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WaterSmart – Water and Energy Efficiency Grants FY 2014
Funding Opportunity Announcement No. R14AS00001

The South Canal 17.7 Pipeline Gravity Pressure Project

A Project To Reduce Sediment Loading in Waters Tributary to the Snake River From Irrigated Lands; Reduce Overall Water Consumption; and Reduce Electrical Pumping Demands By Converting Lands From Flood Irrigation To Sprinkler Irrigation By Means of a Pipeline Gravity Flow Pressurized Water Supply System

South Board of Control
Homedale, Owyhee County, Idaho
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Technical Proposal

1. Executive Summary

South Board of Control (SBOC), Homedale, Owyhee County, Idaho.

This proposed project the conversion of 700 agricultural acres from flood irrigation to sprinkler irrigation by the installation of approximately 13,400 linear feet (2.54 miles) of PVC piping which will supply gravity flow pressurized irrigation water to the farm units.

This project will produce significant measurable and quantifiable immediate and potential future positive results in the following Criterion areas:

1. Contributions to Water Supply Sustainability. This is a highly significant benefit of this project because it directly impacts an area that is high on the list of sites in Southwest Idaho designated by the Natural Resource Conservation Service as being of special need of reduction of agriculture runoff sediment loading via drains into Jump Creek, tributary to the Snake River.
Government and private entities have been working intensively in this area for the past several years to meet Total Maximum Daily Load (TMDL) goals for Jump Creek. Several independent environmental studies have established that TMD loads in Jump Creek must be reduced by 24-97 percent to be able to sustain the calculated level of TMDL Load at 65mg/L.

This project converts 700 acres of highly erosive farmland from furrow/flood irrigation to sprinklers which will reduce return sediment flows via drains by a conservatively calculated 1,400 tons of silt per irrigation season, a major step towards meeting TMDL goals. A secondary benefit will be the attendant reduction in the spread of unwanted vegetation including noxious and invasive weeds typically found in irrigation drainage.

2. Water Conservation by annually conserving a minimum of at least 1,232 cubic feet per second – 2,443 acre feet – of irrigation water currently lost through open canal travel evaporation, headgate leakage and tailend spill, porous ground seepage and furrow/flood irrigation practices;

3. Energy-Water Nexus by reducing by an estimated 495,500 kilowatt-hours the annual electrical demand required to meet high-lift pumping demands required to provide sufficient water supply necessary when storage water supplies have been exhausted;

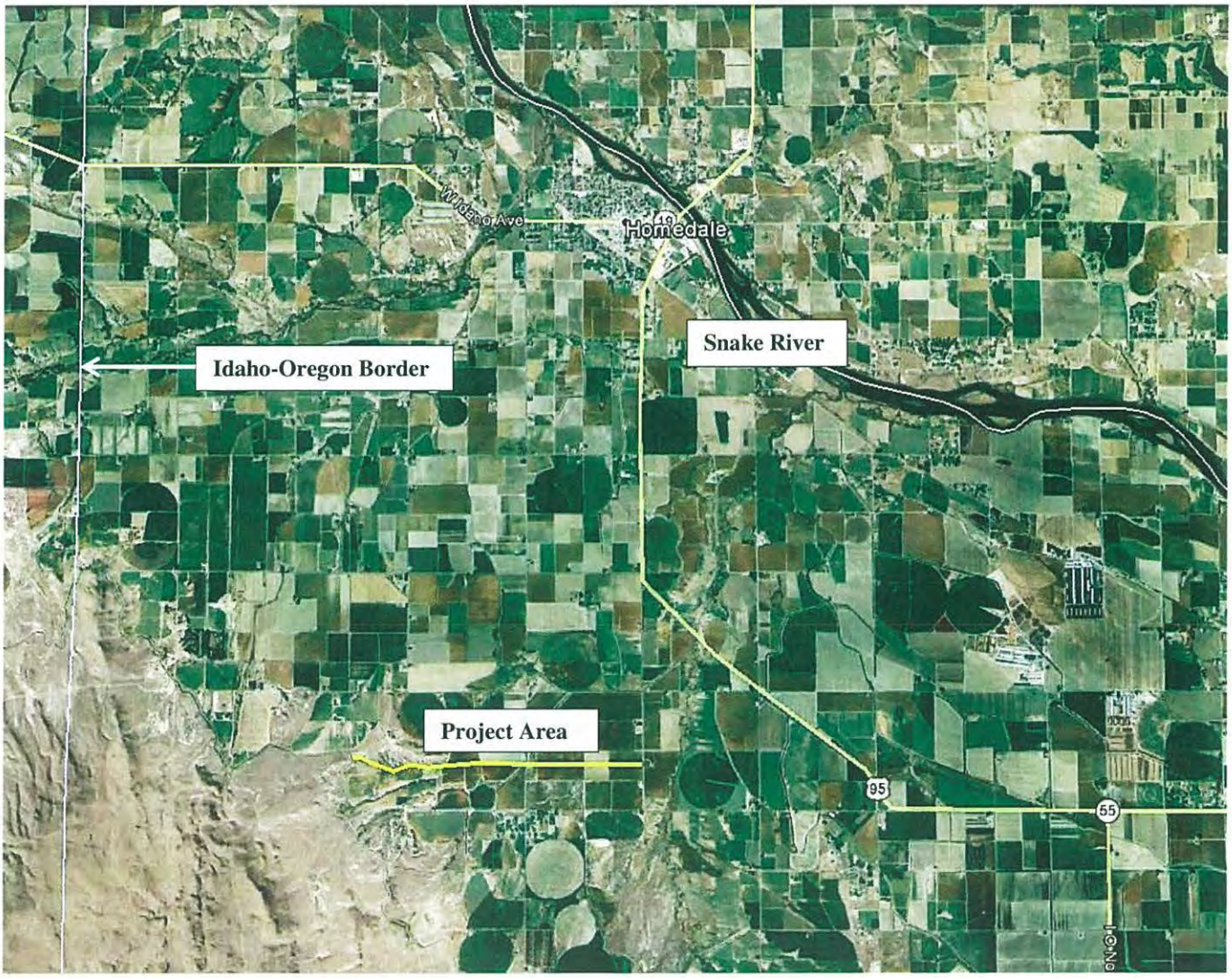
4. Benefit to Endangered Species by creating the potential, depending on conditions, for conserved water possibly to be made available to the Bureau of Reclamation for use in salmon recovery effort;

5. Water Marketing by potentially making conserved water available via the Idaho Water Bank or exchanges to other water users in the area during times of need; and

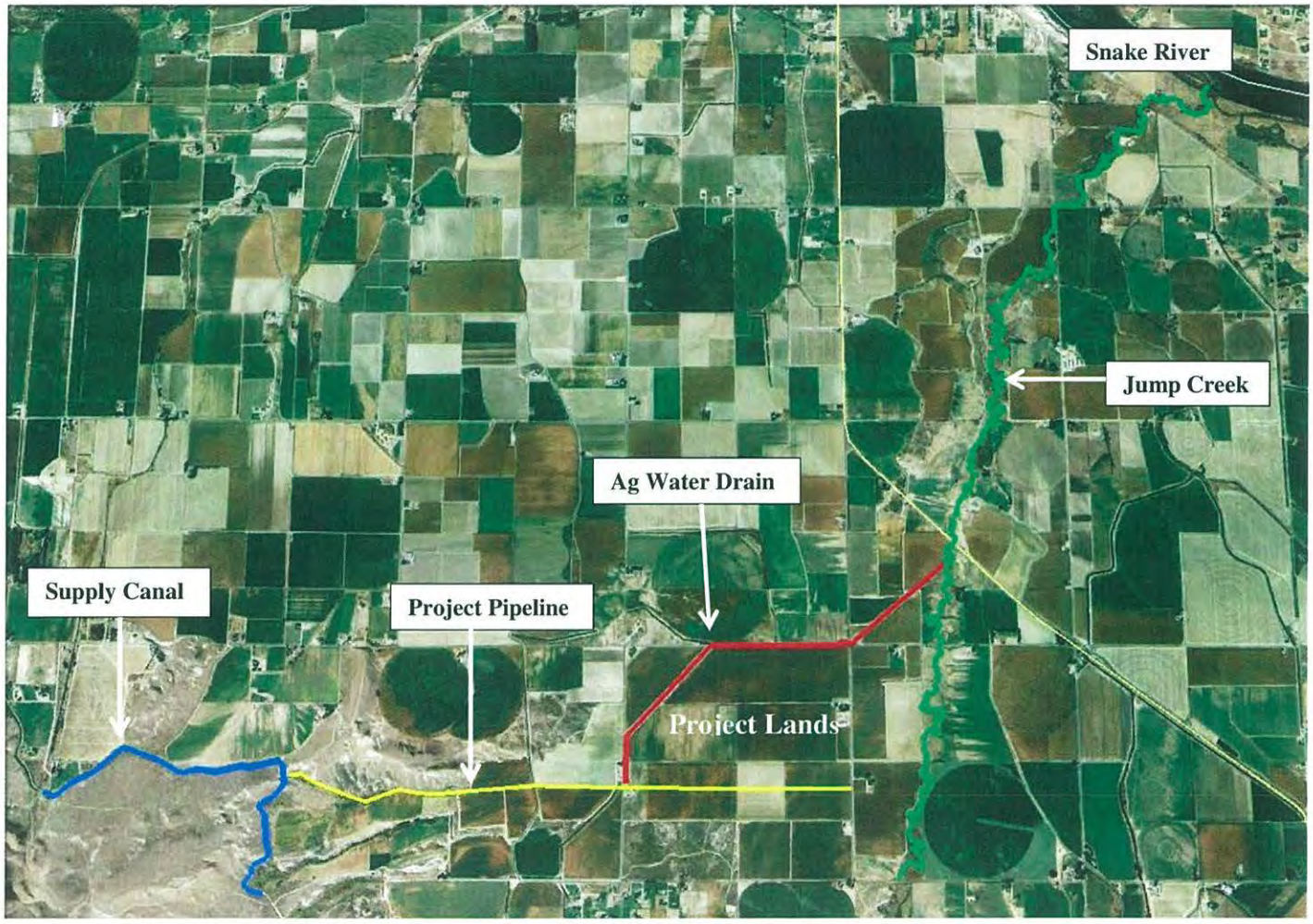
If approved, work on the project would be divided into two parts because work can only be done during non-delivery months when canals are empty. Part 1 would commence Oct. 15, 2014 and end approximately Apr. 1, 2015 while Part 2 would commence Oct. 15, 2015 and be completed by Sept. 30, 2016.

2. Background Data

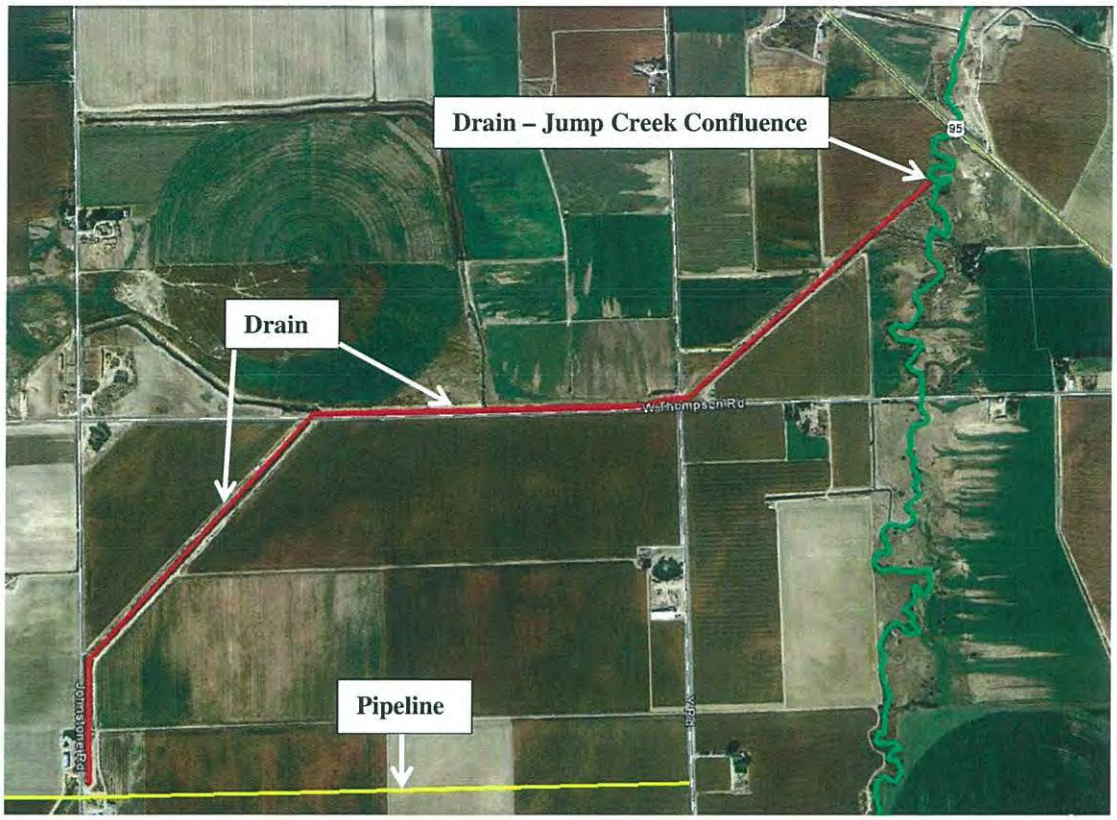
This illustration shows the general project area. It is located approximately 5.6 miles south of Homedale, Owyhee County, Idaho. It is in the southwest corner of Owyhee County, east of the Idaho-Oregon border. The yellow line is the pipeline that will be installed.



This illustration shows the specific elements of the proposed project. Water from the South Canal supply canal (in blue) will be diverted via a new pipeline(in yellow) approximately 2.54 miles to the east for delivery to 700 acres of agricultural lands. The gravity flow water, pressurized by a 190-feet hydraulic head resulting from the difference in elevation between the supply point and the irrigated lands, then makes possible a conversion from flood and furrow irrigation to sprinklers without the need for individual electrically powered unit pumps. The pressurized water in the pipeline replaces water presently pumped into an open lateral, saving 2,243 acre feet of water annually lost to evaporation, seepage, etc., plus 495,504 kilowatt hours of electricity saved by reduced lateral supply pumping. The conversion to sprinklers also will reduce by 1,400 tons of sediment that annually flows as irrigation runoff into an agricultural drain (in red) that empties into Jump Creek (in green), eventually discharging into the Snake River.



The upper photo depicts the agricultural drain (in red) that carries sediment-laden irrigation runoff from lands in the project area to nearby Jump Creek (in green). The lower photo shows the confluence of Jump Creek and the Snake River, located approximately 2.6 miles to the north of where the drainage enters Jump Creek. The sediment plume entering the Snake River is clearly visible. The project will eliminate 1,400 tons of sediment every irrigation season.



a. Water Rights:

The South Board of Control is the operating agency for the Gem Irrigation District (GID) located in Owyhee County, Idaho and the Ridgeview Irrigation District (RID) located in Malheur County, Oregon with a combined total serviceable area of 44,833 irrigable acres. The project receives water from Owyhee, Reservoir, in South East Oregon and the Snake River, Succor Creek and Jump Creek diversions in Southwestern Idaho. The project is operated under contract with the Bureau of Reclamation and has Old Gem, Succor Creek and Owyhee Reservoir Rights.

b. Water Supply:

In Idaho, Gem Pumping Plant on the Snake River has 9 pump units having 6,000 total horse power, using 18 to 20 million Kilowatt hours annually and providing a water delivery of 356 cfs. The Owyhee Reservoir has a capacity to deliver 490 Cubic Feet to the head of the district's South Canal Infrastructure, designed to deliver water to Old Gem, New Gem and Ridgeview.

c. Crops-Users:

Typical crops in the Owyhee Project are potatoes, sugar beets, corn, barley, wheat, alfalfa hay, beans, pasture for cattle. The District also delivers water to the Cities of Homedale and Marsing Idaho, a total of 632.49 acres leaving a total of 44,200.54 Acres for Agriculture. The District has at present a total of 1,200 water users plus the two municipalities. The amount of water served per acre totally depends on the Owyhee Reservoir annual storage. The allotment is set by the amount of water in storage at the beginning of the water season. The more water left in storage helps not only the South Board but the Owyhee Irrigation Project in Oregon. This project services close to 70,000 acres under the Owyhee Reservoir. The South Board has approximately 120 miles of main canals, more than 100 miles of lateral canals and more than 150 miles of drain.

d. Applicant's Water system

The South Board of Control is primarily an agriculture irrigation delivery system. South Board brings water from the Owyhee Reservoir to the South Canal next to Adrian, Oregon. South Canal is the high system of the project and delivers water to 6,784.90 acres to Ridgeview Irrigation District in Oregon, 15,106.67 acres in new Gem and a supplement supply to Old Gem to keep power rates at a minimum. The South Canal flows 38 miles from the head at Adrian, Oregon to the end, two miles south of Marsing, Idaho. On the Snake River at the end of the South canal the Gem Irrigation Plant has 9 pumps, a total of 6,000 plus horse power. Four electrical pumps – one of which will be addressed in this proposal – feed the A canal with a lift of 190 feet. Three pumps feed the B canal, a lift of 150 feet. Two pumps feed the C canal with a lift of 70 feet. All three canals then gravity flow approximately 10 miles ending at Succor Creek tributaries next to Homedale, Idaho.

e. Renewable Energy Element

Although not the focus of this application, this project does continue the foundation development of the necessary critical infrastructure for SBOC to potentially move towards the development of renewable energy capability. The installation of PVC piping, coupled with first-rate gravity flow pressure due to feeder canal elevation, presents an excellent opportunity for SBOC to consider developing in-line small hydropower development. SBOC has already started its preliminary research and investigation in this area.

f. Previous Bureau Relationships

Since 1966, the South Board of Control has installed approximately 75,000 feet of pipe through private and Bureau of Reclamation grants.
SBOC has actively pursued funding from the Bureau of Reclamation Snake River Area Office for the following Water Conservation Grants:

- No. 1425-03-FC-10-04320 Pipeline and Water Measurement Projects $100,000.00.
- No. 1425-02-FC-10-9340 Lateral Piping and Installation of a broad crest weir $25,000.00.
- No. 1425-03-FC-1S-9970 Water Measurement and SCAD Improvements $19,250.00.
- No. 1425-FG-1S-1071 Lateral Piping Project $30,000.00.
- No. 1425-06FG1S1206 Lateral Piping Project $25,000.00.
- No. 1425-08FG1S1344 Lateral Piping Project and Measurement Improvements $43,850.00.
- No. R11SF80303 Lateral Pressurization Project $300,000

3. Technical Proposal: Technical Project Description

This project has been engineered by the local district engineer with the Natural Resources Conservation Services.

This project consists of installing a total of approximately 13,400 linear feet (2.54 miles) of 10-24 inch PVC piping with pressure capacity ranging from 80 PSI to 125 PSI. The pipeline will divert water via a headgate structure from the A Canal to 700 acres of farmlands currently irrigated by furrow and flood irrigation. The new supply of gravity flow, with a hydraulic head of 190 feet of altitude difference from its starting point, will provide pressurized water to farm units that will be converted to sprinkler irrigation without the need for farm unit pumps.

While the conversion made possible by the pipeline pressurized water will not replace open canals, it will reduce the need for 45 CFS of water to be high-lift pumped from the A Pump Station to meet the typical 27 days of summer irrigation supply demands in the 700-acre project lands.

The work involves initial site preparation with a grader to set survey stakes to establish the proper dig grade. New head structures and screening systems will be installed. Then a Caterpillar excavator with a survey crew of four workers will then dig the trench to grade level.

Sandy silt material will be hauled in for pipe bedding due to the gravel material soil in the area. Pipe will then be placed and hooked in 20-feet intervals.

All required appurtenances including farm delivery points and meters will be installed at required points as installation continues. When finished, each farm unit will have a constant pressurized head with an accurate, individual metered system.

The initial soil backfill of the project will be done with a dozer. A grader will then be used to do finish grading and project restoration.

If approved, work on the project would be divided into two parts because work can only be done during non-delivery months when canals are empty. Part 1 would commence Oct. 15, 2014 and end approximately Apr. 1, 2015 while Part 2 would commence Oct. 15, 2015 and be completed by Sept. 30, 2016.

All equipment used in the project is owned by SBOC and all workers on the project will be SBOC employees who are experienced in pipeline installation. Overall responsibility for the work will rest with the SBOC general manager while the SBOC foreman provides direct daily supervision.

Evaluation Criterion A: Water Conservation

The 10-year average recorded water supply is 232,763. Annual water deliveries over the past 10 years range from a high of 159,294 acre feet to a low of 128,523 acre feet with the 10-year average being 148,716 acre feet. Using those two figures, SBOC has calculated that the 10-year average transport loss is 84,047 acre feet.

Subcriterion No. 1 – Water Conservation

1 (a) Quantifiable Water Savings

Direct water use savings from this project is projected to be approximately of 2,443 acre feet annually. The savings come about in two distinct areas:

- The NRCS has provided SBOC with estimates that show the annual water savings resulting from conversion to sprinkler systems made possible by the project will be at least 1,332 acre feet saved. The water saved comes about as a result from sprinkler efficiency compared to furrow irrigation in which a good portion of the water simply seeps into the ground without any benefit to roots of the crop.

- SBOC has calculated that the estimated annual ditch water savings resulting from the reduced need for A Canal water by using the diversion from the South Canal would result in an annual reduction in lateral loss of 1,110 acre feet. This conservative figure was determined using water delivery and spills information compiled in a daily log book, daily water user orders entered on cards and then compiled into a computer, water master and employee experience-based

estimates of headgate leakage, open canal travel evaporation loss, headgate and end spills and seepage and other similar episodic reckonings. The estimated savings were calculated as conservatively as possible and will in most likelihood be higher than estimated.

The conserved water will be used in any or all of three general ways.

- The conserved water can be passed on through to the tail end of the Gem system thus reducing the need to use supplemental water pumped from the Snake River. This will yield a reduced demand on Snake River water supplies and also provide a considerable energy savings and cost reduction since the pumps, ranging from 400 to 1,000 horsepower, will not need to operate as often.
- During periods of drought, the conserved water can be allocated to improve individual farm unit quotas and protect crop production.
- The conserved water can be left in the Owyhee Reservoir where it can be used to assist the 100,000 total acres that are supported by the Owyhee system or potential become available for marketing to other entities.

1. (b) Improved Water Management

The project will provide improved greatly water management through the SBOC system. Not just from the savings, but for the entire average of 148,716 acre feet of water supplied from Owyhee Reservoir.

Projected irrigation year water allocations for Districts and individual farm units can be better refined. Previously, water needs could only be determined when they arose which then would trigger supplemental pumping to meet needs. The extra 2,443 acre feet of water can be included in pre-irrigation calculations that giving users a better grasp of water delivery outlooks and a more accurate picture of when, if and how much supplemental pumping will be required.

This water-in-the-back-pocket advantage provides water managers a much needed water management flexibility in a geographic region in which every drop counts and in which available storage and natural flow supplies often cannot be accurately determined until just prior to the start of the irrigation season.

To fully grasp the inherent benefits provided by this project, it must be put in the water supply environment context in which Owyhee farmers and irrigation systems operate. This portion of Idaho is a geographic region in which the yearly amount of storage and natural flow supplies is almost totally snow pack dependent. Year to year projections of the water supply typically cannot be accurately determined until just prior to the start of the irrigation season. This "every drop counts" irrigated agricultural reality means that an annual 2,443 acre feet of extra "water-in-the-back-pocket" provides water managers a much needed advantage and flexibility that cannot be overstated. What may seem a relatively minor water management advantage in point of fact can truly become the difference between success and failure at the individual farmer level.

Given that situation, then the percentage of water better managed amounts to 100 percent of the annual average water supply.

$$\frac{148{,}716}{148{,}716}$$

Subcriterion No. 2 – Percentage of Total Supply:

The savings of this project, is a relatively small percentage of the total – 2,443 acre feet from an average total supply of 148,716 acre feet – just 1.6% of the total. However, it is an understatement to say that this savings plays a far great role that the figures would indicate. It is a factual statement in both theory and practice that the management flexibility provided by in fact results in the ability to far better manage the entire yearly supply. Because the conserved water can be utilized in various management combinations – i.e. stored, wheeled through to users down the line, equally allocated to supplement farm units, made available for rental through existing water banks, released to the entire Owyhee system, or any and all, etc., a far more finely tuned water delivery process can be developed.

Subcriterion No. 3 – Reasonableness of Costs:

Total project cost, both BoR grant and local funding) is currently estimated at $633,354. The annual acre feet conserved is 2,443 while the total acre feet better managed will be an average of 148,000 acre feet (see paragraph above for explanation). The expected life of the project is estimated to be 50 years. That yields a reasonableness of cost figure of .0856.

$$\frac{633{,}354}{148{,}000 \times 50}$$

Evaluation Criterion B: Energy-Water Nexus

The nexus of water and energy plays a pivotal role in this application. in both an immediate and future context.

1. Implementing Renewable Energy Projects Related to Water Management and Delivery.

This piping project will expand the necessary physical and environmental framework for a potential quantum step towards future implementation of renewal energy capability within the SBOC system through the use of in-line small hydropower units. In that aspect, it is crucial to view this project as the means to the end of dual purpose water use: irrigation and hydropower.

Currently there are no such projects in use in the SBOC system because the is the continuation of an established plan to first create the foundation for a complex, interrelated potential small scale hydropower system. Once completed, the strong gravity flow water head provided by the higher elevations of this pipeline the canal that feeds the piping system, coupled with the immediate

availability of electrical transmission lines, yields a unique opportunity for power generation that can be fed into the general area power grid or used to off-set the huge electrical power demands of the supplement pumping operation, the costs of which must be incurred by members of the District.

SBOC managers have already identified at least two potential sites where the combination of water head and transmission line availability coincide. Some initial research on in-line small hydropower units has been done and appears promising.

It is our belief that the energy-water nexus can only be truly developed in those situation where the potential exists to create it. Stated differently, the desired effect cannot be achieve if the factors needed to make it a reality does not yet exist. That type of situation we believe represents the very essence of the government-private sector grant relationship. That potential is waiting to be exploited in this project.

2. Increasing Energy Efficiency in Water Management

The most immediate and quantifiable increase in energy efficiency resulting from this project will be the reduction in supplemental water supply pumping that is currently required when in system water supply runs low. The Gem Irrigation Pumping Plant uses nine pumps totaling 6,000 Hp to supply high lift water to three canals to meet the supplemental needs. These pumps consume 18-20 million Kilowatt hours of electricity annually; therefore, the ability to reduce the need for pumping produces a direct, bottom line energy efficiency that amounts to a reduction of thousands of kilowatt hours.

Using data supplied by the Bonneville Power Administration from which SBOC purchases power, SBOC calculated the annual kilowatt hour savings resulting from reduced pumping made possible by reduction of 2,443 acre feet of water that is annually high-lift pumped to the A Canal system an average of 27 days every irrigation season.

SBOC made those calculations using 2,443 acre feet of water via the average lift of one A Canal supply pump for 27 days. The conserved water results in a reduced pumping electrical demand of 495,504 kilowatt hours at an estimated electrical power cost of $440.45 per day.

Evaluation Criterion C: Benefits to Endangered Species

The proposed project has the potential to provide a direct benefit to recovery efforts for fall Snake River Chinook salmon; spring/summer Snake River Chinook Salmon; and sockeye Salmon, all of which are Federally-recognized endangered species. It also will benefit Snake River steelhead and Snake River white sturgeon, both of which are listed as Federally-recognized threatened species.

1. This benefit accrues because increased stream flows plus the need to maintain historic streamflow levels in the Snake and Columbia Rivers are established, critical elements in salmon,

recovery efforts in the Pacific Northwest, while the maintenance of historic streamflow levels in the Snake River is a lynchpin in the efforts to maintain steelhead and white sturgeon habitat.

2. Idaho irrigation water is purchased on a willing seller basis or rented via Idaho water banks or the Oregon Reservoir Storage program by the Bureau of Reclamation to supply annually at least 429,000 acre feet of water to make possible the downstream flow augmentation that meets the needs of the increased flow strategy followed in salmon recovery efforts and to maintain flows for steelhead and white sturgeon protection.

The annual savings of 2,443 acre feet of water produced by this project has the potential when water supplies permit to be considered by the SBOC for being made available to the BoR via water bank rental for use in flow augmentation or water exchange efforts in direct support of endangered/threatened species efforts. It is a well established fact that the Federal government annually has difficulty in securing sufficient water for recovery support. This project would open another productive water rental source in support of those efforts.

Although it was covered earlier in the area of Contributions to Water Supply Sustainability, it is also important to note the water quality improvement produced by this proposed project as it relates to endangered species benefits and reduction of sediment flows to the Snake River. NRCS guidelines estimate that this project will eliminate 1,400 tons of sediment each irrigation season. That is 1,400 tons of silt contaminants that do not enter the waters of a river that is a key ingredient in the recovery and/or protection of endangered and threatened species of fish. Additionally, the project results in a marked reduction in the use of herbicides which potentially can make their way via drains to the Snake River.

There is also a secondary environmental benefit of the project that should be noted in any discussion of species protection. Included in the project design is water screening at the project heads which will dramatically reduce or eliminate contamination of the water by weed seeds, including noxious weeds. That is currently not possible given the nature of open canal water transmission.

Evaluation Criterion D: Water Marketing

1. The annual water savings of at least 2,443 acre feet creates an excellent water marketing possibility which can potentially become part of the SBOC operation.

2. Although first priority use of any water saved would always be to meet the demands of the SBOC system users, abundant water years would potentially provide the opportunity for the water to be made available to other users via the Idaho Water Bank process. The water would be retained in Owyhee Reservoir and then marketed to irrigation entities downstream from Owyhee Dam or to entities or projects involving the Snake River. The availability of the saved water also would present the opportunity for a variety of situation specific water exchanges.

3. Should the SBOC market the conserved water, it would be made available to a wide variety of water users in the immediate vicinity and elsewhere. For example, irrigation districts currently using Owyhee Reservoir Water and the Bureau of Reclamation for in-stream flow augmentation

would be two major opportunities. Idaho also has a long history of using simple or sophisticated rental water exchange projects to resolve one-time or ongoing water conflicts where, for example, rented water is used to replace water taken out at some other point in the system. The conserved water would be an excellent candidate for that type of situation.

4. The legal issues involved in any potential water marketing are already in place plus being codified in Idaho water statutes.

5. The water market potential exists year round; however, the primary duration of the annual water market would be April-October, the designated irrigation season. Still, the water market would be available throughout the entire calendar year since flow augmentation, water exchange projects, etc., are not confined to irrigation season.

Evaluation Criterion E: Other Contributions to Water Supply Sustainability

1.

a. The project will address water shortages that regularly arise due to the cyclical drought conditions in which the Owyhee Basin finds itself. A snowpack-dependent system such as is found in the Basin means low snowfall means short water supplies. With approximately 100,000 acres of agricultural lands dependent on the water stored in Owyhee Reservoir, there certainly is a heightened demand for what water exists in any given year.

A relatively unique situation also exists insofar as how the conserved water actually reduces demand for water on the Snake River. That arises because water passed through to the Gem Irrigation District can take the place of supplemental water that would have to be pumped from the Snake River. That can be a small, but significant issue, in a river system where maintenance of flow levels is required on behalf of downstream fisheries that include endangered and threatened species.

b. Depending on the supply situation in any given year, the conserved water could be marketed to users outside of the immediate area. The significance depends on the specific situation, so perhaps a simple example might help illustrate just on potential circumstance.

Eastern and Southern Idaho water users continually face short water supplies. Lawsuits and legal battles over water priority are common and on going. However, water exchanges have become a common solution. That is a case, for example, where water removed hundreds of miles upstream might be replaced by water supplied to the river at some point downstream. That has created a de facto Idaho wide water market where all entities – not just irrigators – needing additional water seek out entities with water available.

c. Five Idaho tribes possess water rights tied to the rivers that serve the SBOC region – the Owyhee River passes through the Shoshone-Paiute Tribes' Duck Valley Reservation upstream

from Owyhee Reservoir; the Shoshone-Bannock Tribes have water rights on the Upper Snake River in Eastern Idaho; and the Nez Perce Tribe has water rights on the Snake River downstream from the area that are codified in the Nez Perce Agreement between the Tribe and the State of Idaho. While it is not being done at present, the conserved water from this project thus becomes available for exchange or supplement use should those tribes find it to their advantage, especially if water use conflicts continue to escalate in Idaho.

d. The project will annually result in up to 2,443 acre feet of water being stored in Owyhee Reservoir and therefore potentially available in the Owyhee Basin where the SBOC project is located.

2. There is widespread support for this project. The concept, goals and elements of the project have been discussed, formally and informally, with a wide range of government and private sector entities that know and understand the nature of the area and the water, power, environmental and other benefits. These entities include: U.S. Fish and Wildlife Service, Idaho Department of Fish and Game, Idaho Department of Environmental Quality, Idaho Power Corporation, Bonneville Power Administration, , Resource Conservation and Development Council, Owyhee Soil Conservation District, Owyhee Watershed Council and individual landowners, both inside and outside the SBOC.

The particular significance of this wide range of support is that it stretches across both governmental and private sector interests. It is supported by both regulatory and free market representatives, by recreational and business interests, by environmental and development orientated representatives. Idaho is an extremely conservative state in which conflicts between these types of entities is common. That is especially so in the water arena where there are often mutually exclusive demands on the resource. Therefore, to have such broad and mutually agreed support is indeed unusually significant.

3. The detail and concept of the project, coupled with its realized benefits, will be promoted by SBOC through the media and other professional and private channels so it can serve as an example to the water user communities as to how a carefully thought out project can result in water quality and sediment reduction improvements while at the same time conserving both water and energy. The unique feature of using gravity flow water to eliminate individual farm unit electrical sprinkler pumps, plus its demonstrated ability to used conserved water to reduce traditional pumping operations clearly demonstrates how projects can skillfully integrate both water and energy components.

Ultimately, perhaps the most impressive value of this project may be the multifaceted impressive results which establishe an outstanding template for how imaginative, innovative water management projects can benefit multiple areas of concern. This is a relatively simple engineering project involving the installation of a pipeline. But the synergistic results of that project touch a multitude of areas: water conservation, power demand reduction, water quality enhancement, improved farming procedures, prevention of water demand conflicts, heightened public confidence in the water management community, reduction of the potential for conflict between environmental and the farming community, and also the enhancement of farming and

water management professions. This project represents the best of the concept of good stewardship of the land. And all that from one simple PVC pipeline.

Evaluation Criterion F: Implementation and Results

1. Project Planning

(1) The South Board of Control currently has a Water Conservation and Management Plan in place. The plan has broad range of goals designed to continue to improve the district's distribution system, to improve water loss, automation, maintenance and delivery control. The State of Idaho has a Drought Emergency Plan established.

(2) The local Owyhee Soil and Conservation District and the USDA Natural Resource Conservation Service furnished a cost share in the engineering and design of this project. The NRCS) also supplied the engineering and surveying of this project. Because of its interest in the nearby Snake River and issues such as daily sediment loading and power savings, NRCS has worked on this project many hours. Informal engineering support in the area of power conservation and usage has been supplied by the Bonneville Power Administration.

(3) The project was also intentionally designed to further a variety of planning goals from Federal, State and local agencies in such areas as sediment flow, water quality, water conservation, reduction in chemical use, reduction in nitrates/phosphate fertilizers, farm unit and infrastructure improvements.

2. Readiness To Proceed

Engineering plans are in place and the project is ready to proceed. It will be done in one phase.

SBOC expects to begin preliminary ground work October 20, 2014. The 17.7 lateral will consist of a survey, structure removal, lay and bed pipe, finish grade, and install head screen structure. The 17.7 lateral project will be installed and complete by April 1, 2016.

The project will start at the South Canal and proceed east alongside the 17.8 lateral for 5,860 feet with 24-inch, 80 psi pipe and a total hydraulic head of 141 feet until it intersects the A Canal, which it will bridge.

The next stage will run 2,240 feet east until it intersects Johonstone Road which it will cross.

The third stage will continue 2680 feet east with 190 feet hydraulic head of 18-inch 125 psi pipe.

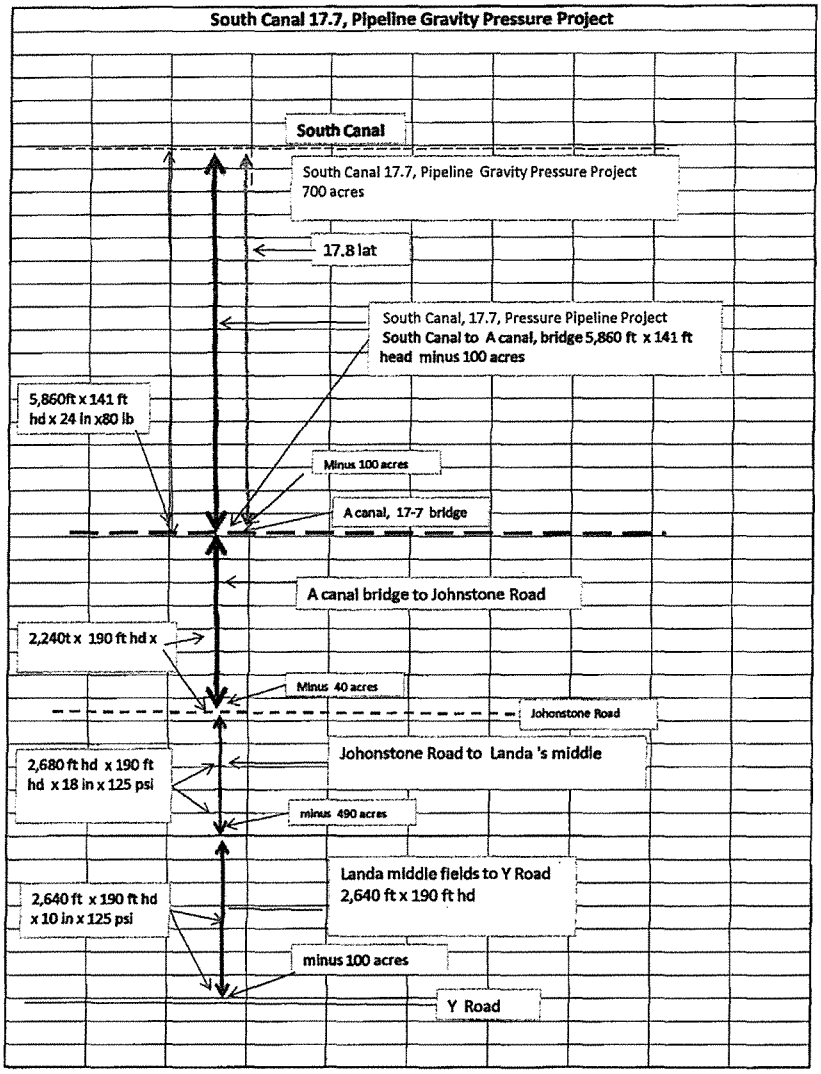
The fourth and final stage will be continue east for 2,640 feet with 190 feet of hydraulic head via 10-inch, 125 psi piping terminating at Y Road.

The project has NRCS engineering and will be laid by NRCS specifications. Head screen structure will be installed by the 2015 water season.

All pipe will have 36 inches of cover bedded in silt loam soil if needed, finish graded, and all property seeded to fit location needs

3. Performance Measures

Water deliveries are recorded and compiled at the end of each season. These will be compared to previous years to determine the degree of water conserved. Additionally, detailed electrical records are kept which can be compared to previous years to determine the degree to which the project reduced pumping electrical demands. Records will be kept detailing any water marketed to other entities.



Evaluation Criterion G: Connection to Reclamation Project Activities

Congress authorized the construction of the Owyhee Reservoir in 1926 and established two divisions, one of which was the SBOC. That BoR contract exists to this day and this proposed project is proposed under that contract.

The SBOC receives Bureau of Reclamation water from Owyhee Reservoir. The specific lateral canals involved convey that water and are under the infrastructure of the BoR. The proposed project is located in the Owyhee Basin where Owyhee Reservoir is located. The conserved water will be left in Owyhee Reservoir and will be used to benefit projects established under BoR contracts.

Performance Measure for Quantifying Post-Project Benefits

There are several different methods available by which post-project benefits can be determined and examined.

A detailed water accounting process already exists within the SBOC. This system will permit the water delivery comparison between pre and post project irrigation periods. That will provide a quantified method of determining the water savings resulting from the project.

Detailed records are also maintained by the SBOC for conserved water that would be passed through to Gem Irrigation and used to reduce high lift supplemental pumping. Gem maintains strict fiscal accounting records of power use – as does the power supplier BPA. That provides a means to directly compare irrigation electrical use pre and post project.

Other records are maintained detailing any of the conserved water marketed to other entities through actions such as entering the water in the water bank system, water exchanges, etc.

Agricultural Operations Agreement [Public Law 111-11, Section 9504(a)(3)(B)]

One of the specific elements of this project will result in the conservation of irrigation water. Accordingly, and in accordance with Section 9504(a)(3)(B) of Public Law 111-11, the South Board of Control hereby agrees and stipulates:

- Not to use any associated water savings to increase the total irrigated acreage of lands inside the SBOC jurisdiction; and
- Not to otherwise increase the consumptive use of water in the operation of the SBOC, as determined pursuant to the law of the State of Idaho.

Environmental and Cultural Resources Compliance

The responses to the questions falling under this category have been largely answered within the context of the Technical proposal. However, those that have not are answered as follows:

1. Will the project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)?

The project will not impact the surrounding environment. All pipeline installation will be done on either SBOC water distribution system lands or agricultural lands current being farmed. The limited nature of the installation, i.e. trenching and backfill, will be minor in nature and therefore will not affect air quality. The project will be done when the canal systems are dry so there will be no impact on water. None of the lands through which the pipeline will travel are considered to be animal habitat.

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?

SBOC is not aware of any.

3. Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "waters of the United States?"

There are none. However, the project will result in significant reductions in TMDL sediment loading – 1,400 tons per irrigation season – outside the immediate project area due to the reduction in flood and furrow irrigation runoff into drains that eventually empty into waters tributary to the Snake River which may fall under CWA jurisdiction.

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

None of which SBOC is aware.

5. Are there any known archeological sites in the proposed project area?

None of which SBOC is aware.

6. Will the project have a disproportionately high and adverse effect on low income or minority populations?

No.

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

No

Required Permits or Approvals

No permits or approvals are required because all work will be done on lands included in the SBOC easement exemptions.

UNITED STATES DEPARTMENT OF AGRICULTURE

NRCS

Natural Resources Conservation Service
9173 W Barnes Drive,
Boise, Idaho 83709-1574
Telephone: 208-378-5700

SUBJECT: Southboard of Control request for support letter for pipeline project planned from the South Canal down passed Johnstone Road, Marsing, Idaho.

Date: 1-7-2014

TO: Granting Authority/Funding Agency

File Code: Eng-210

FROM: Natural Resources Conservation Service

The Natural Resources Conservation Service (NRCS) has worked successfully on numerous projects with the Southboard of Control. Their desire to conserve water and reduce agricultural runoff is well known. The NRCS along with the Owyhee County Conservation District have successfully offered both technical and financial assistance to eligible private landowners in the past, while maintaining an excellent working relationship with Southboard.

The proposed lateral replacement will be designed in accordance with the Southboard of Control's delivery policy and procedures. The gravity pressurized pipeline will improve delivery efficiency, and eliminate pumping requirements and their associated costs on approximately 700 acres. The new system would also convert currently surface irrigated acres to sprinkler irrigation thus conserving water and significantly reducing runoff that would normally enter Jump Creek (TMDL listed stream).

NRCS is in full support of this project. However if the benefitting landowners do not wish to participate in the Environment Quality Incentive Program or have not arranged financial assistance our technical assistance cannot be guaranteed nor could we ensure that the project is designed and installed to meet NRCS *Standards and Specifications*. Due to state wide project obligations that are currently funded our assistance for this project would be, "As time Permits".

If you have further questions or comments don't hesitate to contact our local NRCS County Field Office in Marsing, Idaho. (Local contact ~ Stacy Thronbrugh, District Conservationist at 208-896-4544 ext. 101.)

Julie Phelps

Julie Phelps, Civil Engineering Technician
NRCS, Boise State Office

Owyhee Watershed Council
106 Owyhee Street
P.O. Box 275 ◦ Adrian, OR 97901
Telephone: (541) 372-5782 ◦ Fax: (541) 372-5785
Nicole Sullivan-Coordinator
Email: nsullivanowc@qwestoffice.net

January 9, 2014

To Whom It May Concern,

I would like to extend support for the South Canal 17.7 Pipeline Gravity Pressure Project proposed by South Board of Control Irrigation District. This project will allow area landowners to convert 700 acres of flood/furrow irrigated cropland to sprinkler irrigation and eliminate irrigation tail water flowing into Jump Creek. This project will greatly reduce sediment and nutrients flowing into Jump Creek and ultimately the Snake River.

This project is consistent with a basin wide effort to improve water quality in the Mid Snake-Succor Creek Subbasin by reducing irrigation-induced erosion. The project is located within the Upstream Snake River Segment of the Snake River-Hells Canyon TMDL. Flow in this segment is a result of seasonal precipitation events, upstream and tributary catchments and irrigation diversions/returns. This segment of the Snake River is on the Idaho and Oregon 303(d) list for the following pollutants: bacteria, dissolved oxygen, mercury, nutrients, pH, sediment and temperature.

The Owyhee Watershed Council has worked with the South Board of Control Irrigation District, area landowners, and NRCS on water quality improvement projects throughout the past 10 years with positive and successful results. The council would like to see those results continue in the future. The South Canal 17.7 Pipeline Project will be a great project for continuation of collaborative partnerships, and will provide significant water quality improvements to Jump Creek and the Snake River.

Thank you for your time and consideration.

Sincerely,

Nicole A Sullivan
Coordinator
Owyhee Watershed Council

South Board of Control, Owyhee Project

P.O. Box 67
Homedale, Idaho 83628
Phone 337-3760

Request for Proposal no. R14AS0001

Resolution
Applicant's Name: SOUTH BOARD OF CONTROL

Whereas the South Board of Control, District Board of Directors have reviewed and support the so-named 17-Lateral Gravity Pressure Project.

Whereas South Board of Control is capable of providing its share of the funding or in-Kind contribution, specified in the funding plan; and

Whereas if selected for a Challenge Grant, South Board of Control will work with the Bureau of Reclamation to meet established deadlines for entering into a co-operative agreement and complete work as agreed.

Now therefore, South Board of Control of Directors approves the submittal of a Watersmart 2014 Grant and accomplish the above.

Date 1/14/14

Authorized Signature _____
Chairman, South Board of Control

Attest Ron Kuster
South Board of Control, District manager

South Canal - 17-7 Lateral							
WaterSmart:							
Water and Energy Efficiency Grants for FY 2014							
Budget Narrative							
Project Hours 60 days x 480	**Hours**	**Lin/ft**	**cost/ hr**	**sub/total**	**in-kind**	**BOR**	**Total**
1. Project Manager	140		$29.00	4,060			
2. Heavy Equipment, Operator x 3	1,080		$15.91	17,183			
3. pipe installation crew 5 men	2,200		$15.91	35,002.00			
4. forman	250		$21.86	5,465.00			
				61,710			
5. benefits 34%				20,981.40			
				82,691	**82,691**		**82,691**
Equipment to be used							
1. 318 Cat Excavator, trench	260		$80.00	20,000.00			
2. 320 L Boom	360		$114.00	41,040.00			
3. Hundi Track Exc, misc trench	80		$80.00	6,400.00			
4. D-6 cat	80		$75.00	6,000.00			
5. John Deere Backhoe	100		$60.00	6,000.00			
6. Grader .75 per ft		12,480	$75.00	9,360.00			
7. pickup, est, travel misc, mile		1,040	$0.40	416			
8. flatbed/	520		$50.00	20,800			
9. Dump truck	80		$65.00	5,200.00			
10. loader	40		$65.00	2,600.00			
sub - total				**117,816.00**	**117,816.00**		**117,816.00**
1. Site work,							
material, truck haul							
pipe bedding/field work		12,480	2.00 ln ft	**24,960.00**	**24,960.00**		**24,960.00**
Misc elbows, fittings				**14,000**	**14,000.00**		**14,000.00**
2. Inlet structure/ screen				**26,000**	**26,000.00**		**26,000.00**
Materials							
1. 5,860 ft x 24 in x 80 lb pvc	80 lb	5,860	$24.00	140,640			
2. 2,240 ft 24 in x 125 psi	125 lb	2,240	$33.25	74,480			
3. 2,680 ft 21 in x 125 psi	125 lb	2,680	$26.45	70,886			
4. 2,640 ft x 10 in x 125 psi	125 lb	2,640	$5.45	14,388			
5. 1,500 ft x 24 in x 80 lb	80 lb	1,500	$24.00	36,000			
		14,920		**336,394**	**36,394.00**	**$300,000.00**	**336,394.00**
7 delivery structures			$2,300	**16,100**	**16,100**		**16,100**
contingency 5 %				**15,393**	**15,393**		**15,393.00**
					333,354	**$300,000.00**	**633,354**
					300,000		
					633,354		

Summary of non-Federal and Federal funding Sources

Funding Sources	Funding Amount
Non-Federal entities	
1. South Board Of Control	$333,354
Non-Federal subtotal:	$333,354
Other Federal entities	None
Other Federal subtotal:	$0
Requested Reclamation funding:	$300,000
Total project funding:	$633,354

The following page provides a detail specific project budget narrative that outlines specific costs applicable to each element of the proposal.