Kern Storm Water Resource Plan



Kern County, California

December 2016

Report prepared by:

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Abbreviations

AB ..... Assembly Bill
ADWT ..... Advanced Water Treatment Grant
AF ..... Acre Foot
AF/yr, AFY ..... Acre-feet/year
Air District ..... San Joaquin Valley Air Pollution Control District
AWMC ..... Ag Water Management Council
Basin Plan ..... Water Quality Control Plan for Tulare Lake Basin
BMP ..... Best Management Practices
Bulletin 160 ..... California Water Plan
BVWSD ..... Buena Vista Water Storage District
CASGEM ..... California Statewide Groundwater Elevation Monitoring
CDFW ..... California Department of Fish and Wildlife
CEQA ..... California Environmental Quality Act
CERES ..... California Environmental Resources Evaluation System
CESA ..... California Endangered Species Act
cfs ..... Cubic-foot per second
Comm ..... Community
CPUC ..... California Public Utilities Commission
CSD ..... Community Services District
CUWCC ..... California Urban Water Conservation Council
CV ..... Central Valley
CVC ..... Cross Valley Canal
CVCAC ..... Cross Valley Canal Advisory Committee
CVP ..... Central Valley Project
CVRWQCB ..... Central Valley Regional Water Quality Control Board
CV-SALTS ..... Central Valley Salinity Alternatives for Long-term Sustainability
CWA ..... Clean Water Act
CWSRF ..... Clean Water State Revolving Fund
DAC ..... Disadvantaged Communities
DCP ..... Dust Control Plan
DDW ..... State Water Resources Control Board Department of Drinking Water

DOI..... U.S. Department of Interior
DWR ..... Department of Water Resources
EDA..... Economically Distressed Areas
Env ..... Environmental
EPA ..... U.S. Environmental Protection Agency
FEMA..... Federal Emergency Management Agency
FM ..... Flood Management
GAMA ..... Groundwater Ambient Monitoring and Assessment
GAR..... Groundwater Quality Assessment Report
GHG ..... Greenhouse Gas Emissions
Ledger ..... 11-inch by 17-inch
ILRP..... Irrigated Lands Regulatory Program
IPR ..... Indirect Potable Reuse
IRWM ..... Integrated Regional Water Management
IRWMP ..... Integrated Regional Water Management Plan
ISR..... Indirect Source Review
KCWA ..... Kern County Water Agency
Kern Region ..... Combined geographic Kern and Poso Creek IRWMP areas
KFMC ..... Kern Fan Monitoring Committee
M&I..... Municipal & Industrial
MEP ..... Maximum Extent Practicable
MGD ..... Millions of gallons per day
MOU ..... Memorandums of Understanding
MS4 ..... Municipal Separate Storm Sewer System
MWH ..... Megawatt-hour
NEPA..... National Environmental Policy Act
NGO..... Non-Government Organization
No. ..... Number
NOI ..... Notice of Intent
NPDES ..... National Pollutant Discharge Elimination System
NPS ..... Non-point sources
NRCS..... Natural Resources Conservation Service
O&M..... Operations & Maintenance

P2 ..... Pollution Prevention
Plan ..... Kern Storm Water Resource Plan
PSF ..... Project Submittal Form
PSP ..... Proposal Solicitation Package
RWMG ..... Regional Water Management Group
SB ..... Senate Bill
SDWA ..... Safe Drinking Water Act
SDWSRF ..... Safe Drinking Water State Revolving Fund
SRA ..... Source Reduction Assistance
SRF ..... State Revolving Fund
SWAMP ..... Surface Water Ambient Monitoring Program
SWGP ..... Storm Water Grant Program
SWP ..... State Water Project
SWPAO ..... State Water Project Analysis Office
SWPPP ..... Storm Water Pollution Prevention Plan
SWRCB ..... State Water Resources Control Board
SWRP ..... Storm Water Resource Plan
TDS ..... Total Dissolved Solids
TMDL ..... Total Maximum Daily Load
USACE ..... U.S. Army Corps of Engineers
USBR ..... U.S. Bureau of Reclamation
USDA ..... U.S. Department of Agriculture
USFS ..... U.S. Forest Service
USFWS ..... U.S. Fish & Wildlife Service
USGS ..... United States Geological Survey
Ventura ..... Watersheds Coalition of Ventura County
WaterSMART ..... Sustain and Manage America's Resources for Tomorrow
WD ..... Water District
WDR ..... Waste Discharge Requirements
WQ ..... Water Quality
WS ..... Water Supply
WSD ..... Water Storage District
WWTP ..... Wastewater Treatment Plant

Executive Summary

This Storm Water Resource Plan (SWRP or Plan) was written to begin the process of formulating a regional plan for storm water and dry weather run-off (referred to collectively as "storm water") projects for augmenting surface water supplies, improving water quality, and reducing the need for groundwater pumping. The capture and use of storm water is now considered to be a new way of looking at a resource previously regarded as negatively impacting people and property and addressed by quick disposal through drainage control structures and, in some cases, eventual routing out to sea. In the drought-stricken State of California, the State Legislature has made changes to the Water Code to encourage use of storm water as a resource rather than a nuisance. To that end, the state has developed programs under Proposition 1 which directs grant funding to programs designed to encourage development of projects which capture and re-use storm water for groundwater recharge, banking, and other beneficial uses.

The Plan was developed for the benefit of the Kern and Poso Creek Integrated Regional Water Management (IRWM) Groups and encompasses their combined boundaries. The Plan includes a comprehensive review and description of watersheds located within the Plan boundaries. It describes both surface and groundwater resources, water suppliers, and watershed priorities. Following the State Water Resources Control Board (SWRCB) Guidelines, natural habitat, existing water bodies, open space and watershed processes are reviewed and presented. The Plan addresses how water quality standards will be complied with and includes provision for modification of stream channels or lake beds and addresses Plan requirements for monitoring, data collection and management.

The Plan includes a section on collaboration and coordination amongst the member agencies and stakeholder entities that may have an interest in the Plan development. The original communication mechanism set forth in the Kern and Poso Creek IRWMP groups was retained and will continue to make use of these two groups' websites, email list-servers, and meeting protocols familiar to many stakeholders within Plan boundaries. None of the communication or governance protocols codified by Memorandum of Understanding (MOU) of the participating IRWMP groups would be affected by implementation of the Plan.

The Plan authors encouraged participants to submit proposed projects using a Project Submittal Form (PSF) template designed with guidance from SWRCB Guidelines for capturing proposed project concepts and quantifying project benefits. The PSFs were developed specifically for this Plan, and stakeholders provided reviews and constructive comments to the PSF format and content during the first of two public meetings. A total of 12 project proposals were submitted for inclusion in the Plan. The Plan contains an explanation of the project scoring, ranking, and prioritization rubric. The rubric methodology was submitted for review and comment to stakeholders during the second public meeting. A project implementation strategy and schedule was developed, which encourages the submission of additional projects or modification of existing proposed projects for future updates to the Plan. One of the Plan goals and requirement of the guidelines is to produce a living document which can be used for many years and adapted to the changing needs and resource goals for the Kern Region.

1 Introduction

1.1 Background

Increasing development and environmental demands on water availability, coupled with curtailments of imported State Water Project (SWP) and Central Valley Project (CVP) deliveries due to drought and regulatory restrictions, have intensified the competition for available water supplies in the Kern Region. There is a continuing need to maintain a water resources management plan and strategy that addresses the needs of both municipal and industrial (M&I) purveyors and agricultural water users. Reliable, high quality water supplies are necessary to serve continually expanding urban needs as well as agricultural demand for reasonably-priced irrigation and groundwater recharge water.

With the exception of a few areas, the Tulare Lake Hydrologic Region of Kern County is a closed basin in that water entering the basin does not return to a salt sink after use, thus allowing opportunities for robust recycling, capture, and conjunctive use programs. A few years ago, several water storage districts and local government agencies formed Integrated Regional Water Management Plan (IRWMP) areas in contiguous parts of Kern and Tulare counties. The purpose of the IRWMPs is to develop a cooperative regional framework, implementation plan, and regional context for managing water resources in the Kern Region. The region is ideal for ongoing integrated regional water management. Water districts and government agencies in Kern County have successfully implemented regional projects and are interested in continuing to build projects to increase available water supply, improve water quality, reduce local flood risk, and enhance the natural habitat and the community's open space resources.

Senate Bill (SB) 985, the Storm Water Management Planning Act, implemented through Water Code section 10563, substantively focuses on diverting runoff from existing storm drains, channels, or conveyance structures to sites (particularly publicly owned sites) that can clean, store, infiltrate and/or use the runoff. A watershed-based Storm Water Resource Plan must comply with the relevant Water Code provisions enacted by SB 985, in order for individual storm water and dry weather runoff capture projects in the Plan to be eligible for bond funds. Funding for construction of watershed projects is available from the State of California through Proposition 1, the water bond measure approved by voters in November 2014, which authorized $200 million in grant funding for multi-benefit storm water management projects. Water code section 10563, subdivision (c) (1) requires a SWRP as a condition for receiving funds for storm water and dry weather runoff capture projects from any bond measure approved by voters after January 2014. Agencies within two local IRWMPs, the Kern IRWMP and Poso Creek IRWMP, agreed to jointly develop this Plan as a collaborative means for securing grant funds for constructing watershed projects beneficial to many stakeholders.

1.2 Purpose and Need

Effective storm water planning and management on a watershed basis involves collaboration of local and regional governments, utilities, and other stakeholder groups to analyze the hydrology, storm drain/runoff conveyances systems, opportunity sites, as well as habitat or community needs

within sub-watersheds. The intent of a SWRP is to use a watershed-based approach to integrate storm water management and dry weather runoff capture to accomplish watershed goals and objectives. The watershed approach is essential to integrate storm water management with other basic aspects of aquatic resource protection and overall water management including flood control, water supply, and habitat conservation.

This Plan addresses existing regional watershed issues, identifies natural watershed processes and problems, and presents solutions to problems by proposing projects including those that are connected to regional water conveyance facilities. For the Kern SWRP, agencies within the Kern and Poso IRWMPs were called upon to propose projects using a standardized Project Submittal Form for inclusion in the Kern SWRP (see **Appendix A: Project Submittal Form Template**). The proposed projects submitted by these agencies are described conceptually in the Project Submittal Forms included in **Appendix B: Project Submittal Forms**. The Project Submittal Forms provide high-level project profiles, enabling each project to be evaluated and ranked for prioritization of implementation.

When the initial Plan was published in December 2016, 12 proposed projects were incorporated. Nine of the 12 projects present groundwater recharge proposals varying from 577 to 20,000 acre-feet/year (AF/yr) average annual water supply yield gained by storm water runoff capture. These nine projects have the potential of reducing dependence Delta imports as well as reduce flood risk, while enabling seasonal wetlands to thrive on land which would otherwise be dry and fallow. The remaining three projects are stream restoration and habitat production projects. These projects improve existing watershed processes by enhancing flows, reducing water temperature, and improving water quality at receiving reservoirs.

The Plan is intended to be structured as a living document in which new projects can be proposed while existing projects can be modified to adapt to changing conditions in the Kern Region. The Project Submittal Form template is included as **Appendix A: Project Submittal Form Template** and will be used for future submittals following publication of this Plan document.

1.3 Goals and Objectives

Adoption of this Plan will improve water supply availability and water quality by enhancing the natural processes resulting in ground water recharge and aquifer replenishment. Also, the reduction of downstream hydromodification and destabilization of surface water bodies will be realized due to control of unchecked runoff. The Plan goals include, but are not limited to:

- Implement a watershed-based approach to managing storm water and dry weather runoff by replicating natural hydrology and watershed processes onsite where rainfall occurs
- Realize multiple benefits by reducing runoff volume to receiving waters, thus reducing the pollutants discharged
- Realize non-measurable social and community benefits not obtained with traditional projects

Objectives for achieving the goals include:

- Augment the supply of freshwater to surface water bodies and enhance stream flows (that are hydrologically connected to groundwater aquifers) by developing projects consistent with the Plan goals
- Improve conditions for aquatic life and wildlife habitats
- Recharge groundwater aquifers through pervious urban or agricultural areas to support sustainable groundwater levels and increase local water supplies by developing projects consistent with the Plan goals
- Provide a supply of freshwater to increase recreational uses
- Harvest rainwater for augmenting groundwater and local water supplies
- Reduce or minimize erosion and land destabilization caused by runoff
- Reduce or minimize hydromodification of streams, rivers, wetlands, lakes caused by runoff

2 Watershed Identification

The Kern Region watershed includes watersheds of the member agencies of the Regional Water Management Groups (RWMG) that developed and that are implementing the Kern County and Poso Creek IRWMPs, which are located in the Tulare Lake Basin hydrologic region. The Tulare Lake Basin includes portions of Fresno, Tulare and Kings Counties.

The Kern County RWMG includes the following participants:

Table 2-1. Kern County RWMG Participants

Kern County RWMG Participants		
City of Arvin	Arvin Community Services District	Arvin-Edison Water Storage District
City of Bakersfield Water Resources Division	Bear Valley Community Services District	Belridge Water Storage District
Berrenda Mesa Water District	Buena Vista Water Storage District	Buttonwillow County Water District
California Water Service, Bakersfield	California Water Service, Kern River Valley District	Casa Loma Water Company
City of Delano	Desert Mountain Resource Conservation and Development Council	Dudley Ridge Water District
East Niles Community Service District	Frazier Park Public Utility District	Golden Hills Community Services District
Greenfield County Water District	Henry Miller Water District	Kern County Water Agency (KCWA)
Kern County Resource Management Agency	KCWA Improvement District No.4 (ID4)	Kern Delta Water District
Kern Water Bank Authority	Lamont Public Utility District	Lamont Stormwater Utility District
Lebec County Water District	Long Canyon Water Company	Lost Hills Utility District
Lost Hills Water District	City of Maricopa	City of McFarland
Mettler County Water District	Mountain Mesa Water Company	North of the River Municipal Water District
North West Kern Resource Conservation District	Oildale Mutual Water Company	Olcese Water District
Rainbird Valley Mutual Utility Company	Rosedale Rio Bravo Water Storage District	City of Shafter
Stallion Spring Community Services District	City of Taft	City of Tehachapi
Tehachapi-Cummings County Water District	Tehachapi Resource Conservation District	Tejon-Castac Water District
Valley Estates Property Owners Association	Vaughn Water Company	City of Wasco
West Kern Water District	Wheeler Ridge Maricopa Water Storage District	

The Poso Creek RWMG includes the following agencies:

Table 2-2. Poso Creek RWMG Participants

Poso Creek RWMG Participants		
Semitropic Water Storage District	Cawelo Water District	Delano-Earlimart Irrigation District
Kern-Tulare Water District	North Kern Water Storage District	Shafter-Wasco Irrigation District
North West Kern Resource Conservation District	Disadvantaged Community (DAC) Representative*	Southern San Joaquin Municipal Utilities District

*See Section 4, Table 4-4.

2.1 Watershed Boundaries

The overall watershed boundary (shown on **Figure 1**) is the portion of the Tulare Lake Basin hydrologic region that is within Kern County, plus Dudley Ridge Water District in Kings County and portions of Tulare County within Delano-Earlimart Irrigation District and Kern-Tulare Water District (see **Figure 2**). The boundary within Kern County is consistent with the Tulare Lake Hydrologic Basin Planning Area boundary delineated by the Central Valley Regional Water Quality Control Board (CVRWQCB), and the California Water Plan (Bulletin 160) Hydrologic Region. The overall boundary is consistent with the combined boundary of the Kern County and Poso Creek IRWMP boundaries.

A large portion of the San Joaquin Valley groundwater basin underlies the watershed boundary. The San Joaquin Valley groundwater basin is in a critical state of overdraft. Therefore beneficial storm water management by member agencies that recharge the groundwater basin or otherwise contribute positively to groundwater balance will potentially benefit others within the region (see **Section 2.4**).

A network of regional and agency water conveyance systems plus wells, reservoirs, groundwater recharge and banking projects have been developed and are employed to conjunctively manage surface water and groundwater. Major water management facilities are shown on **Figure 3**.

2.2 Internal Boundaries/Neighboring Watersheds not included in the Plan

Figure 4 shows the surrounding IRWMPs. The Kern SWRP boundary is adjacent to eight other IRWM planning regions: Southern Sierra, Inyo-Mono, Antelope Valley, Fremont Basin, Upper Santa Clara River, the Watersheds Coalition of Ventura County (Ventura), Santa Barbara, and San Luis Obispo. Overlapping areas exist within two of these Regions: (1) San Luis Obispo, and (2) Antelope Valley.

Members of the Kern and Poso Creek IRWMPs have a long history of open communication and coordination of storm water, surface water, and groundwater management on inter-regional, regional and local scales, which predate the IRWM program. Inter-regional and regional coordination and communication is evident in the development and operations of water management facilities, numerous joint groundwater recharge and banking programs, plus the many exchanges and transfers of water supplies between various agencies, including urban and agricultural purveyors, as well as

participation in local and state programs including many water management committees and meetings.

A number of cities, water districts, irrigation districts and other agencies have not opted to participate in the Kern SWRP but will be able to submit projects for consideration. The reasoning for non-participation ranged from non-applicability to lack of defined projects at this time. These agencies are free to ask for inclusion at a later date.

2.3 Water Quality Priorities

Pollution can enter a water body from point sources like wastewater treatment plants (WWTP) and/or other industries that directly discharge to the streams and from nonpoint sources over a broad area, such as runoff from a city and/or agricultural farmland or grazing areas located adjacent to stretches of a stream. Some non-point source (NPS) contaminants are naturally occurring in local rocks and soil, such as salts, boron, and heavy metals, (arsenic, chromium, selenium). Natural sources of nitrates also occur. The Federal Clean Water Act (CWA) contains two strategies for managing water quality including: (1) a technology-based approach that envisions requirements to maintain a minimum level of pollutant management using the best available technology; and (2) a water quality-based approach that relies on evaluating the condition of surface waters and setting limitations on the amount of pollution that the water can be exposed to without adversely affecting the beneficial uses of those waters. Section 303(d) of the CWA requires that the states make a list of waters that are not attaining standards after the technology-based limits are put into place. Impaired water bodies, with Total Maximum Daily Load (TMDL) assignments, within Kern County are listed in **Table 2-3** below.

The federal CWA, as well as the State Porter-Cologne Water Quality Control Act, requires water quality control plans to establish water quality standards which address beneficial uses of water sources. The CVRWQCB has established and adopted the Water Quality Control Plan for the Tulare Lake Basin (Basin Plan). The Basin Plan describes designated beneficial uses to be protected, water quality objectives to protect those uses, and a program of implementation needed for achieving the objectives. Beneficial uses, together with their corresponding water quality objectives, address federal regulatory criteria for water quality standards. Hence, the Basin Plan serves as regulatory references for meeting both state and federal requirements for surface and groundwater water quality control in the Tulare Lake Basin.

Table 2-3. 2010 303(d) List of Impaired Water Bodies within Kern County

2010 303(d) List of Impaired Water Bodies within Kern County (TMDL only)					
Water Body	Pollutant	Typical Data Range	Basin Plan Objective	Size	TMDL Completion
Isabella Lake	Dissolved Oxygen	0.8-11.0 mg/L	No Sample < 5.0 mg/l	123 acres	2021
	pH	7.3-9.6	6.5 – 8.5		

State Water Resources Control Board, 2010, http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

Local surface water is supplied primarily by the Kern River and is considered to be high in quality. The only area with a surface water concern, within Kern County, is Lake Isabella for dissolved

oxygen and pH. Both pollutants are listed on the 303(d) Impaired Water Body List. There are other impairments identified for both Lake Isabella and the Kern River but are not listed on the 303(d) list.

The water quality of imported water is governed by the California Department of Water Resources (DWR) via the SWP and by the United States Bureau of Reclamation (USBR) via the CVP. Water provided by the SWP currently meets the applicable water standards as determined by DWR, but is occasionally compromised by seawater intrusion in the Delta and by impaired runoff from west side streams. Water provided by the CVP is a blend of water sources and can have water quality concerns due to impairment of the sources or conveyance facilities. Currently, the water meets the applicable water quality standards as determined by USBR, but is occasionally compromised by exchanges of their source water.

Groundwater quality is considered acceptable for most of the beneficial uses in much of the area. Some areas have impairments that affect beneficial uses. In some areas, these can be mitigated through blending water sources or treatment. Salinity and nitrates are the region's biggest concerns. Agricultural crops can be highly sensitive to high concentrations of salt and therefore require larger quantities of water to flush excess salt from the crop root layers.

Other pollutant concerns include arsenic, metals, and pesticides. Treatment options for these constituents, as well as salts and nitrates are usually very costly, so blocking impairment sources and/or blending with higher quality water are often employed as options before treatment.

2.4 Surface and Groundwater Resources

Water supplies utilized in the region are from the SWP via the California Aqueduct, the CVP via the Friant-Kern Canal, and local surface supplies from the Kern River and other local streams including Poso Creek, as well as the groundwater basin. Other groundwater basins in the Kern Region include the Kern River Valley groundwater basin to the east; Walker Basin Creek Valley groundwater basin to the southeast; Cummings Valley, Brite Valley, and Tehachapi Valley West/East Basins on the eastern side of the Region; and Cuddy Canyon Valley, Cuddy Ranch Area, Cuddy Valley; and Mil Potrero Area basins to the south. All of these groundwater basin boundaries are within the watershed boundary of the Kern Region (see **Figure 5**). Recently, the White Wolf groundwater sub-basin (a portion of the Kern basin isolated by the White Wolf fault) has been recognized as its own groundwater basin for groundwater sustainability planning purposes. **Figure 6** shows existing groundwater recharge sites, many of which are hydraulically connected to the groundwater basins and will be linked to the proposed projects included in Section 5.

A complete discussion on groundwater basins and groundwater recharge capability within the region is included in **Appendix D: Recharge to Groundwater**, which was excerpted from the Kern River Watershed Coalition Authority Groundwater Quality Assessment Report (GAR).

2.5 Local Water Suppliers

The wholesale and retail water purveyors, wastewater agencies, flood management agencies, and special districts of the Kern Region are involved in the development and implementation of the objectives and projects for this SWRP. Many agencies function as both water purveyors and flood

management agencies. Their participation was focused particularly on the water supply and flood management issues pertaining to the region. These agencies include, but are not limited to SWP districts (Kern County Water Agency [KCWA] and its 13 member units plus Dudley Ridge Water District), Kern River districts (i.e., North Kern Water Storage District, Kern Delta Water District), CVP districts (i.e., Delano-Earlimart Irrigation District, Arvin-Edison Water Storage District, Shafter-Wasco Irrigation District, etc.), groundwater supplier districts (cities and smaller water suppliers like the Vaughn Water Company and Casa Loma Water Company, and community services districts such as Bear Valley Community Services District and Golden Hills Community Services District). Municipal and county governments and special districts include local jurisdictions and land use planning agencies that were involved in the identification of issues, formation of objectives, and development of projects of this SWRP.

Table 2-4 below lists the potable water suppliers within the Kern Region. Non-potable water suppliers within the Kern Region are listed in **Table 2-1** and are shown geographically in **Figure 2**.

Table 2-4. Urban Water Suppliers within the Kern SWRP

Potable Water Use within the Kern SWRP			
Water Supplier	2010 Volume (Est.)*	Water Supplier	2010 Volume (Est.)*
Arvin Community Services District	3,472	Lake of the Woods Mutual Water Company	
Bear Valley Community Services District	956	Lamont Public Utility District	4,865
Buttonwillow County Water District	142	Lebec County Water District	
California Water Service, Bakersfield	77,177	Long Canyon Water Company	
California Water Service, Kern River Valley District	1,106	Lost Hills Utility District	462
Casa Loma Water Company		Mettler County Water District	
City of Bakersfield Water Resources	43,211	Mountain Mesa Water Company	
City of Delano	9,271	North of the River Municipal Water District	8,400
City of Maricopa		Oildale Mutual Water Company	7,148
City of McFarland	1,765	Rainbird Valley Mutual Utility Company	
City of Shafter	4,735	Stallion Springs Community Services District	399
City of Tehachapi	2,043	Tejon-Castac Water District	1,587
City of Wasco	4,681	Valley Estates Property Owners Association	
East Niles Community Services District	8,962	West Kern Water District	24,729
Frazier Park Public Utility District	1,768	Stockdale Mutual Water Company and Annex	219
Golden Hills Community Services District	1,210	Victory Mutual Water Company	205
Greenfield County Water District	2,843	Vaughn Water Company	11,104

* 2010 water use is obtained from data contained in 2010 Urban Water Management Plans or the 2011 Kern IRWMP.

Table 2-5. Non-Potable Water Suppliers within the Kern SWRP

Non-Potable Water Suppliers within the Kern SWRP			
Water District	Data Source	Irrigated Acres	Total Crop Water Demand (AF)
Arvin-Edison Water Storage District	2011 WMP	112,617	325,024
Belridge Water Storage District	2015 AWMP (2014 Data)	37,185	138,757
Berrenda Mesa Water District	2015 AWMP (2014 Data)	24,836	85,003
Buena Vista Water Storage District	2015 AWMP (2015 Data)	32,437	96,886
Cawelo Water District	2016 AWMP (2015 Data)	33,630	114,816
Delano- Earlimart Irrigation District	2012 WMP (2008 Data)	49,149	158,320
Dudley Ridge Water District	2015 AWMP (2015 Data)	16,622	62,527
Henry Miller Water District	Kern IRWMP (2005 Data)	18,876	47,000
Kern Delta Water District	2015 AWMP (2013 Data)	91,530	297,260
Kern Tulare Water District	2016 AWMP (2015 Data)	18,157	61,514
Lost Hills Water District	2015 AWMP (2014 Data)	30,435	112,048
North Kern Water District	2015 AWMP (2014 Data)	57,393	185,603
Rosedale Rio Bravo Water Storage District	2014 Operations Report (2014 Data)	29,000	87,465
Semitropic Water Storage District	2015 AWMP (2015 Data)	135,996	388,120
Shafter-Wasco Irrigation District	2011 WMP (2011 Data)	30,127	101,026
Tehachapi-Cummings County Water District	Kern IRWMP (2005 Data)	3,393	8,449
Wheeler Ridge Maricopa Water Storage District	2015 AWMP (2015 Data)	85,973	219,595
Olcese Water District	Kern IRWMP (2005 Data)	2,008	5,000

Figure 7 shows non-potable water distribution and flood water capture infrastructure for the region. Proposed projects described and ranked in **Section 5** will rely on this infrastructure as a means of improving groundwater recharge capacity through the capture of storm water and dry weather run-off in the Kern Region.

2.6 Native Habitat, Water Bodies, and Open Space

Kern County's remaining native land is primarily semi-desert and desert landscape with varying geology and wildlife with rivers and creeks. There are a number of state and federally protected areas; including river habitat areas, parks, and wildlife refuges.

Geologically, the Kern Region is located in four of the twelve traditionally recognized geomorphic provinces in California, including the Coast Ranges, the Great Valley, the Transverse Range, and the

Sierra Nevada Range province. These geologic attributes influence the climate, wildlife, vegetation, hydrology, and other environmental factors in the Region. Notably within the Coast Range is the San Andreas Fault.

The Tulare Lake Basin has two outlets for surface waters (North Fork of Kings River and Kern River-Aqueduct Intertie). These are only used in very wet years as outlets to prevent flooding of lands in low lying areas. Streams from the Sierra Nevada, Coast Ranges and Tehachapi Mountains have eroded and deposited materials in the Tulare Lake Basin, forming alluvial fans at the surface.

Environmental resources of the Region include the Kern River, Sequoia National Forest, several wildlife refuges, and the unique flora and fauna of the Tejon Pass area and Transverse Ranges. The riparian forest along the South Fork Kern River is one of the highest quality and most extensive stands of that vegetation type in California. Much of this forest is conserved in the U.S. Forest Service (USFS) South Fork Wildlife Area, Audubon California's Kern River Preserve, and California Department of Fish & Wildlife's (CDFW) Canebrake Ecological Reserve.

The Kern River pools at Isabella Reservoir behind Isabella Dam, which is a U.S. Army Corps of Engineers (USACE) flood control facility protecting the City of Bakersfield and other downstream areas. After leaving Isabella Reservoir the river travels generally southwest through the Sierra foothills and the City of Bakersfield. The Kern River supports many vegetation types and both common and sensitive species are found along the river corridor.

The Sequoia National Forest draws visitors from around the world, primarily attracted by the giant sequoia trees. In addition to the giant sequoia, the forest is home to numerous animals, including several rare and endangered species.

The 1,249-acre Kern National Wildlife Refuge contains remnant habitats of the original Tulare Lake region and consists of freshwater marshes, valley grasslands, and a relict cottonwood-willow riparian corridor. The refuge provides habitat for wintering and migrating waterfowl, shorebirds, and marsh birds and also provides habitat for upland and riparian bird species.

The Bitter Creek National Wildlife Refuge is located in the southwest corner of the region. This refuge is intended to protect dwindling California condor foraging and roosting habitat. The refuge is bisected by the San Andreas Fault and Bitter Creek Canyon. In addition to the California condor, there are numerous other animals and bird species found in the refuge.

The southeastern portion of the region, surrounding the Tejon Pass area, is the intersection of five geomorphic provinces: Sierra Nevada, Great Central Valley, Coast Ranges, Transverse Ranges, and Mojave Desert. These geomorphic areas each have a distinct ecology, and the intermixing of these geomorphic provinces creates a unique and diverse landscape in a relatively small area. Because of its unique biogeography and location between major urban centers in Los Angeles and Kern counties, the Tejon Pass area also supports many threatened and endangered species and other species considered rare or sensitive because of their restricted distributions and substantial loss of habitat. At least 20 species listed as Threatened or Endangered under the Federal and California Endangered Species Acts and an additional 61 species otherwise designated as sensitive are known to occur or have the potential to occur in the vicinity of Tejon Pass.

In 2008, five environmental organizations and the Tejon Ranch Company entered into an agreement to permanently protect 178,000 acres of Tejon Ranch in the southern area of the region, near the community of Lebec. The Tejon Ranch Conservancy, an independent nonprofit conservation organization will monitor and enforce a conservation easement on the 178,000 acres of conserved lands while implementing a long-term stewardship plan to protect and restore habitat. The Tejon Ranch Conservancy is working to acquire an additional 62,000 acres. The majority of the preserve is in Kern County with a portion in Los Angeles County (Tejon Ranch Conservancy 2009).

Since 1998, The Wildlands Conservancy has owned and managed Wind Wolves Preserve, an ecologically unique region where the Transverse Ranges, Coast Ranges, and San Joaquin Valley converge. Due to elevation ranging from 640 to 6,005 feet, and 95,000 acres, the preserve has an impressive array of landforms and habitats that serve as a critical landscape linkage and wildlife corridor between the Coast Ranges and Sierra Nevada.

2.7 Natural Watershed Process Interruptions

Before development by European immigrants, the watershed process was mostly uninhibited and surface water flowed unimpaired from the Sierra Nevada Mountain Range into the San Joaquin Valley via the Kern River and other smaller tributary streams and creeks. Low lying areas in the Kern and Buena Vista Lake beds were flooded by the river and its associated sloughs. As immigrant communities were developed, surface flows were diverted to support the urban population bases via dams, canals, and pipelines. Before development, the valley floor's land was mostly pervious (with the exception of rock outcroppings, swamp, overflow lands, and lake bottoms) and allowed storm/rainfall infiltration. Presently, the urban areas have large impervious areas reducing infiltration (thereby reducing groundwater recharge from rainfall).

Surface waters from the Kern River were dammed at Lake Isabella (northeast of Bakersfield) to provide flood protection, hydroelectric power, and water supply.

Through continued urban growth and the demand for water, groundwater wells have been used to supplement the limited surface water supply. Even with surface water importation, demands for critical water resources, including from environmental protection actions, have outstripped supplies. Groundwater levels have dropped and have been listed by DWR as being in a state of critical overdraft.

The Kern IRWMP (Table 2-20) identified crops within Kern County (see **Table 2-6** below). The annual crop water demand is shown below. Note that the estimate of crop water demands in the Region are being updated through the Kern Groundwater Authority under a study being prepared by the Irrigation Training and Research Center (ITRC) using processed satellite imagery. Once this information is made available, the crop water demands in this table will be updated in a future revision of this Plan.

Table 2-6. Kern IRWMP Table 2-20, Summary of Agricultural Water Demand (AFY)

Kern IRWMP Table 2-20, Summary of Agricultural Water Demand (AFY)			
Crop Type	Irrigated Acreage	Consumptive Water Use (AF/acre)	Agricultural Water Demand (AFY)*
Alfalfa (including seed)	92,210	4.10	378,000
Almonds	179,948	3.28	590,000
Apples, Pears, Plums	3,178	3.45	11,000
Apricots, Nectarines, Peaches	4,642	3.35	16,000
Beans	3,712	2.11	8,000
Carrots	28,645	2.55	73,000
Citrus	57,904	3.37	195,000
Corn, Grain Sorghum	52,008	2.95	153,000
Cotton	74,212	2.71	201,000
Grapes	101,571	2.81	285,000
Grain and Grain Hay	58,647	2.07	121,000
Idle, Fallow Lands	183,495	0.33	60,000
Melons, Squash, Cucumbers	4,208	1.46	6,000
Misc. Deciduous Trees	18,433	3.34	62,000
Misc. Field Crops	664	2.09	1,000
Misc. Subtropical Trees	4,123	3.38	14,000
Misc. Vegetables	11,759	1.62	19,000
Nursery	5,000	3.28	16,000
Onions, Garlic	6,982	1.70	12,000
Pasture, Turf, Misc. Grasses	9,136	4.13	38,000
Pistachios	78,528	4.11	322,000
Potatoes	17,466	1.98	35,000
Safflower, Sunflower	2,068	2.23	5,000
Sugar Beets	489	3.29	2,000
Tomatoes	15,802	2.51	40,000
Turnips	209	1.62	500
Walnuts	1,907	3.89	7,000
Total Irrigated Lands:	833,452	2.49	2,670,000
Total Crop Lands:	1,016,946		

Kern IRWMP, November 2011. Data is from 2007.

*Water Demand rounded to nearest 1,000 AFY.

Other natural watershed interruptions include transportation infrastructure including vehicle and railroad corridors. These corridors (infrastructure) are additional impervious surfaces and locations where previously free flowing surface waters are engineered into localized paths to protect railways or roadways.

3 Compliance with Water Quality Standards

Storm Water Resource Plans must comply with applicable water quality provisions developed and implemented by the U.S. Environmental Protection Agency (EPA), SWRCB, CVRWQCB and takes into consideration the concerns and needs of local agencies and constituents. These agencies are tasked with oversight, permitting, enforcement, and monitoring. Sources of pollution can include NPS such as runoff from developed areas, agricultural farmland, confined animal units, and/or grazing areas. Contaminants from these sources are often naturally occurring in rocks and soil, including minerals; heavy metals such as arsenic, chromium and selenium; and nutrients. Additionally, the Kern Region has local water quality regulations and policies related to the Kern River, Cross Valley Canal, Friant-Kern Canal, and the California Aqueduct that must be considered.

3.1 Compliance Requirements for Plan Implementation

Pollution can originate from point-sources where pollutants are directly discharged to waterways from operations such as wastewater treatment facilities, industries, and dairies. Point source pollutants are typically covered by Waste Discharge Requirements (WDR) and National Pollutant Discharge Elimination System (NPDES). NPS pollution prevention utilizes best management practices (BMPs), efficient water management practices, and source control.

The Federal CWA focuses on two elements for protecting water quality. These include a technology-based approach that uses requirements to maintain a minimum level of pollutant management using the best available technology and a water quality-based approach that relies on evaluating the condition of surface waters and setting limitations on the amount of pollution that the water can be exposed to without adversely affecting the beneficial uses of those waters. Section 303(d) of the CWA incorporates these two strategies.

Section 303(d) requires that the state make a list of waters that are not attaining standards after the technology-based limits are put into place. For waters on this list, as deemed appropriate by the EPA, the state is required to determine all the sources of the constituents of concern including those from point sources and NPS. The only water body on the 303(d) list within Kern Region is Isabella Reservoir, which has two constituents listed (pH and dissolved oxygen). Isabella Reservoir regulates flows for the Kern River, and is a recreational facility. The Kern River is not listed on the 303(d) list, and generally has excellent water quality. Periodically, localized areas of the river can have water quality concerns, such as increased sediment loading of the river after forest fires, which can significantly affect its watershed.

In addition to the Federal CWA, the State Porter-Cologne Water Quality Control Act required water quality control plans to be established for water quality standards to protect the beneficial uses of water sources. The CVRWQCB established and adopted the Water Quality Control Plan for the Tulare Lake Basin (Basin Plan). The Basin Plan lists the designated beneficial uses to be protected, water quality objectives to protect those uses, and an implementation program for achieving the objectives. The Basin Plan serves as a regulatory reference for meeting both state and federal requirements for surface and groundwater water quality control in the Tulare Lake Basin. The CVRWQCB regulates discharges to both surface water and groundwater in a variety of ways to

protect water quality to standards related to the designated beneficial uses. Point source waste discharges are generally regulated by Point of Treatment Wastewater Discharge Requirements that includes treatment standards, monitoring, and reporting. The CVRWQCB also has several water quality protection programs related to discharges from NPS. These include the Dairy General Order and Irrigated Lands Regulatory Program (ILRP). There are numerous water quality regulations associated with these NPS programs.

The CVRWQCB has been working with stakeholders through the Central Valley Salinity Alternatives for Long-term Sustainability (CV-SALTS) Program to develop amendments to the basin plans in California's Central Valley, including the Tulare Lake Basin, related to salts and nitrates in surface and groundwater. These amendments are expected to occur within the next few years, and establish processes for exempting agricultural dominated water bodies from "default" drinking water protection, as well as more localized standards for salinity and nitrate degradation.

3.1.1 CEQA Compliance

Storm water related projects proposed for the study area by public agencies must comply with the California Environmental Quality Act (CEQA). The CEQA process includes work to identify any potential negative impacts that may be associated with implementing the submitted projects include (1) short-term, site specific impacts related to site grading and construction, (2) long-term impacts associated with project operation, and (3) cumulative impacts associated with project construction and/or operation when considered together with other known projects or programs.

The CEQA process will evaluate the significance of any potential impacts. CEQA requires that any impacts determined to be significant must be mitigated to a level of non-significance (unless the CEQA lead agency makes findings of overriding consideration in an environmental impact report (EIR) that reviews the project and options to it).

CEQA review of specific projects will provide a detailed evaluation of the potential impacts discussed below:

- **Aesthetics –** Projects that include construction activities and new infrastructure have the potential to affect aesthetics. However, it is likely that projects would be constructed in areas that are already disturbed, or would include mitigation measures that would return disturbed areas to their pre-construction conditions.
- **Air Quality –** Short-term air quality impacts could result from construction of the projects. However, through the CEQA process potential air emissions would be minimized through application of BMPs identified by the air quality management district or mitigation measures.
- **Biological Resources –** Short-term and long-term biological impacts could result from construction activities as well as non-native plant removal. Most of these negative effects would be avoided or minimized through mitigation efforts related to CEQA. Some projects could result in overall benefits to biological resources.
- **Cultural Resources –** Impacts to cultural resources (historical, archeological, and paleontological resources) could result from construction activities from the projects. As part of the CEQA process it will be necessary to develop mitigation measures to avoid or minimize these potential impacts.

- **Geology and Soils –** Projects with the potential to impact geologic resources would be required to undergo geological feasibility studies which would specify the appropriate engineering standards the contractor would have to comply with during construction. Compliance with these standards would mitigate project site geological and soil impacts.
- **Hydrology and Water Quality –** It is anticipated that impacts to hydrology and water quality would be generally beneficial because in the long-term projects are intended to improve water supply reliability and water quality. For short-term erosion or sedimentation, project-specific BMPs would be identified as part of the NPDES permitting process.
- **Land Use and Planning –** Projects are evaluated as to their compatibility with other planning documents for the Kern Region, including local and regional General Plans. No significant land use changes or inconsistencies with policies are anticipated though.
- **Noise –** Noise impacts could result from construction activities from some of the proposed projects. However, through the CEQA process most of these activities would be minimized through mitigation efforts and no long-term noise impacts are expected.
- **Population and Housing –** No adverse impacts to population and housing are anticipated. Project implementation would help to meet the water demands of the existing and anticipated future population.
- **Public Services and Utilities –** Many of the projects are intended to enhance water supply, water quality, and improve storm water management and flood control. These types of projects would benefit the utilities and service systems in the Kern Region.
- **Recreation –** Projects are anticipated to improve or have no impact on recreational activities within the County.
- **Transportation and Circulation –** Transportation and circulation could be temporarily impacted during construction of some of the projects. Construction can temporarily increase traffic congestion due to transportation of equipment and trips by workers. Construction of projects located near roadways can result in temporary lane closures and detours. However, through the CEQA process most of these activities would be avoided or minimized and no long-term transportation and circulation impacts are expected.

3.1.2 California Health and Safety Code

The California Health and Safety Code includes provisions for the control of vectors including mosquito abatement. The Mosquito Abatement Act of 1915 allows municipalities and counties to create Mosquito Abatement Districts. The risks of mosquitoes due to delinquent water handling practices include marsh, malaria, encephalitis and West Nile virus. Proper BMPs can significantly reduce mosquito populations and their associated illnesses.

Projects performed in accordance with this Plan must adhere to the requirements of the local mosquito abatement districts. The Kern Mosquito and Vector Control District, Kern County Environmental Health Services, Delano Mosquito Abatement District, West Side Mosquito and Vector Control District, and South Fork Mosquito Control District provide mosquito abatement services within Kern Region, depending upon location.

BMPs established by the applicable mosquito abatement district must be implemented for all projects included in this Plan. BMPs include source reduction including the elimination, reduction or modification of larval habitats, biological control such as using predators to reduce larval population, and mosquitocides including larvalcides and adulticides.

3.1.3 Water Rights

Groundwater recharge is the augmentation of groundwater, by natural or artificial means, with surface water or recycled water. Groundwater recharge is not a beneficial use of water in and of itself. Some groundwater recharge projects may be based on short-term water surpluses that occur infrequently, assuming that water is available for appropriation. A diversion to underground storage can be a method of diverting water, taking advantage of the natural storage capacity of aquifers; however to obtain a water right, there must be a designated beneficial use of the water placed to underground storage. Groundwater storage projects have been successfully constructed and are operating in California, with diversion to underground storage being the method of diversion. These projects include the use of the stored water for beneficial use, just as with surface water storage projects. The beneficial uses, including the extraction of the stored water, are required to be protective of water quality.

Water rights are required to capture stream flows, including peak storm events, for groundwater recharge with later beneficial use. Except where the storage and beneficial use are authorized under an existing appropriative right, or a change in that right, this will require filing an application with the SWRCB to obtain a water rights permit. In the water rights application, beneficial uses (i.e., municipal, irrigation, municipal, industrial, water quality, etc.) of the water placed to underground storage will need to be specified.

Consideration of project operation timelines and approval requirements will dictate the need for a standard permit or temporary permit. An application for a standard permit should be filed for proposed long-term projects. A temporary permit should be filed for projects of a temporary nature where an urgent need exists. Assuming there is an urgent need, an application for a temporary permit may be filed simultaneously with an application for a standard permit, to cover the period until a standard long-term permit is issued. Temporary permits expire within 180 days after the date of issuance, unless specified. Temporary permits may be renewed by the SWRCB. Both permits require detailed reporting of the amount of water diverted into underground storage and the amount removed for beneficial use.

- **Standard Permit –** A standard permit development timeline is 15 years, however for groundwater a longer development period may be warranted.
- **Temporary Permits –** No development period is specified, but permittee must report on beneficial use of the diverted water. For these types of projects, the permittee will need to file temporary permit renewals until the amount beneficially used is equivalent to the diversion amount.

Projects that are not required to apply for a permit include projects that meet the following criteria:

- Projects designed and used solely for flood protection and not for beneficial use; where capture of flood waters is necessary to protect health and safety, and is not intended to store the water for later beneficial use by any party. This assumes that the water is held no longer

than needed for flood control and that no right is asserted to any of the groundwater recharge that results from the flood control.

- Projects that propose to replenish groundwater with recycled water, where the recycled water comes directly from a water treatment plant and is not conveyed using a surface water stream system or a subterranean stream. In this situation, a wastewater change petition may be necessary if the wastewater was previously discharged to a stream.
- Projects diverting water under a valid pre-1914 appropriative right.
- Projects that use water delivered under a water supply contract or purchase agreement in which the water purveyor delivering the water has a right to divert water to underground storage at the proposed location.

3.1.4 Local Water Quality

Surface water supplies in the area provide water for crop cultivation, municipal supplies and groundwater banking. Major surface water conveyances in the Region include the California Aqueduct, the Friant-Kern Canal, the Kern River, Poso Creek and the Cross Valley Canal (CVC).

3.1.4.1 Friant-Kern Canal

The USBR operates the CVP and its associated conveyance canals including the Friant-Kern Canal, and jointly operate the San Luis Canal/California Aqueduct together with DWR to the Kern County line. Non-CVP water conveyed in the Friant-Kern Canal requires a Warren Act contract and must comply with water quality standards set by the USBR.

The current non-emergency non-CVP water quality regulations are being revised. The current standards protect the Friant-Kern Canal to drinking water quality standards. Modifying this to include agricultural water quality standards has been discussed.

Agencies located near the end of the Friant-Kern Canal are the most impacted by water quality issues due to the conveyance of non-CVP water in the canal. Temporary water quality exchange agreements have been developed as part of some water banking and exchange programs to allow them to move forward on a short term basis.

3.1.4.2 California Aqueduct

DWR conveys local groundwater using the SWP conveyance structures through Pump-In Projects. These projects operate in accordance with the California Water Code which states that non-project water may be conveyed, wheeled, or transferred in the SWP provided that water quality is protected. The acceptance of Pump-In water is through established agreements with DWR's State Water Project Analysis Office (SWPAO).

These agreements between SWPAO and Pump-In entities include water quality criteria among other aspects. These water quality criteria dictate that a Pump-In entity of any non-project water program must demonstrate that the water is of consistent, predictable, and acceptable quality prior to pumping the local groundwater into the SWP. Since there cannot be any adverse impacts to SWP water deliveries, operations or facilities, the water quality criteria cannot constrain DWR's ability to operate the SWP for its intended purposes or to protect its integrity during emergencies.

The Pump-In volumes and water quality are monitored regularly when the Pump-In entities are introducing local groundwater into the SWP. Agencies participating in the Pump-In Projects in recent years include:

- Westlands Water District
- San Luis Water District
- Semitropic Water Storage District
- Kern County Water Agency for Cross Valley Canal users
- Kern Water Bank Authority for users of Kern Water Bank Canal
- Buena Vista Water Storage District
- Arvin-Edison Water Storage District
- Wheeler Ridge-Maricopa Water Storage District

3.1.4.3 Kern River

Water discharges to the Kern River are regulated by the CVRWQCB. Storm water discharges that have the potential to affect Kern River water quality are subject to review by the Kern River Water Master and Kern River water users. Kern River water users meet periodically when issues warrant it.

3.1.4.4 Poso Creek

Poso Creek diversions are governed by an agreement between North Kern, Cawelo and Semitropic, who share the runoff from the creek. Under the agreement, riparian users have first right to the water. Once these are satisfied, the water is shared among the three agencies in accordance with the following guidelines based on the flow measured in Poso Creek at Highway 65:

- Cawelo – Less than 135 cfs
- North Kern – Between 135 cfs and 300 cfs and greater than 685 cfs
- Semitropic – Between 300 cfs and 685 cfs

Total dissolved solids (TDS) concentrations in Poso Creek are typically higher than the Kern River, but less than SWP water. Discharges to Poso Creek are regulated by the CVRWQCB.

3.1.4.5 Cross Valley Canal

The Cross Valley Canal (CVC) is operated by the KCWA for the agencies that hold Cross Valley contracts for water from the Delta through the USBR and for other agencies that own CVC capacity (which is used to move water across the valley). The Cross Valley Canal Advisory Committee (CVCAC) represents those agencies.

Formal water quality guidelines for the CVC have not been developed, however, during the environmental review process, storm water projects that have the potential to alter the water quality of the CVC would be subject to the review and approval of the KCWA and the CVCAC.

3.2 Proposed Modification(s) of an Existing Stream Bed or Channel

Projects within the Plan that include substantial change or use of any material from a river, stream, or lake should avoid and minimize erosion, sediment transport, and hydromodification, and fully mitigate environmental impacts resulting from the project as required by Clean Water Act sections 401 and 404 and any other federal and state laws, regulations and permits. If a stream bed modification is identified in the project, a complete notification package and fee must be submitted to the California Department of Fish and Wildlife (CDFW) regional office that serves the county where the activity will take place.

The CDFW Code section 1602 requires an entity to notify CDFW prior to commencing any activity that may do one or more of the following:

- Substantially divert or obstruct the natural flow of any river, stream or lake.
- Substantially change or use any material from the bed, channel or bank of any river, stream, or lake.
- Deposit debris, waste or other materials that could pass into any river, stream or lake.

"Any river, stream or lake" includes those that are episodic (dry for periods of time) as well as those that are perennial (flow year round). This includes ephemeral streams, desert washes, and watercourses with a subsurface flow. It may also apply to work undertaken within the flood plain of a body of water.

3.3 Monitoring Plan Requirements

3.3.1 Data Collection

Statistically meaningful data will be collected from projects implemented in accordance with this Plan when relevant. The frequency and method of sampling and data collection will be dependent upon the nature of the project, but will be reviewed to ensure that the Project meets local, state and federal requirements. Monitoring and reporting efforts associated with this plan will not duplicate monitoring efforts undertaken by other agencies. Data will be integrated with other datasets and will be updated annually.

Data collection and analysis can help to quickly identify data gaps, assess project and program performance, support statewide data needs, and integrate datasets with other regional and statewide programs. Within the plan boundary, there are a several entities collecting and maintaining data on the Region's water and environmental resources.

KCWA collects data on groundwater and surface water supplies and water quality. Since its formation in 1961, KCWA, or through other water districts, has collected information on the water supply and demand characteristics of the San Joaquin Valley portion of Kern County. Since 1977, the Agency has published it annual Water Supply Report to present these statistics in one document and to assist water leaders and users in making water management decisions.

The Kern River interests are valley floor entities with Kern River rights; they include: Buena Vista Water Storage District (WSD), Kern Delta Water District, North Kern WSD, City of Bakersfield and KCWA. More specifically, North Kern WSD, Kern Delta WSD, and the City of Bakersfield have rights below the "first point of measurement," Buena Vista WSD has "second point of measurement" rights and the KCWA has lower river (a.k.a. high flow) rights. The Kern River Interests collectively have hired a Watermaster to maintain records for the first point of measurement. Buena Vista WSD also is responsible for the collection and maintenance of second point records.

The Kern Fan Monitoring Committee (KFMC) was established through various MOUs among the Kern Fan area entities. The members of the Committee include both banking project participants and adjoining entities (those entities whose lands and/or banking projects are adjacent to the banking projects). The KFMC is responsible for collecting data from participants/adjoining entities and reporting that data in the KMFC's "Kern Fan Area Operations and Monitoring Report." Other activities/authorities of the committee include: hiring technical consultants, determining the need for/placement of additional monitoring sites and dispute resolution. Data that is collected and published in the Operations and Monitoring Report includes groundwater levels, groundwater elevation and water quality sampling results. Entities involved in banking programs such as the Kern Water Bank collect annual statistical data in accordance with the MOUs, and in some cases groundwater management plans of local agencies prepared under Assembly Bill (AB) 3030 (the Groundwater Management Planning Act, and other groundwater law provisions).

Each of the agencies and agency groups are collecting data that is important to the Region, have methods for data collection that are similar, and thus have opportunities for streamlining or maximizing efficiencies for creating region-wide datasets and databanks. Data is vitally important to agencies trying to maximize operating efficiency and design projects with limited budgets. The types of data available, current relevance and trends, and knowledgeable people that can interpret the data are all important. Monitoring associated with Plan implementation is an opportunity for state agencies to obtain data for their own monitoring needs and to better understand local conditions. Creation of data management tools that recognize similarities in methodology, the repetitiveness in data harnessing, and inefficiencies in data reporting are additional strategies that can be implemented in order to streamline efforts on not just a local, but a region-wide scale as well. The ongoing data collection and management efforts for the Plan will establish a means to collect and maintain the data. Additionally, data gaps will be reviewed and discussed with member agencies to determine an appropriate method for rectifying the gaps.

3.3.2 Integration into Existing Monitoring Efforts

Data collected as part of this Plan can be used to support existing state programs such as the Surface Water Ambient Monitoring Program (SWAMP), the Groundwater Ambient Monitoring and Assessment (GAMA), and the California Environmental Resources Evaluation System (CERES), as well as water use efficiency and demand reduction data collected by the SWRCB through the California Urban Water Conservation Council (CUWCC) and Ag Water Management Council (AWMC). A brief description of each program is listed below:

- **Surface Water Ambient Monitoring Program (SWAMP) –** All the surface water data collected as part of projects implemented through grant funding will be consistent with

SWAMP database compatibility guidelines, and will be exported annually to the state database using the required data submission formats.

- **Groundwater Ambient Monitoring and Assessment (GAMA) –** As required by grant programs that implement Kern SWRP projects, groundwater data collection efforts will be coordinated with the needs of the GAMA program and will be consistent with database specifications so that the data can be easily submitted, shared, and integrated into the GAMA database. Field sampling efforts will be coordinated with the GAMA program to eliminate duplicative data collection efforts and fill data gaps.
- **California Environmental Resources Evaluation System (CERES) –** As required by a grant programs that implement Kern SWRP projects, data and reports will be sent to CERES so that information will be available and useful to a wide variety of users.
- **California Statewide Groundwater Elevation Monitoring (CASGEM) –** On November 4, 2009 the State Legislature enacted SBX7-6, which mandates a permanent statewide, locally-managed groundwater elevation monitoring program for California's groundwater basins and sub-basins identified in DWR Bulletin 118. To achieve that goal, the new law directs that groundwater elevations be regularly and systematically monitored, and groundwater elevation data collected under collaboration between local monitoring entities and DWR. The primary objective of the CASGEM monitoring program is to define the seasonal and long-term trends in groundwater elevations in California's groundwater basins. The scale for this evaluation should be the static regional groundwater table or potentiometric surface. A secondary objective is to provide sufficient data to draw representative contour maps of the elevations. These maps could be used to estimate changes in groundwater storage and to evaluate potential areas of overdraft and subsidence.

3.3.3 Multiple Separate Storm Sewer System (MS4) Projects

The Municipal Storm Water Permitting Program regulates storm water discharges from municipal separate storm sewer systems (MS4). Storm water is runoff from rain or snow melt that runs off surfaces such as rooftops, paved streets, highways or parking lots and can carry with it pollutants such as: oil, pesticides, herbicides, sediment, trash, bacteria and metals. The runoff can then drain directly into a local stream, or other water body. Often, in the Kern Region, the runoff drains into storm drains which eventually drain untreated into local storm water retention basins.

Additionally, municipal or urban areas commonly include large impervious surfaces which contribute to an increase in runoff flow, velocity and volume. As a result streams are hydrologically impacted through streambed and channel scouring, instream sedimentation and loss of aquatic and riparian habitat. In addition to hydrological impacts, large impervious surfaces contribute to greater pollutant loading, resulting in turbid water, nutrient enrichment, bacterial contamination, and increased temperature and trash.

MS4 permits were issued in two phases.

Under Phase I, which started in 1990, the Regional Water Quality Control Boards adopted National Pollutant Discharge Elimination System General Permit for storm water permits for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 people) municipalities.

Most of these permits are issued to a group of co-permittees encompassing an entire metropolitan area. These permits are reissued as the permits expire. The Phase I MS4 permits require the discharger to develop and implement a Storm Water Management Plan/Program with the goal of reducing the discharge of pollutants to the maximum extent practicable (MEP). MEP is the performance standard specified in Section 402(p) of the Clean Water Act. The management programs specify what BMPs will be used to address certain program areas. The program areas include public education and outreach; illicit discharge detection and elimination; construction and post-construction; and good housekeeping for municipal operations. In general, medium and large municipalities are required to conduct monitoring.

On April 30, 2003, as part of Phase II, the State Water Resources Control Board issued a General Permit for the Discharge of Storm Water from Small MS4s (WQ Order No. 2003-0005-DWQ) to provide permit coverage for smaller municipalities (population less than 100,000), including non-traditional Small MS4s, which are facilities such as military bases, public campuses, prison and hospital complexes. The Phase II Small MS4 General Permit covers Phase II Permittees statewide. On February 5, 2013 the Phase II Small MS4 General Permit was adopted and became effective on July 1, 2013.

Within the SWRP boundary there is one Phase I permittee; the City of Bakersfield and Kern County have a joint cooperative permit. **Table 3-1** below lists the Phase II Traditional and Non-Traditional permittees.

Table 3-1. Phase II Traditional and Non-Traditional Permittes

Phase II Traditional and Non-Traditional Permittees	
Traditional Permittees	Non-Traditional Permittees
City of Delano	CSU Bakersfield
City of Ridgecrest	Kern County Fairgrounds
City of Tehachapi	
City of Wasco	

Monitoring programs are specific to each MS4 program, however the Phase II permittees are bound by prescriptive requirements within Water Quality (WQ) Order No. 2003-0005-DWQ. Water quality data is stored at the state level through various reporting program requirements such as CASGEM, Urban Water Management Planning Act, Sustainable Water Use and Demand Reduction requirements, and other monitoring/reporting included in **Section 3.3.2**.

4 Organization, Coordination and Collaboration

4.1 Introduction and Overview

This section identifies the local agencies and nongovernmental agencies that have been consulted in the development of this Storm Water Resource Plan, as well as those who will be included in the implementation of the Plan, and describes the process of communication. Key stakeholders include members of the Kern and Poso Creek Integrated Regional Water Management Plan groups, many of whom have a long-standing history of coordination and collaboration regarding Kern County water resources.

During Plan development, the primary focus of these agencies was to make certain that local, regional, and watershed-wide obstacles are addressed in order to maximize benefits and ultimately enhance water conservation efforts within the Kern Region. In addition, the relationship between storm water resource projects noted in this Plan, and other IRWMPs and planning documents, and their affects on disadvantaged communities (DAC) are discussed.

4.2 Regional Water Management Groups Implementing Existing IRWM Plans

The Kern SWRP benefits the entities of the Kern and Poso Creek IRWM Regional Water Management Groups, and their existing IRWMPs. IRWMP boundaries are defined on the IRWMP Boundary Map (**Figure 1**).

4.2.1 Overview of Kern IRWMP

The Kern Regional Water Management Group was established in October 2008, and represents the Tulare Lake Basin portion of Kern County. The group is a collaboration of water suppliers, community and government representatives, environmental groups, businesses, and other interested parties. The IRWMP seeks to preserve the economic and environmental health of Kern County communities through comprehensive and efficient management of its water resources. Members of the Kern RWMG are listed in **Table 4-1**.

4.2.2 Overview of Poso Creek IRWMP

The Poso Creek Regional Water Management Group formed in 2005, and consists of a group of individual water management districts and agencies in the northern Kern County and southern portion of Tulare County. The Poso Creek IRWMP was originally written and adopted in 2007 to provide the framework for coordinating groundwater and surface water management activities through regional objectives, and for implementing the measures necessary to meet those objectives. The IRWMP was updated in 2014 to reflect the IRWM Group's expanded planning efforts to

address Department of Water Resources' Proposition 84 guidelines. Members of the Poso Creek RWMG are listed in **Table 4-1**.

4.3 Stakeholder Agencies that Participated in Plan Development

4.3.1 Stakeholder Agencies

The stakeholder agencies that were invited to participate in the development of the Storm Water Resource Plan include members of the Kern IRWM and Poso Creek IRWM Regional Water Management Groups (RWMG). These agencies and organizations were given an opportunity to participate and exercise their authorities and mandates in order to address the SWRCB's storm water and dry weather management objectives which are required for the Plan. These stakeholders are listed in **Table 4-1**:

Table 4-1. Stakeholder Agencies and Organizations

Stakeholder Agencies and Organizations	
Kern IRWM	
Arvin Community Services District	Kern Delta Water District
Arvin-Edison Water Storage District	Kern Water Bank Authority
Bear Valley Community Services District	Lamont Public Utility District
Belridge Water Storage District	Lamont Stormwater Utility District
Berrenda Mesa Water District	Lebec County Water District
Buena Vista Water Storage District*	Long Canyon Water Company
Buttonwillow County Water District	Lost Hills Utility District*
California Water Service (Bakersfield, Lake Isabella)	Lost Hills Water District*
Canyon Meadows Mutual Water Company	Mettler County Water District
Casa Loma Water Company	Mountain Mesa Water Company
City of Arvin	North of the River Municipal Water District
City of Bakersfield (Water Resources)	North West Kern Resource Conservation District*
City of Delano*	Oildale Mutual Water Company
City of Maricopa	Olcese Water District
City of McFarland*	Rainbird Valley Mutual Utility Company
City of Shafter*	Rosedale-Rio Bravo Water Storage District*
City of Taft	South San Joaquin Municipal Utility District*
City of Tehachapi	Southern California Edison
City of Wasco*	Stallion Springs Community Services District
County of Kern – Resource Management Agency*	Tehachapi-Cummings County Water District
Desert Mountain Resource Conservation and Development Council	Tehachapi Resource Conservation District
Dudley Ridge Water District	Tejon-Castac Water District
East Niles Community Services District	Tubatulabals of Kern Valley
Frazier Park Public Utility District	Tulare Basin Wildlife Partners
Golden Hills Community Services District	Valley Estates Property Owners Association

Stakeholder Agencies and Organizations	
Greenfield County Water District	Vaughn Water Company
Henry Miller Water District	West Kern Water District
Improvement District No. 4	Westside Mutual Water Company
Kern County Water Agency*	Wheeler Ridge-Maricopa Water Storage District
Poso Creek IRWM	
Bishop Acres Mutual Water Company	Friant Water Users Authority
Buena Vista Water Storage District*	Kern County Water Agency*
Cawelo Water District	Kern National Wildlife Improvement District
City of Buttonwillow	Kern-Tulare Water District
City of Delano*	Lost Hills Utility District*
City of McFarland*	Lost Hills Water District*
City of Shafter*	Maple Elementary School
City of Wasco*	Pond Union School District
Community of Allensworth	North Kern Water Storage District
Community of Blackwells Corner	North West Kern Resource Conservation District*
Community of Earlimart	Rodriguez Farm Labor Camp
Community of Lost Hills	Rosedale-Rio Bravo Water Storage District*
Community of Madonna	Semitropic Water Storage District
Community of North Shafter	Semitropic Wildlife Improvement District
Community of Pond	Shafter-Wasco Irrigation District
Community of South Shafter (Smith's Corner, Thomas Lane, Cherokee Strip, Burbank, Mexican Colony, Southwest Shafter)	Southern San Joaquin Municipal Utility District
County of Kern*	Tulare Basin Wildlife Partners*
Delano-Earlimart Irrigation District*	

*Participant in both Kern and Poso Creek IRWM Groups

Of the key stakeholders listed in **Table 4-1**, the following agencies attended the public stakeholder meetings and/or submitted projects to be included in the Plan:

- Arvin-Edison Water Storage District
- Buena Vista Water Storage District
- County of Kern
- Delano-Earlimart Irrigation District
- Kern IRWM Group
- Lamont Storm Water District
- North Kern Water Storage District
- Poso Creek RWMG (Facilitator: GEI Consultants; Chairman: Dana Munn)

- Regional Water Quality Control Board
- Rosedale Rio Bravo Water Storage District
- Semitropic Water Storage District
- Shafter-Wasco Irrigation District

4.4 Nonprofit Organizations

Nonprofit organizations that are resources for water resource planning and/or management in the watershed include Self-Help Enterprises (www.selfhelpenterprises.org) and Community Water Center (www.communitywatercenter.org). As discussed in Section 15.3 of the Kern IWRMP, both groups work with DACs in the San Joaquin Valley, and are actively involved in water issues.

- **Self-Help Enterprises –** Self-Help Enterprises is a nationally recognized community organization with a mission to work with low-income families to build and sustain healthy homes and communities. Self-Help is currently working with DACs throughout the San Joaquin Valley, including Kern County, to develop water projects. The organization works with these communities to seek funding and provide technical assistance to communities with contaminated water sources who are working towards community-wide solutions that will result in a permanent source of clean drinking water. Because of their work with DACs, Self-Help can be an asset to engage during the public participation phase of projects.
- **Community Water Center –** The Community Water Center advocates for policies and practices at the state and regional level to prevent contamination of drinking water supplies of communities throughout the San Joaquin Valley. Because of their dedicated work for remediation for drinking water contamination and overall groundwater protection, their advocates may want to be involved in the implementation phase of the Plan, as projects (specifically the projects that will impact DACs) move into the planning and public participation phases.

Additional nonprofit organizations may be identified as more detailed stakeholder lists are put together for each specific project listed in this Plan.

4.5 Public Engagement/Communication Plan and Coordination

4.5.1 Overview of Public Engagement/Communication Plan

Guidelines and implementation processes for education, outreach and public participation opportunities associated with the Kern Storm Water Resource Plan have been established. Through the initial phases of Plan development, key stakeholders were included when considering major technical and policy issues related to the development and implementation of the Plan, such as what the ultimate purpose was in the development of the SWRP and plan components, who was going to be involved in the development, how projects would be solicited from stakeholders, gathered and included in the Plan, and development of the process for updates and the addition of projects in the future. The goal was to encourage public participation in projects benefitting stakeholders and promote the resource goals of the Plan.

Following the adoption of the Plan, the goal of future education, outreach and public participation efforts will be to engage the public, specifically community members who will be affected by project design and implementation, and engage disadvantaged and climate vulnerable communities within the plan boundaries. Project proponents will be encouraged to engage the public during the planning, design and construction phases of their projects.

Communication efforts for development and implementation phases of the Plan will be conducted through a variety of outreach methods including: educational public meetings and workshops; development and distribution of educational materials; utilization of media outlets and agency websites; and direct community outreach.

4.5.2 Public Meetings during Plan Development

4.5.2.1 Public Meeting No. 1 – May 31, 2016

Agencies, non-governmental organizations (NGOs), and other stakeholders included in the Kern and Poso Creek IRWMPs were invited to participate in an initial public meeting, held on May 31, 2016 at the Shafter-Wasco Irrigation District. Representatives of these agencies and other entities were invited to attend via an email "blast", which included a link to a RSVP form set up to via Google Forms to gather information from those who would be attending. The email blast was sent to the email lists developed over the years by both IRWM Groups, which include federal and state agencies, local water agencies, cities and communities (including DACs), special districts, NGOs, political leaders, agricultural community representatives, community activists, etc.

Priority items covered on the agenda for the first public meeting consisted of:

- **Background –** Discussion included explaining that recognition of storm water as a resource, emphasizing multiple-benefit projects, the requirement of public agencies to develop a SWRP prior to receiving grant funding for storm water-related projects.
- **Purpose and Need for a Storm Water Resource Plan –** The traditional approach to storm water management vs. a watershed-based approach was explained. The traditional approach focuses on implementation of management practices, and is limited to treatment prior to conveyance off-site and ultimately into surface waters, and does not fully address the water quality impacts from storm water discharges. There is also limited consideration of multiple benefits such as water supply augmentation and ecological enhancement with a traditional approach.

  A watershed-based approach replicates natural hydrology and watershed processes by managing storm water and dry weather run-off onsite or within the watershed where rainfall occurs, and yields multiple water quality benefits by reducing the volume of run-off delivered to receiving waters, thus reducing the pollutants discharged. In addition, it yields non-measurable social and community benefits that the traditional approach does not provide. Watershed-based approach projects are eligible to receive state grant funding through Proposition 1.
- **Storm Water Resource Plan Requirements –** A SWRP must be developed on a watershed-basis; prioritize use of public lands; provide multiple benefits for project design; quantitatively prioritize projects; provide for community participation; and not jeopardize

water quality. In addition, the Plan may build off of existing documents but does not need to be consistent with local IRWMPs, and must be submitted to the local IRWMPs for incorporation.

- **Kern Storm Water Resource Plan Components –** The presentation reviewed the components of a SWRP, which will include a description and scale of a watershed to be covered by the Plan; coordination and collaboration during plan development; benefit metrics to be used to identify and prioritize projects; general guidance on metrics-based analysis of project performance proposed to fulfill watershed needs; data collection and management; prioritization of projects to proceed to implementation; and adaptive management, plan implementation and public participation during implementation.
- **Project Submittal Form Review –** Forms were provided via hard copy and by email to agencies in the Kern and Poso Creek IRWMPs and were due by June 24. The agencies submitted the 12 Project Submittal Forms, which are included in **Appendix B: Project Submittal Forms**. The forms are necessary to gain information for projects submitted to be included in the Plan and consisted of the following sections:
  - Part 1. Lead Implementing Agency/Organizational Information
  - Part 2. Project Need (necessary to understand the need/issue that the proposed project will address and the benefits it will provide.
  - Part 3. Project Description
  - Part 4. Project Benefits (Water Quality, Water Supply, Flood Management, Environmental and Habitat Enhancement, Community Stewardship)
- **Public Meeting Scope and Tentative Date –** The next public meeting will be held in the Fall to review the draft Kern SWRP, receive comments from stakeholders and the public, and answer any questions.
- **Questions & General Discussion –** Comments and discussion focused on eligibility for state funding; definition of a DAC; Plan boundaries including location and methodology for defining the boundaries; cost of developing the Plan; process for soliciting feedback on the Plan; and further clarification on completing the Project Submittal Form.

Following the meeting, a summary of the meeting discussion notes, a PDF copy of the Power Point presentation, and the Project Submittal Form was sent via email to all of the key stakeholders of the Kern and Poso Creek IRWMPs.

4.5.2.2 Public Meeting No. 2 – November 9, 2016

A second public meeting was held on November 9, 2016 at the Buena Vista Water Storage District in Buttonwillow, California. Representatives of agencies within the Kern and Poso Creek IRWMPs were invited to participate using the same meeting notification process described in Section 4.5.2.1 for the first public meeting held in May. The main purpose of the second public meeting was to review and discuss the draft Kern SWRP, which was distributed for a three-week public review by email on October 21, 2016 and posted on www.kernirwmp.com.

The meeting consisted of an overview of each SWRP section and corresponding discussion amongst stakeholders regarding additions and/or revisions to the draft Kern SWRP before finalizing and publishing.

Following the specific discussion regarding the draft SWRP, the "next steps" were discussed, including addressing comments received during the public review period and publishing the report, the report adoption process (further discussed in **Section 6**), a self-certification checklist process (included in **Section 8** of this Plan), and developing a process for future updates to the Kern SWRP and addition of projects (discussed in **Section 5.6**).

4.6 Local, State, Federal Decisions, Code Changes or Legislations Needed for Plan Implementation

Generally, projects that have significant impacts on storm water resources within regions require decisions to be made by local, state or federal regulatory agencies in order for SWRP and project implementation to be successful. Coordination between local agencies will be essential for watershed-based regional monitoring and will be addressed through the collaboration of the Kern and Poso Creek IRWMP agencies, as needed. In addition, some interaction with local, state and federal agencies may be required for permitting and environmental processes.

4.6.1 Local, State and Federal Decisions, Code Changes or Legislations

Board actions, code changes or legislation needed for specific potential projects discussed in this Plan are detailed in **Table 4-2**. As a summary, the projects may be implemented through specific agency/district board approval; however grant funding will need to be acquired for some of the projects. No specific code changes or legislation will be required on local, state or federal levels for Plan or project implementation.

Table 4-2. Board Actions, Code Changes, or Legislation Required for SWRP Projects

Board Actions, Code Changes, or Legislation Required for SWRP Projects		
Potential Project	Implementing Agency/Organization	Board Actions, Code Changes, or Legislation
101. Schuster Spreading Grounds	Semitropic Water Storage District	May be implemented by Board approval
102. Pond-Poso Spreading Grounds, Phase 2	Semitropic Water Storage District	May be implemented by Board approval
103. Stored Water Recovery Unit, Element of the Semitropic Groundwater Bank	Semitropic Water Storage District	Board authorization needed to fund project
104. Entrance Ponds to the Pond Poso Spreading Grounds	Semitropic Water Storage District	May be implemented by Board approval
105. Caliente Creek Habitat Restoration and Groundwater Recharge Projects (Design & Construction)	County of Kern – Public Works Department	State approval needed for grant funding; local approval needed for project to proceed, as well as local financial participation
106. Cuddy Creek Restoration Project	County of Kern – Public Works Department	State approval need for grant funding; local approval needed for project to proceed, as well as local financial participation
107. Sandy Creek Bank and Erosion Protection Project	County of Kern – Public Works Department	None
108. The Palms Storm Water Recharge and Recovery Project	Buena Vista Water Storage District	None
109. Stockdale East Groundwater Recharge Project	Rosedale-Rio Bravo Water Storage District	May be implemented by Board approval
110. Western Rosedale In-Lieu Service Area Project	Rosedale-Rio Bravo Water Storage District	May be implemented by Board approval
111. James Groundwater Storage and Recovery Project	Rosedale-Rio Bravo Water Storage District	May be implemented by Board approval from District and partnering agency, Buena Vista Water Storage District's Board
112. Shafter-Wasco Irrigation District Recharge Project	Shafter-Wasco Irrigation District	May be implemented by Board approval

4.6.2 Federal, State or Local Agency Interaction for Permitting and Environmental Processes

As projects within the Plan are implemented, there will be interaction required with federal, state and local agencies for permitting and environmental documentation processes and approvals. Permits and environmental documents may need to be obtained, depending on the project location, or amended (if these documents or permits already exist). Permits and documentation may consist of:

- **Permits –** Storm Water Pollution Prevention Plans (SWPPP); encroachments; local grading permits; Streambed Alteration Agreements; Section 401 and 404 Permits
- **Environmental Documents –** CEQA and/or National Environmental Protection Act (NEPA) documentation; Indirect Source Reviews (ISR); Dust Control Plans (DCP)

4.6.2.1 State and Federal Agencies

As described in **Section 4.6.2**, coordination with state and federal agencies will be necessary for implementation of the Plan and listed projects. These agencies will be contacted in order to fulfill

permitting and environmental documentation requirements, and will be included in project communications including public participation strategies, if necessary. These agencies include:

- **State Water Resources Control Board/Regional Water Quality Control Board** – The SWRCB and the CVRWQCB (District 5 is responsible for the Kern Watershed boundaries) are responsible for working in coordination with each other to preserve, protect, enhance and restore water quality within the state. The SWRCB administers the Proposition 1 Storm Water Grant Program (SWGP), which funds multi-benefit storm water management projects that improve regional water-reliance, security, and adapt to the effects on water supply through climate change. The connected agencies oversee permitting processes for storm water such as the SWPPP, and 401 permits (a permit that protects water quality), and will be involved in projects that are implemented from this Plan.
- **California Department of Water Resources (DWR) –** The DWR is the state agency responsible for overseeing the IRWM programs statewide, which includes administering the Proposition 1 IRWM Grant Program, which provides funding for projects that help meet the long term water resource needs within IRWM Regions. Kern and Poso Creek IRWM agencies/districts may need to work with the DWR to obtain grant monies to fund projects listed in the Kern SWRP. Criteria for obtaining Proposition 1 grant funds include: assisting water infrastructure systems to mitigate impacts from climate change; providing incentives throughout each watershed to collaborate in managing a region's water resources and setting regional priorities for water infrastructure; and improving regional water self-reliance, while reducing reliance on Sacramento-San Joaquin Delta. In addition, the DWR is responsible for overseeing the enhancement of water resources within DACs.
- **California Department of Fish & Wildlife (CDFW) –** The CDFW is responsible for permitting programs that fulfill their mission to manage California's diverse fish, wildlife, and plant resources, and their habitats. These permitting and environmental documentation programs include the California Endangered Species Act (CESA) program, CEQA program, and the Lake and Streambed Alteration Program. Any projects that affect endangered species or the overall environment, coordination with the CDFW will be required.
- **Federal Emergency Management Agency (FEMA) –** FEMA is a federal agency that works throughout the country to build, sustain and improve hazards that affect communities. Specifically for projects within the SWRP boundaries, FEMA may need to be involved with projects that will consist of flood management.
- **U.S. Army Corps of Engineers (USACE) –** USACE's principle focus is environmental sustainability, with the goal to deliver essential water resource solutions throughout the nation. Their programs focus on flood risk management, ecosystem restoration and infrastructure, recreation and natural resource management, hydropower, wetlands and waterways regulatory, and water supply. Any SWRP projects that may result in discharge of dredge and fill material to a body of water will likely need to coordinate with the USACE to obtain the necessary permits under Section 404 of the Clean Water act.
- **U.S. Fish & Wildlife Service (USFWS) –** The USFWS is responsible for permits that provide a means to balance use and conservation of protected species, and use permits as a conservation tool to promote long-term protection of animals, plants, and their habitats. For SWRP projects that will affect the habitats of native endangered and threatened species

(as identified under the Endangered Species Act) or Migratory Bird, then coordination with the USFWS will be required.

4.7 Planning and Coordination among Existing Local Government Agencies for Plan Implementation

Planning and coordination with existing local governmental agencies has been part of the development phase of the Plan, and will continue through the implementation phase. For the success of these projects, some may require collaboration between local agencies as projects affect potential banking partners, neighboring water districts, cities, and DACs (cities and communities within Kern County are shown in **Figure 8**). In addition, local government agencies that will most likely be involved in project implementation include:

- **County of Kern –**As the projects included in this Plan begin to move into the implementation phase, County coordination may be required for encroachment, local grading, and other local permits, depending on the specific project's location and district boundaries. It should be noted that the County of Kern was represented at the initial public meeting held in May 2016, and the agency submitted three projects for inclusion in the SWRP.
- **San Joaquin Valley Air Pollution Control District (Air District) –** The Air District oversees the improvements to the health and quality of life for San Joaquin Valley residents through air quality improvement programs. For any projects that require air quality permits including those affecting Greenhouse Gas Emissions, as well as ISRs and DCPs, as identified in project-specific environmental documents, cooperation with the Air District will be necessary.

4.8 Relationship of Plan with Other Existing Planning Documents

4.8.1 Projects within the Kern Region & Relationship with Existing IRWMP Documents

Agencies within the Kern Region completed Project Submittal Forms detailing future projects that meet the requirements to the Storm Water Resource Plan Guidelines established by the SWRCB on December 15, 2015. All of the projects submitted for inclusion in the Plan were also listed in either the Kern IRWMP or the Poso Creek IRWMP, and are listed in **Table 4-3**. Because these projects are listed in the Plan and one of the other adopted IRWMPs, public outreach/participation efforts will be coordinated for consistency and efficiency for compliance with both IRWMP and SWRP requirements.

Table 4-3. Storm Water Resource Projects

Storm Water Resource Projects			
Implementing Agency/Organization	Possible Partnering Agencies	Project	Other Plans Project is Included In
Semitropic Water Storage District	N/A	Schuster Spreading Grounds	Poso Creek IRWMP
Semitropic Water Storage District	N/A	Pond-Poso Spreading Grounds, Phase 2	Poso Creek IRWMP
Semitropic Water Storage District	N/A	Stored Water Recovery Unit, Element of the Semitropic Groundwater Bank	Poso Creek IRWMP
Semitropic Water Storage District	N/A	Entrance Ponds to the Pond Poso Spreading Grounds	Poso Creek IRWMP
County of Kern – Public Works Department	Arvin-Edison Water Storage District, Lamont Stormwater Utility District	Caliente Creek Habitat Restoration and Groundwater Recharge Projects (Design & Construction)	Kern IRWMP
County of Kern – Public Works Department	N/A	Cuddy Creek Restoration Project	Kern IRWMP
County of Kern – Public Works Department	City of Taft	Sand Creek Bank and Erosion Protection Project	Kern IRWMP
Buena Vista Water Storage District	West Kern Water Storage District, Rosedale-Rio Bravo Water Storage District, potentially other Kern IRWMP districts	The Palms Storm Water Recharge and Recovery Project	Kern IRWMP
Rosedale-Rio Bravo Water Storage District	N/A	Stockdale East Groundwater Recharge Project	Kern IRWMP
Rosedale-Rio Bravo Water Storage District	N/A	Western Rosedale In-Lieu Service Area Project	Kern IRWMP
Rosedale-Rio Bravo Water Storage District	Buena Vista Water Storage District	James Groundwater Storage and Recovery Project	Kern IRWMP
Shafter-Wasco Irrigation District	Buena Vista Water Storage District	Shafter-Wasco Irrigation District Recharge Project	Poso Creek IRMWP

4.8.2 DAC Studies within Kern Region

There are several disadvantaged communities within the Kern Region (**Table 4-4** and **Figure 9**). Of the 12 projects submitted, three are located within and/or adjacent to a DAC, and will require public participation efforts in those communities once the Plan has been adopted and the projects begin to come to fruition. The process for the public participation efforts is detailed in **Section 7**. The impact of the submitted projects on the DACs within the Plan boundaries is outlined in **Table 4-4**.

Table 4-4. Disadvantaged Communities within the SWRP Boundary

Disadvantaged Communities within the SWRP Boundary		
Community	Population	Households
City of Arvin	20,028	4,595
City of Tehachapi	13,818	3,269
City of Delano	52,883	10,549
City of McFarland	12,784	2,817
City of Maricopa	1,158	395
City of Shafter (including Bishop Acres, Madonna, Maple Elementary School, Thomas Lane, Burbank)	17,261	4,434
City of Wasco	25,865	5,264
Blackwell's Corner		
Bodfish	1,961	1,043
Buttonwillow	1,371	378
Cherokee Strip (South Shafter)	295	68
Derby Acres	324	145
Dustin Acres	295	128
Earlimart	8,310	1,903
Edmundson Acres	274	54
Ford City	4,154	1,323
Frazier Park	2,730	958
Fuller Acres	924	262
Lake Isabella	3,093	1,417
Lake of the Woods	539	292
Lamont	16,359	3,606
Lost Hills	2,194	452
McKittrick	112	38
Mettler	88	31
Mexican Colony (South Shafter)	216	63
Mountain Mesa	454	156
Oildale	33,879	12,308
Onyx	599	217
Pine Mountain Club	1,890	825
Richgrove	3,006	628
Rodriguez Farm Labor Camp	192	39
Smith's Corner (South Shafter)	661	137
South Taft	1,680	471
Squirrel Mountain Valley	372	180
Tupman	176	45
Valley Acres	717	227
Weedpatch	2,170	583
Weldon	2,604	1,236
Wofford Heights	2,043	992

Table 4-5. DAC Involvement

DAC Involvement				
Implementing Agency/Organization	Potential Project	Project Located within or adjacent to a DAC?	Requires DAC Participation?	DACs Involved
Semitropic Water Storage District	Schuster Spreading Grounds	No	No	N/A
Semitropic Water Storage District	Pond-Poso Spreading Grounds, Phase 2	No	No	N/A
Semitropic Water Storage District	Stored Water Recovery Unit, Element of the Semitropic Groundwater Bank	No	No	N/A
Semitropic Water Storage District	Entrance Ponds to the Pond Poso Spreading Grounds	No	No	N/A
County of Kern – Public Works Department	Caliente Creek Habitat Restoration and Groundwater Recharge Projects (Design & Construction)	Adjacent	Yes	City of Arvin and Community of Lamont; Lamont Storm Water District
County of Kern – Public Works Department	Cuddy Creek Restoration Project	Within, Adjacent	Yes	Frazier Park
County of Kern – Public Works Department	Sand Creek Bank and Erosion Protection Project	Within, Adjacent	Yes	City of Taft, Ford City
Buena Vista Water Storage District	The Palms Storm Water Recharge and Recovery Project	Adjacent		City of Taft, City of Buttonwillow, Community of Tupman
Rosedale-Rio Bravo Water Storage District	Stockdale East Groundwater Recharge Project	No	No	N/A
Rosedale-Rio Bravo Water Storage District	Western Rosedale In-Lieu Service Area Project	No	No	N/A
Rosedale-Rio Bravo Water Storage District	James Groundwater Storage and Recovery Project	No	No	N/A
Shafter-Wasco Irrigation District	Shafter-Wasco Irrigation District Recharge Project	No	No	N/A

4.8.3 Other Existing Planning Documents, Ordinances and Programs

In addition to the Kern IRWMP and Poso Creek IRWMP, a number of plans, studies and grant applications related to storm water and water resource management within the Kern Region have had an impact on the development of this Plan and the storm-water related projects that are part of it. In order to stay consistent with regional goals for the Kern County area, it is important to have these documents as a resource. Other existing planning documents, ordinances and programs that were noted by the implementing agencies/organizations to be associated with projects listed in the SWRP are listed in **Table 4-6**. Other plan/document resources that are not noted in the table include the Kern County General Plan, City of Bakersfield General Plan, City of Delano General Plan, City of Shafter General Plan, City of Taft General Plan, City of Tehachapi General Plan, Greater Tehachapi Area Specific Plan, City of Wasco General Plan, and Kern River Valley Specific Plan.

Table 4-6. Other Existing Planning Documents Associated with Kern SWRP Projects

Other Existing Planning Documents Associated with Kern SWRP Projects		
Implementing Agency/Organization	Potential Project	Other Existing Documents
Semitropic Water Storage District	Schuster Spreading Grounds	None
Semitropic Water Storage District	Pond-Poso Spreading Grounds, Phase 2	• District CEQA Document (IS/ND), 2007 • Federal-Funded ARRA grant for Phase I completion
Semitropic Water Storage District	Stored Water Recovery Unit, Element of the Semitropic Groundwater Bank	• Supplemental and Final Environmental Impact Report
Semitropic Water Storage District	Entrance Ponds to the Pond Poso Spreading Grounds	• 2010 WaterSMART Pond – Poso Retention Ponds Phase II Grant Application • District CEQA Document (IS/ND), 2007
County of Kern – Public Works Department	Caliente Creek Habitat Restoration and Groundwater Recharge Projects (Design & Construction)	• Caliente Resource Management Plan, 1998
County of Kern – Public Works Department	Cuddy Creek Restoration Project	• 2008 Urban Stream Restoration Program, Grant Application (11/12/2008) • Preliminary Design and Feasibility Report by Questa Engineering (November 2003) • Final Design Report by Questa Engineering (April 2004)
County of Kern – Public Works Department	Sand Creek Bank and Erosion Protection Project	• Sandy Creek Flood Control Project, J.H. Hansen Engineering (March 1986 for the Kern County Water Agency) • Sandy Creek Hydrology Study by Meyer Civil Engineering for the City of Taft (September 2, 2005)
Buena Vista Water Storage District	The Palms Storm Water Recharge and Recovery Project	• Initial Study/Mitigated Negative Declaration for Palms Groundwater Banking Project • Geology and Hydrology Review of The Palms Groundwater Recharge and Recovery Project, Robert A. Crewdson, PhD
Rosedale-Rio Bravo Water Storage District	Stockdale East Groundwater Recharge Project	• 2016 WaterSMART Water and Energy Efficiency Grant Application
Rosedale-Rio Bravo Water Storage District	Western Rosedale In-Lieu Service Area Project	• 2016 Agricultural Water Conservation and Efficiency Grants
Rosedale-Rio Bravo Water Storage District	James Groundwater Storage and Recovery Project	• 2015 Draft Environmental Impact Report
Shafter-Wasco Irrigation District	Shafter-Wasco Irrigation District Recharge Project	• Shafter-Wasco Irrigation District Recharge Project Final Initial Study and Mitigated Negative Declaration, February 2015

5 Identification and Prioritization of Projects

5.1 Introduction

One of the main purposes of the Storm Water Resource Plan is to begin the process of developing storm water and dry weather runoff capture projects and to make these projects eligible to receive grant funding from state agencies. SB 985, which amended Water Code section 10560, subdivision (c)(1), requires that for the purpose of obtaining grant funds from any state bond act, such projects must be included in a SWRP. This requirement was passed into law and became effective in January 2014.

The SWRP Guidelines require a list of prioritized projects, ratified by the IRWMP groups, to be included with the Plan. The projects must be ranked based on their ability to deliver Main and Additional Benefits to the Plan area. The guidelines do not delineate a methodology to be used for ranking the projects, but state that a system of quantitative, score-able metrics must be used to evaluate the proposed projects. The intent is to characterize and rank projects, develop a list of prioritized projects based on the ranking, and include the list within the Plan. The Plan will be reviewed and approved by stakeholders within the Kern IRWMP and Poso Creek IRWMP. Stakeholders in both IRWMP groups contributed a total of 12 project proposals. **Section 5** explains the methodology used to characterize, rank, and prioritize the projects and presents the prioritized list based on the scoring metrics.

5.2 Project Submittal Form – Purpose and Use

Appendix B: Project Submittal Forms is comprised of the Project Submittal Forms (PSFs) submitted by stakeholders for inclusion in the Plan. The PSF is not a grant application, but serves as a means of communicating conceptual projects which fit in with the Plan's resource goals. The PSF template was developed following guidance stated in the guidelines, conforming to the SWRP Guidelines' checklist on pages A-1 through A-10. The PSFs were set up to be readily score-able to allow comparing, scoring, ranking, and prioritizing projects included with the Plan. The guidelines state that projects submitted for inclusion in the Plan must demonstrate a minimum of two or more Main Benefits and as many Additional Benefits as possible. Main and Additional Benefits are described in **Section 5.4** and are presented in Table 3 on pages 22-23 of the SWRP Guidelines.

The PSF template was reviewed and commented on by IRWMP group participants during the first public meeting and subsequently revised to reflect their input. Representatives from both Poso Creek and Kern IRWMP groups agreed to the revised PSF and subsequently submitted 12 projects for inclusion in the Plan, which are included in **Appendix B: Project Submittal Forms**.

5.3 Project List Unranked – Side-by-Side Comparison of Submitted Projects

Table 5-1 presents a summary of the proposed projects submitted in the PSFs to enable side-by-side comparison of how proposed projects deliver Main and Additional Benefits. It allows the reader to visualize the geographic area covered by all submitted projects, identify areas of overlap, and compare how resource goals are addressed by the two IRWMP groups.

Table 5-1. Summary of Proposed Projects

Summary of Proposed Projects											
Project No. & Sponsor Designator	Type of Project	Project Sponsor	Project Name	Location Description	IRWMP	Latitude/ Longitude	Water Supply Benefits *Metric: Annual yield of supply created (acre-feet)*	Water Quality Benefits *Metric: Pollutant load reduced or Volume treated*	Flood Management Benefits *Metric: Volume or flows impounded or diverted (acre-feet or cfs)*	Environmental and Habitat Enhancement Benefits *Metric: Acres enhanced, flows improved (cfs)*	Community Stewardship Benefits *Metric: Acres made available, number of jobs created, number of people served*
101_SWSD	Conjunctive use/recharged groundwater	Semitropic Water Storage District	Schuster Spreading Grounds	Northwest of the intersection of Shuster Road and Highway 43, about 5.8 miles southwest of Delano, within the west half of Section 24, Township 25 South, Range 24 East, MDB&M.	Poso Creek	35.740073 / -119.340199	Average Year: 577AFY = 332AFY + 245AFY based on removal of crop demand plus delivery of surface supplies to the Shuster SGs similar to the PPSGs at a frequency of 2 wet years out of 10 years Dry year: 245 af/yr Wet year: 1903 af/yr	Enhancement of groundwater quality due to decreased pumping lifts and stabilization of the water table, which reduces the chances of water quality changing due to pumping from zones of less quality; and enhancements to water quality due to the importation of surface water to the District in wet years, which delivers surface water of quality suitable for the beneficial uses within the region.	Up to 224 Ac-ft diverted into detention basin, reducing flood risk to local drainage area of Poso Creek. In the case of Semitropic's Water Bank and direct recharge facility, flood flow is delivered via the CA Aqueduct into the District's conveyance system, or, it is delivered via Poso Creek as diverted CVP-Friant or locally, Poso Creek Stormwater, therefore, the added absorptive capacity of direct recharge enhances the ability to receive flows during wet periods, typically corresponding to times of the year when irrigation demand is low. This Project enhances flood management of the CA Aqueduct in reducing flood risk by allowing diversions into the CA Aqueduct, upstream of the Semitropic turnout.	The Project will provide waterfowl with a place to rest and nest, intermittently, when they have water in the ponds and are being utilized for recharge purposes.	The Project will provide jobs during construction. Once constructed, the facility provides a habitat for various birds and waterfowl that also provides an opportunity for the public to view the birds.
102_SWSD	Conjunctive use/recharged groundwater	Semitropic Water Storage District	Pond-Poso Spreading Grounds, Phase 2	The Project is 7 miles northwest of Wasco, adjacent to, and west and north of the existing Pond-Poso Spreading Grounds, Phase I; south half of Section 8 and west half of Section 17, Township 26 South, Range 24 East, MDB&M.	Poso Creek	35.674436 / -119.411299	While a precise estimate of the annual amount of Stormwater or surface supply that will be delivered for direct recharge is challenging due to uncertainties and variation in annual supply, evaluation of the project's absorptive capacity can be estimated based on the acreage of Phase 2 compared to Phase 1 and the operation of Phase 1 during a recent wet period. A reasonable estimate of the absorptive capacity for the Phase 2 recharge facility is 15,163 acre-feet per wet year since it is the development of 4 quarter sections compared to the existing developed five quarter section area of Phase 1. Phase 1 was able to absorb 18,954 acre-feet of surface supply in 2011, a wet period. [15,163 = (4/5) * 18,954] Additionally, the Project will convert 640 gross acres to ponds, resulting in an annual benefit of 2,240 AF [3.5 AFY per acre], for a total annual benefit of 5,273 AFY [5,273 AFY = 2,240 AFY + 3,033 AFY]. The Project would also: • Improve the reliability of water supply for Semitropic. • Increase operational flexibility for delivery of State Water Project (SWP) water • Increase direct spreading, absorptive capability within Semitropic • Increase local unconfined groundwater quality. • Make use of available groundwater storage. • Contribute to the groundwater basin for use during periods of peak demand or when SWP water is not available.	The Project also has the potential to improve water quality as follows: • Enhancement of groundwater quality due to decreased pumping lifts and stabilization of the water table, which reduces the chances of water quality changing due to pumping from zones of less quality; and • Enhancements to water quality due to the importation of surface water to the District in wet years, which delivers surface water of quality suitable for the beneficial uses within the region. The project Converts 640 acres of farmed land into recharge facility	The Project provides a flood management benefit inasmuch as the water delivered to the direct recharge facility during times of Stormwater management will be diverted and not contribute to increased downstream flows and flood risks. In the case of Semitropic's Water Bank and direct recharge facility, flood flow is delivered via the CA Aqueduct into the District's conveyance system, or, it is delivered via Poso Creek as diverted CVP-Friant or Poso Creek Stormwater, therefore, the added absorptive capacity of direct recharge enhances the ability to receive flows during wet periods, typically corresponding to times of the year when irrigation demand is low. This Project enhances flood management of the CA Aqueduct in reducing flood risk by allowing diversions into the CA Aqueduct, upstream of the Semitropic turnout. Additionally, the Project also provides for a flood management benefit with the ability to divert wet-year water from Poso Creek into the recharge ponds. During flood events on Poso Creek, the recharge ponds could take occurring flood flows, thereby reducing flood damage within the Kern NWR and adjacent valuable agriculture lands. Max increased conveyance capacity 350 cfs. Project has transistory storage capacity of up to 15,163 AF.	The Pond Poso Spreading Grounds has the potential to create seasonal or intermittent shallow open water habitat by providing benefits for upland habitat through the construction of habitat benches, which consist of enlarged earthen benches up to 80-feet wide to support waterfowl with a place to rest and nest, when they have water in the ponds and are being utilized for recharge purposes.	The Project has the potential for providing project benefits to the community as described below. Once constructed, the facility provides a habitat for various birds and waterfowl that also provides an opportunity for the public to view the waterfowl.

Summary of Proposed Projects											
Project No. & Sponsor Designator	Type of Project	Project Sponsor	Project Name	Location Description	IRWMP	Latitude/ Longitude	Water Supply Benefits *Metric: Annual yield of supply created (acre-feet)*	Water Quality Benefits *Metric: Pollutant load reduced or Volume treated*	Flood Management Benefits *Metric: Volume or flows impounded or diverted (acre-feet or cfs)*	Environmental and Habitat Enhancement Benefits *Metric: Acres enhanced, flows improved (cfs)*	Community Stewardship Benefits *Metric: Acres made available, number of jobs created, number of people served*
103_SWSD	Groundwater banking	Semitropic Water Storage District	Stored Water Recovery Unit, Element of the Semitropic Groundwater Bank	Within the northwest area of the SWSD, about 4 miles south of the north Kern County line	Poso Creek	35.679706 / -119.508296	The put and take operation of the current Semitropic Groundwater Bank is limited by the availability of surface supplies, capacity of the existing intake, conveyance, and pump back facilities, and the ability to deliver (absorb) surface water using the lateral distribution and irrigation systems. With the proposed construction of a conveyance pipeline originating at the Pond-Poso Canal, an opportunity is created to significantly enhance the put, which is the absorptive capacity of the Groundwater Bank. This additional capacity, coupled with a balancing reservoir adjacent to the Pond-Poso Canal, could greatly enhance the operational flexibility of the put operation and increase the absorptive capacity of the in-lieu portion of the Bank. Ongoing water supply monitoring and data acquisition is done by the Semitropic Staff and communicated to the neighboring districts through the Semitropic Groundwater Monitoring Committee. The committee acquires and stores hydrology data collected by the District Staff, the Kern County Water Agency, and the DWR's CA Aqueduct operators. Creates up to 12,600 AF of additional annual yield for the SWRU in an average year and 42,000 AF in a wet year.	This project also has the potential to improve water quality as follows: • Enhancement of groundwater quality due to decreased pumping lifts and stabilization of the water table, which reduces the chances of water quality changing due to pumping from zones of less quality; and • Enhancements to water quality due to the importation of surface water to the District in wet years, which delivers surface water of quality suitable for the beneficial uses within the region.	The Project provides a flood management benefit inasmuch as the water stored will not contribute to increased downstream flows and flood risks from where the water is diverted. In the case of Semitropic's Water Bank, flood flow is delivered via the CA Aqueduct into the SWRU conveyance system, therefore, the added absorptive capacity enhances the CA Aqueduct in reducing flood risk by allowing diversions into the CA Aqueduct, upstream of the Semitropic turnout. Additionally, the Project also provides for a flood management benefit with the construction of an overpour structure, control structure and regulating reservoir off of the Poso Creek Flood Channel. The facilities would allow the District to divert wet-year water from Poso Creek into the Regulation Reservoir, which would be subsequently pumped into the North-South Conveyance System. This creek-side facility would also allow the District to convey regulated water to the Kern NWR. During flood events on Poso Creek, the weir structure could take 300 cfs of the occurring flood flows, thereby reducing flood damage within the Kern NWR and adjacent valuable agriculture lands. Creates 8400 AF of transitory floodwater storage. and provides 300 cfs of increased conveyance capacity.	A component of the Project, construction of the Regulation Reservoir, has the potential for developing and enhancing habitat and open space as described below. The reservoir will be located adjacent to and south of the Poso Creek Flood Channel within a larger parcel that will be used to regulate water diverted from Poso Creek from time to time and could ultimately be developed into a managed wetlands area. The current configuration of the reservoir is a "dumbbell" shape with the easterly levees curved and the exterior slopes flattened to enhance duck club aesthetics to accommodate an existing active duck club pond that is adjacent to and east of the reservoir. The configuration of the reservoir was coordinated with the adjacent duck club owner for this reason. Once constructed, the Regulation Reservoir, has the potential to provide a habitat for various birds and waterfowl that also provides an opportunity for the public to view the waterfowl. Provides up to 40 acres of wetland area.	A component of the Project, construction of the Regulation Reservoir has the potential for providing project benefits to the community as described below. As described above, once constructed, the Regulation Reservoir, has the potential to provide a habitat for various birds and waterfowl that also provides an opportunity for the public to view the waterfowl.
104_SWSD	Conjunctive use/recharged groundwater	Semitropic Water Storage District	Entrance Ponds to the Pond Poso Spreading Grounds	The Project is 7 miles northwest of Wasco, northeast and adjacent to the existing Pond-Poso Spreading Grounds, located in Section 9, Township 26 South, Range 24 East, MDB&M.	Poso Creek	35.682362 / -119.392154	The Project, once fully developed, will provide the following estimated water supply benefits: • An estimated quantifiable water savings of 1,120 acre-feet per year based on the conversion of agricultural land to retention ponds (the estimated water savings per year is based on 320 gross acres of cropland with an applied water use of 3.5 acre-feet per year being converted to non-cropland); • An additional 160 acre-feet per day capacity for aquifer recharge when the area is wet and in use as retention ponds (estimated rate of recharge is at minimum 0.5 acre-feet per day); and, • Added flexibility for regional water management by adding a 350 cfs conveyance route from Poso Creek Flood Channel to the District's spreading facility and/or Pond Poso Canal for local surface water and CVP water supplies (equivalent volumes for the added route capacity of 350 cfs are 700 acre-feet per day or 21,000 acre-feet per month). • Up to 1280 AF annual yield in an average year. Dry year: 1120 AF/yr; Wet year: 2720 AF/yr	The Project will improve the quality of water by allowing for the removal of sediment prior to diverting the water to the District's Pond Poso Canal and/or the Pond Poso Spreading Grounds. In doing so it will also improve the effectiveness of the aquifer, recharge operation within the Pond Poso Spreading Grounds by decreasing the amount of silt that reaches the recharge ponds, maintaining recharge rates, and increasing total water supply benefit. It is recognized in the Poso Creek IRWMP area that the majority of recharge facilities are constructed and operated by the agricultural districts and not by the small disadvantaged communities or the environmental water users, this project also has the potential to improve water quality as follows: • Enhancement of groundwater quality due to decreased pumping lifts and stabilization of the water table, which reduces the chances of water quality changing due to pumping from zones of less quality; and • Enhancements to water quality due to the importation of surface water to the District in wet years, which delivers surface water of quality suitable for the beneficial uses within the region.	The Project provides a flood management benefit inasmuch as the water delivered to the direct recharge facility during times of stormwater /floodwater management will be diverted and not contribute to increased downstream flows and flood risks. In the case of Semitropic's Water Bank and direct recharge facility, flood flow is delivered via the CA Aqueduct into the District's conveyance system, or, it is delivered via Poso Creek as diverted CVP-Friant or Poso Creek Stormwater, therefore, the added absorptive capacity of direct recharge enhances the ability to receive flows during wet periods, typically corresponding to times of the year when irrigation demand is low. Additionally, the Project also provides for a flood management benefit with the ability to divert wet-year water originating from the Poso Creek Flood Channel into the PPSG recharge ponds and/or the Pond Poso Canal. During flood events on Poso Creek, the recharge ponds could take occurring flood flows, thereby reducing flood damage within the Kern NWR and adjacent valuable agricultural lands. Transitory storage: 1024 AF; Max increased conveyance: 350 cfs	The Entrance Ponds to the Pond Poso Spreading Grounds has the potential to create seasonal or intermittent shallow open water habitat by providing benefits for upland habitat to support waterfowl with a place to rest and nest, when water is in the ponds and are being utilized for recharge purposes. 256 acres of non-treatment wetland area and 64 acres of open space.	The Project has the potential for providing project benefits to the community as described below. Once constructed, the facility provides a habitat for various birds and waterfowl that also provides an opportunity for the public to view the waterfowl. creates 64 acres of open space.

Summary of Proposed Projects											
Project No. & Sponsor Designator	Type of Project	Project Sponsor	Project Name	Location Description	IRWMP	Latitude/ Longitude	Water Supply Benefits *Metric: Annual yield of supply created (acre-feet)*	Water Quality Benefits *Metric: Pollutant load reduced or Volume treated*	Flood Management Benefits *Metric: Volume or flows impounded or diverted (acre-feet or cfs)*	Environmental and Habitat Enhancement Benefits *Metric: Acres enhanced, flows improved (cfs)*	Community Stewardship Benefits *Metric: Acres made available, number of jobs created, number of people served*
105_KC	Habitat mitigation and groundwater recharge	County of Kern—Public Works Department	Caliente Creek Habitat Restoration and Groundwater Recharge Projects—Design and Construction	Caliente Creek. Near State Route 58 and Arvin, Kern County	Kern	35.28266 / -118.6361	Un-quantified amount of groundwater capture. The capture of storm water and flood flows in proposed groundwater recharge basins will provide additional water to underlying aquifers.	Un-quantified decrease in sediment deposition to downstream areas	Approximately 1,500 acres is proposed to be converted back to natural riparian habitat upstream of the proposed groundwater recharge basins. This riparian habitat will provide natural treatment and infiltration to waters flowing in Caliente Creek. The proposed groundwater recharge basins will capture and meter flow and thus reduce the flooding issues presently downstream.	The Caliente Creek Habitat Mitigation project proposes the conversion of approximately 1,300 acres back to riparian habitat. Currently most of the area is under cultivation. It is proposed to re-introduce native plant species to help maintain a diverse population in the region.	Currently there will be no community/public projects to utilize storm water other than for ground water recharge.
106_KC	Habitat restoration and streambank stabilization.	County of Kern—Public Works Department	Cuddy Creek Restoration Project	This project is located at Cuddy Creek in Frazier Park, Kern County	Kern	34.82131 / -118.95026	Un-quantified amount of groundwater recharge opportunity. The groins will slow the water and provide areas of additional groundwater infiltration and recharge.	No established TMDL. The proposed project includes the construction/placement of grade control structures, planted groins, and vegetation groins. The purpose of this project is to reduce watershed soil erosion and sedimentation of surface water to reduce the discharge of pollutants to State waters from storm or nonpoint sources.	Approx 2 acres adjacent to 3000 linear feet of the channel will be preserved from erosion. The channel erosion has stripped all of the top soil from much of the channel bed leaving barren rock. As these banks erode laterally, homes that were originally constructed a safe distance from the creek may now become placed in peril. This project will prevent further watershed soil erosion and reduce the discharge of pollutants to State waters from storm or nonpoint sources.	The Cuddy Creek Restoration Project will use planted groins and rock groins to re-establish natural controls to mitigate and reduce the dangerously uncontrolled erosion problems. Cuddy Creek will be less capable of lateral migration (less bank erosion) and should develop meadows where there is currently only bare rock and/or poorly graded sediments. Once established, the restored riparian corridor will provide an ideal habitat for trout (Cuddy Creek is annually stocked with trout) and native wildlife.	It is anticipated the community would be involved in planting some trees along the banks and on the rock groins and the meandering sidewalk along Cuddy Creek would lend itself to the locals appreciating the new riparian habitat and participate in maintenance and beautification of the community.
107_KC	Detention basin/groins/grade control structures/ bank armoring	County of Kern—Public Works Department	Sandy Creek Bank and Erosion Protection Project	Ford City Area, Kern County.	Kern	35.15198 / -119.46063	Un-quantified amount of groundwater recharge opportunity. The groins will slow the water and provide areas of additional groundwater infiltration and recharge. There is no specific storm water capture proposed. Just natural infiltration along Sandy Creek and at the detention basin located at Midoil Road.	No established TMDL. The proposed detention basin at Midoil Road will provide some increase in infiltration to groundwater. The proposed channel work, removal of non-native plants and construction of grade control structures will help with downstream sedimentation issues.	Project uses 40 acres to temporarily detain up to 187 acre-feet of storm water storage, protecting 600 acres of land from seasonal flooding. Provides 100-yearLOP to Ford City and Taft. The construction of the detention basin, shaping and armoring the stream banks to prevent additional erosion, and constructing a series of drop structures to slow the flow, reduce energy, will reduce the negative effects of erosion, degradation and aggradation.	None	None
108_BVWSD	Conjunctive use/recharged groundwater	Buena Vista Water Storage District	The Palms Storm Water Recharge and Recovery Project	Latitude/longitude is located at the approximate center of the proposed project recharge basin.	Kern	35º19'50"N / 119º23'11"W	Adds 20,000 AF annual yield. The Project will increase water supply by storing captured storm water in the local groundwater aquifer. Groundwater recharge is particularly timely in Kern County where the extended drought has depleted aquifers that are relied upon by users throughout the region. In addition, both components support conjunctive use by capturing storm water during the limited periods when it is available for aquifer replenishment and that, once stored, can be relied upon during dry periods. Water is conserved by recharging captured storm water in areas where stored water is readily accessible. Project will have an 1160 acre detention basin.	A portion of the captured storm water recharged in the Project will be treated to Title 22 standards, if treatment is needed to enable recovered water to be conveyed in the California Aqueduct to urban agencies in Southern California. All storm water recharged by the Project will pass through sediment basins and be filtered as it percolates through the soil profile. Recharge of storm water will also reduce the concentration of salts, nitrate, and arsenic in the underlying groundwater. Furthermore, BVWSD's western boundary is formed by the Coastal Range that is derived from marine and lacustrine deposits that tend to have marginal to poor quality groundwater (high salinity). The Project will increase groundwater levels in the southern portion of BVWSD, reducing the head gradient separating the good quality groundwater located on the basin floor and the poorer groundwater to the west.	Low lying developed areas in the San Joaquin Valley periodically are inundated by flood waters. The Tulare Lake area in particular is the recipient of floodwaters from the Kings, Kaweah, Tulare, Kern Rivers, and a number of smaller streams. A portion of the water recharged in the Project otherwise would have contributed to flooding of low-lying improved lands in Kern County near the Kern River Flood Channel, Kings County (Tulare Lake Bed), and other areas further North (adjacent to the San Joaquin River and Delta). However, the amounts are difficult to quantify because of the complexity of various floodwater pathways, impact location, and degree of impacts to developed lands.	Using captured storm water to maintain groundwater levels in Kern County will lower pumping lifts and consequently reduce energy use and greenhouse gas emissions. The Project will also increase base flow in regional streams, benefiting local habitats in stream channels and wetlands.	

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Project No. & Sponsor Designator	Type of Project	Project Sponsor	Project Name	Location Description	IRWMP	Latitude/ Longitude	Water Supply Benefits *Metric: Annual yield of supply created (acre-feet)*	Water Quality Benefits *Metric: Pollutant load reduced or Volume treated*	Flood Management Benefits *Metric: Volume or flows impounded or diverted (acre-feet or cfs)*	Environmental and Habitat Enhancement Benefits *Metric: Acres enhanced, flows improved (cfs)*	Community Stewardship Benefits *Metric: Acres made available, number of jobs created, number of people served*
109_RRBWSD	Conjunctive use/recharged groundwater	Rosedale-Rio Bravo Water Storage District	Stockdale East Groundwater Recharge Project	West of Bakersfield, immediately east of the intersection of Enos Lane (Highway 43) and Stockdale Highway.	Kern	35.349537 / -119.24776	The project will save a total of 9,500 AFY by conserving groundwater directly as a result of the recharge of wet year water by this project. Annual Yield of Supply: Dry yr 800 AF; Average yr 9500 AF; Wet yr 29,800 AF. Hydrology shows that the region experiences wet years sufficient to provide supplies to the project about every three in ten years. That would result in an average of additional 5,700 AFY (0.3 x 19,000 AF) stored groundwater. Approximately 50 cfs of the Central Intake Pumping Plant – Phase 2 would be dedicated to serving this site. Given this evaluation is for a wet year, a more detailed evaluation of Stormwater available during a wet year is needed to refine the average annual amount of water supply benefit. An additional 90 cfs would be included to offer capacity to deliver state and federal water to existing recharge areas located approximately 1.5 miles north of the site (Superior Basins). This would give added access to recharge supplies and potentially add up to 10,000 AF into the groundwater basin during each wet year. Using the same wet-year probability, this would result in an average of 3,000 AFY (0.3 x 10,000 AF) of additional stored groundwater. An additional 800 AFY of water is conserved due to the retiring of the required 229 acres of land (229 acres x 3.5 AF/acre). Therefore, a total of 9,500 AFY would be conserved as a direct result of the project and the estimate of the portion directly related to stormwater needs refinement.	Providing a connection for Stormwater that is delivered as surface water to recharge sites increases infiltration of surface water to storage in groundwater and enhances quality of the basin. The surface water available during wet periods is delivered to spreading facility for direct recharge. The use of direct spreading facility as the recharge mechanism avoids adding nutrients and transporting constituents used in growing crops.	The Project provides a flood management benefit inasmuch as the water diverted and stored will not contribute to increased downstream flows and flood risks from where the water is diverted. Provides up to 19,000 AF of transitory storage and Max increased conveyance capacity 140 cfs	Like all spreading basins, the Project will provide some intermittent habitat for waterfowl, birds, and other species when in use. Intermittent use of 200 acres on non-treatment wetland area.	The Project will reduce groundwater pumping lifts and resulting energy savings. The savings will be shared with municipal and private well owners alike. Other activity includes bird watching.
110_RRBWSD	Storm water conveyance to recharge facility	Rosedale-Rio Bravo Water Storage District	Western Rosedale In-Lieu Service Area Project	Between East Side Canal and Interstate 5, south of Bowerbank, and within the District	Kern	35.370275 / -119.376214	The Project is expected to absorb surface supplies up to the in-lieu system design amount of 5,630 AFY in 80 percent of the years, providing surface water for use by farmers in the Project Area in-lieu of groundwater that would otherwise be pumped, thus, conserving an average annual amount of 4,500 AF and 5630 AF in a wet year.	It is recognized in the IRWMP area that the majority of recharge and in-lieu recharge facilities are constructed, operated, and used by the agricultural districts and the City of Bakersfield and not by the small disadvantaged communities or the environmental water users, this project also has the potential to improve water quality as follows: • Enhancement of groundwater quality due to decreased pumping lifts and stabilization of the water table, which reduces the chances of water quality changing due to pumping from zones of less quality; and • Enhancements to water quality due to the importation of surface water to the District in wet years, which delivers surface water of quality suitable for the beneficial uses within the region.	The Project provides a flood management benefit inasmuch as the water stored will not contribute to increased downstream flows and flood risks from where the water is diverted. Provides up to 900 AF of transitory storage and conveys up to 72 cfs of storm water flow.	By providing in-lieu groundwater recharge, the Project will reduce groundwater pumping lifts and resulting energy savings. The savings will be shared with municipal and private well owners alike.	

Summary of Proposed Projects											
Project No. & Sponsor Designator	Type of Project	Project Sponsor	Project Name	Location Description	IRWMP	Latitude/ Longitude	Water Supply Benefits *Metric: Annual yield of supply created (acre-feet)*	Water Quality Benefits *Metric: Pollutant load reduced or Volume treated*	Flood Management Benefits *Metric: Volume or flows impounded or diverted (acre-feet or cfs)*	Environmental and Habitat Enhancement Benefits *Metric: Acres enhanced, flows improved (cfs)*	Community Stewardship Benefits *Metric: Acres made available, number of jobs created, number of people served*
111_RRBWSD	Groundwater banking	Rosedale-Rio Bravo Water Storage District	James Groundwater Banking and Recovery Project	The Project property, known locally as McAllister Ranch, is located in the City of Bakersfield, Kern County, California within Sections 16, 21, 22, and 23, Township 30 South, Range 26 East, Mount Diablo Meridian (MDM)	Kern	35.309774 / -119.189067	The Project is expected to absorb surface supplies up to approximately 57,600 AFY. Annual Yield of Supply: Average Year 11,520 AF; Wet Year 57,600 AF Additionally, the project would: • Improve the regional reliability of water supply. • Increase operational flexibility. • Increase direct spreading and basin absorptive capability. • Increase local unconfined groundwater quality. • Make use of available groundwater storage. • Contribute to the groundwater basin for use during periods of peak demand	Water quality benefits would not apply as a primary benefit for this project. However, recharge basins within the District allow for direct recharge of surface water originating from the SWP, the CVP, Kern River usually suitable for irrigation. The sources vary in quality, but are all typically suitable for irrigation and do not degrade the groundwater basin from its designated use. This project also has the potential to improve water quality as follows: • Enhancement of groundwater quality due to decreased pumping lifts and stabilization of the water table, which reduces the chances of water quality changing due to pumping from zones of less quality; and • Enhancements to water quality due to the importation of surface water to the District in wet years, which delivers surface water of quality suitable for the beneficial uses within the region. Additionally, the District, Project, and City of Bakersfield are within the Kern Fan. The water quality benefits produced by the Project are shared with the City and other nearby municipal entities.	The Project provides a flood management benefit inasmuch as the water delivered to the direct recharge facility during times of Stormwater management will be diverted and not contribute to increased downstream flows and flood risks. Provides up to 57,600 AF of transitory storage at a flood water/ storm water diversion rate of up to 258 cfs	The Project will provide waterfowl with a place to rest and nest, intermittently, when they have water in the ponds and are being utilized for recharge purposes. Provides 526 acres of non-treatment wetland area during recharge operation.	Once constructed the facility provides a habitat for various birds and waterfowl that also provides an opportunity for the public to view the birds. The Project will reduce groundwater pumping lifts and resulting energy savings. The savings will be shared with municipal and private well owners alike.
112_SWID	Conjunctive use/recharged groundwater	Shafter Wasco Irrigation District	Shafter-Wasco Irrigation District Recharge Project	The Project will consist of up to seven 20-acres storm water recharge basins which total approximately 140 acres on property to be selected within a 4,000-acre survey area located within the Shafter-Wasco Irrigation District, Kern County, CA. The SWID Recharge Project is located within the Shafter-Wasco Irrigation District Boundaries, to the northeast of Shafter, CA, and on the west bank of the Calloway Canal at the corner of Beech and Fresno Avenues.	Poso Creek	35.551041 / -119.293969	Improved overall water supply, water supply reliability, energy savings and reduced greenhouse gas emissions will result from the long-term increase in groundwater elevations in the Project area due to recharge of storm water. Therefore, although the Project will be operated as a groundwater storage facility with groundwater elevations increasing during periods when water is recharged and declining when groundwater is extracted for beneficial uses, the Project will be operated so as to maintain average groundwater elevations that are higher than they would be absent the Project. Supporting local groundwater levels will aid in regional compliance with the Sustainable Groundwater Management Act and will enable groundwater pumpers (both Project proponents and local domestic, agricultural and municipal users) to reduce pumping costs and lessen the need to deepen wells. The 140 acre recharge ponds are anticipated to absorb 0.5 acre-feet per day, or 70 AF per Day for up to 6 months, 4 out of 10 years. The equates to an average annual amount of 5,040 AF = [70 AF * 30 days * 6 months * 4] / 10. In addition, converting the land from irrigation to recharge ponds removes 490 AFY of demand = 140 A * 3.5 AFY/A demand. The project creates 5530 AF average annual yield (5040+490). Annual yield of supply: Average year 5,040 AF; Dry year 490 AF; Wet year 13,090 AF	The Project protects water quality in that storm water captured by the Project originates from uplands that form the watersheds of the lakes and reservoirs that will release water recharged by the Project. These source waters are largely unimpaired, with unsubstantial water quality issues. While flood releases conveyed overland and through unlined canals and river channels may mobilize substantial sediment loads, because the path of the storm water will not cross major urban or agricultural areas, with the exception of sediment, loadings of constituents other than sediment are expected to be low and will remain stable over time. 140 acres will be converted to recharge ponds.	The Project helps water infrastructure systems adapt to flood flows by alleviating pressure on an aging system. Existing research on climate change suggests that one of the primary outcomes will be a shift in snowfall to rainfall and an increase in peak storm flows. Providing an outlet for storm water flows that channels these flows to groundwater recharge facilities improves the functionality of existing infrastructure by diverting storm water flows from overtaxed conveyance channels during large storm events, and enhancing water supply reliability during dry years. Maximum volume of transitory storage of storm water runoff: 70 AF/day; 2100 AF/month	During periods when storm water is available for recharge, the spreading ponds will act as intermittent wetlands that will benefit wildlife including migratory birds. Creates 140 acres of non-treatment wetland area.	As noted in the water supply benefit section, recharging the groundwater aquifer provides a benefit to the local community by helping to increase the groundwater table elevation and lower the required pumping lift near the project. Therefore, all wells providing water for public or private use receive a benefit. The quantitative benefit of the project will be determined as design details are finalized. The construction of the recharge site provides some temporary employment. Creates bird viewing area for the community.

5.4 Project Scoring Form – Description of Scoring Methodology

In order to demonstrate the Plan's ability to implement storm water and dry weather capture projects, projects submitted must satisfy specific water management objectives and be able to deliver multiple benefits. Each project must identify at least two Main Benefits and as many Additional Benefits as possible. The quantification of benefits and analysis of proposed projects were evaluated using metrics for the five Main Benefit areas: Water Quality (WQ), Water Supply (WS), Flood Management (FM), Environmental (Env), and Community (Comm). A simple scoring methodology was developed for scoring and ranking projects. The projects and their preliminary rankings were submitted to the two IRWMP groups as part of the draft Plan. Stakeholders were allowed to provide comments during a public comment period and at Public Meeting No. 2.

5.4.1 Main and Additional Benefits Scoring

The following metrics were considered to evaluate how well proposed projects are able to deliver Main and Additional Benefits shown on pages 22-23 of the SWRP Guidelines:

5.4.1.1 Effects of Proposed Projects on WATER QUALITY

- How do projects comply with or are consistent with existing NPDES permits?
- Description of watershed-based outcomes using modeling, calculations, pollutant mass balances, water volumes balances, or other methods of analysis
- Description of how projects will contribute to the preservation, restoration, or enhancement of watershed processes
- Include projects in a summary matrix/table with scoring metrics
- WQ metric: Pollutant load reduction (lbs/day, mg/L, bacteria count per ml, etc)
- WQ metric: Volume treated (mgd, AF/yr)

5.4.1.2 Effects of Proposed Projects on Local WATER SUPPLIES

- How do proposed projects capture, store, and use storm water and dry weather runoff to recharge or replace groundwater or offset water imports from the Delta?
- Include projects in a summary matrix/table with scoring metrics
- WS metric: Groundwater volume recharged or replaced or runoff volume captured (mgd, AF/yr)
- WS metric: Augmentation/replacement of water supply or reduced dependence on imported water (mgd, AF/yr)
- WS metric: Cost of water supply augmentation ($/AF/yr)

5.4.1.3 Effect of Proposed Projects on FLOOD MANAGEMENT

- Describe how project will reduce flood risk through reduction in stage, flood flows

- Describe how flood water will be captured to maximize and/or augment water supply
- Include projects in a summary matrix/table with scoring metrics
- FM metric: Reduction in flood risk (reduced flow in cfs, reduced stage in feet, reduced volume in AF)
- FM metric: Reduction in sanitary sewer overflows (flow in cfs or volume in cubic feet or AF)

5.4.1.4 Effect of Proposed Projects on ENVIRONMENTAL AND COMMUNITY Benefits, including the creation and restoration of habitat, open space, parks, recreation in disadvantaged communities

- Narrative describing how each project will benefit the environment and/or community
- Include in a summary matrix/table with scoring metrics
- Env metric: Habitat improved or restored; wetland enhanced/created; urban green space created (acres); reduced energy use (MWH); re-establishment of natural hydrograph (flows in cfs or stage in ft); water temp improvements by reduction in temp (degrees)
- Comm metric: Enhanced or created recreation or public use areas (acres); community involvement (no. of people); jobs created (no.)

Appendix C: Project Scoring Forms shows proposed projects would receive a score of either a 4 or 5 in each Main Benefit category. If a Main Benefit is well-quantified and supported by numerical results of calculations or modeling, the project received a score of 5. For less well-quantified Main Benefits, a score of 4 was given, which indicated that the Main Benefit would be achieved in concept, but the actual quantification of the benefit is not well-defined. A proposed project would need a minimum score of 8 in order to be considered viable for inclusion in the Plan, as the guidelines state that at least two Main Benefits must be achieved for a project to be eligible for inclusion in the Plan for consideration of future grant funding. All 12 of the proposed projects contained at least two Main Benefits.

Appendix C: Project Scoring Forms also shows the full spectrum of Additional Benefits possible for proposed projects. Projects received scores in the Additional Benefits column of 3, 2, or 1, depending on how well the Additional Benefits were quantified. Well-quantified Additional Benefits with objective numerical results supported by calculation or modeling received a score of 3. Additional Benefits achieved, but with less well-quantified metrics or conceptually improved metrics received a score of 2. Additional Benefits achieved by good concepts but needing more information, received a score of 1.

5.4.2 Project Readiness Scoring

Practical factors were also considered in developing the scoring methodology for the proposed projects. The **Appendix C: Project Scoring Forms** contain a Project Readiness Checklist, and proposed projects were evaluated against five Project Readiness criteria:

1. Is the Project ready to implement (Yes=1), (No=0)?
2. Is the Project cost well defined (1) or just an estimate (0)?

3. Is the land currently owned by a public agency (1) or does it need to be acquired (0)?
4. Is the environmental permitting process complete (1) or not yet started (0)?
5. Does the agency have the funds available for the 50 percent local funding match (Yes=1), (No=0)?

Each Project Readiness criterion was scored with either 1 or 0 for a "yes" or "no" response. Partial credit (0.5) was given for each partially completed Project Readiness criterion. The Project Readiness checklist was useful in separating conceptual projects from those that were further along in the planning process or more shovel-ready.

A Project Scoring Form (**Appendix C: Project Scoring Forms**) was filled out for each of the 12 proposed projects submitted to the Plan. The combined scores of the 12 proposed projects are summarized in **Table 5-2** and ranked by combined Main/Additional Benefit and Project Readiness scores, which satisfies the guidelines' requirement for presenting a prioritized list of proposed projects.

5.5 Prioritized List of Projects

Table 5-2 consists of the prioritized list of the 12 proposed projects, which were received in June 2016 for inclusion in the Plan. They are ranked by their ability to deliver Main and Additional benefits as well as their Project Readiness for construction. The Plan can be updated periodically with submittals of future projects or revisions to existing projects, correlated to future rounds of implementation grant funding opportunities.

Table 5-2. Prioritized List of Projects

Prioritized List of Projects							
Ranking	Sponsor Designator & Project No.	Type of Project	Project Sponsor	Project Name	Scoring		Stakeholder Comments
					Benefits	Readiness	
1	109_RRBWSD	Conjunctive use/recharged groundwater	Rosedale-Rio Bravo Water Storage District	Stockdale East Groundwater Recharge Project	21	2	
2	108_BVWSD	Conjunctive use/recharged groundwater	Buena Vista Water Storage District	The Palms Storm Water Recharge and Recovery Project	18	3	
3	104_SWSD	Conjunctive use/recharged groundwater	Semitropic Water Storage District	Entrance Ponds to the Pond Poso Spreading Grounds	18	2	
4	112_SWID	Conjunctive use/recharged groundwater	Shafter Wasco Irrigation District	Shafter-Wasco Irrigation District Recharge Project	17	2.5	
4	111_RRBWSD	Groundwater banking	Rosedale-Rio Bravo Water Storage District	James Groundwater Storage and Recovery Project	17	2.5	
5	103_SWSD	Groundwater banking	Semitropic Water Storage District	Stored Water Recovery Unit, Element of the Semitropic Groundwater Bank	17	2	
6	110_RRBWSD	Storm water conveyance to recharge facility	Rosedale-Rio Bravo Water Storage District	Western Rosedale In-Lieu Service Area Project	16	2.5	
7	101_SWSD	Conjunctive use/recharged groundwater	Semitropic Water Storage District	Schuster Spreading Grounds	16	1	

Prioritized List of Projects							
Ranking	Sponsor Designator & Project No.	Type of Project	Project Sponsor	Project Name	Scoring		Stakeholder Comments
					Benefits	Readiness	
8	102_SWSD	Conjunctive use/recharged groundwater	Semitropic Water Storage District	Pond-Poso Spreading Grounds, Phase 2	15	2	
9	105_KC	Habitat mitigation and groundwater recharge	County of Kern—Public Works Department	Caliente Creek Habitat Restoration and Groundwater Recharge Projects—Design and Construction	13	0.5	
10	107_KC	Detention basin/groins/grade control structures/ bank armoring	County of Kern—Public Works Department	Sandy Creek Bank and Erosion Protection Project	12	0	
11	106_KC	Habitat restoration and streambank stabilization	County of Kern—Public Works Department	Cuddy Creek Restoration Project	11	1.5	

5.6 Process for Submitting New or Modifying Existing Project Proposals

One of the goals of the Plan is to make it a living document capable of adapting to changing watershed conditions and be receptive to submittal of new projects and modifications to existing projects. At the time of publication, there were 12 proposed projects submitted, all of which are included in the Plan. There are many districts within the Poso Creek and Kern Regional Water Management Groups that did not submit proposals due to budget or time constraints. This Plan is designed to accommodate and not discourage later proposal submissions. This section describes the process for submitting new project proposals or revising existing project proposals.

5.6.1 New Project Proposals

If an agency or stakeholder wishes to submit a new project for consideration, the first step is to fill out a PSF. A blank PSF template is included in **Appendix A: Project Submittal Form Template**. Fill out the form with as much detail as possible. Include metrics supported by calculation, models, or measurements, such as those included in **Section 5.4**. Quantify the Main Benefits and Additional Benefits provided by the new project proposal and show how the new project provides Main Benefits and Additional Benefits. A project proposal must include at least two Main Benefits and as many as possible Additional Benefits. The proposal should then be submitted to the IRWMP group most closely associated with the project location.

5.6.2 Modifications or Revisions to Existing Project Proposals

If an agency or stakeholder wishes to submit modifications or revisions to an existing project, which has already been adopted into the Kern SWRP, the stakeholder would fill out a PSF and attach the previously submitted PSF to the new form. A blank PSF template is included in **Appendix A: Project Submittal Form Template**. Fill out the new form with as much detail as possible. Include metrics supported by calculation, models, or measurements, from the list included in **Section 5.4**. Quantify the Main Benefits and Additional Benefits provided by the revised project proposal and show how the revised project improves or expands upon the Main Benefits and Additional Benefits of the previously adopted project. The revised proposal should then be submitted to the same IRWMP group associated with the project location as on the originally submitted PSF.

Table 5-3. IRWMP Group Contacts for Project Submittals

IRWMP Group Contacts for Project Submittals	
Group	Contact
Kern IRWMP Group	Email: KernIRWMP@kcwa.com
Poso Creek IRWMP Group	Ms. Isela Medina, PE Semitropic Water Storage District Address: PO Box 8043, Wasco, CA 93280; 1101 Central Avenue, Wasco, CA 93280 Telephone: (661) 758-5113; Fax: (661) 758-3219; Email: imedina@semitropic.com

6 Implementation Strategy and Schedule

6.1 Resources for Plan Implementation

The Kern Storm Water Resources Plan is being funded by the Buena Vista Waster Storage District and the Shafter-Wasco Irrigation District. The Plan implementation costs moving past the initial development of the plan will be funded by the Project Sponsors identified in **Section 5**.

Potential Project Sponsors' will provide the appropriate local matching funds through a variety of potential resources. A list of available funding sources, in addition to Sponsors' general funds, is identified below. Many of the funding sources listed below can be found in the Kern County and Poso Creek IRWMP.

6.1.1 Project Funding

Securing funding for the projects proposed in the Kern SWRP can be best accomplished with a focused, deliberate, packaging strategy. As seen from the descriptions below, there are many funding programs within and outside of the Kern Region that could provide financial opportunities for the Sponsors' projects. As these funding opportunities become available, Plan Projects will be integrated to fit the funding criteria. In this manner, a process would be established for integrating packages of projects for future funding programs.

Grant and loan funding sources have been identified based on currently available information. However, due to the uncertainty of the State of California's budgets, the availability of many grant and loan programs are never guaranteed. Grant and loan programs dependent on the sale of California General Obligation bonds have been, and will very likely will continue to be, limited in the amount of funding offered. This section includes a discussion of funds available through various grant programs and specifies eligibility requirements. Although some of the programs listed below may not be directly related to storm water projects, the Plan Projects may still have a nexus to these funding programs, warranting the Project Sponsor to consider submitting an application to a funding program.

6.1.1.1 State Funding Programs

6.1.1.1.1 Storm Water Grant Program (SWRCB)

The SWRCB provides grant funds for multi-benefit storm water management projects through the Proposition 1 Storm Water Grant Program. Proposition 1 designated $200 million in grant funds for projects that improve regional water self-reliance, security, and adapt to the effects on water supply arising from climate change. Storm water and dry weather runoff are underutilized sources of water supplies and may cause pollution or impairment of rivers, lakes, streams, and coastal waters. The SWGP will fund projects that have multiple benefits including water supply, flood control, habitat enhancement/restoration, and creating green spaces.

The SWGP has two types of grants available: Planning Grants and Implementation Grants. The Planning Grant had one funding round of $19 million (occurred in Spring 2016) that will be used for developing SWRPs and planning for specific projects throughout the state. Two rounds of Implementation Grant funding have been designated under Proposition 1. Approximately $80 million of funding is designated for Round 1 in 2016, and $100 million is designated for Round 2 that will occur in 2018. Implementation Grant awards can range from $250,000 to $10,000,000 per project. The local funding match is set at 50 percent of the project cost with reductions available for DACs or Economically Distressed Areas (EDAs).

6.1.1.1.2 Integrated Regional Water Management Implementation Grants (DWR)

The DWR is the state agency responsible for overseeing the IRWM programs statewide, which includes administering the Proposition 1 IRWM Grant Program, which provides funding for projects that help meet the long term water resource needs within IRWM Regions. Kern and Poso Creek IRWM agencies have obtained grant monies to fund projects in previous years through Proposition 50 and 84 funding. Proposition 1 designates $510 million for IRWM grant funding; $34 million is available for the Tulare/Kern funding area, where the Kern and Poso Creek IRWM regions are located. The first round of Proposition 1 implementation grant funding is expected to begin in 2018. Criteria for obtaining Proposition 1 grant funds include: assisting water infrastructure systems to mitigate impacts from climate change; providing incentives throughout each watershed to collaborate in managing a region's water resources and setting regional priorities for water infrastructure; and improving regional water self-reliance, while reducing reliance on Sacramento-San Joaquin Delta. Plan Projects are required to be included in their respective IRWMP and may be eligible for potential funding.

http://www.water.ca.gov/floodmgmt/funding/small-communities.cfm

6.1.1.1.3 Federal 319 Program (SWRCB)

This program, administered by the SWRCB, is a NPS pollution control program that is focused on controlling activities that impair beneficial uses and on limiting pollutant effects caused by those activities. The program is federally funded on an annual basis. Project proposals that address TMDL implementation and those that address problems in impaired waters are favored in the selection process. There is also a focus on implementing management activities that reduce and/or prevent release of pollutants that impair surface and ground waters. Nonprofit organizations, local government agencies including special districts, tribes, and educational institutions qualify. State or federal agencies may qualify if they are collaborating with local entities and are involved in watershed management or proposing a statewide project.

6.1.1.1.4 Water Recycling Funding Grant and Loan Program (SWRCB)

This is a long-term program operated by the SWRCB that offers grants and low-interest loans for the planning, design and construction of water recycling facilities. This program can also be used to fund groundwater recharge facilities for indirect potable reuse (IPR). Grants are provided for facilities planning studies to determine the feasibility of using recycled water to offset the use of fresh/potable water from state and/or local supplies. Pollution control studies, in which water recycling is an alternative, are not eligible. Public agencies and privately-owned utilities regulated by the California Public Utilities Commission (CPUC) are eligible. The Water Recycling Funding Program receives funding from various sources, including Proposition 1 and the State Revolving Fund (SRF). Due to the varying funding sources, preferences for funding can vary.

6.1.1.1.5 Clean Water State Revolving Fund (SWRCB)

The Federal Water Pollution Control Act (Clean Water Act or CWA), as amended in 1987, provides for establishment of a Clean Water State Revolving Fund (CWSRF) program. The program is funded by federal grants, state funds (including Propositions 50, 84, and 1), and revenue bonds. The purpose of the CWSRF program is to implement the CWA and various state laws by providing financial assistance for the construction of facilities or implementation of measures necessary to address water quality problems and to prevent pollution of the waters of the State.

The CWSRF Loan Program provides low-interest loan funding for construction of publicly-owned wastewater treatment facilities, local sewers, sewer interceptors, water recycling facilities, as well as, expanded use projects such as implementation of NPS projects or programs, development and implementation of estuary Comprehensive Conservation and Management Plans, and storm water treatment. Publicly owned treatment works, local public agencies, non-profit organizations, and private parties are eligible for funding. Matching funds are not required. Applications are continuously accepted and $200 to $300 million is available annually.

6.1.1.1.6 Infrastructure State Revolving Fund- California Infrastructure and Economic Development Bank

Through I-Bank, this program funds public infrastructure projects deemed important to California communities. The financing is available to cities, counties, special districts, assessment districts, joint powers authorities, and redevelopment agencies. Eligible projects may include streets and highways, sewage collection and treatment, water treatment and distribution, drainage, flood control, solid waste collection and disposal. The financing can be paired with other grant and loans programs to complete the funding of a project although no matching is required and the funds may serve as the sole source for the project.

6.1.1.1.7 Safe Drinking Water State Revolving Fund (DDW)

The Federal Safe Drinking Water Act (SDWA) Amendments of 1996 authorized the creation of a revolving fund program for public water system infrastructure needs specific to drinking water. There is similar state legislation and the Safe Drinking Water State Revolving Fund (SDWSRF) reflects the intent of federal and state laws to provide grant funding or low-interest loans to correct deficiencies in public water systems based on a prioritized system. Highest priority is given to projects that address public health risk, projects that will assist a public water system with compliance with the SDWA, and projects that assist those public water systems most in need. Funding is available for construction/ enhancement of public water systems. The program is funded by federal grants, state funds (including Propositions 50 and 84), and revenue bonds. The program is administered by the SWRCB Department of Drinking Water (DDW). The entity must be a public water system to be eligible and preference is given to DACs.

6.1.1.1.8 Agricultural Drainage Loan Program (SWRCB)

The Agricultural Drainage Loan Program was created by the Water Conservation and Water Quality Bond Law of 1986 to address treatment, storage, conveyance, or disposal of agricultural drainage water that threaten waters of the State.

6.1.1.1.9 Agricultural Water Use Efficiency Program (DWR)

This grant program will fund agricultural water use efficiency projects. This particular water use efficiency Guidelines and Proposal Solicitation Package (PSP) directly supports California Water

Plan - Action Number One: Make Conservation a California Way of Life, as well as supporting several other Actions, either directly or indirectly. Funding through this program is also directed towards agricultural water management planning and water use efficiency projects and programs developed pursuant to Part 2.8 (commencing with Section 10800) of Division 6 of the California Water Code.
http://www.water.ca.gov/wuegrants/SolicitationsProp1AG.cfm

6.1.1.2 Federal Funding Programs

6.1.1.2.1 WaterSMART (USBR)

The USBR Sustain and Manage America's Resources for Tomorrow Program (WaterSMART) was established for USBR to work with states, tribes, local governments, and NGOs to secure and stretch water supplies for use by existing and future generations. In addition to sustainable water resources goals, the program also addresses adaptive measures needed to address climate change and future demands. The programs described below are part of the WaterSMART program.

6.1.1.2.2 Water and Energy Efficiency Grants (USBR)

The Water and Energy Efficiency Grants program offered through USBR is an annual grant program which the applicant will need to provide a minimum of a 50 percent match. The projects need to demonstrate both water and energy savings.

6.1.1.2.3 Grants to Develop Climate Analysis Tools (USBR)

These grants, offered annually, provide funding to universities, non-profits, or entities with water or energy delivery authority in the Western United States for the development of tools to better manage water resources with the caveat the tool must consider climate change. Seven areas of research are listed as eligible under this program which the ultimate goal of better water resource management.

6.1.1.2.4 Advanced Water Treatment Grants (USBR)

The Advanced Water Treatment (ADWT) Grant Program offered by USBR funds demonstration and pilot projects which utilize advanced water treatment systems. The purpose of this program is to create a new economically feasible water supply from brackish groundwater, seawater, or impaired waters. The ADWT grant encourages water agencies to accelerate the adoption of advanced water technologies including reverse osmosis, filtration, electrodialysis, pretreatment methods, advanced oxidation, concentrate disposal or any other process that removes dissolved and suspended matter such as salts, viruses, bacteria or any other difficult to remove matter. The projects should not be the full scale plant but a pilot to demonstrate the viability of the project. Operations and maintenance (O&M) costs are not included in the funding, cost sharing is required, and the projects must be completed within the specified timeframe of the grant.

6.1.1.2.5 Cooperative Watershed Management Program (USBR)

The Cooperative Watershed Management Program provides funding for Phase II watershed management projects in fiscal year 2017. Phase II funding will support local watershed groups in implementing collaborative solutions to water management issues. USBR is seeking comments on the draft criteria and eligible project types.

6.1.1.2.6 Drought Resiliency Project Grants and Drought Contingency Planning Grants (USBR)

The Program establishes a framework to provide federal leadership and assistance for using water efficiently, integrating water, and energy policies to support the sustainable use of all natural resources, and coordinating the water conservation activities of various U.S. Department of the Interior (DOI) bureaus and offices. Through the program, the DOI is working to achieve a sustainable water strategy to meet the nation's water needs. The objective of this Program is to invite states, tribes, irrigation districts, water districts, and other organizations with water or power delivery authority to leverage their money and resources by cost-sharing Drought Contingency Planning with USBR to build resilience to drought in advance of a crisis.

6.1.1.2.7 Title XVI Feasibility Studies (USBR)

The objective of this Program is to invite applicants to submit proposals to develop new Title XVI feasibility studies. Applicants must provide 50 percent non-federal cost share for the proposed activity. Under Title XVI of Public Law 102-575, USBR works to identify and investigate opportunities to reclaim and reuse wastewaters and naturally impaired ground and surface water in the 17 Western States and Hawaii. Title XVI also provides authority for USBR to provide up to 50 percent of the costs of studies to determine the feasibility of water reclamation and reuse projects. Prior to construction funding of any project authorized under Title XVI, USBR must determine that a feasibility study for the project complies with the provisions of Title XVI. Under this Program, funding is being made available to assist project sponsors with the development of new Title XVI feasibility studies.

6.1.1.2.8 FEMA/California Emergency Management Agency Infrastructure Improvement Grants

FEMA, through the California Emergency Management Agency, funds grants to improve existing infrastructure to increase protection from hazards (such as wildfires, earthquakes, etc.). The intent is to improve infrastructure, particularly lifeline infrastructure (water systems, hospitals, fire) to reduce injuries, loss of life, and damage and destruction of property. Grants are also available for the creation of Local Hazard Mitigation Plans.

6.1.1.2.9 North American Wetlands Conservation Act Grant (USFWS)

This grant provides funds for projects that provide long-term protection of wetlands, and the fish and wildlife that depend upon wetlands. Applicants must provide local match equal to that requested. Entities that are eligible include organizations and individuals who have developed partnerships to carry out wetlands conservation projects in the U.S., Canada, and Mexico. Applications are continuously accepted by the USFWS for this grant.

6.1.1.2.10 Environmental Protection Agency, Pollution Prevention (EPA)

The EPA created the Pollution Prevention (P2) Grant Program (formerly Pollution Prevention Incentives for States) under the authority of the Pollution Prevention Act of 1990. The grant program provides matching funds to state and tribal programs to support P2 activities across all environmental media and to develop state-based programs. The purpose of the P2 Grant Program is to give states and tribes the capability to assist businesses and industries in identifying better environmental strategies and solutions for complying with federal and state environmental regulations. It also aims to improve business competitiveness without increasing environmental impacts. The majority of P2 Grants fund state-based projects for technical assistance, training,

outreach, education, regulatory integration, data collection, research, demonstration projects, and recognition programs.

6.1.1.2.11 Environmental Protection Agency, Source Reduction Assistance (EPA)

The EPA annually awards grants and cooperative agreements under the Source Reduction Assistance (SRA) Grant Program. The purpose of this program is to prevent the generation of pollutants at the source and ultimately provide an overall benefit to the environment. This program seeks projects that support source reduction, pollution prevention, and/or source conservation practices. Source reduction activities include: modifying equipment or technology; modifying processes or procedures; reformulating or redesigning products; substituting raw materials; and generating improvements in housekeeping, maintenance, training, or inventory control. Pollution prevention activities reduce or eliminate the creation of pollutants via such procedures as: using raw materials, energy, water or other resources more efficiently; protecting natural resources through conservation; preventing pollution; and promoting the reuse of materials and/or conservation of energy and materials. Eligible organizations include units of state, local, and tribal government; independent school district governments; private or public colleges and universities; nonprofit organizations; and community-based grassroots organizations.

6.1.1.2.12 Environmental Protection Agency, Wetlands Program Development Grants (EPA)

This program seeks projects that promote the coordination and acceleration of research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution. The EPA has identified three priority areas: (1) the development of a comprehensive monitoring and assessment program; (2) the improvement of the effectiveness of compensatory mitigation; and (3) the refinement of the protection of vulnerable wetlands and aquatic resources. Eligible entities include states, tribes, local governments, interstate associations, intertribal consortia, and national non-profit, NGOs.

6.1.1.2.13 Natural Resources Conservation Service, Watershed Protection and Flood Prevention Grant (NRCS)

The purpose of the program is to support activities that promote soil conservation and that promote the preservation of the watersheds of rivers and streams throughout the U.S. This program seeks to preserve and improve land and water resources via the prevention of erosion, floodwater, and sediment damages. The program supports improvement of: (1) flood prevention including structural and land treatment measures; (2) conservation, development, utilization, and disposal of water; or (3) conservation and proper utilization of land. Successful applicants under this program receive support for watershed surveys and planning, as well as watershed protection and flood prevention operations. Funding for watershed surveys and planning is intended to assist in the development of watershed plans to identify solutions that use conservation practices, including nonstructural measures, to ultimately solve problems.

Matching funds are not required; however, applicants must generally provide matches ranging from 0 to 50 percent in cash or in-kind resources depending on such factors as project type and the kinds of structural measures which a project proposes.

Eligible entities include: states, local governments, and other political subdivisions; soil or water conservation districts; flood prevention or control districts; and tribes. Potential applicants must be

able to obtain all appropriate land and water rights and permits to successfully implement proposed projects.

6.1.1.2.14 Water and Waste Disposal Program (USDA)

The Water and Waste Disposal Program provides financial assistance in the form of grants and loans for the development and rehabilitation of water, wastewater, and storm drain systems within rural communities. Funds may be used for costs associated with planning, design, and construction of new or existing water, wastewater, and storm drain systems. Eligible projects include storage, distribution systems, and water source development. Projects must benefit cities, towns, public bodies, and census-designated places with a population less than 10,000 persons. The intent of the program is to improve rural economic development and improve public health and safety.

6.1.1.2.15 Rural Development Program (USDA)

The U.S. Department of Agriculture (USDA), through its Rural Development Program, offers grants and financing for utilities in communities of less than 10,000 persons. Public agencies and Native American tribes are eligible grantees. Eligible utilities include electric, telecommunications, water, and environmental (wastewater, solid waste, storm drainage).

6.1.1.2.16 Rural Water Supply Program (USBR)

Through this program, USBR assists rural communities in the western United States with planning and design of projects to develop and deliver potable water supplies. Public agencies and Native American tribes serving communities of less than 50,000 persons are eligible to receive funding for appraisal investigations and feasibility studies related to water supply.

6.1.1.2.17 Agricultural Water Conservation Grants (USBR)

The USBR and the Natural Resources Conservation Service (NRCS) collaborate to make federal funding available in California to improve the efficiency of agricultural water use throughout the state. The projects funded through this partnership are intended to help communities build resilience to drought, including the modernization of their water infrastructure and efficiently using scarce water resources, while supporting the agricultural economy. USBR has the authority to provide financial assistance to entities with water or power delivery authority, including water districts and irrigation districts, whereas NRCS has the authority to provide on-farm assistance.

6.1.1.2.18 San Joaquin River Restoration Program Part III of Title X (USBR)

The San Joaquin River Restoration Program provides financial assistance to local agencies within the CVP of California for the planning, design, environmental compliance, and construction of local facilities to bank water underground or to recharge groundwater to reduce, avoid, or offset the quantity of expected water supply impacts to Friant Division long-term contractors caused by the interim and restoration flows.

6.2 Implementation

The beneficiaries of the Kern SWRP are the residents of the Kern Region represented by the Plan stakeholders, and include: water agencies; local, state, and federal agencies; NGOs, businesses, wildlife organizations, the agricultural/farm industry, and others within the Kern SWRP Region. The

Plan will, through project implementation, ensure regional multiple benefits. Projects included in this Plan are discussed in **Section 5**. The funding sources briefly discussed in the section above will help ensure the Plan is implemented.

As part of this Plan, a call was solicited to all stakeholders for projects to be submitted for inclusion in the Plan. Projects were analyzed and ranked within the SWRP (See **Section 5**). Comments were solicited for the Plan from all stakeholders. The projects identified within this Plan will be submitted through their respective IRWMPs for implementation.

6.2.1 SWRP Project Monitoring

The objectives and goals of the SWRP are stated in **Section 1**. These goals will be monitored as projects are implemented. The Kern SWRP was prepared using information and guidance provided by a mix of water suppliers, municipalities, regulatory, environmental, agricultural, and land use planning entities that represent all areas of the Kern Region. Extensive information and data on the Kern Region have been prepared by these various agencies and groups. The groups within Kern County, through the IRWMP process, submitted their plans, reports, and studies to the region's IRWMP resource library to ensure that the Kern IRWMP accurately reflects each stakeholder's individual perspectives, which was used during the development of this SWRP. That information was reviewed and evaluated and served as the technical foundation for the development of this plan. Refer to the Kern IRWMP Tables 14-1 through 14-4 for a listing of various plans, reports and studies pertinent to the area.

The use of these plans and the data collected by various agencies and committees within the Kern Region will aid in determining if specific SWRP projects are meeting monitoring goals and providing a benefit to the area. The Kern IRWMP details the data collection and monitoring for the Kern Region. Each of these committee's and/or agencies are collecting data that is important to the region, have methods for data collection that are similar, and thus have opportunities for streamlining or maximization of efficiencies for creating region-wide datasets and databanks.

Data is vitally important to agencies trying to maximize operating efficiency and design projects with limited budgets. The types of data available, current relevance and trends, and knowledgeable people that can interpret the data are all important. Equally important is the opportunity for federal and state agencies to view local data for their own monitoring needs and to better understand local conditions.

6.3 Adaptive Management

The SWRP was created utilizing public participation and assistance and feedback from various stakeholders in the Kern Region. The Plan was developed in order to provide a planning and regional benefit basis for water projects in Kern County. As the projects are developed or regional needs/benefits change, the SWRP will be revised to adequately address the needs of the area in the context of the SWRCB plan guidelines. Projects will be added to or removed from the SWRP through the submittal and review process, and added to the agenda of regularly-scheduled Kern and Poso Creek IRWMP meetings for consideration of inclusion in the Plan.

When the SWRP is re-opened for revisions, updates can be applied throughout the Plan. The Plan priorities, assessments, project ranking, project addition/removal, etc. will be addressed. The Plan can be re-opened/revised based on the procedure below. If the Plan is being re-opened for the sole purpose of including or removing projects, a process is identified in **Section 5.6**.

1. Adoption/Acceptance of the Kern SWRP:
    a. To adopt/accept the Kern SWRP, the Stakeholders Group shall issue a notice to all participants in the respective IRWMPs of the intent to adopt/accept the Kern SWRP. A vote will be held, either in person, via mail or electronically. A list of entities or individuals that provided comments to the draft SWRP can be found in **Appendix E: List of Individuals and Entities that Provided Comments on Draft SWRP**.
    b. The Kern SWRP shall be adopted/accepted when a majority of the stakeholders vote in favor of acceptance of the Plan.
        i. Acceptance of the Plan by each entity seeking to do so shall be subject to the internal policies and practices of said entity.
2. Amendments to the Kern SWRP:
    a. Amendments to the plan may be proposed by any member of the Stakeholder Group.
    b. Amendments to the Plan shall require:
        i. Approval of the stakeholders by a simple majority vote.
        ii. The amended Plan shall be adopted/accepted when a majority of the stakeholders vote in favor of acceptance of the Plan.
    c. Amendment of one or more of the appendices, in part or in whole, shall not require re-adoption of the Plan by the Stakeholder Group.

The Kern SWRP is anticipated to be revised prior to the release of the SWGP Round 2 final guidelines, which is tentatively scheduled for 2018.

7 Education, Outreach and Public Participation

7.1 Public Outreach and Participation Opportunities

Through public education and public participation communication efforts key stakeholders and community members will have the opportunity to be involved in actions and decisions regarding the implementation and design of watershed-based storm water management projects noted in this Plan (**Table 4-2**). Through these efforts, the goal will be to engage the public when considering major technical and policy issues related to the development and implementation of the Plan, engaging community members and key stakeholders who will be affected by project design and implementation. This section discusses the mechanisms, processes and milestones that will be used to engage and facilitate public participation and communication for projects.

7.1.1 Identifying Key Stakeholders

Key stakeholders that have been involved in plan development were identified as stakeholders of the Kern and Poso Creek RWMGs (**Table 4-1**). As the Kern SWRP is implemented, other specific stakeholders such as DACs and the residents of those communities will be brought into the communication process. DACs that will be directly affected by the projects included in this Plan are discussed in **Section 7.2**.

While the Kern RWMG and Poso Creek RWMG members and specific DACs are noted as the main stakeholders in the implementation of the Plan, additional parties may include developers, locally regulated commercial and industrial stakeholders, nongovernmental and nonprofit organizations (discussed in **Section 4.3**), and the overall general public. As projects come to fruition, these additional parties will be identified by the agencies/project proponents responsible for the project, and a point-of-contact will be researched and included in any communication distribution lists.

7.1.2 Public Outreach/Participation Actions

7.1.2.1 Plan Development Communication

As described in **Section 4.5**, during the development phase of the Plan, key stakeholders were identified as members of the Kern and Poso Creek RWMGs (**Table 4-1**) and were invited to attend and participate in public meetings and contribute storm water-related project proposals to be included in the Plan. The initial meeting was held on May 31, 2016 at the Shafter-Wasco Irrigation District office, and the presentation consisted of the purpose and need for a SWRP, an overview of the Kern SWRP outline, review of the Project Submittal Form, an announcement regarding the second public meeting to be held in the fall, and a period of questions and general discussion.

A second public meeting was held with stakeholders on November 9, 2016 at the Buena Vista Water Storage District office to review and discuss the draft Kern SWRP, which was distributed by email

and posted online at www.kernirwmp.com for a three-week public review period on October 21, 2016. The meeting's primary focus consisted of an overview and corresponding discussion with stakeholders of any necessary additions or revisions for each of the seven SWRP sections.

7.1.2.2 Plan Implementation Communication

As the projects listed in the Plan are funded through grant programs and begin their implementation phase (planning, design, and construction), the affected agencies, surrounding landowners, and directly-affected community members will be included in a communication plan regarding the projects. The following are suggested outreach mechanisms to engage stakeholders during project planning, design and implementation phases:

7.1.2.2.1 Direct Community Outreach

- **Educational Public Meetings –** Public meetings would be held as necessary, specifically when the project involves/affects a DAC and/or directly impacts landowners and ratepayers of the responsible district(s). A minimum of two meetings are suggested; however, more can be held if determined to be necessary:
    - The first meeting would discuss an overview of the project including what the final goal would be and how it would benefit the stakeholders including anticipated long and short term solutions provided by the completed project that would address water-related challenges they may be facing; beginning discussions with stakeholders to determine their needs and concerns regarding the project; communicating the "what's next" process as far as education efforts and project progression; and an opportunity for questions and answers.
    - The second (and any additional) educational public meeting(s) should consist of updates on the progress of the project; an overview of the information gathered from any surveys conducted and how the gathered input is being incorporated into the project phases to best suit the short and long-term needs of the stakeholders; and an opportunity for questions and answers. Additional agenda items may be added as needed.

  Attendance at the meetings should be taken to track participants and to follow-up on any specific questions or issues that may come up in discussions.
- **Community/Stakeholder Surveys –** Community/stakeholder surveys may be utilized to gather additional information, particularly from landowners and DAC community members as a follow-up to the initial public meeting.
    - Landowner surveys can be easily developed using an online survey source such as Constant Contact or Google Forms, and instructions and a link to the survey can be distributed by email by the responsible district(s) or public outreach consultant.
    - Community members within the affected DACs may not have Internet access or it may be more difficult to gather email addresses, therefore door-to-door surveys may be the best way to ensure the information is gathered from the intended audience. These surveys should be provided in English and Spanish versions, and a Spanish interpreter should be part of the team conducting door-to-door surveys in order to alleviate any potential language barriers.

7.1.2.2.2 Printed Communication

- **Branding –** To help with all methods of communication, it is best that a "brand" be developed for the project to help recipients of information with recognition and immediate association with a project. Branding can be established through methods such as the development of a logo for the project, and consistent usage of fonts and a graphical image.
- **Printed Materials –** Printed materials should incorporate the visual imagery established through branding efforts, and should be tailored for specific means of communication:
    - Fliers – Fliers can be designed and distributed either via direct mail and email, or printed and distributed in communities. In some cases, the fliers should be both in English and Spanish languages.
    - Letter Correspondence – Letters can be distributed via email or direct mail and can include specifics on project information, such as construction schedules, the need for the completion of a survey, and other pertinent facts to be communicated to stakeholders.
    - Presentation Materials – A Power Point presentation may be utilized at the public meetings. If a Power Point isn't possible to display for a meeting, display boards printed at 24-inch x 36-inch or larger size can be used and set up on easels. Handouts of presentations and smaller versions of display boards can be distributed to meeting attendees, and later emailed (or posted on a website) for access by stakeholders as a recap of a meeting (as discussed in **Section 7.1.2.2.3**).
- **Signage –** If projects are funded by specific grants such as Proposition 1, then projects should be kept in compliance with Water Code section 79707(g), as these projects must include signage informing the public about that the project.

7.1.2.2.3 Digital Communication

- **Websites –** Public meeting notices, agendas and minutes, PDFs of meeting presentations, and any handouts related to the SWRP will be posted on the Kern IRWMP (www.kernirwmp.com) and Poso Creek IRWMP (www.semitropic.com/PosoCreekIRWM.html) websites in a timely manner.

  Project specific communication would occur through the implementing agency's website. Printed materials, community/stakeholder surveys and completion instructions, educational fliers and any other methods of printed communication would also be posted (in both English and Spanish versions as necessary).
- **Email Distribution –** Members of the Kern and Poso Creek IRWM will be communicated with via email as upcoming public meetings regarding the SWRP are scheduled. Emails to these groups can be made through the specific IRWM managers.
- **Press Releases –** As needed, press releases may be written and distributed to a media list that consists of media outlets (newspapers, radio and television stations) within Kern County. Press releases should cover the "who, what, why, when and where" for pertinent information the public should be aware of regarding the projects included in this Plan. Press release topics should include: upcoming public meeting information; requests for

completion of community/stakeholder surveys; construction schedules; and any other important project information.

7.2 Involvement of Disadvantaged and Climate Vulnerable Communities

DAC involvement will be integrated as the Plan is implemented and projects within or adjacent to DACs begin to come to fruition. A composite listing of DACs within the Kern and Poso Creek IRWM boundaries are listed on **Table 4-4**. The specific disadvantaged and climate-vulnerable communities that may be affected by storm water projects and will need to be included in the implementation of the Plan are noted in **Table 7-1**:

Table 7-1. DACs Affected by Potential Projects

DACs Affected by Potential Projects			
DACs Involved	Implementing Agency/Organization	Potential Project	Location to DAC Boundary
Community of Arvin	County of Kern – Public Works Department	Caliente Creek Habitat Restoration and Groundwater Recharge Projects (Design & Construction)	Adjacent
Community of Lamont/Lamont Storm Water District			
Frazier Park	County of Kern – Public Works Department	Cuddy Creek Restoration Project	Within, Adjacent
City of Taft	County of Kern – Public Works Department	Sand Creek Bank and Erosion Protection Project	Within, Adjacent
Ford City			
City of Buttonwillow	Buena Vista Water Storage District	The Palms Storm Water Recharge and Recovery Project	Adjacent
City of Taft			
Community of Tupman			

7.2.1 Communicating with and Educating DACs

Communication with DACs is essential to the successful completion of watershed-based storm water management projects, and residents are generally dedicated to bettering their communities. Important information that will be essential to communicate to and engage DACs will include construction timelines, benefits to their communities, and soliciting information from community members such as how design/functionality/environmental factors could impact their quality of life, and short and long-term solutions.

Opportunities to educate the members of DAC communities and gather their input may be conducted via door-to-door community surveys, educational materials (posters, hand outs, letters, etc.) to educate residents about goals of the Plan and specific project and conservation efforts they can implement in their daily tasks, and public outreach meetings. All materials should be available in English and Spanish languages. In addition, a Spanish interpreter will be available to translate at any community meetings and while conducted door-to-door surveys (if needed).

By including the DAC members, they will have a sense of ownership in the project and more likely to participate and provide feedback that could be crucial to long-term solutions that projects should solve. Engaged community members will be tracked using a sign-in system at any public meetings held, as well as responses received from community surveys and any other correspondence with community members regarding the specific project.

7.3 Addressing Environmental Injustice Issues

By including DACs in the implementation process of projects listed in the Plan that are within and/or adjacent to their boundaries with direct impact on their communities, runoff-related environmental injustice can be avoided, or at the very least, minimized. With the involvement of these communities in the planning process, project aspects that could negatively affect residents' quality of life can be identified immediately so that short and long term solutions can be incorporated into final designs and project implementation. Opportunities to educate the members of DAC communities and gather their input will be conducted via door-to-door community surveys, informational materials (posters, handouts, letters), and community meetings. All materials will be available in English and Spanish languages, and both versions of all materials will be posted on the Kern and Poso Creek IRWMP websites. In addition, a Spanish interpreter will be available to translate at any community meetings held. Methods of communication are described in greater detail in **Section 7.1.2**.

7.4 Public Engagement and Education Schedule

Schedules for public engagement and education efforts will vary by project.

8 SWRP Checklist and Self-Certification

8.1 Checklist Instructions

For each element listed below, review the applicable section in the Storm Water Resource Plan Guidelines and enter ALL of the following information.

A. Mark the box if the Storm Water Resource Plan, or a functional equivalent Plan, meets the provision

B. In the provided space labeled References, enter:

1. Title of document(s) that contain the information;
2. The chapter/section, and page number(s) where the information is located within the document(s);
3. The entity(ies) that prepared the document(s);
4. The date the document(s) was prepared, and subsequent updates; and
5. Where each document can be accessed[1] (website address or attached).

Table 8-1. Storm Water Resource Plan Checklist and Self-Certification

Storm Water Resource Plan Checklist and Self-Certification		
Note: Mandatory required elements per California Water Code are shaded		
Check if "Yes"	Plan Element	Water Code Section
Watershed Identification *(Guidelines Section VI.A)*		
Check if "Yes"	Plan Element	Water Code Section
☒	Plan identifies watershed and subwatershed(s) for storm water resource planning.	10565(c) 10562(b)(1) 10565(c)
References: • Sections 2.1 and 2.2		
☐	Plan is developed on a watershed basis, using boundaries as delineated by U.S. Geological Survey (USGS), CalWater, USGS Hydrologic Unit designations, or an applicable integrated regional water management group, and includes a description and boundary map of each watershed and sub-watershed applicable to the Plan.	
References:		

[1] All documents referenced must include a website address. If a document is not accessible to the public electronically, the document must be attached in the form of an electronic file (e.g. pdf or Word 2013) on a compact disk or other electronic transmittal tool.

Watershed Identification *(Guidelines Section VI.A)*		
Check if "Yes"	Plan Element	Water Code Section
☐	Plan includes an explanation of why the watershed(s) and sub-watershed(s) are appropriate for storm water management with a multiple-benefit watershed approach;	
References:		
☐	Plan describes the internal boundaries within the watershed (boundaries of municipalities; service areas of individual water, wastewater, and land use agencies, including those not involved in the Plan; groundwater basin boundaries, etc.; preferably provided in a geographic information system shape file);	
References:		
☐	Plan describes the water quality priorities within the watershed based on, at a minimum, applicable TMDLs and consideration of water body-pollutant combinations listed on the State's Clean Water Act Section 303(d) list of water quality limited segments (a.k.a impaired waters list);	
References:		
☐	Plan describes the general quality and identification of surface and ground water resources within the watershed (preferably provided in a geographic information system shape file);	
References:		
☐	Plan describes the local entity or entities that provide potable water supplies and the estimated volume of potable water provided by the water suppliers;	
References:		
☐	Plan includes map(s) showing location of native habitats, creeks, lakes, rivers, parks, and other natural or open space within the sub-watershed boundaries; and	
References:		
☐	Plan identifies (quantitative, if possible) the natural watershed processes that occur within the sub- watershed and a description of how those natural watershed processes have been disrupted within the sub-watershed (e.g., high levels of imperviousness convert the watershed processes of infiltration and interflow to surface runoff increasing runoff volumes; development commonly covers natural surfaces and often introduces non-native vegetation, preventing the natural supply of sediment from reaching receiving waters).	
References:		

Water Quality Compliance *(Guidelines Section V)*		
Check if "Yes"	Plan Element	Water Code Section
☒	Plan identifies activities that generate or contribute to the pollution of storm water or dry weather runoff, or that impair the effective beneficial use of storm water or dry weather runoff.	10562(d)(7)
References: • Section 2.7		
☒	Plan describes how it is consistent with and assists in, compliance with total maximum daily load implementation plans and applicable national pollutant discharge elimination system permits.	10562(b)(5)
References: • Section 3.1		
☒	Plan identifies applicable permits and describes how it meets all applicable waste discharge permit requirements.	10562(b)(6)
References: • Sections 3.1, 3.3		

Organization, Coordination, Collaboration *(Guidelines Section VI.B)*		
Check if "Yes"	Plan Element	Water Code Section
☒	Local agencies and nongovernmental organizations were consulted in Plan development.	10565(a)
References: • Sections 4.2, 4.3		
☒	Community participation was provided for in Plan development.	10562(b)(4)
References: • Sections 4.5		
☐	Plan includes description of the existing integrated regional water management group(s) implementing an integrated regional water management plan.	
References:		
☐	Plan includes identification of and coordination with agencies and organizations (including, but not limited to public agencies, nonprofit organizations, and privately owned water utilities) that need to participate and implement their own authorities and mandates in order to address the storm water and dry weather runoff management objectives of the Plan for the targeted	
References:		
☐	Plan includes identification of nonprofit organizations working on storm water and dry weather resource planning or management in the watershed.	
References:		

Organization, Coordination, Collaboration *(Guidelines Section VI.B)*		
Check if "Yes"	Plan Element	Water Code Section
☐	Plan includes identification and discussion of public engagement efforts and community participation in Plan development.	
References:		
☐	Plan includes identification of required decisions that must be made by local, state or federal regulatory agencies for Plan implementation and coordinated watershed-based or regional monitoring and visualization	
References:		
☐	Plan describes planning and coordination of existing local governmental agencies, including where necessary new or altered governance structures to support collaboration among two or more lead local agencies responsible for plan implementation.	
References:		
☐	Plan describes the relationship of the Plan to other existing planning documents, ordinances, and programs established by local agencies.	
References:		
☐	(If applicable) Plan explains why individual agency participation in various isolated efforts is appropriate.	
References:		

Quantitative Methods *(Guidelines Section VI.C)*		
Check if "Yes"	Plan Element	Water Code Section
☐	For all analyses: Plan includes an integrated metrics-based analysis to demonstrate that the Plan's proposed storm water and dry weather capture projects and programs will satisfy the Plan's identified water management objectives and multiple benefits.	
References:		
☐	For water quality project analysis (section VI.C.2.a): Plan includes an analysis of how each project and program complies with or is consistent with an applicable NPDES permit. The analysis should simulate the proposed watershed-based outcomes using modeling, calculations, pollutant mass balances, water volume balances, and/or other methods of analysis. Describes how each project or program will contribute to the preservation, restoration, or enhancement of watershed processes (as described in Guidelines section VI.C.2.a)	
References:		

Quantitative Methods *(Guidelines Section VI.C)*		
Check if "Yes"	Plan Element	Water Code Section
☐	For storm water capture and use project analysis (section VI.C.2.b): Plan includes an analysis of how collectively the projects and programs in the watershed will capture and use the proposed amount of storm water and dry weather runoff.	
References:		
☐	For water supply and flood management project analysis (section VI.C.2.c): Plan includes an analysis of how each project and program will maximize and/or augment water supply.	
References:		
☐	For environmental and community benefit analysis (section VI.C.2.d): Plan includes a narrative of how each project and program will benefit the environment and/or community, with some type of quantitative measurement.	
References:		
☐	Data management (section VI.C.3): Plan describes data collection and management, including: a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified.	
References:		

Identification and Prioritization of Projects *(Guidelines Section VI.D)*		
Check if "Yes"	Plan Element	Water Code Section
☒	Plan identifies opportunities to augment local water supply through groundwater recharge or storage for beneficial use of storm water and dry weather runoff.	10562(d)(1)
References: • Appendix A - Project Submittal Forms, Water Supply Benefits, Page 9 of 13, on each of the 12 proposed projects		
☒	Plan identifies opportunities for source control for both pollution and dry weather runoff volume, onsite and local infiltration, and use of storm water and dry weather runoff.	10562(d)(2)
References: • Appendix A - Project Submittal Forms, Water Quality Benefits, Page 8 of 13, on each of the 12 proposed projects		
☒	Plan identifies projects that reestablish natural water drainage treatment and infiltration systems, or mimic natural system functions to the maximum extent feasible.	10562(d)(3)
References: • Appendix A - Project Submittal Forms, Flood Management Benefits, Page 10 of 13, on each of the 12 proposed projects		

Identification and Prioritization of Projects *(Guidelines Section VI.D)*		
Check if "Yes"	Plan Element	Water Code Section
☒	Plan identifies opportunities to develop, restore, or enhance habitat and open space through storm water and dry weather runoff management, including wetlands, riverside habitats, parkways, and parks.	10562(d)(4)
References: • Appendix A - Project Submittal Forms, Environmental and Habitat Enhancement Benefits, Page 11 of 13, on each of the 12 proposed projects		
☒	Plan identifies opportunities to use existing publicly owned lands and easements, including, but not limited to, parks, public open space, community gardens, farm and agricultural preserves, school sites, and government office buildings and complexes, to capture, clean, store, and use storm water and dry weather runoff either onsite or offsite.	10562(d)(5), 10562(b)(8)
References: • Appendix A - Project Submittal Forms, Environmental and Habitat Enhancement Benefits, Page 12 of 13, on each of the 12 proposed projects		
☒	For new development and redevelopments (if applicable): Plan identifies design criteria and best management practices to prevent storm water and dry weather runoff pollution and increase effective storm water and dry weather runoff management for new and upgraded infrastructure and residential, commercial, industrial, and public development.	10562(d)(6)
References: • Appendix A - Project Submittal Forms, Water Quality Benefits, Page 8 of 13, on each of the 12 proposed projects		
☒	Plan uses appropriate quantitative methods for prioritization of projects. (This should be accomplished by using a metrics-based and integrated evaluation and analysis of multiple benefits to maximize water supply, water quality, flood management, environmental, and other community benefits within the watershed.)	10562(b)(2)
References: • Section 5.4		
☐	*Overall:* Plan prioritizes projects and programs using a metric-driven approach and a geospatial analysis of multiple benefits to maximize water supply, water quality, flood management, environmental, and community benefits within the watershed.	
References:		
☐	*Multiple benefits:* Each project in accordance with the Plan contributes to at least two or more Main Benefits and the maximum number of Additional Benefits as listed in Table 4 of the Guidelines. (Benefits are not counted twice if they apply to more than one category.)	
References:		

Implementation Strategy and Schedule *(Guidelines Section VI.E)*		
Check if "Yes"	Plan Element	Water Code Section
☐	Plan identifies resources for Plan implementation, including: 1) projection of additional funding needs and sources for administration and implementation needs; and 2) schedule for arranging and securing Plan implementation financing.	
References:		
☒	Plan projects and programs are identified to ensure the effective implementation of the storm water resource plan pursuant to this part and achieve multiple benefits.	10562(d)(8)
References: • Sections 5.4, 5.5, and Table 5.2; Sections 6.1, 6.2, and Appendix C		
☒	The Plan identifies the development of appropriate decision support tools and the data necessary to use the decision support tools.	10562(d)(8)
References: • Sections 5.4, 5.5, and Table 5.2, and Appendix C		
☐	Plan describes implementation strategy, including: a) Timeline for submitting Plan into existing plans, as applicable; b) Specific actions by which Plan will be implemented; c) All entities responsible for project implementation; d) Description of community participation strategy; e) Procedures to track status of each project; f) Timelines for all active or planned projects; g) Procedures for ongoing review, updates, and adaptive management of the Plan; and h) A strategy and timeline for obtaining necessary federal, state, and local permits.	
References:		
☒	Applicable IRWM Plan: The Plan will be submitted, upon development, to the applicable integrated regional water management (IRWM) group for incorporation into the IRWM plan.	10562(b)(7)
References: • Sections 5.1, 5.2, and 6.3		
☐	Plan describes how implementation performance measures will be tracked.	
References:		

Education, Outreach, Public Participation *(Guidelines Section VI.F)*		
Check if "Yes"	Plan Element	Water Code Section
☒	Outreach and Scoping: Community participation is provided for in Plan implementation.	10562(b)(4)
References: • Sections 7.1 and 7.2		
☐	Plan describes public education and public participation opportunities to engage the public when considering major technical and policy issues related to the development and implementation.	
References:		
☐	Plan describes mechanisms, processes, and milestones that have been or will be used to facilitate public participation and communication during development and implementation of the Plan.	
References:		
☐	Plan describes mechanisms to engage communities in project design and implementation.	
References:		
☐	Plan identifies specific audiences including local ratepayers, developers, locally regulated commercial and industrial stakeholders, nonprofit organizations, and the general public.	
References:		
☐	Plan describes strategies to engage disadvantaged and climate vulnerable communities within the Plan boundaries and ongoing tracking of their involvement in the planning process.	
References:		
☐	Plan describes efforts to identify and address environmental injustice needs and issues within the watershed.	
References:		
☐	Plan includes a schedule for initial public engagement and education.	
References:		

8.2 Declaration and Signature

I declare under penalty of perjury that all information provided is true and correct to the best of my knowledge and belief.

Signature	Title	Date
Signature	Title	Date

9 References

California Department of Water Resources. (2016). *IRWM Boundary Map.* Retrieved from http://www.water.ca.gov/waterplan/gis/index.cfm.

California Department of Water Resources. (Last modified on Oct. 18, 2016 by DWR). *Groundwater Basins Map.* Bulletin 118. Retrieved from http://water.ca.gov/groundwater/sgm/basin_boundaries.cfm.

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GEI Consultants. (June 2014). *Poso Creek Integrated Regional Water Management Plan – 2014 Update.* Prepared on behalf of Poso Creek IRWMP Regional Water Management Group

GEI Consultants. (Updated December 2016*). Figure: Flood Water Capture and Distribution Infrastructure.* Originally included in Poso Creek Integrated Regional Water Management Plan – 2014 Update. Prepared on behalf of Poso Creek IRWMP Regional Water Management Group

Iger, Rick. (June 27, 2012). Presentation on Kern County Water Supply – A History of Water in Kern County. *Southern San Joaquin Valley of Kern County Recharge Sites.* Figure originally by County of Kern.

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Provost & Pritchard Consulting Group. (August 2014). *Disadvantaged Community Water Study for the Tulare Lake Basin.* Prepared on behalf of County of Tulare.

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U.S. Department of Agriculture (USDA) Natural Resources Conservation Services. (2016). *Watershed Boundary Dataset.* Retrieved from http://egis.fire.ca.gov/watershed_mapper/PDF/calw221_with_Fish_ESU_County.htm.

U.S. Geological Survey (USGS). (2016). Water Data Reports and Geographic Information Systems (GIS) data. Retrieved from http://water.usgs.gov/maps.html

Figures

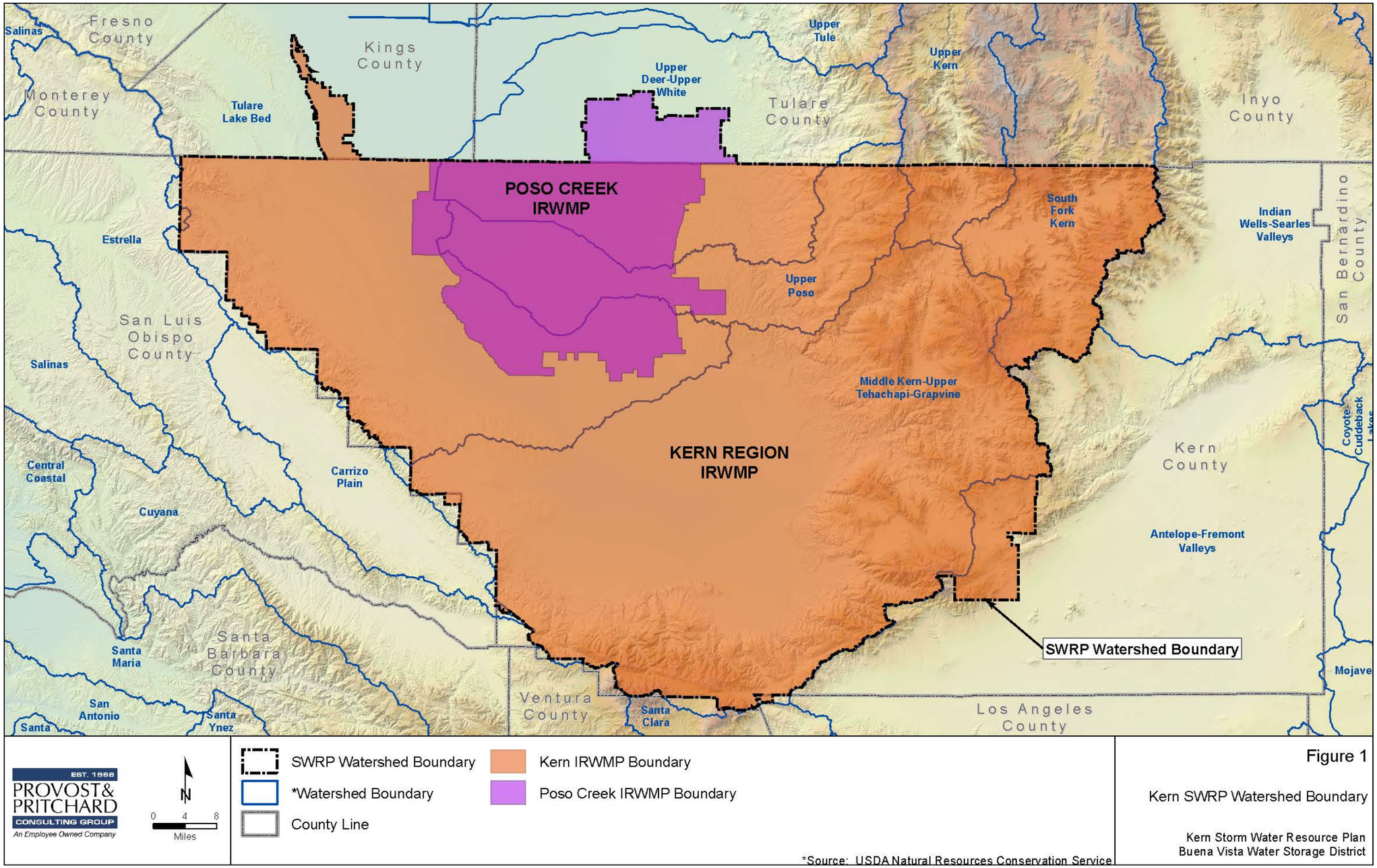

Figure 1. Kern SWRP Watershed Boundary Map

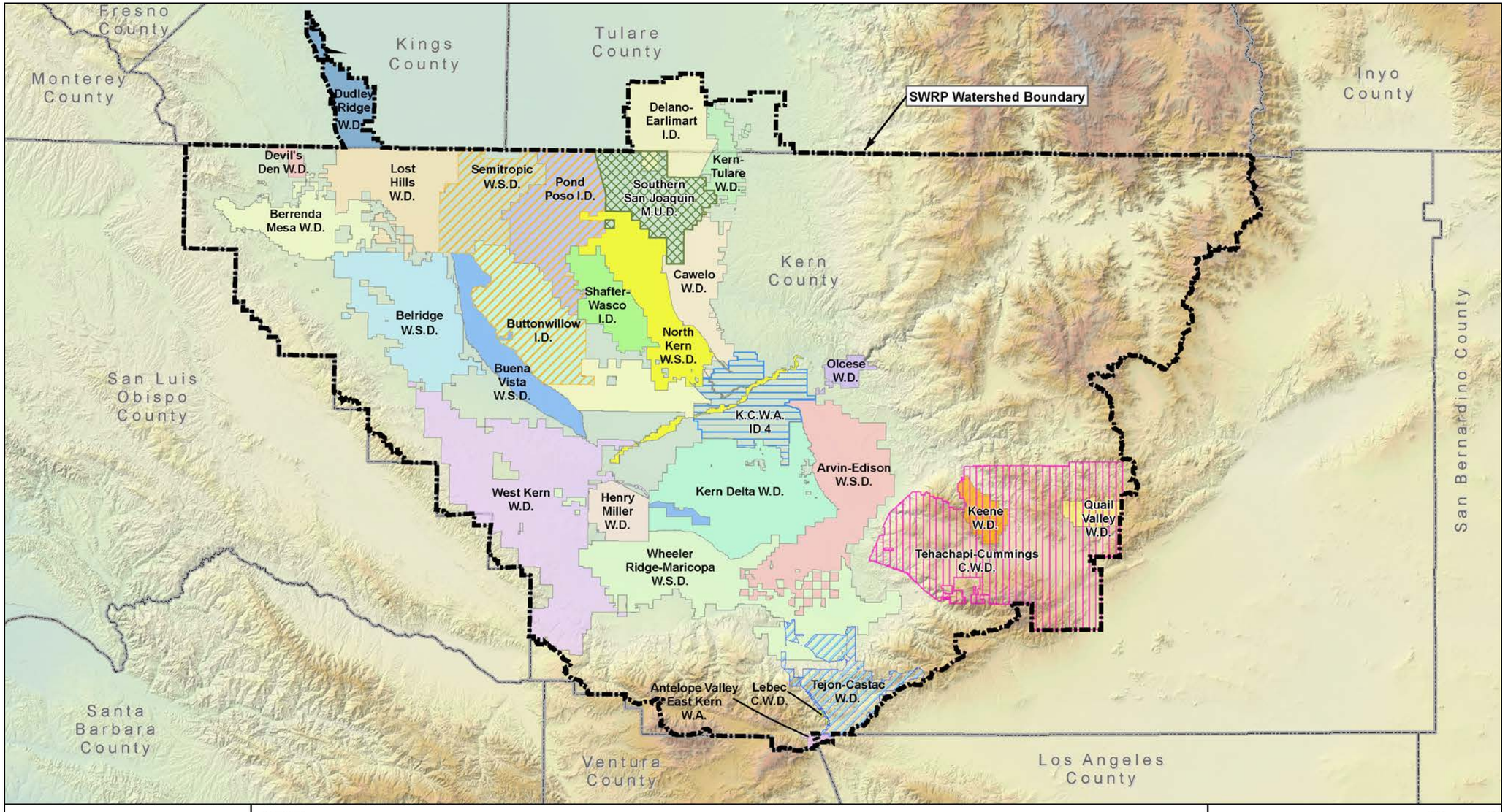

Figure 2. Water Agencies within the Kern Region

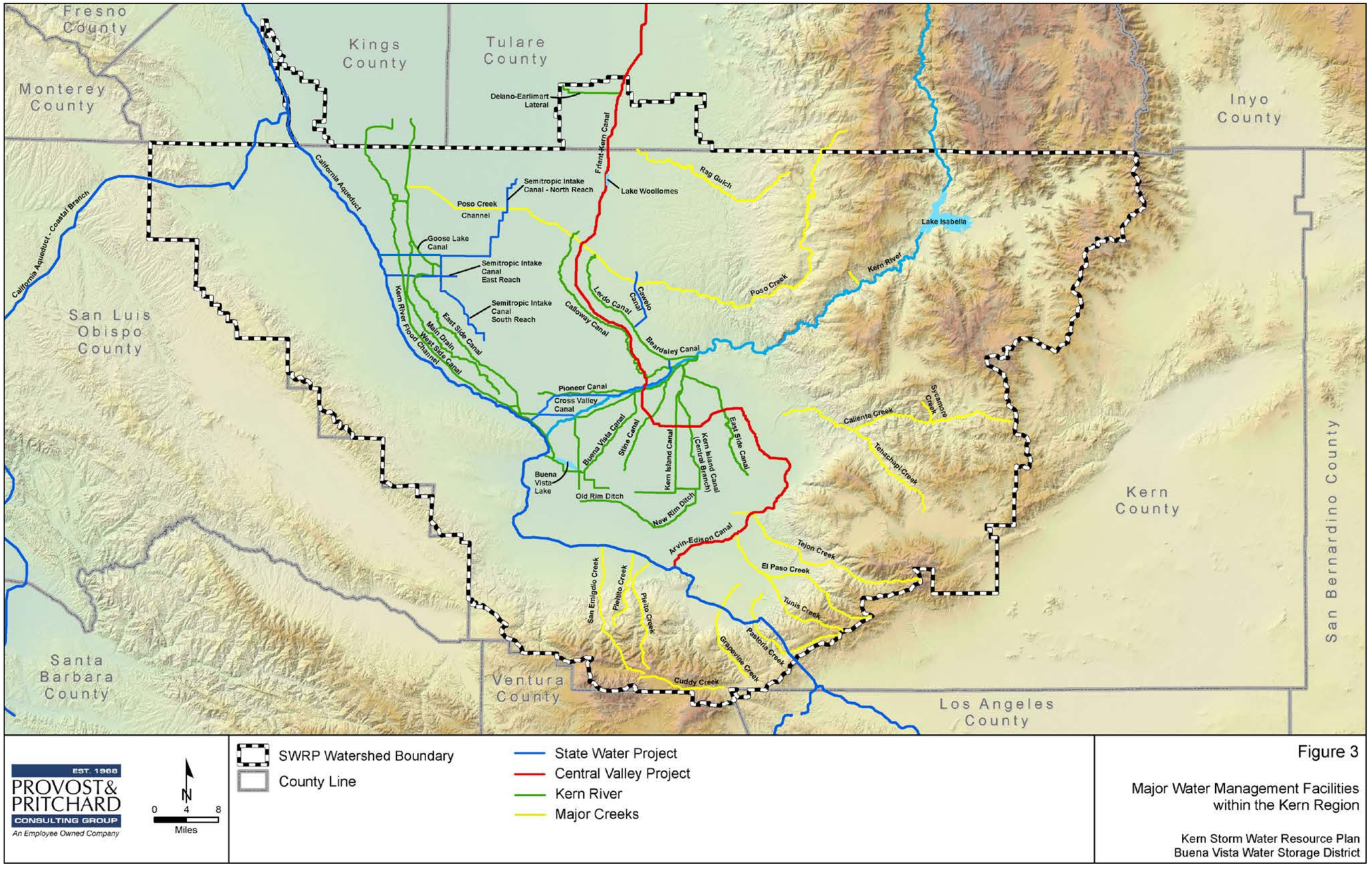

Figure 3. Major Water Management Facilities within the Kern Region

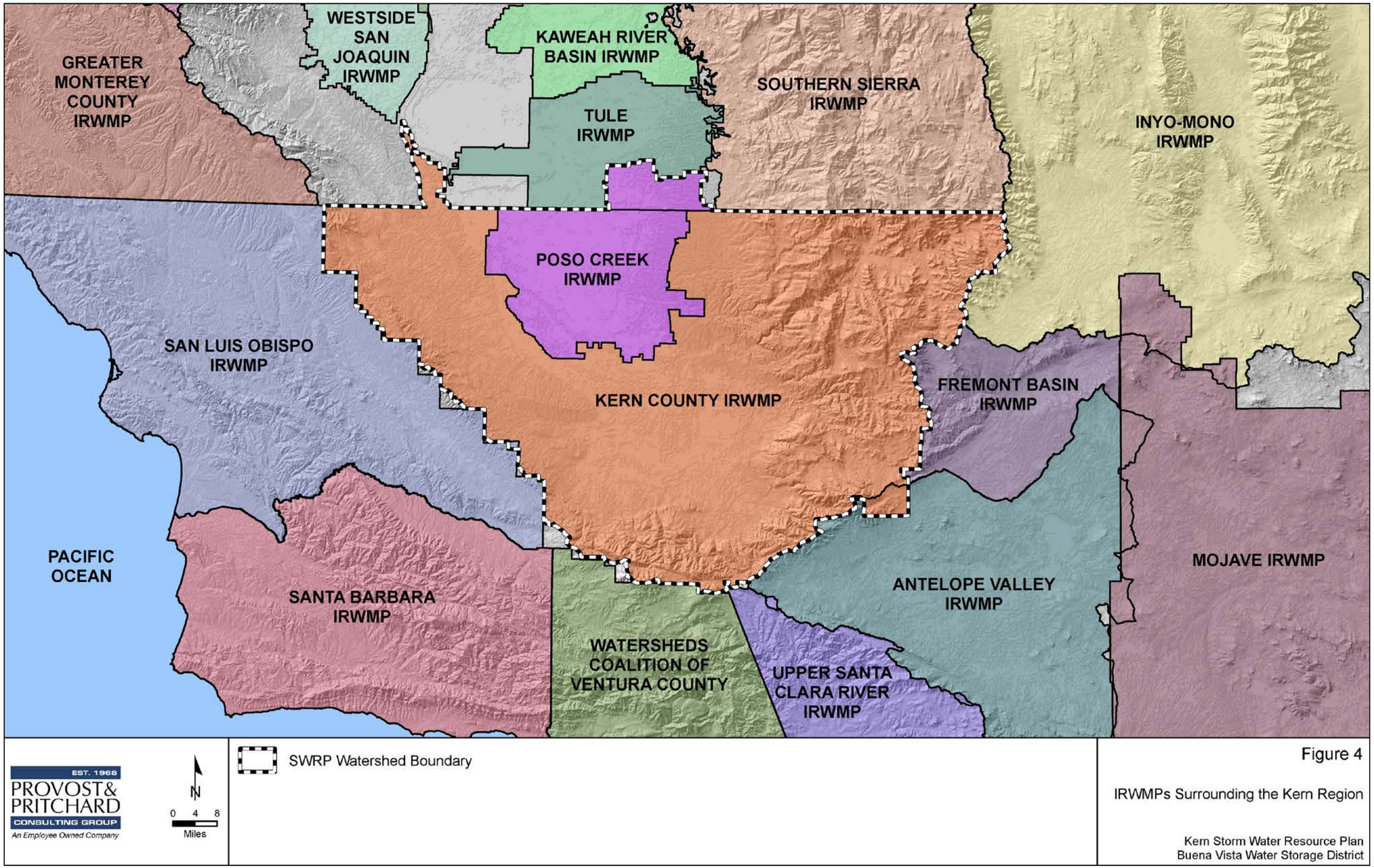

Figure 4. IRWMPs Surrounding the Kern Region

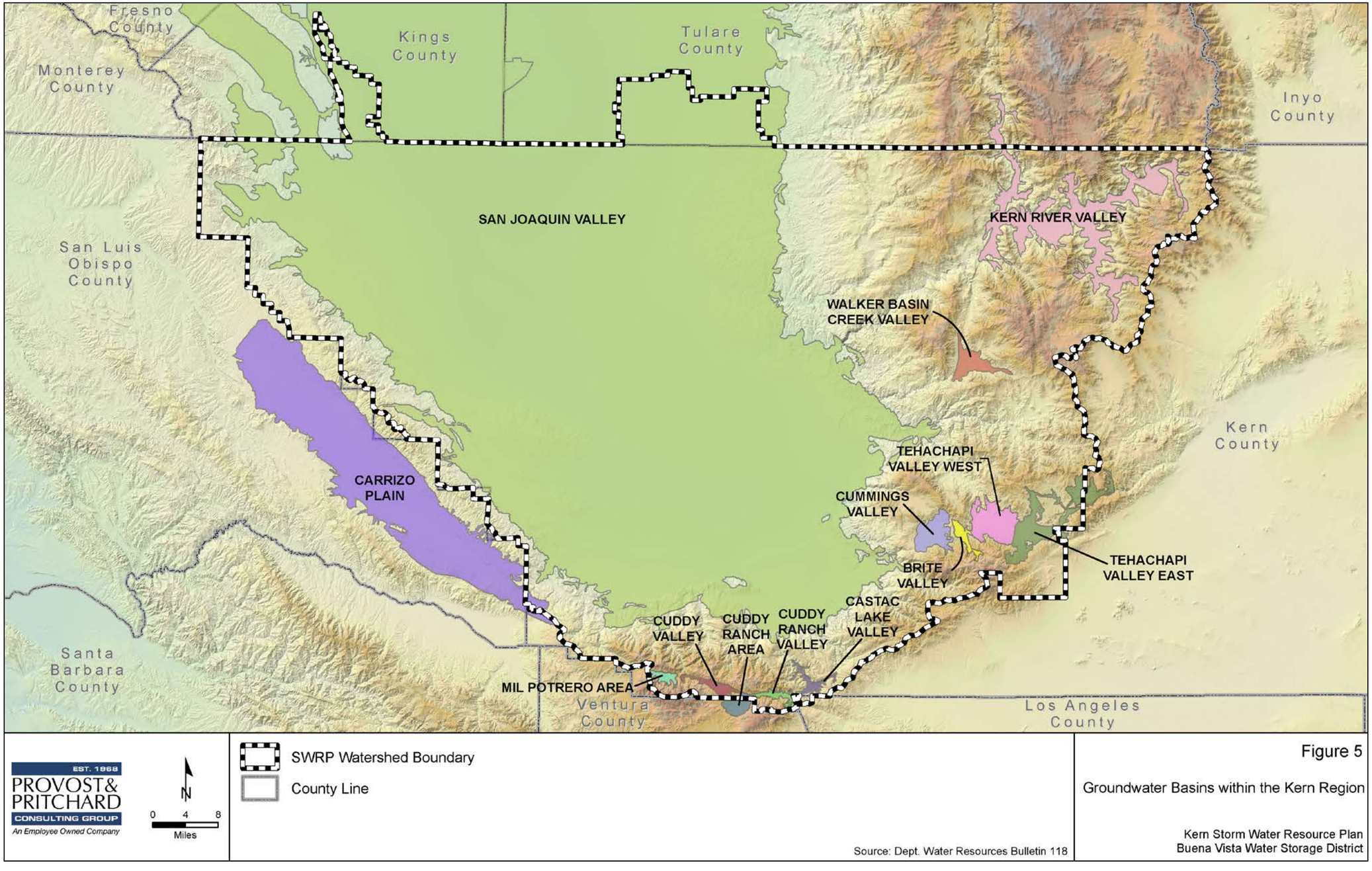

Figure 5. Groundwater Basins within the Kern Region

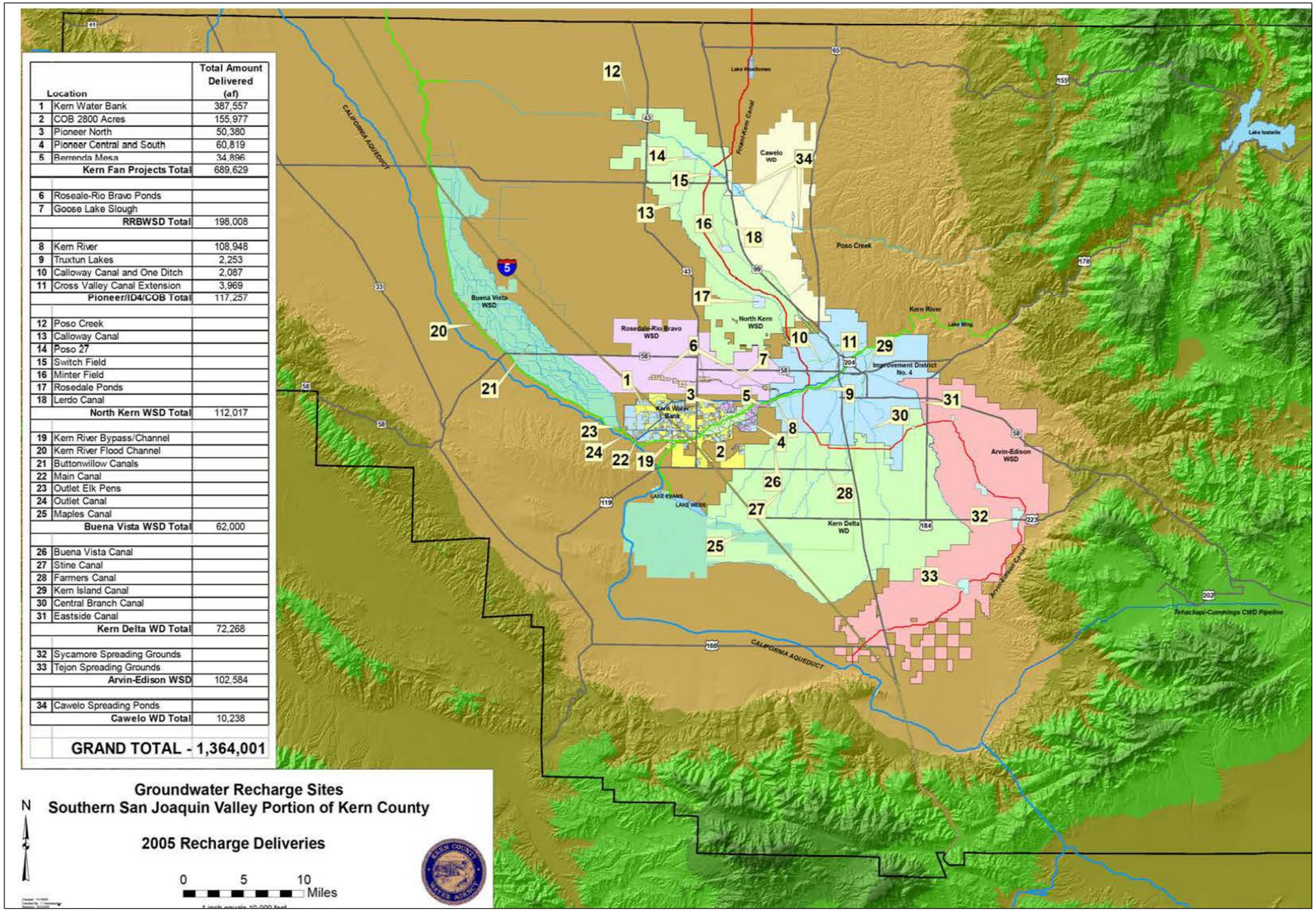

Figure 6. Groundwater Recharge Areas of the Kern Region

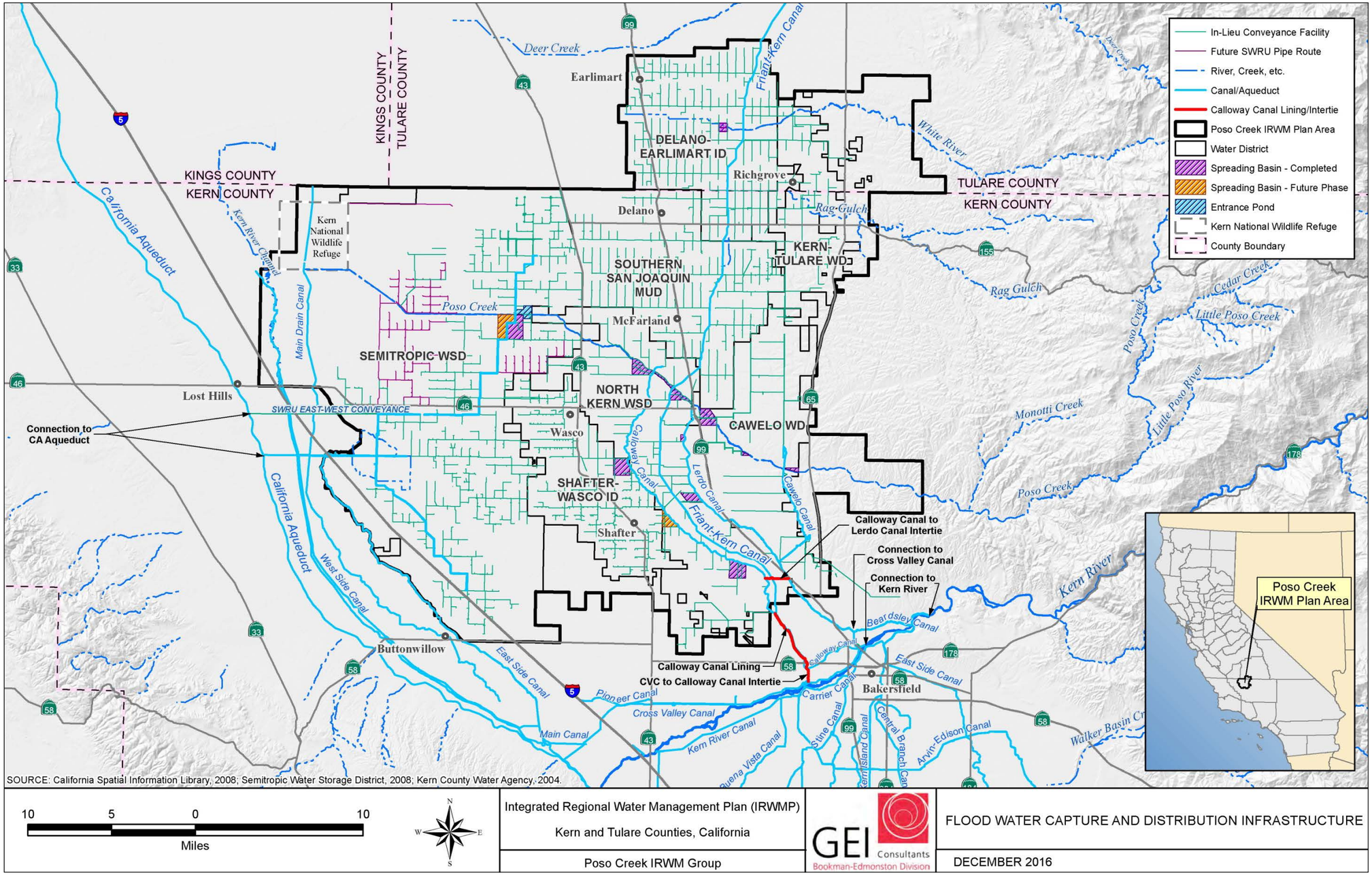

Figure 7. Flood Water Capture and Distribution Infrastructure for Poso Creek IRWM Group

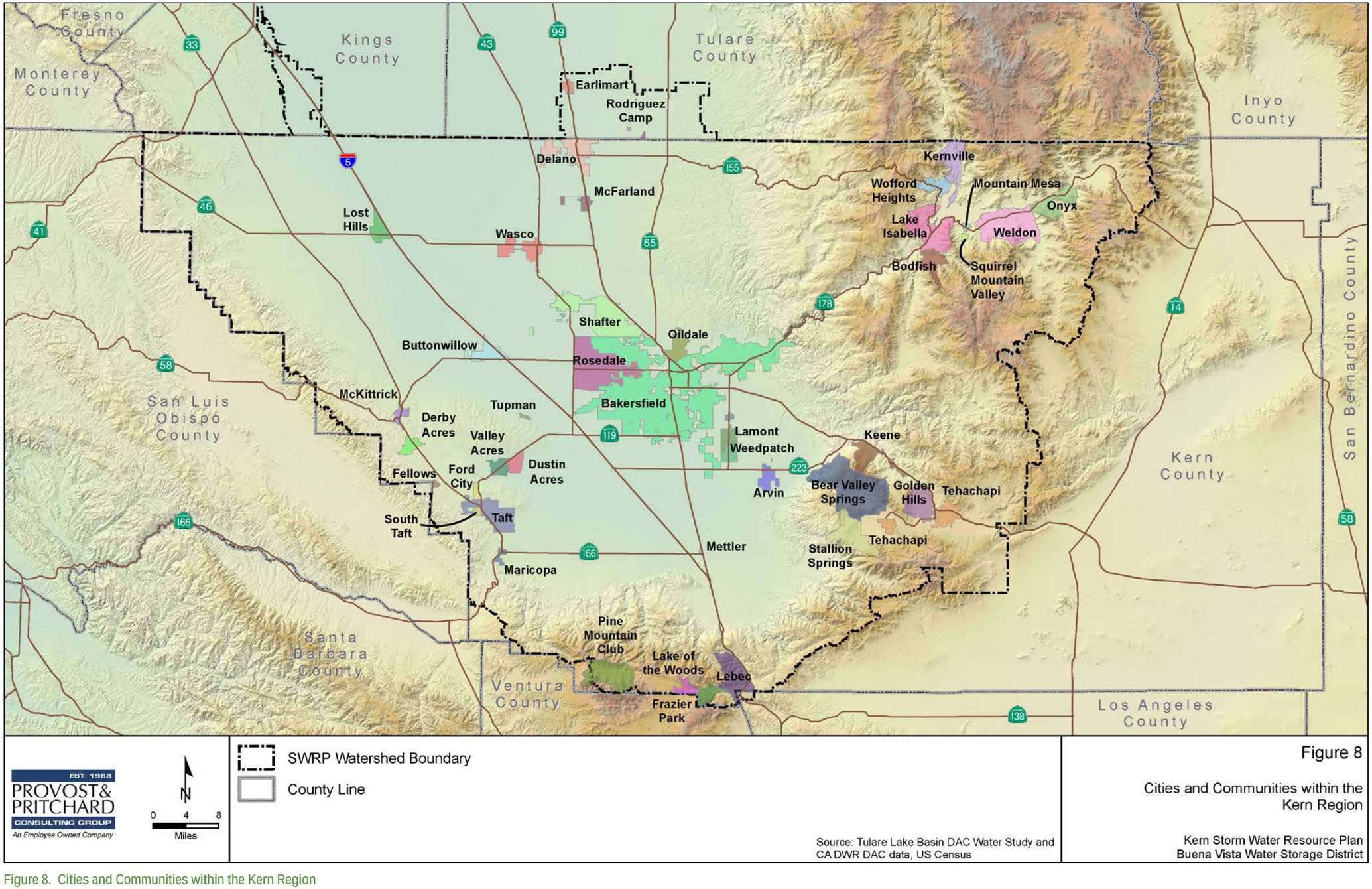

Figure 8. Cities and Communities within the Kern Region

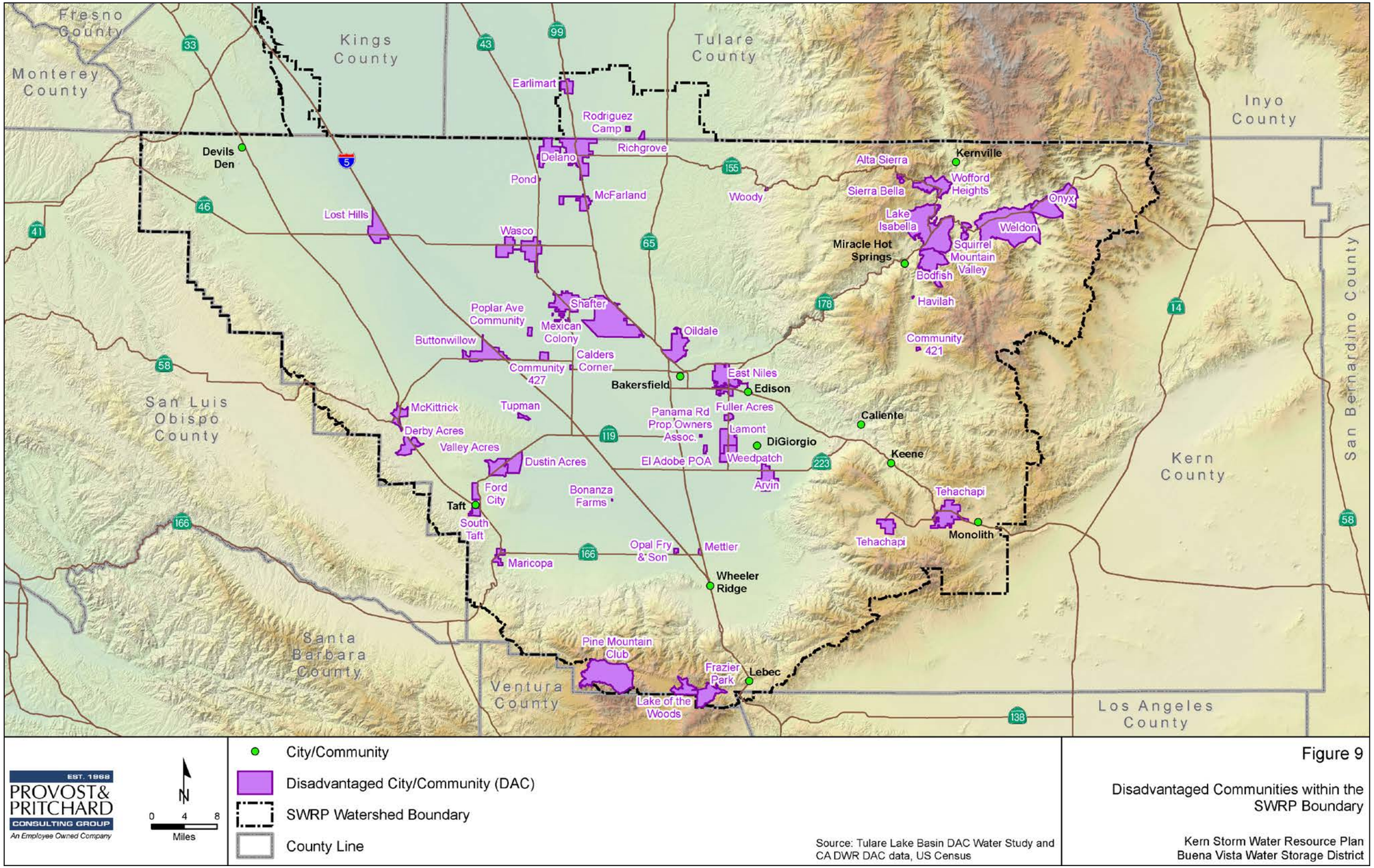

Figure 9. Disadvantaged Communities within the Kern Region

Appendix A: Project Submittal Form Template

Kern Storm Water Resource Plan

Project Submittal Form

This form is to be electronically filled out and e-mailed to LMarino@ppeng.com by June 24, 2016.

Reference: Storm Water Resource Plan Guidelines, December 15, 2015
State Water Resources Control Board

Part 1. Lead Implementing Agency/Organizational Information

Please provide the following information regarding the project sponsor and proposed project.

Implementing Agency/ Organization / Individual:

Agency / Organization / Individual Address:

Possible Partnering Agencies:

Name:

Title:

Telephone: **Fax:**

Email:

Website:

Project Name:

Either the latitude/longitude or a location description is required. To determine the latitude/longitude, use the closest address or intersection. If the project is linear, use the furthest upstream latitude/longitude.

Project Latitude: | **Project Longitude:**

Location Description:	

Project Cooperating Agency(ies)/Organization(s)/Individual(s):

-
-
-
-

Project Status (e.g., new, ongoing, expansion, new phase):

Has the Project been submitted to IRWM Plan:

☐ Kern IRWMP ☐ Poso Creek IRWMP ☐ Not Submitted

Does the project address any known environmental justice issues?

☐ Yes ☐ No ☐ Not Sure

Is the project located within or adjacent to a disadvantaged community (DAC)? Refer to this website.

☐ Within ☐ Adjacent ☐ No ☐ Not Sure

Does the project include DAC participation?

☐ Yes ☐ No ☐ Not Sure

If yes, please identify the contact person, group, or organization and describe the DAC's participation:

What is the DAC's estimated population:

Does the Implementing Agency own the land where the project is located? If no, describe ability to purchase land or if eminent domain is required:

☐ Yes ☐ No

Part 2. Project Need

It is important to understand the need(s) or issue(s) that the proposed project will address and the benefits that it will provide. Information provided in this section defines the need(s) or issue(s) that the proposed project will address and will help to catalog existing need(s) or issue(s) in the planning area of the Kern Storm Water Resource Plan.

Please provide a 1-2 paragraph description of the need(s) or problem(s) that the proposed project will address. Discuss the benefits to water quality, water supply, flood management, environmental, and community benefits that the proposed project will bring. Discuss critical impacts or worsening conditions that will occur if the proposed project is not implemented.

Project Need (Narrative)

Part 3. Project Description

A general description of the proposed project is needed. This section will provide information associated with the project concept and general project information. Much of the requested information may not be available for projects that are in the conceptual stages of development. An essential element of the Kern Storm Water Resource Plan consists of proposed projects. We appreciate and need your ideas.

Please provide a one or two paragraph description of the project including the general project concept, what will be constructed/implemented, how the constructed project will function, what technologies or methods will be used, as appropriate. For water quality projects, include a description of impacts to existing Total Maximum Daily Loads, NPDES permits, and/or waste discharge requirements.

Project Description (Narrative)

If applicable, list surface water bodies and groundwater basins associated with the proposed project:

•
•
•
•

Please identify up to three available documents which contain information specific to the proposed project. Include conceptual plans, permits, drawings, and technical documents:

•
•
•

Please identify federal, state, or local permits, which pertain to the proposed project and would need to be obtained or, if existing, would need to be amended:

•
•
•

Please identify any existing projects or facilities, including existing water conveyance infrastructure, which would be affected, modified, or superseded as a result of implementing the proposed project:

•
•
•

Is the proposed project an element or phase of a regional or larger program?:	☐ Yes ☐ No
If yes, please identify the program:	
Design life of the project:	
Proposed Construction/Implementation Start Date:	
Proposed Construction/Implementation Completion Date:	
Ready for Construction Bid:	☐ Yes ☐ No ☐ N/A

Item	Status (e.g., not initiated, in process, complete)	Date (mm/dd/yyyy)
Conceptual Plans		
Land Acquisition/ Easements		
Preliminary Plans		
CEQA/NEPA		
Permits		
Construction Drawings		

For projects ready for construction or implementation, including projects which do not include construction, briefly describe the project's readiness to proceed.

Project Readiness (Narrative)

Include any local or state board actions, code changes, or legislation needed in order to proceed with the project.

Local or State Board Actions, Code Changes, or Legislation

Please describe the dominant existing land use type for the proposed project location.

Please describe the dominant existing land use type for areas upstream and downstream of the proposed project location

Upstream:	
Downstream:	

Part 4. Project Benefits

Please provide a one or two paragraph description of the benefit(s) that the project will address. Benefit Categories, shown below, are referenced from the **Storm Water Resource Plan Guidelines**, Page 31, Table 4. Each project should address at least two or more Main Benefits and as many Additional Benefits as feasible. Information you provide will be used to evaluate the project for State grant funding.

Storm Water Management Benefits		
Benefit Category	**Main Benefit**	**Additional Benefit**
Water Quality (while contributing to compliance with applicable permit and/or TMDL requirements)	• Increased filtration and/or treatment of run-off	• Non-point source pollution control • Reestablished natural water drainage and treatment
Water Supply (through groundwater management and/or run-off capture and use)	• Water supply reliability • Conjunctive use	• Water conservation
Flood Management	• Decreased flood risk by reducing run-off rate and/or volume	• Reduced sanitary sewer overflows
Environmental and Habitat Enhancement	• Environmental and habitat protection and improvement, including; - wetland enhancement/creation; - riparian enhancement; and/or - instream flow improvement • Increased urban green space	• Reduced energy use, greenhouse gas emissions, or provides a carbon sink • Reestablishment of the natural hydrograph • Water temperature improvements
Community Stewardship	• Employment opportunities provided • Public Education	• Community involvement • Enhance and/or create recreational and public use areas

Source: Page 31, Table 4, Storm Water Resource Plan Guidelines, State Water Resources Control Board

Please provide the following PROJECT BENEFIT information for all applicable components of the proposed project. Benefit categories include:

- **Water Quality**
- **Water Supply**
- **Flood Management**
- **Environmental and Habitat Enhancement**
- **Community Stewardship**

If the project benefits a disadvantaged community (DAC) describe the specific benefits to that community. Estimate the percentage of the project benefits to the DAC.

Please supply all information relevant to the proposed project. The information you provide will be used to evaluate the project for State grant funding. **Attach additional sheets if necessary.**

Water Quality Benefits

1. Describe how the proposed project will improve source control for both pollution and dry weather runoff volume, onsite and local infiltration, and use of storm water and dry weather runoff.
2. Describe design criteria and best management practices to prevent storm water and dry weather runoff pollution and increase effective storm water and dry weather runoff management for new and upgraded infrastructure and residential, commercial, industrial, and public development
3. Describe how the proposed project complies with or is consistent with an applicable NPDES permit. The analysis should simulate the proposed watershed-based outcomes using modeling, calculations, pollutant mass balances, water volume balances, and/or other methods of analysis. Describe how the proposed project will contribute to the preservation, restoration, or enhancement or watershed processes (as described in Guidelines section VI.C.2.a)
4. Describe the water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified.

Water Quality Benefits (Narrative)

Pollutant TMDL reduction (Volume per day) and (mass /unit volume) of most probable number of bacteria or indicator organisms (mpn/mL):	
Increase in infiltration rate above existing condition:	
Non-point source pollution control:	
Does project affect an Existing NPDES Permit? If applicable, describe the need for a new NPDES Permit:	

Water Supply Benefits

1. Describe how the proposed project captures and reuses storm water and dry weather runoff for groundwater recharge or storage for beneficial use.
2. Please provide detailed information to quantify how the proposed project will reduce existing potable water demand.
3. Describe the water supply monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified

Water Supply Benefits (Narrative)

Enhanced Water Supply or Demand Reduction Benefit Information

Source of Increased Supply or Demand Reduction

☐ Groundwater	☐ Groundwater treatment	☐ Increased surface water storage
☐ Recycled water	☐ Conservation/ water use efficiency	☐ Ocean desalination
☐ Transfer	☐ Other (describe):	

Type of enhanced supply or demand reduction:	
Annual Yield of Supply (acre-feet):	

Availability by Water-Year Type (acre-feet per year)

Average Year:	
Dry Year:	
Wet Year:	

Availability by Season (check all that apply):

☐ Summer ☐ Fall ☐ Spring ☐ Winter

Does the project have the potential to reduce dependence on the Sacramento San Joaquin Bay-Delta?

☐ Yes ☐ No ☐ Not Sure

Flood Management Benefits

1. Describe how the proposed project will reestablish natural water drainage treatment and infiltration systems, or mimic natural system functions to the maximum extent feasible.
2. Describe how the proposed project will reduce flood risk by reducing runoff rate and/or volume.
3. If applicable, describe how the proposed project will reduce the risk of sanitary sewer overflows.

Flood Management Benefits (Narrative)

Description facilities protected:	
Maximum volume of temporary storage of storm water runoff (acre-feet):	
Maximum increased conveyance capacity (cubic feet/second):	
Estimated area benefiting from flood damage reduction (acres):	
Estimated level of flood protection resulting from project implementation (% annual probability of recurrence or 1-in-number of years recurrence):	
Estimated annual value of flood damage reduction provided by project ($/year):	
Land required for project implementation (acres):	

For projects that include detention and groundwater recharge, please complete the following:

How many acres of land drain into this detention basin? (acres):	
Detention Basin area (acres):	
Detention basin max. operational depth (ft.):	
% of basin covered by wetlands:	
Soil type:	
If other than infiltration, identify method (e.g., injection) and recharge (acre-feet/year):	
Estimated basin annual inflow (acre-feet/year):	
Estimated basin annual outflow (acre-feet/year):	

Environmental and Habitat Enhancement Benefits

Describe how the proposed project identifies opportunities to develop, restore, or enhance habitat and open space through storm water and dry weather runoff management, including wetlands, riverside habitats, parkways, and parks. Provide some type of quantitative measurement, which will show how the project benefits the environment and enhances the natural habitat.

Environmental and Habitat Enhancement Benefits (Narrative)

Non-treatment wetland area (acres):	
Treatment wetland area (acres):	
Riparian habitat area (acres):	
Non-developed open space area (acres):	
Total Project area (acres):	

Community Stewardship Benefits

Describe how the project identifies opportunities to use existing publicly owned lands and easements, including, but not limited to parks, open space, community gardens, farm and agricultural preserves, school sites, and government office buildings and complexes, to capture, clean, store, and use storm water and dry weather runoff either onsite or offsite. Provide some type of quantitative measurement, which will show how the project benefits the community.

Community Stewardship Benefits (Narrative)

Multiple use/ recreation area (acres) – additionally, select the type of multiple use / recreation and associated acres by type:

Single Sport Athletics:	
Multiple Sport Athletics Acres:	
Other Recreation Acres:	
Pedestrian Trail Acres:	
Equestrian Trail Acres:	
Other Passive Activity:	
Other Acres (describe):	
Description:	
Total Project Area (acres):	

Part 5. Project Cost Estimate

Project cost information is needed to assist in comparing benefits and cost. Additionally, knowledge of the project type and cost will assist in identifying funding sources for potential projects.

Please indicate the estimated costs of project implementation and associated funding source(s). These costs should include land purchase/easement, planning/design/engineering, construction/ implementation, environmental compliance, administration, and contingency.

Approximate Total Cost: (If project costs are variable, please include lower and upper range estimates.)	
Funding Source: (If multiple sources, list each source and the percent or amount funded by each)	
Maximum Funding Match from Implementing Agency:	
Funding Certainty & Longevity:	
Operations & Maintenance Cost: (per year)	
Operations & Maintenance Funding Source(s) (i.e., annual budget, grant, etc. If multiple sources, list each source and the percent or amount funded by each.)	
Operations & Maintenance Funding Certainty: (i.e., already included in organization's budget, contingent upon grant, etc.)	

Appendix B: Project Submittal Forms

Kern Storm Water Resource Plan

Project Submittal Form

This form is to be electronically filled out and e-mailed to LMarino@ppeng.com by June 24, 2016.

Reference: Storm Water Resource Plan Guidelines, December 15, 2015
State Water Resources Control Board

Part 1. Lead Implementing Agency/Organizational Information

Please provide the following information regarding the project sponsor and proposed project.

Implementing Agency/ Organization / Individual:

Semitropic Water Storage District

Agency / Organization / Individual Address:

1101 Central Ave, Wasco, CA 93280

Possible Partnering Agencies:

Name:

Title:

Jason Gianquinto

Telephone:

661-758-5113

Fax:

661-758-3219

Email:

mail@semitropic.com

Website:

www.semitropic.com

Project Name:

Schuster Spreading Grounds

Either the latitude/longitude or a location description is required. To determine the latitude/longitude, use the closest address or intersection. If the project is linear, use the furthest upstream latitude/longitude.

Project Latitude:	35.740073	**Project Longitude:**	-119.340199

Location Description:	Northwest of the intersection of Shuster Road and Highway 43, about 5.8 miles southwest of Delano, within the west half of Section 24, Township 25 South, Range 24 East, MDB&M.

Project Cooperating Agency(ies)/Organization(s)/Individual(s):

- Neighboring Water Districts
- Other Interested Parties

Project Status (e.g., new, ongoing, expansion, new phase):

New

Has the Project been submitted to IRWM Plan:

☐ Kern IRWMP ☒ Poso Creek IRWMP ☐ Not Submitted

Does the project address any known environmental justice issues?

☐ Yes ☒ No ☐ Not Sure

Is the project located within or adjacent to a disadvantaged community (DAC)? Refer to this website.

☐ Within ☐ Adjacent ☒ No ☐ Not Sure

Does the project include DAC participation?

☐ Yes ☒ No ☐ Not Sure

If yes, please identify the contact person, group, or organization and describe the DAC's participation:

What is the DAC's estimated population?

Does the Implementing Agency own the land where the project is located? If no, describe ability to purchase land or if eminent domain is required:

☒ Yes ☐ No

The District owns the property in fee.

Part 2. Project Need

It is important to understand the need(s) or issue(s) that the proposed project will address and the benefits that it will provide. Information provided in this section defines the need(s) or issue(s) that the proposed project will address and will help to catalog existing need(s) or issue(s) in the planning area of the Kern Storm Water Resource Plan.

Please provide a 1-2 paragraph description of the need(s) or problem(s) that the proposed project will address. Discuss the benefits to water quality, water supply, flood management, environmental, and community benefits that the proposed project will bring. Discuss critical impacts or worsening conditions that will occur if the proposed project is not implemented.

Project Need (Narrative)

The Schuster Spreading Grounds (the Project) is part of the District's portfolio of projects that would advance the District's conjunctive use objectives. The Project will allow the District to absorb and manage surface water supplies originating from the various sources of surface supplies or "flavors of water" available to the District through banking arrangements/ transfers/ or exchanges including State Water Project (SWP) from the CA Aqueduct, Central Valley Project (CVP) water from the Friant-Kern Canal, and Kern River water for direct use within the District. Additionally, the Project would provide recharge ponds for diversion, capture, and recharge of flood flows from the Poso Creek Flood Channel for ultimate recharge and storage of surplus water.

The primary purpose of the Project is to improve the sustainability of the local water supplies and conjunctively manage the surface and groundwater resource for the benefit of the area. The need results from a number of actions which have served to reduce the historical reliability of water supplies available to the region.

Part 3. Project Description

A general description of the proposed project is needed. This section will provide information associated with the project concept and general project information. Much of the requested information may not be available for projects that are in the conceptual stages of development. An essential element of the Kern Storm Water Resource Plan consists of proposed projects. We appreciate and need your ideas.

Please provide a one or two paragraph description of the project including the general project concept, what will be constructed/implemented, how the constructed project will function, what technologies or methods will be used, as appropriate. For water quality projects, include a description of impacts to existing Total Maximum Daily Loads, NPDES permits, and/or waste discharge requirements.

Project Description (Narrative)

The Project consists of the following facilities:

Development of 70 gross acres into diked ponds;

Modifications to existing turnouts to facilitate conveyance of water to the recharge ponds;

Construction of overpour structures to convey water to the lower elevation diked ponds; and

Construction of up to two (2) high production wells and a network of pipelines and appurtenances to recover water that has been previously recharged.

During "put" operations, surface water (including floodwater originating from Poso Creek, CVP-Friant System, and surface supplies received to be stored as "banked" water) will be conveyed through the District's existing distribution system and delivered to the recharge ponds for recharge and storage.

During "take" operations, which is the return of previously stored water, water will be recovered through the use and operation of production wells and returned by use of the network of pipelines for ultimate delivery to the Pond Poso Canal.

If applicable, list surface water bodies and groundwater basins associated with the proposed project:

- Surface water delivered via CA Aqueduct or Friant-Kern Canal
- Poso Creek Flood Channel
- Kern Groundwater Basin
- Pond Poso Canal

Please identify up to three available documents which contain information specific to the proposed project. Include conceptual plans, permits, drawings, and technical documents:

- N/A

Please identify federal, state, or local permits, which pertain to the proposed project and would need to be obtained or, if existing, would need to be amended:

• CEQA, IS/ND
• Dept. of Fish and Game
• Local: SJV Unified Air Pollution Control District, SWPPP NOI

Please identify any existing projects or facilities, including existing water conveyance infrastructure, which would be affected, modified, or superseded as a result of implementing the proposed project:

• N/A

Is the proposed project an element or phase of a regional or larger program?	☒ Yes ☐ No
If yes, please identify the program:	Poso Creek IRWMP
Design life of the project:	50
Proposed Construction/Implementation Start Date:	Yet Unknown
Proposed Construction/Implementation Completion Date:	Yet Unknown
Ready for Construction Bid:	☐ Yes ☒ No ☐ N/A

Item	Status (e.g., not initiated, in process, complete)	Date (mm/dd/yyyy)
Conceptual Plans	**Not Initiated**	N/A
Land Acquisition/ Easements	**Not Initiated**	N/A
Preliminary Plans	**Not Initiated**	N/A
CEQA/NEPA	**Not Initiated**	N/A
Permits	**Not Initiated**	N/A
Construction Drawings	**Not Initiated**	N/A

For projects ready for construction or implementation, including projects which do not include construction, briefly describe the project's readiness to proceed.

Project Readiness (Narrative)

The Project is in the early stages of development and has been advanced into the conceptual phase. In this regard, while the property is owned in fee by the District, the Project will require completion of a CEQA environmental document, acquisition of construction-related permits, and the preparation of contract documents, including Plans and Specifications for implementation. However, this project would be similar in scope and complexity as existing District recharge and recovery facilities and could be implemented expeditiously.

Include any local or state board actions, code changes, or legislation needed in order to proceed with the project.

Local or State Board Actions, Code Changes, or Legislation

The Project can be implemented by Board action.

Please describe the dominant existing land use type for the proposed project location.

Agricultural

Please describe the dominant existing land use type for areas upstream and downstream of the proposed project location

Upstream:	Agricultural
Downstream:	Agricultural

Part 4. Project Benefits

Please provide a one or two paragraph description of the benefit(s) that the project will address. Benefit Categories, shown below, are referenced from the **Storm Water Resource Plan Guidelines**, Page 31, Table 4. Each project should address at least two or more Main Benefits and as many Additional Benefits as feasible. Information you provide will be used to evaluate the project for State grant funding.

Storm Water Management Benefits		
Benefit Category	**Main Benefit**	**Additional Benefit**
Water Quality (while contributing to compliance with applicable permit and/or TMDL requirements)	• Increased filtration and/or treatment of run-off • Potential improvements in groundwater quality	• Non-point source pollution control • Reestablished natural water drainage and treatment
Water Supply (through groundwater management and/or run-off capture and use)	• **Water supply reliability** • **Expand Conjunctive use** • **Reduce short-term groundwater level declines**	• Water conservation
Flood Management	• **Decreased flood risk by reducing run-off rate and/or volume**	• Reduced sanitary sewer overflows
Environmental and Habitat Enhancement	• Environmental and habitat protection and improvement, including; - wetland enhancement/creation; - riparian enhancement; and/or - instream flow improvement • Increased urban green space	• Reduced energy use, greenhouse gas emissions, or provides a carbon sink • Reestablishment of the natural hydrograph • Water temperature improvements
Community Stewardship	• Employment opportunities provided • Public Education	• Community involvement • Enhance and/or create recreational and public use areas

Source: Page 31, Table 4, Storm Water Resource Plan Guidelines, State Water Resources Control Board

Please provide the following PROJECT BENEFIT information for all applicable components of the proposed project. Benefit categories include:

- **Water Quality**
- **Water Supply**
- **Flood Management**
- **Environmental and Habitat Enhancement**
- **Community Stewardship**

If the project benefits a disadvantaged community (DAC) describe the specific benefits to that community. Estimate the percentage of the project benefits to the DAC.

Please supply all information relevant to the proposed project. The information you provide will be used to evaluate the project for State grant funding. **Attach additional sheets if necessary.**

Water Quality Benefits

1. Describe how the proposed project will improve source control for both pollution and dry weather runoff volume, onsite and local infiltration, and use of storm water and dry weather runoff.
2. Describe design criteria and best management practices to prevent storm water and dry weather runoff pollution and increase effective storm water and dry weather runoff management for new and upgraded infrastructure and residential, commercial, industrial, and public development
3. Describe how the proposed project complies with or is consistent with an applicable NPDES permit. The analysis should simulate the proposed watershed-based outcomes using modeling, calculations, pollutant mass balances, water volume balances, and/or other methods of analysis. Describe how the proposed project will contribute to the preservation, restoration, or enhancement or watershed processes (as described in Guidelines section VI.C.2.a)
4. Describe the water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified.

Water Quality Benefits (Narrative)

Water quality benefits would not apply as a primary benefit for this project. However, recharge basins within the District allow for direct recharge of surface water originating from the SWP, the CVP, Kern River, and the local Poso Creek that has varying "raw" untreated, water quality characteristics, usually suitable for irrigation. Local Stormwater may also originate from the Poso Creek and is diverted through settlement basins prior to entering the District distribution system and delivered to spreading grounds. The sources vary in quality, but are all typically suitable for irrigation and do not degrade the groundwater basin from its designated use.

It is recognized in the Poso Creek IRWMP area that the majority of recharge facilities are constructed and operated by the agricultural districts and not by the small disadvantaged communities or the environmental water users, this project also has the potential to improve water quality as follows:

- Enhancement of groundwater quality due to decreased pumping lifts and stabilization of the water table, which reduces the chances of water quality changing due to pumping from zones of less quality; and
- Enhancements to water quality due to the importation of surface water to the District in wet years, which delivers surface water of quality suitable for the beneficial uses within the region.

Pollutant TMDL reduction (Volume per day) and (mass /unit volume) of most probable number of bacteria or indicator organisms (mpn/mL):	Unknown
Increase in infiltration rate above existing condition:	A portion of 70 acres will be developed into recharge basins allowing for an increase in the District's absorptive capacity.
Non-point source pollution control:	Unknown
Does project affect an Existing NPDES Permit? If applicable, describe the need for a new NPDES Permit:	Unknown

Water Supply Benefits

1. Describe how the proposed project captures and reuses storm water and dry weather runoff for groundwater recharge or storage for beneficial use.
2. Please provide detailed information to quantify how the proposed project will reduce existing potable water demand.
3. Describe the water supply monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified

Water Supply Benefits (Narrative)

The Project, once fully developed, will provide the following estimated water supply benefits:

1) An estimated quantifiable water savings of 245 acre-feet per year based on the conversion of agricultural land to retention ponds (the estimated water savings per year is based on 70 gross acres of cropland with an applied water use of 3.5 acre-feet per year being converted to non-cropland;
2) An additional 35 acre-feet per day capacity for aquifer recharge when the area is wet and in use as recharge ponds (estimated rate of recharge is at minimum 0.5 acre-feet per day); and
3) Estimated capacity for a wet year of 1,658AFY (=70/800 * 18,954 AF = 1,658 AFY, based on comparison ratio of yield of PPSG (@ 800 acres)).

Additionally, the project would:

- Improve the reliability of water supply for Semitropic.
- Increase operational flexibility for delivery of State Water Project (SWP) water
- Increase direct spreading, absorptive capability within Semitropic
- Increase local unconfined groundwater quality.
- Make use of available groundwater storage.
- Contribute to the groundwater basin for use during periods of peak demand or when SWP water is not available.

Enhanced Water Supply or Demand Reduction Benefit Information

Source of Increased Supply or Demand Reduction

☒ Groundwater	☐ Groundwater treatment	☒ Increased surface water storage
☐ Recycled water	☒ Conservation/ water use efficiency	☐ Ocean desalination
☐ Transfer	☐ Other (describe):	

Type of enhanced supply or demand reduction:	Recharged groundwater
Annual Yield of Supply (acre-feet):	577AFY = 332AFY + 245AFY based on removal of crop demand plus delivery of surface supplies to the Shuster SGs similar to the PPSGs at a frequency of 2 wet years out of 10 years

Availability by Water-Year Type (acre-feet per year)

Average Year:	577AFY = 332 AFY + 245AFY; [332 AFY = 1,658 AF * (2 wet years / 10 years)]
Dry Year:	245AFY

Wet Year:	1,903AFY = 1,658 AFY + 245AFY

Availability by Season (check all that apply):

☒ Summer ☒ Fall ☒ Spring ☒ Winter

Does the project have the potential to reduce demands on the Bay/Delta/Estuary?

☒ Yes ☐ No ☐ Not Sure

Flood Management Benefits

1. Describe how the proposed project will reestablish natural water drainage treatment and infiltration systems, or mimic natural system functions to the maximum extent feasible.
2. Describe how the proposed project will reduce flood risk by reducing runoff rate and/or volume.
3. If applicable, describe how the proposed project will reduce the risk of sanitary sewer overflows.

Flood Management Benefits (Narrative)

The Project provides a flood management benefit inasmuch as the water delivered to the direct recharge facility during times of storm water/floodwater management will be diverted and not contribute to increased downstream flows and flood risks. In the case of Semitropic's Water Bank and direct recharge facility, flood flow is delivered via the CA Aqueduct into the District's conveyance system, or, it is delivered via Poso Creek as diverted CVP-Friant or locally, Poso Creek Stormwater, therefore, the added absorptive capacity of direct recharge enhances the ability to receive flows during wet periods, typically corresponding to times of the year when irrigation demand is low. This Project enhances flood management of the CA Aqueduct in reducing flood risk by allowing diversions into the CA Aqueduct, upstream of the Semitropic turnout.

Description facilities protected:	Potentially regional conveyance facilities and facilities/land along Poso Creek
Maximum volume of temporary storage of storm water runoff (acre-feet):	224 (based on 56 wetted acres x 4 feet deep)
Maximum increased conveyance capacity (cubic feet/second):	20 (based on modifications of four existing turnouts @ 5cfs/turnout)
Estimated area benefiting from flood damage reduction (acres):	Immediate local drainage of Poso Creek
Estimated level of flood protection resulting from project implementation (% annual probability of recurrence or 1-in-number of years recurrence):	Unknown
Estimated annual value of flood damage reduction provided by project ($/year):	Unknown
Land required for project implementation (acres):	70 acres, owned by the District

For projects that include detention and groundwater recharge, please complete the following:

How many acres of land drain into this detention basin? (acres):	N/A
Detention Basin area (acres):	70 gross acres, with 56 wetted acres

Detention basin max. operational depth (ft.):	4
% of basin covered by wetlands:	N/A
Soil type:	Loam
If other than infiltration, identify method (e.g., injection) and recharge (acre-feet/year):	N/A
Estimated basin annual inflow (acre-feet/year):	332
Estimated basin annual outflow (acre-feet/year):	0

Environmental and Habitat Enhancement Benefits

Describe how the proposed project identifies opportunities to develop, restore, or enhance habitat and open space through storm water and dry weather runoff management, including wetlands, riverside habitats, parkways, and parks. Provide some type of quantitative measurement, which will show how the project benefits the environment and enhances the natural habitat.

Environmental and Habitat Enhancement Benefits (Narrative)

The Project will provide waterfowl with a place to rest and nest, intermittently, when they have water in the ponds and are being utilized for recharge purposes.

Non-treatment wetland area (acres):	56 acres (70 gross acres x 80% wetted area), only when being used for direct recharge
Treatment wetland area (acres):	N/A
Riparian habitat area (acres):	N/A
Non-developed open space area (acres):	14 acres = (70 gross acres – 56 wetted acres)
Total Project area (acres):	70 gross acres

Community Stewardship Benefits

Describe how the project identifies opportunities to use existing publicly owned lands and easements, including, but not limited to parks, open space, community gardens, farm and agricultural preserves, school sites, and government office buildings and complexes, to capture, clean, store, and use storm water and dry weather runoff either onsite or offsite. Provide some type of quantitative measurement, which will show how the project benefits the community.

Community Stewardship Benefits (Narrative)

The Project will provide jobs during construction. Once constructed, the facility provides a habitat for various birds and waterfowl that also provides an opportunity for the public to view the birds.

Multiple use/ recreation area (acres) – additionally, select the type of multiple use / recreation and associated acres by type:

Single Sport Athletics:	N/A
Multiple Sport Athletics Acres:	N/A
Other Recreation Acres:	N/A
Pedestrian Trail Acres:	N/A
Equestrian Trail Acres:	N/A
Other Passive Activity:	Bird Viewing
Other Acres (describe):	N/A
Description:	N/A
Total Project Area (acres):	70

Part 5. Project Cost Estimate

Project cost information is needed to assist in comparing benefits and cost. Additionally, knowledge of the project type and cost will assist in identifying funding sources for potential projects.

Please indicate the estimated costs of project implementation and associated funding source(s). These costs should include land purchase/easement, planning/design/engineering, construction/ implementation, environmental compliance, administration, and contingency.

Approximate Total Cost: (If project costs are variable, please include lower and upper range estimates.)	Approximately $875,000 (estimated based on recent conversion of land to spreading basins and the property already owned by the District)
Funding Source: (If multiple sources, list each source and the percent or amount funded by each)	• Potential future grant funding; • District Assessments
Maximum Funding Match from Implementing Agency:	N/A
Funding Certainty & Longevity:	Unknown
Operations & Maintenance Cost: (per year)	Unknown
Operations & Maintenance Funding Source(s) (i.e., annual budget, grant, etc. If multiple sources, list each source and the percent or amount funded by each.)	Annual Budget
Operations & Maintenance Funding Certainty: (i.e., already included in organization's budget, contingent upon grant, etc.)	Included as part of setting of annual budget

Kern Storm Water Resource Plan

Project Submittal Form

This form is to be electronically filled out and e-mailed to LMarino@ppeng.com by June 24, 2016.

Reference: Storm Water Resource Plan Guidelines, December 15, 2015
State Water Resources Control Board

Part 1. Lead Implementing Agency/Organizational Information

Please provide the following information regarding the project sponsor and proposed project.

Implementing Agency/ Organization / Individual:

Semitropic Water Storage District

Agency / Organization / Individual Address:

1101 Central Ave, Wasco, CA 93280

Possible Partnering Agencies:

Name:

Jason Gianquinto

Title:

General Manager

Telephone:

661-758-5113

Fax:

661-758-3219

Email:

mail@semitropic.com

Website:

www.semitropic.com

Project Name:

Pond-Poso Spreading Grounds, Phase 2

Either the latitude/longitude or a location description is required. To determine the latitude/longitude, use the closest address or intersection. If the project is linear, use the furthest upstream latitude/longitude.

Project Latitude:	35.674436	**Project Longitude:**	-119.411299

Location Description:	The Project is 7miles northwest of Wasco, adjacent to, and west and north of the existing Pond-Poso Spreading Grounds, Phase I; south half of Section 8 and west half of Section 17, Township 26 South, Range 24 East, MDB&M.

Project Cooperating Agency(ies)/Organization(s)/Individual(s):

- Potentially Banking Partners
- Neighboring Water Districts
-
-

Project Status (e.g., new, ongoing, expansion, new phase):

Expansion

Has the Project been submitted to IRWM Plan:

☐ Kern IRWMP ☒ Poso Creek IRWMP ☐ Not Submitted

Does the project address any known environmental justice issues?

☐ Yes ☒ No ☐ Not Sure

Is the project located within or adjacent to a disadvantaged community (DAC)? Refer to this website.

☐ Within ☐ Adjacent ☒ No ☐ Not Sure

Does the project include DAC participation?

☐ Yes ☒ No ☐ Not Sure

If yes, please identify the contact person, group, or organization and describe the DAC's participation:

What is the DAC's estimated population?

Does the Implementing Agency own the land where the project is located? If no, describe ability to purchase land or if eminent domain is required:

☒ Yes ☐ No

The District owns the property in fee.

Part 2. Project Need

It is important to understand the need(s) or issue(s) that the proposed project will address and the benefits that it will provide. Information provided in this section defines the need(s) or issue(s) that the proposed project will address and will help to catalog existing need(s) or issue(s) in the planning area of the Kern Storm Water Resource Plan.

Please provide a 1-2 paragraph description of the need(s) or problem(s) that the proposed project will address. Discuss the benefits to water quality, water supply, flood management, environmental, and community benefits that the proposed project will bring. Discuss critical impacts or worsening conditions that will occur if the proposed project is not implemented.

Project Need (Narrative)

The Pond Poso Spreading Grounds (PPSG): Phase 2 (the Project), is a component of the Semitropic Groundwater Bank and will enhance the operation of the Bank. Since its inception, the Semitropic Groundwater Bank has provided long-term underground storage of water for use by the banking partners in times of need. The banking of water has been limited to "in-lieu" recharge wherein the District satisfies an irrigation demand with surplus water from its banking partners "in-lieu" of farmers pumping (leaving a like amount in groundwater storage). This method of banking has been limited to periods when the banking partners' water supplies have not exceeded the ability to absorb the surface water by delivery to an irrigation demand. The Project will allow the District to absorb and manage the water when surface water supplies exceed the ability to deliver and absorb the surface water with an irrigation demand.

This Project adds four quarter-sections to an existing five quarter-sections in size recharge and extraction facility. Once all nine quarter-sections are fully completed, it will have a direct recharge capacity to receive up to 350 cubic feet per second (cfs) (equivalent to 700 acre-feet per day or 21,000 acre-feet per month during a wet period or opportunistic time to bank water supplies) and place up to 65,000 acre-feet of water into storage in any given wet year more efficiently (based on three months of use in a given "wet year"). The Project would also provide for recovery of stored water. When the Project is fully completed, it will provide for the recovery of about 66,000 acre-feet per year (based on 10 months of pumping and 10 percent downtime).

The Project will also provide for flood management benefits inasmuch as it will accommodate diversion of flood flows from the Poso Creek Flood Channel, through the Poso Creek intake and control structure, which conveys water from Poso Creek into the Pond Poso Canal and ultimately into the Project.

The primary purpose of the Project is to improve the sustainability of the local water supplies and conjunctively manage the surface and groundwater resource for the benefit of the area. The need results from a number of actions which have served to reduce the historical reliability of water supplies available to the region.

Part 3. Project Description

A general description of the proposed project is needed. This section will provide information associated with the project concept and general project information. Much of the requested information may not be available for projects that are in the conceptual stages of development. An essential element of the Kern Storm Water Resource Plan consists of proposed projects. We appreciate and need your ideas.

Please provide a one or two paragraph description of the project including the general project concept, what will be constructed/implemented, how the constructed project will function, what technologies or methods will be used, as appropriate. For water quality projects, include a description of impacts to existing Total Maximum Daily Loads, NPDES permits, and/or waste discharge requirements.

Project Description (Narrative)

The Project consists of the following facilities:

The conversion of 640 gross acres into diked recharge ponds, with up to 16 "cells";

Construction of a 8'x8' reinforced concrete diversion box with 48-inch RCP pipe oriented to the West to lift water from the Pond Poso Canal to the westerly recharge ponds;

Modification of existing pump structures on the Pond Poso Canal (PPC) to facilitate lifting of water into the northerly recharge ponds, at other locations within the PPC;

Construction of pond structures, including up to 25 interbasin structures and up to 15 pond overpour structures to convey water to the lower elevation recharge ponds;

Construction of emergency spillways located on the lowest tiers of the recharge ponds, adjacent to the Poso Creek Flood Channel to overflow water into the creek in the event the inflow into the recharge ponds exceeds the ponds capacity;

At several locations, construction of double barrel siphon pipe crossings of the Pond Poso Canal;

Widening of two miles of the Pond Poso Canal for that portion running through the PPSG;

Construction of 12 flowpath wells and a network of pipelines and appurtenances to recover water that has been previously recharged; and

Construction of 4 monitoring wells to monitor water levels.

During "put" operations, surface water (including floodwater originating from Poso Creek, CVP-Friant System, and banked water) will be lifted from the Pond Poso Canal and delivered to the recharge ponds for recharge. Water will be conveyed through the recharge ponds via interbasin structures and overpour structures to the lower elevation ponds.

During "take" operations, water will be recovered through the use and operation of flowpath wells and the network of pipelines for ultimate delivery to the Pond Poso Canal.

If applicable, list surface water bodies and groundwater basins associated with the proposed project:

- Surface water delivered via CA Aqueduct or Friant-Kern Canal
- Poso Creek Flood Channel
- Kern Groundwater Basin
- Pond Poso Canal

Please identify up to three available documents which contain information specific to the proposed project. Include conceptual plans, permits, drawings, and technical documents:

• CEQA Document (IS/ND)Prepared in 2007
• Federal funded ARRA grant for completion of Phase 1
•

Please identify federal, state, or local permits, which pertain to the proposed project and would need to be obtained or, if existing, would need to be amended:

• Update CEQA for GHG Emissions
• Dept. of Fish & Game
• Local: SJV Unified Air Pollution Control District, SWPPP NOI

Please identify any existing projects or facilities, including existing water conveyance infrastructure, which would be affected, modified, or superseded as a result of implementing the proposed project:

• Pond Poso Spreading Grounds would be expanded to Phase II
• Pond Poso Canal
• Poso Creek Flood Channel

Is the proposed project an element or phase of a regional or larger program?	☒ Yes ☐ No
If yes, please identify the program:	Poso Creek IRWMP
Design life of the project:	50
Proposed Construction/Implementation Start Date:	Yet Unknown
Proposed Construction/Implementation Completion Date:	Yet Unknown
Ready for Construction Bid:	☐ Yes ☒ No ☐ N/A

Item	Status (e.g., not initiated, in process, complete)	Date (mm/dd/yyyy)
Conceptual Plans	**Complete**	05/10/2010
Land Acquisition/ Easements	**Complete**	
Preliminary Plans	**Complete**	
CEQA/NEPA	**CEQA completed in 2007; update for GHG may be needed. NEPA would be required if a federal nexus exists.**	
Permits	**Normal CEQA compliance**	
Construction Drawings	**Preliminary drawings have been prepared.**	

For projects ready for construction or implementation, including projects which do not include construction, briefly describe the project's readiness to proceed.

Project Readiness (Narrative)

Phase 2 of the Pond Poso Spreading Grounds is ready to implement since the District owns the property and can obtain access fairly quickly. The design of Phase 2 will be based on the completed design for Phase 1, which will allow for an accelerated schedule once funding is secured to complete the construction. If federal funding was secured, it will require completing NEPA documentation prior to construction.

Include any local or state board actions, code changes, or legislation needed in order to proceed with the project.

Local or State Board Actions, Code Changes, or Legislation

Phase 2 of the Pond Poso Spreading Grounds can be implemented by Board action.

Please describe the dominant existing land use type for the proposed project location.

Agricultural

Please describe the dominant existing land use type for areas upstream and downstream of the proposed project location

Upstream:	Agricultural
Downstream:	Agricultural/Spreading Grounds

Part 4. Project Benefits

Please provide a one or two paragraph description of the benefit(s) that the project will address. Benefit Categories, shown below, are referenced from the **Storm Water Resource Plan Guidelines**, Page 31, Table 4. Each project should address at least two or more Main Benefits and as many Additional Benefits as feasible. Information you provide will be used to evaluate the project for State grant funding.

Storm Water Management Benefits		
Benefit Category	**Main Benefit**	**Additional Benefit**
Water Quality (while contributing to compliance with applicable permit and/or TMDL requirements)	• Increased filtration and/or treatment of run-off • Potential improvements in groundwater quality	• Non-point source pollution control • Reestablished natural water drainage and treatment
Water Supply (through groundwater management and/or run-off capture and use)	• **Water supply reliability** • **Expand Conjunctive use** • **Reduce short-term groundwater level declines**	• Water conservation
Flood Management	• **Decreased flood risk by reducing run-off rate and/or volume**	• Reduced sanitary sewer overflows
Environmental and Habitat Enhancement	• Environmental and habitat protection and improvement, including; - wetland enhancement/creation; - riparian enhancement; and/or - instream flow improvement • Increased urban green space	• Reduced energy use, greenhouse gas emissions, or provides a carbon sink • Reestablishment of the natural hydrograph • Water temperature improvements
Community Stewardship	• Employment opportunities provided • Public Education	• Community involvement • Enhance and/or create recreational and public use areas

Source: Page 31, Table 4, Storm Water Resource Plan Guidelines, State Water Resources Control Board

Please provide the following PROJECT BENEFIT information for all applicable components of the proposed project. Benefit categories include:

- **Water Quality**
- **Water Supply**
- **Flood Management**
- **Environmental and Habitat Enhancement**
- **Community Stewardship**

If the project benefits a disadvantaged community (DAC) describe the specific benefits to that community. Estimate the percentage of the project benefits to the DAC.

Please supply all information relevant to the proposed project. The information you provide will be used to evaluate the project for State grant funding. **Attach additional sheets if necessary.**

Water Quality Benefits

1. Describe how the proposed project will improve source control for both pollution and dry weather runoff volume, onsite and local infiltration, and use of storm water and dry weather runoff.
2. Describe design criteria and best management practices to prevent storm water and dry weather runoff pollution and increase effective storm water and dry weather runoff management for new and upgraded infrastructure and residential, commercial, industrial, and public development
3. Describe how the proposed project complies with or is consistent with an applicable NPDES permit. The analysis should simulate the proposed watershed-based outcomes using modeling, calculations, pollutant mass balances, water volume balances, and/or other methods of analysis. Describe how the proposed project will contribute to the preservation, restoration, or enhancement or watershed processes (as described in Guidelines section VI.C.2.a)
4. Describe the water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified.

Water Quality Benefits (Narrative)

The Project also has the potential to improve water quality as follows:

- Enhancement of groundwater quality due to decreased pumping lifts and stabilization of the water table, which reduces the chances of water quality changing due to pumping from zones of less quality; and
- Enhancements to water quality due to the importation of surface water to the District in wet years, which delivers surface water of quality suitable for the beneficial uses within the region.

Pollutant TMDL reduction (Volume per day) and (mass /unit volume) of most probable number of bacteria or indicator organisms (mpn/mL):	Unknown
Increase in infiltration rate above existing condition:	Converts 640 acres of farmed land into recharge facility.
Non-point source pollution control:	Unknown
Does project affect an Existing NPDES Permit? If applicable, describe the need for a new NPDES Permit:	Unknown

Water Supply Benefits

1. Describe how the proposed project captures and reuses storm water and dry weather runoff for groundwater recharge or storage for beneficial use.
2. Please provide detailed information to quantify how the proposed project will reduce existing potable water demand.
3. Describe the water supply monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified

Water Supply Benefits (Narrative)

While a precise estimate of the annual amount of Stormwater or surface supply that will be delivered for direct recharge is challenging due to uncertainties and variation in annual supply, evaluation of the project's absorptive capacity can be estimated based on the acreage of Phase 2 compared to Phase 1 and the operation of Phase 1 during a recent wet period. A reasonable estimate of the absorptive capacity for the Phase 2 recharge facility is 15,163 acre-feet per wet year since it is the development of 4 quarter sections compared to the existing developed five quarter section area of Phase 1. Phase 1 was able to absorb 18,954 acre-feet of surface supply in 2011, a wet period. [15,163 = (4/5) * 18,954]

Additionally, the Project will convert 640 gross acres to ponds, resulting in an annual benefit of 2,240 AF [3.5 AFY per acre], for a total annual benefit of 5,273 AFY [5,273 AFY = 2,240 AFY + 3,033 AFY]

The Project would also:

- Improve the reliability of water supply for Semitropic.
- Increase operational flexibility for delivery of State Water Project (SWP) water
- Increase direct spreading, absorptive capability within Semitropic
- Increase local unconfined groundwater quality.
- Make use of available groundwater storage.
- Contribute to the groundwater basin for use during periods of peak demand or when SWP water is not available.

Enhanced Water Supply or Demand Reduction Benefit Information

Source of Increased Supply or Demand Reduction

☒ Groundwater	☐ Groundwater treatment	☒ Increased surface water storage
☐ Recycled water	☒ Conservation/ water use efficiency	☐ Ocean desalination
☐ Transfer	☐ Other (describe):	

Type of enhanced supply or demand reduction:	Recharged groundwater
Annual Yield of Supply (acre-feet):	3,033 AFY based on delivery to Phase 2 at a frequency of 2 out of 10 years
Availability by Water-Year Type (acre-feet per year)	
Average Year:	5,273 AFY = 2,240 AFY +3,033 AFY ; 15,163 [2 wet years / 10 years] = 3,033 AF
Dry Year:	2,240 AF

Wet Year:	17,403 AFY = 15,163 AFY + 2,240 AFY; based on 2011 deliveries to existing PPSG, plus 2,240 AFY due to saved water from retired agricultural land.

Availability by Season (check all that apply):

☒ Summer ☒ Fall ☒ Spring ☒ Winter

Does the project have the potential to reduce dependence on the Sacramento San Joaquin Bay/Delta/Estuary-Delta?

☒ Yes ☐ No ☐ Not Sure

Flood Management Benefits

1. Describe how the proposed project will reestablish natural water drainage treatment and infiltration systems, or mimic natural system functions to the maximum extent feasible.
2. Describe how the proposed project will reduce flood risk by reducing runoff rate and/or volume.
3. If applicable, describe how the proposed project will reduce the risk of sanitary sewer overflows.

Flood Management Benefits (Narrative)

The Project provides a flood management benefit inasmuch as the water delivered to the direct recharge facility during times of Stormwater management will be diverted and not contribute to increased downstream flows and flood risks. In the case of Semitropic's Water Bank and direct recharge facility, flood flow is delivered via the CA Aqueduct into the District's conveyance system, or, it is delivered via Poso Creek as diverted CVP-Friant or Poso Creek Stormwater, therefore, the added absorptive capacity of direct recharge enhances the ability to receive flows during wet periods, typically corresponding to times of the year when irrigation demand is low. This Project enhances flood management of the CA Aqueduct in reducing flood risk by allowing diversions into the CA Aqueduct, upstream of the Semitropic turnout.

Additionally, the Project also provides for a flood management benefit with the ability to divert wet-year water from Poso Creek into the recharge ponds. During flood events on Poso Creek, the recharge ponds could take occurring flood flows, thereby reducing flood damage within the Kern NWR and adjacent valuable agriculture lands.

Description facilities protected:	Regional conveyance facilities and facilities/land along Poso Creek.
Maximum volume of temporary storage of storm water runoff (acre-feet):	15,163
Maximum increased conveyance capacity (cubic feet/second):	350
Estimated area benefiting from flood damage reduction (acres):	Unknown, qualitatively estimated to be all agricultural lands adjacent to the Poso Creek Flood Channel and the Kern NWR, which have historically been flooded during major flooding events.
Estimated level of flood protection resulting from project implementation (% annual probability of recurrence or 1-in-number of years recurrence):	Unknown
Estimated annual value of flood damage reduction provided by project ($/year):	Unknown

Land required for project implementation (acres):	640, owned by the District.

For projects that include detention and groundwater recharge, please complete the following:

How many acres of land drain into this detention basin? (acres):	
Detention Basin area (acres):	640 gross acres, with 512 net acres
Detention basin max. operational depth (ft.):	4
% of basin covered by wetlands:	N/A
Soil type:	Loam
If other than infiltration, identify method (e.g., injection) and recharge (acre-feet/year):	15,163 AF/year; based on 2011 deliveries to existing PPSG.
Estimated basin annual inflow (acre-feet/year):	3,033 AF/year
Estimated basin annual outflow (acre-feet/year):	0 AF/year

Environmental and Habitat Enhancement Benefits

Describe how the proposed project identifies opportunities to develop, restore, or enhance habitat and open space through storm water and dry weather runoff management, including wetlands, riverside habitats, parkways, and parks. Provide some type of quantitative measurement, which will show how the project benefits the environment and enhances the natural habitat.

Environmental and Habitat Enhancement Benefits (Narrative)

The Pond Poso Spreading Grounds has the potential to create seasonal or intermittent shallow open water habitat by providing benefits for upland habitat through the construction of habitat benches, which consist of enlarged earthen benches up to 80-feet wide to support waterfowl with a place to rest and nest, when they have water in the ponds and are being utilized for recharge purposes.

Non-treatment wetland area (acres):	512 acres (640 acres x 80% wetted area), only when being used for direct recharge
Treatment wetland area (acres):	N/A
Riparian habitat area (acres):	N/A
Non-developed open space area (acres):	128 acres= (640 gross acres – 512 wetted acres)
Total Project area (acres):	640 gross acres

Community Stewardship Benefits

Describe how the project identifies opportunities to use existing publicly owned lands and easements, including, but not limited to parks, open space, community gardens, farm and agricultural preserves, school sites, and government office buildings and complexes, to capture, clean, store, and use storm water and dry weather runoff either onsite or offsite. Provide some type of quantitative measurement, which will show how the project benefits the community.

Community Stewardship Benefits (Narrative)

The Project has the potential for providing project benefits to the community as described below. Once constructed, the facility provides a habitat for various birds and waterfowl that also provides an opportunity for the public to view the waterfowl.

Multiple use/ recreation area (acres) – additionally, select the type of multiple use / recreation and associated acres by type:

Single Sport Athletics:	N/A
Multiple Sport Athletics Acres:	N/A
Other Recreation Acres:	N/A
Pedestrian Trail Acres:	N/A
Equestrian Trail Acres:	N/A
Other Passive Activity:	Bird viewing
Other Acres (describe):	N/A
Description:	N/A
Total Project Area (acres):	640

Part 5. Project Cost Estimate

Project cost information is needed to assist in comparing benefits and cost. Additionally, knowledge of the project type and cost will assist in identifying funding sources for potential projects.

Please indicate the estimated costs of project implementation and associated funding source(s). These costs should include land purchase/easement, planning/design/engineering, construction/ implementation, environmental compliance, administration, and contingency.

Approximate Total Cost: (If project costs are variable, please include lower and upper range estimates.)	$10,000,000+
Funding Source: (If multiple sources, list each source and the percent or amount funded by each)	• Potential future grant funding; • Banking Partners; • District Assessments
Maximum Funding Match from Implementing Agency:	N/A
Funding Certainty & Longevity:	Unknown
Operations & Maintenance Cost: (per year)	Unknown
Operations & Maintenance Funding Source(s) (i.e., annual budget, grant, etc. If multiple sources, list each source and the percent or amount funded by each.)	Annual Budget
Operations & Maintenance Funding Certainty: (i.e., already included in organization's budget, contingent upon grant, etc.)	Included as part of setting of annual budget

Kern Storm Water Resource Plan

Project Submittal Form

This form is to be electronically filled out and e-mailed to LMarino@ppeng.com by June 24, 2016.

Reference: Storm Water Resource Plan Guidelines, December 15, 2015
State Water Resources Control Board

Part 1. Lead Implementing Agency/Organizational Information

Please provide the following information regarding the project sponsor and proposed project.

Implementing Agency/ Organization / Individual:

Semitropic Water Storage District

Agency / Organization / Individual Address:

1101 Central Ave, Wasco, CA 93280

Possible Partnering Agencies:

Name:

Jason Gianquinto

Title:

General Manager

Telephone:

661-758-5113

Fax:

661-758-3219

Email:

mail@semitropic.com

Website:

www.semitropic.com

Project Name:

Stored Water Recovery Unit, Element of the Semitropic Groundwater Bank

Either the latitude/longitude or a location description is required. To determine the latitude/longitude, use the closest address or intersection. If the project is linear, use the furthest upstream latitude/longitude.

Project Latitude:	35.679706	**Project Longitude:**	-119.508296

Location Description:	Within the northwest area of the SWSD, about 4 miles south of the north Kern County line

Project Cooperating Agency(ies)/Organization(s)/Individual(s):

- Potentially Banking Partners
- Neighboring Water Districts
-
-

Project Status (e.g., new, ongoing, expansion, new phase):

New

Has the Project been submitted to IRWM Plan:

☐ Kern IRWMP ☒ Poso Creek IRWMP ☐ Not Submitted

Does the project address any known environmental justice issues?

☐ Yes ☒ No ☐ Not Sure

Is the project located within or adjacent to a disadvantaged community (DAC)? Refer to this website.

☐ Within ☐ Adjacent ☒ No ☐ Not Sure

Does the project include DAC participation?

☐ Yes ☒ No ☐ Not Sure

If yes, please identify the contact person, group, or organization and describe the DAC's participation:

What is the DAC's estimated population?

Does the Implementing Agency own the land where the project is located? If no, describe ability to purchase land or if eminent domain is required:

☐ Yes ☒ No

The District owns most of the property in fee, but will need to acquire some easements, work which is currently in progress.

Part 2. Project Need

It is important to understand the need(s) or issue(s) that the proposed project will address and the benefits that it will provide. Information provided in this section defines the need(s) or issue(s) that the proposed project will address and will help to catalog existing need(s) or issue(s) in the planning area of the Kern Storm Water Resource Plan.

Please provide a 1-2 paragraph description of the need(s) or problem(s) that the proposed project will address. Discuss the benefits to water quality, water supply, flood management, environmental, and community benefits that the proposed project will bring. Discuss critical impacts or worsening conditions that will occur if the proposed project is not implemented.

Project Need (Narrative)

The Stored Water Recovery Unit (SWRU) is an element of the highly-recognized Semitropic Groundwater Banking Project. This large groundwater storage and conjunctive use project consists of expanding the recharge and recovery capacity of the Groundwater Bank by 650,000 acre-feet of storage and up to 200,000 acre-feet of recovery capability. The SWRU will enhance the District's ability to capture and store available water supplies through the addition of roughly 12,000 acres of in-lieu recharge facilities, lands currently relying exclusively on pumped groundwater, increasing the District's recharge capacity to approximately 400,000 acre-feet per year.

The Project utilization of available SWRU storage and recovery capacity will facilitate expanded conjunctive use opportunities within the District, allowing for more storage and conservation of water in wet years and greater recovery of banked water in dry periods. The SWRU benefits include additional capacity to absorb available surface supplies into the District and into the groundwater basin. Delivery of surface water supply increases groundwater levels which benefits the water quality of all users within the shared groundwater, which includes environmental, small communities, prisons, and agriculture. Increasing the absorptive capacity for delivery of surface water also provides an additional flood management benefit by allowing another place for surface water to be delivered during times of high flow.

The banking of supplemental surface waters in the aquifers underlying the District's service area provides an effective way to reduce short-term groundwater level declines.

Other advantages of groundwater banking include short-term decreases in pumping costs related to a reduction in pumping lift and a long-term benefit from the capture of additional water permanently retained in Semitropic, which occurs when banking facilities are not being utilized for banking purposes.

The primary purpose of the Project is to improve the sustainability of the local water supplies and conjunctively manage the surface and groundwater resource for the benefit of the area. The need results from a number of actions which have served to reduce the historical reliability of water supplies available to the region.

Part 3. Project Description

A general description of the proposed project is needed. This section will provide information associated with the project concept and general project information. Much of the requested information may not be available for projects that are in the conceptual stages of development. An essential element of the Kern Storm Water Resource Plan consists of proposed projects. We appreciate and need your ideas.

Please provide a one or two paragraph description of the project including the general project concept, what will be constructed/implemented, how the constructed project will function, what technologies or methods will be used, as appropriate. For water quality projects, include a description of impacts to existing Total Maximum Daily Loads, NPDES permits, and/or waste discharge requirements.

Project Description (Narrative)

The project consists of the following facilities:

North South Conveyance System consisting of a bidirectional pipeline/canal (including a jack and bore crossing of Highway 46) with an in-line booster pumping plant;

3 in-lieu distribution systems (System X, Y, and Z) consisting of approximately 45 miles of distribution pipeline ranging in diameter from 15 inches to 66 inches consisting of reinforced concrete pipe (> 21-inch) and PVC pipe (15-inch and 18-inch) and 80 turnouts;

3 large capacity pumping plants at the juncture of each distribution system (P.P. X - 115 cfs, P.P. Y - 80 cfs and P.P. Z - 75 cfs);

In-line booster pumping plant for System X (30cfs);

Well field consisting of 65 high production wells, 20 miles of well-field collector pipeline, 18 miles of 12kV overhead electrical power lines, and 22 miles of access roads;

Regulating Reservoir, Regulation Reservoir Pumping Plant and Poso Creek Overpour and Control Structure; and

Interconnections between systems.

Below is a summary of the function of the facilities:

North-South Conveyance System- The North-South Conveyance System (canal and pipeline) provides the additional plumbing to the California Aqueduct necessary to increase the rate of delivery of surface water supplies and return of previously-banked water.

In-Lieu Distribution System- The In-Lieu Distribution System provides additional groundwater recharge capacity through the in-lieu banking feature and by increasing recovery capacity. Proceeding from south to north, the three distribution systems are referred to as "X," "Y," and "Z." Each system is designed to deliver surface water (when available) to lands otherwise reliant on pumped groundwater for irrigation. The North-South Conveyance System provides for the delivery of water to and from the California Aqueduct and the In Lieu System Area (ILSA). The pipeline laterals which deliver water to the ILSA would also provide the means by which stored water would be recovered and delivered from the ILSA to the North-South Conveyance System when the wells are being used to recover previously-banked water. Farm turnouts provide the interface between the District's system and the landowner's system and include provision for the metering of flows (both instantaneous rate and cumulative volume).

Well Field- Up to 65 high production wells and a network of pipelines provide the means for recovery of previously-banked water. Stored water recovered by the Well Field would be conveyed via collector pipelines to a regulating reservoir, then pumped into a pipeline/canal (North-South Conveyance System) by a proposed pumping plant (the Regulation Reservoir Pumping Plant) located adjacent to the Regulation Reservoir. The Regulation Reservoir would serve to balance the flow of water delivered from the wells and

pumped into the North-South Conveyance System.

Regulation Reservoir-The Regulation Reservoir is proposed to be constructed immediately east of the North-South Conveyance System and adjacent to the proposed well field. Its function is to regulate water produced in the well field and provide a pool from which to pump water into the North-South Conveyance System. The Regulation Reservoir Pumping Plant is proposed to be located adjacent to the southern portion of the Regulation Reservoir. Its main function is to pump water out of the Regulation Reservoir and into the North-South Conveyance System for ultimate delivery into the California Aqueduct.

Regulation Reservoir / Poso Creek Overpour- the Regulation Reservoir / Poso Creek Overpour, or spillway, is a concrete weir structure that is proposed to be located on the southern levee of Poso Creek adjacent to the Regulation Reservoir to allow diversion into and out of the Poso Creek Flood Channel. The weir structure would allow the District to divert wet-year water from Poso Creek into the Regulation Reservoir, which would be subsequently pumped into the North-South Conveyance System. This creek-side facility would also allow the District to convey regulated water to the Kern NWR. During flood events on Poso Creek, the weir structure could take 300 cfs of the occurring flood flows, thereby reducing flood damage within the Kern NWR and adjacent agriculture lands.

Poso Creek Control Structure- The Poso Creek Control Structure is a control structure that would be operated in conjunction with the Regulation Reservoir / Poso Creek Overpour. In a wet-year period, when flood waters are occurring in Poso Creek, the Poso Creek Control Structure would allow the District to raise the water surface elevation in Poso Creek to allow for diversion of flows into the Regulation Reservoir via the Regulation Reservoir / Poso Creek Overpour. The diverted water would be subsequently pumped into the North-South Conveyance System for capture and delivery to the District.

A 27" Kern NWR Supply Pipeline would supply water to the Kern NWR. This pipeline is approximately 3,000 feet long and will provide a connection between the North-South Conveyance System and the Well Field. It will allow for water to be delivered from within various sources within the District to the Refuge.

If applicable, list surface water bodies and groundwater basins associated with the proposed project:

- Surface water delivered via CA Aqueduct or Friant-Kern Canal
- Pond Poso Canal
- Poso Creek Flood Channel
- Kern Groundwater Basin

Please identify up to three available documents which contain information specific to the proposed project. Include conceptual plans, permits, drawings, and technical documents:

- Supplemental and Final Environmental Impact Report
-
-

Please identify federal, state, or local permits, which pertain to the proposed project and would need to be obtained or, if existing, would need to be amended:

- Federal: US Fish and Wildlife Service
- State: DFG, DoT, RWQCB, etc.
- Local: SJV Unified Air Pollution Control District, Kern County, SWPPP-NOI, Encroachment, etc.

Please identify any existing projects or facilities, including existing water conveyance infrastructure, which would be affected, modified, or superseded as a result of implementing the proposed project:

• California Aqueduct
• Pond Poso Canal
• Poso Creek Flood Channel

Is the proposed project an element or phase of a regional or larger program?	☒ Yes ☐ No
If yes, please identify the program:	Poso Creek IRWMP
Design life of the project:	50
Proposed Construction/Implementation Start Date:	Yet Unknown
Proposed Construction/Implementation Completion Date:	Yet Unknown
Ready for Construction Bid:	☐ Yes ☒ No ☐ N/A

Item	Status (e.g., not initiated, in process, complete)	Date (mm/dd/yyyy)
Conceptual Plans	**Complete**	09/1/1999
Land Acquisition/ Easements	**In Process**	
Preliminary Plans	**In Process**	
CEQA/NEPA	**CEQA is Complete; NEPA would be required if a federal nexus exists (i.e. through federal grant funding for example).**	09/1/1999
Permits	**In Process**	
Construction Drawings	**Preliminary, In Process**	

For projects ready for construction or implementation, including projects which do not include construction, briefly describe the project's readiness to proceed.

Project Readiness (Narrative)

Portions of the Project are "shovel ready" inasmuch as Issued for Construction drawings have been prepared and all required regulatory permits have been obtained, with the exception of construction-related permits, which would be acquired at the onset of the Project. Components that would be ready to construct include the North-South Conveyance System and the In-Lieu portion of the SWRU, Systems X. A detailed cost estimate has been provided and is available to support construction documents. Funding requires over a minimum of $30M for the next phase of this project to realize the benefits. Preliminary/conceptual drawings for other components of the Project have been prepared and would require the reparation of final drawings, acquisition of easements/fee parcels and the acquisition of construction-related permits to commence work.

Include any local or state board actions, code changes, or legislation needed in order to proceed with the project.

Local or State Board Actions, Code Changes, or Legislation

SWSD Board of Directors would need to authorize funding for the project to proceed.

Please describe the dominant existing land use type for the proposed project location.

Agricultural, with some private property occurring sporadically throughout the area.

Please describe the dominant existing land use type for areas upstream and downstream of the proposed project location

Upstream:	See above
Downstream:	Agriculture is served by CA Aqueduct and the Kern National Wildlife Refuge is downstream from this area along the Poso Creek Flood Channel.

Part 4. Project Benefits

Please provide a one or two paragraph description of the benefit(s) that the project will address. Benefit Categories, shown below, are referenced from the **Storm Water Resource Plan Guidelines**, Page 31, Table 4. Each project should address at least two or more Main Benefits and as many Additional Benefits as feasible. Information you provide will be used to evaluate the project for State grant funding.

Storm Water Management Benefits		
Benefit Category	**Main Benefit**	**Additional Benefit**
Water Quality (while contributing to compliance with applicable permit and/or TMDL requirements)	• Increased filtration and/or treatment of run-off • Potential improvements in groundwater quality	• Non-point source pollution control • Reestablished natural water drainage and treatment
Water Supply (through groundwater management and/or run-off capture and use)	• **Water supply reliability** • **Expand Conjunctive use** • **Reduce short-term groundwater level declines**	• Water conservation
Flood Management	• Decreased flood risk by reducing run-off rate and/or volume • Flood reduction benefits	• Reduced sanitary sewer overflows
Environmental and Habitat Enhancement	• Environmental and habitat protection and improvement, including; - wetland enhancement/creation; - riparian enhancement; and/or - instream flow improvement • Increased urban green space	• Reduced energy use, greenhouse gas emissions, or provides a carbon sink • Reestablishment of the natural hydrograph • Water temperature improvements
Community Stewardship	• Employment opportunities provided • Public Education	• Community involvement • Enhance and/or create recreational and public use areas

Source: Page 31, Table 4, Storm Water Resource Plan Guidelines, State Water Resources Control Board

Please provide the following PROJECT BENEFIT information for all applicable components of the proposed project. Benefit categories include:

- **Water Supply**
- **Flood Management**
- **Environmental and Habitat Enhancement**
- **Community Stewardship**

If the project benefits a disadvantaged community (DAC) describe the specific benefits to that community. Estimate the percentage of the project benefits to the DAC.

Please supply all information relevant to the proposed project. The information you provide will be used to evaluate the project for State grant funding. **Attach additional sheets if necessary.**

Water Quality Benefits

1. Describe how the proposed project will improve source control for both pollution and dry weather runoff volume, onsite and local infiltration, and use of storm water and dry weather runoff.
2. Describe design criteria and best management practices to prevent storm water and dry weather runoff pollution and increase effective storm water and dry weather runoff management for new and upgraded infrastructure and residential, commercial, industrial, and public development
3. Describe how the proposed project complies with or is consistent with an applicable NPDES permit. The analysis should simulate the proposed watershed-based outcomes using modeling, calculations, pollutant mass balances, water volume balances, and/or other methods of analysis. Describe how the proposed project will contribute to the preservation, restoration, or enhancement or watershed processes (as described in Guidelines section VI.C.2.a)
4. Describe the water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified.

Water Quality Benefits (Narrative)

This project also has the potential to improve water quality as follows:

- Enhancement of groundwater quality due to decreased pumping lifts and stabilization of the water table, which reduces the chances of water quality changing due to pumping from zones of less quality; and
- Enhancements to water quality due to the importation of surface water to the District in wet years, which delivers surface water of quality suitable for the beneficial uses within the region.

Pollutant TMDL reduction (Volume per day) and (mass /unit volume) of most probable number of bacteria or indicator organisms (mpn/mL):	N/A
Increase in infiltration rate above existing condition:	The Project increases the ability to absorb surface water supply since it connects the District's distribution system with 12,000 acres previously only served by groundwater.
Non-point source pollution control:	N/A
Does project affect an Existing NPDES Permit? If applicable, describe the need for a new NPDES Permit:	N/A

Water Supply Benefits

1. Describe how the proposed project captures and reuses storm water and dry weather runoff for groundwater recharge or storage for beneficial use.
2. Please provide detailed information to quantify how the proposed project will reduce existing potable water demand.
3. Describe the water supply monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified

Water Supply Benefits (Narrative)

The put and take operation of the current Semitropic Groundwater Bank is limited by the availability of surface supplies, capacity of the existing intake, conveyance, and pump back facilities, and the ability to deliver (absorb) surface water using the lateral distribution and irrigation systems. With the proposed construction of a conveyance pipeline originating at the Pond-Poso Canal, an opportunity is created to significantly enhance the put, which is the absorptive capacity of the Groundwater Bank. This additional capacity, coupled with a balancing reservoir adjacent to the Pond-Poso Canal, could greatly enhance the operational flexibility of the put operation and increase the absorptive capacity of the in-lieu portion of the Bank. Ongoing water supply monitoring and data acquisition is done by the Semitropic Staff and communicated to the neighboring districts through the Semitropic Groundwater Monitoring Committee. The committee acquires and stores hydrology data collected by the District Staff, the Kern County Water Agency, and the DWR's CA Aqueduct operators.

Enhanced Water Supply or Demand Reduction Benefit Information

Source of Increased Supply or Demand Reduction

☒ Groundwater	☐ Groundwater treatment	☒ Increased surface water storage
☐ Recycled water	☒ Conservation/ water use efficiency	☐ Ocean desalination
☐ Transfer	☐ Other (describe):	

Type of enhanced supply or demand reduction:	Groundwater; in-lieu recharge.
Annual Yield of Supply (acre-feet):	12,600 AF

Availability by Water-Year Type (acre-feet per year)

Average Year:	0.3 times 42,000 AFY = 12,600 AF
Dry Year:	Return of Previously Stored Water
Wet Year:	12,000 Acres x 3.5 AF/A delivery = 42,000 AFY

Availability by Season (check all that apply):

☒ Summer ☒ Fall ☒ Spring ☒ Winter

Does the project have the potential to displace demands on the Bay/Delta/Estuary?

☒ Yes ☐ No ☐ Not Sure

Flood Management Benefits

1. Describe how the proposed project will reestablish natural water drainage treatment and infiltration systems, or mimic natural system functions to the maximum extent feasible.
2. Describe how the proposed project will reduce flood risk by reducing runoff rate and/or volume.
3. If applicable, describe how the proposed project will reduce the risk of sanitary sewer overflows.

Flood Management Benefits (Narrative)

The Project provides a flood management benefit inasmuch as the water stored will not contribute to increased downstream flows and flood risks from where the water is diverted. In the case of Semitropic's Water Bank, flood flow is delivered via the CA Aqueduct into the SWRU conveyance system, therefore, the added absorptive capacity enhances the CA Aqueduct in reducing flood risk by allowing diversions into the CA Aqueduct, upstream of the Semitropic turnout. Additionally, the Project also provides for a flood management benefit with the construction of an overpour structure, control structure and regulating reservoir off of the Poso Creek Flood Channel. The facilities would allow the District to divert wet-year water from Poso Creek into the Regulation Reservoir, which would be subsequently pumped into the North-South Conveyance System. This creek-side facility would also allow the District to convey regulated water to the Kern NWR. During flood events on Poso Creek, the weir structure could take 300 cfs of the occurring flood flows, thereby reducing flood damage within the Kern NWR and adjacent valuable agriculture lands.

Maximum volume of temporary storage of storm water runoff (acre-feet):	Since Stormwater is more likely to occur in early spring and late fall part of the growing season, called the shoulder months, an estimate of 20 percent of the total absorptive capacity, 8,400 AF of in-lieu recharge is available during this time. [0.20 * 42,000 AF = 8,400 AF]
Maximum increased conveyance capacity (cubic feet/second):	300
Estimated area benefiting from flood damage reduction (acres):	Unknown, qualitatively estimated to be all agricultural lands adjacent to the Poso Creek Flood Channel and the Kern NWR, which have historically been flooded during major flooding events.
Estimated level of flood protection resulting from project implementation (% annual probability of recurrence or 1-in-number of years recurrence):	Unknown
Estimated annual value of flood damage reduction provided by project ($/year):	Unknown
Land required for project implementation (acres):	40-80

For projects that include detention and groundwater recharge, please complete the following:

How many acres of land drain into this detention basin? (acres):	Unknown; surface water is diverted into the CA Aqueduct which delivers to Semitropic WSD.
Detention Basin area (acres):	N/A

Detention basin max. operational depth (ft.):	N/A
% of basin covered by wetlands:	0
Soil type:	Loam
If other than infiltration, identify method (e.g., injection) and recharge (acre-feet/year):	In-lieu recharge; The projects recharge is predicated on in-lieu recharge whereby for every 1 af of surface water delivered, 1 af of water of pumping is displaced.
Estimated basin annual inflow (acre-feet/year):	N/A
Estimated basin annual outflow (acre-feet/year):	N/A

Environmental and Habitat Enhancement Benefits

Describe how the proposed project identifies opportunities to develop, restore, or enhance habitat and open space through storm water and dry weather runoff management, including wetlands, riverside habitats, parkways, and parks. Provide some type of quantitative measurement, which will show how the project benefits the environment and enhances the natural habitat.

Environmental and Habitat Enhancement Benefits (Narrative)

A component of the Project, construction of the Regulation Reservoir, has the potential for developing and enhancing habitat and open space as described below. The reservoir will be located adjacent to and south of the Poso Creek Flood Channel within a larger parcel that will be used to regulate water diverted from Poso Creek from time to time and could ultimately be developed into a managed wetlands area. The current configuration of the reservoir is a "dumbbell" shape with the easterly levees curved and the exterior slopes flattened to enhance duck club aesthetics to accommodate an existing active duck club pond that is adjacent to and east of the reservoir. The configuration of the reservoir was coordinated with the adjacent duck club owner for this reason. Once constructed, the Regulation Reservoir, has the potential to provide a habitat for various birds and waterfowl that also provides an opportunity for the public to view the waterfowl.

Non-treatment wetland area (acres):	Up to 40 acres
Treatment wetland area (acres):	N/A
Riparian habitat area (acres):	N/A
Non-developed open space area (acres):	N/A
Total Project area (acres):	Up to 40 acres

Community Stewardship Benefits

Describe how the project identifies opportunities to use existing publicly owned lands and easements, including, but not limited to parks, open space, community gardens, farm and agricultural preserves, school sites, and government office buildings and complexes, to capture, clean, store, and use storm water and dry weather runoff either onsite or offsite. Provide some type of quantitative measurement, which will show how the project benefits the community.

Community Stewardship Benefits (Narrative)

A component of the Project, construction of the Regulation Reservoir has the potential for providing project benefits to the community as described below. As described above, once constructed, the Regulation Reservoir, has the potential to provide a habitat for various birds and waterfowl that also provides an opportunity for the public to view the waterfowl.

Multiple use/ recreation area (acres) – additionally, select the type of multiple use / recreation and associated acres by type:

Single Sport Athletics:	N/A
Multiple Sport Athletics Acres:	N/A
Other Recreation Acres:	N/A
Pedestrian Trail Acres:	N/A
Equestrian Trail Acres:	N/A
Other Passive Activity:	Bird viewing
Other Acres (describe):	N/A
Description:	N/A
Total Project Area (acres):	40-60 acres (Regulation Reservoir)

Part 5. Project Cost Estimate

Project cost information is needed to assist in comparing benefits and cost. Additionally, knowledge of the project type and cost will assist in identifying funding sources for potential projects.

Please indicate the estimated costs of project implementation and associated funding source(s). These costs should include land purchase/easement, planning/design/engineering, construction/ implementation, environmental compliance, administration, and contingency.

Approximate Total Cost: (If project costs are variable, please include lower and upper range estimates.)	Approximately $100,000,000.00+
Funding Source: (If multiple sources, list each source and the percent or amount funded by each)	• Potential future grant funding; • Banking Partners; • District Assessments
Maximum Funding Match from Implementing Agency:	N/A
Funding Certainty & Longevity:	Unknown
Operations & Maintenance Cost: (per year)	Unknown
Operations & Maintenance Funding Source(s) (i.e., annual budget, grant, etc. If multiple sources, list each source and the percent or amount funded by each.)	Annual Budget
Operations & Maintenance Funding Certainty: (i.e., already included in organization's budget, contingent upon grant, etc.)	Included as part of setting of annual budget

Kern Storm Water Resource Plan

Project Submittal Form

This form is to be electronically filled out and e-mailed to LMarino@ppeng.com by June 24, 2016.

Reference: Storm Water Resource Plan Guidelines, December 15, 2015
State Water Resources Control Board

Part 1. Lead Implementing Agency/Organizational Information

Please provide the following information regarding the project sponsor and proposed project.

Implementing Agency/ Organization / Individual:

Semitropic Water Storage District

Agency / Organization / Individual Address:

1101 Central Ave, Wasco, CA 93280

Possible Partnering Agencies:

Name:

Jason Gianquinto

Title:

General Manager

Telephone:

661-758-5113

Fax:

661-758-3219

Email:

mail@semitropic.com

Website:

www.semitropic.com

Project Name:

Entrance Ponds to the Pond Poso Spreading Grounds

Either the latitude/longitude or a location description is required. To determine the latitude/longitude, use the closest address or intersection. If the project is linear, use the furthest upstream latitude/longitude.

Project Latitude:	35.682362	**Project Longitude:**	-119.392154

Location Description:	The Project is 7 miles northwest of Wasco, northeast and adjacent to the existing Pond-Poso Spreading Grounds, located in Section 9, Township 26 South, Range 24 East, MDB&M.

Project Cooperating Agency(ies)/Organization(s)/Individual(s):

- Potentially Banking Partners
- Neighboring Water Districts
- Other Interested Parties

Project Status (e.g., new, ongoing, expansion, new phase):

Expansion of the PPSG

Has the Project been submitted to IRWM Plan:

☐ Kern IRWMP ☒ Poso Creek IRWMP ☐ Not Submitted

Does the project address any known environmental justice issues?

☐ Yes ☒ No ☐ Not Sure

Is the project located within or adjacent to a disadvantaged community (DAC)? Refer to this website.

☐ Within ☐ Adjacent ☒ No ☐ Not Sure

Does the project include DAC participation?

☐ Yes ☒ No ☐ Not Sure

If yes, please identify the contact person, group, or organization and describe the DAC's participation:

What is the DAC's estimated population?

Does the Implementing Agency own the land where the project is located? If no, describe ability to purchase land or if eminent domain is required:

☒ Yes ☐ No

The District owns the property in fee.

Part 2. Project Need

It is important to understand the need(s) or issue(s) that the proposed project will address and the benefits that it will provide. Information provided in this section defines the need(s) or issue(s) that the proposed project will address and will help to catalog existing need(s) or issue(s) in the planning area of the Kern Storm Water Resource Plan.

Please provide a 1-2 paragraph description of the need(s) or problem(s) that the proposed project will address. Discuss the benefits to water quality, water supply, flood management, environmental, and community benefits that the proposed project will bring. Discuss critical impacts or worsening conditions that will occur if the proposed project is not implemented.

Project Need (Narrative)

The Entry Ponds to the Pond Poso Spreading Grounds (PPSG) (the Project) is a component of the Semitropic Groundwater Bank and will enhance the operation of the Bank. The Project, will allow the District to divert floodwater/stormwater and to drop out sediment contained in stormwater during high-flow events originating from the Poso Creek. Flood Channel. In this regard, it will provide the District the ability to convey and manage floodwater originating from the Poso Creek Flood Channel, which absent the Project, would be delivered as uncontrolled floodwater to the Kern NWR and adjacent agricultural lands.

The Project is an expansion of the District's recharge and extraction facility, the PPSG, that once fully completed, will allow for the diversion of up to 350 cubic feet per second (cfs) of occurring flood flows during a wet period or opportunistic time to bank water supplies. The yield is equivalent to 700 acre-feet per day or 7,000 acre-feet for a 10-day storm event. In this regard, the Project has a potential to place up to 21,000 acre-feet of water into storage in a given one month period.
The Project will also provide for flood management benefits inasmuch as it will accommodate diversion of flood flows from the Poso Creek Flood Channel, through the Poso Creek diversion works structure, which conveys water from Poso Creek into the Entrance Ponds to the PPSG and ultimately into the District's system.

The primary purpose of the Project is to improve the sustainability of the local water supplies and conjunctively manage the surface and groundwater resource for the benefit of the area. The need results from a number of actions which have served to reduce the historical reliability of water supplies available to the region. The secondary objective of the project is to provide flood management benefits. The need arises from a number of historical hydrological events which have caused significant damages to adjacent valuable agricultural lands and facilities.

Part 3. Project Description

A general description of the proposed project is needed. This section will provide information associated with the project concept and general project information. Much of the requested information may not be available for projects that are in the conceptual stages of development. An essential element of the Kern Storm Water Resource Plan consists of proposed projects. We appreciate and need your ideas.

Please provide a one or two paragraph description of the project including the general project concept, what will be constructed/implemented, how the constructed project will function, what technologies or methods will be used, as appropriate. For water quality projects, include a description of impacts to existing Total Maximum Daily Loads, NPDES permits, and/or waste discharge requirements.

Project Description (Narrative)

The Project consists of the following facilities:

Development of 320 gross acres into diked ponds (240 acres north and 80 acres south of Poso Creek), with up to 10 "cells" and a serpentine design to allow sediment to drop off before it is diverted to the District's PPSG and/or the Pond Poso Canal;

Construction of a reinforced concrete diversion works structure located on the Poso Creek channel with two adjustable weirs, two fixed weirs, and a 200-foot wide earthen weir with a capacity of diverting up to 350 cfs of floodwater/stormwater from Poso Creek into the diked ponds;

Construction of up to eight (8) overpour structures to convey water to the lower elevation diked ponds;

Construction of an outlet structure located on the lowest tiers of the diked ponds, adjacent to the Pond Poso Canal to divert water into the District's canal once all of the sediment has been dropped out;

Construction of two outlet structures located on the lowest tiers of the diked ponds adjacent to the Poso Creek Flood Channel to overflow water into the creek in the event the inflow into the diked ponds exceeds the ponds capacity;

Construction of a low-head pumping plant (100 cfs), with 80 linear feet of 48-inch steel manifold pipe, and up to 600 linear feet 60-inch RCP pipe with a 120-inch riser on the lower tier of the diked ponds south of Poso Creek to facilitate lifting of water into the PPSG recharge ponds for recharge and storage; and

Construction of up to six (6) high production wells and a network of pipelines and appurtenances to recover water that has been previously recharged.

During "put" operations, surface water originating from floodwater/stormwater would be diverted and captured from Poso Creek, diverted to the diked ponds for settlement of sediment, then conveyed into the District's Pond Poso Canal and/or the PPSG for recharge and storage.

If applicable, list surface water bodies and groundwater basins associated with the proposed project:

- Poso Creek Flood Channel
- Pond Poso Canal
- Kern Groundwater Basin
-

Please identify up to three available documents which contain information specific to the proposed project. Include conceptual plans, permits, drawings, and technical documents:

• 2010 WaterSMART Pond Poso Retention Ponds – Phase II Grant Application
• CEQA Document (IS/ND)Prepared in 2007
•

Please identify federal, state, or local permits, which pertain to the proposed project and would need to be obtained or, if existing, would need to be amended:

• Update CEQA for GHG Emissions
• State: Dept. of Fish & Game
• Local: SJV Unified Air Pollution Control District, SWPPP NOI

Please identify any existing projects or facilities, including existing water conveyance infrastructure, which would be affected, modified, or superseded as a result of implementing the proposed project:

• Expansion of the Pond Poso Spreading Grounds
• Pond Poso Canal
• Poso Creek Flood Channel

Is the proposed project an element or phase of a regional or larger program?:	☒ Yes ☐ No
If yes, please identify the program:	Poso Creek IRWMP
Design life of the project:	50
Proposed Construction/Implementation Start Date:	Yet Unknown
Proposed Construction/Implementation Completion Date:	Yet Unknown
Ready for Construction Bid:	☐ Yes ☒ No ☐ N/A

Item	Status (e.g., not initiated, in process, complete)	Date (mm/dd/yyyy)
Conceptual Plans	**Complete**	04/11/2012
Land Acquisition/ Easements	**Complete**	
Preliminary Plans	**Complete**	04/11/2012
CEQA/NEPA	**CEQA completed in 2007; update for GHG may be needed. NEPA would be required if a federal nexus exists.**	
Permits	**Not Initiated**	
Construction Drawings	**Preliminary drawings have been prepared.**	

For projects ready for construction or implementation, including projects which do not include construction, briefly describe the project's readiness to proceed.

Project Readiness (Narrative)

With the exception of the potential acquisition of regulatory permits, the Project is "shovel ready" inasmuch as Issued for Construction Drawings are substantially completed, at the 60-percent level, the land is owned in fee and construction-related permits would be secured in a timely manner. Additionally, the Project is covered under the CEQA IS/ND, which was completed in 2007.

Include any local or state board actions, code changes, or legislation needed in order to proceed with the project.

Local or State Board Actions, Code Changes, or Legislation

The Project can be implemented by Board action.

Please describe the dominant existing land use type for the proposed project location.

Agricultural

Please describe the dominant existing land use type for areas upstream and downstream of the proposed project location

Upstream:	Agricultural
Downstream:	Agricultural/Spreading Grounds

Part 4. Project Benefits

Please provide a one or two paragraph description of the benefit(s) that the project will address. Benefit Categories, shown below, are referenced from the **Storm Water Resource Plan Guidelines**, Page 31, Table 4. Each project should address at least two or more Main Benefits and as many Additional Benefits as feasible. Information you provide will be used to evaluate the project for State grant funding.

Storm Water Management Benefits		
Benefit Category	**Main Benefit**	**Additional Benefit**
Water Quality (while contributing to compliance with applicable permit and/or TMDL requirements)	• Increased filtration and/or treatment of run-off • Potential improvements in groundwater quality	• Non-point source pollution control • Reestablished natural water drainage and treatment
Water Supply (through groundwater management and/or run-off capture and use)	• **Water supply reliability** • **Expand Conjunctive use** • Reduce short-term groundwater level declines	• Water conservation
Flood Management	• **Decreased flood risk by reducing run-off rate and/or volume**	• Reduced sanitary sewer overflows
Environmental and Habitat Enhancement	• Environmental and habitat protection and improvement, including; - wetland enhancement/creation; - riparian enhancement; and/or - instream flow improvement • Increased urban green space	• Reduced energy use, greenhouse gas emissions, or provides a carbon sink • Reestablishment of the natural hydrograph • Water temperature improvements
Community Stewardship	• Employment opportunities provided • Public Education	• Community involvement • Enhance and/or create recreational and public use areas

Source: Page 31, Table 4, Storm Water Resource Plan Guidelines, State Water Resources Control Board

Please provide the following PROJECT BENEFIT information for all applicable components of the proposed project. Benefit categories include:

- **Water Quality**
- **Water Supply**
- **Flood Management**
- **Environmental and Habitat Enhancement**
- **Community Stewardship**

If the project benefits a disadvantaged community (DAC) describe the specific benefits to that community. Estimate the percentage of the project benefits to the DAC.

Please supply all information relevant to the proposed project. The information you provide will be used to evaluate the project for State grant funding. **Attach additional sheets if necessary.**

Water Quality Benefits

1. Describe how the proposed project will improve source control for both pollution and dry weather runoff volume, onsite and local infiltration, and use of storm water and dry weather runoff.
2. Describe design criteria and best management practices to prevent storm water and dry weather runoff pollution and increase effective storm water and dry weather runoff management for new and upgraded infrastructure and residential, commercial, industrial, and public development
3. Describe how the proposed project complies with or is consistent with an applicable NPDES permit. The analysis should simulate the proposed watershed-based outcomes using modeling, calculations, pollutant mass balances, water volume balances, and/or other methods of analysis. Describe how the proposed project will contribute to the preservation, restoration, or enhancement or watershed processes (as described in Guidelines section VI.C.2.a)
4. Describe the water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified.

Water Quality Benefits (Narrative)

The Project will improve the quality of water by allowing for the removal of sediment prior to diverting the water to the District's Pond Poso Canal and/or the Pond Poso Spreading Grounds. In doing so it will also improve the effectiveness of the aquifer, recharge operation within the Pond Poso Spreading Grounds by decreasing the amount of silt that reaches the recharge ponds, maintaining recharge rates, and increasing total water supply benefit.

It is recognized in the Poso Creek IRWMP area that the majority of recharge facilities are constructed and operated by the agricultural districts and not by the small disadvantaged communities or the environmental water users, this project also has the potential to improve water quality as follows:

- Enhancement of groundwater quality due to decreased pumping lifts and stabilization of the water table, which reduces the chances of water quality changing due to pumping from zones of less quality; and
- Enhancements to water quality due to the importation of surface water to the District in wet years, which delivers surface water of quality suitable for the beneficial uses within the region.

Pollutant TMDL reduction (Volume per day) and (mass /unit volume) of most probable number of bacteria or indicator organisms (mpn/mL):	Unknown
Increase in infiltration rate above existing condition:	The Project connects floodwater/storm water to recharge basins
Non-point source pollution control:	Unknown
Does project affect an Existing NPDES Permit? If applicable, describe the need for a new NPDES Permit:	Unknown

Water Supply Benefits

1. Describe how the proposed project captures and reuses storm water and dry weather runoff for groundwater recharge or storage for beneficial use.
2. Please provide detailed information to quantify how the proposed project will reduce existing potable water demand.
3. Describe the water supply monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified

Water Supply Benefits (Narrative)

The Project, once fully developed, will provide the following estimated water supply benefits:
1) An estimated quantifiable water savings of 1,120 acre-feet per year based on the conversion of agricultural land to retention ponds (the estimated water savings per year is based on 320 gross acres of cropland with an applied water use of 3.5 acre-feet per year being converted to non-cropland);
2) An additional 160 acre-feet per day capacity for aquifer recharge when the area is wet and in use as retention ponds (estimated rate of recharge is at minimum 0.5 acre-feet per day); and,
3) Added flexibility for regional water management by adding a 350 cfs conveyance route from Poso Creek Flood Channel to the District's spreading facility and/or Pond Poso Canal for local surface water and CVP water supplies (equivalent volumes for the added route capacity of 350 cfs are 700 acre-feet per day or 21,000 acre-feet per month).

Enhanced Water Supply or Demand Reduction Benefit Information

Source of Increased Supply or Demand Reduction

☒ Groundwater	☐ Groundwater treatment	☒ Increased surface water storage
☐ Recycled water	☒ Conservation/ water use efficiency	☐ Ocean desalination
☐ Transfer	☐ Other (describe):	

Type of enhanced supply or demand reduction:	Recharged groundwater
Annual Yield of Supply (acre-feet):	1,280 AFY = 1,120 AFY Conserved Water plus (320 AFY) 160 AF per Day for 10 days, twice in 10 years [160 * 10 * 2 / 10]; this is a component of the PPSGs diverting 350 cfs per day, 7,000AF per flood event (for a single flooding event over a period of 10 days)

Availability by Water-Year Type (acre-feet per year)

Average Year:	[1,280 AFY = 1,120 AFY plus 320 AFY] [320 AFY = 160 AF/D * 10 Days/Y * (2 wet years / 10 years)]
Dry Year:	1,120 AFY
Wet Year:	AF = 1,120 AFY plus 1,600 [160 AF/D times 10 days]; the PPSGs facility has the ability to absorb 7,000AF during a wet period event [700AF/D times 10 days] in addition to the area specific to the Entrance Ponds component of the PPSGs.

Availability by Season (check all that apply):

☒ Summer	☒ Fall	☒ Spring	☒ Winter

Does the project have the potential to reduce dependence on the Sacramento San Joaquin Bay-Delta?

☒ Yes ☐ No ☐ Not Sure

Flood Management Benefits

1. Describe how the proposed project will reestablish natural water drainage treatment and infiltration systems, or mimic natural system functions to the maximum extent feasible.
2. Describe how the proposed project will reduce flood risk by reducing runoff rate and/or volume.
3. If applicable, describe how the proposed project will reduce the risk of sanitary sewer overflows.

Flood Management Benefits (Narrative)

The Project provides a flood management benefit inasmuch as the water delivered to the direct recharge facility during times of stormwater /floodwater management will be diverted and not contribute to increased downstream flows and flood risks. In the case of Semitropic's Water Bank and direct recharge facility, flood flow is delivered via the CA Aqueduct into the District's conveyance system, or, it is delivered via Poso Creek as diverted CVP-Friant or Poso Creek Stormwater, therefore, the added absorptive capacity of direct recharge enhances the ability to receive flows during wet periods, typically corresponding to times of the year when irrigation demand is low.

Additionally, the Project also provides for a flood management benefit with the ability to divert wet-year water originating from the Poso Creek Flood Channel into the PPSG recharge ponds and/or the Pond Poso Canal. During flood events on Poso Creek, the recharge ponds could take occurring flood flows, thereby reducing flood damage within the Kern NWR and adjacent valuable agricultural lands.

Description facilities protected:	Regional conveyance facilities and facilities/land along Poso Creek
Maximum volume of temporary storage of storm water runoff (acre-feet):	1,024 (based on 256 wetted acres x 4 feet deep)
Maximum increased conveyance capacity (cubic feet/second):	350 cfs diverted using Entrance Ponds into PPSGs
Estimated area benefiting from flood damage reduction (acres):	Unknown, qualitatively estimated to be all agricultural lands adjacent to the Poso Creek Flood Channel and the Kern NWR, which have historically been flooded during major flooding events.
Estimated level of flood protection resulting from project implementation (% annual probability of recurrence or 1-in-number of years recurrence):	Unknown
Estimated annual value of flood damage reduction provided by project ($/year):	Unknown
Land required for project implementation (acres):	320, owned by the District

For projects that include detention and groundwater recharge, please complete the following:

How many acres of land drain into this detention basin? (acres):	N/A

Detention Basin area (acres):	320 gross acres, with 256 net acres
Detention basin max. operational depth (ft.):	4
% of basin covered by wetlands:	N/A
Soil type:	Loam
If other than infiltration, identify method (e.g., injection) and recharge (acre-feet/year):	N/A
Estimated basin annual inflow (acre-feet/year):	1,280 AFY
Estimated basin annual outflow (acre-feet/year):	0

Environmental and Habitat Enhancement Benefits

Describe how the proposed project identifies opportunities to develop, restore, or enhance habitat and open space through storm water and dry weather runoff management, including wetlands, riverside habitats, parkways, and parks. Provide some type of quantitative measurement, which will show how the project benefits the environment and enhances the natural habitat.

Environmental and Habitat Enhancement Benefits (Narrative)

The Entrance Ponds to the Pond Poso Spreading Grounds has the potential to create seasonal or intermittent shallow open water habitat by providing benefits for upland habitat to support waterfowl with a place to rest and nest, when water is in the ponds and are being utilized for recharge purposes.

Non-treatment wetland area (acres):	256 acres (320 acres x 80% wetted area), only when being used for direct recharge
Treatment wetland area (acres):	0
Riparian habitat area (acres):	0
Non-developed open space area (acres):	64 acres= (320 gross acres – 256 wetted acres)
Total Project area (acres):	320 gross acres

Community Stewardship Benefits

Describe how the project identifies opportunities to use existing publicly owned lands and easements, including, but not limited to parks, open space, community gardens, farm and agricultural preserves, school sites, and government office buildings and complexes, to capture, clean, store, and use storm water and dry weather runoff either onsite or offsite. Provide some type of quantitative measurement, which will show how the project benefits the community.

Community Stewardship Benefits (Narrative)

The Project has the potential for providing project benefits to the community as described below. Once constructed, the facility provides a habitat for various birds and waterfowl that also provides an opportunity for the public to view the waterfowl.

Multiple use/ recreation area (acres) – additionally, select the type of multiple use / recreation and associated acres by type:

Single Sport Athletics:	N/A
Multiple Sport Athletics Acres:	N/A
Other Recreation Acres:	N/A
Pedestrian Trail Acres:	N/A
Equestrian Trail Acres:	N/A
Other Passive Activity:	Bird viewing
Other Acres (describe):	N/A
Description:	N/A
Total Project Area (acres):	320

Part 5. Project Cost Estimate

Project cost information is needed to assist in comparing benefits and cost. Additionally, knowledge of the project type and cost will assist in identifying funding sources for potential projects.

Please indicate the estimated costs of project implementation and associated funding source(s). These costs should include land purchase/easement, planning/design/engineering, construction/ implementation, environmental compliance, administration, and contingency.

Approximate Total Cost: (If project costs are variable, please include lower and upper range estimates.)	$5,000,000 +
Funding Source: (If multiple sources, list each source and the percent or amount funded by each)	• Potential future grant funding; • Banking Partners; • District Assessments
Maximum Funding Match from Implementing Agency:	N/A
Funding Certainty & Longevity:	Unknown
Operations & Maintenance Cost: (per year)	Unknown
Operations & Maintenance Funding Source(s) (i.e., annual budget, grant, etc. If multiple sources, list each source and the percent or amount funded by each.)	Annual Budget
Operations & Maintenance Funding Certainty: (i.e., already included in organization's budget, contingent upon grant, etc.)	Included as part of setting of annual budget

Kern Storm Water Resource Plan

Project Submittal Form

This form is to be electronically filled out and e-mailed to LMarino@ppeng.com by June 24, 2016.

Reference: Storm Water Resource Plan Guidelines, December 15, 2015
State Water Resources Control Board

Part 1. Lead Implementing Agency/Organizational Information

Please provide the following information regarding the project sponsor and proposed project.

Implementing Agency/ Organization / Individual:

County of Kern—Public Works Department

Agency / Organization / Individual Address:

2700 'M' Street
Bakersfield, CA 93301

Possible Partnering Agencies:

Arvin-Edison WSD
Lamont SWD

Name:

Craig Pope

Title:

Director

Telephone:

661-862-5071

Fax:

Email:

CPOPE@co.kern.ca.us

Website:

www.co.kern.ca.us

Project Name:

Caliente Creek Habitat Restoration and Groundwater Recharge Projects—Design and Construction

Either the latitude/longitude or a location description is required. To determine the latitude/longitude, use the closest address or intersection. If the project is linear, use the furthest upstream latitude/longitude.

Project Latitude:	35.28266	**Project Longitude:**	-118.6361

Location Description:	Caliente Creek. Near State Route 58 and Arvin, Kern County

Project Cooperating Agency(ies)/Organization(s)/Individual(s):

- Arvin-Edison WSD
- Lamont SWD
-
-

Project Status (e.g., new, ongoing, expansion, new phase):

Ongoing

Has the Project been submitted to IRWM Plan:

☒ Kern IRWMP ☐ Poso Creek IRWMP ☐ Not Submitted

Does the project address any known environmental justice issues?

☐ Yes ☐ No ☒ Not Sure

Is the project located within or adjacent to a disadvantaged community (DAC)? Refer to this website.

☐ Within ☒ Adjacent ☐ No ☐ Not Sure

Does the project include DAC participation?

☒ Yes ☐ No ☐ Not Sure

If yes, please identify the contact person, group, or organization and describe the DAC's participation:

The project will benefit both the towns of Lamont and Arvin which comprise of the DAC. The Lamont Storm Water District will participate.

What is the DAC's estimated population:

Lamont—5,000 and Arvin—10,000

Does the Implementing Agency own the land where the project is located? If no, describe ability to purchase land or if eminent domain is required:

☐ Yes ☒ No

Will attempt to purchase property.

Part 2. Project Need

It is important to understand the need(s) or issue(s) that the proposed project will address and the benefits that it will provide. Information provided in this section defines the need(s) or issue(s) that the proposed project will address and will help to catalog existing need(s) or issue(s) in the planning area of the Kern Storm Water Resource Plan.

Please provide a 1-2 paragraph description of the need(s) or problem(s) that the proposed project will address. Discuss the benefits to water quality, water supply, flood management, environmental, and community benefits that the proposed project will bring. Discuss critical impacts or worsening conditions that will occur if the proposed project is not implemented.

Project Need (Narrative)

The Caliente watershed routinely floods the communities of Arvin and Lamont on the average of every 7 years.

Currently the first Phase of the Project, the feasibility analysis, is underway. This phase includes designing the most effective layout for plantings for the Habitat Mitigation area, determine the locations for interim irrigation facilities, provide preliminary designs for the ground water storage basins and required headworks and assess the economic costs and benefits associated with both of the projects. This analysis will be a vital component and the basis for applying for future implementation/construction grants.

Future phases will include processing of the CEQA document, acquisition of lands, final design for the recharge basins, grading/construction of facilities and site revegetation.

The design and construction phases will include two projects to force a slowing and energy dissipation of flows, increase sediment deposition, increase volume losses, reclaim approximately 1,500 acres as natural habitat, and to utilize drainage areas for the groundwater recharge.

It is estimated the entire project will cost approximately $50,000,000 to construct.

Part 3. Project Description

A general description of the proposed project is needed. This section will provide information associated with the project concept and general project information. Much of the requested information may not be available for projects that are in the conceptual stages of development. An essential element of the Kern Storm Water Resource Plan consists of proposed projects. We appreciate and need your ideas.

Please provide a one or two paragraph description of the project including the general project concept, what will be constructed/implemented, how the constructed project will function, what technologies or methods will be used, as appropriate. For water quality projects, include a description of impacts to existing Total Maximum Daily Loads, NPDES permits, and/or waste discharge requirements.

Project Description (Narrative)

Currently the first Phase of the Project, the feasibility analysis, is underway.

Subsequent phases will include processing of the CEQA document, acquisition of lands, final design for the recharge basins, grading/construction of facilities and site revegetation.

The design and construction phase includes two projects:

The Caliente Creek Habitat Mitigation Project will create a riparian forest upstream of Highway 58 in order to affect flood control and water clarification/purification. There are five direct goals of this project: Decrease site erosion by slowing the velocity of the flow; Increase sediment deposition; Increase groundwater recharge; Reclaim this 1,300 acre area as natural habitat; Clarify and purify the waters crossing this alluvial floodplain.

The Caliente Creek Ground Water Recharge Project lies south of the Habitat Mitigation Project and covers approximately 1,500 acres of land between Highway 58 and the Tamarisk Tree line south of the highway. Flows passing under Highway 58 at either the Caliente Creek Bridge or the Neumarkel underpass would be directed into storage basins for ground water recharge.

If applicable, list surface water bodies and groundwater basins associated with the proposed project:

- Caliente Creek
-
-
-

Please identify up to three available documents which contain information specific to the proposed project. Include conceptual plans, permits, drawings, and technical documents:

- CRMP
- IRWMP Project Form
- AECOM study (currently underway)

Please identify federal, state, or local permits, which pertain to the proposed project and would need to be obtained or, if existing, would need to be amended:

• Local grading permit
•
•

Please identify any existing projects or facilities, including existing water conveyance infrastructure, which would be affected, modified, or superseded as a result of implementing the proposed project:

•
•
•

Is the proposed project an element or phase of a regional or larger program?:	☐ Yes ☒ No
If yes, please identify the program:	
Design life of the project:	
Proposed Construction/Implementation Start Date:	June 2016—Feasibility Study (underway) June 2017—Design and Construction
Proposed Construction/Implementation Completion Date:	January 2017—Feasibility Study January 2019—Design and Construction
Ready for Construction Bid:	☐ Yes ☒ No ☐ N/A

Item	Status (e.g., not initiated, in process, complete)	Date (mm/dd/yyyy)
Conceptual Plans	**In process**	06/28/2016
Land Acquisition/ Easements	**Not initiated**	
Preliminary Plans	**Not initiated**	
CEQA/NEPA	**Not initiated**	
Permits	**Not initiated**	
Construction Drawings	**Not initiated**	

For projects ready for construction or implementation, including projects which do not include construction, briefly describe the project's readiness to proceed.

Project Readiness (Narrative)

The feasibility study is in progress.

Include any local or state board actions, code changes, or legislation needed in order to proceed with the project.

Local or State Board Actions, Code Changes, or Legislation

State approval for grant, if not then no project **Local approval for project and local financial participation**

Please describe the dominant existing land use type for the proposed project location.

agricultural

Please describe the dominant existing land use type for areas upstream and downstream of the proposed project location

Upstream:	Agricultural and grazing land
Downstream:	Agricultural

Part 4. Project Benefits

Please provide a one or two paragraph description of the benefit(s) that the project will address. Benefit Categories, shown below, are referenced from the **Storm Water Resource Plan Guidelines**, Page 31, Table 4. Each project should address at least two or more Main Benefits and as many Additional Benefits as feasible. Information you provide will be used to evaluate the project for State grant funding.

Storm Water Management Benefits		
Benefit Category	**Main Benefit**	**Additional Benefit**
Water Quality (while contributing to compliance with applicable permit and/or TMDL requirements)	• Increased filtration and/or treatment of run-off	• Non-point source pollution control • Reestablished natural water drainage and treatment
Water Supply (through groundwater management and/or run-off capture and use)	• Water supply reliability • Conjunctive use	• Water conservation
Flood Management	• Decreased flood risk by reducing run-off rate and/or volume	• Reduced sanitary sewer overflows
Environmental and Habitat Enhancement	• Environmental and habitat protection and improvement, including; - wetland enhancement/creation; - riparian enhancement; and/or - instream flow improvement • Increased urban green space	• Reduced energy use, greenhouse gas emissions, or provides a carbon sink • Reestablishment of the natural hydrograph • Water temperature improvements
Community Stewardship	• Employment opportunities provided • Public Education	• Community involvement • Enhance and/or create recreational and public use areas

Source: Page 31, Table 4, Storm Water Resource Plan Guidelines, State Water Resources Control Board

Please provide the following PROJECT BENEFIT information for all applicable components of the proposed project. Benefit categories include:

- **Water Quality**
- **Water Supply**
- **Flood Management**
- **Environmental and Habitat Enhancement**
- **Community Stewardship**

If the project benefits a disadvantaged community (DAC) describe the specific benefits to that community. Estimate the percentage of the project benefits to the DAC.

Please supply all information relevant to the proposed project. The information you provide will be used to evaluate the project for State grant funding. **Attach additional sheets if necessary.**

Water Quality Benefits

1. Describe how the proposed project will improve source control for both pollution and dry weather runoff volume, onsite and local infiltration, and use of storm water and dry weather runoff.
2. Describe design criteria and best management practices to prevent storm water and dry weather runoff pollution and increase effective storm water and dry weather runoff management for new and upgraded infrastructure and residential, commercial, industrial, and public development
3. Describe how the proposed project complies with or is consistent with an applicable NPDES permit. The analysis should simulate the proposed watershed-based outcomes using modeling, calculations, pollutant mass balances, water volume balances, and/or other methods of analysis. Describe how the proposed project will contribute to the preservation, restoration, or enhancement or watershed processes (as described in Guidelines section VI.C.2.a)
4. Describe the water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified.

Water Quality Benefits (Narrative)

The project will help control flooding which will decrease the sediment deposition downstream.	
Pollutant TMDL reduction (Volume per day) and (mass /unit volume) of most probable number of bacteria or indicator organisms (mpn/mL):	No TMDL established for Caliente Creek
Increase in infiltration rate above existing condition:	Increase in infiltration rate with construction of groundwater recharge basins
Non-point source pollution control:	Decrease in sediment deposition downstream
Does project affect an Existing NPDES Permit? If applicable, describe the need for a new NPDES Permit:	Project area not within NPDES permit area.

Water Supply Benefits

1. Describe how the proposed project captures and reuses storm water and dry weather runoff for groundwater recharge or storage for beneficial use.
2. Please provide detailed information to quantify how the proposed project will reduce existing potable water demand.
3. Describe the water supply monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified

Water Supply Benefits (Narrative)

The capture of storm water and flood flows in proposed groundwater recharge basins will provide additional water to underlying aquifers.

Enhanced Water Supply or Demand Reduction Benefit Information

Source of Increased Supply or Demand Reduction

☒ Groundwater	☐ Groundwater treatment	☒ Increased surface water storage
☐ Recycled water	☒ Conservation/ water use efficiency	☐ Ocean desalination
☐ Transfer	☐ Other (describe):	

Type of enhanced supply or demand reduction:	Retention of storm water from rain and flood events.
Annual Yield of Supply (acre-feet):	Not yet determined

Availability by Water-Year Type (acre-feet per year)

Average Year:	To be determined
Dry Year:	To be determined
Wet Year:	To be determined

Availability by Season (check all that apply):

☒ Summer ☒ Fall ☒ Spring ☒ Winter

Does the project have the potential to displace demands on the Bay/Delta/Estuary?

☒ Yes ☐ No ☐ Not Sure

Flood Management Benefits

1. Describe how the proposed project will reestablish natural water drainage treatment and infiltration systems, or mimic natural system functions to the maximum extent feasible.
2. Describe how the proposed project will reduce flood risk by reducing runoff rate and/or volume.
3. If applicable, describe how the proposed project will reduce the risk of sanitary sewer overflows.

Flood Management Benefits (Narrative)

Approximately 1,500 acres is proposed to be converted back to natural riparian habitat upstream of the proposed groundwater recharge basins. This riparian habitat will provide natural treatment and infiltration to waters flowing in Caliente Creek. The proposed groundwater recharge basins will capture and meter flow and thus reduce the flooding issues presently downstream.

Maximum volume of temporary storage of storm water runoff (acre-feet):	Information not available at this time
Maximum increased conveyance capacity (cubic feet/second):	Information not available at this time
Estimated area benefiting from flood damage reduction (acres):	Information not available at this time
Estimated level of flood protection resulting from project implementation (% annual probability of recurrence or 1-in-number of years recurrence):	Information not available at this time
Estimated annual value of flood damage reduction provided by project ($/year):	Information not available at this time
Land required for project implementation (acres):	1,500

For projects that include detention and groundwater recharge, please complete the following:

How many acres of land drain into this detention basin? (acres):	1,500 +/-
Detention Basin area (acres):	To be determined
Detention basin max. operational depth (ft.):	To be determined
% of basin covered by wetlands:	N/A
Soil type:	varies
If other than infiltration, identify method (e.g., injection) and recharge (acre-feet/year):	No other methods identified
Estimated basin annual inflow (acre-feet/year):	To be determined
Estimated basin annual outflow (acre-feet/year):	To be determined

Environmental and Habitat Enhancement Benefits

Describe how the proposed project identifies opportunities to develop, restore, or enhance habitat and open space through storm water and dry weather runoff management, including wetlands, riverside habitats, parkways, and parks. Provide some type of quantitative measurement, which will show how the project benefits the environment and enhances the natural habitat.

Environmental and Habitat Enhancement Benefits (Narrative)

The Caliente Creek Habitat Mitigation project proposes the conversion of approximately 1,300 acres back to riparian habitat. Currently most of the area is under cultivation. It is proposed to re-introduce native plant species to help maintain a diverse population in the region.

Non-treatment wetland area (acres):	none
Treatment wetland area (acres):	none
Riparian habitat area (acres):	1,300 +/-
Non-developed open space area (acres):	All non-developed
Total Project area (acres):	1,300 +/-

Community Stewardship Benefits

Describe how the project identifies opportunities to use existing publicly owned lands and easements, including, but not limited to parks, open space, community gardens, farm and agricultural preserves, school sites, and government office buildings and complexes, to capture, clean, store, and use storm water and dry weather runoff either onsite or offsite. Provide some type of quantitative measurement, which will show how the project benefits the community.

Community Stewardship Benefits (Narrative)

Currently there will be no community/public projects to utilize storm water other than for ground water recharge.

Multiple use/ recreation area (acres) – additionally, select the type of multiple use / recreation and associated acres by type:

Single Sport Athletics:	N/A
Multiple Sport Athletics Acres:	N/A
Other Recreation Acres:	N/A
Pedestrian Trail Acres:	N/A
Equestrian Trail Acres:	N/A
Other Passive Activity:	N/A
Other Acres (describe):	N/A
Description:	N/A
Total Project Area (acres):	0

Part 5. Project Cost Estimate

Project cost information is needed to assist in comparing benefits and cost. Additionally, knowledge of the project type and cost will assist in identifying funding sources for potential projects.

Please indicate the estimated costs of project implementation and associated funding source(s). These costs should include land purchase/easement, planning/design/engineering, construction/ implementation, environmental compliance, administration, and contingency.

Approximate Total Cost: (If project costs are variable, please include lower and upper range estimates.)	Design and Construction Phase 1--$10,000,000 (total project--$50,000,000)
Funding Source: (If multiple sources, list each source and the percent or amount funded by each)	Kern County Public Works—general fund budget State and Federal Grants
Maximum Funding Match from Implementing Agency:	To be determined
Funding Certainty & Longevity:	To be determined
Operations & Maintenance Cost: (per year)	To be determined
Operations & Maintenance Funding Source(s) (i.e., annual budget, grant, etc. If multiple sources, list each source and the percent or amount funded by each.)	To be determined
Operations & Maintenance Funding Certainty: (i.e., already included in organization's budget, contingent upon grant, etc.)	To be determined

Kern Storm Water Resource Plan

Project Submittal Form

This form is to be electronically filled out and e-mailed to LMarino@ppeng.com by June 24, 2016.

Reference: Storm Water Resource Plan Guidelines, December 15, 2015
State Water Resources Control Board

Part 1. Lead Implementing Agency/Organizational Information

Please provide the following information regarding the project sponsor and proposed project.

Implementing Agency/ Organization / Individual:

County of Kern—Public Works Department

Agency / Organization / Individual Address:

2700 'M' Street
Bakersfield, CA 93301

Possible Partnering Agencies:

Name:

Craig Pope

Title:

Director

Telephone:

661-862-5100

Fax:

Email:

CPOPE @co.kern.ca.us

Website:

www.co.kern.ca.us

Project Name:

Cuddy Creek Restoration Project

Either the latitude/longitude or a location description is required. To determine the latitude/longitude, use the closest address or intersection. If the project is linear, use the furthest upstream latitude/longitude.

Project Latitude:	34.82131	**Project Longitude:**	-118.95026

Location Description:	This project is located at Cuddy Creek in Frazier Park, Kern County

Project Cooperating Agency(ies)/Organization(s)/Individual(s):

- Frazier Park Adopt-A-Creek (local citizens group)
-
-
-

Project Status (e.g., new, ongoing, expansion, new phase):

New

Has the Project been submitted to IRWM Plan:

☒ Kern IRWMP ☐ Poso Creek IRWMP ☐ Not Submitted

Does the project address any known environmental justice issues?

☐ Yes ☐ No ☒ Not Sure

Is the project located within or adjacent to a disadvantaged community (DAC)? Refer to this website.

☒ Within ☒ Adjacent ☐ No ☐ Not Sure

Does the project include DAC participation?

☒ Yes ☐ No ☐ Not Sure

If yes, please identify the contact person, group, or organization and describe the DAC's participation:

Frazier Park is considered a DAC. Community and civic organizations are interested in participation in the process.

What is the DAC's estimated population:

Frazier Park—2,800

Does the Implementing Agency own the land where the project is located? If no, describe ability to purchase land or if eminent domain is required:

☐ Yes ☒ No

Will attempt to purchase.

Part 2. Project Need

It is important to understand the need(s) or issue(s) that the proposed project will address and the benefits that it will provide. Information provided in this section defines the need(s) or issue(s) that the proposed project will address and will help to catalog existing need(s) or issue(s) in the planning area of the Kern Storm Water Resource Plan.

Please provide a 1-2 paragraph description of the need(s) or problem(s) that the proposed project will address. Discuss the benefits to water quality, water supply, flood management, environmental, and community benefits that the proposed project will bring. Discuss critical impacts or worsening conditions that will occur if the proposed project is not implemented.

Project Need (Narrative)

This construction project would restore a portion of Cuddy Creek through the town of Frazier Park. The project consists of constructing a series of rock groins and planted groins to force the stream into a meandering path to slow the flow, reduce energy, and thereby reduce the negative effects of erosion, degradation and aggradations. The slowing effect will also provide an opportunity for additional ground water recharge, which is much needed in the aquifer serving the Lake of the Woods and adjacent areas.

Part 3. Project Description

A general description of the proposed project is needed. This section will provide information associated with the project concept and general project information. Much of the requested information may not be available for projects that are in the conceptual stages of development. An essential element of the Kern Storm Water Resource Plan consists of proposed projects. We appreciate and need your ideas.

Please provide a one or two paragraph description of the project including the general project concept, what will be constructed/implemented, how the constructed project will function, what technologies or methods will be used, as appropriate. For water quality projects, include a description of impacts to existing Total Maximum Daily Loads, NPDES permits, and/or waste discharge requirements.

Project Description (Narrative)

In general, the project consists of stabilization and restoration of approximately 3000 feet of Cuddy Creek. Construction will include grade control structures, planted groins, and vegetation groins. The purpose of this project is to reduce watershed soil erosion and sedimentation of surface water to reduce the discharge of pollutants to State waters from storm or nonpoint sources. Slowing the water will also provide additional ground water recharge.

If applicable, list surface water bodies and groundwater basins associated with the proposed project:

• Cuddy Creek
•
•
•

Please identify up to three available documents which contain information specific to the proposed project. Include conceptual plans, permits, drawings, and technical documents:

• 2008 Urban Stream Restoration Program, Grant Application dated 11/12/2008
• Preliminary Design and Feasibility Report by Questa Engineering - November, 2003
• Final Design Report by Questa Engineering - April, 2004

Please identify federal, state, or local permits, which pertain to the proposed project and would need to be obtained or, if existing, would need to be amended:

• Local grading permit
• Fish & Game
• US Corp of Engineers

Please identify any existing projects or facilities, including existing water conveyance infrastructure, which would be affected, modified, or superseded as a result of implementing the proposed project:

•
•
•

Is the proposed project an element or phase of a regional or larger program?:	☐ Yes ☒ No
If yes, please identify the program:	
Design life of the project:	50 years
Proposed Construction/Implementation Start Date:	May 2017
Proposed Construction/Implementation Completion Date:	November 2017
Ready for Construction Bid:	☐ Yes ☒ No ☐ N/A

Item	Status (e.g., not initiated, in process, complete)	Date (mm/dd/yyyy)
Conceptual Plans	**Completed**	4/1/2004
Land Acquisition/ Easements	**Not Initiated**	
Preliminary Plans	**Completed**	4/1/2004
CEQA/NEPA	**Incomplete**	
Permits	**Not Initiated**	
Construction Drawings	**Incomplete**	

For projects ready for construction or implementation, including projects which do not include construction, briefly describe the project's readiness to proceed.

Project Readiness (Narrative)

There are preliminary plans completed with enough details to start the project.

Include any local or state board actions, code changes, or legislation needed in order to proceed with the project.

Local or State Board Actions, Code Changes, or Legislation

State approval grants
Local approval for project and local financial participation

Please describe the dominant existing land use type for the proposed project location.

Project location is Cuddy Creek Streambed Channel, bordered by residential and commercial.

Please describe the dominant existing land use type for areas upstream and downstream of the proposed project location

Upstream:	Stream channel bordered by residential and commercial.
Downstream:	Stream channel bordered by residential and commercial.

Part 4. Project Benefits

Please provide a one or two paragraph description of the benefit(s) that the project will address. Benefit Categories, shown below, are referenced from the **Storm Water Resource Plan Guidelines**, Page 31, Table 4. Each project should address at least two or more Main Benefits and as many Additional Benefits as feasible. Information you provide will be used to evaluate the project for State grant funding.

Storm Water Management Benefits		
Benefit Category	**Main Benefit**	**Additional Benefit**
Water Quality (while contributing to compliance with applicable permit and/or TMDL requirements)	• Increased filtration and/or treatment of run-off	• Non-point source pollution control • Reestablished natural water drainage and treatment
Water Supply (through groundwater management and/or run-off capture and use)	• Water supply reliability • Conjunctive use	• Water conservation
Flood Management	• Decreased flood risk by reducing run-off rate and/or volume	• Reduced sanitary sewer overflows
Environmental and Habitat Enhancement	• Environmental and habitat protection and improvement, including; - wetland enhancement/creation; - riparian enhancement; and/or - instream flow improvement • Increased urban green space	• Reduced energy use, greenhouse gas emissions, or provides a carbon sink • Reestablishment of the natural hydrograph • Water temperature improvements
Community Stewardship	• Employment opportunities provided • Public Education	• Community involvement • Enhance and/or create recreational and public use areas

Source: Page 31, Table 4, Storm Water Resource Plan Guidelines, State Water Resources Control Board

Please provide the following PROJECT BENEFIT information for all applicable components of the proposed project. Benefit categories include:

- **Water Quality**
- **Water Supply**
- **Flood Management**
- **Environmental and Habitat Enhancement**
- **Community Stewardship**

If the project benefits a disadvantaged community (DAC) describe the specific benefits to that community. Estimate the percentage of the project benefits to the DAC.

Please supply all information relevant to the proposed project. The information you provide will be used to evaluate the project for State grant funding. **Attach additional sheets if necessary.**

Water Quality Benefits

1. Describe how the proposed project will improve source control for both pollution and dry weather runoff volume, onsite and local infiltration, and use of storm water and dry weather runoff.
2. Describe design criteria and best management practices to prevent storm water and dry weather runoff pollution and increase effective storm water and dry weather runoff management for new and upgraded infrastructure and residential, commercial, industrial, and public development
3. Describe how the proposed project complies with or is consistent with an applicable NPDES permit. The analysis should simulate the proposed watershed-based outcomes using modeling, calculations, pollutant mass balances, water volume balances, and/or other methods of analysis. Describe how the proposed project will contribute to the preservation, restoration, or enhancement or watershed processes (as described in Guidelines section VI.C.2.a)
4. Describe the water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified.

Water Quality Benefits (Narrative)

The proposed project includes the construction/placement of grade control structures, planted groins, and vegetation groins. The purpose of this project is to reduce watershed soil erosion and sedimentation of surface water to reduce the discharge of pollutants to State waters from storm or nonpoint sources.

Pollutant TMDL reduction (Volume per day) and (mass /unit volume) of most probable number of bacteria or indicator organisms (mpn/mL):	Cuddy Creek does not have a TMDL
Increase in infiltration rate above existing condition:	No anticipated increase in the infiltration rate
Non-point source pollution control:	Will help control erosion and sedimentation issues
Does project affect an Existing NPDES Permit? If applicable, describe the need for a new NPDES Permit:	Project will not affect an existing NPDES permit.

Water Supply Benefits

1. Describe how the proposed project captures and reuses storm water and dry weather runoff for groundwater recharge or storage for beneficial use.
2. Please provide detailed information to quantify how the proposed project will reduce existing potable water demand.
3. Describe the water supply monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified

Water Supply Benefits (Narrative)

The groins will slow the water and provide areas of additional groundwater infiltration and recharge.

Enhanced Water Supply or Demand Reduction Benefit Information

Source of Increased Supply or Demand Reduction

☒ Groundwater	☐ Groundwater treatment	☐ Increased surface water storage
☐ Recycled water	☒ Conservation/ water use efficiency	☐ Ocean desalination
☐ Transfer	☐ Other (describe):	

Type of enhanced supply or demand reduction:	Groundwater recharge
Annual Yield of Supply (acre-feet):	unknown

Availability by Water-Year Type (acre-feet per year)

Average Year:	Not determined
Dry Year:	Not determined
Wet Year:	Not determined

Availability by Season (check all that apply):

☒ Summer ☒ Fall ☒ Spring ☒ Winter

Does the project have the potential to displace demands on the Bay/Delta/Estuary?

☒ Yes ☐ No ☐ Not Sure

Flood Management Benefits

1. Describe how the proposed project will reestablish natural water drainage treatment and infiltration systems, or mimic natural system functions to the maximum extent feasible.
2. Describe how the proposed project will reduce flood risk by reducing runoff rate and/or volume.
3. If applicable, describe how the proposed project will reduce the risk of sanitary sewer overflows.

Flood Management Benefits (Narrative)

The channel erosion has stripped all of the top soil from much of the channel bed leaving barren rock. As these banks erode laterally, homes that were originally constructed a safe distance from the creek may now become placed in peril. This project will prevent further watershed soil erosion and reduce the discharge of pollutants to State waters from storm or nonpoint sources.

Maximum volume of temporary storage of storm water runoff (acre-feet):	N/A
Maximum increased conveyance capacity (cubic feet/second):	N/A
Estimated area benefiting from flood damage reduction (acres):	About two acres which is adjacent or within the channel +/- 3000 lf.
Estimated level of flood protection resulting from project implementation (% annual probability of recurrence or 1-in-number of years recurrence):	Uncertain
Estimated annual value of flood damage reduction provided by project ($/year):	N/A
Land required for project implementation (acres):	Uncertain

For projects that include detention and groundwater recharge, please complete the following:

How many acres of land drain into this detention basin? (acres):	N/A
Detention Basin area (acres):	N/A
Detention basin max. operational depth (ft.):	N/A
% of basin covered by wetlands:	N/A
Soil type:	N/A
If other than infiltration, identify method (e.g., injection) and recharge (acre-feet/year):	N/A
Estimated basin annual inflow (acre-feet/year):	N/A
Estimated basin annual outflow (acre-feet/year):	N/A

Environmental and Habitat Enhancement Benefits

Describe how the proposed project identifies opportunities to develop, restore, or enhance habitat and open space through storm water and dry weather runoff management, including wetlands, riverside habitats, parkways, and parks. Provide some type of quantitative measurement, which will show how the project benefits the environment and enhances the natural habitat.

Environmental and Habitat Enhancement Benefits (Narrative)

The Cuddy Creek Restoration Project will use planted groins and rock groins to re-establish natural controls to mitigate and reduce the dangerously uncontrolled erosion problems. Cuddy Creek will be less capable of lateral migration (less bank erosion) and should develop meadows where there is currently only bare rock and/or poorly graded sediments. Once established, the restored riparian corridor will provide an ideal habitat for trout (Cuddy Creek is annually stocked with trout) and native wildlife.

Non-treatment wetland area (acres):	N/A
Treatment wetland area (acres):	N/A
Riparian habitat area (acres):	About two acres which is adjacent or within the channel +/- 3000 lf.
Non-developed open space area (acres):	N/A
Total Project area (acres):	About 3 acres

Community Stewardship Benefits

Describe how the project identifies opportunities to use existing publicly owned lands and easements, including, but not limited to parks, open space, community gardens, farm and agricultural preserves, school sites, and government office buildings and complexes, to capture, clean, store, and use storm water and dry weather runoff either onsite or offsite. Provide some type of quantitative measurement, which will show how the project benefits the community.

Community Stewardship Benefits (Narrative)

It is anticipated the community would be involved in planting some trees along the banks and on the rock groins and the meandering sidewalk along Cuddy Creek would lend itself to the locals appreciating the new riparian habitat and participate in maintenance and beautification of the community.

Multiple use/ recreation area (acres) – additionally, select the type of multiple use / recreation and associated acres by type:

Single Sport Athletics:	N/A
Multiple Sport Athletics Acres:	N/A
Other Recreation Acres:	N/A
Pedestrian Trail Acres:	N/A
Equestrian Trail Acres:	N/A
Other Passive Activity:	N/A
Other Acres (describe):	N/A
Description:	N/A
Total Project Area (acres):	0

Part 5. Project Cost Estimate

Project cost information is needed to assist in comparing benefits and cost. Additionally, knowledge of the project type and cost will assist in identifying funding sources for potential projects.

Please indicate the estimated costs of project implementation and associated funding source(s). These costs should include land purchase/easement, planning/design/engineering, construction/ implementation, environmental compliance, administration, and contingency.

Approximate Total Cost: (If project costs are variable, please include lower and upper range estimates.)	$2,000,000
Funding Source: (If multiple sources, list each source and the percent or amount funded by each)	Kern County general fund. State and Federal Grants.
Maximum Funding Match from Implementing Agency:	To be determined
Funding Certainty & Longevity:	To be determined
Operations & Maintenance Cost: (per year)	To be determined
Operations & Maintenance Funding Source(s) (i.e., annual budget, grant, etc. If multiple sources, list each source and the percent or amount funded by each.)	to be determined
Operations & Maintenance Funding Certainty: (i.e., already included in organization's budget, contingent upon grant, etc.)	To be determined

Kern Storm Water Resource Plan

Project Submittal Form

This form is to be electronically filled out and e-mailed to LMarino@ppeng.com by June 24, 2016.

Reference: Storm Water Resource Plan Guidelines, December 15, 2015
State Water Resources Control Board

Part 1. Lead Implementing Agency/Organizational Information

Please provide the following information regarding the project sponsor and proposed project.

Implementing Agency/ Organization / Individual:

County of Kern—Public Works Department

Agency / Organization / Individual Address:

2700 'M' Street
Bakersfield, CA 93301

Possible Partnering Agencies:

City of Taft

Name:

Craig Pope

Title:

Director

Telephone:

661-862-5100

Fax:

Email:

CPOPE@co.kern.ca.us

Website:

www.co.kern.ca.us

Project Name:

Sandy Creek Bank and Erosion Protection Project

Either the latitude/longitude or a location description is required. To determine the latitude/longitude, use the closest address or intersection. If the project is linear, use the furthest upstream latitude/longitude.

Project Latitude:	35.15198	**Project Longitude:**	-119.46063

Location Description:	Ford City Area, Kern County.

Project Cooperating Agency(ies)/Organization(s)/Individual(s):

- City of Taft
-
-
-

Project Status (e.g., new, ongoing, expansion, new phase):

New

Has the Project been submitted to IRWM Plan:

☒ Kern IRWMP ☐ Poso Creek IRWMP ☐ Not Submitted

Does the project address any known environmental justice issues?

☐ Yes ☐ No ☒ Not Sure

Is the project located within or adjacent to a disadvantaged community (DAC)? Refer to this website.

☒ Within ☒ Adjacent ☐ No ☐ Not Sure

Does the project include DAC participation?

☒ Yes ☐ No ☒ Not Sure

If yes, please identify the contact person, group, or organization and describe the DAC's participation:

The City of Taft is incorporated and would be represented by their city council. Ford City is unincorporated and would be represented by the County Board of Supervisors.

What is the DAC's estimated population:

City of Taft—9,000 and Ford City—4,500

Does the Implementing Agency own the land where the project is located? If no, describe ability to purchase land or if eminent domain is required:

☐ Yes ☒ No

Will attempt to purchase

Part 2. Project Need

It is important to understand the need(s) or issue(s) that the proposed project will address and the benefits that it will provide. Information provided in this section defines the need(s) or issue(s) that the proposed project will address and will help to catalog existing need(s) or issue(s) in the planning area of the Kern Storm Water Resource Plan.

Please provide a 1-2 paragraph description of the need(s) or problem(s) that the proposed project will address. Discuss the benefits to water quality, water supply, flood management, environmental, and community benefits that the proposed project will bring. Discuss critical impacts or worsening conditions that will occur if the proposed project is not implemented.

Project Need (Narrative)

Sandy Creek runs through the urban (both incorporated and unincorporated) areas around the City of Taft and Ford City. The Sandy Creek channel is under-sized and frequently causes flooding issues for the City of Taft and Ford City areas. Not performing any improvements will result in continued erosion and eventual failure of the levee jeopardizing adjacent property, homes, and businesses.

Part 3. Project Description

A general description of the proposed project is needed. This section will provide information associated with the project concept and general project information. Much of the requested information may not be available for projects that are in the conceptual stages of development. An essential element of the Kern Storm Water Resource Plan consists of proposed projects. We appreciate and need your ideas.

Please provide a one or two paragraph description of the project including the general project concept, what will be constructed/implemented, how the constructed project will function, what technologies or methods will be used, as appropriate. For water quality projects, include a description of impacts to existing Total Maximum Daily Loads, NPDES permits, and/or waste discharge requirements.

Project Description (Narrative)

The Meyer Civil Engineering Hydrology Report proposes the construction of a detention basin at Midoil Road (west of Ford City and the City of Taft). The detention basin would be designed to reduce the 100 year inflow peak from 2,139 CFS to 848 CSF by storing 187 acre feet of water. This reduction at Midoil Road is continued all the way to the North Sandy Creek confluence where flows would be reduced from 5,052 CFS to 4,076 CFS. There will be groins, grade control structures and bank armoring will also be constructed.

If applicable, list surface water bodies and groundwater basins associated with the proposed project:

• Sandy Creek
•
•
•

Please identify up to three available documents which contain information specific to the proposed project. Include conceptual plans, permits, drawings, and technical documents:

• Sandy Creek Flood Control Project, J.H. Hansen Engineering, March 1986 (for the Kern County Water Agency)
• Sandy Creek Hydrology Study, September 2, 2005, Meyer Civil Engineering, Inc. (for City of Taft)
• Kern IRWMP

Please identify federal, state, or local permits, which pertain to the proposed project and would need to be obtained or, if existing, would need to be amended:

• Grading permit
• Corp of Engineers
•

Please identify any existing projects or facilities, including existing water conveyance infrastructure, which would be affected, modified, or superseded as a result of implementing the proposed project:

•
•
•

Is the proposed project an element or phase of a regional or larger program?:	☐ Yes ☒ No
If yes, please identify the program:	
Design life of the project:	
Proposed Construction/Implementation Start Date:	January 2017
Proposed Construction/Implementation Completion Date:	October 2017
Ready for Construction Bid:	☐ Yes ☐ No ☒N/A

Item	Status (e.g., not initiated, in process, complete)	Date (mm/dd/yyyy)
Conceptual Plans	**complete**	09/02/2005
Land Acquisition/ Easements	**Not initiated**	
Preliminary Plans	**Not initiated**	
CEQA/NEPA	**Not initiated**	
Permits	**Not initiated**	
Construction Drawings	**Not initiated**	

For projects ready for construction or implementation, including projects which do not include construction, briefly describe the project's readiness to proceed.

Project Readiness (Narrative)

There are conceptual design plans currently in place. Final design and construction will commence once funding is available.

Include any local or state board actions, code changes, or legislation needed in order to proceed with the project.

Local or State Board Actions, Code Changes, or Legislation

Please describe the dominant existing land use type for the proposed project location.

Oil field, rural, residential

Please describe the dominant existing land use type for areas upstream and downstream of the proposed project location

Upstream:	Oil field, rural, residential
Downstream:	Residential, rural, Ag

Part 4. Project Benefits

Please provide a one or two paragraph description of the benefit(s) that the project will address. Benefit Categories, shown below, are referenced from the **Storm Water Resource Plan Guidelines**, Page 31, Table 4. Each project should address at least two or more Main Benefits and as many Additional Benefits as feasible. Information you provide will be used to evaluate the project for State grant funding.

Storm Water Management Benefits		
Benefit Category	**Main Benefit**	**Additional Benefit**
Water Quality (while contributing to compliance with applicable permit and/or TMDL requirements)	• Increased filtration and/or treatment of run-off	• Non-point source pollution control • Reestablished natural water drainage and treatment
Water Supply (through groundwater management and/or run-off capture and use)	• Water supply reliability • Conjunctive use	• Water conservation
Flood Management	• Decreased flood risk by reducing run-off rate and/or volume	• Reduced sanitary sewer overflows
Environmental and Habitat Enhancement	• Environmental and habitat protection and improvement, including; - wetland enhancement/creation; - riparian enhancement; and/or - instream flow improvement • Increased urban green space	• Reduced energy use, greenhouse gas emissions, or provides a carbon sink • Reestablishment of the natural hydrograph • Water temperature improvements
Community Stewardship	• Employment opportunities provided • Public Education	• Community involvement • Enhance and/or create recreational and public use areas

Source: Page 31, Table 4, Storm Water Resource Plan Guidelines, State Water Resources Control Board

Please provide the following PROJECT BENEFIT information for all applicable components of the proposed project. Benefit categories include:

- **Water Quality**
- **Water Supply**
- **Flood Management**
- **Environmental and Habitat Enhancement**
- **Community Stewardship**

If the project benefits a disadvantaged community (DAC) describe the specific benefits to that community. Estimate the percentage of the project benefits to the DAC.

Please supply all information relevant to the proposed project. The information you provide will be used to evaluate the project for State grant funding. **Attach additional sheets if necessary.**

Water Quality Benefits

1. Describe how the proposed project will improve source control for both pollution and dry weather runoff volume, onsite and local infiltration, and use of storm water and dry weather runoff.
2. Describe design criteria and best management practices to prevent storm water and dry weather runoff pollution and increase effective storm water and dry weather runoff management for new and upgraded infrastructure and residential, commercial, industrial, and public development
3. Describe how the proposed project complies with or is consistent with an applicable NPDES permit. The analysis should simulate the proposed watershed-based outcomes using modeling, calculations, pollutant mass balances, water volume balances, and/or other methods of analysis. Describe how the proposed project will contribute to the preservation, restoration, or enhancement or watershed processes (as described in Guidelines section VI.C.2.a)
4. Describe the water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified.

Water Quality Benefits (Narrative)

The proposed detention basin at Midoil Road will provide some increase in infiltration to groundwater. The proposed channel work, removal of non-native plants and construction of grade control structures will help with downstream sedimentation issues.

Pollutant TMDL reduction (Volume per day) and (mass /unit volume) of most probable number of bacteria or indicator organisms (mpn/mL):	Sandy Creek does not have a TMDL
Increase in infiltration rate above existing condition:	Limited groundwater increase from detention basin
Non-point source pollution control:	sedimentation
Does project affect an Existing NPDES Permit? If applicable, describe the need for a new NPDES Permit:	The project will not affect an existing NPDES permit

Water Supply Benefits

1. Describe how the proposed project captures and reuses storm water and dry weather runoff for groundwater recharge or storage for beneficial use.
2. Please provide detailed information to quantify how the proposed project will reduce existing potable water demand.
3. Describe the water supply monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified

Water Supply Benefits (Narrative)

There is no specific storm water capture proposed. Just natural infiltration along Sandy Creek and at the detention basin located at Midoil Road.

Enhanced Water Supply or Demand Reduction Benefit Information

Source of Increased Supply or Demand Reduction

☒ Groundwater	☐ Groundwater treatment	☒ Increased surface water storage
☐ Recycled water	☒ Conservation/ water use efficiency	☐ Ocean desalination
☐ Transfer	☐ Other (describe):	

Type of enhanced supply or demand reduction:	Increased infiltration and groundwater recharge from the proposed detention basin
Annual Yield of Supply (acre-feet):	Not determined

Availability by Water-Year Type (acre-feet per year)

Average Year:	Not determined
Dry Year:	Not determined
Wet Year:	Not determined

Availability by Season (check all that apply):

☒ Summer ☒ Fall ☒ Spring ☒ Winter

Does the project have the potential to displace demands on the Bay/Delta/Estuary?

☒ Yes ☐ No ☐ Not Sure

Flood Management Benefits

1. Describe how the proposed project will reestablish natural water drainage treatment and infiltration systems, or mimic natural system functions to the maximum extent feasible.
2. Describe how the proposed project will reduce flood risk by reducing runoff rate and/or volume.
3. If applicable, describe how the proposed project will reduce the risk of sanitary sewer overflows.

Flood Management Benefits (Narrative)

The construction of the detention basin, shaping and armoring the stream banks to prevent additional erosion, and constructing a series of drop structures to slow the flow, reduce energy, will reduce the negative affects of erosion, degradation and aggradation.

Maximum volume of temporary storage of storm water runoff (acre-feet):	187
Maximum increased conveyance capacity (cubic feet/second):	Not determined
Estimated area benefiting from flood damage reduction (acres):	600
Estimated level of flood protection resulting from project implementation (% annual probability of recurrence or 1-in-number of years recurrence):	100
Estimated annual value of flood damage reduction provided by project ($/year):	unknown
Land required for project implementation (acres):	40

For projects that include detention and groundwater recharge, please complete the following:

How many acres of land drain into this detention basin? (acres):	25000
Detention Basin area (acres):	10
Detention basin max. operational depth (ft.):	10
% of basin covered by wetlands:	N/A
Soil type:	Varies/sandy
If other than infiltration, identify method (e.g., injection) and recharge (acre-feet/year):	none
Estimated basin annual inflow (acre-feet/year):	2139 CFS 100-year storm
Estimated basin annual outflow (acre-feet/year):	848 CFS 100-year storm

Environmental and Habitat Enhancement Benefits

Describe how the proposed project identifies opportunities to develop, restore, or enhance habitat and open space through storm water and dry weather runoff management, including wetlands, riverside habitats, parkways, and parks. Provide some type of quantitative measurement, which will show how the project benefits the environment and enhances the natural habitat.

Environmental and Habitat Enhancement Benefits (Narrative)

The project is not designed to have any environmental or habitat enhancements.

Non-treatment wetland area (acres):	N/A
Treatment wetland area (acres):	N/A
Riparian habitat area (acres):	N/A
Non-developed open space area (acres):	N/A
Total Project area (acres):	N/A

Community Stewardship Benefits

Describe how the project identifies opportunities to use existing publicly owned lands and easements, including, but not limited to parks, open space, community gardens, farm and agricultural preserves, school sites, and government office buildings and complexes, to capture, clean, store, and use storm water and dry weather runoff either onsite or offsite. Provide some type of quantitative measurement, which will show how the project benefits the community.

Community Stewardship Benefits (Narrative)

Multiple use/ recreation area (acres) – additionally, select the type of multiple use / recreation and associated acres by type:

Single Sport Athletics:	N/A
Multiple Sport Athletics Acres:	N/A
Other Recreation Acres:	N/A
Pedestrian Trail Acres:	N/A
Equestrian Trail Acres:	N/A
Other Passive Activity:	N/A
Other Acres (describe):	N/A
Description:	N/A
Total Project Area (acres):	0

Part 5. Project Cost Estimate

Project cost information is needed to assist in comparing benefits and cost. Additionally, knowledge of the project type and cost will assist in identifying funding sources for potential projects.

Please indicate the estimated costs of project implementation and associated funding source(s). These costs should include land purchase/easement, planning/design/engineering, construction/ implementation, environmental compliance, administration, and contingency.

Approximate Total Cost: (If project costs are variable, please include lower and upper range estimates.)	Phase 1--$10,000,000 (total project $25,000,000)
Funding Source: (If multiple sources, list each source and the percent or amount funded by each)	City of Taft Kern County general fund State and Federal Grants
Maximum Funding Match from Implementing Agency:	To be determined
Funding Certainty & Longevity:	To be determined
Operations & Maintenance Cost: (per year)	To be determined
Operations & Maintenance Funding Source(s) (i.e., annual budget, grant, etc. If multiple sources, list each source and the percent or amount funded by each.)	To be determined
Operations & Maintenance Funding Certainty: (i.e., already included in organization's budget, contingent upon grant, etc.)	To be determined

Kern Storm Water Resource Plan

Project Submittal Form

This form is to be electronically filled out and e-mailed to LMarino@ppeng.com by June 24, 2016.

Reference: Storm Water Resource Plan Guidelines, December 15, 2015
State Water Resources Control Board

Part 1. Lead Implementing Agency/Organizational Information

Please provide the following information regarding the project sponsor and proposed project.

Implementing Agency/ Organization / Individual:

Buena Vista Water Storage District

Agency / Organization / Individual Address:

P.O. Box 756
Buttonwillow, CA 93206

Possible Partnering Agencies:

West Kern W.S.D., Rosedale Rio Bravo W.S.D., potentially other Kern IRWMP water districts.

Name:

Tim Ashlock

Title:

District Engineer

Telephone:

661-324-1101

Fax:

Email:

tim@bvh2o.com

Website:

www.bvh2o.com

Project Name:

The Palms Storm Water Recharge and Recovery Project

Either the latitude/longitude or a location description is required. To determine the latitude/longitude, use the closest address or intersection. If the project is linear, use the furthest upstream latitude/longitude.

Project Latitude:	35°19'50"N	**Project Longitude:**	119°23'11"W

Location Description:	Latitude/longitude is located at the approximate center of the proposed project recharge basin.

Project Cooperating Agency(ies)/Organization(s)/Individual(s):

-
-
-
-

Project Status (e.g., new, ongoing, expansion, new phase):

New

Has the Project been submitted to IRWM Plan:

☒ Kern IRWMP ☐ Poso Creek IRWMP ☐ Not Submitted

Does the project address any known environmental justice issues?

☐ Yes ☒ No ☐ Not Sure

Is the project located within or adjacent to a disadvantaged community (DAC)? Refer to this website.

☐ Within ☒ Adjacent ☐ No ☐ Not Sure

Does the project include DAC participation?

☐ Yes ☐ No ☐ Not Sure

If yes, please identify the contact person, group, or organization and describe the DAC's participation:

What is the DAC's estimated population:

Does the Implementing Agency own the land where the project is located? If no, describe ability to purchase land or if eminent domain is required:

☒ Yes ☐ No

Part 2. Project Need

It is important to understand the need(s) or issue(s) that the proposed project will address and the benefits that it will provide. Information provided in this section defines the need(s) or issue(s) that the proposed project will address and will help to catalog existing need(s) or issue(s) in the planning area of the Kern Storm Water Resource Plan.

Please provide a 1-2 paragraph description of the need(s) or problem(s) that the proposed project will address. Discuss the benefits to water quality, water supply, flood management, environmental, and community benefits that the proposed project will bring. Discuss critical impacts or worsening conditions that will occur if the proposed project is not implemented.

Project Need (Narrative)

Storm water captured by the proposed Project originates from uplands that form the watersheds of the lakes and reservoirs that will release water recharged by the Project. While flood releases would be expected to carry small sediment loads, the sediment loads may be substantial at the points where the storm water will be diverted into groundwater recharge facilities. Because the path of the storm water will not cross major urban or agricultural land uses, with the exception of sediment, constituent loadings will be stable over time.

The quantity of storm water to be captured by the Project will fluctuate depending on the frequency and intensity of precipitation events driving storm water into the Kern River and its tributaries. Average annual recharge through Project facilities is estimated to be approximately 20,000 AF/year.

Approximately 80 percent of the storm water captured and recharged by the Project will be recoverable, and therefore will have the potential to contribute to offsetting demands from other sources. Because BVWSD is a State Water Project contractor these offsets have the potential to reduce demands on the Delta.

Benefits associated with the Project include: increased water supply reliability, conjunctive use, water conservation, treatment of runoff, instream flow improvement, and reduced energy use and greenhouse gas emissions.

Part 3. Project Description

A general description of the proposed project is needed. This section will provide information associated with the project concept and general project information. Much of the requested information may not be available for projects that are in the conceptual stages of development. An essential element of the Kern Storm Water Resource Plan consists of proposed projects. We appreciate and need your ideas.

Please provide a one or two paragraph description of the project including the general project concept, what will be constructed/implemented, how the constructed project will function, what technologies or methods will be used, as appropriate. For water quality projects, include a description of impacts to existing Total Maximum Daily Loads, NPDES permits, and/or waste discharge requirements.

Project Description (Narrative)

The Project will cover approximately 1,160 acres and will include features needed to recharge captured storm water and facilities for recovery and treatment of stored storm water. Construction of the component will include 1) construction of recharge facilities, 2) installation of pumps in existing wells and approximately 4 miles of pipeline, 3) construction and equipping additional recovery wells with associated piping, and 4) water treatment facilities, if needed.

Recharged storm water will flow to aquifers that are water supply sources for residents of Tupman, for the disadvantaged communities of Taft and Buttonwillow, and to replenish groundwater under the Tule Elk Reserve. Lands used for recharge have an established history of irrigated crop production and have been retired for two years in anticipation of development of the Project. While retirement of these lands from irrigated agriculture will eliminate deep percolation of irrigation water, recharge of storm water will greatly reduce the potential for leaching of nitrates, salts and other contaminants. Earthwork would include construction of low berms from surface soil that overlies shallow, highly permeable river-borne sand deposits. Topsoil used for construction of berms will no longer be exposed to leaching further reducing transport of contaminants to groundwater.

If applicable, list surface water bodies and groundwater basins associated with the proposed project:

- Kern River
- State Water Project
- Kern Sub Basin
-

Please identify up to three available documents which contain information specific to the proposed project. Include conceptual plans, permits, drawings, and technical documents:

- Initial Study/Mitigated Negative Declaration for Palms Groundwater Banking Project
- Geology and Hydrology Review of The Palms Groundwater Recharge and Recovery Project – Robert A. Crewdson, Ph.D.
-

Please identify federal, state, or local permits, which pertain to the proposed project and would need to be obtained or, if existing, would need to be amended:

• SWPPP
• DWR License Agreement
• Indirect Source Review & Dust Control Plan

Please identify any existing projects or facilities, including existing water conveyance infrastructure, which would be affected, modified, or superseded as a result of implementing the proposed project:

• Project would rehabilitate and utilize abandoned groundwater wells
•
•

Is the proposed project an element or phase of a regional or larger program?:	☒ Yes ☐ No
If yes, please identify the program:	Buena Vista Groundwater Recharge and Recovery Program (GRRP)
Design life of the project:	50 years +
Proposed Construction/Implementation Start Date:	2017
Proposed Construction/Implementation Completion Date:	2018
Ready for Construction Bid:	☐ Yes ☒ No ☐ N/A

Item	Status (e.g., not initiated, in process, complete)	Date (mm/dd/yyyy)
Conceptual Plans	**Complete**	8/2015
Land Acquisition/ Easements	**Complete**	1120 ac complete 40 ac pending winter 2016
Preliminary Plans	**In Process**	
CEQA/NEPA	**Recharge Facilities CEQA completed, Recovery facilities CEQA in process**	1/2016 Winter 2017
Permits	**Not initiated**	
Construction Drawings	**Not initiated**	

For projects ready for construction or implementation, including projects which do not include construction, briefly describe the project's readiness to proceed.

Project Readiness (Narrative)

BVWSD has adopted an Initial Study/Mitigated Negative Declaration for the Project. Construction activity for the recharge facilities is scheduled to begin in the winter of 2017 and be completed within 6 months. Construction of recovery facilities will follow and be completed by the fall of 2018.

Include any local or state board actions, code changes, or legislation needed in order to proceed with the project.

Local or State Board Actions, Code Changes, or Legislation

N/A

Please describe the dominant existing land use type for the proposed project location.

Fallow land

Please describe the dominant existing land use type for areas upstream and downstream of the proposed project location

Upstream:	Kern River channel
Downstream:	N/A

Part 4. Project Benefits

Please provide a one or two paragraph description of the benefit(s) that the project will address. Benefit Categories, shown below, are referenced from the **Storm Water Resource Plan Guidelines**, Page 31, Table 4. Each project should address at least two or more Main Benefits and as many Additional Benefits as feasible. Information you provide will be used to evaluate the project for State grant funding.

Storm Water Management Benefits		
Benefit Category	**Main Benefit**	**Additional Benefit**
Water Quality (while contributing to compliance with applicable permit and/or TMDL requirements)	• Increased filtration and/or treatment of run-off	• Non-point source pollution control • Reestablished natural water drainage and treatment
Water Supply (through groundwater management and/or run-off capture and use)	• Water supply reliability • Conjunctive use	• Water conservation
Flood Management	• Decreased flood risk by reducing run-off rate and/or volume	• Reduced sanitary sewer overflows
Environmental and Habitat Enhancement	• Environmental and habitat protection and improvement, including; - wetland enhancement/creation; - riparian enhancement; and/or - instream flow improvement • Increased urban green space	• Reduced energy use, greenhouse gas emissions, or provides a carbon sink • Reestablishment of the natural hydrograph • Water temperature improvements
Community Stewardship	• Employment opportunities provided • Public Education	• Community involvement • Enhance and/or create recreational and public use areas

Source: Page 31, Table 4, Storm Water Resource Plan Guidelines, State Water Resources Control Board

Please provide the following PROJECT BENEFIT information for all applicable components of the proposed project. Benefit categories include:

- **Water Quality**
- **Water Supply**
- **Flood Management**
- **Environmental and Habitat Enhancement**
- **Community Stewardship**

If the project benefits a disadvantaged community (DAC) describe the specific benefits to that community. Estimate the percentage of the project benefits to the DAC.

Please supply all information relevant to the proposed project. The information you provide will be used to evaluate the project for State grant funding. **Attach additional sheets if necessary.**

Water Quality Benefits

1. Describe how the proposed project will improve source control for both pollution and dry weather runoff volume, onsite and local infiltration, and use of storm water and dry weather runoff.
2. Describe design criteria and best management practices to prevent storm water and dry weather runoff pollution and increase effective storm water and dry weather runoff management for new and upgraded infrastructure and residential, commercial, industrial, and public development
3. Describe how the proposed project complies with or is consistent with an applicable NPDES permit. The analysis should simulate the proposed watershed-based outcomes using modeling, calculations, pollutant mass balances, water volume balances, and/or other methods of analysis. Describe how the proposed project will contribute to the preservation, restoration, or enhancement or watershed processes (as described in Guidelines section VI.C.2.a)
4. Describe the water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified.

Water Quality Benefits (Narrative)

A portion of the captured storm water recharged in the Project will be treated to Title 22 standards, if treatment is needed to enable recovered water to be conveyed in the California Aqueduct to urban agencies in Southern California. All storm water recharged by the Project will pass through sediment basins and be filtered as it percolates through the soil profile.

Recharge of storm water will also reduce the concentration of salts, nitrate, and arsenic in the underlying groundwater. Furthermore, BVWSD's western boundary is formed by the Coastal Range that is derived from marine and lacustrine deposits that tend to have marginal to poor quality groundwater (high salinity). The Project will increase groundwater levels in the southern portion of BVWSD, reducing the head gradient separating the good quality groundwater located on the basin floor and the poorer groundwater to the west.

Pollutant TMDL reduction (Volume per day) and (mass /unit volume) of most probable number of bacteria or indicator organisms (mpn/mL):	
Increase in infiltration rate above existing condition:	
Non-point source pollution control:	Sedimentation load reduced through sedimentation basins, filtration occurs through soil profile.
Does project affect an Existing NPDES Permit? If applicable, describe the need for a new NPDES Permit:	

Water Supply Benefits

1. Describe how the proposed project captures and reuses storm water and dry weather runoff for groundwater recharge or storage for beneficial use.
2. Please provide detailed information to quantify how the proposed project will reduce existing potable water demand.
3. Describe the water supply monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified

Water Supply Benefits (Narrative)

The Project will increase water supply by storing captured storm water in the local groundwater aquifer. Groundwater recharge is particularly timely in Kern County where the extended drought has depleted aquifers that are relied upon by users throughout the region. In addition, both components support conjunctive use by capturing storm water during the limited periods when it is available for aquifer replenishment and that, once stored, can be relied upon during dry periods. Water is conserved by recharging captured storm water in areas where stored water is readily accessible.

Enhanced Water Supply or Demand Reduction Benefit Information

Source of Increased Supply or Demand Reduction

☒ Groundwater	☐ Groundwater treatment	☐ Increased surface water storage
☐ Recycled water	☐ Conservation/ water use efficiency	☐ Ocean desalination
☐ Transfer	☐ Other (describe):	

Type of enhanced supply or demand reduction:	Groundwater
Annual Yield of Supply (acre-feet):	20,000

Availability by Water-Year Type (acre-feet per year)

Average Year:	20,000 AF enhanced supply
Dry Year:	20,000 AF enhanced supply
Wet Year:	20,000 AF enhanced supply

Availability by Season (check all that apply):

☒ Summer ☒ Fall ☒ Spring ☒ Winter

Does the project have the potential to reduce dependence on the Sacramento San Joaquin Bay-Delta?

☒ Yes ☐ No ☐ Not Sure

Flood Management Benefits

1. Describe how the proposed project will reestablish natural water drainage treatment and infiltration systems, or mimic natural system functions to the maximum extent feasible.
2. Describe how the proposed project will reduce flood risk by reducing runoff rate and/or volume.
3. If applicable, describe how the proposed project will reduce the risk of sanitary sewer overflows.

Flood Management Benefits (Narrative)

Low lying developed areas in the San Joaquin Valley periodically are inundated by flood waters. The Tulare Lake area in particular is the recipient of floodwaters from the Kings, Kaweah, Tulare, Kern Rivers, and a number of smaller streams. A portion of the water recharged in the Project otherwise would have contributed to flooding of low-lying improved lands in Kern County near the Kern River Flood Channel, Kings County (Tulare Lake Bed), and other areas further North (adjacent to the San Joaquin River and Delta). However, the amounts are difficult to quantify because of the complexity of various floodwater pathways, impact location, and degree of impacts to developed lands.

Description facilities protected:	
Maximum volume of temporary storage of storm water runoff (acre-feet):	
Maximum increased conveyance capacity (cubic feet/second):	
Estimated area benefiting from flood damage reduction (acres):	
Estimated level of flood protection resulting from project implementation (% annual probability of recurrence or 1-in-number of years recurrence):	
Estimated annual value of flood damage reduction provided by project ($/year):	
Land required for project implementation (acres):	

For projects that include detention and groundwater recharge, please complete the following:

How many acres of land drain into this detention basin? (acres):	0
Detention Basin area (acres):	1,160
Detention basin max. operational depth (ft.):	4 ft
% of basin covered by wetlands:	90%
Soil type:	Sandy
If other than infiltration, identify method (e.g., injection) and recharge (acre-feet/year):	7.6 AF/ac-month
Estimated basin annual inflow (acre-feet/year):	40,000-70,000 AF/yr (3 out of 10 yrs)
Estimated basin annual outflow (acre-feet/year):	0

Environmental and Habitat Enhancement Benefits

Describe how the proposed project identifies opportunities to develop, restore, or enhance habitat and open space through storm water and dry weather runoff management, including wetlands, riverside habitats, parkways, and parks. Provide some type of quantitative measurement, which will show how the project benefits the environment and enhances the natural habitat.

Environmental and Habitat Enhancement Benefits (Narrative)

Using captured storm water to maintain groundwater levels in Kern County will lower pumping lifts and consequently reduce energy use and greenhouse gas emissions. The Project will also increase base flow in regional streams, benefiting local habitats in stream channels and wetlands.

Non-treatment wetland area (acres):	
Treatment wetland area (acres):	
Riparian habitat area (acres):	
Non-developed open space area (acres):	
Total Project area (acres):	1,160

Community Stewardship Benefits

Describe how the project identifies opportunities to use existing publicly owned lands and easements, including, but not limited to parks, open space, community gardens, farm and agricultural preserves, school sites, and government office buildings and complexes, to capture, clean, store, and use storm water and dry weather runoff either onsite or offsite. Provide some type of quantitative measurement, which will show how the project benefits the community.

Community Stewardship Benefits (Narrative)

Multiple use/ recreation area (acres) – additionally, select the type of multiple use / recreation and associated acres by type:

Single Sport Athletics:	
Multiple Sport Athletics Acres:	
Other Recreation Acres:	
Pedestrian Trail Acres:	
Equestrian Trail Acres:	
Other Passive Activity:	
Other Acres (describe):	
Description:	
Total Project Area (acres):	

Part 5. Project Cost Estimate

Project cost information is needed to assist in comparing benefits and cost. Additionally, knowledge of the project type and cost will assist in identifying funding sources for potential projects.

Please indicate the estimated costs of project implementation and associated funding source(s). These costs should include land purchase/easement, planning/design/engineering, construction/ implementation, environmental compliance, administration, and contingency.

Approximate Total Cost: (If project costs are variable, please include lower and upper range estimates.)	$10,000,000
Funding Source: (If multiple sources, list each source and the percent or amount funded by each)	SWGP Implementation Funding
Maximum Funding Match from Implementing Agency:	BVWSD to contribute 50% funding match.
Funding Certainty & Longevity:	SWGP Application submitted.
Operations & Maintenance Cost: (per year)	$125,000
Operations & Maintenance Funding Source(s) (i.e., annual budget, grant, etc. If multiple sources, list each source and the percent or amount funded by each.)	Annual budget.
Operations & Maintenance Funding Certainty: (i.e., already included in organization's budget, contingent upon grant, etc.)	50% in current budget, balance contingent upon construction of project.

Kern Storm Water Resource Plan

Project Submittal Form

This form is to be electronically filled out and e-mailed to LMarino@ppeng.com by June 24, 2016.

Reference: Storm Water Resource Plan Guidelines, December 15, 2015
State Water Resources Control Board

Part 1. Lead Implementing Agency/Organizational Information

Please provide the following information regarding the project sponsor and proposed project.

Implementing Agency/ Organization / Individual:

Rosedale-Rio Bravo Water Storage District

Agency / Organization / Individual Address:

849 Allen Road
P.O. Box 20820
Bakersfield, CA 93390

Possible Partnering Agencies:

None

Name:

Dan Bartel

Title:

Assistant General Manager-Engineer

Telephone:

661-589-6045

Fax:

661-589-1867

Email:

dbartel@rrbwsd.com

Website:

www.rrbwsd.com

Project Name:

Stockdale East Groundwater Recharge Project

Either the latitude/longitude or a location description is required. To determine the latitude/longitude, use the closest address or intersection. If the project is linear, use the furthest upstream latitude/longitude.

Project Latitude:	35.349537	**Project Longitude:**	-119.24776

Location Description:	West of Bakersfield, immediately east of the intersection of Enos Lane (Highway 43) and Stockdale Highway.

Project Cooperating Agency(ies)/Organization(s)/Individual(s):

-
-
-
-

Project Status (e.g., new, ongoing, expansion, new phase):

New

Has the Project been submitted to IRWM Plan:

☒ Kern IRWMP ☐ Poso Creek IRWMP ☐ Not Submitted

Does the project address any known environmental justice issues?

☐ Yes ☒ No ☐ Not Sure

Is the project located within or adjacent to a disadvantaged community (DAC)? Refer to this website.

☐ Within ☐ Adjacent ☒ No ☐ Not Sure

Does the project include DAC participation?

☐ Yes ☒ No ☐ Not Sure

If yes, please identify the contact person, group, or organization and describe the DAC's participation:

What is the DAC's estimated population?

Does the Implementing Agency own the land where the project is located? If no, describe ability to purchase land or if eminent domain is required:

☒ Yes ☐ No

Part 2. Project Need

It is important to understand the need(s) or issue(s) that the proposed project will address and the benefits that it will provide. Information provided in this section defines the need(s) or issue(s) that the proposed project will address and will help to catalog existing need(s) or issue(s) in the planning area of the Kern Storm Water Resource Plan.

Please provide a 1-2 paragraph description of the need(s) or problem(s) that the proposed project will address. Discuss the benefits to water quality, water supply, flood management, environmental, and community benefits that the proposed project will bring. Discuss critical impacts or worsening conditions that will occur if the proposed project is not implemented.

Project Need (Narrative)

The Stockdale East Groundwater Recharge Project is designed to improve overall District system efficiency by increasing the District's ability to intercept high flow surface runoff for storage within the Kern Fan area groundwater basin.

The stored groundwater as a direct result of the Project will provide additional water to:
1. Support District water-users (agricultural, municipal, and industrial).
2. Provide enhanced protection against prolonged drought and climatic changes.
3. Reduce groundwater pumping lifts and resulting energy savings.
4. Potentially support third-party banking and transfer partners.
5. Provide intermittent wetlands for wildlife environmental benefits.

Part 3. Project Description

A general description of the proposed project is needed. This section will provide information associated with the project concept and general project information. Much of the requested information may not be available for projects that are in the conceptual stages of development. An essential element of the Kern Storm Water Resource Plan consists of proposed projects. We appreciate and need your ideas.

Please provide a one or two paragraph description of the project including the general project concept, what will be constructed/implemented, how the constructed project will function, what technologies or methods will be used, as appropriate. For water quality projects, include a description of impacts to existing Total Maximum Daily Loads, NPDES permits, and/or waste discharge requirements.

Project Description (Narrative)

The benefits of the project described in the Project Need section will be accomplished through two project components:

1. Stockdale East Recharge Ponds: construction approximately 200 acres of recharge ponds via the placement of 203,000 CY of compacted levees that are approximately 2-5 feet in height. Upwards of 19,000 acre-feet per year (AFY) (typically 3 years in 10) of recharge water will be conveyed from pond to pond via 10 inter-basin check structures.

2. Central Intake Pumping Plant - RRBWSD is preparing to construct a Central Intake Pipeline Facility as part of its Emergency Drought Relief Project. The overall project includes installing pipelines, which range in size from 48-inch to 72-inch diameter that will allow RRBWSD the ability to network various groundwater recharge and conveyance facilities in order to maximize opportunities to store in the groundwater basin available, Stormwater runoff during wet years. In order to deliver local, state and federal water for recharge purposes to the Stockdale East property and other existing recharge projects (Superior Recharge Ponds and Goose Lake Slough), 4 low lift pumps (total of 140 cfs capacity) along with high efficiency motors, variable frequency drives (VFDs), SCADA control units, flow meters, and discharge piping must be added to the Pumping Plant. Upwards of 19,000 AFY of recharge water will be conveyed to the Stockdale East Recharge Ponds and upwards of 30,000 AFY could be conveyed to the Superior Recharge Ponds and Goose Lake Slough (typically 3 years in 10), 10,000 AFY of which would be new recharge and 20,000 AFY would be water better managed via this preferred route. A detailed analysis is needed to refine the portions of Stormwater that is captured as available surface water during the wet years; this project develops the capability to move Stormwater into the recharge basins.

If applicable, list surface water bodies and groundwater basins associated with the proposed project:

- Kern River
- California Aqueduct
- Friant-Kern Canal
-

Please identify up to three available documents which contain information specific to the proposed project. Include conceptual plans, permits, drawings, and technical documents:

- 2016 WaterSMART Water and Energy Efficiency Grant Application
-
-

Please identify federal, state, or local permits, which pertain to the proposed project and would need to be obtained or, if existing, would need to be amended:

• None
•
•

Please identify any existing projects or facilities, including existing water conveyance infrastructure, which would be affected, modified, or superseded as a result of implementing the proposed project:

• A Cross Valley Canal intake would be constructed
•
•

Is the proposed project an element or phase of a regional or larger program?	☒ Yes ☐ No
If yes, please identify the program:	Kern IRWM
Design life of the project:	50
Proposed Construction/Implementation Start Date:	
Proposed Construction/Implementation Completion Date:	
Ready for Construction Bid:	☐ Yes ☒ No ☐ N/A

Item	Status (e.g., not initiated, in process, complete)	Date (mm/dd/yyyy)
Conceptual Plans	**Complete**	
Land Acquisition/ Easements	**In process**	
Preliminary Plans	**Complete**	
CEQA/NEPA	**In process**	
Permits	**Complete**	
Construction Drawings	**In process**	

For projects ready for construction or implementation, including projects which do not include construction, briefly describe the project's readiness to proceed.

Project Readiness (Narrative)

The Project is in design stage with 100% design drawing to be completed in 2016. The Project is intended to move into construction towards the end of 2016 or into 2017. The environmental documentation and land easement are in progress.

Include any local or state board actions, code changes, or legislation needed in order to proceed with the project.

Local or State Board Actions, Code Changes, or Legislation

RRBWSD Board of Directors

Please describe the dominant existing land use type for the proposed project location.

Idle

Please describe the dominant existing land use type for areas upstream and downstream of the proposed project location

Upstream:	Agriculture
Downstream:	Agriculture

Part 4. Project Benefits

Please provide a one or two paragraph description of the benefit(s) that the project will address. Benefit Categories, shown below, are referenced from the **Storm Water Resource Plan Guidelines**, Page 31, Table 4. Each project should address at least two or more Main Benefits and as many Additional Benefits as feasible. Information you provide will be used to evaluate the project for State grant funding.

Storm Water Management Benefits		
Benefit Category	**Main Benefit**	**Additional Benefit**
Water Quality (while contributing to compliance with applicable permit and/or TMDL requirements)	• Increased filtration and/or treatment of run-off	• Non-point source pollution control • Reestablished natural water drainage and treatment
Water Supply (through groundwater management and/or run-off capture and use)	• **Water supply reliability** • **Conjunctive use**	• Water conservation
Flood Management	• **Decreased flood risk by reducing run-off rate and/or volume**	• Reduced sanitary sewer overflows
Environmental and Habitat Enhancement	• Environmental and habitat protection and improvement, including; - wetland enhancement/creation; - riparian enhancement; and/or - instream flow improvement • Increased urban green space	• Reduced energy use, greenhouse gas emissions, or provides a carbon sink • Reestablishment of the natural hydrograph • Water temperature improvements
Community Stewardship	• Employment opportunities provided • Public Education	• Community involvement • Enhance and/or create recreational and public use areas

Source: Page 31, Table 4, Storm Water Resource Plan Guidelines, State Water Resources Control Board

Please provide the following PROJECT BENEFIT information for all applicable components of the proposed project. Benefit categories include:

- **Water Quality**
- **Water Supply**
- **Flood Management**
- **Environmental and Habitat Enhancement**
- **Community Stewardship**

If the project benefits a disadvantaged community (DAC) describe the specific benefits to that community. Estimate the percentage of the project benefits to the DAC.

Please supply all information relevant to the proposed project. The information you provide will be used to evaluate the project for State grant funding. **Attach additional sheets if necessary.**

Water Quality Benefits

1. Describe how the proposed project will improve source control for both pollution and dry weather runoff volume, onsite and local infiltration, and use of storm water and dry weather runoff.
2. Describe design criteria and best management practices to prevent storm water and dry weather runoff pollution and increase effective storm water and dry weather runoff management for new and upgraded infrastructure and residential, commercial, industrial, and public development
3. Describe how the proposed project complies with or is consistent with an applicable NPDES permit. The analysis should simulate the proposed watershed-based outcomes using modeling, calculations, pollutant mass balances, water volume balances, and/or other methods of analysis. Describe how the proposed project will contribute to the preservation, restoration, or enhancement or watershed processes (as described in Guidelines section VI.C.2.a)
4. Describe the water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified.

Water Quality Benefits (Narrative)

Providing a connection for Stormwater that is delivered as surface water to recharge sites increases infiltration of surface water to storage in groundwater and enhances quality of the basin. The surface water available during wet periods is delivered to spreading facility for direct recharge. The use of direct spreading facility as the recharge mechanism avoids adding nutrients and transporting constituents used in growing crops.

Pollutant TMDL reduction (Volume per day) and (mass /unit volume) of most probable number of bacteria or indicator organisms (mpn/mL):	Unknown
Increase in infiltration rate above existing condition:	Yes, delivers Stormwater to recharge facility
Non-point source pollution control:	Unknown
Does project affect an Existing NPDES Permit? If applicable, describe the need for a new NPDES Permit:	Unknown

Water Supply Benefits

1. Describe how the proposed project captures and reuses storm water and dry weather runoff for groundwater recharge or storage for beneficial use.
2. Please provide detailed information to quantify how the proposed project will reduce existing potable water demand.
3. Describe the water supply monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified

Water Supply Benefits (Narrative)

The project will save a total of **9,500 AFY** by conserving groundwater directly as a result of the recharge of wet year water by this project.

Hydrology shows that the region experiences wet years sufficient to provide supplies to the project about every three in ten years. That would result in an average of additional **5,700 AFY** (0.3 x 19,000 AF) stored groundwater. Approximately 50 cfs of the Central Intake Pumping Plant – Phase 2 would be dedicated to serving this site. Given this evaluation is for a wet year, a more detailed evaluation of Stormwater available during a wet year is needed to refine the average annual amount of water supply benefit.

An additional 90 cfs would be included to offer capacity to deliver state and federal water to existing recharge areas located approximately 1.5 miles north of the site (Superior Basins). This would give added access to recharge supplies and potentially add up to 10,000 AF into the groundwater basin during each wet year. Using the same wet-year probability, this would result in an average of **3,000 AFY** (0.3 x 10,000 AF) of additional stored groundwater. An additional **800 AFY** of water is conserved due to the retiring of the required 229 acres of land (229 acres x 3.5 AF/acre). Therefore, a total of **9,500 AFY** would be conserved as a direct result of the project and the estimate of the portion directly related to Stormwater needs refinement.

Enhanced Water Supply or Demand Reduction Benefit Information

Source of Increased Supply or Demand Reduction

☒ Groundwater	☐ Groundwater treatment	☒ Increased surface water storage
☐ Recycled water	☒ Conservation/ water use efficiency	☐ Ocean desalination
☐ Transfer	☐ Other (describe):	

Type of enhanced supply or demand reduction:	Flood water will be used to recharge groundwater
Annual Yield of Supply (acre-feet):	9,500 AFY

Availability by Water-Year Type (acre-feet per year)

Average Year:	9,500 AFY = [(19,000 AF plus 10,000 AF)*(3 wet years / 10 years) plus 800 AFY]
Dry Year:	800 AF
Wet Year:	29,800 AF = 19,000 AF plus 10,000 AF plus 800 AF

Availability by Season (check all that apply):

☐ Summer	☒ Fall	☒ Spring	☒ Winter

Does the project have the potential to reduce dependence on the Bay/Delta/Estuary?

☒ Yes ☐ No ☐ Not Sure

Flood Management Benefits

1. Describe how the proposed project will reestablish natural water drainage treatment and infiltration systems, or mimic natural system functions to the maximum extent feasible.
2. Describe how the proposed project will reduce flood risk by reducing runoff rate and/or volume.
3. If applicable, describe how the proposed project will reduce the risk of sanitary sewer overflows.

Flood Management Benefits (Narrative)

The Project provides a flood management benefit inasmuch as the water diverted and stored will not contribute to increased downstream flows and flood risks from where the water is diverted.

Description facilities protected:	Regional Conveyance Facilities within the Basin
Maximum volume of temporary storage of storm water runoff (acre-feet):	19,000
Maximum increased conveyance capacity (cubic feet/second):	140
Estimated area benefiting from flood damage reduction (acres):	Unknown
Estimated level of flood protection resulting from project implementation (% annual probability of recurrence or 1-in-number of years recurrence):	Unknown
Estimated annual value of flood damage reduction provided by project ($/year):	Unknown
Land required for project implementation (acres):	229

For projects that include detention and groundwater recharge, please complete the following:

How many acres of land drain into this detention basin? (acres):	2,688 [Estimated in local area; surface water diverted to site from regional conveyance facility]
Detention Basin area (acres):	200
Detention basin max. operational depth (ft.):	5
% of basin covered by wetlands:	0
Soil type:	
If other than infiltration, identify method (e.g., injection) and recharge (acre-feet/year):	N/A
Estimated basin annual inflow (acre-feet/year):	8,700
Estimated basin annual outflow (acre-feet/year):	N/A

Environmental and Habitat Enhancement Benefits

Describe how the proposed project identifies opportunities to develop, restore, or enhance habitat and open space through storm water and dry weather runoff management, including wetlands, riverside habitats, parkways, and parks. Provide some type of quantitative measurement, which will show how the project benefits the environment and enhances the natural habitat.

Environmental and Habitat Enhancement Benefits (Narrative)

Like all spreading basins, the Project will provide some intermittent habitat for waterfowl, birds, and other species when in use.

Non-treatment wetland area (acres):	Intermittent use of 200 acres
Treatment wetland area (acres):	N/A
Riparian habitat area (acres):	N/A
Non-developed open space area (acres):	N/A
Total Project area (acres):	200 acres

Community Stewardship Benefits

Describe how the project identifies opportunities to use existing publicly owned lands and easements, including, but not limited to parks, open space, community gardens, farm and agricultural preserves, school sites, and government office buildings and complexes, to capture, clean, store, and use storm water and dry weather runoff either onsite or offsite. Provide some type of quantitative measurement, which will show how the project benefits the community.

Community Stewardship Benefits (Narrative)

The Project will reduce groundwater pumping lifts and resulting energy savings. The savings will be shared with municipal and private well owners alike.

Multiple use/ recreation area (acres) – additionally, select the type of multiple use / recreation and associated acres by type:

Single Sport Athletics:	N/A
Multiple Sport Athletics Acres:	N/A
Other Recreation Acres:	N/A
Pedestrian Trail Acres:	N/A
Equestrian Trail Acres:	N/A
Other Passive Activity:	Bird watching
Other Acres (describe):	N/A
Description:	N/A
Total Project Area (acres):	200

Part 5. Project Cost Estimate

Project cost information is needed to assist in comparing benefits and cost. Additionally, knowledge of the project type and cost will assist in identifying funding sources for potential projects.

Please indicate the estimated costs of project implementation and associated funding source(s). These costs should include land purchase/easement, planning/design/engineering, construction/ implementation, environmental compliance, administration, and contingency.

Approximate Total Cost: (If project costs are variable, please include lower and upper range estimates.)	$4,094,125
Funding Source: (If multiple sources, list each source and the percent or amount funded by each)	RRBWSD
Maximum Funding Match from Implementing Agency:	N/A
Funding Certainty & Longevity:	Certain
Operations & Maintenance Cost: (per year)	$187,170
Operations & Maintenance Funding Source(s) (i.e., annual budget, grant, etc. If multiple sources, list each source and the percent or amount funded by each.)	Annual Budget
Operations & Maintenance Funding Certainty: (i.e., already included in organization's budget, contingent upon grant, etc.)	Will be included in budget.

Kern Storm Water Resource Plan

Project Submittal Form

This form is to be electronically filled out and e-mailed to LMarino@ppeng.com by June 24, 2016.

Reference: Storm Water Resource Plan Guidelines, December 15, 2015
State Water Resources Control Board

Part 1. Lead Implementing Agency/Organizational Information

Please provide the following information regarding the project sponsor and proposed project.

Implementing Agency/ Organization / Individual:

Rosedale-Rio Bravo Water Storage District

Agency / Organization / Individual Address:

849 Allen Road
P.O. Box 20820
Bakersfield, CA 93390

Possible Partnering Agencies:

None

Name:

Dan Bartel

Title:

Assistant General Manager-Engineer

Telephone:

661-589-6045

Fax:

661-589-1867

Email:

dbartel@rrbwsd.com

Website:

www.rrbwsd.com

Project Name:

Western Rosedale In-Lieu Service Area Project

Either the latitude/longitude or a location description is required. To determine the latitude/longitude, use the closest address or intersection. If the project is linear, use the furthest upstream latitude/longitude.

Project Latitude:	35.370275	**Project Longitude:**	-119.376214

Location Description:	Between East Side Canal and Interstate 5, south of Bowerbank, and within the District

Project Cooperating Agency(ies)/Organization(s)/Individual(s):

-
-
-
-

Project Status (e.g., new, ongoing, expansion, new phase):

New

Has the Project been submitted to IRWM Plan:

☒ Kern IRWMP ☐ Poso Creek IRWMP ☐ Not Submitted

Does the project address any known environmental justice issues?

☐ Yes ☒ No ☐ Not Sure

Is the project located within or adjacent to a disadvantaged community (DAC)? Refer to this website.

☐ Within ☐ Adjacent ☒ No ☐ Not Sure

Does the project include DAC participation?

☐ Yes ☒ No ☐ Not Sure

If yes, please identify the contact person, group, or organization and describe the DAC's participation:

What is the DAC's estimated population?

Does the Implementing Agency own the land where the project is located? If no, describe ability to purchase land or if eminent domain is required:

☒ Yes ☐ No

Part 2. Project Need

It is important to understand the need(s) or issue(s) that the proposed project will address and the benefits that it will provide. Information provided in this section defines the need(s) or issue(s) that the proposed project will address and will help to catalog existing need(s) or issue(s) in the planning area of the Kern Storm Water Resource Plan.

Please provide a 1-2 paragraph description of the need(s) or problem(s) that the proposed project will address. Discuss the benefits to water quality, water supply, flood management, environmental, and community benefits that the proposed project will bring. Discuss critical impacts or worsening conditions that will occur if the proposed project is not implemented.

Project Need (Narrative)

The intent of the Project is to deliver surface water supplies to farmers in-lieu of pumping groundwater, allow growers to convert from existing inefficient irrigation practices to more efficient irrigation practices (such as drip irrigation). The Project is expected to absorb surface supplies up to the in-lieu system design amount of 5,630 AFY in 80 percent of the years, providing surface water for use by farmers in the Project Area in-lieu of groundwater that would otherwise be pumped, thus, conserving an average annual amount of 4,500 AF.

Part 3. Project Description

A general description of the proposed project is needed. This section will provide information associated with the project concept and general project information. Much of the requested information may not be available for projects that are in the conceptual stages of development. An essential element of the Kern Storm Water Resource Plan consists of proposed projects. We appreciate and need your ideas.

Please provide a one or two paragraph description of the project including the general project concept, what will be constructed/implemented, how the constructed project will function, what technologies or methods will be used, as appropriate. For water quality projects, include a description of impacts to existing Total Maximum Daily Loads, NPDES permits, and/or waste discharge requirements.

Project Description (Narrative)

The Project consists of the following:

- Construction and operation of up to ten (10) miles of water conveyance pipelines, ranging in diameter from 12 inches to 40 inches; the pipelines would extend from the East Side Canal to various locations within the Project Area, which are termed North Coverage Area, Central Coverage Area, and South Coverage Area (Figure 5). The alignments and pipe diameters shown in Figure 5 may be modified during Project design.
- Construction and operation of appurtenant facilities, such as pumps, valves, flow meters, air vents, connections to the East Side Canal (proposed turnouts), and connections to BVWSD's Supervisory Control and Data Acquisition (SCADA) system.

If applicable, list surface water bodies and groundwater basins associated with the proposed project:

- California Aqueduct
- Friant-Kern Canal
- Kern River
-

Please identify up to three available documents which contain information specific to the proposed project. Include conceptual plans, permits, drawings, and technical documents:

- 2016 Agricultural Water Conservation and Efficiency Grants
-
-

Please identify federal, state, or local permits, which pertain to the proposed project and would need to be obtained or, if existing, would need to be amended:

• None
•
•

Please identify any existing projects or facilities, including existing water conveyance infrastructure, which would be affected, modified, or superseded as a result of implementing the proposed project:

•
•
•

Is the proposed project an element or phase of a regional or larger program?	☒ Yes ☐ No
If yes, please identify the program:	Kern IRWM
Design life of the project:	50
Proposed Construction/Implementation Start Date:	
Proposed Construction/Implementation Completion Date:	
Ready for Construction Bid:	☐ Yes ☒ No ☐ N/A

Item	Status (e.g., not initiated, in process, complete)	Date (mm/dd/yyyy)
Conceptual Plans	**Complete**	
Land Acquisition/ Easements	**Complete**	
Preliminary Plans	**Complete**	
CEQA/NEPA	**Complete**	
Permits	**Complete**	
Construction Drawings	**In process**	

For projects ready for construction or implementation, including projects which do not include construction, briefly describe the project's readiness to proceed.

Project Readiness (Narrative)

Following the completion of design drawings and specs, the project will be ready to bid and construct.

Include any local or state board actions, code changes, or legislation needed in order to proceed with the project.

Local or State Board Actions, Code Changes, or Legislation

RRBWSD Board of Directors

Please describe the dominant existing land use type for the proposed project location.

Agricultural

Please describe the dominant existing land use type for areas upstream and downstream of the proposed project location

Upstream:	Agriculture
Downstream:	Agriculture

Part 4. Project Benefits

Please provide a one or two paragraph description of the benefit(s) that the project will address. Benefit Categories, shown below, are referenced from the **Storm Water Resource Plan Guidelines**, Page 31, Table 4. Each project should address at least two or more Main Benefits and as many Additional Benefits as feasible. Information you provide will be used to evaluate the project for State grant funding.

Storm Water Management Benefits		
Benefit Category	**Main Benefit**	**Additional Benefit**
Water Quality (while contributing to compliance with applicable permit and/or TMDL requirements)	• Increased filtration and/or treatment of run-off	• Non-point source pollution control • Reestablished natural water drainage and treatment
Water Supply (through groundwater management and/or run-off capture and use)	• **Water supply reliability** • **Conjunctive use**	• Water conservation
Flood Management	• Decreased flood risk by reducing run-off rate and/or volume	• Reduced sanitary sewer overflows
Environmental and Habitat Enhancement	• Environmental and habitat protection and improvement, including; - wetland enhancement/creation; - riparian enhancement; and/or - instream flow improvement • Increased urban green space	• Reduced energy use, greenhouse gas emissions, or provides a carbon sink • Reestablishment of the natural hydrograph • Water temperature improvements
Community Stewardship	• Employment opportunities provided • Public Education	• Community involvement • Enhance and/or create recreational and public use areas

Source: Page 31, Table 4, Storm Water Resource Plan Guidelines, State Water Resources Control Board

Please provide the following PROJECT BENEFIT information for all applicable components of the proposed project. Benefit categories include:

- **Water Quality**
- **Water Supply**
- **Flood Management**
- **Environmental and Habitat Enhancement**
- **Community Stewardship**

If the project benefits a disadvantaged community (DAC) describe the specific benefits to that community. Estimate the percentage of the project benefits to the DAC.

Please supply all information relevant to the proposed project. The information you provide will be used to evaluate the project for State grant funding. **Attach additional sheets if necessary.**

Water Quality Benefits

1. Describe how the proposed project will improve source control for both pollution and dry weather runoff volume, onsite and local infiltration, and use of storm water and dry weather runoff.
2. Describe design criteria and best management practices to prevent storm water and dry weather runoff pollution and increase effective storm water and dry weather runoff management for new and upgraded infrastructure and residential, commercial, industrial, and public development
3. Describe how the proposed project complies with or is consistent with an applicable NPDES permit. The analysis should simulate the proposed watershed-based outcomes using modeling, calculations, pollutant mass balances, water volume balances, and/or other methods of analysis. Describe how the proposed project will contribute to the preservation, restoration, or enhancement or watershed processes (as described in Guidelines section VI.C.2.a)
4. Describe the water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified.

Water Quality Benefits (Narrative)

It is recognized in the IRWMP area that the majority of recharge and in-lieu recharge facilities are constructed, operated, and used by the agricultural districts and the City of Bakersfield and not by the small disadvantaged communities or the environmental water users, this project also has the potential to improve water quality as follows:

- Enhancement of groundwater quality due to decreased pumping lifts and stabilization of the water table, which reduces the chances of water quality changing due to pumping from zones of less quality; and
- Enhancements to water quality due to the importation of surface water to the District in wet years, which delivers surface water of quality suitable for the beneficial uses within the region.

Pollutant TMDL reduction (Volume per day) and (mass /unit volume) of most probable number of bacteria or indicator organisms (mpn/mL):	Unknown
Increase in infiltration rate above existing condition:	Yes, delivers Stormwater to recharge facility
Non-point source pollution control:	Unknown
Does project affect an Existing NPDES Permit? If applicable, describe the need for a new NPDES Permit:	Unknown

Water Supply Benefits

1. Describe how the proposed project captures and reuses storm water and dry weather runoff for groundwater recharge or storage for beneficial use.
2. Please provide detailed information to quantify how the proposed project will reduce existing potable water demand.
3. Describe the water supply monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified

Water Supply Benefits (Narrative)

The Project is expected to absorb surface supplies up to the in-lieu system design amount of 5,630 AFY in 80 percent of the years, providing surface water for use by farmers in the Project Area in-lieu of groundwater that would otherwise be pumped, thus, conserving an average annual amount of 4,500 AF.

Enhanced Water Supply or Demand Reduction Benefit Information

Source of Increased Supply or Demand Reduction

☒ Groundwater	☐ Groundwater treatment	☒ Increased surface water storage
☐ Recycled water	☒ Conservation/ water use efficiency	☐ Ocean desalination
☐ Transfer	☐ Other (describe):	

Type of enhanced supply or demand reduction:	Flood water will be used to recharge groundwater
Annual Yield of Supply (acre-feet):	4,500 AFY

Availability by Water-Year Type (acre-feet per year)

Average Year:	4,500
Dry Year:	
Wet Year:	5,630 AFY

Availability by Season (check all that apply):

☒ Summer ☒ Fall ☒ Spring ☒ Winter

Does the project have the potential to reduce dependence on the Bay/Delta/Estuary?

☒ Yes ☐ No ☐ Not Sure

Flood Management Benefits

1. Describe how the proposed project will reestablish natural water drainage treatment and infiltration systems, or mimic natural system functions to the maximum extent feasible.
2. Describe how the proposed project will reduce flood risk by reducing runoff rate and/or volume.
3. If applicable, describe how the proposed project will reduce the risk of sanitary sewer overflows.

Flood Management Benefits (Narrative)

The Project provides a flood management benefit inasmuch as the water stored will not contribute to increased downstream flows and flood risks from where the water is diverted.

Description facilities protected:	N/A
Maximum volume of temporary storage of storm water runoff (acre-feet):	900; assumes 20% of avg. annual water delivered as in-lieu recharge will occur during the "shoulder" months of irrigation demand, late fall or early spring, coincident with Stormwater events.
Maximum increased conveyance capacity (cubic feet/second):	72
Estimated area benefiting from flood damage reduction (acres):	Unknown
Estimated level of flood protection resulting from project implementation (% annual probability of recurrence or 1-in-number of years recurrence):	Unknown
Estimated annual value of flood damage reduction provided by project ($/year):	Unknown
Land required for project implementation (acres):	3,002

For projects that include detention and groundwater recharge, please complete the following:

How many acres of land drain into this detention basin? (acres):	N/A
Detention Basin area (acres):	N/A
Detention basin max. operational depth (ft.):	N/A
% of basin covered by wetlands:	N/A
Soil type:	N/A
If other than infiltration, identify method (e.g., injection) and recharge (acre-feet/year):	N/A
Estimated basin annual inflow (acre-feet/year):	N/A
Estimated basin annual outflow (acre-feet/year):	N/A

Environmental and Habitat Enhancement Benefits

Describe how the proposed project identifies opportunities to develop, restore, or enhance habitat and open space through storm water and dry weather runoff management, including wetlands, riverside habitats, parkways, and parks. Provide some type of quantitative measurement, which will show how the project benefits the environment and enhances the natural habitat.

Environmental and Habitat Enhancement Benefits (Narrative)

N/A.

Non-treatment wetland area (acres):	N/A.
Treatment wetland area (acres):	N/A.
Riparian habitat area (acres):	N/A.
Non-developed open space area (acres):	N/A.
Total Project area (acres):	N/A.

Community Stewardship Benefits

Describe how the project identifies opportunities to use existing publicly owned lands and easements, including, but not limited to parks, open space, community gardens, farm and agricultural preserves, school sites, and government office buildings and complexes, to capture, clean, store, and use storm water and dry weather runoff either onsite or offsite. Provide some type of quantitative measurement, which will show how the project benefits the community.

Community Stewardship Benefits (Narrative)

By providing in-lieu groundwater recharge, the Project will reduce groundwater pumping lifts and resulting energy savings. The savings will be shared with municipal and private well owners alike.

Multiple use/ recreation area (acres) – additionally, select the type of multiple use / recreation and associated acres by type:

Single Sport Athletics:	N/A
Multiple Sport Athletics Acres:	N/A
Other Recreation Acres:	N/A
Pedestrian Trail Acres:	N/A
Equestrian Trail Acres:	N/A
Other Passive Activity:	N/A
Other Acres (describe):	N/A
Description:	N/A
Total Project Area (acres):	N/A

Part 5. Project Cost Estimate

Project cost information is needed to assist in comparing benefits and cost. Additionally, knowledge of the project type and cost will assist in identifying funding sources for potential projects.

Please indicate the estimated costs of project implementation and associated funding source(s). These costs should include land purchase/easement, planning/design/engineering, construction/ implementation, environmental compliance, administration, and contingency.

Approximate Total Cost: (If project costs are variable, please include lower and upper range estimates.)	$4,100,000
Funding Source: (If multiple sources, list each source and the percent or amount funded by each)	RRBWSD
Maximum Funding Match from Implementing Agency:	N/A
Funding Certainty & Longevity:	Certain
Operations & Maintenance Cost: (per year)	$37,000
Operations & Maintenance Funding Source(s) (i.e., annual budget, grant, etc. If multiple sources, list each source and the percent or amount funded by each.)	Annual Budget
Operations & Maintenance Funding Certainty: (i.e., already included in organization's budget, contingent upon grant, etc.)	Will be included in budget.

Kern Storm Water Resource Plan

Project Submittal Form

This form is to be electronically filled out and e-mailed to LMarino@ppeng.com by June 24, 2016.

Reference: Storm Water Resource Plan Guidelines, December 15, 2015
State Water Resources Control Board

Part 1. Lead Implementing Agency/Organizational Information

Please provide the following information regarding the project sponsor and proposed project.

Implementing Agency/ Organization / Individual:

Rosedale-Rio Bravo Water Storage District

Agency / Organization / Individual Address:

849 Allen Road
P.O. Box 20820
Bakersfield, CA 93390

Possible Partnering Agencies:

Buena Vista Water Storage District

Name:

Dan Bartel

Title:

Assistant General Manager-Engineer

Telephone:

661-589-6045

Fax:

661-589-1867

Email:

dbartel@rrbwsd.com

Website:

www.rrbwsd.com

Project Name:

James Groundwater Banking and Recovery Project

Either the latitude/longitude or a location description is required. To determine the latitude/longitude, use the closest address or intersection. If the project is linear, use the furthest upstream latitude/longitude.

Project Latitude:	35.309774	**Project Longitude:**	-119.189067

Location Description:	The Project property, known locally as McAllister Ranch, is located in the City of Bakersfield, Kern County, California within Sections 16, 21, 22, and 23, Township 30 South, Range 26 East, Mount Diablo Meridian (MDM)

Project Cooperating Agency(ies)/Organization(s)/Individual(s):

- Buena Vista Water Storage District
-
-
-

Project Status (e.g., new, ongoing, expansion, new phase):

New

Has the Project been submitted to IRWM Plan?

☒ Kern IRWMP ☐ Poso Creek IRWMP ☐ Not Submitted

Does the project address any known environmental justice issues?

☐ Yes ☒ No ☐ Not Sure

Is the project located within or adjacent to a disadvantaged community (DAC)? Refer to this website.

☐ Within ☐ Adjacent ☒ No ☐ Not Sure

Does the project include DAC participation?

☐ Yes ☒ No ☐ Not Sure

If yes, please identify the contact person, group, or organization and describe the DAC's participation:

What is the DAC's estimated population?

Does the Implementing Agency own the land where the project is located? If no, describe ability to purchase land or if eminent domain is required:

☒ Yes ☐ No

Part 2. Project Need

It is important to understand the need(s) or issue(s) that the proposed project will address and the benefits that it will provide. Information provided in this section defines the need(s) or issue(s) that the proposed project will address and will help to catalog existing need(s) or issue(s) in the planning area of the Kern Storm Water Resource Plan.

Please provide a 1-2 paragraph description of the need(s) or problem(s) that the proposed project will address. Discuss the benefits to water quality, water supply, flood management, environmental, and community benefits that the proposed project will bring. Discuss critical impacts or worsening conditions that will occur if the proposed project is not implemented.

Project Need (Narrative)

The Project provides a benefit to the lands, landowners, and water users within their respective boundaries by providing a reliable, affordable, and usable water supply through economic and efficient storage, distribution, and use of available water supplies, while facilitating programs that protect and benefit the groundwater basin.

The Project is intended to provide water storage and recovery capacity for RRBWSD and BVWSD for the efficient management of water supplies in their respective service areas. The Project will allow wet year water supplies to be conserved for use during dry years or when needed.

The Project's specific objectives are:

- To increase water supply reliability in the area, in a cost-effective and environmentally sound manner, by providing a means to store wet year water, that is not needed for immediate use, in the groundwater aquifer and provide a means to extract and use stored groundwater during dry years or when needed; and
- To reduce the Districts' dependence on the Sacramento-San Joaquin River Delta (also referred to herein as the Delta), from programs such as the SWP and CVP, by locally storing water in the groundwater aquifer during wet years for later extraction and use.

Part 3. Project Description

A general description of the proposed project is needed. This section will provide information associated with the project concept and general project information. Much of the requested information may not be available for projects that are in the conceptual stages of development. An essential element of the Kern Storm Water Resource Plan consists of proposed projects. We appreciate and need your ideas.

Please provide a one or two paragraph description of the project including the general project concept, what will be constructed/implemented, how the constructed project will function, what technologies or methods will be used, as appropriate. For water quality projects, include a description of impacts to existing Total Maximum Daily Loads, NPDES permits, and/or waste discharge requirements.

Project Description (Narrative)

The James Groundwater Storage and Recovery Project (the Project) consists of construction and operation of shallow percolation ponds totaling approximately 526 acres, levees surrounding the proposed percolation ponds, up to 10 groundwater extraction wells and well pumping plants (any combination of the operation of 2 to 6 existing wells onsite, plus construction and operation of 4 to 8 proposed new wells), water conveyance facilities, 3 pumping plants and 2 gravity turnouts, and up to 8 groundwater monitoring wells.

The Project also includes some offsite improvements, which include two new siphon crossings along the James Canal (paralleling the existing siphon crossings at the Kern River Canal and the Burlington Northern Santa Fe (BNSF) Railroad tracks); a new gravity turnout from the Kern River to an existing basin (located between the Kern River and the Kern River Canal, near the northerly terminus of the James Canal); modifications to the existing James Canal prism (cross-section); improvements to the intake structure from the Buena Vista Canal to the Canfield Lateral; and modifications to the existing Canfield Lateral prism (cross-section).

If applicable, list surface water bodies and groundwater basins associated with the proposed project:

- California Aqueduct
- Friant-Kern Canal
- Kern River
-

Please identify up to three available documents which contain information specific to the proposed project. Include conceptual plans, permits, drawings, and technical documents:

- 2015 Draft Environmental Impact Report
-
-

Please identify federal, state, or local permits, which pertain to the proposed project and would need to be obtained or, if existing, would need to be amended:

• RWQCB
• USACE
• California Department of Fish and Game

Please identify any existing projects or facilities, including existing water conveyance infrastructure, which would be affected, modified, or superseded as a result of implementing the proposed project:

• James Canal
• Canfield Canal
•

Is the proposed project an element or phase of a regional or larger program?:	☒ Yes ☐ No
If yes, please identify the program:	Kern IRWM
Design life of the project:	50 years
Proposed Construction/Implementation Start Date:	
Proposed Construction/Implementation Completion Date:	
Ready for Construction Bid:	☐ Yes ☒ No ☐ N/A

Item	Status (e.g., not initiated, in process, complete)	Date (mm/dd/yyyy)
Conceptual Plans	**Complete**	
Land Acquisition/ Easements	**Complete**	
Preliminary Plans	**In process**	
CEQA/NEPA	**Complete**	2015
Permits	**In process**	
Construction Drawings	**Not Initiated**	

For projects ready for construction or implementation, including projects which do not include construction, briefly describe the project's readiness to proceed.

Project Readiness (Narrative)

Following the completion of design drawings and specs, the project will be ready to bid and construct.

Include any local or state board actions, code changes, or legislation needed in order to proceed with the project.

Local or State Board Actions, Code Changes, or Legislation

RRBWSD & BVWSD Board of Directors

Please describe the dominant existing land use type for the proposed project location.

Idle

Please describe the dominant existing land use type for areas upstream and downstream of the proposed project location

Upstream:	Idle
Downstream:	Idle

Part 4. Project Benefits

Please provide a one or two paragraph description of the benefit(s) that the project will address. Benefit Categories, shown below, are referenced from the **Storm Water Resource Plan Guidelines**, Page 31, Table 4. Each project should address at least two or more Main Benefits and as many Additional Benefits as feasible. Information you provide will be used to evaluate the project for State grant funding.

Storm Water Management Benefits		
Benefit Category	**Main Benefit**	**Additional Benefit**
Water Quality (while contributing to compliance with applicable permit and/or TMDL requirements)	• Increased filtration and/or treatment of run-off	• Non-point source pollution control • Reestablished natural water drainage and treatment
Water Supply (through groundwater management and/or run-off capture and use)	• **Water supply reliability** • **Conjunctive use**	• Water conservation
Flood Management	• Decreased flood risk by reducing run-off rate and/or volume	• Reduced sanitary sewer overflows
Environmental and Habitat Enhancement	• Environmental and habitat protection and improvement, including; - wetland enhancement/creation; - riparian enhancement; and/or - instream flow improvement • Increased urban green space	• Reduced energy use, greenhouse gas emissions, or provides a carbon sink • Reestablishment of the natural hydrograph • Water temperature improvements
Community Stewardship	• Employment opportunities provided • Public Education	• Community involvement • Enhance and/or create recreational and public use areas

Source: Page 31, Table 4, Storm Water Resource Plan Guidelines, State Water Resources Control Board

Please provide the following PROJECT BENEFIT information for all applicable components of the proposed project. Benefit categories include:

- **Water Quality**
- **Water Supply**
- **Flood Management**
- **Environmental and Habitat Enhancement**
- **Community Stewardship**

If the project benefits a disadvantaged community (DAC) describe the specific benefits to that community. Estimate the percentage of the project benefits to the DAC.

Please supply all information relevant to the proposed project. The information you provide will be used to evaluate the project for State grant funding. **Attach additional sheets if necessary.**

Water Quality Benefits

1. Describe how the proposed project will improve source control for both pollution and dry weather runoff volume, onsite and local infiltration, and use of storm water and dry weather runoff.
2. Describe design criteria and best management practices to prevent storm water and dry weather runoff pollution and increase effective storm water and dry weather runoff management for new and upgraded infrastructure and residential, commercial, industrial, and public development
3. Describe how the proposed project complies with or is consistent with an applicable NPDES permit. The analysis should simulate the proposed watershed-based outcomes using modeling, calculations, pollutant mass balances, water volume balances, and/or other methods of analysis. Describe how the proposed project will contribute to the preservation, restoration, or enhancement or watershed processes (as described in Guidelines section VI.C.2.a)
4. Describe the water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified.

Water Quality Benefits (Narrative)

Water quality benefits would not apply as a primary benefit for this project. However, recharge basins within the District allow for direct recharge of surface water originating from the SWP, the CVP, Kern River usually suitable for irrigation. The sources vary in quality, but are all typically suitable for irrigation and do not degrade the groundwater basin from its designated use. This project also has the potential to improve water quality as follows:

- Enhancement of groundwater quality due to decreased pumping lifts and stabilization of the water table, which reduces the chances of water quality changing due to pumping from zones of less quality; and
- Enhancements to water quality due to the importation of surface water to the District in wet years, which delivers surface water of quality suitable for the beneficial uses within the region.

Additionally, the District, Project, and City of Bakersfield are within the Kern Fan. The water quality benefits produced by the Project are shared with the City and other nearby municipal entities.

Pollutant TMDL reduction (Volume per day) and (mass /unit volume) of most probable number of bacteria or indicator organisms (mpn/mL):	Unknown
Increase in infiltration rate above existing condition:	Yes, delivers Stormwater to recharge facility
Non-point source pollution control:	Unknown
Does project affect an Existing NPDES Permit? If applicable, describe the need for a new NPDES Permit:	Unknown

Water Supply Benefits

1. Describe how the proposed project captures and reuses storm water and dry weather runoff for groundwater recharge or storage for beneficial use.
2. Please provide detailed information to quantify how the proposed project will reduce existing potable water demand.
3. Describe the water supply monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified

Water Supply Benefits (Narrative)

The Project is expected to absorb surface supplies up to approximately 57,600 AFY.

Additionally, the project would:

- Improve the regional reliability of water supply.
- Increase operational flexibility.
- Increase direct spreading and basin absorptive capability.
- Increase local unconfined groundwater quality.
- Make use of available groundwater storage.
- Contribute to the groundwater basin for use during periods of peak demand

Enhanced Water Supply or Demand Reduction Benefit Information

Source of Increased Supply or Demand Reduction

☒ Groundwater	☐ Groundwater treatment	☒ Increased surface water storage
☐ Recycled water	☒ Conservation/ water use efficiency	☐ Ocean desalination
☐ Transfer	☐ Other (describe):	

Type of enhanced supply or demand reduction:	Flood water will be used to recharge groundwater
Annual Yield of Supply (acre-feet):	11,520

Availability by Water-Year Type (acre-feet per year)

Average Year:	11,520 AF ; [11,520 AFY = 57,600 AF * (2 wet years / 10 years)]
Dry Year:	
Wet Year:	57,600 AF

Availability by Season (check all that apply):

☒ Summer ☒ Fall ☒ Spring ☒ Winter

Does the project have the potential to reduce dependence on the Bay/Delta/Estuary?

☒ Yes ☐ No ☐ Not Sure

Flood Management Benefits

1. Describe how the proposed project will reestablish natural water drainage treatment and infiltration systems, or mimic natural system functions to the maximum extent feasible.
2. Describe how the proposed project will reduce flood risk by reducing runoff rate and/or volume.
3. If applicable, describe how the proposed project will reduce the risk of sanitary sewer overflows.

Flood Management Benefits (Narrative)

The Project provides a flood management benefit inasmuch as the water delivered to the direct recharge facility during times of Stormwater management will be diverted and not contribute to increased downstream flows and flood risks.

Description facilities protected:	Regional water management facilities
Maximum volume of temporary storage of storm water runoff (acre-feet):	57,600
Maximum increased conveyance capacity (cubic feet/second):	258; based on preliminary evaluation
Estimated area benefiting from flood damage reduction (acres):	Unknown
Estimated level of flood protection resulting from project implementation (% annual probability of recurrence or 1-in-number of years recurrence):	Unknown
Estimated annual value of flood damage reduction provided by project ($/year):	Unknown
Land required for project implementation (acres):	658

For projects that include detention and groundwater recharge, please complete the following:

How many acres of land drain into this detention basin? (acres):	N/A
Detention Basin area (acres):	526
Detention basin max. operational depth (ft.):	1 to 4
% of basin covered by wetlands:	Unknown
Soil type:	Loam
If other than infiltration, identify method (e.g., injection) and recharge (acre-feet/year):	
Estimated basin annual inflow (acre-feet/year):	11,520
Estimated basin annual outflow (acre-feet/year):	0

Environmental and Habitat Enhancement Benefits

Describe how the proposed project identifies opportunities to develop, restore, or enhance habitat and open space through storm water and dry weather runoff management, including wetlands, riverside habitats, parkways, and parks. Provide some type of quantitative measurement, which will show how the project benefits the environment and enhances the natural habitat.

Environmental and Habitat Enhancement Benefits (Narrative)

The Project will provide waterfowl with a place to rest and nest, intermittently, when they have water in the ponds and are being utilized for recharge purposes.

Non-treatment wetland area (acres):	526, intermittent use when filled with water for recharge
Treatment wetland area (acres):	N/A
Riparian habitat area (acres):	N/A
Non-developed open space area (acres):	N/A
Total Project area (acres):	658

Community Stewardship Benefits

Describe how the project identifies opportunities to use existing publicly owned lands and easements, including, but not limited to parks, open space, community gardens, farm and agricultural preserves, school sites, and government office buildings and complexes, to capture, clean, store, and use storm water and dry weather runoff either onsite or offsite. Provide some type of quantitative measurement, which will show how the project benefits the community.

Community Stewardship Benefits (Narrative)

Once constructed the facility provides a habitat for various birds and waterfowl that also provides an opportunity for the public to view the birds. The Project will reduce groundwater pumping lifts and resulting energy savings. The savings will be shared with municipal and private well owners alike.

Multiple use/ recreation area (acres) – additionally, select the type of multiple use / recreation and associated acres by type:

Single Sport Athletics:	N/A
Multiple Sport Athletics Acres:	N/A
Other Recreation Acres:	N/A
Pedestrian Trail Acres:	N/A
Equestrian Trail Acres:	N/A
Other Passive Activity:	Bird viewing
Other Acres (describe):	N/A
Description:	N/A
Total Project Area (acres):	526

Part 5. Project Cost Estimate

Project cost information is needed to assist in comparing benefits and cost. Additionally, knowledge of the project type and cost will assist in identifying funding sources for potential projects.

Please indicate the estimated costs of project implementation and associated funding source(s). These costs should include land purchase/easement, planning/design/engineering, construction/ implementation, environmental compliance, administration, and contingency.

Approximate Total Cost: (If project costs are variable, please include lower and upper range estimates.)	Approximately $60,000,000 is a preliminary estimate.
Funding Source: (If multiple sources, list each source and the percent or amount funded by each)	RRBWSD and BVWSD
Maximum Funding Match from Implementing Agency:	N/A
Funding Certainty & Longevity:	Certain
Operations & Maintenance Cost: (per year)	$100,000
Operations & Maintenance Funding Source(s) (i.e., annual budget, grant, etc. If multiple sources, list each source and the percent or amount funded by each.)	Annual Budget
Operations & Maintenance Funding Certainty: (i.e., already included in organization's budget, contingent upon grant, etc.)	Will be included in budget.

Kern Storm Water Resource Plan

Project Submittal Form

This form is to be electronically filled out and e-mailed to LMarino@ppeng.com by June 24, 2016.

Reference: Storm Water Resource Plan Guidelines, December 15, 2015
State Water Resources Control Board

Part 1. Lead Implementing Agency/Organizational Information

Please provide the following information regarding the project sponsor and proposed project.

Implementing Agency/ Organization / Individual:

Shafter-Wasco Irrigation District

Agency / Organization / Individual Address:

16294 Central Valley Hwy, Wasco, CA 93280

Possible Partnering Agencies:

Buena Vista Water Storage District

Name:

Dana Munn

Title:

General Manager

Telephone:

(661) 758-5153

Fax:

Email:

dmunn@SWID.org

Website:

www.SWID.org

Project Name:

Shafter-Wasco Irrigation District Recharge Project

Either the latitude/longitude or a location description is required. To determine the latitude/longitude, use the closest address or intersection. If the project is linear, use the furthest upstream latitude/longitude.

Project Latitude:	35.551041	**Project Longitude:**	-119.293969

Location Description:	The Project will consist of up to seven 20-acres storm water recharge basins which total approximately 140 acres on property to be selected within a 4,000-acre survey area located within the Shafter-Wasco Irrigation District, Kern County, CA. The SWID Recharge Project is located within the Shafter-Wasco Irrigation District Boundaries, to the northeast of Shafter, CA, and on the west bank of the Calloway Canal at the corner of Beech and Fresno Avenues.

Project Cooperating Agency(ies)/Organization(s)/Individual(s):

-
-
-
-

Project Status (e.g., new, ongoing, expansion, new phase):

New; a Final Initial study and Mitigated Negative Declaration has been prepared.

Has the Project been submitted to IRWM Plan?

☐ Kern IRWMP ☒ Poso Creek IRWMP ☐ Not Submitted

Does the project address any known environmental justice issues?

☐ Yes ☒ No ☐ Not Sure

Is the project located within or adjacent to a disadvantaged community (DAC)? Refer to this website.

☐ Within ☐ Adjacent ☐ No ☒ Not Sure

Does the project include DAC participation?

☐ Yes ☒ No ☐ Not Sure

If yes, please identify the contact person, group, or organization and describe the DAC's participation:

What is the DAC's estimated population?

Does the Implementing Agency own the land where the project is located? If no, describe ability to purchase land or if eminent domain is required:

☐ Yes ☒ No

Currently the plan is to purchase the land.

Part 2. Project Need

It is important to understand the need(s) or issue(s) that the proposed project will address and the benefits that it will provide. Information provided in this section defines the need(s) or issue(s) that the proposed project will address and will help to catalog existing need(s) or issue(s) in the planning area of the Kern Storm Water Resource Plan.

Please provide a 1-2 paragraph description of the need(s) or problem(s) that the proposed project will address. Discuss the benefits to water quality, water supply, flood management, environmental, and community benefits that the proposed project will bring. Discuss critical impacts or worsening conditions that will occur if the proposed project is not implemented.

Project Need (Narrative)

The infrequent, less reliable, and inadequacy of surface water supplies delivered into Kern County have increased the importance of utilizing supplies as they become available. The Project addresses this by capturing surplus storm waters and allowing for their delivery to spreading ponds. By using the water to recharge the aquifer underlying the District, the Project helps to offset demand on surface supplies in dry years, increasing local supply reliability.

Additionally, implementation of the Project will help achieve sustainable groundwater levels by reducing annual demand, increasing storm water capture, and avoid the adverse environmental and economic burden associated with groundwater declines, including increased energy consumption, increased emission of greenhouse gases and the eventual fallowing or conversion of agricultural lands to non-agricultural uses.

Part 3. Project Description

A general description of the proposed project is needed. This section will provide information associated with the project concept and general project information. Much of the requested information may not be available for projects that are in the conceptual stages of development. An essential element of the Kern Storm Water Resource Plan consists of proposed projects. We appreciate and need your ideas.

Please provide a one or two paragraph description of the project including the general project concept, what will be constructed/implemented, how the constructed project will function, what technologies or methods will be used, as appropriate. For water quality projects, include a description of impacts to existing Total Maximum Daily Loads, NPDES permits, and/or waste discharge requirements.

Project Description (Narrative)

The Project consists of constructing up to (7) 20-acre ponds, totaling approximately 140 acres, within the District to capture storm water for the purpose of groundwater recharge. Construction of the ponds will require temporary staging and storage areas for materials and equipment that will be located onsite for each basin. The Project would also require the construction of the following conveyance facilities:

- Project turnout to conveyance channel. This structure would consist of a turnout and pipeline. The size of the pipeline will depend on the total pond area served by the turnout as surface water will be conveyed from the Calloway Canal to the Project's distribution canal.

- Distribution Canal Check Structures within the Recharge Ponds. These structures would consist of a concrete weir with board guides constructed downstream of the recharge basin turnout and would serve the purpose of maintaining the desired upstream water surface to allow flow into each recharge basin. There may be one check structure for multiple ponds, depending on slope and if the canal is located central to the pond layout. Several check structures will be installed to serve the 20 ponds; the exact number is to be determined in the design following selection of a site. The design may include a canal with appropriate flow capacity to serve the ponds. Canals would be earthen and trapezoidal in shape, cut about two feet below grade with an embankment about two feet above grade.

- Basin turnouts. These structures would vary in size from 18 inches to 24 inches and would lead from the distribution canal into each recharge basin. There would be at most one inlet for each basin. Typical existing design allow four basins to be served by one check structure.

If applicable, list surface water bodies and groundwater basins associated with the proposed project:

- The District overlies the Kern Subbasin
-
-
-

Please identify up to three available documents which contain information specific to the proposed project. Include conceptual plans, permits, drawings, and technical documents:

- SWID Recharge Project, Final IS & Mitigated ND, February 2015
-
-

Please identify federal, state, or local permits, which pertain to the proposed project and would need to be obtained or, if existing, would need to be amended:

•
•
•

Please identify any existing projects or facilities, including existing water conveyance infrastructure, which would be affected, modified, or superseded as a result of implementing the proposed project:

• Calloway Canal, for conveyance
•
•

Is the proposed project an element or phase of a regional or larger program?	☒ Yes ☐ No
If yes, please identify the program:	Poso Creek IRWMP
Design life of the project:	50 years
Proposed Construction/Implementation Start Date:	Yet Unkown
Proposed Construction/Implementation Completion Date:	Yet Unkown
Ready for Construction Bid:	☐ Yes ☒ No ☐ N/A

Item	Status (e.g., not initiated, in process, complete)	Date (mm/dd/yyyy)
Conceptual Plans	**Complete**	6/1/2016
Land Acquisition/ Easements	**Not initiated**	
Preliminary Plans	**In Process**	
CEQA/NEPA	**Complete**	2/2015
Permits	**In Process**	
Construction Drawings	**Not initiated**	

For projects ready for construction or implementation, including projects which do not include construction, briefly describe the project's readiness to proceed.

Project Readiness (Narrative)

SWID prepared a Final Initial Study & Mitigated Negative Declaration for the Project in February of 2015. This report considered all effects that the project might have on the environment as well as identify the best locations for the recharge ponds within District boundaries. Once a site is selected, the design and construction of the 140 acre recharge site can progress very rapidly since the District Engineer/Manager has extensive experience constructing spreading basins in the District. The Project is not very complicated as it involves converting existing irrigated land into spreading ponds by reshaping and install simple water diversion structures. For the SWID Recharge Project each construction phase is expected to have the following stages and general durations: 1) one month for site preparation including clearing, grubbing, and grading; 2) three months for installation of turnouts, water control structures, pipelines, and canals; 3) one month for system interconnection and clean up.

Include any local or state board actions, code changes, or legislation needed in order to proceed with the project.

Local or State Board Actions, Code Changes, or Legislation

No State Board actions or legislation would be required. As with all projects within the District, all appropriate approvals from the SWID Board of Directors will be obtained.

Please describe the dominant existing land use type for the proposed project location.

Agricultural – Crop.

Please describe the dominant existing land use type for areas upstream and downstream of the proposed project location

Upstream:	Agricultural – Crop
Downstream:	Agricultural - Crop

Part 4. Project Benefits

Please provide a one or two paragraph description of the benefit(s) that the project will address. Benefit Categories, shown below, are referenced from the **Storm Water Resource Plan Guidelines**, Page 31, Table 4. Each project should address at least two or more Main Benefits and as many Additional Benefits as feasible. Information you provide will be used to evaluate the project for State grant funding.

Storm Water Management Benefits		
Benefit Category	**Main Benefit**	**Additional Benefit**
Water Quality (while contributing to compliance with applicable permit and/or TMDL requirements)	• Increased filtration and/or treatment of run-off	• Non-point source pollution control • Reestablished natural water drainage and treatment
Water Supply (through groundwater management and/or run-off capture and use)	• Water supply reliability • Conjunctive use	• Water conservation
Flood Management	• Decreased flood risk by reducing run-off rate and/or volume	• Reduced sanitary sewer overflows
Environmental and Habitat Enhancement	• Environmental and habitat protection and improvement, including; - wetland enhancement/creation; - riparian enhancement; and/or - instream flow improvement • Increased urban green space	• Reduced energy use, greenhouse gas emissions, or provides a carbon sink • Reestablishment of the natural hydrograph • Water temperature improvements
Community Stewardship	• Employment opportunities provided • Public Education	• Community involvement • Enhance and/or create recreational and public use areas

Source: Page 31, Table 4, Storm Water Resource Plan Guidelines, State Water Resources Control Board

Please provide the following PROJECT BENEFIT information for all applicable components of the proposed project. Benefit categories include:

- **Water Quality**
- **Water Supply**
- **Flood Management**
- **Environmental and Habitat Enhancement**
- **Community Stewardship**

If the project benefits a disadvantaged community (DAC) describe the specific benefits to that community. Estimate the percentage of the project benefits to the DAC.

Please supply all information relevant to the proposed project. The information you provide will be used to evaluate the project for State grant funding. **Attach additional sheets if necessary.**

Water Quality Benefits

1. Describe how the proposed project will improve source control for both pollution and dry weather runoff volume, onsite and local infiltration, and use of storm water and dry weather runoff.
2. Describe design criteria and best management practices to prevent storm water and dry weather runoff pollution and increase effective storm water and dry weather runoff management for new and upgraded infrastructure and residential, commercial, industrial, and public development
3. Describe how the proposed project complies with or is consistent with an applicable NPDES permit. The analysis should simulate the proposed watershed-based outcomes using modeling, calculations, pollutant mass balances, water volume balances, and/or other methods of analysis. Describe how the proposed project will contribute to the preservation, restoration, or enhancement or watershed processes (as described in Guidelines section VI.C.2.a)
4. Describe the water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified.

Water Quality Benefits (Narrative)

The Project protects water quality in that storm water captured by the Project originates from uplands that form the watersheds of the lakes and reservoirs that will release water recharged by the Project. These source waters are largely unimpaired, with unsubstantial water quality issues. While flood releases conveyed overland and through unlined canals and river channels may mobilize substantial sediment loads, because the path of the storm water will not cross major urban or agricultural areas, with the exception of sediment, loadings of constituents other than sediment are expected to be low and will remain stable over time.

Pollutant TMDL reduction (Volume per day) and (mass /unit volume) of most probable number of bacteria or indicator organisms (mpn/mL):	Unknown
Increase in infiltration rate above existing condition:	140 acres will be converted to recharge ponds
Non-point source pollution control:	Unknown
Does project affect an Existing NPDES Permit? If applicable, describe the need for a new NPDES Permit:	No

Water Supply Benefits

1. Describe how the proposed project captures and reuses storm water and dry weather runoff for groundwater recharge or storage for beneficial use.
2. Please provide detailed information to quantify how the proposed project will reduce existing potable water demand.
3. Describe the water supply monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe the a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified

Water Supply Benefits (Narrative)

Improved overall water supply, water supply reliability, energy savings and reduced greenhouse gas emissions will result from the long-term increase in groundwater elevations in the Project area due to recharge of storm water. Therefore, although the Project will be operated as a groundwater storage facility with groundwater elevations increasing during periods when water is recharged and declining when groundwater is extracted for beneficial uses, the Project will be operated so as to maintain average groundwater elevations that are higher than they would be absent the Project. Supporting local groundwater levels will aid in regional compliance with the Sustainable Groundwater Management Act and will enable groundwater pumpers (both Project proponents and local domestic, agricultural and municipal users) to reduce pumping costs and lessen the need to deepen wells. The 140 acre recharge ponds are anticipated to absorb 0.5 acre-feet per day, or 70 AF per Day for up to 6 months, 4 out of 10 years. The equates to an average annual amount of 5,040 AF = [70 AF * 30 days * 6 months * 4] / 10.
In addition, converting the land from irrigation to recharge ponds removes 490 AFY of demand = 140 A * 3.5 AFY/A demand.

Enhanced Water Supply or Demand Reduction Benefit Information

Source of Increased Supply or Demand Reduction

☒ Groundwater	☐ Groundwater treatment	☒ Increased surface water storage
☐ Recycled water	☒ Conservation/ water use efficiency	☐ Ocean desalination
☐ Transfer	☐ Other (describe):	

Type of enhanced supply or demand reduction:	Flood Water
Annual Yield of Supply (acre-feet):	Approximately 5,530 AF = 5,040 AF + 490 AF

Availability by Water-Year Type (acre-feet per year)

Average Year:	5,040 AF
Dry Year:	490 AF
Wet Year:	13,090 AF = 12,600 AF + 490 AF; 12,600 AF = [70 AF * 30 days * 6 months]

Availability by Season (check all that apply):

☐ Summer ☒ Fall ☒ Spring ☒ Winter

Does the project have the potential to reduce dependence on the Sacramento San Joaquin Bay-Delta?

☒ Yes ☐ No ☐ Not Sure

Flood Management Benefits

1. Describe how the proposed project will reestablish natural water drainage treatment and infiltration systems, or mimic natural system functions to the maximum extent feasible.
2. Describe how the proposed project will reduce flood risk by reducing runoff rate and/or volume.
3. If applicable, describe how the proposed project will reduce the risk of sanitary sewer overflows.

Flood Management Benefits (Narrative)

The Project helps water infrastructure systems adapt to flood flows by alleviating pressure on an aging system. Existing research on climate change suggests that one of the primary outcomes will be a shift in snowfall to rainfall and an increase in peak storm flows. Providing an outlet for storm water flows that channels these flows to groundwater recharge facilities improves the functionality of existing infrastructure by diverting storm water flows from overtaxed conveyance channels during large storm events, and enhancing water supply reliability during dry years.

Description facilities protected:	
Maximum volume of temporary storage of storm water runoff (acre-feet):	70 AFD; 2,100 AF per Month
Maximum increased conveyance capacity (cubic feet/second):	Yet Unknown
Estimated area benefiting from flood damage reduction (acres):	Yet Unknown
Estimated level of flood protection resulting from project implementation (% annual probability of recurrence or 1-in-number of years recurrence):	Yet Unknown
Estimated annual value of flood damage reduction provided by project ($/year):	Yet Unknown
Land required for project implementation (acres):	140

For projects that include detention and groundwater recharge, please complete the following:

How many acres of land drain into this detention basin? (acres):	Yet Unknown
Detention Basin area (acres):	140
Detention basin max. operational depth (ft.):	1-4 feet
% of basin covered by wetlands:	Intermittent use during wet periods
Soil type:	Yet Unknown
If other than infiltration, identify method (e.g., injection) and	Yet Unknown

recharge (acre-feet/year):	
Estimated basin annual inflow (acre-feet/year):	5,040 AFY average
Estimated basin annual outflow (acre-feet/year):	0

Environmental and Habitat Enhancement Benefits

Describe how the proposed project identifies opportunities to develop, restore, or enhance habitat and open space through storm water and dry weather runoff management, including wetlands, riverside habitats, parkways, and parks. Provide some type of quantitative measurement, which will show how the project benefits the environment and enhances the natural habitat.

Environmental and Habitat Enhancement Benefits (Narrative)

During periods when storm water is available for recharge, the spreading ponds will act as intermittent wetlands that will benefit wildlife including migratory birds.

Non-treatment wetland area (acres):	140 intermittent
Treatment wetland area (acres):	Yet Unknown
Riparian habitat area (acres):	Yet Unknown
Non-developed open space area (acres):	140
Total Project area (acres):	140

Community Stewardship Benefits

Describe how the project identifies opportunities to use existing publicly owned lands and easements, including, but not limited to parks, open space, community gardens, farm and agricultural preserves, school sites, and government office buildings and complexes, to capture, clean, store, and use storm water and dry weather runoff either onsite or offsite. Provide some type of quantitative measurement, which will show how the project benefits the community.

Community Stewardship Benefits (Narrative)

As noted in the water supply benefit section, recharging the groundwater aquifer provides a benefit to the local community by helping to increase the groundwater table elevation and lower the required pumping lift near the project. Therefore, all wells providing water for public or private use receive a benefit. The quantitative benefit of the project will be determined as design details are finalized. The construction of the recharge site provides some temporary employment.

Multiple use/ recreation area (acres) – additionally, select the type of multiple use / recreation and associated acres by type:

Single Sport Athletics:	N/A
Multiple Sport Athletics Acres:	N/A
Other Recreation Acres:	N/A
Pedestrian Trail Acres:	N/A
Equestrian Trail Acres:	N/A
Other Passive Activity:	Bird Viewing
Other Acres (describe):	N/A
Description:	Reduced pump lift for all pumps in the vicinity of the Project.
Total Project Area (acres):	140

Part 5. Project Cost Estimate

Project cost information is needed to assist in comparing benefits and cost. Additionally, knowledge of the project type and cost will assist in identifying funding sources for potential projects.

Please indicate the estimated costs of project implementation and associated funding source(s). These costs should include land purchase/easement, planning/design/engineering, construction/ implementation, environmental compliance, administration, and contingency.

Approximate Total Cost: (If project costs are variable, please include lower and upper range estimates.)	$5,021,550
Funding Source: (If multiple sources, list each source and the percent or amount funded by each)	Local funding will match State grant and possible Federal grant funds.
Maximum Funding Match from Implementing Agency:	$2,521,550 is estimated if this State funding is successful
Funding Certainty & Longevity:	
Operations & Maintenance Cost: (per year)	$25,000 annually
Operations & Maintenance Funding Source(s) (i.e., annual budget, grant, etc. If multiple sources, list each source and the percent or amount funded by each.)	District annual revenues
Operations & Maintenance Funding Certainty: (i.e., already included in organization's budget, contingent upon grant, etc.)	It will be included in District's annual budget

Appendix C: Project Scoring Forms

Project Name / Sponsor: 101_Schuster Spreading Grounds / Semitropic	Storm Water Management Benfits	
MAIN AND ADDITIONAL BENEFITS CATEGOTRIES	Main Benefit (4-5 pts ea)	Additional Benefit (1-3 pts ea)
WATER QUALITY - while contributing to compliance with applicable permit and/or TMDL requirements		
* Increased filtration and/or treatment of runoff		
** Nonpoint source pollution control		1
** Reestablishment of natural water drainage and treatment		
WATER SUPPLY - through groundwater management and/or runoff capture and use		
* Water supply reliability		
** Water conservation		
* Conjunctive use	5	
** Water conservation		
FLOOD MANAGEMENT		
* Decreased flood risk by reducing runoff rate and/or volume	5	
** Reduced sanitary sewer overflows		
ENVIRONMENTAL		
* Environemtal and habitat protection and improvement, including: (a) wetland enhancemtn/creation; (b) riparian enhancement; (c) instream flow improvement	4	
** Reduced energy use, greenhouse gas emmisions, or provides carbon sink		
** Reestablishment of the natural hydrograph		
* Increased urban green space		
** Water temerature improvements		
COMMUNITY		
* Employment opportunities provided		
** Community involvement		1
* Public education		
** Enhance and/or create recreational and public use areas		
TOTAL MAIN BENEFITS (8 pts minimum)	14	
TOTAL ADDITIONAL BENEFITS		2
TOTAL MAIN + ADDITIONAL BENEFITS	16	

0 = criteria does not apply
1 = Criteria may apply/need more information
2 = Additional Benefit Criteria partially applies
3 = Additional Benefit Criteria fully applies
4 = Main Benefit Criteria partially applies
5 = Main Benefit Criteria fully applies

PROJECT READINESS CHECKLIST	YES	NO
Is the Project ready to implement (Yes=1), (No=0)?		0
Is the Project cost well defined (1) or just an estimate (0)?		0
Is the land currently owned by a public agency (1) or does it need to be acquired (0)?	1	
Is the environmental permitting process complete (1) or not yet started (0)?		0
Does the agency have the funds available for the 50% local funding match (Yes=1), (No=0)?		0
PROJECT READINESS SCORE	1	

Project Name / Sponsor: 102_Pond-Poso Spreading Grounds, Phase 2 / Semitropic	Storm Water Management Benfits	
MAIN AND ADDITIONAL BENEFITS CATEGOTRIES	Main Benefit (4-5 pts ea)	Additional Benefit (1-3 pts ea)
WATER QUALITY - while contributing to compliance with applicable permit and/or TMDL requirements		
* Increased filtration and/or treatment of runoff		
** Nonpoint source pollution control		1
** Reestablishment of natural water drainage and treatment		
WATER SUPPLY - through groundwater management and/or runoff capture and use		
* Water supply reliability	5	
** Water conservation		
* Conjunctive use		
** Water conservation		
FLOOD MANAGEMENT		
* Decreased flood risk by reducing runoff rate and/or volume	5	
** Reduced sanitary sewer overflows		
ENVIRONMENTAL		
* Environmental and habitat protection and improvement, including: (a) wetland enhancement/creation; (b) riparian enhancement; (c) instream flow improvement	4	
** Reduced energy use, greenhouse gas emmisions, or provides carbon sink		
** Reestablishment of the natural hydrograph		
* Increased urban green space		
** Water temperature improvements		
COMMUNITY		
* Employment opportunities provided		
** Community involvement		
* Public education		
** Enhance and/or create recreational and public use areas		
TOTAL MAIN BENEFITS (8 pts minimum)	14	
TOTAL ADDITIONAL BENEFITS		1
TOTAL MAIN + ADDITIONAL BENEFITS	15	

0 = criteria does not apply
1 = Criteria may apply/need more information
2 = Additional Benefit Criteria partially applies
3 = Additional Benefit Criteria fully applies
4 = Main Benefit Criteria partially applies
5 = Main Benefit Criteria fully applies

PROJECT READINESS CHECKLIST	YES	NO
Is the Project ready to implement (Yes=1), (No=0)?	0.5	
Is the Project cost well defined (1) or just an estimate (0)?		0
Is the land currently owned by a public agency (1) or does it need to be acquired (0)?	1	
Is the environmental permitting process complete (1) or not yet started (0)?	0.5	
Does the agency have the funds available for the 50% local funding match (Yes=1), (No=0)?		0
PROJECT READINESS SCORE	2	

Project Name / Sponsor: 103_Stored Water Recovery Unit, Element of the Semitropic Groundwater Bank / Semitropic	Storm Water Management Benfits	
MAIN AND ADDITIONAL BENEFITS CATEGOTRIES	**Main Benefit (4-5 pts ea)**	**Additional Benefit (1-3 pts ea)**
WATER QUALITY - while contributing to compliance with applicable permit and/or TMDL requirements		
* Increased filtration and/or treatment of runoff		
** Nonpoint source pollution control		1
** Reestablishment of natural water drainage and treatment		
WATER SUPPLY - through groundwater management and/or runoff capture and use		
* Water supply reliability	5	
** Water conservation		
* Conjunctive use		
** Water conservation		
FLOOD MANAGEMENT		
* Decreased flood risk by reducing runoff rate and/or volume	5	
** Reduced sanitary sewer overflows		
ENVIRONMENTAL		
* Environmental and habitat protection and improvement, including: (a) wetland	4	
** Reduced energy use, greenhouse gas emmisions, or provides carbon sink		
** Reestablishment of the natural hydrograph		
* Increased urban green space		
** Water temperature improvements		
COMMUNITY		
* Employment opportunities provided		
** Community involvement		
* Public education		
** Enhance and/or create recreational and public use areas		2
TOTAL MAIN BENEFITS (8 pts minimum)	**14**	
TOTAL ADDITIONAL BENEFITS		**3**
TOTAL MAIN + ADDITIONAL BENEFITS	**17**	

0 = criteria does not apply
1 = Criteria may apply/need more information
2 = Additional Benefit Criteria partially applies
3 = Additional Benefit Criteria fully applies
4 = Main Benefit Criteria partially applies
5 = Main Benefit Criteria fully applies

PROJECT READINESS CHECKLIST	YES	NO
Is the Project ready to implement (Yes=1), (No=0)?	0.5	0
Is the Project cost well defined (1) or just an estimate (0)?		0
Is the land currently owned by a public agency (1) or does it need to be acquired (0)?	0.5	0
Is the environmental permitting process complete (1) or not yet started (0)?	1	0
Does the agency have the funds available for the 50% local funding match (Yes=1), (No=0)?		0
PROJECT READINESS SCORE	**2**	

Project Name / Sponsor: 104_Entrance Ponds to the Pond Poso Spreading Grounds / Semitropic	Storm Water Management Benfits	
MAIN AND ADDITIONAL BENEFITS CATEGOTRIES	Main Benefit (4-5 pts ea)	Additional Benefit (1-3 pts ea)
WATER QUALITY - while contributing to compliance with applicable permit and/or TMDL requirements		
* Increased filtration and/or treatment of runoff		
** Nonpoint source pollution control		1
** Reestablishment of natural water drainage and treatment		
WATER SUPPLY - through groundwater management and/or runoff capture and use		
* Water supply reliability	5	
** Water conservation		
* Conjunctive use		
** Water conservation		
FLOOD MANAGEMENT		
* Decreased flood risk by reducing runoff rate and/or volume	5	
** Reduced sanitary sewer overflows		
ENVIRONMENTAL		
* Environmental and habitat protection and improvement, including: (a) wetland enhancement/creation; (b) riparian enhancement; (c) instream flow improvement	5	
** Reduced energy use, greenhouse gas emmisions, or provides carbon sink		
** Reestablishment of the natural hydrograph		
* Increased urban green space		
** Water temperature improvements		
COMMUNITY		
* Employment opportunities provided		
** Community involvement		
* Public education		
** Enhance and/or create recreational and public use areas		2
TOTAL MAIN BENEFITS (8 pts minimum)	**15**	
TOTAL ADDITIONAL BENEFITS		**3**
TOTAL MAIN + ADDITIONAL BENEFITS	**18**	

0 = criteria does not apply
1 = Criteria may apply/need more information
2 = Additional Benefit Criteria partially applies
3 = Additional Benefit Criteria fully applies
4 = Main Benefit Criteria partially applies
5 = Main Benefit Criteria fully applies

PROJECT READINESS CHECKLIST	YES	NO
Is the Project ready to implement (Yes=1), (No=0)?	0.5	
Is the Project cost well defined (1) or just an estimate (0)?		0
Is the land currently owned by a public agency (1) or does it need to be acquired (0)?	1	
Is the environmental permitting process complete (1) or not yet started (0)?	0.5	
Does the agency have the funds available for the 50% local funding match (Yes=1), (No=0)?		0
PROJECT READINESS SCORE	**2**	

Project Name / Sponsor: 105_Caliente Creek Habitat Restoration and Groundwater Recharge Projects—Design and Construction/Kern County	Storm Water Management Benfits	
MAIN AND ADDITIONAL BENEFITS CATEGOTRIES	Main Benefit (4-5 pts ea)	Additional Benefit (1-3 pts ea)
WATER QUALITY - while contributing to compliance with applicable permit and/or TMDL requirements		
* Increased filtration and/or treatment of runoff		
** Nonpoint source pollution control		1
** Reestablishment of natural water drainage and treatment		1
WATER SUPPLY - through groundwater management and/or runoff capture and use		
* Water supply reliability		
** Water conservation		
* Conjunctive use		
** Water conservation		1
FLOOD MANAGEMENT		
* Decreased flood risk by reducing runoff rate and/or volume	4	
** Reduced sanitary sewer overflows		
ENVIRONMENTAL		
* Environmental and habitat protection and improvement, including: (a) wetland enhancement/creation; (b) riparian enhancement; (c) instream flow improvement	5	
** Reduced energy use, greenhouse gas emmisions, or provides carbon sink		
** Reestablishment of the natural hydrograph		
* Increased urban green space		
** Water temperature improvements		
COMMUNITY		
* Employment opportunities provided		
** Community involvement		1
* Public education		
** Enhance and/or create recreational and public use areas		
TOTAL MAIN BENEFITS (8 pts minimum)	**9**	
TOTAL ADDITIONAL BENEFITS		**4**
TOTAL MAIN + ADDITIONAL BENEFITS	**13**	

0 = criteria does not apply
1 = Criteria may apply/need more information
2 = Additional Benefit Criteria partially applies
3 = Additional Benefit Criteria fully applies
4 = Main Benefit Criteria partially applies
5 = Main Benefit Criteria fully applies

PROJECT READINESS CHECKLIST	YES	NO
Is the Project ready to implement (Yes=1), (No=0)?	0.5	
Is the Project cost well defined (1) or just an estimate (0)?		0
Is the land currently owned by a public agency (1) or does it need to be acquired (0)?		0
Is the environmental permitting process complete (1) or not yet started (0)?		0
Does the agency have the funds available for the 50% local funding match (Yes=1), (No=0)?		0
PROJECT READINESS SCORE	**0.5**	

Project Name / Sponsor: 106_Cuddy Creek Restoration Project / Kern County	Storm Water Management Benfits	
MAIN AND ADDITIONAL BENEFITS CATEGOTRIES	Main Benefit (4-5 pts ea)	Additional Benefit (1-3 pts ea)
WATER QUALITY - while contributing to compliance with applicable permit and/or TMDL requirements		
* Increased filtration and/or treatment of runoff		
** Nonpoint source pollution control		1
** Reestablishment of natural water drainage and treatment		
WATER SUPPLY - through groundwater management and/or runoff capture and use		
* Water supply reliability	4	
** Water conservation		
* Conjunctive use		
** Water conservation		
FLOOD MANAGEMENT		
* Decreased flood risk by reducing runoff rate and/or volume		
** Reduced sanitary sewer overflows		
ENVIRONMENTAL		
* Environmental and habitat protection and improvement, including: (a) wetland enhancement/creation; (b) riparian enhancement; (c) instream flow improvement	4	
** Reduced energy use, greenhouse gas emmisions, or provides carbon sink		
** Reestablishment of the natural hydrograph		
* Increased urban green space		
** Water temperature improvements		
COMMUNITY		
* Employment opportunities provided		
** Community involvement		1
* Public education		
** Enhance and/or create recreational and public use areas		1
TOTAL MAIN BENEFITS (8 pts minimum)	**8**	
TOTAL ADDITIONAL BENEFITS		**3**
TOTAL MAIN + ADDITIONAL BENEFITS	**11**	

0 = criteria does not apply
1 = Criteria may apply/need more information
2 = Additional Benefit Criteria partially applies
3 = Additional Benefit Criteria fully applies
4 = Main Benefit Criteria partially applies
5 = Main Benefit Criteria fully applies

PROJECT READINESS CHECKLIST	YES	NO
Is the Project ready to implement (Yes=1), (No=0)?	0.5	
Is the Project cost well defined (1) or just an estimate (0)?		0
Is the land currently owned by a public agency (1) or does it need to be acquired (0)?		0
Is the environmental permitting process complete (1) or not yet started (0)?	1	
Does the agency have the funds available for the 50% local funding match (Yes=1), (No=0)?		0
PROJECT READINESS SCORE	**1.5**	

Project Name / Sponsor: 107_Sandy Creek Bank and Erosion Protection Project / Kern County	Storm Water Management Benfits	
MAIN AND ADDITIONAL BENEFITS CATEGOTRIES	Main Benefit (4-5 pts ea)	Additional Benefit (1-3 pts ea)
WATER QUALITY - while contributing to compliance with applicable permit and/or TMDL requirements		
* Increased filtration and/or treatment of runoff	4	
** Nonpoint source pollution control		
** Reestablishment of natural water drainage and treatment		
WATER SUPPLY - through groundwater management and/or runoff capture and use		
* Water supply reliability		
** Water conservation		2
* Conjunctive use		
** Water conservation		
FLOOD MANAGEMENT		
* Decreased flood risk by reducing runoff rate and/or volume	5	
** Reduced sanitary sewer overflows		
ENVIRONMENTAL		
* Environmental and habitat protection and improvement, including: (a) wetland enhancement/creation; (b) riparian enhancement; (c) instream flow improvement		
** Reduced energy use, greenhouse gas emmisions, or provides carbon sink		
** Reestablishment of the natural hydrograph		
* Increased urban green space		
** Water temperature improvements		
COMMUNITY		
* Employment opportunities provided		
** Community involvement		1
* Public education		
** Enhance and/or create recreational and public use areas		
TOTAL MAIN BENEFITS (8 pts minimum)	9	
TOTAL ADDITIONAL BENEFITS		3
TOTAL MAIN + ADDITIONAL BENEFITS	12	

0 = criteria does not apply
1 = Criteria may apply/need more information
2 = Additional Benefit Criteria partially applies
3 = Additional Benefit Criteria fully applies
4 = Main Benefit Criteria partially applies
5 = Main Benefit Criteria fully applies

PROJECT READINESS CHECKLIST	YES	NO
Is the Project ready to implement (Yes=1), (No=0)?		0
Is the Project cost well defined (1) or just an estimate (0)?		0
Is the land currently owned by a public agency (1) or does it need to be acquired (0)?		0
Is the environmental permitting process complete (1) or not yet started (0)?		0
Does the agency have the funds available for the 50% local funding match (Yes=1), (No=0)?		0
PROJECT READINESS SCORE	0	

Project Name/Sponsor: 108_The Palms Storm Water Recharge and Recovery Project/Buena Vista WSD	Storm Water Management Benfits	
MAIN AND ADDITIONAL BENEFITS CATEGOTRIES	**Main Benefit (4-5 pts ea)**	**Additional Benefit (1-3 pts ea)**
WATER QUALITY - while contributing to compliance with applicable permit and/or TMDL requirements		
* Increased filtration and/or treatment of runoff	4	
** Nonpoint source pollution control		
** Reestablishment of natural water drainage and treatment		
WATER SUPPLY - through groundwater management and/or runoff capture and use		
* Water supply reliability	5	
** Water conservation		
* Conjunctive use		
** Water conservation		
FLOOD MANAGEMENT		
* Decreased flood risk by reducing runoff rate and/or volume	5	
** Reduced sanitary sewer overflows		
ENVIRONMENTAL		
* Environmental and habitat protection and improvement, including: (a) wetland enhancemtn/creation; (b) riparian enhancement; (c) instream flow improvement		
** Reduced energy use, greenhouse gas emmisions, or provides carbon sink		2
** Reestablishment of the natural hydrograph		2
* Increased urban green space		
** Water temperature improvements		
COMMUNITY		
* Employment opportunities provided		
** Community involvement		
* Public education		
** Enhance and/or create recreational and public use areas		
TOTAL MAIN BENEFITS (8 pts minimum)	**14**	
TOTAL ADDITIONAL BENEFITS		**4**
TOTAL MAIN + ADDITIONAL BENEFITS	**18**	

0 = criteria does not apply
1 = Criteria may apply/need more information
2 = Additional Benefit Criteria partially applies
3 = Additional Benefit Criteria fully applies
4 = Main Benefit Criteria partially applies
5 = Main Benefit Criteria fully applies

PROJECT READINESS CHECKLIST	YES	NO
Is the Project ready to implement (Yes=1), (No=0)?	0.5	0
Is the Project cost well defined (1) or just an estimate (0)?		0
Is the land currently owned by a public agency (1) or does it need to be acquired (0)?	1	
Is the environmental permitting process complete (1) or not yet started (0)?	0.5	
Does the agency have the funds available for the 50% local funding match (Yes=1), (No=0)?	1	
PROJECT READINESS SCORE	**3**	

Project Name / Sponsor: 109_Stockdale East Groundwater Recharge Project / Rosedale Rio Bravo WSD	Storm Water Management Benfits	
MAIN AND ADDITIONAL BENEFITS CATEGOTRIES	Main Benefit (4-5 pts ea)	Additional Benefit (1-3 pts ea)
WATER QUALITY - while contributing to compliance with applicable permit and/or TMDL requirements		
* Increased filtration and/or treatment of runoff	4	
** Nonpoint source pollution control		1
** Reestablishment of natural water drainage and treatment		
WATER SUPPLY - through groundwater management and/or runoff capture and use		
* Water supply reliability	5	
** Water conservation		
* Conjunctive use		
** Water conservation		
FLOOD MANAGEMENT		
* Decreased flood risk by reducing runoff rate and/or volume	5	
** Reduced sanitary sewer overflows		
ENVIRONMENTAL		
* Environmental and habitat protection and improvement, including: (a) wetland enhancement/creation; (b) riparian enhancement; (c) instream flow improvement	5	
** Reduced energy use, greenhouse gas emmisions, or provides carbon sink		1
** Reestablishment of the natural hydrograph		
* Increased urban green space		
** Water temerature improvements		
COMMUNITY		
* Employment opportunities provided		
** Community involvement		
* Public education		
** Enhance and/or create recreational and public use areas		
TOTAL MAIN BENEFITS (8 pts minimum)	**19**	
TOTAL ADDITIONAL BENEFITS		**2**
TOTAL MAIN + ADDITIONAL BENEFITS	**21**	

0 = criteria does not apply
1 = Criteria may apply/need more information
2 = Additional Benefit Criteria partially applies
3 = Additional Benefit Criteria fully applies
4 = Main Benefit Criteria partially applies
5 = Main Benefit Criteria fully applies

PROJECT READINESS CHECKLIST	YES	NO
Is the Project ready to implement (Yes=1), (No=0)?	0.5	
Is the Project cost well defined (1) or just an estimate (0)?		0
Is the land currently owned by a public agency (1) or does it need to be acquired (0)?	1	0
Is the environmental permitting process complete (1) or not yet started (0)?	0.5	0
Does the agency have the funds available for the 50% local funding match (Yes=1), (No=0)?		0
PROJECT READINESS SCORE	**2**	

Project Name/Sponsor: 110_Western Rosedale In-Lieu Service Area Project / Rosedale-Rio Bravo WSD	Storm Water Management Benfits	
MAIN AND ADDITIONAL BENEFITS CATEGOTRIES	**Main Benefit (4-5 pts ea)**	**Additional Benefit (1-3 pts ea)**
WATER QUALITY - while contributing to compliance with applicable permit and/or TMDL requirements		
* Increased filtration and/or treatment of runoff	4	
** Nonpoint source pollution control		1
** Reestablishment of natural water drainage and treatment		
WATER SUPPLY - through groundwater management and/or runoff capture and use		
* Water supply reliability		
** Water conservation		
* Conjunctive use	5	
** Water conservation		
FLOOD MANAGEMENT		
* Decreased flood risk by reducing runoff rate and/or volume	5	
** Reduced sanitary sewer overflows		
ENVIRONMENTAL		
* Environmental and habitat protection and improvement, including: (a) wetland enhancement/creation; (b) riparian enhancement; (c) instream flow improvement		
** Reduced energy use, greenhouse gas emmisions, or provides carbon sink		1
** Reestablishment of the natural hydrograph		
* Increased urban green space		
** Water temperature improvements		
COMMUNITY		
* Employment opportunities provided		
** Community involvement		
* Public education		
** Enhance and/or create recreational and public use areas		
TOTAL MAIN BENEFITS (8 pts minimum)	**14**	
TOTAL ADDITIONAL BENEFITS		**2**
TOTAL MAIN + ADDITIONAL BENEFITS	**16**	

0 = criteria does not apply
1 = Criteria may apply/need more information
2 = Additional Benefit Criteria partially applies
3 = Additional Benefit Criteria fully applies
4 = Main Benefit Criteria partially applies
5 = Main Benefit Criteria fully applies

PROJECT READINESS CHECKLIST	YES	NO
Is the Project ready to implement (Yes=1), (No=0)?	0.5	0
Is the Project cost well defined (1) or just an estimate (0)?		0
Is the land currently owned by a public agency (1) or does it need to be acquired (0)?	1	
Is the environmental permitting process complete (1) or not yet started (0)?	1	
Does the agency have the funds available for the 50% local funding match (Yes=1), (No=0)?		0
PROJECT READINESS SCORE	**2.5**	

Project Name/Sponsor: 111_James Groundwater Storage & Recovery Project/Rosedale-Rio Bravo WSD	Storm Water Management Benfits	
MAIN AND ADDITIONAL BENEFITS CATEGOTRIES	Main Benefit (4-5 pts ea)	Additional Benefit (1-3 pts ea)
WATER QUALITY - while contributing to compliance with applicable permit and/or TMDL requirements		
* Increased filtration and/or treatment of runoff		
** Nonpoint source pollution control		
** Reestablishment of natural water drainage and treatment		
WATER SUPPLY - through groundwater management and/or runoff capture and use		
* Water supply reliability	5	
** Water conservation		
* Conjunctive use		
** Water conservation		
FLOOD MANAGEMENT		
* Decreased flood risk by reducing runoff rate and/or volume	5	
** Reduced sanitary sewer overflows		
ENVIRONMENTAL		
* Environmental and habitat protection and improvement, including: (a) wetland enhancement/creation; (b) riparian enhancement; (c) instream flow improvement	5	
** Reduced energy use, greenhouse gas emmisions, or provides carbon sink		
** Reestablishment of the natural hydrograph		
* Increased urban green space		
** Water temperature improvements		
COMMUNITY		
* Employment opportunities provided		
** Community involvement		
* Public education		
** Enhance and/or create recreational and public use areas		2
TOTAL MAIN BENEFITS (8 pts minimum)	**15**	
TOTAL ADDITIONAL BENEFITS		**2**
TOTAL MAIN + ADDITIONAL BENEFITS	**17**	

0 = criteria does not apply
1 = Criteria may apply/need more information
2 = Additional Benefit Criteria partially applies
3 = Additional Benefit Criteria fully applies
4 = Main Benefit Criteria partially applies
5 = Main Benefit Criteria fully applies

PROJECT READINESS CHECKLIST	YES	NO
Is the Project ready to implement (Yes=1), (No=0)?	0.5	0
Is the Project cost well defined (1) or just an estimate (0)?		0
Is the land currently owned by a public agency (1) or does it need to be acquired (0)?	1	
Is the environmental permitting process complete (1) or not yet started (0)?	1	0
Does the agency have the funds available for the 50% local funding match (Yes=1), (No=0)?		0
PROJECT READINESS SCORE	**2.5**	

Project Name/Sponsor: 112_Shafter-Wasco Irrigation District Recharge Project/Shafter-Wasco ID	Storm Water Management Benfits	
MAIN AND ADDITIONAL BENEFITS CATEGOTRIES	Main Benefit (4-5 pts ea)	Additional Benefit (1-3 pts ea)
WATER QUALITY - while contributing to compliance with applicable permit and/or TMDL requirements		
* Increased filtration and/or treatment of runoff		
** Nonpoint source pollution control		1
** Reestablishment of natural water drainage and treatment		
WATER SUPPLY - through groundwater management and/or runoff capture and use		
* Water supply reliability		
** Water conservation		
* Conjunctive use	5	
** Water conservation		
FLOOD MANAGEMENT		
* Decreased flood risk by reducing runoff rate and/or volume	5	
** Reduced sanitary sewer overflows		
ENVIRONMENTAL		
* Environmental and habitat protection and improvement, including: (a) wetland enhancement/creation; (b) riparian enhancement; (c) instream flow improvement	5	
** Reduced energy use, greenhouse gas emmisions, or provides carbon sink		
** Reestablishment of the natural hydrograph		
* Increased urban green space		
** Water temperature improvements		
COMMUNITY		
* Employment opportunities provided		
** Community involvement		1
* Public education		
** Enhance and/or create recreational and public use areas		
TOTAL MAIN BENEFITS (8 pts minimum)	**15**	
TOTAL ADDITIONAL BENEFITS		**2**
TOTAL MAIN + ADDITIONAL BENEFITS	**17**	

0 = criteria does not apply
1 = Criteria may apply/need more information
2 = Additional Benefit Criteria partially applies
3 = Additional Benefit Criteria fully applies
4 = Main Benefit Criteria partially applies
5 = Main Benefit Criteria fully applies

PROJECT READINESS CHECKLIST	YES	NO
Is the Project ready to implement (Yes=1), (No=0)?	0.5	
Is the Project cost well defined (1) or just an estimate (0)?		0
Is the land currently owned by a public agency (1) or does it need to be acquired (0)?		0
Is the environmental permitting process complete (1) or not yet started (0)?	1	
Does the agency have the funds available for the 50% local funding match (Yes=1), (No=0)?	1	0
PROJECT READINESS SCORE	**2.5**	

Appendix D: Recharge to Groundwater

Groundwater Quality Assessment Report, Kern River Watershed Coalition Authority

Kern River Watershed Coalition Authority

Groundwater Quality Assessment Report

Kern County, California
February 2015

Prepared for:
Kern River Watershed Coalition Authority
Kern County, California

Prepared by:
Provost & Pritchard Consulting Group
Bakersfield, California

Land IQ
Sacramento, California

Todd Groundwater
Alameda, California

8 Recharge to Groundwater

Groundwater recharge is the sum of the hydrogeologic processes through which water percolates from the ground surface into a groundwater aquifer. These processes require two basic components in order for groundwater recharge to occur, available water and permeable materials at the ground surface. Recharge cannot occur in a location without both of these components. The capacity for recharge is also largely a function of these two components; groundwater recharge is highest in areas with very permeable material and abundant surface water.

Source water quality is another recharge consideration. In general, highly effective recharge areas are a net benefit to water quality because they tend to dilute the concentrations of groundwater constituents. However, areas with poor quality surface water and high permeability could negatively impact groundwater quality.

8.1 Sources of Recharge

Groundwater recharge in the KRWCA area comes from a variety of sources, and each source has different water quality. It is likely that these recharge sources, including natural and managed recharge, generally have lower concentrations of nitrate and salinity than the receiving groundwater aquifer, while other sources (like some agricultural return flows and wastewater discharges) may have higher concentrations of nitrates and salinity. The main sources of recharge and their expected effect on the groundwater quality are discussed below.

8.1.1 Natural Recharge

For purposes of this report, natural recharge is percolation from rainfall on areas with native vegetation. Percolation from rainfall in cropped and urban areas is discussed in other categories below. In addition to precipitation and evapotranspiration (**ET**), natural recharge is also a function of how much water is stored in near-surface soils temporarily and later returned to the atmosphere via transpiration or through bare soil evaporation.

8.1.2 Agricultural Return Flow

Agricultural return flow is the water that runs off crop land and/or percolates past the root zone when more irrigation water is applied than the crop needs, or that the root zone can absorb or hold. Agricultural return flow results from applied irrigation water and precipitation in excess of the soil root zone water holding capacity and ET requirements of the crop. Return flows consist of the excess water that either percolates directly beneath the field or runs off and percolates in nearby areas When percolated water passes through the vadose zone and reaches the water table, it is considered groundwater. Because some groundwater can be "perched" on shallow clay layers, and variations in aquifer stratigraphy can confine and/or change flow directions, it is important to consider the particular groundwater zone that return flows encounter. The hydrogeology of the study area is discussed in **Section 5**. The water requirements of individual crops and the associated irrigation methods and efficiencies, result in a range of potential recharge rates from agricultural return flows.

8.1.3 Municipal Return Flow

Municipal return flow results from precipitation and water applied to the ground surface in municipal settings that exceeds evaporation, consumptive use, and root zone water holding capacity. It may also result from percolation from stormwater detention basins or water that flows through pavements. Demands are typically associated with urban and suburban irrigation or recreational uses. The major municipal purveyors in the KRWCA area include the City of Bakersfield, Cal Water, and other smaller purveyors, including but not limited to, the City of Shafter, City of Wasco, City of Delano, City of McFarland, Vaughn Water Company, Greenfield County Water District, West Kern Water District, Buttonwillow County Water District, Oildale Mutual Water Company, North of the River Municipal Water District, Stockdale Mutual Water Company, East Niles Community Services District, City of Arvin, and Lamont Community Services District.

8.1.4 Wastewater

Treated wastewater from wastewater treatment plants (**WWTPs**) within the KRWCA area is generally used for irrigation. When irrigation demands are low in the winter, effluent may be discharged to onsite ponds for storage, and/or evaporation and percolation, depending on permit conditions. These WWTPs are regulated by Central Valley Regional Water Quality Control Board (**CVRWQCB**) individual waste discharge requirements (**WDRs**) to control potential impacts to groundwater. Several WWTPs serve the metro Bakersfield area. Some of the WWTPs within the KRWCA area include the City of Bakersfield WWTP No. 2, City of Bakersfield WWTP No. 3, North of the River Sanitary District No. 1 WWTP, Kern Sanitation Authority WWTP, Lamont PUD, and the Shafter-Minter Field WWTP. Other cities and communities in KRWCA also have WWTPs with WDRs.

Some developed lands in the KRWCA utilize septic tanks with leach lines (septic systems). Recharge occurs from the septic systems.

Wastewater from food processors, confined animal operations, and other industries is also often used for irrigation, and contributes to recharge. In some cases, food processing wastewater flows to wastewater treatment plants. The CVRWQCB regulates wastewater discharges from these industries to control groundwater quality impacts.

8.1.5 Managed Recharge and Canal Seepage

Managed recharge and banking is performed in the area by multiple water agencies through various mechanisms, including canal seepage as water is conveyed, recharge ponds, and seepage from reservoirs. In-lieu recharge activities by displacing groundwater use with surface water is not evaluated in this section. For the purposes of this evaluation, no distinction is made between managed recharge conducted by water agencies and others to increase groundwater in storage for general resources improvement in the study area, and more formal banking projects where water is recharged for storage on behalf of an outside party for later recovery and use outside of the project area. Managed recharge associated with both of these practices is often accomplished in recharge or percolation ponds. As many of the canals and the Kern River used to transport water in the area are unlined, seepage from these canals is also used as a component of managed recharge. Seepage from lined canals, smaller water conveyance facilities (ditches and pipelines) also occurs and contributes to recharge. Local streams are also sometimes used for recharge. The water used in managed recharge comes either from

the Kern River, local streams, or from imported surface water conveyed through the State Water Project and Central Valley Project. These water supplies are generally of high quality, and managed recharge is considered to have an overall positive benefit to groundwater quality in the KRWCA area.

8.2 Significant Recharge Areas and Rates

8.2.1 Natural Recharge

Natural recharge is a function of precipitation, ET, and soil moisture holding capacity, as noted above. Precipitation and ET records for the primary KRWCA area are available from the California Irrigation Management Information System (**CIMIS**) Station. Average annual precipitation from the Shafter Station (No. 5) is 6.3 inches, which is relatively low compared to an annual potential evapotranspiration (**ET**) of 57 inches. As a consequence, deep percolation of precipitation past the root zone occurs infrequently or not at all. A daily soil moisture balance was completed for the Kern Fan (Todd, 2012) using the Thornthwaite and Mather method (1955 and 1957). This soil moisture balance showed that precipitation is generally consumed by evapotranspiration within a few days of a rainfall event, and there is no excess available water for recharge to groundwater.

In the secondary area where precipitation volumes are higher and evapotranspiration is generally lower, natural recharge is likely the primary source of recharge to groundwater. However, precipitation and runoff varies greatly, estimates of ET from vegetation are more difficult (due to the wide variety of vegetation and little research to support estimates), and there is little unconsolidated material in this area, as indicated in **Section 5**. The variations in precipitation and runoff, difficulty of estimating ET, limited extent of unconsolidated material, and predominance of fractured bedrock groundwater makes estimation of natural recharge in these areas infeasible.

8.2.2 Agricultural Return Flow

Return flows vary geographically with changes in crop type, soil type, and irrigation practices. A partial evaluation of these components for major crops was completed for the KRWCA primary area by New Fields Agricultural and Environmental Resources (Kimmelshue and Tillman 2013). These estimates considered all of the factors related to applied water for the major crops; including irrigation efficiencies in varying soil types, and the water required for cultural practices such as leaching of accumulated salts from the soil. Applied water estimates were prepared by Kimmelshue and Tillman (2013) for select crops by soil region and crop and irrigation system type. These estimates indicated a range of applied water rates from 2.7 acre-feet per year per acre (**AFY/ac**) for grapes in the foothills and 5.1 AFY/ac for alfalfa in the Kern Fan area. Kimmelshue and Tillman (2013) found that irrigation efficiency ranges from 75 to 95 percent over the KRWCA primary area, and that rates are generally higher in the foothills and southern Kern Fan. Return flow rates vary from 0.16 AFY/ac for grapes in the foothills to 1.23 AFY/ac for corn and wheat in the Kern Fan area.

The Kern County Water Agency (**KCWA**) estimates total agricultural return flow in Water Supply Reports as part of the hydrologic accounting of the Kern County Subbasin (KCWA 2002 through 2011). These estimates indicate that total agricultural return flows to the Kern County Subbasin range between 378,000 acre-feet per year (**AFY**) to 753,000 AFY.

8.2.3 Municipal Return Flow

Municipal return flows, landscape irrigation runoff, deep percolation, stormwater runoff and recharge occur mainly in urban areas and are limited in volume. Based on estimates in the Bakersfield area, 50 to 70 percent of municipal supply is used outdoors in some capacity. In addition storm water runoff from precipitation flows into unlined sumps that allow water to percolate to the groundwater. A reasonable assumption is that 12 percent of the outdoor use recharges the aquifer as return flow. In Bakersfield (the city and Cal Water systems combined), the estimated return flow over the period from 2006 through 2010 was 9,100 AFY over a combined service area of 65,587 acres, or 0.14 AFY/ac. While detailed data was not available from other water systems, the remaining communities in the KRWCA area are expected to have a similar rate of return flow.

8.2.4 Wastewater

Available information regarding the volumes discharged to WWTP disposal ponds is limited. However, the City of Bakersfield indicates that WWTP No. 3 and North of the River Service District WWTP No. 1 discharge 3,000 AFY to 7,200 AFY per plant into effluent ponds. Additional wastewater is used as an irrigation water source in other parts of the County. Treated wastewater is regulated by the CVRWQCB under specific wastewater discharge permits. Recharge from septic systems is significant in KRWCA, but is not measured or estimated.

Recharge from wastewater generated by food processing, confined animal facilities, and other industries may also result in high volumes of water for disposal. Because a high percentage of that wastewater is used for irrigation of crops, it is important not to double-count it in water balances.

8.2.5 Managed Recharge and Seepage

The rate of recharge for managed recharge projects and the recharge associated with seepage vary annually depending on hydrology. In normal and wet years, recharge and banking occur in large amounts, and more water is transported and recharged through canal, river, and stream flow. In dry years, banking generally does not occur, and recharge in canals, river, and streams are limited as well due to reduced duration and amounts of flows being conveyed. Because of the variability of rate and location, managed recharge and seepage is examined in detail in **Section 8.3**.

8.3 Groundwater Recharge Projects

There are a number of groundwater recharge projects in the KRWCA area. They range from agencies with one or two ponds used to recharge surplus water to large operations that bank and recover water on behalf of outside parties. The recharge facilities associated with these projects are shown on **Figure 8-1**. Agencies and major projects actively recharging groundwater within the KRWCA primary and secondary areas include:

- Arvin-Edison Water Storage District;
- Buena Vista Water District;
- The City of Bakersfield;
- Kern County Water Agency – Pioneer, Berrenda Mesa, and Kern River Banking;

- Kern Delta Water District;
- Kern Water Bank Authority;
- North Kern Water Storage District;
- Rosedale Rio Bravo Water Storage District;
- Semitropic Water Storage District;
- West Kern Water District;
- Golden Hills Community Services District; and,
- Tehachapi Cummings County Water District.

Estimates of recharged water by agency and major project in the primary Central Valley portion of KRWCA for the period of 2006 through 2010 are shown in **Table 8-1**. These are the most recent available managed recharge data. The largest recharge project is the Kern Water Bank (**KWB**), which recharged an average of 66,618 AFY during this time period. Even this large project has a large range of annual recharge, with a maximum recharge volume of 283,233 AFY in 2006 and no recharge occurring in the dry years of 2008 and 2009. The average rate of recharge for managed recharge was 37 AFY/ac, but the actual rate of recharge is variable over time and project, ranging from 0 AFY/ac in most projects in 2008 to 180.1 AFY/ac in 2006 for the Kern Delta Water District recharge ponds.

Canal, stream, and river seepage results in significant recharge to the aquifer, and this source of recharge is generally considered to be a managed recharge source, in addition to the projects listed above. The major unlined waterways in the KRWCA area are shown on **Figure 8-1**. The rates of loss to recharge from these waterways are dependent on the length of the canal and the total loss observed (**Table 8-2**). The highest volume of loss occurs along the Kern River, but the highest rate of loss occurs along the City of Bakersfield Carrier Canal, as shown in **Table 8-2**.

The managed recharge and waterway loss data presented here is from reporting by individual agencies and from the Kern River Hydrographic Annual Reports prepared annually by the City of Bakersfield in cooperation with the Kern River Watermaster (2006 through 2010). In-lieu recharge is a management practice wherein water from an alternative surface water source, that is normally unavailable, is provided to groundwater users to offset pumping. This practice does not actually result in increased recharge to groundwater or offset 100 percent of groundwater use, so it is not considered an actual managed recharge source and is not included in **Table 8-2.**

The managed recharge projects contribute relatively high quality water to groundwater. The exact benefit and extent of this high quality recharge is variable and cannot easily be quantified, but should be considered as an element that could improve water quality when delineating areas of groundwater vulnerability.

8.4 Managed Wetlands

The Kern National Wildlife Refuge (**KNWR**) is an area of restored and preserved wetland habitat that existed historically in the area near the Kern River prior to intense farming. The majority of the water available to the KNWR for wildlife habitat is available in the fall and winter. These habitat areas, including wetlands, are managed by the United States Fish and Wildlife Service (**USFWS**) who uses Central Valley Project refuge supplies for irrigation and ponding. The habitat areas are divided into the following categories:

- Seasonal wetlands: timothy;
- Seasonal wetlands: smartweed;
- Seasonal wetlands: watergrass;
- Permanent wetlands;
- Semi-permanent wetlands;
- Riparian;
- Irrigated pasture;
- Upland; and,
- Seasonal wetlands (no summer water).

The most predominant types of managed wetlands are timothy seasonal wetlands (2,096 acres) and seasonal wetlands with no summer water (3,795 acres) (Todd Engineers, 2012). In 2009, timothy seasonal wetlands had a total delivered water rate of 6,498 AFY and an estimated seepage rate of 1.20 AFY/ac. The seasonal wetlands with no summer water have an average delivered water total of 11,385 AFY and also have a seepage rate of 1.20 AFY/ac. On average, 19,331 AFY of water is delivered to the managed wetlands.

The duration of the flooding depends on type of water supply, with the goal of 5,900 acres being flooded infrequently (1 year in 10), 4,830 acres flooded on an intermediate basis (2 years in 10), and 2,110 acres flooded frequently (5 years in 10).

The geology of these managed wetlands is comprised of an upper layer of clay overlying a lower layer of sandy loam, clay loam, and fine sandy loam. These areas often have a seasonally high water table and have low soil permeability.

The managed wetlands may also receive return flows from agricultural fields in the early water delivery season which may contain high levels of nutrients and salt loading that often cause algal growth in the wetlands. The soils in these areas are also strongly alkaline and in some areas contain high boron. These water quality issues require water quality monitoring and frequent flushing of the wetlands for maintenance, as controlled by USFWS.

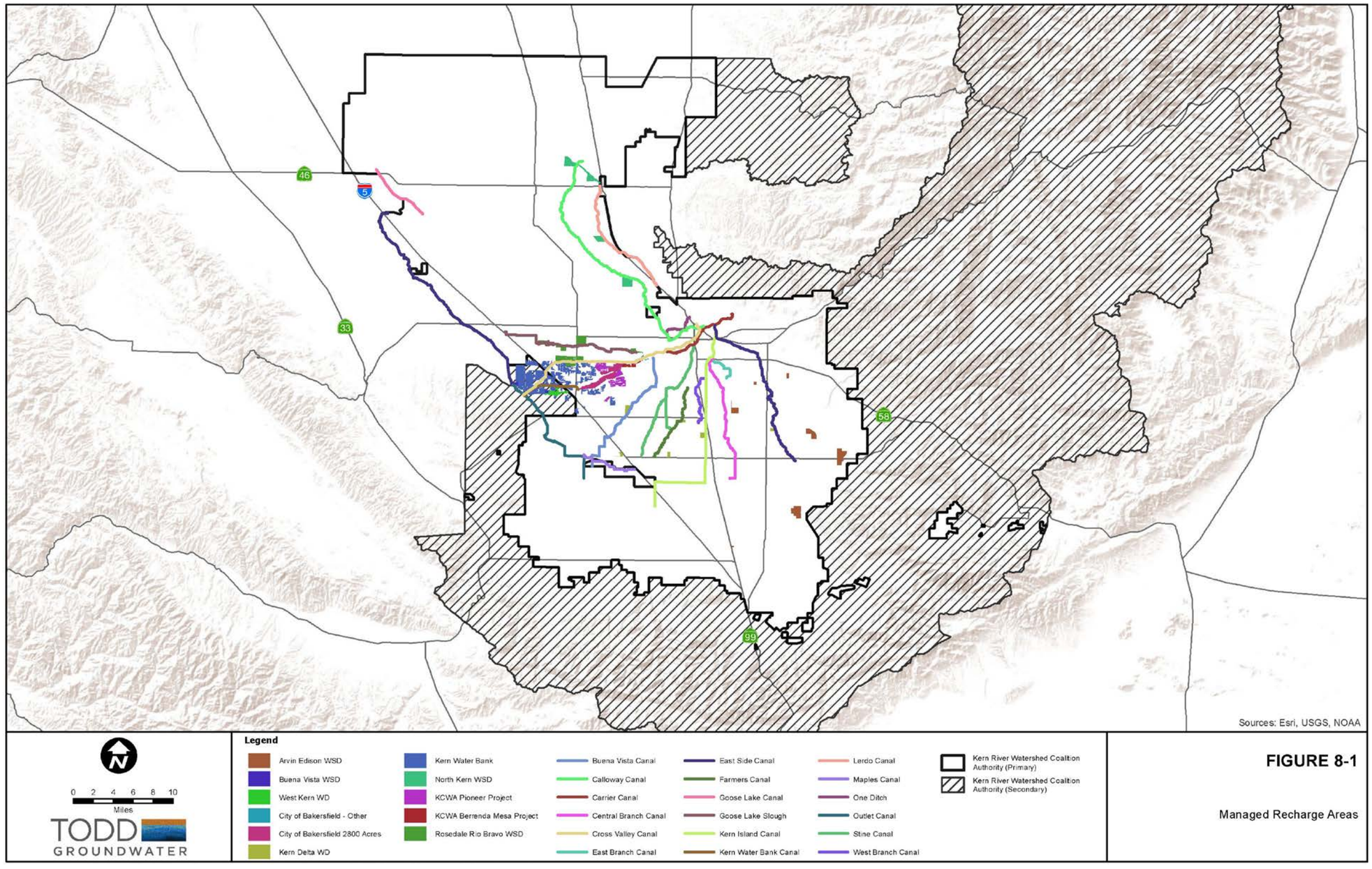

Figure 8-1. Managed Recharge Areas

Table 8-1. Managed Groundwater Recharge in KRWCA

Managed Groundwater Recharge in KRWCA									
Agency	**Project**	**Area (acres)**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average Annual Recharge**	**Average Recharge (AFY/acre)**
Arvin-Edison Water Storage District	Recharge Ponds	2,068	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Buena Vista Water Storage District	Elk Pen	186	28,519	0	0	3,000	25,545	11,413	61
City of Bakersfield	2800 Acres	1,749	81,521	4,495	0	0	7,039	18,611	11
	Other	46	5,174	2,463	1,613	2,097	3,606	2,991	65
Kern County Water Agency	Pioneer	1,259	61,228	4,813	0	0	0	13,208	10
	Berrenda Mesa	210	26,229	2,098	0	0	0	5,665	27
	Kern River Channel	N/A	825	0	0	0	0	165	N/A
Kern Delta Water District	Recharge Ponds	226	40,775	0	0	0	82,363	24,628	109
Kern Water Bank	Kern Water Bank	7,530	283,233	16,728	0	0	33,131	66,618	9
North Kern Water Storage District	Poso Creek and Recharge Ponds	1,892	164,940	30,151	2,487	14,156	27,615	47,870	25
Rosedale Rio-Bravo Water Storage District	Recharge Ponds	2,697	147,151	3,200	0	2,354	141,521	58,845	22
Semitropic Water Storage District	Southern Ponds	N/A	1,019	211	0	0	625	371	N/A
West Kern Water District	Recharge Ponds	529	23,954	3,923	3,318	13,244	26,061	14,100	27

All values in acre-feet per year (AFY), unless otherwise noted.

Table 8-2. Unlined Canal and River Losses to Recharge in KRWCA

Managed Groundwater Recharge in KRWCA									
Agency	**Canal Name**	**Total Canal Length (ft)**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average**	**Average Recharge per Mile (AFY/mi)**
Buena Vista Water Storage District	Maples	33,440	1,335	0	0	0	0	267	42
	Main Bypass Canal	223,789	0	191	187	2,286	1,159	765	18
	Outlet Canal	35,626	15,366	8,069	10,579	3,881	12,608	10,101	1,497
	Minor Canals	46,735	12,934	7,710	8,085	11,564	13,868	10,832	1,224
City of Bakersfield	Cross Valley Canal	80,704	0	0	0	383	205	118	8
	KRCI Ditch	19,302	1,685	896	922	890	640	1,007	275
	Carrier Canal	3,088	7,013	5,071	5,510	7,917	6,718	6,446	11,022
Kern Delta Water District	Eastside	48,022	1,580	1,903	3,712	3,345	6,719	3,452	380
	Farmers	125,379	3,912	680	2,565	2,068	6,887	3,222	136
	Buena Vista	125,379	6,921	2,594	4,490	7,032	15,746	7,357	310
	Central Branch	103,307	12,211	12,437	11,314	10,379	16,568	12,582	643
	Kern Island Canal	19,270	17,197	17,515	15,934	14,616	23,332	17,719	4,855
	Stine Canal	72,201	24,276	4,462	11,770	18,640	35,742	18,978	1,388
North Kern Water Storage District	Calloway Canal	138,420	22,592	642	2,166	2,163	23,739	10,260	391
	Lerdo Canal	71,442	1,528	1,039	943	964	1,154	1,126	83
Kern River		124,834	90,728	11,658	10,863	12,244	95,296	44,158	1,868

All values in acre-feet per year (AFY), unless otherwise noted.

Appendix E: List of Individuals and Entities that Provided Comments on Draft SWRP

List of Individuals and Entities that Provided Comments on Draft SWRP

The Draft Kern SWRP was distributed by email and posted on to the Kern IRWMP website (www.kernirwmp.com) on October 21, 2016 for a three-week public review period. Public comments were due by November 14, 2016. During that time, a public meeting was held on November 9, 2016 with a group discussion regarding additions and revisions to the draft. In addition, comments were received separately from the following entities and individuals:

- Poso Creek IRWMP Regional Water Management Group – Signed by Ram Venkatesan, Vice Chairman, on behalf of the Poso Creek IRWMP RWMG, following a discussion at their public meeting held on November 1, 2016
- City of Bakersfield, Water Resources Department – Signed by Colin L. Pearce, Special Water Counsel with Duane Morris LLP on behalf of the City), dated November 14, 2016
- GEI Consultants – Sam Schaefer, Facilitator with Poso Creek IRWMP, dated November 2, 2016

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