Hildale / Colorado City Utility Board

Thursday, July 28, 2022 at 6:00 PM

320 East Newel Avenue, Hildale City, Utah 84784

Agenda

Notice is hereby given to the members of the Hildale/Colorado City Utility Board and the public, that the Board will hold a public meeting on **July 28, 2022 at 6:00 p.m. (MDT)**, at 320 East Newel Avenue, Hildale City, Utah 84784.

Board members may be participating electronically by video or telephone conference. The meeting will be broadcast to the public on Facebook Live under Hildale's City page. Members of the public may also watch the City of Hildale through the scheduled Zoom meeting.

https://www.facebook.com/hildalecity/live/

Join Zoom Meeting
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Comments during the public comment or public hearing portions of the meeting may be emailed to manager@hildalecity.com or privately messaged to Hildale City's Facebook page. All comments sent before the meeting may be read during the meeting and messages or emails sent during the meeting may be read at the Mayor's discretion.

Roll Call of Board Attendees: Utility Administrative Deputy Director LaCorti

Welcome, Introduction and Preliminary Matters: Board Chair Black

Pledge of Allegiance: By Invitation of Board Chair Black

Conflict of Interest Disclosures: Board Members

Public Comments: (3 minutes each - Discretion of Board Chair Black)

Reports: Staff

1. Revised Intergovernmental Agreement review and update, to include purpose, procedures, and authorities. (20 minutes, TM Barlow and CM Duthie)

Unfinished Board Business: Board Chair Black

New Board Business: Board Chair Black

2. Consideration, discussion, and possible recommendation to the Hildale City and Colorado City Councils of the 2022 Culinary Water Master Plan. (30 minutes Utility Director Weston Barlow / Consultant Jerry Postema).

Board Comments: (10 minutes total Board Chair Black)

Board members comments of issues not previously discussed in the meeting.

Executive Session: As needed

Adjournment: Board Chair Black

Agenda items and any variables thereto are set for consideration, discussion, approval or other action. The Utility Board may, by motion, recess into executive session, which is not open to the public, to receive legal advice from their attorney(s) on any agenda item, or regarding sensitive personnel issues, or concerning negotiations for the purchase, sale, or lease of real property. Board Members may attend by telephone. The Agenda may be subject to change up to 24 hours prior to the meeting. Individuals needing special accommodations should notify the City Recorder at 435 874-2323 at least three days prior to the meeting.

INTERGOVERNMENTAL COOPERATIVE AGREEMENT FOR UTILITIES SYSTEMS MANAGEMENT, OPERATION, AND MAINTENANCE

THIS AGREEMENT ("Agreement" or "IGA") is entered into between The Town of Colorado City, Arizona (hereafter referred to as "Town"), and Hildale, Utah, (hereafter referred to as "City"), both of which are referred to individually as a "Party" and collectively as "the Parties."

WITNESSETH

WHEREAS, pursuant to the provisions of Title 9, Chapter 5, Articles 2 and 3, Arizona Revised Statutes, as amended, and other applicable provisions of Arizona law (collectively, the "Arizona Act") Town is authorized to engage in any business or enterprise which may be engaged in by persons by virtue of a franchise from Town, including facilities for utility services; and

WHEREAS, pursuant to the provisions of Title 10, Chapter 8 and Title 11, Chapter 14, Utah Code Annotated 1953, as amended, and other applicable provisions of Utah law (collectively, the "Utah Act"), City is authorized to acquire, construct, maintain and operate facilities within or without its corporate limits for utilities, and to issue its bonds to finance the costs thereof; and

WHEREAS, pursuant to the provisions of Title 11, Chapter 7, Article 3, Arizona Revised Statutes, as amended (The "Arizona Joint Exercise of Powers Act"), Town is authorized to enter into contracts and agreements for joint and cooperative action, services and the joint exercise of powers with, among others, any political subdivision of a state; and

WHEREAS, pursuant to Utah Code Ann. § 11 13 201 et seq (1953 as amended), the City is authorized to execute and administer contracts for the joint exercise of power with any public agency of any other state, exercising and enjoying all of the powers, privileges and authorities conferred by said act; and

WHEREAS, the Parties also recognized that this Agreement must adhere to to the Utah Interlocal Cooperation Act ("ICA") found in Utah Code Ann. § 11-13-101 *et seq.;* and

WHEREAS, the Parties desire to construct, purchase, acquire own, manage, operate, maintain, finance and bill for utilities to provide water, sewer, gas and fiber optic networking services to the inhabitants of the municipalities; and

WHEREAS, the water system, sewer system, gas system, and fiber optic system constitute separate systems in City and in Town for the purposes of acquisition, ownership and financing thereof, although such systems are operated and managed as a single system that serves both municipalities; and

WHEREAS, each of the Parties own the utility lines located in their respective jurisdiction, except for the sewer line that is owned by the City, including the portion of the sewer line located in the Town; and

WHEREAS, the sewer system for both municipalities is owned by City, but for the purposes of system management and billing, Town will adopt regulations governing the sewer system in Town; and

WHEREAS, the water systems, sewer systems, gas systems and fiber optic systems in both municipalities shall hereafter collectively be referred to as the "Utility System";

WHEREAS, it is necessary for the good government of Town and City to jointly administer and operate the Utility System, to arrange storage, treatment and distribution resources and for the management of resources, and for the billing of retail utility service, with the advice of a joint advisory board with respect to certain legislative policies that shall guide utility operations; and

WHEREAS, it will promote the interest of efficient management of the Utility System that one Party should hold primary responsibility for managing, operating and maintaining the Utility System, subject to cooperation with and oversight by the management and governing body of the other Party.

Now, THEREFORE, for and in consideration of the mutual covenants and agreements herein contained, it is agreed by and between the parties hereto as follows:

AGREEMENT

Section 1. FINDINGS AND DETERMINATIONS.

The Parties to this Agreement hereby find, determine and declare that the joint, coordinated and cooperative management, operation and maintenance of the Utility System pursuant to the terms and provisions of this Agreement:

1. Is necessary for the regular and businesslike operation of the Utility System consistent with prudent utility practices;

2. Will enable each of the Parties to make the most efficient use of its powers with respect to the management, operation and maintenance of its portion of the Utility System to meet the existing and future needs of the residents of and businesses in that municipality's community; and
3. Will provide the benefits of economies of scale and reliable utility service to foster further economic development in the municipalities and will promote the general welfare of each community.

Section 2. TERM.

A. This Agreement will be from the 1st day of June, 2022, until one of the Parties to the IGA provides the other Party with a written Notice to Terminate this agreement at least twelve (12) months prior to the desired termination of the IGA. Upon termination of this Agreement any property that is owned by either Party used pursuant to this Agreement shall remain with or be returned to the owner of the property. If the Parties agree, rather than reverting the property to the Party owning the property, the Party owning the property may accept a payment of not less than the fair market value of the property from the other Party. Termination will not relieve either Party from liabilites and costs already incurred under this agreement, nor affect ownership of said equipment or property.

Section 3. UTILITY ADVISORY BOARD ESTABLISHED.

A. A joint advisory board is hereby established ("Utility Board" or "Board") which shall advise the parties on legislative and strategic matters as set forth in this Agreement. Such Board is only advisory and shall not constitute an independent legal entity in either Arizona or Utah. Employees charged with managing the Utility System (collectively, the "Management Staff" shall be comprised of both Town and City employees for all utilities other than sewer. Management Staff for sewer operations shall be comprised solely of Town employees. Any claim arising out of the joint actions of Town and City Management Staff pursuant to this Agreement shall be subject to the Joint Defense Agreement defined in Section 15.D of this Agreement.

B. The Utility Advisory Board shall have the following powers, duties and responsibilities on behalf of the Parties,
    1. Review of such annual operating budgets and long-term capital budgets as shall be proposed by Management Staff for the operation, maintenance, renewal and replacement of the Utility System and the recommendation of such budgets to each of the Parties as provided herein;

2. Review and recommend to the Parties such amendments to schedules of utility rates and charges shall be proposed by Management Staff to ensure the financial stability of the Utility System in compliance with the respective obligations of the Parties;
3. Review and recommend to the Parties such amendments to utility service regulations as shall be proposed by Utility Management Staff to ensure the prudent operation of the Utility System;
4. Review and recommend to the Parties of such internal policies and procedures as shall be proposed by Utility Management Staff to govern the operation of the Utility System, including without limitation accounting, customer service, billing and collections, procurements, employee safety, and facilities security;
5. The policies and procedures for sewer operation shall be identical for sewer operations in both jurisdictions and implemented by the Utility Staff.
6. Review and recommendation to the Parties for approval of all procurements as shall be proposed by Management Staff per Section 6 of this IGA; and
7. Review and input to the Parties on the planning, study, and development of such short- and long-term capital projects as shall be proposed by Utility Management Staff as necessary or desirable for the continued growth and development of the Utility System and the municipalities.

Section 4. UTILITY ADVISORY BOARD MEMBERS.

A. The Board shall consist of five (5) individuals ("Members"), two (2) Members to be appointed by the City Mayor, two (2) Members to be appointed by the Town Mayor per policies adopted by each Party; and one Member to be appointed by the joint designation of both Parties. No one appointed to the Board shall be an elected official of either municipality. The City shall insure the individuals on the Board appointed by the City. The Town shall insure the individuals on the Board appointed by the Town. The jurisdiction where the Member appointed by both Parties resides (the "Jointly Appointed Board Member") shall insure the Jointly Appointed Board Member.

B. On the Effective Date of this Agreement the existing Utility Board shall be dissolved and the Mayors of each Party shall appoint one (1) member to an initial 2-year term and one (1) member to an initial 3-year term and appoint a jointly appointed member to an initial 3-year term.

C. The Members of the Utility Advisory Board shall be residents of the community which they represent. The joint appointee shall be a resident of either Town or City.

D. Each Member of the Board shall be entitled to one advisory vote.

E. Other than the Initial Members of the Board, the Members of the Board shall serve for terms of three (3) years. All subsequent appointments to the Board shall be for three-year terms commencing on January 1 and ending on December 31. Members may be reappointed for additional terms and may temporarily continue to serve at the end of their term until an appointment to fill the position is made pursuant to Subsection 4(A).

F. Vacancies of appointed Board Members occurring otherwise than through expiration of term shall be filled for the remainder of the unexpired term Pursuant to Subsection 4(A).

G. Notwithstanding the length of terms described above, Board Members shall serve at the pleasure of the respective Party's governing body and may be removed at any time with or without cause.

H. The Board Members may serve with compensation as determined by the Parties. The Members of the Board shall be entitled to reimbursement for actual expenses preauthorized in writing and incurred in the performance of duties, upon presentation of proper receipts and vouchers.

I. The jointly selected Member shall serve as the Chairperson of the Board. The Board shall elect from among its Members a Vice-Chairperson. The term of the Vice-Chairperson shall be for one calendar year, with the potential for additional terms.

J. The Board may adopt such rules and by-laws as it may deem necessary for the proper conduct of its business, in compliance with applicable statues and ordinances. The Board shall keep a public record of its proceedings per Section 21 of this Agreement.

K. The regular meetings of the Utility Advisory Board shall occur each year on or as near as practicable to March 15th, June 15th, September 15th, and December 15th. Special meetings of the Utility Advisory Board may be called by the Chairperson when necessary to timely fulfill the duties and responsibilities of the Utility Advisory Board. The meetings of the Board shall be open to the public and shall be conducted in compliance with the applicable open meeting law, and if a meeting is subject to the open meeting laws of both parties, the meeting shall be conducted in compliance with both sets of open meetings laws. The Utility Board may prescribe rules of conduct and procedure for its meetings.

L. Meetings of the Utility Board may be held through electronic communication to the extent allowed by the laws of the state where the meeting is held. A Board Member

participating in a meeting through such means shall be considered present for purposes of a quorum and voting.

M. A quorum shall consist of three (3) Members, so long as that includes at least one regular appointed member from each Party. A vote of a majority of Members in attendance shall be required to take any action in a meeting duly convened with a quorum.

Section 5. UTILITY SYSTEM MANAGEMENT.

A. The administrative offices for the utility systems shall be based at the City office, located at 320 East Newel Avenue, Hildale, Utah.

B. A Utility Director shall be hired based on the recruitment and hiring policies of the Town, the employer of record. The hiring committee shall consist of the Mayors and Managers of both Parties and the Chairperson of the Utility Advisory Board. In the event of a vacancy in the Utility Director Position, an interim Utility Director, who must be an employee of the Town, shall be appointed by the Town Manager and the City Manager.

C. Utility staff shall be hired under the recruitment and hiring policies of the Town, the employer of record for all Utility staff. Utility staff payroll will be provided by the Town and paid for with funds from the utility systems revenues.

D. As per A.R.S. § 23-1022, any employee working within the jurisdictional boundary of the other Party, pursuant to this IGA, will be provided worker's compensation benefits by the hiring employer only.

E. As per Utah Code Ann. § 11-13-222 all privileges, immunities from liability, exemptions from laws, ordinances, and rules, pensions and relief, disability, workers compensations, and other benefits shall apply to an officer, agent, or employee of a public agency (as defined in the ICA) while performing functions under this Agreement, whether within the territorial limits of the City or the territorial limit of the Town. All provisions of Arizona Revised Statutes Title 12, Chapter 7, Article 2 shall apply to any public entity or public employee performing funding under this Agreement.

F. Procurements shall be conducted by City in compliance with City's procurement policy. No procurement that is subject to Section 6 below shall be completed without the approval of the respective Party's Governing Body.

G. In the event that a procurement is being made with State or Grant/Loan funding, the procurement shall be conducted in compliance with the funding agency's/agencies' requirements.

H. The Utility Director shall report to the City and Town Managers, in person or by other instantaneous method of communication followed by written notice, immediately following occurrence of any of the following:

i. Significant accidents resulting in loss of life, bodily injury, property damage, or environmental damage, or which may be reasonably expected to otherwise result in a claim against either Party's insurance policies.

ii. Actual or suspected fraud, theft or intentional damage of Utility System property.

iii. Actual or suspected illegal discrimination or harassment of a person by any other person in connection with the Utility System.

iv. Significant violations of applicable laws, regulations, ordinances, policies, or procedures.

I. The Utility Director shall report to the City and Town Managers in writing promptly following occurrence of any of the following:

i. Proposals from Developers/Subdividers that may impact the Utility System.

ii. Changes in the position, rate of pay, or employment status of any Utility Personnel.

iii. Actual or threatened litigation concerning the Utility System, or to which either Party may be made a party.

Section 6. SYSTEM EXPANSION

A. Upon the recommendation of the Utility Management Staff, the Utility Board shall review and recommend to the Parties' respective governing bodies any contract and/or development agreements that impact the utility system(s) to:

1. Construct distribution or collection systems, pipelines, transmission lines, and other capital facilities;

2. Sell Utility System products to any purchaser other than to an end-user in the ordinary course of utility business;

3. Purchase franchises;

4. Procure equipment and materials costing more than $50,000 in a single procurement or, in the case of a lease of personal property, in a single fiscal year; or

5. Purchase or lease real property; or

6. Review and recommend adoption of, or changes to, utility impact fees.

Section 7. SYSTEM RATES AND REGULATIONS.

A. The Utility Management Staff shall have responsibility for development of proposed rate schedules for the Utility System when necessary, and to propose them to the Utility Board for review and recommendation of the same to the Parties for approval. It is the intent of the Parties to this Agreement that the commodity rates will be similar for both municipalities.

B. Rates for utilities provided by the Utility System to the consumers shall be sufficient to cover all costs, including without limitation the costs of acquisition, operation and maintenance of the Utility System, liabilities, insurance, payment of all contractual obligations, establishment and funding of necessary reserves, sufficient cash availability for operations, and capital requirements for system upgrades, improvements, extensions and enlargements, to the extent directed by either Governing Body, payment of any general obligation indebtedness of either Party relating to the Utility System, with due consideration being accorded to the terms, covenants and conditions contained in any contract of the Parties relating to the Utility System.

C. When the Utility Management Staff determines that an adjustment to the rate schedules is necessary, they shall prepare and submit to the Board a report describing the existing rates, the proposed adjustment, and the basis for their recommendation. The Utility Management Staff may retain the services of such consulting engineers and financial advisors as may be necessary to assist in preparing their report. The Board shall review

the report and, if it determines that an adjustment would be fiscally responsible, recommend the proposed adjustment for adoption by the Parties' respective governing bodies. Each Governing Body shall be responsible for adoption of the rates in their respective jurisdiction.

D. The Board may elect, but is not required, to hold a public hearing before recommending any rate adjustment to the Parties. Notice of any such hearing shall be given to afford an opportunity for interested citizens to appear and provide input on matters relative to the rates to be established. Each Party's Governing Body shall hold public hearings in lieu of or in addition to public hearings before the Utility Board.

E. If the Utility Board or either Governing Body finds that additional study and analysis is necessary before adopting a rate adjustment, it shall request a supplemental report from the Utility Management Staff, specifically identifying in its request the additional study and analysis needed.

F. At the conclusion of any Board action recommending a rate adjustment, the Board shall transmit its written recommendation for approval and adoption of the adjusted rate schedules to the Parties' governing bodies, including an explanation of the basis upon which the proposed rate adjustment is predicated. Each governing body shall hold a hearing on such rates as may be required by State law.

Section 8. UTILITY SERVICE REGULATIONS.

A. The Utility Management Staff shall have responsibility for development of proposed utility service regulations as shall:

1. Provide quality, consistent service according to capacity of the Utility System;

2. Minimize the risk of personal injury or property damage or harm to customers, employees or third parties in operations of the Utility System and in the customers' installation and use;

3. Enforce sound business policy;

4. Ensure the prompt collection of all billings owed for services provided by:
   i. Providing a clear, understandable billing policy and the timely and accurate billings of charges for services, and
   ii. Minimizing the amount of accounts receivable and minimizing exposure for losses due to uncollectible accounts.

5. Minimize or avoid losses;

6. Provide requirements for prospective new customers according to the capacity of the system, while maintaining the flexibility and ability to serve existing customers;

7. Allocate the burden of capital expenditures to ensure that capital investment is recovered by:
   i. Minimizing the cost of line extensions and capital expenditures to the Parties; and
   ii. Placing the cost of line extensions, source development or treatment for commercial, industrial or prospective uses on the new customer or a developer or subdivider of property ("Developer/Subdivider"), so as to protect existing customers from paying costs for a Developer/Subdivider;
   iii. Recommending to the Parties the adoption of impact fees for new customers to offset defined impacts to the system.

8. Provide a method for the fair resolution and disputes between the Utility System and its respective customers; and

9. Promote the orderly, efficient and equitable management, operation and maintenance of the Utility System.

B. When the Utility Management Staff determines that an amendment to a Utility System regulation for any utility other than sewer is necessary, they shall prepare and submit to the Board a report describing the existing regulations and the proposed amendment, and the basis for their recommendation. The Board shall review the report, and must forward any amendment with the Board's, recommendation to each Party's respective governing bodies for review and action. If the Utility Board or either governing body finds that additional study and analysis is necessary before adopting an amendment, it shall request a supplemental report from the Utility Management Staff, specifically identifying in its request the additional study and analysis needed. If the governing bodies are unable to agree on the proposed amendment, the existing regulation shall continue without amendment until the two governing bodies agree. Changes to regulations involving the sewer component of the Utility System shall only be subject to change with the consent of the Town council.

Section 9. OPERATION AND MAINTENANCE OF UTILITY SYSTEM.

A. The cost of management, operation and maintenance of the Utility System will be borne on a proportionate basis, determined annually, based upon the relative proportionate amounts of retail usage by each Party.

B. The Utility Management Staff shall ensure that the Utility System is maintained, operated and improved to provide safe, reliable and efficient service. Such maintenance, operation and improvement shall include, but shall not be limited to, the following :

1. Developing resources and facilities in accordance with Section 8(A)(7) above;
2. Extending lines and installing meters to provide service to new customers in accordance with Section 8(A)(7) above;
3. Regularly inspect and test customers' meters;
4. Regularly inspect all lines, meters, and other components of the Utility System;
5. Repair or replace, as appropriate, malfunctioning or outdated meters;
6. Repairing or replacing, as necessary, damaged, displaced or destroyed Utility System components;
7. Provide planning, engineering and supervisory services in connection with such regular upgrades of Utility System components as shall be necessary in accordance with prudent utility practice;
8. Provide all such other services as are normally required for the operation and maintenance of a utility system of similar size and complexity in accordance with prudent utility practice;
9. Seek funding when possible for source or treatment development and maximizing government loan and grant opportunities on behalf of the Utility System;
10. Adhere to quality regulation as required by each State.

C. The Utility Management Staff shall, in accordance with applicable law, accounting standards, and prudent utility practices, maintain records of:
1. The maintenance of the Utility System;
2. The financial transactions of the Utility System;
3. The inventory of Utility System assets; and
4. The operations of the Utility System, including events of significance that occur in connection with the Utility System.

D. Maps of the Utility System shall be maintained showing the location of the physical components of the system both within and without the respective municipality limits.

E. The Utility Management Staff shall plan improvements in accordance with the standards established by applicable governmental regulations applicable to the location of such

improvements and shall also plan and/or coordinate extensions and expansions of the Utility System in conjunction with the other utilities in the area, and specifically those operated by the Parties.

F. A plan shall be prepared by Utility Management Staff and kept current by the Governing Body of each of the Parties, which shall outline the anticipated capital improvements and expenditures over the next five succeeding years.

G. Proposals from Developers/Subdividers that may impact the Utility System shall be negotiated primarily by the Party affected by a proposed development, in close coordination with the Management Staff. In the event that a development is anticipated to increase demand on the Utility System by [15] ERU's or more, the terms negotiated with respect to the Utility System shall be presented in writing to the Utility Board. Prior to consideration of the proposal by the relevant Party's Governing Body, the Board shall meet and review the proposal and recommend for or against approval of the proposed development, in, the best interest of existing customers, and the financial stability of the Utility System.

Section 10. UTILITY SYSTEM BILLINGS.

A. Utility Personnel shall prepare and render monthly bills to each customer of the Utility System. Such billings shall be prepared in such a manner as to clearly indicate whether the party billed is a customer in the City or a customer in the Town.

B. Such billings may provide that the customer shall remit payment to City as a servicer. Immediately upon receipt of any payments, Utility Personnel shall cause the amount received to be deposited in the respective Utility System operation fund, to the credit of the respective Party of the customer.

Section 11. UTILITY SYSTEM OPERATING FUNDS.

A. There is hereby established under the fiduciary management primarily by City solely with respect to the safe keeping of funds, and secondarily by Town, five special funds, separate and distinct from all other funds and accounts of the Parties (but still maintained as the property of the Parties), to be known as the "Joint Operation Fund", the "Gas System Operation Fund", the "Water System Operation Fund", the "Sewer System Operation Fund", and the "Fiber System Operation Fund".

B. The operation funds shall account for all revenues, receipts and income of the Utility System and all expenditures for costs of operation and maintenance, purchased gas,

energy, water or transmission service, renewals, replacements, capital improvements, additions to the Utility Systems, the Parties' Utility System employee salaries and benefits, insurance, and all other costs properly allocable to the operation of the Utility System.

C. All revenues, receipts, and income from the operation of the Utility System shall be immediately deposited into the respective operation fund. All costs of operation shall be paid out of the respective operation fund when the same shall be due and payable. As convenient and appropriate, each respective operation fund may be obligated to deposit into the Joint Operation Fund sufficient funds to cover each operation fund's share of the general administrative expenses of the Utility System.

D. City shall maintain such books and records and may establish such separate accounts and sub-accounts with the operation funds, as shall be necessary to separately account for the revenues, costs of operation and resulting net revenues that are attributable to each respective portion of the Utility System.

E. The operating funds shall be maintained with a recognized bank or financial institution and shall be secured in accordance with the provisions of the laws of the State of Utah governing the deposit of public funds to the extent permitted regarding funds derived from Town customers.

Section 12. ALLOCATION OF REVENUES AND EXPENSES.

A. All revenues, receipts and income derived from the operation of the sewer system portion of the Utility System shall be allocated to City as the owner of the system to the extent permitted by Arizona law for any portion of the sewer system located in Arizona.

B. All revenues, receipts and income derived from the operation of the Gas, Water, and Fiber Optic Networking Systems shall be allocated between the Cities as follows:

1. All revenues received from each of the Party's customer billings shall be credited to that customer's municipality.

2. Investment income shall be allocated between the Parties based upon the proportion that each Party's balance in the Operation Fund bears to the total balance on deposit therein; and

3. All other revenues, receipts and income shall be allocated between the Parties based upon initial Utility System cost, total energy sales, number of customers, or such other

method as shall be fair and reasonable to each of the Parties. All revenues, receipts and income shall be so allocated when received.

4. If any commodity produced by either municipality is sold at wholesale to another entity, the revenues derived from the sale shall be allocated as outlined in Section 12(C)1. Neither Party shall agree to the sale of a commodity produced to another entity without the prior approval of each Party's governing body.

C. All costs and expenses incurred in the operation of the Gas, Water, and Fiber Optic Networking Systems shall be allocated between the Parties as follows:

1. All costs and expenses shall be allocated on the basis of the proportion of annual commodity usage to each Party's Utility customers. The allocation of costs and expenses shall be reassessed annually prior to the beginning of each fiscal year and shall utilize commodity sales figures for the prior calendar year.
2. If either municipality produces a commodity that is intended to be distributed to the customers of the system, the cost of production of the commodity shall be allocated to all customers of the commodity produced, as outlined in Section 12(C)1.
3. Town and City each agree to pay, but solely out of the revenues derived from the operation of the Town portion of the Utility System and the City portion of the Utility System, respectively, and as an operation and maintenance expense of and a first charge on the revenues of such Utility System, all amounts charged to it in respect to the costs and expenses incurred hereunder.

Section 13. BUDGETS.

A. An annual budget shall be prepared by the Utility Management Staff for each utility system operating fund, in accordance with this Section and with the Uniform Fiscal Procedures Act for Utah Cities, to provide a complete financial plan for operations, setting forth the following in tabular form:

1. Actual revenues and expenditures in the last completed fiscal year;
2. Budget estimates for the current fiscal year;
3. Actual revenues and expenditures for a period of six to nine months, as appropriate, of the current fiscal year;
4. Estimated total revenue and expenditures for the current fiscal year;
5. Estimates of revenues and expenditures for the upcoming budget year;

6. An estimate of all capital projects which the Board and Management Staff believe should be undertaken within the next five succeeding years and the proposed method of payment for such projects;
7. The latest available balance of capital accounts maintained by the Management Staff;
8. A summary and review of rates, fees and charges for services rendered by the Utility System, with a summary of billings and actual receipts in each rate, fee or charge category for:
    i. the current fiscal year, and
    ii. the previous completed fiscal year;
9. A summary of accounts receivable as of:
    i. the end of the last month of operation for which such data is available including losses and uncollectible accounts for the current fiscal year to date; and
    ii. the end of the last completed fiscal year including losses and uncollectible accounts for the year.
10. A budget message, which shall explain the budget, containing an outline of the proposed financial policies of the utility department for the budget year, and shall describe in connection therewith the important features of the budgetary plan. It shall set forth a reason for material changes from the previous year and appropriation and revenue items.

B. On or before April 15th of each year, the Utility Management Staff shall prepare a proposed budget for the next fiscal year and present it to the Utility Board and the Managers of both Parties. The Board shall review the tentative budget and, if it determines that the proposed budget would be fiscally responsible, recommend the proposed budget for adoption by the Parties. If the Board determines that adjustments to the proposed budget are necessary, it shall submit its written opinion to each Party's Governing Body, explaining the recommended adjustments and the basis therefor.

C. Upon final adoption by the Parties, the budget shall be in effect for the applicable budget year.

Section 14. ANNUAL REPORT.

A. The Utility Management Staff, in addition to the reports and accounting it may otherwise be required by law to make, shall, as required by the Parties, not later than the last day of January in each year, furnish to the Utility Advisory Board and each Party's Governing Body an annual report which shall include the following statements as of the end of the preceding fiscal year:

1. A balance sheet showing the financial condition of the Utility System prepared according to generally accepted public utility accounting principles;

2. A statement of operations; and

3. Any additional supporting statements or schedules deemed necessary and desirable by the Party's Governing Body to make a clear and informative presentation of the financial position of the Utility System.

B. The reports shall be kept on file in the offices of the City Recorder and the Town Clerk and shall be open to public inspection. The funds and accounts of the Utility System shall be audited annually by a certified public accountant or by a firm of such accountants.

Section 15. LIABILITY AND INDEMNIFICATION.

A. To the extent permitted by law, each Party shall defend, indemnify and save harmless the other from all liability and expense, including reasonable counsel fees and other litigation expenses, on account of any and all liability, damages, claims, or actions, including injury to or death of persons arising from any act or accident in connection with the installation, presence, maintenance and operation of the property and equipment of the indemnifying Party to the extent caused by the negligent acts or omissions of the indemnifying Party or any of its officers, officials, employees and agents but not to the extent caused by the negligent acts or omissions of the other Party or any of its officers, officials, employees and agents.

B. The Parties each hereby find, determine and declare that the Utility Advisory Board, in carrying out and discharging its obligations and responsibilities under this Agreement, is performing and will perform governmental functions on behalf of the Parties. To that end, if applicable, the Utility Board shall have the benefit of all privileges and immunities to which the Parties are entitled under the laws of the States of Utah and Arizona.

C. No agreement or obligation contained in this Agreement shall be deemed to be the agreement or obligation of any elected or appointed official, officer, member, agent or employee of either of the Parties or the Utility Advisory Board in his or her individual capacity and none of such officials, officers, members, agents or employees shall be personally liable or subject to any personal liability by reason of their performance of or involvement with any of the agreements and obligations contained in this Agreement.

D. If a claim or claims by third parties become subject to the indemnity provisions of this Section 15, the Parties to this Agreement shall expeditiously meet to discuss a common

and mutual defense, including possible proportionate liability based upon the relative degree of fault and proportionate payment of possible litigation expenses and damages pursuant to the Joint Defense Memorandum of Understanding and Agreement attached hereto as Exhibit A (collectively, the "Joint Defense Agreement").

E. The obligations under this Section 15 shall survive termination of this Agreement.

F. The payment obligations of the Parties under this Agreement are several and not joint and shall constitute an obligation of each Party payable as an operating expense of its Utility System solely from the revenues and other available funds of such Party's portion of the Utility System. In no event shall any of the Parties' payment obligations hereunder constitute a debt or indebtedness of either of the Parties within the meaning of any constitutional or statutory limitation or provision.

Section 16. INTERESTS OF THE PARTIES.

The Parties' respective ownership of the Utility Systems are and shall be maintained separate and distinct. The benefits and liabilities related to each system and operation thereof shall accrue to the respective owner of that portion of the Utility System.

Section 17. RELATIONSHIP TO AND COMPLIANCE WITH OTHER DOCUMENTS.

A. It is recognized and agreed to by each of the Parties that in undertaking the acquisition and financing of the Utility System, each Party must comply with all licenses, permits, approvals and regulations necessary for such acquisition and the operation of such Utility System.

B. This Agreement is intended to reflect the mutual intent of the Parties with respect to the subject matter hereof, and no rule of strict construction shall be applied against any Party.

C. The Parties shall work in good faith to implement and resolve details not specified in this Agreement.

D. Insofar as possible under all applicable laws, Utah law shall govern Utility System business management as it is integrated in the City offices located in the State of Utah.

Section 18. SEVERABILITY AND CONFLICTS OF INTEREST

A. The provisions of this Agreement are severable. Should any part, term, or provision of this Agreement be held by the courts to be illegal or in conflict with any law of the States of Utah or Arizona, or otherwise rendered unenforceable or ineffectual, the validity of the remaining portions or provisions shall not be affected thereby.

B. This Agreement may be canceled pursuant to A.R.S. § 38 - 511 in the event of a conflict of interest as described therein. Any cancellation shall be made pursuant to such law while giving as much notice as reasonably possible.

C. No delay, omission or failure to exercise any right of either Party under this agreement shall be construed to be a waiver of any such right or as impairing any such right.

Section 19. IMMUNITY

A. By entering into this Agreement, the Parties do not (and do not intend to) waive any immunity provided to the Parties hereto or their officials, employees, or agents by Title 63G, Chapter 7, *Utah Code Annotated,* known as the *Governmental Immunity Act of Utah*, (the "Immunity Act"), or under Arizona Revised Statutes Title 12, Chapter 7, Article 2, or by other applicable law.

B. While performing duties under this Agreement, whether inside or outside the employee's own jurisdiction, each employee shall possess the same immunities and privileges as if the duties were performed within the employee's own jurisdiction.

C. Nothing in this Agreement shall be construed as a waiver of any sort, including, but not limited to, sovereign immunity or other defense available to governmental entities in Utah and Arizona, or as a consent to be sued, or as a submission to the jurisdiction of any court.

Section 20. OBLIGATIONS

This Agreement shall not relieve any Party of any obligation or responsibility imposed upon it by law and nothing herein shall be construed or give rise to a general obligation or liability of any Party or a charge against its general credit or taxing powers.

Section 21. FILING

A copy of this Agreement shall be placed on file in the office of the official record keeper of each Party and shall remain on file for public inspection during the term of this Agreement. In the event of a renewal of this Agreement the official record keeper shall refile the

renewed Agreement.

Section 22. GENERAL TERMS

A. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original but all of which together shall constitute one and the same instrument.

B. Nothing in this Agreement shall be construed as either limiting or extending the lawful jurisdiction of any Party. The parties agree that nothing in this Agreement alters or conveys any judicial jurisdiction.

C. This Agreement contains the entire agreement between the Parties concerning its subject matter and shall not be modified except by written agreement duly executed by the Parties hereto. There are no oral understandings or agreements not set forth herein.

D. This Agreement shall supersede all previous utility service management, operation and maintenance agreements (IGAs)between City and Town.

Section 20. GOVERNING LAW.

This Agreement is made in the States of Utah and Arizona, under the Constitution and laws of such States and is to be construed pursuant to such laws. Insofar as possible, Utah law shall govern utility business management as it is integrated in the City offices located in Utah; however, to the extent any records or documents are maintained by Town, such records and documents shall be addressed under Arizona law. City and Town shall cooperate with one another to assist one another in satisfaction and compliance with Utah and Arizona law, respectively.

[SIGNATURES ON FOLLOWING PAGES]

IN WITNESS WHEREOF, the parties hereby agree to carry out the terms of this Agreement.
DATED this 31st day of May, 2022.

HILDALE CITY

Donia Jessop, Mayor
Hildale City

Attest:

City Recorder

COLORADO CITY

Joseph Allred, Mayor
Colorado City

Attest:

Town Clerk

TOWN OF INCORPORATED SEAL 1985 COLORADO CITY ARIZONA

IN WITNESS WHEREOF, the parties hereby agree to carry out the terms of this Agreement.
DATED this 31st day of May, 2022.

HILDALE CITY

Donia Jessop, Mayor
Hildale City

Attest:

City Recorder

COLORADO CITY

Joseph Allred, Mayor
Colorado City

Attest:

Town Clerk

This Agreement as executed is hereby approved as being in proper form and is compatible with and is within the powers and authority granted under the laws of the State of Utah.

Joseph Hood
Hildale Attorney

This Agreement as executed is hereby approved as being in proper form and is compatible with and is within the powers and authority granted under the laws of the State of Arizona.

Mangum, Wall, Stoops & Warden, PLLC
Colorado City Attorney

Culinary Water Master Plan
January 2021 Comparison to
July 2022

1. Growth Rate Projections

Growth Rate 2021

Year 2021 Projected Population (Hildale & Colorado City): $7{,}032(1+0.00)^{1}$ = **7,032 People**
Year 2022 Projected Population (Hildale & Colorado City): $7{,}032(1+0.01)^{1}$ = **7,103 People**
Year 2024 Projected Population (Hildale & Colorado City): $7{,}103(1+0.01)^{3}$ = **7,245 People**
Year 2031 Projected Population (Hildale & Colorado City): $7{,}245(1+0.018)^{7}$ = **8,209 People**
Year 2041 Projected Population (Hildale & Colorado City): $7{,}245(1+0.018)^{17}$ = **9,812 People**

The projected number of connections can be estimated with the same equation.

Year 2021 Projected Number of Connections: $847(1+0.00)^{1}$ = **847 Connections**
Year 2022 Projected Number of Connections: $847(1+0.01)^{1}$ = **855 Connections**
Year 2024 Projected Number of Connections: $855(1+0.01)^{3}$ = **873 Connections**
Year 2031 Projected Number of Connections: $873(1+0.018)^{7}$ = **989 Connections**
Year 2041 Projected Number of Connections: $954(1+0.018)^{15}$ = **1,182 Connections**

Figure II-2 shows past population and number of connections and how population and number of connections are projected over the next 40 years.

Growth Rate 2022

Figure II-2: Growth Rate Analysis Summary

Calendar year	Est. Growth Rate	Proj.Total Population
2023	3.50%	8076
2024	3.50%	8358
2025	3.50%	8651
2026	3.50%	8954
2027	3.50%	9267
2028	3.25%	9568
2029	3.25%	9879
2030	3.25%	10200
2031	3.25%	10532
2032	3.25%	10874
2033	2.00%	11091
2034	2.00%	11313
2035	2.00%	11540
2036	2.00%	11770
2037	2.00%	12006
2038	2.00%	12246
2039	2.00%	12491
2040	2.00%	12741
2041	2.00%	12995
2042	2.00%	13255

2. Current Water System Production Capacity

Reported Capacity 2021

Figure III-1: Existing Water Source Capacity

Hildale City and Town of Colorado City Sources		Total Flow	
Well #		CFS	gpm
24	350 S 450 W Colorado City	0.334	150
22	350 S 450 W Colorado City	0.412	185
11	350 S 450 W Colorado City	0.334	150
8	585 W. Johnson Avenue	0.134	60
4a, 4b	195 S Richard St.	0.334	150
10	155 S Richard St.	0.189	85
21	5 S Richard St.	0.468	210
15	5 N Richard St.	0.056	25
19	730 W Township Ave.	0.323	145
17	330 N Willow	0.178	80
	Wells Total =	**2.763**	**1,240**
Additional Wells Currently Unavailable			
Academy Well		0.624	**280**
Power Plant Well		0.544	**244**
	Additional Well Total =	1.168	**524**
Springs			
Jans Canyon		0.036	16
Maxwell Canyon		0.143	64
	Springs Total =	**0.178**	**80**
	Source Total Without Additional Wells =	**0.321**	**1,320**
	Source Total With Additional Wells=	**2.941**	**1,844**

Actual Reported Capacity 2022

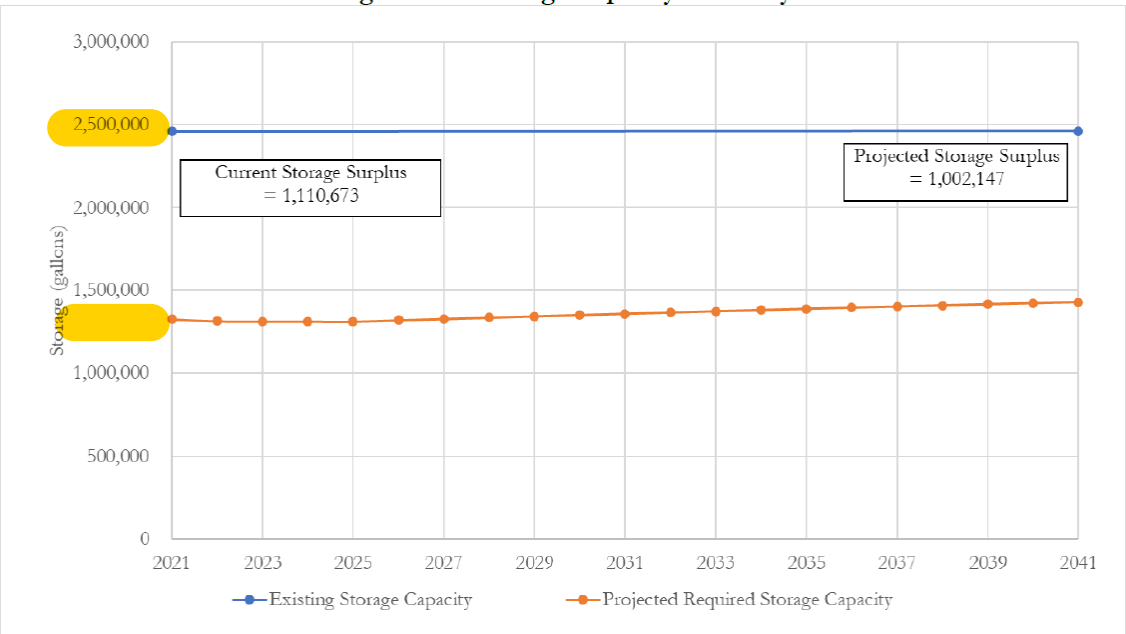
Figure III-1: Hildale and Colorado City Existing Water Sources

Name/#	Flow (CFS)	Flow (gpm)
Wells		
4	0.223	100
8	0.134	60
10	0.189	85
11	0.223	100
15	0.000	0
17	0.000	0
19	0.323	145
21	0.468	210
22	0.267	120
24	0.223	100
Academy	0.579	260
Power Plant*	0.000	0
Subtotal	2.629	1180
Springs		
Jans Canyon	0.036	16
Maxwell Canyon	0.143	64
Subtotal	0.178	80
Total Source	2.807	1260

3. Storage Capacity

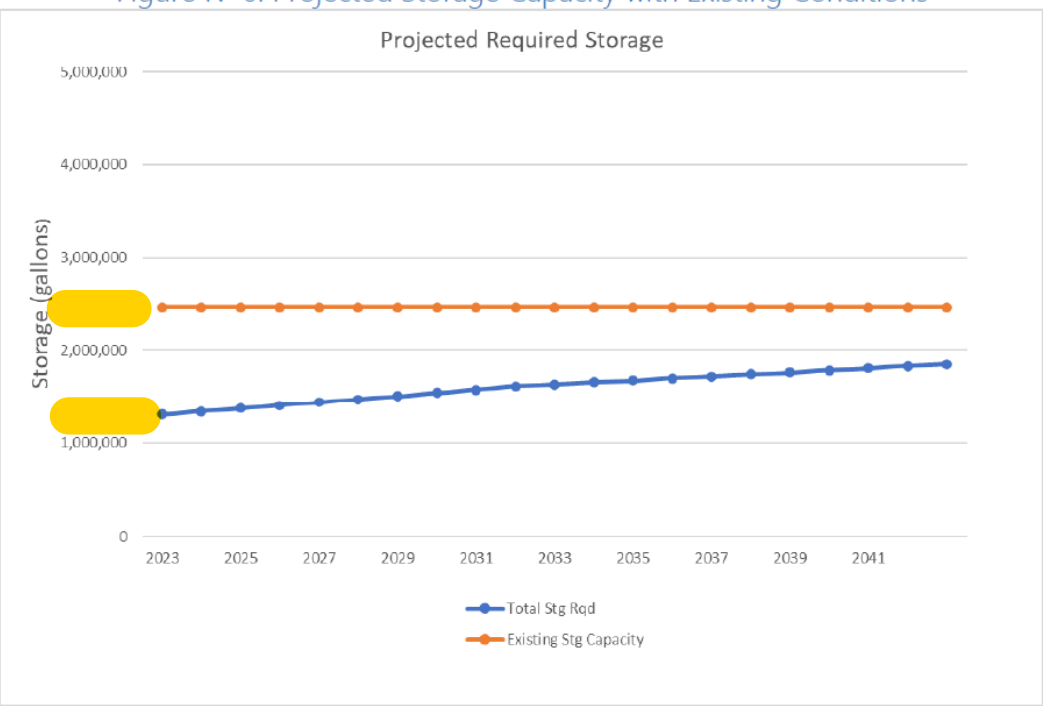
Reported Storage Capacity 2021

Figure IV-4: Storage Capacity Summary



Reported Storage Capacity 2022

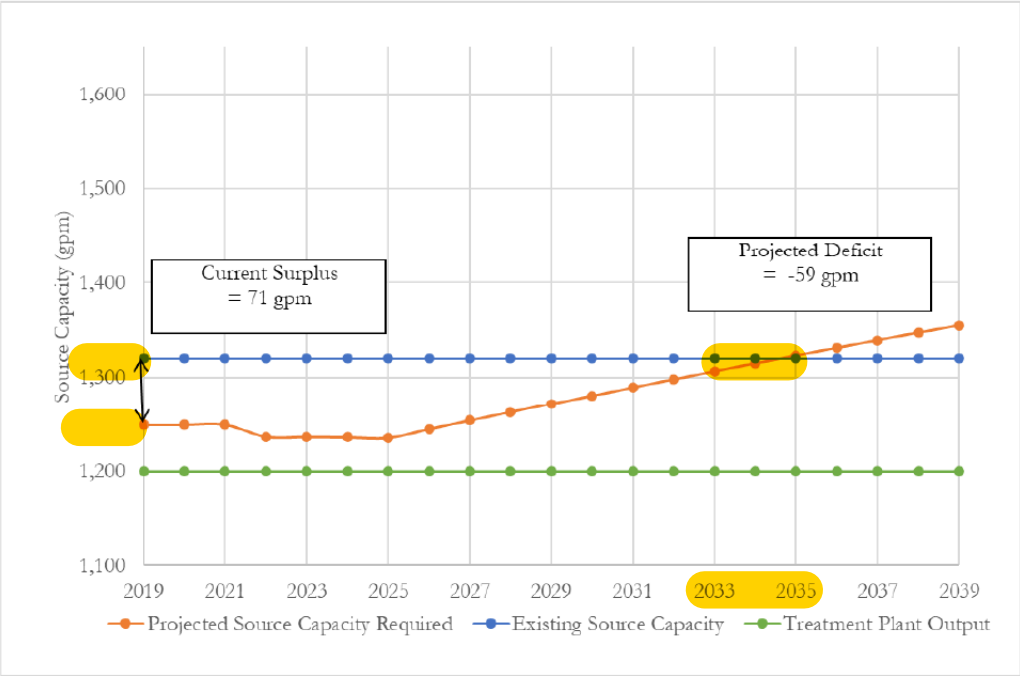
Figure IV-6: Projected Storage Capacity with Existing Conditions



4. Source Capacity

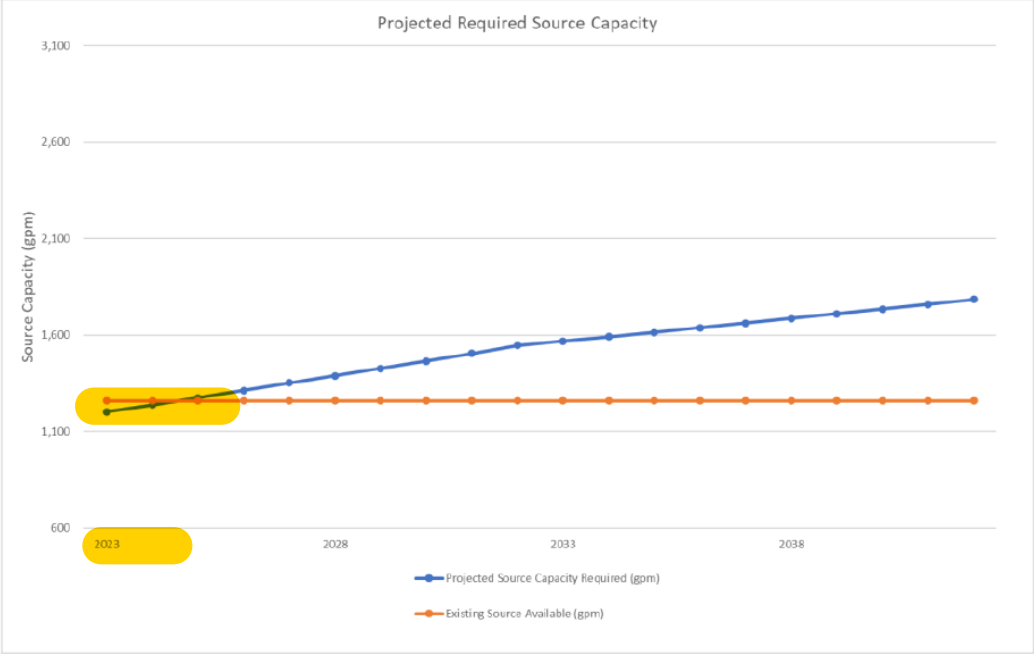
Source Capacity 2021

Figure III-4: Existing Source Capacity Summary



Source Capacity 2022

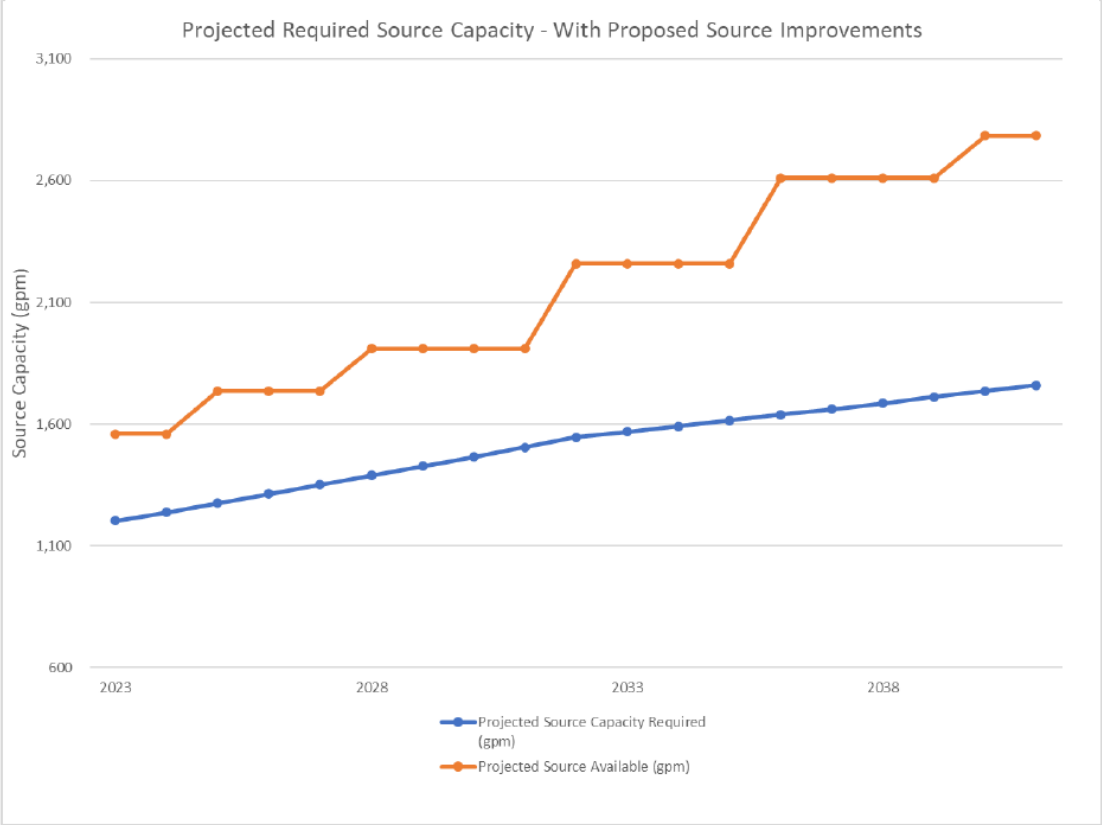
Figure III-6: Projected Source Capacity with Existing Conditions



5. Storage Capacity

Storage Capacity with Needed Improvements 2022

Figure III-7: Projected Source Capacity with Recommended Improv Improvements



HILDALE CITY & TOWN OF COLORADO CITY CULINARY WATER MASTER PLAN UPDATE

JUNE 2022

PREPARED BY:

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I. INTRODUCTION

Hildale City is located along Highway 59 in Washington County in southwestern Utah. The Town of Colorado City is neighboring Hildale, just across the border in Arizona. The water system is shared and funded by both communities and is operated and maintained by the Hildale Colorado City Utility Department. This plan was created with coordination from staff from Hildale City and the Hildale Colorado City Utility Department. For this plan "City Staff" is defined as staff from the City as well as the utility department.

Hildale City Completed a Culinary Water Master Plan Update in 2020 which was an update to their 2014 Plan. The City has contracted with Sunrise Engineering to complete an update to the 2020 plan. While this is a shorter window between plans than is typical, the city has recognized that conditions and future projections have changed significantly in that short time period. The intent of this update is to account for these changes.

The culinary water system has been analyzed under the State of Utah Division of Drinking Water guidelines to determine the current system status and to evaluate possible system needs as the community grows during the next 20 years. As part of this plan, Sunrise Engineering, Inc. has recommended some improvements to the culinary water system and has developed a potential financing plan that will help Hildale City and the Town of Colorado City obtain the necessary funds for the recommended improvements.

This report does not analyze water rights or a secondary water system. This plan also does not include a user rate analysis.

II. SYSTEM USERS' ANALYSIS

A. LENGTH OF PLANNING PERIOD

It is typical for a Master Plan to use a 10 or 20-year planning period. For example, the first year of a 10-year planning period would be the year 2023 with the 10th and final year being 2032. This plan will use fiscal years and will assume a 20-year (2023-2042) planning period for recommended improvements. This period will allow an adequate evaluation of the system for potential infrastructure improvements or other needs. Revenue sources should be carefully evaluated each year as budgets are set by the city council.

B. PROJECTED GROWTH RATE

An important element in the development of the water system and capacity analysis is the projection of the city's population growth rate on an annual basis. This projection gives the planner an idea of the potential future demands on the culinary water system for the length of the planning period.

Projecting the number of future culinary water connections can be a subjective process. The most effective method of estimating the number of future connections is by analyzing past historical numbers of connections and census records. Because Hildale and Colorado City utilize the same water system, the census records and past numbers of connections of both Hildale and Colorado City were included in the analysis. In the past five years the communities have seen a fluctuation of positive and negative growth rates. Due to this fluctuation, analyzing the historical growth rates is an inaccurate method of predicting future growth for these communities. Figure II-1 below shows the historic population and connections in both communities.

Figure II-1: Historic Population

Calandar year	Hildale Population	Colorado City Population	Total Population	Est. Growth Rate
1990	1325	2426	3751	
2000	1895	3258	5153	3.23%
2010	2660	4722	7382	3.66%
2015	2926	4808	7734	0.94%
2016	2926	4804	7730	-0.05%
2017	2916	4809	7725	-0.06%
2018	2916	4825	7741	0.21%
2019	2910	4836	7746	0.06%
2020	2727	4531	7258	-6.30%
2021	2825	4694	7519	3.60%
2022	2931	4871	7803	3.77%

In the past couple of years, the growth rate in both communities has changed drastically. At the time of the previous plan, the communities anticipated minimal to no growth for the first few years of the planning window. However, in the past year the communities have seen a significant increase in number of connections, and there are multiple new developments that will be built in the next couple of years. This abrupt change in growth is one of the main reasons that the City is updating their culinary water master plan after only a couple years.

City staff looked at the upcoming developments in different stages in the approval process to determine a realistic number of anticipated new connections in future years. The number of anticipated new connections was used to determine a growth rate. In the discussions with City staff, it was determined that the immediately foreseeable growth may not be sustainable over the 20-year planning period, and therefore a lesser growth rate was determined for the remainder of the planning period. The following growth rates were used for this study:

- 2023-2027 (first 5 years) – 3.5% per year
- 2028-2032 (second 5 years) – 3.25% per year
- 2033-2042 (last 10 years) – 2.0% per year

C. PROJECTED POPULATION & NUMBER OF CONNECTIONS

Based on the forecasted growth rates referenced above, the number of connections the City will need to plan for can be calculated with the compound interest formula shown below.

$$F = P(1 + i)^N$$

F = Future Population P = Present Population
i = Projected Growth Rate N = Years

This equation was used to project the community population and number of connections for each year in the planning period. Figure II-2 below shows a summary of the growth rate analysis. Appendix A shows the full analysis.

Figure II-2: Growth Rate Analysis Summary

Calendar year	Est. Growth Rate	Proj.Total Population
2023	3.50%	8076
2024	3.50%	8358
2025	3.50%	8651
2026	3.50%	8954
2027	3.50%	9267
2028	3.25%	9568
2029	3.25%	9879
2030	3.25%	10200
2031	3.25%	10532
2032	3.25%	10874
2033	2.00%	11091
2034	2.00%	11313
2035	2.00%	11540
2036	2.00%	11770
2037	2.00%	12006
2038	2.00%	12246
2039	2.00%	12491
2040	2.00%	12741
2041	2.00%	12995
2042	2.00%	13255

It is important to understand that projected growth rates are not the cornerstone of this plan. If the maximum number of system connections projected is reached earlier or later than anticipated, future improvements to support growth may come either earlier or later.

D. PROJECTED EQUILVALENT RESIDENTIAL UNITS (ERU)

The water system is made up of multiple connection types. Hildale City and the Town of Colorado City report their different connections to the state as either residential, commercial, industrial, or institutional. Figure II-3 shows a summary of the number of connections by type.

Figure II-3: Total Number of Units Per Connection Type

Year	Total	Residential	Commercial	Industrial	Institutional
2017	900	772	66	25	37
2018	985	834	81	28	42
2019	995	854	84	23	34
2020	936	814	82	23	17
2021	971	842	85	27	17

Each of these different connection types uses different amounts of water at different rates. In order to properly analyze the systems usage, the number of connections are converted to equivalent residential units (ERU). This is done by taking the usage per connection of each connection type and dividing by the usage per connection of residential connections. Figure II-4 and Figure II-5 show the ERU per connection type and the total number of ERUs. This plan will use the number of ERUs instead of number of connections.

Figure II-4: ERUs Per Connection Type

Residential	Commercial	Industrial	Institutional
1.0	1.0	0.5	5.8

Figure II-5: Total Number of ERUS Per Connection Type

Year	Total	Residential	Commercial	Industrial	Institutional
2017	896	772	64	14	46
2018	968	834	81	16	37
2019	1068	854	100	32	82
2020	1003	814	79	13	97
2021	1038	842	84	14	98

E. AVERAGE CULINARY WATER USAGE

The State of Utah Public Drinking Water regulations require public water system to meet requirements based upon usage. These requirements are found in the State R309 Code. The code provides a standard usage based upon the types of connections serviced in a system. For a

standard residential connection, the code says to assume an average day usage of 400 gallons per day (gpd) per ERU. Historical usage data was provided by Hildale City and that usage was compared against the 400 gpd to check if it would adequately represent the usage in the city's system.

The historical usage from the city was from meter data over the past 5 years (2017-2021). To check against the usage indicated in the State's R309 Code, the average usage per ERU was calculated from the historical usage. The total average usage over the past 5 years was divided by the average number of ERUs and then converted to gpd/ERU as shown in the calculations below.

283,416,000 gallons / 995 ERU = 284,840 gallon/ERU/year
284,840 gallon/ERU/year / 365 days/year = 781 gpd/ERU

Figure II-6 shows a summary of the average usage and historical data that is explained above.

Figure II-6: Hildale & Colorado City Historical Usage Summary

Year	Total Usage (Thousand gallons)	Number of Connections	Usage per Conn. (gpd/conn)	Number of ERUs	Usage Per ERU (gpd/ERU)
2017	315,703	900	961	896	965
2018	262,422	985	730	968	743
2019	260,656	995	718	1,068	669
2020	292,417	936	856	1,003	799
2021	285,883	971	807	1,038	755
5-Year Avg:	283,416	957	814	995	781
This Master Plan will use a historic daily usage of 781 gpd/ERU					

The 781 gpd/ERU average usage calculated from the City's historical usage is significantly higher than the usage that is indicated for use in the State Code. This is because the average household size in the communities of Hildale City and Colorado City are larger than the average household size in the rest of the state. Because of the larger usage per ERU, this plan will determine usage demand from the historical usage instead of the numbers from the State Code. This method will result in a more realistic analysis and is the more conservative of the two methods.

The calculations in this report will be based on the historical average usage of 781 gpd/ERU (0.54 gpm/ERU). It is recommended that future improvements be sized based on this average usage.

F. PEAK DAY DEMAND CULINARY WATER USAGE

Peak Day Demand (PDD) is defined by the Utah Administrative Code as the "anticipated water demand on the day of the highest water consumption". The state code uses 800 gpd/ERU for a peak day demand of a standard residential unit which is twice the average day demand. Therefore, it can be assumed that the PDD for this plan is double the 781 gpd/ERU average demand calculated above. Doubling the average usage results in a peak demand of 1561 gpd/ERU (1.1gpm/ERU).

G. PEAK INSTANTANEOUS DEMAND CULINARY WATER USAGE

Peak Instantaneous Demand (PID) can be described as the highest demand at any one instance in the system. This can be determined based on hourly usage if such data is available. Where hourly usage data does not exist, which is the case of this study, the State Code uses the following method to calculate the PID:

Indoor Usage:

$$Q_{peak\ indoor} = 10.8\ x\ N^{0.64}$$

Where N is the number of connections and Q is the flow in gpm

Outdoor Usage:

$$Q_{peak\ outdoor} = N\ x\ Irr.Acreage\ x\ Demand\ Factor$$

Where N is the number of connections, Irr. Acreage is the average area that is irrigated throughout the system and the Demand Factor is based on the zone given in Table 510-7 of R309-510 of the Utah Administrative Code.

The above calculations result in a PID of 1917 gpm. As demonstrated in the previous demand calculations, the communities' water use does not match with the assumptions the State uses for the calculations found in the administrative code. An alternative method to calculate PID was used to check against the State's equations.

The alternative method still includes a separate calculation for indoor and outdoor usage. A peaking factor was determined for both indoor and outdoor usage. After determining the peaking factors, the indoor and outdoor average usage was multiplied by the respective peaking factors resulting in a PID (indoor) and PID (outdoor). The sum of the two demands resulted in the PID used for this study.

The indoor peaking factor was defined as the PID determined by the State's equation above divided by the State's ADD of 400 gpd/ERU. The outdoor peaking factor was determined by examining the relationship of the outdoor instantaneous demand factor and the outdoor peak day demand factor from the tables in the R309 code. The peak instantaneous demand factor is twice the peak day demand. As mentioned above, the peak day demand can be defined as twice the average day demand and therefore it can be assumed that the outdoor peak instantaneous demand is four times the average outdoor demand. This method resulted in the following peaking factors:

- Indoor Peaking Factor = 3.15
- Outdoor Peaking Factor = 4

The average indoor usage was calculated from the average usage data from the past 5 years in the months of December through February. The average outdoor usage was calculated by subtracting the indoor average usage by the indoor average demand calculated in II-E. This resulted in the following:

- PID (indoor) = 1065 gpm
- PID (outdoor) = 984 gpm
- Total PID = 2049 gpm

This plan will use the more conservative 2049 gpm as the PID. The full calculations used to determine the PID are shown in Appendix B.

H. CONSERVATION

This plan assumes a conservation rate of 0.5% per year over the planning period. This conservation factor is used to represent any conservation efforts from the city, existing connections, or new connections. This rate also takes into account the decrease in average household size that is accompanying the community's current growth. This conservation results in the following demands at the end of the planning window

- ADD (2042) = 699 gpd/ERU
- PDD (2042) = 1397 gpd/ERU

The conservation factor is not used for the PID. As mentioned above, the PID is the highest demand on the system at any given moment. Conservation efforts do not have a major impact on the amount of water that could be used at any given moment.

III. WATER SOURCE CAPACITY ANALYSIS

A. EXISTING WATER SOURCE

To analyze source capacity, all available culinary water sources must first be identified. These sources are listed in Figure III-1. The flow capacity numbers were acquired from Hildale City.

Figure III-1: Hildale and Colorado City Existing Water Sources

Name/#	Flow (CFS)	Flow (gpm)
Wells		
4	0.223	100
8	0.134	60
10	0.189	85
11	0.223	100
15	0.000	0
17	0.000	0
19	0.323	145
21	0.468	210
22	0.267	120
24	0.223	100
Academy	0.579	260
Power Plant*	0.000	0
Subtotal	**2.629**	**1180**
Springs		
Jans Canyon	0.036	16
Maxwell Canyon	0.143	64
Subtotal	**0.178**	**80**
Total Source	**2.807**	**1260**

Listed spring flows are relatively constant. These springs were developed from a horizontal bore into the Navajo sandstone formation.

Wells 15 and 17 are shown as 0 gpm in the source table due to both wells being unavailable during peak demands. The pumps for these wells are set at too high an elevation to be able to supply water during peak summer days. The City is planning on a replacement project for both wells to get them back in service. See the recommended improvements section below for more details on that project.

B. EXISTING REQUIRED WATER SOURCE CAPACITY

The Utah State Code R309-510-7 states that a water system's source needs to meet "the anticipated water demands on the day of the highest water consumption which is the Peak Day Demand". The PDD was determined above as 1,561 gpd/ERU. The source capacity demand for the water system was calculated by multiplying the PDD from Section II-F by the total number of ERUs existing in the system. The results of the analysis are presented in gallons per minute. The results of this analysis are shown in Figure III-2.

Figure III-2: Required Source Capacity (Existing Conditions)

Total Required Source Capacity	1,168 gpm
Total Existing Source Available	1,260 gpm
Existing Culinary System Source Capacity Surplus	92 gpm

C. PROJECTED REQUIRED WATER SOURCE CAPACITY

Projecting growth to the 10-year and 20-year planning periods and using the same method of calculating required source capacity reveals that the water system will have a deficit of source capacity. The projected required source capacity for the 10-year and 20-year planning periods are shown in Figure III-3 and Figure III-4.

Figure III-3: Required Source Capacity (10-Year Planning Period)

Total Required Source Capacity	1,546 gpm
Total Existing Source Available	1,260 gpm
Existing Culinary System Source Capacity Deficiency	-286 gpm

Figure III-4: Required Source Capacity (20-Year Planning Period)

Total Required Source Capacity	1,786 gpm
Total Existing Source Available	1,260 gpm
Existing Culinary System Source Capacity Surplus	-526 gpm

D. RECOMMENDED WATER SOURCE CAPACITY IMPROVEMENTS

The analysis above shows that the existing available source is not sufficient to accommodate a peak day demand. The historical experience has been that during peak summer months with the system running at full capacity, the City is unable to provide enough water. Without being able to provide enough water to meet system demand the water levels in the storage tanks gradually drop during summer months affecting available fire flow and water pressures. This has caused both communities to enact water restrictions during summer months for the last several years.

Source availability improvements are needed now as well as in upcoming years. Hildale City and The Town of Colorado City have performed multiple studies over the years looking at different ways to improve the quantity and quality of available source. These studies, as well as this plan, suggest the following improvements:

1. 1 TO 5 YEAR IMPROVEMENTS

- Replace Wells 15 and 17 – As mentioned above, these are existing wells that are currently not able to produce water during peak demands. It is recommended that the City replace both of these wells. Both wells should be drilled to a deeper depth and have the pump installed at a deeper elevation than the existing pumps. It is anticipated that Well 15 would produce 20gpm and Well 17 would produce 80 gpm.

- Treatment Plant Wells – The quickest available option to help increase source capacity is to drill additional wells in the Arizona side of the system. This portion of Arizona is an open basin and does not require obtaining water rights to drill and use a well. The City is currently working on a study to evaluate the locations of these two wells. The preliminary idea is to drill the wells at the treatment plant. Based on the output of existing wells, it is anticipated that these wells will produce roughly 80 gpm for the shallow well and 120 gpm for the deep well. The well study will help refine these estimated flows.

- Trailhead Well 1 - The City is looking at drilling additional wells in the nearby canyons to the northeast. The water from these canyons would be obtained from different geologic formations than their current wells. The hope is that the water quality is similar to the Jans and Mawell Canyon springs. The Trailhead Well 1 would be located on City owned property by the Squirrel Canyon Trailhead. This well would provide additional source to the town but primarily will act as a test to determine potential quantity and quality of water. It is estimated that this well could produce 175 gpm. These wells are in Utah and will require water rights to drill and use the well. The City currently has water rights that can be transferred to use the proposed well.

2. 5 TO 10 YEAR IMPROVEMENTS

- Trailhead Well 2- If the Trailhead Well 1 proves to be a successful route for obtaining additional source, it is recommended that the City continue to pursue this source with an additional well on the city owned land next to the Squirrel Canyon Trailhead. This well and all future wells up the canyon will require obtaining additional water rights. This Well is also estimated to produce 175 gpm

3. 10 TO 20 YEAR IMPROVEMENTS

- Hildale Groundwater Project Phase I - If the Trailhead Wells are successful at producing good quality water, this plan recommends that additional wells be drilled in the area Northeast of Hildale. These wells would be located on BLM property and would require environmental studies and going through BLM's process (such as a SF299 application and Plan of Development) for obtaining Right-of-Way on BLM land. The City has already begun working through this process with the help of the Washington County Water Conservancy District. Based on the best available information that the City has, it is estimated that this project would produce roughly 350 gpm. The exact location of these wells will be determined through coordination with the City and BLM.

- Hildale Groundwater Project Phase II- This phase involves drilling two additional wells in different location than Phase I but in the same general BLM owned area. Phase II would require the same BLM process and need for additional water rights. This phase is also estimated to produce roughly 350 gpm.

- Hildale Groundwater Project Phase III – This phase is similar to first two and involves additional wells in the BLM owned area Northeast of Hildale. It is estimated that this phase will produce 175 gpm.

These recommended improvements are summarized in Figure III-5. Appendix D includes an exhibit showing the location of these improvements.

Figure III-5: Summary of Recommended Source Improvements

Name/#	Flow (CFS)	Flow (gpm)	Est. Year Installed
	Wells		
Treatment Plan Shallow	0.178	80	2023
Treatment Plant Deep	0.267	120	2023
Well 15 Replacement	0.045	20	2023
Well 17 Replacement	0.178	80	2023
Trailhead Well 1	0.390	175	2025
Trailhead Well 2	0.390	175	2028
Hildale Groundwater Project PH I	0.780	350	2032
Hildale Groundwater Project PH II	0.780	350	2036
Hildale Groundwater Project PH III	0.390	175	2040
Total Projected New Source	**3.398**	**1525**	

E. SOURCE CAPACITY SUMMARY

Figure III-6 and Figure III-7 both show the comparison between the available source capacity and the projected required source capacity. The available source capacity in Figure III-7 represents the source capacity available with the implementation of the recommended improvements.

Figure III-6: Projected Source Capacity with Existing Conditions

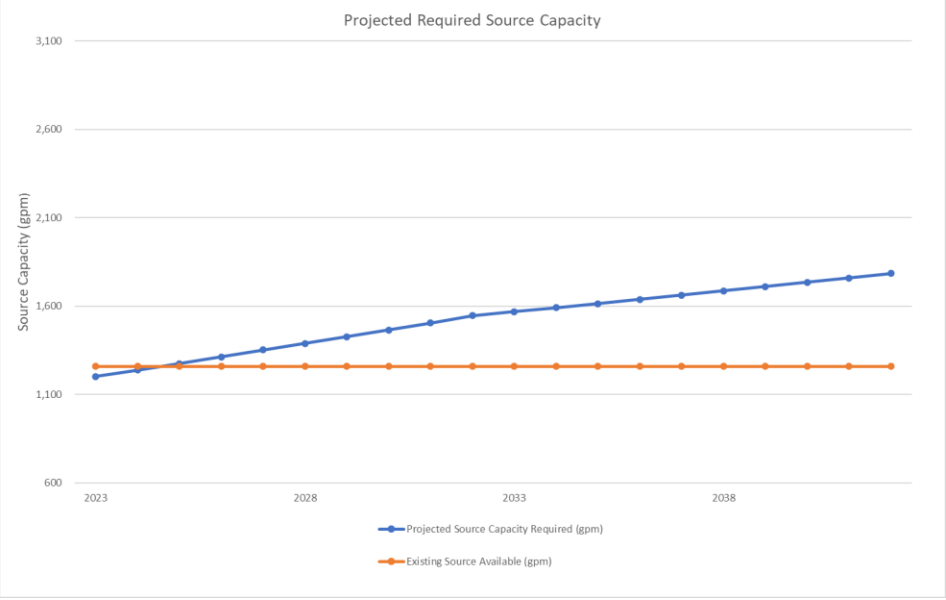


Figure III-7: Projected Source Capacity with Recommended Improv Improvements

IV. WATER STORAGE CAPACITY ANALYSIS

Water storage capacity requirements are found in the State of Utah Public Drinking Water Regulations, R309-510. These regulations require storage for the community's culinary water system to meet one full day's average use requirement for all connections in the community in addition to fire flows for a minimum of two hours and emergency storage as deemed necessary.

A. EXISTING WATER STORAGE CAPACITY

There are currently four existing water storage tanks. These tanks are identified in Figure IV-1 below. The Saddle Tank is higher than the other three, and it receives the water from the springs. The outlet to the Saddle Tank is near the top of the tank allowing unpressurized outflow. In an emergency, there is a valve that can be opened to utilize the storage in the tank. The other three tanks all have the same high-water elevation and receive water from the wells through the treatment plant.

Figure IV-1: Storage Capacity Summary

Existing Tank	Available Storage (gal)
Saddle Tank	60,000
800,000 Gallon Tank	800,000
600,000 Gallon Tank	600,000
Elm Street Tank	1,000,000
Total Existing Storage Capacity	**2,460,000**

B. EXISTING REQUIRED WATER STORAGE CAPACITY

As shown in Section II-E, average water usage per ERU also known as the Average Day Demand (ADD) in the water system is 781 gpd/ERU. In general, fire flow requirements are set by the local Fire Authority or are based on building size and type of construction. This plan uses the same minimum fire flow as the previous plans of 1,500 gpm. Also included in required storage is emergency storage. For planning purposes, this master plan will use an amount of 25% of the total required storage as the emergency storage. The emergency storage is on top of the storage required for an average day and fire flow.

The required storage capacity was calculated by multiplying the ADD by the total number of ERUs currently existing in the system. When compared with the system's total storage capacity summarized above, the calculation shows that the City has considerable surplus total storage capacity under current conditions. The results of this analysis are shown in Figure IV-2.

Figure IV-2: Required Storage Capacity (Existing Conditions)

Total Required Storage Capacity	**1,276,105** gal
Total Existing Storage Available	**2,460,000** gal
Existing Culinary System Storage Capacity Surplus	**1,183,895** gal

C. PROJECTED REQUIRED WATER STORAGE CAPACITY

The projected culinary water storage capacity required at the end of the planning period is determined from the same factors explained in Section B above, but the projected number of ERUs is inserted into the calculations instead of the number of existing ERUs. The results of the analysis are shown below in Figure IV-3 and Figure IV-4.

Figure IV-3: Required Storage Capacity (10-Year Planning Window)

Total Required Storage Capacity	1,616,624 gal
Total Existing Storage Available	2,460,000 gal
Projected Culinary System Storage Capacity Surplus	843,376 gal

Figure IV-4: Required Storage Capacity (20-Year Planning Window)

Total Required Storage Capacity	1,832,099 gal
Total Existing Storage Available	2,460,000 gal
Projected Culinary System Storage Capacity Surplus	627,901 gal

D. STORAGE CAPACITY CHALLENGES

The storage capacity analysis results show that the city has a surplus of storage through the planning window. However, there are still some concerns and shortcomings with the existing storage facilities.

- During summer months water operators have expressed concerns that because they are barely able to meet system demands with the wells during the day, they are not able to keep the tanks full and therefore do not have the full available storage shown in the calculation above.

- The water system consists of a single pressure zone. There are multiple areas around the community within each of the cities' limits that are at an elevation higher than the maximum elevation the existing tanks can serve.

E. RECOMMENDED WATER STORAGE CAPACITY IMPROVEMENTS

To help mitigate the concerns mentioned above and to improve the overall system, this plan recommends the following improvements:

1. 1 TO 5 YEAR IMPROVEMENTS

- Sandhill Tank – This tank would be constructed above the Elm Street tank to create a higher-pressure zone that would cover the area north of Utah Ave and east of the highway. This project would include a booster pump to get water to the tank and valving to create the new pressure zone. It is recommended this tank be at least a 1-million-gallon tank.

Based on the existing ADD this tank would be able to serve 1,000 ERUs in the new pressure zone.

2. 5 TO 10 YEAR IMPROVEMENTS

- Tank Near Squirrel Canyon Trail Head- This tank would be installed on the same site as the two wells recommended in the same area in Section III-D. This tank would serve two purposes. First, it would collect the water from the proposed Trailhead Well and eventually the Hildale Groundwater Project wells. The second purpose is to create a higher-pressure zone on the northeast side of Hildale. This pressure zone would serve the existing and new building up the canyons north of Williams Ave. This plan recommends the tank capacity to be 500,000 gallons, but the capacity should be reevaluated after the City receives results on how much water can be obtained from the Trailhead Well 1.

3. 10 TO 20 YEAR IMPROVEMENTS

- Tank for New Annexation Area – Recently Hildale City annexed land west of the previous city limits. It is anticipated that new developments will begin to come into the area in the next couple of years. As this new area grows it is recommended the city consider construction of a storage facility closer to the development areas than their existing tanks. This plan uses a recommended storage capacity of 1,000,000 gallons. However, the location and size of the tank should be determined based on how the area grows over the next several years. Because of these unknowns, the tank is not depicted in the recommended improvement exhibit. However, a cost estimate is provided for this project in Appendix C

These recommended storage improvements are summarized in. Appendix D includes an exhibit showing the location of these improvements.

Figure IV-5: Summary of Recommended Storage Improvements

Proposed Tank	Available Storage (gal)	Est. Installation Date
Sandhilll Tank	1,000,000	2024
Trailhead Tank	500,000	2028
Tank For Annexation Area	1,000,000	2042
Total Projected New Storage	**2,500,000**	

F. STORAGE CAPACITY SUMMARY

- Figure IV-6 and Figure IV-7 both show the comparison between the available storage capacity and the projected required storage capacity. The available storage capacity in Figure IV-7 represents the storage capacity available with the implementation of the recommended improvements.

Figure IV-6: Projected Storage Capacity with Existing Conditions

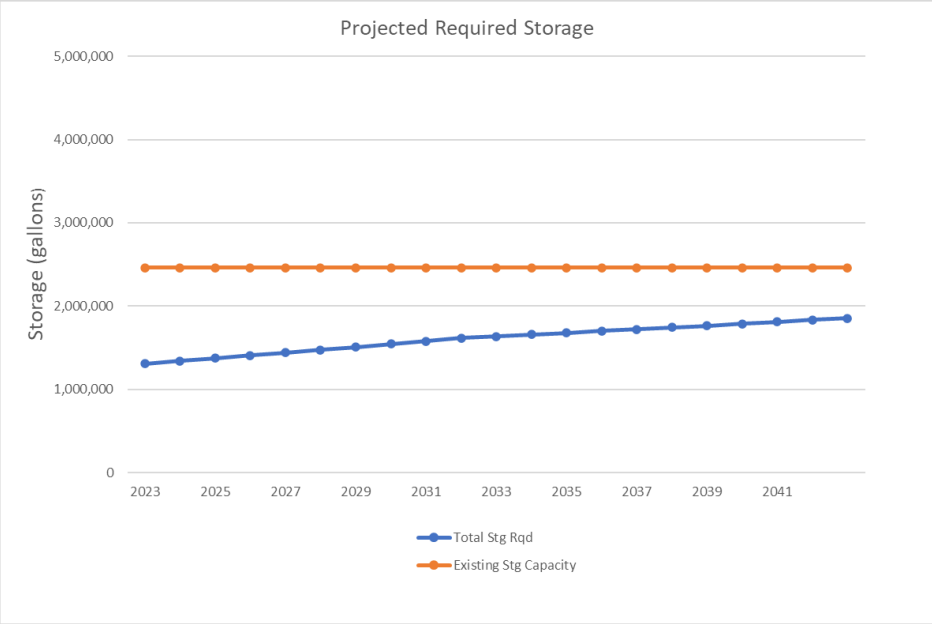
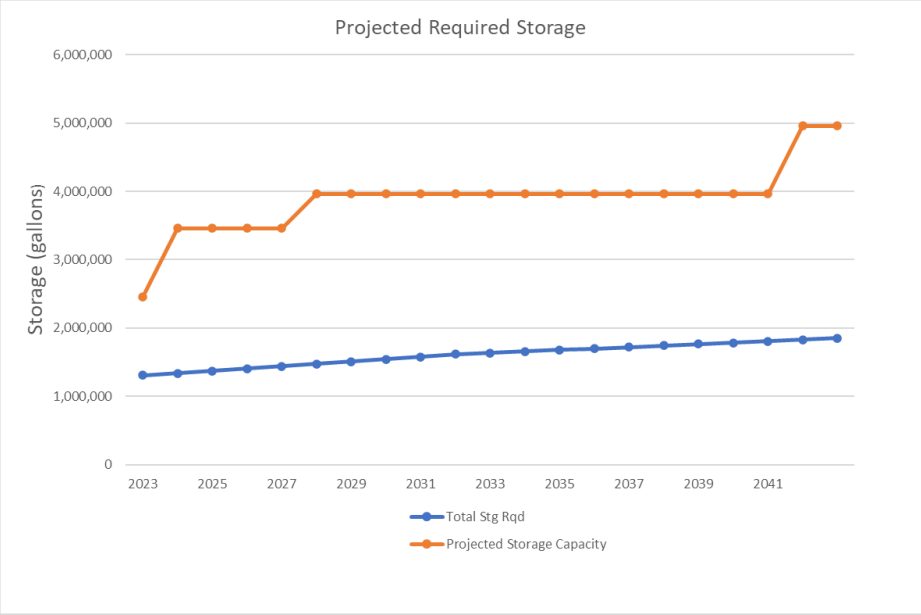


Figure IV-7: Projected Storage Capacity with Recommended Improvements



V. WATER TREATMENT REQUIREMENTS AND ANALYSIS

A. GENERAL REQUIREMENTS

The State of Utah Public Drinking Water Regulations, in accordance with the National Safe Drinking Water Act, have adopted "primary;" regulations for the protection of public health and "secondary" regulations related to the taste and aesthetics. The regulations recommend that all culinary water sources have provisions for continuous disinfection. Hildale/Colorado City have culinary water treatment facility to treat the existing wells in an effort to meet the minimum requirements.

B. EXISTING TREATMENT FACILITIES

The existing culinary water treatment plant uses a greensand filtration process which includes injecting the water with potassium permanganate. The system wells are pumped to the treatment plant where the plant treats for iron, manganese, and radium. The plant contains 6 pressure vessels designed to operate in parallel and treat 2,400 gpm. Historically, operating the vessels in parallel has not treated the water as effectively as operators would like, and the system has been unable to deliver 1200 gpm throught the filters. So, the plant has been operated in series (water going through two vessels instead of one) for the past several years. Operating the plant in series reduces the max capacity to 1,200 gpm.

C. RECOMMENDED WATER TREATMENT FACILITY IMPROVEMENTS

The City is in the process of a refurbishing and improving the plant. The project is being referred to as the Mohave County ARPA Project. This project includes the following elements:

- Installing one additional filter on each filter train. This will provide a redundant filter so that during backwashes or maintenance, the filtration rate through the vessels will not need to fluctuate.
- Install a pretreatment system up stream of the pressure vessels.
- Change out filter media in the vessels. Media will be replaced with a newer media that is believed to be more robust than what is currently being used in the plant.

Plant operators expect these improvements to allow for the treatment plant to operate in parallel again and reach the design flow of 2,400 gpm.

In addition to the improvements to the treatment plant, this plan recommends improvements to the raw water transmission lines which carry water from the wells to the treatment plant. These lines are old, undersized, and estimated to have iron and other mineral deposits adhering to the pipe. It is possible the amount of flow going to the treatment plant is restricted by these deposits.

It is recommended that a new 12" transmission line be installed in Richard St. to convey water from the wells south of the treatment plant. It is also recommended that access points be installed that

allow water operators to flush and clean out the lines on the new line and on the remaining existing raw water lines.

Both the treatment improvements and the improvements to the raw waterline are in the 0 to 5 year improvements window.

VI. WATER DISTRIBUTION SYSTEM ANALYSIS

The State of Utah Public Water Regulations, R309-105-9, states three pressure conditions which must be met to demonstrate adequate service capacity of a system. These conditions are:

- At least 40 psi must be retained as residual pressure in the distribution system under a Peak Day Demand (PDD).
- At least 30 psi must be retained as residual pressure in the distribution system under Peak Instantaneous Demand (PID)
- At least 20 psi must be retained as residual pressure in the distribution system under PDD plus fire flow conditions.

A. EXISTING DISTRIBUTION SYSTEM ANALYSIS

The existing PDD and PID were calculated in Section II. These flows are shown below:

- PDD – 1,561 gpd/ERU = 1,169 gpm with the existing number of ERUs
- PID – 2,049 gpm

As mentioned in Section IV, this report used a fire flow of 1,500 gpm.

The existing Hildale and Colorado City culinary water distribution system has been modeled using the computer program Infowater® by Innovyze, Inc. For the existing system network there are areas which provide less than the required 40 psi of pressure for PDD, areas that provide less than 30 psi for PID, and areas that do not provide adequate fire flow. For the most part, the deficiencies in each of these requirements fall in the same areas of the system. Exhibits showing the areas of low pressure and fire flow are located in Appendix D. Below is a summary of these areas:

- Northwest Hildale (area between Newel Ave. and the Elm Street tank) - This area suffers from poor fire flow, lack of hydrants, and low pressure during PDD and PID. Fire flows in this area have been modeled as low as 657 gpm during PDD. This is largely the result of proximity to the elevation of the Elm St. tank. Pressures during PDD and PID are as low as 23 psi and 19 psi respectively.

- Northeast Hildale (area north of Jessop Ave. and west of Carlin St.) – This area suffers from poor fire flow, lack of hydrants, and low pressure during PDD and PID. Fire flows in this area have been modeled as low as 637 gpm during PDD. This largely is a result of proximity in elevation to the tanks, smaller line sizes, and lack of looping. Pressure during PDD and PID are as low as 33 psi and 27 psi respectively.

- East Colorado City (Between Edson Ave. and E Johnson Ave.) – This area suffers from poor fire flow and slightly low pressures during PDD scenarios. Fire Flows have been modeled as low as 585 gpm during PDD. This is largely due to smaller line sizes and lack of looping. The lowest pressure in the area during PDD was at 34 psi.

B. PROJECTED DISTRIBUTION SYSTEM ANALYSIS

The projected distribution system analysis is performed using the same assumptions as in the existing system analysis, except that the projected number of connections for the 20-year planning window is inserted into the calculations. The results of this calculation for both PDD and PID are shown below:

- PDD – 1,307 gpd/ERU = 1,787 gpm with the projected number of ERUs
- PID – 3,481 gpm

The same water model that was used to examine the existing distribution system was used to analyze the scenarios of the projected system at the end of the 20-year window. According to the model, the areas of the system not meeting the conditions of R309-105-9 at the end of the planning period are the same areas that don't currently meet these conditions. There are no additional areas of concern that arise in the existing system.

C. FIRE HYDRANTS

State regulations require all new fire hydrants to be served from 8" diameter or larger pipelines unless it can be proven through the use of modeling that 6" lines are sufficient. There are a number of existing hydrants in the system that are on 6" or smaller pipes.

State requirements also state that hydrant spacing be no more than 500 feet. There are numerous locations throughout the system where additional fire hydrants are required to meet the 500-foot maximum spacing.

D. RECOMMENDED DISTRIBUTION SYSTEM IMPROVEMENTS

From the system deficiencies observed in the analysis, this plan recommends the following improvements:

1. 0 TO 5 YEAR IMPROVEMENTS

- Fire Hydrants – Install additional fire hydrants to meet the minimum required spacing. In placing these new hydrants, some smaller lines will need to be replaced with 8" lines to meet the requirements mentioned above. It is recommended that this project replace all undersized lines which are not already included in the other improvements. This project would help bring the system into compliance with fire flow requirements.

- Jessop Ave. Line – Install a new 8" diameter water main on Jessop Ave from Juniper St. to Redwood St. and tie into the existing north and south water mains on Redwood St, Maple St., Elm St., and Juniper St. Some of the north and south lines will need to be extended with

an 8" line to reach Jessop Ave. This water main will provide some looping in the area and mitigate the low pressures experienced in this area.

2. 5 TO 10 YEAR IMPROVEMENTS

- University Ave. Line – Install a new 8" water main that would go from University Ave east and then down the irrigation canal alignment to Township Ave. This added water main will provide looping to the east side of Colorado City mentioned above that is experiencing inadequate fire flow.

- Canyon St Line – Install a new 8" water main in Canyon St. from Memorial St. to Newel Ave. This would provide looping to the northeast Hildale area and help mitigate some of the low pressures and low fire flows. This water main would also act as a trunkline for delivering water from the new wells in the Hildale Groundwater Project and the Trailhead Wells.

3. 10 TO 20 YEAR IMPROVEMENTS

- Provide water to Annexation Area – As mentioned in previous sections, the City of Hildale has recently annexed new land west of the current city boundary. Currently there is no water infrastructure in place to provide water to this area. It is recommended the City create a plan to provide water to these areas to include the portion to be provided by the City and the portion to be provided by developer(s). For planning purposes this plan assumes two trunk lines to be installed, one from Utah Ave. to the south side of the annexation area and the second line from the new Sandhill Tank to the north side of the annexation area.

These recommended improvements are summarized in Figure VI-1. Appendix D includes an exhibit showing the location of these improvements.

Figure VI-1: Summary of Recommended Distribution Improvements

Proposed Improvement	Est. Installation Date
Fire Hydrant Project	2023
Jessop Ave. Line	2025
University Ave. Line	2028
Canyon St. Line	2030
Annexation Trunklines	2040

VII. WATER AVAILABILITY

A major concern for the community is long term availability of their water source. With the ongoing drought, this is a concern for most, if not all, communities in the surrounding counties. The following are ideas that the City could investigate to potentially lengthen the availability of water in the area. These ideas are not recommended improvements but starting points for future conversations.

1. WATER CONSERVATION PROGRAM

Implementing a water conservation program is a good way to reduce current water usage and prolong water availability as well as defer the need for some water infrastructure improvements. A conservation program is cheap in that it does not require any construction of infrastructure prior to implementation. Below is a potential list of items that could be included in such a program:

- Provide education on how much water local grasses and trees require and encourage residents to limit outdoor watering to not exceed what is needed.
- Perform a "water audit" on city owned irrigation to determine if outdoor water use could be reduced on city owned property.
- Look into capturing rainwater for outdoor watering. (This would require some investigation on how much water Utah and Arizona will allow to be captured and used)
- Provide incentives for residents to change their existing landscaping to something which requires less water such as Xeriscape.

2. CONSTRUCTION WATER

Currently construction water is typically obtained from fire hydrants. This means that the construction in town is typically using culinary water for construction. This may not be a major usage of the culinary water system, but there may be some inexpensive options to provide non culinary grade water for use as construction water.

The Power Plant Well that is unavailable for use in the culinary water system. This well could be setup with a connection to provide non culinary grade construction water. While this option does alleviate some strain from the culinary water system, it is still using the same aquifer (source) that the culinary water system is using.

3. RECYCLE BACKWASH WATER AT TREATMENT PLANT

Part of the process of the existing treatment plant includes backwashing the filters occasionally with clean, culinary grade water. Currently the backwash water is sent into the sewer system which is common in many similar plants. It is possible to capture the backwash water, reuse a portion of it, and send it back through the plant. This option saves a minimal amount of water, backwashes do not happen frequently, and they do not use a large amount of water per backwash. However, this adjustment would save water and should be considered when making future improvements to the treatment facility.

4. SECONDARY WATER SYSTEM

Implementing a secondary water system would be a major benefit to the culinary water system. A secondary system in Hildale/Colorado City would reduce the culinary water use by roughly 40%. This reduction would greatly help with the deficiencies discussed in previous sections of this plan. However, constructing a new water system from the ground up is not cheap, and the added irrigation user rate needed to implement a new system would increase most customer water bills. It is possible to install a complete system in phases or install a small system just for parks or specific high outdoor use areas.

5. WASTEWATER REUSE

Treating wastewater for reuse is an option that would provide more water to use which is not coming from the same sources as the culinary water system. Treating wastewater sufficiently to be used for human consumption is very expensive and not likely practical for Hildale/Colorado City. However, reuse could be used for things such as construction water or irrigation for parks and agriculture that is not for human consumption. Treatment to this level is cheaper and may provide a cost effective alternative for the city.

VIII. ANALYSIS OF FUTURE GROWTH AREAS

Working with City staff, multiple areas have been identified as locations of future large developments. These are areas in which developers have had some discussions with the city on potential developments, and there is a possibility of the developments being built within the 20-year window. Below is a list of growth areas that were specifically looked at in this plan:

- Area around and west of the Elm Street Tank
- The recent annexation area west of Hildale City
- Larger empty lots on the northeast side of Colorado City

During the water modeling discussed in Section VI, these areas were included in the model as having at least partial developments. The demands used for the projected system water model was based on assumptions made with the current information that is available regarding developments in these areas. The recommended improvements identified in the previous sections included providing water to these growth areas. However, the timing in which these areas develop could adjust the time frame in which the recommended improvements are needed for the system.

These potential growth areas are in different stages of development planning. It is recommended that the city reevaluate the timing, location, and size of the recommended improvements for these areas as these areas move closer to being developed and more information is available.

IX. SUMMARY OF RECOMMENDED IMPROVEMENTS

A. PRIORITY OF IMPROVEMENTS

Figure IX-1 shows a summary of the proposed improvements with the estimated cost for the project in today's dollars, the estimated year the improvements will be installed and the estimated cost of the project accounting for inflation. This plan uses an assumed inflation rate of 3%.

Figure IX-1: Summary of Recommended Improvements

Project	Cost Estimate (Todays $)	Est. Year of Installation	Estimated Costs with Inflation
0 To 5 Year Improvements			
Treatment Plant Wells	$ 1,288,650.00	2023	$ 1,327,309.50
Wells 15 and 17 Replacement	$ 1,288,650.00	2023	$ 1,327,309.50
Fire Hydrant Project	$ 1,733,500.00	2023	$ 1,785,505.00
Mohave County ARPA Project	$ 948,000.00	2023	$ 976,440.00
Raw Water Transmission Line	$ 998,800.00	2023	$ 1,028,764.00
Trailhead Well 1	$ 2,445,250.00	2025	$ 2,671,990.70
Sandhilll Tank	$ 3,983,400.00	2025	$ 4,352,768.73
Jessop Ave. Line	$ 808,770.00	2025	$ 883,764.82
Total Costs for 0 to 5 Year Improvements	**$ 13,495,020.00**		**$ 14,353,852.24**
5 To 10 Year Improvements			
Trailhead Well 2	$ 1,713,100.00	2028	$ 2,045,530.99
Trailhead Tank	$ 1,864,100.00	2028	$ 2,225,832.89
Canyon St. Line	$ 374,900.00	2028	$ 447,650.21
Universiy Ave. Line	$ 326,000.00	2030	$ 412,967.05
Total Costs for 5 to 10 Year Improvements	**$ 4,278,100.00**		**$ 5,131,981.13**
10 To 20 Year Improvements			
Hildale Groundwater Project PH I	$ 3,691,800.00	2032	$ 4,961,470.49
Hildale Groundwater Project PH II	$ 4,220,100.00	2036	$ 6,383,279.90
Hildale Groundwater Project PH III	$ 2,887,050.00	2040	$ 4,915,009.37
Annexation Trunklines	$ 2,329,700.00	2040	$ 3,966,158.30
Tank For Annexation Area	$ 3,658,500.00	2042	$ 6,607,657.95
Total Costs for 10 to 20 Year Improvements	**$ 16,787,150.00**		**$ 26,833,576.01**
Total Costs for All Improvements	**$ 34,560,270.00**		**$ 46,319,409.38**

The detailed cost estimate for each project is located in Appendix C.

X. POSSIBLE FINANCING PLAN

The City is currently in the process of applying and obtaining grant funds through different federal and state agencies. They have received notice that they will be receiving 1.4 million dollars of ARPA funds from the recent infrastructure bills through Mohave County. It is anticipated that these grant funds will be used to fund the projects on the 0-5 year improvement list.

The purpose of this possible finance plan is to show what a funding plan may look like to pay for the projects recommended for 2023. The City may also choose to complete the improvements in separate smaller projects. The projects are assumed to be paid with loan and grant money, including the ARPA funding mentioned above. It should be noted agencies may require some amount of self-participation in order to provide funding.

Figure X-1 outlines a possible financing plan from the Utah Division of Drinking Water (DDW). This plan assumes 30% of the funding from DDW will be grant while the remaining 70% is loan at a 2.5% interest rate and payback term of 30 years. It is possible a lower interest rate or higher portion of grants will be available. It is recommended that, as the City prepares to start this project, they contact DDW and other funding agencies such as the Water Infrastructure Finance Authority of Arizona, US Department of Agriculture - Rural Development, or the Utah Community Impact Board to determine what funding is available and where they can get the best funding package.

The possible financing plan shown in Figure X-1 results in an annual payment of $147,181.73. This annual payment along with other O&M expenses for the water system, would require an average charge for culinary water user rates to be $59.24.

The City is looking into adjusting their culinary water impact fees. A majority of the recommended improvements in this plan are fully or partially Impact Fee eligible. If the City were to begin collecting impact fees this would help to fund the recommended improvements.

Figure X-1: Possible Financing plan

HILDALE CITY/TOWN OF COLORADO CITY						
POSSIBLE FINANCING PLAN 2023 projects						
Total Project Cost (Construction + Professional Services):						**$ 6,445,328**
Proposed Funding:	**% of Proj**	**Rate**	**Term**		**Principal**	**Est. Payment**
ARPA Grant (Mohave County)	22%			$	1,400,000.00	
Self Participation	10%			$	644,532.80	
DDW Grant	20%			$	1,320,238.56	
DDW Loan	48%	2.50%	30	$	3,080,556.64	$147,181.73
TOTAL PROJECT ANNUAL PAYMENT (2023):						**$147,181.73**
O&M EXPENSES: (First Year of New Debt Service Payment)						
Office Expenses and Travel						$ 29,267.63
Repairs and Maintenance						$ 366,075.73
Utilities						$ 190,554.97
Legal and Professional Fees						$ 64,482.00
Renewal and Replacement Fund						$0
Interest Income						$ (5,062.58)
Subtotal Expenses:						**$645,318**
EXISTING DEBT SERVICE						
Existing Debt Service						$0
Subtotal Existing Annual Debt Service:						**$0**
GRAND TOTAL EXPENSES:						**$792,499**
ANNUAL INCOME						
Impact Fees Expended for 2023 Projects						$ -
Total Number Of ERU						1,115
Average Monthly Water User Rate/ERU						**$59.24**
Charges for Services, Fees, etc.						$792,499
GRAND TOTAL INCOME:						**$792,499**

APPENDIX A
Growth Rate Analysis

Population & Growth Rate						
Calandar year	Hildale Population	Colorado City Population	Total Population	Est. Growth Rate	# of Conn.	# of ERU
1990	1325	2426	3751			
2000	1895	3258	5153	3.23%		
2010	2660	4722	7382	3.66%		
2015	2926	4808	7734	0.94%		
2016	2926	4804	7730	-0.05%	891	868
2017	2916	4809	7725	-0.06%	895	891
2018	2916	4825	7741	0.21%	862	968
2019	2910	4836	7746	0.06%	995	1068
2020	2727	4531	7258	-6.30%	936	1004
2021	2825	4694	7519	3.60%	971	1039
2022	2931	4871	7803	3.77%	1009	1078
2023	3034	5042	8076	3.50%	1044	1116
2024	3140	5218	8358	3.50%	1081	1155
2025	3250	5401	8651	3.50%	1119	1195
2026	3364	5590	8954	3.50%	1158	1237
2027	3481	5786	9267	3.50%	1198	1280
2028	3595	5974	9568	3.25%	1237	1322
2029	3711	6168	9879	3.25%	1278	1365
2030	3832	6368	10200	3.25%	1319	1409
2031	3957	6575	10532	3.25%	1362	1455
2032	4085	6789	10874	3.25%	1406	1502
2033	4167	6925	11091	2.00%	1434	1532
2034	4250	7063	11313	2.00%	1463	1563
2035	4335	7204	11540	2.00%	1492	1594
2036	4422	7348	11770	2.00%	1522	1626
2037	4510	7495	12006	2.00%	1553	1659
2038	4600	7645	12246	2.00%	1584	1692
2039	4692	7798	12491	2.00%	1615	1726
2040	4786	7954	12741	2.00%	1648	1760
2041	4882	8113	12995	2.00%	1681	1796
2042	4980	8276	13255	2.00%	1714	1831

APPENDIX B
Water Use Analysis

Year	Total Usage (Thousand gallons)	Number of Connections	Usage per Conn. (gpd/conn)	Number of ERUs	Usage Per ERU (gpd/ERU)
2017	315,703	900	961	895	966
2018	262,422	985	730	968	743
2019	260,656	995	718	1,068	669
2020	292,417	936	856	1,004	798
2021	285,883	971	807	1,039	754
5-Year Avg:	283,416	957	814	995	781

Peak Instantaneous Demand Calculations (State)			
Indoor Peak Instantaneous Demand			
Q=	10.8 X N^.64		N= No. of ERU
2022	Q=	943	gpm
	Q=	1259	gpd/ERU
Outdoor Peak Instantaneous Demand			
Irrigation Zone 5 =		9.04	gpm/Irrigated Acre
Irrigatated Acres /ERU		0.1	Irrigated Acres/ERU
Q=	Irr Acres/ERU X Irr Zone FactorX No. ERU		
Example:			
2022	Q=	975	gpm

Peak Instantaneous Demand Calculations (Alternative)			
Indoor Peaking Factor			
P.F.= Q(PID)/Q(ADD) =		3.15	
Q= Indoor ADD * P.F.			
Q=	1422	gpd/ERU	
Q=	1065	gpm	
Outdoor Peaking Factor			
P.F.= Zone 5 PID (9.04))/Zone 5 PDD (4.52) =			2 for PDD to PID
- Because of this we can assume that he P.F. for ADD to PID is 4			
Q= Outdoor ADD* P.F.			
Q=	1315	gpd/ERU	
Q=	984	gpm	

$$Required\ Source\ Capacity = \#ERU\ X\ \frac{gpd}{\#ERU}\ X\ \frac{1\ Day}{24\ hr}\ X\ \frac{1\ hr}{60\ min}$$

$$Required\ Storage\ Capacity = \#ERU\ X\ \frac{gpd}{\#ERU} + Fire\ Flow\ (1{,}500gpm)\frac{60\ min}{1\ hr}\ X\ 2hr$$

*This plan added a 25% Emergency Storage on top of the calculated Required Storage Capacity.

Current & Projected Required Source Capacity								
Year	# of ERU	Percent Reduction In Usage Per ERU	Peak Day Usage (gpd/ERU)	Source Capacity Required (gpm)	Existing Source Available (gpm)	Treatment Plan Capacity (gpm)	Source Capacity Surplus/Deficit (gpm)	Projected Source Available (gpm)
2022	1078	0.0%	1,561	1,169	1490	1200	321	1,490
2023	1116	0.5%	1,553	1,204	1490	1200	286	1,760
2024	1155	0.5%	1,546	1,239	1490	1200	251	1,760
2025	1195	0.5%	1,538	1,276	1490	1200	214	1,760
2026	1237	0.5%	1,530	1,314	1490	1200	176	2,010
2027	1280	0.5%	1,522	1,353	1490	1200	137	2,010
2028	1322	0.5%	1,514	1,390	1490	1200	100	2,260
2029	1365	0.5%	1,506	1,428	1490	1200	62	2,260
2030	1409	0.5%	1,499	1,467	1490	1200	23	2,260
2031	1455	0.5%	1,491	1,507	1490	1200	(17)	2,260
2032	1502	0.5%	1,483	1,547	1490	1200	(57)	2,760
2033	1532	0.5%	1,475	1,570	1490	1200	(80)	2,760
2034	1563	0.5%	1,467	1,593	1490	1200	(103)	2,760
2035	1594	0.5%	1,460	1,616	1490	1200	(126)	2,760
2036	1626	0.5%	1,452	1,640	1490	1200	(150)	2,760
2037	1659	0.5%	1,444	1,663	1490	1200	(173)	2,760
2038	1692	0.5%	1,436	1,688	1490	1200	(198)	2,760
2039	1726	0.5%	1,428	1,712	1490	1200	(222)	2,760
2040	1760	0.5%	1,421	1,737	1490	1200	(247)	3,010
2041	1796	0.5%	1,413	1,762	1490	1200	(272)	3,010
2042	1831	0.5%	1,405	1,787	1490	1200	(297)	3,010
2043	1868	0.5%	1,397	1,813	1490	1201	(323)	3,010

Storage Capacity Analysis										
Year	Number of ERU	Percent Reduction In Usage Per ERU	Avg. Usage (gpd/ERU)	Storage Required (gal)	Fire Flow Stg Rqd	Emergency Supply (25%)	Existing Stg Capacity	Total Stg Rqd	Storage Capacity Surplus/Deficit (gal)	Projected Storage Capacity
2022	1078	0.0%	781	841,484	180,000	255,371	2,460,000	1,276,855	1,183,145	2,460,000
2023	1116	0.5%	777	866,582	180,000	261,645	2,460,000	1,308,227	1,151,773	2,460,000
2024	1155	0.5%	773	892,405	180,000	268,101	2,460,000	1,340,506	1,119,494	3,460,000
2025	1195	0.5%	769	918,974	180,000	274,744	2,460,000	1,373,718	1,086,282	3,460,000
2026	1237	0.5%	765	946,310	180,000	281,578	2,460,000	1,407,888	1,052,112	3,460,000
2027	1280	0.5%	761	974,434	180,000	288,608	2,460,000	1,443,042	1,016,958	3,460,000
2028	1322	0.5%	757	1,000,944	180,000	295,236	2,460,000	1,476,179	983,821	3,960,000
2029	1365	0.5%	753	1,028,147	180,000	302,037	2,460,000	1,510,184	949,816	3,960,000
2030	1409	0.5%	749	1,056,061	180,000	309,015	2,460,000	1,545,077	914,923	3,960,000
2031	1455	0.5%	745	1,084,704	180,000	316,176	2,460,000	1,580,880	879,120	3,960,000
2032	1502	0.5%	742	1,114,094	180,000	323,523	2,460,000	1,617,617	842,383	3,960,000
2033	1532	0.5%	738	1,130,395	180,000	327,599	2,460,000	1,637,993	822,007	3,960,000
2034	1563	0.5%	734	1,146,902	180,000	331,725	2,460,000	1,658,627	801,373	3,960,000
2035	1594	0.5%	730	1,163,617	180,000	335,904	2,460,000	1,679,522	780,478	3,960,000
2036	1626	0.5%	726	1,180,543	180,000	340,136	2,460,000	1,700,678	759,322	3,960,000
2037	1659	0.5%	722	1,197,680	180,000	344,420	2,460,000	1,722,100	737,900	3,960,000
2038	1692	0.5%	718	1,215,030	180,000	348,757	2,460,000	1,743,787	716,213	3,960,000
2039	1726	0.5%	714	1,232,595	180,000	353,149	2,460,000	1,765,744	694,256	3,960,000
2040	1760	0.5%	710	1,250,377	180,000	357,594	2,460,000	1,787,971	672,029	3,960,000
2041	1796	0.5%	706	1,268,377	180,000	362,094	2,460,000	1,810,471	649,529	3,960,000
2042	1831	0.5%	703	1,286,596	180,000	366,649	2,460,000	1,833,245	626,755	4,460,000
2043	1868	0.5%	699	1,305,038	180,000	371,259	2,460,000	1,856,297	603,703	4,460,000

Water Distribution Analysis						
Year	No. ERU	ADD (gpm)	PDD (gpm)	PID Indoor (gpm)	PID Outdoor (gpm)	PID Total (gpm)
2022	1078	584	1,169	1065	984	2049
2023	1116	602	1,204	1102	1019	2121
2024	1155	620	1,239	1141	1054	2195
2025	1195	638	1,276	1181	1091	2272
2026	1237	657	1,314	1222	1129	2351
2027	1280	677	1,353	1265	1169	2434
2028	1322	695	1,390	1306	1207	2513
2029	1365	714	1,428	1348	1246	2594
2030	1409	733	1,467	1392	1287	2679
2031	1455	753	1,507	1437	1329	2766
2032	1502	774	1,547	1484	1372	2856
2033	1532	785	1,570	1514	1399	2913
2034	1563	796	1,593	1544	1427	2971
2035	1594	808	1,616	1575	1456	3030
2036	1626	820	1,640	1606	1485	3091
2037	1659	832	1,663	1638	1515	3153
2038	1692	844	1,688	1671	1545	3216
2039	1726	856	1,712	1705	1576	3280
2040	1760	868	1,737	1739	1607	3346
2041	1796	881	1,762	1773	1639	3413
2042	1831	893	1,787	1809	1672	3481

APPENDIX C
Engineers Opinion of Probable Cost

SUNRISE ENGINEERING
11 North 300 West, Washington Utah 84
Tel 435.652.8450 | **FAX** 435.652.8416

Engineer's Opinion of Probable Cost

Treatment Plant Wells 16-Jun-22
Hildale City BCW/tcd

NO.	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	AMOUNT
GENERAL CONSTRUCTION					
1	Mobilization	5%	LS	$ 37,800.00	$ 37,800.00
2	Pre-Construction DVD and Project Sign	1	LS	$ 1,500.00	$ 1,500.00
3	GeoPhysical Logging	1	LS	$ 15,000.00	$ 15,000.00
4	Disinfection and Capping	1	LS	$ 4,000.00	$ 4,000.00
5	Well Driller's Report	1	LS	$ 2,500.00	$ 2,500.00
6	Site Restoration	1	LS	$ 10,000.00	$ 10,000.00
7	Misc. Electrical Improvements	1	LS	$ 15,000.00	$ 15,000.00
DEEP WELL					
8	Conductor Casing	100	LF	$ 400.00	$ 40,000.00
9	20" Diameter Well Drilling	700	LF	$ 123.00	$ 86,100.00
10	12" Diameter Well Drilling - Pilot Hole	700	LF	$ 160.00	$ 112,000.00
11	12" Well Casing	600	LF	$ 170.00	$ 102,000.00
12	2" Galvanized Tremie Pipe	100	LF	$ 40.00	$ 4,000.00
13	Furnish and Install Pea Gravel	400	LF	$ 115.00	$ 46,000.00
14	Bentonite Packer	1	LS	$ 6,000.00	$ 6,000.00
15	Conductor Casing Removal	1	LS	$ 8,000.00	$ 8,000.00
16	Flow Meter	1	EA	$ 10,000.00	$ 10,000.00
17	Initial Well Development	40	HR	$ 700.00	$ 28,000.00
18	Install Pump for Development and Testing	1	LS	$ 40,000.00	$ 40,000.00
19	Well Development and Pumping	80	HR	$ 700.00	$ 56,000.00
20	Misc. Well and Pump Testing	1	LS	$ 10,000.00	$ 10,000.00
21	Well Head, Disinfection and Capping	1	LS	$ 8,500.00	$ 8,500.00
22	Well Pad and Pipping	1	LS	$ 15,000.00	$ 15,000.00
SHALLOW WELL					
23	Conductor Casing	1	LS	$ 40,000.00	$ 40,000.00
24	16" Diameter Well Drilling	120	LF	$ 270.00	$ 32,400.00
25	8" Well Casing	80	LF	$ 100.00	$ 8,000.00
26	8" Stainless Steel Screen	40	LF	$ 300.00	$ 12,000.00
27	2" Galvanized Tremie Pipe	20	LF	$ 40.00	$ 800.00
28	Instrument Pipe	120	LF	$ 50.00	$ 6,000.00
29	Furnish and Install Fine Silica Sand	120	LF	$ 125.00	$ 15,000.00
30	Bentonite Packer	1	LS	$ 6,000.00	$ 6,000.00
31	Conductor Casing Removal	1	LS	$ 6,000.00	$ 6,000.00
32	Sanitary Grout Seal	1	LS	$ 150.00	$ 150.00
33	Flow Meter	1	LS	$ 10,000.00	$ 10,000.00
34	Initial Well Development	40	HR	$ 700.00	$ 28,000.00
35	Install Pump for Development and Testing	1	LS	$ 40,000.00	$ 40,000.00
36	Well Development and Pumping	80	HR	$ 700.00	$ 56,000.00
37	Misc. Well and Pump Testing	1	LS	$ 10,000.00	$ 10,000.00
38	Well Head, Disinfection and Capping	1	LS	$ 8,500.00	$ 8,500.00
39	Well Pad and Pipping	1	LS	$ 15,000.00	$ 15,000.00
			SUBTOTAL		**$ 951,250.00**
			CONTINGENCY	20%	**$ 190,300.00**
			CONSTRUCTION TOTAL		**$ 1,141,550.00**
INCIDENTALS					
1	Engineering Design	4.3%	LS	$ 55,000.00	$ 55,000.00
2	Bidding & Negotiating	0.6%	HR	$ 7,500.00	$ 7,500.00
3	Engineering Construction Services	3.7%	HR	$ 47,600.00	$ 47,600.00
4	Topographic & Property Survey	0.4%	EST	$ 5,000.00	$ 5,000.00
5	Permitting	0.8%	EST	$ 10,000.00	$ 10,000.00
6	Funding and Administrative Services	0.9%	EST	$ 12,000.00	$ 12,000.00
7	Miscellaneous Professional Services	0.8%	EST	$ 10,000.00	$ 10,000.00
			SUBTOTAL		$ 147,100.00
			TOTAL PROJECT COST		**$ 1,288,650.00**

In providing opinions of probable construction cost, the Client understands that the Engineer has no control over costs or the price of labor, equipment or materials, or over the Contractor's method of pricing, and that the opinion of probable construction cost provided herein is made on the basis of the Engineer's qualifications and experience. The Engineer makes no warranty, expressed or implied, as to the accuracy of such opinions compared to bid or actual costs.

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Engineer's Opinion of Probable Cost

Well 15 and 17 Replacement 16-Jun-22
Hildale City BCW/tcd

NO.	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	AMOUNT
GENERAL CONSTRUCTION					
1	Mobilization	5%	LS	$ 37,800.00	$ 37,800.00
2	Pre-Construction DVD and Project Sign	1	LS	$ 1,500.00	$ 1,500.00
3	GeoPhysical Logging	1	LS	$ 15,000.00	$ 15,000.00
4	Disinfection and Capping	1	LS	$ 4,000.00	$ 4,000.00
5	Well Driller's Report	1	LS	$ 2,500.00	$ 2,500.00
6	Site Restoration	1	LS	$ 10,000.00	$ 10,000.00
7	Misc. Electrical Improvements	1	LS	$ 15,000.00	$ 15,000.00
Well 17					
8	Conductor Casing	100	LF	$ 400.00	$ 40,000.00
9	20" Diameter Well Drilling	700	LF	$ 123.00	$ 86,100.00
10	12" Diameter Well Drilling - Pilot Hole	700	LF	$ 160.00	$ 112,000.00
11	12" Well Casing	600	LF	$ 170.00	$ 102,000.00
12	2" Galvanized Tremie Pipe	100	LF	$ 40.00	$ 4,000.00
13	Furnish and Install Pea Gravel	400	LF	$ 115.00	$ 46,000.00
14	Bentonite Packer	1	LS	$ 6,000.00	$ 6,000.00
15	Cunductor Casing Removal	1	LS	$ 8,000.00	$ 8,000.00
16	Flow Meter	1	EA	$ 10,000.00	$ 10,000.00
17	Initial Well Development	40	HR	$ 700.00	$ 28,000.00
18	Install Pump for Development and Testing	1	LS	$ 40,000.00	$ 40,000.00
19	Well Development and Pumping	80	HR	$ 700.00	$ 56,000.00
20	Misc. Well and Pump Testing	1	LS	$ 10,000.00	$ 10,000.00
21	Well Head, Disinfection and Capping	1	LS	$ 8,500.00	$ 8,500.00
22	Well Pad and Pipping	1	LS	$ 15,000.00	$ 15,000.00
Well 15					
23	Conductor Casing	1	LS	$ 40,000.00	$ 40,000.00
24	16" Diameter Well Drilling	120	LF	$ 270.00	$ 32,400.00
25	8" Well Casing	80	LF	$ 100.00	$ 8,000.00
26	8" Stainless Steel Screen	40	LF	$ 300.00	$ 12,000.00
27	2" Galvanized Tremie Pipe	20	LF	$ 40.00	$ 800.00
28	Instrument Pipe	120	LF	$ 50.00	$ 6,000.00
29	Furnish and Install Fine Silica Sand	120	LF	$ 125.00	$ 15,000.00
30	Bentonite Packer	1	LS	$ 6,000.00	$ 6,000.00
31	Conductor Casing Removal	1	LS	$ 6,000.00	$ 6,000.00
32	Sanitary Grout Seal	1	LS	$ 150.00	$ 150.00
33	Flow Meter	1	LS	$ 10,000.00	$ 10,000.00
34	Initial Well Development	40	HR	$ 700.00	$ 28,000.00
35	Install Pump for Development and Testing	1	LS	$ 40,000.00	$ 40,000.00
36	Well Development and Pumping	80	HR	$ 700.00	$ 56,000.00
37	Misc. Well and Pump Testing	1	LS	$ 10,000.00	$ 10,000.00
38	Well Head, Disinfection and Capping	1	LS	$ 8,500.00	$ 8,500.00
39	Well Pad and Pipping	1	LS	$ 15,000.00	$ 15,000.00
			SUBTOTAL		**$ 951,250.00**
			CONTINGENCY	20%	**$ 190,300.00**
			CONSTRUCTION TOTAL		**$ 1,141,550.00**
INCIDENTALS					
1	Engineering Design	4.3%	LS	$ 55,000.00	$ 55,000.00
2	Bidding & Negotiating	0.6%	HR	$ 7,500.00	$ 7,500.00
3	Engineering Construction Services	3.7%	HR	$ 47,600.00	$ 47,600.00
4	Topographic & Property Survey	0.4%	EST	$ 5,000.00	$ 5,000.00
5	Permitting	0.8%	EST	$ 10,000.00	$ 10,000.00
6	Funding and Administrative Services	0.9%	EST	$ 12,000.00	$ 12,000.00
7	Miscellaneous Professional Services	0.8%	EST	$ 10,000.00	$ 10,000.00
			SUBTOTAL		$ 147,100.00
			TOTAL PROJECT COST		**$ 1,288,650.00**

In providing opinions of probable construction cost, the Client understands that the Engineer has no control over costs or the price of labor, equipment or materials, or over the Contractor's method of pricing, and that the opinion of probable construction cost provided herein is made on the basis of the Engineer's qualifications and experience. The Engineer makes no warranty, expressed or implied, as to the accuracy of such opinions compared to bid or actual costs.

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Engineer's Opinion of Probable Cost

Fire Hydrant Improvements 16-Jun-22
Hildale City BCW/tcd

NO.	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	AMOUNT
GENERAL CONSTRUCTION					
1	Mobilization	5%	LS	$ 61,700.00	$ 61,700.00
2	Pre-Construction DVD and Project Sign	1	LS	$ 2,500.00	$ 2,500.00
3	Traffic Control	1	LS	$ 10,000.00	$ 10,000.00
4	Subsurface Investigation	24	HR	$ 250.00	$ 6,000.00
5	Materials Sampling & Testing	1	LS	$ 16,000.00	$ 16,000.00
6	Dust Control & Watering	1	LS	$ 9,000.00	$ 9,000.00
7	Construction Staking	1	LS	$ 13,000.00	$ 13,000.00
8	Erosion Control Compliance	1	LS	$ 6,000.00	$ 6,000.00
9	6" PVC (C900) Line, Fitting, Tracer Wire, Bedding, & Backfill	2,100	LF	$ 50.00	$ 105,000.00
10	6" Gate Valve Assembly	80	EA	$ 2,000.00	$ 160,000.00
11	8" PVC (C900) Line, Fitting, Tracer Wire, Bedding, & Backfill	2,930	LF	$ 65.00	$ 190,450.00
12	8" Gate Valve Assembly	8	EA	$ 2,900.00	$ 23,200.00
13	Fire Hydrant Assembly	78	EA	$ 7,000.00	$ 546,000.00
14	Restore Gravel Road	21,200	SF	$ 3.25	$ 68,900.00
15	Pavement Restoration	9,100	SF	$ 7.50	$ 68,250.00
16	Restore Surface Improvements	1	LS	$ 10,000.00	$ 10,000.00
			SUBTOTAL		**$ 1,296,000.00**
			CONTINGENCY	20%	**$ 259,200.00**
			CONSTRUCTION TOTAL		**$ 1,555,200.00**
INCIDENTALS					
1	Engineering Design	4.6%	LS	$ 79,000.00	$ 79,000.00
2	Bidding & Negotiating	0.4%	HR	$ 7,500.00	$ 7,500.00
3	Engineering Construction Services	3.7%	HR	$ 64,800.00	$ 64,800.00
4	Topographic & Property Survey	0.6%	EST	$ 10,000.00	$ 10,000.00
5	Funding and Administrative Services	0.7%	EST	$ 12,000.00	$ 12,000.00
6	Miscellaneous Engineering Services	0.3%	EST	$ 5,000.00	$ 5,000.00
			SUBTOTAL		$ 178,300.00
			TOTAL PROJECT COST		**$ 1,733,500.00**

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Engineer's Opinion of Probable Cost

Mohave County ARPA Project
Hildale City

16-Apr-22
BCW/tcd

NO.	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	AMOUNT
GENERAL CONSTRUCTION					
1	Media Changeout for Pressure Vessels	1	LS	$ 125,000.00	$ 125,000.00
2	Chemical Pretreatment System	1	LS	$ 80,000.00	$ 80,000.00
3	Installation of Additional Vessels	2	EA	$ 225,000.00	$ 450,000.00
4	Misc Pipping and Appurtenances for Additional Vessels	1	LS	$ 60,000.00	$ 60,000.00
			SUBTOTAL		**$ 715,000.00**
			CONTINGENCY	20%	**$ 143,000.00**
			CONSTRUCTION TOTAL		**$ 858,000.00**
INCIDENTALS					
1	Engineering Design	5.3%	LS	$ 50,000.00	$ 50,000.00
6	Funding and Administrative Services	1.6%	EST	$ 15,000.00	$ 15,000.00
7	Regulatory Compliance	1.6%	EST	$ 15,000.00	$ 15,000.00
10	Miscellaneous Professional Services	1.1%	EST	$ 10,000.00	$ 10,000.00
			SUBTOTAL		$ 90,000.00
			TOTAL PROJECT COST		**$ 948,000.00**

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Engineer's Opinion of Probable Cost

Raw Water Transmission Line
Hildale City

16-Jun-22
BCW/tcd

NO.	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	AMOUNT
GENERAL CONSTRUCTION					
1	Mobilization	5%	LS	$ 34,300.00	$ 34,300.00
2	Traffic Control	1	LS	$ 10,000.00	$ 10,000.00
3	Pre-Construction DVD & Project Sign	1	LS	$ 1,500.00	$ 1,500.00
4	Dust Control & Watering	1	LS	$ 10,000.00	$ 10,000.00
5	Subsurface Investigation	10	HR	$ 250.00	$ 2,500.00
6	Restore Surface Improvements	1	LS	$ 15,000.00	$ 15,000.00
7	Construction Staking	1	LS	$ 10,000.00	$ 10,000.00
8	Erosion Control Compliance	1	LS	$ 5,000.00	$ 5,000.00
9	Materials Sampling & Testing	1	LS	$ 12,500.00	$ 12,500.00
10	Excavation & Demolition	1	LS	$ 20,000.00	$ 20,000.00
11	12" PVC (C900) Line, Fitting, Tracer Wire, Bedding, & Backfill	2,500	LF	$ 80.00	$ 200,000.00
12	12" Gate Valve Assembly	8	EA	$ 6,750.00	$ 54,000.00
13	Pavement Restoration	26,400	SF	$ 7.75	$ 204,600.00
14	Access/Cleanout Structure	4	EA	$ 5,000.00	$ 20,000.00
15	Misc. Fittings, Connections, and Tie-Ins	1	LS	$ 20,000.00	$ 20,000.00
16	Electrical Conduit	2,500	LF	$ 40.00	$ 100,000.00
			SUBTOTAL		**$ 719,400.00**
			CONTINGENCY	20%	**$ 143,900.00**
			CONSTRUCTION TOTAL		**$ 863,300.00**
INCIDENTALS					
1	Engineering Design	5.0%	LS	$ 50,000.00	$ 50,000.00
2	Bidding & Negotiating	0.8%	HR	$ 7,500.00	$ 7,500.00
3	Engineering Construction Services	3.6%	HR	$ 36,000.00	$ 36,000.00
4	Topographic & Property Survey	1.5%	EST	$ 15,000.00	$ 15,000.00
5	Permitting	0.5%	EST	$ 5,000.00	$ 5,000.00
6	Funding and Administrative Services	1.2%	EST	$ 12,000.00	$ 12,000.00
7	Miscellaneous Engineering Services	1.0%	EST	$ 10,000.00	$ 10,000.00
			SUBTOTAL		$ 135,500.00
			TOTAL PROJECT COST		**$ 998,800.00**

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Engineer's Opinion of Probable Cost

Trailhead Well 1
Hildale City

16-Jun-22
BCW/tcd

NO.	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	AMOUNT
GENERAL CONSTRUCTION					
1	Mobilization	5%	LS	$ 83,600.00	$ 83,600.00
2	Pre-Construction DVD & Project Sign	1	LS	$ 1,500.00	$ 1,500.00
3	Traffic Control	1	LS	$ 5,000.00	$ 5,000.00
4	Subsurface Investigation	4	HR	$ 250.00	$ 1,000.00
5	Materials Sampling & Testing	1	LS	$ 7,500.00	$ 7,500.00
6	Dust Control & Watering	1	LS	$ 10,000.00	$ 10,000.00
7	Construction Staking	1	LS	$ 10,000.00	$ 10,000.00
8	Erosion Control Compliance	1	LS	$ 7,500.00	$ 7,500.00
9	Geophysical Survey	1	LS	$ 20,000.00	$ 20,000.00
10	Access and Drill Pad Construction	1	LS	$ 145,000.00	$ 145,000.00
11	Conductor Casing and Seal	100	LF	$ 650.00	$ 65,000.00
12	Drill 12" Pilot Borehole	600	LF	$ 160.00	$ 96,000.00
13	Drill 20" Reamed Borehole	600	LF	$ 123.00	$ 73,800.00
14	Geophysical Logging	1	LS	$ 9,000.00	$ 9,000.00
15	Well Installation - 12" Steel Casing	500	LF	$ 170.00	$ 85,000.00
16	Well Installation - 12" SS Screen 70 Slot	200	LF	$ 350.00	$ 70,000.00
17	Installation of Gravel Pack - 8-12	550	LF	$ 115.00	$ 63,250.00
18	Installation of Annular Grout Seal	150	LF	$ 115.00	$ 17,250.00
19	Initial Well Development	40	HR	$ 750.00	$ 30,000.00
20	Install Pump for Development and Testing	1	LS	$ 42,000.00	$ 42,000.00
21	Well Development by pumping	80	HR	$ 425.00	$ 34,000.00
22	Misc. Well and Pump Testing	1	LS	$ 10,000.00	$ 10,000.00
23	Well Disinfecting	1	LS	$ 5,000.00	$ 5,000.00
24	Well Head	1	LS	$ 2,500.00	$ 2,500.00
25	Well Capping	1	LS	$ 750.00	$ 750.00
26	Roadway Restoration	48,000	SF	$ 6.00	$ 288,000.00
27	10" PVC (C900) Line, Fitting, Tracer Wire, Bedding, & Backfill	8,000	LF	$ 72.00	$ 576,000.00
28	10" Gate Valve Assembly	4	EA	$ 5,000.00	$ 20,000.00
29	Misc. Connections, Fittings and Tie-ins	1	LS	$ 20,000.00	$ 20,000.00
			SUBTOTAL		**$ 1,798,650.00**
			CONTINGENCY	20%	**$ 359,700.00**
			CONSTRUCTION TOTAL		**$ 2,158,350.00**
INCIDENTALS					
1	Engineering Design	4.5%	LS	$ 110,000.00	$ 110,000.00
2	Bidding & Negotiating	0.3%	HR	$ 7,500.00	$ 7,500.00
3	Engineering Construction Services	3.7%	HR	$ 89,900.00	$ 89,900.00
4	Topographic & Property Survey	0.7%	EST	$ 17,500.00	$ 17,500.00
5	Water Right Change Application	0.8%	EST	$ 20,000.00	$ 20,000.00
6	Funding and Administrative Services	0.5%	EST	$ 12,000.00	$ 12,000.00
7	Permitting	0.4%	EST	$ 10,000.00	$ 10,000.00
8	Miscellaneous Professional Services	0.8%	EST	$ 20,000.00	$ 20,000.00
			SUBTOTAL		$ 286,900.00
			TOTAL PROJECT COST		**$ 2,445,250.00**

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Engineer's Opinion of Probable Cost

Sandhill Tank
Hildale City

16-Jun-22
BCW/tcd

NO.	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	AMOUNT
GENERAL CONSTRUCTION					
1	Mobilization	5%	LS	$ 137,900.00	$ 137,900.00
2	Traffic Control	1	LS	$ 5,000.00	$ 5,000.00
3	Pre-Construction DVD & Project Sign	1	LS	$ 1,500.00	$ 1,500.00
4	Dust Control & Watering	1	LS	$ 10,000.00	$ 10,000.00
5	Subsurface Investigation	8	HR	$ 250.00	$ 2,000.00
6	Restore Surface Improvements	1	LS	$ 10,000.00	$ 10,000.00
7	Construction Staking	1	LS	$ 12,000.00	$ 12,000.00
8	Materials Sampling & Testing	1	LS	$ 35,000.00	$ 35,000.00
9	Excavation & Demolition	1	LS	$ 25,000.00	$ 25,000.00
10	Earthwork & Grading	1	LS	$ 80,000.00	$ 80,000.00
11	1MG Concrete Storage Tank	1	LS	$ 1,750,000.00	$ 1,750,000.00
12	Tank Site Appurtenances	1	LS	$ 75,000.00	$ 75,000.00
13	Metering Station	1	LS	$ 40,000.00	$ 40,000.00
14	12" PVC (C900), Fittings, Installation, Pipe Bedding, Trench Backfill	4,000	LF	$ 80.00	$ 320,000.00
15	12" Gate Valve Assembly	10	EA	$ 6,750.00	$ 67,500.00
16	Misc. Connections, Fittings and Tie-ins	1	LS	$ 30,000.00	$ 30,000.00
17	Surface Restoration	1	LS	$ 15,000.00	$ 15,000.00
18	PRV and Vault	1	EA	$ 50,000.00	$ 50,000.00
19	Valving and Piping to Create New Pressure Zone	1	LS	$ 45,000.00	$ 45,000.00
20	Misc Electrical and SCADA Improvements	1	LS	$ 30,000.00	$ 30,000.00
21	Tank Access Road	32,000	SF	$ 2.50	$ 80,000.00
22	Fence and Gate	1	LS	$ 75,000.00	$ 75,000.00
			SUBTOTAL		**$ 2,895,900.00**
			CONTINGENCY	20%	**$ 579,200.00**
			CONSTRUCTION TOTAL		**$ 3,475,100.00**
INCIDENTALS					
1	Engineering Design	5.0%	LS	$ 200,000.00	$ 200,000.00
2	Bidding & Negotiating	0.2%	HR	$ 7,500.00	$ 7,500.00
3	Engineering Construction Services	4.4%	HR	$ 173,800.00	$ 173,800.00
4	Topographic & Property Survey	0.4%	EST	$ 15,000.00	$ 15,000.00
5	Geotechnical Report	0.3%	EST	$ 10,000.00	$ 10,000.00
6	Funding and Administrative Services	0.3%	EST	$ 12,000.00	$ 12,000.00
7	Permitting	0.3%	EST	$ 10,000.00	$ 10,000.00
8	Environmental (Including Biological and Archeological) Report	0.8%	EST	$ 30,000.00	$ 30,000.00
9	SCADA Design	0.4%	EST	$ 15,000.00	$ 15,000.00
10	BLM ROW Negotiation (SF299 Application & POD)	0.3%	EST	$ 10,000.00	$ 10,000.00
11	Miscellaneous Engineering Services	0.6%	EST	$ 25,000.00	$ 25,000.00
			SUBTOTAL		$ 508,300.00
			TOTAL PROJECT COST		**$ 3,983,400.00**

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Engineer's Opinion of Probable Cost

Jessop Ave. Line
Hildale City

16-Jun-22
BCW/tcd

NO.	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	AMOUNT
GENERAL CONSTRUCTION					
1	Mobilization	5%	LS	$ 27,700.00	$ 27,700.00
2	Pre-Construction DVD	1	LS	$ 1,500.00	$ 1,500.00
3	Traffic Control	1	LS	$ 7,500.00	$ 7,500.00
4	Subsurface Investigation	16	HR	$ 250.00	$ 4,000.00
5	Materials Sampling & Testing	1	LS	$ 10,000.00	$ 10,000.00
6	Dust Control & Watering	1	LS	$ 7,500.00	$ 7,500.00
7	Construction Staking	1	LS	$ 7,500.00	$ 7,500.00
8	Erosion Control Compliance	1	LS	$ 6,000.00	$ 6,000.00
9	8" PVC (C900) Line, Fitting, Tracer Wire, Bedding, & Backfill	5,060	LF	$ 65.00	$ 328,900.00
10	8" Gate Valve Assembly	14	EA	$ 2,900.00	$ 40,600.00
11	Reconnect Water Services	5	EA	$ 1,500.00	$ 7,500.00
12	Restore Gravel Road	30,360	SF	$ 3.25	$ 98,670.00
13	Restore Surface Improvements	1	LS	$ 10,000.00	$ 10,000.00
14	Misc. Connections, Fittings, and Tie-Ins	1	LS	$ 10,000.00	$ 10,000.00
15	6" Fire Hydrant Assembly	2	EA	$ 7,000.00	$ 14,000.00
			SUBTOTAL		**$ 581,370.00**
			CONTINGENCY	20%	**$ 116,300.00**
			CONSTRUCTION TOTAL		**$ 697,670.00**
INCIDENTALS					
1	Engineering Design	5.6%	LS	$ 45,000.00	$ 45,000.00
2	Bidding & Negotiating	0.9%	HR	$ 7,500.00	$ 7,500.00
3	Engineering Construction Services	3.6%	HR	$ 29,100.00	$ 29,100.00
4	Topographic & Property Survey	0.9%	EST	$ 7,500.00	$ 7,500.00
5	Funding and Administrative Services	1.5%	EST	$ 12,000.00	$ 12,000.00
6	Permitting	0.6%	EST	$ 5,000.00	$ 5,000.00
7	Miscellaneous Proffesional Services	0.6%	EST	$ 5,000.00	$ 5,000.00
			SUBTOTAL		$ 111,100.00
			TOTAL PROJECT COST		**$ 808,770.00**

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Engineer's Opinion of Probable Cost

Trailhead Well 2
Hildale City

16-Jun-22
BCW/tcd

NO.	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	AMOUNT
GENERAL CONSTRUCTION					
1	Mobilization	5%	LS	$ 32,000.00	$ 32,000.00
2	Erosion Control Compliance	1	LS	$ 5,000.00	$ 5,000.00
3	Geophysical Survey	1	LS	$ 20,000.00	$ 20,000.00
4	Access and Drill Pad Construction	1	LS	$ 50,000.00	$ 50,000.00
5	Conductor Casing and Seal	100	LF	$ 650.00	$ 65,000.00
6	Drill 12" Pilot Borehole	600	LF	$ 175.00	$ 105,000.00
7	Drill 20" Reamed Borehole	600	LF	$ 123.00	$ 73,800.00
8	Geophysical Logging	1	LS	$ 9,000.00	$ 9,000.00
9	Well Installation - 12" Steel Casing	170	LF	$ 170.00	$ 28,900.00
10	Well Installation - 12" SS Screen 70 Slot	200	LF	$ 350.00	$ 70,000.00
11	Installation of Gravel Pack - 8-12	550	LF	$ 115.00	$ 63,250.00
12	Installation of Annular Grout Seal	150	LF	$ 115.00	$ 17,250.00
13	Initial Well Development	40	HR	$ 750.00	$ 30,000.00
14	Install Pump for Development and Testing	1	LS	$ 42,000.00	$ 42,000.00
15	Well Development by pumping	80	HR	$ 425.00	$ 34,000.00
16	Misc. Well and Pump Testing	1	LS	$ 10,000.00	$ 10,000.00
17	Well Disinfecting	1	LS	$ 5,000.00	$ 5,000.00
18	Well Head	1	LS	$ 2,500.00	$ 2,500.00
19	Well Capping	1	LS	$ 750.00	$ 750.00
20	8" PVC (C900) Line, Fitting, Tracer Wire, Bedding, & Backfill	150	LF	$ 65.00	$ 9,750.00
21	8" Gate Valve Assembly	1	EA	$ 2,900.00	$ 2,900.00
22	Water Right Procurement	1	LS	$ 650,000.00	$ 650,000.00
			SUBTOTAL		**$ 1,326,100.00**
			CONTINGENCY	20%	**$ 265,200.00**
			CONSTRUCTION TOTAL		**$ 1,591,300.00**
INCIDENTALS					
1	Engineering Design	2.6%	LS	$ 45,000.00	$ 45,000.00
2	Bidding & Negotiating	0.4%	HR	$ 7,500.00	$ 7,500.00
3	Engineering Construction Services	2.0%	HR	$ 33,800.00	$ 33,800.00
4	Topographic & Property Survey	0.2%	EST	$ 3,500.00	$ 3,500.00
5	Permitting	0.6%	EST	$ 10,000.00	$ 10,000.00
6	Funding and Administrative Services	0.7%	EST	$ 12,000.00	$ 12,000.00
39	Miscellaneous Professional Services	0.6%	EST	$ 10,000.00	$ 10,000.00
			SUBTOTAL		$ 121,800.00
			TOTAL PROJECT COST		**$ 1,713,100.00**

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Engineer's Opinion of Probable Cost

Trailhead Tank
Hildale City

20-Apr-20
BCW/tcd

NO.	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	AMOUNT
GENERAL CONSTRUCTION					
1	Mobilization	5%	LS	$ 62,500.00	$ 62,500.00
2	Traffic Control	1	LS	$ 5,000.00	$ 5,000.00
3	Pre-Construction DVD & Project Sign	1	LS	$ 1,500.00	$ 1,500.00
4	Dust Control & Watering	1	LS	$ 75,000.00	$ 75,000.00
5	Subsurface Investigation	4	HR	$ 250.00	$ 1,000.00
6	Restore Surface Improvements	1	LS	$ 7,500.00	$ 7,500.00
7	Construction Staking	1	LS	$ 5,000.00	$ 5,000.00
8	Materials Sampling & Testing	1	LS	$ 7,500.00	$ 7,500.00
9	Earthwork	1	LS	$ 65,000.00	$ 65,000.00
10	500K Concrete Storage Tank	1	LS	$ 800,000.00	$ 800,000.00
11	Tank Site Appurtenances	1	LS	$ 35,000.00	$ 35,000.00
12	Fence and Gate	1	LS	$ 75,000.00	$ 75,000.00
13	Metering Station	1	LS	$ 32,000.00	$ 32,000.00
14	Tank Access Rd	5,500	SF	$ 2.50	$ 13,750.00
15	10" PVC (C900), Fittings, Installation, Pipe Bedding, Trench Backfill	1,000	LF	$ 72.00	$ 72,000.00
16	10" Gate Valve Assembly	3	EA	$ 5,000.00	$ 15,000.00
17	Misc. Connections, Fittings, and Tie-Ins	1	LS	$ 20,000.00	$ 20,000.00
18	Misc Electrical and SCADA Improvements	1	LS	$ 20,000.00	$ 20,000.00
			SUBTOTAL		**$ 1,312,750.00**
			CONTINGENCY	20%	**$ 262,550.00**
			CONSTRUCTION TOTAL		**$ 1,575,300.00**
INCIDENTALS					
1	Engineering Design	5.1%	LS	$ 95,000.00	$ 95,000.00
2	Bidding & Negotiating	0.4%	HR	$ 7,500.00	$ 7,500.00
3	Engineering Construction Services	4.2%	HR	$ 78,800.00	$ 78,800.00
4	Topographic & Property Survey	0.4%	EST	$ 8,000.00	$ 8,000.00
5	Geotechnical Report	0.5%	EST	$ 10,000.00	$ 10,000.00
6	Funding and Administrative Services	0.6%	EST	$ 12,000.00	$ 12,000.00
7	Permitting	0.5%	EST	$ 10,000.00	$ 10,000.00
10	Environmental (Including Biological and Archeological) Report	1.3%	EST	$ 25,000.00	$ 25,000.00
11	BLM ROW Negotiation (SF299 Application & POD)	0.5%	EST	$ 10,000.00	$ 10,000.00
39	Miscellaneous Professional Services	1.1%	EST	$ 20,000.00	$ 20,000.00
			SUBTOTAL		$ 288,800.00
			TOTAL PROJECT COST		**$ 1,864,100.00**

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Engineer's Opinion of Probable Cost

Canyon Street Line
Hildale City

16-Jun-22
BCW/tcd

NO.	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	AMOUNT
GENERAL CONSTRUCTION					
1	Mobilization	5%	LS	$ 11,900.00	$ 11,900.00
2	Pre-Construction DVD	1	LS	$ 1,500.00	$ 1,500.00
3	Traffic Control	1	LS	$ 10,000.00	$ 10,000.00
4	Subsurface Investigation	8	HR	$ 250.00	$ 2,000.00
5	Materials Sampling & Testing	1	LS	$ 10,000.00	$ 10,000.00
6	Dust Control & Watering	1	LS	$ 10,000.00	$ 10,000.00
7	Construction Staking	1	LS	$ 7,500.00	$ 7,500.00
8	Erosion Control Compliance	1	LS	$ 7,500.00	$ 7,500.00
9	8" PVC (C900) Line, Fitting, Tracer Wire, Bedding, & Backfill	1,500	LF	$ 65.00	$ 97,500.00
10	8" Gate Valve Assembly	5	EA	$ 2,900.00	$ 14,500.00
11	Restore Surface Improvements	1	LS	$ 10,000.00	$ 10,000.00
12	Pavement Restoration	9,000	SF	$ 6.00	$ 54,000.00
13	Misc. Connections, Fittings, and Tie-Ins	1	LS	$ 7,500.00	$ 7,500.00
14	Reconnect Water Services	5	EA	$ 1,200.00	$ 6,000.00
			SUBTOTAL		**$ 249,900.00**
			CONTINGENCY	20%	**$ 50,000.00**
			CONSTRUCTION TOTAL		**$ 299,900.00**
INCIDENTALS					
1	Engineering Design	6.7%	LS	$ 25,000.00	$ 25,000.00
2	Bidding & Negotiating	2.0%	HR	$ 7,500.00	$ 7,500.00
3	Engineering Construction Services	4.7%	HR	$ 17,500.00	$ 17,500.00
4	Topographic & Property Survey	2.0%	EST	$ 7,500.00	$ 7,500.00
5	Funding and Administrative Services	2.7%	EST	$ 10,000.00	$ 10,000.00
6	Permitting	1.3%	EST	$ 5,000.00	$ 5,000.00
7	Miscellaneous Engineering Services	0.7%	EST	$ 2,500.00	$ 2,500.00
			SUBTOTAL		$ 75,000.00
			TOTAL PROJECT COST		**$ 374,900.00**

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SUNRISE ENGINEERING

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Engineer's Opinion of Probable Cost

University to Township Line
Hildale City

16-Jun-22
BCW/tcd

NO.	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	AMOUNT
GENERAL CONSTRUCTION					
1	Mobilization	5%	LS	$ 8,400.00	$ 8,400.00
2	Pre-Construction DVD	1	LS	$ 1,500.00	$ 1,500.00
3	Traffic Control	1	LS	$ 18,000.00	$ 18,000.00
4	Subsurface Investigation	4	HR	$ 250.00	$ 1,000.00
5	Materials Sampling & Testing	1	LS	$ 7,500.00	$ 7,500.00
6	Dust Control & Watering	1	LS	$ 7,500.00	$ 7,500.00
7	Construction Staking	1	LS	$ 7,000.00	$ 7,000.00
8	Erosion Control Compliance	1	LS	$ 7,500.00	$ 7,500.00
9	8" PVC (C900) Line, Fitting, Tracer Wire, Bedding, & Backfill	1,500	LF	$ 65.00	$ 97,500.00
10	8" Gate Valve Assembly	4	EA	$ 2,900.00	$ 11,600.00
11	Restore Surface Improvements	1	LS	$ 8,500.00	$ 8,500.00
			SUBTOTAL		**$ 176,000.00**
			CONTINGENCY	20%	**$ 35,200.00**
			CONSTRUCTION TOTAL		**$ 211,200.00**
INCIDENTALS					
1	Engineering Design	7.7%	LS	$ 25,000.00	$ 25,000.00
2	Bidding & Negotiating	2.3%	HR	$ 7,500.00	$ 7,500.00
3	Engineering Construction Services	3.8%	HR	$ 12,300.00	$ 12,300.00
4	Topographic & Property Survey	2.3%	EST	$ 7,500.00	$ 7,500.00
5	Funding and Administrative Services	3.1%	EST	$ 10,000.00	$ 10,000.00
6	Land & RoW Negotiation/Acquisition	15.3%	EST	$ 50,000.00	$ 50,000.00
7	Miscellaneous Engineering Services	0.8%	EST	$ 2,500.00	$ 2,500.00
			SUBTOTAL		$ 114,800.00
			TOTAL PROJECT COST		**$ 326,000.00**

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Engineer's Opinion of Probable Cost

Hildale Groundwater Project PH I 16-Jun-22
Hildale City BCW/tcd

NO.	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	AMOUNT
GENERAL CONSTRUCTION					
1	Mobilization	5%	LS	$ 132,900.00	$ 132,900.00
2	Pre-Construction DVD & Project Sign	1	LS	$ 1,500.00	$ 1,500.00
3	Traffic Control	1	LS	$ 5,000.00	$ 5,000.00
4	Subsurface Investigation	4	HR	$ 250.00	$ 1,000.00
5	Materials Sampling & Testing	1	LS	$ 7,500.00	$ 7,500.00
6	Dust Control & Watering	1	LS	$ 10,000.00	$ 10,000.00
7	Construction Staking	1	LS	$ 10,000.00	$ 10,000.00
8	Erosion Control Compliance	1	LS	$ 7,500.00	$ 7,500.00
9	Geophysical Survey	1	LS	$ 23,000.00	$ 23,000.00
10	Access and Drill Pad Construction	1	LS	$ 130,000.00	$ 130,000.00
11	Conductor Casing and Seal	100	LF	$ 650.00	$ 65,000.00
12	Drill 12" Pilot Borehole	650	LF	$ 175.00	$ 113,750.00
13	Drill 20" Reamed Borehole	650	LF	$ 123.00	$ 79,950.00
14	Geophysical Logging	1	LS	$ 9,000.00	$ 9,000.00
15	Caliper	1	LS	$ 6,500.00	$ 6,500.00
16	Well Installation - 12" Steel Casing	550	LF	$ 100.00	$ 55,000.00
17	Well Installation - 12" SS Screen 70 Slot	200	LF	$ 350.00	$ 70,000.00
18	Installation of Gravel Pack - 8-12	600	LF	$ 115.00	$ 69,000.00
19	Installation of Annular Grout Seal	150	LF	$ 115.00	$ 17,250.00
20	Initial Well Development	40	HR	$ 750.00	$ 30,000.00
21	Install Pump for Development and Testing	1	LS	$ 42,000.00	$ 42,000.00
22	Well Development by pumping	80	HR	$ 425.00	$ 34,000.00
23	Misc. Well and Pump Testing	1	LS	$ 10,000.00	$ 10,000.00
24	Well Disinfecting	1	LS	$ 5,000.00	$ 5,000.00
25	Well Head	1	LS	$ 2,500.00	$ 2,500.00
26	Well Capping	1	LS	$ 750.00	$ 750.00
27	Roadway Restoration	30,000	SF	$ 7.75	$ 232,500.00
28	8" PVC (C900) Line, Fitting, Tracer Wire, Bedding, & Backfill	5,000	LF	$ 65.00	$ 325,000.00
29	8" Gate Valve Assembly	8	EA	$ 2,900.00	$ 23,200.00
30	Misc. Connections, Fittings and Tie-ins	1	LS	$ 15,000.00	$ 15,000.00
31	Water Right Procurement	1	LS	$ 1,300,000.00	$ 1,300,000.00
			SUBTOTAL		**$ 2,833,800.00**
			CONTINGENCY	20%	**$ 566,800.00**
			CONSTRUCTION TOTAL		**$ 3,400,600.00**
INCIDENTALS					
1	Engineering Design	2.7%	LS	$ 100,000.00	$ 100,000.00
2	Bidding & Negotiating	0.2%	HR	$ 7,500.00	$ 7,500.00
3	Engineering Construction Services	2.1%	HR	$ 76,700.00	$ 76,700.00
4	Topographic & Property Survey	0.5%	EST	$ 20,000.00	$ 20,000.00
5	Funding and Administrative Services	0.3%	EST	$ 12,000.00	$ 12,000.00
6	Permitting	0.3%	EST	$ 10,000.00	$ 10,000.00
7	Environmental (Including Biological and Archeological) Report	0.9%	EST	$ 35,000.00	$ 35,000.00
8	BLM ROW Negotiation (SF299 Application & POD)	0.3%	EST	$ 10,000.00	$ 10,000.00
9	Miscellaneous Engineering Services	0.5%	EST	$ 20,000.00	$ 20,000.00
			SUBTOTAL		$ 291,200.00
			TOTAL PROJECT COST		**$ 3,691,800.00**

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Engineer's Opinion of Probable Cost

Hildale Groundwater Project PH II
Hildale City

16-Jun-22
BCW/tcd

NO.	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	AMOUNT
GENERAL CONSTRUCTION					
1	Mobilization	5%	LS	$ 152,000.00	$ 152,000.00
2	Pre-Construction DVD & Project Sign	1	LS	$ 1,500.00	$ 1,500.00
3	Traffic Control	1	LS	$ 5,000.00	$ 5,000.00
4	Subsurface Investigation	4	HR	$ 250.00	$ 1,000.00
5	Materials Sampling & Testing	1	LS	$ 7,500.00	$ 7,500.00
6	Dust Control & Watering	1	LS	$ 10,000.00	$ 10,000.00
7	Construction Staking	1	LS	$ 10,000.00	$ 10,000.00
8	Erosion Control Compliance	1	LS	$ 7,500.00	$ 7,500.00
9	Geophysical Survey	1	LS	$ 23,000.00	$ 23,000.00
10	Access and Drill Pad Construction	1	LS	$ 130,000.00	$ 130,000.00
11	Conductor Casing and Seal	100	LF	$ 650.00	$ 65,000.00
12	Drill 12" Pilot Borehole	650	LF	$ 175.00	$ 113,750.00
13	Drill 20" Reamed Borehole	650	LF	$ 123.00	$ 79,950.00
14	Geophysical Logging	1	LS	$ 9,000.00	$ 9,000.00
15	Caliper	1	LS	$ 6,500.00	$ 6,500.00
16	Well Installation - 12" Steel Casing	550	LF	$ 100.00	$ 55,000.00
17	Well Installation - 12" SS Screen 70 Slot	200	LF	$ 350.00	$ 70,000.00
18	Installation of Gravel Pack - 8-12	600	LF	$ 115.00	$ 69,000.00
19	Installation of Annular Grout Seal	150	LF	$ 115.00	$ 17,250.00
20	Initial Well Development	40	HR	$ 750.00	$ 30,000.00
21	Install Pump for Development and Testing	1	LS	$ 42,000.00	$ 42,000.00
22	Well Development by pumping	80	HR	$ 425.00	$ 34,000.00
23	Misc. Well and Pump Testing	1	LS	$ 10,000.00	$ 10,000.00
24	Well Disinfecting	1	LS	$ 5,000.00	$ 5,000.00
25	Well Head	1	LS	$ 2,500.00	$ 2,500.00
26	Well Capping	1	LS	$ 750.00	$ 750.00
27	Roadway Restoration	50,400	SF	$ 7.75	$ 390,600.00
28	8" PVC (C900) Line, Fitting, Tracer Wire, Bedding, & Backfill	8,400	LF	$ 65.00	$ 546,000.00
29	8" Gate Valve Assembly	9	EA	$ 2,900.00	$ 26,100.00
30	Misc. Connections, Fittings and Tie-ins	1	LS	$ 15,000.00	$ 15,000.00
31	Water Right Procurement	1	LS	$ 1,300,000.00	$ 1,300,000.00
			SUBTOTAL		**$ 3,234,900.00**
			CONTINGENCY	20%	**$ 647,000.00**
			CONSTRUCTION TOTAL		**$ 3,881,900.00**
INCIDENTALS					
1	Engineering Design	2.8%	LS	$ 120,000.00	$ 120,000.00
2	Bidding & Negotiating	0.2%	HR	$ 7,500.00	$ 7,500.00
3	Engineering Construction Services	2.3%	HR	$ 96,700.00	$ 96,700.00
4	Topographic & Property Survey	0.5%	EST	$ 22,000.00	$ 22,000.00
5	Funding and Administrative Services	0.3%	EST	$ 12,000.00	$ 12,000.00
6	Permitting	0.2%	EST	$ 10,000.00	$ 10,000.00
7	Environmental (Including Biological and Archeological) Report	0.9%	EST	$ 40,000.00	$ 40,000.00
8	BLM ROW Negotiation (SF299 Application & POD)	0.2%	EST	$ 10,000.00	$ 10,000.00
9	Miscellaneous Engineering Services	0.5%	EST	$ 20,000.00	$ 20,000.00
			SUBTOTAL		$ 338,200.00
			TOTAL PROJECT COST		**$ 4,220,100.00**

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Engineer's Opinion of Probable Cost

Hildale Groundwater Project PH III 16-Jun-22
Hildale City BCW/tcd

NO.	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	AMOUNT
GENERAL CONSTRUCTION					
1	Mobilization	5%	LS	$ 110,000.00	$ 110,000.00
2	Pre-Construction DVD & Project Sign	1	LS	$ 1,500.00	$ 1,500.00
3	Traffic Control	1	LS	$ 5,000.00	$ 5,000.00
4	Subsurface Investigation	4	HR	$ 250.00	$ 1,000.00
5	Materials Sampling & Testing	1	LS	$ 7,500.00	$ 7,500.00
6	Dust Control & Watering	1	LS	$ 10,000.00	$ 10,000.00
7	Construction Staking	1	LS	$ 10,000.00	$ 10,000.00
8	Erosion Control Compliance	1	LS	$ 7,500.00	$ 7,500.00
9	Geophysical Survey	1	LS	$ 23,000.00	$ 23,000.00
10	Access and Drill Pad Construction	1	LS	$ 130,000.00	$ 130,000.00
11	Conductor Casing and Seal	100	LF	$ 650.00	$ 65,000.00
12	Drill 12" Pilot Borehole	600	LF	$ 175.00	$ 105,000.00
13	Drill 20" Reamed Borehole	600	LF	$ 123.00	$ 73,800.00
14	Geophysical Logging	1	LS	$ 9,000.00	$ 9,000.00
15	Caliper	1	LS	$ 6,500.00	$ 6,500.00
16	Well Installation - 12" Steel Casing	500	LF	$ 170.00	$ 85,000.00
17	Well Installation - 12" SS Screen 70 Slot	200	LF	$ 350.00	$ 70,000.00
18	Installation of Gravel Pack - 8-12	550	LF	$ 115.00	$ 63,250.00
19	Installation of Annular Grout Seal	150	LF	$ 115.00	$ 17,250.00
20	Initial Well Development	40	HR	$ 750.00	$ 30,000.00
21	Install Pump for Development and Testing	1	LS	$ 42,000.00	$ 42,000.00
22	Well Development by pumping	80	HR	$ 425.00	$ 34,000.00
23	Misc. Well and Pump Testing	1	LS	$ 10,000.00	$ 10,000.00
24	Well Disinfecting	1	LS	$ 5,000.00	$ 5,000.00
25	Well Head	1	LS	$ 2,500.00	$ 2,500.00
26	Well Capping	1	LS	$ 750.00	$ 750.00
27	Roadway Restoration	39,000	SF	$ 8.00	$ 312,000.00
28	8" PVC (C900) Line, Fitting, Tracer Wire, Bedding, & Backfill	6,500	LF	$ 65.00	$ 422,500.00
29	8" Gate Valve Assembly	8	EA	$ 2,900.00	$ 23,200.00
30	Misc. Connections, Fittings and Tie-ins	1	LS	$ 20,000.00	$ 20,000.00
31	Water Right Procurement	1	LS	$ 650,000.00	$ 650,000.00
			SUBTOTAL		**$ 2,352,250.00**
			CONTINGENCY	10%	**$ 235,200.00**
			CONSTRUCTION TOTAL		**$ 2,587,450.00**
INCIDENTALS					
1	Engineering Design	3.5%	LS	$ 100,000.00	$ 100,000.00
2	Bidding & Negotiating	0.3%	HR	$ 7,500.00	$ 7,500.00
3	Engineering Construction Services	2.9%	HR	$ 85,100.00	$ 85,100.00
4	Topographic & Property Survey	0.7%	EST	$ 20,000.00	$ 20,000.00
5	Funding and Administrative Services	0.4%	EST	$ 12,000.00	$ 12,000.00
6	Permitting	0.3%	EST	$ 10,000.00	$ 10,000.00
7	Environmental (Including Biological and Archeological) Report	1.2%	EST	$ 35,000.00	$ 35,000.00
8	BLM ROW Negotiation (SF299 Application & POD)	0.3%	EST	$ 10,000.00	$ 10,000.00
9	Miscellaneous Engineering Services	0.7%	EST	$ 20,000.00	$ 20,000.00
			SUBTOTAL		$ 299,600.00
			TOTAL PROJECT COST		**$ 2,887,050.00**

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Engineer's Opinion of Probable Cost

Annexation Trunklines 16-Jun-22
Hildale City BCW/tcd

NO.	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	AMOUNT
GENERAL CONSTRUCTION					
1	Mobilization	5%	LS	$ 82,700.00	$ 82,700.00
2	Traffic Control	1	LS	$ 12,000.00	$ 12,000.00
3	Pre-Construction DVD	1	LS	$ 1,500.00	$ 1,500.00
4	Dust Control & Watering	1	LS	$ 20,000.00	$ 20,000.00
5	Subsurface Investigation	8	HR	$ 250.00	$ 2,000.00
6	Restore Surface Improvements	1	LS	$ 12,000.00	$ 12,000.00
7	Erosion Control Compliance	2	LS	$ 8,000.00	$ 16,000.00
8	Construction Staking	1	LS	$ 12,500.00	$ 12,500.00
9	Materials Sampling & Testing	1	LS	$ 12,000.00	$ 12,000.00
10	Roadway Restoration	91,000	SF	$ 4.50	$ 409,500.00
11	12" PVC (C900) Line, Fitting, Tracer Wire, Bedding, & Backfill	13,000	LF	$ 80.00	$ 1,040,000.00
12	12" Gate Valve Assembly	12	EA	$ 6,750.00	$ 81,000.00
13	Misc. Connections, Fittings and Tie-ins	1	LS	$ 35,000.00	$ 35,000.00
			SUBTOTAL		**$ 1,736,200.00**
			CONTINGENCY	20%	**$ 347,200.00**
			CONSTRUCTION TOTAL		**$ 2,083,400.00**
INCIDENTALS					
1	Engineering Design	4.5%	LS	$ 105,000.00	$ 105,000.00
2	Bidding & Negotiating	0.3%	HR	$ 7,500.00	$ 7,500.00
3	Engineering Construction Services	3.7%	HR	$ 86,800.00	$ 86,800.00
4	Topographic & Property Survey	0.6%	EST	$ 15,000.00	$ 15,000.00
5	Funding and Administrative Services	0.5%	EST	$ 12,000.00	$ 12,000.00
6	Permitting	0.2%	EST	$ 5,000.00	$ 5,000.00
7	Miscellaneous Engineering Services	0.6%	EST	$ 15,000.00	$ 15,000.00
			SUBTOTAL		$ 246,300.00
			TOTAL PROJECT COST		**$ 2,329,700.00**

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Engineer's Opinion of Probable Cost

Tank for Annexation Area
Hildale City

16-Jun-22
BCW/tcd

NO.	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	AMOUNT
GENERAL CONSTRUCTION					
1	Mobilization	5%	LS	$ 127,200.00	$ 127,200.00
2	Materials Sampling & Testing	1	LS	$ 35,000.00	$ 35,000.00
3	Excavation and Demolition	1	LS	$ 25,000.00	$ 25,000.00
4	Earthwork	1	LS	$ 100,000.00	$ 100,000.00
5	1MG Concrete Storage Tank	1	LS	$ 1,750,000.00	$ 1,750,000.00
6	Tank Site Appurtenances	1	LS	$ 90,000.00	$ 90,000.00
7	Metering Station	1	LS	$ 50,000.00	$ 50,000.00
8	12" PVC (C900), Fittings, Installation, Pipe Bedding, Trench Backfill	2,500	LF	$ 80.00	$ 200,000.00
9	12" Gate Valve Assembly	8	EA	$ 6,750.00	$ 54,000.00
10	Misc. Connections, Fittings and Tie-ins	1	LS	$ 20,000.00	$ 20,000.00
11	Surface Restoration	1	LS	$ 10,000.00	$ 10,000.00
12	Tank Access Road	20,000	SF	$ 4.00	$ 80,000.00
13	Fence and Gate	1	LS	$ 80,000.00	$ 80,000.00
14	Misc Electrical and SCADA Improvements	1	LS	$ 50,000.00	$ 50,000.00
			SUBTOTAL		**$ 2,671,200.00**
			CONTINGENCY	20%	**$ 534,200.00**
			CONSTRUCTION TOTAL		**$ 3,205,400.00**
INCIDENTALS					
1	Engineering Design	5.5%	LS	$ 200,000.00	$ 200,000.00
2	Bidding & Negotiating	0.2%	HR	$ 7,500.00	$ 7,500.00
3	Engineering Construction Services	3.7%	HR	$ 133,600.00	$ 133,600.00
4	Topographic & Property Survey	0.3%	EST	$ 10,000.00	$ 10,000.00
5	Geotechnical Report	0.3%	EST	$ 10,000.00	$ 10,000.00
6	Funding and Administrative Services	0.3%	EST	$ 12,000.00	$ 12,000.00
7	Permitting	0.1%	EST	$ 5,000.00	$ 5,000.00
8	Miscellaneous Engineering Services	0.7%	EST	$ 25,000.00	$ 25,000.00
9	Easement/ROW Acuisition	1.4%	EST	$ 50,000.00	$ 50,000.00
			SUBTOTAL		$ 453,100.00
			TOTAL PROJECT COST		**$ 3,658,500.00**

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APPENDIX D
System Maps

EXISTING WATER SYSTEM

MAP LEGEND

North

0 1,000 2,000

1 In = 2,000 Feet

- 2"
- 4"
- 6"
- 8"
- 12"

- w_Hydrants
- Water Tank
- Treatment Plant
- State Boundary

Hildale City
WELCOME HOME

Map Date: 06.30.2022

Creating solutions that work and relationships that last.

SUNRISE ENGINEERING

LOW FIRE FLOW AREA

MAP LEGEND

North

0 1,000 2,000

1 In = 2,000 Feet

- 2"
- 4"
- 6"
- 8"
- 12"

- Hydrants
- Water Tank
- Treatment Plant
- Low Fire Flow
- State Boundary

Hildale City
WELCOME HOME

Map Date: 06.30.2022

LOW PRESSURE DURING PDD SCENARIO

MAP LEGEND

North

0 1,000 2,000

1 In = 2,000 Feet

- 2"
- 4"
- 6"
- 8"
- 12"

- Hydrants
- Water Tank
- Treatment Plant
- Low Pressure Area
- State Boundary

Hildale City
WELCOME HOME

Map Date: 06.30.2022

Creating solutions that work and relationships that last.

SUNRISE ENGINEERING

LOW PRESSURE DURING PID SCENARIO

MAP LEGEND

North

0 1,000 2,000

1 In = 2,000 Feet

- 2"
- 4"
- 6"
- 8"
- 12"

- Hydrants
- Water Tank
- Treatment Plant
- Low Pressure Area
- State Boundary

Hildale City
WELCOME HOME

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Creating solutions that work and relationships that last.

SUNRISE ENGINEERING

RECOMMENDED IMPROVEMENTS

Trailhead Tank

Trailhead Wells 1 and 2

Sand Hill Tank

Jessop Ave. Line

Canyon Ave. Line

Replace Well 17

University Ave. Line

Treatment Plant Improvements

Treatment Plant Wells

Replace Well 15

Raw Water Transmission Line

MAP LEGEND

North

0 1,000 2,000

1 In = 2,000 Feet

Recommended Improvements
- Water Mains
- Water Hydrants
- Water Tank
- Production Well
- Hildale Ground Water Project Area

Existing Water System
- w_mains
- Water Tank
- Treatment Plant

State Boundary

Hildale City
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