STRAWBERRY HIGH LINE CANAL COMPANY

LATERAL 31 PIPING CONSERVATION PROJECT GENOLA, UTAH

Strawberry High Line Canal Company
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1. EXECUTIVE SUMMARY

APPLICATION DATE: January 17, 2013

APPLICANT: Strawberry High Line Canal Company (SHLCC)
Payson, Utah County, Utah

PROJECT SUMMARY:

The **Lateral 31 Piping Conservation Project** focuses on **Task A – Water Conservation** and **Task D – Water Markets**.

The proposed project contributes to the accomplishment of Task A by converting 4000 feet of concrete-lined open canal to pipeline, increasing the water conveyance capacity of the Lateral 31 delivery system. Thereby resulting in 793 AF of better managed water annually and **conserving approximately 45,000 acre-feet of water** in the existing SHLCC water bank over the life of the project. The increased water conveyance capacity will allow for water that has been historically spilled to be moved to a storage reservoir and used at a later date.

Task D accomplishment contributions resulting from the project will be water savings and corresponding increases in available water supply. Water conserved through loss prevention will be made available to lease for agricultural irrigation and municipal secondary irrigation purposes.

Lateral 31 PROJECT WATER SUPPLY DETAILS:

Current Annual Transport Losses – Project Specific:	450 acre-feet
Estimated Annual Transport Losses after the project:	0 acre-feet
Estimated Water Saved - Annually:	450 acre-feet
Estimated Water Better Managed - Annually:	793 acre-feet
Estimated Water Saved – Life of the Project:	45,000 acre-feet
Estimated Water Better Managed – Life of the Project:	79,300 acre-feet
Current Water Marketed/Banked – Annually:	0 acre-feet
Estimated Water Marketed/Banked – Annually:	450 acre-feet
Estimated Water Marketed/Banked – Life of the Project:	45,000 acre-feet
Average Annual Acre-Feet of Water Supply – Project Specific:	4,522 acre feet

PROJECT TIMEFRAME:
It is anticipated that the Lateral 31 Piping Conservation Project will take approximately eight months to complete.

PROPOSED PROJECT DATES: August 1, 2013 – March 31, 2014

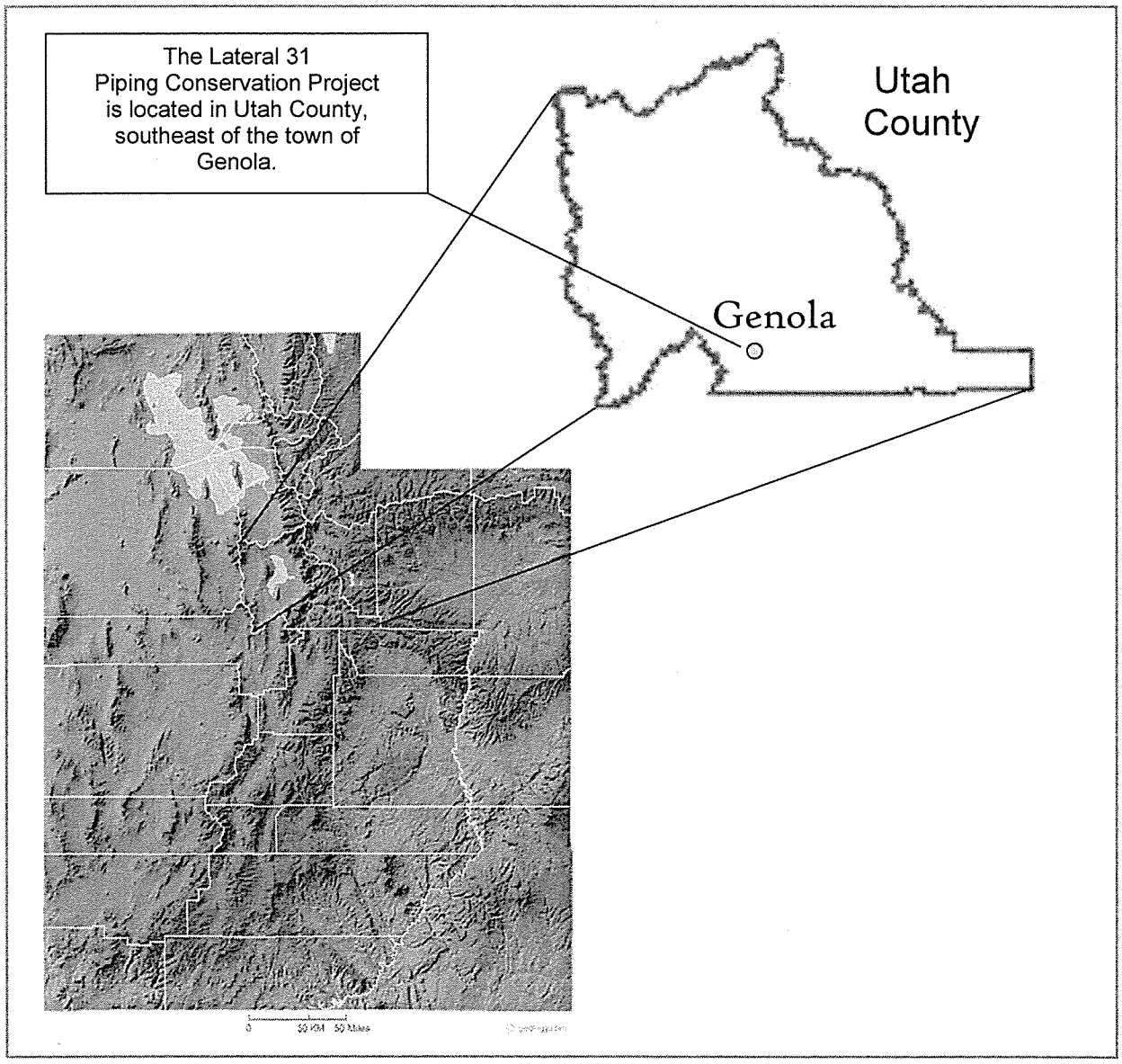
2. BACKGROUND DATA

Project Location

The proposed project is located southeast of the town of Genola in Utah County, Utah.

- The illustration below shows the location of the project in relation to Utah State and Utah County.

- **Figure 1: Location Map**, and **Figure 2: Site Map**, included as attachments to this application, provide a close-up aerial view of the project location in relation to surrounding cities and landmarks in south Utah County.



2. BACKGROUND DATA (continued)

Water Supply

Strawberry High Line Canal Company - Overall

SHLCC delivers an average of 56,300 acre-feet of water annually. The 56,300 acre-feet is comprised of 39,000 acre-feet of Strawberry Valley Project water, 6,500 acre-feet of Central Utah Project water, 6,000 acre-feet from Spanish Fork and Payson canyons, 3,000 acre-feet of well water and 1,800 acre-feet of return flow water right.

Lateral 31 – Project Specific

Lateral 31 currently delivers an average of 4,522 AF of water annually. Upon project completion, Lateral 31 will have the potential capacity to deliver, divert and/or store up to 10,550 AF each year.

Water Rights

As landowners within the service area of the High Line Unit of the Strawberry Valley project, SHLCC Shareholders contracted with the Bureau of Reclamation for delivery and beneficial use of their water rights.

The Bureau of Reclamation, in turn, has contracted with SHLCC to operate and maintain the Bureau of Reclamation owned facilities.

By contract, SHLCC delivers water rights appurtenant to land in the High Line Unit of the Strawberry Valley Project.

Water Uses

SHLCC water is used primarily for commercial agriculture irrigation, small pasture irrigation and small lot irrigation.

Water Users

Strawberry High Line Canal Company - Overall

SHLCC services 17,500 acres of agricultural land and over 22,000 people in the communities of Payson City, Salem City, the town of Genola, and in southern Utah County. SHLCC provides irrigation to a majority of the fruit orchards in the state, delivering water to over 70% of the orchards in Utah. The orchards served by SHLCC primarily produce apples, cherries, and peaches. In addition to the orchards, the principal crops grown on the acreage served by SHLCC include grass hay, alfalfa, and the following grains: wheat, barley, oats, and corn. Other crops grown are: beets, potatoes, and onions.

2. BACKGROUND DATA (continued)

Water Users (continued)

Lateral 31 – Project Specific

Lateral 31 services 2200 acres of agricultural land and over 120 homes in the town of Genola. The principal crops grown on the 2200 acres served by Lateral 31 include grass hay, alfalfa, and the following grains: wheat, barley, oats, and corn.

Lateral 31 also services the vast majority of the fruit orchards in the Genola area providing water to orchards primarily yielding apples, cherries, and peaches.

Water Demand

Strawberry High Line Canal Company - Overall

SHLCC is located in southern Utah County. The demand for water in this area is rapidly increasing to the point where demand will inevitably exceed the available supply.

Lateral 31 – Project Specific

The Lateral 31Piping Conservation Project is located in southern Utah County, the area is currently experiencing high growth rates in conjunction with limited existing water supplies.

Water Delivery System

Strawberry High Line Canal Company - Overall Facilities

SHLCC has 17 miles of main canal, over 40 miles of laterals and approximately 35 miles of pressurized pipeline that service the cities and surrounding areas of Salem, Payson, Spring Lake, Santaquin, West Mountain, and Genola.

Lateral 31 – Project Specific Facilities

Lateral 31 consists of approximately 9800 feet of concrete-lined open canal that delivers water to 11 ponds with pressurized irrigation systems. The proposed project plan would convert 4000 feet of the concrete-lined open canal to pressurized pipeline.

2. BACKGROUND DATA (continued)

Bureau of Reclamation Relationship History

Strawberry High Line Canal Company

For over 90 years, SHLCC has been the contract operator for the High Line Unit of the Strawberry Valley Project, having received and delivered Strawberry Valley Project water since April 7, 1916.
SHLCC has also received and delivered water from the Bonneville Unit of the Central Utah Project.
SHLCC's proposed piping conservation project seeks funding to pipe Lateral 31, a Bureau of Reclamation owned facility.

Bureau of Reclamation Projects and Previous Grant Funding

Water Conservation Field Services Program (WCFSP)

SHLCC was awarded a grant through WCFSP to create a Water Management Conservation Plan (WMCP).
SHLCC's WMCP was finalized and approved by the Bureau of Reclamation in September of 2009.

The WCFSP also provided funding for the Utah Association of Conservation Districts (UACD) Canal Safety study. SHLCC was the pilot system for the study, assisting UACD in creating a Water Conveyance Facility Safety Management Plan template in compliance with the Water Conveyance Facilities Safety Act of 2010 and for use and distribution to all irrigation water conveyance facilities within the state of Utah.

Water 2025 and Water for America

SHLCC's Lateral 20 piping projects are a result of the cooperative relationship of SHLCC, Payson City and the Bureau of Reclamation.

Funding for the initial Lateral 20 Relocation project was received through cooperative, dual-applicant Water 2025 grants awarded to SHLCC and Payson City by the Bureau of Reclamation in 2005 and 2007.

SHLCC's Red Bridge Project was a cooperative effort of SHLCC and the Bureau of Reclamation through a Water 2025 Grant awarded in 2007.

The Lateral 20 Piping Conservation Project that recently completed the piping of Lateral 20 was funded in part by a generous award from the Bureau of Reclamation through the Water for America grant program.

3. TECHNICAL PROJECT DESCRIPTION

Existing Project Demographics and Proposed Project Details

Lateral 31 consists of approximately 9800 feet of concrete-lined open canal that delivers water to 11 ponds with pressurized irrigation systems.
The proposed project plan converts 4,000 feet of the concrete-lined open canal to pressurized pipeline through installation of 42 inch HDPE pipe.

The inside diameter of the 42 inch Solid Wall HDPE is 39.26 inches. The HDPE pipe will be fused at the joints. Lateral 31 will maintain a minimum slope of 0.1% to achieve a maximum flow of approximately 35 CFS. The pipe is expected to have a lifespan of 100 years.

The inlet and outlet structures will be reinforced concrete. A slide gate will be placed over the newly placed HDPE pipe at the inlet. There are no turnouts along this stretch of the canal to be piped.

The backfill material will be compacted during installation. In the event that the native material cannot be sufficiently compacted, an imported backfill material will be placed around the pipe. The pipe corridor will be graded.

Proposed Project Results

The original design capacity of Lateral 31 was 20 CFS; however, due to aging infrastructure and safety concerns, SHLCC limits water conveyance through Lateral 31 to 15 CFS. Throughout the 152 day irrigation season Lateral 31 typically runs at full capacity, amounting to approximately 4,522 AF of water conveyance per year.

It is estimated that on an annual basis approximately 10 percent, or 450 AF of water, is lost throughout the 4,000 foot section of the proposed project. Piping the 4,000 foot section will result in an annual water savings of approximately 450 AF equating to a potential savings of 45,000 AF over the life of the project.

Using the Hazen-Williams equation, the 42 inch solid wall HDPE pipe will deliver approximately 30 to 35 CFS, but can be pressurized to provide much greater flow. With Lateral 31's increased capacity of approximately 20 CFS, there is the potential for an additional 6,028 AF of water to be delivered, diverted, and/or stored thus resulting in an annual water conveyance capacity of approximately 10,550 AF.

Additional capacity in Lateral 31 will also allow SHLCC to meet higher demands for water delivery during peak season irrigation; servicing a greater number of SHLCC Shareholders and mitigating potential water conflicts.

4. EVALUATION CRITERIA

Evaluation Criterion A: Water Conservation

Subcriterion No. A.1. – Water Conservation

a) **Quantifiable Water Savings**
By converting 4,000 feet of concrete-lined open canal to pipeline, the **Lateral 31 Piping Conservation Project will conserve 10% of the water utilized in the Lateral 31 delivery system,** or approximately 450 AF of the annual 4,522 AF currently delivered through the Lateral 31 water conveyance facility.

Over the life of the Lateral 31 Piping Conservation Project, SHLCC will conserve approximately 45,000 AF of the water designated for delivery by way of Lateral 31.

- **What is the applicant's average annual acre-feet of water supply?**
SHLCC's average annual acre-feet of water supply is 56,300.
The average annual water supply delivered through Lateral 31 is approximately 4,522 AF.

- **Where is that water currently going (i.e., back to the stream, spilled at the end of the ditch, seeping into the ground, etc.)?**
The water lost during conveyance through Lateral 31 is lost due to evaporation and seepage.

- **Where will the conserved water go?**
The conserved water will remain in the SHLCC water bank.

(1) Canal Lining/Piping

- **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 estimated average annual water savings resulting from the Lateral 31 Piping Conservation Project has been determined through an on-site evaluation of the condition of the existing canal, verbal historical reports from the ditch riders, and water delivery and SCADA reports from the 2012 irrigation season. SHLCC has made the assumption that additional water currently required for conveyance to meet water order requests would be saved when the open, concrete-line ditch is replaced with pipe; the additional water would no longer be required to meet water orders and would not be lost due to the very nature of pipe.

4. EVALUATION CRITERIA (continued)

Evaluation Criterion A: Water Conservation (continued)

Subcriterion No. A.1. – Water Conservation (continued)

(1) **Canal Lining/Piping** (continued)

- **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.**

  The average annual canal losses due to seepage, leakage and evaporation have been determined through an on-site evaluation of the condition of the existing canal, verbal historical reports from the ditch riders, and water delivery and SCADA reports from the 2012 irrigation season. More specifically, SCADA data (inflow/outflow measurements) and water order reports have been compared to determine canal losses. [e.g., On July 19, 2012 water orders in the Genola area totaled 20.59 AF while the SCADA reports indicated that 27.77 AF was required to meet the requested delivery needs. These types of comparisons suggest that an average of 7.18 AF water is lost in the current open, concrete-lined delivery system. The Lateral 31 Piping Conservation Project proposes enclosure of approximately 50% of the open, concrete-lined canal.]
  Ponding tests have not been conducted in this section of the canal as the slope in the area is too great.

- **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?)**

  The projected post-project seepage/leakage losses are expected to be nonexistent; the nature of pipe suggests that little or no water will be lost after the pipe is installed and the open, concrete-lined canal is obsolete. (For specific data relating to the type of material being used, please refer to "*3408 Pipe Specifications*" and "*4710 Pipe Specifications*" included in the application attachments.)

4. EVALUATION CRITERIA (continued)

Evaluation Criterion A: Water Conservation (continued)

Subcriterion No. A.1. – Water Conservation (continued)

(1) Canal Lining/Piping (continued)

- **What are the anticipated annual transit loss reductions in terms of AF per mile for the overall project and for each section of canal included in the project?**

  The anticipated annual transit loss reductions for the overall project are approximately 594 AF per mile; more specifically 450 AF along the 4,000 foot section of the canal included in the proposed piping project.

- **How will actual canal loss seepage reductions be verified?**

  Actual canal loss seepage reductions will be verified through SCADA reports, water order conveyance comparisons, verbal reports from the ditch riders, and on-site evaluations of the newly-piped canal.

- **Include a detailed description of the materials being used.**

  Detailed descriptions of the type of material being used in the project are included as attachments ("*3408 Pipe Specifications*" and "*4710 Pipe Specifications*") with this application.

4. EVALUATION CRITERIA (continued)

Evaluation Criterion A: Water Conservation (continued)

Subcriterion No. A.1. – Water Conservation (continued)

b) **Improved Water Management**
Upon completion of the proposed project, the increased capacity of **Lateral 31 will enable SHLCC to better manage 793 AF, or approximately 18% of Lateral 31 water each irrigation season.** Over the life of the Lateral 31 Piping Conservation Project, SHLCC will improve the delivery efficiency of over 79,300 AF of water designated for delivery by way of Lateral 31.

Estimated Amount of Water Better Managed	793 AF
Average Annual Water Supply	4,522 AF

Project Improved Water Management: 18%

Increasing Lateral 31 capacity by converting 4000 feet of concrete-lined open canal to pipeline will enable SHLCC to divert and store water that has historically been spilled at the end of the ditch; thereby allowing for better management and beneficial use of previously lost water.

Subcriterion No. A.2. – Percentage of Total Supply

SHLCC's entire delivery system serves over 56,300 acre-feet of water annually, with Lateral 31 encompassing approximately 8% of that delivery system. The Lateral 31 Piping Conservation Project would conserve and improve delivery efficiency of approximately 1% of SHLCC's annual water delivery.

Subcriterion No. A.3. – Reasonableness of Costs

The total cost of the Lateral 31 Piping Conservation Project is $657,000.00. The total acre-feet of water conserved (450 AF) in addition to the water that is better managed (793 AF) brings the total project water conveyance impact to 1,243 AF annually.
The physical improvements (i.e., replacing the concrete-lined open canal with pipeline) are expected to have added benefits for a project life of 100 years.

Total Project Cost	$657,000.00
AF Conserved/Better Managed X Life of the Project	124,300 AF

Project Cost: $5.29 per AF

4. EVALUATION CRITERIA (continued)

Evaluation Criterion B: Energy-Water Nexus

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

The Lateral 31 Piping Conservation project does not implement renewable energy projects related to water management and delivery.

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

The Lateral 31 Piping Conservation project does not increase energy efficiency in water management.

Evaluation Criterion C: Benefits to Endangered Species

The Lateral 31 Piping Conservation project does not provide a benefit to any endangered species.

Evaluation Criterion D: Water Marketing

1) **Estimated amount of water to be marketed**
   The Lateral 31 Piping Conservation Project will add an estimated 45,000 AF of conserved water to the SHLCC water bank over the life of the project, providing 45,000 AF of additional water for lease to SHLCC Shareholders.

2) **A detailed description of the mechanism through which water will be marketed (e.g., individual sale, contribution to an existing market, the creation of a new water market, or construction of a recharge facility)**
   Water conserved through the Lateral 31 Piping Conservation Project will be added to the existing SHLCC water bank; providing additional water for lease to SHLCC Shareholders.

3) **Number of users, types of water, etc. in the water market**
   SHLCC's water market is comprised of over 1900 Shareholders. The 45,000 AF of water conserved by the proposed project will provide additional water for SHLCC Shareholders to lease, meeting their future water supply needs and reducing water crisis conflicts. The water in the SHLCC water bank is primarily used for agricultural irrigation with secondary application being comprised of municipal small lot or secondary irrigation use.

4. EVALUATION CRITERIA (continued)

Evaluation Criterion D: Water Marketing (continued)

4) **A description of any legal issues pertaining to water marketing (e.g., restrictions under reclamation law or contracts, individual project authorities, or State water laws)**

SHLCC adheres to all State laws pertaining to water marketing and is not aware of any additional legal issues, reclamation laws or contracts, or individual project authorities that prohibit, regulate or mandate its water marketing practices.

SHLCC utilizes auxiliary water (i.e., well rights, company owned shares, etc.) to supplement water loss within the Strawberry Valley Project. Additional project water conserved through the proposed Lateral 31 Piping Conservation Project will allow SHLCC to maintain the current water bank and in turn offer a greater amount of auxiliary water for lease to its Shareholders.

SHLCC's water marketing practices ensure that conserved water is banked, remains within the project, and is put to beneficial use.

5) **Estimated duration of the water market**

The duration of the water market is expected to span the life of the project, lasting approximately 100 years. The additional water added to the SHLCC water bank conserved through the Lateral 31 Piping Conservation Project will be made available for lease to SHLCC Shareholders for the life of the project.

4. EVALUATION CRITERIA (continued)

Evaluation Criterion E: Other Contributions to Water Supply Sustainability

1) WaterSMART Basin Study adaptation strategy

- **Describe in detail the adaptation strategy that will be implemented through this WaterSMART Grant project. Identify the specific WaterSMART Basin Study where this adaptation strategy was developed. Describe the water supply or water management issue that this adaptation strategy will address.**

  The Lateral 31 Piping Conservation Project answers Secretary of the Interior, Ken Salazar's "Call to Action" by implementing three adaptation strategies identified in the Colorado River Basin Water Supply and Demand Study (Basin Study). These strategies include Agricultural Conservation and Efficiency, Irrigation Infrastructure Modernization Program to Improve Efficiency, and Reduction of On-farm and Conveyance Evaporative Losses and Deep Percolation; Basin Study Record Numbers 53, 54, and 83, respectively. (Basin Study Appendix F-2, pg.9)

  These three adaptation strategies address two of the six Basin Study Agricultural Water Conservation Measures, including Conveyance System Efficiency Improvements, and On-farm Irrigation System Improvements. (Basin Study Appendix F-10, pg.2)

  The two Agricultural Water Conservation Measures specifically address the disproportionate supply and demand concern that is escalating in this area and is expected to increase both in magnitude and spatial extent in the near future.

- **Provide a detailed explanation of how the proposed WaterSMART Grant project would help implement the adaptation strategy identified in the Basin Study.**

  The Lateral 31 Piping Conservation Project will help mitigate projected water supply and demand imbalances in the area by narrowing the gap between supply and demand; reducing demand through increased conservation and efficiency efforts.

  More specifically, the proposed project aligns with the Conveyance System Efficiency Improvements Conservation Measure by converting open canal to pipe; providing significant reductions in total diversions and water loss due to evaporation, seepage, drainage, etc.

4. EVALUATION CRITERIA (continued)

Evaluation Criterion E: Other Contributions to Water Supply Sustainability (continued)

1) WaterSMART Basin Study adaptation strategy (continued)

The on-farm improvements that will occur as a result of the project line up with the On-farm Irrigation System Improvements Conservation Measure by enabling reductions in total water diversion from reduced tail water and deep percolation return flows. (Basin Study Appendix, F-10, pg.3)

- **Fully describe any other benefits to water supply sustainability that are not described elsewhere in your proposal that will result from this WaterSMART Grant project, for example, if the project will result in further collaboration among Basin Study partners, or demonstrate a new or innovative approach, among other benefits.**

  Additional benefits resulting from the proposed project include diligent planning and collaboration efforts from various entities including the Bureau of Reclamation, SHLCC Directors and Shareholders, and municipal partners, successful implementation of basin study adaptation strategies that will serve as the proto-type for future water and energy efficiency conservation efforts, and accolades for the Colorado River Basin Water Supply and Demand Study due to successfully-utilized adaptation strategies, immediate, effective implementation of multiple Basin Study options, and objectives realized resulting from collaborative efforts coordinated through the Bureau of Reclamation WaterSMART Basin Study and WaterSMART Grant programs.

4. EVALUATION CRITERIA (continued)

Evaluation Criterion E: Other Contributions to Water Supply Sustainability (continued)

1) The Lateral 31 Piping Conservation Project will **not** help expedite future on-farm irrigation improvements, including future on farm improvements that may be eligible for Natural Resources Conservation Service (NRCS) funding.

   i. **Include a detailed listing of the fields and acreage that may be improved in the future.**

      Not Applicable.

   ii. **Describe in detail the on-farm improvements that can be made as a result of this project. Include discussion of any planned or ongoing efforts by farmers/ranchers that receive water from the applicant.**

      Not Applicable.

   iii. **Provide a detailed explanation of how the proposed WaterSMART Grant project would help to expedite such on-farm efficiency improvements.**

      Not Applicable.

   iv. **Fully describe the on-farm water conservation or water use efficiency benefits that would result from the enabled on-farm component of this project. Estimate the potential on-farm water savings that could result in AF per year. Include support or backup documentation for any calculations or assumptions.**

      Not Applicable.

   v. **Projects that include significant on-farm irrigation improvements should demonstrate the eligibility, commitment, and number or percentage of shareholders who plan to participate in any available NRCS funding programs. Applicants should provide letters of intent from farmers/ranchers in the affected project areas.**

      Not Applicable.

   vi. **Describe the extent to which this project complements an existing or newly awarded AWEP project.**

      Not Applicable.

4. EVALUATION CRITERIA (continued)

2) Other benefits of the Lateral 31 Piping Conservation Project
   - Will the project make water available to address a specific concern?

i. Will the project address water supply shortages due to climate variability and/or heightened competition for finite water supplies (e.g. population growth or drought)?

Yes. SHLCC's Lateral 31 Piping Conservation Project will address water supply shortages due to heightened competition for finite water supplies. The project is located in southern Utah County where the demand for water is rapidly increasing to the point where demand will inevitably exceed the available supply; the area is currently experiencing high growth rates in conjunction with limited existing water supplies.

Is the river, aquifer or other source supply over-allocated?
No. At the present time, the water sources for the Lateral 31 Piping Conservation Project (i.e., Strawberry Reservoir, Spanish Fork River, and Payson Canyon) are not over-allocated. However, the demand for water is increasing due to escalating growth and development in the area; without conservation intervention the demand will inevitably out-weigh the supply and cause water supply allocation conflicts in the future.

ii. Will the project market water to other users? If so, what is the significance of this (e.g., does this help stretch water supplies in a water-short basin)?

Yes. The Lateral 31 Piping Conservation Project will enable SHLCC to market water to over 1900 of its Shareholders, thereby meeting the water supply needs of multiple water users, stretching the existing water supply, and preventing future water crisis issues and water shortage disputations.

iii. Will the project make additional water available for Indian tribes?

No. The Lateral 31 Piping Conservation Project will not make additional water available for Indian Tribes.

iv. Will the project help to address an issue that could potentially result in an interruption to the water supply if unresolved? (e.g., will the project benefit endangered species to maintain an adequate water supply)?

Yes. The Lateral 31 Piping Conservation Project will replace aged and deteriorated concrete-lined canal with pipe, preventing seepage that potentially may result in canal damage or breach that would interrupt the water supply; severely impacting a vast majority of Utah County orchards and many acres of farm ground.
SHLCC's Lateral 31 Piping Conservation Project will not address any issues related to water supply interruption or maintain water supply for any endangered species.

4. EVALUATION CRITERIA (continued)

Evaluation Criterion E: Other Contributions to Water Supply Sustainability (continued)

2) Other benefits of the Lateral 31 Piping Conservation Project (continued)

v. Will the project generally make more water available in the water basin where the proposed work is located?

Yes. The Lateral 31 Piping Conservation Project will conserve Strawberry Valley Project Water enabling SHLCC to maintain its water bank, making more water available throughout the project.

- Does the project promote and encourage collaboration among parties?

i. Is there widespread support for the project?

Yes. The Lateral 31 Piping Conservation Project has widespread support including, but not limited to, Strawberry Water Users Association (SWUA), the town of Genola, and the UACD.

ii. What is the significance of the collaboration/support?

The collaboration and support from SWUA, the town of Genola and the UACD are significant in the fact that SHLCC is setting precedence for other water conveyance facilities throughout the Strawberry Valley Project and the state of Utah; thus being recognized by irrigation associations, and municipal and state entities.

As SHLCC endeavors to conserve water and ensure the safety of residents and residential property, other irrigation companies will follow suit, increasing the water supply throughout the region and offering additional security and confidence in water conveyance facilities in the state of Utah.

iii. Will the project help prevent a water-related crisis or conflict?

Yes. The Lateral 31 Piping Conservation Project will replace aged and deteriorated concrete-lined canal with pipe, addressing water-related crisis concerns expressed in Utah House Bill 60 - The Water Conveyance Facilities Safety Act of 2010, mitigating the potential risk of canal failure that may potentially result in loss of water supply, severe property damage, or loss of life.

In addition to mitigating potential risk and increasing canal safety, the conserved and better managed water made possible by the Lateral 31 Piping Conservation Project will help prevent future water-related crisis and conflict by providing additional water supply to an area of increasing demand. The proposed project will abate potential water disputes by increasing the amount of water available for delivery and lease throughout the SHLCC service area.

4. EVALUATION CRITERIA (continued)

Evaluation Criterion E: Other Contributions to Water Supply Sustainability (continued)

2) Other benefits of the Lateral 31 Piping Conservation Project (continued)

iv. Is there frequently tension or litigation over water in the basin?
Yes. There is reoccurring conflict and the tension is high within the proposed project area as well as within the region of the Colorado River Basin. Currently, agriculture and municipal entities in South Utah County struggle with disagreements over water use and supply allocation and regional water resources are stretched to meet the culinary and agricultural irrigation needs within the basin in the midst of balancing requests for inter-basin water transfers to alleviate water shortages in outlying areas.

v. Is the possibility of future water conservation improvements by other water users enhanced by completion of this project?
Yes. Completion of SHLCC's Lateral 31 Piping Conservation Project will enhance the possibly of future water conservation efforts and improvements made by project-area agricultural producers, municipal partners (i.e., The Town of Genola), and Genola town residents. The proposed project will make it possible, through future conservation improvements, for additional water to be stored to meet imminent and increasing demands as exponential growth and development continue throughout the area.

4. EVALUATION CRITERIA (continued)

Evaluation Criterion E: Other Contributions to Water Supply Sustainability (continued)

2) Other benefits of the Lateral 31 Piping Conservation Project (continued)

- Will the project increase awareness of water and/or energy conservation and efficiency efforts?

i. Will the project serve as an example of water and/or energy conservation and efficiency within a community?

Yes. As the pilot facility for the UACD Water Conveyance Facility Safety Management Plan study, SHLCC is currently in the spotlight and receiving significant attention at the regional and state level. SHLCC's Lateral 31 Piping Conservation Project will provide an example of water conservation and safety measures that may be recreated and implemented by other water conveyance facility entities.

ii. Will the project increase the capability of future water conservation or energy efficiency efforts for use by others?

Yes. The Lateral 31 Piping Conservation Project will encourage and enable SHLCC water users to enact conservation measures and manage their water more effectively in the future.

iii. Does the project integrated water and energy components?

No. SHLCC's Lateral 31 Piping Conservation Project is water exclusive; it does not incorporate energy related components.

4. EVALUATION CRITERIA (continued)

Evaluation Criterion F: Implementation and Results

Subcriterion No. F.1. – Project Planning

Does the project have a Water Conservation Plan, System Optimization Review (SOR), and/or district or geographic area drought contingency plans in place? Does the project relate/have a nexus to an adaptation strategy developed as part of a WaterSMART Basin Study? Please self-certify, or provide copies, where appropriate to verify there is a water conservation plan, SOR, and/or district or geographic area drought contingency plans 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, Basin Study, or other planning efforts done to determine the priority of this project in relation to other potential projects.

SHLCC's Water Management Conservation Plan (WMCP), submitted to and approved by the Bureau of Reclamation in September 2009, supports the water conservation initiatives detailed in the Lateral 31 Piping Conservation Project.
SHLCC's WMCP proposes various goals to help better manage the company's water supplies. The first proposed goal is to address water loss problems by enclosing all SHLCC canals. The second proposed goal is to address environmental concerns by having all open canals converted to a piping system.
The Lateral 31 Piping Conservation Project will enable SHLCC to move closer to accomplishing each of these WMCP goals by converting concrete-lined canal to pipeline.
The proposed project has a nexus with a Bureau of Reclamation basin study; the Lateral 31 Piping Conservation Project is directly connected to implementation adaptation strategies recently published in the Colorado River Basin Water Supply and Demand Study.

(2) Identify and describe any engineering or design work performed specifically in support of the proposed project.
SHLCC contracted Franson Civil Engineers to design the Lateral 31 Piping Conservation Project. Franson has completed preliminary pipe sizing and alignment work specifically in support of the proposed project.

4. EVALUATION CRITERIA (continued)

Evaluation Criterion F: Implementation and Results (continued)

Subcriterion No. F.1. – Project Planning (continued)

(3) 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 emphasizes water conservation and efficient management of developed water supplies as key strategies for providing for the present and future water needs in the state of Utah. The Lateral 31 Piping Conservation Project conserves water and helps improve the efficiency in managing the finite and competitive water supply developed for southern Utah County. In this manner, the Lateral 31 Piping Conservation Project conforms to and meets the goals of the Utah State Water Plan.

Subcriterion No. 2 – Readiness to Proceed

Are all necessary plans/designs complete? Are there any delays expected to result from environmental compliance?
Preliminary plans and project designs are complete.
Based on previous environmental studies and fulfillment experience, SHLCC does not anticipate any delays resulting from environmental compliance issues.

Describe the implementation plan of the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates.

PROJECT IMPLEMENTATION PLAN

Award Date: May 1, 2013

Final Engineering: August 1 – September 1, 2013

Order Material and Supplies: September 1 – October 1, 2013

Project Installation:
- Concrete Lining Removal: October 1 – November 1, 2013
- Pipeline Installation: November 1, 2013 – March 1, 2014
- Final Excavation and Clean-up: March 1 – April 30, 2014

Project Completion Date: April 30, 2014

Please explain any permits that will be required, along with the process for obtaining such permits. SHLCC is not aware of any permits required for the Lateral 31 Piping Conservation Project.

4. EVALUATION CRITERIA (continued)

Evaluation Criterion F: Implementation and Results (continued)

Subcriterion No. F.3. – Performance Measures

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

In preparation for this application and for the implementation of the Lateral 31 Piping Conservation Project, SHLCC reviewed historical seepage and evaporation records. These records provide the primary source for project performance measurement; indicating pre-project performance and allowing for post-project quantifiable measurements.
Prior to project implementation, historical data will be verified with an Inflow/Outflow test and upon project completion, another Inflow/Outflow test will be conducted to actualize project benefits.
SHLCC with also utilize in-house Water Order and Delivery Summary Reports, historical (pre-project) and future (post-project) to quantify and document the overall benefits of the Lateral 31 Piping Conservation Project.

4. EVALUATION CRITERIA (continued)

Evaluation Criterion G: Additional Non-Federal Funding

Non-Federal Funding	$357,000.00
Total Project Cost	$657,000.00

Non-Federal Funding will cover 54.4% of the project cost

Evaluation Criterion H: Connection to Reclamation Project Activities

(1) How is the proposed project connected to Reclamation project activities?

For over 90 years, SHLCC has been the contract operator for the High Line Unit of the Strawberry Valley Project, having received and delivered Strawberry Valley Project water since April 7, 1916.
SHLCC has also received and delivered water from the Bonneville Unit of the Central Utah Project.
SHLCC's proposed piping conservation project seeks funding to pipe Lateral 31, a Bureau of Reclamation owned facility.

(2) Does the applicant receive Reclamation project water?

Yes. SHLCC has received Reclamation water through the Strawberry Valley Project since 1916.

(3) Is the project on Reclamation project lands or involving Reclamation facilities?

Yes. SHLCC contracts with the Bureau of Reclamation to maintain and operate the High Line Unit of the Strawberry Valley Project.

(4) Is the project in the same basin as a Reclamation project or activity?

Yes. The Lateral 31 Piping Conservation Project is part of the High Line Unit of the Strawberry Valley Project, a Bureau of Reclamation project, and is, therefore, located 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?

Yes. The water conserved by the Lateral 31 Piping Conservation Project will be contributed to a basin where a Reclamation project is located.

IV.D. PERFORMANCE MEASURE FOR QUANTIFYING POST-PROJECT BENEFITS

SHLCC will quantify in acre-feet the actual Lateral 31 Piping Conservation Project benefits of conserved, banked and better managed water.
Upon completion of the proposed project, SHLCC will use the Acre-Feet Performance Measurement to quantify the actual post-project benefits; identifying and documenting, in acre-feet, pre and post project water measurements. Acre-Feet water measurements in delivery, use and banked water comparison data will be included in the final report describing the completed project and quantifying the actual project benefits.

IV.D.1. ENVIRONMENTAL COMPLIANCE
POTENTIAL ENVIRONMENTAL IMPACTS

(1) Will the project impact the surrounding environment (i.e., soil [dust], air, water [quality and quantity], animal habitat, etc.)? 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 Lateral 31 Piping Conservation Project will have minor short-term environmental impacts associated with the pipe installation. All land surface disturbances will be confined to the canal area and small staging areas adjacent to the canal. To minimize the environmental impact in the project construction zone, construction will take place during the early spring or late fall; during this time of the year, SHLCC does not deliver water and the canal will be empty and dry, eliminating any possible environmental impacts that may be posed by canal waters.

(2) Are you aware of any species listed or proposed to be listed as a Federal endangered or threatened species, or designated Critical Habitat in the project area? If so, would they be affected by any activities associated with the proposed project?

No. SHLCC is not aware of any endangered or threatened species, or Critical Habitat in the Lateral 31 Piping Conservation Project area.

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

No. SHLCC is not aware of any wetlands in the Lateral 31 Piping Conservation Project boundaries that fall under Federal Clean Water Act jurisdiction as "waters of the United States."

(4) When was the water delivery system constructed?

The Lateral 31 open ditch canal water delivery system was constructed in 1915 and 1916. Other than regular maintenance, no additional upgrades or construction has taken place on Lateral 31 since the 1960's when obsolete flumes were removed and replaced with compacted soil and concrete; only trivial effects on the proposed Lateral 31 project area have occurred as a result of regular maintenance.

IV.D.1. ENVIRONMENTAL COMPLIANCE
POTENTIAL ENVIRONMENTAL IMPACTS
(continued)

(5) Will the project result in any modification of or effects to, individual features of an irrigation system (e.g., head gates, 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.

Yes. The Lateral 31 Piping Conservation Project will result in significant modifications to the existing Lateral 31 concrete-lined canal – replacing 4000 feet of concrete-lined canal with pipeline.

Since its construction in 1915 and 1916 there have not been any major modifications to the proposed Lateral 31 project area. In the 1960's, minor changes were made when obsolete flumes were removed and replaced with compacted soil and concrete. Throughout the years, only trivial effects on the proposed Lateral 31 project area have occurred as a result of regular maintenance.

(6) Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?

No. None of the buildings, structures, or features in the irrigation district project area are known to be eligible for listing on the National Register of Historic Places.

(7) Are there any known archeological sites in the proposed project area?

No. To the best knowledge of SHLCC, there are no archeological sites in the proposed project area.

(8) Will the project have a disproportionately high and adverse effect on low income or minority populations?

No. To the best knowledge of SHLCC, the Lateral 31 Piping Conservation Project will not have any effect on low income or minority populations.

(9) Will the project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?

No. SHLCC is not aware of any sacred sites or tribal lands accessed for ceremonial use within the Lateral 31 Piping Conservation area boundaries.

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

No. To the best knowledge of SHLCC, the Lateral 31 Piping Conservation Project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species within the project area.

IV.D.2.REQUIRED PERMITS OR APPROVALS

SHLCC is not aware of any permits required for the Lateral 31 Piping Conservation Project.

IV.D.3. OFFICIAL RESOLUTION

SHLCC's Board of Directors passed an official resolution on February 2, 1011 to commit to the financial and legal obligations associated with the Lateral 31 Piping Conservation Project and to fund their cost-share through shareholder assessment revenues and reserve funds.

SHLCC's official resolution is attached with this application.

IV.D.4. PROJECT BUDGET
(1) FUNDING PLAN AND LETTERS OF COMMITMENT

(1) 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).

SHLCC will achieve their cost-share requirement with in-kind contributions and monetary funds obtained through Shareholder assessments and reserve funds.

(2) Describe any in-kind costs incurred before the anticipated project start date that you seek to include as project costs.

To date, SHLCC has not incurred any in-kind costs for the Lateral 31 Piping Conservation Project and therefore, will not seek to include in-kind costs incurred prior to the project's anticipated start date.

(3) Provide the identity and amount of funding to be provided by funding partners, as well as the required letters of commitment.

SHLCC will provide all non-Reclamation funding; there are no other cost-share partners providing funding for the proposed project. As there are no other non-Reclamation cost-sharing partners, other than the applicant, no commitment letters are included with this application.

(4) Describe any funding requested or received from other Federal partners.

No funding has been requested or received from other Federal partners.

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

SHLCC has not applied for other Lateral 31 Piping Conservation Project funding; there are no pending funding requests for the proposed project.

As the condition of the deteriorated concrete-lined canal poses a potential safety risk and high probability of water supply loss, mitigating these concerns is a top priority for SHLCC. If grant funding from the Bureau of Reclamation is not awarded, SHLCC will be forced to reevaluate other canal rehabilitation options and enact an alternative provisional project plan to mitigate potential water supply loss and reinforce canal safety within the financial means of the company.

SHLCC does not have the funds to implement the Lateral 31 Piping Conservation Project as proposed; without the Bureau of Reclamation grant award, the proposed Lateral 31 Piping Conservation Project will be postponed and alternate, transitory project plans enacted due to insufficient funds.

IV.D.4. PROJECT BUDGET

(1) FUNDING PLAN AND LETTERS OF COMMITMENT

(continued)

Please include the following chart (table 1) to summarize your non-Federal and other Federal funding sources. Denote in-kind contributions with an asterisk (*).

Funding Sources	Funding Amount
Non-Federal Entities	
1. Strawberry High Line Canal Company	$357,000.00*
Other Federal Entities	NA
Requested Reclamation Funding	$300,000.00
TOTAL PROJECT FUNDING	**$657,000.00**

* Approximately 60% of SHLCC's funding, or $211,200.00, will be provided through in-kind contributions.

Other than SHLCC and the Bureau of Reclamation, there are no other funding partners. **SHLCC will fund 54.4%, or $357,000.00 of the Lateral 31 Piping Conservation Project**, the remaining 45.6%, or $300,000.00, will be funded through the Bureau of Reclamation WaterSMART Grant.

Total Federal funding does not exceed 50% of the total estimated project.

IV.D.4. PROJECT BUDGET

(2) BUDGET PROPOSAL - PROJECT BUDGET APPLICATION

GENERAL REQUIREMENTS

SHLCC's proposed Lateral 31 Piping Conservation Project requires funding in the amount of $657,000.00. Project budget details are provided in the Budget Proposal and Budget Narrative.

BUDGET PROPOSAL

BUDGET ITEM DESCRIPTION	COMPUTATION		RECIPIENT FUNDING	RECLAMATION FUNDING	TOTAL COST
	$/Unit and Unit	Quantity			
SALARIES AND WAGES (Table 1)					
Laborer	$22.67	2240 hours	$50,780.80	$0.00	$50,780.80
Equipment Operators	$28.19	920 hours	$25,934.80	$0.00	$25,934.80
FRINGE BENEFITS (Table 1)					
Laborer	$4.19	2240 hours	$9,385.60	$0.00	$9,385.60
Equipment Operators	$4.19	920 hours	$3,854.80	$0.00	$3,854.80
OVERHEAD (Table 1)					
Laborer	$5.90	2240 hours	$13,216.00	$0.00	$13,216.00
Equipment Operators	$5.90	920 hours	$5,428.00	$0.00	$5,428.00
EQUIPMENT (Table 2)					
Mobilization	$5,500.00	1	$5,500.00	$0.00	$5,500.00
Track Hoe	$130.00	560 hours	$72,800.00	$0.00	$72,800.00
Back Hoe	$67.50	360 hours	$24,300.00	$0.00	$24,300.00
Fusing Machine	$50.00	360 hours	$18,000.00	$0.00	$18,000.00
CONTRACTUAL/CONSTRUCTION					
Materials (See Table 3)	$354,500.00	1	$54,500.00	$300,000.00	$354,500.00
Engineering – Design and Construction Review (See Manpower and Cost Estimate attachment)	$60,000.00	1	$60,000.00	$0.00	$60,000.00
ENVIRONMENTAL AND REGULATORY COMPLIANCE	$13,300.00	1 (approximately 2% of total project costs)	$13,300.00	$0.00	$13,300.00
TOTAL PROJECT COSTS			**$357,000.00**	**$300,000.00**	**$657,000.00**

IV.D.4. PROJECT BUDGET

(3) BUDGET NARRATIVE

Salaries and Wages

Approximately 12% of the total project costs are employee wages.
See labor break-out details in relation to Salary & Wages in the Appendix,
Table 1 – Lateral 31 Piping Conservation Project – Labor Costs.

Fringe Benefits

Approximately 2% of the total project costs are employee benefits.
See labor break-out details in relation to Fringe Benefits in the Appendix,
Table 1 – Lateral 31 Piping Conservation Project – Labor Costs.

Travel

Not Applicable

Equipment

Approximately 18% of the total project cost is related to equipment.
See Equipment details in the Appendix,
Table 2 – Lateral 31 Piping and Conservation Project – Equipment.

Materials and Supplies

Approximately 54% of the total project cost is related to materials.
See materials detail in the Appendix,
Table 3 – Lateral 31 Piping Conservation Project – Materials.

Contractual

The Manpower and Cost Estimate table, included as an attachment with this application, explains the hours and cost breakdown for Franson Civil Engineers costs - totaling $60,000.00 or 9% of the total project cost.
Franson Civil Engineers has an agreement with SHLCC to design and provide construction review for the Lateral 31 Piping Conservation Project. Franson Civil Engineers will also compile the final report upon completion of the project.
The Manpower and Cost Estimate table provides a task description for the Franson responsibilities to be completed for the project.

Environmental and Regulatory Compliance Costs

In the Budget Proposal, a cost of $13,300, or approximately 2% of the total project cost, is identified for Environmental and Regulatory Compliance expenditures.

Reporting

Reporting costs are included in the Contractual line item of the proposed project budget.

Other

Not Applicable.

Indirect Costs

Not Applicable.

Total Cost

The total cost for the Lateral 31 Piping Conservation Project will be $657,000.00 with a Federal cost share of $300,000.00 or 46% of the total project cost. SHLCC will fund the remaining $357,000.00, or 54% of the proposed project outlay.

APPENDIX

TABLE 1

Lateral 31 Piping Conservation Project - LABOR COSTS

	Description	Quantity	Unit	Unit Price	Amount
1	Laborer	2240	Wage - hourly	$ 22.67	$ 50,780.80
		2240	Benefits - hourly	$ 4.19	$ 9,385.60
		2240	Overhead - hourly	$ 5.90	$ 13,216.00
2	Equipment Operator	920	Wage - hourly	$ 28.19	$ 25,934.80
		920	Benefits - hourly	$ 4.19	$ 3,854.80
		920	Overhead - hourly	$ 5.90	$ 5,428.00
			LABOR COST TOTAL		**$ 108,600.00**

TABLE 2

Lateral 31 Piping Conservation Project - Equipment

	Description	Quantity	Unit	Unit Price	Amount
1)	Mobilization	1	LS	$ 5,500.00	$ 5,500.00
2)	Concrete Lining Removal & Excavation				
	Track Hoe	200	Hours	$ 130.00	$ 26,000.00
3)	Install 42" DR 32.5 HDPE Pipeline				
	Track Hoe	360	Hours	$ 130.00	$ 46,800.00
	Back Hoe	360	Hours	$ 67.50	$ 24,300.00
	Fusing Machine	360	Hours	$ 50.00	$ 18,000.00
			CONSTRUCTION TOTAL		$ 120,600.00

TABLE 3

Lateral 31 Piping Conservation Project - MATERIALS

	Description	Quantity	Unit	Unit Price	Amount
1)	Pipeline				
	42" DR 32.5 HDPE	4000	LF	$ 80.00	$ 320,000.00
2)	Other Materials				
	Inlet Structure	1	EA	$ 7,500.00	$ 7,500.00
	Outlet Structure	1	EA	$ 7,500.00	$ 7,500.00
	24" Slide Gate	1	EA	$ 4,500.00	$ 4,500.00
	Imported Fill Material	1500	CY	$ 10.00	$ 15,000.00
	CONSTRUCTION MATERIALS TOTAL				**$ 354,500.00**

FIGURE 1

LOCATION MAP

DATE: FEBRUARY 15, 2011

SCALE:

Plan & Profile.dwg

H:\CLIENTS\Central Utah Area\Strawberry High Line Canal Company\Company Projects\AWOS_-Lateral 31 Piping Project\Drawings

LAYOUT: Fig1

HIGHLINE CANAL COMPANY

LATERAL 31

FRANSON CIVIL ENGINEERS

FIGURE 2 SITE MAP	DATE: FEBRUARY 15, 2011 SCALE: Plan & Profile.dwg H:\CLIENTS\Central Utah Area\Strawberry High Line Canal Company\Company Projects\AWOS - Lateral 31 Piping Project\Drawings LAYOUT: Fig2	HIGHLINE CANAL COMPANY LATERAL 31	FRANSON CIVIL ENGINEERS

RESOLUTION NO. 2011 - 003

APPLICANTS NAME: STRAWBERRY HIGH LINE CANAL COMPANY

WHEREAS, the United States Department of the Interior, Bureau of Reclamation has established the WaterSMART Water and Energy Efficiency Grant program for the accomplishment of water conservation and energy efficiency activities, and

WHEREAS, the United States Department of the Interior, Bureau of Reclamation has requested proposals from eligible entities to be included in the WaterSMART Water and Energy Efficiency Grant program, and

WHEREAS, the Strawberry High Line Canal Company has need for funding for the Lateral 31 Piping Conservation Project which will increase water conservation, and improve water management,

NOW THEREFORE, BE IT RESOLVED that the Board of Directors of the Strawberry High Line Canal Company agrees and authorizes that we:

1. Have reviewed and support the proposal submitted;

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

3. Will, if selected for the WaterSMART Water and Energy Efficiency Grant program award, work with the Bureau of Reclamation to meet established deadlines for entering into a cooperative agreement.

DATED: February 2, 2011

Authorized Signature(s)

ATTEST:

MANPOWER AND COST ESTIMATE

Client: High Line Canal Company
Project: Lateral 31 Piping Project

Description: Pipe the Lateral 31 Canal with 42-inch pipe. Design drawings and specs required.

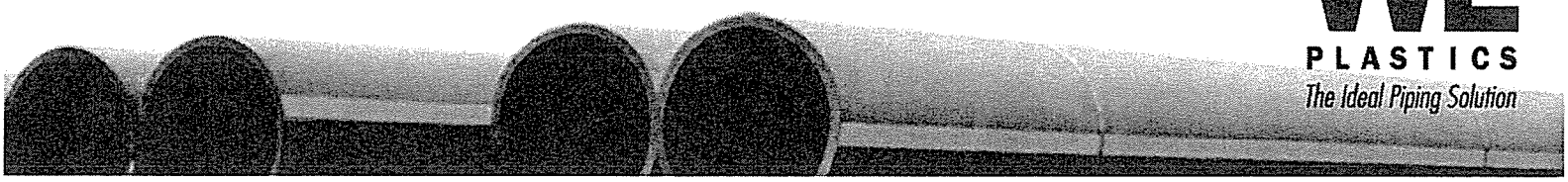
Personnel Assigned

1. Principal
2. Senior Manager
3. Senior Engineer
4. Staff Engineer
5. Senior Field Engineer
6. Engineer I
7. Senior Designer
8. Reports - Writer/Editor
9. Designer
10. Engineering Assistant
11. Engineering Intern
12. CAD Operator
13. Technician
14. Office Assistant
15. Clerk

Task Description	Hours By Personnel Category									Total Hours	Total Labor Charges	Other Direct Costs	Total Fee
	1	2	4	5	6	7	8	9	14				
	JF	LP	JM	BP	AV	LF	TA	MG	VLH				
Lateral 31													
Project Administration	2	40	20	4	4		8			78	$8,666	$115	$8,781
Pre-design & Coordination	1	10	10			4		10		35	$3,509	$125	$3,634
Design & Drawings	2	20	80	2	40	40	2	80	2	268	$24,310	$150	$24,460
Construction Review		5	10	50						65	$6,510	$250	$6,760
Coordination w/ Reclamation	2	20	20		2		20		4	68	$6,738	$95	$6,833
Final Report	2	30	30		4		4	20	4	94	$9,450	$82	$9,532
Project Totals	9	125	170	56	50	44	34	110	10	608	$59,183	$817	$60,000
Employee Hourly Rates	$145	$126	$98	$98	$88	$86	$79	$78	$53				
Total Cost Per Employee	$1,305	$15,750	$16,660	$5,488	$4,400	$3,784	$2,686	$8,580	$530		$59,183		

FRANSON
CIVIL ENGINEERS

PE3608/PE3408 PIPE COMPOUND



WL PLASTICS
The Ideal Piping Solution

Typical Physical Properties for WL Plastics PE3608/PE3408 Pipe Compound

- WL Plastics HDPE PE3608/PE3408 pipe is manufactured from pressure rated polyethylene compound that meets or exceeds ASTM D 3350 Cell Classification 345464C and meets or exceeds material designation codes PE3608 and PE3408.
- WL Plastics HDPE PE3608/PE3408 polyethylene pipe materials are listed by PPI in TR-4 with HDB ratings of 1600 psi at 73°F and 800 psi at 140°F, and HDS ratings for water of 800 psi at 73°F and 400 psi at 140°F.
- For potable water service, WL Plastics HDPE PE3608/PE3408 black polyethylene compounds are certified by the National Sanitation Foundation in accordance with NSF-61.

Physical Property	*Test Method*	*Typical Value*[1]
Cell Classification (black compound)	ASTM D3350	346464C
Melt Index (190/2.16)	ASTM. D1238	0.1 g/10 min
High Load Melt Index[2] (190/21.6)	ASTM. D1238	6 – 18 g/10 min
Density with 2% minimum carbon black	ASTM. D792	0.955 g/cm^3
Tensile strength at yield (2 in/min)	ASTM. D638	>3000 psi
Tensile elongation (2 in/min)	ASTM. D638	>700%
Flexural modulus	ASTM. D790	110,000 < 160,000 psi
SCG Resistance, PENT (80°C, 2.4 MPa)	ASTM. F1473	> 100 h
Thermal stability	ASTM. D3350	>428°F (>220°C)
Brittleness temperature	ASTM. D746	<-103°F (<-75°C)
Thermal expansion coefficient	ASTM. D696	9 x 10^{-5} in/in/°F
HDB[3] at 140°F (60°C)	D2837/PPI TR-3	800 psi
HDS[3] at 73°F (23°C)	D2837/PPI TR-3	800 psi
HDS at 140°F (60°C)	D2837/PPI TR-3	400 psi

Contact WL Plastics Customer Service for availability. 1. Typical values determined from laboratory tests of resin plaques and specimens prepared in accordance with industry standard test methods. Values determined on samples taken from pipe may vary. The typical values presented herein are for PE3608/PE3408 polyethylene pipe compounds (resin) but do not constitute engineering properties for pipe. 2. Overall range of HLMI values for all compounds from all WL Plastics compound suppliers; HLMI variation for an individual compound will be well within the overall range. 3. Listed HDB and HDS ratings are published by the Plastics Pipe Institute in PPI TR-4 by the compound manufacturer (independent listing) and WL Plastics (dependent listing) in accordance with ASTM D 2837 and PPI TR-3. Compound supplier codes for WL Plastics PE3608/PE3408 PPI dependent listings are D (Dow), E (Lyondell Basell), N (Nova), S (Ineos) and T (Total).

NSF · American Water Works Association — Dedicated to Safe Drinking Water · PPI Plastics Pipe Institute

CASPER PLANT: 2075 North Pyrite • P. O. Box 1120 • Mills, WY 82644 • Customer Service 307-472-6000 • Fax: 307-472-6200
CEDAR CITY PLANT: 4660 W. Highway 56 • P. O. Box 627 • Cedar City, UT 84721 • Customer Service 435-867-8908 • Fax: 435-865-2703
GILLETTE PLANT: 1301 E Lincoln St • Gillette, WY 82716 • Customer Service 307-682-5554 • Fax: 307-682-3339
BOWIE PLANT: 1110 Old Wise Road • PO Box 32 • Bowie, TX 76230 • Customer Service 940-872-8300 • Fax: 940-872-8304
CROSSFIELD PLANT: PO Box 860 • 1030 Western Drive • Crossfield, AB T0M 0S0 Canada • Customer Service 403-946-0202 • Fax: 403-946-0252

PE4710 PIPE COMPOUND

WL PLASTICS
The Ideal Piping Solution

Typical Physical Properties for WL Plastics PE4710 Pipe Compound

- WL Plastics PE4710 pipe is manufactured from pressure rated PE4710 polyethylene compounds that meet or exceed ASTM D 3350 Cell Classification 445574C and that meet or exceed ASTM D3350 Cell Classification 345464C and material code designations PE3608 and PE3408
- WL Plastics PE4710 polyethylene pipe compounds are Listed by PPI in TR-4 and are stress rated for pressure pipe at 1000 psi (6.9 MPa) HDS for water at 73°F (23°C) and 1000 psi (6.9 MPa) HDB at 140°F (60°C)
- WL Plastics PE4710 exceeds minimum PPI SCG resistance requirements (>500 hours) with over 2,500 hours per ASTM F 1473 (PENT). WL Plastics PE4710 ductility is validated with greater than 438,300 hours (50 years) at 73°F (23°C) before brittle stress-rupture
- For potable water service, WL Plastics PE4710 black polyethylene compounds are certified to NSF-61 by the National Sanitation Foundation

Physical Property	*Test Method*	*Typical Value*[1]
Cell classification (black compound)	ASTM D3350	445574C
Melt Index (190/2.16)	ASTM D1238	0.1 g/10 min
High Load Melt Index[2] (190/21.6)	ASTM D1238	6 – 18 g/10 min
Density with 2% minimum carbon black	ASTM D792	0.960 g/cm^3
Tensile strength at yield (2 in/min)	ASTM D638	3500 < 4000 psi
Tensile elongation (2 in/min)	ASTM D638	>700%
Flexural modulus	ASTM D790	110,000 < 160,000 psi
SCG Resistance, PENT (80°C, 2.4 MPa)	ASTM F1473	> 2500 h
Thermal stability	ASTM D3350	>428°F (> 220°C)
Brittleness temperature	ASTM D746	<-103°F (<-75°C)
Thermal expansion coefficient	ASTM D696	9 x 10^{-5} in/in/°F
HDB[3] at 140°F (60°C)	D2837/PPI TR-3	1000 psi (6.9 MPa)
HDS[3] for water at 73°F (23°C)	D2837/PPI TR-3	1000 psi (6.9 MPa)
HDS for water at 140°F (60°C)	D2837/PPI TR-3	630 psi (4.3 MPa)
RCP Resistance, Critical Pressure at 32°F (0°C)	ISO 13477	>174 psi (>1.2 MPa)
RCP Resistance, Critical Temperature at 72.5 psi (0.5 MPa)	ISO 13477	<2°F (<-17°C)

Contact WL Plastics Customer Service for availability. 1. Typical values determined from laboratory tests of samples of compounds (resins) prepared as plaque specimens in accordance with industry standard test methods. Values determined on samples prepared from pipe may vary. The typical values presented herein are for PE4710 polyethylene pipe compounds (resins) but do not constitute engineering properties for pipe. 2. Overall range of HLMI values for all compounds from all WL Plastics compound suppliers; HLMI variation for an individual compound will be well within the overall range. 3. Listed HDB and HDS ratings are published by the Plastics Pipe Institute in PPI TR-4 by the compound manufacturer (independent listing) and WL Plastics (dependent listing) in accordance with ASTM D 2837 and PPI TR-3. Compound supplier codes for WL Plastics PE4710 PPI dependent listings are D (Dow), E (Lyondell Basell) and T (Total).

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CASPER PLANT: 2075 North Pyrite • P. O. Box 1120 • Mills, WY 82644 • Customer Service 307-472-6000 • Fax: 307-472-6200
CEDAR CITY PLANT: 4660 W. Highway 56 • P. O. Box 627 • Cedar City, UT 84721 • Customer Service 435-867-8908 • Fax: 435-865-2703
GILLETTE PLANT: 1301 E Lincoln St • Gillette, WY 82716 • Customer Service 307-682-5554 • Fax: 307-682-3339
BOWIE PLANT: 1110 Old Wise Road • PO Box 32 • Bowie, TX 76230 • Customer Service 940-872-8300 • Fax: 940-872-8304
CROSSFIELD PLANT: PO Box 860 • 1030 Western Drive • Crossfield, AB T0M 0S0 Canada • Customer Service 403-946-0202 • Fax: 403-946-0252