Town of Alta Water Distribution Infrastructure Improvements Project

Efficiency upgrades and modernization for the Bay City Mine Tunnel Water Supply System

Bureau of Reclamation WaterSMART Grants:
Small-Scale Water Efficiency Projects (FOA BOR-DO-19-F005)



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TABLE OF CONTENTS

Mandatory Federal Forms....3
SF-424 Application for Federal Assistance....3
SF-424C Budget Information- construction....3
SF-424D Assurances- construction....3
SFLLL Disclosure of lobbying activities....3
Technical Proposal....4
Executive Summary....4
Background Data....4
Project Location....6
Technical project description and milestones....6
Evaluation Criteria....8
Evaluation Criterion A—Project Benefits....8
Evaluation Criterion B—Planning Efforts Supporting the Project....10
Evaluation Criterion C—Project Implementation....11
Evaluation Criterion D— Nexus to Reclamation....11
Evaluation Criterion E— Department of the Interior Priorities....12
Project Budget....13
Funding plan and letters of commitment....13
Budget Proposal....13
Budget narrative....15
Environmental and Cultural Compliance Costs....16
Required Permits and Approvals....19
Official Resolution....19
Unique Entity Identifier and System for Award Management....20
Letters of Support....20
Appendices....20

Mandatory Federal Forms

SF-424 APPLICATION FOR FEDERAL ASSISTANCE

– Refer to Appendix SF-424

SF-424C BUDGET INFORMATION- CONSTRUCTION

- Refer to Appendix SF-424C

SF-424D ASSURANCES- CONSTRUCTION

- Refer to Appendix SF-424D

SFLLL DISCLOSURE OF LOBBYING ACTIVITIES

- Refer to Appendix SFLLL

Technical Proposal

EXECUTIVE SUMMARY

Date: *April 18, 2019*
Applicant Name: *Town of Alta/Salt Lake County Service Area #3*
Location: *Town of Alta, Salt Lake County, Utah 84092-8016*

The Town of Alta (Alta) submits this WaterSMART application under FOA No. BOR-DO-19-F005 for the its Water Distribution Infrastructure Improvements Project (Project), requesting funds to modernize and upgrade its water delivery infrastructure by increasing efficient water use and supply management. These on-the-ground improvements have been prioritized by two reports: *Town of Alta Capital Improvement Analysis* (2014) and *Town of Alta Water System Future Improvement Plan* for 2011-2021 and the 2019-2020 Town budget proposal. The grant funds would be used to support this FOA's goals by implementing projects already prioritized by Alta's planning efforts and that promote the efficient use of water and promote conservation. Alta is proposing a project comprised of three components including tunnel source water improvements, water meter upgrade, and system reliability improvements.

The Project final designs will occur during the late summer and early fall of 2019. Construction of these prioritized projects to improve water management and water supply efficiency will commence no sooner than October 2019, and projects will all be complete by 2020, but most likely, November 15, 2019. Eighty percent of Alta's municipal boundary is located within the Uinta-Wasatch-Cache National Forest; however, the proposed Project is located on private and/or leased lands.

BACKGROUND DATA

Alta is nestled in the Wasatch Mountains, surrounded by steep ridges that surround Little Cottonwood Canyon, high above the Salt Lake Valley. Alta is within the Salt Lake City Watershed Management Area[1] which provides 100% of Alta's water supply and 20% for the water users in the entire Salt Lake Valley. Alta is unique in that as an old mining town, the Bay City Mine Tunnel provides 70% of the water for Alta. The SLC Service Area #3 provides the remaining 30% water through the Peruvian Mine, augmented by the Wasatch Drain Tunnel.

Water Supply

The Bay City Mine Tunnel, as the primary source of water for Alta, is provided by water rights owned by Salt Lake City under a long-term agreement with the Alta. The water contract allows for a daily use of 265,000 gallons, plus an additional allocation for snowmaking, which is considered a non-consumptive use. The use is approved under water right 57-10013(a16844). The water is used for municipal, domestic and businesses including restaurants and hotels. Alta's water system serves 85 connections. The connections consist of 61 domestic, 21 commercial

[1] https://townofalta.com/wp-content/uploads/2016/01/SLC_Watershed_Management_Plan.pdf

and 3 industrial. Resident population is less than 400, plus visitors and seasonal employees, swells that number to over 4,000 per day during winter months.

Water Demand

A hydraulic model for Alta's water system was constructed for the *Town of Alta Capital Improvement Analysis* (2014)[2]. The model scenario found Alta's water system to include 171 gpm for the average day demand; 300 gpm for maximum day demand; and 536 gpm for peak hour demand. In 2018, water use was 7.21 acre-feet (AF) for domestic, 46.98 AF for commercial and 26.2 AF for industrial, for a total of 80.39 AF. Based on anticipated residential and commercial (hotel) buildouts, under existing land use ordinances, an additional 12.27 AF is needed by 2025. The county is projected to add nearly 600,000 new residents by 2065. As growth continues in Alta and SLC, increasing efficient water use and conservation are critical for the Bay City Mine Tunnel supply management.

Water Delivery System

Alta's water delivery system is unique. Water enters the Bay City Mine, an abandoned silver mine, with a subterranean 1,700 foot tunnel accessing a 350-foot-deep shaft. This shaft serves as water storage (i.e., Mine Reservoir) for Alta, holding 5 million gallons. Two pumps, 24 and 15 years old, respectively, are sunk 200-feet in-depth to access the Mine shaft, within the area known as the Pump Room. Normal useful life for these pumps is 10-15 years, but through maintenance and rebuilding, these pumps remain operational, however their efficiency has been reduced to only 80%. From the Pump Room the water flows through 1,700 feet of piping to the entrance of the Bay City Mine Tunnel. All culinary water, 54.19 AF, is treated at the water treatment plant located at the tunnel entrance, to reduce certain metal levels. Water is then pumped to the Town Reservoir. Additionally, 26.2 AF of water from the Mine shaft by-passes treatment and is piped to Alta Ski Lifts Company (ASL) for snow-making, a non-consumptive use. The majority of Alta users receive gravity-fed water from the Town Reservoir. A booster station pumps water from the Town Reservoir to a 10,000 gallon storage tank to serve residents at Grizzly Gulch. Alta provides water to the ski area, businesses, hotels, restaurants, and residential customers connected to the water system. The water system is also the supply to the fire hydrants and fire suppression systems.

Alta's water delivery system includes:

- 2.1 miles of water distribution pipe and 85 service connections
- Three storage areas:
    - Bay City Mine Tunnel (Mine Reservoir) holds 5 million gallons
    - Town Reservoir holds 365,000 gallons
    - Grizzly Gulch storage tank (10,000 gallons)
- One water treatment facility: Bay City Treatment
    - Two 35 hp supply pumps (24 and 15 years old) in the Mine shaft
    - Two pump stations within distribution system

Alta to-date has no prior working relationships with Reclamation.

[2]2014, Capital Improvements Analysis, Forsgren Associates Inc., Appendix, Previous Planning.

PROJECT LOCATION

The Project is within Alta's municipal boundary located in Salt Lake County, Utah. The project area is 25 miles southeast from Salt Lake City, Utah. The project latitude is 40° 36' 32.55" N and longitude 111° 37' 52.47" W. Refer to the map in Figure 1 in next section.

TECHNICAL PROJECT DESCRIPTION AND MILESTONES

The flip side to Alta's picturesque setting is the fact that Alta is rural, and can be isolated due to the 10-mile long single access road which is susceptible to winter avalanches, can cut Alta off from the Salt Lake Valley. The proposed Project includes three areas: (1) Bay City Mine Tunnel source water improvements; (2) water meter upgrade, and (3) system reliability improvement. Combined, these area projects will accomplish the goals of increasing efficiency in the delivery of water, plus increasing reliability of that delivery both on a daily basis and in times where the town is experiencing power outages. The Town loses 24% of its water, or 19.3 AF, due to an unknown reason. Installing a smart meter to a significant water user will provide information to try and account and capture that water loss, plus encourage conservation with ski resort operations. The location for the proposed meter upgrade is a key location for new meters and future planning as well. The three areas in Alta where the project will occur are further described below and depicted on Figure 1.

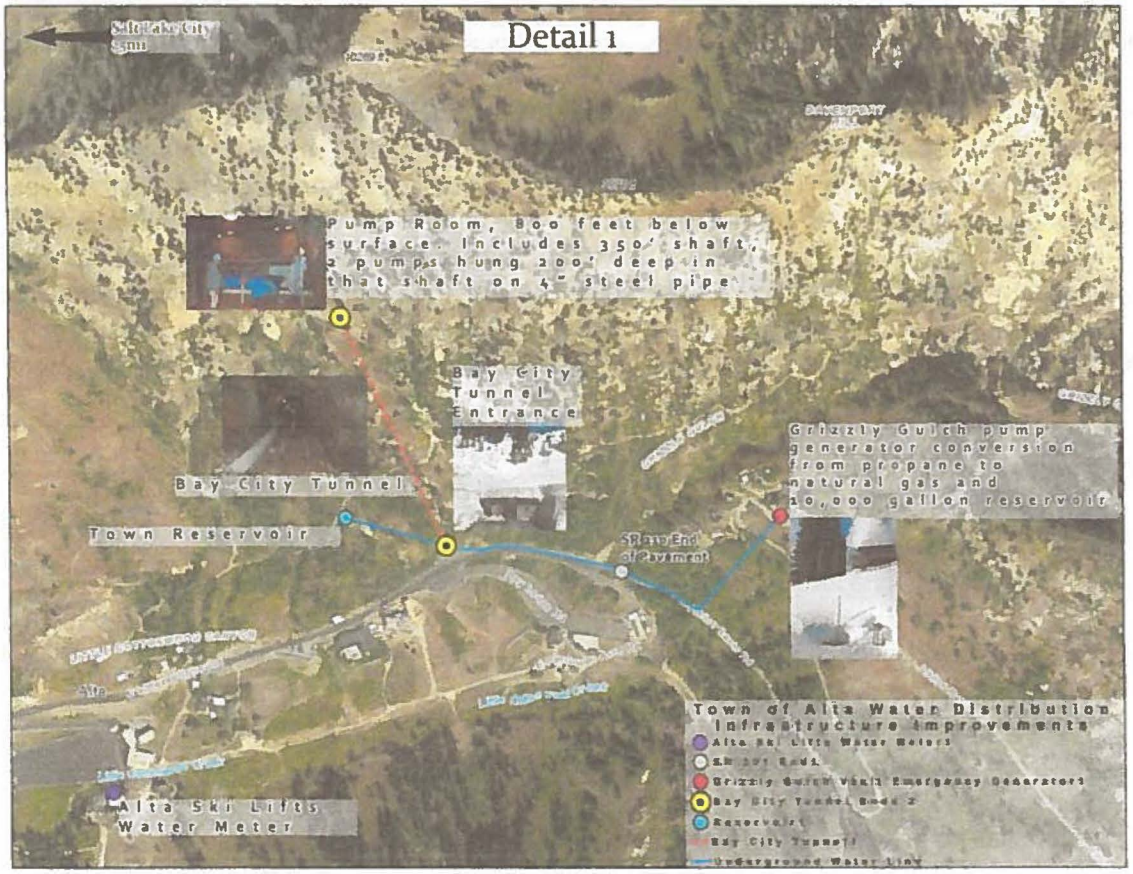


Figure 1. Project Location

Bay City Mine Tunnel Source Water System

As Alta's main water supply is located 1,700 feet inside a mine tunnel and stored in a 350 foot deep shaft, Alta staff uses a mine cart and rail system, built and in operation, since the late 1800's. Due to the heavy mineralization in the water, the 200 feet of hanging steel-shaft pump pipes, are heavily corroded and contain particulate matter reducing efficient flow. Being subterranean, the mine tunnel is a constant temperature of 45 degrees. At the tunnel entry, Alta constructed an avalanche resistant concrete entry building which houses the pumps, electrical and mechanical equipment and the water treatment facility, to remove antimony and other constituents from the water supply. Alta has relied on inefficient electrical heaters to prevent water in the system from freezing prior to distribution to water users. These electric heaters have a high energy use and have been subject to frequent power interruptions as the electrical power arrives in overhead transmission lines from Evanston, Wyoming, over mountainous terrain to Alta. These interruptions create water reliability issues for Alta. Over the 2018 winter season, Alta experienced 7 significant power outages impacting water service.

Alta proposes to improve the Bay City Mine Tunnel source water system by: (1) upgrading the 24 year old, 35 hp pump and increasing the capacity of in the Mine shaft with a more efficient 50 hp variable frequency drive (vfd) pump, while at the same time, replacing and improving the attached 200 feet of steel pipe on which the pump is hung, with an upgraded epoxy coated steel pipe; (2) upgrading incandescent lighting to energy efficient LED lighting; and, (3) converting the unreliable, inefficient electrical heating system to natural gas system. A reliable heating source for the entry building will ensure water in the distribution line to the Town Reservoir does not freeze during winter months. As part of these efficiency and reliability infrastructure upgrades to the Mine Reservoir pump, piping, and heat source, Alta needs to upgrade the 1870's railbed to perform the efficiency infrastructure upgrades to the pump, piping, lighting, and heating within this small, tunnel system. Along portions of the tunnel, the rail bed will not support the weight of the new 50 hp vfd pump. It is necessary to improve sections of that rail line to preserve the tracks and to conduct these needed efficiency upgrades. The upgrade outcomes will also increase safety for Alta staff by reducing the number of trips personnel will need to enter the narrow, mine tunnel as well as traveling to the mine building during heavy snow events.

- ✓ Upgrade and increase the capacity to a 50 hp vfd pump will be capable of pumping water based on demand, for increased efficiency, reliability and water savings;
- ✓ Upgrade the 200 feet of pipe with epoxy coated steel will reduce pipe system head and improve overall distribution efficiency;
- ✓ Upgrade to LED lighting will be more energy efficient, meet current code and increase staff safety within the mine tunnel;
- ✓ Upgrade electric heating system with a more efficient natural gas system, improves system reliability, thereby ensuring continuous water to users, even in the event of a power interruption.

Water Meter Improvement Delivery System

The largest user of water is the Alta Ski Lifts (ASL) Company. The current meter at ASL has been identified in pervious planning as a priority to upgrade due to issues with accurate readings, unreliable data, and staff required visits to the meter. Alta plans to install an upgraded smart

meter with leak detection to isolate and support timely leak detection, collect additional water data to inform staff for future recommendations on best conservation measures to implement.

Water Reliability Improvement Delivery System

As some residents live in West Grizzly and Grizzly Gulch areas, elevations higher than the Town Reservoir, pumps that serve these areas are electrically powered. Alta receives an average of 500" of snow per year and during winter, the vault housing the generator is covered by snow. Alta plans to pursue a project involving Grizzly Gulch, one such residential area. Grizzly Gulch is accessed by a seasonal road, unplowed during the winter. Winter access is by foot, snow cat or snowmobile. Grizzly Gulch residents receive water from Alta's water system, but during electrical outages, the pumps bringing water to those homes, stops operating, leaving the homes with no water. As an interim solution, Alta installed a propane powered generator which requires Alta staff to visit and refuel the Grizzly Gulch pump during power outages.

The plan calls for upgrading the existing pump generator in the vault to be powered by natural gas, a more reliable and efficient system. A natural gas line is within several feet of the Grizzly Gulch water vault. This small storage tank and propane tank powered pump system ,can become buried under meters of snow, so are less reliable than natural gas would be.

EVALUATION CRITERIA

Evaluation Criterion A—Project Benefits

The proposed Project will provide the following benefits.

- Better management of the Alta water system
  - Support identification of water use and losses with data collection connected to largest water user: ASL.
  - Increase control over pumping rate/volumes as needed by seasonal/ tourism demand and fire fighting.
  - Upgrades to implement greater efficient water use within system plus reducing the number of water service disruptions.
  - Positive impacts not only to Alta's residents, for both culinary and firefighting water, but to tourism and recreation with increased reliability of snowmaking water and more efficient refill of the Town Reservoir.

- Reduction of Alta staff time for travel to ASL meter, Bay City Mine Tunnel, and storage tanks.
  - Reduction of travel during storms and heavy snowfall events to protect water supply delivery.
  - Increases staff safety by reduction of travel and upgraded lighting to water system site.

- Additional water demand/use data to analyze and plan for future conservation and metering options in Alta.
  - The new 50 hp vfd pump will increase pumping capacity, water reliability in comparison to the 24 year old pump and pipe, plus overall efficiency in the water

delivery system by ensuring faster refill to the 365,000 gallon Town Reservoir, when depleted.

- The new 50 vfd pump and ancillary improvements to the electrical and heating system will result in electrical savings of up to $375.00 per month.
- Ability to use data to reduce peak demands (municipal, commercial, vs. snow-making) and to adjust timing to thereby reduce demands on pumps, piping, treatment facility, and storage.
- Delay need for costly capital improvements simply by more efficient water use within Alta system and identification of further conservation efforts to address future demand through data collection.

The expected geographic benefits from the proposed project are local within the lower portion of Albion Basin in Little Cottonwood Canyon. Alta contracts with and shares water managers with SLCo Service Area #3 which provides water to the adjacent Snowbird Ski and Summer Resort, part of unincorporated Salt Lake County. Salt Lake City (SLC) owns the water rights, but has contracts with both Alta and Salt Lake County Service Area #3 for water use. Both areas have similar contracts and requirements with Salt Lake City and work together with the City on water issues. In fact, 30% of Alta residents receive water from Salt Lake County Service Area #3, in an area of overlapping jurisdiction. In addition, collaboration is necessary and appropriate as there is an emergency water connection potential between the Service Area and the Town of Alta, which can supply water from either area when incidents like a recent fire occurred. These conditions require and ensure close cooperation between the parties. Alta reports water analysis and particulate matter to MWDSLS, Salt Lake County, Utah's Division of Drinking Water, the MWD, as well as its water users. This close cooperation and collaboration with Salt Lake County, Salt Lake City and Snowbird, will continue with these improvements and information sharing will continue as well in the region.

When electrical power is lost, no longer will a staff member have to transport a generator uphill to Alta's water facility to operate the heaters, to prevent water in the distribution pipes from freezing. Checking the equipment and operations will be safer for Alta's staff, and more energy efficient with improved LED lights in the system's one-third mile, sub-subterranean mine tunnel. The system will be able to operate reliably and will see 20-25% increased efficiently, whether to fight fires, supply water for snow-making, for resort hotels, and/or to local residents for cooking and sanitation. All of the water originating in Alta and not used under Alta's contract with SLC, flows to the MWDSLS treatment plant at the mouth of Little Cottonwood Canyon for distribution in the Salt Lake valley. As Alta is more efficient and accurate when monitoring its water usage, there is increased benefit to MWDSLS. The new, improved smart meter, will give Alta more careful monitoring capability and the ability to share the quantity of water used for culinary versus snow-making uses. This new information in turn will leads to better future conservation planning. The increased reliability of water flow will ensure recreation and tourism needs have adequate water resources, as well as residents. The Project does not have a direct connection to the NRCS assistance through EQIP or other programs, as this Project is focused on potable and non-potable (snow-making and fire needs).

Evaluation Criterion B—Planning Efforts Supporting the Project

Describe how your project is supported by an existing planning effort.

The proposed Project will assist Alta and SL County Service Area #3 upgrade system components with better metering and accounting related to the largest water users. In 2011 the Town's water operator prepared the Water System Future Improvement Plan 2011-2021 highlighting "*the need to meet newer fire flow standards and to help prevent long water service disruptions caused by breaks (and) freezing...*[3] In 2014 the Town commissioned Forsgren Associates to produce the *Town of Alta Capital Improvement Analysis* (2014),[4] a study to understand capital improvements due to the need to provide fire flow as well as average day demand of water. While converting the electrical heating system to natural gas in the mine building speaks directly to eliminating service disruptions due to freezing, the rest of both reports set forth large projects involving hundreds of thousands of dollars to improve distribution lines for system redundancy including looping lines, improving water flow, and increasing fire fighting capacity. All of the improvements identified rely on and "take for granted" efficient and reliable pumping in the Mine shaft. None of those proposed improvements will work absent a solid base beginning with the pumps in the Mine shaft. The existing pumps will not support the improvement projects in these two prior studies. Therefore, Alta's first priority is to increase the reliability in its existing system with increased pump capacity and efficiency. This prioritization is reflected in the Town's recent budget discussion highlights;[5] improve the Bay City Mine improvements before any of the projects identified in the 2011 or 2014 analyses can be pursued. The agenda for that meeting identifies "*water fund*," projects as a priority, listing the project components in this application.: "new 50 hp pump, rail improvements, lighting in the tunnel, Grizzly pump conversion, and the ASL water meter."

In addition, a Drinking Water Source Protection Plan (DWSPP) was developed in 2005, and updated in 2016[6]. The Source Protection Plan emphasizes the need to replace and upgrade the water system, some portions of which are over 40 years old. It emphasizes Alta's commitment to protect all of the improvements within the water system, which in turn protects the source and purity of the water. That Plan also highlights Alta's relationship with Salt Lake County Service Area #3, the Utah Division of Drinking Water and the Salt Lake Valley Health Department, all part of Alta's total commitment to providing quality water to the community.

The Town's water system operator has operational data demonstrating that the Town is losing 25.5% of its water through the distribution system. The proposed improvements, especially installing the first of many smart meters with leak detection, will help the system function more efficiently and enable the Town to identify and correct leaks in the system.

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[3] 2011, Water System Future Improvement Plan 2011-2021, Keith Hansen. Appendix Previous Planning.

[4] 2014, Capital Improvements Analysis, Forsgren Associates Inc., page 6, Appendix Previous Planning.

[5] The February 7, 2019 Budget Committee Meeting list of budget items by department, Appendix Previous Planning.

[6] The 95-page, 2016, DWSPP report can be found at https://townofalta.com/wp-content/uploads/2016/01/SLC_Watershed_Management_Plan.pdf



Figure 2. Project Implementation Timeline

Evaluation Criterion C—Project Implementation

The schedule provided in Figure 2 above, outlines timing of the major tasks and milestones for the proposed Project. Prior to any construction commencing on the Project, an environmental and cultural document will be prepared in collaboration with Reclamation's Provo area office. Once all documents and permits are complete, construction will commence.

Engineering design and specifications will be conducted by a local engineering firm that is familiar and has previously worked on Alta's unique water distribution system. In parallel with the design, Reclamation personnel from the Provo Regional office will begin environmental and cultural compliance work. Once the design and specifications are complete Alta will acquire permits from the State and county. If a permit to construction will be required from the Utah Division of Drinking Water (DDW), Alta has built in extra time for this 30-60 day process. Figure 2 shows Alta has provided adequate time for project design and permitting.

No excavation or construction work will commence prior to funds being available to the Town from Reclamation, in October 2019. Construction work will commence, and is projected to take a total of 320 man-hours, over approximately 2 weeks, although 4 weeks is shown on the schedule to accommodate unanticipated delays. All work is expected to be done by November 15, 2019. Scheduling the tie-in to the natural gas line can be accomplished when there is an adequate weather window.

Evaluation Criterion D— Nexus to Reclamation

Alta is located near the Little Cottonwood headwaters and is part of the Central Utah Water Conservancy District. Little Cottonwood Canyon watershed has been identified as an important watershed to Metropolitan Water District of Salt Lake & Sandy (MWD). In 1992, Central Utah Project Completion Act (CUPCA) recognized how important the Little Cottonwood Canyon drainage is to the completion of the Central Utah Project and CUPCA funds were authorized to purchase lands for watershed conservation in Albion Basin (in Alta). MWD[7] is located within Reclamation's Upper Colorado River Basin Region and MWD includes 2 Reclamation facilities,

[7] Map of the MWD System, including Reclamation facilities in in Appendix, Map.

including the Jordanelle Reservoir and the Deer Creek Dam and Reservoir. These are in turn, part of the Central Utah Project and Provo River Project, respectively.

According to a 2018 Environmental Assessment prepared by the United States Forest Service, for projects within the Town of Alta, by Alta Ski Lifts, Company (ASL), "*Water quality in Little Cottonwood Creek is monitored closely by the Utah Department of Water Quality (DWQ) and Salt Lake City because the creek is a significant water source for Salt Lake City, supports native aquatic species, and is important for recreation* (p. 43, USFS EA of ASL MDP improvement projects within the Town of Alta[8].

The proposed Project will better manage water resources within the Little Cottonwood watershed by providing more efficient water usage and water data. It is expected with increased efficiency and data, the Town will be able to encourage additional conservation for Alta and contribute additional water to the basin, including within the Little Cottonwood watershed and downstream to Reclamation facilities.

Evaluation Criterion E— Department of the Interior Priorities

The following are DOI priorities addressed as part of the proposed Project:

1. **Creating a conservation stewardship legacy second only to Teddy Roosevelt** – Alta continues a stewardship of natural resources by utilizing science to manage the land and water resources through ordinances such as prohibiting outdoor watering except for re-vegetation following disturbance due to construction activities. Alta works closely with several local non-profits, including Friends of Alta, an I.R.S. section 501(c)(3) land and conservation trust, on the shared goal of balancing stewardship and sustainable use of public lands to help minimize overuse, as well as working towards a sustainable water supply.
2. **Utilizing our natural resources** - The proposed Project includes providing reliable energy sources to prevent water supply disruptions to customers. Further, the Project will help water be used more efficiently and will reduce peak demands on Alta's infrastructure resulting in energy savings. By utilizing energy and water efficient systems, Alta efforts stretch American Energy resources further.
3. **Restoring trust with local communities** – Alta is a small town that attracts a wide range of visitors both during winter and summer months. By upgrading it's water system, Alta will demonstrate water systems for all communities are critical and need support to promote conservation and efficiency. Providing Alta staff with safer access to the water system through the Bay City Mine, gathering additional water data, increasing the Town's ability to fight fires in Alta (upper watershed area), and providing water service during winter power outages, these improvements will build greater trust with the community, SL County Service Area #3, Salt Lake City, tourists, environmental interests, as well as other regulatory agencies.
4. **Modernizing our infrastructure** — Alta is partnering with a private business, ASL, as a public/private partnership to improve the water distribution infrastructure. This involves installing a modern water meter to serve ASL, a major user of Town water. This meter

[8] https://www.fs.usda.gov/nfs/11558/www/nepa/103726_FSPLT3_4286628.pdf.

4. **Modernizing our infrastructure** — Alta is partnering with a private business, ASL, as a public/private partnership to improve the water distribution infrastructure. This involves installing a modern water meter to serve ASL, a major user of Town water. This meter will allow Alta to better understand the water uses and needs of ASL, monitor for possible leaks, and in turn, will allow ASL to better control and conserve water for snow-making as well in its mountainside day lodges and restaurants within the town of Alta. Also, installing a modern, variable frequency drive to a new, greater horsepower pump, will allow greater efficiency and coverage for the resort's snowmaking to occur simultaneously with other demands, such as domestic use and fire-fighting. Modernizing Alta's water distribution infrastructure demonstrates Alta's commitment to the MWDSLS that Alta is indeed protecting local water resources.

Project Budget

FUNDING PLAN AND LETTERS OF COMMITMENT

Alta maintains a reserve in its Water Capital Account. As of April 2019, that fund has an available balance for capital outlay of $79,000.00. Those funds are not earmarked for other projects, but the necessary portion thereof would be so restricted, should the Town be awarded the funds in this grant opportunity as indicated in the April 11, 2019 Resolution. (See Appendix Official Resolution). It is not anticipated that any project costs will be incurred prior to award.

Table 1 - Total Project Cost Table

SOURCE	AMOUNT
Costs to be reimbursed with the requested Federal Reclamation funding	$67,385.01
Costs to be paid by applicant, Town of Alta Water Capital Account	$66,385.01
Value of third-party contributions	$1,000.00
TOTAL PROJECT COSTS	**$134,770.02**

BUDGET PROPOSAL

Table 2 - Town of Alta Budget Proposal

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity Type	TOTAL COST
	$/Unit	Quantity		
Salaries and Wages	(Including fringe benefits)			
Project Manager, John Guldner	$55	20	hour	$1,100.00
Construction Supervisor, Keith Hansen	$55	50	hour	$2,750.00

Construction Foreman, Steve McIntosh	$55	50	hour	$2,750.00
Town of Alta Laborer	$30	50	hour	$1500
Town of Alta Laborer	$30	50	hour	$1500
Town of Alta Laborer	$30	50	hour	$1500
Town of Alta Laborer	$30	50	hour	$1500
Equipment				
Nickerson Company	$26,759	1	50 hp Pump installer- quote attached	$26,759
Total Power & Controls	$10,000	1	LED lighting	$10,000
Total Power & Controls	$9825	1	Variable frequency drive for 50 hp pump	$9825
Supplies and Materials				
Miscellaneous pipe, wire, conduit supplies (see [1], below, Town of Alta)	$2,000			$2,000
Contractual/Construction				
Aqua Engineering	$10,000	1	Engineering plans and specifications	$10,000
Town of Alta	$1,000		mine bed repair, fish plates and ties- mostly labor costs	$1,000
Dominion Energy/Newman Construction	$30,000	1	Bay City Tunnel gas conversion and Highway excavation	$30,000
Waterford Systems	$4,000	1	Siemens 4" mag water meter	$4,000
Town of Alta	see above[1]		pipe, wire, conduit	
SKM	$2,000	1	programming new equipment into existing SKADA system	$2,000
Dominion Energy/Newman Construction	$8,000	1	gas line excavation and conversion for Grizzly vault	$8,000
Other				
Permitting	$500		State and County	$500
Environmental & Cultural Compliance costs		1	Add 5 % to subtotal costs	$5,834.20
TOTAL DIRECT COSTS				$116,684.00
Indirect Costs			*de minimus, + 10%*	$12,251.82
TOTAL ESTIMATED PROJECT COSTS				$134,770.02

BUDGET NARRATIVE

Salaries and Wages

The Project Manager is an Alta employee, whose salary compensation, as allocated to this project is approximately 20 hours including obtaining and communicating regarding permits and approvals and communicating with Reclamation staff. The construction Supervisor and Foreman are employed by SL County Service Area #3, Alta's contracted water system operator. All indicated labor is charged at the rate for the individual worker, regardless of the task performed. It is anticipated the Supervisor and Foreman will each spend 30 hours for pump replacement, preserving the mine rails, and installing miscellaneous pipe, plus wire and conduit in the mine tunnel. It is estimated they will work 20 hours each, to reprogram the SCADA and pump control, as well as supervise the work of sub-contractors, Nickerson, Total Power & Control, Dominion Energy and Newman Construction inside the Bay City Mine Tunnel, as well as the meter installation at ASL Company's Buckhorn building, and at the Grizzly Gulch remote water vault. gas conversion. Dominion is Alta's local gas utility, which will work with Newman to excavate under Highway U-210 to bring the natural gas to the Bay City Tunnel, and both entities will work to also connect the underground gas line from the dirt/gravel "Summer Road," to the Grizzly Gulch vault's pump generator. The quoted labor rates represent the actual labor rates for the identified personnel.

Fringe Benefits

Included in the salaries and wages are fringe benefits to full time employees including medical insurance.

Travel

No travel related expenses are included in this budget proposal.

Equipment

The budget identifies purchasing a 50 hp vfd pump, valued at more than $5,000. (Budget Appendix, Nickerson) In addition, the variable frequency drive to lower power demand on the new 50 hp vfd pump, is valued higher than $5,000, per phone quote with Total Power & Control.

A 50 hp vfd pump is needed to provide reliable water distribution at the rates capable to serving the culinary needs of the Town, the snow making needs of the Alta Ski Lifts Company resort, and the fire fighting needs for the community through United Fire Authority. The new pump will be 20-25% more energy efficient with an estimated energy cost savings of approximately $375.00 per month. When combined with the new variable frequency drive, (fvd) the power demand to operate the pump will be reduced for an additional energy savings. The pump will not continuously operate at full capacity, but can be run at rates that are compatible with the water distribution needs of the water system.

LED lighting in the Bay City Tunnel will also contribute a 20-25% energy efficiency, making up a portion of the above-mentioned monthly cost savings by operating at a lower voltage. LED lights will provide a safer working environment reducing electrical shock from standing and dripping water from the walls, ceilings and floors, of the tunnel itself. Detecting leaks from equipment will be easier with improved lighting.

Materials and Supplies
All identified materials and supplies will be used in construction and were estimated by the length of the Bay City Tunnel, the depth of the shaft, and rail line in the tunnel, plus based on past experience by the Construction Supervisor who is a certified water operator, and who has been working on the system for over 20 years.

Contractual
The proposed project involves 7 components. All but two will occur in the Bay City Tunnel. Because the work occurs in a confined area, some of the work may overlap such that breaking out where one component starts and ends is difficult. Selection of contractors is based on prior experience with these contractors and their ability to work in the unique situation of Alta's mine and tunnel. Note the Nickerson Company quote includes labor and equipment. Alta's water system operator spoke with representatives from Newman Construction and Total Power & Control, about the components of this project and obtained phone quotes for the entries listed in the Budget Proposal and the attached SF-424C. Both companies are regular vendors in Salt Lake County, and familiar with Alta's water system, plus have been "on-call" for Alta emergencies.

Third-Party In-Kind Contributions
The Alta Ski Lift Company will contribute $1,000.00 towards the cost of the new smart meter with leak detection.

Other Expenses
No other expenses are anticipated or budgeted.

Indirect Costs
Not having previously been approved for an indirect cost rate, Alta has included the 10% *de minimus* rate of modified total costs, as part of the project budget.

Environmental and Cultural Compliance Costs

The Town has spoken with staff at Provo Regional Office of Reclamation regarding environmental and cultural compliance costs. In addition, Provo office personnel visited the site mid-April 2019, and saw Alta's unique water system. It is anticipated compliance activities will be accomplished by Reclamation to evaluate NEPA, ESA, NHPA and CWA regulations.

- *Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.*

The proposed Project does not have any anticipated significant impacts to the surrounding environment. As the contemplated work of the proposed components take place almost exclusively in a subterranean space, in an established mine shaft, impact on the surrounding environment is minimal, not involving dust, nor animal habitat. No impacts to water quality and

pump, because a spare pump will be used during the transition. No animals are known to live in the mine tunnel, and the surrounding area does not consist of any animal habitat.

Seven (7) residences receive water, pumped up to them with electrically powered pumps. The current back-up, propane fueled generator in the Grizzly Gulch water vault will be converted to natural gas. This involves digging into the dirt/gravel roadway where the gas pipeline exists. Dust and animal habitat disturbance will be minimal, brief and mitigated by applying water to the dirt prior to digging and covering any excavation in the evenings when work is suspended. It is anticipated this work will take one week of active work, further reducing the disturbance to the environment.

- *Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?*

No federally listed wildlife or plant species are known to occur in Alta. (See p. 59, 66, 73 -82, USFS 2018, Environmental Assessment (EA) Alta Ski Lifts, Company application for Master Development Plan in the Town of Alta.
(https://www.fs.usda.gov/nfs/11558/www/nepa/103726_FSPLT3_4286628.pdf)

- *Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States?" If so, please describe and estimate any impacts the proposed project may have.*

No wetlands or surface waterbodies occur within the Project area (i.e., disturbance area).

- *When was the water delivery system constructed?*

Alta's water delivery system was constructed in the 1970's, with a major renovation project in 1995[9].

- *Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.*

No, Alta's water system does not involve irrigation, nor does not have headgates, canals or flumes.

- *Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.*

[9] 2016 DWSPP, p. 2-6,
https://townofalta.com/wp-content/uploads/2016/01/SLC_Watershed_Management_Plan.pdf

The Bay City Mine and Tunnel is eligible for inclusion in the National Register of Historic Places as it was constructed in the late 1880's. Provo Area Office of the Bureau of Reclamation personnel have consulted with the Town Alta and came to the site in April 2019. Archeologists from the Bureau of Reclamation will further inspect the area and work to be done in this project.

- *Are there any known archeological sites in the proposed project area?*

The Bay City Mine and Tunnel is known to be an archeological site where miners did mine drawings with carbide lanterns, as seen by Provo Area Reclamation personnel in April 2019.

- *Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?*

No, the proposed project components will not have either a disproportionate or adverse impact on low income or minority populations.

- *Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?*

No, access to and ceremonial use of Indian sacred sites are not affected, nor will there be impacts to tribal lands.

- *Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?*

No, nothing in the proposed project will contribute to introducing nor continuing the existence or spread of noxious weeds or non-native invasive species known to occur in the area. No vegetation or re-vegetation is involved; the mine is subterranean where there is no flora, the Grizzly Gulch natural gas line is buried beneath a dirt/gravel road where there are not plants and no fill material will be brought to the site following excavation.

National Historic Preservation Act (NEPA)
The Bay City Mine and Tunnel have been modified and modernized repeatedly over the years, including adding the concrete entry building in 1995. The Grizzly Gulch vault was substantially modified in the 1990's as well when a dead rodent was discovered floating in the water. The Town has spoken with Dave Snyder and Scott Blake at the Provo office of the Bureau of Reclamation and they have saw the Alta system in April 2019.

In addition, the Town has for many years received funds from the United States Forest Service and is in regular contact with the Salt Lake Ranger District which ensures Alta's activities are consistent with federal environmental and cultural compliance concerns.

Endangered Species Act (ESA)
Based on the USFWS Information, Planning and Conservation (IPAC) System the following species could occur in the area: Canada Lynx (*Lynx canadensis*) and June Sucker (*Chasmistes*

liorus). As the Project occurs within the Bay City Mine Tunnel and developed areas within Alta no impact is anticipated for the Canada Lynx or its habitat. No waterbody will be disturbed during construction and no impact is anticipated for the June Sucker or its habitat. See, Appendix, Environmental.

However, a comprehensive listing of flora and fauna, threatened and endangered species in Alta, part of the 2018 United States Forest Service response to the Alta Ski Lifts, Company's, proposed Master Development Plan, found no effect for species and/or its habitat. See, https://www.fs.usda.gov/nfs/11558/www/nepa/103726_FSPLT3_4286628.pdf.

Required Permits and Approvals

The Town requires building permits for any construction within the municipal boundary. This permit will be submitted to the planning department once engineering and design materials are available, in early summer 2019. Thereafter, the building department, hydrologist, and building official will review the plans and issue their comments and suggestions. Once approved by these individuals, the permit may issue. This process can take 1 month following submission of completed materials.

In addition because the water in Little Cottonwood Canyon is owned by Salt Lake City, which has a contract with Alta for surplus water, Alta will seek approval from the Salt Lake City Department of Public Utilities for the project components. Said approval involves advise and consent, rather than formal permitting. Approval must also be obtained from the State of Utah Division of Drinking Water. That approval will likely take 2 weeks. Approval will be obtained prior to any construction, which will be pursued in early summer 2019, and if necessary finished in 2020.

And, finally, because the conversion to natural gas for the Bay City Tunnel involves excavation under state highway U-210, State approval will be sought as well from the Utah Department of Transportation. This approval will be sought in conjunction and concurrently with, approval from Salt Lake County.

Official Resolution

April 11, 2019, the Alta Town Council (legislative body) approved a resolution authorizing the Mayor of Alta to sign the necessary Federal forms to apply for this grant and to commit the town to the funds should it be awarded this grant. This resolution, attached in Appendix Official Resolution, demonstrates the Town through its governing body supports applying for this funding opportunity grant. Further it establishes the Town has funds and the ability to apply those funds, as specified in the funding plan. Finally, the resolution demonstrates the Town's commitment to work with Reclamation to meet established deadlines for entering into a grant and any cooperative agreement.

Unique Entity Identifier and System for Award Management

Alta's DUNS number is: 081826364, effective through November 19, 2019. Upon inquiry, Matthew Reichert, Grants Management Specialist, Bureau of Reclamation, Department of Interior, Financial Assistance Support Section, emailed Alta Councilwoman Bourke on March 26, 2019 stating "The SAM registration identifier that we use is the DUNS number."

Letters of Support

Five entities have provided Letters of Support for Alta's proposed Project. They are collected in the Appendices section that follows.

Appendices

Mandatory Federal Forms

Appendix SF-424
Appendix SF-424C
Appendix SF-424D
Appendix SF LLL

Previous Planning

2011, Water System Future Improvement Plan 2011-2021, Keith Hansen
2014, Capital Improvements Analysis, Forsgren Associates Inc.
2019 Budget Committee Meeting list of budget items by department

Map

MWDSLS System Facilities, including Reclamation sites

Official Resolution

Town of Alta, April 11, 2019

Letters of Support

United Fire Authority, Jay Torgerson, EMS Division Chief
Metropolitan Water District of Salt Lake & Sandy, Mike DeVries, General Manager
Salt Lake City Department of Public Utilities, Laura Briefer, Director
Salt Lake County Health Department, Dr. Royal DeLegge, Director Environmental Health
Jordan Valley Water Conservancy District, Richard Bay, General Manager

Budget

Nickerson Construction

Environmental

4/14/2019, USFWS Information, Planning and Conservation (IPAC)

Town of Alta **4/1/2011**

Water System Future Improvement Plan 2011-2021

The Town of Alta's water system was initially installed in the 1977 and consists of a 325,000 gallon concrete storage tank that is filled from the 2-35hp deep well pumps in the Bay City Mine. The Grizzly portion of the system was improved in 1992 with a 10,000 gallon tank and underground pressure pump station. The Town bonded and improved the Bay City pump system in 1995. The improvements included 1800" of new 8" HDPE pipe in the Bay City tunnel, a new water operations building at the Bay City portal and new tunnel liner into the Bay City mine. This Bond will be retired in 2015. In 2010 the Town installed a 300 gpm antimony removal water treatment plant at the portal to the Bay City mine. The plant cost $535,000 and was funded through a State grant and Town capital improvement funds.

The Distribution system consists of:
4500' of 8" c-900 slip joint "Blue Brute" (1977)
3000' of 6" c-900 slip joint "Blue Brute" (1977)
500' of 6" Asbestos cement pipe (1977)
1500' of 4" HDPE (1997)
1500' of 2" c-900 slip joint PVC (1977)

While the system has served it's purpose well for the last 34 years, I feel that it needs updating to help comply with newer fire flow standards and to help prevent long water service disruptions caused by breaks, freezing, or maintenance.

I propose a long term capital improvement plan for the Town. While this could be expensive, if it is done over a period of years, the cost should be manageable to the Town with out having to go into debt.
The best solution is to loop the current system with new lines that are looped throughout the Town to allow water to reach service connections from 2 directions. I recommend prioritizing the distribution system improvements in the following way.

1. Powderidge mainline replacement: replacing the existing main line with a new 8" pipe 7' deep. There is currently 1400' of pipe and freezing and fire flow are the reasons behind replacement. In a perfect world we would also extend the Powderidge line east along the Westward Ho road (900') and tie it into Alta lift company's 6" lateral that runs from near the Buckhorn(467' main to proposed T) to the Mine building. This could then be the first system loop (Loop #1). An additional 900' would bypass the Buckhorn line and loop back into the existing near the Wildcat ticket office.

a. Powderidge 8":	1400 ft @ $50/ft. = $70,000.00	**2011**
b. Westward Ho 8" (Loop #1):	900 ft @ $35/ft. = $31,500.00	**2012**

2. The Peruvian estates PRV valve has never worked. It was improperly installed probably when the Powderidge PUD was built. This PRV if installed properly and located correctly could reduce the pressure to the Hellgate area and allow us to increase the pressure in the Powderidge area.

New 6" PRV w/isolation valves:	$4500.00	
New 2" PRV w/isolation valves:	$1500.00	
Excavation, piping, installation	$5000.00	
PRV Total:	$11,000.00	**2011**

3. Hellgate area loop. The Hellgate area is supplied through a 6" main line that starts in Peruvian estates and runs west on SR-210 (6" Blue Brute & 6" AC cement pipe) to Hellgate road where it ties into 8" DIP (field verify) that follows Hellgate road east to the Searle's residence. If a new 8" line were run through Peruvian estates (replacing the current 2" galvanized line) and parallel to the existing sewer easement to connect into the 8"DIP line in front of the Searle's, that would loop the Hellgate area and improve the Peruvian estates and Hellgate area fire flows (Loop #2).

Hellgate loop (Loop#2) 8":	1100 ft @ $50/ft = $55,000.00	**2013**

4. A mainline loop beginning in SR-210 200 ft east of the Snowpine lodge and running south to the transfer tow (750') and then running west along the transfer tow road to the mainline between the GMD and Wildcat Ticket office (1830'). This would be a 10" line that would loop the central portion of the Town. It would require a PRV in order to balance with the current mainline (8") that runs west along SR-201 and then turns south adjacent to the Alta Lodge.

Mainline loop (Loop#3) 10":	2580 ft @ $50/ft =	$129,000.00	
Loop#3 PRV & Vault:		$ 20,000.00	
	Loop#3 Total:	$149,000.00	**2014**

5. Albion base area loop. With the installation of loop#3, I would then extend the 10" line east from the transfer tow / Snowpine road junction to the Alta Ski Lift Company's maintenance shop where the line would tie back into the existing 6" HDPE line that currently services the maintenance shop, Albion Grill and ticket office. This loop (Loop#4) would be within the same pressure zone as the Alta water tank and would increase available water to that area significantly.

Albion Base loop (Loop#4) 10":	1525 ft @ $50/ft = $76,250.00	**2015**

6. Wildcat ticket office to Westward Ho loop. Tie into loop #3 just east of Wildcat tickets and run a line south and then west to tie into the Westward Ho 8"(Loop #5). This would make pressure zone #2 truly looped.

Wildcat –Westward loop (Loop#5) 10":	900 ft @ $50/ft = $45,000	**2016**

7. Grizzly 2" line replacement. At the present time, the 10,000 gallon Grizzly tank is filled by 2-3 horsepower pumps in the Bay City mine building. The maximum we can fill the Grizzly tank is at 35 GPM. We run one Grizzly pump constantly all winter at 4 GPM because the 2" line can freeze and if it does, the Grizzly residents are without water. In 1997, we replaced 1050' of the 2" with 4"HDPE. This is in the road running east from the Bay City building to the Albion Basin summer road gate. I would follow the existing 2" line easement and replace the 2" with 10" buried 7' deep. The use of 10" is to possibly provide adequate fire flows in the future. This could be accomplished two ways. A new Town water tank could be built above the Grizzly area that the new line would service, or high pressure, high capacity fire pumps could be installed either at the Bay City building or at the Alta maintenance shop. The logistics of these improvements would have to be worked out in the future but having the large line already in place would simplify that project.

Grizzly 2" replacement with 10": 1500 ft @ $50/ft = $75,000.00 **2017**

8. Maintenance shop to Grizzly jumper. Install a 10" line from loop #4 at the maintenance shop to the new 10" grizzly line. This would follow the Grizzly sewer easement up to the summer road and allow for fire pumps, new tank, or other improvements.

Grizzly jumper 10" 400 ft @ $50/ft = $20,000 **2018**

9. Replace the 2" PVC line servicing Alta Central area. Run a main line up the Alta Central road to the upper guard station turn. This could be an 8" line to increase fire protection to the businesses on the north side of SR-2010.

Alta Central line 8": 600 ft @ $50/ft = $30,000.00 **2019**

10. Replace existing 6" line from Peruvian estates to Hellgate area along SR-210. I am unsure how many feet of this line is Asbestos cement pipe. By 2020 it should probably be replaced. I would plan on replacing all 1250'.

A/C pipe replacement 8": 1250 ft @ $50/ft = $62,500.00 **2020**

11. Replace 6" line from Peruvian lodge west to Peruvian estates.

Old 6" replacement 8": 660 ft @ 50/ft = $33,000.00 **2021**

Total water distribution system capital improvements by year:

2011	1a. & 2.	$ 81,000.00
2012	1b.	$ 31,500.00
2013	3.	$ 55,000.00
2014	4.	$149,000.00
2015	5.	$ 76,250.00
2016	6.	$ 45,000.00
2017	7.	$ 75,000.00
2018	8.	$ 20,000.00
2019	9.	$ 30,000.00
2020	10.	$ 62,500.00
2021	11.	$ 33,000.00
	Total:	**$658,250.00**

These are just ideas at this stage. I am not taking into account inflation over the next 11 years. If this is the general direction the Town administration and council would like to go, I recommend the Town hire an engineer to review these tasks and possibly formalize these ideas into a Master Plan.

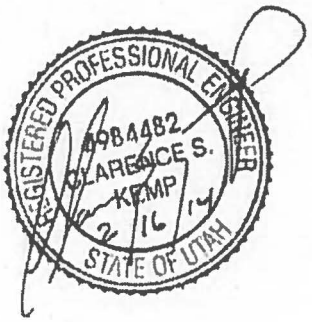
Keith Hanson
Water System Manager
Town of Alta

Planning

2014, Capital Improvements Analysis, Forsgren Associates Inc.

TOWN OF ALTA CAPITAL IMPROVEMENTS ANALYSIS





2014

FORSGREN Associates Inc

Contents

1. Purpose 2
2. System Demands 2
3. Updated Water Model 3
4. Hydraulic Profile 3
5. CIP - Modeling Results 5
6. Recommended Capital Improvments 5
7. Grizzly Gulch PZ 6
8. System Storage 6
9. Cost Estimates 6

1. Purpose

The purpose of this analysis is to evaluate the recommended capital improvements for the Town of Alta water system. Based on information and recommendations provided by the system operator(s), updates to the water model have been made, including past and future improvements. The updated water model was then used to evaluate the relative hydraulic impacts that future proposed improvements would have on the system. Benefits to the system, primarily in the form of increased fire flows, are discussed herein and construction cost estimates for the improvements are presented.

2. System Demands

This analysis uses the Alta Water system demands and peaking factors established by the University of Utah CvEEN 6440 Water Distribution System Design class of the Spring 2011 semester. This class also constructed a hydraulic model for the Alta and Snowbird systems. This model has been used as the bases for the updated hydraulic model in this analysis. Demands for the Alta Water System for Average Day (ADD), Max Day (MDD), and Peak Hour (PHD) are shown in Table 1. Fire Flows for the Hydraulic Model were set to an upper limit of 2,500 gpm.

Table 1 Alta System Demands

Demand Scenario	gpm	Peaking Factor
Average Day Demand (ADD)	171	1
Maximum Day Demand (MDD)	300	1.75
Peak Hour Demand (PHD)	536	3.1

Minimum system pressures for Public Water Systems under Utah Administrative Code R309-105-9 are as follows;

(2) Unless otherwise specifically approved by the Director, new public drinking water systems constructed after January 1, 2007 shall be designed and shall meet the following minimum water pressures at points of connection:

(a) 20 psi during conditions of fire flow and fire demand experienced during peak day demand;

(b) 30 psi during peak instantaneous demand; and

(c) 40 psi during peak day demand.

3. Updated Water Model

The Alta and Snowbird water systems are tied together but are operated as separate systems. They are divided by an isolation valve located in the Alta by-pass Road. In the existing water model this closed valve is represented by having a portion of the water line turned off in the model. To simplify the results of this analysis the Snowbird portion of the model was removed. Improvements that have since been installed but not added to the model since the last update have been added. These include the Powder Ridge Drive and East Powder Run Dr. 8-inch waterlines, and the existing 6-inch waterline running southeast from Little Cottonwood Canyon Road along Lodge Road to the Alta Ski Company's maintenance shop.

Six of the Capital Improvement Project(s) (CIP) recommendations from the Water System Future Improvement Plan 2011-2021 dated 4/21/2011 were added to the model for evaluation. These improvements are divided between the Alta Lower, and Upper Pressure Zone (PZ) and include the following:

1. Hellgate 8-inch loop (Loop #2) – Alta Lower PZ
2. Mainline 10-inch loop (Loop #3) – Alta Upper PZ
3. Albion Base 10-inch loop (Loop #4) – Alta Upper PZ
4. Wildcat – Westward 10-inch loop (Loop #5) – Alta Lower PZ
5. AC 8-inch Pipe Replacement along SR-210 – Alta Lower PZ
6. Alta Central 8-inch line – Alta Upper PZ
7. Old 6-inch replacement to 8-inch Peruvian Lodge west to Peruvian Estates

4. Hydraulic Profile

The Alta water system consists of three pressure zones. The Alta Upper Pressure Zone (AUPZ) is fed from the Alta tank and feeds the Alta Lower Pressure Zone (ALPZ) via a pressure reducing valve. The Grizzly Gulch Pressure Zone is independent of the Alta Tank and needs to be boosted for service pressures. The Alta and Snowbird systems are separated by an isolation valve on Alta by-pass Rd. This valve can be opened to supplement the Alta System from Snowbird during high or emergency demands. Figure 1.1 shows a hydraulic grade line schematic of both the Alta and Snowbird system elevations.

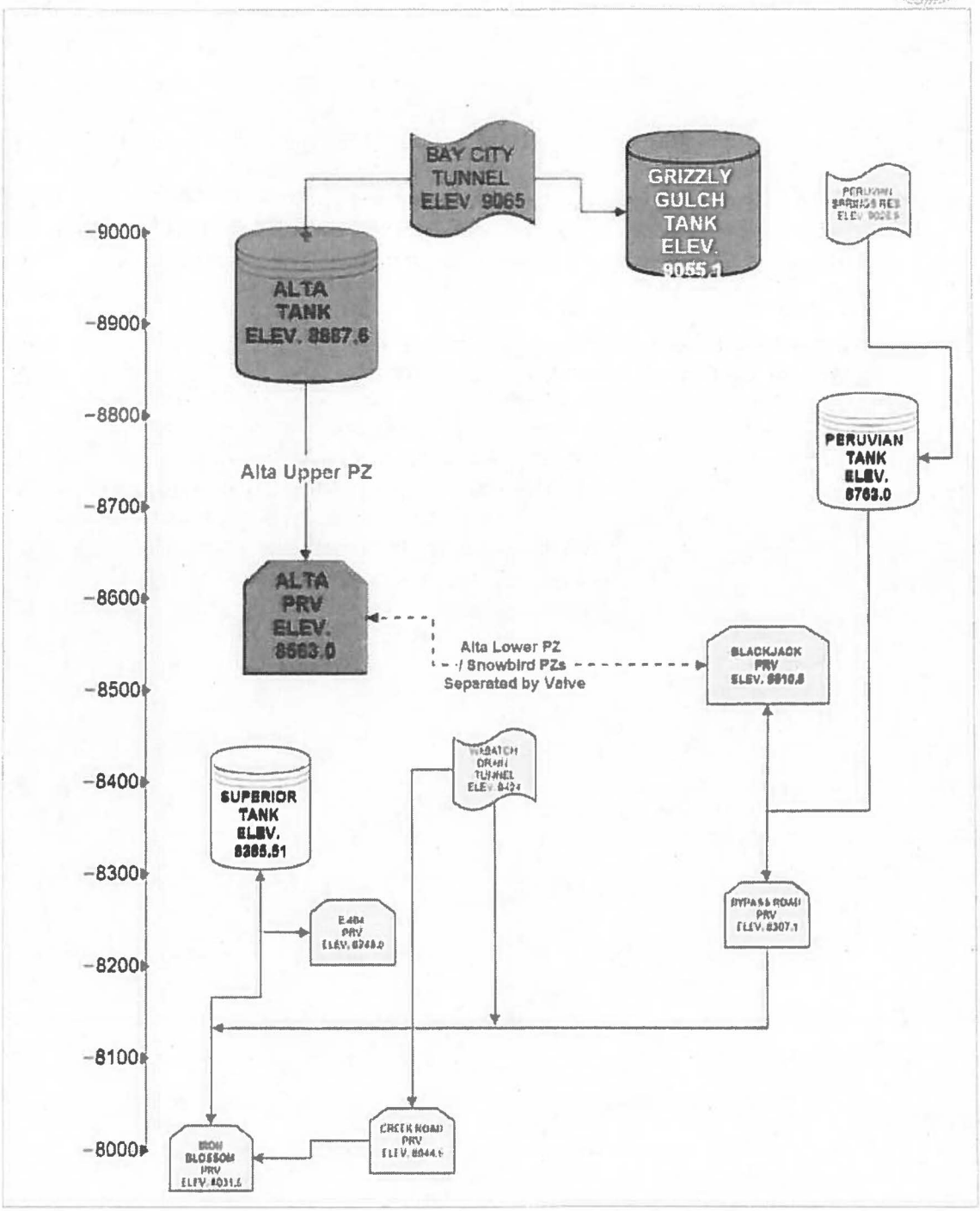

BAY CITY TUNNEL ELEV. 9065
GRIZZLY GULCH TANK ELEV. 9055.1
ALTA TANK ELEV. 8887.6
PERUVIAN TANK ELEV. 8763.0
Alta Upper PZ
ALTA PRV ELEV. 8563.0
Alta Lower PZ
/ Snowbird PZs
Separated by Valve
BLACKJACK PRV ELEV. 8510.8
SUPERIOR TANK ELEV. 8365.51
E484 PRV ELEV. 8248.0
BYPASS ROAD PRV ELEV. 8307.1
IRON BLOSSOM PRV ELEV. 8031.6
CREEK ROAD PRV ELEV. 8044.6
9000
8900
8800
8700
8600
8500
8400
8300
8200
8100
8000

Figure 1.1

5. CIP - Modeling Results

Modeling the proposed CIP recommendations showed that the system would benefit in both efficiency and redundancy with these improvements. Improved fire flow capacity was used to rank the proposed improvements. The model with the CIP improvements was run under ADD, MDD plus Fire, and PHD. Fire flows in the model were, as a matter of operational practicality, limited to 2,500 gpm in order to keep the velocity in pipe P-36 (feed from Alta Tank) to under 18 feet per second. Also, junction J-100 is the limiting node (20 psi residual) in nearly every fire flow analysis primarily due to its higher elevation. Results for the demand scenarios and fire flow analysis are found in the appendix. Based on the results of the modeling the projects below are discussed in order of recommend implementation.

6. Recommended Capital Improvements

Hellgate Area 8-inch loop (ALPZ) – Installation of the Hellgate Area loop by itself increased the available fire flows for the Hellgate area (Node TOA-14 from 1,366 gpm to 2,165). This includes replacing the 2-inch galvanized pipe line serving the Peruvian Estates west of the Alta by Pass Road. This loop will also increase better water circulation in the Hellgate area.

Mainline 10-inch Loop (AUPZ) –This line in addition to the Wildcat – Westward loop increases the fire flow available to most of the Alta Lower PZ nodes to 2,500 gpm. As indicated above, this flow was limited by keeping the velocities under 18 feet per second in the 8-inch line that feeds the system from the Alta Tank. Fire Flows along this new pipe alignment and along the existing 8-inch line along Little Cottonwood Rd within the Alta Upper PZ can also reach 2,500 gpm. This also adds redundancy to the system by feeding the ALPZ in two locations.

Albion Base 10-inch loop (AUPZ) – Adding this line would increase the fire flows near the Alta Ski Lift Company's maintenance shop from 1,240 gpm to 2,500 gpm. These fire flow capacities could be increased if the 8-inch line from the Alta Tank was upsized.

Alta Central 8-inch line (AUPZ) – This line would provide fire flows to the Alta central area. The modeling showed that an 8-inch line would provide 1,413 gpm of fire flow capacity at the upper guard station and 1,714 near Little Cottonwood Rd.

Wildcat – Westward 10-inch loop (ALPZ) – Adding this line to the model increased fire flow delivery capacity along East Powder Run from 2,193 gpm to 2,500 gpm. Perhaps more importantly, this line would also give the ALPZ two feed points for water.

AC 8-inch Pipe Replacement along SR-210 (ALPZ) - Increasing the 6-inch AC pipe along SR-210 to an 8-inch line would do little to increase the available fire flow in Hellgate area. With the installation of the Hellgate Area 8-inch loop, this line could be replaced in the distant future as recommended or even be abandoned with little hydraulic impact.

Old 6-inch replacement to 8-inch Peruvian Lodge west to Peruvian Estates (ALPZ) – The model indicates that there is minimal hydraulic benefit to increasing the size of this waterline. Unless the material, condition, or bury depth of this line are problematic from a maintenance standpoint, there is minimal value in replacing this line.

7. Grizzly Gulch PZ

No improvements for the Grizzly PZ were modeled for this analysis. Tank elevations to produce 30-40 psi at the Grizzly PZ would need to be between 9,175 and 9200 based on pressure head. The contours at these approximate elevations are shown in the attached Alta System Map exhibit.

8. System Storage

System Storage requirements are outlined by the Utah Administrative Code R309-510-8.

> *Storage Sizing.*
>
> (1) General.
>
> Each storage facility shall provide:
> (a) equalization storage volume, to satisfy average day demands for water for indoor use as well as outdoor use,
> (b) fire suppression storage volume, if the water system is equipped with fire hydrants and intended to provide fire suppression water, and
> (c) emergency storage, if deemed appropriate by the water supplier or the Director, to meet demands in the event of an unexpected emergency situation such as a line break or a treatment plant failures.

The existing 0.365 mg Alta Tank stores the fire flow and system storage for the Town. With the current fire flow requirement of 1,500 gpm for 2 hrs. (1500*60*2 = 180,000 gallons) and an average day demand of approximately 300 gpm (117*60*24 = 246,240 gallons) the system volume needed without emergency storage is 0.426 MG. This leaves a deficit of 61,240 gallons before any emergency storage is considered. In addition, to take full advantage of higher fire flow capacities in the system, additional storage volume would be needed. As the Town looks at improvements to the Grizzly Gulch PZ this deficit should be addressed.

9. Cost Estimates

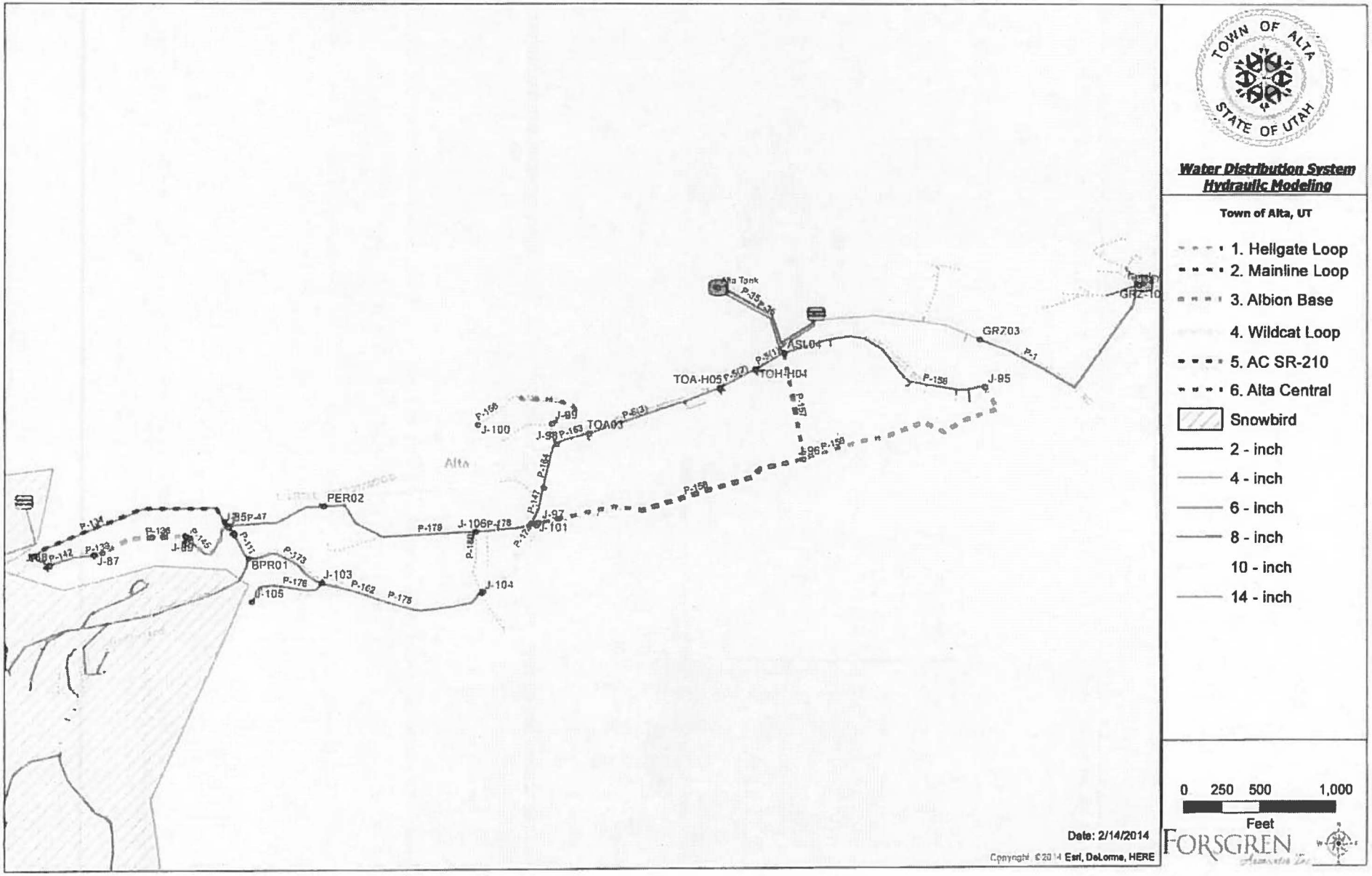
Cost estimates for the materials, installation, and surface repair for the CIP projects were done based on the modeling data. These costs also include traffic control, cleanup, 15% contingency, and construction engineering services. Results of unit price cost estimates for the seven areas discussed are shown below in Table 2 .

Table 2 Cost Estimates

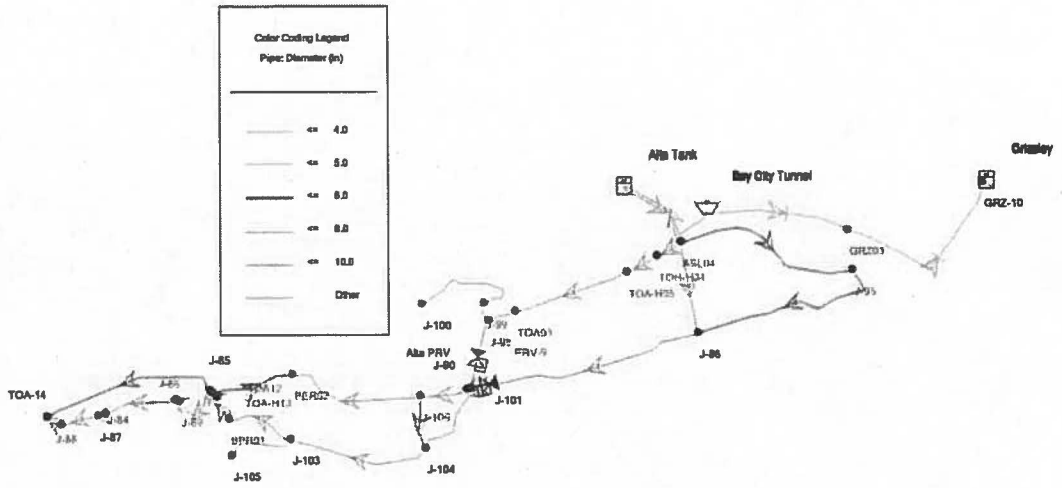
	CIP PROJECTS	Costs
1.	Hellgate 8-inch loop (Loop #2)	$150,895.00
2.	Mainline 10-inch loop (Loop #3)	$229,231.25
3.	Albion Base 10-inch loop (Loop #4)	$331,281.25
4.	Alta Central 8-inch line	$148,791.25
5.	Wildcat – Westward 10-inch loop (Loop #5)	$99,338.75
6.	AC 8-inch Pipe Replacement along SR-210	$251,975.00
7.	Alta Central 8-inch line	$150,585.00

Appendix

Hydraulic Model Results


TOWN OF ALTA
STATE OF UTAH
Water Distribution System
Hydraulic Modeling
Town of Alta, UT
1. Heilgate Loop
2. Mainline Loop
3. Albion Base
4. Wildcat Loop
5. AC SR-210
6. Alta Central
Snowbird
2 - inch
4 - inch
6 - inch
8 - inch
10 - inch
14 - inch
Alta Tank
ASL04
TOH-H04
TOA-H05
TOA01
GR703
J-85
J-87
J-88
J-89
J-100
J-101
J-103
J-104
J-105
J-106
PER02
BPR01
Alta
0 250 500 1,000
Feet
Date: 2/14/2014
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FORSGREN

Scenario: Peak Hour



Scenario: Future Max One Zone
Current Time Step: 0.000Hr
FlexTable: Junction Table

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Zone
166	GRZ-10	9,041.99	9	9,063.00	9.1	Grz PZ
164	GRZ03	8,759.84	0	9,064.95	132.0	Grz PZ
398	J-100	8,747.00	0	8,894.71	63.9	Alta Lower PZ
156	ASL04	8,707.35	7	8,895.07	81.2	Alta Lower PZ
376	J-95	8,707.00	7	8,895.02	81.3	Alta Lower PZ
185	TOH-H04	8,700.79	0	8,894.97	84.0	Alta Lower PZ
190	TOA-H05	8,687.66	78	8,894.84	89.6	Alta Lower PZ
378	J-96	8,666.37	0	8,895.02	98.9	Alta Lower PZ
154	TOA03	8,648.29	84	8,894.71	106.6	Alta Lower PZ
396	J-99	8,646.00	0	8,894.71	107.6	Alta Lower PZ
393	J-98	8,612.72	0	8,894.71	122.0	Alta Lower PZ
400	J-101	8,563.79	0	8,743.50	77.8	Alta Lower PZ
382	J-97	8,562.93	(N/A)	(N/A)	(N/A)	Alta Lower PZ
360	J-90	8,560.04	0	8,743.50	79.4	Alta Lower PZ
413	J-105	8,556.50	0	8,743.25	80.8	Alta Lower PZ
425	J-106	8,555.82	0	8,743.38	81.1	Alta Lower PZ
410	J-104	8,547.00	0	8,743.29	84.9	Alta Lower PZ
146	PER02	8,543.31	79	8,743.22	86.5	Alta Lower PZ
407	J-103	8,518.18	0	8,743.25	97.4	Alta Lower PZ
144	TOA12	8,510.50	4	8,743.22	100.7	Alta Lower PZ
323	J-85	8,509.71	0	8,743.22	101.0	Alta Lower PZ
256	TOA-H13	8,503.94	0	8,743.22	103.5	Alta Lower PZ
142	BPR01	8,503.94	21	8,743.22	103.5	Alta Lower PZ
345	J-89	8,467.50	0	8,743.22	119.3	Alta Lower PZ
327	J-86	8,464.57	0	8,743.22	120.6	Alta Lower PZ
240	TOA-14	8,451.44	10	8,743.22	126.2	Alta Lower PZ
336	J-88	8,431.76	0	8,743.22	134.8	Alta Lower PZ
331	J-87	8,420.85	0	8,743.22	139.5	Alta Lower PZ
321	J-84	8,419.71	0	8,743.22	140.0	Alta Lower PZ

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Scenario: Future Max One Zone
Current Time Step: 0.000Hr
FlexTable: Junction Table

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Zone
166	GRZ-10	9,041.99	9	9,063.00	9.1	Grz PZ
164	GRZ03	8,759.84	0	9,064.95	132.0	Grz PZ
398	J-100	8,747.00	0	8,894.71	63.9	Alta Lower PZ
156	ASL04	8,707.35	7	8,895.07	81.2	Alta Lower PZ
376	J-95	8,707.00	7	8,895.02	81.3	Alta Lower PZ
185	TOH-H04	8,700.79	0	8,894.97	84.0	Alta Lower PZ
190	TOA-H05	8,687.66	78	8,894.84	89.6	Alta Lower PZ
378	J-96	8,666.37	0	8,895.02	98.9	Alta Lower PZ
154	TOA03	8,648.29	84	8,894.71	106.6	Alta Lower PZ
396	J-99	8,646.00	0	8,894.71	107.6	Alta Lower PZ
393	J-98	8,612.72	0	8,894.71	122.0	Alta Lower PZ
400	J-101	8,563.79	0	8,743.50	77.8	Alta Lower PZ
382	J-97	8,562.93	(N/A)	(N/A)	(N/A)	Alta Lower PZ
360	J-90	8,560.04	0	8,743.50	79.4	Alta Lower PZ
413	J-105	8,556.50	0	8,743.25	80.8	Alta Lower PZ
425	J-106	8,555.82	0	8,743.38	81.1	Alta Lower PZ
410	J-104	8,547.00	0	8,743.29	84.9	Alta Lower PZ
146	PER02	8,543.31	79	8,743.22	86.5	Alta Lower PZ
407	J-103	8,518.18	0	8,743.25	97.4	Alta Lower PZ
144	TOA12	8,510.50	4	8,743.22	100.7	Alta Lower PZ
323	J-85	8,509.71	0	8,743.22	101.0	Alta Lower PZ
256	TOA-H13	8,503.94	0	8,743.22	103.5	Alta Lower PZ
142	BPR01	8,503.94	21	8,743.22	103.5	Alta Lower PZ
345	J-89	8,467.50	0	8,743.22	119.3	Alta Lower PZ
327	J-86	8,464.57	0	8,743.22	120.6	Alta Lower PZ
240	TOA-14	8,451.44	10	8,743.22	126.2	Alta Lower PZ
336	J-88	8,431.76	0	8,743.22	134.8	Alta Lower PZ
331	J-87	8,420.85	0	8,743.22	139.5	Alta Lower PZ
321	J-84	8,419.71	0	8,743.22	140.0	Alta Lower PZ

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Scenario: Future Max One Zone
Current Time Step: 0.000Hr
Fire Flow Node FlexTable: Fire Flow Report

Label	Pressure (psi)	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)
TOA-H05	89 6	Alta Lower PZ	2	True	1 500	2,500	1 578	2,578	20 0	46.1	20.0	20 4	J-100	(N/A
J-86	120 6	Alta Lower PZ	2	True	1 500	2,500	1 500	2,500	20 0	63.5	20.0	38 0	J-100	(N/A
BPR01	103 5	Alta Lower PZ	2	True	1 500	2,500	1 521	2,521	20 0	55.7	20.0	37 0	J-105	(N/A
J-84	140 0	Alta Lower PZ	2	True	1 500	2,500	1 500	2,500	20 0	73.5	20.0	38 0	J-100	(N/A
TOAH13	103 5	Alta Lower PZ	2	True	1 500	2,500	1 500	2,500	20 0	55.6	20.0	38 0	J-100	(N/A
TOA-H13	103 5	Alta Lower PZ	2	True	1 500	2,500	1,500	2,500	20 0	56.6	20.0	38 0	J-100	(N/A
TOAH18	126 2	Alta Lower PZ	2	True	1 500	2,500	1,500	2,500	20 0	53.0	20.0	38 0	J-100	(N/A
J-106	81 1	Alta Lower PZ	2	True	1 500	2,500	1,500	2,500	20 0	62.1	20.0	38 0	J-100	(N/A
TOAH05	89 6	Alta Lower PZ	2	True	1 500	2,500	1,500	2,500	20 0	43.6	20.0	20 4	J-100	(N/A
H-30	139 5	Alta Lower PZ	2	True	1 500	2,500	1,500	2,500	20 0	71.2	20.0	38 0	J-100	(N/A
TOHH04	84 0	Alta Lower PZ	2	True	1 500	2,500	1,500	2,500	20 0	47.8	20.0	30 2	J-100	(N/A
TOH-H04	84 0	Alta Lower PZ	2	True	1 500	2,500	1,500	2,500	20 0	50.3	20.0	30 2	J-100	(N/A
ASL04	81 2	Alta Lower PZ	2	True	1 500	2,500	1,507	2,507	20 0	55.3	20.0	38 0	J-100	(N/A
TOA03	106 6	Alta Lower PZ	4	True	1 500	1,832	1,584	1,916	20 0	62.7	20.0	20 0	J-100	(N/A
PER02	86 5	Alta Lower PZ	2	True	1 500	2,500	1,579	2,579	20 0	44.2	20.0	38 0	J-100	(N/A
TOA12	100 7	Alta Lower PZ	2	True	1 500	2,500	1,504	2,504	20 0	54.1	20.0	38 0	J-100	(N/A
TOA-14	126 2	Alta Lower PZ	2	True	1,500	2,500	1,510	2,510	20 0	53.6	20.0	38 0	J-100	(N/A
J-97	(N/A)	Alta Lower PZ	(N/A)	(N/A)	1,500	(N/A)	(N/A)	(N/A)	20 0	(N/A)	20.0	(N/A)	(N/A)	(N/A
J-105	80 8	Alta Lower PZ	3	True	1,500	2,378	1,500	2,378	20 0	20.0	20.0	40.1	J-100	(N/A
J-104	84 9	Alta Lower PZ	2	True	1,500	2,500	1,500	2,500	20 0	38.5	20.0	38 0	J-100	(N/A
J-103	97 4	Alta Lower PZ	2	True	1,500	2,500	1,500	2,500	20 0	48.6	20.0	32 1	J-105	(N/A
J-101	77 6	Alta Lower PZ	2	True	1,500	2,500	1,500	2,500	20 0	76.0	20.0	38 0	J-100	(N/A
J-100	83 9	Alta Lower PZ	3	False	1,500	1,412	1,500	1,412	20 0	20.0	20.0	70 9	TOHH04	(N/A
J-85	101 0	Alta Lower PZ	2	True	1,500	2,500	1,500	2,500	20 0	53.8	20.0	38 0	J-100	(N/A
J-98	122 0	Alta Lower PZ	5	True	1,500	1,714	1,500	1,714	20 0	78.1	20.0	20 0	J-100	(N/A
J-87	139 5	Alta Lower PZ	2	True	1,500	2,500	1,500	2,500	20 0	72.2	20.0	38 0	J-100	(N/A
J-96	98 9	Alta Lower PZ	2	True	1,500	2,500	1,500	2,500	20 0	66.6	20.0	38 0	J-100	(N/A
J-95	81 3	Alta Lower PZ	2	True	1,500	2,500	1,507	2,507	20 0	40.2	20.0	38 0	J-100	(N/A
J-90	79 4	Alta Lower PZ	2	True	1,500	2,500	1,500	2,500	20 0	77.3	20.0	38 0	J-100	(N/A
J-89	119 3	Alta Lower PZ	2	True	1,500	2,500	1,500	2,500	20 0	62.8	20.0	38 0	J-100	(N/A
H-32	120 6	Alta Lower PZ	2	True	1,500	2,500	1,500	2,500	20 0	57.4	20.0	38 0	J-100	(N/A
J-88	134 8	Alta Lower PZ	2	True	1,500	2,500	1,500	2,500	20 0	63.6	20.0	38 0	J-100	(N/A
H-31	134 8	Alta Lower PZ	2	True	1,500	2,500	1,500	2,500	20 0	60.2	20 0	38 0	J-100	(N/A
J-99	107 6	Alta Lower PZ	8	True	1,500	1,662	1,500	1,662	20 0	83.7	20.0	20 0	J-100	(N/A
GRZ-10	9 1	Grz PZ	1	False	1,500	0	1,509	9	20 0	9.1	20.0	132 0	GRZ03	(N/A
GRZ03	132 0	Grz PZ	1	False	1 500	0	1,500	0	20 0	132.0	20 0	9 1	GRZ-10	(N/A

CIP Mapping


ALTA TANK
City Bay Tunnel
GRIZ TANK
TOWN OF ALTA
STATE OF UTAH
Water Distribution System
CIP Improvements
Town of Alta, UT
1. Hellgate Loop
2. Mainline Loop
3. Albion Base
4. Wildcat Loop
5. AC SR-210
6. Alta Central
Snowbird
2 - inch
4 - inch
6 - inch
8 - inch
10 - inch
14 - inch
0 250 500 1,000
Feet
FORSGREN

Cost Estimates

Town of Alta					
Preliminary Construction Cost Estimate					
1. Hellgate 8-inch loop (Loop #2) – Alta Lower PZ					
Estimate Updated 1/23/2014					
Bid	**Description**	**Units**	**Estimated**	**Unit Price**	Total Price
1	Mobilization (Not to exceed 5% of Bid Price)	LS	Job	$ 5,500.00	$ 5,500.00
2	Exploratory Excavation	HR	8	$ 300.00	$ 2,400.00
3	Site Restoration and Cleanup	LS	Job	$ 2,500.00	$ 2,500.00
4	Dust Control and Watering	LS	Job	$ 1,500.00	$ 1,500.00
5	Traffic Control/Public Coordination	LS	Job	$ 14,500.00	$ 14,500.00
6	6" PE 4710 DR-11 HPDE Waterline	LF	20	$ 50.00	$ 1,000.00
7	8" PE 4710 DR-11 HPDE Waterline	LF	1000	$ 35.00	$ 35,000.00
8	Imported Pipe Bedding	LF	1020	$ 5.00	$ 5,100.00
9	8" Bends	Each	7	$ 390.00	$ 2,730.00
10	8"x8"x8" Tee	Each	1	$ 600.00	$ 600.00
11	6" Solid Sleeve	Each	1	$ 285.00	$ 285.00
12	8" Solid Sleeve	Each	1	$ 325.00	$ 325.00
13	8"x6" Reducer	Each	2	$ 450.00	$ 900.00
14	8" Gate Valve w/Box	Each	2	$ 1,500.00	$ 3,000.00
15	6" Gate Valve w/Box	Each	2	$ 1,350.00	$ 2,700.00
16	Class "B" Street Repair	LF	150	$ 50.00	$ 7,500.00
17	Class "C" Street Repair	LF	400	$ 10.00	$ 4,000.00
18	Imported Trench Backfill	LF	550	$ 20.00	$ 11,000.00
19	Imported 3/4" Minus Road Base (Road Restoration)	Ton	238	$ 10.00	$ 2,376.00
20	"MAG Water" (Dust Control Treatment)	Ton	10	$ 160.00	$ 1,600.00
21	Fire Hydrant w/Isolation Valve and Mainline Tee	Each	1	$ 3,500.00	$ 3,500.00
22	3/4" Service Line	LF	280	$ 20.00	$ 5,600.00
23	3/4" Service Line Connection	Each	7	$ 300.00	$ 2,100.00
24	Rock Excavation	CY	50	$ 100.00	$ 5,000.00
Construction Total					**$ 120,716.00**
	Construction Total (From Above)				$ 120,716.00
	Construction Engineering Services 10%				$ 12,071.60
	Contingency 15%				$ 18,107.40
	Project Total				**$ 150,895.00**

Town of Alta					
Preliminary Construction Cost Estimate					
2. Mainline 10-inch loop (Loop #3)					
Estimate Updated 1/23/2014					
Bid	**Description**	**Units**	**Estimated**	**Unit Price**	Total Price
1	Mobilization (Not to exceed 5% of Bid Price)	LS	Job	$ 9,000.00	$ 9,000.00
2	Exploratory Excavation	HR	8	$ 300.00	$ 2,400.00
3	Site Restoration and Cleanup	LS	Job	$ 2,500.00	$ 2,500.00
4	Dust Control and Watering	LS	Job	$ 1,500.00	$ 1,500.00
5	Traffic Control/Public Coordination	LS	Job	$ 3,250.00	$ 3,250.00
6	6" PE 4710 DR-11 HPDE Waterline	LF	40	$ 50.00	$ 2,000.00
7	10" PE 4710 DR-11 HPDE Waterline	LF	1500	$ 40.00	$ 60,000.00
8	Imported Pipe Bedding	LF	1540	$ 5.00	$ 7,700.00
9	10" Bends	Each	5	$ 390.00	$ 1,950.00
10	6x6"x6 Tee	Each	1	$ 600.00	$ 600.00
11	6" Solid Sleeve	Each	1	$ 325.00	$ 325.00
12	10" Solid Sleeve	Each	1	$ 450.00	$ 450.00
13	10"x6" Reducer	Each	1	$ 500.00	$ 500.00
14	10" Gate Valve w/Box	Each	4	$ 1,800.00	$ 7,200.00
15	8" Gate Valve w/Box	Each	0	$ 1,500.00	$ -
16	Class "B" Street Repair	LF	100	$ 50.00	$ 5,000.00
17	Class "C" Street Repair	LF	1500	$ 10.00	$ 15,000.00
18	Imported Trench Backfill	LF	1600	$ 20.00	$ 32,000.00
19	Imported 3/4" Minus Road Base (Road Restoration)	Ton	891	$ 10.00	$ 8,910.00
20	"MAG Water" (Dust Control Treatment)	Ton	10	$ 160.00	$ 1,600.00
21	Fire Hydrant w/Isolation Valve and Mainline Tee	Each	4	$ 3,500.00	$ 14,000.00
22	3/4" Service Line	LF	0	$ 20.00	$ -
23	Service Line Connection	Each	0	$ 300.00	$ -
24	Rock Excavation	CY	75	$ 100.00	$ 7,500.00
Construction Total					**$ 183,385.00**
	Construction Total (From Above)				$ 183,385.00
	Construction Engineering Services 10%				$ 18,338.50
	Contingency 15%				$ 27,507.75
	Project Total				**$ 229,231.25**

Town of Alta					
Preliminary Construction Cost Estimate					
3. Albion Base 10-inch loop (Loop #4)					
Estimate Updated 1/23/2014					
Bid	**Description**	**Units**	**Estimated**	**Unit Price**	Total Price
1	Mobilization (Not to exceed 5% of Bid Price)	LS	Job	$ 5,500.00	$ 5,500.00
2	Exploratory Excavation	HR	8	$ 300.00	$ 2,400.00
3	Site Restoration and Cleanup	LS	Job	$ 2,500.00	$ 2,500.00
4	Dust Control and Watering	LS	Job	$ 1,500.00	$ 1,500.00
5	Traffic Control/Public Coordination	LS	Job	$ 3,250.00	$ 3,250.00
6	8" PE 4710 DR-11 HPDE Waterline	LF	40	$ 50.00	$ 2,000.00
7	10" PE 4710 DR-11 HPDE Waterline	LF	2500	$ 40.00	$ 100,000.00
8	Imported Pipe Bedding	LF	2540	$ 5.00	$ 12,700.00
9	10" Bends	Each	5	$ 390.00	$ 1,950.00
10	10x10"x10" Tee	Each	1	$ 600.00	$ 600.00
11	8" Solid Sleeve	Each	1	$ 325.00	$ 325.00
12	10" Solid Sleeve	Each	1	$ 450.00	$ 450.00
13	10"x8" Reducer	Each	2	$ 500.00	$ 1,000.00
14	10" Gate Valve w/Box	Each	7	$ 1,800.00	$ 12,600.00
15	8" Gate Valve w/Box	Each	0	$ 1,500.00	$ -
16	Class "B" Street Repair	LF	40	$ 50.00	$ 2,000.00
17	Class "C" Street Repair	LF	2500	$ 10.00	$ 25,000.00
18	Imported Trench Backfill	LF	2540	$ 20.00	$ 50,800.00
19	Imported 3/4" Minus Road Base (Road Restoration)	Ton	1485	$ 10.00	$ 14,850.00
20	"MAG Water" (Dust Control Treatment)	Ton	10	$ 160.00	$ 1,600.00
21	Fire Hydrant w/Isolation Valve and Mainline Tee	Each	4	$ 3,500.00	$ 14,000.00
22	3/4" Service Line	LF	0	$ 20.00	$ -
23	Service Line Connection	Each	0	$ 300.00	$ -
24	Rock Excavation	CY	100	$ 100.00	$ 10,000.00
Construction Total					**$ 265,025.00**
	Construction Total (From Above)				$ 265,025.00
	Construction Engineering Services 10%				$ 26,502.50
	Contingency 15%				$ 39,753.75
	Project Total				**$ 331,281.25**

Town of Alta					
Preliminary Construction Cost Estimate					
4. Alta Central 8-inch line					
Estimate Updated 1/23/2014					
Bid	**Description**	**Units**	**Estimated**	**Unit Price**	Total Price
1	Mobilization (Not to exceed 5% of Bid Price)	LS	Job	$ 9,000.00	$ 9,000.00
2	Exploratory Excavation	HR	8	$ 300.00	$ 2,400.00
3	Site Restoration and Cleanup	LS	Job	$ 2,500.00	$ 2,500.00
4	Dust Control and Watering	LS	Job	$ 1,500.00	$ 1,500.00
5	Traffic Control/Public Coordination	LS	Job	$ 14,500.00	$ 14,500.00
6	6" PE 4710 DR-11 HPDE Waterline	LF		$ 50.00	$ -
7	8" PE 4710 DR-11 HPDE Waterline	LF	700	$ 35.00	$ 24,500.00
8	Imported Pipe Bedding	LF	700	$ 5.00	$ 3,500.00
9	8" Bends	Each	5	$ 390.00	$ 1,950.00
10	8"x8"x8" Tee	Each	1	$ 600.00	$ 600.00
11	6" Solid Sleeve	Each	0	$ 285.00	$ -
12	8" Solid Sleeve	Each	1	$ 325.00	$ 325.00
13	8"x6" Reducer	Each	0	$ 450.00	$ -
14	8" Gate Valve w/Box	Each	2	$ 1,500.00	$ 3,000.00
15	6" Gate Valve w/Box	Each	0	$ 1,350.00	$ -
16	Class "B" Street Repair	LF	40	$ 50.00	$ 2,000.00
17	Class "C" Street Repair	LF	700	$ 10.00	$ 7,000.00
18	Imported Trench Backfill	LF	740	$ 20.00	$ 14,800.00
19	Imported 3/4" Minus Road Base (Road Restoration)	Ton	416	$ 10.00	$ 4,158.00
20	"MAG Water" (Dust Control Treatment)	Ton	0	$ 160.00	$ -
21	Fire Hydrant w/Isolation Valve and Mainline Tee	Each	3	$ 3,500.00	$ 10,500.00
22	3/4" Service Line	LF	600	$ 20.00	$ 12,000.00
23	Service Line Connection	Each	6	$ 300.00	$ 1,800.00
24	Rock Excavation	CY	30	$ 100.00	$ 3,000.00
Construction Total					**$ 119,033.00**
	Construction Total (From Above)				$ 119,033.00
	Construction Engineering Services 10%				$ 11,903.30
	Contingency 15%				$ 17,854.95
	Project Total				**$ 148,791.25**

Town of Alta					
Preliminary Construction Cost Estimate					
5. Wildcat – Westward 10-inch loop (Loop #5)					
Estimate Updated 1/23/2014					
Bid	**Description**	**Units**	**Estimated**	**Unit Price**	Total Price
1	Mobilization (Not to exceed 5% of Bid Price)	LS	Job	$ 3,500.00	$ 3,500.00
2	Exploratory Excavation	HR	8	$ 300.00	$ 2,400.00
3	Site Restoration and Cleanup	LS	Job	$ 2,500.00	$ 2,500.00
4	Dust Control and Watering	LS	Job	$ 1,500.00	$ 1,500.00
5	Traffic Control/Public Coordination	LS	Job	$ 3,250.00	$ 3,250.00
6	8" PE 4710 DR-11 HPDE Waterline	LF	40	$ 50.00	$ 2,000.00
7	10" PE 4710 DR-11 HPDE Waterline	LF	700	$ 40.00	$ 28,000.00
8	Imported Pipe Bedding	LF	740	$ 5.00	$ 3,700.00
9	10" Bends	Each	3	$ 390.00	$ 1,170.00
10	10x10"x10" Tee	Each	1	$ 600.00	$ 600.00
11	8" Solid Sleeve	Each	1	$ 325.00	$ 325.00
12	10" Solid Sleeve	Each	1	$ 450.00	$ 450.00
13	10"x8" Reducer	Each	2	$ 500.00	$ 1,000.00
14	10" Gate Valve w/Box	Each	2	$ 1,800.00	$ 3,600.00
15	8" Gate Valve w/Box	Each	2	$ 1,500.00	$ 3,000.00
16	Class "B" Street Repair	LF		$ 50.00	$ -
17	Class "C" Street Repair	LF	400	$ 10.00	$ 4,000.00
18	Imported Trench Backfill	LF	400	$ 20.00	$ 8,000.00
19	Imported 3/4" Minus Road Base (Road Restoration)	Ton	238	$ 10.00	$ 2,376.00
20	"MAG Water" (Dust Control Treatment)	Ton	10	$ 160.00	$ 1,600.00
21	Fire Hydrant w/Isolation Valve and Mainline Tee	Each	1	$ 3,500.00	$ 3,500.00
22	3/4" Service Line	LF	0	$ 20.00	$ -
23	Service Line Connection	Each	0	$ 300.00	$ -
24	Rock Excavation	CY	30	$ 100.00	$ 3,000.00
Construction Total					**$ 79,471.00**
	Construction Total (From Above)				$ 79,471.00
	Construction Engineering Services 10%				$ 7,947.10
	Contingency 15%				$ 11,920.65
	Project Total				**$ 99,338.75**

Town of Alta					
Preliminary Construction Cost Estimate					
6. AC 8-inch Pipe Replacement along SR-210 – Alta Lower PZ					
Estimate Updated 1/23/2014					
Bid	**Description**	**Units**	**Estimated**	**Unit Price**	Total Price
1	Mobilization (Not to exceed 5% of Bid Price)	LS	Job	$ 9,000.00	$ 9,000.00
2	Exploratory Excavation	HR	8	$ 300.00	$ 2,400.00
3	Site Restoration and Cleanup	LS	Job	$ 2,500.00	$ 2,500.00
4	Dust Control and Watering	LS	Job	$ 1,500.00	$ 1,500.00
5	Traffic Control/Public Coordination	LS	Job	$ 14,500.00	$ 14,500.00
6	6" PE 4710 DR-11 HPDE Waterline	LF	40	$ 50.00	$ 2,000.00
7	8" PE 4710 DR-11 HPDE Waterline	LF	1450	$ 35.00	$ 50,750.00
8	Imported Pipe Bedding	LF	1490	$ 5.00	$ 7,450.00
9	8" Bends	Each	3	$ 390.00	$ 1,170.00
10	8"x8"x8" Tee	Each	1	$ 600.00	$ 600.00
11	6" Solid Sleeve	Each	1	$ 285.00	$ 285.00
12	8" Solid Sleeve	Each	1	$ 325.00	$ 325.00
13	8"x6" Reducer	Each	2	$ 450.00	$ 900.00
14	8" Gate Valve w/Box	Each	3	$ 1,500.00	$ 4,500.00
15	6" Gate Valve w/Box	Each	2	$ 1,350.00	$ 2,700.00
16	Class "B" Street Repair	LF	1300	$ 50.00	$ 65,000.00
17	Class "C" Street Repair	LF	0	$ 10.00	$ -
18	Imported Trench Backfill	LF	1300	$ 20.00	$ 26,000.00
19	Imported 3/4" Minus Road Base (Road Restoration)	Ton	0	$ 10.00	$ -
20	"MAG Water" (Dust Control Treatment)	Ton	0	$ 160.00	$ -
21	Fire Hydrant w/Isolation Valve and Mainline Tee	Each	0	$ 3,500.00	$ -
22	3/4" Service Line	LF	0	$ 20.00	$ -
23	Service Line Connection	Each	0	$ 300.00	$ -
24	Rock Excavation	CY	100	$ 100.00	$ 10,000.00
Construction Total					**$ 201,580.00**
	Construction Total (From Above)				$ 201,580.00
	Construction Engineering Services 10%				$ 20,158.00
	Contingency 15%				$ 30,237.00
	Project Total				**$ 251,975.00**

Town of Alta

FORSGREN Associates Inc.

Preliminary Construction Cost Estimate

7. Old 6-inch replacement to 8-inch Peruvian Lodge west to Peruvian Estates

Estimate Updated 1/23/2014

Bid	Description	Units	Estimated	Unit Price	Total Price
1	Mobilization (Not to exceed 5% of Bid Price)	LS	Job	$ 5,500 00	$ 5,500.00
2	Exploratory Excavation	HR	8	$ 300.00	$ 2,400.00
3	Site Restoration and Cleanup	LS	Job	$ 2,500 00	$ 2,500.00
4	Dust Control and Watering	LS	Job	$ 1,500 00	$ 1,500.00
5	Traffic Control/Public Coordination	LS	Job	$ 14,500 00	$ 14,500.00
6	6" PE 4710 DR-11 HPDE Waterline	LF	40	$ 50 00	$ 2,000.00
7	8" PE 4710 DR-11 HPDE Waterline	LF	650	$ 35.00	$ 22,750.00
8	Imported Pipe Bedding	LF	690	$ 5.00	$ 3,450 00
9	8" Bends	Each	3	$ 390.00	$ 1,170.00
10	8"x8"x8" Tee	Each	1	$ 600.00	$ 600.00
11	6" Solid Sleeve	Each	1	$ 285.00	$ 285.00
12	8" Solid Sleeve	Each	1	$ 325.00	$ 325.00
13	8"x6" Reducer	Each	2	$ 450.00	$ 900.00
14	6" Gate Valve w/Box	Each	3	$ 1,500.00	$ 4,500.00
15	6" Gate Valve w/Box	Each	2	$ 1,350.00	$ 2,700.00
16	Class "B" Street Repair	LF	500	$ 50.00	$ 25,000.00
17	Class "C" Street Repair	LF	200	$ 10 00	$ 2,000.00
18	Imported Trench Backfill	LF	700	$ 20.00	$ 14,000.00
19	Imported 3/4" Minus Road Base (Road Restoration)	Ton	119	$ 10 00	$ 1,188.00
20	"MAG Water" (Dust Control Treatment)	Ton	10	$ 160 00	$ 1,600.00
21	Fire Hydrant w/Isolation Valve and Mainline Tee	Each	0	$ 5,000.00	$ -
22	3/4" Service Line	LF	180	$ 20.00	$ 3,600.00
23	Service Line Connection	Each	6	$ 500 00	$ 3,000.00
24	Rock Excavation	CY	50	$ 100 00	$ 5,000 00
Construction Total					**$ 120,468.00**
	Construction Total (From Above)				$ 120,468.00
	Construction Engineering Services 10%				$ 12,046.80
	Contingency 15%				$ 18,070.20
	Project Total				**$ 150,585.00**

Planning

2019 Budget Committee Meeting list of budget items by department

Budget Committee Meeting – February 7, 2019

Budget topics and big ticket items:

- UFA contract cost increase – current contract amount is $146,000
- 2017 Toyota Lease Payments – paid off in January 2019. New Toyota, keep oldest one (2013) for fleet vehicle?
- Current fleet of vehicles: 2013, 2014, 2015 & 2017 Toyotas and a 2007 Chev Pickup.
- Audit costs – 2018 audit costs were $15,900
- Town liability/vehicles/property insurance costs for 2018/2019 - $38,811
- Town workers compensation costs for 2018/2019 - $6,900.00
- Alta Resort Shuttle contribution – 2018/2019 contribution is $6,000
- CWC contribution – scheduled payment - $15,000
- Matching grant funds – WFRC – trails plan or other project - $10,000?
- Use of impact fees funds on 18/19 projects
- ACVB

Other major purchases requested by department:

Police

- Town pickup truck
- Record Management System
- Legal law enforcement policy subscription
- Fulltime officer

Admin

- Adobe Acrobat (5 desks)
- Office handheld radio $1600
- Education budget

Bonuses included in salary budget

Fund the post-employment benefit fund- minimum of $30,000

Use Impact fee for projects

Capital Improvement Projects

- Radios
- VMS

- Carpet and paint in town office
- Heat tape and roof membrane on town office bldg.
- Copier

Alta Central

- Replace stair treads to 2nd flr and spot repair stairs
- Replace 4 windows
- Replace Light fixtures to LED

Water Fund

- New 50 hp pump $30,000
- Rail improvements $2,000
- Lighting in tunnel $10,000
- Grizzly pump conversion to gas $10,000
- West Griz sewer study $5,000
- Buckhorn water meter replacement $4000

Sewer

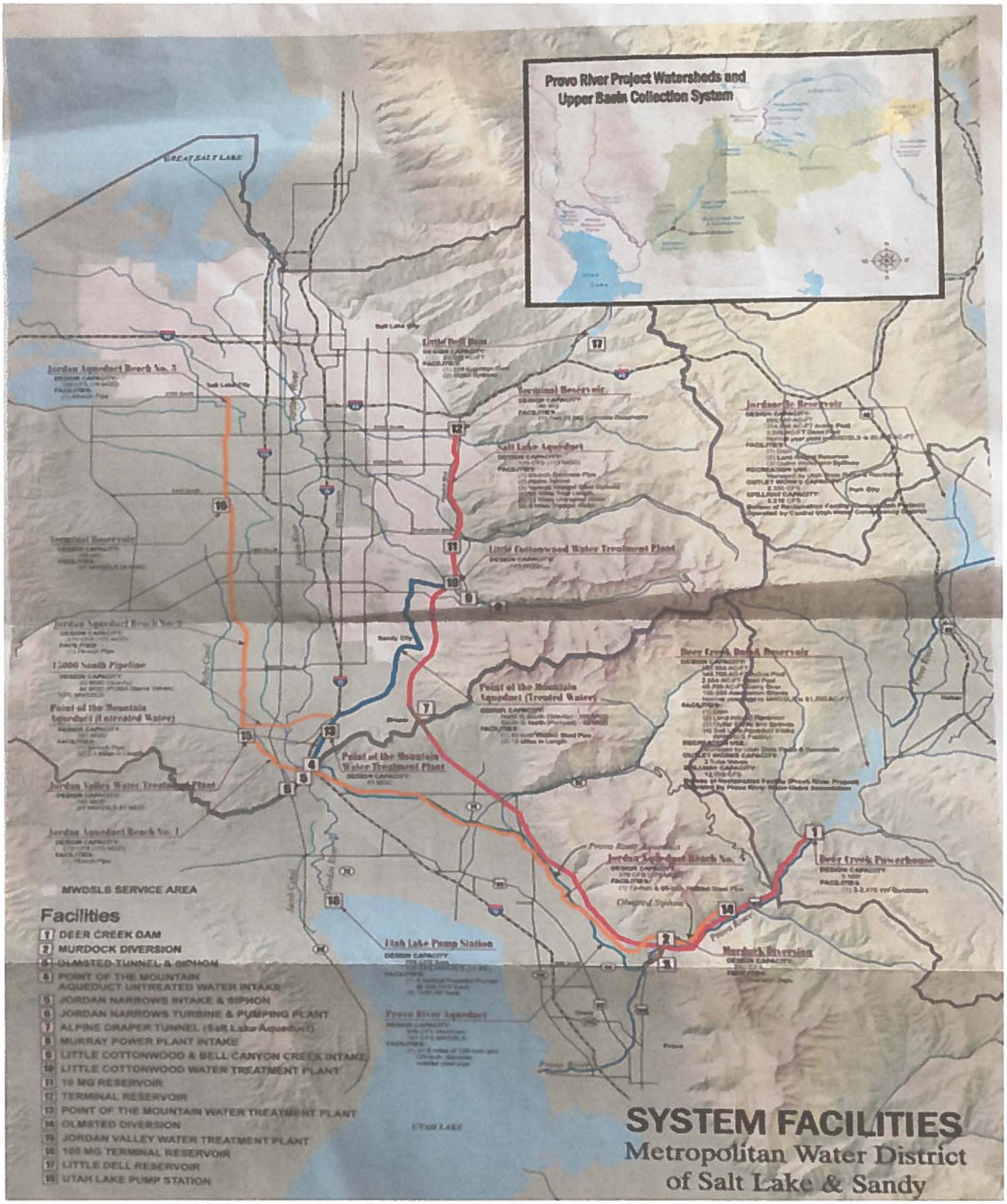
- West Grizzly RFP

Reasons to amend:

- Routine
- Bonuses
- Caselle modules

Map

MWDSLS System Facilities, including Reclamation sites


Provo River Project Watersheds and Upper Basin Collection System
GREAT SALT LAKE
Jordan Aqueduct Reach No. 3
Little Dell Dam
Terminal Reservoir
Salt Lake Aqueduct
Jordanelle Reservoir
Little Cottonwood Water Treatment Plant
12000 South Pipeline
Point of the Mountain Aqueduct (Untreated Water)
Point of the Mountain Aqueduct (Treated Water)
Point of the Mountain Water Treatment Plant
Deer Creek Dam & Reservoir
Jordan Valley Water Treatment Plant
Jordan Aqueduct Reach No. 1
Jordan Aqueduct Reach No. 4
Deer Creek Powerhouse
Murdock Diversion
Utah Lake Pump Station
Provo River Aqueduct
UTAH LAKE
MWDSLS SERVICE AREA
Facilities
1 DEER CREEK DAM
2 MURDOCK DIVERSION
3 OLMSTED TUNNEL & SIPHON
4 POINT OF THE MOUNTAIN AQUEDUCT UNTREATED WATER INTAKE
5 JORDAN NARROWS INTAKE & SIPHON
6 JORDAN NARROWS TURBINE & PUMPING PLANT
7 ALPINE DRAPER TUNNEL (Salt Lake Aqueduct)
8 MURRAY POWER PLANT INTAKE
9 LITTLE COTTONWOOD & BELL CANYON CREEK INTAKE
10 LITTLE COTTONWOOD WATER TREATMENT PLANT
11 10 MG RESERVOIR
12 TERMINAL RESERVOIR
13 POINT OF THE MOUNTAIN WATER TREATMENT PLANT
14 OLMSTED DIVERSION
15 JORDAN VALLEY WATER TREATMENT PLANT
16 100 MG TERMINAL RESERVOIR
17 LITTLE DELL RESERVOIR
18 UTAH LAKE PUMP STATION
SYSTEM FACILITIES
Metropolitan Water District of Salt Lake & Sandy

Official Resolution

Town of Alta, April 11, 2019

TOWN OF ALTA
RESOLUTION NO. 2019-R-4

A RESOLUTION AUTHORIZING THE SUBMITTAL OF A BUREAU OF RECLAMATION (BOR) GRANT APPLICATION IN RESPONSE TO ANNOUNCEMENT NO. FOA BOR-DO-19-F005 AND AUTHORIZING THE MAYOR TO COMMIT TO SUBSEQUENT APPROPRIATION OF REQUIRED MATCHING FUNDS FOR THE TOWN OF ALTA WATER DISTRICT FOR A WaterSMART: SMALL-SCALE WATER EFFICIENCY PROJECT

WHEREAS, the Alta Town Council on behalf of the Town of Alta has authorized preparation of planning and engineering reports to evaluate Alta's water needs;

WHEREAS, the Alta Town Council has reviewed the proposals from engineering consultants about the weaknesses and inefficiencies in its water distribution system from 2011 and 2014;

WHEREAS, the Alta Town Council acknowledges the need to implement infrastructure improvements and efficiencies from the referenced engineering and design reports;

WHEREAS the Alta Town Council believes the Town of Alta to be qualified, willing and able to carry out all activities ascribed in the BOR grant application;

WHEREAS in this action the Alta Town Council on behalf of the Town of Alta declares its commitment to the funding obligations specified in the funding plan of the WaterSMART: Small-Scale Water Efficiency Project as described in the application;

WHEREAS in this action the Alta Town Council has declared its intent and that the mayor will execute the WaterSMART: Small-Scale Water Efficiency Program described in the application;

WHEREAS in this action the Alta Town Council declares that the Town of Alta will, upon an award and acceptance of the grant, agree to the terms of the grant.

NOW, THEREFORE, BE IT RESOLVED BY THE TOWN COUNCIL AS FOLLOWS:

Section 1. The Alta Town Council supports and requests the funds and assistance from the Bureau of Reclamation WaterSMART: Small-Scale Water Efficiency Program and will comply with the rules for the program, and

Section 2. The Alta Town Council has reviewed the application to be submitted to the Bureau of Reclamation WaterSMART: Small-Scale Water Efficiency Program, and commits that the Town of Alta will provide the funding and/or in-kind contributions specified in the funding plan, and

Section 3. **Alta's Mayor** is authorized to act on behalf of the Town of Alta to submit and sign an application to the Bureau of Reclamation WaterSMART: Small-Scale Water Efficiency Program, sign related documents, work with the BOR to meet established deadlines for entering into a grant or cooperative agreement, and

Section 4. Alta's Mayor is authorized to sign related documents, and to work with Reclamation to meet established deadlines for entering into a grant or cooperative agreement,

APPROVED by the Town Council on the 11th day of April, 2019.

By:

MAYOR HARRIS SONDAK

ATTEST:

PIPER LEVER, TOWN CLERK

APPROVED AS TO FORM:

NORA R. PINCUS, TOWN ATTORNEY

Letters of Support

United Fire Authority, Jay Torgerson
Metropolitan Water District of Salt Lake & Sandy, Mike DeVries, General Manager
Salt Lake City Department of Public Utilities, Laura Briefer, Director
Salt Lake County Health Department, Dr. Royal DeLegge, Director Environmental Health
Jordan Valley Water Conservancy District, Richard Bay, General Manager

UNIFIED FIRE AUTHORITY

Mayor Harris Sondak
Town of Alta
P.O. Box 8016
Alta, UT 84092-8016

April 2, 2019

Dear Mayor Sondak,

Thank you for reaching out to Unified Fire Authority (UFA) for input regarding the Water System that serves the area around the Town of Alta, Utah. UFA is proud to serve the Town of Alta, it's citizens and the thousands of visitors who recreate year round in here. UFA provides fire and all hazard response capabilities, emergency medical and rescue services in and around the Town of Alta, 24 hours a day, 365 days a year, from Station 113 in Little Cottonwood Canyon. UFA supports Alta's efforts to improve the reliability in its water infrastructure in the Bay City Mine Tunnel.

I cannot emphasize enough, how important a reliable water system is for our emergency and fire responses around the Town of Alta. This was made clear on a recent response to a multi-unit condominium fire UFA firefighters responded to in February of this year. A fire engine carries about 500 gallons of water, that is quickly utilized on an initial fire attack. This water is used in a matter of a few minutes when combatting a fire and must be quickly resupplied. The fire crew accomplishes this by accessing the water system through a connection made to the nearest fire hydrant. Fire hydrants are a part of the overall water system in the area and allow the fire engine to replenish its water supply. Alta's plans to update its water infrastructure system should enable firefighters to continue to have a reliable and adequate source of water to use to completely extinguish a fire. If the fire involves structures, as it did recently, this may require several thousands of gallons of water.

We are seeing steady growth in the number of people living in and visiting the Town of Alta each year. This has led to an increase in the number of calls for emergency response, both fire and emergency medical. We have also seen an increase in the number of callouts during the summer season for wildland fire incidents. This includes callouts for both natural and man caused fires. Having a reliable source of water is vital during these emergencies, with our focus being life safety, structure protection and resource value protection. The Area around Alta is an important watershed, providing drinking water to millions of people in the Salt Lake Valley and well beyond. Having reliable access to an adequate water supply to quickly extinguish a fire, before it grows is extremely important to protecting this valuable and important community resource.

Sincerely,

Jay Torgersen
Division Chief, Unified Fire Authority
jtorgersen@unifiedfire.org

Metropolitan Water District of Salt Lake & Sandy
3430 East Danish Road, Cottonwood Heights, UT 84093
Phone: 801-942-1391 Fax: 801-942-3674
www.mwdsls.org

April 9, 2019

Mayor Harris Sondak
Town of Alta
P. O. Box 8016
Alta, UT 84092-8016

Dear Mayor Sondak,

This letter demonstrates the Metropolitan Water District of Salt Lake & Sandy's (MWDSLS) support for the Town of Alta's WaterSMART: Small-Scale Water Efficiency Project grant application for improvements to the Bay City Mine Tunnel, the water metering program, and the distribution system.

As a wholesale provider of drinking water, MWDSLS treats and delivers Little Cottonwood Creek water to Salt Lake City, Sandy City, and Jordan Valley Water Conservancy District. This water is then delivered within the respective service areas of these entities, with the potential to be conveyed to over one million people in the Salt Lake Valley. Source water protection of Little Cottonwood Creek is essential to the public health of nearly the entire Salt Lake Valley.

The proposed project's objectives support protection of the Little Cottonwood Creek Watershed which provides approximately 35% of the total water treated at MWDSLS's Little Cottonwood Water Treatment Plant. Additionally, the project should result in more efficient use of water in the watershed which will be beneficial to all users of Little Cottonwood Creek.

MWDSLS recognizes the importance of water conservation and watershed protection efforts in the Little Cottonwood Creek Watershed. Therefore, MWDSLS supports the Town of Alta's application for the WaterSMART: Small-Scale Water Efficiency Project grant.

Sincerely,

Michael J. DeVries
General Manager

JACQUELINE M. BISKUPSKI
Mayor



DEPARTMENT OF PUBLIC UTILITIES

April 15, 2019

Mayor Harris Sondak
Town of Alta
P.O. Box 8016
Alta, UT 84092-8016

Dear Mayor Sondak,

Salt Lake City Department of Public Utilities (SLCDPU) is pleased to support the Town of Alta's WaterSMART: Small-Scale Water Efficiency Project grant application for improvements to the Bay City Mine Tunnel, the water metering program, and the distribution system.

As a retail provider of drinking water, SLCDPU treats and delivers about 3.9 billion gallons of water annually to 352,000 people over a water service area of about 141 square miles. Our water service area includes Salt Lake City, Mill Creek City, Holladay City, Cottonwood Heights City, and portions of South Salt Lake, Murray, and Midvale Cities. The communities served by SLCDPU rely upon surface water sources in the Central Wasatch Mountains, including Little Cottonwood Creek. Protecting these water sources from pollution and degradation is essential to the public health of nearly the entire Salt Lake Valley. The Town of Alta is located in the Little Cottonwood Creek watershed, and has been a longstanding partner in the protection of these critical water resources

The proposed project's objectives support protection of the Little Cottonwood Creek Watershed which contributes approximately 10-15% of the overall water supply to SLCDPU's service area. Additionally, the project should result in more efficient use of water in the Town of Alta, which will be beneficial to all who rely on Little Cottonwood Creek for water supplies.

Our communities benefit from water conservation and watershed protection efforts in the Little Cottonwood Creek Watershed. SLCDPU supports the Town of Alta's Application for the WaterSMART: Small-Scale Water Efficiency Project grant.

Sincerely,

Laura Briefer
Director

1530 South West Temple
Salt Lake City, Utah 84115

www.slcgov.com
Tel 801-483-6900 Fax 801-483-6818

SALT LAKE COUNTY
HEALTH DEPARTMENT

Jennifer Wilson, *Salt Lake County Mayor*
Karen Crompton, *Human Services Director*
Gary Edwards, *Executive Director*

April 8, 2019

Mayor Harris Sondak
Town of Alta
P.O. Box 8016
Alta, UT 84092-8016

Dear Mayor Sondak:

The Salt Lake County Health Department provides this letter of support for the application the Town of Alta is submitting to the Bureau of Reclamation for a proposed WaterSMART: Small-Scale Water Efficiency Project venture.

The department supports the Town of Alta in its efforts to improve the ability to provide high-quality and sustainable drinking water for residents of the town. Toward this end, the Town recognizes the need to modernize aspects of its water system infrastructure with projects that would include improvements to the Town's sole source of supply, the Bay City Mine Tunnel, as well as needed improvements in its water metering program and improvements to the Town water distribution system. These proposed system improvements, identified in studies commissioned by the Town, provide support for the 2016 Drinking Water Source Protection Plan. The Town and the department both recognize that a high-quality water supply infrastructure must be sustained in order to help maintain and protect the Little Cottonwood watershed from potential degradation.

Given the legal authority that the Town and the department share to ensure safe drinking water supplies to Town residents and visitors, we support upgrades and improvements to the Town water system designed to achieve those ends.

Sincerely,

Royal P. DeLegge, PhD, LEHS, RS
Environmental Health Director

Royal P. DeLegge, PhD, LEHS, RS, *Director, Environmental Health*
788 East Woodoak Lane (5380 South) Murray, UT 84117 T 385-468-3860 F 385-468-3861 **saltlakehealth.org**
Salt Lake County Health Department promotes and protects community and environmental health

JORDAN VALLEY WATER
CONSERVANCY DISTRICT

8215 South 1300 West • West Jordan, UT 84088 • Ph: 801.565.4300 • www.jvwcd.org

Richard P. Bay, *General Manager/CEO*
Barton A. Forsyth, *Assistant General Manager*
Alan E. Packard, *Assistant General Manager*

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Lyle C. Summers
John H. Taylor

April 9, 2019

Mayor Harris Sondak
Town of Alta
PO Box 8016
Alta, UT 84092-8016

Dear Mayor Sondak:

I understand that the Town of Alta is applying for cost-sharing funds from the US Bureau of Reclamation. The projects proposed for federal funding of about $67,000 include improvements to the Town's source of supply via the Bay City Mine Tunnel, improvements to the Town's water metering program, and improvements to the Town's distribution system.

The Town of Alta is located at the head of Little Cottonwood Canyon, a watershed that is important in providing high-quality water supply to water users in the Salt Lake Valley. Jordan Valley Water Conservancy District occasionally receives Little Cottonwood Creek water, treated for potable use by Metropolitan Water District of Salt Lake and Sandy. Jordan Valley Water is supportive of the Town's cost-sharing application to the US Bureau of Reclamation.

Sincerely,

Richard P. Bay

Richard P. Bay
General Manger/CEO

c: Bart Forsyth

Budget

Nickerson Company, Inc.

Estimate Sheet

Nickerson Company, Inc.
P.O. Box 25425
2301 West Indiana Ave.
Salt Lake City, UT 84125

	Customer:	TOWN OF ALTA		3/21/2019
	Attention:	KEITH HANSON		
	Phone:	801-330-3447		
	Fax:			
	Job Name:	BAY CITY MINE TUNNEL WELL PUMP		
	Condition of Service:	300 GPM @ 450' HD		
#	**Item**	**Description**	**Unit**	**Extension**
				$ -
1	PUMP, MOTOR, CABLE, COLUMN, SHROUD, AND CHECK VALVE	BERKELEY SUBMERSIBLE PUMP MODEL 6TMH-300, 8 STAGE, STANDARD MATERIALS OF CONSTRUCTION, 50 HP FRANKLIN SUBMERSIBLE MOTOR, 6", SANDFIGHTER, 3/60/460 VOLT, 350' OF #4/3 SUBMERSIBLE PUMP CABLE WITH GROUND, FLAT, JACKETED, 300' OF 4" COLUMN PIPE IN 10' SECTIONS, NPT, 8" X 10' PVC FLOW INDUCER SHROUD, 4" DUCTILE IRON CHECK VALVE, EXISTING DISCHARGE HEAD ASSEMBLY.	$ 15,539.00	$ 15,539.00
				$ -
1	REMOVAL AND INSTALLATION	MOBILIZATION AND DE-MOBILIZATION, REMOVAL OF THE EXISTING SUBMERSIBLE WELL PUMP WITH 200' OF 4" COLUMN PIPE ASSEMBLY, RE-INSTALL THE NEW COMPONENTS ABOVE. PRICING INCLUDES UP TO (4) 8 HOUR DAYS. (EACH 8 HOUR DAY INCLUDES TRAVEL TO AND FROM JOBSITE)	$ 11,220.00	$ 11,220.00
				$ -
		NOTE: SHOULD ANY UNFORSEEN CIRCUMSTANCES ARISE IN THE REMOVAL OR INSTALLATION THAT WOULD EXCEED THE (4) DAYS QUOTED, THE HOURLY RATE FOR (2) MEN IS $235.00 PLUS MILEAGE.		$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
	Freight:			INCLUDED
	Tax			NOT INCLUDED
	Total Price:			$ 26,759.00
	Shipment:	APPROX. 4 WEEKS A.R.O.		
	FOB:	JOBSITE		

QUOTE GOOD FOR 30 DAYS

Terms: Net 30 days
Quoted by: Jeff Stucki

Phone: 801-973-8888
Fax: 801-973-8267

SCHNEIDER ELECTRIC

Variable Frequency Drive,50 Max. HP,3 Input Phase AC,575 to 690VAC Input Voltage

Item # 48R362 Mfr. Model # ATV71HD37Y Catalog Page # N/A UNSPSC # 26111503



Web Price
$9,476.94 / each

This item requires special shipping, additional charges may apply

One Time Delivery

1 Add to Cart

+ Add to List |

Shipping Pickup

Ships from supplier. Expect to arrive on or before **Fri. Apr 12**

Ship To **84101** (Change)

Be the first to write a review

Shipping Weight **150.0 lbs.**

Country of Origin France | *Country of Origin is subject to change.*

Note: Product availability is real-time updated and adjusted continuously. The product will be reserved for you when you complete your order. More

How can we improve our Product Images?

Compare

Technical Specs

Item	Variable Frequency Drive
Max. HP	50
Enclosure	Open
Input Voltage	575 to 690VAC
Max. Output Amps	52
Output Voltage	575 to 690VAC
Input Phase AC	3
Output Phase AC	3
With Bypass / No Bypass	No Bypass
With Line Contactor / No Line Contactor	No Line Contactor
Input Frequency	50/60 Hz

Output Frequency Range	0.1 to 599 Hz
Dynamic Braking	Yes
Control Type	Keypad/Remote
Key Pad Lockout	No
Start/Stop Control	Programmable
Protection	Motor thermal protection,Motor power removal,Motor motor phase break,Drive thermal protection,Drive short-circuit between motor phases,Drive power removal,Drive overvoltages on the DC bus,Drive overheating protection,Drive overcurrent between output phases and earth,Drive line supply undervoltage,Drive line supply overvoltage,Drive input phase breaks,Drive break on the control circuit,Drive against input phase loss,Drive against exceeding limit speed
Accepts Input Control Signal	Yes
Display Type	LCD
Displays	LCD
Digital Readout	Yes
Standards	UL, CSA, CE, NOM,GOST, C-Tick, DNV, RoHS, ABS

Environmental

4/14/2019, USFWS Information, Planning and Conservation (IPAC)

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

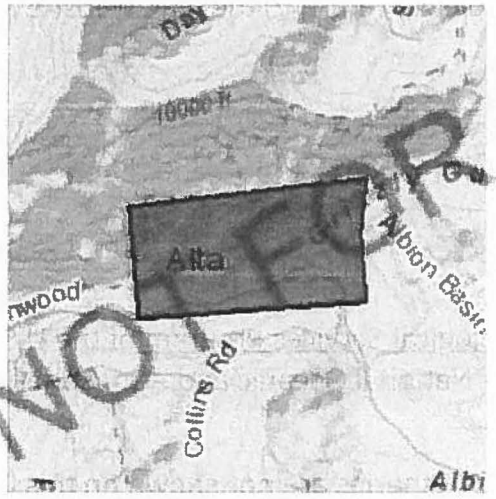
This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Salt Lake County, Utah



Local office

Utah Ecological Services Field Office

(801) 975-3330
(801) 975-3331

2369 West Orton Circle, Suite 50
West Valley City, UT 84119-7603

http://www.fws.gov
http://www.fws.gov/utahfieldoffice/

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Canada Lynx Lynx canadensis — Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/3652

Fishes

NAME	STATUS
June Sucker Chasmistes liorus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/4133	Endangered

Flowering Plants

NAME	STATUS
Ute Ladies'-tresses Spiranthes diluvialis No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2159	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

NOT FOR CONSULTATION

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php

- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Black Rosy-finch Leucosticte atrata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9460	Breeds Jun 15 to Aug 31

Black Swift Cypseloides niger — Breeds Jun 15 to Sep 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8878

Brewer's Sparrow Spizella breweri — Breeds May 15 to Aug 10
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9291

Brown-capped Rosy-finch Leucosticte australis — Breeds Jun 15 to Sep 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/1680

Lewis's Woodpecker Melanerpes lewis — Breeds Apr 20 to Sep 30
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9408

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Rufous Hummingbird selasphorus rufus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Virginia's Warbler Vermivora virginiae — Breeds May 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9441

Willow Flycatcher Empidonax traillii — Breeds May 20 to Aug 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/3482

Probability of Presence Summary

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The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season ( )
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

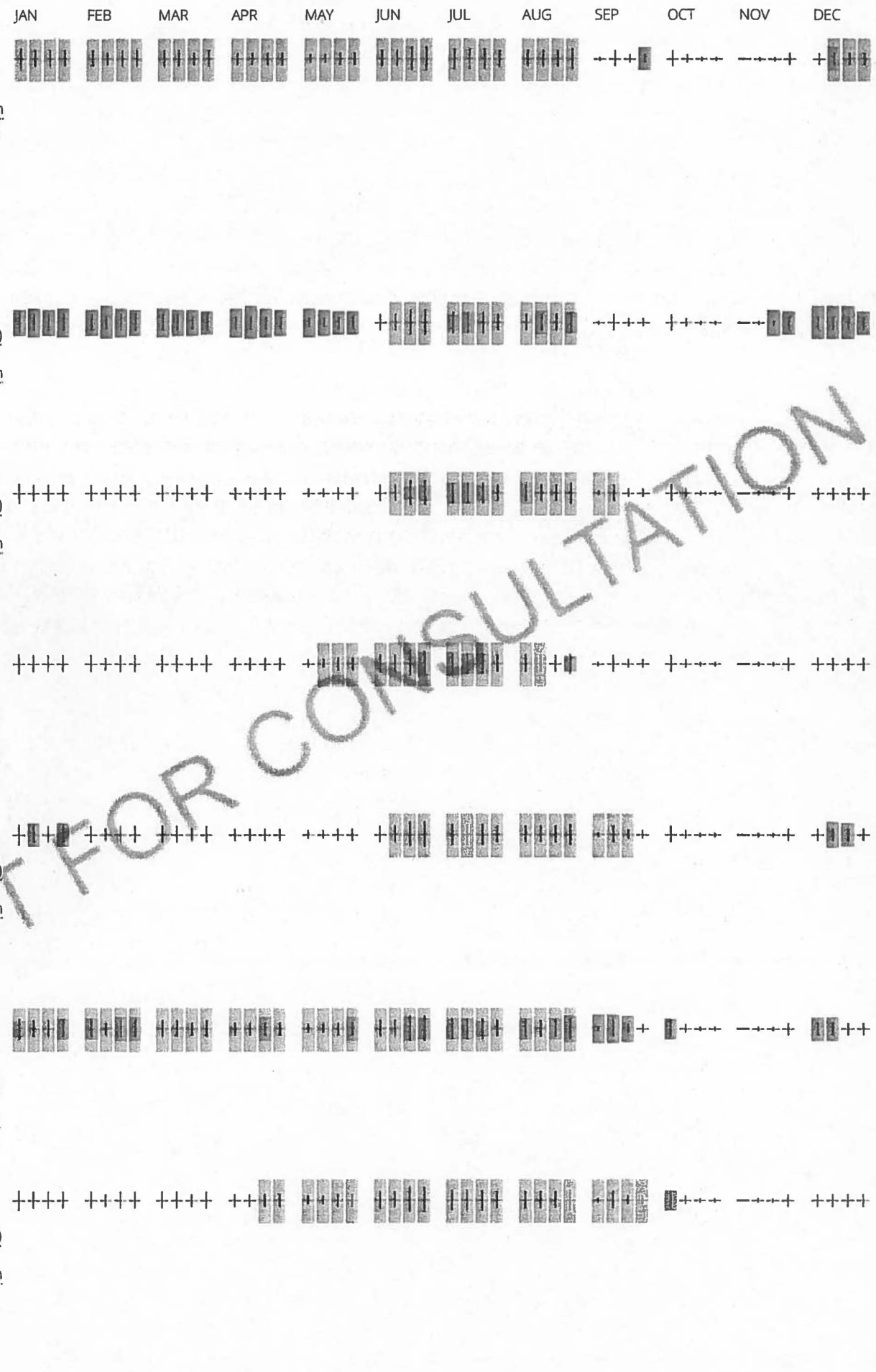
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

■ probability of presence breeding season | survey effort – no data



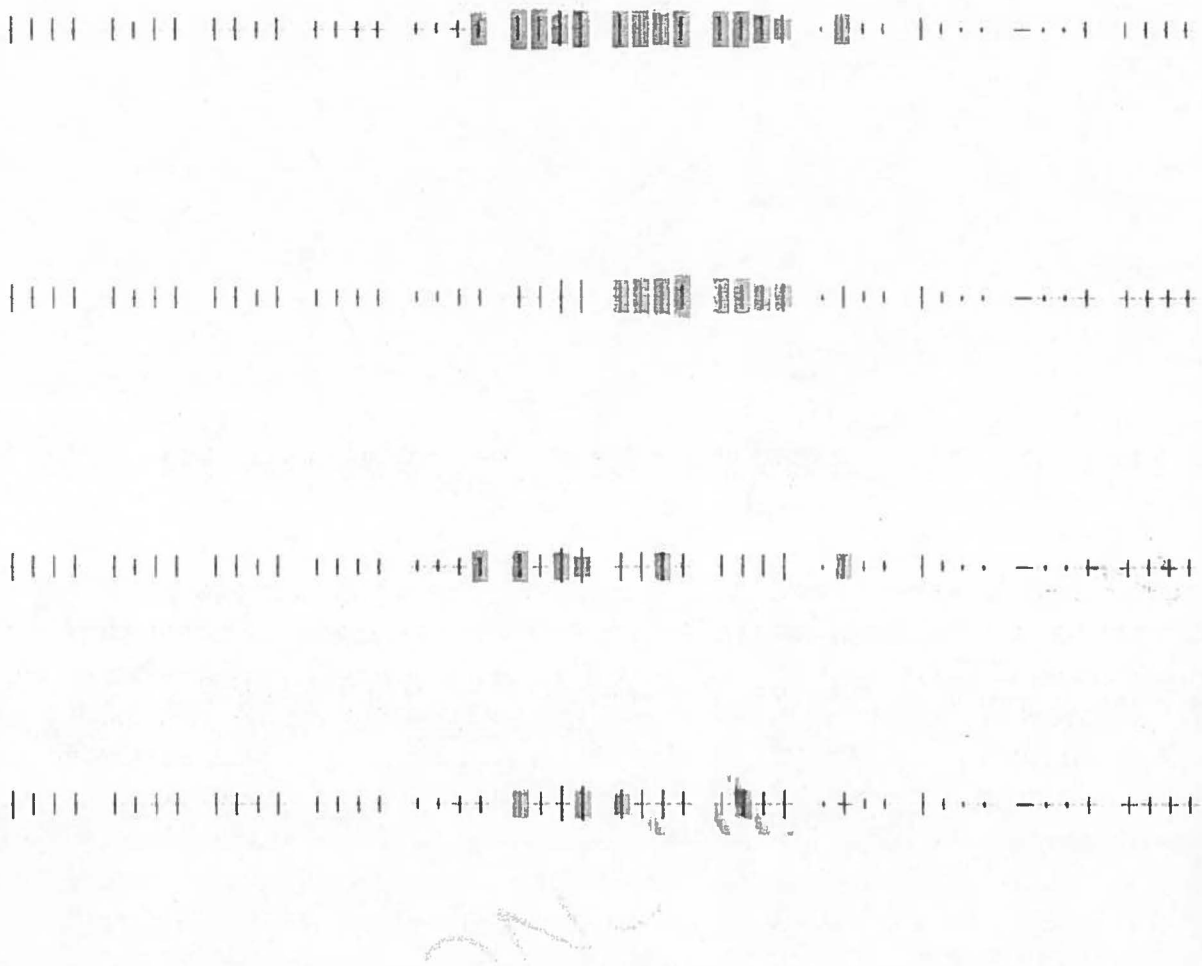
NOT FOR CONSULTATION

Olive-sided Flycatcher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Rufous Hummingbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Virginia's Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Willow Flycatcher
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

NOT FOR CONSULTATION

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

Wildlife refuges and fish hatcheries

REFUGE AND FISH HATCHERY INFORMATION IS NOT AVAILABLE AT THIS TIME

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER FORESTED/SHRUB WETLAND

PSSC

RIVERINE

R5UBH

R4SBC

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION