



July 31, 2018

**WATERSMART FY2018:
SMALL-SCALE
WATER EFFICIENCY
PROJECT**

**SARONI CANAL
WATER CONSERVATION PROJECT,
PHASE II**

FOAN: BOR-DO-18-F009

CFDA: 15.507

FEDERAL FUNDING REQUEST: \$29,871.96

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TECHNICAL PROPOSAL

EXECUTIVE SUMMARY

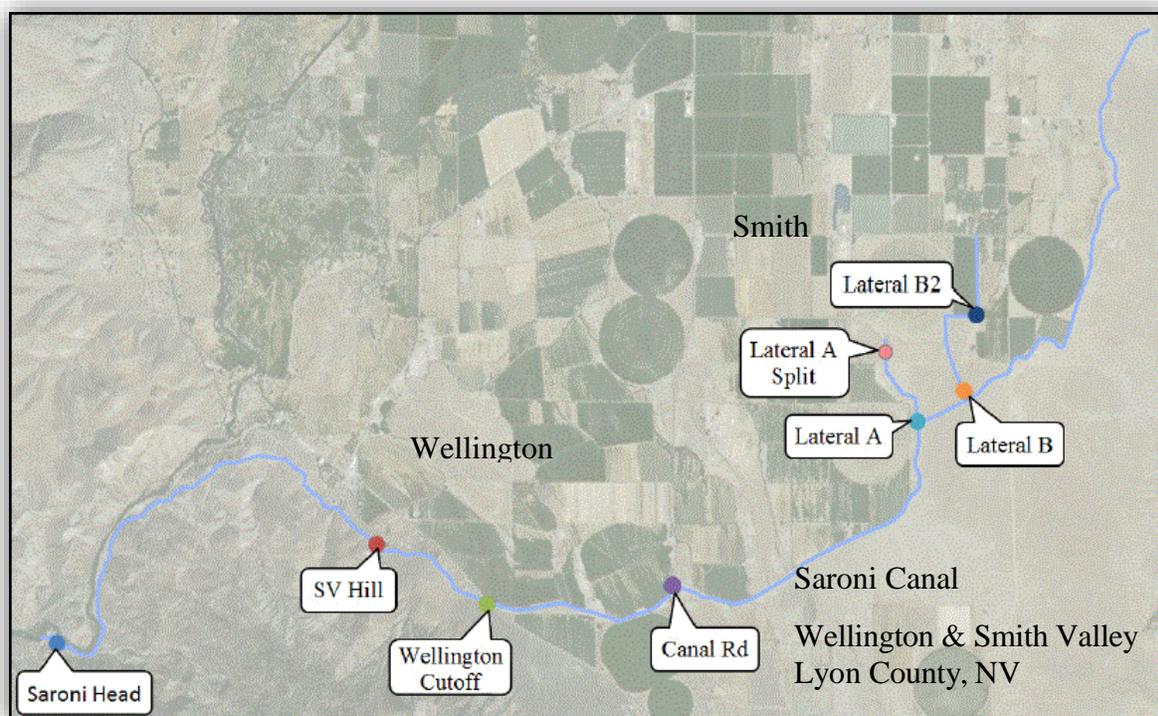
Walker River Irrigation District, located in Nevada's Walker River Basin, is requesting funding for a water conservation project under the FY2018 WaterSMART Small-Scale Water Efficiency Project. Walker River Irrigation District is requesting \$29,871.96 in federal funding that will be matched by \$31,091.24 of non-federal funds via monetary match and in-kind services. The proposed water conservation project has been titled as the 'Saroni Canal Water Conservation Project, Phase II (the Project). This Project is intended to minimize water loss and increase water efficiency and delivery along the Saroni Canal by installing cross-section regulating structures. Upon completion, this Project will yield more accurate water delivery data, decreased water loss due to identifying problematic water loss areas and improvement of instream conditions. No part of the Saroni Canal Water Conservation Project, Phase II will occur in or near a Federal facility. The Project will begin November 2018 and continue to progress with an estimated end date of Fall 2020.

BACKGROUND DATA

The Walker River Irrigation District (WRID) was created in April 1919 under the Authority of the Nevada Irrigation District Act and functions primarily under Nevada Revised Statute 539; WRID is an independent irrigation district. WRID encompasses approximately 235,000 acres of which 80,000 are irrigated. WRID operates two storage reservoirs- Bridgeport Reservoir in Mono County, CA and Topaz Reservoir in Douglas County, NV and Mono County, CA. WRID operates and maintains extensive drainage systems in both Smith and Mason Valleys. The Saroni Canal (the Canal) is owned and operated by WRID, but is governed by a user elected board. The Canal begins at the top of Hoye Canyon in Wellington, NV (Figure 1). The Canal waters are supplied from the West Walker River which is fed from Topaz Reservoir. The Canal has 3951.23 water righted acres along its entirety with 26 water right users, all of which were served during the 2017 irrigation season. The Canal users utilize 28 gates to direct irrigation water onto their farms and ranches; many of which are currently being operated by generational families. These farms and ranches depend on accurate and appropriate water delivery to aid in success. Success in the farming/ranching industry depends on the availability of water and efficiency in the use of water. The region continues to experience severe drought conditions, as reported by the U.S. Drought Monitor. During the 2017 irrigation season, 19,062.19 acre-feet of water were requested to be delivered to users along the Canal. Monitoring during the 2017 irrigation season did not yield a remarkable water loss, but during the drought years of 2011-2016, water loss due to seepage and evaporation yielded up to 40% water loss on multiple days; during the drought years, the average daily water loss was estimated at 30% per the Nevada State Engineer (NSE). Losses of any magnitude are detrimental to the accuracy of water delivery and efficiency of water use. With current litigations and current drought conditions, the demand

for water downstream is expected to increase. Inaccuracy of water delivery and ineffective water use is detrimental to the ecosystem of the Walker River Basin and water conservation efforts are imperative to the symbiosis of the cultures within the Basin. Major agricultural crops along the Canal include grass, grain, alfalfa, as well as cattle, sheep, and horses. Many users have made on farm changes, including crop change, to adapt to the drought and decrease irrigation water availability from the reservoirs. The main Saroni Canal is approximately 8 miles of canal with two laterals that total approximately 2 miles combined. In 2014, WRID and Bureau of Reclamation (BOR) worked together in installing solar powered head gates and electronic equipment to modernize the operation of the Canal. Supervisory Control and Data Acquisition (SCADA) systems were installed to operate the head gates and to collect water measurements for data analysis. The WRID Water Gauge Improvement and the Desert Terminus Lakes projects are an example of a successful working relationship between WRID and BOR and demonstrates the ability of WRID to appropriately utilize federal funds and complete timely and accurate reports.

Figure 1



PROJECT DESCRIPTION

In 2015, Walker River Irrigation District requested a preliminary study done on the Saroni Canal to identify the need for modernization. The 16 September 2015 Draft Technical Memorandum from the Irrigation Training & Research Center (ITRC) of California Polytechnic State University outlines the location of water loss due to seepage, evaporation, and insufficient structures. ITRC prioritized each of the modernization needs in the report. In FY2017, WRID

was awarded BOR funding to mitigate the top four priority projects; WRID is now seeking funding for the next tasks on the list according to ITRC's priority listing. Per the recommendation of ITRC in its 16 September 2015 Draft Technical Memorandum, WRID will need to install four (4) cross regulator flow measurement devices at the four sites (Figure 3). The Project will include installation of cross regulating structures at the sites of Wedertz #5, Cardoni, Straub and Lateral A Turnouts. Currently, water users along the Canal move rocks, sheet piles, and other objects into the canal to raise water levels when they are to receive deliveries. The foreign debris not only causes structural issues but results in inaccurate in-stream flow measurements. In accordance with Section 9504(a)(3)(B) of Public Law 111-11, WRID agrees 1.) not to use any associated water savings to increase the total irrigation acreage of the applicant; and 2.) not to otherwise increase the consumptive use of water in the operation of the applicant, as determined pursuant to the law of the State in which the applicant is located.

Figure 3



Installation of four regulating structures and devices would mitigate both the debris piling and the inaccuracy of the in-stream flow measurements. With improving instream measurement accuracy, excess water may be available to remain in and/or return to the river system. The cross-regulating structures will be constructed as per the ITRC Design (the Design). The Design suggests the following key points be included in the cross-regulating structures:

1. The devices would consist of vertical concrete walls on each side of the canal with a footing across the Canal.
2. The devices will be installed at an angle across the Canal (rather than perpendicular) to provide added length, reduced water level fluctuations due to flow rate fluctuations (Figure 4).

3. The walls will have slots made to fit large pieces of dimensional lumber (i.e. 4x8s or 4x12s). The water level could be raised or lowered by adding or removing pieces of lumber.
4. A catwalk will run across the top of the Canal to allow access for adding and/or removing boards and/or measuring flow via a weir stick (Figure 5).

Figure 4

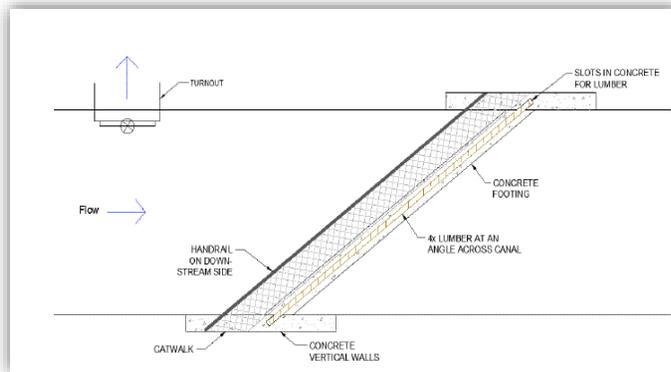
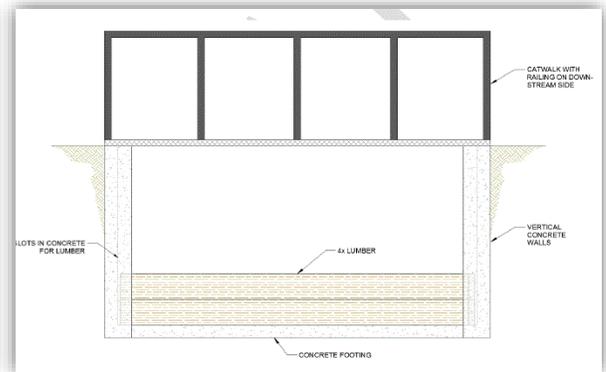


Figure 5



The installation of data loggers previously installed at each of the sites will gather water flow measurements before and after the structures are installed. The data will then be analyzed and is expected to prove the water saving expectations.

EVALUATION CRITERIA

PLANNING EFFORTS SUPPORTING THE PROJECT

1. Discussions and research are being conducted by WRID in effort of drafting a Walker Basin Water Conservation Plan in 2017. The obvious aspect of this project proposal, which conforms to all planning efforts currently under way, is that it works to conserve water. Secondly, the proposed project has a goal of increasing instream flows, benefiting federally listed species and downstream users. Shortfalls in the water supply, which have led to litigation, may be improved with the potential of increasing flow the Walker Lake.
2. WRID, ITRC and the Saroni Canal Advisory Board have identified the problematic areas of the Canal which yield the highest water loss and possible water delivery inaccuracy. Taking steps to mitigate the water loss and improve water delivery accuracy is the first step in mitigating overall Canal loss.

PROJECT BENEFITS

1. The Saroni Canal Water Conservation Project, Phase II is expected to conserve water as well as improve water transport and delivery efficiency through the installation of four cross-regulating structures. Water loss measurements during the 2016 irrigation season reached as high as 40% loss on multiple days but averaged 30% per the Nevada State Engineer (NSE). The total annual system loss from 1 April 2016 to 31 October 2016 (drought year) was calculated at 1,942.43 acre-feet per year. Upon completion of the Project, WRID estimates a total canal water savings of 571.86 acre-feet per year using the 2017 total water ordered and NSE loss percentage. This annual savings is based on the calculation of Total Water Ordered in 2017 (af) multiplied by Daily Water Loss Percentage per NSE multiplied by Potential Estimated Water Loss Percentage due to the fluctuation of water levels and possible water delivery inaccuracy.

Total Water Ordered in 2017 (af)	19062.19
Daily Water Loss Percentage per NSE	30%
Potential Estimated Loss Percentage	10%
Annual Total Projected Water Savings Phase I	571.86 acre-feet

2. Expected post-project annual average daily losses are estimated at maximum of 20% which is a 10% decrease from 2017 measurements. Installation of cross-regulating structures will decrease the amount of debris in the Canal and will allow for more accurate water delivery and flow measurement. Taking the action to complete the Project will ensure more water remains within the system and is available for irrigation use and/or instream flow; both of which improve the water supply reliability and availability.
3. The scope of positive impact will be seen throughout the project, but will ultimately yield results when the Post Performance Measures are completed. The overall water loss is expected to decrease approximately 10% from previous years. A positive impact will be felt by the water users who will receive accurate water delivery.
4. Increased support for the Project results in increased collaboration for future water conservation projects. ITRC has collaborated with WRID and the Saroni Canal governing board to prioritize Canal improvements. Because of the ITRC, WRID and Saroni Canal collaborations, other independent ditch companies within the Walker River Basin have expressed interest in discussing improvement projects to contribute to water conservation efforts. Tension and litigation within the Walker River Basin has been present for decades. With the continued drought and decreased water availability, tension builds. Diverse interest exists from the top of the Walker River's two forks down to the terminal Walker Lake. Litigation has been an ongoing issue, primarily with surrounding tribes. The benefit of this Project is that no water rights will be affected and it has the potential to increase flows directed toward the tribes and Walker Lake. The possibility of future water conservation improvements by water users and ditch companies will be enhanced by this Project by setting an example of possible water saving improvements.

- Walker River Basin thrives due to its agricultural economy. During the recent drought, water users were faced with the challenge of modifying their on-farm practices to accommodate the decreased availability of water. The economic benefits from increased instream flows would not only apply to the agricultural community, but will positively impact businesses along the Walker River who rely on recreational activity. With the expected loss reductions resulting in completion of the Saroni Canal Water Conservation Project, Phase II, it is projected that excess water will now stay within the Walker River or will ultimately return to the river system. Any return flow or water left in the river system will benefit the efforts in preserving Walker Lake, a terminus lake at the end of the Walker River system. Benefits of increased return flows and allowing water to remain in the river system include improved stability and diversity to riparian and lacustrine habitats, as well as improved physical water quality composition for both fish and wildlife.

PROJECT IMPLEMENTATION

- Upon grant approval, compliance with all local, state, and federal mandates will be obtained. Prior to any ground-disturbing activity, National Environmental Policy Act (NEPA) representatives will be contacted. One year has been estimated for all local, state and federal environmental studies to be completed. After all mandates and policies are adhered to, the Project will begin at the end of irrigation season in 2019 and will be constructed as per engineer suggestions in the ITRC Draft Technical Memorandum dated 16 September 2015. Beginning tasks will include removal of existing rocks, sheet piles, and other debris currently being used to modify canal flows. Upon removal of all obstacles, framing and concrete installation for the cross-section regulating structures will commence. The final construction tasks will be building and installing the catwalk railing; this task is projected to be completed in March 2020. Post Project Performance Measures include data collection, analyzation and reporting of canal water losses, flow rates and potential problem areas. These measures will begin in March 2020 and will conclude in November 2020 with the results being reported. The final task of the Project will be completing closeout report; all reporting will be completed by the end of June 2021. The reports will comply with Reclamation requirements and will include all necessary data and observations of the Project.

Milestone	November 2018	November 2019	November 2020	June 2021
Environmental/Cultural Review	X			
Structure Installation		X		
Post Project Performance Measures			X	
Closeout Report				X

2. As the proposal is planned for installation cross-regulating structures within an irrigation canal, it is exempt from dredging permits from the Environmental Protection Act and the Army Corps of Engineers under the Clean Water Act. The canal, which is man-made, does occasionally transport surface water acquired from the West Walker River as permitted by users for irrigation purposes. No other permits/permissions are required for the Project.
3. Walker River Irrigation District (WRID) works continually with the Irrigation Training & Research Center (ITRC) of California Polytechnic State University. ITRC Engineers provided a Draft Technical Memorandum dated 16 September 2015 which identifies all recommended improvement along the Saroni Canal. ITRC’s draft technical memorandum was compiled based on field studies performed, in person, by their Director and staff Engineers. All proposed improvements and projects are proposed based on their engineered specifications.
4. No new policies or administrative actions will be created in effort to implement the project.

PROJECT LOCATION

The Saroni Canal (the Canal) in Lyon County, NV, begins at the top of Hoye Canyon in Wellington, NV and ends near Hudson Aurora Road in Smith Valley, NV where it empties into a drain that returns water to the Walker River. The Project locations are sporadic along the canal. The Wedertz #5 turnout is located at 38.740022N, 119.352878W; the Cardoni turnout is located at 28.744836N, 119.312812W; the Straub turnout is located at 38.750874N, 119.302395W; the Lateral A turnout is located at 38.755884N / 119.302505W. (Figure 6)

Figure 6



NEXUS TO RECLAMATION

1. The proposed Project is connected to Reclamation project activities by contributing to the common goals such as conserving water, protecting agriculture, environmental and habitat interest.
 - a. Walker River Irrigation District does not receive Reclamation project water.
 - b. The Project is not on Reclamation project land and does not involve Reclamation facilities.
 - c. The Project is in the same basin as other Reclamation projects such as the Walker Basin Restoration Program with the National Fish and Wildlife Foundation and the Walker Basin Project with the University of Nevada- Reno and Desert Research Institute.
 - d. Project results will include an increase in return flows due to more efficient use of water and decreased water losses along the Saroni Canal. The increase in return flows have the potential to increase the amount of water intended for Walker Lake.
2. The waters of the Walker River Basin have been an integral part of life for many tribes including the Bridgeport Indian Colony, Washoe Tribe, Yerington Paiute Tribe and Walker River Paiute Tribe. Since the Project does not adversely affect the current flows, but potentially works to restore flows, it is a mutual benefit to other users such as the area tribes. The Federal Indian Trust Responsibility is a legally enforceable fiduciary obligation on the part of the United States, Reclamation included, to protect tribal resources, among other items. The Walker River Paiute Tribe has water rights along the Walker River and would benefit from increased flow, thus fulfilling a portion of the trust responsibility. Additionally, federal projects under Executive Order 13175, provided the opportunity for Tribal consultation which further helps Reclamation meet trust responsibility.

DEPARTMENT OF THE INTERIOR PRIORITIES

Tension and litigation within the Walker River Basin has been present for decades. With the continued drought and decrease water availability, tension builds. Diverse interest exists from the top of the Walker River's two forks down to the terminal Walker Lake. Litigation has been an ongoing issue, primarily with surrounding tribes. The benefit of this Project is that no water rights will be affected, and it has the potential to increase flows directed toward the tribes and Walker Lake.

ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

1. The cross-regulating structures are planned entirely within the property of Walker River Irrigation District. The removal of existing debris and structures may result in minimal airborne particulate matter. Surface material is primarily ditch bank vegetation.
2. No known occurrences of federally listed species have been documented in the project area, nor does the project area contain any critical habitat.
3. As the proposal is planned for installation of cross-regulating structures within an irrigation canal, it is exempt from dredging permits from the Environmental Protection Act and the Army Corps of Engineers under the Clean Water Act. The canal, which is man-made, does occasionally transport surface water acquired from the West Walker River as permitted by users for irrigation purposes. Classification by the Fish and Wildlife Service along the canal is wetlands.
4. The Saroni Canal has been owned and operated by the Walker River Irrigation District and the Saroni Canal Advisory Board since 1926. Regular maintenance has been completed on a continual basis. In 2015, several modernization projects were completed, and SCADA technology was implemented.
5. The project will replace man-made diversion structures such as rocks, sheet piles, and other objects with engineer recommended cross-regulating structures.
6. No historical or culturally sensitive properties lay within the project areas.
7. No known archaeological sites are present within the project areas.
8. The Project will not have a high or adverse effect on low income or minority populations.
9. Access will not be limited to any ceremonial grounds or sacred sites of Native Americans.
10. It is not anticipated that the Project will introduce or contribute to the spread of noxious or non-native invasive species known to occur within the area.

FUNDING PLAN AND LETTERS OF COMMITMENT

1. A total of **\$31,091.24** is planned as the applicant contribution toward the Project.
2. Annual assessment fees are collected from water right holders within the Saroni Canal boundaries.
3. An Official Resolution accompanies this proposal.
4. No other funding or project partner contributions have been requested.

Funding Sources	Amount
Non-Federal Entities	
1. Saroni Canal Company	\$31,091.24
Non-Federal Subtotal	\$31,091.24
Other Federal Entities	

1. N/A	\$0
Other Federal Subtotal	\$0
Requested Reclamation Funding	\$29,871.96

BUDGET PROPOSAL

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity Type	TOTAL COST
	\$/Unit	Quantity		
Salaries and Wages				
Bookkeeper	\$16.88	10	hour	\$168.80
General Manager	\$41.22	16	hour	\$659.52
Shop Laborer	\$14.61	480	hour	\$7,012.80
Shop Foreman II	\$17.65	480	hour	\$8,472.00
Data Technician	\$15.50	448	hour	\$6,944.00
Temporary Laborer; 2 employees	\$12.00	480	hour	\$5,760.00
Fringe Benefits				
All Employees	10%	\$29,017		\$2,902
Equipment				
Excavator, H35HI006	\$275.57	16	hour	\$4,409.12
Tractor Truck, T50XX029	\$45.15	10	hour	\$451.50
Lowboy Trailer, T45EA007	\$13.01	10	hour	\$130.10
Backhoe, L50CA004	\$41.72	16	hour	\$667.52
Compactor, C10BO0001	\$3.82	8	hour	\$30.56
Truck, T50XX010	\$11.97	20	hour	\$239.40
Construction Supplies/Materials				
Steel	\$350.00	4	Sites	\$1,400.00
Concrete	\$115.00	100	cy	\$11,500.00
Other				
Reclamation environmental and cultural compliance costs				\$10,216.00
TOTAL DIRECT COSTS				\$60,963.20
Indirect Costs				
None				\$0.00
TOTAL ESTIMATED PROJECT COSTS				\$60,963.20

FUNDING SOURCES	Percent of Total Project Cost	Total Cost By Source
Recipient Funding	51%	\$31,091.24
Other Recipient Funding		\$0.00
Reclamation Funding	49%	\$29,871.96
Other Federal Funding		\$0.00
TOTALS	100%	\$60,963.20

BUDGET NARRATIVE

Salaries and wages for Administrative staff are based on an hourly wage of \$16.88 plus 10% fringe. Duties of Administrative staff are grant preparation, submittal, reporting, and close-out for the duration of the grant. Salaries and Wages for Management staff are based on hourly wage of \$41.22 plus 10% fringe. Duties of Management staff are grant preparation, site research, supervisory duties, and grant management overview. Site crew salaries and wages are based on WRID Board approved hourly rates. There will be no travel charges applicable to this grant. Equipment charges are based on current unit prices and quotes from distributors.

UNIQUE ENTITY IDENTIFIER AND SYSTEM FOR AWARD MANAGEMENT

- A. SAM Registration: Confirmed
- B. EIN: 88-6001610
- C. DUNS: 126062368

ATTACHMENT

- A. Official Resolution



Walker River Irrigation District

Established in 1919

RESOLUTION NO. 1-19

**RESOLUTION OF THE BOARD OF DIRECTORS
OF THE WALKER RIVER IRRIGATION DISTRICT
GRANTING THE GENERAL MANAGER THE AUTHORITY TO APPLY FOR A
WATERSMART WATER AND ENERGY EFFICIENCY GRANT
TO THE U.S. BUREAU OF RECLAMATION**

WHEREAS, the Walker River Irrigation District (“District”) is a Nevada irrigation district organized under Nevada’s Irrigation District Act, N.R.S. Chapter 539; and

WHEREAS, the Walker River Irrigation District was formed in accordance with N.R.S. Chapter 539 on February 26, 1926, and is the owner of the Saroni Canal; and

WHEREAS, the Board of Directors of the District serves as the Board of Directors of Local Improvement District No. 4 with input from the Saroni Canal Advisory Board; and

WHEREAS, the U.S. Department of Interior’s WaterSMART (*Sustain and Manage America’s Resources for Tomorrow*) provides grant funding for the efficient use of water and integration of water and energy policies to support the sustainable use of all natural resources; and

WHEREAS, the grant program is administered by the U.S. Bureau of Reclamation; and

WHEREAS, the U.S. Bureau of Reclamation requires the grant applicant to designate, by resolution, an authorized representative for filing the grant application; and

WHEREAS, the Saroni Canal Advisory Board has requested the District to implement the Saroni Canal Water Conservation Project Phase II; and

WHEREAS, the District desires to apply to the U.S. Bureau of Reclamation for grant funding to implement the Saroni Canal Water Conservation Project Phase II.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors, the governing body of the District and Local Improvement District No. 4 as follows:

- 1) That application be made to the U.S. Bureau of Reclamation to obtain a WaterSMART Water and Energy Efficiency Grant to receive a grant for the Saroni Canal Water Conservation Project Phase II.
- 2) The General Manager of the District is hereby authorized and directed to prepare the necessary data, conduct investigations, and file such application with the U.S.

Bureau of Reclamation and to execute any documents necessary to accept such grant once funded.

- 3) The General Manager of the District is further specially authorized to make the required assurances to the U.S. Bureau of Reclamation in accordance with the rules, regulations and policies of the U.S. Department of Interior Bureau of Reclamation WaterSMART Program.
- 4) That, if the application is selected for an award, the District will work with the U.S. Bureau of Reclamation to meet established deadlines for entering into a grant funding agreement.
- 5) That a copy of this Resolution shall be submitted to the U.S. Bureau of Reclamation WaterSMART Program.

UPON MOTION DULY MADE AND SECONDED and approved by 5 in favor, 0 opposed, and 0 abstaining, the Board of Directors adopted the foregoing Resolution.

Dated this 9th day of July 2018.

Attest: Bridget A Banta
Secretary

Jim Ingle
President