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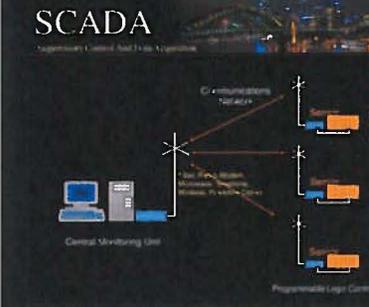
**NORTH KERN WATER  
STORAGE DISTRICT**

*ORIGINAL*

July 2018



**SCADA**



# SCADA Automation and Evapotranspiration Measurement Improvements Project

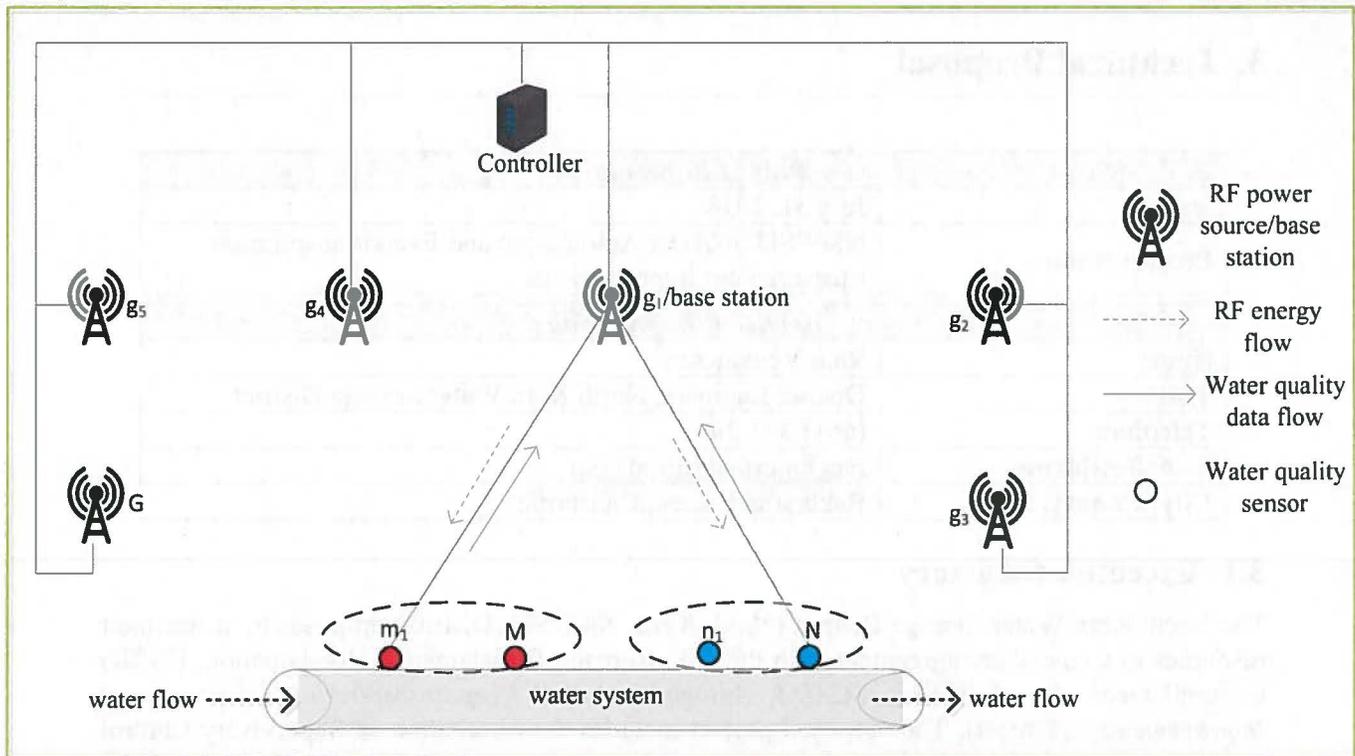
North Kern Water Storage District

*Project Location—Southern San Joaquin Valley, California*

*Application for  
WaterSMART Grants*

Small-Scale Water Efficiency Projects for Fiscal Year 2018

FOA No: BOR-DO-18-F009



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## 3. Technical Proposal

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<i>Project Information</i>	
<b>Date</b>	July 31, 2018
<b>Project Name</b>	NKWSD SCADA Automation and Evapotranspiration Measurement Improvements
<i>Applicant Information</i>	
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<b>City, County, State</b>	Bakersfield, Kern, California

### 3.1 Executive Summary

The North Kern Water Storage District (North Kern, NKWSD, District) proposes to utilize their resources in a cost-share agreement with the U.S. Bureau of Reclamation (Reclamation, USBR) to implement the “*NKWSD SCADA Automation and Evapotranspiration Measurement Improvements*” (Project). The proposed project includes the installation of Supervisory Control and Data Acquisition (SCADA) Automation software along with Evapo-transpiration (ET)

measurement stations. This project is divided into two components; the purpose of the first component is to remotely monitor and control the District owned and operated groundwater wells and Canal level transmitters. Currently, the District is modernizing all its groundwater wells by installing magmeters, water level and water quality sensors in wells, radio telemetry systems, along with canal level transmitters. This project aims at completing the District's modernization efforts by installing a SCADA software that compiles and analyzes all the information collected from the well and canal sites. The SCADA software will also provide added benefits by monitoring the critical parameters of the wells and canals, preventing excess pumping (pumping greater than demand) or pumping during peak hours, and automatically generating site specific groundwater pumping information which currently consumes a significant amount of District staff time. The second component of this project is to install Evapo-transpiration stations in strategic locations within the District. The District anticipates that the crop specific ET measurements will help the District and its growers to correlate the ET and the applied water with the crop yield. The ET measurements will serve as a management tool for the growers to efficiently reduce their applied water, which is a critical step in reducing the amount of groundwater pumped. This goal is in tune with the FOA's objective to conserve, better manage, or otherwise make more efficient use of water supplies.

The proposed Project is to be completed within 18 to 24 months from the signing of the grant funding agreement. The Project would start in October 2018 (refer to Section 3.5.3 for schedule) and is identified as a key component in reducing the amount of groundwater pumped by the District. The proposed improvement adds drought resiliency to the Region and the District. This project is not located in a federal facility.

## **3.2 Background Data**

The following section provides background regarding the District and information on general water management and water use considerations, not necessarily specific to the proposed Project but to provide context for the Project need.

### **3.2.1 Primary Water Supplies and Sources**

The North Kern WSD, established in 1935, is a public agency, which supplies surface water from the Kern River and groundwater to primarily agricultural customers. About 52,000 acres of the 60,000 gross acres (87 percent) in the North Kern service area have been essentially fully developed to irrigated agriculture for over forty years; however, cropping patterns have varied over the years.

### **3.2.2 Average Annual Acre-Feet of Water Supply and Water Use**

While North Kern's principal source of surface water is the Kern River. North Kern has utilized Kern River water under a schedule of long-standing diversion rights, with this water being supplemented from time to time by water from Poso Creek, which traverses the northern portion of the District and contributes primarily through infiltration, to the underlying groundwater supply.

Historical water supplies to North Kern from the Kern River have ranged from less than 10,000 acre-feet per year to nearly 400,000 acre-feet per year. As a result of this highly variable water supply, North Kern has developed an extensive groundwater recharge and extraction program utilizing groundwater to regulate its water supplies by pumping an estimated average of 80,000

acre-feet of groundwater per year to meet the District total demand for irrigation water which is on the order of 180,000 acre-feet. North Kern has successfully operated this conjunctive surface and groundwater management program for over 60 years.

**Major crops and total acres served:** The cropping pattern within North Kern's 52,000-acre water service area has changed significantly from row crops to permanent plantings over the past 25 years. Currently, about 75 percent of the District's irrigated lands are planted to permanent crops, primarily almonds, grapes and pistachios. Additional detailed information may be found in North Kern's 2015 Agricultural Water Management Plan, at <http://www.water.ca.gov>.

### **3.2.3 Water Delivery System**

In North Kern, surface water is delivered through approximately 130 miles of unlined canals heading at two diversion points on the Kern River, 20 miles of pipeline, and 20 miles of lined canal. The District's principal supply artery, and most important upstream point of diversion on the Kern River, is the Beardsley-Lerdo system. This system is entirely gravity flow and consists of the diversion structure or headworks on the Kern River, 9.5 miles of concrete-lined canal (the Beardsley Canal) between the headworks and the District's southern boundary, followed by an unlined canal section (the Lerdo Canal) that continue along North Kern's eastern or "high" side.

As much as 850 cfs has been conveyed through the Beardsley Canal and delivered to the District, which represents the practical maximum delivery in this system. The second point of diversion, 4.5 miles downstream, is the Calloway headworks, which services the relatively large, now unlined section of the Calloway Canal. This facility is also entirely gravity flow and extends for 10.4 miles before entering North Kern at Seventh Standard Road. The Calloway Canal is now used as a "wet year" facility and has a capacity of 1,000 cfs at its headworks.

Typically, District-owned wells are used only during "dry" years when surface water supplies are inadequate. Groundwater is delivered to customers during dry years via a network of small, lined canals running parallel to the larger, unlined canals used for conveyance of surface water. The District owns and operates about 100 wells. Approximately 200 privately owned wells in the Class 2 service area are used to meet irrigation demands in this part of the District. All deliveries made by the District to its growers are exclusively for irrigation purposes. The District recently entered into an agreement with Reclamation and DWR to install state of the art automated control equipment and remote monitoring devices to tie in all the District owned wells and canal level transmitters. This project is currently being implemented.

### **3.2.4 Prior Working Relationships with USBR**

Select examples of North Kern's working relationships with the USBR include the following:

**2014** - North Kern, on a joint venture with Cawelo WD, received 2014 CalFed Grant funding to concrete line Reaches C1, C2, and D of the Calloway Canal. The project was successfully constructed in 2015.

**2016** - North Kern entered into a contract with the USBR for \$1,000,000 to line 1,600 LF of currently unlined portion of the Calloway Canal, and equipping 50 District owned wells with state of the art telemetry systems. This project is currently being implemented.

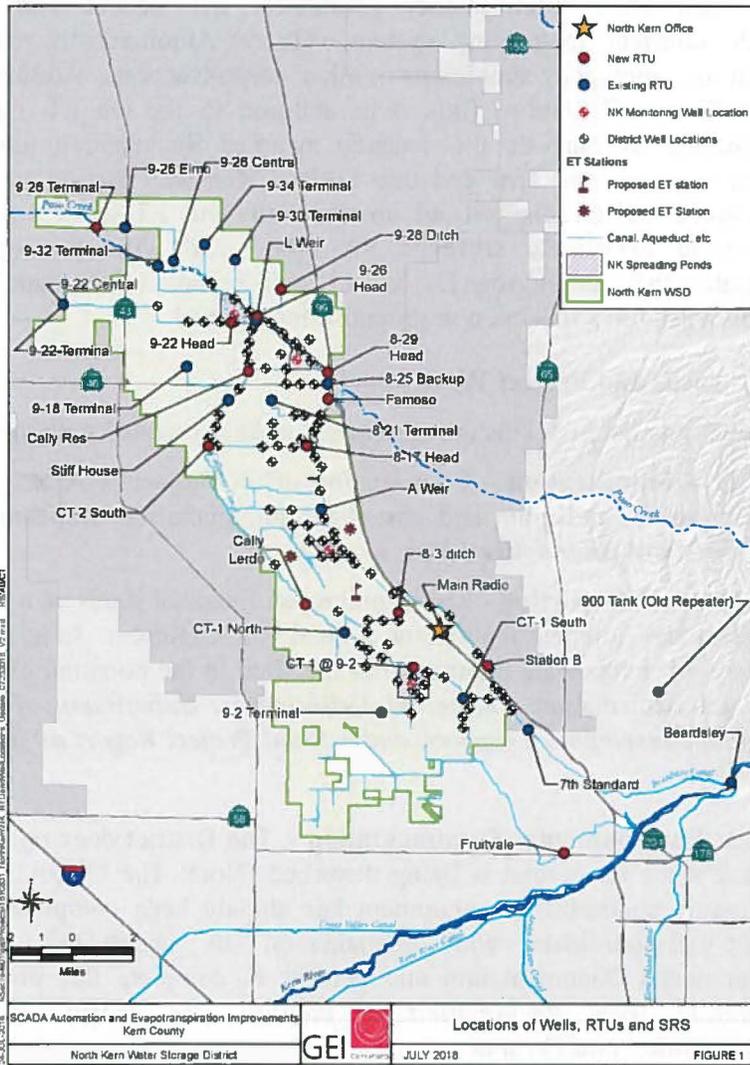
**2017** - North Kern entered into a contract with the USBR for \$1,000,000 to line 2,631 LF of

currently unlined portion of the Calloway Canal, and equipping 50 District owned wells with state of the art telemetry systems. This project is expected to begin in summer, 2018.

2017 - North Kern entered into a contract with the USBR for \$300,000 to line 1,320 LF of currently unlined portion of the Calloway Canal. This project is expected to begin in summer, 2018.

### 3.3 Project Location

North Kern WSD, shown in Figure 1, is in Kern County along the eastern side of California's southern San Joaquin Valley. The District lies between the City of Bakersfield on the South and the City of Delano on the north, and between Highway 99 on the east and the cities of Wasco and Shafter on the west. This figure also identifies the locations of the wells, canal level transmitters (shown as RTUs in the figure) and ET stations (two ET stations and one Surface Renewal Ground station) that are proposed to be connected to the SCADA system. The SCADA system will be housed in the District's office.



### 3.4 Technical Project Description

#### 3.4.1 Proposed Project Description

The District owns and operates 100 groundwater wells to supplement surface water to its growers during dry years. At present, the groundwater pumped per well is estimated by measuring the instantaneous flow rate and extrapolating that for the entire month. This method, apart from being highly unreliable, consumes significant amount of staff time. Therefore, the District decided to modernize their groundwater pumping operations. As part of this effort, the District entered into multiple grant agreements with Reclamation and DWR to install

on-site well modernization equipment such as magmeters, telemetry units, canal level transmitters, water quality and level sensors and ET stations (USBR Agreement numbers: R16AP00172, R17AP00159; DWR Agreement number: 4600011921). Currently, the District is actively engaged in conducting assessments to install the on-site modernization equipment on all well sites and level transmitters at various locations in their canal system. The final step in this modernization effort is to integrate the on-site equipment with a platform that can compile, analyze and interpret the data into a user interface. This final step will be achieved by installing a SCADA software that ties into all the on-site equipment. This SCADA software will have the capability to i) Record and analyze all data transmitted from the well and canal sites ii) Generate instantaneous reports for groundwater pumped, depth to water, and other water quality parameters iii) Reduce and eliminate manned patrols; provide constant monitoring, system wide iv) Automatically react to alarms and events by performing emergency shutdowns or other control actions. Additionally, the District proposes to install two ET stations (this is in addition to the ten ET stations that are scheduled to be installed as part of the recently awarded Reclamation grant) to measure the Evapotranspiration per unit area and one Surface Renewal Station to measure relative humidity, wind speed, solar radiation and precipitation. This ET setup will enable the District and its growers to effectively correlate the crop yield with the applied water. The District anticipates that monitoring ET values will reduce the amount of applied water, which will ultimately lead to a reduction in groundwater pumped.

### 3.4.2 Tasks and Project Work

The following list of details the anticipated tasks associated with the Project work:

**Task 1: Administration** - Coordination of all Project activities, including budget, schedule, communication, and grant and cost-share administration. *Expected Deliverables: Preparation of invoices and other deliverables, as required.*

**Task 2: Grant Reporting** - Report on project financial status on a semi-annual basis and prepare significant development reports and a Final Project Report. In addition, the Project will comply with any other reporting requirements specified in the potential grant agreement between North Kern and Reclamation. *Expected Deliverables: Submission of semi-annual status reports, significant development reports, and a Final Project Report as specified in the potential grant agreement.*

**Task 3: Environmental Documentation** - The District does not anticipate any activity under this task since no ground is being disturbed (Note: The CEQA and NEPA required to install the on-site modernization equipment has already been completed and signed). However, the District will coordinate with Reclamation to understand and execute the required Environmental Documentation and permits to complete this project. *Expected Deliverables: Coordinate with Reclamation to identify and execute the required Environmental Documentation and Permits.*

**Task 4: Construction** - Construction involves procuring and installing the necessary SCADA software and installing the ET stations and the Surface Renewal Station. A contract for this task will be awarded to the respective vendors as per District's purchasing policy.

## 3.5 Evaluation Criteria

### 3.5.1 Evaluation Criterion A: Project Benefits

*Describe the expected benefits and outcomes of implementing the proposed project. What are the benefits to the applicant's water supply delivery system?*

Over the past two years, North Kern has entered into multiple agreements with Reclamation and DWR to install on-site equipment to collect data from their groundwater pumping operations and canal delivery system. Currently, North Kern is actively engaged in implementing the on-site modernization improvements throughout the District. Prior to this modernization effort, the District manually calculated their monthly groundwater pumping numbers which was time consuming. In addition, they did not have the resources to monitor the water quality and level data from all its wells, so they monitored a select number of wells. With these modernization efforts, the District can automatically record the instantaneous groundwater pumping rate, depth to groundwater, canal level, water quality parameters, and ET data. The District has identified that the final step to complete the modernization effort is to tie in all the on-field data to a secure SCADA platform that will compile, analyze and interpret the data into a user interface. As explained in section 3.4.1, this SCADA software will have the capability to i) Record and analyze all data transmitted from the well and canal sites ii) Generate instantaneous reports for groundwater pumped, depth to water, and other water quality parameters iii) Reduce and eliminate manned patrols; provide constant monitoring, system wide iv) Automatically react to alarms and events by performing emergency shutdowns or other control actions. Additionally, the District proposes to install two ET stations (this is in addition to the ten ET stations that are scheduled to be installed as part of the recently awarded Reclamation grant) to measure the crop specific Evapo-transpiration per unit area and one Surface Renewal Station to measure relative humidity, wind speed, solar radiation and precipitation. This ET setup will enable the District and its growers to effectively correlate the crop yield with the ET values and applied water. The District anticipates that monitoring ET values will reduce the amount of applied water, which will ultimately lead to a reduction in groundwater pumped. The reduction in applied water will also indirectly benefit pumping costs and nutrient management in crop root zone.

In tune with SGMA's goal to achieving long-term sustainability of the subbasin's groundwater levels, this project will help the District in maintaining accurate records of groundwater pumped and delivered to its network of canals. The SCADA platform combined with the level transmitters in the canal will help the District identify leaks in their delivery system network, and constantly monitor the capacity of the canals thereby helping the District staff to make key decisions during water delivery to its growers.

*Extent to which the proposed project improves overall water supply reliability. The expected geographic scope benefits from the proposed project (e.g., local, sub-basin, basin). Extent to which the proposed project will increase collaboration and information sharing among water managers in the region.*

North Kern is part of the conjunctively managed Kern groundwater subbasin, which is a critically overdraft subbasin. With multiple bouts of drought combined with lack of consistent surface water supplies, the underlying subbasin has been subjected to a lot of stress, which has led to groundwater declining to alarming levels. With sustainable long-term use of groundwater being the need of the

hour, this Project proposes to reduce the stress on groundwater by eliminating excessive pumping and reducing applied water on crops, thereby improving overall water supply reliability.

The District is an active member of the Poso Creek IRWM group that is composed of seven water districts in the kern subbasin. The 2014 planning document of the group identified “achieving drought resiliency by regional cooperation” as a key goal. The District believes that reducing groundwater pumping operations will benefit the entire subbasin since it is conjunctively managed. Additionally, the ET and groundwater level monitoring data are highly effective management tools to manage applied water and groundwater respectively. Sharing such critical data among members of a conjunctively managed groundwater basin will promote regional cooperation.

*Any anticipated positive impacts/benefits to local sectors and economies (e.g., agriculture, environment, recreation, tourism).*

The District’s water use is mostly for agricultural purposes, with some growers relying completely on groundwater as their sole source of supply. This project should benefit all growers that depend on the District’s groundwater pumping operations and water delivery system. Additionally, this project positively impacts the agricultural economy as a whole by providing access to ET data that will help the growers to efficiently utilize scientific advances to increase crop yield by utilizing the optimum amount of water.

*Extent to which the project will complement work done in coordination with NRCS in the area (e.g., with a direct connection to the district’s water supply). Describe any on-farm efficiency work that is currently being completed or is anticipated to be completed in the future using NRCS assistance through EQIP or other programs.*

Growers apply directly to the NRCS for EQIP funding, and, since the applicants to the NRCS programs remain confidential until awarded funding, North Kern is generally not aware of the number of growers in the District who have applied for funding until the funding has been awarded. Nevertheless, the District strongly supports grower participation in EQIP as improved on-farm water use efficiency is the cornerstone for improved District and regional water management.

North Kern growers already have converted to low-volume irrigation systems, such as micro-sprinkler and drip. However, a continuing need exists for on-farm irrigation system evaluations using the Mobile Lab service operated by Brian Hockett of the North West Kern Resources Conservation District (NWKRCDD). North Kern is within the NWKRCDD service area and has funded irrigation system evaluations for growers over many years. The proposed Project, which provides accurate ET measurements to North Kern growers, would be enhanced by an expanded program of on-farm irrigation system evaluations using the Mobile Lab. In addition to the improvements in water use efficiency that would result from these evaluations, an additional benefit would be improved nutrient management that would stem from improved irrigation practices.

### **3.5.2 Evaluation Criterion B: Planning Efforts Supporting the Project**

*Describe how your project is supported by an existing planning effort, implements a goal or address a need or problem identified; and how it has been determined as a priority in the as opposed to other potential projects/measures.*

The District has an Agricultural Water Management Plan (AWMP) that identifies Efficient Water Management Practices (EWMP) that were established by the District in 2015. As part of this

management plan, under Section VII, the District identified the need to install SCADA automation of its facilities. The plan also states the following “Implement real-time water meter reading network so water consumer usage can be uploaded to the District server” and “Implement SCADA monitoring to check water levels at strategic locations in the District’s distribution system”. This Project directly addresses these EWMPs as the SCADA software will effectively compile and generate real time reports for the District, which addresses the problem identified in section 3.4.1 by reducing human error on water usage reporting and reducing the man hours required to manually monitor the District’s delivery system. The same EWMP also recognizes the “necessity to provide for the effective water management services to its water users”, and specifically identifies the need to provide crop ET information to its growers.

Both components of this proposed Project have been identified as critical EWMPs in the AWMP and the District believes that addressing these critical EWMPs would be the key to addressing the subbasin’s dwindling groundwater levels.

**3.5.3 Evaluation Criterion C: Project Implementation**

*Describe the implementation plan for the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates.*

The Project will be implemented as follows: activities would begin around October 1, 2018; the software procurement and ET stations setup would begin as soon as environmental compliance is confirmed; and all project work and reporting would be completed by September 2020 at the latest. A draft Project Completion Report will be submitted to Reclamation for Project Manager’s comment and review no later than 90 days after project completion, followed by a Final Report addressing comments. The report shall be prepared and presented in accordance with the provision of a grant contract.

<b>Milestone/Task/Activity</b>	<b>Planned Start Date</b>	<b>Planned Completion Date</b>
Signed Agreement	September 2018	September 2018
Administration	October 2018	September 2020
Grant Reporting	October 2018	September 2020
Environmental Documentation	August 2018	September 2018
Construction	October 2018	June 2020

*Describe any permits that will be required, along with the process for obtaining such permits; and administrative actions required.*

Please refer to Section 6.0 for details on the Permits and Approvals process. No new policies or administrative actions are required for project implementation.

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

The District is currently engaged in an ongoing assessment to evaluate and install the necessary on-field modernization equipment. This assessment will also recommend compatible SCADA platforms. The District is also in the pursuit of vendors for their ET measurement setup. The District

will decide on both vendors in accordance with their purchasing policy. This Engineering assessment is anticipated to be completed by September 2018.

*Describe how the environmental compliance estimate was developed. Have the compliance costs been discussed with the local Reclamation office?*

The environmental compliance estimate was based on previous experience with similar projects and has not been discussed with a local Reclamation office. As such, it is anticipated that this project will incur minimal environmental costs.

### **3.5.4 Evaluation Criterion D: Nexus to Reclamation**

*Is the proposed project connected to a Reclamation project or activity? If so, how?*

Although North Kern is not a federal water contractor, they have already entered into water banking deals with federal water contractor neighbors such as Shafter-Wasco ID, Delano-Earlimart ID and Kern-Tulare WD. Reclamation's Friant-Kern Canal (FKC) flows through the District, this enables the District to bank water from the FKC on behalf of Kern-Tulare WD and Delano-Earlimart ID during the wet years, onto their spreading grounds. In another instance, Shafter-Wasco ID exchanges Reclamation's water with North Kern by drawing water into their district from the more conveniently located District Canal. The proposed Project's SCADA platform will effectively monitor level transmitters in the canals to improve efficiency of the District's delivery system. Additionally, the District's end goal of reducing applied water and conserving groundwater is in line with objective of Central Valley Project's 2016 Drought Contingency Plan.

The proposed Project is located in the Tulare Lake Basin, which also includes Reclamation's Friant-Kern Canal. The Project lands do not involve any Reclamation facility; nor meet trust responsibilities to Tribes

### **3.5.5 Evaluation Criterion E: Department of the Interior Priorities**

**Creating a conservation stewardship legacy second only to Teddy Roosevelt - utilize science to identify best practices to manage land and water resources and adapt to changes in the environment:**

Highly unreliable surface water coupled with extensive periods of drought has led to the depletion of groundwater at alarming levels. The District identified the need to adapt to best management practices in their AWMP. Through this Project, North Kern proposes to utilize the advances made in the field of science and technology to improve irrigation practices by providing ET data to the growers and reducing human error factor by implementing a SCADA platform to monitor groundwater pumping and delivery system.

**Restoring trust with local communities - be a better neighbor with those closest to our resources by improving dialogue and relationships with persons and entities bordering our lands:**

Since the Kern groundwater subbasin is a conjunctive use subbasin, regional cooperation to achieving drought resiliency and long-term sustainability is of utmost importance. With the introduction of SGMA, North Kern's goal of monitoring the depth to groundwater levels and measuring ET will also benefit its neighbors.

## 4. Project Budget

### 4.1 Funding Plan and Letters of Commitment

Funding Sources	Funding Amount
<b>Non-Federal Entities</b>	
North Kern Water Storage District Monetary Contribution	\$ 93,432
<b>Non-Federal Subtotal</b>	<b>\$ 93,432</b>
<b>Other Federal Entities</b>	
<b>Other Federal</b>	<b>\$ 0</b>
<b>Requested Reclamation</b>	<b>\$ 75,000</b>
<b>Total Project Funding</b>	<b>\$ 168,432</b>

Table 4.1. Summary of Non-Federal and Federal Funding Sources

*How you will make your contribution to the cost-share requirement, such as monetary and/or in-kind contributions and source funds contributed by the applicant.*

The District's cost-share will be covered by the District's Capital Reserve Fund. The District adopts an annual budget during the fall of each year.

*Describe any In-kind costs incurred before the anticipated project start date to include as project costs.*

No In-kind cost will incur before the Project start date.

*Identity and amount of funding to be provided by funding partners; funding requested or received from other Federal partners; or pending funding requests that have not yet been approved.*

No other funding partners exist for this project. No other Federal funding has been requested, received, or is pending for the proposed work.

### 4.2 Budget Proposal

The total Project is estimated at \$168,432 with \$75,000 in requested grant funds (Federal Cost Share) and \$93,432 in Non-Federal Cost Share funds. The approach has been reflected in the budget estimates. The total requested grant funds amount to about 45 percent of total project costs, with the remainder (55 percent) funded by the Applicant. Refer to Table 2, which provides a summary of the estimated budget by funding source.

The Project budget, Table 4.2, was prepared based on the level of effort required to implement the project as discussed in Section 3.4.2 – Tasks and Project Work. The Work Plan identifies and describes four tasks used to define the overall Project Scope, and Budget:

Task 1: Administration (\$5,054)

Task 2: Reporting (\$5,071)

Task 3: Environmental Documentation (\$4,169)

Task 4: Construction (\$154,138)

4.3 Budget Narrative

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	\$/Unit	Quantity		
<b>SALARIES AND WAGES (INCLUDING FRINGE BENEFITS)</b>				
District Engineer	92.26	16	Hours	\$1,476
Administrative Staff	45.09	19	Hours	\$857
<b>CONTRACTUAL</b>				
<b>Engineering Consultant</b>				
Senior Professional - Grade 7	245.00	16	Hours	\$3,920
Senior Professional - Grade 5	181.00	6	Hours	\$1,086
Project Professional - Grade 3	137.00	35	Hours	\$4,795
<b>SCADA - Evapotranspiration</b>				
System Platform 2017	Quote from Wonderware			\$30,490
Historian add-on	Quote from Wonderware			\$11,415
Standard Support	Quote from Wonderware			\$7,124
GISsize	Quote from Wonderware			\$12,037
Dream Report	Quote from Wonderware			\$18,344
Remote Alarm Notification software	Quote from Wonderware			\$8,495
ET Station setup	Quote from Land IQ			\$65,310
<b>TOTAL DIRECT COSTS</b>				\$168,432
INDIRECT COSTS - __%				\$0
<b>TOTAL PROJECT COSTS</b>				\$168,432

Table 4.2. Budget Summary

Cost Estimating Notes:

- (1) This table is supported by detailed tables which are included immediately following the Budget Narrative.
- (2) Task 4: Environmental Compliance - The cost for this task is assumed to be 2% of the construction cost. This will be modified once the final estimate is provided by Reclamation
- (3) Reference the Work Plan in Section 3 for task descriptions.
- (4) The number of personnel hours was estimated from District and Consultant engineer experience based on the previously completed well drilling and reclamation projects.

*Salaries and Wages* – Ram Venkatesan, District Engineer for North Kern WSD, is the representative for the Applicant and will provide and a licensed Civil Engineer in the state of California is the representative for the Applicant and will provide overall Project Management, and construction of the project components. The District’s existing Professional Service providers and the recently awarded contractor. The District Engineer will mainly execute the administration (6 hrs.), and construction (10 hrs.) components of the project. The Budget Item “Salaries and Wages” provides a summary of the estimated hours (by job classification) necessary to complete

the Project work and their applicable hourly rates. The hourly labor rates for District personnel were calculated as the annual salary, plus benefits, divided by 260 days (2,080 hours). Salaries and Wages costs are expected to be used as local cost share, meaning the District will not be asking for reimbursement on these costs. The number of hours for personnel to complete the work in each task was estimated based on experience by the District and their professional services provider in implementing federally funded projects.

*Fringe Benefits:*

Fringe Benefits have been included in 'Salaries and Wages'. Fringe benefits include medical insurance, Employee's Pension Plan, Social Security, District portion of Medicare, Dental Insurance, Vision Insurance, Life Insurance, and Disability Insurance.

*Travel and Equipment:*

The District will not be charging any travel or equipment expenses to the Project, nor will they be asking for reimbursement of any incidental costs.

*Materials and Supplies:*

Acquisition of materials and supplies for office use is not anticipated; rather, the District will provide any incidental supplies. Accordingly, no "Materials and Supplies" expenses have been included.

*Contractual: (Administration, Reporting, and Construction)*

Main items under this Budget Item include Engineering Consultant costs and Construction Contractor's costs.

*Engineering Consultants* – With regards to consulting costs, the District will use an existing professional services contract with GEI Consultants, Inc. to assist with implementing the Project's administration and reporting as needed. In this regard, the District operates with minimal professional staff and has maintained long-standing relationships with consultants, who are familiar with District facilities and operations. It is noted that work described other than construction will be completed primarily by the engineering consultants, with assistance from the District. In this regard, costs for the engineering consultants have been estimated under the category "Contractual" for all tasks. The consultant budgets under the "Contractual" category for each task are estimates; however, they have been prepared based on the level of effort to complete past projects by the consultants, whom over the years, have provided similar services to the District for federally funded projects. The costs for the SCADA platform and Evapotranspiration components are from experienced vendors in the industry. The District is currently conducting phase 1 site assessment and radio path survey on all the ground water well sites. Upon the completion of the Phase 1 assessments, the District will enter into a contract with vendors for both SCADA software and ET measurement in accordance with the District's purchasing policy.

*Environmental and Regulatory Compliance Costs :*

The environmental compliance estimate was based off experience from previous effort required for Reclamation to review and accept the required environmental documents. The exact cost has not been discussed with a local Reclamation office, however this includes 2% of the construction

until the exact cost is determined by reclamation, discussed more in Section 5 – Environmental Compliance. It is anticipated minimal environmental costs will incur.

*Other Expenses and Indirect Costs:*

No “Other Costs” or “Indirect Costs” are included in the budget. Accordingly, this category does not apply.

*Total Costs \$168,432*

## **5. Environmental and Cultural Resources Compliance**

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The following section summarizes NKWSD’s approach to avoid, minimize, and mitigate any potential environmental impacts. The following paragraphs address the specific questions posted in the Environmental and Cultural Resources Compliance section of the FOA.

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

No. The Project is located within property owned and operated by North Kern Water Storage District. At this time, the District is not aware of any part of this project that will have a significant impact on soil, air, water, or animal habitat quality. Regardless, all applicable environmental compliance measures will be followed, at a minimum, to ensure no improper disturbances are made to the environment and animal life.

*Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area?*

NKWSD is aware that threatened and endangered species exist in the Southern San Joaquin Valley. The FWS Endangered Species Database listed several threatened and endangered species within Kern County. However, based on experience, the Kern Council of Governments Habitat Conservation map, and federally-listed species mapping, no endangered species habitats have been identified within the area of this project.

*Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as “Waters of the United States?”*

*No.*

*When was the water delivery system constructed?*

As discussed in NKWSD’s AWMP (2015), North Kern’s canal and pipeline distribution system and related works were originally completed in the 1950s, with additional features and enlargements (e.g., pumping stations, discharge pipelines, and reservoir systems) constructed with the expansion of the District’s service area (i.e., increased water demand). Kern County Land and Water Company, who subsequently lengthened it to its current 30-mile length, originally constructed the Calloway Canal between 1875 by O.P. Calloway and 1877. Over time, the canal’s

prism (i.e., trapezoidal shape), head gates, weirs and other features have been replaced, repaired, or improved to allow for greater capacity and flow delivery to water users (Districts). As of late, modifications have been made to accommodate commercial, housing, and road development as the City of Bakersfield has slowly been expanding to the north. It is worth noting that the Project will not result in any modifications or effects to individual irrigation system features (e.g., headgates, canals, or flumes).

*Will the project result in any modification of or effects to, individual features of an irrigation system?*

There will be no modifications to the existing irrigation distribution system.

Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.

No. NKWSD will contract with a private cultural resources management consultant and arrange for Reclamation staff to coordinate to determine what, if any previous cultural resources surveys have been conducted in the project area. The District currently does not expect to encounter any obstacles in receiving clearance.

*Are there any known Archeological sites in the area?*

No. Since the Project area has been disturbed previously for the construction of farm roads and fields, it is expected that there will be no obstacles to receipt of clearance with respect to archeological sites. In addition, the District is prepared to implement any necessary mitigation measures should cultural resources be identified.

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

No.

*Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts or tribal lands? Will the project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?*

No.

## **6. Required Permits or Approvals**

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Since no ground is being disturbed, the District does not anticipate the requirement of any permits or approvals. However, the District will coordinate with Reclamation to determine the required path of action before beginning construction.

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**SAM status: Active   DUNS: 081783946   CAGE Code: 5P2X5   Expiration: Jan 15, 2019**

## 7. Official Resolution

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BEFORE THE BOARD OF DIRECTORS  
OF THE NORTH KERN WATER STORAGE DISTRICT  
ON BEHALF OF ITSELF AND ROSEDALE RANCH IMPROVEMENT  
DISTRICT

IN THE MATTER OF: RESOLUTION NO. XXX

RESOLUTION OF INTENTION OF NORTH KERN WATER STORAGE  
DISTRICT

TO FILE AN APPLICATION WITH THE BUREAU OF RECLAMATION  
FOR A GRANT UNDER THE WATERSMART SMALL-SCALE WATER  
EFFICIENCY *PROJECTS FOR FISCAL YEAR 2018*

WHEREAS, North Kern Water Storage District partnered with several neighboring water districts and formulated the Poso Creek Integrated Regional Water Management Plan (Plan), adopted in July 2007 and updated in 2014 by each of the districts for their collective area; and

WHEREAS, District staff, in conjunction with surrounding water districts, communities, and stakeholders, has formulated a plan of improvements; and

WHEREAS, the Plan identified regional projects that, once implemented, would improve the water management of the Region and the ability for North Kern to regulate water supplies available to the district; and

WHEREAS, the Plan promotes a regional recharge, reduction of overdraft, and operation changes in responding to reductions in water supply reliability to the region; and

WHEREAS, District staff has formulated a project improvement, referred to as *SCADA Automation and Evapo-Transpiration Measurement*, which has the support of surrounding water districts and communities; and would be funded by a combination of North Kern Water Storage District funds, and grant funds; and

WHEREAS, groundwater pumping and ET measurements will be improved; and

WHEREAS, the United States Bureau of Reclamation is currently soliciting proposals for grant funding assistance under their *WaterSMART Small-Scale Water Efficiency Grants for Fiscal Year 2018* (Funding Opportunity No BOR-DO-18-F009); and

WHEREAS, District staff has formulated a grant proposal to construct the *SCADA Automation and Evapo-Transpiration Measurement Improvements*.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the North Kern Water Storage District as follows:

- a. The District's Board of Directors has reviewed and supports the submission of a grant application to Reclamation entitled SCADA Automation and Evapo-Transpiration Measurement Improvements Project.
- b. The District's Manager, Richard Diamond, is hereby authorized and directed to submit the grant application and is authorized to enter into an agreement with Reclamation on behalf of North Kern Water Storage District for grant funding under Reclamation's *WaterSMART Projects Grant*.
- c. The Applicant is capable of providing the amount of funding and in-kind contributions specified in the application; and
- d. The Applicant will work with Reclamation to meet established deadlines for entering into a cooperative agreement.

PASSED APPROVED AND ADOPTED on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ by the following roll-call vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

**NORTH KERN WATER STORAGE DISTRICT**

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President/Board of Directors

ATTEST:

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Board of Directors

## 8. Letter of Support

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1101 Central Avenue, Wasco, CA 93280  
661 758 5113

July 24, 2018

Mr. Ram Venkatesan  
District Engineer  
North Kern Water Storage District  
33380 Cawelo Avenue  
Bakersfield, CA 93308

Subject: Proposed Project – SCADA Automation and Evapotranspiration Measurement Improvements.

Dear Mr. Venkatesan:

The Poso Creek IRWM group supports North Kern Water Storage District's continued efforts to improve efficient water use in Kern County. We are clearly interested and supportive of the *SCADA Automation and Evapotranspiration Measurement Improvements Project*, as this project will incrementally reduce the applied water in North Kern, which will help improve sustainable groundwater use in the Kern subbasin. This Project is a vital improvement that will be of great benefit to the entire Poso Creek IRWM region.

We hope that our expression of support is helpful in your efforts to secure grant funding assistance to implement your plans. If the funding agency would like to discuss our interest and support of your project, we would be happy to do so.

Sincerely,



Dana Munn  
Chairman  
Poso Creek IRWM group