# Water Conservation Project

## Funding Opportunity No. R15AS00002

## WaterSMART: Water and Energy Efficiency Grants for FY 2015

Fiscal Year 2015

by

The Bostwick Irrigation District
In Nebraska

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# Water Conservation Project

## Bostwick Irrigation District in Nebraska

## TABLE OF CONTENTS

# Technical Proposal and Evaluation Criteria

**The technical proposal and evaluation criteria (50 pages maximum) includes: (1) the executive summary, (2) background data, (3) technical project description, (4) evaluation criteria and (5) performance measures. To ensure accurate and complete scoring of your application, your proposal should address each subcriterion in the order presented here.**

## Executive Summary

**The executive summary should include:**

**•The date, applicant name, city, county, and state**

| | |
|---|---|
| Date: | January 12, 2015 |
| Applicant Name: | Bostwick Irrigation District in Nebraska |
| City, County, State: | Red Cloud, Webster County, Nebraska |
| Contact: | Michael D. Delka |
| Title: | Manager |
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| Phone: | (402) 746-3424 |
| E-mail: | bostwick@gpcom.net |
| Project Name: | Water Conservation Project |

**•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 (see Section III.B, "Eligible Projects")**

This project is being submitted under Task Area A, B, C and D.
Approximately 2.7 miles of open ditch canal lateral will be converted to buried pipe to conserve approximately 620 acre-feet of water normally lost to seepage and evaporation. The estimated amount of water to be better managed will be 1,250 acre-feet (620 a-f of loss and 12" delivery to 630 acres). The average annual water supply of the District is approximately 50,000 acre-feet. Included in this proposal is the installation of meters in pipes at field delivery points for more accurate water measurement. This meets the goal of Task A from the RFP to save water and improve water management. The Project meets the goal of Task Area B (B) by eliminating one or more farm pumps currently used to pump water. The conversion of the open ditch will allow for the accumulation of head pressure which should reduce/eliminate the need for pumping. The Project meets the goal of Task Area C (C) from the RFP by saving water and increasing available supplies which will enhance the habitat around the Harlan County Reservoir. The reservoir is along a migratory route and has had recorded visits by Whooping Cranes. The Project meets the goal of Task D from the RFP to enhance the potential of water banks and markets by increasing available supplies. The water saved will be stored in the Harlan County Reservoir to supplement the District's supply during dry years and/or marketed for Basin compliance to the Republican River Compact. In 2006 the District marketed the use of 10,118 acre-feet of storage and the natural flows of the Republican River to the State of Nebraska for Compact compliance. In 2007, the District marketed 12,500 acre-feet of storage and the natural flows of the Republican River to the State of Nebraska. In September of 2012 the manager and board chairman of the Lower Republican NRD met with the Bostwick Board to discuss a potential water purchase. No agreement was reached at this time. In 2014 the State of Nebraska paid the District $300,000 for the use of the Districts natural flow rights for July and August.

Any water that exceeds storage ability would be passed to downstream users and have the potential of being marketed by programs run out of the Milford Reservoir, which is downstream in Kansas. In 2013, 2014 and projected for 2015 the State of Nebraska issued a "compact call" which prohibits surface water users from storing or diverting surface water. The District is currently contemplating litigation to seek damages to protect the Federal project water supply and drive water market development if water is taken. The proposed Water Conservation Project consists of replacing 2.7 miles of open ditch with buried pipe. The project will focus on Franklin Canal Lateral 38.9. The project will increase the probability of District survival in times of water shortage and help to address and enhance public safety. The conserved water will be stored in the Harlan County Dam and Reservoir upstream of the project on the Republican River. The conserved water can then be used by the District and the Kansas Bostwick Irrigation District #2 to meet its minimum requirements during drought years, and will increase the potential of water marketing activities being done in Nebraska and downstream at the Milford Reservoir in Kansas (Task A).

The State of Nebraska signed an agreement with our District for the use of the District water supply in 2006 and in 2007. Most of the future scenarios of the Republican River Compact water model indicate future depletions to the river which may demand the potential of water leasing for the State to consistently achieve compact compliance. When the conserved water exceeds the storage capacity of the Harlan County Reservoir, the excess water would be passed to downstream users, and have the potential of being marketed by programs run out of the Milford Reservoir downstream in Kansas.

**•State the length of time and estimated completion date for the project**

The project should be completed within two years. The following timeline is anticipated.

Project Schedule:

| | |
|---|---|
| January 2015 | Submit Grant |
| January 2015 | Verify environmental and cultural clearance |
| June 2015 | Grant is announced |
| September 2015 | Sign grant agreement as soon as possible and begin project |
| September 2015 | Order materials and start construction as quickly as can be approved and allowed by the Bureau of Reclamation for federal portion |
| September 2015 | Focus resources on construction effort |
| May 2016 | Complete construction and draft final report |

**•Whether or not the project is located on a Federal facility**

The Bostwick Irrigation District is a Federal facility constructed by the Bureau of Reclamation and has a repayment and water service contract with the Bureau.

## Background Data

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

A map showing the geographic location can be found on page 45.

**As applicable, describe the source of water supply, the water rights involved, current water uses (i.e., 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. In addition, 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 (i.e., 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 source of the District water supply is the Harlan County Reservoir and the natural flow of the Republican River. A page with all of the District's water rights can be found on page 44.

The primary use of the District water supply is agricultural and the District has approximately 230 water users. The current water demand is dependent on the amount of rainfall during the growing season but, a normal year would require about 12 acre-inches per acre of applied water. The future water demands will be impacted by supply, markets, improved water efficiency of crops, weather, etc... The near term demands for an "average" crop year should be approximately 10 acre-inches per acre. The inflows into the Harlan County Reservoir have depleted over 80% since the development of the District.

The main identified contributors to the depletions have been well development, on-farm conservation practices and no-till farming. The primary crops grown in the District are corn and soybeans. The District currently services 22,455 acres. The water delivery system is an open ditch and canal system constructed in the 1950's. Since the District includes approximately 90 miles of main canals and 90 miles of laterals, the battle to continuously improve the efficiency has been a formidable challenge. Most of the original system deliveries are measured with weirs and Armco gates. The District has a System Optimization Review that will help in the project selection. Some of the improvements include gate automation on 10 sites of the Franklin Canal, many water users have converted to center pivots, where water measurement has been difficult, flow meters have been installed and approximately 70 miles of open laterals have been converted to buried pipe.

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

The conversion of the laterals from open ditch to buried pipe will reduce/eliminate the use of several pumps currently being used by irrigators and reduce the miles driven by staff to monitor deliveries.

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

The District is a Reclamation project and has made major strides in conservation by partnering with the Bureau of Reclamation through the small grant programs and three Water 2025 grants (2005-$300,000, 2006-$100,000, 2009-$300,000, 2010-$247,500, 2011- $250,000, 2012-300,000 and 2013-$300,000). Most of the prior projects were for buried pipe and meters. Recently the District received a Water 2025 system optimization grant to automate eight check structures on the Franklin Canal and a grant to develop a system optimization review. To date the District has converted approximately 70 miles of open ditch to buried pipe. The District has also partnered with Reclamation numerous times with the Conservation Field Services grant program.

## Technical Project Description

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

The pipe portion of the project is based on the engineering and study conducted by Reclamation in 1984 and adapted to current demand and capacities. The project will commence after the appropriate environmental and cultural clearances are performed by Reclamation. To start the actual project the first step will be to haul the equipment to the project site. Next, we will remove the existing turnouts and any drops or check structures that will complicate the placement of the pipe. Any fences will be removed. A short piece of pipe will be cemented into the end of the lateral turnout transition so the existing lateral turnout gate may be utilized and the cement on the interior of the main canal will remain in place and the trash rack will be fabricated to fit the structure. An air vent tee and air vent will be installed at the beginning of the project to avoid potential air locks and facilitate the filling of the pipe. The ditch will now be profiled for grade using a laser transit and the pipe will be laid on the grade. The project will follow the existing titled ground and easements. Elbows and fittings will be installed as necessary to align with curves and field turnouts. Main line valves will be installed as necessary to help maximize adequate delivery pressures in the upper reaches of the lateral. Farm turnouts will be installed by using a tee fitting from the main line that will reduce to the 10" turnout pipe size which is the standard district turnout pipe size. Elbows may be utilized to transition to the ground surface as necessary. An adapter which converts from PVC to a 10" steel flange will be installed so a meter tube with an air vent and straightening vanes can be installed. After the meter tube, a valve will be bolted to the meter tube to assure a full tube and accurate measurement. A 10" flange that adapts to the farmers needs is bolted on the farm side of the valve for the farmer's convenience. Siphons located on the lateral will be addressed in one of two methods depending on the circumstances. The preferred method of dealing with a siphon is to remove the inlet and outlet of the siphon and shove the pipe through the siphon. This will avoid digging through railroads and roads. If conditions do not allow for the inlet or outlet removal without a public risk or a project benefit the pipe will be cemented into the inlet and outlet of the siphon with an air vent tee placed at both ends and an open pipe of a maximum height of 6' installed as an open air vent. Reclamation has requested a maximum six foot of operating head be used on existing siphons. The District is evaluating the use of flexible pipe for use in siphons for retaining head pressure and possible ease of installation. The last direct operation to be performed on the project will be to cover the pipe. This will be done with the excavator, backhoe, dump trucks, motor grader and loaders as needed to move, haul and spread soil.

# Evaluation Criteria

**The evaluation criteria portion of your application should thoroughly address each criterion and subcriterion in the order presented to assist in the complete and accurate evaluation of your proposal.**

## V.A.1 Evaluation Criterion A: Water Conservation (28 points)

*Up to **28 points** may be awarded for a proposal that will conserve water and improve efficiency. Points will be allocated to give consideration to projects that are expected to result in significant water savings.*

## Subcriterion No. A.1: Quantifiable Water Savings

*Up to 24 points may be allocated based on the quantifiable water savings expected as a result of the project.*

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

The amount of water conserved by the conversion of 2.7 miles of open ditch to buried pipe would be approximately 620 acre-feet. This number reflects an average of early and late season loss rates for a 100 day irrigation season and does not include benefits from better management, reduced operational waste, reduced canal loading and better measurement. The total annual water conservation total for the project is estimated to be 620 acre-feet of water.

| Conservation | | | CFS | (100 days) |
|---|---|---|---|---|
| Lateral | Early Loss | Late Loss | Average | Season |
| FC 38.9 | 3.8 | 2.4 | 3.1 | 310 |
| Total | | | | 310 cfs |

**310 cfs x 2 a-f/cfs = 620 acre-feet loss**

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

**•What is the applicant's average annual acre-feet of water supply?**

The total average annual water supply is approximately 50,000 acre-feet (this was a number obtained from the Bureau).

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

The water to be conserved is either absorbed into the ground or spilled at the end of the ditch and eventually ends up in the Republican River except for the water in the laterals that is lost due to evaporation.

**•Where will the conserved water go?**

The water conserved will be retained in the Harlan County Reservoir to maintain higher lake levels and assure better water supplies in the future. In the event the lake is not able to store the water it will be released and will enhance the existing river flows that will benefit the associated flora and fauna.

**Please address the following questions according to 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 amount of water conserved by the conversion of 2.7 miles of open ditch to buried pipe would be approximately 620 acre-feet. This number reflects an average of early and late season loss rates for a 100 day irrigation season and does not include benefits from better management, reduced operational waste, reduced canal loading and better measurement. The total annual water conservation total for the project is estimated to be 620 acre-feet of water.

**(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.**

The average annual lateral seepage losses were determined by using average lateral operations as quantified by ditch riders, water masters and field superintendents in average operating conditions.

| Conservation | | | CFS | (100 days) |
|---|---|---|---|---|
| Lateral | Early Loss | Late Loss | Average | Season |
| FC 38.9 | 3.8 | 2.4 | 3.1 | 310 |
| Total | | | | 310 cfs |

**310 cfs x 2 a-f/cfs = 620 acre-feet loss**

Multiple recent data sets were not attainable due to no District operation in 2014 due to a compact call taking the District water supply and the project not being designated at the time.

**(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)?**

The post-project seepage losses should be approximately 0%. Converting an open ditch to buried pipe using 80 psi PVC should eliminate seepage and improve operational control. Previous conversions have yielded similar results.

**(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 anticipated annual transit loss reductions from the conversion of open ditch to buried pipe should be the estimated seepage loss (620 acre-feet) and the reductions from increased management opportunities which are difficult to quantify.

**(e) How will actual canal loss seepage reductions be verified?**
The actual canal loss seepage reductions can be easily verified by measuring the diversions to a lateral and the delivery from the lateral. Similar projects in the past have yielded an approximate 100% delivery rate of water diverted into an enclosed lateral.

**(f) Include a detailed description of the materials being used.**
The pipe and fittings to be used will be 80 psi PVC and will vary from 10" to 21" diameters depending on the needed flow capacity. The meters will be Macrometer 10" impeller meters that are reverse flow have over run bearings. The valves will be 10" cast iron with gear heads. The District uses 3" air/vacuum relief valves as a standard.

**(2) Municipal Metering:** Municipal metering projects can provide water savings when individual user meters are installed where none exist to allow for unit pricing and when new meters are installed within a distribution system to assist with leakage reduction. Applicants proposing municipal metering projects should address the following:
Not applicable.

(3) **Irrigation Flow Measurement: Irrigation flow measurement improvements can provide water savings when improved measurement accuracy results in reduced spills and over-deliveries to irrigators. Applicants proposing municipal metering projects should address the following:**
Not a municipal metering project.

**(a) How have average annual water savings estimates been determined? Please provide all relevant calculations, assumptions, and supporting data.**
The average annual water savings estimates were determined using average operational loss criteria obtained from ditch riders, water masters and the field superintendent. The amount of water conserved by the conversion of 2.7 miles of open ditch to buried pipe would be approximately 620 acre-feet. This number reflects a current average of early and late season loss rates for a 100 day irrigation season and does not include benefits from better management, reduced operational waste, reduced canal loading and better measurement. The total annual water conservation total for the project is estimated to be 620 acre-feet of water.

**(b) Are flows currently measured at proposed sites and if so what is the accuracy of existing devices? How has the existing measurement accuracy been established?**
All delivery points are currently being measured by Armco gates and/or weirs. These are accurate for spot checking flows but will not account for real time canal fluctuations that will vary flows over weirs or through gates. The enclosed system using impeller meters should allow for accurate measurements throughout a 24 hour period.

**(c) Provide detailed descriptions of all proposed flow measurement devices, including accuracy and the basis for the accuracy.**
The proposed measurement device is a ten inch reverse flow McCrometer meter with over run bearings in a meter tube with straightening vanes. The accuracy of the meter is +/- 2%. The accuracy was based on industry standards and verified on a flow bench.

**(d) How will actual water savings be verified upon completion of the project?**
The water savings verification is inherent in the project. Converting from open ditch to buried pipe will eliminate seepage, evaporation and operational waste as projected because it will now be an enclosed system.

**(4) SCADA and Automation**
Not applicable

## Subcriterion No. A.2: Percentage of Total Supply

*Up to **4 additional points** may be allocated based on the percentage of the applicant's total average water supply (i.e., including all facilities managed by the applicant) that will be conserved directly as a result of the project.*

**Provide the percentage of total water supply conserved: State the applicant's total average annual water supply in acre-feet. Please use the following formula:**

**Estimated Amount of Water Conserved** / **Average Annual Water Supply** = 620 a/f / 50,000 a/f = 1.24% of avg. supply

## V.A.2 Evaluation Criterion B: Energy-Water Nexus (16 points)

*Up to **16 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.*

**For projects that include construction or installation of renewable energy components, please respond to Subcriterion No. B.1: Implementing Renewable Energy Projects Related to Water Management and Delivery. If the project does not implement a renewable energy project but will increase energy efficiency, please respond to Subcriterion No. B2: Increasing Energy Efficiency in Water Management. If the project has separate components that will result in both implementing a renewable energy project and increasing energy efficiency, an applicant may respond to both. However, an applicant may receive no more than 16 points total under both Subcriteria No. B.1 and B.2.**

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

Project does not apply to this subcriterion.

## Subcriterion No. B.2: Increasing Energy Efficiency in Water Management

*If the project is not implementing a renewable energy component, as described in Subcriterion No. B.1 above, 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.**

  **a.) 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?**

  The proposed project will reduce the pumping requirements in two ways. On Franklin Canal Lateral 38.9 an electric pump could be eliminated and two pumps serving two center pivots will experience a reduction in the horsepower requirements when the open ditch is enclosed because the head pressure in the pipe will eliminate/reduce the need for pumping. These are private user pumps and the District has no information on use or costs.

**b.) Please indicate whether you energy savings estimate originates from the point of diversion, or whether the estimate is based upon an alternate site of origin.**
All energy savings estimates originate from the current points of diversion for the field.

**c.) Does the calculation include the energy required to treat the water?**
No.

**d.) 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).**
Yes. The number of vehicle miles driven and man hours of labor will be reduced. The District does not have detailed exact information due to weather, vegetation and demand variance on a year to year basis. Similar projects result in reductions due to elimination of flushing laterals, cleaning check structures, turnouts and siphon inlets. Because of these savings the District has been able to eliminate two full time ditch rider positions and converted one full time position to part time as well as reduce the vehicle fleet by two pickups. It is anticipated this project will contribute to these reductions.

## V.A.3 Evaluation Criterion C: Benefits to Endangered Species (12 points)

*Up to **12 points** may be awarded for projects that will benefit federally-recognized candidate species or up to **12 points** may be awarded for projects expected to accelerate the recovery of threatened or endangered species, or addressing designated critical habitat.*

**For projects that will directly benefit *federally-recognized candidate species*, please include the following elements:**

- **What is the relationship of the species to water supply?**
  The Whooping Crane is a federally listed species in the project area. However, the benefits of potential increases in water conserved in storage in the Harlan County Reservoir will be expanded habitat for migratory species. The Whooping Crane has been documented to randomly use the lake and river during migration.
- **What is the extent to which the proposed project would reduce the likelihood of listing or would otherwise improve the status of the species?**
  The expanded potential of the storage in the Harlan County Reservoir along the migratory route should enhance the migratory route by enhancing the local environment.

## V.A.4 Evaluation Criterion D: Water Marketing (12 points)

*Up to **12 points** may be awarded for projects that propose developing a new water market. Note: Water marketing does **not** include an entity selling conserved water to an existing customer. This criterion is intended for the situation where an entity that is conserving water uses water marketing to make the conserved water available to meet other existing water supply needs or uses.*

**Briefly describe any water marketing elements included in the proposed project. Include the following elements:**

- **Estimated amount of water to be marketed**
  There is no current plan or market to sell conserved water to a new entity or use. Water has been marketed in the past to the State of Nebraska and the Natural Resource Districts. The District has been previously approached by the Lower Republican Natural Resource District for the potential sale/lease of approximately 5,000 acre-feet of water. In 2014 the State of Nebraska paid the District $300,000.00 for the use of their water rights in July and August. This may occur again in the future when assurances are needed for compact compliance.

- **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)**

  In the past water has been marketed in a variety of ways. Memorandum of agreements have been signed for the use of stored water by the state and natural resource districts, the use of natural flows in the river by the state and the transfer of stored water to another facility for use by another irrigation district.

- **Number of users, types of water use, etc. in the water market**

  There are approximately 230 users in the Bostwick Irrigation District in Nebraska. The District has marketed both storage in reservoirs and natural flows in the Republican River to the State of Nebraska, Natural Resource Districts and other Irrigation Districts.

- **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)**

  All District water marketing activities must comply with the state laws, the Republican River Compact and have the approval of the Bureau of Reclamation.

- **Estimated duration of the water market**

  All marketing activities to date have been on an annual basis.

## V.A.5 Evaluation Criterion E: Other Contributions to Water Supply Sustainability (14 points)

*Up to **14 points** may be awarded for projects expected to contribute to a more sustainable water supply. This criterion is intended to provide an opportunity for the applicant to explain 1) how the project relates to a completed **WaterSMART Basin Study**; 2) how the project could expedite future **on-farm improvements**; 3) how the project will **build resiliency to drought**; and/or 4) how the project will provide **other benefits to water supply sustainability** within the basin. An applicant may receive the **maximum 14 points** under this criterion based on discussion of one or more of the numbered sections below.*

### Subcriterion E.1: Addressing Adaptation Strategies in a WaterSMART Basin Study

*Up to **14 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 (i.e., 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.**

  The Republican River Basin is in the process of conducting a WaterSMART basin study. The study has not been completed at this time and it can only be assumed conservation will be a part of the adaptation strategy.

- **Identify the applicant's level of involvement in the Basin Study (e.g., cost-share partner, participating stakeholder, etc.).**

  The District is willing to participate as a stakeholder.

- **Describe whether the project will result in further collaboration among Basin Study partners.**

  *Through the WaterSMART Basin Study Program, Reclamation is working with State and local partners, as well as other stakeholders, to comprehensively evaluate the ability to meet future water demands within a river basin. The Basin Studies allow Reclamation and its partners to evaluate potential impacts of climate change to water resources within a particular river basin, and to identify adaptation strategies to address those impacts.*

  It would be the hope of the District that its conservation activities could serve as a demonstration of the value and potential of conservation to all users both now and in the future.

## Subcriterion E.2: Expediting Future On-Farm Irrigation Improvements

*Up to **14 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.*

**Note: Scoring under this sub-criterion is based on an overall assessment of the extent to which the WaterSMART Grant project will facilitate future on-farm improvements. Applicants should describe any proposal made to NRCS, or any plans to seek funding from NRCS in the future, and how an NRCS-funded activity would complement the WaterSMART Grant project. Applicants may receive maximum points under this sub-criterion by addressing the types of information described in the bullet points below. Applicants are not required to have assurances of NRCS funding by the January 23 application deadline to be awarded the maximum number of points under this sub-criterion. Reclamation may contact applicants during the review process to gather additional information about pending applications for NRCS funding if necessary.**

**If the proposed projects will help expedite future on-farm improvements please address the following:**

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

  All fields served by the District will benefit from conservation projects by a stronger water supply and reduced O&M in the future. In 2011 the District had over 11 center pivot requests. Because the District was restricted from storing and diverting water in 2013, 2014 and projected for 2015 many of the cost share improvements such as center pivots, pivot up-grades, soil moisture sensors, etc... have not been applied for. It is the intent of this project that a more stable water supply will motivate the improvements.

- **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.**

  Several major on-farm improvements have resulted from similar past projects and will be anticipated as a result of this project. The first improvement is that the enclosed lateral will offer better and more consistent service which will allow the irrigator to more consistently irrigate their crop. Another benefit to the farm is the head pressure of the pipe which allows for better water management and less manpower requirements. The biggest on-farm change occurs when the decision is made to transition to a center pivot from gated pipe. (continued)

The buried lateral encourages this by reducing concerns about canal fluctuations creating the possibility of ruining a pump by running dry and providing the potential of the pump self priming due to head pressure. The head pressure also reduces the horsepower and energy requirements of the pump for the pivot thus reducing costs. It is the intent of this project that a more stable water supply will motivate the improvements.

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

  Because the District was restricted from storing and diverting water in 2013, 2014 and projected for 2015 many of the cost share improvements such as center pivots, pivot up-grades, soil moisture sensors, etc... have not been applied for. It is the intent of this project that a more stable water supply will motivate the improvements.

- **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 acre-feet per year. Include support or backup documentation for any calculations or assumptions.**

  It is difficult to isolate on-farm conservation associated to this project because they are not the main focus of this project. Past piping projects have seen several trends associated with the farms. The potential for center pivots discussed earlier reduces the amount of water necessary for irrigation if that transition occurs. Another trend is that with the increase of available head pressure from the pipe the farm is able to utilize larger volumes of water to irrigate a field in less time. This allows a farm to better keep up with crop demands to produce higher yields.

- **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.**

  No direct inclusion of on-farm benefits have been included or committed to in this proposal that are directly tied to NRCS funding programs.

- **Describe the extent to which this project complements an existing NRCS-funded project or a project that either has been submitted or will be submitted to NRCS for funding.**
  *Note: On-farm water conservation improvements that complement the water delivery improvement projects selected through this FOA may be considered for NRCS funding and technical assistance in FY 2015 to the extent such assistance is available.*

  No direct inclusion of on-farm benefits have been included or committed to in this proposal that are directly tied to NRCS funding programs.

## Subcriterion E.3: Building Drought Resiliency

*Up to **14 points** may be awarded for projects that will **build long-term drought resilience** in an area affected by drought.*

**If the proposed project will make water available to alleviate water supply shortages resulting from drought, please address the following:**

- **Explain in detail the existing or recent drought conditions in the project area. Describe the severity and duration of drought conditions in the project area. Describe how the water source that is the focus of this project (river, aquifer, or other source of supply) is impacted by drought.** (next page)

2012 and 2013 were drought years. In the spring of 2012 the Harlan County Reservoir was full and had to release water in the spring. By the end of 2012 the lake was so low a "compact call" was announced for 2013. In a compact call water can't be stored in dams or natural flows diverted from the river in an attempt for the state to achieve compact compliance. The conditions did not improve enough in 2013 and the compact call was extended to 2014. It has been announced that 2015 will be a compact call. The major source of water for the District is the Republican River. The natural flows are diverted into canals and stored in dams. During times of drought more water is released from storage and the impacts of increased well pumping reduce inflows. These events extend the impacts of a drought.

- **Describe the impacts that are occurring now or are expected to occur as a result of drought conditions. Provide a detailed explanation of how the proposed WaterSMART Grant project will improve the reliability of water supplies during times of drought. For example, will the proposed project prevent the loss of permanent crops and/or minimize economic losses from drought conditions? Will the project improve the reliability of water supplies for people, agriculture, and/or the environment during times of drought?**

  As a result of the drought conditions 2015 is projected to be a "compact call" year as was explained prior. The best demonstration of how the conservation can improve water supplies in times of drought occurred in 2012. 2012 was one of the driest years on record, yet due to prior conservation efforts burying over 60 miles of pipe diversions ranked 23rd from the least of the 56 years of records at the time. If not for the compact call and the impacts from well pumping the District believes it could have offered more water benefits to users in 2013, 2014 and 2015. These conservation projects should help increase water supplies to all users in times of drought and help avoid future compact calls.

## Subcriterion E.4: Other Water Supply Sustainability Benefits

*Up **10 points** may be awarded for projects that include **other benefits** to water supply sustainability.*

*Projects may receive up to 10 points under this sub-criterion by thoroughly explaining additional project benefits, not already described above.*

**Please provide sufficient explanation of the additional expected project benefits and their significance. Additional project benefits may include, but are not limited to, the following:**

- **Will the project make water available to address a specific concern? For example: *Will the project directly address a heightened competition for finite water supplies and over-allocation (e.g., population growth)?***

  This project will increase conservation and management opportunities in the Republican River Basin. Because the river and basin are over-allocated a moratorium exists on both ground water and surface water. The basin is the center of an on-going conflict between Kansas, Nebraska and Colorado over the waters of the Republican River. The issue is now returning to the Supreme Court and a special master is anticipated to make a decision soon. This project has the ability to make water available to address a variety of concerns. Most of the concerns are tied to a heightened competition for a finite resource. A primary District concern is the depleted inflows into the Harlan County Reservoir caused by well development and conservation practices such as dams and terraces. The project will help meet the compliance needs to the Republican River Compact (as demonstrated in 2006, 2007 and 2013), it has the ability to market water to other users (Natural Resource Districts, the State and other Districts) and it should make more water available in the basin. (continued)

In 2008 the Upper Republican Natural Resource District purchased water from districts in the upper basin. As their supplies diminish they will have to look down stream. The Republican River Compact has established thresholds and triggers for the basin based on the amount of storage in the Harlan County Reservoir. A water short year is determined when the amount of supply storage is less than 119,000 acre-feet. This project should assist in achieving increased storage through reduced use. Any storage that is held over is split annually with the Kansas Bostwick Irrigation District #2 and potentially benefits their patrons as well. Any water crossing the state line in the canal or river has a percentage credited back to upstream states (Nebraska, Kansas and Colorado) which will increase the amount all of the states are allocated for use. The conserved water will also benefit recreation, flora and fauna in the basin.

- **Describe how the water source that is the focus of this project (river, aquifer, or other source of supply) is impacted by climate variation.**

  The water source of this project is directly impacted by climate variation. During dry periods the river is impacted by increased well pumping and the declining water table of the aquifer. This causes reduced river flows which means less water will be stored and/or diverted into canals. This has been documented over time by the inflows into the Harlan County Reservoir being reduced by approximately 80% since the Dam was constructed.

- **Will the project help to address an issue that could potentially result in an interruption to the water supply if unresolved?**

  Using less water due to seepage and evaporation will increase supplies for storage and delivery. This was demonstrated by the diversion and delivery performance in 2012 mentioned prior. The increase in supply should help avoid a compact call and the damages associated with the disruption of water to users.

- **Will the project make additional water available for Indian tribes?**

  Not in the local area.

- **Will the project make water available for rural or economically disadvantaged communities?**

  The project will help local users avoid a compact call and reduced supplies in the future.

- **Does the project promote and encourage collaboration among parties?**

  The project is a coordinated effort with the District and the Bureau and will have positive impacts to the state and other water users. This water conservation project is meant to increase the available surface water supply through improved delivery system efficiency. This increased supply will be beneficial to the water users in the District, recreation at the Harlan County Lake (higher potential lake levels), recreation in the river (longer potential water season which increases canoeing, tubing, fishing and other opportunities), riparian vegetation, Kansas Bostwick Irrigation District (potential carryover storage), other basin water users (increased allocations caused by increased state line flows) and the citizens of all compact states by increasing the potential of compliance and reducing the potential of conflict. Any larger storage volumes will benefit to all migratory species including the Whooping Crane. A major benefit will be the potential for increased releases from the Harlan County Reservoir into the Republican River. In 2004 and 2005 due to the drought conditions and weather the Republican River dried up at Riverton, Red Cloud and at Hardy. The lack of reservoir releases was a major contributing factor to this condition. The reduced or no flows caused fish kills and stress to associated wildlife in the middle of summer when nature is trying to raise its young. The fish kills occurred not only due to the water volume

but also due to the increased temperature and low oxygen content associated with it. Fish were also impacted by low flows by river pumpers without sufficient screening for their pumps. During low flows the pump sites create small pockets in the river where fish tend to congregate and are subjected to increased injury potential when the pumps are operated. When the river dried up it forced animals, birds and other species to travel away from the river to seek water. This travel makes them more susceptible to predation and conflict with man. The reduced water availability also creates a concentration of wildlife near the remaining water sources. This concentration more readily promotes the spread of disease and inter-species conflicts. The water quality due to stagnation was also a problem. The low water flows created a secondary problem of vegetative growth in the river channel. The reduced flows created a secondary problem of vegetative growth in the river channel. The reduced flows are encouraging a transition from traditional plant species to more drought resistant varieties. The Natural Resource Districts have received funding to clear the river channel and spray some invasive species in the river channels to reduce water consumption and channel congestion. The public safety issues of converting open ditches to buried pipe would be a benefit as well.

- **Is there widespread support for the project?**
  The dire need for conservation of water to assist the state to meet its obligations under the Republican River Compact is demonstrated by the inclusion of water marketing in the past and being included in the Integrated Water Management Plans of the Natural Resource Districts to address future needs.

- **What is the significance of the collaboration/support?**
  The willingness of Reclamation to support these types of projects emphasizes their need and urgency. Direct project benefits were calculated by taking an average of historical losses (early and late season) and multiplying by a one hundred day delivery season (3.1 cfs x 100 days x 2 acre-feet/cfs = 620 acre-feet /season). This number reflects a current average loss rate of 3.1 cfs for a 100 day irrigation season and does not include benefits from better management, reduced operational waste, reduced canal loading and better measurement. An economic impact analysis conducted in 1993 estimated that every foot of lake elevation loss to the Harlan County Reservoir would result in 16,520 fewer visitor days per year. This meant annual losses of $771,820 in direct tourist expenditures, $1,223,595 in direct and indirect economic activity, $450,243 in household income, and 33.5 full time jobs for each foot of lake elevation. At the bottom of the usable conservation pool (1927.0 msl) 620 acre-feet would be approximately .07 feet of elevation. This would mean the value of the increased elevation would be approximately $171,196.06 per year. The agreement reached with the state in 2007 was based on an economic study that placed the value of water to the crop at $55 per acre-inch. The value of 620 acre-feet at $55 per acre-inch ($660/acre-foot) would be approximately $409,200 to the crops per year.

- **Will the project help to prevent a water-related crisis or conflict?**
  The project will definitely be a tool to be utilized to assist the State of Nebraska and the basin Natural Resource Districts to meet their obligations under the Republican River Compact. The more water that is available will mean reduced restrictions will be necessary to maintain compact compliance. This will reduce the burden faced by water users, state governments, the court system and the Federal Government. A "water short" year is designated when the storage water for irrigation falls below 119,000 acre-feet. This project should reduce the probability of the designation by reducing the amount of water to be released for irrigation.

- **Is there frequently tension or litigation over water in the basin?**
  Yes. Currently, the Frenchman-Cambridge Irrigation District has filed a lawsuit, Bostwick is in the process to file a lawsuit and the Republican River Compact is being addressed by the United States Supreme Court.
- **Is the possibility of future water conservation improvements by other water users enhanced by completion of this project?**
  Yes. This project demonstrates how positive conservation impacts supply. As our District improves and becomes more efficient it encourages other basin districts and those districts in other basins to promote conservation projects. As our District becomes fully converted to an enclosed system it will reduce the competition for funds and other projects may be funded.
- **Will the project increase awareness of water and/or energy conservation and efficiency efforts?**
  Yes. The project encourages on-farm water efficiency and reduces the need for pumping and serves as an example to other districts.
- **Will the project serve as an example of water and/or energy conservation and efficiency within a community?**
  Yes. The District water users strongly support these projects and many water users lobby the District to consider their lateral for current or future projects. The District receives requests every year for cost share by some users if they help the District bury part of a lateral to, or through their fields.
- **Will the project increase the capability of future water conservation or energy efficiency efforts for use by others?**
  Yes. The project encourages on-farm water efficiency and reduces the need for pumping and serves as an example to other districts.
- **Does the project integrate water and energy components?**
  Yes. The project integrates water conservation through piping. The project integrates energy by the on-farm reduced pumping.

## V.A.6 Evaluation Criterion F: Implementation and Results (10 points)

***Up to 10 points may be awarded for the following:***

### 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, 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 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, Basin Study, drought contingency plan, or other planning efforts done to determine the priority of this project in relation to other potential projects.**

In March 2011 a System Optimization Review was completed on the District. The SOR evaluated a variety of options for the District including piping, automation and the variable frequency drives.

**(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 District is not aware of any state or regional water plan. The District does have a SOR as mentioned previously. The Natural Resource Districts do have Integrated Water Plans that encourage conservation and try to avoid a "Water Short" compact year. The Integrated Management Plans (IMP) identify several options for compact compliance including acreage retirement, water purchase/leasing, augmentation and allocation reductions. This project will be an asset to those plans.

## Subcriterion No. F.2: Readiness to Proceed

*Points may be awarded based upon the extent to which the proposed project is capable of proceeding upon entering into a financial assistance agreement.*

**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.** ***(Please note, under no circumstances may an applicant begin any ground-disturbing activities—including grading, clearing, and other preliminary activities—on a project before environmental compliance is complete and Reclamation explicitly authorizes work to proceed).*** **Please explain any permits that will be required, along with the process for obtaining such permits. Identify and describe any engineering or design work performed specifically in support of the proposed project.**

Project Schedule;

| | |
|---|---|
| January 2015 | Submit Grant |
| January 2015 | Verify environmental and cultural clearance |
| June 2015 | Grant is announced |
| September 2015 | Sign grant agreement as soon as possible |
| September 2015 | Order materials and start construction as quickly as can be approved and allowed by the Bureau of Reclamation for federal portion |
| September 2015 | Water season ends |
| September 2015 | Focus resources on construction effort |
| November 2016 | Complete construction and draft final report |

The lateral that is a part of this project has been requested for NEPA and cultural clearance. This proposal also contains a District cost share which should allow the District to start the project using the District funds. This is important so benefits may be seen for the coming season if delays in grant announcements, agreements or non-funding occur. The project readiness is also demonstrated by the District's willingness to start the project using the District funds prior to funding being announced. The completion of the project will rely on the funding but if the project is not funded a valve will be installed where the District funds deplete and partial benefits will be realized.

## 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 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).**

*Note: All WaterSMART Grant applicants are required to propose a "performance measure" (a method of quantifying the actual benefits of their project once it is completed). 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. If information regarding project benefits is not available immediately upon completion of the project, the financial assistance agreement may be modified to remain open until such information is available and until a Final Report is submitted. 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.*

Historically and currently the District does not divert water prior to demand so conservation can be maximized. The performance measure for the project will be an average historic loss rate (inflow-outflow) compared to the completed project. It should be noted the enclosed system will have a near 100% delivery rate and that is the motivation for the project. The actual conservation may be adjusted in the final report by the actual length (more or less) of the irrigation season.

### Subcriterion No. F.4: Reasonableness of Costs

*Points may be awarded based on the reasonableness of the cost for the benefits gained.*

**Please include information related to the total project cost, annual acre-feet conserved, energy capacity, or other project benefits and the expected life of the improvement(s).**

**For all projects involving physical improvements, specify the expected life of the improvement in number of years and provide support for the expectation (e.g., manufacturer's guarantee, industry accepted life-expectancy, description of corrosion mitigation for ferrous pipe and fittings, etc.). Failure to provide this information may result in a reduced score for this section.**

$$\frac{\text{Total Project Cost}}{\text{(Acre-Feet Conserved x Improvement Life)}} = \frac{\$376,076.10}{620 \text{ a-f x } 50 \text{ yrs}} = \mathbf{\$12.13/a\text{-}f/yr}$$

The material life expectancy for plastic pipe was based on an estimate obtained from Diamond Plastics and was explained as a conservative industry estimate of from 50 to 100 years. The 50 year projection was used for a conservative estimate. Air vents and valves depended on the corrosive content of the water and environment. Many of the parts and materials have been in operation since the District started a conservation program 20 years ago.

## V.A.7 Evaluation Criterion G: Additional Non-Federal Funding (4 points)

*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.*

$$\frac{\text{Non-Federal Funding}}{\text{Total Project Cost}} = \frac{\$211,318.82}{\$381,010.82} = \mathbf{55.46\%}$$

## V.A.8 Evaluation Criterion H: Connection to Reclamation Project Activities (4 points)

*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?**

The Bostwick Irrigation District in Nebraska is a Reclamation project that serves 22,455 acres with project water. Downstream is the Kansas Bostwick Irrigation District #2 which shares a water supply with our District and is also a Reclamation project. Upstream of our District is the Frenchman-Cambridge Irrigation District which is a Reclamation project.

**(2) Does the applicant receive Reclamation project water?**

Yes. The source of the District water supply is the Harlan County Reservoir and the natural flow of the Republican River. The District is a Reclamation Project. The storage and storage use rights of the Harlan County Reservoir are held in the name of the Bureau.

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

Yes, our District is a Bureau of Reclamation project. The District has a water service and repayment contract with Reclamation for the proposed project facilities.

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

Reclamation projects upstream include the Frenchman-Cambridge Irrigation District, the Frenchman Valley Irrigation District, Hitchcock and Red Willow Irrigation District and the Almena Irrigation District. Downstream is the Kansas Bostwick Irrigation District #2 which shares a water supply with our District and is also a Reclamation project. Any water conserved in our District could also benefit the Kansas Bostwick system and the 42,000 acres they serve.

**(5) Will the proposed work contribute water to a basin where a Reclamation project is located?**

Yes. The proposed project can contribute water to the basin in a variety of ways. The conserved water will increase the potential supply of the Bostwick Irrigation District in Nebraska and the Kansas Bostwick Irrigation District #2. The increase in supply will also mean more water will potentially cross the state line which will increase the allocation to Kansas, Colorado and Nebraska under the Republican River Compact.

**(6) Will the project help Reclamation meet trust responsibilities to Tribes?**

Not in the project area.

## IV.D 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, marketed, or better managed, as a direct result 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.**

The water savings verification is inherent in the project. Converting from open ditch to buried pipe will eliminate seepage, evaporation and operational waste as projected because it will now be an enclosed system. The benefits of this project will be immediately verified when water diverted down a lateral has 100% delivery.

### IV.D.1 Environmental and Cultural Resources Compliance

**To allow Reclamation to 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 NEPA, ESA, and NHPA requirements. Please answer the following questions to the best of your knowledge. If any question is not applicable to the project, please explain why.**

*Note: Applicants proposing a Funding Group II project must address the environmental and cultural resources compliance questions for their entire project, not just the first 1-year phase.*

1) **Will the 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 have a minimal impact on the surrounding environment. The temporary disturbing of the soil caused by profiling or trenching will be as minimal as the silt removal or reshaping of historic O&M. Because the future O&M will not require such activities or the use of herbicides the environment should have a stronger natural stability. It is the intent of the District to keep all soil movement to the minimum necessary to assure a timely project completion.

2) **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?**

   None that we are aware of.

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

   I am not aware of any wetlands or other surface water in the project area.

4) **When was the water delivery system constructed?**

   The project delivery system was constructed in the late 1940's and early 1950's.

5) **Will the 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 the intent of the project to replace open ditch laterals and associated features and structures built in the late 1940's-early 1950's with buried pipe. I am not aware of any extensive alterations or modifications to those features since construction.

6) **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.**

   None of the project has a listing in the Historic Places Registry.

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

   No sites are known at this time.

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

   No.

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

   No.

**(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?**

The project should reduce the impacts and spread of non-native invasive species by eliminating the open flow in ditches, ditch banks and any inadvertent watering that may have occurred.

## IV.D.2 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. Note that improvements to Federal facilities that are implemented through any project awarded funding through this FOA must comply with additional requirements. The Federal government will continue to hold title to the Federal facility and any improvement that is integral to the existing operations of that facility. Reclamation may also require additional reviews and approvals prior to award to ensure that any necessary easements, land use authorizations, or special permits can be approved consistent with the requirements of 43 Code of Federal Regulations (CFR) §429, and that the development will not impact or impair project operations or efficiency.**

This project will need Bureau approval to proceed. This approval will require environmental and cultural approvals. The District will request the Bureau to conduct the necessary procedures to obtain the approvals. The District will contact the Diggers Hot Line prior to construction to identify potential utilities or other obstacles prior to construction. The District will obtain a permit from the State Department of Roads when addressing siphons under highways.

## IV.D.3 Official Resolution

**Include an official resolution adopted by the applicant's board of directors or governing body, or for state government entities, an official authorized to commit the applicant to the financial and legal obligations associated with receipt of WaterSMART Grant financial assistance, verifying:**

An official resolution is included on page 40 .

## IV.D.4 Project Budget

**The project budget includes: (1) Funding Plan and Letters of Commitment, (2) Budget Proposal, (3) Budget Narrative and (4) Budget Form.**

### (1) Funding Plan and Letters of Commitment

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

The District is funded through annual water user assessments. The District plans to utilize some of the annual District O&M funds (which should be reduced after project completion) and to utilize reserve funds (other than contractual reserve funds) accumulated from efficient District operations. The in-kind labor and equipment will be performed by District employees. The District and Reclamation are the only funding sources at this time.

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

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).**

The District is funded through annual water user assessments. The District plans to utilize some of the annual District O&M funds (which should be reduced after project completion) and to utilize reserve funds (other than contractual reserve funds) accumulated from efficient District operations. The in-kind labor and equipment will be performed by District employees.

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

The District plans to include and project associated costs incurred prior to start of construction such as engineering, environmental clearances, cultural clearances, etc... It is also the intent of the District to expend the District funds committed as part of the match to start the project as soon as the start of construction is viable. This expenditure may grow if the funding announcement and signed agreement are delayed.

3) **What project expenses have been incurred**

At this time some administrative costs have been incurred to determine the project, the materials, the costs and all information necessary for the grant application.

a) **How they benefitted the project**

The in-kind costs incurred before the anticipated grant funding will allow for the project to be completed sooner and the benefits to be realized sooner. Delays associated with cultural clearances will not be an issue if the process can start as soon as possible. By utilizing District funds to start the project, will allow any delays and/or problems to be identified prior to the grant announcement and give assurance any designated milestones may be achieved.

b) **The amount of the expense**

The amount of the expense will be dependent on many factors. The weather and environmental clearances will be the dominant initial delays to project start and progress. The District is committed to a potential cost of $62,138.00 plus equipment and labor to start the project.

c) **The date of cost incurrence**

The date of cost incurrence should be the spring/summer of 2015 except if the lateral has completed NEPA compliance.

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

The current funding partners are $169,692.00 from WaterSMART and $211,318.82 from the Bostwick Irrigation District in Nebraska.

5) **Describe any funding requested or received from other Federal partners. Note: other sources of Federal funding may not be counted towards your 50 percent cost share unless otherwise allowed by statute.**

No other Federal partners are involved at this time.

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

No other funding requests are involved at this time.

**Please include the following chart (table 1) to summarize your non-Federal and other Federal funding sources. Denote in-kind contributions with an asterisk (*). Please ensure that the total Federal funding (Reclamation and all other Federal sources) does not exceed 50 percent of the total estimated project cost.**

**Table 1.—Summary of non-Federal and Federal funding sources**

| Funding sources | Funding amount |
|---|---|
| **Non-Federal entities** | |
| *Bostwick I.D. In-kind | $148,980.82 |
| Bostwick I.D. Funds | $62,338.00 |
| **Non-Federal subtotal:** | $211,318.82 |
| **Other Federal entities** | |
| None | |
| **Other Federal subtotal:** | |
| **Requested Reclamation funding:** | $169,692.00 |
| **Total project funding:** | **$381,010.82** |

## Budget Proposal

**The project budget 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. Additionally, applicants shall include a narrative description of the items included in the project budget, including the value of 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 on tables 3 and 4 or a similar format that provides this information. If selected for award, successful applicants must submit detailed supporting documentation for all budgeted costs.**

### Table 3. Funding Sources.

| Funding Sources | Percent of Total Project Cost | Total Cost by Source |
|---|---|---|
| Recipient Funding | 55.46% | $ 211,318.82 |
| Reclamation Funding | 44.54% | $ 169,692.00 |
| Other Federal Funding | 0% | $ 0.00 |
| **Totals** | **100%** | **$ 381,010.82** |

### Table 4.—Budget Proposal

| Budget Item Description | Computation $/Unit | Quantity | Recipient Funding | Reclamation Funding | Total Cost |
|---|---|---|---|---|---|
| Salaries and Wages | | | | | |
| Ditchriders | 14.02 | 2850.34 | 39961.77 | 0 | 39961.77 |
| Ofc. Manager | 19.00 | 66.00 | 1254.00 | 0 | 1254.00 |
| Manager | 24.00 | 73.00 | 1752.00 | 0 | 1752.00 |
| Fringe Benefits (avg./empl.) | | | | | |
| Health Insurance | 9.49 | 2989.34 | 28368.84 | 0 | 28368.84 |
| Life Insurance | 0.05 | 2989.34 | 149.47 | 0 | 149.47 |
| Retirement 4% | 2.28 | 2989.34 | 6815.70 | 0 | 6815.70 |
| Travel (incl. in equip. & labor) | 0 | 0 | 0 | 0 | 0 |

| Equipment | | | | | |
|---|---|---|---|---|---|
| Excavator JD 120 (work) | 32.76 | 201.62 | 6605.07 | 0 | 6605.07 |
| Excavator JD 120 (Stand by) | 4.77 | 326.24 | 1556.16 | | 1556.16 |
| Excavator JD 690 (work) | 49.54 | 527.86 | 26150.18 | 0 | 26150.18 |
| Excavator JD 690(standby) | 7.57 | 0 | 0 | 0 | 0 |
| Backhoe JD 610 (work) | 20.98 | 40 | 839.20 | 0 | 839.20 |
| Backhoe JD 610 (stand by) | 2.3 | 487.86 | 1122.08 | 0 | 1122.08 |
| Maintainer (work) | 40.08 | 144.02 | 5772.32 | 0 | 5772.32 |
| Maintainer (stand by) | 6.57 | 383.84 | 2521.83 | 0 | 2521.83 |
| Loader A-62 (work) | 39.46 | 130 | 5129.80 | 0 | 5129.80 |
| Loader A-62 (stand by) | 4.92 | 397.86 | 1957.47 | 0 | 1957.47 |
| Loader Cat 941 (work) | 35.5 | 60 | 2130.00 | 0 | 2130.00 |
| Loader Cat 941 (stand by) | 4.74 | 467.86 | 2217.66 | 0 | 2217.66 |
| Dump Truck (work) | 39.65 | 45 | 1784.25 | 0 | 1784.25 |
| Dump Truck (stand by) | 3.86 | 483.86 | 1867.70 | 0 | 1867.70 |
| Pickup (work) | 11.63 | 360.24 | 4189.59 | 0 | 4189.59 |
| Pickup (stand by) | 1.14 | 166.62 | 189.95 | 0 | 189.95 |
| Pickup (work) | 11.63 | 88.5 | 1029.26 | 0 | 1029.26 |
| Pickup (stand by) | 1.14 | 439.36 | 500.87 | 0 | 500.87 |
| Pickup (work) | 11.63 | 88.5 | 1029.26 | 0 | 1029.26 |
| Pickup (stand by) | 1.14 | 439.36 | 500.87 | 0 | 500.87 |
| Haul Truck (work) | 40.09 | 20 | 801.80 | 0 | 801.80 |
| Haul Truck (stand by) | 3.23 | 507.86 | 1640.39 | 0 | 1640.39 |
| Lowboy Trailer (work) | 8.07 | 20 | 161.40 | 0 | 161.40 |
| Lowboy Trailer (stand by) | 1.52 | 507.86 | 771.95 | 0 | 771.95 |
| Misc.(torch, generator, etc.) | 10.00 | 41 | 410.00 | 0 | 410.00 |
| Supplies and Materials | 0 | 0 | 0 | 0 | 0 |
| 10" PVC | 3.48 | 2850 | 0 | 9918.00 | 9918.00 |
| 12" PVC | 5.03 | 2515 | 0 | 12651.00 | 12651.00 |
| 15" PVC | 7.9 | 1595 | 0 | 12601.00 | 12601.00 |
| 18" PVC | 12.17 | 3490 | 0 | 42474.00 | 42474.00 |
| 21" PVC | 17.94 | 3952 | 0 | 70899.00 | 70899.00 |
| Turnouts | 1973.8 | 10 | 19738.00 | 0 | 19738.00 |
| Fittings | 0 | 107 | 0 | 21149.00 | 21149.00 |
| Trash Racks | 400 | 1 | 400 | 0 | 400 |
| Environmental & Regulatory | 12000 | 1 | 12000 | 0 | 12000 |
| Engineering | 15000 | 1 | 15000 | 0 | 15000 |
| Misc. & Contingency | 15000 | 1 | 15000 | 0 | 15000 |
| Contractual & Construction | 0 | 0 | 0 | 0 | 0 |
| **Total** | | | **211,318.82** | **169692.00** | **381,010.82** |

## 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 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.**

The project consists of three major components. Those components are materials, labor and equipment. An itemized breakdown of these costs is included. The wages of the manager and office manager are not separated as indirect costs because of the direct nature of the project. Their time is essential for material and labor coordination as well as other necessary functions of the project. Other items of the budget are the environmental compliance and engineering. The environmental compliance for some of the project has been completed and the remainder will be requested of Reclamation and the amount was an estimate based on previous similar projects. The engineering costs are an estimate based on previous similar grant projects and the District will obtain specific costs if the grant is awarded. It is the intent of the District to pay the costs of the environmental clearance and any needed engineering. Any variance from these estimates will be the liability of the District.

## Salaries and Wages

**Indicate program manager and other key personnel by name and title. Other personnel may be indicated by title alone. For all positions, indicate salaries and wages, estimated hours or percent of time, and rate of compensation proposed. The labor rates should identify the direct labor rate separate from the fringe rate or fringe cost for each category. All labor estimates, including any proposed subcontractors, shall be allocated to specific tasks as outlined in the recipient's technical project description. Labor rates and proposed hours shall be displayed for each task.**
**Clearly identify any proposed salary increases and the effective date.**
**Generally, salaries of administrative and/or clerical personnel will be included as a portion of the stated indirect costs. If these salaries can be adequately documented as direct costs, they should be included in this section; however, a justification should be included in the budget narrative.**

| | | Direct | Fringe | Total Program |
|---|---|---|---|---|
| Manager | Mike Delka | 53821 | 21841 | $75662.00 |
| Office Manager | Tracy Smith | 42582 | 21425 | $64007.00 |
| Ditch Riders | Frank Clyde | 32202 | 21038 | $53240.00 |
| | Cody Wyatt | 30011 | 20958 | $50969.00 |
| | Daren Saathoff | 30011 | 20958 | $50969.00 |
| | Chris Goebel | 32202 | 21038 | $53240.00 |
| | Mike McCartney | 33534 | 21092 | $54626.00 |
| | Dave Nolan | 32202 | 21038 | $53240.00 |
| | Neil Thomsen | 30011 | 20958 | $50969.00 |

Direct wages include base wage, Social Security costs and Medicare. Fringe costs include health insurance, life insurance and retirement costs. No wage increases are anticipated at this time.

## Fringe Benefits

**Indicate rates/amounts, what costs are included in this category, and the basis of the rate computations. Indicate whether these rates are used for application purposes only or whether they are fixed or provisional rates for billing purposes. Federally approved rate agreements are acceptable for compliance with this item.**

The wages and fringe benefits listed are a combination of actual costs and averages. The costs of health insurance are an average because the of the various ages, sex, marital status, and the exact number of hours of each ditchrider may vary depending on vacations, sickness, family issues, etc... The cost of life insurance should be a direct cost as is the 4% retirement match.

| Labor Costs | Ditchrider | Ofc. Manager | Manager |
|---|---|---|---|
| Wage (avg.) | 29171 | 39528 | 49920 |
| Health Ins. | 19739 | 19739 | 19739 |
| Life Ins. | 105 | 105 | 105 |
| Retirement 4% | 1167 | 1582 | 1997 |
| Soc. Sec. 6.2% | 1751 | 2372 | 2996 |
| Medicare 1.45% | 423 | 574 | 724 |
| **Total** | **$ 52356** | **$ 63900** | **$ 75481** |
| $/hour | $ 25.17 | $ 30.72 | $ 36.29 |

## Travel

**Include purpose of trip, destination, number of persons traveling, length of stay, and all travel costs including airfare (basis for rate used), per diem, lodging, and miscellaneous travel expenses. For local travel, include mileage and rate of compensation.**

The only travel anticipated to be associated with this project is the transportation to and from the project site. This travel is included as vehicle time in the equipment costs and personnel time for the labor costs.

## Equipment

**Itemize costs of all equipment having a value of over $5,000 and include information as to the need for this equipment, as well as how the equipment was priced if being purchased for the agreement. If equipment is being rented, specify the number of hours and the hourly rate. Local rental rates are only accepted for equipment actually being rented or leased for the project. If equipment currently owned by the applicant is proposed for use under the proposed project, and the cost to use that equipment is being included in the budget as in-kind cost share, provide the rates and hours for each piece of equipment owned and budgeted. These should be ownership rates developed by the recipient for each piece of equipment. If these rates are not available, the U.S. Army Corp of Engineer's recommended equipment rates for the region are acceptable. Blue book, Federal Emergency Management Agency (FEMA), and other data bases should not be used.**

All of the anticipated equipment to be used is currently owned by the District. The following table should give a summary estimate of the equipment and time needed.

Equipment rates were based on Corps of Engineers Region V rates.
Depreciation (paragraph 3.11) on page 3-4 for overage equipment multiple table 2-1 and 3-1.

| | | | Table 2-1 | Table 3-1 | |
|---|---|---|---|---|---|
| **Machine** | **Cat #** | **Number** | **Owner Rate** | **Overage Adjust.** | **Adj. Own Rate** |
| Cat 130G Grader | 130 | G15CA001 | 54.9 | 0.73 | 40.08 |
| JD 120 Excavator | 312 | H25CA021 | 35.61 | 0.92 | 32.76 |
| 36" bucket | | H25WN001 | 2.33 | 0.91 | 2.12 |
| JD 690D Excavator | M-318 | H30CA005 | 53.85 | 0.92 | 49.54 |
| Cat 941 Loader | 939 | L35CA013 | 39.89 | 0.89 | 35.5 |
| Ford A-62 Loader | 924 | L40CA022 | 42.89 | 0.92 | 39.46 |
| JD 610 Backhoe | 446 | L50CA001 | 23.84 | 0.88 | 20.98 |
| Lowboy | | T45EA006 | 8.97 | 0.9 | 8.07 |
| Pickup | | T50XX004 | 12.37 | 0.94 | 11.63 |
| Haul Truck | | T50XX029 | 48.89 | 0.82 | 40.09 |
| 1997 GMC Dump Tr. | | T50XX032 | 46.65 | 0.85 | 39.65 |

To adjust Standby rates multiply table 2-1 and table 3-2.

| | | | Table 2-1 | Table 3-2 | |
|---|---|---|---|---|---|
| **Machine** | **Cat #** | **Number** | **Stand By** | **Adjust.** | **Adj. Standby** |
| Cat 130G Grader | 130 | G15CA001 | 10.6 | 0.62 | 6.57 |
| JD 120 Excavator | 312 | H25CA021 | 7.34 | 0.65 | 4.77 |
| 36" bucket | | H25WN001 | 0.62 | 0.65 | 0.4 |
| JD 690D Excavator | M-318 | H30CA005 | 11.36 | 0.65 | 7.57 |
| Cat 941 Loader | 939 | L35CA013 | 6.58 | 0.68 | 4.74 |
| Ford A-62 Loader | 924 | L40CA022 | 7.35 | 0.67 | 4.92 |
| JD 610 Backhoe | 446 | L50CA001 | 3.44 | 0.67 | 2.3 |
| Lowboy | | T45EA006 | 2.21 | 0.69 | 1.52 |
| Pickup | | T50XX004 | 1.21 | 0.94 | 1.14 |
| Haul Truck | | T50XX029 | 4.61 | 0.7 | 3.23 |
| 1997 GMC Dump Tr. | | T50XX032 | 5.52 | 0.7 | 3.86 |

**Total Project Length 326.24 (lay pipe) + 57.6 (site prep.) + 144.02 (cover) = 527.86 hours**

**Equipment Expense**

| Machine | Site Prep (hours) | Lay Pipe (hours | Cover Pipe (hours) | Total Hours. | Rate ($/hour) | Cost ($) |
|---|---|---|---|---|---|---|
| Excavator JD 120 | 57.6 | 0 | 144.02 | 201.62 | 32.76 | $6,605.07 |
| Excavator JD 690 | 57.6 | 326.24 | 144.02 | 527.86 | 49.54 | $26,150.18 |
| Backhoe JD 610 | 10 | 0 | 30 | 40 | 20.98 | $839.20 |
| Cat 130G Grader | 0 | 0 | 144.02 | 144.02 | 40.08 | $5,772.32 |
| Loader Ford A-62 | 10 | 80 | 40 | 130 | 39.46 | $5,129.80 |
| Loader Cat 941 | 0 | 20 | 40 | 60 | 35.5 | $2,130.00 |
| Loader Cat 941 | 0 | 0 | 0 | 0 | 35.5 | $0.00 |
| Dump Truck | 5 | 0 | 40 | 45 | 39.65 | $1,784.25 |
| Dump Truck | 0 | 0 | 0 | 0 | 39.65 | $0.00 |
| Pickup | 10 | 326.24 | 24 | 360.24 | 11.63 | $4,189.59 |
| Pickup | 10 | 54.5 | 24 | 88.5 | 11.63 | $1,029.26 |
| Pickup | 10 | 54.5 | 24 | 88.5 | 11.63 | $1,029.26 |
| Haul Truck | 20 | 0 | 0 | 20 | 40.09 | $801.80 |
| Lowboy Trailer | 20 | 0 | 0 | 20 | 8.07 | $161.40 |
| | | | | | **Total** | **$55,622.13** |

**Equipment Expense (stand by)**

| Machine | Total Hours | Hours Used | Stand by Hours | ($/hour) Rate | ($) Cost |
|---|---|---|---|---|---|
| Excavator JD 120 | 527.86 | 201.62 | 326.24 | 4.77 | $1,556.16 |
| Excavator JD 690 | 527.86 | 527.86 | 0 | 7.57 | $0.00 |
| Backhoe JD 610 | 527.86 | 40 | 487.86 | 2.3 | $1,122.08 |
| Cat 130G Grader | 527.86 | 144.02 | 383.84 | 6.57 | $2,521.83 |
| Loader Ford A-62 | 527.86 | 130 | 397.86 | 4.92 | $1,957.47 |
| Loader Cat 941 | 527.86 | 60 | 467.86 | 4.74 | $2,217.66 |
| Dump Truck | 527.86 | 45 | 483.86 | 3.86 | $1,867.70 |
| Dump Truck | 527.86 | 0 | 0 | 3.86 | $0.00 |
| Pickup | 527.86 | 361.24 | 166.62 | 1.14 | $189.95 |
| Pickup | 527.86 | 88.5 | 439.36 | 1.14 | $500.87 |
| Pickup | 527.86 | 88.5 | 439.36 | 1.14 | $500.87 |
| Haul Truck | 527.86 | 20 | 507.86 | 3.23 | $1,640.39 |
| Lowboy Trailer | 527.86 | 20 | 507.86 | 1.52 | $771.95 |
| | | | | **Total** | **$14,846.93** |

**Total Equipment Costs = 55,622.13 (work) + 14,846.93 (Stand by) = $70,469.06**

## Materials and Supplies

**Itemize supplies by major category, unit price, quantity, and purpose, such as whether the items are needed for office use, research, or construction. Identify how these costs were estimated (i.e., quotes, past experience, engineering estimates, or other methodology).**

The materials to be used for the project were priced by obtaining current list pricing from vendors. The actual costs may change by construction start date. Prices quoted 11-18-2014.

| Fittings | FC 38.9 | Cost | Total |
|---|---|---|---|
| 10"x10" | 10 | 38.50 | $385.00 |
| 10"-22 | 4 | 60.99 | $243.96 |
| 10"-45 | 10 | 74.10 | $741.00 |
| 10x10x3 | 3 | 78.00 | $234.00 |
| 10x10x10 | 1 | 152.03 | $152.03 |
| 12"-10" | 2 | 63.18 | $126.36 |
| 12"-22 | 3 | 86.46 | $259.38 |
| 12"-45 | 4 | 106.55 | $426.20 |
| 12x12x10 | 2 | 180.70 | $361.40 |
| 12x12x4 | 3 | 125.85 | $377.55 |
| 4"-3" | 13 | 16.00 | $208.00 |
| 15"-10" | 0 | 144.25 | $0.00 |
| 15"-12" | 2 | 101.94 | $203.88 |
| 15"-22 | 5 | 133.91 | $669.55 |
| 15"-45 | 2 | 168.34 | $336.00 |
| 15x15x4 | 3 | 188.42 | $565.26 |
| 15x15x10 | 1 | 267.94 | $267.94 |
| 18"-15" | 2 | 185.76 | $371.52 |
| 18"-22 | 1 | 230.88 | $230.88 |
| 18"-30 | 1 | 274.92 | $274.92 |
| 18"-45 | 2 | 274.92 | $549.84 |
| 18x18x10 | 3 | 389.96 | $1,169.88 |
| 18x18x4 | 4 | 344.40 | $1,377.60 |
| 18X18X18 | 0 | 577.64 | $0.00 |
| 21"-11 | 3 | 385.34 | $1,156.02 |
| 21"-15 | 1 | 385.34 | $385.34 |
| 21"-22 | 4 | 385.34 | $1,541.36 |
| 21"-30 | 3 | 444.82 | $1,334.46 |
| 21"-45 | 7 | 444.82 | $3,113.74 |
| 21"-18" | 2 | 255.82 | $511.64 |
| 21x21x21 | 1 | 1,065.71 | $1,065.71 |
| 21x21x10 | 2 | 559.11 | $1,118.22 |
| 21x21x4 | 3 | 463.34 | $1,390.02 |
| **Total** | **107** | | **$21,148.66** |

## 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.**

No contractual work is anticipated at this time.

## 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 a WaterSMART Grant, including costs associated with any required documentation of environmental compliance, analyses, permits, or approvals. Applicable Federal environmental laws could include NEPA, ESA, NHPA, and the 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**

It is anticipated Reclamation will conduct the environmental compliance. Some of the compliance has been completed previously.

## Reporting

**Recipients are required to report on the status of their project on a regular basis. Failure to comply with reporting requirements may result in the recipient being removed from consideration for funding under future funding opportunities. Include a line item for reporting costs (including final project and evaluation costs).**

The status reports and submission of costs was included as part of the manager and office manager estimated costs associated with the project. The administrative costs were estimates based on previous similar grants. It is the desire of the District to complete the project as soon as possible and minimize the reporting function.

## Other Expenses

**Any other expenses not included in the above categories shall be listed in this category, along with a description of the item and what it will be used for. No profit or fee will be allowed.**

The miscellaneous and contingency was used for small items such as lumber, plywood, concrete, glue, cleaner, welding rod, wire and any other non-itemized materials used for the project.

## Indirect Costs

**Show the proposed rate, cost base, and proposed amount for allowable indirect costs based on the applicable OMB circular cost principles or the recipient's organization. It is not acceptable to simply incorporate indirect rates within other direct cost line items.**

All significant costs have been identified and any unidentified costs will be part of the District cost share.

# Bostwick Irrigation District in Nebraska

P.O. Box 446, Red Cloud, Nebraska 68970
Phone/Fax (402) 746-3424

## RESOLUTION FOR CHALLENGE GRANT PROGRAM: WaterSMART Water and Energy Efficiency Grants for FY2015

December 2, 2014

**WHEREAS**, the Bostwick Irrigation District in Nebraska is a legally organized irrigation district in the State of Nebraska, and

**WHEREAS**, the District promotes, supports and encourages water conservation, and

**WHEREAS**, the District has suffered through a drought that allowed no irrigation in 2004, 2005, 2006, 2007, 2014 and

**WHEREAS**, the District urgently needs system improvements to maximize the utilization of a limited water supply and help sustain the viability of the project.

**THEREFORE, BE IT RESOLVED** that the Board of Directors of the Bostwick Irrigation District in Nebraska agrees and authorizes that:

1. The Board has reviewed and supports the application proposal to the WaterSMART: Water and Energy Efficiency Grants program;
2. The Board authorizes the District Manager, Michael Don Delka, the legal authority to enter into the WaterSMART: Water and Energy Efficiency Grants agreement;
3. The Bostwick Irrigation District in Nebraska is capable of providing the in-kind services and matching obligations, and
4. If selected for a Challenge Grant, the applicant will work with Reclamation to meet established deadlines for entering into a cooperative agreement.

DATED: 12-2-2014

Walter Knehans, President

ATTEST:

James Miller, Secretary

# "Water is Life"

COPY

# Bostwick Irrigation District in Nebraska

P.O. Box 446, Red Cloud, Nebraska 68970
Phone/Fax (402) 746-3424


December 8, 2014

Aaron Thompson
Bureau of Reclamation
Nebraska-Kansas Area Office
1706 West Third Street
McCook, Nebraska 69001

Subject: Environmental and Cultural Clearance for Franklin Canal Lateral 38.9.

Dear Mr. Thompson,

The Bostwick Irrigation District in Nebraska has submitted an application for the 2015 WaterSMART Grant program. It is the desire of this letter to request the necessary environmental and cultural clearances for the project prior to any construction. The project for the grant is to convert Franklin Canal Lateral 38.9 from open ditch to buried pipe. It is our understanding this lateral may have been cleared with laterals associated with prior projects. If not, this letter is being sent to request the Bureau to start the necessary procedures to obtain the clearances. It is not the intent of the District to deviate from the current alignment of the lateral. Thank you for your assistance.

Respectfully,

Mike Delka, Manager
Bostwick Irrigation District in Nebraska

**"Water is Life"**

COPY

BOSTWICK IRRIGATION DISTRICT
RED CLOUD, NEBRASKA
STATEMENTS OF NET POSITION
DECEMBER 31, 2013 AND 2012

ASSETS

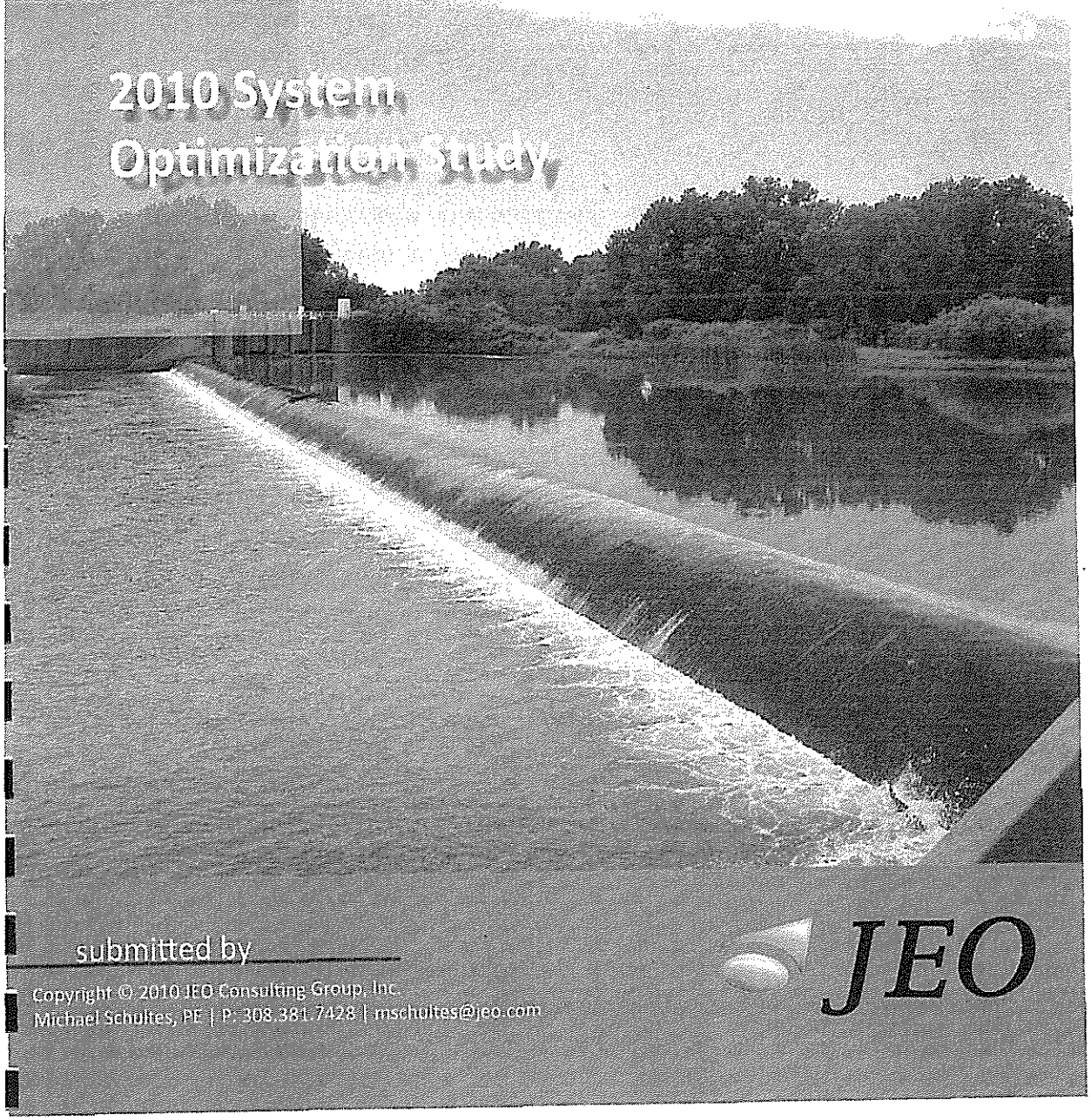
| | 2013 | Restated 2012 |
|---|---|---|
| CURRENT ASSETS | | |
| Cash and cash equivalents | 325,682 | 160,980 |
| Certificates of deposit | 368,805 | 417,788 |
| Deposit in escrow | 1,000 | 1,000 |
| Assessment receivable | 335,940 | 350,132 |
| Bureau of Reclamation grant receivable | 493,000 | 413,076 |
| Assessment interest receivable | 42 | 131 |
| Prepaid expenses | 46,712 | 45,224 |
| Total current assets | 1,571,181 | 1,388,331 |
| LAND, BUILDINGS, DISTRIBUTION SYSTEM, AND EQUIPMENT | | |
| Land and land rights | 209,703 | 209,703 |
| Distribution works | 4,324,750 | 4,090,493 |
| Drainage system | 2,610,499 | 2,610,499 |
| Water supply rights | 1,525,183 | 1,525,183 |
| Buildings | 76,286 | 76,286 |
| Equipment | 706,644 | 650,074 |
| | 9,453,065 | 9,162,238 |
| Less accumulated depreciation | (669,782) | (633,772) |
| Net land, buildings, distribution system, and equipment | 8,783,283 | 8,528,466 |
| RESTRICTED ASSETS | | |
| Restricted for O & M Reserve | | |
| Certificates of deposit | 139,453 | 132,572 |
| TOTAL ASSETS | 10,493,917 | 10,049,369 |

See accompanying notes to financial statements.

December 2010

# Nebraska Bostwick Irrigation District

# 2010 System Optimization Study



submitted by



Michael Schultes, PE | P: 308.381.7428 | mschultes@jeo.com

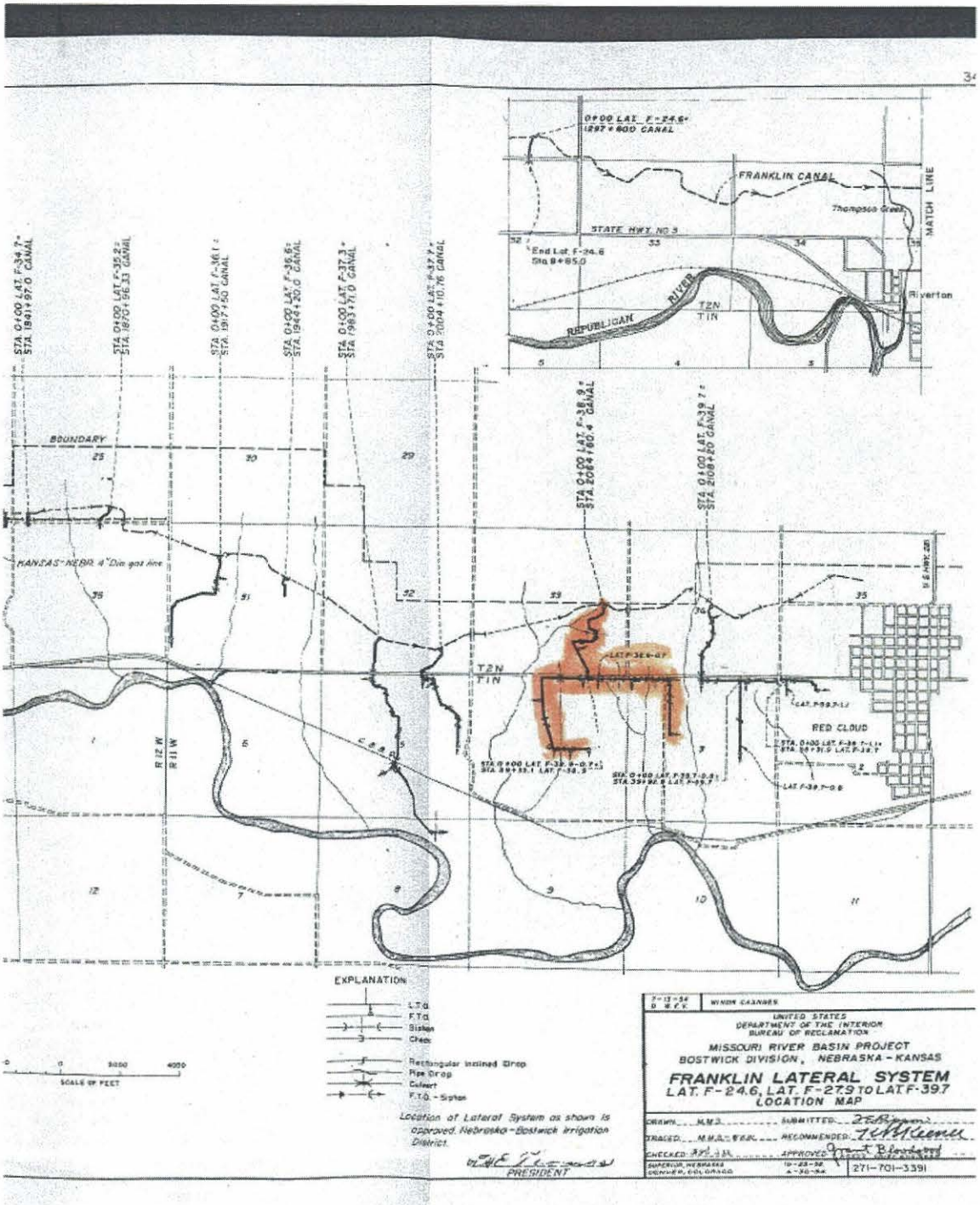
JEO

COPY

# BOSTWICK IRRIGATION DISTRICT in NEBRASKA

## WATER APPROPRIATIONS

| FRANKLIN CANAL | | | NAPONEE CANAL | | | FR. PUMP CANAL | | | COURTLAND CANAL | | | SUPERIOR CANAL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PRIOR. DATE | APP. | CFS | PRIOR. DATE | APP. | CFS | PRIOR. DATE | APP. | CFS | PRIOR. DATE | APP. | CFS | PRIOR. DATE | APP. | CFS |
| 4/3/1946 | A-2691-A | 35.87 | 2/26/1948 | A-4217 | 10.33 | 4/3/1946 | A-2691BR | 0.08 | 2/26/1948 | A-4222 | 11.95 | 4/3/1946 | A-2691CR | 39.29 |
| 4/3/1946 | A-2691-BR | 31.23 | | | | | | | | | | 2/26/1948 | A-4221 | 0.06 |
| 2/26/1948 | A-4216 | 15.43 | 4/16/1954 | A-6220 | 0.66 | 2/28/1948 | A-4227 | 14.93 | 4/16/1954 | A-6224 | 0.84 | | | |
| 4/16/1954 | A-6221 | 1.20 | | | | | | | | | | 4/16/1954 | A-6223 | 1.86 |
| 11/21/1955 | A-8259 | 1.21 | 4/19/1957 | A-9463 | 1.23 | 4/16/1954 | A-6222 | 1.47 | 10/6/1966 | A-10963 | 1.94 | | | |
| 5/21/1958 | A-9623 | 0.76 | | | | | | | | | | 4/24/1959 | A-9723 | 0.64 |
| 4/24/1959 | A-9724 | 0.26 | 4/24/1959 | A-9722 | 0.16 | 10/6/1966 | A-10962 | 0.11 | 9/20/1974 | A-13210 | 0.49 | | | |
| 10/6/1966 | A-10964 | 4.13 | | | | | | | | | | 12/30/1960 | A-9875 | 0.70 |
| 1/23/1973 | A-12796 | 1.47 | 10/6/1966 | A-10965 | 2.41 | 9/10/1982 | A-16150 | 0.33 | 9/10/1982 | A-16149 | 0.70 | | | |
| 4/7/1976 | A-14162 | 0.30 | | | | | | | | | | 10/6/1966 | A-10966 | 1.04 |
| 6/11/1979 | A-15488 | 0.81 | 9/10/1982 | A-16150 | 0.93 | | | | | | | | | |
| 5/5/1982 | A-16099 | 1.44 | | | | | | | | | | 5/5/1982 | A-16100 | 1.67 |
| TOTAL | | 94.11 | TOTAL | | 15.72 | TOTAL | | 16.92 | TOTAL | | 15.92 | TOTAL | | 45.26 |


FRANKLIN CANAL
STATE HWY. NO. 3
End Lat. F-24.6
Sta. 9+85.0
RIVER
REPUBLICAN
T2N
T1N
Riverton
MATCH LINE
BOUNDARY
KANSAS-NEBR. 4° Div. par. Line
RED CLOUD
R12W
R11W
EXPLANATION
L.T.G.
F.T.G.
Siphon
Check
Rectangular Inclined Drop
Pipe Drop
Culvert
F.T.G. - Siphon
SCALE OF FEET
Location of Lateral System as shown is approved Nebraska-Bostwick Irrigation District.
PRESIDENT
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
MISSOURI RIVER BASIN PROJECT
BOSTWICK DIVISION, NEBRASKA-KANSAS
FRANKLIN LATERAL SYSTEM
LAT. F-24.6, LAT. F-27.9 TO LAT. F-39.7
LOCATION MAP
271-701-3391

NEBRASKA-BOSTWICK R&B

Engineering Backup Data

COPY

HYDRAULIC PROPERTIES

| SECTION | Q | V | B | C | n | A | P | R | E.G. | H |
|---|---|---|---|---|---|---|---|---|---|---|
| Capacity for Q=60 cfs | 60 cfs | 1.68 | 1.00 | 56 | 0.014 | 35.7 sq ft | 21.4 ft | 1.67 ft | 4.39 ft | 0.7 |
| Capacity for Q=70 cfs | 70 cfs | 1.96 | 1.00 | 56 | 0.014 | 35.7 sq ft | 21.4 ft | 1.67 ft | 4.39 ft | 0.7 |

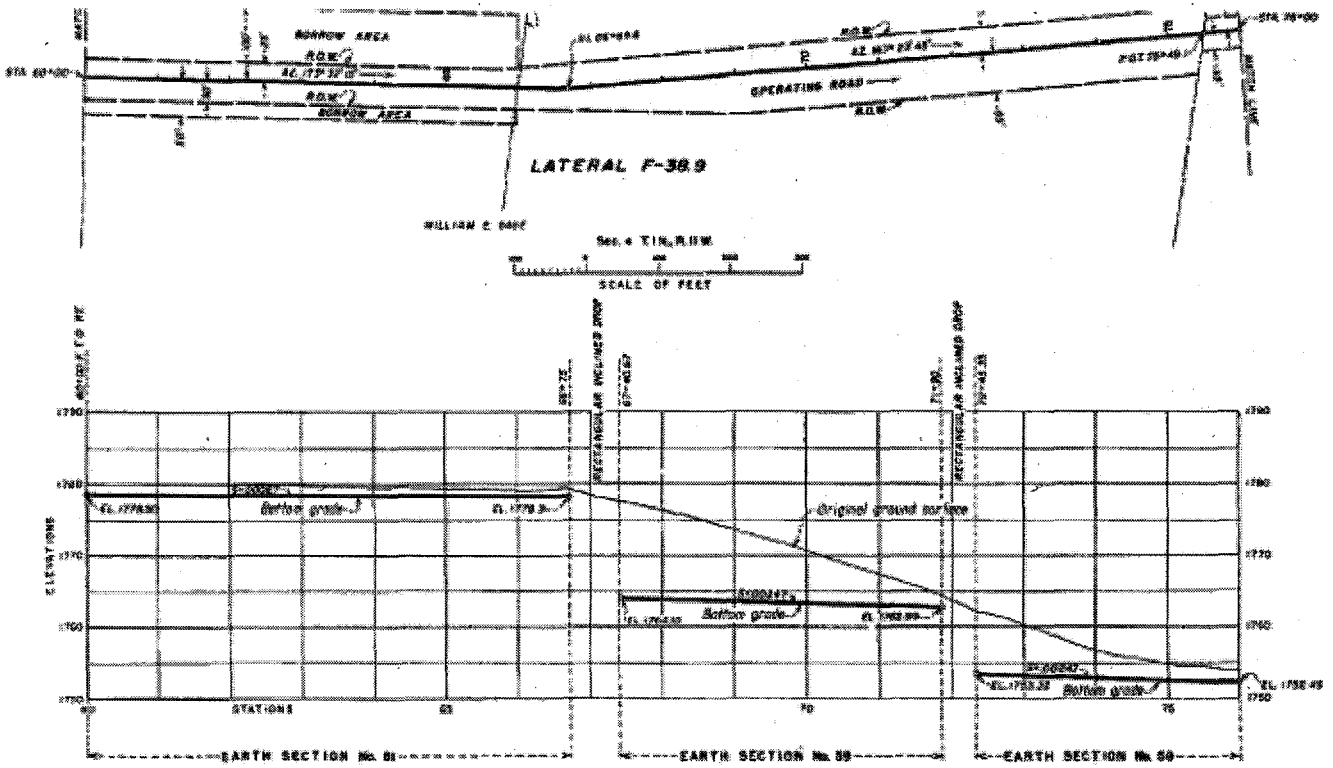
NOTE

For typical channel sections, see 270-701-2202

FRANKLIN LATERAL SYSTEM
LATERAL F-38.9
STA. 0+00 TO STA. 30+00
PLAN AND PROFILE

270-701-2274

LATERAL F-38.9
Original ground surface
Bottom grade
EARTH SECTION
HYDRAULIC PROPERTIES
NOTE
For typical lateral section, see 271-701-3385
FRANKLIN LATERAL SYSTEM
LATERAL F-38.9
STA. 30+00 to STA. 80+00
PLAN AND PROFILE
271-701-3380




NOTE

For typical lateral sections, see 271-701-3382.

HYDRAULIC PROPERTIES

| SECTION | A | V | Q | r | n | s | B | d | H | W |
|---|---|---|---|---|---|---|---|---|---|---|
| Earth No. 58 | 8.08 | 3.00 | 24 | 1.18 | .035 | .0007 | 3.0 | 2.00 | 3.4 | 3.0 |
| Earth No. 59 | 5.37 | 2.83 | 15 | .76 | .035 | .0004 | 3.0 | 1.14 | 2.3 | 3.0 |

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
MISSOURI RIVER BASIN PROJECT
BOSTWICK DIVISION-NEBRASKA-KANSAS
FRANKLIN LATERAL SYSTEM
LATERAL F-38.9
STA. 60+00 TO STA. 76+00
PLAN AND PROFILE

DESIGNED ... RECOMMENDED ...
DRAWN ... APPROVED ...
CHECKED ... APPROVED ...

271-701-3381

## HYDRAULIC PROPERTIES

| SECTION | A | V | Q | P | n | s | b | d | H | W |
|---|---|---|---|---|---|---|---|---|---|---|
| EARTH No. 89 | 5.37 | 2.23 | 12 | 7.6 | .025 | .00247 | 3.0 | 1.19 | 2.3 | 3.6 |
| EARTH No. 75 | 7.88 | 1.52 | 12 | 9.4 | .025 | .00067 | 3.0 | 1.50 | 3.0 | 3.0 |

**NOTE**

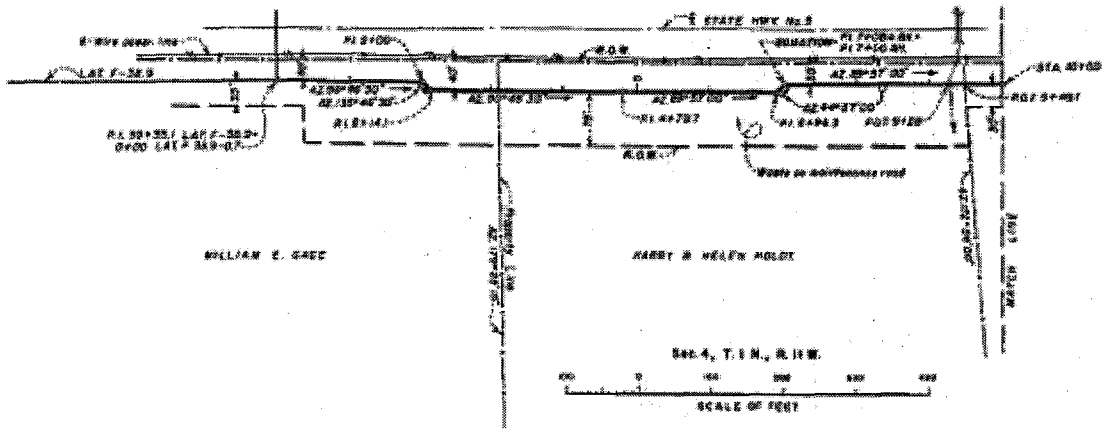
For typical lateral sections, see 271-701-3383.

DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
MISSOURI RIVER BASIN PROJECT
NORTHWEST DIVISION-NEBRASKA-KANSAS
FRANKLIN LATERAL SYSTEM

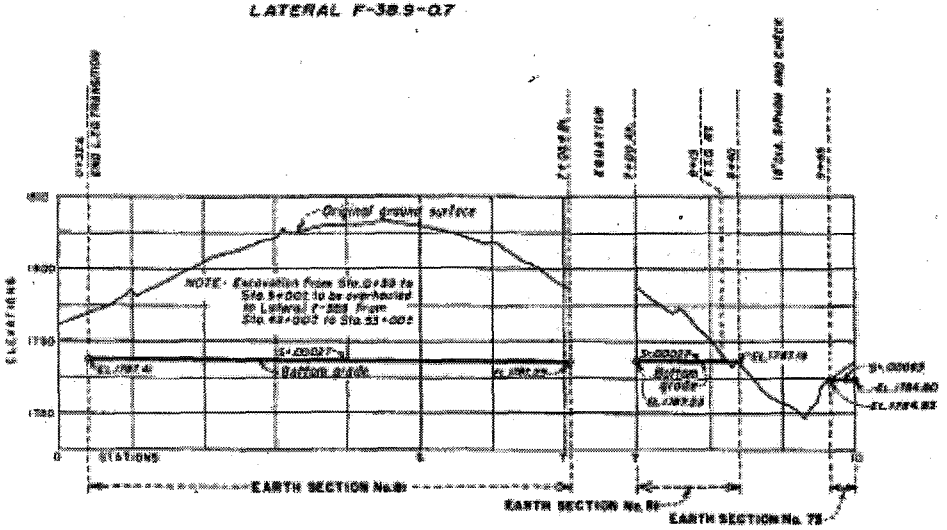
**LATERAL F-38.9**
**STA. 76+00 TO STA. 92+00.8**
**PLAN AND PLOT**

DRAWN ... SUBMITTED ...
TRACED ... RECOMMENDED ...
CHECKED ... APPROVED ...
SUPERVISED, NEBRASKA APRIL 22, 1955

271-701-3382




LATERAL F-38.9-0.7




HYDRAULIC PROPERTIES

| SECTION | A | V | Q | r | n | s | b | d | H | W |
|---|---|---|---|---|---|---|---|---|---|---|
| Earth No. 8 | 12.00 | 1.00 | 12 | 1.18 | .025 | .00027 | 3.0 | 2.00 | 3.4 | 3.0 |
| Earth No. 7a | 7.88 | 1.52 | 12 | .94 | .025 | .00083 | 3.0 | 1.50 | 3.0 | 3.0 |

NOTE

For typical lateral sections, see 271-701-3395

UNITED STATES
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MISSOURI RIVER BASIN PROJECT
NORTHERN DIVISION—NEBRASKA-KANSAS
FRANKLIN LATERAL SYSTEM
LATERAL F-38.9-0.7
STA. 0+00 to STA. 10+00
PLAN AND PROFILE

DESIGNED W.E.G. SUBMITTED W. E. Gage
TRACED R.S.K. RECOMMENDED [illegible]
CHECKED [illegible] APPROVED [illegible]

271-701-3383

NOTE

HYDRAULIC PROPERTIES

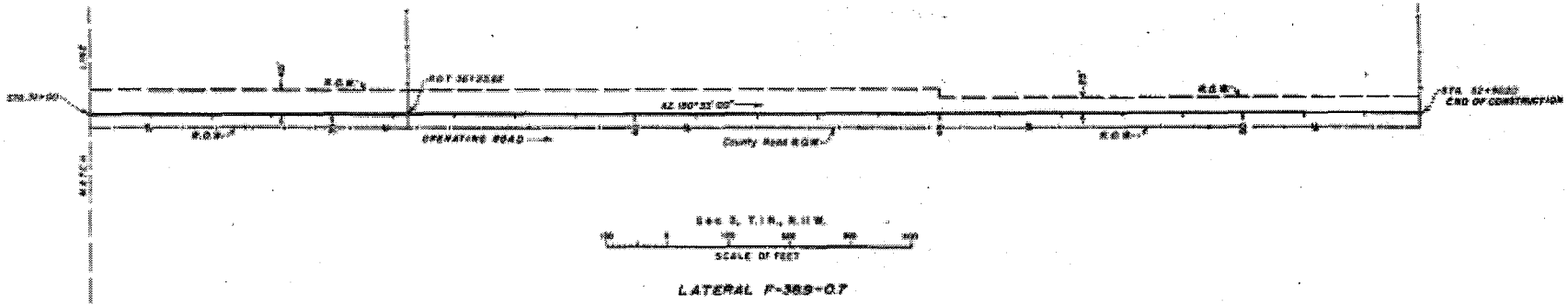
| SECTION | B | D | Q | P | S | n | Z1 | Z2 | W |
|---|---|---|---|---|---|---|---|---|---|
| STA 31+00 TO STA 31+50 | 7.00 | 3.00 | 27 | 0.0 | 0.025 | 0.0250 | 3.0 | 3.0 | 3.0 |
| STA 31+50 TO STA 32+00 | 5.67 | 2.33 | 18 | 0.0 | 0.025 | 0.0250 | 3.0 | 1.5 | 3.0 |
| STA 32+00 TO STA 32+50 | 4.00 | 1.67 | 9 | 0.0 | 0.025 | 0.0250 | 3.0 | 0.0 | 3.0 |

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
MISSOURI RIVER BASIN PROJECT
NORTHWEST DIVISION-NEBRASKA-KANSAS
FRANKLIN LATERAL SYSTEM

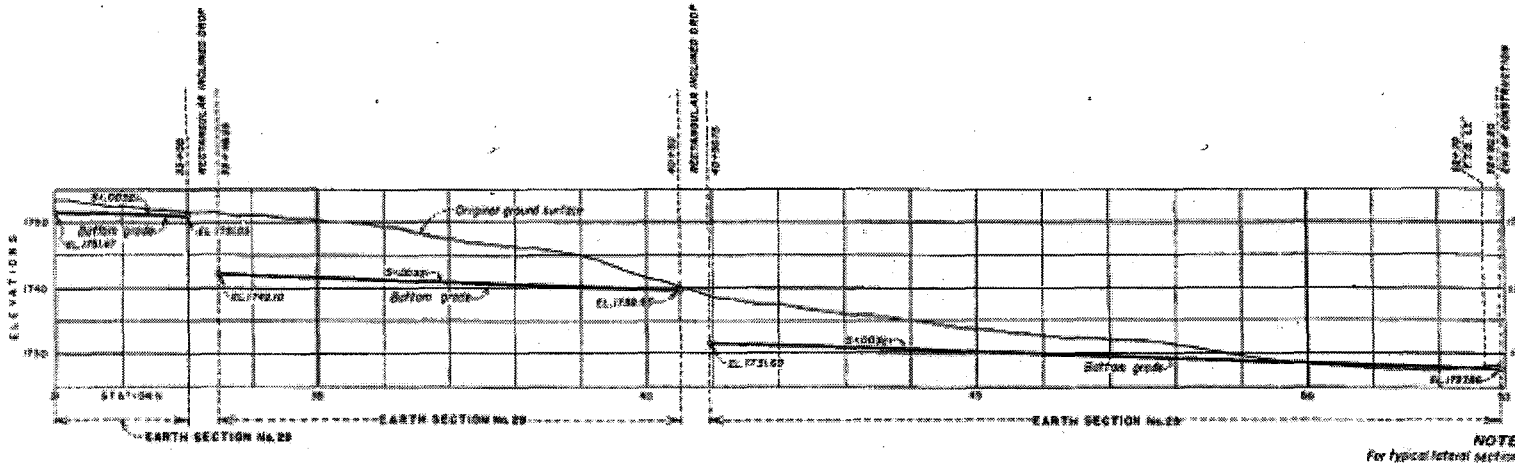
LATERAL F-38.9-0.7
STA. 10+00 TO STA. 31+00
PLAN AND PROFILE

| | | | |
|---|---|---|---|
| DESIGNED | | DRAWN | |
| TRACED | | CHECKED | |
| SUBMITTED | | RECOMMENDED | |

DENVER, COLORADO, APRIL 25, 1957 | 271-701-3584




LATERAL F-38.9-0.7




NOTE
For typical lateral sections, see 271-701-3353.

HYDRAULIC PROPERTIES

| SECTION | A | v | Q | r | R | s | D | d | H | W |
|---|---|---|---|---|---|---|---|---|---|---|
| Earth Sec 29 | 2.03 | 2.23 | 7 | 64 | .029 | 0.0021 | 3.6 | 3.5 | 7.7 | 30 |

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
MISSOURI RIVER BASIN PROJECT
BOSTWICK DIVISION-NEBRASKA-KANSAS
FRANKLIN LATERAL SYSTEM
LATERAL F-38.9-0.7
STA. 31+00 TO STA. 52+90.20
PLAN AND PROFILE

DESIGNED — H.E.K. — SUBMITTED — W.E. Campbell
DRAWN — R.E.P. — RECOMMENDED — R.C. Gilmore
TRACED — W.R. — APPROVED — Chief, Planning Division
CHECKED — — — Regional Director

271-701-3385

BOSTWICK IRRIGATION DISTRICT IN NEBRASKA
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FIGURE 3: Turnout and Meter Installation

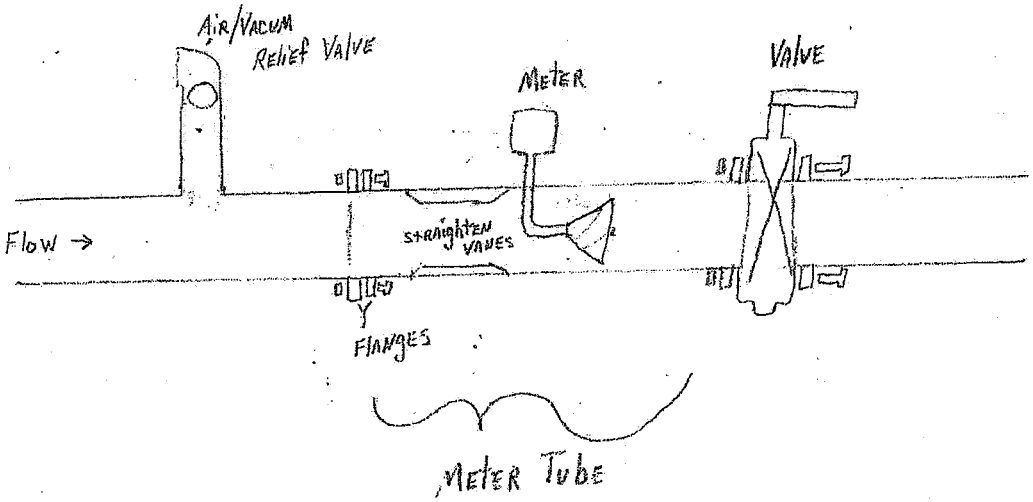

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FIGURE 1: Pipe Installation

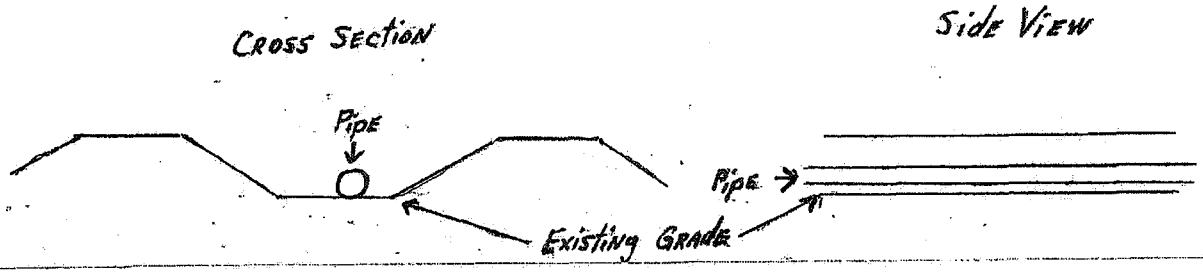


FIGURE 2: Siphon Alternatives