WaterSMART

Water and Energy Efficiency Grants for FY 2017

Funding Opportunity Announcement No. BOR-DO-17-F012

Funding Group II

Mountain Green Secondary Improvements Project

Mountain Green, Utah

Mountain Green Secondary Water Company
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January 18, 2017

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Technical Proposal and Evaluation Criteria

Executive Summary

The executive summary should include:

- *The date, applicant name, city, county, and state*
- *A one paragraph project summary that specifies the work proposed, including how project funds will be used to accomplish specific project activities and briefly identifies how the proposed project contributes to accomplishing the goals of this FOA*
- *State the length of time and estimated completion date for the proposed project*
- *Whether or not the project is located on a Federal facility*

Date:	January 18, 2017
Applicant:	Mountain Green Secondary Water Company Mountain Green, Morgan County, Utah
Project Title:	Mountain Green Secondary Improvements

Mountain Green is a community in Morgan County, north of the Weber River. The project sponsor is Mountain Green Secondary Water Company (MGSWC). Other entities affected by the project are Cottonwood Mutual Water Company (CMWC), Northwest Irrigation Company (NIC), and Trout Unlimited (TU). The project consists of replacing a diversion dam and adding a fish ladder, replacing a splitter weir, enclosing the Northwest Ditch in a pipe, constructing the Northside Creek Reservoir and feeder pipeline, and adding a secondary waterline between subdivisions to serve additional customers. The aging diversion dam that will be replaced delivers water to an existing pipeline and canal. The new diversion structure will include a fish ladder to improve spawning habitat in Cottonwood Creek. The improved habitat will be 14.5 miles in length. The existing splitter does not allow flow measurement or accurate flow split. The new splitter weir will include a measurement device and accurate flow split via a vertical plate and weir to allow better management that was not previously available. The Northwest Ditch will be enclosed in a pipeline to conserve water. Construction of the Northside Creek Reservoir will provide additional storage for the overall system. The new secondary pipeline will connect a portion of the secondary system that has already been installed, but remained dry since construction, with existing secondary lines currently in use. It will also allow additional subdivisions access to secondary water when secondary lines are installed in the future. The cost of the overall project is $5,042,000. In addition to the proposed facilities, MGSWC is constructing other facilities to improve the operation of the secondary system. All four entities will participate in the funding of the overall project and enjoy the benefits of conserved water, better management, improved energy efficiency, preserved water quality for culinary use, and sustainability of habitat. The requested grant is $1,000,000, approximately 20 percent of the total project. The project is estimated to conserve 650 acre-feet of water annually. It is also estimated that through the conversion of 203 culinary to secondary connections for outdoor water use, $20,000 in energy costs will be saved annually by reducing the volume of groundwater pumped for outdoor use. The energy saved is approximately 161,000 kWh annually. These conversions allow for better management of high-quality groundwater and surface water supplies.

Approximate Length:	18 months
Completion Date:	December 2018
Federal Facility:	The project is not located on a Federal facility.

Background Data

Project Location

Provide a map of the area showing the geographic location (include the state, county, and direction from the nearest town) of the proposed project.

The project is in and around Mountain Green, Morgan County, Utah. See Figure 1.

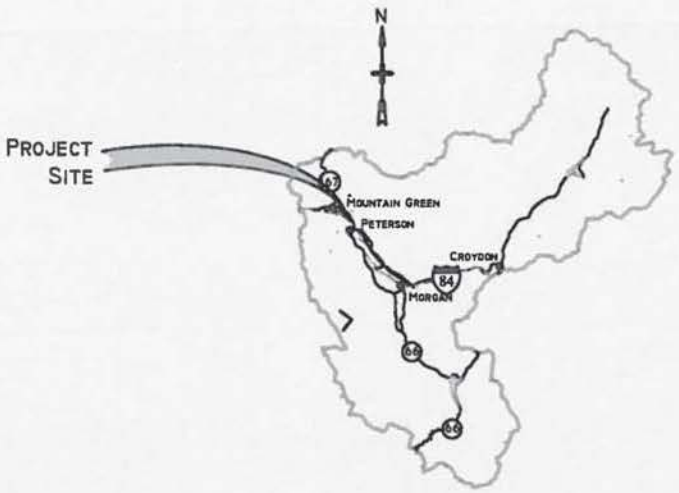
Project Sponsors and Participants

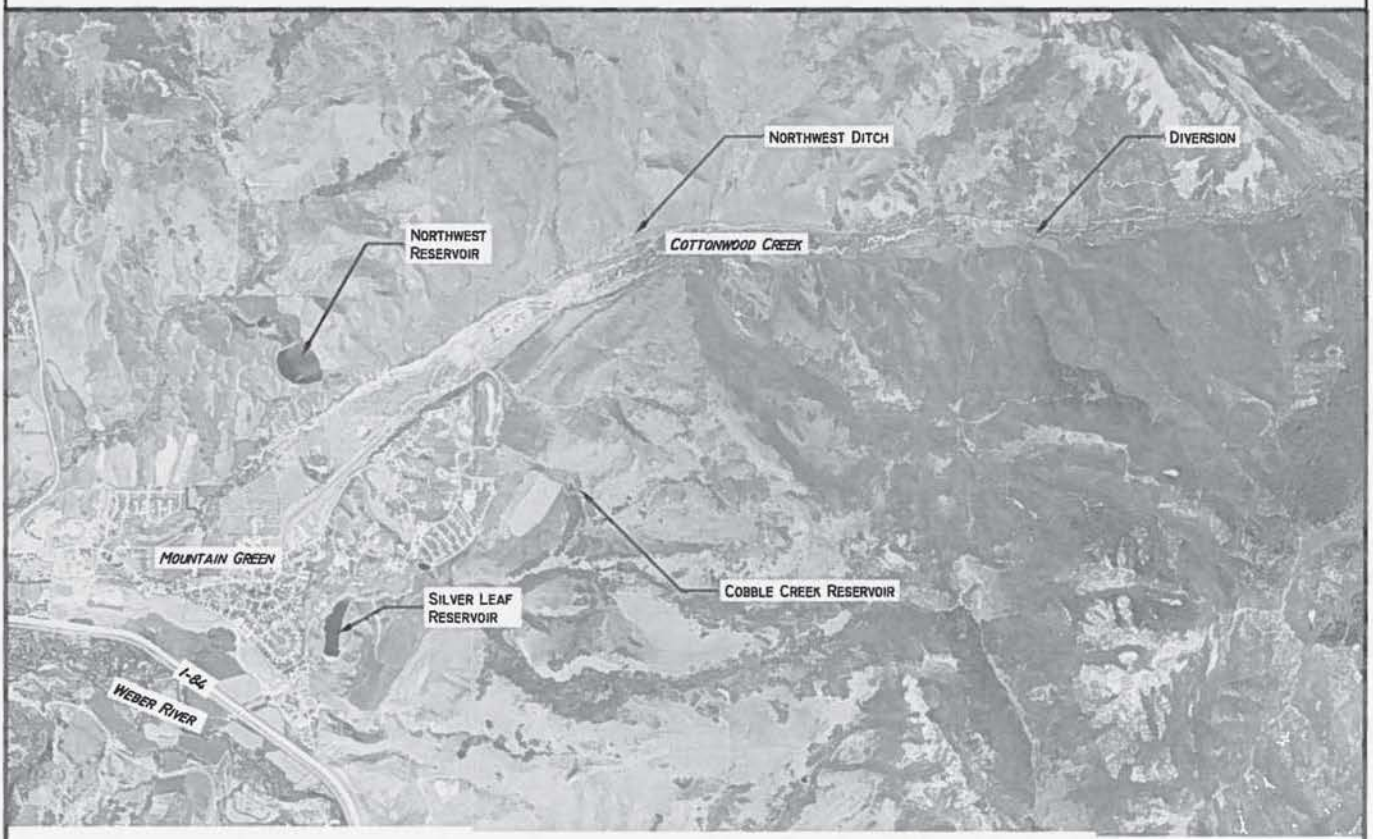
While not specifically requested in the USBR template, this section has been added to the background section to assist the reviewers in understanding the project participants and their relationships.

The Mountain Green system includes culinary, secondary, and agricultural systems that function to meet the indoor, outdoor, and agricultural needs of the residents and property owners in the area. The systems are owned and operated by three separate companies: Mountain Green Secondary Water Company, Northwest Irrigation Company, and Cottonwood Mutual Water Company. While the companies provide benefits to some shared customers, they are separate entities and administrations that cooperatively work together to meet the needs of common customers. Each company is described in further detail below. A fourth organization is also involved in the project via the fish ladder design and funding, part of the diversion dam rehabilitation.

The project sponsor is Mountain Green Secondary Water Company (MGSWC). MGSWC is a non-profit, secondary water company that provides water to Mountain Green developments for outdoor use, and to some areas outside the developments for irrigation and stock water. The company owns and operates the secondary system throughout Mountain Green, the Main Farm Pipeline, and the secondary regulating pond. They also own a portion of the diversion dam, joint pipeline, and splitter weir. They have recently constructed Cobble Creek Reservoir to create additional storage to meet late-summer shortages. The company serves approximately 470 connections. Company management consists of a board of directors with five members elected by the shareholders.

Northwest Irrigation Company (NIC) is a non-profit irrigation company that serves 1,600 acres of agricultural land near Mountain Green. The company has 1,800 shares served by several water rights for Cottonwood Creek and nearby springs. Of the 1,800 shares owned by the company, 350 shares are owned by MGSWC for use in portions of their secondary system. NIC is run by a five-member board of directors elected by the shareholders. The company owns the Northwest Ditch and Northwest Reservoir, as well as a portion of the diversion dam, joint pipeline, and splitter weir.





FRANSON CIVIL ENGINEERS	DATE: JANUARY 13, 2017 SCALE: 1" = 5,000' Watersmart Figures.dwg P:\UT\Wasatch Back\Mtn Green Secondary Impr\6-Drawings	MOUNTAIN GREEN SECONDARY WATER COMPANY MOUNTAIN GREEN SECONDARY IMPROVEMENTS	FIGURE 1 LOCATION MAP

Cottonwood Mutual Water Company (CMWC) is a non-profit water company that provides culinary water to the Mountain Green community. Many residents in the community receive water from both CMWC and MGSWC. The company serves 646 residential connections and 28 commercial and industrial connections and meets the requirements of the Utah Division of Drinking Water. To meet their demand, the company has four water rights for Cottonwood Creek, one water right for Bohman Hollow, and two water rights for underground wells. The company owns Silver Leaf Reservoir. The company has a general manager who reports to a five-member board of directors elected by the shareholders.

The final participant and beneficiary of the project is Trout Unlimited (TU). TU is a non-profit organization whose mission is to conserve, protect and restore North America's trout and salmon fisheries and their watersheds. The local chapter is active in the fishery resources of the Weber River and its tributaries. TU and MGSWC are actively working together to maintain and improve the fish habitat in Cottonwood Creek. The main focus of the habitat is for the Bonneville Cutthroat Trout during the spring when spawning occurs. Due to declining populations, Bonneville Cutthroat Trout are listed as a Tier I Sensitive Species by the Utah Division of Wildlife Resources (UDWR). They were also granted Sensitives Species status by the U.S. Forest Service (USFS) Intermountain Region and the U.S. Bureau of Land Management (BLM). In 1992 and 1998, they were unsuccessfully petitioned for listing under the Endangered Species Act (ESA).

Applicant's Water Supply

As applicable, describe the source of water supply, the water rights involved, current water uses (e.g., agricultural, municipal, domestic, or industrial), the number of water users served, and the current and projected water demand. Also, identify potential shortfalls in water supply. If water is primarily used for irrigation, describe major crops and total acres served.

MGSWC owns three water rights to water 140 acres of land and serve 470 water users with Cottonwood Creek as the sole water source. The current water demand is 260 acre-feet, and is projected to rise as growth occurs in Mountain Green. The company's total water right is 425 acre-feet.

CMWC serves 646 residential connections and 28 commercial and industrial connections in Mountain Green. The company has water rights for Cottonwood Creek, Bohman Hollow, and underground wells. The current water demand is 310 acre-feet. The company's total water right from Cottonwood Creek is 50 acre-feet plus groundwater rights and an exchange with Weber Basin.

NIC owns several water rights for Cottonwood Creek and nearby springs to serve their 1,800 shares. The current water demand is 1,600 acre-feet. The company's total water right from Cottonwood Creek is 3,336 acre-feet plus 4 cubic feet per second (cfs) without an acre-foot maximum. The water is stored in the Northwest Reservoir. The principal crop for the company is alfalfa for hay. The company shareholders have converted to sprinkler irrigation.

It is anticipated that water demands for each company will rise as Mountain Green expands its residential developments, increasing the number of culinary and secondary connections, and as precipitation and weather patterns fluctuate, creating a greater dependency on streamflow for the irrigation users. The companies are planning for future needs by creating storage reservoirs now to

serve current and future water shortages. Recent droughts have resulted in reduced diversion flows that then directly affect all water users in each company. By storing additional water and conserving water, the companies will be able to meet late-season shortages in the water supply. Water rights for each of the three companies are shown in Table 1.

Table 1: Water Rights for Participating Companies

Water Right	Source	Quantity (ac-ft)	Flow (cfs)	Type	Priority
Mountain Green Secondary Water Company					
35-12279	Cottonwood Creek	71.661	0.296	Decree	1890
35-8247	Cottonwood Creek	171.5	1.44	Decree	1894
35-11718	Cottonwood Creek	180.6		Decree	1894
Cottonwood Mutual Water Company					
35-5771	Cottonwood Creek	9.6		Decree	1868
35-8191	Cottonwood Creek	14.4		Decree	1868
35-5770	Cottonwood Creek	3.32		Decree	1888
35-8232	Cottonwood Creek	21.6		Decree	1888
Northwest Irrigation Company					
35-8140	Cottonwood Creek		0.28	Decree	1860
35-8167	Cottonwood Creek		0.42	Decree	1862
35-8209	Cottonwood Creek		1.27	Decree	1874
35-8219	Cottonwood Creek		1.07	Decree	1880
35-8238	Cottonwood Creek		1.04	Decree	1889
35-8239	Cottonwood Creek	96		Decree	1889
35-200	Cottonwood Creek	240		Certificate	10/09/1941
35-198	Cottonwood Creek	3000	10	Certificate	09/08/1945

Water Delivery System

Describe the applicant's water delivery system as appropriate. For agricultural systems, please include the miles of canals, miles of laterals, and existing irrigation improvements (e.g., type, miles, and acres). For municipal systems, please include the number of connections and/or number of water users served and any other relevant information describing the system.

The location of the delivery system for the area is shown in Figure 2. The following is a summary of the ownership and use of the existing facilities. The physical features of the facilities are shown in Table 2.

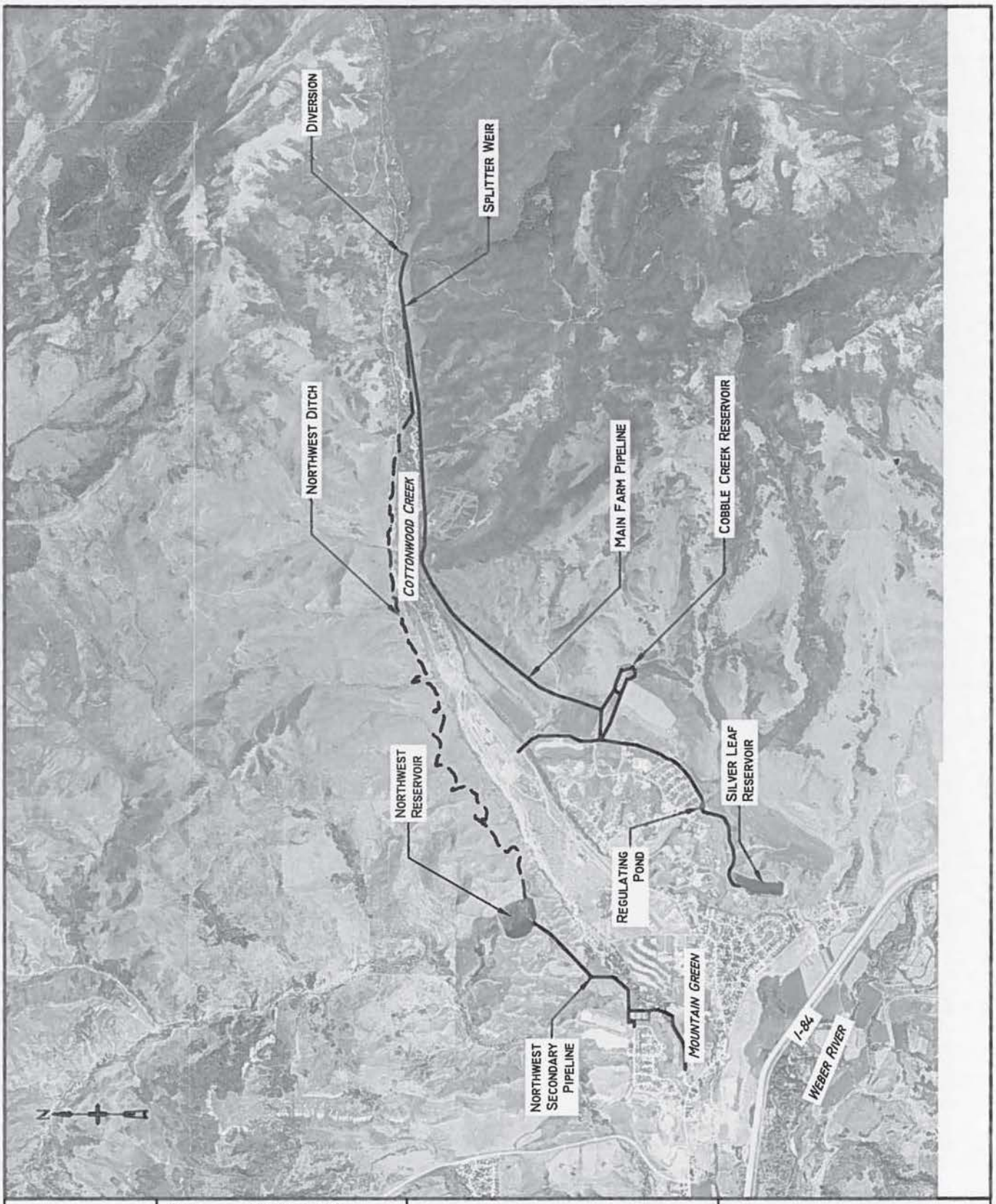
The system begins with a diversion dam located on Cottonwood Creek approximately 3.5 miles above the community of Mountain Green. This diversion is shared by MGSWC and NIC to divert

water from Cottonwood Creek into their respective systems. Water from the diversion dam is transmitted through a jointly-owned pipeline to the splitter weir. At the splitter weir one-third of the water is diverted into the Northwest Ditch, owned by NIC, and two-thirds of the water is diverted into the Main Farm Pipeline, owned by MGSWC.

At the splitter weir, the NIC water is released into an open, concrete-lined ditch for 750 feet where it enters an unlined earthen ditch referred to as the Northwest Ditch. This water then flows to Northwest Reservoir where it is stored for future use. From the Northwest Reservoir, the water is distributed to irrigators through a pressurized pipeline for sprinkler irrigation. As stated earlier, MGSWC owns shares in NIC. The water from these shares is transmitted to the western portion of Mountain Green via the Northwest Secondary Pipeline.

The remaining two-thirds of the diverted water leaves the splitter weir and enters the Main Farm Pipeline to be used and stored in several locations. The first delivery point is a regulating pond for the secondary system on the eastern side of Mountain Green. The second delivery point is the Silver Leaf Reservoir, owned by the CMWC, which has agreement with MGSWC for use of the water in the secondary system. The third delivery point is the newly-constructed Cobble Creek Reservoir, via the Cobble Creek Feeder Pipeline, where the water is stored for future use. A distribution pipeline from Cobble Creek Reservoir delivers water, using gravity, back to the secondary system when needed. Direct diversions from the Main Farm Pipeline serve connections north and east of the secondary regulating pond. Water from Silver Leaf Reservoir is pumped back into the secondary regulating pond when additional water is needed for the secondary system. Secondary water is conveyed to MGSWC customers via a secondary system in the subdivisions that connects to Cobble Creek Reservoir and the Main Farm Pipeline.

CMWC distributes culinary water from five wells to 670 connections. The system averages 84 million gallons per year with an energy cost of $36,000.



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LAYOUT: Existing System	

MOUNTAIN GREEN SECONDARY WATER COMPANY

MOUNTAIN GREEN SECONDARY IMPROVEMENTS

FIGURE 2

EXISTING SYSTEM LOCATION MAP

Table 2. Existing System Features

Project Feature	Owner	Physical Data
Diversion Dam	MGSWC, NIC	▪ Length = 50 feet ▪ Height = 4 feet
Joint Pipeline from Diversion to Splitter Weir	MGSWC, NIC	▪ Length of Pipeline = 1,640 feet ▪ 10-inch C900 PVC
Splitter Weir	MGSWC, NIC	▪ Northwest Pipeline = 33% ▪ Main Farm Pipeline = 67%
Ditch from Splitter Weir to Northwest Ditch	NIC	▪ Length of Channel = 750 feet ▪ Concrete-lined
Northwest Ditch	NIC	▪ Length of Pipeline = 19,920 feet ▪ Earthen
Northwest Reservoir	NIC	▪ Storage Capacity = 523 acre-feet
Northwest Secondary Pipeline	MGSWC	▪ Length of Pipeline = 5,700 feet ▪ 10-inch C900 PVC
Main Farm Pipeline	MGSWC	▪ Length of Pipeline = 21,570 feet ▪ 10-inch C900 PVC
Cobble Creek Reservoir	MGSWC	▪ Storage Capacity = 40 acre-feet
Cobble Creek Feeder Pipeline from Main Farm Pipeline	MGSWC	▪ Length of Pipeline = 720 feet ▪ 10-inch C900 PVC ▪ Flow goes in both directions using gravity
Pipeline from Proposed Northside Creek Reservoir to Secondary System	MGSWC	▪ Length of Pipeline = 2,700 feet ▪ 10-inch C900 PVC
Pipeline from Cobble Creek Reservoir to Secondary System	MGSWC	▪ Length of Pipeline = 1,540 feet
Pipeline from Cobble Creek to Secondary System	MGSWC	▪ Length of Pipeline = 3,700 feet
Secondary Regulating Pond	MGSWC	Storage Capacity = 8 acre-feet
Pipeline from Secondary Regulating Pond to Silver Leaf Reservoir	MGSWC	▪ Length of Pipeline = 1,400 feet ▪ 8-inch C900 PVC ▪ Flow goes in both directions
Silver Leaf Reservoir	CMWC	▪ Storage Capacity = 285 acre-feet

Renewable Energy or Energy Efficiency

If the application includes renewable energy or energy efficiency elements, describe existing energy sources and current energy uses.

The culinary water system utilizes five wells to provide water. The annual amount of water pumped is 310 acre-feet. This requires an average energy use of 290,000 kWh, supplied by Rocky Mountain Power. The average yearly cost is $36,000. The culinary system serves 685 connections. Of those 685 connections, 203 residential connections use groundwater for both indoor and outdoor use. The remaining 454 residential connections use secondary water from MGSWC for their outdoor use. The commercial and industrial connections do not use outdoor water.

Additional pumps operate within the secondary system to balance the source of water with the location of use. The recent addition of the Cobble Creek Reservoir will allow for better water management of the secondary system and is expected to reduce the pumping costs of the secondary system. However, no energy efficiency is being claimed in this application due to this improved operation with Cobble Creek Reservoir.

By tying the western and eastern portions of the secondary system together with the proposed Secondary Pipeline, an additional 203 connections will be able to use secondary water for outdoor use. Secondary waterlines were constructed eight years ago in a subdivision that serves a portion of these 203 connections, but because there was no pipeline to connect to the operating secondary system, the pipes have remained dry since construction. This additional pipeline will allow water to reach this subdivision and utilize the existing secondary waterlines. It will also allow additional secondary waterlines to be installed and utilized in additional subdivisions to reach the remaining connections. These connections will then be able to use secondary system water for outdoor use instead of high-quality groundwater pumped for culinary purposes. The reduced pumping required will result in reduced energy costs of approximately $20,000 per year from 161,000 kWh saved. In addition to the energy savings, this operation will extend the water supply of the culinary system and allow for increased demand.

Prior Work with Reclamation

Identify any past working relationships with Reclamation. This should include the date(s), description of prior relationships with Reclamation, and a description of the project(s).

There have been no direct working relationships between MGSWC, CMWC, or NIC and Reclamation on any specific reclamation project. However, the Weber Basin Project administered by the Weber Basin Water Conservancy District includes the Mountain Green area.

Project Description

The project description should describe the work in detail, including project milestones and specific activities that will be accomplished because of this project. This description shall have sufficient detail to permit a comprehensive evaluation of the proposal.

The proposed project is composed of six different components. A description of the features in the proposed project is provided in the following paragraphs and summarized in Table 3 (also see Figure 3). These features are part of a system that serves 445 secondary customers, 685 culinary customers, and 1,600 acres of sprinkler-irrigated agricultural land. The existing overall system contains over five miles of pipe, three reservoirs, a secondary regulatory pond, multiple culinary storage tanks, five wells, and two distribution pumps. These facilities are managed by three non-profit companies.

The project will improve water management, preserve high-quality groundwater for future use, reduce energy consumption, improve fish habitat for the Bonneville Cutthroat Trout, and conserve 650 acre-feet of water annually. The project costs will be funded through contributions of all four participating entities. While the requested grant from the WaterSMART program is only 20 percent of the total cost of the project improvements, the grant will facilitate cooperation and improved water management within the area. By creating continuity throughout the entire Mountain Green System and creating additional storage, water needs now, and in the future, will be met. The collaboration on this project exemplifies the ability of the three participating companies to work together to improve the overall community.

Diversion Dam Replacement

The existing diversion dam does not allow fish passage upstream in Cottonwood Creek and allows sub flows to seep under the dam. The ability of the diversion to capture all flows, divert and convey water from Cottonwood Creek, and allow fish passage is ineffective. This project proposes to completely replace the diversion dam with a new concrete structure designed to divert approximately 10 cfs into the pipeline that flows into the splitter weir where the flow will be split between two separate distribution systems.

A cutoff wall will be placed at the footing to capture sub flows currently running under the structure. It is difficult to quantify this sub flow; however, flows do exist, as evidenced by water resurfacing in Cottonwood Creek below the dam. A portion of these flows captured by the cutoff wall will be used in a fish ladder incorporated into the diversion dam design.

The addition of a fish ladder will create additional spawning habitat for the Bonneville Cutthroat Trout. The Bonneville Cutthroat Trout is listed as a Sensitive Species within the intermountain region. Utah Division of Wildlife Resources performed a study in 2014 and 2015 on Cottonwood Creek indicating the trout enter Cottonwood Creek from the Weber River for spawning purposes. TU has committed funding to assist the diversion dam rehabilitation if a fish ladder is included in the design. They have also offered to provide assistance on the fish ladder design. This cooperation is a model of the beneficial effects of collaboration. The inclusion of the fish ladder will allow the trout access to approximately 7.6 miles of spawning habitat above the diversion dam that was previously inaccessible. The flows through the ladder will also improve the habitat below the

diversion. The diversion is approximately 6.9 miles upstream from the Weber River, resulting in 14.5 miles of improved habitat due to the proposed fish ladder.

Splitter Weir Replacement

The existing splitter weir structure does not provide an accurate flow split between NIC and MGSWC and will be replaced with a new concrete structure. The new splitter box will include a weir for measurement and a vertical plate to split the flow. One-third of the flow will enter the proposed Northwest Pipeline and two-thirds will enter the Main Farm Pipeline. This structure will allow better operation and measurement of flows.

Northwest Ditch Enclosure

High density polyethylene (HDPE) pipe will be used to replace the existing earthen ditch extending from the concrete-lined ditch to the Northwest Reservoir. The pipeline will be 15,030 feet long and replace 19,920 feet of open ditch. The pipeline will be designed to handle a flow capacity of 2.7 cfs and shall not exceed the Natural Resources Conservation Service (NRCS) recommended velocity of 5 feet per second (ft/s). Preliminary design efforts indicate a 10-inch pipeline will provide the needed flow capacity. Air valves, flow control valves, pressure reducing valves, drains, fittings, and pertinent pipe appurtenances will be installed at appropriate locations to ensure the proper operation of the pipeline. The pipeline will be drained at the end of the irrigation season to prevent freezing during the cold winter months. The enclosure of the ditch is expected to conserve 650 acre-feet of water per year. This water will be used by the existing NIC shareholders, including MGSWC, to meet late-season shortages currently experienced.

Northside Creek Reservoir

A 138-acre-foot reservoir will be constructed in the abandoned gravel pit adjacent to Cottonwood Creek. The reservoir will be lined to prevent seepage losses. The Northside Creek Reservoir will allow MGSWC to store a portion of their water from their shares in NIC and deliver it to the secondary system within the Mountain Green developments. The reservoir will be owned and operated by MGSWC.

Northside Feeder Pipeline

A 700-foot pipeline from the Northwest Pipeline to the Northside Creek Reservoir will be constructed to convey MGSWC's water to the new reservoir. The pipeline allows MGSWC to more efficiently utilize their water shares for their customers. Preliminary design efforts indicate a 10-inch HDPE pipeline will provide the needed flow capacity. All necessary pipe appurtenances will be installed at appropriate locations to ensure proper operation. This pipeline will be drained along with the Northwest Pipeline at the end of the irrigation season.

Secondary Pipeline

C900 polyvinyl chloride (PVC) pipe will be used to add 5,310 feet of secondary pipeline to the existing system in the Mountain Green Secondary System. This pipeline will connect subdivisions

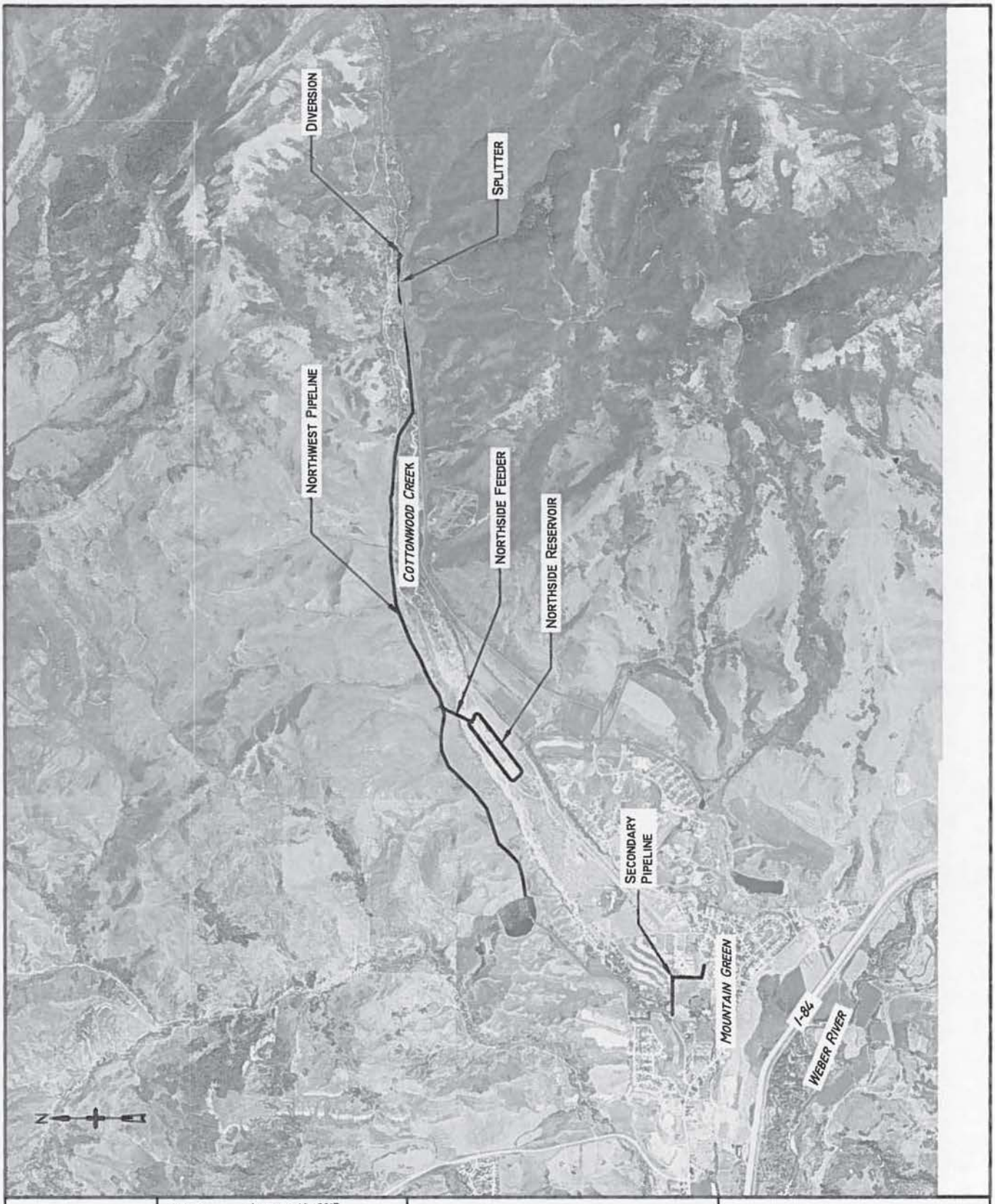
within the secondary distribution system, allowing installed secondary pipe within the subdivision that has been dry for the eight years since its construction to be utilized, as well as allowing additional secondary waterlines to be installed and utilized. Once connected, all Mountain Green subdivisions can be fed from either Northwest Reservoir, Northside Creek Reservoir, or Cobble Creek Reservoir. Preliminary design efforts indicate that an 8-inch pipeline will provide the needed flow capacity. All necessary pipe appurtenances will be installed at the appropriate locations. The addition of this pipeline will allow 203 culinary connections to add a secondary connection and convert outdoor water usage from culinary to secondary water. This will reduce the amount of groundwater pumping required by CMWC, thereby reducing energy use, and preserve high-quality groundwater for future demands. The expected annual energy reduction is 161,000 kWh with a cost savings of approximately $20,000 and better water management.

All project components will be hydraulically modeled to evaluate surges and fatigue, as well as to verify sizing and pressure requirements. The complete design of the pipeline will be done by a professional engineering firm to ensure the system meets minimum standards of quality. All design drawings will be stamped by a professional engineer and be available to Reclamation for review.

If a grant from Reclamation is received, the three companies and TU will collaborate to fund this project. A memo will be prepared to define the criteria and assumptions the design work will be based upon. This will include design flows, pipe alignment, pipe type and size(s), storage capacities, structural requirements, pump power, and environmental requirements. Design will proceed to the point where alternatives can be evaluated using NEPA Compliance. Once the environmental clearance has been obtained, the engineering design and construction documents will be prepared and appropriate easements will be obtained from landowners and State authorities.

Table 3. Proposed Project Features

Project Component	Owner	Physical Data
Diversion Dam w/ Cutoff Wall and Fish Ladder	MGSWC, NIC	▪ Length of Diversion Structure = 65 feet ▪ Height of Diversion Structure = 5 feet ▪ Length of Cutoff Walls = 150 feet ▪ Length of Fish Ladder = 200 feet
Splitter Weir	MGSWC, NIC	▪ Northwest Pipeline = 33% ▪ Main Farm Pipeline = 67%
Northwest Pipeline	NIC	▪ Length of Pipeline = 15,030 feet ▪ 10-inch HDPE
Northside Creek Reservoir	MGSWC	▪ Storage Capacity = 138 acre-feet
Northside Feeder Pipeline	MGSWC	▪ Length of Pipeline = 700 feet ▪ 10-inch HDPE
Secondary Connection Pipeline	MGSWC	▪ Length of Pipeline = 5,310 feet ▪ 8-inch C900 PVC



FRANSON CIVIL ENGINEERS	DATE: JANUARY 16, 2017 SCALE: 1" = 4,000' Watersmart Figures.dwg P:\UT\Wasatch Back\Mtn Green Secondary Impr\6-Drawings LAYOUT: Proposed Project	MOUNTAIN GREEN SECONDARY WATER COMPANY MOUNTAIN GREEN SECONDARY IMPROVEMENTS	FIGURE 3 PROPOSED PROJECT LOCATION MAP

Evaluation Criteria

Evaluation Criterion A: Quantifiable Water Savings

Up to 25 points may be awarded for a proposal that will conserve water and improve efficiency. Points will be allocated based on the quantifiable water savings expected because of the project. Points will be allocated to give greater consideration to projects that are expected to result in significant water savings.

Describe the amount of water saved. *For projects that conserve water, please state the estimated amount of water expected to be conserved (in acre-feet per year) as a direct result of this project. Please provide sufficient detail supporting how the estimate was determined, including all supporting calculations. Please be sure to consider the questions associated with your project type (listed below) when determining the estimated water savings, along with the necessary support needed for a full review of your proposal.*

In addition, all applicants should be sure to address the following:

- *Where is the water that will be conserved currently going (e.g., back to the stream, spilled at the end of the ditch, seeping into the ground)?*

Please include a specific quantifiable water savings estimate; do not include a range of potential water savings.

The proposed project is anticipated to conserve approximately 650 acre-feet of water per year. The water savings for the system were estimated using data collected from MGSWC and NIC. NIC records indicate that the Northwest Reservoir is filled two and a half times per irrigation season, equating to a total annual volume of water of 1,307 acre-feet. According to a report by Utah State University (USU) Extension, water losses in earthen irrigation canals range from 20 to 50 percent due to seepage. A presentation by the NRCS states that water losses range from 33 to 50 percent due to seepage, leakage, and improper management. Conservatively assuming a minimum of 33 percent water losses due to seepage, evaporation, and improper management in the existing Northwest Ditch, water losses were determined to be 650 acre-feet. Enclosing the ditch will eliminate all losses due to seepage and evaporation, resulting in water savings equal to current water losses. See Appendix C for detailed calculations.

Sub flows at the existing diversion dam will be captured and conveyed downstream through the fish ladder. These flows cannot be measured and are not included in water conservation calculations, but will provide instream benefit to local fish species in improving their habitat and allowing the fish to access upstream spawning grounds. Construction of a new splitter weir, Northside Creek Reservoir and feeder pipeline, and the secondary pipeline will not eliminate any existing water losses, but it will allow preservation of water sources through better water management and secondary water use in residential communities. Measurements and water allocation accuracy will increase, storage volumes will increase, and groundwater pumping will decrease, leaving the community more drought resilient than before the project.

Table 4. Water Savings Expected for each Project Feature

Feature	Water Savings (ac-ft)	Improved Management (ac-ft)
Diversion Dam w/ Cutoff Wall and Fish Ladder	-	4,000
Splitter Weir	-	4,000
Northwest Pipeline	650	1,300
Northside Creek Reservoir	-	250
Northside Feeder Pipeline	-	250
Secondary Pipeline	-	340

Please address the following questions per the type of project you propose for funding.

(1) ***Canal Lining/Piping:*** *Canal lining/piping projects can provide water savings when irrigation delivery systems experience significant losses due to canal seepage. Applicants proposing lining/piping projects should address the following:*

(a) How has the estimated average annual water savings that will result from the project been determined? Please provide all relevant calculations, assumptions, and supporting data.

The water savings will be equal to the amount of water that is currently lost through seepage and evaporation. See Appendix C for calculations.

(b) How have average annual canal seepage losses been determined? Have ponding and/or inflow/outflow tests been conducted to determine seepage rates under varying conditions? If so, please provide detailed descriptions of testing methods and all results. If not, please provide an explanation of the method(s) used to calculate seepage losses. All estimates should be supported with multiple sets of data/measurements from representative sections of canals.

According to NIC records, Northwest Reservoir fills two and a half times per irrigation season. Using typical seepage and evaporation water loss percentages from USU and the NRCS (see Appendix C), the diverted water into the Northwest Ditch was calculated by dividing the annual volume in the reservoir by 67 percent. The seepage and evaporation losses were calculated by subtracting the volume in the reservoir from the volume diverted. No other measurement data is available.

(c) What are the expected post-project seepage/leakage losses and how were these estimates determined (e.g., can data specific to the type of material being used in the project be provided)?

Seepage losses will be eliminated by replacing the transmission system with HDPE pipe. With good construction practices, leakage losses from pipe sections and joints will be near zero.

(d) What are the anticipated annual transit loss reductions in terms of acre-feet per mile for the overall project and for each section of canal included in the project?

The transit loss reduction is approximately 232 acre-feet per mile each year. This was determined by dividing 650 acre-feet of conserved water by the 2.8 miles of transmission system that will be replaced with a pipeline.

(e) How will actual canal loss seepage reductions be verified?

Meters will be installed at the beginning and end of the pipeline to compare to historical records. A measurement device will also be installed in the splitter weir to measure the flow released into the NIC system.

(f) Include a detailed description of the materials being used.

The transmission system will be replaced with 10-inch HDPE pipe. Sections of pipe are fused together with heat, resulting in a continuous material. The minimum pressure rating will be DR 32.5. Air valves, pressure reducing valves, pressure relief valves, and other pipe appurtenances will be installed as necessary.

(2) ***Other Project Types Not Listed Above:*** *Projects to provide water savings for irrigation and municipal water systems other than those listed above will be considered and evaluated based on the amount of estimated water savings and the adequacy of the description of how the savings are estimated. Applicants proposing these types of projects should address the following items:*

(a) How have average annual water savings estimates been determined? This should include a detailed description of the rationale and methodologies used to develop the estimates. Please provide all relevant calculations, assumptions, and supporting data. Reference relevant studies or past project documentation that support the water saving estimates.

By converting 203 connections from culinary water to secondary water for outdoor usage, high-quality groundwater demands will decrease. This will conserve 170 acre-feet of culinary water per year. The current culinary demand is 310 acre-feet for 646 connections. It was calculated that 56 percent of that demand is used for outdoor use. By multiplying 56 percent by the water demand of 310 acre-feet, the 170 acre-feet of water preserved was determined. All usage data was obtained from the General Manager of CMWC.

(b) If new technologies or devices are proposed, how will the savings occur? Please provide detailed descriptions that will enable the reviewer to understand function and how savings occur.

There are no new technologies proposed. The work will use proven technology and methods.

(c) *How will actual water savings be verified upon completion of the project? Please explain the calculations and the analyses for this verification.*

The amount of water pumped for the culinary system will be measured and compared with prior pumping records. These calculations may vary depending upon seasonal weather conditions.

Evaluation Criterion B: Water Sustainability Benefits Expected to Result from the Project

Up to 25 points may be awarded under this criterion based on the water sustainability benefits that are expected to occur as a result of the project.

Please describe in detail where the conserved water will go and how the conserved water is expected to increase water sustainability. Consider the following:

- *Will the project commit conserved water to instream flows? If so, please address the following:*
  - *Provide a detailed description of the mechanism that will be used (e.g., collaboration with a state agency or nonprofit organization, or other mechanisms allowable under state law) and the roles of any partners in the process. Please attach any relevant supporting documents.*
  - *Indicate the quantity of conserved water that will be committed to instream flows. Describe where conserved water will be committed to increase instream flows (indicate specific stream reaches if applicable).*
  - *Describe the benefits that are expected to result from increased instream flows. Will the increased instream flows result in benefits to fish and wildlife? If so, please describe the species and expected benefit of the project.*
  - *Please describe the status of the species (e.g., federally threatened or endangered, a federally recognized candidate species, a state listed species, or a species of particular ecological, recreational, or economic importance), the relationship of the species to the water supply, and whether the species is adversely affected by a Reclamation project.*
  - *Will the increased instream flows result in benefits to habitat or other ecological benefits? If so, describe these benefits. Will the flows specifically benefit federally designated critical habitat?*
  - *Will the increased instream flows result in other benefits not discussed above, including recreational, social, or economic benefits? If so, please explain.*

The conserved water from enclosing the Northwest Ditch will be utilized by NIC to meet late-season shortages which their shareholders currently experience. Although the water will not be left as instream flows, the additional water supply for shareholders will result in increased crop yields on agricultural land which will boost the economy and local environment.

- *Some projects may address water supply sustainability in ways other than committing water for instream flows. If the questions listed above are not applicable to your project, please address the following to explain how the water savings from the project are expected to result in a public benefit:*

- *Is there a specific water supply sustainability concern in the region? What factors are contributing to the concern? Please include a description of the impacted geographic area and stakeholders, the partners that are collaborating to resolve the concern, and any other applicable information.*
- *How will the proposed project help to address that concern? Will water conserved through the project result in reduced diversions or be made available to help alleviate water supply shortages due to drought, climate variation, or over-allocation?*
- *Will the project make additional water available to Indian tribes, and/or rural or economically disadvantaged communities)? If so, please explain.*
- *Will water conserved through the project help to address water supply sustainability in a way not listed above?*

Sub flows under the diversion dam will be captured and diverted through a fish ladder to create additional spawning habitat for Bonneville Cutthroat Trout, a Sensitive Species within the intermountain region. Supporting the habitat of this species will improve the overall environment in the region and encourage the continuance of the species. This aspect of the project has garnered the support of TU and promotes additional collaboration among parties. Due to the addition of the fish ladder, approximately 14.5 miles of habitat will be improved, 7.6 miles downstream of the diversion and 6.9 miles upstream of the diversion.

Evaluation Criterion C: Energy-Water Nexus

Up to 18 points may be awarded based on the extent to which the project increases the use of renewable energy or otherwise results in increased energy efficiency.

Subcriterion No. C.1 – Implementing Renewable Energy Projects Related to Water Management and Delivery

Up to 18 points may be awarded for projects that include construction or installation of renewable energy components (e.g., hydroelectric units, solar-electric facilities, wind energy systems, or facilities that otherwise enable the use of renewable energy). Projects such as small-scale solar resulting in minimal energy savings or production will be considered under Subcriterion No. C.2 below.

Not applicable.

Subcriterion No. C.2 – Increasing Energy Efficiency in Water Management

Up to 4 points may be awarded for projects that address energy demands by retrofitting equipment to increase energy efficiency and/or through water conservation improvements that result in reduced pumping or diversions.

***Describe any energy efficiencies that are expected to result from implementation of the water conservation or water management project** (e.g., reduced pumping).*

- *Please provide sufficient detail supporting the calculation of any energy savings expected to result from water conservation improvements. If quantifiable energy savings are expected to*

result from water conservation improvements, please provide sufficient details and supporting calculations. If quantifying energy savings, please state the estimated amount in kilowatt hours per year.

This interconnection will allow 203 culinary connections to convert to secondary water for outdoor use instead of high-quality groundwater. According to pumping data from CMWC, this will conserve approximately 170 acre-feet of culinary water which equates to 161,000 kWh of energy conserved and $20,000 saved annually.

Other features of the system utilize pumps to balance the source of water with the place of use. Although these pumps will not be changed, the addition of Cobble Creek Reservoir and Northside Creek Reservoir has and will improve overall management and exchange pumping needs for energy-efficient gravity flow.

- *Please describe the current pumping requirements and the types of pumps (e.g., size) currently being used. How would the proposed project impact the current pumping requirements?*

Cobble Creek Reservoir will allow water to be stored higher in the system and reduce the pumping from Silver Leaf into the secondary regulating pond. The amount of this reduction has not been quantified at this point because Cobble Creek Reservoir began operation in October 2016. As stated above, CMWC pumps 310 acre-feet per year from five wells to meet their demands.

- *Please indicate whether your energy savings estimate originates from the point of diversion, or whether the estimate is based upon an alternate site of origin.*

Energy savings will originate from the point of diversion, where the pumps are located.

- *Does the calculation include the energy required to treat the water?*

The culinary system uses high-quality groundwater with minimal treatment costs. The calculation does not involve energy required to treat the water.

- *Will the project result in reduced vehicle miles driven, in turn reducing carbon emissions? Please provide supporting details and calculations. Describe any renewable energy components that will result in minimal energy savings/production (e.g., installing small-scale solar as part of a SCADA system).*

By installing remote operation at the diversion dam, travel to the diversion dam from Mountain Green will be reduced. The estimated reduction is 4 trips per week at 7.5 miles per trip. Assuming vehicle efficiency of 15 miles per gallon, 2 gallons per week, or 104 gallons per year, will be saved. This will reduce carbon emissions.

Evaluation Criterion D: Addressing Adaptation Strategies in a WaterSMART Basin Study

Up to 8 points may be awarded for projects that address an adaptation strategy identified ***in a completed WaterSMART Basin Study****.*

Proposals that provide a detailed description of how a project is addressing an adaptation strategy specifically identified in a completed Basin Study (e.g., a strategy to mitigate the impacts of water shortages resulting from climate change, drought, increased demands, or other causes) may receive maximum points under this criterion. Applicants should provide as much detail as possible about the relationship of the proposed project to the adaptation strategy identified in the Basin Study, including, but not limited to, the following:

- *Identify the specific WaterSMART Basin Study where this adaptation strategy was developed. Describe in detail the adaptation strategy that will be implemented through this WaterSMART Grant project and how the proposed WaterSMART Grant project would help implement the adaptation strategy.*
- *Describe how the adaptation strategy and proposed WaterSMART Grant project will address the imbalance between water supply and demand identified by the Basin Study.*
- *Identify the applicant's level of involvement in the Basin Study (e.g., cost-share partner, participating stakeholder, etc.).*
- *Describe whether the project will result in further collaboration among Basin Study partners.*

This project does not fall within one of the areas that has a completed WaterSMART Basin Study. However, the Weber River Basin is an important river basin and is included in the Utah State Water Plan. The Utah Division of Water Rights also completed a Weber River Basin Plan to specifically discuss the needs and goals of the basin. Water conservation and innovative water management strategies are particularly important to Weber Basin stakeholders.

Evaluation Criterion E: Expediting Future On-Farm Irrigation Improvements

Up to 8 points may be awarded for projects that describe in detail how they will directly expedite future ***on-farm irrigation improvements****, including future on-farm improvements that may be eligible for NRCS funding.*

NIC shareholders understand the value of on-farm improvements and have already converted their irrigation to sprinkler systems. The project does not anticipate any further on-farm system conversions. The pressurized pipe system may result in the reduction of individual pumps, depending on the location of the turnout.

Evaluation Criterion F: Implementation and Results

Up to 8 points may be awarded for these subcriteria.

Subcriterion No. F.1 – Project Planning

Points may be awarded for proposals with planning efforts that provide support for the proposed project.

Does the project have a Water Conservation Plan and/or System Optimization Review (SOR) in place? *Please self-certify, or provide copies of these plans where appropriate to verify that such a plan is in place.*

Provide the following information regarding project planning:

(1) Identify any district-wide, or system-wide, planning that provides support for the proposed project. This could include a Water Conservation Plan, SOR, or other planning efforts done to determine the priority of this project in relation to other potential projects.

MGSWC constructed Cobble Creek over the past couple of years as part of their overall plan to conserve and efficiently deliver water throughout the entire irrigation season. The addition of the Northside Creek Reservoir and Secondary Pipeline enhance their vision for better water management. Both NIC and CMWC are also working to facilitate projects that conserve water and improve the overall management of the system. CMWC complies will all required Drinking Water reports and plans, including maintaining updated Annual Drinking Water Quality Reports and Source Protection Plans. If needed, a Water Conservation Plan for the entire system will be prepared. The project is consistent with the Utah State Water Plan and the Weber River Basin Plan.

(2) Describe how the project conforms to and meets the goals of any applicable planning efforts, and identify any aspect of the project that implements a feature of an existing water plan(s).

The Utah State Water Plan and the Weber River Basin Plan emphasize water conservation and innovative water management of developed water supplies as key strategies in providing for the present and future water needs in the state. The specific goals met include water conservation, drought resiliency planning, water use efficiency, innovative water management, and protection of state river systems.

Subcriterion No. F.2 – Support and Collaboration

Points may be awarded based upon the extent to which the project garners widespread support and promotes collaboration.

Describe the extent to which the project garners support and promotes collaboration.
Does the project promote and encourage collaboration among parties? Consider the following:

- *Is there widespread support for the project?*
- *What is the significance of the collaboration/support?*
- *Will the project help to prevent a water-related crisis or conflict?*

- *Is there frequently tension or litigation over water in the basin?*
- *Is the possibility of future water conservation improvements by other water users enhanced by completion of this project?*

The project requires the collaboration of four entities to provide improved water management of Cottonwood Creek flows and groundwater within the Mountain Green area. Each of the participating entities has written a letter of support for the project to demonstrate their willingness to participate and help the project succeed for the benefit of the community. The widespread support among the entities indicates accurate, monitored use of water rights is desired and will prevent future potential conflict if drought continues to have a large impact. The collaboration on this project will enhance the mindset of the shareholders to strive for better water conservation.

Subcriterion No. F.3 – Performance Measures

Points may be awarded based on the description and development of performance measures to quantify actual project benefits upon completion of the project.

Provide a summary describing the performance measure that will be used to quantify actual benefits upon completion of the project (e.g., water saved or better managed, or energy generated or saved).

Meters will be installed along the Northside Pipeline to measure the flow that enters and exits the pipeline. Data gathered will be compared with historic records. In addition, the diversion dam and the splitter weir will include measurement devices that will aid in measuring performance and correctly allocating flow.

Energy conserved will be tracked by CMWC as they pump groundwater to deliver to their customers. Meters are installed on each culinary connection and will be installed on each secondary connection that will receive water from this project. The data gathered will be compared to historic pumping records.

Overall system operation will be monitored by each company. Point of diversion, flow exchanges, and place of use will be tracked to better understand the flow of water in the system. This will allow the companies to better manage how they can best utilize their water allotments.

Evaluation Criterion G: Additional Non-Federal Funding

Up to 4 points may be awarded to proposals that provide non-Federal funding in excess of 50 percent of the project costs. State the percentage of non-Federal funding provided using the following calculation:

$$\frac{\text{Non-Federal Funding}}{\text{Total Project Cost}} = \frac{\$\ 4{,}042{,}000}{\$\ 5{,}042{,}000} = \mathbf{80.2\%}$$

Evaluation Criterion H: Connection to Reclamation Project Activities

Up to 4 points may be awarded if the proposed project is in a basin with connections to Reclamation project activities. No points will be awarded for proposals without connection to a Reclamation project or Reclamation activity.

(1) How is the proposed project connected to Reclamation project activities?
(2) Does the applicant receive Reclamation project water?
(3) Is the project on Reclamation project lands or involving Reclamation facilities?
(4) Is the project in the same basin as a Reclamation project or activity?
(5) Will the proposed work contribute water to a basin where a Reclamation project is located?
(6) Will the project help Reclamation meet trust responsibilities to Tribes?

CMWC receives water from groundwater wells through an exchange with the Weber Basin Water Conservancy District. Additional Reclamation projects are located in the basin. Work on Cottonwood Creek will have an indirect impact on the basin.

Performance Measures

All WaterSMART Grant applicants are required to propose a method (or "performance measure") of quantifying the actual benefits of their project once it is completed. Actual benefits are defined as water actually conserved or better managed, as a direct result of the project. A provision will be included in all assistance agreements with WaterSMART Grant recipients describing the performance measure and requiring the recipient to quantify the actual project benefits in their final report to Reclamation upon completion of the project.

Quantifying project benefits is an important means to determine the relative effectiveness of various water management efforts, as well as the overall effectiveness of WaterSMART Grants.

Performance Measure A: Projects with Quantifiable Water Savings

Performance measure that may be used in estimating pre-project benefits and to verify post-project water savings for projects that are expected to result in quantifiable and sustained water savings or improved water management.

Meters will be installed along the Northside Pipeline to measure the flow that enters and exits the pipeline. Data gathered will be compared with historic records. In addition, the diversion dam and the splitter weir will include measurement devices that will aid in measuring performance and correctly allocating flow. Culinary and secondary water use will also be monitored to quantify the reduction in groundwater pumping and compared to CMWC records.

Performance Measure B: Projects with Quantifiable Energy Savings

Performance measure that may be used in estimating pre-project benefits and post-project energy savings for projects that are expected to increase the use of renewable energy sources in the management and delivery of water and/or are upgrading existing water management facilities resulting in quantifiable and sustained energy savings.

Energy efficiency projects are intended to increase the use of renewable energy and increase overall energy efficiency in managing and delivering water. Applicants should address the following subsections as part of the performance measures they submit with their applications.

Performance Measure No. B.1 – Implementing Renewable Energy Improvements Related to Water Management and Delivery

- *Explain the methodology used for quantifying the energy generated from the renewable energy system*

Not applicable.

Performance Measure No. B.2 – Increasing Energy Efficiency in Water Management

- *Explain the methodology for calculating the quantity of energy savings resulting from the water management improvements or water conservation improvements*

Energy conserved will be tracked by CMWC as they pump groundwater to deliver to their customers. Meters are installed on each culinary connection and will be installed on each secondary connection that will receive water from this project. The data gathered will be compared to historic pumping records.

- *Explain anticipated cost savings*

Present value of the 161,000 kWh of energy conserved is $20,000 for CMWC.

Performance Measure C: Projects that Benefit Endangered Species and/or Critical Habitat

For projects that benefit federally listed species (threatened or endangered), federally recognized candidate species, or designated critical habitat that are affected by a Reclamation facility, the applicant should consider the following:

- *The methodology used for determining the recovery rate of the threatened and/or candidate species*
- *How their projects will address designated critical habitats, including acres covered, species present, and how the water savings or transfers are expected to benefit the habitat(s)*

- *Unavoidable negative impacts to endangered, threatened, or candidate species and/or the critical habitat(s).*

The project directly benefits the local Bonneville Cutthroat Trout population by improving 14.5 miles of habitat and enhancing the spawning season of the species. Because of declining populations, Bonneville Cutthroat Trout are listed as Sensitive Species by the UDWR, USFS Intermountain Region, and BLM. Although not listed as threatened or endangered under the ESA, the species is important for local environmental sustainability. Existing studies have identified the number of trout in Cottonwood Creek and the Weber River Basin, as well as where the fish travel. With the current conditions, the trout do not move upstream of the Mountain Green diversion dam. The addition of the fish ladder to the dam, as proposed by this project, will allow the trout to travel upstream and increase their overall habitat in the area. The UDWR will be able to conduct additional studies and compare the results to previous studies to quantify the benefit of the project. TU will assist in these efforts.

Environmental and Cultural Resources Compliance

So that Reclamation can assess the probable environmental and cultural resources impacts and costs associated with each application, all applicants must respond to the following list of questions focusing on the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), and National Historic Preservation Act (NHPA) requirements. Note: Applicants proposing a Funding Group II project must address the environmental compliance questions for their entire project, not just the first 1-year phase.

Please answer the following questions to the best of your knowledge. If any question is not applicable to the project, please explain why.

- *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 project will start with improving the diversion structure and adding a fish ladder that will be installed in a previously disturbed section of Cottonwood Creek. The improvements on the splitter weir will occur just downstream of the diversion structure and will also occur in a previously disturbed section of the stream. The Northwest Pipeline alignment will follow the existing ditch and will not negatively impact the creek or surrounding areas. The installation of the secondary connection pipeline will temporarily disturb agricultural lands between subdivisions. All land surface disturbances will be confined to the proposed construction areas and small staging areas near the improved or new features of the project. Contract documents will outline the responsibility of the contractor relative to dust control and air and water pollution during construction activities. Minimal environmental disturbance is anticipated and all work will be performed in previously disturbed areas.

Impact on the local Bonneville Cutthroat Trout species will be minimized during construction near Cottonwood Creek and will not occur during spawning season.

- *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?*

According to the U.S. Fish & Wildlife Service's Information for Planning and Conservation (IPaC) service, there is one threatened bird species and one threatened mammal species in the project area, the Yellow-Billed Cuckoo and Canada Lynx. Although both species have critical habitats, they are not located in the project area. The project is not anticipated to have any negative impact on the Yellow-Billed Cuckoo and Canada Lynx.

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

The National Wetlands Inventory has been searched and there will be no construction activities within wetlands areas. There are no anticipated impacts to wetlands. It is not likely that surface waters in the project area fall under CWA jurisdiction as "Waters of the United States."

- *When was the water delivery system constructed?*

It is not known exactly when the system was constructed.

- *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.*

It is not anticipated that any major modifications will occur to individual features of the irrigation system. The addition of a pressurized pipeline will eliminate headgates, but since the irrigators use sprinklers, the effects will be minor.

- *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.*

Northwest Ditch and Cottonwood Creek are not on the National Register of Historic Places database. Other historic features have not been identified in the project area. However, some may be identified as part of the cultural clearance. If cultural features are identified, they will be avoided unless it is not possible.

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

There are no known archeological sites in the proposed project area.

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

The project will not adversely affect 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?*

The project will not affect 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?*

The project will not contribute to the spread of noxious weeds. Disturbed areas will be reseeded with native species.

Letters of Support

Please include letters from interested stakeholders supporting the proposed project. To ensure your proposal is accurately reviewed, please attach all letters of support/partnership letters as an appendix. (Note: this will not count against the application page limit.)

Letters of Support are included in Appendix A.

Required Permits or Approvals

Applicants must state in the application whether any permits or approvals are required and explain the plan for obtaining such permits or approvals.

Applicants proposing renewable energy components to Federal facilities should note that some power projects may require FERC permitting or a Reclamation Lease of Power Privilege. To complete a renewable energy project within the time frame required of this FOA, it is recommended that an applicant has commenced the necessary permitting process prior to applying. To discuss questions related to projects that propose renewable energy development, please contact the Program Coordinator listed in the FOA-Section G, Agency Contacts.

MGSWC will work with CMWC and NIC to obtain two stream alteration permits from the Utah Division of Water Rights, one for the diversion dam rehabilitation and one for the construction of Northside Creek Reservoir. The construction of the reservoir will also require coordination and approval from Dam Safety. County permits, including a building permit, will be acquired through Morgan County. Applications will be prepared for all necessary permits. Easements needed will be obtained from each property owner affected.

Official Resolution

Include an official resolution adopted by the applicant's board of directors or governing body, or for state government entities, a signed statement from an official authorized to commit the applicant to the financial and legal obligations associated with receipt of a financial assistance award under this FOA, verifying:

- *The identity of the official with legal authority to enter into an agreement*
- *The board of directors, governing body, or appropriate official who has reviewed and supports the application submitted*
- *The capability of the applicant to provide the amount of funding and/or in-kind contributions specified in the funding plan*
- *That the applicant will work with Reclamation to meet established deadlines for entering into a grant or cooperative agreement*

An official resolution meeting the requirements set forth above is mandatory. If the applicant is unable to submit the official resolution by the application deadline because of the timing of board meetings or other justifiable reasons, the official resolution may be submitted up to 30 days after the application deadline.

See Appendix B for the signed Official Resolution.

Project Budget

Funding Plan and Letters of Commitment

Describe how the non-Federal share of project costs will be obtained. Reclamation will use this information in making a determination of financial capability.

Project funding provided by a source other than the applicant shall be supported with letters of commitment from these additional sources. This is a mandatory requirement. Letters of commitment shall identify the following elements:

- *The amount of funding commitment*
- *The date the funds will be available to the applicant*
- *Any time constraints on the availability of funds*
- *Any other contingencies associated with the funding commitment*

Commitment letters from third party funding sources should be submitted with your project application. If commitment letters are not available at the time of the application submission, please provide a timeline for submission of all commitment letters. Cost-share funding from sources outside the applicant's organization (e.g., loans or state grants), should be secured and available to the applicant prior to award.

Reclamation will not make funds available for an award under this FOA until the recipient has secured non-Federal cost share. Reclamation will execute a financial assistance agreement once non-Federal funding has been secured or Reclamation determines that there is sufficient evidence and likelihood that non-Federal funds will be available to the applicant subsequent to executing the agreement.

The four involved entities will determine which project components directly affect their shareholders and split the non-federal cost share accordingly. TU has committed to help fund the fish ladder as part of the diversion dam. NIC and MGSWC will negotiate to determine cost shares for the majority of the project. CMWC will determine what funding they are willing to contribute based on the energy savings they will experience. It is likely that a loan from the Utah Division of Water Resources will be sought to cover costs in excess of available funding. It will be determined at a later time who will apply for the loan and the exact costs each entity will contribute. Letters of commitment will be available once these decisions have been made. The Board of Water Resources will not approve the loan until the grant has been awarded; the letter of commitment will soon follow.

The funding plan must include all project costs, as follows:

- *How you will make your contribution to the cost-share requirement, such as monetary and/or in-kind contributions and source funds contributed by the applicant (e.g., reserve account, tax revenue, and/or assessments).*

The total cost of the project is approximately $5,042,000. The specific company cost shares will be determined as negotiations occur and decisions are finalized. MGSWC already has the funds to construct the Northside Creek Reservoir and will not require a loan for the expected $3,500,000 cost. The remainder will be split among entities. Contributions will be paid from assessments to the shareholders and reserve money in existing company funds.

- *Describe any costs incurred before the anticipated Project start date that you seek to include as project costs. For each cost, identify:*
  - *The project expenditure and amount*
  - *Whether the expenditure is or will be in the form of in-kind services or donations*
  - *The date of cost incurrence*
  - *How the expenditure benefits the Project*

To develop a preliminary design and procure funding, costs have been incurred via an engineering firm. The cost from these efforts is $15,000 and was incurred from May 2016 through January 2017. Without this expense, no funding would be obtained for the project and project feasibility would be unknown.

- *Provide the identity and amount of funding to be provided by funding partners, as well as the required letters of commitment.*

Exact funding amounts have not been determined, but commitments have been given from MGSWC, CMWC, NIC, and TU. Further negotiation and discussions are needed.

- *Describe any funding requested or received from other Federal partners. Note: Other sources of Federal funding may not be counted towards the required cost share unless otherwise allowed by statute.*

Not applicable.

- *Describe any pending funding requests that have not yet been approved, and explain how the project will be affected if such funding is denied.*

If funds are not secured from Reclamation or the Utah Division of Water Resources, it is likely that some aspects of the project will continue due to the importance of the improvements, but funding will ensure that the entire project will be completed.

Please include the following chart to summarize all funding sources. Denote in-kind contributions with an asterisk (*).

Table 5: Summary of Non-Federal and Federal Funding Sources

Funding Sources	Funding Amount
Non-Federal Entities	
1. Mountain Green Secondary Water Company	TBD
2. Northwest Irrigation Company	TBD
3. Cottonwood Mutual Water Company	TBD
4. Trout Unlimited	TBD
Non-Federal Subtotal	$4,042,000
Other Federal Entities	
1. N/A	
Other Federal Subtotal	$0
Requested Reclamation Funding	$1,000,000
Total Project Cost	**$5,042,000**

Budget Proposal

The budget proposal shall include detailed information on the categories listed below and must clearly identify all project costs. Unit costs shall be provided for all budget items including the cost of work to be provided by contractors. The budget proposal should also include any in-kind contributions of goods and services provided to complete the Project. It is strongly advised that applicants use the budget proposal format shown below or a similar format that provides this information. If selected for award, successful applicants must submit detailed supporting documentation for all budgeted costs.

Table 6: Budget Proposal

Budget Item Description	Computation		Quantity Type	Total Cost
	$/Unit	Quantity		
Legal Services	$200/hr	100	Hours	$20,000
Environmental Services	See Appendix F			$62,000
Engineering Services	See Appendix D			$125,000
Construction Management	See Appendix D			$88,000
Construction Contract	See Appendix E			$4,727,000
Reclamation Reporting	$100/hr	200	Hours	$20,000
Total Project Costs				**$5,042,000**

Budget Narrative

Submission of a budget narrative is mandatory. An award will not be made to any applicant who fails to fully disclose this information. The budget narrative provides a discussion of, or explanation for, items included in the budget proposal. Include the value of in-kind contributions or donations of goods and services and sources of funds provided to complete the project. The types of information to describe in the narrative include, but are not limited to, those listed in the following subsections. Costs, including the valuation of in-kind contributions and donations, must comply with the applicable cost principles contained in 2 CFR Part §200, available at the Electronic Code of Federal Regulations (www.ecfr.gov).

MGSWC board members and employees will not earn salary, wages, fringe benefits, or reimbursements from funding obtained to implement this project. All contributions by the secondary water company board members and employees will be volunteered or funded by the company's general fund and be in-kind contributions to the project.

Contractual

Identify all work that will be accomplished by subrecipients, consultants, or contractors, including a breakdown of all tasks to be completed, and a detailed budget estimate of time, rates, supplies, and materials that will be required for each task. If a subrecipient, consultant, or contractor is proposed and approved at time of award, no other approvals will be required. Any changes or additions will require a request for approval. Identify how the budgeted costs for subrecipients, consultants, or contractors were determined to be fair and reasonable.

All funding obtained for the project will be used to pay consultants and construction contractors and subcontractors. These include legal and administrative services, environmental services, engineering design, construction management, and construction services. Detailed tasks to be completed, rates, and materials for each task is outlined in the appendices as follows:

Appendix D – Engineering Design and Construction Management
Appendix E – Construction Services
Appendix F – Environmental Services

The costs shown in the appendices were prepared by a professional engineering firm. Costs for construction services were estimated using bid abstracts from similar projects. A narrative for the unit costs in the construction services cost estimate is included in the appendix. The estimates for engineering design, construction management, and environmental services have been broken down into various tasks and employee types to provide a more detailed estimate. The cost for legal and administrative services is outlined in Table 6.

Environmental and Regulatory Compliance Costs

Applicants must include a line item in their budget to cover environmental compliance costs. "Environmental compliance costs" refer to costs incurred by Reclamation or the recipient in complying with environmental regulations applicable to an award under this FOA, including costs associated with any required documentation of environmental compliance, analyses, permits, or approvals. Applicable Federal environmental laws could include NEPA, ESA, NHPA, CWA, and other regulations depending on the project. Such costs may include, but are not limited to:

- *The cost incurred by Reclamation to determine the level of environmental compliance required for the project*
- *The cost incurred by Reclamation, the recipient, or a consultant to prepare any necessary environmental compliance documents or reports*
- *The cost incurred by Reclamation to review any environmental compliance documents prepared by a consultant*
- *The cost incurred by the recipient in acquiring any required approvals or permits, or in implementing any required mitigation measures*

The amount of the line item should be based on the actual expected environmental compliance costs for the project, including Reclamation's cost to review environmental compliance documentation. However, the minimum amount budgeted for environmental compliance should be equal to at least one to two percent of the total project costs. If the amount budgeted is less than one to two percent of the total project costs, you must include a compelling explanation of why less than one to two percent was budgeted.

See Appendix F for environmental costs.

Total Costs

Indicate total amount of project costs, including the Federal and non-Federal cost-share amounts.

The total project cost is $5,042,000. The non-federal share is $4,042,000 and will be paid by the MGSWC, NIC, CMWC, and TU. Exact cost sharing will be determined later as the companies negotiate and discuss options.

Unique Entity Identifier and System for Award Management

MGSWC has met the requirements for the System for Award Management (SAM) registration. The company is listed with DUNS number 962482266 and CAGE code 7S5P2. The applicant agrees to maintain an active registration during the project.

Appendix A

Letters of Support

(not counted in page limitations)

Cottonwood
Mutual Water Company

January 16, 2017

Franson Civil Engineers
Attn: Jay Franson
776 East Utah Valley Drive
American Fork, UT 84003

Dear Jay,

Although Cottonwood Mutual Water and Mountain Green Secondary Water are separate water providers, we each have an interest in seeking the other succeed since we each serve customers in the same service area.

Cottonwood Mutual Water Company currently provides culinary water to 685 total water connections. These connections break down as follows:

- 3 – park / open space (no secondary water)
- 22 – businesses (no secondary water)
- 1 – church (have own well for outdoor watering)
- 1 – elementary school (dual culinary & secondary system)
- 1 – fire station (no secondary water)
- 203 – residential (no secondary water)
- 454 – residential (utilize secondary water)

As a culinary water company we are encouraged by Mountain Green Secondary Water Company's desire to improve upon the existing secondary water delivery system. These improvements will enhance water conservation, improve water delivery efficiencies and assist Cottonwood Mutual Water Company reduce its energy consumption by reducing the number of culinary connections dependent upon culinary water for outdoor watering. Cottonwood Mutual Water Company can then focus solely upon being the provider for indoor domestic water while Mountain Green Secondary Water can focus upon being the sole provider for outdoor watering.

Sincerely,

Michael R. Johanson
President & Manager
Cottonwood Mutual Water Company

4000 West Old Highway Road • Mountain Green, Utah 84050 • Phone: 801.876.3895 • Fax: 801.876.3893

Northwest Irrigation Company
Mountain Green, Utah

Jan. 10, 2017

To Whom it May concern,

As President of Northwest Irrigation Company, I want to offer support to the replacement of the diversion dam being considered at the upper Cottonwood Creek, located in Morgan, Utah and the piping of the earth irrigation ditch from Buck Miller Dam to the Northwest reservoir. The improvements would add considerable water conservation measures to our non-profit water company system. We strongly urge you to approve the necessary funding to accomplish both tasks.

Our board is excited that Mountain Green Secondary Water Company application for the water smart grant and how it would benefit Northwest Irrigation Company today and future generations.

Sincerely,

Mike Wasuita

Mike Wasuita
President of Northwest Irrigation Company

Trout Unlimited
1777 N Kent Street, Suite 100
Arlington, VA 22209
(703) 522-0200

January 13, 2017

Rulon Gardner
General Manager
Mountain Green Secondary Water Company
4000 W Old Highway Rd
Morgan, UT 84050

Dear Mr. Gardner:

Over the past several years, Trout Unlimited has had the great opportunity and privilege to be involved in a positive effort within the Weber River Watershed, known as the Weber River Partnership, which represents a broad and diverse array of interests within the basin. The Weber River Partnership has made great progress in the Weber River by providing a platform for communication, coordination and collaboration among the diverse stakeholders and we believe this diversity has brought considerable value to developing a cohesive vision that includes water security, agricultural interests, community development and natural resources values.

Trout Unlimited has been working on the ground with a number of partners throughout the Weber River Basin, including the Utah Division of Wildlife Resources, agricultural producers and water users to protect and restore populations of Bonneville cutthroat trout and bluehead sucker though habitat restoration, fish passage and water efficiency projects. The bluehead sucker and Bonneville cutthroat trout populations have declined and are considered to be in jeopardy and petitions for listing under the Endangered Species Act are possible. Understandably, all partners in the watershed benefit by preventing the listing of imperiled species, but beyond that, we believe that many watershed partners also greatly value the fact that these species still persist in the Weber River, a sign of the great resilience of these native species and a reflection of the rich economic vitality they bring to our communities. Nevertheless, these species need our help and a cohesive strategy through the Weber River Partnership broadens the scope of our actions on the ground to provide broad benefits to all stakeholders in the Basin.

Trout Unlimited is encouraged by and supportive of your proposed project to improve water conveyance efficiency and fish passage at your irrigation diversion structure on Cottonwood Creek under the WaterSMART water and energy efficiency program. We are encouraged by your consideration of fish passage at your irrigation diversion structure in Cottonwood Creek, as it represents a barrier to Bonneville cutthroat trout migrating out of the Weber River to

access perennially flowing spawning habitat. We support your proposal and are committed to working with the Mountain Green Secondary Water Company on this irrigation diversion improvement and fish passage project.

Although we currently lack immediate funding to financially participate in this project, TU staff remain committed to seeking project implementation funding to aid with construction as we gain a better understanding of fish passage solution at this diversion.

With Kind Regards.

Paul Burnett - Weber River Project Coordinator
5279 South 150 East
Ogden, UT 84405
801-436-4062
pburnett@tu.org

Appendix B

Signed Official Resolution

(not counted in page limitations)

OFFICIAL RESOLUTION
OF THE
Mountain Green Secondary Water Company

RESOLUTION NO. 2017 - 1

WHEREAS, the United States Department of the Interior, Bureau of Reclamation has announced the *WaterSMART Water and Energy Efficiency Grants* in order to prevent water supply crises and ease conflict in the western United States, and has requested proposals from eligible entities to be included in the WaterSMART Program, and

WHEREAS, the Mountain Green Secondary Water Company has need for funding to complete an irrigation and secondary project that will rehabilitate a diversion dam and splitter weir, enclose the Northwest Ditch, construct a storage reservoir, and connect the secondary water system between subdivisions. The project is intended to conserve water, promote collaboration, efficiently deliver water to shareholders, and create better water management practices.

NOW, THEREFORE, BE IT RESOLVED that the Mountain Green Secondary Water Company Board of Directors agrees and authorizes that

1. The Mountain Green Secondary Water Company Board of Directors has reviewed and supports the application submitted;

2. The applicant is capable of providing the amount of funding and/or in-kind contributions, specified in the funding plan; and

3. If selected for a WaterSMART Grant, the applicant will work with Reclamation to meet established deadlines for entering into a grant or cooperative agreement.

DATED: 1-11-2017

Rulon Gardner
President, Mountain Green Secondary Water Company

ATTEST:

Chad Brown
Project Manager, Franson Civil Engineers

Appendix C

Water Savings Calculations

MOUNTAIN GREEN SECONDARY WATER COMPANY

MOUNTAIN GREEN SECONDARY IMPROVEMENTS PROJECT

Water Savings Calculations

**Calculations were made in Excel and were not rounded. The values shown here reflect the Excel values.*

Loss through seepage and evaporation in unlined ditches[1] = 33%

Northwest Pipeline replacement of the existing Northwest Ditch

Northwest Reservoir Capacity = 523 acre-feet

**According to the Northwest Irrigation Company, the reservoir fills 2.5 times each year.*

Total Annual Volume in Reservoir = 523 * 2.5 = 1,307.5 acre-feet

**Assuming 33% water loss from the USU reference, then 67% of the diverted water enters the reservoir.*

Total Annual Volume Diverted = 1,307.5/.67 = 1,961.25 acre-feet

Total Annual Water Loss = 1,961.25 – 1,307.5 = 653.75 acre-feet

**Because the ditch will be enclosed in a pipeline, all seepage and evaporation losses will be eliminated.*

Total Annual Water Savings = Total Annual Water Loss = 653.75 acre-feet

[1]Hill, R. W. (2000). "How Well Does your Irrigation Canal Hold Water? Does it Need Lining?" All Archived Publications, Utah State University. Paper 148. http://digitalcommons.usu.edu/extension_histall/148
"Irrigation Water Conveyance." (2005). NRCS Irrigation Water Management Training, Fort Collins, CO. Presentation.

Appendix D

Probable Cost for Engineering Services

(Engineering Design and Construction Management)

Mountain Green Secondary Improvements Project

Probable Cost Opinion for Engineering Services

(Rate Table Attached)

Task Description	Hours By Personnel Category						Total Hours	Total Labor Charges	Other Direct Costs	Total Fee
	2	3	7	6	9	11				
	Senior Manager	Senior Engineer	Engineer I	Senior Designer	Engineering Assistant	Office Assistant				
Phase 1 - Project Management & Coordination										
Task 1. General Project Management Tasks	30	30	30	5			95	$11,295		$11,295
Task 2. Client Coordination Meetings	10	25	5				40	$5,025	$1,000	$6,025
Task 3. Environmental Coordination	5	5					10	$1,350		$1,350
Task 4. Coordination with Division of Water Resources	10	10	5		5		30	$3,575		$3,575
Task 5. Coordination with Trout Unlimited	15	5					20	$2,800		$2,800
Task 6. Coordination with Shareholders	5	30					35	$4,475		$4,475
Task 7. Loan Closing & Legal Coordination	5	5			5		15	$1,775		$1,775
SUBTOTAL	80	110	40	5	10	0	245	$30,295	$1,000	$31,295
Phase 2 - Engineering Design										
Task 1. Design Team Management	15	15	15	10			55	$6,390		$6,390
Task 2. Site Visits/Surveying		40					40	$5,000	$1,000	$6,000
Task 3. Design Criteria Contract	5						5	$725		$725
Task 4. Coordination with Client & Shareholders	5	10	5				20	$2,425		$2,425
Task 5. Hydraulic Analysis and Model	5		15				20	$2,075		$2,075
Task 6. Surge Analysis and Protection	5		5				10	$1,175		$1,175
Task 7. Air-Valves Sizing			5				5	$450		$450
Task 8. Diversion Dam Design	65	20	50				135	$16,425		$16,425
Task 9. Fish Ladder Design	20	5	20				45	$5,325		$5,325
Task 10. Splitter Weir Design	15		10				25	$3,075		$3,075
Task 11. Northwest Pipeline Design	40	5	5				50	$6,875		$6,875
Task 12. Northside Feeder Pipeline Design	10		10				20	$2,350		$2,350
Task 13. Secondary Waterline Design	40		10				50	$6,700		$6,700
Task 14. Construction Drawings Draft	8	8	8	90			114	$11,790	$150	$11,940
Task 15. Construction Drawings Final	8	8	8	90			114	$11,790	$150	$11,940
Task 16. Construction Specifications	30	5	20		5		60	$7,200	$100	$7,300
Task 17. Bid & Award Coordination		5	5		5		15	$1,500		$1,500
SUBTOTAL	271	121	191	190	10	0	783	$91,270	$1,400	$92,670
Phase 3 - Construction Management										
Task 1. Construction Team Management	5	10	5				20	$2,425		$2,425
Task 2. On-Site Observation and Documentation		550					550	$68,750	$3,000	$71,750
Task 3. Submittal Reviews		5					5	$625		$625
Task 4. Contractor Coordination		10					10	$1,250		$1,250
Task 5. Record Drawings Preparation	20			30			50	$5,870	$150	$6,020
Task 6. O&M Manual	30					5	35	$4,650	$150	$4,800
Task 7. Project Closeout	10	5				5	20	$2,375		$2,375
SUBTOTAL	65	580	5	30	0	10	690	$85,945	$3,300	$89,245
Project Totals	416	811	236	225	20	10	1,718	$207,510	$5,700	$213,210

FRANON CIVIL ENGINEERS
FEE SCHEDULE – 2017

This Fee Schedule applies to services rendered during the current year. A new Schedule will be issued at the beginning of each year. These fees include overhead and profit.

Personnel

Classification	2017
Principal	$165
Senior Manager	$145
Senior Engineer	$125
Senior Field Manager	$120
Staff Engineer	$108
Senior Designer	$99
Engineer I	$90
Designer	$85
Engineering Assistant	$85
Engineering Intern	$70
Office Assistant	$60
Clerk	$50

Expenses

Expenses incurred for the project will be invoiced at direct cost. Standard rates for selected common direct expenses are as follows:

	2017
Mileage (IRS mileage + $0.10)	$0.64/mile
Copy/Print – 8.5x11	$0.04/page
Copies – 11x17	$0.08/page
Color Copy/Print	$0.25/page
Oversize Copies/Prints	$1.00/sq. ft.
Per Diem	$50.00/day

Appendix E

Probable Cost for Construction Services

Mountain Green Secondary Improvements Project

Probable Cost Estimate for Construction

No.	Item	Quantity	Unit	Unit Cost	Total Cost
1	Mobilization	1	LS	$ 331,000.00	$ 331,000.00
				Subtotal:	$ 331,000.00
Diversion Dam					
2	Diversion Inlet Structure Rehabilitation	1	LS	$ 100,000.00	$ 100,000.00
				Subtotal:	$ 100,000.00
Fish Ladder					
3	Fish Ladder	1	LS	$ 40,000.00	$ 40,000.00
				Subtotal:	$ 40,000.00
Splitter Box					
4	Splitter Box Rehabilitation	1	LS	$ 10,000.00	$ 10,000.00
				Subtotal:	$ 10,000.00
Northwest Pipeline					
5	Furnish and Install 10-inch HDPE DR 32.5 Pipe	15,030	LF	$ 25.00	$ 375,750.00
6	Furnish and Install Inlet Structure with Trash Rack	1	LS	$ 30,000.00	$ 30,000.00
7	Furnish and Install 10-inch Isolation Valve	3	EA	$ 3,500.00	$ 10,500.00
8	Furnish and Install 10-inch Tee	1	EA	$ 2,000.00	$ 2,000.00
9	Furnish and Install Air Valve	7	EA	$ 4,000.00	$ 28,000.00
10	Furnish and Install 10-inch Turnout w/Meter	1	EA	$ 12,000.00	$ 12,000.00
11	Furnish and Install 10-inch Meters	2	EA	$ 8,000.00	$ 16,000.00
12	Furnish and Install PRV Vault	1	EA	$ 31,000.00	$ 31,000.00
13	Furnish and Install Pressure Relief Valves	6	EA	$ 2,000.00	$ 12,000.00
14	Furnish and Install Outlet Structure	1	LS	$ 11,000.00	$ 11,000.00
				Subtotal:	$ 528,250.00
Northside Creek Feeder Pipeline					
15	Furnish and Install 10-inch HDPE DR 32.5 Pipe	800	LF	$ 25.00	$ 20,000.00
16	Furnish and Install 10-inch Isolation Valve	1	EA	$ 3,500.00	$ 3,500.00
17	Furnish and Install Air Valve	1	EA	$ 4,000.00	$ 4,000.00
18	Furnish and Install Outlet Structure	1	LS	$ 11,000.00	$ 11,000.00
				Subtotal:	$ 38,500.00
Northside Creek Reservoir					
19	Storm Water Pollution Prevention	1	LS	$ 8,928.62	$ 8,928.62
20	Earthwork, Mass	1	LS	$ 916,453.11	$ 916,453.11
21	Dam Construction	1	LS	$ 1,343,031.53	$ 1,343,031.53
22	Reservoir Infrastructure	1	LS	$ 642,008.54	$ 642,008.54
23	Outlet Works Construction	1	LS	$ 79,188.65	$ 79,188.65
24	Reservoir Liner	1	LS	$ 497,577.84	$ 497,577.84
25	Reservoir Instrumentation	1	LS	$ 16,596.73	$ 16,596.73
26	Lake Ammenities	1	LS	$ 26,260.65	$ 26,260.65
				Subtotal:	$ 3,530,045.67
Secondary Connection Pipeline					
27	Furnish and Install 8-inch C900 PVC Pipe	5,300	LF	$ 22.00	$ 116,600.00
28	Furnish and Install 8-inch Isolation Valve	2	EA	$ 1,800.00	$ 3,600.00
29	Furnish and Install Air Valve	2	EA	$ 4,000.00	$ 8,000.00
30	Furnish and Install Drain	3	EA	$ 4,500.00	$ 13,500.00
31	Stream Crossing	1	LS	$ 5,000.00	$ 5,000.00
32	Connect Water Service to Waterline w/Meter	1	EA	$ 2,500.00	$ 2,500.00
				Subtotal:	$ 149,200.00
				Construction Total:	**$ 4,727,000.00**
				Legal/Bonding:	**$ 20,000.00**
				Environmental Compliance & Permits:	**$ 62,000.00**
				Engineering Design & Construction Observation	**$ 213,000.00**
				Reporting & Coordination with Reclamation:	**$ 20,000.00**
				Total:	$ 5,042,000.00

Budget Narrative

All unit costs were estimated based on actual construction bids from recently completed projects. Engineering judgment was used when comparable items were not available. Very limited preliminary design work was completed to identify pipe sizes and lengths needed. For each bid item referenced, the average of all the bidders was calculated and used for the cost estimate. The bid abstracts referenced include:

- Gobblefield Ditch Enclosure Project – November 2016
- American Fork Culinary Waterline Replacement Project – October 2016
- St. John's Canal Enclosure Project – August 2016
- Last Chance Diversion Dam Rehabilitation Project – September 2015
- Upper High Creek Canal Enclosure Project – July 2015
- Middle Ditch Pressurized Irrigation Project – July 2014

The bid abstracts are available for review upon request. Additional estimates are based on RS Means and a requested bid. Values were rounded to the nearest $1,000. Detail is provided below:

Bid Item 1
The mobilization cost is approximately 7% of the total construction costs. The percentage was calculated based on the Upper High Creek bid abstract average of 7.3%.

Bid Item 2
The cost for the diversion dam was estimated by determining the volume of concrete, riprap, excavation, backfill, and compaction needed for the main structure and cutoff walls. A trash box and screen, gate box, and actuator and remote operator were also included. Prices were estimated using the Gobblefield and Last Chance bid abstracts and the RS Means catalog.

Bid Item 3
The fish ladder is a concrete channel adjacent to the diversion dam. The structure is estimated to require 40 cubic yards of concrete. The cost was based on the Last Chance bid abstract for reinforced concrete for a canal intake structure of approximately $1,000 per cubic yard. The cost includes materials and labor.

Bid Item 4
The cost of the splitter weir was based on the volume of concrete needed, a weir, vertical plate, grate, access ladder, inlet/outlet works, excavation, backfill, and compaction. Specific costs were based on the RS Means catalog. The item was listed as a lump sum due to its size. Engineering experience on concrete work and previous splitter weir designs was also used.

Bid Items 5, 15, and 27
Pipe costs were obtained from the materials bid abstract for the Gobblefield project. The average cost for HDPE DR 32.5 pipe was calculated as $1.00 per pound, including shipping. The weight of 10-inch HDPE is 4.77 pounds per foot. The Gobblefield Ditch Enclosure Project did not use pipe smaller than 30 inches, so the installation cost was reduced from $22.50 per foot to $20.00 per foot for the 10-inch pipe to account for a smaller pipe size. The cost for the 8-inch C900 PVC

pipe was based on the Upper High Creek bid abstract. Although the bid did not have an 8-inch size, the price for a 15-inch PVC pipe was $28.92. This was decreased for the smaller pipe size based on the difference between Upper High Creek's 18-inch pipe and 15-inch pipe sizes of $40.44 and $48.92, respectively. Pipe material and installation costs were summed and rounded to the nearest dollar.

Bid Item 6
The cost for the pipe inlet structure was based on the Gobblefield pond outlet structure which directs flow into the pipe system. The Gobblefield structure is three times larger than this structure is anticipated to be, so the average bid price was divided by three. The cost for the trash rack was based on a Gobblefield bid item and included in the overall price for the bid item.

Bid Items 7, 16, and 28
The cost of the 10-inch isolation valve is based on the Middle Ditch bid abstract. Because the 8-inch isolation valve is used on the secondary waterline, the American Fork bid abstract was used to estimate its cost.

Bid Items 8, 9, 12, 13, 17, 29, and 30
The cost of these pipe appurtenances including tees, air valves, PRV vaults, pressure relief valves, and drains were obtained from St. John's bid abstract which used the same appurtenances. Values were rounded for simplicity.

Bid Item 10 and 11
The cost of the turnouts with meters and stand-alone meters were based on the Upper High Creek bid abstract which had similar items used in the same type of project. The cost of the stand-alone meters was estimated based on size comparison.

Bid Items 14 and 18
The outlet structures are very similar to the Upper High Creek Canal Enclosure Project in size and overall conceptual design. The same average bid price was used to estimate these costs. Preliminary design efforts do not allow more detailed designs at this stage.

Bid Items 19 thru 26
MGSWC has already requested bids for the construction of the Northside Creek Reservoir. The cost estimates were taken from a bid from Salt Lake General Contracting.

Bid Item 31
Preliminary design efforts indicate that the stream crossing is anticipated to be similar to the stream crossing in the Gobblefield project. The same price was used from the Gobblefield bid abstract for a best estimate.

Bid Item 32
The cost for connecting secondary residential water services to the waterline is similar to connecting culinary services to a waterline. The cost is based on the American Fork Culinary bid abstract.

Appendix F

Probable Cost for Environmental Services

(Environmental and Cultural Resources Compliance)

Mountain Green Secondary Improvements Projects

Probable Cost Opinion for Environmental Services

Task Description	Hours By Personnel Category					Total Hours	Total Labor Charges	Other Direct Costs	Total Fee
	2	3	7	6	9				
	Senior Manager	Senior Engineer	Engineer I	Senior Designer	Engineering Assistant				
Environmental Services									
Task 1. Cultural Resources Survey/Report[1]		5	5			10	$1,075	$15,000	$16,075
Task 2. Preparation of Environmental Assessment Draft	5	70	5		10	90	$10,775	$30	$10,805
Task 3. Coordination with Reclamation[2]		24				24	$3,000	$10,000	$13,000
Task 4. Coordination with Other Agencies		15				15	$1,875		$1,875
Task 5. Preparation of Environmental Assessment Final Report	5	60	5		10	80	$9,525	$30	$9,555
Task 6. FONSI	5	10				15	$1,975		$1,975
Task 7. Stream Alteration Permitting (2 permits)	10	5	60	5	5	85	$8,395	$320	$8,715
PROJECT TOTALS	25	189	75	5	25	319	$36,620	$25,380	$62,000

[1] *A cost of $15,000 was budgeted for Cultural Resources Survey/Report that will be prepared by a registered archeologist.*

[2] *A cost of $10,000 was budgeted for Reclamation's effort on NEPA Compliance.*

Appendix G

Proposed Schedule

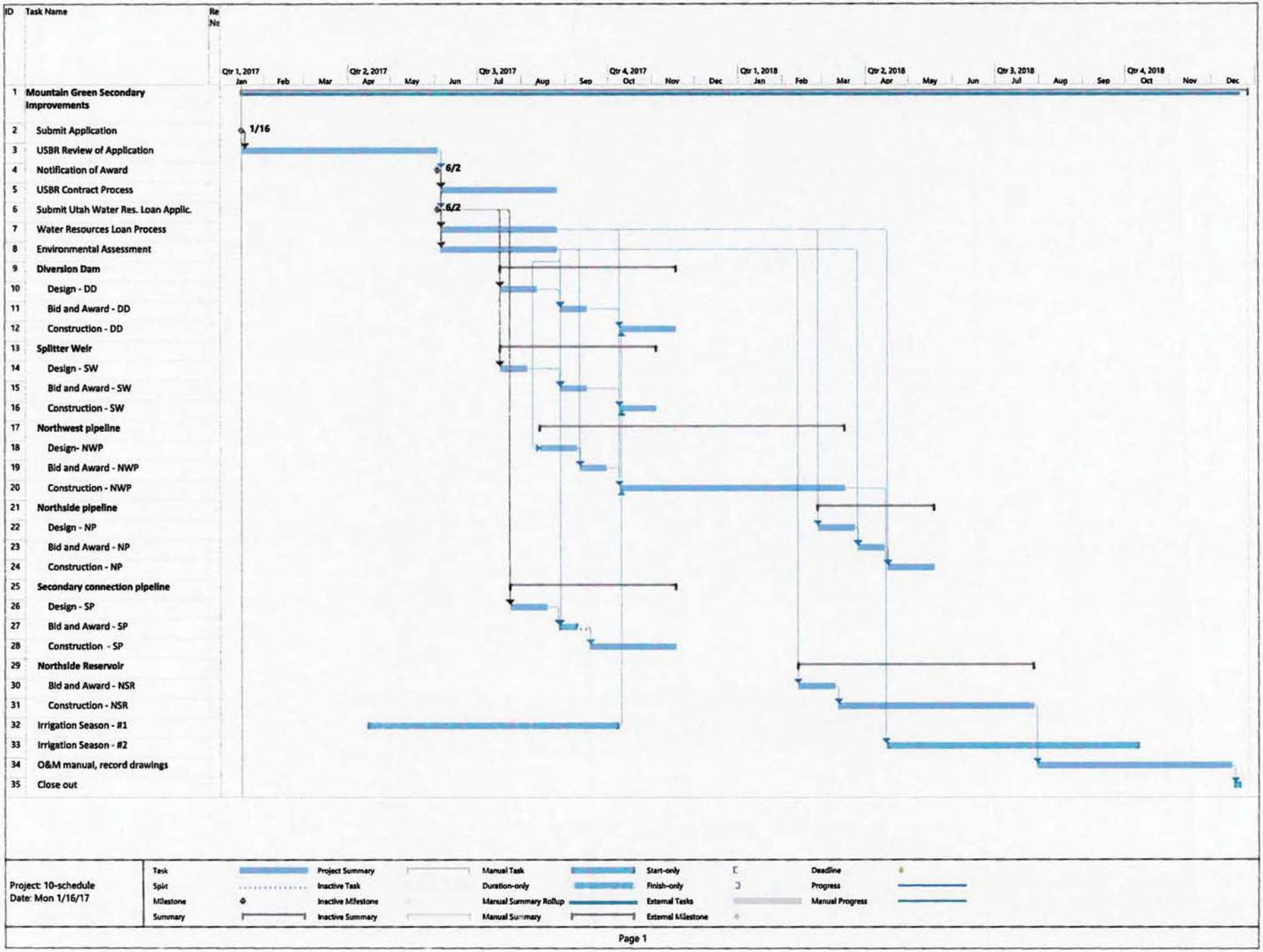
MOUNTAIN GREEN SECONDARY WATER COMPANY

MOUNTAIN GREEN SECONDARY IMPROVEMENTS PROJECT

Proposed Schedule

See attached Gantt Chart. The list below is a summary of the chart.

June 2017	Anticipated WaterSMART Grant Award
August 2017	NEPA Compliance, Easements, and Permitting Complete
August 2017	Utah Division of Water Resources Loan Approval
September 2017	Sign Grant Agreement with Reclamation
July 2017 – March 2018	Engineering Design Complete
August 2017 – April 2018	Project Bidding and Award of Construction Contract
August 2018	Construction of Project Complete
December 2018	O&M Manual and Record Drawings Prepared


ID
Task Name
Qtr 1, 2017
Qtr 2, 2017
Qtr 3, 2017
Qtr 4, 2017
Qtr 1, 2018
Qtr 2, 2018
Qtr 3, 2018
Qtr 4, 2018
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1 Mountain Green Secondary Improvements
2 Submit Application
3 USBR Review of Application
4 Notification of Award
5 USBR Contract Process
6 Submit Utah Water Res. Loan Applic.
7 Water Resources Loan Process
8 Environmental Assessment
9 Diversion Dam
10 Design - DD
11 Bid and Award - DD
12 Construction - DD
13 Splitter Weir
14 Design - SW
15 Bid and Award - SW
16 Construction - SW
17 Northwest pipeline
18 Design- NWP
19 Bid and Award - NWP
20 Construction - NWP
21 Northside pipeline
22 Design - NP
23 Bid and Award - NP
24 Construction - NP
25 Secondary connection pipeline
26 Design - SP
27 Bid and Award - SP
28 Construction - SP
29 Northside Reservoir
30 Bid and Award - NSR
31 Construction - NSR
32 Irrigation Season - #1
33 Irrigation Season - #2
34 O&M manual, record drawings
35 Close out
1/16
6/2
6/2
Project: 10-schedule
Date: Mon 1/16/17
Task
Split
Milestone
Summary
Project Summary
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
External Tasks
External Milestone
Deadline
Progress
Manual Progress