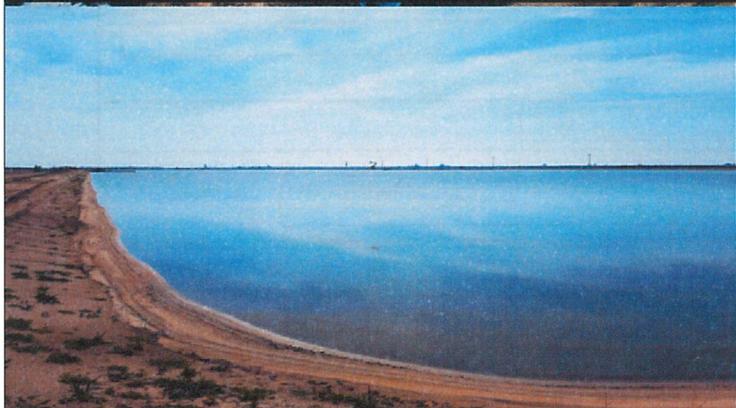
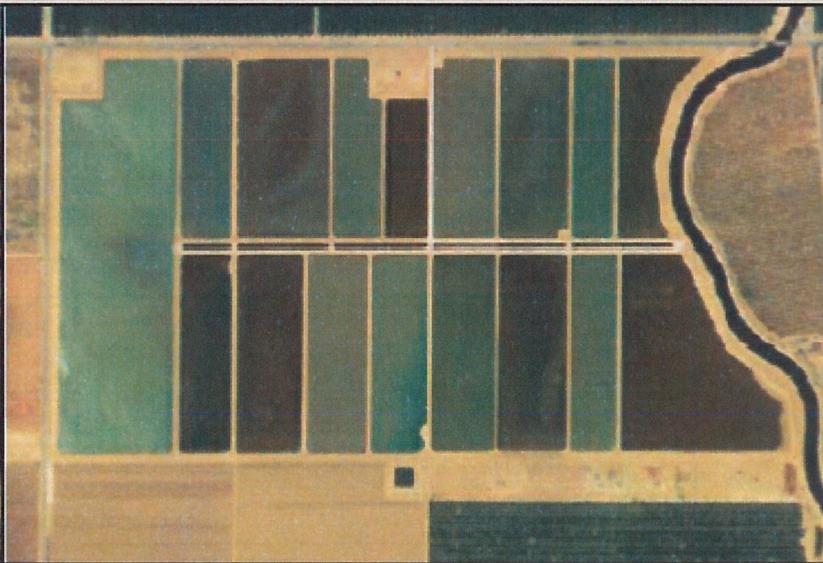


February 2018

WaterSMART Drought Response Program:
Drought Resiliency Projects for FY 2018
Funding Opportunity Announcement No. BOR-DO-18-F008

Recovery and Return Improvements to District's Spreading Grounds for Drought Resiliency

Project Location: Northwestern Kern County of the Southern San Joaquin Valley, CA



Applicant

Shafter-Wasco Irrigation District
On behalf of the Poso Creek IRWM Plan Regional
Water Management Group

P.O. Box 1168
Wasco, CA 93280



Shafter-Wasco Irrigation District

**Recovery and Return Improvements to District's
Spreading Grounds for Drought Resiliency**

**WaterSMART Drought Response Program:
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**Project Location:
Shafter-Wasco Irrigation District Spreading Grounds
Northwestern Kern County
of the Southern San Joaquin Valley, CA**

Shafter-Wasco Irrigation District

**16294 Central Valley Highway
Wasco, CA 93280**

Project Manager: Dana Munn

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February 13, 2018

2.0 TABLE OF CONTENTS

APPLICATION FOR FEDERAL ASSISTANCE FORM (SF-424)

ASSURANCES – CONSTRUCTION PROGRAMS FORM (SF-424D)

1.0 TITLE PAGE.....	1
2.0 TABLE OF CONTENTS.....	2
3.0 TECHNICAL PROPOSAL.....	3
3.1 EXECUTIVE SUMMARY.....	3
3.2 BACKGROUND DATA.....	4
3.3 TECHNICAL PROJECT DESCRIPTION.....	6
3.4 PERFORMANCE MEASURES.....	9
3.5 EVALUATION CRITERIA.....	10
4.0 PROJECT BUDGET.....	19
4.1 FUNDING PLAN AND LETTERS OF COMMITMENT.....	19
4.2 BUDGET PROPOSAL.....	20
4.3 BUDGET NARRATIVE.....	21
4.4 BUDGET FORM.....	25
5.0 ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE.....	37
6.0 REQUIRED PERMITS OR APPROVALS.....	40
7.0 DROUGHT PLAN.....	40
8.0 LETTERS OF PROJECT SUPPORT.....	40
9.0 OFFICIAL RESOLUTION.....	42
10.0 LIST OF REFERENCES	
APPENDIX A - PROPOSAL FIGURES	
APPENDIX B - DROUGHT PLAN DOCUMENTS	
APPENDIX C - PROJECT CONSTRUCTION COST ESTIMATES	

3.0 Technical Proposal and Evaluation Criteria

3.1 Executive Summary

Date	February 13, 2018
Project Name	Recovery and Return Improvements to District’s Spreading Grounds for Drought Resiliency

<i>Applicant Information</i>	
Name	Dana Munn
Title	General Manager Shafter-Wasco Irrigation District
Telephone	(661) 758-5153
E-mail Address	dmunn@swid.org
City, County, State	Wasco, Kern County, California

Note: all figures are contained in Appendix A, unless noted.

The Shafter-Wasco Irrigation District (Shafter-Wasco, SWID, District) proposes a cost-shared project with the U.S. Bureau of Reclamation (Reclamation, USBR). The *Recovery and Return Improvements to District’s Spreading Grounds for Drought Resiliency* (Project) proposes drought resiliency for the District and an external user by constructing two recovery wells and return pipeline in the District’s recently constructed Kimberlina Spreading Grounds (spreading grounds, Facility) to connect the well supply to the District’s north mainline. The External User refers to Homer LLC, a partner of the spreading grounds and agricultural producer. The recently constructed spreading grounds allow the District and Homer LLC to store or “bank” water in the District through groundwater recharge during wet years to later return this water during dry years, however, the Facilities need recovery and return components to complete the banking process. The Project aims to fulfill the recovery and return aspects of the Facility to improve drought resiliency, providing water supply when it is most critical in dry years via two new recovery wells. The addition of the wells and return conveyance adds the return component to allow the water banking agreement to work, which enhances drought resiliency for the District’s landowners, Homer LLC, and helps avoid adverse economic and environmental issues associated with continuous groundwater level declines. The project expenses will include drilling and equipping the two wells with pumps, motors, discharge piping, and electrical equipment as well as the associated piping required to connect the two wells to the District’s north main line. Total Project costs equate to \$1,176,885. Of this total, \$300,000 is requested as Federal funding.

The Project is estimated to provide the following annual benefits, in acre-feet.

Avg. Annual District Water Supply	55,000 AF
Est. Annual Water Better Managed – Dry Year¹	4,760 AF
Est. Annual Water Better Managed – Project Lifespan²	952 AF

¹ In the context of a Dry Year, this number indicates the increased volume of return water the District can retrieve from the aquifer because of the Project.

² Indicated as the volume of recoverable water based on the frequency of dry years over the Project’s 30-year life span.

3.1.1 Project Duration and Completion Date

The Project is expected to be completed within one year of signing a grant agreement. Construction activities are expected to be performed within four months and all Project activities are expected to be completed by June 2019. Time allotted for project activities are based on recent experience by engineering consultants in completing similar work.

3.1.2 Project Relation to Federal Facilities

The Project will contribute to the recovery and return component of the District's spreading facility for management of water supplies (i.e., banking recharge and return) for Shafter-Wasco ID, a contractor of Reclamation's Central Valley Project (CVP), and for Homer, LLC. The specific Project location (i.e., well locations) is not located on any Federal right of way.

3.2 Background Data

Geographic Location

The location of the Shafter-Wasco Irrigation District is shown in Figure 1, in the north-central portion of Kern County in the Southern San Joaquin Valley of California. The District actively supplies a service area of approximately 37,500 acres, with approximately 30,300 acres as irrigated lands (approx. 81 percent of the District). The District lies between Interstate 5 to the west, State Highway 99 to the east, with the Cities of Wasco and Shafter both located within the district boundaries. At its greatest extent, the District's service area is approximately 10.5 miles wide (east-west) and 12 miles long (north-south).

The wells and pipeline connection will be located within the Kimberlina Spreading Grounds on the west side of the Calloway canal within the central portion of the Shafter-Wasco Irrigation District boundary. The Facility is used for the direct recharge of surface water supplies into the underlying aquifer. The location of the two wells on the Facilities and the pipeline infrastructure proposed for the project are shown in Figure 2.

3.2.1 Primary Water Supplies and Sources

The District's primary source of surface water is Central Valley Project (CVP) water delivered through two turnouts from the Friant-Kern Canal connected to a north and a south mainline. The District was established as a public entity in 1937 and in 1955 entered into a water contract with Reclamation to supply water for the district from the Friant unit of the CVP by way of the Friant-Kern Canal. The District began importing CVP surface water in 1957 with a water service contract for 50,000 acre-feet of Class I water and 39,600 acre-feet of Class II water. The Central Valley Project water supplies are highly variable based off their Class 1 and Class 2 contracts and can range from 10,000 acre-feet in a "dry" year to nearly 100,000 acre-feet in a "wet" year. Besides the CVP, the District supplements deliveries with transfers from neighboring Districts when water originating from other surface water sources is available or through conjunctive use of the underlying groundwater basin.

The District overlies a usable groundwater basin; the Kern County Subbasin of the Tulare Lake Basin, with an estimated 40 million acre-feet total capacity (DWR, 2004). The District estimates they have a safe yield to be 28,500 acre-feet per year (SWID, 2011). Landowners in the District utilize pumped wells to extract underlying groundwater resources to meet on-farm water demands

when surface water supplies are inadequate. For example, in 2011 SWID’s total surface water supplies were 75,440 acre-feet, but in 2014 supplies were 11,450 acre-feet as reflected in the District’s Ag Water Management Plan. Given the total District water demand is over 100,000 acre-feet, the remainder is pumped by landowners to meet their irrigation needs. The following table displays the changes in supply that occur from a wet year (2011) to drought conditions as seen in the years 2013 to 2015:

District Water Budget Summary (AF)

Water Accounting	2011	2013	2014	2015
Water Uses/Demands ¹	98,690	104,033	103,144	101,026
Surface Water Supply ²	75,440	23,953	11,450	5,005
Groundwater Pumping ³	23,250	80,080	91,694	96,020

¹Water demand estimate based on irrigated acres identified in District crop surveys.

²Surface water supply (primarily from the CVP) substantially decreases in drought years.

³Pumping values represent the difference between estimated water use and the measured surface water supplies.

3.2.2 Water Conveyance and Delivery System

Water is conveyed from the Friant-Kern Canal to the district’s service area through a network of approximately 120 miles of pressurized pipelines and 3/4 mile of lined canals. Surface water is delivered through two CVP turnouts into two separate systems (North and South) comprised of 120 miles of pressurized pipelines. The District monitors the inflow into the system from the two locations on the Friant-Kern Canal using Venturi Meters. In 2017, the District completed construction of their first recharge facility, the Kimberlina Spreading Grounds, to facilitate District banking operations. Figure 3 illustrates the components of banking process. The spreading grounds receive surface water supplies delivered through a headgate off the Calloway Canal. Deliveries can also be made into the spreading grounds through a connection to the 78-inch District mainline at Kimberlina Road. The new wells will convey pumped groundwater into a new system of 15-inch and 21-inch pipelines that intertie with the Districts existing 78-inch mainline to allow a return mechanism for previously stored water to be delivered into the District North Mainline.

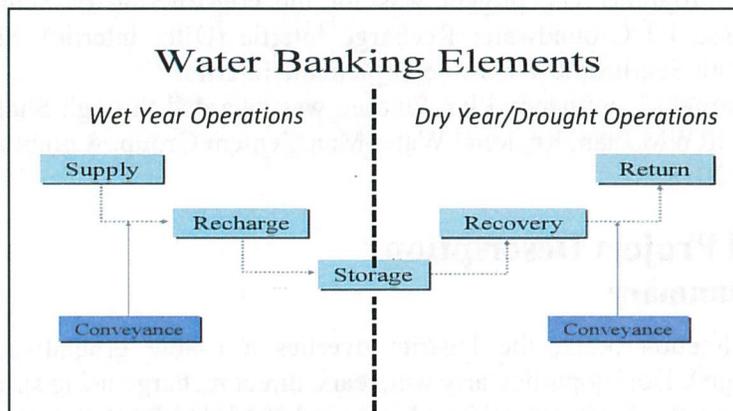


Figure 3: Water Banking Process followed by the District

3.2.3 Water Use

As a District, Shafter-Wasco provides water deliveries exclusively for irrigated agriculture. In this regard, the District serves water to about 250 water users. However, there are two cities, Shafter and Wasco, located within the District's boundaries which pump groundwater for domestic and industrial needs and have a combined population of more than 40,000.

The District has been essentially fully developed to irrigated agriculture for many years, with about 30,000 irrigated acres out of the approximate District total of 38,000 acres. The principal annual crops are cotton and alfalfa, while the principal permanent crops are almonds and grapes, with the latter accounting for a little more than one-half of the irrigated acreage.

There are no apparent long-term trends toward increasing or decreasing irrigated acreage; accordingly, the applied water demand is not expected to change significantly in the future.

3.2.4 Prior Working Relationships with Reclamation

- (2006/2007) – Shafter-Wasco implemented a system improvement project, which involved the replacement of more than 20 farm turnouts at a total cost of about \$253,000, with \$25,000 of funding provided by Reclamation under the Water Conservation Field Service Program.
- (2009/2010) – Shafter-Wasco implemented the North Intertie, a bi-directional connection between SWID's North Mainline and the Calloway Canal for \$300,000 of a \$650,000 project. The North Intertie is located on the east side of the Calloway Canal, north of Kimberlina Avenue, and northeast of the Kimberlina Spreading Grounds
- (2013-2017) – Shafter-Wasco implemented several modifications to the 2013 Madera Avenue Intertie project that concluded with the construction of the Kimberlina Spreading Grounds in 2017. The District had received notice of an award of \$5,000,000 through the San Joaquin River Restoration Program towards the \$11,589,795 project in 2013, however, due to lack of Grower acceptance for the Intertie, modifications were allowed by Reclamation to construct the spreading grounds.
- (2017) – In July 2017, the Semitropic WSD was notified of a grant award for the CALFED Water Use Efficiency Grant, administered by Reclamation in support of the Bay-Delta Restoration Program. The project was for the construction of Semitropic WSD and Shafter-Wasco ID Groundwater Recharge Intertie (Diltz Intertie). Shafter-Wasco is a Partnered with Semitropic WSD to complete the Intertie.
- (2017) – Drought Contingency Plan funding was awarded through Shafter-Wasco for the Poso Creek IRWM Plan, Regional Water Management Group. A grant agreement is being finalized in 2018.

3.3 Technical Project Description

3.3.1 Project Summary

As mentioned in Section 3.2.2, the District overlies a usable groundwater basin that is conjunctively managed. During particularly wet years, direct recharge using spreading grounds is significant throughout the basin (locations shown in Figure 1). To that extent, Shafter-Wasco Irrigation District participates in groundwater recharge by utilizing their resources and infrastructure to capture excess surface water supplies in wet years to later be recovered during

drought. The District constructed the Kimberlina Spreading Grounds to facilitate direct groundwater recharge of both excess surface water purchased by the District and their banking partner, Homer LLC (Partner), for these purposes (i.e., storage of wet year supplies for use in dry conditions). The Homer LLC Agreement with the District defines the shared use of the Kimberlina Spreading Grounds for recharge. California's major water conveyance infrastructure is such that water supplies are delivered southward using the California Aqueduct from the Sacramento-San Joaquin River Delta to the Southern Central Valley and southward from the Friant Dam using the Friant-Kern Canal. Both SWID and the Project Partner receive water from the Federal Central Valley Project via the Friant-Kern Canal. Recently, SWID retired environmental credits from the San Joaquin River Restoration Program by using the spreading grounds to recharge supply delivered via the conveyance route to bring "recirculation water," available in the California Aqueduct, back into the Friant service area using a multitude of regional conveyance improvements. The Kimberlina Spreading Grounds accomplishes two main goals; first it serves the needs of SWID to recapture environmental water and recharge wet period water and second it is a place for their partner Homer LLC to put wet period water into a bank for return in dry years. This proposed Project provides added capacity for the needed recovery and return component for the Facility to be able to meet the two drought resiliency needs. This Project helps to complete the Homer LLC Agreement which encourages more water deliveries into the District. The Project will not only provide SWID the ability to fulfill the agreement made with their Partner, but will also increase the flexibility and reliability of SWID's in-district water supplies by providing the ability to recover the banked groundwater from their facilities in exchange of transferring contracted CVP water to Homer.

To complete the Homer LLC Agreement and accomplish the regional goal set forth to create less dependency on the San Joaquin River in times of drought, SWID's Facility needs to contain the ability to return water to their Partner. Since Homer LLC's irrigated lands lie outside of the District, but still within other CVP contracting place of use in districts to the north, return of their water can be facilitated through an entitlement exchange on the CVP. That is, Homer LLC receives Shafter-Wasco Irrigation District's water allotment from the CVP and in turn, the District pumps the equivalent quantity of groundwater via the two proposed wells for in-District purposes and demands. This exchange of water is in addition to the leave behind water rate in accordance to the agreement made. The main function of the proposed wells is to allow for the extraction of the banked (previously stored) groundwater to be used by the District to fulfill in-district landowner deliveries.

This Project proposes to drill two deep wells and equip the pumps, motors, discharge piping, electrical equipment, and conveyance pipeline necessary to allow for recovery of banked groundwater supplies and return to SWID's north mainline. Improving SWID's infrastructure to return water supplies by constructing extraction wells and the conveyance pipeline to connect to SWID's north mainline at their spreading ponds provides the District and their Partner access to an alternative water supply in times of drought; therefore, improving drought resiliency, water supply management, and the banking facility within the region. Specifically, these improvements apply to the *Recovery and Return* elements of the program (as shown in Figure 3). The total amount of expected additional water provided to SWID and Homer through increased recovery and return capacity is 28,560 acre-feet over the 30-year life of the project, equal to 952 acre-feet annually when normalized over the 30-year time.

From a drought resiliency standpoint, this Project is expected to improve the District's response to dry year and drought conditions by allowing banked groundwater to act as an alternative supply to surface water. This will be accomplished by constructing two new deep groundwater wells within the spreading grounds and conveying recovered groundwater into a set of 15-inch and 21-inch pipelines that would inter-tie to the SWID's existing 78-in main pipeline. The two new wells will fulfill the banked water payback component of the Facilities allowing CVP water to be exchanged with Homer and banked groundwater to be directly returned to SWID. The new recovery wells would be drilled to a depth of approximately 1,000 feet by truck-mounted equipment using an approximately 18-inch-diameter casing. The new pipelines connecting the deep wells to the existing pipeline would be installed in trenches measuring approximately 2.5 feet wide and 5.5 feet deep. During the construction of the Kimberlina Spreading Grounds, the top of the existing 78" pipeline was cored out and a 24" connection was installed to convey wet period water into the spreading grounds in 2017; thus the recovered water pipelines will connect into the mainline using this existing connection for conveyance to District landowners.

3.3.2 Tasks and Project Work

Eight tasks are defined below to accomplish the Project work and are organized to parallel Budget and Schedule items.

Task 1: Grant Administration - Activities include coordination of all Project activities, including budget, schedule, communication, and grant and cost-share administration including preparation of invoices and maintenance of financial records. *Deliverables:* Preparation of invoices and other deliverables, as required.

Task 2: Project Reporting - Reports on the Project financial status will be submitted on a semi-annual basis. A Final Project Report prepared upon project completion. *Deliverables:* Submission of semi-annual status reports, significant development reports, and a Final Project Report as specified in the grant agreement.

Task 3: Project Design - A preliminary design for the proposed Project has been completed with all design work anticipated to be completed in the spring of 2018, prior to the start of construction. *Deliverables:* Final Design.

Task 4: Environmental Documentation and Regulatory Compliance - An environmental document that meets the requirements of CEQA and NEPA has already been prepared for the Recharge Facility. The wells proposed in this application area are expected to be approved by Reclamation as being covered by the 2016 Environmental Assessment. *Deliverables:* Coordinate with Reclamation on confirming compliance of NEPA documentation. Complete and report results of the pre-activity biological survey at the time of construction.

Task 5: Permits and Approvals - The Project is located exclusively within the District's owned and maintained rights-of-way. As such, permitting and approval issues regarding the Project should be minimal. The remaining work under this task will involve consulting with the District and District's Legal Counsel regarding any additional permitting requirements. *Deliverable:* Complete necessary permitting/approval activities prior to construction activities.

Task 6: Equipment Procurement - Equipment procurement for pumps, motors, and electrical components will be completed by the District's consultants. *Deliverables:* Finalize component lists for equipment. Issue Purchase Orders. Coordinate delivery of equipment material.

Task 7: Project Construction - The project includes the completion of extraction and pipeline return facilities that would ensure the recovery of banked (previously stored) water from groundwater storage. Work under this task includes: mobilization and site preparation (pre-construction surveys, pre-construction meetings, and equipment delivery), and equipping and plumbing of wells. Equipping will be performed by construction contractor. *Deliverables:* See Construction Administration task below.

Task 8: Construction Management and Administration - Construction Management and Administration involves everything from the advertisement for bids from qualified construction firms to filing a Notice of Completion for the Project works and preparation of "As-Builts" drawings. Construction management and administration activities can generally be categorized as field observation and contract administration, where the latter includes items such as the Notice to Proceed, pre-construction conference, correspondence with the Contractor, submittal review, progress payments, periodic meetings with the Contractor, Contract Change Orders, etc. Expected Deliverables: Multiple deliverables including a (1) abstract of bids received; (2) successful bid proposal; (3) construction progress pay estimates; (4) start-up and testing verification; (5) Notice of Completion; and (6) "As-Builts" drawings.

The proposed Project will be implemented under the direction of Shafter-Wasco ID. A consultant will provide design, construction management, administrative, reporting assistance, and coordination with local firms, as needed. Dana Munn, SWID's General Manager, will have responsibility for overall Project Management and is a California-licensed Civil Engineer.

3.4 Performance Measures

Recharge, Recovery, and Return Capacity:

The District will maintain records of all surface water delivered for recharge at the Spreading Grounds and keep track of the stored water. It will also record the amount recovered and returned to SWID's north mainline. The incremental increase in Recovery and Return capacity of the equipped wells provides a basis and a measure for the drought resiliency claim of this Project during dry years and drought conditions.

Groundwater Levels:

The District will utilize pre-Project and post-Project methods to evaluate the Project performance regarding groundwater levels. The District maintains historical groundwater elevation level data for production wells and monitoring wells. The post-Project performance will be measured by documenting the amount of time each pump motor operates with totalizing meters and the volume of water that is discharged. The District will continue to maintain groundwater elevation data so that it can compare pre-Project and post-Project water level conditions.

Increasing Energy Efficiency in Water Management:

The energy required by the District to pump the equipped wells and the flow will be recorded continuously using an improved instrumentation system installed on the District wells. Therefore, the power meter readings and acre-feet pumped will be gathered and assessed as a kilowatt hour (kWh) per acre-foot (AF) efficiency value assessed as part of the Banking Program management.

3.5 Evaluation Criteria

3.5.1 Evaluation Criterion A – Project Benefits

How will the project build long-term resilience to drought? How many years will the project continue to provide benefits?

The purpose of this Project is to make available banked wet year water supplies during dry years and drought conditions. The return wells will be equipped with pumps and motors to allow conveyance using pipelines that connect to the District's north mainline to effectively extract banked, previously stored water supplies for delivery to in-District use and to complete the exchange required with the Homer LLC Agreement for meeting out of District use. In terms of drought resiliency and in relation to the elements necessary for a banking facility, implementation of this Project expands the District's *Recovery* capability (i.e., ability to recover banked water stored underground with more pumping capacity) and *Return* capacity (i.e., ability to move more water for return purposes from the well to the surface water delivery system). Both elements are performed during dry years and drought conditions, as the District will actively pump the banked groundwater to supplement limited surface water supplies.

This component of the District infrastructure has been constructed such that the District's recharge facility for this banking agreement will remain operational for the foreseeable future. For the purposes of this application, however, the 'life' of the project is estimated as 30-years for pump, control mechanisms, and outlet pipe operational life. This timeframe for life cycle analysis has been used in prior grant applications.

*Will the project make **additional water supplies** available? If so, what is the estimated quantity of additional supply the project will provide and how was this estimate calculated? What percentage of the total water supply does the additional water supply represent and how was this estimate calculated? Provide a brief qualitative description of the degree/significance of the benefits associated with the additional water supplies.*

During drought years, when surface water supplies are limited, Homer LLC will request water deliveries as an exchange with the District and the District will also recover water to help meet in-District needs. The capability to recover banked groundwater supplies has a direct effect on the District's and their Partner's resiliency during drought years. With implementation of the Project, additional, banked water supplies are made available for this purpose. The groundwater recovery capacity of the two wells is around 19.83 acre-feet (AF) per day, based on a pumping estimate of 9.92 AF/day per well (from an estimate of 5 cfs per well, the average rate of high production wells in District). For an average month (assumed 30-days) the recovery capacity would therefore be approximately 595 acre-feet/month (19.83 AF/day x 30 days/month), or 4,760 acre-feet during a typical 8-month recovery operation (595 AF/month x 8 months). The 8-month approximation is based on usual recovery efforts within the region, roughly based on the District's normal agricultural demands, typically during the middle of each year (i.e., irrigation and crop growing season). Thus, the wells equipped as part of this Project will be used to return water stored in the aquifer at a rate of approximately 4,760 acre-feet during a dry year or drought conditions prompting recovery operations.

Will the project improve the management of water supplies? For example, will the project increase efficiency, increase operational flexibility, or facilitate water marketing? If so, how will the project increase efficiency or operational flexibility? What is the estimated quantity of water better managed as a result of the project and how was this estimate calculated? What percentage of the total water supply does the water better managed represent? How was this estimate calculated? Provide a brief qualitative description of the degree/significance of anticipated water management benefits.

Adding the two wells and conveyance pipeline is expected to increase the operational flexibility of the District equal to the use of two wells to meet the drought needs within the district and for Homer LLC. Water management is made more flexible in the partnership with Homer LLC in that the direct spreading grounds allow water delivery at times other than the irrigation demand season. The added well capacity allows a portion of the banked water to be recovered and available for future use. For instance, under the Homer LLC Agreement, a 2:1 banking arrangement has been made for the first 10,000 Acre-Feet per year recharged and 3:1 banking arrangement for recharge greater than 10,000 AFY, thus, there is an incentive for Homer LLC to recharge more water. The banked, stored water can later be recovered for SWID to use for in-District landowners and to complete the exchange for Homer LLC's use. This Project adds approximately 4,760 acre-feet of dry year recovery and return which matches up closely with the need to return 50-percent of the 10,000 AFY of recharge put into storage in a wet year.

*Will the project make **new information available to water managers**? If so, what is that information and how will it improve water management?*

The project will add two recovery wells that will be metered. Future monitoring wells will be completed by the District on the spreading grounds to enhance groundwater level monitoring. Water entering the spreading grounds is also measured. With the implementation of the proposed new wells, extraction will be metered as it is returned to the District's north mainline.

*Will the project have **benefits to fish, wildlife, or the environment**?*

As previously stated, the proposed Project helps to complete recirculation efforts of the San Joaquin River (SJR) Restoration Program that includes water deliveries to the SJR to increase fish habitat. This Project will provide the return capacity needed to complete the banking process of sending recaptured water to the spreading grounds to later recover. Water managers affiliated with the District's banking agreement within the Poso Creek IRWM Plan Group may also benefit from greater return water supply in times of drought or shortage, if they have utilized the spreading grounds during a wet period. The potential benefits include supplying excess water in the dry years which may be used to mediate a decreased water surface supply affecting local needs for fish, wildlife, or the environment.

*Well Benefits: What is the **estimated capacity of the new well(s)**, and how was the estimate calculated? How much water do you plan to extract through the well(s)?*

Each well will have an anticipated outflow of 5 cfs, based on an estimate from average high production wells in the region. As explained in the section above, the following values (for two wells) are expected to contribute to the District's and Partner's water supply:

Recovery and Return Improvements to District’s Spreading Grounds for Drought Resiliency
 WaterSMART Drought Response Program: Drought Resiliency Projects for FY 2018

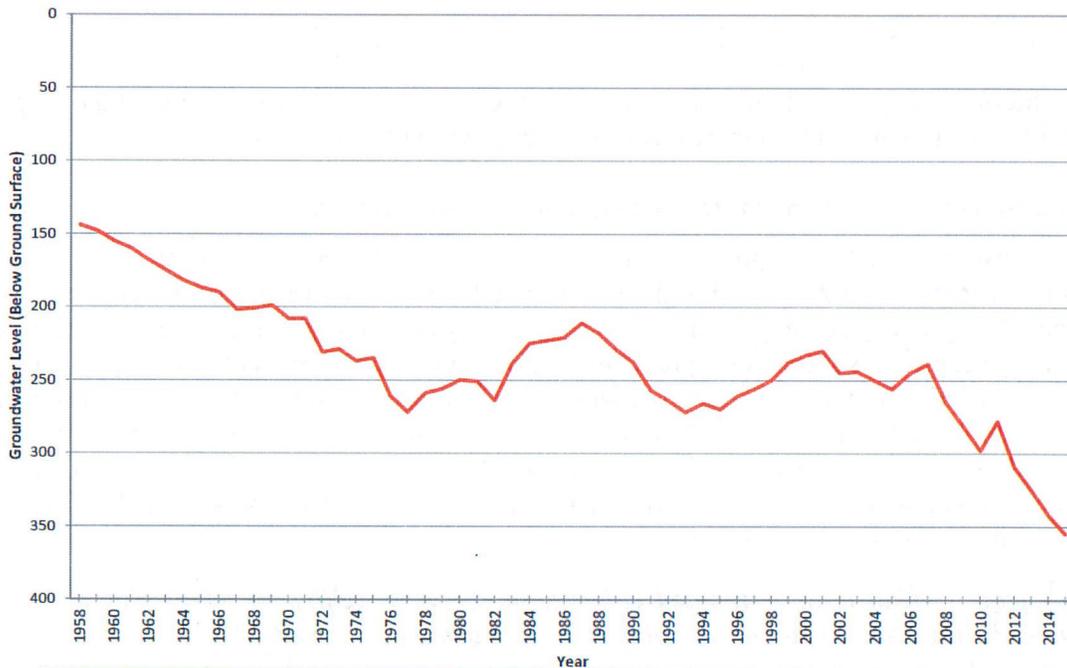
AF per day	19.84
AF per month	595
AF over the recovery period (8 mo.)	4,760
AF over the project’s lifetime (30 yr.)	28,560

*Will the well be used as **primary or supplemental supply** when there is a lack of surface supplies?*

The wells will be used to provide supplemental supply for the District and its banking partner during dry years and drought conditions. The spreading grounds allow for recharge of available surface water supplies during wet years, effectively recharging the aquifer underlying the District. The banked water supplies, previously recharged by banking Partner and the District, is then available via the proposed recovery wells during dry years and drought conditions, when surface water deliveries are lower than normal allocations.

*Please provide information documenting that proposed well(s) will **not adversely impact the aquifer** they are pumping from (overdraft or land subsidence). At minimum, this should include aquifer description, existing or planned aquifer recharge facilities, a map of the well location and other nearby surface water supplies, and physical descriptions of the proposed well(s).*

The District overlies areas of unconfined aquifers in the Kern County Sub-basin previously described. The average depth to groundwater has been declining over time in the District, partially due to the decreased reliability of the CVP contract supplies and due to the recent extended drought.



Average Depth to Groundwater in SWID (measured in January)

The groundwater supply is generally pumped with privately owned wells by individual water users from the unconfined aquifer. The proposed wells will be at least a minimum of ¼ mile from any neighboring privately owned wells. The proposed wells will be utilized for recovery and return of the previously recharged water under the spreading grounds and will only be recovering the amount of water that was previously stored (less losses). The district does not have any substantial information regarding land subsidence within the Plan area, however, land subsidence within the District has very little effect on the CVP water supply in comparison to the effect subsidence is currently having along the Friant-Kern Canal.

Well No.	Well Depth (ft)	Casing Dia. (in)	Casing Material
1	1000 feet	18 inch	Steel/PVC
2	1000 feet	18 inch	Steel/PVC

*Describe the **groundwater monitoring plan** that will be undertaken and the associated monitoring triggers for mitigation actions. Describe how mitigation actions will respond to or help avoid significant adverse impacts to Third Parties that occur from groundwater pumping.*

The District has in place a Groundwater Management Plan (Plan) that specifies the groundwater management practices and monitoring activities established by the District in 2007. In this Plan, the District addresses the importance of monitoring groundwater levels, groundwater quality, and land surface subsidence as well as the appropriate monitoring protocol. District staff monitors the groundwater levels in the District by measuring approximately 74 groundwater wells in January and September of each year. Additional groundwater level information is available from domestic water providers. In general, regular groundwater quality assessments are conducted by domestic water providers within the region.

To mitigate overdraft, the District employs the following strategies: groundwater recharge/management; groundwater extraction policies; conjunctive use policies; and surface water management. Under the Plan, the District aims to preserve and enhance conjunctive use activities through coordinated use of available supplies made possible by water transfers and exchanges through recharge facilities, such as the Kimberlina Spreading Grounds.

3.5.2 Evaluation Criterion B – Drought Planning and Preparedness

*Explain how the applicable **plan addresses drought**. Proposals that reference plans clearly intended to prepare for and address drought will receive more points under this criterion. Explain whether the drought plan was developed with **input from multiple stakeholders**. Was the drought plan developed through a collaborative process?*

Included as the existing drought plan is the District’s Drought Management Plan section from the 2015 Agricultural Water Management Plan (AWMP) addendum filed with the California Department of Water Resources (DWR). To the extent that the District has identified potential impacts from perennial or long-term dry conditions, they have taken steps towards addressing reduced surface water supplies and curbing agricultural demands. Many of the planning associated with these identified impacts, as well as quantification of water supplies and demands in the District, was covered in their 2015 addendum. The District is committed to monitoring and addressing the potential impacts of sustained drought conditions (e.g., decreased surface water deliveries, heavy groundwater use reliance and resultant subsidence, fallowing and agricultural

economic impacts) with neighboring agencies and regional growers. The District has participated in drought programs through coordination and collaboration with Reclamation, neighboring SWP contractors, and other neighboring CVP contractors.

Shafter-Wasco Irrigation District was recently awarded a Drought Contingency Planning Grant to create a drought chapter within the Poso Creek Integrated Regional Water Management (IRWM) Plan. The area includes Shafter-Wasco Irrigation District, along with six other agricultural water districts, one water conservation district, several economically disadvantage communities, and a federal wildlife refuge within the 500,000-acre Poso Creek IRWM region. Therefore, the forthcoming drought plan will be formed through collaboration and input from many stakeholders. The proposed project directly supports the Poso Creek IRWM Plan by promoting water supply banking/exchanges between districts that allow more flexibility in the Region's water supply, ultimately adding regional drought resiliency (SWID).

Also included is the 2016 Drought Contingency Plan written by Reclamation, DWR, the U.S. Fish & Wildlife Service, National Marine Fisheries Service, and the California Department of Fish and Wildlife that addresses the Central Valley Project and State Water Project operations of which Shafter-Wasco is a federal contractor.

*Does the drought plan consider **climate change impacts** to water resources or drought?*

The District's drought plan expects related impacts of climate change to include loss of snowpack storage resulting in greater groundwater demand and infrequent, but larger rain events. The overall impact of climate change is expected to increase extreme climatic events such as droughts (SWID, 2017)). The plan acknowledges the effect such conditions will have on their primary source of surface supply as a CVP contractor.

*Describe how your proposed drought resiliency **project is supported by an existing drought plan**. Does the drought plan identify the proposed project as a potential **mitigation or response action**? Does the proposed project implement a **goal or need** identified in the drought plan? Describe how the proposed project is **prioritized** in the referenced drought plan?*

The proposed Project is referred to in the District's drought plan as one of the District's strategies to allocate supplies obtained through active water purchase and transfer programs and utilizing banked surface supplies, retrieving previously stored water in groundwater banks. The District also points to "demand management", however, the preferred strategy is to add to drought resiliency by the recharge and recovery to help meet District needs. Specifically, the District called the project, at conception, the "SWID Recharge Project"; recovery and recharge are necessary components for the Banking Partner agreement to be completed. In previous years, the District has made use of out-of-district recharge ponds and banking programs to take advantage of wet year water supplies. With the newly constructed recharge facilities and the proposed recovery and return capacity, SWID will be able to better manage the District's own drought resiliency by retaining the leave behind water from its banking partner.

3.5.3 Evaluation Criterion C – Severity of Actual or Potential Drought Impacts

*What are the ongoing or potential drought impacts to specific sectors in the project area if **no***

action is taken and how severe are those impacts?

If the proposed Project is not implemented, there would be no increase in the capability of Shafter-Wasco Irrigation District to Recover and Return banked water supplies from their underlying aquifers. If in-district and banking partner demands potentially go unsatisfied, relying strictly on current Recovery capability, this may lead to a scenario where wet year water supplies are not available to recharge in the District if the Recovery and Return component of the banking agreement is not met.

Some communities, rural residences, and business in Northern Kern County (in and around Shafter-Wasco Irrigation District) rely on groundwater from the aquifers as their principal supply, either lacking the current demand for or infrastructure necessary to convey surface water supplies to their locations. Should climate change result in a reduction in water available from surface supplies, the increased frequency and quantity of groundwater pumping by other agricultural, municipal, and other users will lead to a decrease of groundwater in storage without the necessary means of replenishing the depleted groundwater. Those users currently relying on groundwater as their primary means of supply may find themselves competing with other users in the near future for those limited, and already stressed, resources. According to a CAWSC study (Hanson et al., 2010), counties across the Central Valley including Kern County should expect such a scenario due to the identified impacts of sustained drought conditions, along with land surface subsidence, and the dewatering of aquifer materials beyond that which has been experienced historically.

Whether there are public health concerns or social concerns associated with current or potential drought conditions.

Many of the communities in the surrounding region are considered disadvantaged communities (DACs) based on a comparison of the statewide median household income (\$48,574 for 2010-2014 based on ACS Census data) to the population-weighted average household income level. Regarding the extensive use of groundwater supplies by these DACs, efforts proposed by the District as part of the Poso Creek IRWM Group have focused on projects and programs that benefit the underlying groundwater basin. In this regard, recall that the agricultural water management districts and DACs, as well as other cities and M&I users, share a groundwater basin that is hydraulically connected and utilized by all users in the Region. In many cases, DACs rely exclusively on pumped groundwater as supplies for their residents.

Accordingly, any decline in water levels due to extensive use under drought conditions will be felt by all users, including the regional DACs that rely on the groundwater for their supplies and will face an increase in occurrences of drinking water violations affecting the water quality along with an associated increase in the use of power and energy resources (environmental and economic burden), as well as infrastructure (well) upgrades which become necessary to pump groundwater from deeper in the aquifer. The results can be detrimental to the DACs, since availability from other water sources in this scenario are very limited and may lead to interruption in services. To that extent, projects and programs such as the proposed Project works to mitigate declines in water levels will provide benefits to other groundwater users in the surrounding region. This is accomplished by maintaining levels in Shafter-Wasco Irrigation District through the storage of wet year supplies, thus leading to less competition for other hydrologically connected groundwater resources.

During years when the availability of water from the CVP is limited, District landowner pump

groundwater from landowner-owned wells as part of the Districts conjunctive management strategy.

*Whether there are ongoing or potential **environmental impacts**.*

Kern County is known to have more than two dozen threatened and endangered species that are land-based mammals. The three primary endangered species known to live within the District's boundaries, per the federally-recognized candidate listing, are the San Joaquin Kit Fox and the California burrowing owls. The proposed Project is not expected to lessen or improve the status of these species. According to the Natural Environment Study for the proposed Kimberlina Recharge Facility (where the wells are located), there are no CNDDDB occurrences within a 2-mile query of the BSA. During botanical surveys of the BSA in December 2015 and January 2016, no special status plant species or their habitat were observed in the BSA.

*Whether there are **economic losses** associated with current drought conditions.*

The District's water use is mostly for agricultural purposes, with some commercial, domestic users and communities in the Region that use water and typically rely on groundwater as the sole source of supply. The economic fiber of the Region depends on the effective, efficient, and conjunctive use of surface water supplies and groundwater from the common groundwater basin. As such, being able to replenish the basin with wet year and excess surface water supplies means less competition between users in the region (i.e., some water supplies that are banked end up being used for in-district uses). The consequences of failing to increase water supply reliability, include increased costs of agricultural production; decreased cropped and irrigated acreage; decreased workforce; and significant economic losses, both locally and statewide. As the drought continues to threaten the reliability of imported surface water on an annual basis, the reliance on other sources of supplies becomes more pronounced.

*Whether there are **other drought-related impacts** not identified above, including tensions over water that could result in a water-related crisis or conflict.*

The Project is the result of collaboration among neighboring water agencies. In particular, in 2005, the District joined with neighboring water agencies to develop the Poso Creek IRWM Plan (Plan) for the region. In addition to Shafter-Wasco Irrigation District, the agencies that developed and adopted the Plan included, Semitropic Water Storage District, North Kern Water Storage District, Cawelo Water District, Kern-Tulare Water District, and Delano-Earlimart Irrigation District. Since then, Southern San Joaquin Municipal Utility District has also become a member. These agencies represent about 350,000 irrigated acres and a gross area of 0.5 million acres. These agencies represent SWP, CVP, and local Kern River water supply contractors.

As recognized in the Plan, projects that result in improved management of groundwater supplies in the region benefit all users because of the widespread reliance on the underlying common basin resource. Therefore, the proposed Project which helps improve the reliability of regulated groundwater supplies for regional and banking interests, is supported by several neighboring districts, and helps to prevent water-related crisis and reduce conflict.

*Describe existing or potential drought conditions in the project area. Is the project in an area that is currently **suffering from drought** or which has recently suffered from drought?*

According to the U.S. Drought Monitor, sponsored by the U.S. Department of Agriculture and the National Drought Mitigation Center: Semitropic, as well as much of the Southern San Joaquin

Valley in California, is experiencing 'Abnormally Dry (D0)'. Prior to the heavy precipitation of 2017, this region experienced 'Exceptional Drought (D4).' The result of prolonged drought conditions was little or no surface water deliveries to users in the region, and many fallowed fields due to inadequate water supply. The latest release of this information was January 2, 2018. As with much of the Southern San Joaquin Valley in California, current drought conditions have improved and surface water deliveries have increased when compared to the drought years (2011-2017).

*Describe any projected increases to the severity or duration of drought in the project area resulting from **climate change**.*

The future of the District's water supply will be driven mainly by changes in hydrology and particularly by the volume, variability, and timing of precipitation of the Sacramento-San Joaquin River Delta, as the receiving watershed area is the source of supply for the SWP, the primary source of surface water for the District. For many climate change scenarios, and a range of future climate projections studied (Chung et al. 2009), the reliability of the SWP and CVP water supply systems is expected to be reduced from less frequent, but more intense precipitation events. Decreases in surface water deliveries to areas south of the Sacramento-San Joaquin River Delta, directly affect the water volume supplied to SWID, including potential 'excess' volumes which could be stored and recharged.

3.5.4 Evaluation Criterion D – Project Implementation

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

The Project will be implemented as follows: Activities would begin around September 1, 2018; design is anticipated to be completed prior to signing of the agreement with Reclamation; construction would begin as soon as environmental compliance is met; and all project work and reporting would be completed by June 2019. 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. A Grant Schedule estimating the phases and milestones for completion of the work is shown in Appendix A.

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

It is anticipated that no regulatory permits will be required, inasmuch as all construction components are added items to already disturbed, existing District facilities. An evaluation will be made by District Counsel regarding whether construction of the Project will require any additional permits. It is noted that the District is not subject to the County's jurisdiction with regard to building and grading permits. Accordingly, no County-issued permits will be required. The District will comply with CEQA and NEPA before commencing any ground disturbing activities, as discussed further in Section 5.0. Additionally, a pre-activity survey will be conducted by a qualified biologist prior to the start of construction.

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

The Project will be constructed on District-owned property. The District has contracted

engineering consultants to begin design work for drilling and equipping two wells on District property.

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

The District's banking agreement has already been established and the wells proposed for equipping were identified and scheduled by the District, as such, no new policies or administrative actions are required to implement this Project.

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

The environmental compliance estimate was based off previous experience with similar projects and has not been discussed with a local Reclamation office. However, environmental documents have already been prepared for the existing spreading grounds that included three recovery wells; as such, it is anticipated minimal environmental costs will incur.

3.5.5 Evaluation Criterion E – Nexus to Reclamation

*How is the proposed project **connected to a Reclamation project or activity**?*

The District is a CVP contractor of Reclamation-managed water supplies. The District has a contract for 50,000 acre-feet of Class I water and 39,600 acre-feet of Class II water. The spreading ground facilities can receive surface water from the Friant-Kern Canal and Calloway Canal in wet years for recharge. The two proposed wells will recover banked, previously stored water for use in the dry years. In the case with Homer LLC, CVP water will be exchanged for water recovered and returned to the District north mainline.

Will the project benefit any tribe(s)?

There are no tribal areas in the immediate Project area. The project will not be able to help Reclamation meet any trust responsibilities.

*Does the applicant receive **Reclamation project water**?*

As stated in the first question of Evaluation Criterion E, the District is a CVP contractor of Reclamation-managed water supplies and receives allocation of 50,000 acre-feet of Class I water and 39,600 acre-feet of Class II water.

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

Yes. The Project is in the CVP place of use.

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

As mentioned in Section 3.2.2, the District overlies a usable groundwater basin, the Kern County Subbasin of the Tulare Lake Basin, which is actively and conjunctively managed. The District's immediate neighbors are CVP-Friant contractors with the infrastructure and conveyance systems used to deliver project water to their respective service areas. These neighbors, as well as others, rely on the same groundwater basin for their supplies when supplemental surface water is inadequate to satisfy demands.

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

The Project will contribute to the temporary holdover of water supplies in a basin that is a Reclamation CVP place of use.

4.0 Project Budget

4.1 Funding Plan and Letters of Commitment

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 (e.g., reserve account, tax revenue, and/or assessments).

The District’s cost-match portion will be covered by the District’s Capital Reserve Fund. The District identified the Reserve Fund for 2018 and into 2019 to be utilized to meet the cost obligations for the wells, equipping, and pipeline. The District adopts an annual budget during the fall of each year.

In-kind costs incurred before the anticipated project start date included as project costs. District Manager and consultants under professional services contracts have participated in the design of the wells, equipping wells, and the pipeline conveyance to allow project definition and a cost estimate in preparation for this application. The District will include some of the in-kind costs incurred prior to the anticipated project start date as project costs. General design of project will be completed early in the year, 2018. Design work has supported the preparation of construction cost estimates.

Identity and amount of funding to be provided by funding partners. No other funding partners need to be identified.

Funding requested or received from other Federal partners. No other Federal funding has been requested or received for the proposed work.

Pending funding requests that have not yet been approved. The District does not have any pending funding requests that have not yet been approved for the Project components.

Summary of Non-Federal and Federal Funding Sources

Funding Sources	Funding Amount
Non-Federal Entities	
Shafter-Wasco Irrigation District Monetary Contribution	\$876,885
Non-Federal Subtotal	\$876,885
Other Federal Entities	
Other Federal	\$ -
Requested Reclamation	\$300,000
Total Project Funding	\$1,176,885

4.2 Budget Proposal

The total Project budget for the *Recovery and Return Improvements to District's Spreading for Drought Resiliency* (Project) is estimated at \$1,176,885 with \$300,000 in requested grant funds (Federal Cost Share) and \$876,885 in Non-Federal Cost Share funds. It is expected that the drilling and equipping of two wells and the pipeline installation will be completed by contractors. The approach has been reflected in the budget estimates. The total requested grant funds amount to about 26 percent of total project costs, with the remainder (74 percent) funded by the Applicant. Refer to Table 4-1a, which provides a summary of the estimated budget, by task, including Reclamation and Applicant contributions.

The Project budget was prepared based on the level of effort required to implement the project as discussed in Section 3.3.2 – Tasks and Project Work. The Work Plan identifies and describes eight tasks used to define the overall Project Scope, Schedule, and Budgets:

- Task 1: Grant Administration
- Task 2: Project Reporting
- Task 3: Project Design
- Task 4: Environmental Documentation and Regulatory Compliance
- Task 5: Permits & Approvals
- Task 6: Equipment Procurement
- Task 7: Construction (Equipping Wells)
- Task 8: Construction Administration

Budget Table Format:

Several tables have been prepared in support of these budget estimates, which immediately follow this section in the order shown below.

- a. Table 4-1a provides a task-by-task summary of the estimated budget. Table 4-1b summarizes program funding sources, including Reclamation and Applicant contributions.
- b. Tables 4-2 through 4-8 provide a summary of Project costs by task and follow the “sample budget proposal format” from the FOA.
- c. Table 4-7 provides a summary of Project Construction costs for drilling and equipping the two wells and the conveyance piping. Refer to Appendix C for a detailed breakdown of costs for well drilling and equipping based on estimates provided to the District by vendors. An engineer's estimate is also provided for the pipeline installation.
- d. Table 4-8 provides a summary of the aggregated costs for implementation of the Project.
- e. Table 4-9 provides a listing of burdened hourly rates for District Staff.

The Standard Budget Form 424C is included at the end of this Section 4.4 – Budget Form SF 424C, which follows the budget narrative.

Table 4-1a. Budget Summary by Task

Task Number - Name	Total Cost
Task 1 - Grant Administration (See Table 4-2)	\$11,366
Task 2 - Project Reporting (See Table 4-3)	\$11,404
Task 3 - Project Design (See Table 4-4)	\$23,437
Task 4 - Environmental Documentation and Regulatory Compliance	\$20,895
Task 5 - Permits and Approvals (See Table 4-5)	\$8,231
Task 6 - Construction-Equipping Wells and Pipeline (Table 4-6)	\$1,044,752
Task 7 - Construction Administration (See Table 4-7)	\$56,799
TOTALS	\$1,176,885

Table 4-1b. Program Funding Sources

Funding Sources	Percent of Total Project Costs	Total Cost by Source
Recipient Funding	75%	\$ 876,885
Reclamation Funding	25%	\$ 300,000
Other Federal Funding	0%	\$ -
TOTAL PROGRAM COSTS	100%	\$ 1,176,885

Cost Estimating Notes:

- 1) This table is supported by detailed tables which are included immediately following the Budget Narrative.
- 2) Task 4: Environmental Documentation and Regulatory Compliance - If awarded, the District will coordinate with Reclamation to complete the necessary environmental compliance.
- 3) Salaries, Wages, and Fringe Benefits for District office and field staff are shown in Table 4-9.
- 4) Reference the Technical Proposal (Section 3.3.2) for task descriptions.
- 5) Refer to the Table 4-8 for a Budget Summary of all Projects costs.
- 6) The number of personnel hours was estimated from District and Consultant engineer experience based on the previously completed well drilling, well equipping, and pipeline installation projects.

4.3 Budget Narrative

Salaries and Wages:

Dana Munn, General Manager for Shafter-Wasco Irrigation District, is the representative for the Applicant and will provide overall Project Management. The project will be completed utilizing the District's existing professional services contract and by a competitive bid process

for a contractor to complete the construction items. In this regard, the District's office staff will coordinate with the Professional Services provider to perform the required project administration, reporting, design, environmental compliance, and assist with the equipment procurement. Additionally, the District will have accounting staff responsible for tracking costs and maintaining financial records to administer Project finances, including making all payments for contracted services.

Tables 4-2 through 4-8, under "Salaries and Wages", provide an estimated cost to complete the work under each task. The tables provide a summary of the estimated hours (by job classification) necessary to complete the work in each task and their applicable hourly rates. The number of hours for personnel to complete the work in each task was estimated based on recent experience by the District and their professional services provider in implementing projects that have been funded by federal grants. This provided the basis for the number of hours estimated for implementing tasks related to the grant.

The hourly labor rates for District personnel were calculated as the annual salary, plus benefits, divided by 260 days (2,080 hours).

The costs provided under Salaries and Wages were calculated by multiplying the estimated number of hours, by the applicable hourly rate for each job classification. Salaries and Wages costs will be part of the federal Cost Share. In this regard, the District will be asking for reimbursement for any Salaries and Wages costs.

Fringe Benefits:

Fringe benefits for District personnel vary from between 58 percent to 69 percent of the base hourly rate, depending on level of staff. Fringe benefits include medical insurance, Employee's Pension Plan, Social Security, District portion of Medicare, Dental Insurance, Vision Insurance, Life Insurance, and Disability Insurance. Refer to Table 4-10 for a summary of the fringe benefits by job classification for District personnel. It is noted that the applicant has not worked through a Federally-approved benefit agreement.

Travel:

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

Equipment:

The District will not be charging any Equipment rentals to the Project, nor will they be asking for a reimbursement for Equipment rentals.

Materials and Supplies:

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

Contractual:

With regards to contractual costs common to the drilling and equipping of the wells and installing the piping, the District will use an existing professional services contract with GEI Consultants and Zeiders Consulting, two of the District's engineering consultants, to assist the District with

implementing the Project including providing administrative and reporting assistance, design, bid-phase support, and construction management assistance as needed. In this regard, the District operates with minimal professional staff and have maintained a long-standing relationship with the consultants, who are familiar with District facilities and operations. Additionally, sub consultants will be retained to supplement the engineering consultant's technical expertise. It is noted that work described in the work plan other than construction will be completed primarily by the engineering consultants, with assistance from the District. In this regard, costs for the engineering consultant and sub consultants to complete the work have been estimated under the category "Contractual" for all tasks. Refer to Tables 4-2 through 4-7 under the category "Contractual" for a summary of the contractual costs. A copy of the fee schedules for the engineering consultant and sub consultants are included in Tables 4-9a and 4-9b. The fee schedules list the billing rates by job classification. The contractual costs were determined by multiplying the total number of hours by the applicable labor rate identified in the fee schedules. The budgets under the "Contractual" category for each task are estimates now. However, they have been prepared based on the level of effort to complete past projects by the consultants and sub consultants, whom over the years, have provided similar services to the District for projects that have been similar in scope and complexity.

Under contractual costs, costs for other consultants are also presented including the District's legal counsel. The estimate presented is based on recent experience and recent work done by the consultant for implementation of various projects funded by Reclamation and similar well and pipeline design projects. The total was determined by multiplying the number of hours by job classification by the applicable hourly rate.

Environmental and Regulatory Compliance Costs:

The District intends to work with Reclamation to determine the potential environmental effects the proposed Project may have in relation to NEPA, NHPA, ESA, and the Clean Water Act to ensure compliance with all applicable environmental laws.

All proposed activities are located on district-owned and maintained rights of way. Prior to the proposed wells, the Kimberlina Spreading Grounds were completed with a grant from USBR. The project was covered under a 2016 Environmental Assessment (EA), which resulted in a Finding of No Significant Impact (FONSI). Accordingly, it is anticipated that it will not be difficult to obtain permits or approvals necessary for the work that is the subject of this Proposal since it is expected that this project will also have minimal environmental effects.

For Task 5 – Permitting, "Environmental Compliance and Other Costs" were estimated and include costs associated with filing two permits prior to construction commencing. The permits include an NPDES SWPPP permit and a PM-10 Dust Control permit. The costs provided are estimates based on recent experience by a neighboring District in filing similar permits for the recent CALFED funded Calloway Canal Lining project. The cost for the NPDES Application Filing Fee is determined based on the area of disturbance estimated to be 4.8 acres of land. Based on inspection of the FOA, it is understood that Reclamation will determine who will perform the work under this category (i.e. Reclamation, the Applicant, or a consultant). With regards to CEQA, an Initial Study will be completed and these requirements may fulfill the environmental requirements.

Other Expenses:

No "Other Costs" are included in the budget. Accordingly, this category does not apply.

Indirect Costs:

No indirect costs are included in the budget. Accordingly, this category does not apply.

4.4 Budget Form

The following page is a completed SF-424C – Budget Information – Construction Programs for the proposed Project.

Table 4-8, Overall Budget Summary

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	\$/Unit	Quantity		
SALARIES AND WAGES (INCLUDING FRINGE BENEFITS)				
General Manager	139.67	177	Hours	\$24,721
Field Superintendent	65.58	72	Hours	\$4,722
Administrative Assistant	50.84	31	Hours	\$1,576
CONTRACTUAL				
Engineering Consultant				
Senior Consultant - Grade 8	275.00	79	Hours	\$21,725
Senior Professional - Grade 7	245.00	44	Hours	\$10,780
Senior Professional - Grade 6	206.00	70	Hours	\$14,420
Senior Professional - Grade 5	181.00	54	Hours	\$9,774
Project Professional - Grade 4	154.00	183	Hours	\$28,182
Project Professional - Grade 3	137.00	32	Hours	\$4,384
Staff Professional - Grade 2	125.00	38	Hours	\$4,750
Staff Professional - Grade 1	113.00	42	Hours	\$4,746
Senior CADD Drafter	137.00	20	Hours	\$2,740
Technician	102.00	18	Hours	\$1,836
Legal Counsel				
Surveying				
2-Man Survey Crew	266.00	32	Hours	\$8,512
Senior Licensed Land Surveyor	252.00	14	Hours	\$3,528
Office Engineer	158.00	2	Hours	\$316
Construction Items (Table 10-9)				
Well Drilling	*See Appendix-D*			\$492,930
Well Equipping	*See Appendix-E*			\$163,227
Well Motors and Electrical Panelling	*See Appendix-F*			\$223,320
Well Telemetry	*See Table 4-6a*			\$24,946
Furnish and Install 15" 2,200 LF PVC	*See Table 4-6b*			\$103,700
SUPPLIES/MATERIALS				
EQUIPMENT PROCUREMENT				
				\$0
TRAVEL				
Survey Crew - 4 roundtrips @ 25 mi/trip	0.535	100	Miles	\$54
ENVIRONMENTAL/REG.				
NPDES Application Filing Fee	818.00	1	Filing	\$818
PM-10 Dust Control Application Filing Fee	384.00	1	Filing	\$384
ENVIRONMENTAL/REG.				\$20,895
				\$0
OTHER				
				\$0
Equipment Rental				
				\$0
TOTAL DIRECT COSTS				\$1,176,987
INDIRECT COSTS - ___%				\$0
TOTAL PROJECT COSTS				\$1,176,987

Table 4-2, Task 1 - Administration

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	\$/Unit	Quantity		
SALARIES AND WAGES (INCLUDING FRINGE BENEFITS)				
General Manager	139.67	20	Hours	\$2,793.38
Field Superintendent	65.58	0	Hours	\$0.00
Administrative Assistant	50.84	8	Hours	\$406.75
CONTRACTUAL				
Engineering Consultant				
Senior Consultant - Grade 8	275.00	0	Hours	\$0.00
Senior Professional - Grade 7	245.00	10	Hours	\$2,450.00
Senior Professional - Grade 6	206.00	0	Hours	\$0.00
Senior Professional - Grade 5	181.00	0	Hours	\$0.00
Project Professional - Grade 4	154.00	8	Hours	\$1,232.00
Project Professional - Grade 3	137.00	14	Hours	\$1,918.00
Staff Professional - Grade 2	125.00	14	Hours	\$1,750.00
Staff Professional - Grade 1	113.00	0	Hours	\$0.00
Senior CADD Drafter	137.00	0	Hours	\$0.00
Technician	102.00	8	Hours	\$816.00
TRAVEL				
				\$0.00
SUPPLIES/MATERIALS				
				\$0.00
ENVIRONMENTAL/REG.				
				\$0.00
OTHER				
				\$0.00
TOTAL DIRECT COSTS				\$11,366.13
INDIRECT COSTS - __%				\$0.00
TOTAL PROJECT COSTS				\$11,366.13

Notes:

- (1) Estimated to be 1% of overall project costs, based on previously completed reclamation projects

Table 4-3, Task 2 - Reporting ¹

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	\$/Unit	Quantity		
SALARIES AND WAGES (INCLUDING FRINGE BENEFITS)				
General Manager	139.67	0	Hours	\$0.00
Field Superintendent	65.58	0	Hours	\$0.00
Administrative Assistant	50.84	10	Hours	\$508.44
CONTRACTUAL				
Engineering Consultant				
Senior Consultant - Grade 8	275.00	0	Hours	\$0.00
Senior Professional - Grade 7	245.00	18	Hours	\$4,410.00
Senior Professional - Grade 6	206.00	0	Hours	\$0.00
Senior Professional - Grade 5	181.00	0	Hours	\$0.00
Project Professional - Grade 4	154.00	0	Hours	\$0.00
Project Professional - Grade 3	137.00	18	Hours	\$2,466.00
Staff Professional - Grade 2	125.00	24	Hours	\$3,000.00
Staff Professional - Grade 1	113.00	0	Hours	\$0.00
Senior CADD Drafter	137.00	0	Hours	\$0.00
Technician	102.00	10	Hours	\$1,020.00
TRAVEL				
				\$0.00
SUPPLIES/MATERIALS				
				\$0.00
ENVIRONMENTAL/REG.				
				\$0.00
OTHER				
				\$0.00
TOTAL DIRECT COSTS				\$11,404.44
INDIRECT COSTS - __%				\$0.00
TOTAL PROJECT COSTS				\$11,404.44

¹ Based on District Engineer and Consultant experience from previously completed reclamation projects

Table 4-4, Task 3 - Design ¹

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	\$/Unit	Quantity		
SALARIES AND WAGES (INCLUDING FRINGE BENEFITS)				
General Manager	139.67	16	Hours	\$2,234.70
Field Superintendent	65.58	0	Hours	\$0.00
Administrative Assistant	50.84	0	Hours	\$0.00
CONTRACTUAL				
Engineering Consultant				
Senior Consultant - Grade 8	275.00	24	Hours	\$6,600.00
Senior Professional - Grade 7	245.00	16	Hours	\$3,920.00
Senior Professional - Grade 6	206.00	0	Hours	\$0.00
Senior Professional - Grade 5	181.00	16	Hours	\$2,896.00
Project Professional - Grade 4	154.00	0	Hours	\$0.00
Project Professional - Grade 3	137.00	0	Hours	\$0.00
Staff Professional - Grade 2	125.00	0	Hours	\$0.00
Staff Professional - Grade 1	113.00	0	Hours	\$0.00
Senior CADD Drafter	137.00	20	Hours	\$2,740.00
Technician	102.00	0	Hours	\$0.00
Surveying				
2-Man Survey Crew	266.00	12	Hours	\$3,192.00
Senior Licensed Land Surveyor	252.00	6	Hours	\$1,512.00
Office Engineer	158.00	2	Hours	\$316.00
TRAVEL				
Survey Crew - 2 roundtrips @ 25 mi/trip	0.535	50	Miles	\$27
SUPPLIES/MATERIALS				
				\$0.00
ENVIRONMENTAL/REG.				
				\$0.00
TOTAL DIRECT COSTS				\$23,437.45
INDIRECT COSTS - __%				\$0.00
TOTAL PROJECT COSTS				\$23,437.45

Notes:

(1) Estimate based on 2% of overall Constructions Costs from previously completed

Table 4-5, Task 5 - Permits and Approvals

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	\$/Unit	Quantity		
SALARIES AND WAGES (INCLUDING FRINGE BENEFITS)				
General Manager	139.67	5	Hours	\$698.34
Field Superintendent	65.58	0	Hours	\$0.00
Administrative Assistant	50.84	5	Hours	\$254.22
CONTRACTUAL				
Engineering Consultant				
Senior Consultant - Grade 8	275.00	0	Hours	\$0.00
Senior Professional - Grade 7	245.00	0	Hours	\$0.00
Senior Professional - Grade 6	206.00	10	Hours	\$2,060.00
Senior Professional - Grade 5	181.00	8	Hours	\$1,448.00
Project Professional - Grade 4	154.00	10	Hours	\$1,540.00
Project Professional - Grade 3	137.00	0	Hours	\$0.00
Staff Professional - Grade 2	125.00	0	Hours	\$0.00
Staff Professional - Grade 1	113.00	10	Hours	\$1,130.00
Senior CADD Drafter	137.00	0	Hours	\$0.00
Technician	102.00	0	Hours	\$0.00
TRAVEL				
				\$0.00
SUPPLIES/MATERIALS				
				\$0.00
CONTRACTUAL				
				\$0.00
ENVIRONMENTAL/REG. COMPLIANCE ⁽¹⁾				
NPDES Application Filing Fee	716.00	1	Filing	\$716.00
PM-10 Dust Control App. Filing Fee	384.00	1	Filing	\$384.00
OTHER				
				\$0.00
TOTAL DIRECT COSTS				\$8,230.56
INDIRECT COSTS - __%				\$0.00
TOTAL PROJECT COSTS				\$8,230.56

¹ Unit fee based on the Area of Disturbance of 4 acres.

Table 4-6, Task 6 - Construction

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	\$/Unit	Quantity		
SALARIES AND WAGES (INCLUDING FRINGE BENEFITS)				
General Manager	\$ 139.67	96	Hours	\$13,408
Field Superintendent	\$ 65.58	72	Hours	\$4,722
Administrative Assistant	\$ 50.84	0	Hours	\$0
CONTRACTUAL				
Engineering Consultant				
Senior Consultant - Grade 8	\$ 275.00	0	Hours	\$0
Senior Professional - Grade 7	\$ 245.00	0	Hours	\$0
Senior Professional - Grade 6	\$ 206.00	20	Hours	\$4,120
Senior Professional - Grade 5	\$ 181.00	10	Hours	\$1,810
Project Professional - Grade 4	\$ 154.00	25	Hours	\$3,850
Project Professional - Grade 3	\$ 137.00	0	Hours	\$0
Staff Professional - Grade 2	\$ 125.00	0	Hours	\$0
Staff Professional - Grade 1	\$ 113.00	12	Hours	\$1,356
Senior CADD Drafter	\$ 137.00	0	Hours	\$0
Technician	\$ 102.00	0	Hours	\$0
Surveying				
2-man Survey Crew	\$ 266.00	20	Hours	\$5,320
Senior Licensed Land Surveyor	\$ 252.00	8	Hours	\$2,016
Construction Items (Table 10-9)				
Well Drilling	*See Appendix-D*			\$492,930
Well Equipping	*See Appendix-E*			\$163,227
Well Motors and Electrical Panelling	*See Appendix-F*			\$223,320
Well Telemetry	*See Table 4-6a*			\$24,946
Furnish and Install 15" 2,200 LF PVC	*See Table 4-6b*			\$103,700
TRAVEL				
Survey Crew - 2 roundtrips @ 25 mi/trip	0.535	50	Miles	\$27
ENVIRONMENTAL/REG				
				\$0
OTHER-EQUIPMENT RENTAL				
				\$0
TOTAL DIRECT COSTS				\$1,044,752
INDIRECT COSTS - __%				\$0
TOTAL PROJECT COSTS				\$1,044,752

(1) Estimate based on recent well drilling and equipping bids received by North Kern in July, 2017 and preliminary pipeline design estimate

(2) Construction Well Items were based on similar project estimates provided by North Kern, PVC installation based on similar project within district

Table 4-7, Task 7 - Construction Administration⁽¹⁾

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	\$/Unit	Quantity		
SALARIES AND WAGES (INCLUDING FRINGE BENEFITS)				
General Manager	\$ 139.67	40	Hours	\$5,586.75
Field Superintendent	\$ 65.58	0	Hours	\$0.00
Administrative Assistant	\$ 50.84	8		\$406.75
CONTRACTUAL				
Engineering Consultant				
Senior Consultant - Grade 8	275.00	55	Hours	\$15,125.00
Senior Professional - Grade 7	245.00	0	Hours	\$0.00
Senior Professional - Grade 6	206.00	40	Hours	\$8,240.00
Senior Professional - Grade 5	181.00	20	Hours	\$3,620.00
Project Professional - Grade 4	154.00	140	Hours	\$21,560.00
Project Professional - Grade 3	137.00	0	Hours	\$0.00
Staff Professional - Grade 2	125.00	0	Hours	\$0.00
Staff Professional - Grade 1	113.00	20	Hours	\$2,260.00
Senior CADD Drafter	137.00	0	Hours	\$0.00
Technician	102.00	0	Hours	\$0.00
TRAVEL				
				\$0.00
SUPPLIES/MATERIALS				
				\$0.00
CONTRACTUAL				
				\$0.00
ENVIRONMENTAL/REG.				
				\$0.00
OTHER				
				\$0.00
TOTAL DIRECT COSTS				\$56,798.50
INDIRECT COSTS - __%				\$0.00
TOTAL PROJECT COSTS				\$56,798.50

Notes:

- (1) Construction Administration activities include field observation and oversight.
- (2) Estimate based on cost incurred in the previously completed well drilling and pipeline installation costs (approx 5% of Construction cost)

Table 4-6a Cost for Well Telemetry

AVIVA ENERGY CORP - comments as energy consultant to North Kern Water district on September 11, 2016.

SOLAR PANELS, TELEMTRY UNITS

Device	Description	Unit Price/site	Number of units	Total	Quote From	Notes
Telemetry Unit	To transmit information from well to data display point	\$3,100	1	\$3,100	REDtrac	Includes- Data logger, Electric meter, CTs, Radio, DC transformer, Box, Conduits, Relay
Site Assessment	Site assessment	\$500	1	\$500	AVIVA Energy	To assess the site for telemetry installation
Telemetry Installation	Installation of telemetry hardware	\$2,500	1	\$2,500	AVIVA Energy	Possibly done by NKWSD staff
Total material and installation cost				\$6,100		

WATER FLOW METERS

Flowmeter	Electromagnetic Meter	\$4,373	1	\$4,373	Seametrics	12" diameter pipe, see Budget Appendix for Quote
Total material and installation cost		\$4,373	50	\$4,373		

MONITORING WELL WATER LEVEL SENSORS

Level sensors in monitoring	Water level sensors	\$2,000	1	\$2,000	AVIVA Energy	to measure the depth of water
Total material and installation cost		\$2,000	9	\$2,000		

GRAND TOTAL \$12,473

Table 4-6b Cost estimate of PVC installation

Cost Breakdown		
<i>Cost/crew/day</i>	\$	3,200
Pipe Length		2,200 ft
Construct 15-inch PVC Pipe		
<u>Labor</u>		
production rate		220.00 ft/day
time		10.0 days
cost	\$	32,000
<u>Testing</u>		
days to test		1.0 days
cost	\$	3,200 \$
Labor Total	\$	35,200 \$
<u>Material</u>		
15" PVC Pipe	\$	18.00 \$/lf
15" PVC Pipe	\$	39,600 \$
Material Total	\$	39,600 \$
<u>Temporary Shoring</u>		
		23100 SF
Unit Price		1.25 \$/SF
Total		28875 \$
Total Cost	\$	28,900 \$
Total Material & Labor	\$	103,700 \$

*Estimates based on previous pipe installation cost for Diltz intertie of installing 15 inch PVC line

Table 4-9a - 2018 SWID Wages and Fringe Benefits

Job Classification	Base Hourly Rate	Fringe Benefits	Burdened Hourly Rate
General Manager	\$ 88.37	58.05%	\$ 139.67
Field Superintendent	\$ 38.62	69.82%	\$ 65.58
Administrative Assistant	\$ 31.14	63.27%	\$ 50.84

Table 4-9b - 2018 SWID Calculation of Fringe Benefits

Benefit Type	General Manager	Field Superintendent	Administrative Assistant
FICA (Social Security)	6.20%	6.20%	6.20%
Medicare	1.45%	1.45%	1.45%
Workers Compensation	1.16%	7.86%	0.95%
Medical Package (Medical, Dental, Vision, Life/AD&D)	18.74%	23.81%	24.17%
Retirement Contribution	16.50%	16.50%	16.50%
Vacation Leave	14.00%	14.00%	14.00%
Total	58.05%	69.82%	63.27%

Table 4-9c
Calculation of Burdened Labor Hourly Rate for Consultants

Job Classification	Hourly Rate
Senior Consultant - Grade 8	\$275.00
Senior Professional - Grade 7	\$245.00
Senior Professional - Grade 6	\$206.00
Senior Professional - Grade 5	\$181.00
Project Professional - Grade 4	\$154.00
Project Professional - Grade 3	\$137.00
Staff Professional - Grade 2	\$125.00
Staff Professional - Grade 1	\$113.00
Senior CADD Drafter	\$137.00
Technician	\$102.00

5.0 Environmental and Cultural Resource Compliance

The following section summarizes the District's approach to avoid, minimize, and mitigate any potential environmental impacts related to construction of the proposed Project. The Project will be constructed in compliance with California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) requirements.

Pursuant to its responsibilities under CEQA, the District prepared and adopted an Initial Study/Mitigated Negative Declaration and Addendum for the Shafter-Wasco Irrigation District Recharge Project, which evaluated the impacts of a program of 60 twenty-acre recharge basins (and related facilities and appurtenances) throughout the District, including the Kimberlina Basin Recharge Project. Reclamation also completed a NEPA document in 2016 that covers the scope of the proposed project. The Environmental Assessment (EA), entitled "Shafter-Wasco Irrigation District Kimberlina Groundwater Recharge Basin and Banking Project," concluded by signing a Finding of No Significant Impact, FONSI-16-06-SJRRP. The scope of the Project in the 2016 EA included the construction of three wells for added recovery capacity, in addition to constructing other facilities to connect sources of supply with groundwater storage capacity. The EA was prepared for receiving Reclamation grant funding for the San Joaquin River Restoration Program of 2013 (SJRRP). The SJRRP Project was awarded in 2013, but required various modifications with the District Reclamation to finalize the Project. After final decision of a Project was made between the parties, a time constraint placed by the agreement limited project activities to only the completion of the spreading component, leaving the recovery and return components (e.g., drilling, equipping, and plumbing wells) to yet be constructed.

The District hopes to receive approval from reclamation to use the 2016 EA for the current grant application. It is anticipated that the Project description of the proposed Project will be reviewed by Reclamation to determine the level of NEPA environmental documentation that may remain prior to commencement of construction activity.

Impacts on Surrounding Environment:

The extent (footprint) of the Project is relatively small and located exclusively within the recently completed Kimberlina Spreading Grounds (operational in 2017) which prior to construction had completed a Natural Environmental Study report in June 2016. All the proposed work is on actively disturbed land owned by the District.

Construction of the proposed Project will involve minimal soil disturbing activities that will have minimal impact on the air in the surrounding environment, insomuch as the majority of the work involves drilling two wells followed by installation of pumps, motors, discharge piping and installation of electrical equipment at the recovery wells. In addition, piping will be installed to connect the recovery wells with to SWID's north mainline. No impacts to water or animal habitat is expected. To minimize impacts from soil disturbing activities, the District will implement Best Management Practices during construction to mitigate any impacts as follows: construction equipment will be powered down when not in use to reduce unnecessary emissions; dust-control

measures will be implemented during all earth-disturbing activities; and all equipment will be tuned and serviced to minimize unnecessary emissions. Additionally, to minimize impacts to animal habitat, the District will engage a qualified biologist to conduct a pre-activity survey before the start of construction to ensure that the construction area remains unoccupied by sensitive (endangered) species. In addition, standard avoidance and minimization protocols will be followed during construction. Moreover, the duration of the construction activity is expected to be relatively short (i.e., construction to occur over period of few months within the window for utilizing the grant funds).

Impacts to Regional Endangered Species:

The District is aware that threatened and endangered species exist in the Southern San Joaquin Valley. Typically, endangered species habitat is not found within these highly cultivated areas. Natural vegetation is limited to ruderal, non-native grasses and forbs at the project site. However, certain species are known to exist around the edges of fields. Based on experience and the Kern Council of Governments Habitat Conservation Map and federally-listed species mapping, and review of the FWS Endangered Species Database and California Natural Diversity Database, the only sensitive species with native habitats near the Project are the San Joaquin kit fox (protected under the Endangered Species Act), the blunt-nosed leopard lizard, the Tipton kangaroo rat, and the giant kangaroo rat. As part of the environmental work, the District will retain a certified biologist to conduct a biological reconnaissance survey and prepare a report to evaluate potential impacts to biological resources within the project sites. It is expected that none will be encountered since the project site is in an actively disturbed area. However, if potential impacts are identified, the District will follow recommendations by the biologist to reduce those impacts to a less than significant level.

Prior to construction of the Kimberlina Spreading Grounds where the wells are located within, studies were completed on the area within a 2-mile radius. General biological surveys were completed with a focus on the San Joaquin kit fox, botanical surveys and California burrowing owl (complete list of animals within study) conducted by a qualified Bighorn Consulting, INC. biologist from December 2015 to January 2016. No protocol level survey was completed at that time, but reconnaissance-level surveys were performed. The surveys resulted in no CNDDDB occurrences within the 2-mile area, or special status plants within the project area (Natural Environmental Report, 2016). Reclamation had received concurrence from the U.S. Fish and Wildlife Service on its determination that the proposed action was not likely to adversely affect San Joaquin kit fox.

Water Conveyance System:

The District has been receiving water from the CVP since 1957. CVP water enters the district from two turnouts off the Friant-Kern Canal. The Kimberlina Spreading Grounds became operational in 2017. The proposed Project will not alter any existing features of an irrigation system, but will tie into the District's distribution mainline.

The previous EA and FONSI identified the installation of wells within the Facility capable of recovering a portion of recharged groundwater. They noted that the wells will not be operated to remove more water than has been recharged, coupled with the leave-behind component with the banking partner, therefore the Project is anticipated to have beneficial effects on the system.

Buildings and Structures Eligible for National Register of Historic Places:

Reclamation previously consulted with the California State Historic Preservation Officer in June 2016, regarding the Facility, as part of the preparation of the EA and they have concurred that the proposed Project in this area will not affect historic properties pursuant to 36 CFS Part 800.3(a)(1). If Reclamation deems necessary, the District will retain a private cultural resources management consultant or arrange for Reclamation staff to again carry out a consultation to evaluate if any buildings or structures are eligible under the National Register of Historic Places. The expectation is that none will be identified since the project improvements will be constructed in actively disturbed agricultural lands.

Archaeological Sites:

A cultural resources survey was completed as part of the 2016 EA for the Facility of which, the proposed Project is a part of. Reclamation concluded that the proposed Project would have no effect on historic properties pursuant to 36 CFS Part 800.3(a)(1). The proposed project work is for wells on the same constructed facilities covered in the FONSI-16-06-SJRRP. As part of Reclamation's EA for the construction of the Facility and determination of FONSI, Reclamation entered consultation with SHPO requesting concurrence on Reclamation's finding that no historic properties would be affected by the proposed undertaking of the Facility. SHPO concurred in a letter dated June 17, 2016. There will be no significant impacts to cultural resources from the Proposed Action.

If Reclamation deems necessary, the District will work with Reclamation cultural resources staff to obtain clearance for archaeological sites within the project area. The District will retain a private cultural resources management consultant or arrange for Reclamation staff to carry out a consultation to conduct a Phase I intensive pedestrian cultural resource survey, and a cultural resources records search and Native American consultation to evaluate any impacts to cultural sites. Impacts to cultural resources are not expected. Nevertheless, the District is prepared to implement any necessary mitigation measures should cultural resources be identified for any component of the Project.

Other Environmental and Cultural Concerns:

Other environmental and cultural concerns that were noted regarding the Project area are:

- a. There are no wetlands or other surface waters inside the Project boundaries that fall under CWA jurisdiction as "Waters of the United States".
- b. Construction of the Project will support the important agricultural-based economy in the Southern San Joaquin Valley and should have only positive impacts on low income or minority persons living in the region.
- c. The Project will not limit access to or ceremonial use of Native American sacred sites or tribal lands.
- d. The Project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species in the region.

6.0 Required Permits or Approvals

It is anticipated that no regulatory permits will be required, since the work will be performed on previously and actively disturbed District land. In this regard, only permits related to construction may be required and application will be made for these permits prior to construction commencing, although no permits are expected.

An evaluation will be made by District Counsel regarding whether construction of the work will require any additional permits. It is noted that the District is not subject to the County's jurisdiction regarding building and grading permits. Accordingly, no County-issued permits will be required.

7.0 Existing Drought Contingency Plan

The Drought Management Plan from Shafter-Wasco's 2015 addendum to the 2011 Agricultural Water Management Plan is attached in Appendix B. The plan details how the District would prepare for droughts and manage water supplies and allocations during drought conditions.

Also attached is the Central Valley Project and State Water Project 2016 Drought Contingency Plan for Water Project Operations. Shafter-Wasco is a Central Valley Project contractor and is affected by the lack of Project water under dry conditions. This contingency plan establishes the goals and potential actions of the Projects' governing agencies in response to drought.

8.0 Letters of Project Support

The District has established long-term, working relationship with its neighboring water districts. Although neighboring water districts are not providing funding to construct the proposed facilities, they are interested in the facilities being constructed and may form water banking agreements in the future based on the use of District spreading, recovery, and return capacity.

The District has received a letter of support signed by the Vice-Chairman of the Poso Creek Integrated Regional Water Management Plan (IRWMP) Regional Water Management Group, which represents seven districts within the Poso Creek IRWMP. The following neighboring water agencies who participate as members of the Poso Creek IRWMP and are supportive of the project include:

- ✓ Semitropic Water Storage District
- ✓ Cawelo Water District
- ✓ Delano-Earlimart Irrigation District
- ✓ Kern-Tulare Water District
- ✓ North Kern Water Storage District
- ✓ Southern San Joaquin Municipal Utility District
- ✓ North West Kern Resource Conservation District

A copy of this letter of support is included following this page.



POSO CREEK IRWMP

Management Group

16294 Central Valley Hwy, Wasco, CA 93280

661-758-5153

Mr. Dana Munn
General Manager
Shafter-Wasco Irrigation District
16294 Central Valley Hwy,
Wasco, CA 93280

Subject: Proposed Project – District Spreading Grounds Return Capacity Improvement for Drought Resiliency

Dear Mr. Munn:

On behalf of the Poso Creek Integrated Regional Water Management Group (Group), of which Shafter-Wasco Irrigation District (Shafter-Wasco, SWID) is apart, I am writing this letter in support of the *District Spreading Grounds Return Capacity Improvement Project*. Implementation of this project will enhance water supply reliability, increase operational flexibility, and help maintain the economic viability of water use in the region by improving the recovery and return components of Shafter Wasco's recently constructed spreading grounds. These three benefits are directly aligned with three of the five primary goals of the IRWMP. The Group is clearly interested and supportive of this project which will benefit both the Group, SWID, and others within the region.

We hope that our expressions of support are 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 for you project, we would be happy to do so.

Sincerely,

Ram Venkatesan

Vice Chairman of the IRWMP

9.0 Official Resolution

The Official Resolution for the *WaterSMART Drought Response Program: Drought Resiliency Projects for FY 2018* is scheduled for adoption by the District's Board of Directors at the District's March 13th Board Meeting. The draft resolution is provided below and a copy of the signed Resolution will be provided following the Board Meeting.

RESOLUTION OF THE BOARD OF DIRECTORS OF THE SHAFTER-WASCO IRRIGATION DISTRICT

IN THE MATTER OF: RESOLUTION NO. 18-XX

IN SUPPORT OF FILING AN APPLICATION WITH THE BUREAU OF RECLAMATION FOR A
GRANT UNDER *WATERSMART: DROUGHT RESILIENCY PROJECTS (FY 2018)*

WHEREAS, the Shafter-Wasco Irrigation District (District or Applicant) partnered with several neighboring water districts in January 2006 and formulated an Integrated Regional Water Management Plan (Plan) for their collective area, which was adopted in July 2007 and updated in 2014 by each of the districts; and

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

WHEREAS, varying yearly water supplies in the Friant-Kern Canal have rendered the District's CVP water less reliable, creating an additional need to regulate supplies when they are available; and

WHEREAS, the District's regulating capabilities can be improved with improvements made to the extraction component of the District's water banking supplies; and

WHEREAS, the United States Bureau of Reclamation is currently soliciting proposals for grant funding assistance under their *WATERSMART: DROUGHT RESILIENCY PROJECTS FOR FY 2018* (Funding Opportunity No. BOR-DO-18-F008); and

WHEREAS, District Staff has formulated a grant proposal for improvements to the District's recovery component, referred to as the *Recovery and Return Improvements to District's Spreading Grounds for Drought Resiliency*

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the APPLICANT as follows:

- a. The District's Board of Directors has reviewed and supports the submission of a grant application to Reclamation entitled Recovery and Return Improvements to District's Spreading Grounds for Drought Resiliency;
- b. The District's General Manager, Dana Munn, or his designee, is directed to submit the grant application and is authorized to enter into an agreement with Reclamation on behalf of Shafter-Wasco Irrigation District for grant funding under Reclamation's *WaterSMART: Drought Resiliency Projects (FY 2018)*;
- 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.

ALL THE FOREGOING, being on motion of _____, Director and seconded by _____, Director was authorized by the following vote:

10.0 List of References

The following list of references was cited throughout the proposal document:

Kern County Water Agency (KCWA), 2011. "Water Supply Report."

U.S. Bureau of Reclamation (USBR), et al. 2016. "Central Valley Project and State Water Project 2016 Drought Contingency Plan for Water Project Operations."

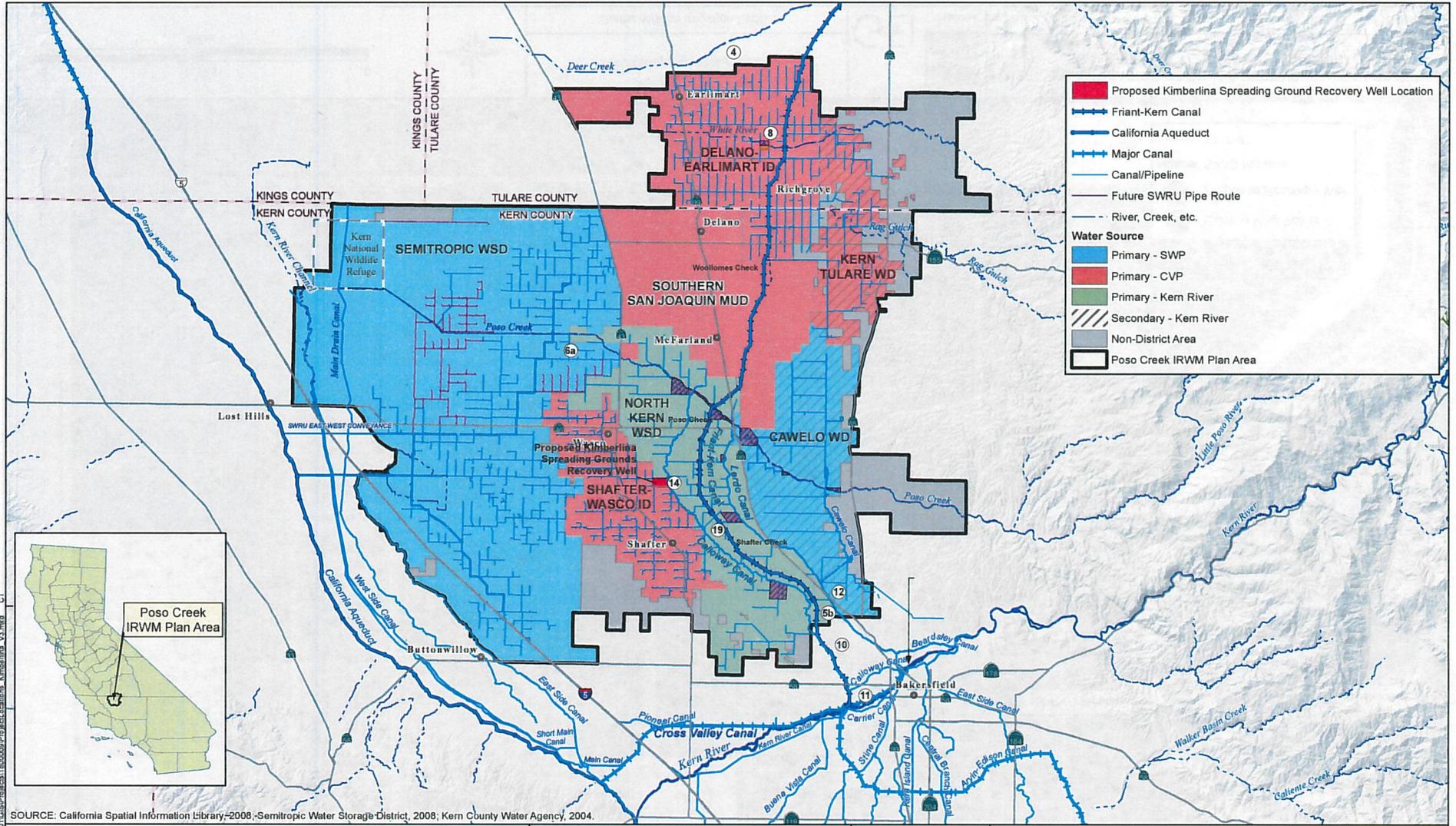
U.S. Geological Survey (USGS), California Water Science Center. Fact Sheet 2009-3074. 2009. "Effects of Climate Variability and Change on Groundwater Resources in the United States".

Shafter Wasco Irrigation District (SWID), 2016. "Addendum to the November, 2015 Agricultural Water Management Plan (AWMP)." Board of Directors adopted February 6, 2016. Resolution No. ST 13-12.

Shafter Wasco Irrigation District (SWID), et al. 2017. "Drought Contingency Plan for Poso Creek IRWM Plan Region WaterSMART Drought Responsive Program: Drought Contingency Planning Grants for Fiscal Year 2017."

U.S. Bureau of Reclamation (USBR), et al. 2016. "Central Valley Project and State Water Project 2016 Drought Contingency Plan for Water Project Operations."

Appendix A - Proposal Figures



SOURCE: California Spatial Information Library-2008; Semitropic Water Storage District, 2008; Kern County Water Agency, 2004.

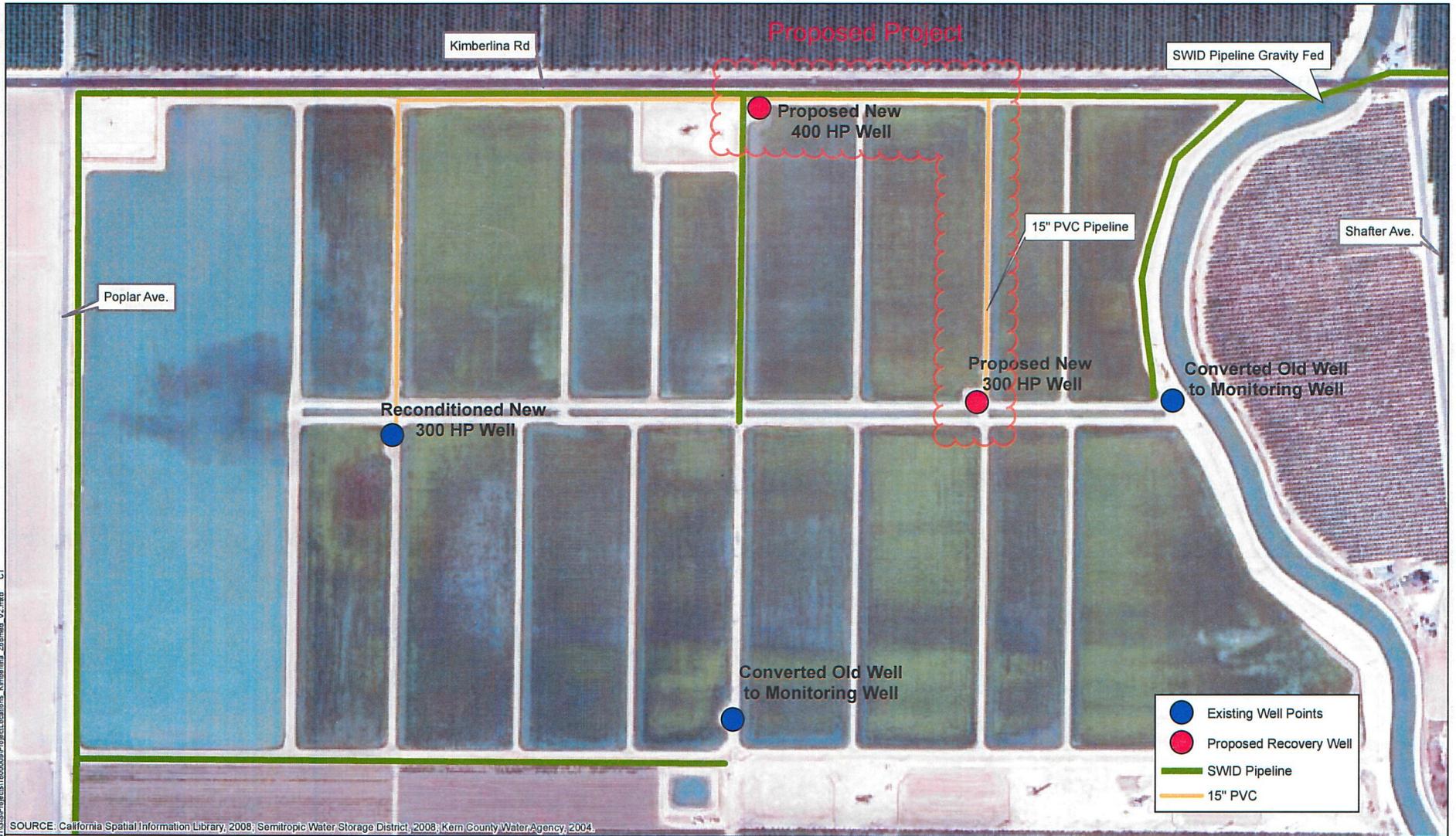


SWID Drought Resiliency Group 1
 Shafter-Wasco Irrigation District



KIMBERLINA SPREADING GROUNDS RECOVERY WELL LOCATION
SHAFTER-WASCO IRRIGATION DISTRICT
 FEB 2018
 FIGURE 1

7-FEB-2018 \\sac1-031\GIS\Projects\18000000\Project\Locations_Kimberlina_V3.mxd CT



SOURCE: California Spatial Information Library, 2008; Semitropic Water Storage District, 2008; Kern County Water Agency, 2004.



SWID Drought Resiliency Group 1

Shafter-Wasco Irrigation District



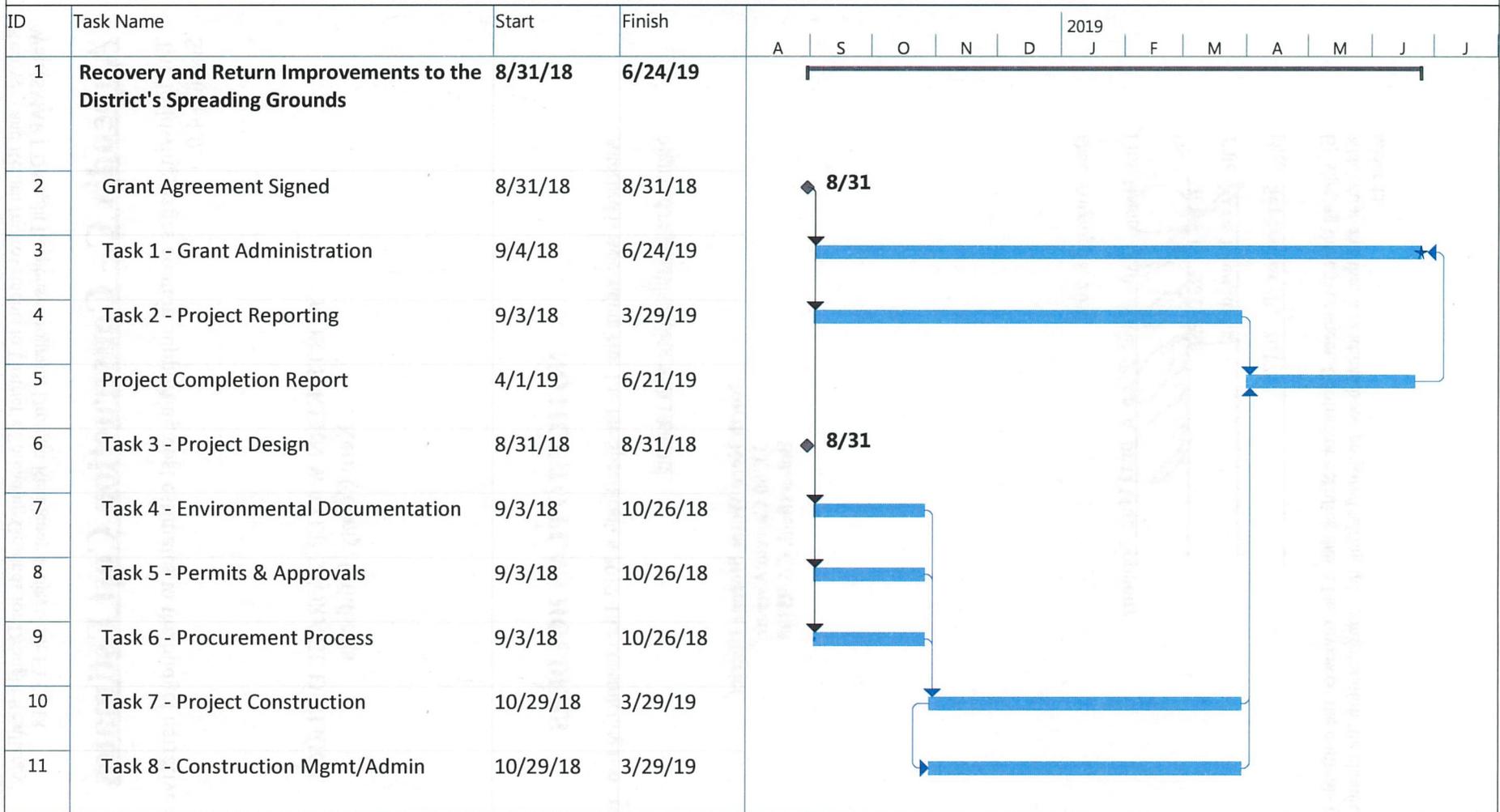
KIMBERLINA SPREADING GROUNDS RECOVERY WELL LOCATION
SHAFTER-WASCO IRRIGATION DISTRICT

FEB 2018

FIGURE 2

7-FEB-2018 11:58:15 AM \\saw\is\p\GIS\Projects\1000000\ProjectLocations_Kimberlina_Zoned_V2.mxd CT

Figure 4: Project Schedule



Appendix C - Construction Cost Estimates

The following pages contain supporting cost estimates to the budget narrative and tables explained in Section 4.0.

NORTH KERN WATER STORAGE DISTRICT
Kern County, California

NOTICE TO PLAN HOLDERS

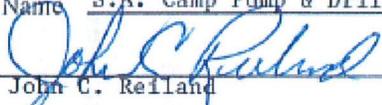
Attached is Addendum No: 1 to the Specification 2017-1 for constructing two irrigation wells.

Sign and return this notice with your bid.

North Kern Water Storage District
33380 Cawelo Avenue
Bakersfield, CA 93308

Date: August 18, 2017

Firm Name S.A. Camp Pump & Drilling Company

By 
John C. Keiland

Title Vice President

Date September 8, 2017

By signing the cover sheet, Contractor certifies that it has reviewed the contents of the subject addendum and that its bid has been prepared taking into consideration the changes made by said addenda.

Bid Detail Schedule For Primary Well Construction					
Bidder Information					
Bidding Company Name: S.A. CAMP PUMP & DRILLING COMPANY					
Bidding Company Address: 17876 ZERKER RD. BAKERSFIELD, CA 93308					
Bidding Company Phone: (661) 399-2976					
Bidding Company Email: donp@sacamp.net					
Bidding Company Contact Person Information: DONALD PEDERSEN (661) 747-2060					
Date of Bid: SEPTEMBER 8, 2017					
Fixed Cost Detailed Bid (For Each Well)					
Line Item	Quantity	Unit of Measure	Item Description	Unit Price	Extended Price
Permits & Bonds					
1	1	Ea	County Drilling Permit and Paperwork	925.00	925.00
2	1	Ea	Other Permit Related	500.00	500.00
3	1	Ea	Bond Charges	7,000.00	7,000.00
Drilling					
4	1	Ea	Mobilize/Demobilize Equipment and Personnel/Water Supply	7,500.00	7,500.00
5	1	Ea	Daily Log Entry & Core Sample Collection, Archiving	500.00	500.00
6	1100	Ft	Drilling Per Foot (Adjustment to bid to be made based upon actual drilling depth during construction based upon the per foot price)	40.00	44,000.00
7	1	Ea	E-log (includes rig time)	2,500.00	2,500.00
8	1	Ea	Deviation Survey (includes rig time)	950.00	950.00
9	1000	Ft	Reaming Per Foot (Adjustment to bid to be made based upon actual drilling depth during construction based upon the per foot price)	40.00	40,000.00
10	1	Ea	Other (Describe)	-0-	-0-
Casing & Other					
11	50	Ft	Furnish & Install 36" Conductor Casing (any additional, if required and authorized to be at unit price)	300.00	15,000.00
12	400	Ft	Furnish & Install 18" Blank Casing (any additional, if required, to be at unit price)	50.00	20,000.00
13	600	Ft	Furnish & Install 18" Perforated Casing (any additional, if required, to be at unit price)	70.00	42,000.00
14	700	Ft	Furnish & Install Gravel & Sand (between gravel and seal)	15.00	10,500.00
15	300	Ft	Furnish & Install Annular Seal (any additional, if required, to be at unit price)	35.00	10,500.00
16	315	Ft	Furnish & Install Gravel Tube	10.00	3,150.00
17	1	Ea	Furnish & Install Air Vent/Sounding Tube Stickup	200.00	200.00
18	1	Ea	Furnish & Install Casing Guides and Rounded Closed Shoe for Bottom of Casing String	2,380.00	2,380.00
19	1	Ea	Well Alignment (Gyro) Survey	3,200.00	3,200.00
20	48	Hr	Swab & Airlift	320.00	15,360.00
21	600	Ft	mud additives used) Not required if only fresh water with no mud additives is used in drilling pilot hole and reaming process.	-0-	-0-
22	1	Ea	Freight Charges	-0-	-0-
23	1	Ea	Other (Describe)	-0-	-0-

Test Pumping					
24	1	Ea	Mobilize Pump Rig and Personnel	500.00	500.00
25	1	EA	Install & Remove Develop/Test Pump	3,500.00	3,500.00
26	48	Hr	Develop & Test Well	250.00	12,000.00
27	200	Ft	Discharge Piping	2.00	400.00
28	2	Ea	Mud Dispersant Treatment during pump development process (Mud-Nox)	-0-	-0-
29	1	Ea	Deviation Survey (includes rig time)	1,950.00	1,950.00
30	1	Ea	Video Log	850.00	850.00
31	1	Ea	Weld Steel Plate At Top Casing After Completion If Required	100.00	100.00
32	1	Ea	Other (Describe)	-0-	-0-
Site Cleanup					
33	1	Ea	General Cleanup, Restore Fencing, Roadways, and All Other Public & Private "Facilities"	1,000.00	1,000.00
34	1	Ea	Other (Describe)	-0-	-0-
				Total	246,465.00

Variable Cost Items & "If Required" Item Prices (For Each Well)					
Line Item	Quantity	Unit of Measure	Item Description	Unit Price	Extended Price
35	1	Ea	Disposal of Cuttings and Drilling mud residue, restore cuttings and drilling mud holding site.	5,000.00	5,000.00
36	1	Hr	High Speed Bailing of well for well development (as directed by District Representative)	350.00	350.00
37	1	Hr	Rock Bit Change Per Hour If Required (Actual hours to be added to bid during drilling phase at the per hour price)	200.00	200.00
38	1	Hr.	Standby rate per hour if authorized	250.00	250.00
39	1	Ea	Other (Describe)	-0-	-0-

Signed:  Date: 09/08/2017

Notes: TOTAL PRICE TO DRILL TWO (2) 18" X 1,000' DEEP WELLS \$492,930.00



19325 Flightpath Way, Bakersfield, California 93308 PH: 661-831-5703 FX: 661-831-5976 Lic. # 410385

North Kern Water Storage District
33380 Cawelo Extension
Bakersfield, Ca 93308
ATTN: Ram Venkatesan, P.E.

July 1, 2015

RE: 12 NEW WELLS – ELECTRICAL CONSTRUCTION PROPOSAL

PROPOSAL

SCOPE OF WORK

The following proposal is to electrify the 12 new wells to be constructed.

ITEMS INCLUDED

Quote includes the following items:

- 400HP US Motor, Model #HO400 S2SLHX, 1800RPM, 480VAC, 3ph, 60Hz, Standard Efficiency, 449TPH Frame, WPI, High Thrust
- Eaton 800A Service Entrance Switchboard, PG&E Metering, 800A main breaker, 800A feeder circuit breaker, 65kAIC, NEMA 3R, freestanding
- 400HP Eaton SSRV starter
- Transformer pad, bollards per PG&E specs
- All underground trenching and backfill
- All wire, lugs and conduit
- Labor to install

ITEMS EXCLUDED

Please note the following exceptions:

- Permits will be billed at cost +25%
- If site is in flood zone additional charge of \$3,500 will apply
- Any required sales tax will be billed extra

PREVAILING WAGE

All labor is quoted as prevailing wage.

PRICING (PER WELL SITE)

Price of Material	\$ 73,613.68
Price of Labor/Equipment	\$ 8,000.00
Total Price of Materials and Labor (per well)	\$ 81,613.68