to Canyon Wash	3,100	LF	$ 66	$ 204,600
28	840' 8" waterline along Bristlecone Way to 7200 North	840	LF	$ 66	$ 55,440
29	4,720' 8" waterline along Ruby Valley Dr to Bristlecone Way	4,720	LF	$ 66	$ 311,520
30	2,444' 8" waterline from midway of Lone Tree Pkwy to extended Bristlecone Way	2,444	LF	$ 66	$ 161,304
31	4,000' 12" waterline from Lonetree Pkwy to 15200 West	4,000	LF	$ 99	$ 396,000
32	610' 12" waterline along 6400 North from Cherokee St east	610	LF	$ 99	$ 60,390
33	2,650' 12" waterline along 6400 North from east border of the city going west	2,650	LF	$ 99	$ 262,350
34	5,320' 12" waterline down the east border of the city from Pony Express Pkwy to 6400 North	5,320	LF	$ 99	$ 526,680
35	Extend waterline In Pony Express Pkwy from Silverlake Pkwy to city border	3,100	LF	$ 160	$ 496,000
36	3,290' 16" waterline along 6400 North from 16000 West to 15400 West	3,290	LF	$ 116	$ 379,995
37	6,780' 12" waterline along 6400 North from 15400 West to Pony Express Pkwy	6,780	LF	$ 99	$ 671,220
38	3,510 ' 12" waterline from Tank 5 south east to east boundary	3,510	LF	$ 99	$ 347,490
39	2,940' 18" waterline along 600 North to east edge of city	2,940	LF	$ 160	$ 470,400
40	1,750' 24" waterline along 6000 North from Airport Road to Lake Mountain Road	1,750	LF	$ 209	$ 365,750
41	6,220' 8" waterline along 6000 North from Ohre Lane to Airport Road	6,220	LF	$ 66	$ 410,520
42	4,230' 12" waterline along 6000 North from Eagle Mountain Blvd to Ochre Lane	4,230	LF	$ 99	$ 418,770
43	11,770 12"waterline from Ocrhe Lane up to 7000 North	11,770	LF	$ 99	$ 1,165,230
44	1,965' 20" waterline along Airport Road from 6000 North going south	1,965	LF	$ 165	$ 324,225
45	8,465' 18" waterline along Airport Road south to Eagle Mountain Blvd	8,465	LF	$ 160	$ 1,354,400
46	2,640' 12" waterline along the east edge of city from 6000 North to approx. 5400 North	2,640	LF	$ 99	$ 261,360
47	1,370' 8" waterline heading north from Bobby Wren Blvd	1,370	LF	$ 66	$ 90,420
48	1,370' 8" waterline heading north from Bobby Wren Blvd	1,370	LF	$ 66	$ 90,420
49	695' 8" waterline heading north from Bobby Wren Blvd	695	LF	$ 66	$ 45,870
50	5,265' 16" waterline along 16000 West from 5000 North to 4000 North	5,265	LF	$ 116	$ 610,740
51	10,685' 12" waterline along 16000 West from 4000 North to 2000 North	10,685	LF	$ 99	$ 1,057,815
52	10,720' 16" waterline from 2000 North to 1 North	10,720	LF	$ 116	$ 1,243,520
53	2,400' 8" waterline along approx. 4500 North from16000 West eastward	2,400	LF	$ 66	$ 158,400
54	3,120' 8" waterline From Eagle Mountain southwest	3,120	LF	$ 66	$ 205,920
55	5,360' 12" waterline along 4000 North from 17000 West to 16000West	5,360	LF	$ 99	$ 530,640
56	2,320' 8" waterline along 4000 North from 16000 West	2,320	LF	$ 66	$ 153,120
57	7,855' 8" waterline along approx. 4500 North to3000 North	7,855	LF	$ 66	$ 518,430
58	5,920' 8" waterline from 17000 West to 16000 West	5,920	LF	$ 66	$ 390,720
59	5,360' 8" waterline along 3000 North from 17000 West to 16000 West	5,360	LF	$ 66	$ 353,760
60	8,000' 16" waterline along 3000 North from 16000 West to Pony Express	8,000	LF	$ 116	$ 924,000
61	5,290' 12" waterline along 3000 North From Pony Express to Airport Road	5,920	LF	$ 99	$ 586,080
62	16,020' 8" waterline along 15000West from 3000 North to 1 North	16,020	LF	$ 66	$ 1,057,320
63	Replace 5,990' 12" with 16" along Pony Express from 3000 North to 2000 North	5,990	LF	$ 116	$ 691,845
64	10,720' 16" waterline along airport road from Eagle Mountain Blvd to 2000 North	10,720	LF	$ 116	$ 1,238,160
65	11,175' 18" waterline along Eagle Mountain Blvd to 1500 North	11,175	LF	$ 160	$ 1,782,413
66	2,660' 12" waterline along 17000 West from 4000 North to approx. 3500 North	2,660	LF	$ 99	$ 263,340
67	8,000' 16" waterline along 17000 West from 3500 North to 2000 North	8,000	LF	$ 116	$ 924,000
68	11,370' 12" waterline along 2000 North from 17000 West to 15000 West	11,370	LF	$ 99	$ 1,125,630
69	23,980' 16" waterline along 2000 North from 15000 West to 13100 West to Lake Mountain Dr	23,980	LF	$ 116	$ 2,769,690
70	10,690' 24" waterline along Pony Express Pkwy from 2000 North to 1 North	10,690	LF	$ 209	$ 2,234,210
71	2,690' 8" waterline along Airport Rd from 2000 North to 1500 North	2,690	LF	$ 66	$ 177,540
72	2,660' 10" waterline along Airport Rd from 1500 North to 1000 North	2,660	LF	$ 99	$ 263,340
73	5,350' 8" waterline along 13000 West from 2000 North to 1000 North	5,350	LF	$ 66	$ 353,100
74	2,765' 16" waterline along Eagle Mountain Blvd from 1500 North to 1000 North	2,765	LF	$ 115	$ 317,975
75	3,080' 8" waterline along approx. 1500 North from Airport Rd to 13000 West	3,080	LF	$ 66	$ 203,280
76	1,650' 16" along approx. 1500 North from 13000 West to Eagle Mountain Blvd	1,650	LF	$ 116	$ 190,575
77	12,655' 8" waterline along 1000 North from 16000 West to approx. 13700 West	12,655	LF	$ 66	$ 835,230
78	3,405' 10" waterline along 1000 North from 13700 West to 13000 West	3,405	LF	$ 88	$ 299,640

79	2,120' 8" waterline along 1000 North from 13000 West to Eagle Mountain Blvd	2,120	LF	$ 66	$ 139,920
80	5,360' 12" waterline along Airport Rd from 1000 North to 1 North	5,360	LF	$ 99	$ 530,640
81	5,295' 12" waterline along 13000 West from 1000 North to 1 North	5,295	LF	$ 99	$ 524,205
82	5,410' 16" waterline along 1 North from 16000 West to 15000 West	5,410	LF	$ 116	$ 624,855
83	5,275' 20" waterline along 1 North from 15000 West to 14000 West	5,275	LF	$ 165	$ 870,375
84	5,325' 24" waterline along 1 North from 14000 West to 13000 West	5,325	LF	$ 209	$ 1,112,925
85	5,280' 20" waterline along Airport Rd from 1 North to 1000 South	5,280	LF	$ 165	$ 871,200
86	5,260' 18" waterline along 13000 West from 1 North to 1000 South	5,260	LF	$ 160	$ 841,600
87	3,920' 16" waterline along 1000 South from Airport Rd to 13000 West	3,920	LF	$ 116	$ 452,760
88	4,170' 12" waterline along 5000 North from 16000 West to Eagle Mountain Blvd	4,170	LF	$ 99	$ 412,830
89	4,270' 8" waterline from Eagle Mountain Blvd to Pony Express Rd	4,270	LF	$ 66	$ 281,820
90	7,670' parallel 12" waterline along Pony Express Parkway past Lone Tree West	7,670	LF	$ 99	$ 759,330
91	Power Easement Waterline South of Pony Express Pkwy	6,622	LF	$ 116	$ 764,841
113	3,373' 16" waterline along SR73 from the new SSA well to Well 1	3,373	LF	$ 116	$ 297,000
				Pipe Projects Total	**$48,544,313**
Tank Projects					
18	Water Tank	2	MG	$1,000,000	$2,000,000
20	Water Tank	2	MG	$1,000,000	$2,000,000
20a	Water Tank	2	MG	$1,000,000	$2,000,000
21	Water Tank	3	MG	$1,000,000	$3,000,000
93	Water Tank	4	MG	$1,000,000	$4,000,000
94	Water Tank	4	MG	$1,000,000	$4,000,000
95	Water Tank	3	MG	$1,000,000	$3,000,000
				Tanks Projects Total	**$20,000,000**
Pumps and Wells Projects (Includes intermediate project not shown in the report Table 12)					
17	Central Utah CWP SR73 pump station	1	LS	$ 4,950,000	$ 4,950,000
96	NSA Well and Pump	1	LS	$ 990,000	$ 990,000
97	NSA Well and Pump	1	LS	$ 990,000	$ 990,000
98	NSA Well and Pump	1	LS	$ 990,000	$ 990,000
99	SSA Well and Pump	1	LS	$ 990,000	$ 990,000
100	SSA Well and Pump	1	LS	$ 990,000	$ 990,000
101	SSA Well and Pump	1	LS	$ 990,000	$ 990,000
102	SSA Well and Pump	1	LS	$ 990,000	$ 990,000
103	SSA Well and Pump	1	LS	$ 990,000	$ 990,000
104	SSA Well and Pump	1	LS	$ 990,000	$ 990,000
113	SSA Well 2500 gpm well	1	LS	$ 990,000	$ 990,000
				Well Projects Total	**$8,910,000**
PRV Projects					
106	PRV	1	LS	$ 130,000	$ 130,000
107	PRV	1	LS	$ 130,000	$ 130,000
108	PRV	1	LS	$ 130,000	$ 130,000
109	PRV	1	LS	$ 130,000	$ 130,000
110	PRV	1	LS	$ 130,000	$ 130,000
111	PRV	1	LS	$ 130,000	$ 130,000
112	PRV	1	LS	$ 130,000	$ 130,000
				PRV Projects Total	**$910,000**
Easements					
1	CWP Waterline Connection Easement	1	LS	$145,000	$145,000
2	Kern River Gas Line Easement north of Pony Express Pkwy	1	LS	$88,000	$88,000
3	Kern River Gas Line Easement south of Pony Express Pkwy	1	LS	$88,000	$88,000
				Easements Total	**$321,000**
				Total Projects Cost Opinion	**$78,700,000**

CULINARY WATER IMPACT FEE ANALYSIS (IFA)

EAGLE MOUNTAIN

OCTOBER 2014

LEWIS YOUNG
ROBERTSON & BURNINGHAM, INC.
GATEWAY PLAZA BUILDING - 41 N. RIO GRANDE, STE 101 - SALT LAKE CITY, UT 84101
(P) 801-596-0700 - (TF) 800-581-1100 - (F) 801-596-2800 - WWW.LEWISYOUNG.COM

TABLE OF CONTENTS

IMPACT FEE CERTIFICATION **3**

SECTION 1: EXECUTIVE SUMMARY **4**

SECTION 2: GENERAL IMPACT FEE METHODOLOGY **7**

SECTION 3: OVERVIEW OF SERVICE AREA, DEMAND, AND LOS **9**
- SERVICE AREAS 9
- DEMAND UNITS 9
- LEVEL OF SERVICE STANDARDS 10

SECTION 4: EXISTING FACILITIES INVENTORY **11**
- EXCESS CAPACITY 11

SECTION 5: CAPITAL FACILITY ANALYSIS **15**
- SYSTEM VS. PROJECT IMPROVEMENTS 16
- FUNDING OF FUTURE FACILITIES 16
- PROPOSED CREDITS OWED TO DEVELOPMENT 17
- EQUITY OF IMPACT FEES 17
- NECESSITY OF IMPACT FEES 17

SECTION 6: CULINARY WATER IMPACT FEE CALCULATION **18**
- PROPOSED CULINARY WATER IMPACT FEE 18
- CONSIDERATION OF ALL REVENUE SOURCES 19
- EXPENDITURE OF IMPACT FEES 19
- GROWTH-DRIVEN EXTRAORDINARY COSTS 19
- SUMMARY OF TIME PRICE DIFFERENTIAL 19

IMPACT FEE CERTIFICATION

IFA CERTIFICATION

Lewis Young Robertson & Burningham, Inc. certifies that the Impact Fee Analysis ("IFA") prepared for culinary water services:

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;
   c. an expense for overhead, unless the expense is calculated pursuant to a methodology that is consistent with generally accepted cost accounting practices and the methodological standards set forth by the federal Office of Management and Budget for federal grant reimbursement;
   d. offsets costs with grants or other alternate sources of payment; and

3. complies in each and every relevant respect with the Impact Fees Act.

Lewis Young Robertson & Burningham, Inc. makes this certification with the following caveats:

1. All of the recommendations for implementation of the IFFP made in the IFFP documents or in the IFA documents are followed by City Staff and elected officials.

2. If all or a portion of the IFFP or IFA are modified or amended, this certification is no longer valid.

3. All information provided to LYRB is assumed to be correct, complete, and accurate. This includes information provided by the City as well as outside sources.

LEWIS YOUNG ROBERTSON & BURNINGHAM, INC.

DEFINITIONS

The following acronyms or abbreviations are used in this document:

ERC: Equivalent Residential Connection

GAL: Gallons

GPM: Gallons per Minute

GPD: Gallons per Day

IFA: Impact Fee Analysis

IFFP: Impact Fee Facilities Plan

LOS: Level of Service

LYRB: Lewis Young Robertson and Burningham, Inc.

MG: Million Gallons

SECTION 1: EXECUTIVE SUMMARY

The purpose of the Culinary Water Impact Fee Analysis ("IFA") is to fulfill the requirements established in Utah Code Title 11 Chapter 36a, the "Impact Fees Act," and help Eagle Mountain City (the "City") plan necessary capital improvements for future growth. This document will determine the appropriate impact fee the City may charge to new growth to maintain the level of service ("LOS") for the culinary water system. The **Eagle Mountain Impact Fee Facilities Plan 2014** (the "IFFP"), along with information from the City, provides the information utilized in the analysis for the purposes of calculating impact fees.

- **Impact Fee Service Area:** There are two service areas defined in the IFFP. **Service Area 1** represents the general City-wide service area for source, storage and distribution – excluding the Tank 4 Service Area. **Service Area 2** includes the Tank 4 Service Area. The Tank 4 Service area will have the same impact relative to source and distribution, but due to the different level of service relative to storage for this area, a different impact fee is calculated for the storage component in this service area.

- **Demand Analysis:** The demand unit utilized in this analysis is equivalent residential connections (ERCs). As residential and commercial growth occurs within the City, it generates an impact on the culinary water system. The culinary water capital improvements identified in this study are based on maintaining the current level of service.

- **Level of Service:** The IFFP identifies the existing and proposed LOS (See IFFP p.4). The total storage per ERC for Service Area 1equals 835 gallons, whereas the total storage per ERC for Service Area 2 equals 1,027 gallons (See IFFP p.12-13). The total source LOS for both service areas is 1.18 gpm per ERC. The IFFP also defines minimum water pressure requirements and water right requirements.

- **Excess Capacity:** This analysis includes a buy-in component for source, storage and distribution. The intent of the equity buy-in component is to recover the costs of the unused capacity in existing infrastructure from new development.

- **Capital Facilities Analysis:** The IFFP has identified the growth related projects needed within the next six to ten years. Capital projects related to curing existing deficiencies were not included in the calculation of the impact fees. The calculation of the impact fee includes $580,650 in source improvements, $2,540,994 in storage costs and $5,402,941 in distribution related costs.

- **Financing of Existing Facilities:** The City has funded its existing capital infrastructure through a combination of different revenue sources, including general utility fund revenues, the issuance of debt, special improvement districts (SIDs), reimbursement agreements and revenues received from other governmental agencies. The existing reimbursement agreements, City funded projects or SID payments can be repaid from impact fee revenues from the system (See Table 4.9).

- **Funding of Future Facilities:** The City anticipates the need to issue debt. The applicable financing costs are included in the proportionate share analysis.

PROPOSED CULINARY WATER IMPACT FEE

The impact fees in this analysis are calculated based on a defined set of costs specified for future development, as identified in the IFFP. The total system costs are divided by the total demand units the projects are designed to serve based on the existing level of service.

The culinary water impact fees proposed in this analysis will be assessed within all areas of the City, based on the proposed service areas. The proportionate share analysis determines the proportionate cost assignable to new development based on the proposed capital projects and the acres served by the proposed projects. The impact fee per ERC is calculated below for each proposed service area.

TABLE 1.1: SERVICE AREA 1 IMPACT FEE PER ERC

		COST TO IFA	ERCS SERVED	FEE PER ERC
Buy-In	Source Buy-In	$2,083,567	3,436	$606
	Storage Buy-In	$340,446	3,335	$102
	Distribution Buy-In	$544,790	3,651	$149
Source: Future Facilities	Source Future Facilities	$580,650	3,436	$169
	Source Financing Costs	$288,048	3,436	$84
Storage: Future Facilities	Storage Future Facilities	$2,423,215	3,335	$727
	Storage Financing Costs	$1,202,103	3,335	$360
Distribution: Future Facilities	Distribution Future Facilities	$5,402,941	3,651	$1,480
	Distribution Financing Costs	$2,680,279	3,651	$734
Other	Impact Fee Balance	($500,000)	3,651	($137)
			Impact Fee per ERC	$4,275

Table Notes:
Source Buy-In: Calculated in Section 4. Cost is averaged across total ERCs served by the combined ERCs served by existing and future source facilities. See Tables 4.1 – 4.4 and 5.2.
Storage Buy-In: Cost is averaged across total ERCs in Service Area 1. See Table 4.5.
Distribution Buy-In: See Table 4.7 and 4.8.
Future Facilities Costs: See Tables 5.1 and 5.2. Storage facilities are allocated based on service area.
Financing Costs: See Tables 5.3 and 5.4

TABLE 1.2: SERVICE AREA 2 IMPACT FEE PER ERC

		COST TO IFA	ERCS SERVED	FEE PER ERC
Buy-In	Source Buy-In	$2,083,567	3,436	$606
	Storage Buy-In	$627,350	316	$1,985
	Distribution Buy-In	$544,790	3,651	$149
Source: Future Facilities	Source Future Facilities	$580,650	3,436	$169
	Source Financing Costs	$288,048	3,436	$84
Storage: Future Facilities	Storage Future Facilities	$117,780	316	$373
	Storage Financing Costs	$58,428	3,436	$17
Distribution: Future Facilities	Distribution Future Facilities	$5,402,941	3,651	$1,480
	Distribution Financing Costs	$2,680,279	3,651	$734
Other	Impact Fee Balance	($500,000)	3,651	($137)
			Impact Fee per ERC	$5,460

Table Notes:
Source Buy-In: Calculated in Section 4. Cost is averaged across total ERCs served by the combined ERCs served by existing and future source facilities. See Tables 4.1 – 4.4 and 5.2.
Storage Buy-In: Cost is averaged across total ERCs in Service Area 2. See Table 4.6.
Distribution Buy-In: See Table 4.7 and 4.8.
Future Facilities Costs: See Tables 5.1 and 5.2. Storage facilities are allocated based on service area.
Financing Costs: See Tables 5.3 and 5.4

It is important to note that the impact fee should be used to reimburse the assessment payers for any value of remaining capacity within the projects identified in Table 4.9. The reimbursement should be based on the revenues collected from the specific component of the impact fee (i.e. source, storage, distribution) and paid according to the schedules found in Table 4.9.

NON-STANDARD CULINARY WATER IMPACT FEES

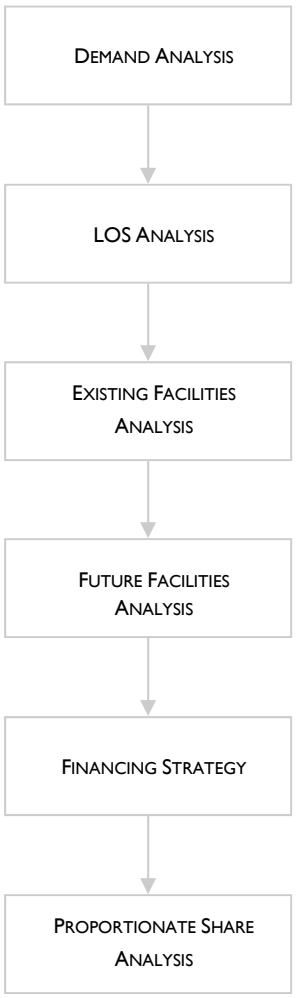
The City reserves the right under the Impact Fees Act to assess an adjusted fee that more closely matches the true impact that the land use will have upon public facilities.[1] This adjustment could result in a different impact fee if the City determines that a particular user may create a different impact than what is standard for its land use.

[1] 11-36a-402(1)(c)

SECTION 2: GENERAL IMPACT FEE METHODOLOGY

The purpose of this study is to fulfill the requirements of the Impact Fees Act regarding the establishment of an IFFP and IFA. The IFFP is designed to identify the demands placed upon the City's existing facilities by future development and evaluate how these demands will be met by the City. The IFFP is also intended to outline the improvements which are intended to be funded by impact fees. The IFA is designed to proportionately allocate the cost of the new facilities and any excess capacity to new development, while ensuring that all methods of financing are considered. Each component must consider the historic level of service provided to existing development and ensure that impact fees are not used to raise that level of service. The following elements are important considerations when completing an IFFP and IFA.

FIGURE 2.1: IMPACT FEE METHODOLOGY



DEMAND ANALYSIS

The demand analysis serves as the foundation for the IFFP. This element focuses on a specific demand unit related to each public service – the existing demand on public facilities and the future demand as a result of new development that will impact public facilities.

LEVEL OF SERVICE ANALYSIS

The demand placed upon existing public facilities by existing development is known as the existing "Level of Service" ("LOS"). Through the inventory of existing facilities, combined with the growth assumptions, this analysis identifies the level of service which is provided to a community's existing residents and ensures that future facilities maintain these standards. Any excess capacity identified within existing facilities can be apportioned to new development. Any demand generated from new development that overburdens the existing system beyond the existing capacity justifies the construction of new facilities.

EXISTING FACILITY INVENTORY

In order to quantify the demands placed upon existing public facilities by new development activity, to the extent possible the Impact Fee Facilities Plan provides an inventory of the City's existing **system** facilities. The inventory valuation should include the original construction cost and estimated useful life of each facility of each facility. The inventory of existing facilities is important to properly determine the excess capacity of existing facilities and the utilization of excess capacity by new development.

FUTURE CAPITAL FACILITIES ANALYSIS

The demand analysis, existing facility inventory and LOS analysis allow for the development of a list of capital projects necessary to serve new growth and to maintain the existing system. This list includes any excess capacity of existing facilities as well as future **system improvements** necessary to maintain the level of service. Any demand generated from new development that overburdens the existing system beyond the existing capacity justifies the construction of new facilities.

FINANCING STRATEGY

This analysis must also include a consideration of all revenue sources, including impact fees, future debt costs, alternative funding sources and the dedication of system improvements, which may be used to finance system improvements.[2] In conjunction with this revenue analysis, there must be a determination that impact

[2] 11-36a-302(2)

fees are necessary to achieve an equitable allocation of the costs of the new facilities between the new and existing users.[3]

PROPORTIONATE SHARE ANALYSIS

The written impact fee analysis is required under the Impact Fees Act and must identify the impacts placed on the facilities by development activity and how these impacts are reasonably related to the new development. The written impact fee analysis must include a proportionate share analysis, clearly detailing each cost component and the methodology used to calculate each impact fee. A local political subdivision or private entity may only impose impact fees on development activities when its plan for financing system improvements establishes that impact fees are necessary to achieve an equitable allocation to the costs borne in the past and to be borne in the future (UCA 11-36a-302).

[3] 11-36a-302(3)

SECTION 3: OVERVIEW OF SERVICE AREA, DEMAND, AND LOS

SERVICE AREAS

Utah Code requires the impact fee enactment establish one or more service areas within which impact fees will be imposed.[4] The impact fees identified in this document will be assessed based on two service areas as defined in the IFFP:

1) **Service Area 1:** A general City-wide service area for source, storage and distribution – excluding the Tank 4 Service Area; and,
2) **Service Area 2:** The Tank 4 Service Area. This service area will have the same impact relative to source and distribution, but due to the different level of service relative to storage, a different impact fee is calculated for the storage component in this service area (See IFFP p.14 and Appendix A for a further description of Service Area 2: Tank 4 Service Area).

This document identifies capital projects that will help to maintain the same level of service enjoyed by existing residents into the future. Culinary water infrastructure will need to be expanded in order to maintain the existing level of service. Impact fees have become an ideal mechanism for funding growth-related infrastructure. This analysis is designed to accurately assess the true impact of a particular user upon the City's infrastructure and prevent existing users from subsidizing new growth. This analysis also ensures that new growth isn't paying for existing system deficiencies.

DEMAND UNITS

This analysis uses the ERC figures provided in the IFFP, with a starting year of 2014. The ERC growth estimates are shown by service area and can be found in the IFFP in Table 6, Table 11, and Table 12 (See IFFP p.10, p.15 and p.16). ERCs are projected to increase by 3,651 ERC through 2024, with 3,335 ERCs in Service Area 1 and 316 ERCs in Service Area 2.

TABLE 3.1: CITY-WIDE GROWTH PROJECTIONS

YEAR	ERC GROWTH	CHANGE	SERVICE AREA 1 ERCS	CHANGE	SERVICE AREA 2 ERCS	CHANGE
2014	6,348		6,144		204	
2015	6,658	310	6,432	288	226	22
2016	6,986	328	6,736	304	250	24
2017	7,331	345	7,055	319	276	26
2018	7,695	364	7,390	335	305	29
2019	8,080	385	7,742	352	338	33
2020	8,428	348	8,060	318	368	30
2021	8,795	367	8,393	333	402	34
2022	9,178	383	8,740	347	438	36
2023	9,597	419	9,120	380	477	39
2024	9,999	402	9,479	359	520	43
New ERCs IFFP Horizon		3,651		3,335		316

[4] UC 11-36a-402(1)(a)

LEVEL OF SERVICE (LOS) STANDARDS

Impact fees cannot be used to finance an increase in the LOS to current or future users of capital improvements. Therefore, it is important to identify the existing LOS to ensure that the impact fees assessed to new development include only the growth related cost necessary to maintain the existing LOS. The IFFP identifies the existing and proposed LOS as follows (See IFFP p.4):

- **Storage**
  - 400 gallons of storage per ERC for indoor use
  - 2,848 gallons per irrigated acre for outdoor use
  - Fire storage 1,000 gpm for 2 hours (120,000 gallons)
  - Emergency storage based upon an assessment of risk and the desired degree of system dependability
  - Based on the average irrigated acres per ERC defined in the IFFP (see p.12) of .1526 the total storage per ERC equals **835 gallons for Service Area 1**.
  - Based on the average irrigated acres per ERC defined in the IFFP (see p.13) of .22 the total storage per ERC equals **1,027 gallons for Service Area 2**.

- **Source**
  - 800 gallons per day of source capacity per ERC for indoor use
  - 3.96 gpm of source per irrigated acre
  - DDW defines safe yield of a well as 2/3 of the pump capacity
  - Based on the LOS defined in the IFFP, the total source per ERC equals **1.18 gpm**.

- **Minimum Water Pressure Requirements**
  - 40 psi during peak day demands
  - 30 psi during peak instantaneous demands
  - 20 psi in during peak day demands with fire

- **Water Rights**
  - 0.53 acre-feet of water right per ERC
  - 2.5 acre-feet per irrigated acre

The Impact Fee Act allows impact fee revenues to be utilized to maintain the existing and proposed LOS.

SECTION 4: EXISTING FACILITIES INVENTORY

EXCESS CAPACITY & BUY-IN

The intent of the equity buy-in component is to recover the costs of the unused capacity in existing infrastructure from new development. The following tables illustrate the appropriate buy-in component related to excess capacity within the existing system.

SOURCE EXISTING EXCESS CAPACITY AND BUY-IN

Table 4.1 illustrates the excess capacity from all existing sources.

TABLE 4.1: DETERMINATION OF TOTAL SOURCE EXCESS CAPACITY

	QUANTITY (GPM)	SAFE YIELD (GPM)	ERCS SERVED	LATENT CAPACITY	EXPLANATION
Well 1	3,200	2,133	1,812	-	Allocation of Latent capacity is an estimate based on existing reimbursement agreements in order to apportion the buy-in value. ERCs served calculated based on LOS of 1.18 gpm
Well 2	2,200	1,467	1,246	340	
Well 3	1,700	1,133	963	293	
Well 5	3,200	2,133	1,812	-	
CUWCD	1,553	1,553	1,319	171	
Total	11,853	8,419	7,152	804	ERCs Served - (See IFFP Table 13). Latent Capacity based on 2014 ERCs

Total Existing ERCs	6,348	2014 ERCs
Latent Capacity	804	7,152 – 6,348 = 804
ERCs in IFFP Horizon	3,651	See Table 3.1
ERCs Remaining to be Served	2,847	3,651 – 804 = 2,847

The City currently utilizes four wells, as well as water from CUWCD, to provide water to its customers. The buy-in related to the wells is determined below. The CUWCD buy-in is calculated separately because the water is conveyed to the City through a transmission line designed to serve a larger number of ERCs then the contractual amount of water currently being assigned to the CUWCD source element.

Based on the information contained in the IFFP and the current estimate of ERCs, the total source excess capacity related to wells represents 10.9 percent of the well capacity. This percentage is compared to the value of the existing system as shown in Table 4.2.

TABLE 4.2: DETERMINATION OF SOURCE EXCESS CAPACITY FROM WELLS AND BUY-IN VALUE

Total ERCs Served from Existing Wells	5,833	Sum of well capacity
Latent Capacity from Wells	633	Sum of latent capacity from wells
% of Total Existing Capacity	10.9%	633 ERCs Served By Latent Capacity/5,833 Total ERCs
Total Value of Existing Wells	$7,911,775*	Total value of well system provided by the City
Value of Wells to Impact Fees	$858,590	10.9% x $7,911,775 = $858,590

*Based on the following costs: Well #1 Property Agreement of $12,000, Well #1 cost of $3,539,000, Ranches Well (Well #2) cost of $825,000, Well #3 (SL6) cost of $750,000, Well #3 (EMC) cost of $169,854, Well #4 cost of $1,763,179, and Well #5 cost of $852,742.

In addition to wells, the City utilizes Central Utah Water Conservancy District (CUWCD) water to meet existing needs. Based on the current contract with CUWCD, the City provides 1,533 gpm from this source, or 1,319 ERCs, whereas the pipeline is estimated to be able serve approximately 8,228 ERCs (See Table 4.3 and 4.4). While the latent capacity from the total existing sources shows a total of 804 ERCs of latent capacity, the City (through the contractual agreement with CUWCD) can physically provide more capacity through the CUWCD pipeline than the amount shown in Table 4.1. However, the utilization of additional CUWCD source will result in the need for future capital improvements and take-down fees.

TABLE 4.3: DETERMINATION OF CUWCD PIPELINE BUY-IN

YEAR	PROJECT NAME	ORIGINAL COST	ERC CAPACITY	REMAINING ERC CAPACITY	VALUE OF REMAINING CAPACITY	AGREEMENT TYPE
2014	CUWCD Pipeline	$3,595,569	8,228	7,080	$3,093,902	City Funded

TABLE 4.4: DETERMINATION OF CUWCD PIPELINE BUY-IN (CONT.)

PROJECT NAME	VALUE OF REMAINING CAPACITY	ERC CAPACITY*	REMAINING ERC	ERCS REMAINING TO SERVE	% TO IFA	COST TO IFA
CUWCD Pipeline	$3,093,902	8,228	7,080	2,803**	40%	$1,224,977
					Value of Pipeline to IFA	$1,224,977
					TOTAL SOURCE VALUE to IFA	$2,083,567

*Estimated ERC Capacity based on 7,500 Ac Ft of supply with a LOS of 0.91 Ac Ft per ERC.
**Represents the sum of the excess capacity identified in Table 4.2 of 171 ERCs plus estimated ERCs to be served of 2,632 ERCs in the IFFP planning horizon from future projects (See Table 5.2).

STORAGE EXISTING EXCESS CAPACITY AND BUY-IN

The City currently utilizes five storage tanks to meet existing storage demands of the community. Service Area 1 utilizes Tanks 1, 2, 3, and 5, whereas Service Area 4 relies on Tank 4. Tables 4.5 and 4.6 illustrate the calculation of the buy-in component for storage for the individual service areas.

TABLE 4.5: DETERMINATION OF STORAGE BUY-IN (SERVICE AREA 1)

	EQUALIZATION STORAGE (GALLONS)	ERCS SERVED	EXPLANATION
Tank 1	880,000	1,054	Storage Capacity Applicable to Service Area 1 Based on LOS of 835 gal per ERC
Tank 2	880,000	1,054	
Tank 3	1,880,000	2,253	
Tank 5	1,880,000	2,253	
Total	5,520,000	6,614	Total ERC Capacity (See IFFP Table 9)

Existing ERCs	6,144	2014 ERCs
Latent Capacity	470	6,614 – 6,144 = 470
% Of Total	7.1%	470 / 6,614 = 7.1%
ERCs in IFFP Horizon	3,335	See Table3.1
ERCs Remaining to be Served	2,865	3,335 – 470 = 2,865
Total Value of Service Area 1 Tanks	$4,795,014	Total value of Tanks within Service Area 1
Value to Impact Fees	$340,446	7.1% x $4,795,014 = $340,446

TABLE 4.6: DETERMINATION OF STORAGE BUY-IN (SERVICE AREA 2)

	EQUALIZATION STORAGE	ERCS SERVED	EXPLANATION
Tank 4	480,000	468	Storage Capacity Applicable to Service Area 2 Based on LOS of 1,027 gal per ERC
Total	480,000	468	Total ERC Capacity (See IFFP Table 10)

Existing ERCs	204	2014 ERCs
Latent Capacity	264	468 – 204 = 264
% Of Total	56.4%	264 / 468 = 56.4%
ERCs in IFFP horizon	316	See Table3.1
ERCs Remaining to be Served	52	316 – 264 = 52
Total Value of Service Area 2 Tanks	$1,112,322	Total value of Tanks within Service Area 2
Value to Impact Fees	$627,350	56.4% x $1,112,322 = $627,350

DISTRIBUTION EXISTING EXCESS CAPACITY AND BUY-IN

The tables below illustrate the calculation of the buy-in component for distribution improvements, including the CUWCD pipeline project.

TABLE 4.7: DETERMINATION OF DISTRIBUTION BUY-IN

YEAR	PROJECT NAME	ORIGINAL COST	ERC CAPACITY	REMAINING ERC CAPACITY	VALUE OF REMAINING CAPACITY	AGREEMENT TYPE
2004	Sweetwater Rd. 12-inch Waterline (NSA)	$141,306	4,800	2,800	$82,429	Reimbursement
2004	Sweetwater Rd. 12-inch Waterline (SSA)	$282,613	4,800	3,600	$211,960	Reimbursement
2007	Sunset Drive	$21,000	1,500	1,340	$18,760	Reimbursement
2013	Well 2 Pump to Waste	$31,135	2,146	241	$3,497	Reimbursement
2013	Meadow Ranch Pipe Size Increase	$64,000	831	831	$64,000	Reimbursement
2013	Lone Tree Pipe Size Increase	$66,000	831	831	$66,000	Reimbursement
2013	Ranches Parkway Extension	$71,116	831	831	$71,116	Reimbursement
2014	Evans Ranch Pipe Size Increase	$27,029	831	831	$27,029	Reimbursement

TABLE 4.8: DETERMINATION OF DISTRIBUTION BUY-IN (CONT.)

PROJECT NAME	VALUE OF REMAINING CAPACITY	ERC CAPACITY	REMAINING ERC CAPACITY	ERCS REMAINING TO SERVE	% TO IFA	COST TO IFA
Sweetwater Rd. 12-inch Waterline (NSA)	$82,429	4,800	2,800	3,651	100%	$82,429
Sweetwater Rd. 12-inch Waterline (SSA)	$211,960	4,800	3,600	3,651	100%	$211,960
Sunset Drive	$18,760	1,500	1,340	3,651	100%	$18,760
Well 2 Pump to Waste	$3,497	2,146	241	3,651	100%	$3,497
Meadow Ranch Pipe Size Increase	$64,000	831	831	3,651	100%	$64,000
Lone Tree Pipe Size Increase	$66,000	831	831	3,651	100%	$66,000
Ranches Parkway Extension	$71,116	831	831	3,651	100%	$71,116
Evans Ranch Pipe Size Increase	$27,029	831	831	3,651	100%	$27,029
					Total Value to IFA	$544,790

MANNER OF FINANCING EXISTING PUBLIC FACILITIES

The City has funded its existing capital infrastructure through a combination of different revenue sources, including general utility fund revenues, the issuance of debt, special improvement districts (SIDs), reimbursement agreements and revenues received from other governmental agencies. This analysis has removed any known funding from federal grants or donations from non-resident citizens to ensure that none of those infrastructure items are included in the level of service.

Table 4.9 illustrates the existing reimbursement agreements or SID payments that can be repaid from impact fee revenues from the system.

TABLE 4.9: EXISTING REIMBURSEMENT AGREEMENTS, SIDS AND CITY FUNDED PROJECTS

YEAR	PROJECT NAME	ORIGINAL COST	ESTIMATED CAPACITY	REMAINING CAPACITY	VALUE REMAINING CAPACITY	ORIGINAL COST PER ERC	AGREEMENT TYPE
Source							
2000	Ranches Well (Well #2)	$825,000	1,243	340	$225,634	$663.75	SID 2000-1
2006	Well #3 (SL6)	$750,000	960	293	$229,151	$780.88	Reimbursement
2006	Well #3 (EMC)	$169,854			$51,896	$176.93	City Funded
Storage							
2000	Tank 3: 2 MG	$1,359,162	2,273	606	$362,244	$598.03	SID 2000-1
2009	Tank 4: Valley View Tank	$1,112,322	468	284	$674,999	$2,376.76	Reimbursement
2008	Tank 5 Water Line	$718,302	2,253	557	$177,627	$318.88	City Funded
2008	Tank 5: 2MG	$1,418,416			$350,757	$629.69	City Funded

YEAR	PROJECT NAME	ORIGINAL COST	ESTIMATED CAPACITY	REMAINING CAPACITY	VALUE REMAINING CAPACITY	ORIGINAL COST PER ERC	AGREEMENT TYPE
Distribution							
2004	Sweetwater Rd. 12-inch Waterline (NSA)	$141,306	4,800	2,800	$82,429	$29.44	Reimbursement
2004	Sweetwater Rd. 12-inch Waterline (SSA)	$282,613	4,800	3,600	$211,960	$58.88	Reimbursement
2007	Sunset Drive	$21,000	1,500	1,340	$18,760	$14.00	Reimbursement
2013	Well 2 Pump to Waste	$31,135	2,146	241	$3,497	$14.51	Reimbursement
2013	Meadow Ranch Pipe Size Increase	$64,000	831	831	$64,000	$77.02	Reimbursement
2013	Lone Tree Pipe Size Increase	$66,000	831	831	$66,000	$79.42	Reimbursement
2013	Ranches Parkway Extension	$71,116	831	831	$71,116	$85.58	Reimbursement
2014	Evans Ranch Pipe Size Increase	$27,029	831	831	$27,029	$32.53	Reimbursement
2014	CWP Pipeline	$3,595,569	8,228	7,080	$3,093,902	$436.99	City Funded

It is important to note that the impact fee should be used to reimburse the assessment payers for any value of remaining capacity within the projects identified in Table 4.9. The reimbursement should be based on the revenues collected from the specific component of the impact fee (i.e. source, storage, distribution) and paid according to the schedules found in Table 4.9.

SECTION 5: CAPITAL FACILITY ANALYSIS

The IFFP has identified the growth related projects needed within the next six to ten years.[5] Capital projects related to curing existing deficiencies were not included in the calculation of the impact fees. Total future project applicable to new development are shown below.

TABLE 5.1: ILLUSTRATION OF CAPITAL IMPROVEMENTS SCHEDULED TO BE COMPLETED IN THE NEXT 10 YEARS

Number	Project	Service Area	Const. Year	Const. Year Project Cost*	% to Growth	% to Repair/Replace	Cost to Growth
Source							
7a	Pony Express PS Expansion	All	2017	$273,182	100%	0%	$273,182
15	Pony Express PS Expansion	All	2021	$307,468	100%	0%	$307,468
Subtotal				$580,650			$580,650
Storage							
7	Meadow Ranch Zone Tank	Service Area 2	2023	$4,114,863	100%	0%	$4,114,863
12	3MG Tank	Service Area 1	2016	$2,918,536	100%	0%	$2,918,536
Subtotal				$7,033,399			$7,033,399
Distribution							
5	Silver Lake PRV	All	2014	$105,000	100%	0%	$105,000
6	Power Corridor Pipeline	All	2015	$1,296,770	100%	0%	$1,296,770
8	SR73 16" Water Line	All	2017	$217,562	100%	0%	$217,562
9	Unity Pass Parallel Pipeline	All	2018	$1,303,339	100%	0%	$1,303,339
10	SR73 16" Water Line	All	2018	$700,742	100%	0%	$700,742
13	Tank 5 to Gateway	All	2022	$740,300	100%	0%	$740,300
14	Sage Valley to Lone Tree West	All	2022	$503,161	100%	0%	$503,161
16	12" Silver Lake Supply Line	All	2023	$536,066	100%	0%	$536,066
Subtotal				$5,402,941			$5,402,941

*Analysis assumes three percent annual construction inflation.

TABLE 5.2: ILLUSTRATION OF CAPITAL IMPROVEMENTS SCHEDULED TO BE COMPLETED IN THE NEXT 10 YEARS (CONT.)

Number	Project	Cost to Growth	Capacity	ERCs Served	ERCs Remaining in IFA Window**	% to IFA	Cost to IFA
Source			GPM				
7a	Pony Express PS Expansion	$273,182	1,553	1,319	1,319	100%	$273,182
15	Pony Express Expansion	$307,468	1,553	1,319	1,528	100%	$307,468
		$580,650	3,106	2,632*	2,847		$580,650
Storage			Gallons				
7	Meadow Ranch Zone Tank	$4,114,863	1,880,000	1,831	52	3%	$117,780
12	3MG Tank	$2,918,536	2,880,000	3,451	2,865	83%	$2,423,215
		$7,033,399	4,760,000	5,282	2,918		$2,540,994
Distribution							
5	Silver Lake PRV	$105,000		3,651	3,651	100%	$105,000
6	Power Corridor Pipeline	$1,296,770		3,651	3,651	100%	$1,296,770
8	SR73 16" Water Line	$217,562		3,651	3,651	100%	$217,562
9	Unity Pass Parallel Pipeline	$1,303,339		3,651	3,651	100%	$1,303,339
10	SR73 16" Water Line	$700,742		3,651	3,651	100%	$700,742
13	Tank 5 to Gateway	$740,300		3,651	3,651	100%	$740,300
14	Sage Valley to Lone Tree West	$503,161		3,651	3,651	100%	$503,161
16	12" Silver Lake Supply Line	$536,066		3,651	3,651	100%	$536,066
		$5,402,941		3,651	3,651	100%	$5,402,941

*Note: The proposed projects related to source will serve less than the anticipated growth in the next ten years. To be conservative the City has chosen to exclude additional source projects since they may fall outside the planning horizon. As a result, the source component will be assessed to ERCs served by the projects and not the full ERCs anticipated through 2024.
**See Section 4.

[5] IFFP p.25

The IFFP has provided all future capital project data including project descriptions and estimated original project costs. The accuracy and correctness of the impact fee analysis is contingent upon the accuracy of the IFFP data and assumptions. Any deviations or changes in the assumptions due to changes in the economy or other relevant information used by the City for this study may cause this analysis to be inaccurate and require modifications.

SYSTEM VS. PROJECT IMPROVEMENTS

System improvements are defined as existing and future public facilities designed to provide services to service areas within the community at large.[6] Project improvements are improvements and facilities that are planned and designed to provide service for a specific development (resulting from a development activity) and considered necessary for the use and convenience of the occupants or users of that development.[7] To the extent possible, this analysis only includes the costs of system improvements related to new growth within the proportionate share analysis.

FUNDING OF FUTURE FACILITIES

The IFFP must also include a consideration of all revenue sources, including impact fees and the dedication of system improvements, which may be used to finance system improvements.[8] In conjunction with this revenue analysis, there must be a determination that impact fees are necessary to achieve an equitable allocation of the costs of the new facilities between the new and existing users.[9]

In considering the funding of future facilities, the City has determined the portion of future projects that will be funded by impact fees as growth-related, system improvements. Revenues from other government agencies are not currently contemplated in this analysis. If these revenues become available in the future, the impact fee analysis should be revised.

Utility Rate Revenues: Utility rate revenues serve as the primary funding mechanism within enterprise funds. Rates are established to ensure appropriate coverage of all operations and maintenance expenses, debt service coverage, and capital project needs. Impact fee revenues are generally considered non-operating revenues and help offset future capital costs.

Debt Financing: In the event the City has not amassed sufficient impact fees to pay for the construction of time sensitive or urgent capital projects needed to accommodate new growth, the City must look to revenue sources other than impact fees for funding. The Impact Fees Act allows for the costs related to the financing of future capital projects to be included in the impact fee. This allows the City to finance and quickly construct infrastructure for new development and reimburse itself later from impact fee revenues for the costs of principal and interest. The City anticipates the need to issue debt. The applicable financing costs are calculated below.

TABLE 5.3: DETERMINATION OF FINANCING COSTS

	SERVICE AREA 1		SERVICE AREA 2	
	Total	Percent of Total	Total	Percent of Total
Total PAR Amount of Bonds*	$13,290,635	100%	See Service Area 1	
Source System Cost to Growth	$580,650	4%	See Service Area 1	
Storage System Cost to Growth	$2,423,215	18%	$117,780	1%
Distribution System Cost to Growth	$5,402,941	41%	See Service Area 1	

*Assumes Series 2015 and Series 2017 bond issues at a rate of 3.00 percent over 20 years. Additional assumptions include a debt service reserve fund of 1.00 percent and cost of issuance of 2.00 percent.

TABLE 5.4: DETERMINATION OF FINANCING COSTS (CONT.)

	SERVICE AREA 1	SERVICE AREA 2	DESCRIPTION
Total Debt Service	$19,883,824		Based on debt service assumptions identified in Table 5.3
Financing Costs	$6,593,189		Total Debt Service of $19,883,824 - $13,290,635 PAR Amount = $6,593,189

[6] 11-36a-102(21)
[7] 11-36a-102(14)
[8] 11-36a-302(2)
[9] 11-36a-302(3)

	SERVICE AREA 1	SERVICE AREA 2	DESCRIPTION
Source Financing Cost to Growth	$288,048		4% of Financing Costs (See Table 5.3)
Storage Financing Cost to Growth	$1,202,103	$58,428	18% and 1% of Financing Costs (See Table 5.3)
Distribution Financing Cost to Growth	$2,680,279		41% of Financing Costs (See Table 5.3)

While not currently contemplated as funding sources in this analysis, other revenues such as property taxes, grants, or loans can be used to fund these types of expenditures, as described below.

- **Property Tax Revenues:** Property tax revenues are not specifically identified in this analysis as a funding source for growth-related capital projects, but inter-fund loans can be made from the general fund which would ultimately include some property tax revenues. Inter-fund loans would be repaid once sufficient impact fee revenues have been collected.

- **Grants, Donations and Other Contributions:** Grants and donations are not expected as a future funding source. The impact fees should be adjusted if grant monies are received. New development may be entitled to a reimbursement for any grants or donations received by the City for growth related projects, or for developer funded IFFP projects. It is anticipated that future project improvements will be funded by the developer. These costs have been excluded from the calculation of the impact fee.

PROPOSED CREDITS OWED TO DEVELOPMENT

The Impact Fees Act requires a local political subdivision or private entity to ensure that the impact fee enactment allows a developer, including a school district or a charter school, to receive a credit against or proportionate reimbursement of an impact fee if the developer: (a) dedicates land for a system improvement; (b) builds and dedicates some or all of a system improvement; or (c) dedicates a public facility that the local political subdivision or private entity and the developer agree will reduce the need for a system improvement.[10]

The facilities must be considered system improvements or be dedicated to the public, and offset the need for an improvement identified in the IFFP.

EQUITY OF IMPACT FEES

Impact fees are intended to recover the costs of capital infrastructure that relate to future growth. The impact fee calculations are structured for impact fees to fund 100 percent of the growth-related facilities identified in the proportionate share analysis as presented in the impact fee analysis. Even so, there may be years that impact fee revenues cannot cover the annual growth-related expenses. In those years, other revenues such as general fund revenues will be used to make up any annual deficits. Any borrowed funds are to be repaid in their entirety through impact fees.

NECESSITY OF IMPACT FEES

An entity may only impose impact fees on development activity if the entity's plan for financing system improvements establishes that impact fees are necessary to achieve parity between existing and new development. This analysis has identified the improvements to public facilities and the funding mechanisms to complete the suggested improvements. Impact fees are identified as a necessary funding mechanism to help offset the costs of new capital improvements related to new growth. In addition, alternative funding mechanisms are identified to help offset the cost of future capital improvements.

[10] 11-36a-402(2)

SECTION 6: CULINARY WATER IMPACT FEE CALCULATION

The calculation of impact fees relies upon the capital improvements planned in the IFFP. As a result of new growth, the culinary water system is in need of expansion to perpetuate the level of service that the City has historically maintained.

PROPOSED CULINARY WATER IMPACT FEE

CULINARY WATER IMPACT FEE CALCULATION

The culinary water impact fees proposed in this analysis will be assessed within all areas of the City, based on the proposed service areas. The proportionate share analysis determines the proportionate cost assignable to new development based on the proposed capital projects and the acres served by the proposed projects. The impact fee per ERC is calculated below for each proposed service area.

TABLE 6.1: SERVICE AREA 1 IMPACT FEE PER ERC

		COST TO IFA	ERCS SERVED	FEE PER ERC
Buy-In	Source Buy-In	$2,083,567	3,436	$606
	Storage Buy-In	$340,446	3,335	$102
	Distribution Buy-In	$544,790	3,651	$149
Source: Future Facilities	Source Future Facilities	$580,650	3,436	$169
	Source Financing Costs	$288,048	3,436	$84
Storage: Future Facilities	Storage Future Facilities	$2,423,215	3,335	$727
	Storage Financing Costs	$1,202,103	3,335	$360
Distribution: Future Facilities	Distribution Future Facilities	$5,402,941	3,651	$1,480
	Distribution Financing Costs	$2,680,279	3,651	$734
Other	Impact Fee Balance	($500,000)	3,651	($137)
			Impact Fee per ERC	$4,275

Table Notes:
Source Buy-In: Calculated in Section 4. Cost is averaged across total ERCs served by the combined ERCs served by existing and future source facilities. See Tables 4.1 – 4.4 and 5.2.
Storage Buy-In: Cost is averaged across total ERCs in Service Area 1. See Table 4.5.
Distribution Buy-In: See Table 4.7 and 4.8.
Future Facilities Costs: See Tables 5.1 and 5.2. Storage facilities are allocated based on service area.
Financing Costs: See Tables 5.3 and 5.4

TABLE 6.2: SERVICE AREA 2 IMPACT FEE PER ERC

		COST TO IFA	ERCS SERVED	FEE PER ERC
Buy-In	Source Buy-In	$2,083,567	3,436	$606
	Storage Buy-In	$627,350	316	$1,985
	Distribution Buy-In	$544,790	3,651	$149
Source: Future Facilities	Source Future Facilities	$580,650	3,436	$169
	Source Financing Costs	$288,048	3,436	$84
Storage: Future Facilities	Storage Future Facilities	$117,780	316	$373
	Storage Financing Costs	$58,428	3,436	$17
Distribution: Future Facilities	Distribution Future Facilities	$5,402,941	3,651	$1,480
	Distribution Financing Costs	$2,680,279	3,651	$734
Other	Impact Fee Balance	($500,000)	3,651	($137)
			Impact Fee per ERC	$5,460

Table Notes:
Source Buy-In: Calculated in Section 4. Cost is averaged across total ERCs served by the combined ERCs served by existing and future source facilities. See Tables 4.1 – 4.4 and 5.2.
Storage Buy-In: Cost is averaged across total ERCs in Service Area 2. See Table 4.6.
Distribution Buy-In: See Table 4.7 and 4.8.
Future Facilities Costs: See Tables 5.1 and 5.2. Storage facilities are allocated based on service area.
Financing Costs: See Tables 5.3 and 5.4

It is important to note that the impact fee should be used to reimburse the assessment payers for any value of remaining capacity within the projects identified in Table 4.9. The reimbursement should be based on the revenues collected from the specific component of the impact fee (i.e. source, storage, distribution) and paid according to the schedules found in Table 4.9.

PLAN BASED (FEE BASED ON DEFINED CIP)

The impact fees in this analysis are calculated based on a defined set of costs specified for future development, as identified in the IFFP. The total system costs are divided by the total demand units the projects are designed to serve based on the existing level of service.

NON-STANDARD IMPACT FEES

The City reserves the right under the Impact Fees Act[11] to assess an adjusted fee that more closely matches the true impact that a specific land use will have upon the City's culinary water system. This adjustment could result in a different impact fee if evidence suggests a particular user will create a different impact than what is standard for its category.

CONSIDERATION OF ALL REVENUE SOURCES

The Impact Fees Act requires the proportionate share analysis to demonstrate that impact fees paid by new development are the most equitable method of funding growth-related infrastructure. See Section 5 for further discussion regarding the consideration of revenue sources.

EXPENDITURE OF IMPACT FEES

Legislation requires that impact fees should be spent or encumbered within six years after each impact fee is paid. Impact fees collected in the next five to six years should be spent only on those projects outlined in the IFFP as growth related costs to maintain the LOS.

GROWTH-DRIVEN EXTRAORDINARY COSTS

The City does not anticipate any extraordinary costs necessary to provide services to future development.

SUMMARY OF TIME PRICE DIFFERENTIAL

The Impact Fees Act allows for the inclusion of a time price differential to ensure that the future value of costs incurred at a later date are accurately calculated to include the costs of construction inflation. A three percent annual construction inflation adjustment is applied to the proposed capital improvements identified in this analysis. The impact fee analysis should be updated regularly to account for changes in costs estimates over time.

[11] 11-36a-402(1)(c)