Treasure Valley Water Supply Project Surface Water Modeling and Dashboard

WaterSMART-Applied Science Grants for Fiscal Year 2023

Funding Opportunity No. R23AS00446

Star, Idaho

October 17, 2023

Applicant

Water District 63
PO Box 767
Star, ID 83669

Project Manager

Mike Meyers, Watermaster
Water District 63
PO Box 767
Star, ID 83669
Email: mike@wd63.org
Phone: 208−908−5482

Prepared for:

U.S. Department of the Interior
Bureau of Reclamation

Contents

1 Executive Summary

1.1 Applicant Information

Date: October 17, 2023
Applicant Name: Water District 63
City, County, State: Star, Ada, Idaho
Applicant Category: A
Grant Funding Request: $400,000
Non-Federal Matching Funds: $471,430
Total Project Costs: $871,430
Federal Facility Denotation: The project is not located on a federal facility.

1.2 Project Summary

Recent changes in the Treasure Valley's irrigation distribution system, land use, irrigation practice, and drain flow operations have led to declining flows in tributary drains to the Boise River. These tributary drains are the primary source of supply for water users with senior natural flow water rights downstream of Caldwell, Idaho. Water District 63, the entity responsible for managing and administering water delivery on the Boise River, needs to be able to anticipate and manage water deliveries as the nature of tributary flows change. The Treasure Valley Water Supply Project (TVWSP) is a multiphase effort to collect data, develop modeling tools and analytics, and better manage water to avoid supply shortfalls resulting in conflicts associated with changing drain flows. The project will collect flow data throughout the tributary drain network. These data will be used to develop Microsoft (MS) Power Business Intelligence (Power BI) data visualization and analysis tools to inform and improve the seasonal management of water delivery on the Boise River. Additionally, hydrologic modeling will be developed that water managers can use to evaluate the impacts of hydrologic changes associated with the development of irrigation practices, changes in irrigation practices, and other hydrologic changes that will influence long-term trends in drain flow. These models can inform needs for both changes in practice and additional infrastructure to support sustainable delivery of water in the changing watershed. With improved monitoring data, analytics, and forecasting on tributary flows to the Boise River, Water District 63 believes that better management will avoid water supply shortage and associated conflicts.

2 Technical Project Description

2.1 Applicant Category

Water District 63 (WD63) is a Category A applicant. The district has authority from the State of Idaho to manage and administer water delivery on the Boise River and its tributaries. Members of WD63 are irrigation districts, canal companies, ditch companies, municipalities, and other water users who would also qualify as Category A applicants.

2.2 Detailed Project Description

The district implements real-time monitoring (RTM) technology on Boise River diversions and is currently developing similar monitoring on drainage channels (drains) that capture irrigation runoff, operational spills, and intentional diversions from canals and shallow groundwater. Flow data collected in the drains will inform the availability of water for downstream diversions within the drains and Boise River. This grant application proposes funding for field work supporting the RTM drain network, and the development of visualization, analysis, and modeling tools that the district will use to better manage and conserve water.

WD63 is in the process of installing new pressure transducers on open-channel drains. The transducers measure water depth. Each device will communicate via a cable-connected telemetry unit to a carrier-grade (i.e., cybersecure, redundant, and future proof) network operated by Ethos Wireless, the largest public carrier-grade Long Range Wide Area Network (LoRaWAN) network provider in North America.

The district will need to complete field work to measure flow at these sites to develop and update accurate depth-discharge rating curves for each site and evaluate the performance of each site. Sites that are not producing a replicable rating will be reinstalled elsewhere. Field work supporting the collection of reliable drain flow data will be critical to the success of the project. WD63 watermaster, Mike Meyers, and deputy watermaster, Daniel Hoke, are experienced in measuring flow in open channels using acoustic Doppler current profilers (ACDPs), and siting and installing the instrumentation and telemetry needed at each site. They will perform the field work for the project.

RTM will automatically and remotely collect, store, and display hourly flow data via a LoRaWAN network and web-based platform/graphical user interface (GUI), provided by Ethos Wireless. The equipment and technology required for the project is commercially available today and has been used successfully by other natural resource districts, including on 64 diversion channels along the Boise River within WD63.

Data collected as part of this project will include estimates of flow throughout the Boise River drain network. These data will be used to develop Microsoft (MS) Power Business Intelligence (Power BI) data visualization and analysis tools to inform and improve the

seasonal management of water delivery on the Boise River. Additionally, hydrologic modeling will be developed that water managers can use to evaluate the impacts of hydrologic changes associated with the development of irrigation practices, changes in irrigation practices, and other hydrologic changes that will influence drain flow trends long term. These models can inform needs for both changes in practice and additional infrastructure to support long-term delivery of water in the changing watershed.

The concept for the MS Power BI data visualization and analysis tool is to create a dashboard that WD63 and other water managers can access to quickly see and evaluate flow in the drain network. Water managers will use this dashboard to estimate trends in flow, changes in flow, diurnal flow changes, and changes in ungaged returns and diversions to the drains. Being able to collect, organize, and analyze this type of data will allow WD63 to see the cause of declining drain flow as it is occurring, coordinate with the irrigation districts and water managers, and avoid delivery shortfalls downstream.

In addition to developing the dashboard, hydrologic modeling will be completed to evaluate changing flow in drains as a function of changes in spills, diversions, return flow, and groundwater seepage. The modeling tasks will include the following steps:

1. Software Selection: -WD63 will work with a consultant to evaluate software modeling platforms that can be integrated with data from groundwater modeling, existing watershed mapping, and surface water flow monitoring to evaluate long-term trends in drain flow. Software packages may include River Ware, Stella, or other hydrologic and system dynamics models.
2. Model Development: WD63 will work with the consultant to develop the framework for the hydrologic model that will include the network of nodes associated with monitoring locations, spills, and diversions from the various drains to the Boise River. This framework will also enable making initial estimates of groundwater flow to the drains, based on the Idaho Department of Water Resources' (IDWR) Treasure Valley Groundwater Flow Model; direct return flow from flood irrigated fields, based on previous estimates such as those developed as part of the spatially distributed water budget for the Treasure Valley; and other flow data sources.
3. Initial Model Calibration and Verification: WD63 will work with the consultant to estimate ungaged return flow and groundwater seepage to the drains based on data collected over the first several years of the Treasure Valley Water Supply Project (TVWSP). This may involve coordinating with water managers and IDWR and collecting additional field data to better understand ungaged gains and losses from the tributaries that are either associated with small returns, small diversions, or groundwater seepage.

4. Future Conditions Modeling: WD63 will work with the consultant to simulate future conditions based on projected groundwater elevations, land uses, and any additional diversions or returns to the drains. This modeling will be used to anticipate future reductions to drain flow that may occur and what improvements could be made either to water delivery infrastructure or operations to mitigate potential water delivery disruptions.

2.3 Project Goals

The objective of the TVWSP is to improve data monitoring and collection in order to improve water management within the drains and avoid water shortages within the Boise River basin.

The drain monitoring plan will be designed to identify changes in flow within the drains resulting from the following:

- Conversion of agricultural properties to residential subdivisions;
- Daily flow fluctuations; and
- Changes in irrigation, drainage, and flood district operations within the drains.

The collected drain monitoring data will be made available to water managers and the public on a real-time basis through an online dashboard to characterize and inform the following:

- Anticipated long-term impacts of development on drain flows;
- Causes, timing, and magnitude of daily drain flow fluctuations;
- Location and magnitude of irrigation district surcharges into drains;
- Availability of water at downstream diversions on drains;
- Opportunities to improve efficiency and effectiveness of water delivery operations on the drains; and
- Strategic locations on the drains for water management facilities.

Project Location

The TVWSP is located in Ada and Canyon counties in Southwest Idaho. This project will develop a dashboard and hydrologic modeling depicting and analyzing flow in the tributary drains to the Boise River. The highest density of monitoring and modeling will be completed for Fifteenmile and Mason creeks. The maps for these are shown in Figure 1 The locations of the areas draining to these watercourses are shown in Figure 2.

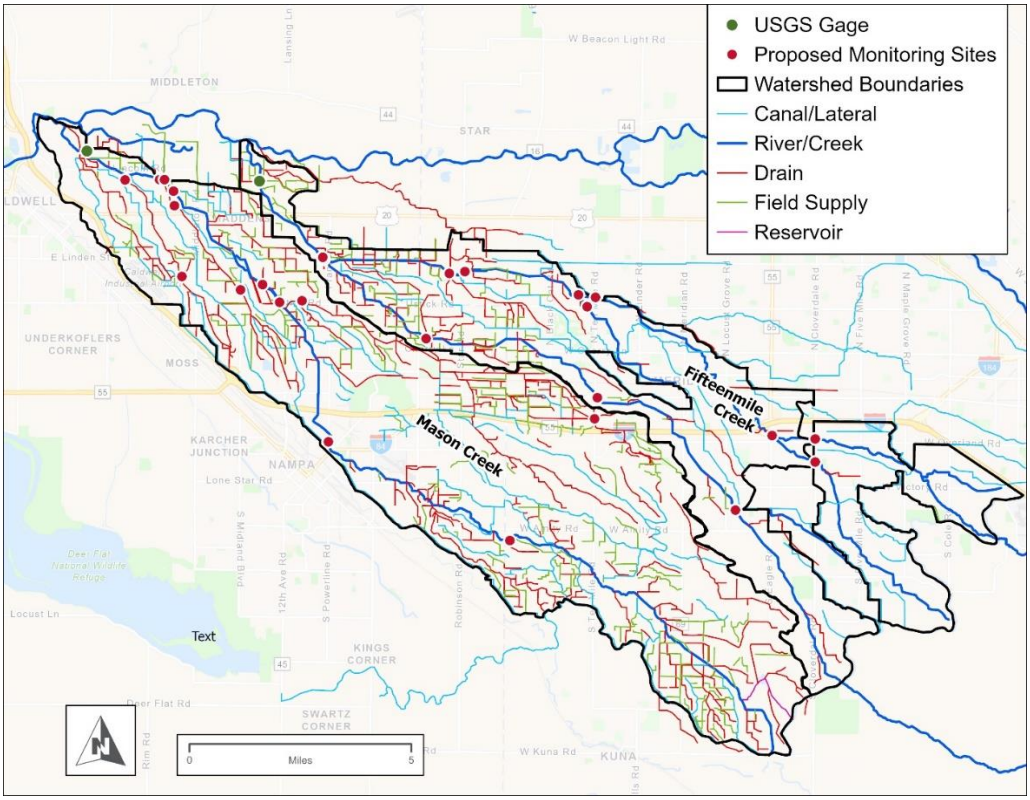

Figure 1. Mason Creek and Fifteen Mile Creek Preliminary Flow Monitoring Plans

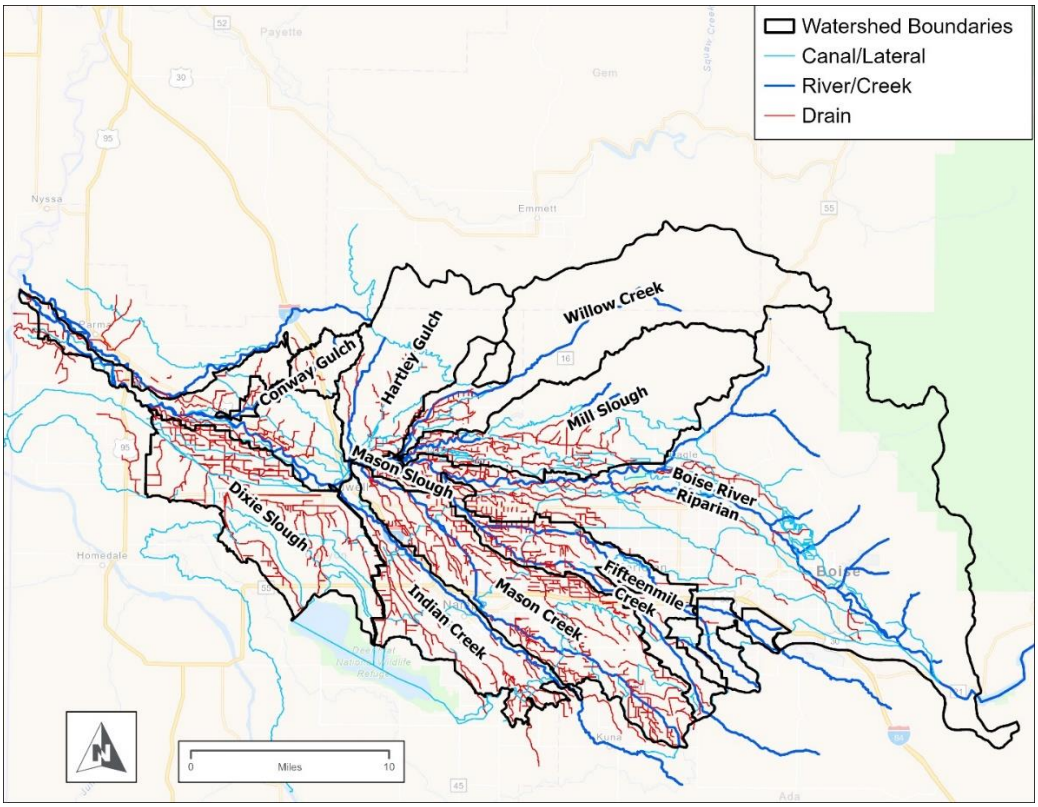

Figure 2. TVWSP Project Area Map

3 Data Management Practices

Data collected as part of this project will include estimates of flow throughout the drain network that contribute flow to Boise River. Flow measurements will be referenced spatially and recorded using ArcGIS. Data management and modeling tools will follow similar industry-standard formats.

4 Evaluation Criteria

4.1 Evaluation Criterion A—Water Management Challenge(s)

1. *Describe the water management challenge(s). Describe in detail the **water management challenge** occurring within your project area.*

The Boise River drainage system was constructed in the early 1900s to alleviate impacts to agricultural production within the Lower Boise River valley due to the accumulation of shallow groundwater from irrigation deliveries. The reliable nature of the return flows from the drains to the Boise River allowed natural flow diversions for water rights holders in the lower reaches of the Boise River below Middleton, Idaho, to be met entirely with drain flow. Therefore, all the natural flow in the Boise River above Middleton could be used to meet diversions for water rights holders above Middleton.

However, over the last 30 years, the magnitude of the drain flows and the required operation of the drains have changed dramatically due to urbanization and increased drought duration due to climate change. Irrigation runoff to the drains has decreased with less irrigation supply available for delivery and fewer flood-irrigated agricultural fields. In addition, irrigation districts have implemented conservation measures to reuse supplies and waste less water, which has required the use of the drains as an extension of their irrigation conveyance systems.

During the 2022 irrigation season, these declines reached the point where there was insufficient natural flow to satisfy the water rights and irrigation needs of several canal companies diverting water from the Boise River below Caldwell, Idaho. This trend of declining flows is of great concern to the Boise River watermaster and WD63 water users. In hindsight, 2022 shortfalls were met by unknowingly delivering salmon flow augmentation water. Similar future water shortages could require administration of Boise River water rights.

Treasure Valley water managers have observed declining drain flows for many years. Rapid development has converted large areas in the Treasure Valley from flood-irrigated agricultural fields to urban and suburban uses with impervious, paved areas and pressure-irrigated lawns and landscaped areas. In addition, many canals have been piped due to development, to conserve water, or reduce the risk of canal failure and flood damage. These and other changes in Treasure Valley land use and irrigation

conveyance systems have reduced flows to the drains, and ultimately Boise River flows below Middleton.

The watermaster requires the ability to monitor the drain network on a real-time basis to understand current conditions and availability of water to be able to actively manage the system to mitigate shortfalls. Currently, the watermaster has the ability to monitor flow in the Boise River at Middleton and Caldwell. There are also U.S. Geological Survey (USGS) stream gages at the mouth of some drains to the Boise River. Reviewing and evaluating these data requires the watermaster to seek out flow in individual drains and track the aggregate increases or decreases in flow separately. There are not any gauges upstream on any of the drains. Therefore, the watermaster does not have information on changes that may be occurring within the drain shed and how these changes to return flow could be mitigated. In previous years, when declines in drain flow have led to shortfalls on the Boise River, the watermaster would find out in hindsight, either using end of week reporting or from reports of the landowner water manager, that the river was nearly dry downstream of Caldwell. The current system of flow monitoring and data collection is insufficient for the increasingly complex return flows to the Boise River and deliveries downstream of these return flows.

2. *Describe the concerns or outcomes if this water management challenge is not addressed?*

Without monitoring data and associated evaluations, the watermaster will not have the information needed to avoid a shortfall of water on the Boise River. It is almost inevitable that a flow shortfall on the Boise River will lead to the inability to deliver natural flow water to senior natural flow water rights holders downstream of Caldwell. If this occurs, water rights holders downstream of Caldwell will make a water call to WD63 This type of action will lead to strict administration of water rights on all drains and years of water rights-related legal conflicts. By improving the data and operability of Boise River flows, including drain flows, WD63 can make the most efficient use of water and avoid this type of conflict.

3. *Explain how your project will address the water management issues identified in your response to the preceding bullets and provide support for your response.*

As described above, collecting flow data and responding proactively to potential shortfalls is expected to avoid water rights administration through improved management. This project will improve water management by developing a robust monitoring network that will allow WD63 to observe and respond to seasonal and long-term changes in drain flow returns to the Boise River. Responses may include temporary increases to reservoir releases, drain flow augmentation, groundwater recharge, and drain flow reregulation.

Without these data and modeling, it would not be possible to evaluate mitigation alternatives. Mitigating water delivery shortfalls downstream of Caldwell will improve

water supply reliability and longevity for municipal, agricultural, environmental, and recreational users of the Boise River. During drought years, the data collected in these drains will be even more important for making best use of the available surface water in the Treasure Valley.

The data collected in this study can also be used to better inform the Treasure Valley groundwater flow model because it will provide a basis for quantifying ungaged gains within the drains that can be compared with flow to the drains estimated in the groundwater model. In this way, the data collected and evaluated using these tools will improve the conjunctive evaluation of both groundwater and surface water.

WD63 has discussed this project proposal with the Lower Boise Watershed Council (LBWC). LBWC is keenly interested in this project to improve watershed management planning within the Treasure Valley. The data collected and analysis completed as part of this project will quantify the hydrologic changes occurring in the Treasure Valley and how these changes impact flow to the Boise River. The LBWC is looking for ways to refine sub watershed management plans in ways that account for these hydrologic changes and the associated changes in sediment and phosphorus loading to the Lower Boise River. Better characterization of the hydrologic changes that have resulted and are likely to occur as development continues in the area will help the LBWC identify reductions in and sources of future contaminant loading to the Boise River. In this way, the data collected in this study has the potential to improve watershed management and overall watershed health within the Lower Boise River.

4.2 Evaluation Criterion B—Project Benefits

1. *Describe how the need for the project was identified. Was the proposed project identified using a collaborative process with input from multiple and diverse stakeholders?*

The need for the project was originally identified during discussions between WD63 staff and board members of the LBWC. These discussions focused on changes in the watershed and the challenges associated with those changes. Discussions led to several presentations and meetings with industry groups, professional societies, local governments, state agencies, federal agencies, and water management entities. A list of the entities and stakeholders with whom this proposal has been discussed and developed is provided below. Many of these stakeholders have contributed cost share toward the development of the drain flow monitoring network and initial efforts to scope this project.

- Idaho Water Users Association
- Treasure Valley Water Users Association
- Lower Boise Watershed Council
- Idaho Department of Environmental Quality
- Ada County
- Canyon County

- City of Meridian
- City of Boise
- City of Nampa
- City of Caldwell
- City of Middleton
- City of Eagle
- Idaho Soil Water Conservation Service
- Pioneer Irrigation District
- Nampa and Meridian Irrigation District
- Water District 63 Advisory Committee
- Idaho Power Company

Describe how the tool, method, or information will be applied and when will it be applied.

- *Will the tool or information be used immediately or will additional work need to be done before the tool will be used?*

This project will collect data and develop two tools, the Power BI surface water flow dashboard and hydrologic models of the drains. The dashboard will be developed fully as part of this project. The dashboard will show the geo-referenced location of all data collected, allow users to view trends in observed flow and ungaged changes to flow between drain monitoring locations. The MS Power BI platform provides flexibility in how the data are structured such that as flows change, these values can be observed on the dashboard and made available to WD63 and other water managers. This tool will give managers the ability to observe drain flow declines and respond proactively with management actions before they become flow shortfalls in the Boise River. This tool will be developed for immediate use.

Hydrologic modeling will also be developed for immediate use. As stated above, modeling tasks will include model development, model calibration, and simulating future hydrologic conditions. WD63 and water managers will be able to immediately act on the insights gained from existing and future conditions hydrologic modeling. Following this project, additional simulations or refinements to the model may be warranted periodically. WD63 can work with stakeholders to determine if and when additional modeling may be required.

2. *Describe, in detail, the extent of benefits that can be expected to occur upon implementation of the project, and provide support for your responses.*

The dashboard, hydrologic modeling, and data developed under this project will be used by WD63, irrigation districts, drainage districts, canal companies, and IDWR to manage water deliveries using real-time data on the Boise River and its tributary drains. Several of these entities have provided letters of support, which are included in Attachment A. Currently, these entities have limited and dispersed data on which to base water management actions such as reservoir releases, regulated spills, and deliveries. Instead of making actions in arrears, as described above, water managers will be able to make these decisions based on real-time data. This will reduce operational uncertainty, operational spills, and ultimately avoid shortfalls and associated water

conflicts. As related to diurnal fluctuations in drain flow, drains such as Fifteenmile Creek experience diurnal fluctuations of 50 to 90 cubic feet per second (CFS). These fluctuations are present in the river at the USGS gage at Caldwell. Only the lowest point of the diurnal fluctuation can be reliably delivered or managed using the current data system. As a result, up to 90 acre-feet of water passes beyond Caldwell but is ultimately not delivered. Real-time flow data collection will allow water managers to deliver water, stabilize drains, or re-regulate the drains to reduce this fluctuation and ultimately conserve this water. This provides a broad benefit to WD63 water users, will improve water delivery reliability, and may extend irrigation seasons during drought years.

3. *Explain how your project complements other similar efforts in the area where the project is located. Will your project complement or add value to other, similar efforts in the area, rather than duplicate or complicate those efforts? Are there other similar efforts in the area that have used a similar methodology successfully which can be complimented?*

WD63 is completing a multiyear effort to automate the control and measurement of diversions from the Boise River. This effort leverages wireless communication, data collection, and flow measurement technology that is similar to the technology being used to measure drain flow. Through the collection of both diversion and return flow data to the Boise River, WD63 is developing a robust monitoring system from which Boise River flows can be managed. In this way, visualization, analytics, and modeling associated with the drain flow complements the real time monitoring and control of Boise River diversions.

As discussed above, the LBWC is completing subwatershed planning to address sediment and phosphorus loading to the Boise River. These efforts include detailed mapping and hydrologic characterization of the drain sheds that contribute to the Boise River. The Lower Boise watershed is rapidly urbanizing and irrigation practices in both urban and agricultural areas of the watershed are changing. The hydrologic changes impact both flow and loading of sediment and phosphorus to the Boise River. Collecting data on the drains will provide insights into how hydrology continues to change in areas experiencing urbanization or irrigation modifications. This project will add value and insights to the LBWC's subwatershed planning efforts.

Flows in the Boise River are operated for water delivery, water storage, flood control, and streamflow maintenance. Boise River water operations involve coordination between WD63, the United States Bureau of Reclamation (Reclamation), the United States Army Corps of Engineers, IDWR, and the Idaho Department of Fish and Game (IDFG). Improved information on tributary drain flow to the Boise River will better inform instream conditions throughout the Boise River system for all Boise River operations and improve coordination between the several agencies responsible for operating flow in the Boise River. More and better information will improve management of flow in the Boise River for the various uses for which the river is operated.

The municipalities and counties in the study have developed comprehensive planning documents identifying areas that will transition from agricultural land use to suburban or other developed land uses. Urbanization leads to reduced irrigated acres, increased impermeable area, transition from flood irrigation to pressure irrigation, nighttime watering, piping and lining of irrigation facilities, and a suite of other changes with hydrologic impacts. Long-term water supply planning and water delivery infrastructure planning needs to account for the aggregate impact of urbanization on surface water flow. This study connects land use planning with long-term water supply planning.

4.3 Evaluation Criterion C—Project Implementation

1. *Briefly describe and provide support for the approach and methodology that will be used to meet the objectives of the project.*

The technology being used to collect flow data includes telemetry and pressure transducers produced by Ethos Wireless. Data are transmitted using a LoRaWAN wireless network. The infrastructure required to support this telemetry is installed in the Treasure Valley and has been reliably delivering data for WD63 as part of the diversion measurement automation project. This project will not install new sensors but will require frequent flow measurements at these locations to correlate water level, collected by a pressure transducer, to flow and changing conditions at each location. Flow will be measured using an ACDP to develop rating curves and establish appropriate shifts, as needed.

The dashboard will be developed using MS Power BI. This platform is commonly used to compile, display, and analyze data from several sources. The platform is highly customizable and can be adapted to meet the specific needs of the water district during the development phase.

The specific software that will be used for hydrologic modeling has not been determined. One of the first steps in the hydrologic modeling tasks is to select software. Two software platforms, Riverware and Stella, have been used in other similar applications throughout the western United States. Riverware has more functions that have been developed to describe hydrologic processes whereas Stella is more general and customizable. Following initial data collection, the data will help inform the selection of modeling software for this project.

2. *Describe the work plan for implementing the proposed scope of work.*

A detailed work plan is provided in the Project Description section of this application. The project schedule, major milestones, and task start and end dates are summarized in Table 1. Upon award, WD63 will review the schedule and may refine milestone dates appropriately.

Table 1. Project Schedule

Task	Start Date	End Date
WaterSMART Award	04/01/2024	04/01/2024
Field Data Collection	04/01/2024	08/31/2026
BI Dashboard Development	05/01/2024	10/01/2024
BI Dashboard Testing and Refinement	10/01/2024	08/01/2026
Hydrologic Model Development	05/01/2024	11/01/2024
Hydrologic Model Calibration and Verification	12/01/2024	12/01/2025
Future Conditions Simulations	01/01/2026	05/01/2026
Reporting	05/01/2026	08/31/2026
Project Close Out	08/31/2026	09/30/2026

Cost for each task is summarized in Table 2. The basis for these costs is provided in the Budget Narrative section of this application.

Table 2. Cost by Task

Task	Cost
Field Work and Data Collection	$120,230
Data storage and LoRaWAN Subscription	$151,200
Dashboard Development and Hydrologic Modeling	$600,000
Total	$871,430

3. *Provide a summary description of the products that are anticipated to result from the project.*

The products that will be developed as part of this project are summarized in Table 3.

Table 3. Products Developed During Project

Product	Format
Dashboard	Power BI Website
Flow Data	Excel, available on dashboard or Ethos wireless cloud
Hydrologic Model	Riverware, Stella, or other appropriate platform
Hydrologic Model Development Memo	PDF

4. *Who will be involved in the project as project partners? What will each partner or stakeholder's role in the project be? How will project partners and stakeholder be engaged in the project and at what stages?*

Project partners will include multiple stakeholders, including the Treasure Valley Water Users Association, participating municipalities, Canyon and Ada counties, LBWC, and IDWR. WD63 coordinates regularly with these stakeholders through interagency coordination meetings, WD63 advisory committee meetings, and Boise River water supply and coordination meetings. These meetings will be the primary avenues for stakeholder engagement and updates during this project. Conferences and meetings such as the Treasure Valley Water Summits, the Idaho Department of Environmental Quality (IDEQ) Annual Workshop, and the Idaho Water Users Association annual convention provide additional opportunities to present and discuss updates associated with this project.

5. *Identify staff with appropriate credentials and experience and describe their qualifications. Describe the process and criteria that will be used to select appropriate staff members for any positions that have not yet been filled. Describe any plans to request additional technical assistance from Reclamation or via a contract.*

WD63 watermaster, Mike Meyers, and deputy watermaster, Daniel Hoke, have been installing and maintaining telemetry units and pressure transducers used for measuring flow in canals and drains for over 2 years. Collecting accurate flow data for these sites and developing rating curves is well within their capabilities.

WD63 will solicit requests for qualifications (RFQs) from engineering firms. From the RFQs, WD63 will be able to assess qualified firms based on their experience with Boise River hydrology, developing BI dashboards, and hydrologic modeling. The project team will be capable of proceeding with tasks within the proposed project immediately upon entering into a financial assistance agreement with Reclamation.

4.4 Evaluation Criterion D—Dissemination of Results

Explain how project results will be disseminated, including:

Describe how the tools, frameworks, or analyses developed under the proposed scope of work will be disseminated, communicated, or made available to water resources managers who may be interested in the results.

WD63 is the primary beneficiary of this project. Additional beneficiaries, including interested stakeholders and water resource managers in the area, will be able to access the dashboard using a web browser. Modeling files and the associated report will also be made available on the WD63 webpage to interested stakeholders and other water managers. Other water managers in the west interested in employing similar technology would also be able to view the tools from this project.

4.5 Evaluation Criterion E—Presidential and Department of the Interior Priorities

Climate Change: E.O. 14008 emphasizes the need to prioritize and take robust actions to reduce climate pollution; increase resilience to the impacts of climate change; protect public health; and conserve our lands, waters, oceans, and biodiversity.

This project addresses actions needed to reduce greenhouse gas emissions and respond to climate change in the following ways:

- Automated flow monitoring reduces the need for WD63 staff to complete in-person measurements. As a result, hundreds of trips required to measure flow will be eliminated and district staff will only complete trips required to develop the rating curves and check the flow measurement sites. Greenhouse gas emissions will be significantly reduced.
- Climate change is expected to increase temperatures that will, in turn, increase irrigation demand and evaporative losses. Proactive measurement of flow in drains will allow for quantifying reduced return flow as a result of increased evaporation and evapotranspiration during irrigation seasons. Water delivery can be managed in light of these changes.
- Climate change is expected to increase the intensity and duration of drought events. Improved water supply management will conserve water, improving drought resilience and extending the irrigation season during drought years.
- Climate change is expected to increase the duration and intensity of droughts and increase the frequency of high intensity precipitation events. Improved flow measurement in tributary drains can be used to assess changes to flow frequency needed to better understand both low flow and high flow hydrology as it relates to drought and flood management.

Disadvantaged or Underserved Communities: E.O. 14008 and E.O. 13985 affirm the advancement of environmental justice and equity for all through the development and funding of programs to invest in disadvantaged or underserved communities.

This project is located within tract number 16027021100 in Canyon County, Idaho. This tract is considered disadvantaged because it meets one burden threshold and the associated socioeconomic threshold. Specifically, this tract meets the burden threshold for wastewater discharge and the associated socioeconomic threshold for low income. This project improves water management and water supply reliability for this tract, which may improve agricultural water supply and economic activity within this area.

Tribal Benefits: The Department of the Interior is committed to strengthening tribal sovereignty and the fulfillment of Federal Tribal trust responsibilities. The President's memorandum, Tribal Consultation and Strengthening Nation-to Nation Relationships,

asserts the importance of honoring the Federal government's commitments to Tribal Nations.

In 2004, the State of Idaho agreed to settle the Nez Perce Tribe's water rights claims by supplying 800 kilo acre-feet (KAF) per year to the tribe as salmon flow augmentation. As described above, in 2022, this water was unknowingly delivered to meet irrigation demands. By monitoring and managing the drains in real time, the watermaster can prevent the diversion of salmon flow augmentation storage releases by water right holders in the Lower Boise River. The state has difficulty providing this much water during drought years. While most of this water comes from the Upper Snake River basin, the Boise River basin also contributes water when it is available. By conserving water, this project will reduce the risk of water scarcity for the Nez Perce Tribe.

5 Project Budget

The installation of flow monitoring locations throughout the tributary drains network is being funded by a broad group of stakeholders in the Treasure Valley. Attachment B summarizes the financial contributions of this broad group of stakeholders. Water District 63 will coordinate with these stakeholders to secure cost share funding for the miscellaneous field equipment needs, dashboard, and modeling described in this proposal. Water District 63 is pursuing $200,000 through the Idaho State Department of Agriculture Water Quality Program for Agriculture as cost share for this project. Water District 63 is also capable of putting its own in-kind and cash contributions toward the project. Table 4 summarizes the expected total project cost sharing and voluntary cost sharing necessary to complete the project.

Table 4. Summary of Non-Federal and Federal Funding Sources

Funding Sources	Amount
Non-Federal Entities	
1. Water District 63	$ 120,230
2. Idaho State Department of Agriculture- Water Quality Program for Agriculture	$ 200,000
3. Project Partners Total Expected Contributions	$ 151,200
Non-Federal Subtotal	$ 471,430
Requested Reclamation Funding	$ 400,000

6 Environmental and Cultural Resources Compliance

There are no environmental and cultural resources compliance issues and concerns with this project.

7 Required Permits or Approvals

No permits or approvals are required for this project.

8 Overlap or Duplication of Effort Statement

There is no overlap between this project and other anticipated projects or proposals. This proposal does not duplicate work included in any other federal funding proposals.

9 Conflict of Interest Disclosure Statement

At this time, WD63 knows of no actual or potential conflicts of interest as defined and governed by 2 Code of Federal Regulations (CFR) §1402.112. Grant funds will not be used for any lobbying activities. Should any actual or potential conflict of interest become known to WD63 during the life of the award, the district will provide prompt notice in accordance with §1402.112(b).

10 Uniform Audit Reporting Statement

WD63's Employer Identification Number is 82-60000465. The last audit report is not available through the Federal Audit Clearinghouse website.

11 SF-LLL: Disclosure of Lobbying Activities

This section is not applicable to WD63.

12 Letters of Support

The letters of support (Attachment A) demonstrate the partnership between the WD63 and several key stakeholders.

13 Official Resolution

The attached resolution demonstrates WD63's support and commitment to this project.

STATE OF IDAHO
WATER DISTRICT No. 63
(BOISE RIVER)
Mike D Meyers, Watermaster
P.O. Box 767
STAR, IDAHO 83669-0767
(208) 908-5482

Resolution K

RESOLVED, That the water users of Water District #63 grant Mike D Meyers the legal authority to enter into an agreement with the Bureau of Reclamation for Water Smart Grants. The Water Users of Water District #63 grant the authority to the Advisory Committee of Water District #63 to review and approve the grant. The Water Users of Water District #63 grant the authority to Water District #63 to provide the amount of funding and / or in-kind contributions specified in the funding plan. The Water User of Water District #63 grant the authority to Water District #63 to work with Reclamation to meet established deadlines for entering into a grant or cooperative agreement.

Clinton C Pline

Mike D Meyers

Attachment A: Letters of Support

Treasure Valley WATER USERS ASSOCIATION
BOISE RIVER BASIN

55 SW 5th Avenue, Suite 100 / Meridian, ID 83642
PH 208.888.0988 / FX 208.888.4586

October 10, 2023

Bureau of Reclamation
Water Resources and Planning Office
PO Box 25007, MC 86-63000
Denver, CO 80225-0007

RE: Letter of Support for Water District 63 - Fiscal Year 2023 WaterSMART Applied Science Grant

The Treasure Valley Water Users Association (TVWUA) fully supports Water District 63 (WD63) application for a 2023 WaterSMART Applied Science Grant and their efforts to monitor and manage the Boise River tributary drains on a real-time basis. Improved management of the Boise River is vital to the sustainability of healthy communities within the Treasure Valley.

Water District 63 has been a longtime partner of the Treasure Valley Water Users Association and has recently spearheaded the Treasure Valley Water Supply Assessment and Sustainability Project. This endeavor holds promise not only for TVWUA members but for the broader Treasure Valley community. The employees at Water District 63, supported by financial contributions from groups like the Bureau of Reclamation, possess the capability to successfully complete this essential project.

Treasure Valley residents depend on the Boise River for water for agriculture and urban landscaping, hydropower generation, fisheries and wildlife habitat, and recreation. It is imperative that water supplies are proactively managed to meet the continued demands of Treasure Valley water users.

TVWUA is proud to say that the hard working and dedicated group of individuals at WD63 have thoroughly impressed our organization. TVWUA members are ecstatic to see the continuation of this project. Through hydraulic modeling and the online data hub, water users will be able to gain better insight on water conservation incentives and overall surface water supply management that will ensure a steadfast continued water supply in the Treasure Valley for future generations.

Real-time monitoring of Boise River drain flows will allow the WD63 Watermaster to manage previously unmeasured components of the Boise River's water supply to help reduce future water conflicts within the basin. If you have any inquiries or require further information, don't hesitate to contact me at roger@amgidaho.com. Thank you for your attention to this letter of support and we look forward to witnessing the positive impacts of this project.

Sincerely,

Roger Batt, Executive Director

PUBLIC WORKS DEPARTMENT
MAYOR: Lauren McLean | DIRECTOR: Stephan Burgos

October 13th 2023

Mike Meyers, Watermaster
Water District 63
10769 W. State St.
Star, ID 83669

RE: Water District 63 Fiscal Year 2023 WaterSMART Applied Science Grant

The City of Boise strongly supports Water District 63 (WD63) in their efforts to monitor and manage the Boise River tributary drains on a real-time basis. Improved management of the Boise River is vital to the sustainability of healthy communities within the Treasure Valley.

Residents of the Treasure Valley depend on the Boise River for drinking water, irrigation of agricultural fields and urban landscaping, hydropower generation, fisheries and wildlife habitat, and recreation. It is imperative that water supplies are proactively managed to ensure there is adequate supply to meet the entire portfolio of Treasure Valley demands.

Real-time monitoring of Boise River drain flows will allow the WD63 Watermaster to manage a previously unmeasured component of the Boise River water supply to reduce future water conflicts within the basin. The city is supportive of advancing the science and increasing monitoring for this critical resource.

Sincerely,

Haley Falconer, PE
Environmental Division Senior Manager
Public Works
Office: (208) 608-7165
hfalconer@cityofboise.org

BOISE RIVER FLOOD CONTROL DISTRICT #10
PO Box 140396
Garden City, Idaho 83714-0396

October 12, 2023

Water District 63
Mike Meyers, Watermaster
PO Box 767
Star, ID 83669

RE: Water District 63 Fiscal Year 2023 WaterSMART Applied Science Grant

Mike,

The Boise River Flood Control District 10 fully supports Water District 63 (WD63) in their efforts to monitor and manage the Boise River tributary drains on a real-time basis. Improved management of the Boise River is vital to the sustainability of healthy communities within the Treasure Valley.

Residents of the Treasure Valley depend on the Boise River for drinking water, irrigation of agricultural fields and urban landscaping, hydropower generation, fisheries and wildlife habitat, and recreation. It is imperative that water supplies are proactively managed to ensure there is adequate supply to meet the entire portfolio of Treasure Valley demands.

Real-time monitoring of Boise River drain flows will allow the WD63 Watermaster to manage a previously unmeasured component of the Boise River water supply to reduce future water conflicts within the basin.

Sincerely,

Mark Zirschky
District Manager
Flood Control District 10
208-861-2766

IDAHO POWER®
An IDACORP Company

October 12, 2023

Mike Meyers
Watermaster
Water District 63
PO Box 767
Star, Idaho 83669

Subject: Water District 63 Fiscal Year 2023 WaterSMART Applied Science Grant

Dear Mr. Meyers:

Water is the fuel of our hydropower system and Idaho Power is a committed steward of the resource. As such, Idaho Power fully supports Water District 63 (WD63) in their efforts to monitor and manage the Boise River tributary drains on a real-time basis.

The Boise River is relied upon for many uses, including drinking water, irrigation, hydropower generation, fish and wildlife habitat, and recreation. Given the unprecedented growth the Boise Basin has experienced in recent years, coordinated and responsible development of our shared and limited resource is becoming increasingly important. New monitoring and accounting of Boise River drain flows will not only allow the WD63 Watermaster to manage a previous unmeasured component of the Boise River water supply, it will also provide insight into water supply trends in this actively growing part of the basin, inform future water management investigations, and help reduce future water conflicts within the basin.

Sincerely,

Kresta Davis

Kresta Davis
Senior Manager
Water Resources and Policy Department

1221 W. Idaho St. (83702)
P.O. Box 70
Boise, ID 83707

Lower Boise Watershed Council

October 12, 2023

RE: Water District 63 Fiscal Year 2023 WaterSMART Applied Science Grant

The Lower Boise Watershed Council fully supports Water District 63 (WD63) in their efforts to monitor and manage the Boise River tributary drains on a real-time basis. Improved management of the Boise River is vital to the sustainability of healthy communities within the Treasure Valley.

Residents of the Treasure Valley depend on the Boise River for drinking water, irrigation of agricultural fields and urban landscaping, hydropower generation, fisheries and wildlife habitat, and recreation. It is imperative that water supplies are proactively managed to ensure there is adequate supply to meet the entire portfolio of Treasure Valley demands.

Real-time monitoring of Boise River drain flows will allow the WD63 Watermaster to manage a previously unmeasured component of the Boise River water supply to reduce future water conflicts within the basin.

Sincerely,

Clint Dolsby

Clint Dolsby
Chair, Lower Boise Watershed Council

TOM POINTS, P.E.
Public Works Director

ASHLEE TEETER
Executive Assistant

October 11, 2023

Water District 63
Attn: Mike Meyers, Boise River Watermaster
PO Box 767
Star, ID 83669

RE: Water District 63 Fiscal Year 2023 WaterSMART Applied Science Grant

Dear Watermaster Meyers,

The City of Nampa fully supports Water District 63 (WD63) in their pursuit if WaterSMART Applied Science Grant funding and efforts to monitor and manage the Boise River tributary drains on a real-time basis.

Improved management of the Boise River is vital to the sustainability of healthy communities within the Treasure Valley. Residents of the Treasure Valley depend on the Boise River for drinking water, irrigation of agricultural fields and urban landscaping, recreation, hydropower generation, fisheries and wildlife habitat. It is imperative that water supplies are proactively managed to ensure there is adequate supply to meet the entire portfolio of Treasure Valley demands.

Real-time monitoring of Boise River drain flows will allow the WD63 Watermaster to manage a previously unmeasured component of the Boise River water supply to reduce future water conflicts within the basin. City of Nampa strongly urges funding of this significant undertaking.

Sincerely,

Tom Points, P.E.
Senior Director of Public Works

500 12TH AVENUE SOUTH NAMPA, IDAHO 83651

TOM POINTS - POINTST@CITYOFNAMPA.US | ASHLEE TEETER – TEETERA@CITYOFNAMPA.US | (208) 468-5420