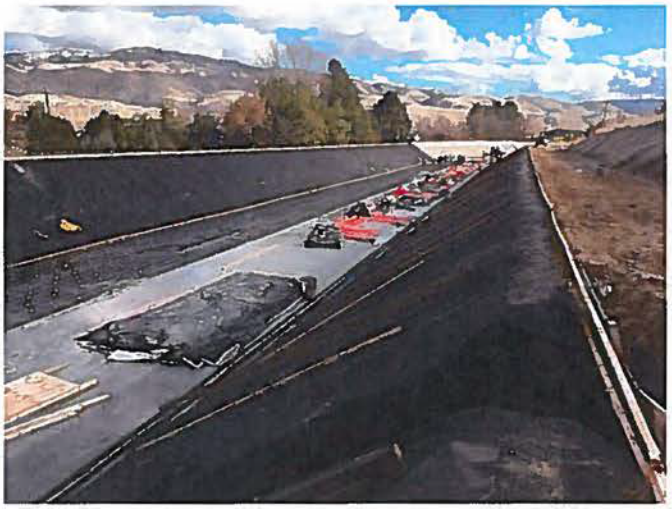
Boise Project Board of Control

New York Canal Lining – Phase 6



Application for:
WaterSmart: Water and Energy Efficiency Grants for FY2019
Funding Opportunity No. BOR-DO-19-F004
March 19, 2019

Submitted by:

Boise Project Board of Control
2465 Overland Road
Boise, Idaho 83705-3155

[redacted]

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March 19, 2019
Boise Project Board of Control
Boise, Idaho
Ada County
New York Canal Lining – Phase 6

EXECUTIVE SUMMARY

The Boise Project Board of Control (BPBC) submits this application for Funding Opportunity Announcement No.BOR-DO-19-F004 under Water Conservation Projects through the 2019 WaterSMART: Water and Energy Efficiency Grant Program from the Bureau of Reclamation (USBR). Through this application, the Boise Project Board of Control is seeking $187,599 in federal funding assistance for Federal Funding Group I. The funding will be used to replace 600 lineal feet of canal lining in the New York Canal (NYC) to increase water conservation and water-use efficiency by reducing seepage losses, meeting the goal of the Funding Opportunity Announcement. The proposed project is to be completed in five months with an estimated start date of October 2019 and a completion date of February 2020. The New York Canal is a USBR federal facility operated and maintained by the Boise Project Board of Control.

BACKGROUND DATA

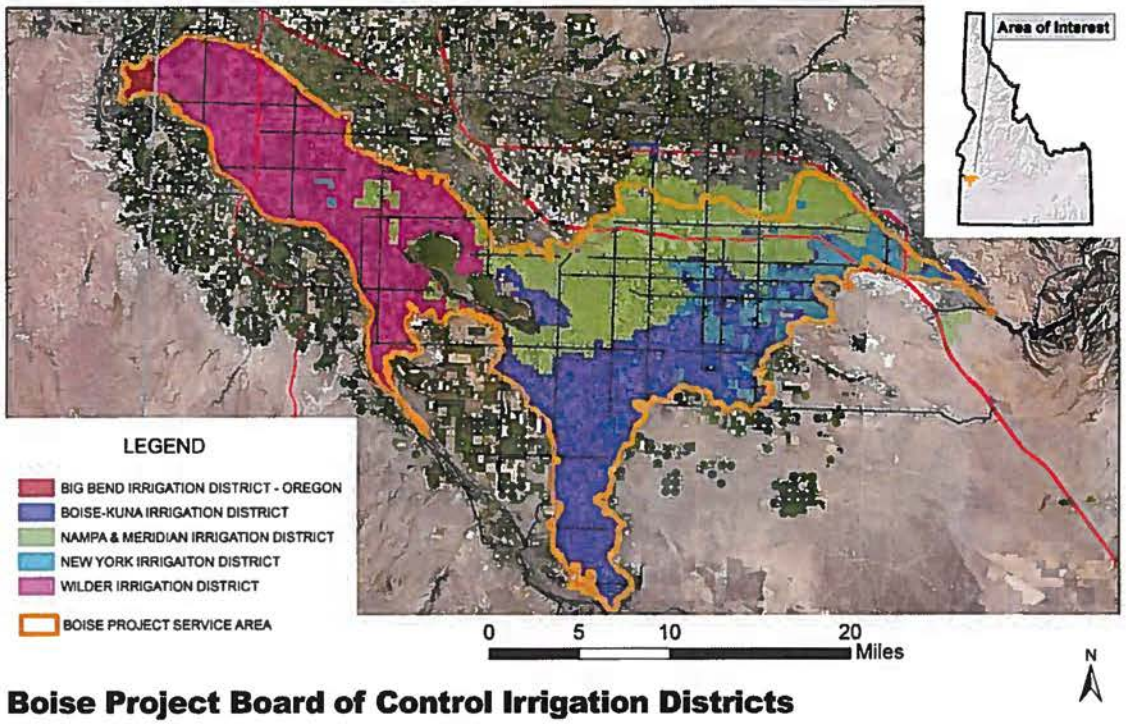

Figure 1 – Boise Project Board of Control Service Area

Boise Project Board of Control

The New York Canal (NYC) and the irrigation system it feeds is operated by the Boise Project Board of Control, on behalf of five (5) irrigation districts established in the early 20th Century to serve irrigators with waters made possible by the development of the Arrowrock Division of the Boise Project by the United States Department of Interior, Bureau of Reclamation (USBR). The five districts consist of:

- Big Bend Irrigation District (Malheur County, OR)
- Boise-Kuna Irrigation District (Ada and Canyon Counties, ID)
- Nampa-Meridian Irrigation District (Ada and Canyon Counties, ID)
- New York Irrigation District (Ada County, ID)
- Wilder Irrigation District (Canyon County, ID)

BPBC delivers irrigation water to approximately 167,000 acres from both Boise River rights and reservoir storage rights in Anderson and Arrowrock Reservoirs held by the USBR in trust for the Districts. The New York Canal is the main delivery canal. The delivery system comprises of over 1,400 miles of canals, laterals and sub-laterals, more than 10,000 individual structures

including headgates and check structures, and is operated by a full time staff of approximately 100 dedicated employees. Improvements on the canals and laterals are done on a yearly basis and including but not limited to piping, lining and recleaning.

As the NYC is designated as an Urban Canal of Concern by the Bureau of Reclamation, the BPBC has been proactively working on upgrading the lining, and has used Canal[3] 12-30-12 in five other projects in the NYC:

- Station 142+00 to Station 146+00, winter 2014, 400 linear feet (Phase 1)
- Station 393+00 to Station 396+00, winter 2015, 300 linear feet (Phase 2)
- Station 396+00 to Station 426+00, winter 2016, 400 linear feet (Phase 3)
- Station 146+00 to Station 150+00, winter 2017, 400 linear feet (Phase 4)
- Station 150+00 to Station 154+00, winter 2018, 400 linear feet (Phase 5)

Approximately 30,000 users are served by BPBC. The major crops irrigated by the NYC consists of alfalfa hay, wheat, sugar beets, hops, corn, onion, mint, lavender, apples, grapes and pasture. There are also many dairy farms and livestock facilities in the area that use the irrigated grains to feed their animals. Along with the agricultural use, residents in the urbanized areas use water for lawn and garden irrigation. Though the main canals and laterals are open channels, there is a diverse mix of ditches, gravity irrigation pipelines, pressurized pipelines and pressurized sprinkler systems throughout the project. As an Urban Canal of Concern, the New York Canal flows past thousands of homes and businesses and in many instances lays 30 or more feet above them.

The current and projected water demand does not meet the current water supply, especially following a low snowpack and precipitation year. With a high agricultural acreage, the supply did not meet the allotted amount. The following table shows the water allotment for the 2012 to 2018 irrigation seasons:

TABLE 1: Allotment

YEAR	ALLOTMENT (acre feet per acre)	DATE
2012	1.90	August 1
2013	1.00	April 22
	1.40	June 5
2014	2.25	June 18
2015	1.65	April 16
	2.35	June 3
	2.95	June 12
2016	2.60	June 15
2017	2.45	July 14
	2.60	July 26
2018	2.65	June 15

The supply has not met the demand, in 2015 and 2016, approximately 75 accounts within the BPBC service area purchased approximately 9,300 acre feet of river water from the Water District #63 to help augment their irrigation water supply.

BPBC has been the recipient of several grants from the Bureau of Reclamation including most recently a grant in 2016 to replace 400 lineal feet of lining in the New York Canal near Roosevelt Street; 2017 for Automation of the Platt & Miller Checks and 2018 Automation of the Deer Flat Low Line #3.

PROJECT LOCATION

The New York Canal Lining – Phases 6 project is located in southeast Boise, Ada County. The project latitude is 43°33'48.0"N, and longitude -116°8'20.5"W.

TECHNICAL PROJECT DESCRIPTION

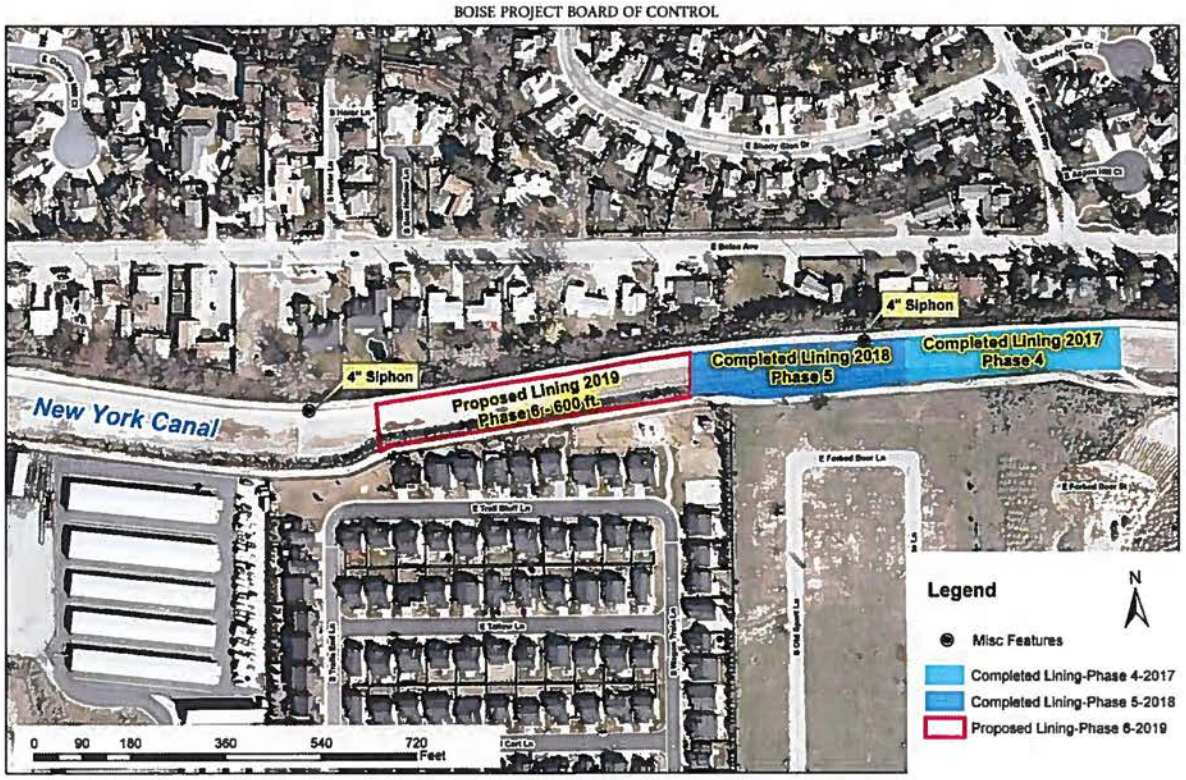

Figure 2 – Map of Proposed Project

The project proposes to replace approximately 600 linear feet of the existing concrete and asphalt lining with a multi-layer geocomposite membrane and concrete cap during the winter of 2019-2020. Huesker's Canal³ 12-30-12 is a geocomposite that consists of polyester nonwovens bonded to a polyethylene geomembrane. The liner is inert to biological degradation and naturally encountered chemicals, alkalis and acids. Huesker's Canal³ 12-30-12 has superior puncture resistance and increased interface fraction properties that allow the liner to be deployed directly

in contact with existing soils and steepened side slopes. This material has an expected lifespan of 50 years.

Phase 6
From Station 154+00 to Station 160+00 the cross sectional width of the New York Canal is approximately 75 feet wide. Therefore, fifteen 17-feet wide by 250-feet long sections of rolled geocomposite membrane canal liner will be installed and laterally seamed every 17 feet. Each section of the liner will be laid along the top of the canal secured with a concrete layer of six inches.

The existing lining consists of asphalt with two layers of concrete underneath on both sides of the canal along with the flooring. The asphalt and concrete on the flooring will be removed along with two and a half feet of dirt. One foot of fill material will be compacted into the floor and sides. Six inches of concrete with ranch panels on the side and #4 rebar on the flooring is then layered on top of the membrane. On the north side, a 12" x 12" concrete parapet wall will be incorporated into the sidelining wall.

E.1.1 Evaluation Criterion A: Quantifiable Water Savings

Describe the amount of estimated water savings. 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.

It is estimated approximately 367.10 acre feet is lost per year.

Describe current losses: Please explain where the water that will be conserved is currently going (e.g., back to the stream, spilled at the end of the ditch, seeping into the ground)?

The current losses are seeping into the ground.

Describe the support/documentation of estimated water savings: Please provide sufficient detail supporting how the estimate was determined, including all supporting calculations. Note: projects that do not provide sufficient supporting detail/calculations may not receive credit under this section. Please be sure to consider the questions associated with your project type (listed below) when determining the estimated water savings, along with the necessary support needed for a full review of your proposal.

The Board of Control has not performed any specific testing; however, the proposed site has been historically known for seepage. A study was performed by Charles Berenbrock with the US Geological Survey in 1997 titled "Streamflow Gains and Losses in the Lower Boise River Basin, Idaho, 1996-1997" (see Attachment A). This study was held during flood control and before the irrigation season began, therefore no deliveries were being made at the time of the study. The study recorded a loss of 2.6 cubic foot per second per mile on March 20, 1997 and another loss of 8.9 $ft^3/s/mi$ on March 27, 1997. Based upon this study, approximately 1.01 cfs of water a day is loss to seepage within the proposed project site. With an average irrigation season of 183 days, 185.08 cfs or 367.10 acre feet of water is lost annually.

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.

No formal testing has been performed. As previously mentioned, according to the study held in 1997, a loss of 2.6 cfs and 8.9 cfs per mile was recorded. Using the 8.9 $ft^3/s/m$ loss as a basis, .00168 cfs is lost per mile which equates to 1.01 cfs per 600 feet. The average irrigation season is 183 days. The annual water savings is 367.10 acre feet per year.

$$(8.9/5280)*600 = 1.01 \text{ cfs} * 183 \text{ days} = 185.08 \text{ csf} = 367.10 \text{ acre feet}$$

(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.

As previously mentioned, no recent testing has been performed. However, a study was held in March 1997 during flood control discharge. Seepage loss was measured at 2.6 $ft^3/s/mi$ and 8.9 $ft^3/s/mi$ on two separate days. (Attachment A)

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

Seepage is expected to be minimal based on the materials and installation techniques. The proposed project will be closely monitored and documented.

(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 600 feet of the proposed project is estimated at losing 2.00 acre feet of water per day. This equates to 17.65 acre feet per mile.

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

In March, water is diverted down the NYC to Lake Lowell before water deliveries begin. Measurements will be taken at various locations, both upstream and downstream from the project site using the SonTek RiverSurveyor.

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

The materials needed to complete the proposed project include the geocomposite liner, the adhesive to seal the seams, fill material and concrete. Huesker's Canal³ 12-30-12 is a geocomposite that consists of polyester nonwovens bonded to a polyethylene geomembrane.

The liner is inert to biological degradation and naturally encountered chemicals, alkalis and acids. Huesker's Canal³ 12-30-12 has superior puncture resistance and increased interface fraction properties that allow the liner to be deployed directly in contact with existing soils and steepened side slopes. The life expectance of the liner is 50 years. Table 2 below provides the properties on the Canal³ lining.

TABLE 2: Huesker's Canal³

PROPERTY	TEST METHOD	VALUES
Mass per Unit Area	ASTM D-5261	44 oz/yd²
Membrane Thickness	ASTM D-5199	30 mils
Grab Tensile Strength (MD)	ASTM D-4632	400 lbs
Grab Elongation (MD)	ASTM D-4632	>50%
Trapezoid Tear Strength (MD)	ASTM D-4533	150 lbs
Puncture Strength, (5/16)	ASTM D-4833	250 lbs
Permeability	ASTM D-4491	Non-measureable

E.1.2. Evaluation Criterion B – Water Supply Reliability

Please address how the project will increase water supply reliability. Proposals that will address more significant water supply shortfalls benefitting multiple sectors and multiple water users, will be prioritized. General water supply reliability benefits (e.g., proposals that will increase resiliency to drought) will also be considered. Please provide sufficient explanation of the project benefits and their significance. These benefits may include, but are not limited to, the following:

1) Will the project make water available to address a specific water reliability concern? Please address:

o Explain and provide detail of the specific issue(s) in the area that is impacting water reliability, such as shortages due to drought, increased demand, or reduced deliveries.

Drought conditions continue to impact the water uses of the BPBC service area. According to the National Drought Mitigation Center, the drought is rated as Abnormally Dry in Ada County. Canyon County has been rated between Moderate Drought in the eastern portion of the county with Severe Drought in the western. Therefore, the snowpack runoff has been below normal for the past 8 of 10 years. Table 3 below indicates the results of snow surveys compared on a percentage basis with an 84 year normal runoff in acre feet. (Source: BPBC 2017 Annual Report).

Table 3 – Snow Survey

Year	Average in Acre Feet	Runoff Oct to Oct acre feet	Percent of Normal
2007	1,816,169	1,227,943	67.6
2008	1,941,750	1,761,110	90.7
2009	1,938,537	1,684,719	86.9
2010	1,914,789	1,502,883	78.5
2011	1,909,584	2,375,397	124.4
2012	1,940,574	2,106,400	108.5
2013	1,930,166	1,066,299	55.2
2014	1,929,154	1,695,179	87.8
2015	1,855,802	1,337,229	72.0
2016	1,833,964	1,724,313	94.0
2017	1,868,276	2,584,776	138.4

As the demand for water increases, in the 2015 and 2016 water seasons, approximately 75 accounts within the BPBC service area purchased approximately 9,300 acre feet of river water from the Water District #63 to help augment their irrigation water supply.

o Will the project directly address a heightened competition for finite water supplies and over-allocation (e.g., population growth)?

The proposed project will not address a heightened competition for finite water supplies and over-allocation. The allocation is based on the water supply for that year. By preventing the water from seepage, the water will remain in the canal and overall, more water will remain in the reservoirs.

o Describe how the project will address the water reliability concern?

As the project will prevent over 367.1 acre feet of water from seeping into the ground, it will aid in allowing this water to be delivered to the water users. As BPBC also has several low-head hydro power plants further downstream, the conserved water also allows for more power production.

o Provide a description of the mechanism that will be used, if necessary, to put the conserved water to the intended use.

The mechanism that will be used to put the conserved water to the intended use is by installing the liner which will prevent the seepage of 367.10 acre feet per year which allows the water to be available to our water users.

o Indicate the quantity of conserved water that will be used for the intended purpose.

The quantity of conserved water is estimated at 367.10 acre feet of water that will be used for its intended purpose, irrigating crops and landscaping.

2) Will the project make water available to achieve multiple benefits or to benefit multiple water users? Consider the following:

   - Will the project benefit multiple sectors and/or users (e.g. agriculture, municipal and industrial, environmental, recreation, or other)?

     The conserved water will benefit multiple types of users. The majority of the irrigation water is consumed by farmers, followed by landscaping for subdivisions. As the conserved water stays in the reservoirs, this allows the recreational use of the water. Arrowrock, Anderson and Lucky Peak Reservoirs are all used recreationally, from waterskiers, boaters, fishermen to parasailing.

     - Will the project benefit species (e.g., federally threatened or endangered, a federally recognized candidate species, a state listed species, or a species of particular recreational, or economic importance).

       The project will not benefit any species.

     - Will the project benefit a larger initiative to address water reliability?

       No, this project will not benefit a larger initiative to address water reliability.

   - Will the project benefit Indian tribes?

     No.

   - Will the project benefit rural or economically disadvantaged communities?

     The proposed project will benefit the entire BPBC service areas in Ada and Canyon Counties in Idaho and a portion of Malheur County, Oregon. According to the Census Bureau and the 2012-2016 American Community Survey 5-Year Estimates, 12.2 % individuals live below the poverty line in Ada County, 18.7% in Canyon and 24.8% in Malheur County, Oregon.

   - Describe how the project will help to achieve these multiple benefits. In your response, please address where the conserved will go and where it will be used, including whether the conserved water will be used to offset groundwater pumping, used to reduced diversions, used to address shortages that impact diversions or reduce deliveries, made available for transfer, left in the river system, or used to meet another intended use.

     Any amount of water conserved from seepage has the potential to benefit multiple users. The water will remain in the reservoir which will benefit recreationists; it will benefit the fish in the reservoirs and the fishermen. Another potential

benefactor of conserved water is the economy of the area. When there is water in the reservoirs, more people go boating, fishing, and picnicking. All these activities require supplies, boats, gear, food, fuel, etc. The conserved water also prevents pumping of groundwater as the farmers and landowners have enough surface irrigation water to irrigate their crops.

3) Does the project promote and encourage collaboration among parties in a way that helps increase the reliability of the water supply?
   - Is there widespread support for the project?

     The BPBC delivers water on behalf of five (5) irrigation districts, and each district has at least one member on the Board of Directors for a total of 9 Board Members. The support of all districts is evident in the Official Resolution which was approved by the Board of Directors.

   - What is the significance of the collaboration/support?

     By preventing seepage and conserving water, there will be more water available for use by all users, from those who use the water for landscaping purposes to those who irrigate their crops.

   - Is the possibility of future water conservation improvements by other water users enhanced by completion of this project?

     Yes, BPBC believes the application of the proposed project will develop an appropriate way for other water users and other irrigation districts to follow in water conservation techniques.

   - Will the project help to prevent a water-related crisis or conflict? Is there frequently tension or litigation over water in the basin?

     Yes, this project will help prevent water-related crisis or conflicts. There is always a concern in the lack of water availability for crops. The BPBC has been involved in several litigations regarding water availability and the accounting system of the water.

   - Describe the roles of any partners in the process. Please attach any relevant supporting documents.

     The BPBC is not working with any partners except for the five irrigation districts that consists of the Boise Project Board of Control.

4) Will the project address water supply reliability in other ways not described above?

   No.

E.1.5. Evaluation Criterion E – Department of Interior Priorities

Creating a conservation stewardship legacy second only to Teddy Roosevelt
As stewards of this vital natural resource, the Board of Directors and employees of the Boise Project Board of Control work diligently to deliver water to its water users in a safe and efficient manner. This conservation project allows BPBC to continue to upgrade and maintain a safe water delivery system in order for the water users to receive their allotted water in a fair and consistent manner.

Restoring trust with local communities
As the New York Canal is the main delivery artery for 167,000 irrigable acres, projects such as this will continue to restore trust with and between all the local communities that benefit from the water. Trust is also restored as the local community and the residents along the canal see the improvements being made to this facility as it shows the efforts of BPBC to conserve water and be a good neighbor.

Modernizing our infrastructure
As the New York Canal has been marked as an Urban Canal of Concern, Boise Project is continuously working to improve and modernize the canal. Beginning in the winter of 2014, Boise Project has lined almost 2,000 lineal feet with the innovative non-woven multi-layered geosynthetic membrane composite lining. The lining is made of non-woven materials scientifically designed to prevent seepage, but also provides increased puncture protection. The lining is not affected by changing temperatures or frost which cause cracks in concrete linings.

E.1.6.Evaluation Criterion F – Implementation and Results

E.1.6.1. Subcriterion F.1 – Project Planning

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

Provide the following information regarding project planning:

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

The BPBC has adopted Water Conservation Plan in 2010. This plan addresses the maintenance on canals and laterals to conserve water and prevent sediment deposits. The project implements a portion of the Project's Water Conservation Plan. In addition, improving and replacing the lining in the high populated areas along the NYC has been priority with BPBC and the Pacific Northwest Bureau of Reclamation.

(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 project relates to Objective #1 of the Water Conservation Plan on maintenance of the New York Canal by replacing the lining.

E.1.6.2. Subcriterion F.2 – Performance Measures

Measurements will be taken upstream from the proposed project at the headworks of the NYC at Diversion Dam and at various locations upstream and downstream using our Sontek RiverSurveyor measuring device. Measurements will be taken when no water deliveries are occurring, allowing for more accurate data.

E.1.6.3. Subcriterion F.3 – Readiness to Proceed

- 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.

  Work on the project will begin immediately after the completion of 2019 water season and the canal is dry, approximately at the end of October. The existing concrete and asphalt lining will be removed and hauled away. Two feet of the canal flooring will be excavated and approximately 810 yards of fill material will be brought in and compacted into the flooring at the desired grade. The liner will be installed according to the manufacturer's instructions. A six inch concrete cap will be poured on top of the liner.

Planning	June 2019
Procurement of materials	July – September 2019
End of Irrigation Season	October 2019
Construction	October – February 2020

- Describe any permits that will be required, along with the process for obtaining such permits.

  With the project site entirely within BPBC and USBR facilities and easements, no permits are required.

- Identify and describe any engineering or design work performed specifically in support of the proposed project.

  No engineering or design work is anticipated.

- Describe any new policies or administrative actions required to implement the project.

No new policies or administrative actions are required to implement the project.

- Describe how the environmental compliance estimate was developed. Has the compliance cost been discussed with the local Reclamation office?

  The estimate for the environmental compliance was obtained from the local Reclamation office

E.1.7. Evaluation Criterion G – Nexus to Reclamation Project Activities

- Is the proposed project connected to Reclamation project activities? If so, how? Please consider the following:

  BPBC was formed to operate and maintain federally financed and owned facilities built under the Reclamation Act of August 30, 1890 and would not exist apart from the efforts of the Federal Government. Its entire history is closely intertwined with the USBR. It was created by the forerunner of the USBR to operate and maintain the federal facilities constructed as part of the Boise Project on behalf of the five irrigation districts established as part of the Project. Irrigation of the lands that BPBC serves would not be possible without the reservoir storage made possible by the Arrowrock and Anderson Ranch reclamation projects.

  - Does the applicant receive Reclamation project water?

    Yes, BPBC receives the majority its water from the reservoir storages in Arrowrock and Anderson Ranch Reservoirs and Boise River water rights.

  - Is the project on Reclamation project lands or involving Reclamation facilities?

    Yes, the NYC is a Reclamation facility.

  - Is the project in the same basin as a Reclamation project or activity?

    Yes, the NYC is located in the Boise River Basin Arrowrock Division of the Boise Project, a Reclamation facility.

  - Will the proposed work contribute water to a basin where a Reclamation project is located?

    Yes, the conserved water will remain in the Boise River Basin.

- Will the project benefit any tribe(s)?
  No, the project will not benefit any tribe(s).

E.1.8. Evaluation Criterion H – Additional Non-Federal Funding

$ 187,600 Non-Federal
$ 375,199 Total Project Costs = 50%

Budget

FUNDING PLAN AND LETTERS OF COMMITMENT

Please identify the sources of the non-Federal cost share contribution for the project, including:

- Any monetary contributions by the applicant towards the cost-share requirement and sources of funds (e.g., reserve account, tax revenue, and/or assessments)

  Non-Reclamation funding for the proposed project comes from the five Irrigation Districts served by BPBC. Authorization for this funding is made by the Board of Directors of BPBC, which endorses and supports this grant proposal as evidenced by the Official Resolution included in this application. As taxing authorities, the Irrigation Districts are legally enabled to assess the users in their districts for the costs of operations, maintenance and improvements. Idaho State Code grants, in considerable detail, the ways in which districts may make such assessments and the ramifications for taxpayers who become delinquent.

- Any costs that will be contributed by the applicant

  BPBC will contribute 50% of the total costs

- Any third party in-kind costs (i.e., goods and services provided by a third party)

  There are no third party in-kind costs

- Any cash requested or received from other non-Federal entities:

  None.

- Any pending funding requests (i.e. grants or loans) that have not yet been approved and explained how the project will be affected if such funding is denied.

  No other pending funding requests

Table 4 – Total Project Cost Table

Funding Sources	Funding amount
Costs to be reimbursed with the requested funding	$187,599
Costs to be paid by the applicant	$187,600
Value of third party contributions	$ 0
TOTAL PROJECT COST	$ 375,199

BUDGET NARRATIVE

The budget established for this project is based upon the actual costs experienced in 2018 when 400 feet of liner was installed immediately upstream from the proposed project site. Field and shop labor were tracked to the task level; management and supervision hours were similarly tracked, and bulk materials, incidental materials, supplies, equipment and minor equipment rental costs were tabulated from actual receipts or invoices.

Salaries and Wages

The following key personnel from Boise Project will be charging time on this project:

- [redacted]
- [redacted]

BPBC's Foremen, Entry Level Manager, dragline operators and full time laborers will provide the labor for project. Their actual salary rates are calculated under the Salary in the Budget Proposal. BPBC labor wages rates currently range between $13.64 to $21.04 per hour.

Costs for preparing reports are also included in the proposed budget.

Fringe Benefits

Fringe benefits include payroll taxes, health insurance and retirement at the following rates

Payroll taxes of Social Security & Medicare:	7.65%
PERSI (state retirement fund – employer share)	11.94%
Health Care Benefits -	$704.38 a month

Equipment

The BPBC owns the equipment necessary to complete the proposed project. The Equipment Rates are based on the US Army Corps of Engineer's Construction Equipment Ownership and Operating Expense Schedule for Region VIII, Volume 8, November 2016. Estimated hours are based on actual hours of the adjacent liner replacement project performed in the winter of 2018.

Material and Supplies

BPBC will solicit one bid for the liner and adhesive and contract with the lowest responsible bidder for the materials. The liner and adhesive for the project will be purchased before the end of the irrigation season in October 2019. Costs for all materials and expenses are based on the actual costs from the winter 2018 liner replacement project adjacent to the proposed project. A detailed breakdown of the materials needed is provided in the Budget Proposal. All materials and supplies are for construction use.

Environmental and Regulatory Compliance Costs

As the proposed project is entirely in the existing canal and its easement, environmental costs are expected to be very minimal. However, the proposed amount of $10,000 was obtained from the

local Bureau of Reclamation office. All of this cost will be part of the BPBC's cost share agreement between the USBR and the applicant. If any portion of the funds for environmental compliance is not required for compliance activities, such funds may be reallocated to the project, if appropriate.

Other Expenses
This expense covers for disposal of the existing concrete and/or asphalt. The estimate was based on actual costs from the winter 2018 project.

Indirect Costs
BPBC is not requesting any reimbursements for indirect costs.

BUDGET PROPOSAL - Phase 6 Station 154+00 to 160+00

Budget Item Description	Computation $/Unit	Unit	Quantity	Total Cost
SALARIES AND WAGES				
Watermaster	$ 28.53	hr	186	$ 5,306.58
Foreman	$ 24.22	hr	321	$ 7,774.62
Management Entry	$ 21.46	hr	253	$ 5,429.38
Dragline Operators	$ 20.77	hr	293	$ 6,085.61
Lead Carpenters	$ 18.79	hr	200	$ 3,758.00
Truck Drivers	$ 17.00	hr	288	$ 4,896.00
Laborers	$ 16.38	hr	2288	$ 37,477.44
Reporting Requirements	$ 21.83	hr	20	$ 436.60
Subtotal - Salaries & Wages				$ 71,164.23
FRINGE BENEFITS				
Watermaster	$ 9.99	hr	186	$ 1,858.14
Foreman	$ 9.14	hr	321	$ 2,933.94
Management Entry	$ 8.61	hr	253	$ 2,178.33
Dragline Operators	$ 8.47	hr	293	$ 2,481.71
Lead Carpenters	$ 8.08	hr	200	$ 1,616.00
Truck Drivers	$ 7.73	hr	288	$ 2,226.24
Laborers	$ 7.61	hr	2288	$ 17,411.68
Reporting Requirements	$ 8.68	hr	20	$ 173.60
Subtotal - Fringe Benefits				30,879.64
EQUIPMENT				
Caterpiller Backhoe 446D	$ 44.42	hr	11	$ 488.62
Caterpiller Backhoe 420E	$ 31.31	hr	14	$ 438.34
Samsung Excavator - MDL SE210W	$ 53.88	hr	105	$ 5,657.40
Caterpiller Wheeled Excavator M318D	$ 57.57	hr	110	$ 6,332.70
Caterpillar Mini Excavator 304D CR	$ 14.17	hr	20	$ 283.40
Caterpiller Grader 140H	$ 66.26	hr	90	$ 5,963.40
Freightliner Dump Truck 12 YD	$ 32.36	hr	90	$ 2,912.40
Peterbilt Dump Truck 12 YD	$ 32.36	hr	282	$ 9,125.52
International Dump Truck 5 YD	$ 33.52	hr	48	$ 1,608.96
Ford 2T Truck	$ 26.17	hr	30	$ 785.10
Subtotal-Equipment				$ 33,595.84
MATERIALS				
Canal Lining	$ 0.90	sq.ft	63750	$ 57,375.00
Jowat Adhesive	$ 150.00	bag	15	$ 2,250.00
Fill Material (3/4" road mix)	$ 4.75	yard	810	$ 3,847.50
Visqueen 6mil 20'x100'	$ 93.50	roll	12	$ 1,122.00
Tie Wires	$ 7.95	box	96	$ 763.20
Wire Ranch Panel 50inX16ft	$ 22.99	each	480	$ 11,035.20
Snap Ties	$ 78.25	box 100	4	$ 313.00
Bar Ties	$ 50.25	box	2	$ 100.50
Chalking	$ 7.64	each	10	$ 76.40
Dobies	$ 0.36	each	9500	$ 3,420.00
Waterstop #703	$ 185.00	each	30	$ 5,550.00
Concrete	$ 94.00	yards	1140	$ 107,160.00
Rebar	$ 1,065.00	Bundle	12	$ 12,780.00
1/4 x 1 1/2 HR Flat 20' Steel	$ 12.03	each	8	$ 96.24
Rebar Safety Caps	$ 0.50	each	300	$ 150.00
Form Oil	$ 49.75	5 Gal Pail	5	$ 248.75
Paint: Mark Flor Pink	$ 4.25	each	18	$ 76.50
Felt Filter Lining	$ 588.00	roll	2	$ 1,176.00
Concrete cutting	$ 1,692.00		1	$ 1,692.00
Subtotal-Materials				$ 209,232.29

RENTAL						
Pumper Truck	$	1,783.00	pour	8		14,264.00
"Trucks Entering Highway" Signs	$	145.20	monthly	2		290.40
Portable restrooms	$	50.00	week	6		300.00
Subtotal-Rental					$	14,854.40
ENVIRONMENTAL AND REGULATORY COSTS					$	10,000.00
Subtotal-Environmental					$	10,000.00
OTHER EXPENSES						
Disposal of concrete/asphalt	$	24.00	loads	228	$	5,472.00
Subtotal-Other Expenses					$	5,472.00
Indirect Costs						$0.00
Total Project Costs - Phase 6					$	375,198.40

H.1. Environmental and Cultural Resources Considerations

(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.

During the project, no environmental impacts or costs are anticipated. The project will take place after the completion of the 2019 irrigation seasons when temperatures are lower and increased precipitation levels reduce the potential of dust associated with the type of construction activities needed to replace the lining. Should dust become an issue, BPBC will apply water applications to ensure dust abatement.

(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?

There are no known endangered or threatened species in the project site.

(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.

The project site is within a high volume residential area with no impact to any wetlands.

(4) When was the water delivery system constructed?

The original canal was constructed in the 1880's. Construction to enlarge the canal began in 1906 with completion in 1909.

(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.

The proposed project will modify the lining which is currently laid with concrete on the flooring and concrete and/or asphalt on the sides. There are no headgates, flumes or deliveries points within the proposed project site.

(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.

There are no buildings, structures or features listed or eligible for listing on the National Register of Historic Places in the project site.

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

There are no archeological sites within the project area.

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

No, the project will not have any effect on any population.

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

The project site is not within tribal lands.

(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?

Removing current vegetation has the potential to introduce or spread of noxious weeds or non-native invasive species. Industry standards practices will be employed to prevent the spread of noxious weeds.

D.2.2.6 REQUIRED PERMITS OR APPROVAL

Because all of the construction work for the project is on USBR owned facilities, (Transferred Works to BPBC as the operating agency for the five Irrigation Districts) and the nature of the work involved, no construction, planning or environmental permits will be required for the project.

D. 2.2.8. OFFICIAL RESOLUTION

The Board of Directors of the Boise Project Board of Control met on May 2, 2018 at which time the Official Resolution was approved and signed by the Chairman of the Board. See Attachment B.

D. 3. UNIQUE ENTITY IDENTIFER AND SYSTEM FOR AWARD MANAGEMENT

The BPBC is registered with System for Award Management (SAM). The Unique Entity Identifier is 085321768. Registration in SAM will remain active.

Attachment A

"Streamflow Gains and Losses in the Lower Boise River Basin, Idaho, 1996-1997" Excerpt

Streamflow Gains and Losses in the Lower Boise River Basin, Idaho, 1996–97

By Charles Berenbrock

Water-Resources Investigations Report 99–4105

In cooperation with the
Idaho Department of Water Resources

Boise, Idaho
1999

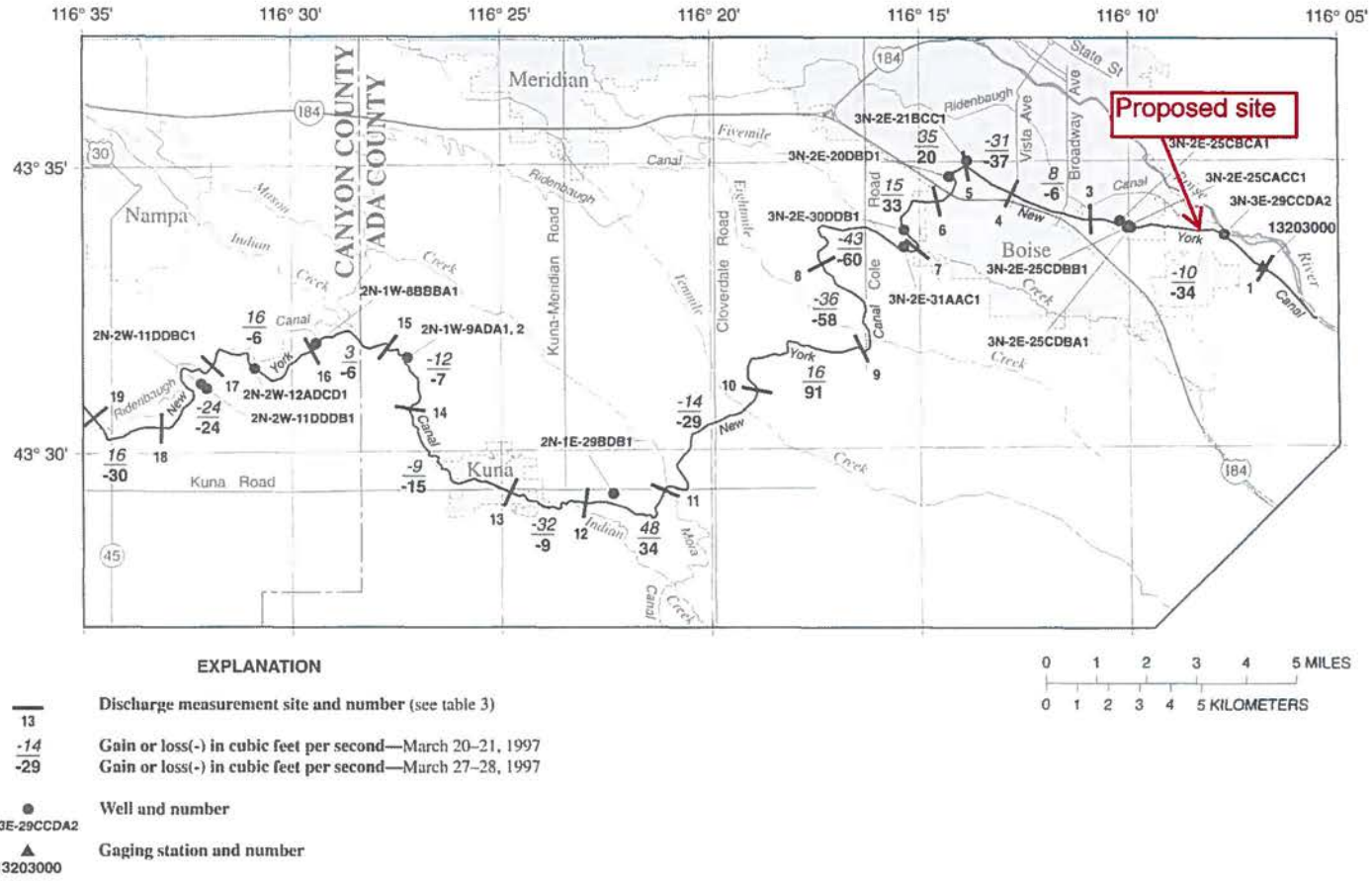

Figure 9. Location of measurement sites and gains and losses(-) along the New York Canal in the lower Boise River Basin, Idaho, March 1997.

Table 3. Flow gains and losses (-) along the New York Canal in the lower Boise River Basin, Idaho, March 1997

[Site locations shown in figure 9; No., number; mi, miles; ft³/s, cubic feet per second, ft³/s/mi, cubic feet per second per mile]

Site No.	Distance from Lake Lowell (mi)	Bridge site name	County	Latitude	Longitude	Measurement date	Discharge (ft³/s)	Measured gain or loss (-) along subreaches (ft³/s)	Measured gain or loss (-) along subreaches (ft³/s/mi)	Measurement date	Discharge (ft³/s)	Measured gain or loss (-) along subreaches (ft³/s)	Measured gain or loss (-) along subreaches (ft³/s/mi)
1	39.5	13203000 New York Canal downstream from Diversion Dam . near Boise	Ada	43°33'08"	116°06'44"	20	439			27	862		
3	35.7	Gekeler Road	Ada	43°34'01"	116°10'55"	20	429	-10	-2.6	27	828	-34	-8.9
4	34.0	Vista Avenue	Ada	43°34'27"	116°12'48"	20	437	8	4.8	27	822	-6	-3.6
5	32.9	Roosevelt Street	Ada	43°34'58"	116°13'58"	20	406	-31	-26.5	27	785	-37	-31.6
6	31.8	Orchard Street	Ada	43°34'21"	116°14'35"	21	441	35	31.8	28	805	20	18.2
7	30.1	Gowen Road	Ada	43°33'29"	116°15'03"	21	456	15	9.1	28	838	33	19.9
8	27.0	Desert Street	Ada	43°33'15"	116°17'20"	21	413	-43	-13.7	28	778	-60	-19.2
9	24.6	Cole Road	Ada	43°31'47"	116°16'25"	21	377	-36	-15.5	28	720	-58	-24.9
10	21.4	Hubbard Road	Ada	43°31'03"	116°18'55"	21	393	16	4.9	28	811	91	27.8
11	17.9	Kuna Road	Ada	43°29'18"	116°21'08"	20	379	-14	-4.1	28	782	-29	-8.4
12	15.8	Strobel Road	Ada	43°29'05"	116°23'00"	20	427	48	22.8	28	816	34	16.1
13	14.0	Swan Falls Road	Ada	43°29'15"	116°24'47"	20	395	-32	-17.6	28	807	-9	-5.0
14	10.7	Black Cat Road	Ada	43°30'46"	116°27'11"	20	386	-9	-2.7	28	792	-15	-4.5
15	8.8	Ridgewood Road	Ada	43°31'51"	116°27'42"	21	374	-12	-6.5	28	785	-7	-3.8
16	6.9	Robinson Road	Ada	43°31'48"	116°29'32"	21	377	3	1.5	28	779	-6	-3.1
17	4.0	South Side Boulevard	Canyon	43°31'32"	116°31'56"	20	393	16	5.6	28	773	-6	-2.1
18	1.6	Power Line Road	Canyon	43°30'28"	116°33'07"	20	369	-24	-10.1	28	749	-24	-10.1
19	0.0	Lake Shore Drive	Canyon	43°30'37"	116°34'45"	20	385	16	9.8	28	719	-30	-18.4
				Total gain or loss (-) =				-54				-143	

Attachment B - Official Resolution

BOISE PROJECT BOARD OF CONTROL

(FORMERLY BOISE U.S. RECLAMATION PROJECT)

2465 OVERLAND ROAD
BOISE, IDAHO 83705-3155

TEL: (208) 344-1141
FAX: (208) 344-1437

OFFICIAL RESOLUTION FOR
WATERSMART: WATER AND ENERGY EFFICIENCY GRANTS FOR FY2019

WHEREAS, The U. S. Bureau of Reclamation is seeking proposals from irrigation districts who want to leverage their money and resources in partnership with Reclamation to conserve and use water more efficiently through the WaterSMART: Water and Energy Efficiency Grants for FY 2019 Program, whereby Reclamation will provide funding on a 50/50 cost share basis for projects focused on water conservation;

WHEREAS, the Boise Project Board of Control desires to apply for funding through Reclamation's WaterSMART Grant Program;

NOW THEREFORE BE IT RESOLVED that the Board of Directors of the Boise Project Board of Control agree and authorize the following:

1. The Board has reviewed and supports this proposal for lining 600 feet of the New York Canal with a geocomposite membrane, including a concrete cap.
2. The Boise Project Board of Control is capable of providing the amount of funding and/or in-kind contributions as specified in the funding plan; and
3. If selected for the WaterSMART Grant, the Boise Project Board of Control will work with Reclamation to meet established deadlines for entering into a grant.
4. Bob Carter, Project Manager, has the legal authority to sign and enter into the agreement.

Passed and adopted by the Board of Directors of the Boise Project Board of Control during its regular meeting on the 6th day of March, 2019.

Clinton C. Pline
Chairman of the Board