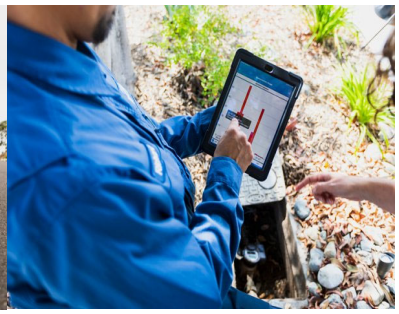
14205 Meridian Parkway
Riverside, CA 92518
District Business | 951.571.7100
Customer Service | 951.571.7104

APPLICATION
WaterSMART
Applied Science Grants

Data Warehouse Phase 1 – Implement Data Management Software and Develop a Data Sharing Module

Riverside County, California

Western Municipal Water District
14205 Meridian Parkway
Riverside, CA 92518

Melissa Matlock, Ph.D.
Water Resources Specialist
951-571-7260 tel
951-571-0592 fax
MMatlock@wmwd.com

PROPOSAL CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

ETL	Extract-Transform-Load
Reclamation	Bureau of Reclamation
Western Water	Western Municipal Water District

APPENDICES

SECTION 1: TECHNICAL PROPOSAL AND EVALUATION CRITERIA

1.1 EXECUTIVE SUMMARY

Date:	October 17, 2023
Applicant:	Western Municipal Water District
Applicant City, County, State:	Riverside, Riverside County, California
Project Name:	Data Warehouse Phase 1 – Implement Data Management Software and Develop a Data Sharing Module

Western Municipal Water District (Western Water) is seeking to implement the Data Warehouse Phase 1 – Implement Data Management Software and Develop a Data Sharing Module (Data Warehouse Phase 1 or Project) which will conduct a needs assessment and establish a common data management software platform resulting in a common data repository for better coordination of water management goals. The Project will encapsulate potable production and delivery data over Western Water's entire service area. Grant funds will contribute to implementation of the Data Warehouse Phase 1, with an assumed total project cost of $299,700. The Project contributes to accomplishing the climate change resiliency goals of the funding opportunity by reducing water loss, maximizing use of local water supplies over imported water, ensuring proper potable water delivery, and better informing future water plans including water shortages/storages.

The Project will be completed within approximately 2 years of award of the grant, with implementation anticipated to take 24 months, beginning April 2024, and to be complete by end of March 2026.

The Project does not have a physical location and is therefore not located on a Federal facility. However, it will involve data from Western Water's service area, which includes portions of March Air Reserve Base, which is a Federal facility.

1.2 TECHNICAL PROJECT DESCRIPTION

1.2.1 APPLICANT CATEGORY

Western Water is a Category A applicant as it is a public water agency which provides water, wastewater, and recycled water services to nearly 1 million people in Riverside County, California.

1.2.2 DETAILED PROJECT DESCRIPTION

The Project is the creation of a central "Data Warehouse" where all Western Water's potable, non-potable and recycled water production, delivery, and usage data will flow and can be easily compiled, accessed, and analyzed. Data Warehouse Phase 1 will

consist of five tasks: Business Requirements Definition, Data Warehouse Conceptualization and Selection of Technology, Data Warehouse Environment Design, Deployment and Refinement, and Project Closeout and Results. Western has already completed the first task, Business Requirements Definition – Western has determined what specific needs are to be addressed in the Data Warehouse; what parameters are to be included (e.g., meter reads, Western Water delivery cost, customer rates), what the Data Warehouse should produce (e.g., water loss report, annual report on water use by customer class, customizable water consumption reports), and how the Data Warehouse is to be accessed. Data Warehouse Conceptualization and Selection of Technology (Task 2) works to prioritize the different analytic needs and then evaluate different technologies to meet those needs. In Task 3 (Data Warehouse Environment Design) relationships between the different data and queries are modelled so that connections can be made between Western Water's various data silos (sales, production, maps). In Task 4 this is where the server and software of the Data Warehouse are set up and data input begins. Task 4 is to be undertaken by specialized contractors and will consist of the creation of the Data Warehouse system itself as well as the configuration of supporting systems/equipment (i.e., user-friendly data entry interfaces, data entry tablets). These supporting systems and equipment will allow Western Water staff to access and enter data in one place in an easy and timely manner, even in the field that will improve data quality. As part of Task 5, Project Closeout and Results Dissemination, Western Water will reflect on lessons learned and create a roadmap to importing and using other data types (sewer, stormwater, water quality) into the database.

1.2.3 GOALS

The preliminary goals and objectives of the Project include:

- Create a system to capture data in a central location making sure it is accurate, valid, and accessible
- Expanded data analysis capabilities to support engineering, water resources planning, operations, and customer service needs
- Improved access to potable production and delivery data by Western Water staff members
- Increased timeliness in data accessibility
- Improved consistency in data format
- Increased efficiency in data entry by operators and field crews

1.3 PROJECT LOCATION

The Project does not have a physical location, though it will encapsulate potable water, raw water, and recycled water production, delivery, and sales data over Western

Water's entire service area, which entails portions of the cities of Riverside, Murrieta and Perris, as well as the unincorporated communities of El Sobrante, Eagle Valley, Lake Mathews, Mead Valley, and March Air Reserve Base. Figure 1 provides a detail of Western Water's service area to be covered by the Project.

1.4 DATA MANAGEMENT PRACTICES

Any spatially explicit data or tools developed as part of project will be done in a manner consistent with professional standards, Western Water's applicable software licenses, and standard formats compatible with GIS platforms.

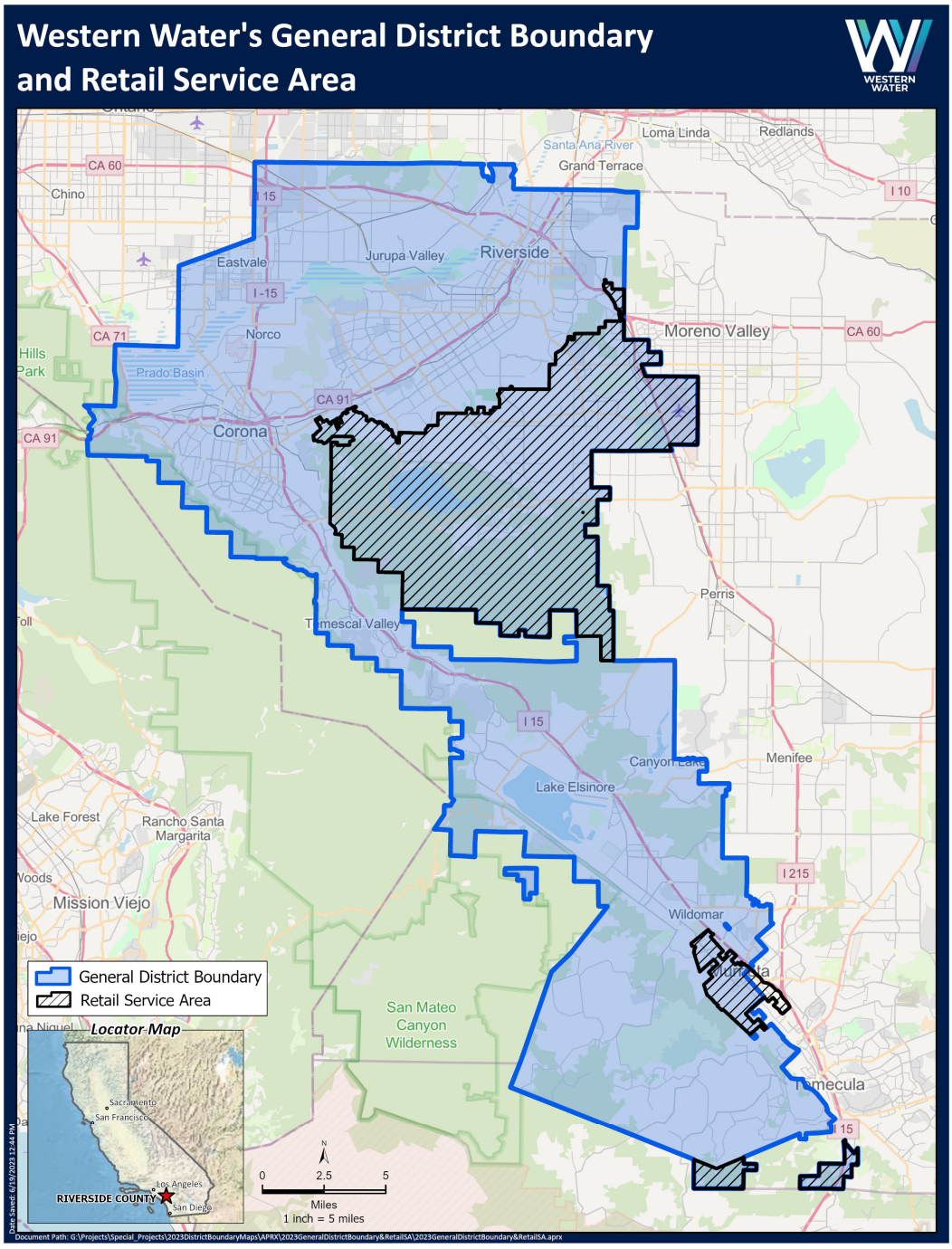
1.5 EVALUATION CRITERIA

1.5.1 EVALUATION CRITERION A – WATER MANAGEMENT CHALLENGE

Describe the water management challenge(s). Describe in detail the water management challenge is occurring within your project area. Describe the severity of the challenge to be addressed with supporting details. For example, will your project address water supply shortfalls or uncertainties, the need to meet competing demands for water and the lack of reliable water supplies for municipal, agricultural, tribal, environmental or recreational water uses, complications arising from drought, conflicts over water, or other water management issues?

Currently, Western Water's data system for recordation of production data, delivery data, turnout data and sales to retail agencies, and delivery to direct retail customers is antiquated and entails manual or in-field reads using Excel or handwritten records, sometimes in varying formats/units. Each data set is essentially its own silo, with the data collected and stored separately. The data lacks connection and requires manual compilation for any analysis or comparison, which is time-consuming; by the time the new data is ready for analysis/comparison, it is approximately a month old. If an analyst recognizes an error or makes a correction to the data, that correction is recognized only in the dataset compiled by the analyst, it does not get pushed out automatically to the broader dataset. There is no version control of the large datasets. The current data system's lack of organization and need for manual input makes it difficult to analyze any trends over time and does not make discrepancies (e.g., water loss) or areas of improvement readily visible. It also makes it difficult for Western Water to understand customer demand profiles. As an example, water use for September 2023 is based on meter reads that occurred October 1, 2023, it takes field operations staff approximately 10 days to input the data. However, a conversion error was found in the data and it had to be corrected and sent out again. So not only did analyst have to wait 40 days for information on water use in early September, the first set of analysis had to be thrown out and redone when the conversion error was identified.

Figure 1 Western Water Service Area



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

Inefficiencies in data management affect the following functions within the water district:

- Tracking water loss. Potable and non-potable water data is used to track system inflows and outflows. Tracking of this data allows Western Water to determine how much water loss occurs on a monthly and annual basis and identify anomalies in the data and prompts an investigation of malfunctioning meters and potential leaks. This data is needed to inform where maintenance may be needed, and to identify areas that may need more investment to reduce water loss.
- Choosing what supply to utilize based on cumulative usage for a given period. Western Water has a portfolio of local supplies as well as imported water. These local supplies have limitations on the time and amount that can be taken. It is Western Water's intent to fully utilize local supplies and minimize use of more costly imported water. In order to do this, analysts need timely data about cumulative use of a given local supply.
- Customer messaging. Western Water wants to appropriately message customers about the need to conserve (due to drought or system maintenance) but the lag in data availability makes it hard to send the right messages to customers in a timely manner.

Without the project, Western Water's operators will continue to spend considerable time and effort in recording and reporting data. Analysts will be limited to inconsistent month-old data in water resources budgeting and planning. Current opportunities to analyze data quickly to inform water management decisions is limited due to the current status of data. A lot of time is spent requesting data, receiving data, validating data, and configuring data in order to do a particular analysis. Without the project, water loss will continue to be high. Without the project, Western Water will not be able to maximize use of local supplies. Due to the lag in data, the scrubbing of the data, the siloed data environments, information on cumulative use of given local source is often two months behind actual use. To be conservative and so as to not overdraw a source, Western Water will switch to imported water. For example, if Western Water analysts had information on cumulative use of a given source through June, in July Western Water would know if they could keep drawing on that local source. The data lag limits Western Water's ability to redirect, communicate with operations and the other agencies and fully utilize local supplies. Customer messaging will continue to be "dated". If Western Water launches a public information campaign to reduce water use, analysts do not know if the campaign is effective for two or more months; in that two months they have lost the ability to increase or ramp up the effort and affect customer behavior.

Explain how your project will address the water management issues identified in your response to the preceding bullets and provide support for your response. Explain how your project will improve any of these examples:

- *Water supply reliability for municipal, agricultural, tribal, environmental or recreational water uses,*
- *Management of water deliveries,*
- *Water marketing activities,*
- *Drought management activities,*
- *Conjunctive use of ground and surface water,*
- *Water rights administration,*
- *Ability to meet endangered species requirements,*
- *Watershed health,*
- *Restore a natural feature or use a nature-based feature to reduce water supply and demand imbalances, the risk of drought or flood, or to increase water supply reliability for ecological values,*
- *Conservation and efficiency*
- *Other improvements to water supply reliability?*

The Project will address these issues by establishing a 'Data Warehouse' software platform that centralizes and unifies what data is collected, what format data is collected in and centralizes what data can be accessed related to water production, delivery, and sales. It will enable operators and field crews to enter meter reads electronically via a handheld device into the system. Additionally, the implementation of the Data Warehouse will make data organization and formats more consistent, as well as eliminate the need for manual data compilation and validation. This will allow for more reliable and direct access to *real-time* and historical potable water data, which will better inform present and future decisions regarding water supply reliability, water deliveries, drought management activities, conjunctive use of ground and surface water, and conservation/efficiency. Having access to consistent, validated water data will allow for improved efficiencies in the proactive planning of water management needs and improve water supply reliability.

1.5.2 EVALUATION CRITERION B – PROJECT BENEFITS

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 aligns with Western Water's Strategic Plan 2022-2025 and has been identified by most Western Water departments including Finance, Water Resources, Engineering, and Operations through a collaborative effort led by the Analysts of Western Water to maintain accurate reliable data. Similar data is used for various reports and decision-making processes by various Western Water departments on a regular basis, A central database will allow data users in various departments

access to the same improved more reliable data without duplicating efforts, ensuring consistency, and dramatically strengthening data reliability and accuracy. The central database will benefit the data input process by ensuring data can only be entered in appropriate formats, improve data validity processes, track data changes and concerns, capture data notes, and reduce data request redundancies.

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

The Data Warehouse Phase 1, the project proposed for funding, will include data related to potable water, raw water, and recycled water and will be online starting in January 2026 and will be put to use immediately. However, over time Western Water anticipates migrating other data sets into the Data Warehouse, such as water quality energy, as well as data related to sewer and stormwater.

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

Once the Data Warehouse software platform is implemented, it will be ready for use immediately, i.e., entry and analysis of potable production and delivery data. The Data Warehouse will immediately have information beneficial for water management data analytics and regular reporting. The database will be updated and expanded to capture additional data related to sewer, stormwater, maintenance tasks, maintenance costs, and labor for improved analytics.

Who will use the tool or data developed under this proposal and how will they benefit from the project? Support could include but is not limited to letters from stakeholders expressing support for the project and explaining how they will benefit.

The Data Warehouse will be primarily used on an ongoing basis by Western Water field operators, various department analysts, executive management, customer service, and many others who utilize or compile data.

How will the project improve water management decisions?

The Project will allow analysts to spend their time analyzing data rather than spending their time finding, validating, scrubbing, and converting data. The Project will improve water management decisions by improving the timeliness and readily accessible water management data including meter reporting and making it easier to compare near real-time and historical water production and demand data. This will allow Western Water to find flow discrepancies, detect leaks or water theft, identify flows that are too high or low, evaluate their current efficiency levels, and identify opportunities for improvement.

Describe if the results of your project will be applicable elsewhere. What additional work would need to be done to make the project results transferable to others? To what extent will the project address the water management challenges described in E.1.1.?

The lessons learned by Western in implementation of the Project would be applicable to the approximately 500 regulated water agencies in the State of California that must comply with the state's regular reporting requirements, including requirements to report water use by customer category, water loss, and customer water cost. While the benefits of analytics are obvious, there are few examples of a large water utility actually going through the steps needed to get the benefits of "big data": implementing a comprehensive data collection, data protocols, and centralized data storage and access.

By starting with potable water, raw water, and recycled water, Western Water can fine tune the process, the interface and templates. For example, Western Water will receive feedback from the field operators about what search queries are helpful and what parts of the input forms are working and what parts are cumbersome or unnecessary. Water Resources Planners can weigh in on how easy it is to organize and search data and recommend changes to the user interface. These lessons learned will also be passed on to Western Water's 13 retail agencies as well as Western Water's neighboring wholesale colleagues such as Eastern Municipal Water District, San Bernardino Valley Municipal Water District, Orange County Water District, and San Diego County Water Authority. Western Water would also endeavor to present their experience in a large format conference such as the Fall or Spring Conference of the Association of California Water Agencies.

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? Applicants should make a reasonable effort to explore and briefly describe related ongoing projects.

This Project complements another data effort being undertaken by Western Water, the GIS Data Acquisition and Leak Mapping Analysis for Improved Water Management Project (Improved GIS Database). Improved GIS Database consists of the improvement and expansion of Western Water's existing GIS database, which has inaccuracies and limitations that are causing system shortcomings and negative downstream effects in other systems and business processes. Improved GIS Database seeks to modernize and centralize this workflow to increase spatial and attribute accuracy of the existing GIS database,

increase efficiency in department collaboration and data sharing, and expand GIS knowledge and capabilities among all Western Water staff.

The two projects are similar in that they are both efforts to improve Western Water's data accuracy, organization, and accessibility. However, they differ in that Data Warehouse Phase 1 focuses on Western Water's production and delivery of the water itself, whereas the Improved GIS Database focuses on Western Water's assets, e.g., geographic locations, attributes, conditions. These two projects complement each other in that their databases can be used together to combine production/delivery data with associated asset and geographic information.

As a specific example, using the Data Warehouse with the Improved GIS Database, Western will be able to identify areas of water loss. Western Water operators will be able to use production and delivery patterns (through the Data Warehouse) in a given geography (through GIS) to identify likely areas of leaks and then use leak detection equipment in tandem with GIS mapping to track the flow of water and identify where ruptures may have occurred. The GIS data will allow operators to quickly figure out what parcels are involved in the leak and what entities, persons, and property owners need to be informed for leak repair work to being.

1.5.3 EVALUATION CRITERION C – PROJECT IMPLEMENTATION

Briefly describe and provide support for the approach and methodology that will be used to meet the objectives of the project. You do not need to repeat the full technical project description. However, you should provide support for your chosen methodology, including use of any specific models, data, or tools.

The methodology for Project implementation occurs in Tasks 1 (already complete) and 2. Task 1 determined the business needs that the Project must address. Task 2 will prioritize the various needs and then evaluate different architectural approaches to addressing the needs. Finally in Task 2 the technology (both the server type, database software, and data transformation software) will be selected.

Describe the work plan for implementing the proposed scope of work. Such plans may include, but are not limited to:

- *An estimated project schedule that shows the stages and duration of the proposed work,*
- *Milestones for each major task,*
- *Start and end dates for each task and milestones, and*
- *Costs for each task*

The project work plan is summarized below:

Task 1: Business Requirements Definition (complete)

This task is complete. Western Water has determined the business requirements of for the project. This included answering questions such as: what information is available, what information could be available, and how and by who should it be accessed. This required understanding the overall goals of Western Water and its different functional units. This step involved evaluation of current methods for collecting data and types of routine data analysis the company currently performs, including what the data is used for and how often the analysis takes place as well as improvements staff would like to see in the analysis.

Task 2. Data Warehouse Conceptualization and Selection of Technology

Using the results of the previous step, the needs and expectations of the various Western Water functional units (the ultimate users of the warehouse) will be identified. These needs will be prioritized. Then different architectural approach to building the data warehouse will be evaluated against the high priority needs. The architecture will consider the staging area, storage area, and potential queries and consolidation. This selection of architectural approach will consider the current technology environment, technical competencies of in-house Information Technology (IT) staff, and data security needs.

This task also involves selection of the deployment option – on-premises, cloud or hybrid. This choice will be based on data volume, data nature, costs, security requirements, and number of users.

Task 3: Data Warehouse Environment Design

In this task the data sources are defined including the types of data stored, the volume of information generated and how often the information is refreshed. Logical data modeling occurs in this step, basically arranging data into a series of logical relationships. Modeling ensures that different datasets can be correlated, e.g., that water sales in a given timeframe or given geography can be compared to water production and delivery in that same timeframe and geography.

After data modeling is finished, the data staging area will be designed. The staging area is a temporary location where raw data from the various data sources is loaded. Before being moved from the staging area to the analytical side of the warehouse, tools are used to evaluate the data. For example, are the data within an expected range and is all the associated attributed data provided (e.g., time and place). Poor data will be flagged and not moved to the analytics part of the warehouse until corrected or otherwise validated. Designing the data staging area involves selecting the tools for data validation. The software used as the interface between the data staging area and the data analytic area is often referred to as the Extract-Transform-Load (ETL) software.

The final step in data warehouse design is creation of data access and usage policies.

Task 4: Deployment and Refinement

In this step Western Water will purchase the necessary local server, license the selected ETL software, and purchase the selected database management software. The server setup, database management software, and ETL software will be configured by a specialized consultant. There will be an approximately one-month period where select Western Water staff "pilot" the database by uploading data and other Western Water staff query the warehouse to ensure its utility for data upload, data transformation, and data visualization. The specialized consultant will refine the database during this month of testing. Following the testing phase, dashboards, or pre-set system queries, will be developed to make the system user friendly and to assist Western Water with regular water system reporting. The Information Services (IS) Team will seek feedback from a broad set of persons in Field Operations, Water Resources, and Finance/Customer Service to improve the dashboards, data input, and user experience. The specialized consultant will train Western Water in-house IS team on all aspects of the data warehouse.

Task 5: Project Closeout and Results Dissemination

This step is to complete the grant reporting steps including final reporting and reimbursement requests. This step will also include developing an overall description of the implementation steps, costs, and lessons learned (good or bad). This will take the form of a presentation that Western Water IS Team can provide to the Board of Directors, Executive Management, retail water agencies, the Regional Drought Task Force and local professional organizations such as the American Public Works Association, American Waterworks Association, Santa Ana Watershed Project Authority.

The estimated schedule and milestones of the Project are provided in Table 1.

Table 1. Project Schedule

Task	Start Date	End Date	Cost
1. Business Requirements Definition Milestones: • Memorandum on Results of Interviews Western Water Functional Units • List of Mandatory Reporting to State and Data Needed for the Reporting • List of data useful for forecasting and other desired planning actions	complete	complete	NA
2. Data Warehouse Conceptualization and Selection of Technology Milestones: • List of Priority Needs • Memorandum, evaluation of architectural approached data warehouse • Memorandum, selection of chosen deployment option	10/1/2024	12/15/2024	$25,500
3. Data Warehouse Environment Design Milestones: • Memorandum on data modeling • Memorandum tools for data validation • Memorandum data access and usage policies	12/15/2024	3/15/2025	$40,500
4.Deployment and Refinement Milestones: • License of ETL Software* • Purchase of database management software • Initial data input and queries • Development of Training Materials	3/15/2025	1/16/2026	$201,700

Table 1 cont.

Task	Start Date	End Date	Cost
5.Project Closeout and Data Dissemination Milestones: • Complete accounting of project costs • Final Project Schedule • Presentation on Western Water Experience Implementing Data Warehouse	1/16/2026	3/31/2026	$16,000

* Acquisition of the necessary licenses is an important milestone. However the ETL licenses will be an annual and ongoing expense and is not included in the grant budget.

Provide a summary description of the products that are anticipated to result from the project. These may include data, metadata, digital or electronic products, reports, and publications. Note: using a table to list anticipated products is suggested.

The main product of the Project will be the Data Warehouse software platform.

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?

Implementing the Data Warehouse is internal to Western Water. This first step in Data Warehouse implementation will focus on four functional units within Western: Operations, Finance, customer service, GIS, and water resources.

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. Have the project team members accomplished projects similar in scope to the proposed project in the past either as a lead or team member? Is the project team capable of proceeding with tasks within the proposed project immediately upon entering into a financial assistance agreement? If not, please explain the reason for any anticipated delay.

Project implementation will primarily be conducted by specialized consultants, however long-term use of the tool will be by Western Water staff.

Integration of the system with needed water planning information will be handled by Western Water, Water Resources Analyst, Sayer Pinto. Sayer has over 9 years of data analysis experience with Western Water and handles data collection and submission of multiple reports as well as Water Resources budgeting and purchase orders. Sayer will act as the interface between the needs of the Water Resources Planning staff and the IS Department which will operate and maintain the Data Warehouse.

Integration of the GIS system with the Data Warehouse will be handled by current Western Water Application Specialist IV and Program Manager, Robert Conrad, GISP. Robert is a Certified Geographic Information System Professional (GISP) who has over 24 years of GIS project management experience and has been a GIS Coordinator at Western Water since 2008.

1.5.4 EVALUATION CRITERION D – DISSEMINATION OF RESULTS

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.

If the applicant is the primary beneficiary of the project, explain how the project results will be communicated internally, and to interested stakeholders and interested water resources managers in the area, if appropriate.

If the applicant is not the primary beneficiary of the project (e.g., universities or research institutes), describe how project results will be communicated to project partners and interested water resources managers in the area.

Describe how the project results will be shared with other water managers in the West that could use the information to support water management objectives.

As part of Phase 5, Western Water will develop an overall description of the implementation steps, costs, and lessons learned (good or bad). This will take the form of a presentation that Western Water Analyst can provide to the Board of Directors, Executive Management, retail water agencies, the Regional Drought Task Force, and local professional organizations such as the American Public Works Association, American Waterworks Association, Santa Ana Watershed Project Authority.

1.5.5 EVALUATION CRITERION E – PRESIDENTIAL AND DOI PRIORITIES

Please address only those priorities that are applicable to your project. It is not necessary to address priorities that are not applicable to your project. A project will not necessarily receive more points simply because multiple priorities are addressed. Points will be allocated based on the degree to

which the project supports one or more of the priorities listed, and whether the connection to the priority(ies) is well supported in the application.

1.5.5.1 CLIMATE CHANGE

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. If applicable, describe how the project addresses climate change and increases resiliency. For example, does the project help communities respond to or recover from drought or reduce flood risk?

The Project will allow Western to understand its water use by customer type. This data will help Western Water understand which customers are most sensitive to drought, which customers are most sensitive to water rate changes, and help Western Water target water conservation programs and water conservation messaging to increase drought and climate change resiliency.

1.5.5.2 DISADVANTED OR UNDERSERVED COMMUNITIES

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. Please use the Council on Environmental Quality's interactive Climate and Economic Justice Screening Tool, available online at Explore the map - Climate & Economic Justice Screening Tool (geoplatform.gov) to identify any disadvantaged communities that will benefit from your project.

Approximately 43% of the Western Water service area qualifies as a Disadvantaged or Underserved Community per the Climate and Economic Justice Screening tool. To confirm this percentage Western Water mapped the overall service area population against the service area population that meets the definition of "disadvantaged" and/or "underserved as defined by the tool.

1.5.5.3 TRIBAL BENEFITS

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. If applicable describe how the project directly serves and/or benefits a Tribe.

Based on data from the Bureau of Indian Affairs, the Western Water Service Area does not contain tribal lands.

SECTION 2: PROJECT BUDGET

2.1 BUDGET PROPOSAL

The following tables (Tables 2 and 3) summarize total costs and funding sources for the proposed Project. The total cost of the proposed Project is $299,700. Funding sources for the project include funding from Western Water and requested funding from Reclamation. No other Federal funding has been requested or received for the Project.

Table 2. Total Project Cost

Source	Amount
Costs to be reimbursed with the requested Federal funding	$149,850
Costs to be paid by the applicant	$149,850
Value of third-party contributions	$0
Total Project Cost	**$299,700**

Table 3. Summary of Non-Federal and Federal Funding Sources

Funding Sources	Amount
Non-Federal Entities	
1. Western Municipal Water District	$149,850
2. N/A	$0
3. N/A	$0
Non-Federal Subtotal	**$149,850**
Requested Reclamation Funding	**$149,850**

The budget proposal consists of costs associated with implementation of the proposed Project which fall under the Contractual/Implementation and Other categories. The budget proposal is provided in Table 4 and is described in more detail in the following Budget Narrative.

Table 4. Budget Proposal

Budget Item Description	Computation		Quantity Type	Total Cost
	$/Unit	Quantity		
Salaries and Wages (a)				
Not applicable.	-	-	-	$0
Fringe Benefits				
Not applicable, Western does not have an Indirect Cost Agreement and will not seek Fringe Benefits	-	-	-	$0
Travel				
Not applicable, travel by contractors included in Contractual cost	-	-	-	$0
Equipment				
Database Management Software	$16,000	1	ea	$16,000
Supplies and Materials				
Not applicable	-	-	-	$0
Contractual/Implementation				
Data Warehouse Conceptualization	See details Table 5.			$40,500
Data Warehouse Environment Design				$201,700
Deployment and Refinement				$16,000
Project Closeout and Results Dissemination				$25,500
Other – Environmental and Regulatory Compliance				
Not applicable	-	-	-	
TOTAL DIRECT COSTS				**$299,700**
Indirect Costs				
Not applicable				
TOTAL ESTIMATED PROJECT COSTS				**$299,700**

2.2 BUDGET NARRATIVE

2.2.1 PERSONNEL

Project implementation will primarily be conducted by specialized consultants whose costs are further detailed below. Western Water will not seek reimbursement for staff time spent on the Project, such as project management activities, as it is considered to fall under normal staff activity.

2.2.2 FRINGE BENEFITS

Western Water will not bill for personnel costs or related Fringe Benefits. Western Water does not have an Indirect Cost Agreement and will not seek Fringe Benefits.

2.2.3 TRAVEL

Consultant travel will be required to conduct the Project. These costs are included under contractual costs.

2.2.4 EQUIPMENT

The purchase of database software would occur as part of the project.

2.2.5 SUPPLIES

There are no costs in the “supplies” category.

2.2.6 CONTRACTUAL

Specialized IS specialists will be used for the four outstanding tasks of the Project. Western Water will follow their procurement standards to advertise and select a consultant to perform the project work; Western Water procurement standards are consistent with 2 CRF Part 200 Subpart D.

Contractual costs are detailed in Table 5. Contractual costs have been estimated based on research done through materials provided by Amazon Redshift, Microsoft Azure, IBM, and Integrate.io.

2.2.7 CONSTRUCTION

No construction tasks will be undertaken for this Project.

2.2.8 OTHER DIRECT COSTS

No other direct costs are anticipated that are not captured under the above categories.

2.2.9 INDIRECT COSTS

No indirect costs are included in the proposed budget.

Table 5. Contractual Costs

Consultant Labor	Hours	Rate	Total Cost
Data Warehouse Conceptualization			
Data Warehouse Consultant	40	200	$8,000
Data Engineer	100	175	$17,500
			$25,500
Data Warehouse Environment Design			
Data Warehouse Consultant	40	200	$8,000
Data Engineer	100	175	$17,500
Database Administrator	100	150	$15,000
			$40,500
Deployment and Refinement			
Data Warehouse Consultant	40	200	$8,000
Data Engineer	200	175	$35,000
Database Administrator	450	150	$67,500
Data Analyst (1)	760	120	$91,200
			$201,700
Project Closeout and Results Dissemination			
Data Warehouse Consultant	80	200	$16,000
			$16,000
		Total Consultant Costs	**$283,700**

SECTION 3: ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

Ground disturbing work is not anticipated as part of the Project. The Project will not have any impact on the local environment, nor will it have a disproportionately high and adverse effect on low-income or minority populations. Furthermore, the project will not limit access to or ceremonial use of Indian sacred sites or result in other impacts on tribal lands.

SECTION 4: OTHER

4.1 REQUIRED PERMITS OR APPROVALS

There are no applicable permits or approvals required for the completion of this Project

4.2 OVERLAP OR DUPLICATION OF EFFORT STATEMENT

There is no overlap between the Project and any other active or anticipated proposals or projects in terms of activities or costs, or commitment of key personnel. Western Water has reviewed potential funding for the Project and does not anticipate submitting the Project to other funding sources federal or non-federal.

4.3 CONFLICT OF INTEREST DISCLOSURE STATEMENT

There is no actual or potential conflict of interest at the time of submission.

4.4 UNIFORM AUDIT REPORTING STATEMENT

Western Municipal Water District was required to submit a Single Audit Report for the fiscal year ending June 30, 2022 (the most current reporting year available) and this is available at the Federal Audit Clearinghouse website. The applicable Employer Identification Number is: 956005108.

4.5 DISCLOSURE OF LOBBYING ACTIVITIES

This application requests more than $100,000 in Federal funds, therefore the Authorized Official's signature on the appropriate SF-424, Application for Federal Assistance form also represents the entities' certification of the statements in 43 CFR Part 18, Appendix A.

4.6 LETTERS OF SUPPORT

Letters of support from the following agencies are included in Appendix A:

- Santa Ana Watershed Project Authority

4.7 LETTERS OF PARTNERSHIP

There are no applicable letters of partnership required for the completion of this Project.

4.8 OFFICIAL RESOLUTION

A resolution from Western Water's Board of Directors to submit this grant application, commit to the financial and legal obligations, and negotiate and execute the grant agreement is provided in Appendix B.

4.9 LETTERS OF FUNDING COMMITMENT

There is no anticipated third-party cost share applicable to this Project.

4.10 UNIQUE ENTITY IDENTIFIER AND SYSTEM FOR AWARD MANAGEMENT

Western Water is registered in the System for Award Management. Western Water's unique Entity ID is QJFRKG8CLNX1. Western Water will maintain an active SAM registration during any period in which the District has an active Federal award or application under consideration by a Federal entity.

APPENDIX A

Letters of Support

- Santa Ana Watershed Project Authority

Santa Ana Watershed Project Authority

Over 50 Years of Innovation, Vision, and Watershed Leadership

October 2, 2023

Craig Miller, General Manager
Western Municipal Water District
14205 Meridian Parkway
Riverside, CA 92518

Re: Support for Western Municipal Water District's WaterSMART Applied Sciences Grant Application

Dear Mr. Miller,

We understand that Western Municipal Water District (Western Water) is applying to the U.S. Bureau of Reclamation's WaterSMART Applied Science Grants for Fiscal Year 2023 (R23AS00446) to implement the 'Data Warehouse Phase 1 – Implement Data Management Software and Develop a Data Sharing Module Project'. The Project will conduct a needs assessment and establish a common data management software platform enabling a data repository and share data for better coordination of water management goals.

Currently, Western Water's data system for production and delivery meters is antiquated and entails Excel or handwritten meter reads. With the implementation of the centralized 'Data Warehouse' hub, operators and field crews will be able to enter meter reads electronically via a handheld device into the database, making the data organized, accessible, and timely. This project is a small investment that will help improve Western Water's overall water management; it will help find discrepancies, detect leaks or water theft, identify flows that are too high or low, and inform better management decisions.

The WaterSMART Applied Sciences Grants support Presidential and Department of the Interior priorities by providing financial assistance to water managers to implement projects that increase resilience to the effects of climate change, benefit disadvantaged or underserved communities, and/or promote tribal sovereignty. The proposed Project accomplishes the climate change resiliency goals of the funding opportunity by helping with less water loss and possible property damage, ensuring proper potable water delivery, and better informing future water plans such as water shortages/storages.

SAWPA is proud to support Western Water's WaterSMART grant application for the Data Warehouse Phase 1 – Implement Data Management Software and Develop a Data Sharing Module Project.

Sincerely,

Jeff Mosher

General Manager

Bruce Whitaker, Chair, Orange County Water District
Mike Gardner, Vice Chair, Western Municipal Water District
T. Milford Harrison, Secretary-Treasurer, San Bernardino Valley Municipal Water District
David J. Slawson, Commissioner, Eastern Municipal Water District
Jasmin A. Hall, Commissioner, Inland Empire Utilities Agency
Jeffrey J. Mosher, General Manager

APPENDIX B

Official Resolution

RESOLUTION 3298

RESOLUTION OF THE BOARD OF DIRECTORS OF WESTERN MUNICIPAL WATER DISTRICT OF RIVERSIDE COUNTY AUTHORIZING THE DISTRICT'S APPLICATION, AND APPROVING NEGOTIATION AND EXECUTION OF A COOPERATIVE AGREEMENT WITH THE DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION, FOR FEDERAL FUNDING UNDER THE APPLIED SCIENCES GRANT PROGRAM

WHEREAS, the Western Municipal Water District of Riverside County ("District") is a municipal water district established pursuant to Section 71000 et seq. of the California Water Code; and

WHEREAS, the Department of the Interior, Bureau of Reclamation, (USBR) under the Applied Sciences Grant Program will make funding available to qualifying applicants; and

WHEREAS, the Board of Directors of the Western Municipal Water District has identified a project that exemplifies the objectives of the Applied Sciences Program in its Data Warehouse Phase 1 - Implement Data Management Software and Develop a Data Sharing Module Project; and

WHEREAS, all applicants wishing to obtain State and Federal funding are required to provide a Resolution designating Authorized Agents to act on behalf of the applicant to receive these funds from USBR; and

WHEREAS, the District desires to designate the General Manager and his designee as Authorized Agents for this purpose; and

WHEREAS, the District agrees to the administration and cost requirements of the grant criteria.

NOW, THEREFORE BE IT RESOLVED BY the Board of Directors that:

1) The District is hereby authorized to receive, if awarded, the USBR funding and will make a good faith effort to enter into an agreement with the USBR for the receipt and administration of said grant funds and agree to abide by the Federal award terms and conditions as set forth in the Articles of Agreement;
2) The General Manager, Craig Miller, or his designee, is hereby authorized to take any and all action which may be necessary for the completion and execution of the project agreement and to take any and all other action which may be necessary for the receipt and administration of the grant funding in accordance with the requirements of the USBR;
3) This resolution officially becomes a component part of the District's grant application that will be submitted to the USBR before October 17, 2023;
4) The District is capable of providing the amount of funding and/or in-kind contributions specified in the grant application funding plan;
5) This resolution shall be effective as of the date of adoption.

ADOPTED this 20th day of September, 2023.

MIKE GARDNER
President

September 20, 2023

I HEREBY CERTIFY that the foregoing is a full, true and correct copy of Resolution 3298 adopted by the Board of Directors of Western Municipal Water District of Riverside County at its Regular Meeting held September 20, 2023.

FAUZIA RIZVI
Secretary-Treasurer