

## **APPENDICES**

**APPENDIX A**  
**NOTICE OF PREPARATION, INITIAL STUDY, AND COMMENTS**

**NOTICE OF PREPARATION**

To: Responsible, Federal and Trustee Agencies

From: Kern Water Bank Authority  
1620 Mill Rock Way, Suite 500  
Bakersfield, California 93309

\_\_\_\_\_  
(Agency)

\_\_\_\_\_  
(Address)

**Subject: Notice of Preparation of an Environmental Impact Report for the Kern Water Bank Conservation and Storage Project**

The Kern Water Bank Authority (KWBA) is the lead agency preparing an environmental impact report (EIR) for the Kern Water Bank Conservation and Storage Project. The KWBA would like input from interested individuals, public agencies, and/or other parties regarding the scope and content of the EIR. Public agency representatives may wish to comment on the statutory responsibilities of their Agency in relation to the proposed project. Certain agencies may need to use the EIR prepared by the KWBA when considering permit or other authorizations related to the proposed project.

A project description, including a summary of relevant background information, project location, project objectives, an initial study, and a listing of environmental resources to be evaluated in the EIR are contained in the attached materials.

Because of the time limits mandated by state law, your response must be sent at the earliest possible date and no later than **March 22, 2012** (4:30 PM). A public scoping meeting is scheduled **February 28, 2012**, starting at 6:00 PM at the offices of the KWBA, 1620 Mill Rock Way, Suite 500, Bakersfield, California. This NOP and information on the scoping meeting has also been posted on the KWBA's website ([www.kwb.org](http://www.kwb.org)).

Please send your response to Mr. Jonathan Parker, General Manager, at the address shown above. Please include your name or the name of a contact person in your agency.

**Kern Water Bank Authority**

Date: February 16, 2012

Signature: \_\_\_\_\_



Title: General Manager  
Telephone: (661) 398-4900  
Email: [jparker@kwb.org](mailto:jparker@kwb.org)

Reference: Cal. Code Regs., tit. 14, (*State CEQA Guidelines*) Sections 15082, subd. (a), 15103, 15375.

**A. PROJECT DESCRIPTION**

**1. Introduction**

The KWBA is a Joint Powers Authority (JPA) formed in October 1995 pursuant to California Government Code 6500 *et seq.* The JPA is a public agency that includes as its members several water districts, a water agency, and a mutual water company. The JPA members include: Dudley Ridge Water District, Kern County Water Agency on behalf of its Improvement District 4, Semitropic Water Storage District, Tejon-Castac Water District, Westside Mutual Water Company, and Wheeler Ridge-Maricopa Water Storage District. All of the JPA members except Kern County Water Agency on behalf of its Improvement District 4 are participating in this project. KWBA members participating in the project are hereafter referred to as “KWBA Participating Members.”

The JPA operates the Kern Water Bank on approximately 20,500 acres in Kern County, for the benefit of its members and their constituents including farmers and residents in the City of Bakersfield and Kern and Kings Counties. The primary purpose of the Kern Water Bank is to recharge, store, and recover water to improve water supply for KWBA members. The Kern Water Bank also provides significant environmental benefits, including the enhancement of habitat for threatened and endangered species, waterfowl, and other wildlife.

The Kern Water Bank is one of a number of water banks located in California’s southern San Joaquin Valley that benefits water users by augmenting dry-year water supplies. Although the region primarily receives water from the California Department of Water Resources’ State Water Project (SWP), the federal Central Valley Project (CVP) through the Friant-Kern Canal, and the Kern River, greater certainty is important to address the residential, commercial, and agricultural needs in the area—especially in dry years.

Precipitation in California varies significantly from year to year. In dry years in particular, water supplies are insufficient to meet all of California's needs. However, in wet years, there is periodically excess water available. The Kern Water Bank stores water in wet years by recharging an underground aquifer through shallow ponds. The water is later recovered by wells when needed.

The Kern River is one of the primary river courses in the southern portion of the Central Valley of California. The Kern River watershed extends high into the southern Sierra Nevada Mountains and drains roughly 2,400 square miles above the City of Bakersfield. The Kern River and its watershed are noted for their range of geographic and topographic conditions. The river and watershed are also noted for their high degree of annual and seasonal climatic and hydrologic variability. This variability has



required river management approaches (including the construction of Lake Isabella reservoir in 1953) that address the potential for severe flooding and drought.

## **2. Project Area**

The general project area for the Kern Water Bank is shown in **Figure 1, Kern Water Bank Location**. The Kern River passes through the Kern Water Bank, generally flowing in an east-northeast to west-southwest direction. The Kern Water Bank is located about 12 miles southwest of the City of Bakersfield in the County of Kern. The Kern Water Bank is situated between Taft Highway (State Route 119) on the south, Rosedale Highway (State Route 58) on the north, Tupman Road and the California Aqueduct on the west, and Heath Road on the east. The Kern Water Bank is east of the California Aqueduct, and is bisected from northwest to southeast by Interstate 5 (I-5).

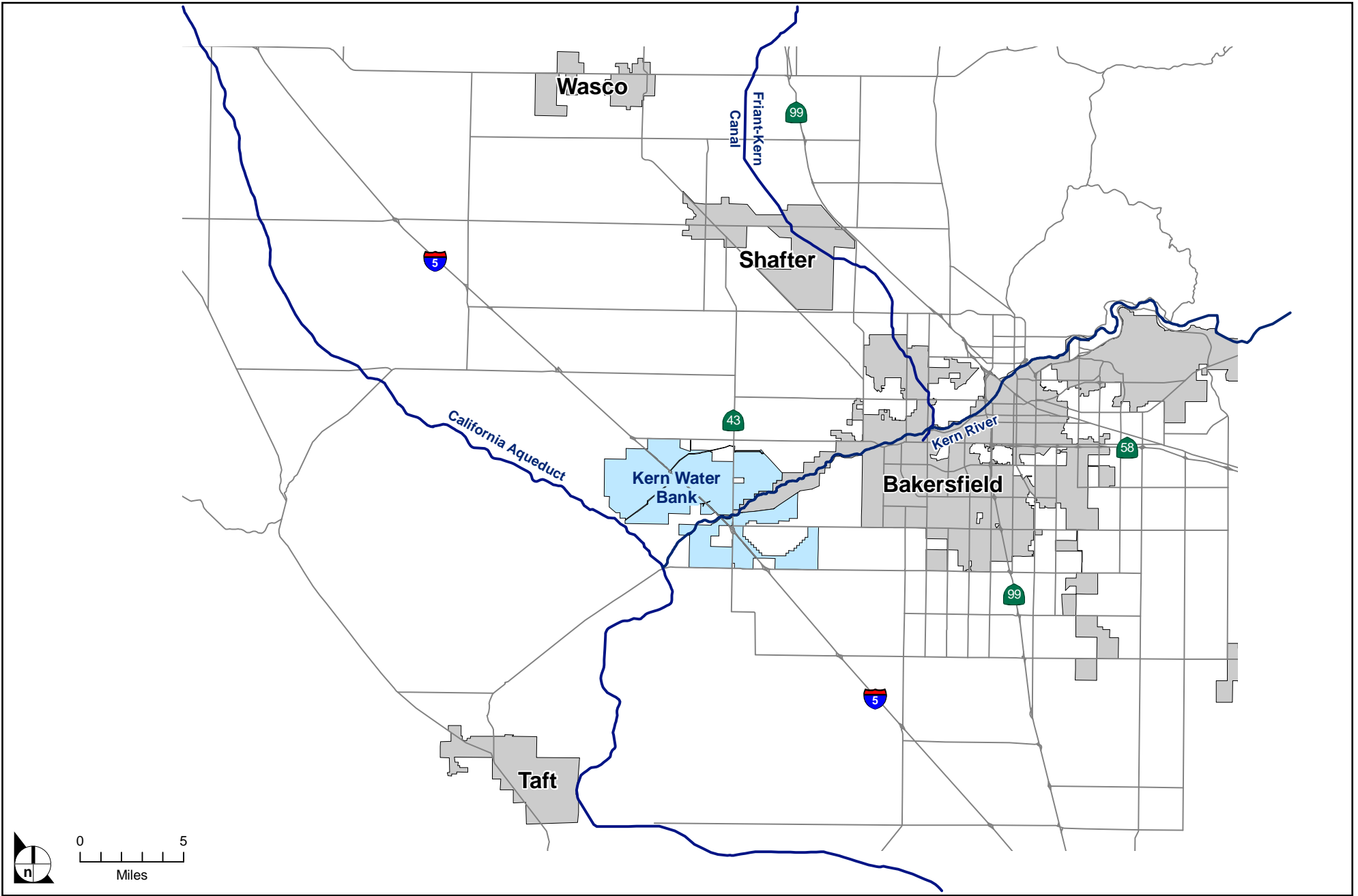
KWBA owns approximately 20,500 acres of land located southwest of Bakersfield in Kern County, on which Kern Water Bank operations occur. The Kern Water Bank is well situated for groundwater banking operations due to its geology and proximity to water supply and delivery systems. The Kern Water Bank is located on the Kern River alluvial fan, an area consisting of alluvial deposits that provide a highly effective mechanism for direct groundwater recharge. The Water Bank receives water from three sources: the Kern River, the California Aqueduct, and the Friant-Kern Canal. Approximately 1 million acre-feet of water is currently stored in the Kern Water Bank.

As shown on **Figure 2, Kern Water Bank Project Facilities**, key features of the general project area include numerous canals for the conveyance of water and recharge basins located both north and south of the Kern River. The Kern Water Bank also includes numerous well facilities that recover groundwater from the aquifer. The Kern Water Bank diverts water to the recharge ponds via several points of diversion, including a primary weir and diversion works on the Kern River and other secondary points of diversion as referenced in the KWBA's application to appropriate.

## **3. Project Objectives**

The Kern Water Bank provides an efficient, reliable, and environmentally sound water source for both local urban water supplies and hundreds of thousands of acres of essential crops, including fruits, vegetables, nuts, fiber, and livestock used in products enjoyed by consumers throughout California, the Nation, and the World.

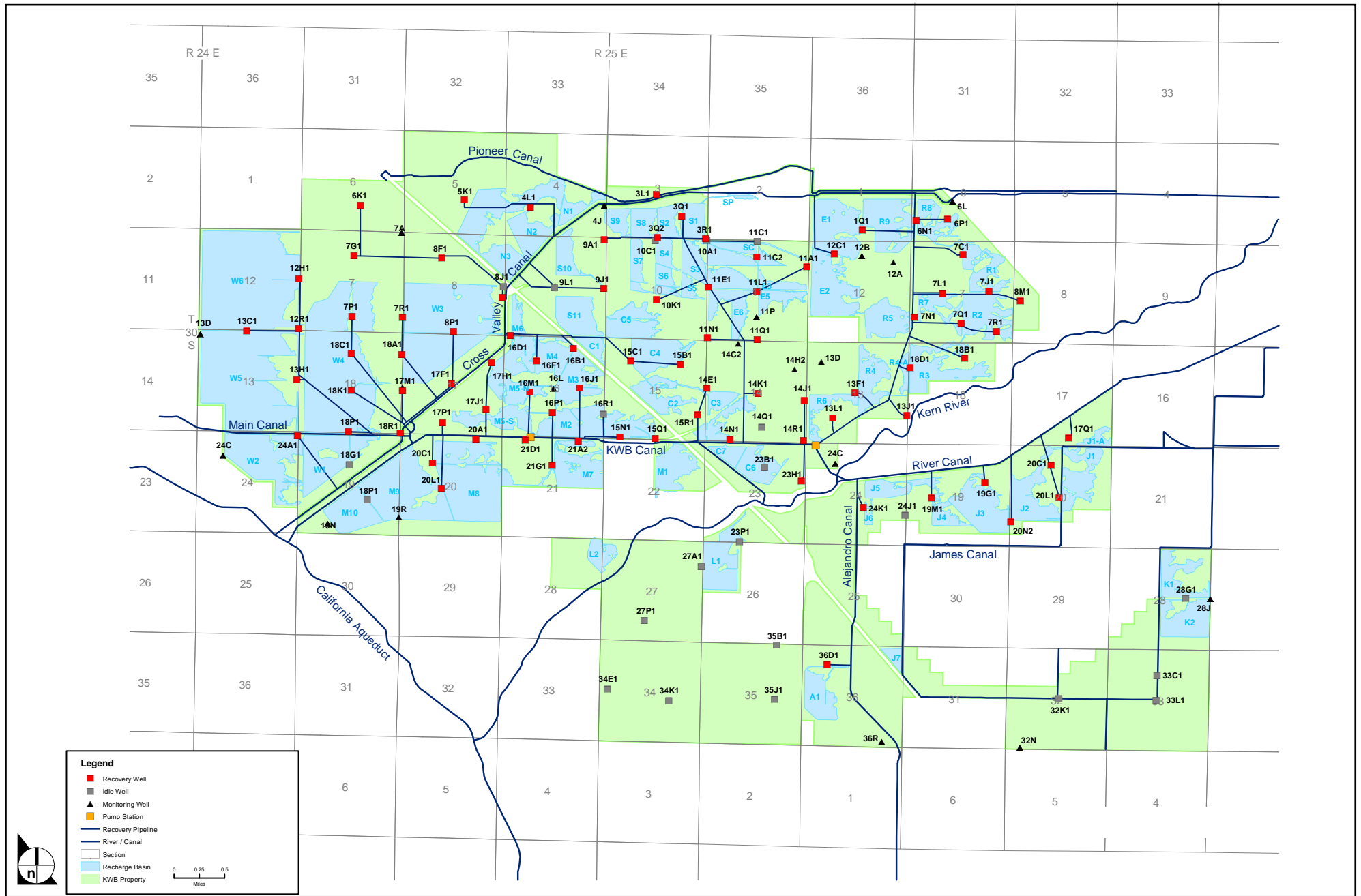
The Kern Water Bank generally stores excess water supplies that are available when rainfall or runoff is plentiful by recharging that water through shallow ponds into an underground aquifer. The stored water is then recovered in times of need by pumping it out with wells.



SOURCE: Kern Water Bank Authority - 2011

FIGURE 1

# Kern Water Bank Location



SOURCE: Kern Water Bank Authority - 2011

FIGURE 2

# Kern Water Bank Project Facilities

The primary objective of the project is to allow additional water to be diverted from the Kern River when available to increase reliability and enhance the dry-year water supply to the KWBA's Participating Members through storage in the Kern Water Bank. The water will be derived from unappropriated Kern River water.

Recharging water from the Kern River will provide multiple benefits to the KWBA Participating Members and the region. Such benefits include increasing groundwater recharge, enhancing riverine and wetland ecology and habitats, improving water quality, and improving the aesthetic quality of the river and Kern Water Bank.

#### **4. Water Rights Issues on the Kern River**

The natural flow of the Kern River has been apportioned among various water users pursuant to a series of court decisions and agreements including, but not limited to, the following: (1) decision of the California Supreme Court in *Lux v. Haggin* (1886) 69 Cal. 255; (2) 1888 Miller-Haggin Agreement; (3) 1900 decree of the Kern County Superior Court in *Farmers Canal Company, et al. v. J.R. Simmons, et al.*, Case No. 1901 (hereinafter "Shaw Decree"); (4) 1930 amendment to the Miller-Haggin Agreement; (5) 1955 amendment to the Miller-Haggin Agreement; (6) 1964 Amendment to the Miller-Haggin Agreement; (7) 1962 Kern River Water Rights and Storage Agreement; and (8) Lake Isabella Recreation Pool Agreement. These decisions and agreements are collectively referred to as the "Law of the River." The Law of the River is generally administered by the Kern River Watermaster.

Pursuant to the 1962 Kern River Water Rights and Storage Agreement, the Kern River Watermaster prepares records of Kern River flows, storage, and releases from Isabella Reservoir. Since at least 1986, the Kern River Watermaster has implemented a "Policy Re-Utilization of Isabella Reservoir Flood Releases" (hereinafter "Flood Policy"). The Flood Policy has been implemented pursuant to the agreement and consent of other water right holders on the Kern River. The Flood Policy provides that during periods of time in which (1) abnormal flow is being released from Isabella Reservoir by order of the Corps of Engineers, and (2) such flow is entering into the California Aqueduct through the Kern River Intertie:

*[w]ater will be made available to any person, interest or group in Kern County who wish to divert that water, up to the amount of water flowing into the Intertie, provided such interest, person or group acknowledges their desire to divert said water by executing an "Order" which shall include, among other things, a description of the point they wish to divert such flow, the rate of flow they wish to divert and provide a schedule such that the request may be honored by the operating Kern River entity. This policy is without prejudice to the rights of any of the Parties.*

In recent years, KWBA has diverted and utilized Kern River flood flows for groundwater recharge purposes in accordance with the Flood Policy. KWBA's diversion and storage of Kern River flood flows has been under the direction and control of the Kern River Watermaster, and in accordance with the Law of the River. KWBA members have also purchased Kern River supplies from Kern River water rights holders.

Legal proceedings between 1996 and 2007 reviewed and considered questions regarding the extent of appropriative Kern River water rights held by the Kern Delta Water District (Kern Delta), a Kern River water right holder. As a result of those proceedings, California courts concluded that Kern Delta had "forfeited" a significant portion of its pre-1914 appropriative Kern River water rights due to non-use. Following the conclusion of those proceedings in 2007, the California State Water Resources Control Board (SWRCB) began proceedings to assess whether the Kern River was fully appropriated. The Kern River was formally designated as a river with fully appropriated status (FAS) by the SWRCB in 1989 (Order 89-25).<sup>1</sup> In February 2010, the SWRCB issued an order removing the FAS status for the Kern River, finding that there is some unappropriated water available in the Kern River. The SWRCB FAS determination is currently on appeal.

## **5. Proposed Project**

In September 2007, and as a result of the above court decisions regarding forfeited water on the Kern River and in anticipation of the SWRCB's possible revision of the Kern River's FAS status, the KWBA on behalf of five of its six member agencies (the KWBA Participating Members) filed a water right application (Application 31676) with the State Water Resources Control Board (SWRCB) to appropriate up to 500,000 acre-feet per year (afy) of water from the Kern River.<sup>2</sup> The 500,000 afy constitutes the estimated maximum quantity that KWBA can physically divert and recharge at the Kern Water Bank in the wettest years. The specific quantity of water available for diversion to the Kern Water Bank in any given year will depend on annual and seasonal hydrologic and climatologic conditions, and would supplement water already received by KWBA Participating Members from the SWP and CVP via the California Aqueduct, the CVP via the Friant-Kern Canal, and directly from the Kern River through purchases or transfers. The appropriation of water under this application will also supplement and permit water historically diverted from the Kern River to the Kern Water Bank in above-normal water

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<sup>1</sup> Order 89-25 cited State Water Rights Board Decision 1196 (D-1196), issued on October 29, 1964, as the basis for including the Kern River on the Declaration. D-1196 concluded that the applicants had failed to show "that there is unappropriated water available" in the Kern River watershed.

<sup>2</sup> The KWBA members that are included as part of the water application are Semitropic Water Storage District, Tejon-Castac Water District, Westside Mutual Water Company, and Wheeler Ridge-Maricopa Water Storage District; Kern County Water Agency on behalf of Improvement District 4 is not part of the application or the proposed project.

years when excess water has been made available for diversion to avoid additional flood risks downstream.

The Kern Water Bank Conservation and Storage Project will allow the KWBA to appropriate water in the Kern River found to be unappropriated water by the SWRCB. In prior wet years, there have been instances when more than 500,000 ac-ft was available for diversion or diverted into the Intertie on the California Aqueduct for flood control purposes. If the SWRCB approves the KWBA's application to appropriate, this water will remain in the Kern River alluvial watershed for instream beneficial purposes until diverted west and downstream of the greater Bakersfield area. Instream beneficial purposes include protection of the public interest, environmental purposes, instream flows, wetland habitats, fish and wildlife, underground aquifer supply, and aquifer water quality enhancement. Further, if the SWRCB determines that other water is available, the KWBA reserves the right to make claims to it.

As a part of the Kern Water Bank Conservation and Storage Project, the KWBA intends to continue to divert water from the Kern River for storage in the Kern Water Bank for later recovery and delivery in dry years for beneficial use including municipal, irrigation, and industrial uses. Additionally, recharge and storage of the diverted water will benefit wildlife preservation within the Kern Water Bank Habitat Conservation/Natural Community Conservation Plan (HCP/NCCP) area.

## **6. Project Implementation and Operation**

Diversion and recharge of currently unappropriated water to the Kern Water Bank will be accomplished through the KWBA's operation of existing infrastructure and facilities on the Kern River and Kern Water Bank, which includes a diversion structure on the Kern River and primary water supply and transport canals. Newly appropriated water recharged on the Kern Water Bank will be available for use through existing wells owned and operated by the KWBA. The use of such stored water will assist the KWBA and its Participating Members to increase reliability and enhance their respective dry-year water supplies for municipal, irrigation, and industrial purposes.

## **B. CEQA PROCESS AND OVERVIEW**

### **1. Notice of Preparation and Scoping Period**

This Notice of Preparation (NOP) for the Kern Water Bank Conservation and Storage Project presents general background information on KWBA's intent to continue to divert water from the Kern River for recharge of the Kern Water Bank, the scoping and general California Environmental Quality Act (CEQA) process, and the resource topics to be addressed in the EIR. The KWBA has prepared this NOP pursuant to *State CEQA Guidelines* section 15082. The public review period to receive comments on this NOP will

begin on **February 21, 2012** and will continue for 30 days until **March 22, 2012**. Information is provided below on how to submit comments regarding this NOP.

## **2. Scoping Meeting**

In order for the public and regulatory agencies to have an opportunity to ask questions and submit comments on the scope of the EIR, a public scoping meeting will be held during the NOP review period. The scoping meeting will solicit input from the public and interested public agencies regarding the nature and scope of environmental impacts to be addressed in the Draft EIR.

At the scoping meeting, a brief presentation will be made to provide an overview of the KWBA's proposed Kern Water Bank Conservation and Storage Project and the general CEQA process. After the brief presentation, a session will follow where KWBA staff will be available to receive comments from the public. Comment forms will also be available at the scoping meeting for those who wish to submit written comments during the meeting. Prepared written comments will be accepted during the meeting, as well as during the 30-day NOP review period.

A public scoping meeting is scheduled for **February 28, 2012**, starting at 6:00 PM at 1620 Mill Rock Way, Suite 500, Bakersfield, California. Information on this scoping meeting has also been published in a local daily newspaper and on the KWBA's website ([www.kwb.org](http://www.kwb.org)).

## **3. Draft Focused EIR**

The primary purpose of the Draft EIR is to analyze and disclose the reasonably foreseeable direct, indirect, and cumulative environmental impacts that may occur as a result of KWBA's Kern Water Bank Conservation and Storage Project. The Draft EIR, as informed by public and agency input through the scoping period, will analyze and disclose the potentially significant environmental impacts associated with the proposed project. Where any such impacts are significant, the Draft EIR will identify and discuss feasible mitigation measures and alternatives that can substantially lessen or avoid such effects.

The following is a preliminary list of potential environmental impacts to be addressed in the Draft EIR. This list is derived from the Initial Study Checklist prepared by the Lead Agency, which is attached to this NOP. Given the limited number of environmental impacts anticipated from this Project, the KWBA plans to prepare a focused EIR on the following list of topic areas:

- Air Quality
- Biological Resources
- Geology/Soils

- Greenhouse Gas Emissions
- Hydrology and Water Quality
- Utilities and Services

For each of these resource topics (and perhaps additional resource topics if determined to be necessary), the Draft EIR will include a description of the proposed project's environmental setting. The environmental setting provides a baseline on which to evaluate how the proposed project may affect environmental resources. The Draft EIR will also describe relevant environmental regulations and policies that should be considered in evaluating the proposed project. The Draft EIR will include a description and evaluation of reasonably foreseeable impacts associated with the implementation of the proposed project. Where appropriate, the Draft EIR will identify criteria and thresholds on which the impact evaluations will be based. The Draft EIR will evaluate whether potential impacts are significant based on identified thresholds of significance, and whether they can be avoided or substantially lessened by feasible mitigation measures or project alternatives. In addition to these resource topics and the implementation of the proposed project, the Draft EIR will consider other potential direct, indirect, cumulative, and growth-inducing effects of the proposed project.

#### **4. Public Review of the Draft EIR**

Once the Draft EIR is completed, it will undergo public review for a minimum of 45 days. The KWBA is also planning to hold a public hearing to receive oral and written comments regarding the adequacy of the Draft EIR. The date, time, and location of the public hearing to review the Draft EIR will be noticed separately prior to the hearing.

#### **5. Final EIR**

Written and oral comments received on the Draft EIR will be addressed in a Response to Comments document, which together with the Draft EIR will constitute the Final EIR. The Final EIR will be included in the consideration by the KWBA, as lead agency under CEQA, in deciding whether to approve or carry out the project.

#### **6. Submittal of Scoping Comments**

This NOP is being circulated to local, state, and federal agencies, and to interested organizations and individuals who may wish to review and comment on the proposed contents of the Draft EIR at this stage in the process. In addition, the NOP is available for review at the KWBA's offices and website ([www.kwb.org](http://www.kwb.org)).



*Notice of Preparation*

Written comments concerning the scope and content of the Draft EIR are welcome. Consistent with the time prescribed by state law for public review of an NOP, your response to and input regarding the preparation of the Draft EIR should be sent at the earliest possible date, but not later than **March 22, 2012** (4:30 PM).

Please include your name, address, and contact number for your agency as applicable for all future correspondence related to KWBA's Kern Water Bank Conservation and Storage Project.

Written comments may be sent to Mr. Jonathan Parker, General Manager, at the following office address or e-mail address:

Kern Water Bank Authority  
1620 Mill Rock Way, Suite 500  
Bakersfield, California 93309

Email comments may be sent to: [jparker@kwb.org](mailto:jparker@kwb.org).

## ENVIRONMENTAL CHECKLIST FORM

**1. Project title:**

Kern Water Bank Conservation and Storage Project

**2. Lead agency name and address:**

Kern Water Bank Authority  
1620 Mill Rock Way, Suite 500  
Bakersfield, California 93309

**3. Contact person and telephone number:** Jonathan Parker, General Manager; (661) 398-4900

**4. Project Location:**

The Kern Water Bank is located about 12 miles southwest of the City of Bakersfield in the County of Kern. The Kern Water Bank is situated between Taft Highway (State Route 119) on the south, Rosedale Highway (State Route 58) on the north, Tupman Road and the California Aqueduct on the west, and Heath Road on the east. The Kern Water Bank is east of the California Aqueduct, and is bisected from northwest to southeast by Interstate 5 (I-5).

**5. Project sponsor's name and address:**

Kern Water Bank Authority  
1620 Mill Rock Way, Suite 500  
Bakersfield, California 93309

**6. General Plan designation:** Intensive agriculture (8.1)

**7. Zoning:** Primarily Agriculture (A)

**8. Description of project:**

The Kern Water Bank Authority (KWBA) is a Joint Powers Authority (JPA) formed in October 1995. The KWBA is a public agency that includes several water districts, a water agency, and a mutual water company as its members. On behalf of five of its six member agencies, KWBA filed a water right application (Application 31676) in September 2007 with the State Water Resources Control Board (SWRCB) to appropriate up to 500,000 acre-feet per year (afy) of water from the Kern River.<sup>1</sup> The five members are hereafter referred to as "KWBA Participating Members." The

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<sup>1</sup> The KWBA members that are included as part of the water application are Semitropic Water Storage District, Tejon-Castac Water District, Westside Mutual Water Company, and Wheeler Ridge-Maricopa Water Storage District; Kern County Water Agency on behalf of its Improvement District 4 is not part of the application or the proposed project.

appropriation of water from the Kern River would supplement water received by the KWBA Participating Members from the SWP and CVP via the California Aqueduct, the CVP via the Friant-Kern Canal, and directly from the Kern River through purchases and transfers. This appropriation would also supplement and permit water historically diverted to the Kern Water Bank from the Kern River in above-normal water years when excess water has been made available for diversion to avoid additional flood risks downstream. The primary objective of the project is to allow additional water to be diverted from the Kern River when excess water is available in order to increase and enhance the reliability of the KWBA Participating Members' dry-year water supplies for residential, commercial, and agricultural purposes.

**9. Surrounding land uses and setting:**

The Kern Water Bank (KWB) is generally surrounded by agricultural land uses. Residential uses associated with the metropolitan area of the City of Bakersfield are located to the east and northeast, with the community of Tupman and petroleum extraction uses located southwest of the California Aqueduct. Petroleum extraction uses are also present to the south of Panama Lane and the KWB. The Coles Levee Preserve occurs to the south and the Tule Elk Reserve is located west of the KWB.

**10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement):**

State Water Resources Control Board

**ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:**

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

<input type="checkbox"/>	Aesthetics	<input type="checkbox"/>	Agriculture and Forestry	<input checked="" type="checkbox"/>	Air Quality
<input checked="" type="checkbox"/>	Biological Resources	<input type="checkbox"/>	Cultural Resources	<input checked="" type="checkbox"/>	Geology/Soils
<input checked="" type="checkbox"/>	Greenhouse Gas Emissions	<input type="checkbox"/>	Hazards & Hazardous Materials	<input checked="" type="checkbox"/>	Hydrology/Water Quality
<input type="checkbox"/>	Land Use Planning	<input type="checkbox"/>	Mineral Resources	<input type="checkbox"/>	Noise
<input type="checkbox"/>	Population/Housing	<input type="checkbox"/>	Public Services	<input type="checkbox"/>	Recreation
<input type="checkbox"/>	Transportation/Traffic	<input checked="" type="checkbox"/>	Utilities/Service Systems	<input checked="" type="checkbox"/>	Mandatory Findings of Significance

**DETERMINATION:**

On the basis of this initial evaluation:

<input type="checkbox"/>	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
<input type="checkbox"/>	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
<input checked="" type="checkbox"/>	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
<input type="checkbox"/>	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
<input type="checkbox"/>	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

  
 \_\_\_\_\_  
 Signature  
 Jonathan Parker, General Manager

February 16, 2012  
 \_\_\_\_\_  
 Date

**EVALUATION OF ENVIRONMENTAL IMPACTS:**

- 1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
- 2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
- 3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
- 4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).
- 5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
  - a) Earlier Analysis Used. Identify and state where they are available for review.
  - b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
  - c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
- 6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
- 7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
- 8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
- 9) The explanation of each issue should identify:
  - a) the significance criteria or threshold, if any, used to evaluate each question; and
  - b) the mitigation measure identified, if any, to reduce the impact to less than significant.

## INITIAL STUDY CHECKLIST

### 1. Aesthetics

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
<b>AESTHETICS – Would the project:</b>				
a. Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### Discussion

- a. Topography of the area is generally flat with no more than a few feet of topographical relief. Recharge ponds are not a prominent visual feature in the Southern San Joaquin Valley. The Kern Water Bank Conservation and Storage Project (proposed project) would not have an adverse impact on scenic vistas or other visual resources because the Kern Water Bank is an existing facility and the appropriation of additional Kern River water flows would have no overt visual change. Therefore, no impacts to scenic vistas would occur.
- b. The proposed project would appropriate Kern River water for diversion when water is available and would not affect scenic resources in the area. The Kern Water Bank is not located near a state designated scenic highway and therefore would not impact any associated scenic resources.<sup>2</sup> There would be no impact.
- c. The proposed project would appropriate Kern River water for diversion when water is available and would not change, substantially damage, degrade, or result in a trend for dramatic changes in visual character or quality of the site or the Kern River at the point of diversion or downstream. The riparian community along the Kern River, downstream of the diversion point, progressively becomes more dominated by sparsely distributed vegetation as instream flows are greatly reduced or non-existent during most times of the year.<sup>3</sup> Operations would be completed with existing facilities and there would be no change or increase from existing conditions. No impact would occur.
- d. The proposed project would appropriate Kern River water for diversion when water is available. There would be no new sources of light or glare that would adversely affect day or nighttime views in the area. There would be no impact.

<sup>2</sup> California Department of Transportation, "California Scenic Highway Program," [http://www.dot.ca.gov/hq/LandArch/scenic\\_highways/scenic\\_hwy.htm](http://www.dot.ca.gov/hq/LandArch/scenic_highways/scenic_hwy.htm), accessed December 2011.

<sup>3</sup> California Department of Fish and Game, *Policy Statement of the CDFG In the Matter of the State Board's Consideration to Remove the Kern River from the Fully Appropriated Streams (FAS) List*, October 26, 27, and 28, 2009.

## 2. Agriculture and Forestry Resources

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
<b>AGRICULTURE AND FORESTRY RESOURCES – Would the project:</b>				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Would the project result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### Discussion

- a. Lands on the project site are primarily designated as “Grazing” and “Nonagricultural and Natural Vegetation” on the 2008 State Important Farmland Map; however, a small portion of the project area contains some land designated as “Farmland of Statewide Importance.”<sup>4</sup> While the proposed project would appropriate Kern River when water is available for recharge in Kern Water Bank’s existing recharge ponds for future beneficial use including agricultural irrigation, it would not convert any lands designated as Farmland of Statewide Importance to non-agricultural use. Therefore, impacts are not considered significant but rather beneficial for agriculture in that the project would provide water supplies to its agricultural users during dry years.
- b. The project site is not located within a designated Williamson Act contract.<sup>5</sup> Further, the project does not conflict with existing agricultural zoning or Williamson Act contracts. No impacts would result.
- c. With the exception of limited farming conducted on behalf of the California Department of Fish and Game (CDFG) for its Heritage Game Bird Program, the project site has not been farmed since 1991. Further, the project does not propose to alter any surface land uses or facilities. As such, the proposed project would not result in the conversion of farmland to non-agricultural use. There would be no impact.

<sup>4</sup> State of California, Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, *Kern County Important Farmland Map Rural Land Edition Sheet 2 of 3*, 2008.

<sup>5</sup> County of Kern, Geographic Information System, Kern County Online Mapping System, [http://maps.co.kern.ca.us/imf/sites/krn\\_pub/launch.jsp?popup\\_blocked=true](http://maps.co.kern.ca.us/imf/sites/krn_pub/launch.jsp?popup_blocked=true), Accessed December 2011.

- d. Existing zoning for the project site as designated by Kern County is “A- Exclusive Agriculture” with portions also designated “FPP – Floodplain – Primary,” “FPS – Floodplain Secondary” and “KRC – Kern River Crossing,”<sup>6</sup> The proposed project would not change or amend the current zoning of the project site or the surrounding land uses, or cause rezoning forestland, timberland or timberland zoned timberland production.<sup>7</sup> Therefore, there would be no impacts to forestland, timberland, or timberland zoned Timberland Production.
- e. The proposed project does not contain any lands designated “forest land” and would not result in the loss of forest land or the conversion of forest land to non-forest use. No impact would occur.

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<sup>6</sup> Kern County, Department of Planning and Land Development, Zone Map, Maps 121 and 122, <http://www.co.kern.ca.us/ess/zmapindx.asp>, accessed January 4, 2012.

<sup>7</sup> California Department of Forestry and Fire Protection, California Land Cover Mapping and Monitoring Program, *Land Cover Map*, 2006.



### 3. Air Quality

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact	
<b>AIR QUALITY – Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:</b>					
a.	Conflict with or obstruct implementation of the applicable air quality plan?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b.	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d.	Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e.	Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### Discussion

- a. The proposed project is located within the San Joaquin Valley Air Pollution Control District (SJVAPCD). The SJVAPCD manages air quality for eight counties including the western portion of Kern County. Air quality in the SJVAPCD is managed via several Air Quality Management Plans to address carbon monoxide (CO), ozone, particulate matter (PM10), fine particulate matter (PM2.5) and other emissions. In 2008, the U.S. EPA redesignated the San Joaquin Valley to attainment for the PM10 National Ambient Air Quality Standard (NAAQS) and approved the PM10 Maintenance Plan. In 2010, EPA approved San Joaquin Valley's 2004 Extreme Ozone Attainment Plan for 1-hour ozone. The SJVAPCD is in federal non-attainment for 8-hour ozone and PM2.5; is in state non-attainment for 1-hour and 8-hour ozone, PM10, and PM2.5. The proposed project does not propose any new facilities or other infrastructure that conflicts with the approved plans.

The proposed project would appropriate Kern River water for diversion when water is available. The diversion of water as proposed is not anticipated to increase annual operations of electrical pumps. The Draft EIR nonetheless will evaluate whether the proposed project will result in a significant increase in operation of electrical pumps and, if so, whether the project will result in an inconsistency with the applicable air quality plan due to regional electrical generation and associated indirect emissions of criteria air pollutants.

- b. The project does not propose to install any new facilities or other infrastructure and, therefore, there would be no construction-related emissions as a result of implementation of the project. The additional diversion of water as proposed is not anticipated to increase use of electrical pumps. The Draft EIR nonetheless will evaluate potential increases in regional electrical generation and associated indirect emissions of criteria air pollutants. See **Discussion a**, above.

- c. As described above in **Discussion a**, the SJVAPCD is currently in nonattainment under federal standards for 8-hour ozone and PM2.5, and nonattainment under state standards for 1-hour and 8-hour ozone, PM10 and PM2.5. The diversion of water as proposed is not anticipated to increase annual operations of electrical pumps. The Draft EIR nonetheless will evaluate potential increases in regional electrical generation and associated indirect emissions of criteria air pollutants.
- d. The closest sensitive receptors to the site are residences in the town of Tupman which is 0.25-mile southwest of the project, and the Elk Hills School, which is located 0.5-mile southwest of the project site also within the town of Tupman. The proposed project would not change existing operations of the Kern Water Bank nor would it construct new facilities that would generate increased emissions near sensitive receptors and would not expose sensitive receptors to substantial increases in pollutant concentrations. Impacts to sensitive receptors would thus be less than significant.
- e. The Kern Water Bank generates localized odors during the normal course of operations from fish decomposing as ponds dry up. The SJVAPCD judges the significance of odor impacts based on a review of the number of complaints; a project's odor impacts are considered significant by the SJVAPCD if the project is expected to generate more than one confirmed complaint per year averaged over a three year period, or three unconfirmed complaints per year averaged over a three-year period.<sup>8</sup> Existing odors from the Kern Water Bank have not resulted in any complaints during over 15 years of operation, and the incremental increase in Kern River diversions for recharge of the aquifer is not expected to change the current odor issues in any measurable way. Therefore, the project would not create objectionable odors affecting a substantial population, and this impact would be less than significant.

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<sup>8</sup> San Joaquin Air Pollution Control District, Guide for Assessing and Mitigating Air Quality Impacts, prepared by the Mobile Source/CEQA Section of the Planning Division, January 2002.

#### 4. Biological Resources

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
<b>BIOLOGICAL RESOURCES – Would the project:</b>				
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### Discussion

- a. The Kern Water Bank already provides substantial areas of surface water and associated riparian and wetland vegetation in and around the recharge ponds, which provide significant benefits to special-status biological resources, including migratory birds. The proposed project would appropriate Kern River water for diversion when water is available and would increase water delivered to the recharge ponds, which is expected to result in some added benefits. While the project may have benefits on site, the potential exists for the project to have indirect downstream effects on special status species or habitat. These potential effects will be discussed and analyzed further in the Draft EIR.
- b. The proposed project would appropriate Kern River water for diversion when water is available. As a result, less water could be available downstream of the project site thereby potentially affecting downstream riparian habitat or other sensitive natural communities. The potential for this impact to occur will be analyzed further in the Draft EIR.

- c. Wetlands, creeks, streams, and permanent and intermittent drainages are generally subject to the jurisdiction of the United States Army Corps of Engineers (USACE) under Section 404 of the federal Clean Water Act or the State and Regional Water Quality Control Boards under the state Porter Cologne Act. As the proposed project would appropriate Kern River water for diversion when water is available, the potential exists that such diversions could have adverse effects on federal or state waters downstream. Water diverted to the recharge ponds, on the other hand, would have a beneficial effect on wetland habitat and other waters within the Kern Water Bank. The potential impacts to federal and state waters downstream will be analyzed further in the Draft EIR.
- d. The project would not involve the construction or operation of new recharge ponds, facilities, or equipment. There are no known nursery sites or fish and wildlife movement or migration corridors within the stretch of the Kern River below the water bank's point of diversion. The Kern River downstream of the project site is dry except when flooding occurs. Therefore, the proposed project is expected to have no impact on any nursery sites or movement and migration corridors downstream of the project's point of diversion.
- e. The proposed project would not require the construction of new facilities for recharge or recovery operations. Additionally, the project is located in an area designated for agricultural uses and would not conflict with such uses. Therefore, the project would not conflict with local policies or ordinances regarding biological resources. No impacts would occur.
- f. The project site is located within the Kern Water Bank Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP). The diversion of additional water to the project site when available from the Kern River would not conflict with the provisions of the HCP/NCCP or any other approved local, regional, or state habitat conservation plan. Although no impact would occur, the Draft EIR will include a discussion of the Kern Bank Habitat HCP/NCCP.

**5. Cultural Resources**

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
<b>CULTURAL RESOURCES – Would the project:</b>				
a. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Disturb any human remains, including those interred outside of formal cemeteries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Discussion**

- a. There are no historical resources within the project site, and the project does not propose to construct any new facilities or otherwise alter or disturb surface soils. Therefore, the project would not cause a substantial adverse change in significance of a historical resource. No impacts would occur.
- b. The project would not require any new facilities and would not involve any earth disturbing activities. Therefore, the proposed project will have no impact on any archeological resources.
- c. No new construction of Kern Water Bank facilities would occur with implementation of the proposed project. As such, the proposed project would not result in earth disturbing activities and the project will have no impact on paleontological resources or unique geologic features.
- d. As previously discussed, the proposed project does not require new facilities and would not involve grading or earth disturbing activities. Therefore, no impacts to the disturbance of human remains would occur.

## 6. Geology and Soils

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
<b>GEOLOGY AND SOILS – Would the project:</b>				
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii. Strong seismic ground shaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii. Seismic-related ground failure, including liquefaction?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iv. Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### Discussion

- a.
  - i. The proposed project is not located within an Alquist-Priolo Earthquake Fault Zone. The closest areas mapped within the Taft (to the west), Oildale (to the northeast), Coal Oil Canyon and Connor SW (both to the south) USGS quadrangle maps are more than 5 miles away. There is no evidence of a known fault within the project area. Therefore, no impact would occur.
  - ii. The project site is located within an area where potential seismic impacts could occur from strong seismic ground motion as a result of an earthquake. The project site contains numerous water canals and levees to transport diverted Kern River water to recharge ponds. In addition, Interstate 5 (I-5) bisects the project site from northwest to southeast; strong seismic ground motion could result in impacts to existing on-site canals or levees and to the adjacent I-5 highway. While the proposed project does not involve the construction of any new canals, levees, or other infrastructure, it may involve an incremental increase in the amount of water to be conveyed and recharged on the project site. Thus, this issue will be discussed further in the Draft EIR.

- iii. The project site contains unconsolidated sediments and high groundwater levels when the sediments are fully saturated. Due to the geology of the project site, strong ground motion could result in some liquefaction or subsidence. As noted in the Kern County General Plan, various areas of the County, including the project site, may be subject to liquefaction during a seismic event due to high groundwater.<sup>9</sup> The proposed project could result in temporary increases in groundwater levels as a result of recharge operations. Generally, changes in water levels could result in increased susceptibility for liquefaction to occur. This impact will be analyzed further in the Draft EIR.
  - iv. Topography of the area is generally flat with no more than a few feet of topographical relief. It is located along the central valley floor with no immediate rises in topography. As a result, there would be no potential for impacts resulting from landslides on, or near, the project site.
- b. Soils in the project area are considered non-buried alluvial fan remnants and consist of Kimberlina-Granoso-Vineland and Copus-Lokern soils. These soils have wind erodibility rankings of 3 to 5 and 4 to 5, respectively,<sup>10</sup> which constitute soils that are low to moderately susceptible to wind erosion. The proposed project's request for appropriation of additional Kern River water for storage and beneficial uses would not result in the construction of new water bank facilities. Further, as soils will be submerged during recharge operations, there is expected to be no increase in the loss of unique topsoil through erosion. Therefore, the proposed project will have no impact on the loss of topsoil or erosion.
  - c. Please see **Discussions a.ii** and **a.iii** with regards to potential seismic-related impacts and possible incremental increases in lateral spreading, liquefaction or collapse. As such, this impact will be further analyzed in the Draft EIR.
  - d. The Kern Water Bank is located over unconsolidated sediments, which could contain expansive soils. However, the project proposes to divert and store additional Kern River water and does not include construction of any new facilities. Therefore, the proposed project would not result in any impacts that would pose a risk to life or property. Therefore, the proposed project would have no impact related to the expansion of soils.
  - e. The proposed project would not construct septic tanks or alternative wastewater disposal systems as the project would not need to dispose of wastewater. Therefore, there is no impact associated with containing soils incapable of adequately supporting the use of septic tanks or wastewater treatment.

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<sup>9</sup> Kern County General Plan, Chapter 4 - Seismic Safety Element, 2004, p. 153.

<sup>10</sup> U.S. Department of Agricultural, Natural Resources Conservation Service, Soil Survey of Kern County, California, Southwest Part, 2009, [http://soils.usda.gov/survey/printed\\_surveys/](http://soils.usda.gov/survey/printed_surveys/).

## 7. Greenhouse Gas Emissions

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
<b>GREENHOUSE GAS EMISSIONS – Would the project:</b>				
a. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### *Discussion*

- a. There are no construction-related emissions arising from the diversion of additional water because the project does not propose to add any new facilities or other infrastructure. The proposed project would appropriate Kern River water for diversion when water is available. The diversion of water as proposed is not anticipated to increase annual operations of electrical pumps. The Draft EIR nonetheless will evaluate whether the proposed project will result in a substantial increase in operation of the electrical pumps and, if so, whether the project will result in significant increases in greenhouse gas emissions associated with regional electrical generation. See **Discussion 3.a**, above.
- b. The project is not anticipated to conflict with any plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. The Draft EIR will nonetheless evaluate the potential for incremental increases in regional electrical generation and related greenhouse gas emissions. See **Discussion a**, above.



### 8. Hazards and Hazardous Materials

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
<b>HAZARDS AND HAZARDOUS MATERIALS – Would the project:</b>				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. For a project located within an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h. Expose people or structures to a significant risk of loss, injury or death involving wild land fires, including where wild lands are adjacent to urbanized areas or where residences are intermixed with wild lands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i. Generate vectors (flies, mosquitoes, rodents, etc.) or have a component that includes agricultural waste? Specifically, would the project exceed the following qualitative threshold: The presence of domestic flies, mosquitoes, cockroaches, rodents, and/or any other vectors associated with the project is significant when the applicable enforcement agency determines that any of the vectors: <ul style="list-style-type: none"> <li>i. Occur as immature stages and adults in numbers considerably in excess of those found in the surrounding environment; and</li> <li>ii. Are associated with design, layout, and management of project operations; and</li> <li>iii. Disseminate widely from the property; and</li> <li>iv. Cause detrimental effects on the public health or well-being of the majority of the surrounding population.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

## ***Discussion***

- a. The proposed project does not involve the routine transport, use, or disposal of hazardous materials. Therefore, the project would not create a significant hazard to the public or the environment. No impact would occur.
- b. The proposed project does not involve the use or transport of hazardous materials. Therefore, the project would not provide the opportunity to cause a significant foreseeable impact to the public or the environment. No impact would occur.
- c. There are no schools within 0.25 mile of the project site. The project would not emit hazardous emissions or handle hazardous materials, substances, or waste. Therefore, there would be no impact.
- d. The project site is not located on a site that is included on a list of hazardous materials sites pursuant to Government Code Section 65962.5. As a result, the project would not create a significant hazard to the public or the environment. No impact would occur.
- e. The project is not located within 2 miles of an airport. The nearest airport to the project site is the Meadows Field Airport in the City of Bakersfield located over 9 miles to the northeast. No impact would occur.
- f. Please see **Discussion e**, above. No impact would occur.
- g. The project site is private land; the public is not allowed to use or access the site and does not otherwise require access to the site for emergency response purposes. Further, there are no adopted emergency response plans or emergency evacuation plans currently in place or needed. As a result, there would be no impact on any emergency response or emergency evacuation.
- h. The proposed project would appropriate Kern River water for diversion when water is available. While designated as a moderate fire hazard zone, the project site contains numerous acres of recharge ponds and vegetation, and the proposed project would add water to those recharge ponds. The project does not propose to add or modify any facilities or other infrastructure. Further, there are no people or aboveground structures located on the project site. There are no major structures on the project site except for Interstate 5 (I-5), the Cross Valley Canal, and some tanks and other oil field equipment. The proposed project would not alter or otherwise impact any of these structures or subject these structures to fire risk. The project will therefore have no impact related to this significance threshold.
- i. The Kern County Environmental Health Services Department Solid Waste and Vector Control Programs work cooperatively with the California Department of Health Services Vector-borne Disease Branch, local government agencies, and mosquito abatement/vector control districts to safeguard the general public and combat the spread of vector-borne diseases within Kern County. The proposed project would appropriate Kern River water for diversion when water is available, for groundwater storage and later recovery for beneficial uses. The Kern Water Bank's recharge ponds are currently subject to vector control measures, including mosquito abatement strategies on the project site (e.g., mosquito fish). Moreover, while the project may incrementally increase water diverted to the Kern Water Bank, the project does not propose to expand the existing recharge ponds, and the existing ponds will continue to be subject to the vector control measures. Thus, the project is not expected to change the existing vector control issues at the Kern Water Bank in any measurable way, and thus the project's impacts under this threshold would be less than significant.

### 9. Hydrology and Water Quality

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
<b>HYDROLOGY AND WATER QUALITY – Would the project:</b>				
a. Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h. Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j. Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Discussion**

- a. The project does not propose to discharge to any waters of the State or United States, and therefore would not violate any water quality standards or waste discharge requirements. No impact would occur.
- b. The proposed project could increase the quantity of water available for storage in the Kern Water Bank through the appropriation of available Kern River water. Therefore, the project would not substantially deplete groundwater supplies or otherwise interfere with groundwater recharge. Instead, the proposed project could aid groundwater recharge and temporarily raise the local groundwater table level, which is generally considered a beneficial impact. The water diverted for

this project is not expected to result in significant changes to recovery pumping. The potential for significant changes in recovery pumping and associated affects will be evaluated in the Draft EIR.

- c. The proposed project would not alter the existing drainage pattern of the site or area. The water diverted from the Kern River under the proposed project would not result in any increase in erosion or siltation downstream of the point(s) of diversion. Therefore, the proposed project would result in less than significant erosion and siltation impacts.
- d. The proposed project would not alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial increase in the rate or amount of surface runoff in a manner that would result in flooding on or off site. The project's proposed increases in diversions of water during wet periods may at times create a benefit as it would allow flood flows, which are hazardous to downstream facilities, to be diverted to groundwater storage. This potential impact, even though likely beneficial, will be further analyzed in the Draft EIR.
- e. The proposed project would not affect existing stormwater drainage systems nor provide substantial sources of polluted runoff. Therefore, no impact would occur.
- f. The project would not alter the chemistry or quality of the Kern River water. Thus, the project's impacts on water quality would be less than significant.
- g. Portions of the project site located west of Interstate 5 (I-5) are within a FEMA flood hazard zone. The proposed project would not place structures or houses within the flood zone. Therefore, no impact would occur.
- h. No new structures are proposed on the project site. Therefore, no new structures would impede or redirect flood flows. As such, no impact would occur.
- i. The proposed project would not expose people or structures to adverse effects that could result in loss, injury, or death. The Kern Water Bank is an existing facility for the storage and recovery of water for beneficial use by the Kern Water Bank Authority members. As the proposed project at times would divert Kern River when available, the project has the potential to reduce the risk of loss, injury, or death. Therefore, no impact would occur.
- j. The project site contains shallow water recharge basins that could have standing waves (seiche). However, there are no structures in the vicinity of the shallow basins and no loss or injury would occur from a low probability standing wave. The project site is not located close to the ocean; therefore, there is no possibility of injury or loss caused by tsunamis. The project site is not located within mudflow hazard areas. Therefore, no impact would occur.

## 10. Land Use and Planning

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
<b>LAND USE AND PLANNING – Would the project:</b>				
a. Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### Discussion

- a. The project site is located in an agricultural area with residential communities to the northeast and east of the Kern Water Bank. The proposed project would not change the existing facilities of the Kern Water Bank and would not divide any established community. Therefore, no impact would occur.
- b. The County of Kern General Plan is the applicable land use plan for the project site and primarily designates the area as Intensive Agriculture (8.1).<sup>11</sup> The operation of the Kern Water Bank includes the storage and later recovery of groundwater for the KWBA members' beneficial use. The proposed project would be consistent with the Miscellaneous Use, which includes water storage or groundwater recharge facilities, and is therefore an allowed use according to the Kern County Zoning Ordinance.<sup>12</sup> The existing operation of recharge basins is compatible with the existing uses for the project site and surrounding areas, and would not change existing land uses. As such, the proposed project would not conflict with the land use plan or the zoning ordinance of Kern County.<sup>13</sup> Therefore, impacts would be less than significant.
- c. A Habitat Conservation Plan/Natural Communities Conservation Plan (HCP/NCCP) was developed with the Kern Water Bank. The HCP allows the water bank uses on about 5,000 acres of the Kern Water Bank project site. The proposed project would request appropriation of additional Kern River water when available. The project would not change the area of recharge basins and does not conflict with the adopted HCP/NCCP. The project could be beneficial, and would certainly be subject to the existing HCP/NCCP. Therefore, no impact would occur. However, the continued application of the HCP/NCCP will be addressed in the Biological Resources chapter of the Draft EIR.

<sup>11</sup> Kern County, General Plan Land Use, Open Space & Conservation Element Land Use Map – Western Section, April 1982.

<sup>12</sup> Kern County Zoning Ordinance, Section 19.12.020, "Exclusive Agriculture (A) District, Permitted Uses."

<sup>13</sup> Section 53091 of the California Government Code exempts the location and construction of facilities for the production, generation, storage, or transmission of water from local zoning ordinances. As a groundwater storage facility, the Kern Water Bank is exempt from local zoning ordinances. Nonetheless, the project does not propose to change any existing land uses and ongoing land uses associated with the Kern Water Bank are consistent with county zoning and its general plan.

**11. Mineral Resources**

		Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
<b>MINERAL RESOURCES – Would the project:</b>					
a.	Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b.	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Discussion**

- a. There are known mineral resource interests located over a large portion of the project site. However, the proposed appropriation of additional Kern River water will not change the infrastructure of the basins or canals. As a result, the proposed project would not affect the availability of a known mineral resource. Therefore, there would be no impact to mineral resources.
- b. The proposed appropriation of additional Kern River water will not change the infrastructure of the basins or canals. Therefore, implementation of the proposed project would result in no impact to locally important mineral resources.

12. Noise

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
<b>NOISE – Would the project result in:</b>				
a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

*Discussion*

- a. No new facilities will be constructed for the project. Existing electric pumps with estimated noise levels of 68 to 72 A-weighted decibels (dB(A)) at 50 feet may at times be utilized for the project. This ambient noise level is generally below the ambient noise in the project area generated by the highway and roadway traffic. These nominal increases in noise levels would not affect sensitive receptors because the pumps are located in remote areas far from homes and businesses (>500 feet). Therefore, noise levels would remain below established standards and the project’s potential noise impacts would be less than significant.
- b. The proposed project would not require the construction of additional water bank infrastructure. As such, the project would not expose persons to the generation of excessive groundborne vibration or groundborne noise levels. Therefore, no impact would occur.
- c. The project will only use existing facilities. As such, there will be no introduction of new stationary noise sources and no increase in peak noise levels. Existing electric pumps may be used at times for the project (see above). These uses would not result in a substantial increase in the permanent ambient levels of the area. Impacts would be less than significant.
- d. The project will use existing facilities. As such, there will be no introduction of new stationary noise sources and no increase in peak noise levels. Therefore, temporary or periodic increases in ambient noise levels would be less than significant. See **Discussion a**, above.

- e. The project site is not located within 2 miles of an airport land use plan. The closest airport land use plan is the Bakersfield Municipal Airport located 9 miles to the northeast of the project site. Therefore, there would no impact.
- f. The project site is not located within the vicinity of a public or private airstrip. The closest airstrip is approximately 9 miles northeast of the project site. Therefore, implementation of the project would neither affect nor be affected by an airstrip. No impact would occur.



### 13. Population and Housing

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
<b>POPULATION AND HOUSING – Would the project:</b>				
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### Discussion

- a. The proposed project would not directly induce population growth as no residential or commercial expansion is proposed. The proposed project could indirectly induce population growth through the increase in water storage within the water bank; however, the additional storage of water is for increasing water reliability for existing populations and not to accommodate increased water usage or urban growth. In addition, water stored within the Kern Water Bank is used primarily for agricultural irrigation in existing areas, and not for urban use. Therefore, the impact would be less than significant.
- b. The proposed project would not displace any housing as the water bank already exists and no expansion in the area is proposed. Therefore, no impact would occur.
- c. The proposed project would not displace any people as the water bank already exists and no expansion in the area or infrastructure is proposed. Therefore, no impact would occur.

**14. Public Services**

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
<b>PUBLIC SERVICES</b>				
a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i. Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii. Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii. Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv. Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
v. Other public services?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Discussion**

- a. i. The proposed project would appropriate Kern River water for diversion when water is available. Water stored in the Kern Water Bank would be placed to beneficial use through later recovery. The proposed project would not create any service level problems on fire protection because the water bank operations would not substantially change nor increase the need for fire protection services. Therefore, no impact would occur.
- ii. The proposed project would appropriate Kern River water for diversion when water is available and put the water to beneficial use through storage in and later recovery from the Kern Water Bank. The proposed project would not create any service level problems on local law enforcement as the water bank operations would not substantially change nor increase the need for additional calls or patrols. Therefore, no impact would occur.
- iii. The proposed project would appropriate Kern River water for diversion when water is available and put the water to beneficial use through storage in and later recovery from the Kern Water Bank. The proposed project would not create any increased need for schools. Therefore, no impact would occur.
- iv. The proposed project would not create any increased need for public parks. Therefore, no impact would occur.
- v. The proposed project would not create any increased need for other public facilities. Therefore, no impact would occur.

**15. Recreation**

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
<b>RECREATION – Would the project:</b>				
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Discussion**

- a. The proposed project would not increase use of neighborhood or regional parks because the water bank operations do not make use of these recreational facilities. Therefore, no impact would occur.
- b. The proposed project does not include new recreational facilities requiring construction. As a result, the physical effect on the environment would not be created. Therefore, no impact would occur.

## 16. Transportation and Traffic

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
<b>TRANSPORTATION/TRAFFIC – Would the project:</b>				
a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### Discussion

- a. The Kern Water Bank does not generate substantial traffic on public roadways as most vehicle traffic is associated with maintenance of the water bank facilities, which primarily make use of the internal rural road system. Any increase in vehicular movements attributable to increases in water deliveries would be minimal (e.g., one or two vehicles for operation and inspection). Consequently, the proposed project would have no impact.
- b. The Kern Water Bank does not generate substantial traffic on public roadways because most vehicle traffic is associated with maintenance of the water bank facilities, which primarily make use of the internal rural road system. Consequently, the proposed project would have no impact.
- c. The proposed project would not have an effect on air traffic patterns nor result in any safety risks associated with air traffic. Therefore, the project would have no impact.

- d. The project would not generate a substantial amount of additional traffic and would not substantially increase any traffic hazards in the project vicinity. The project does not propose any traffic design features or incompatible uses with the existing land uses adjacent to the Kern Water Bank. Therefore, no impact would occur.
- e. The proposed project would not make a change to any existing emergency access passageways in the project area. Therefore, the project would have no impact on emergency access.
- f. The Kern Water Bank does not generate substantial traffic on public roadways because most vehicle traffic is associated with maintenance of the water bank facilities, which primary make use of the internal rural road system. The small increases in vehicular movements attributable to operation of the Kern Water Bank would have little adverse effect on traffic flow on the area's rural roads. Therefore, no impact would occur.

### 17. Utilities and Service Systems

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact	
<b>UTILITIES AND SERVICE SYSTEMS – Would the project:</b>					
a.	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b.	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c.	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d.	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new and expanded entitlements needed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e.	Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f.	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g.	Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### Discussion

- a. The proposed project would appropriate Kern River water for diversion when water is available and does not involve the use of a wastewater treatment plant. As a result, the proposed project would have no impact on exceeding wastewater treatment requirements by the Regional Water Quality Control Board.
- b. The proposed project does not include the construction of new water treatment facilities and would use the existing water bank infrastructure for the purpose of water storage within the Kern Water Bank. The additional amount of stored water would increase and enhance reliability of water supplies to the KWBA members during dry years. Since no new construction is proposed, there would be no significant environmental effects resulting from construction. Therefore, no impact would occur.
- c. The proposed project does not make use of stormwater facilities and no construction is proposed. The operation of the water bank provides some flood protection through the diversion of available Kern River water. Therefore, no impact would occur.

- d. The proposed project would appropriate Kern River water for diversion when water is available for storage and later recovery for beneficial uses. The proposed project would increase reliability of water supplies for current agricultural and some municipal and industrial uses. Although the proposed project plans to serve its members and supply water when water is available (rather than seek water service from existing public utilities or services), the project does need to secure new or expanded entitlements. Consequently, the Draft EIR will analyze this topic further. A water availability analysis is being conducted for the water right proceeding before the SWRCB, which will serve as the project's analysis of whether sufficient water is available to serve this new entitlement.
- e. The proposed project does not make use of the local or regional wastewater treatment facilities so no additional service demands would arise. Therefore, no impact would occur.
- f. The proposed project would appropriate Kern River water for diversion when water is available for storage and recovery within the existing operations of the Kern Water Bank would not create any additional demand on the area's solid waste landfill capacity. The project would not substantially increase the current solid waste generated on site. Therefore, impacts would be less than significant.
- g. The proposed project would comply with all federal, state, and local regulations regarding solid waste. Therefore, no impact would occur.

**18. MANDATORY FINDINGS OF SIGNIFICANCE**

	Potentially Significant Impact	Less than Significant with Project Mitigation	Less than Significant Impact	No Impact
<b>MANDATORY FINDINGS OF SIGNIFICANCE</b>				
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**Discussion**

- a. While the project may have benefits to on-site biological resources, the incremental increases in diversions from the Kern River associated with the project may result in downstream effects related to instream or riparian habitat for fish or wildlife species. (See **Discussions 4.a** and **4.b**, above.) Therefore, this potential impact will be evaluated in the Draft EIR. Measures identified in the HCP/NCCP for the Kern Water Bank would ensure that biological resources on site would be properly managed. The project does not have the potential to eliminate important examples of the major periods of California history or prehistory.
- b. The proposed project is not anticipated to have any impacts that are individually limited but cumulatively considerable. Nonetheless, cumulative impacts will be addressed in the Draft EIR.
- c. The proposed project is not anticipated to result in any substantial adverse effects on human beings, either directly or indirectly, other than those effects already identified for study in the Draft EIR.



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## **INITIAL STUDY PREPARERS**

### **Kern Water Bank Authority**

Jonathan Parker, General Manager

### **Impact Sciences**

Joe Gibson, Principal, Project Manager

Daryl Koutnik, Ph.D., Biological Services Manager

Ken Wilson, RG, CEG

Chris Hampson, Project Planner

Ian Hillway, Publications Manager

Lisa Cuoco, Publications Coordinator

## Comment Letters

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COLIN L. PEARCE  
DIRECT DIAL: +1 415 957 3015  
PERSONAL FAX: +1 415 704 3098  
E-MAIL: CL.Pearce@DuaneMorris.com

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www.duanemorris.com

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- MEXICO CITY
- ALLIANCE WITH
- MIRANDA & ESTAVILLO

March 22, 2012

BY HAND DELIVERY

Jonathan Parker  
General Manager  
Kern Water Bank Authority  
Suite 500  
1620 Mill Rock Way  
Bakersfield CA 93309

Re: City of Bakersfield's Comments to Kern Water Bank Authority's Notice of Preparation for "Kern Water Bank Conservation and Storage Project"

Dear Mr. Parker:

I am outside water counsel for the City of Bakersfield ("City"). On behalf of the City, I submit the following comments to the February 16, 2012 Notice of Preparation ("NOP") for the Kern Water Bank Authority's ("KWBA") Environmental Impact Report ("EIR") for the "Kern Water Bank Conservation and Storage Project" ("Project").

At the outset, the City points out that it supports many of the objectives of the Project, including, in particular, increased quantities of water flowing in the Kern River channel. The City agrees with KWBA's determination that increased flows of water in the Kern River will provide multiple benefits to the region, including increasing groundwater recharge, enhancing riverine and wetland ecology and habitats, improving water quality, and improving the aesthetic quality of the River. The City also supports efforts by local water districts to secure and provide an efficient, reliable and environmentally sound water supply.

The City has a high level of interest in the Project, and the potential impacts of the Project, based on the City's role as the operator and record keeper on the Kern River within the First Pont service area. The City also holds historic pre-1914 appropriative water rights on the Kern River, which rights would presumably be significantly impacted by the Project.

DUANE MORRIS LLP

SPEAR TOWER, ONE MARKET PLAZA, SUITE 2200  
SAN FRANCISCO, CA 94105-1127  
DM23401678.1 R0041/00018

PHONE: +1 415 957 3000 FAX: +1 415 957 3001

The City also understands that the proposed EIR would support and analyze the impacts of KWBA's application to appropriate Kern River water filed with the California State Water Resources Control Board ("SWRCB"). The City, as well as several other local entities, has filed a competing application to appropriate much of the same water sought by KWBA. The City is currently engaged in the preparation of an EIR which will support the City's application to appropriate, and which would help implement a project, the Kern River Flow and Municipal Water Project ("KRFMWP"), which would use much of the same water proposed for use in KWBA's Project.

The City has a number of concerns with and objections to KWBA's application to appropriate. The City expects it will raise those concerns and objections in future proceedings before the SWRCB involving the Kern River.

The City welcomes the opportunity to provide the following general and specific comments regarding the NOP and proposed EIR for KWBA's Project.

#### **1. General Comments**

The NOP does not sufficiently disclose the purpose and objectives of the Project. The NOP does not clearly indicate that the Project is entirely based and dependent upon a favorable decision by the SWRCB with regard to KWBA's application to appropriate Kern River water. The NOP is misleading and incomplete as a result of its failure to identify and discuss in detail KWBA's application to appropriate, and the competing applications to appropriate.

The NOP does not provide necessary information as to the source, nature and quantity of water that would be utilized in the Project. The NOP does not identify the specific quantities of water which would be used in connection with various components and objectives of the Project, including the quantity of water that would be used to increase flows of water in the Kern River channel, or the quantity of water that would be recharged within the Kern Water Bank. The NOP also does not identify the quantity of water that that would be available and utilized in connection with the Project in dry years, average years and wet years.

The NOP does not identify or describe the historical and current use of the water which would be utilized in the Project. The NOP does not indicate that the EIR will review the impact of the Project and increased flows of water pursuant to the Project, on other entities which use Kern River water, including the City. The NOP further does not indicate that the EIR will review basin or area wide impacts of the Project, including impacts on water supply, groundwater levels, and water quality.

In the Initial Study attached to the NOP, KWBA indicates that "the Project would involve the appropriation of Kern River water for diversion when water is available." Such a vague, general statement does not satisfy the requirements of CEQA. The EIR must provide specific details regarding the appropriation and diversion of water in connection with the Project, so that

Jonathan Parker  
March 22, 2012  
Page 3

the City, the SWRCB and other interested entities can adequately and completely assess the impacts of such diversions.

The Project Description in the NOP fails to include a discussion of the baseline current and historical diversions of water from the Kern River. The NOP also fails to describe the Kern River water rights, if any, of KWBA and its member districts. The NOP also fails to identify and describe the Kern River water rights held by the City and other entities, and how such rights impact the ability of KWBA to implement the Project.

The EIR should include analysis of a sufficient number of alternatives to comply with the requirements of CEQA, including alternatives tied to increased conservation by KWBA and its member districts, alternate water supplies for the Project, and dual purpose alternatives that would allow KWBA to implement its Project without interfering with the City's water rights and use of water, or the City's competing KRFMWP.

The City is concerned that the Project could involve or lead to transfers or sales of Kern River water outside the region. The EIR should identify and discuss in detail potential transfers of water, or it should provide assurances that the Project will not involve or effectuate out of area transfers of water. This is a valid, real concern because some of KWBA's member districts have sold and transferred Kern River water for use outside the area in prior years, contrary to the policies of the City.

## **2. Specific Comments**

KWBA indicates that one of its member districts, the "Kern County Water Agency on behalf of its Improvement District 4," will not participate in the Project. The City questions how the EIR can completely and comprehensively analyze the Project, and the impacts of the Project, if one of the member districts is not participating in the Project. The City also questions whether the KWBA has authority to act on behalf of less than all of its member districts in connection with the Project.

The NOP indicates in several places that KWBA provides water for "urban" water supplies, including for "residents in the City of Bakersfield." The only KWBA member district which provides municipal water service, however, the Kern County Water Agency's Improvement District No. 4, is not participating in the Project. None of the remaining member districts provide water service to residents of the City.

The description of the "Project Area" in the NOP is not clear or consistent. The NOP initially identifies the "Project Area" as the Kern Water Bank boundaries, as shown in Figure 1 attached to the NOP. The NOP indicates, however, that the Project will involve activities, components and impacts in areas outside of the Kern Water Bank, such as in the Kern River channel within the City.

Jonathan Parker  
March 22, 2012  
Page 4

The NOP further indicates that member districts of KWBA may utilize water acquired in connection with the Project. It appears that the Project Area should therefore also encompass the boundaries and service areas of the member districts.

At page 6, the NOP indicates that water for the Project “will be derived from unappropriated Kern River water.” The NOP fails to identify the quantity of such Kern River water, when it will be available, how and where such water is currently being used, and which entity or entities are currently using the water. Absent such information, it is difficult to see how the EIR can properly analyze the impacts of the Project.

The statement on page 6 of the NOP that the “Law of the River” is “generally administered by the Kern River Watermaster” is not accurate. As the NOP acknowledges, the duties of the Kern River Watermaster are set forth in the 1962 Kern River Water Rights and Storage Agreement. That agreement does not indicate that the Kern River Watermaster’s responsibilities include the “administration” of the “Law of the River.” The City is not otherwise aware of any instances in which the Kern River Watermaster has “administered” the Law of the River, or any other law, in connection with the Kern River.

At pages 6 and 7, the NOP discusses a “Flow Policy” implemented by the Kern River Watermaster, and the diversion and storage of “flood flows” in connection with such policy. The NOP does not define or describe the “flood flows,” nor does the NOP describe how the “Flow Policy” relates, if at all, to the Project. It is additionally not clear whether the Flow Policy has previously been subjected to CEQA review.

The NOP indicates, at page 7, that KWBA members have in the past “directly” obtained quantities of Kern River water through “purchases or transfers.” The EIR should indicate whether and to what extent such prior acquisitions involve or overlap with the supply of water which would be utilized in the Project. The EIR should also indicate whether, and to what extent, such purchases and transfers have already been subjected to CEQA review.

At page 8, the NOP indicates that if the SWRCB approves KWBA’s application to appropriate, water will remain in the Kern River for “instream beneficial purposes.” The NOP does not identify where, to what extent and at what time of year water will remain in the River for instream beneficial purposes. Although such information will presumably be included in the EIR for the Project, the failure to provide such essential information and details regarding the Project, and the environmental effects of the Project, raises questions with regard to KWBA’s compliance with CEQA requirements. (See e.g. 14 Cal. Code Regs §15082.)

At page 8, the NOP further states that “if the SWRCB determines that additional other water is available, KWBA reserves the right to makes claims to it.” It is not clear whether such “other water” would be obtained by KWBA pursuant to its pending application to appropriate, or whether such water is part of the Project.

Jonathan Parker  
March 22, 2012  
Page 5

Duane Morris

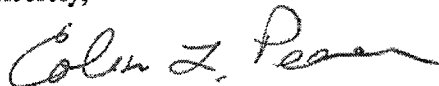
At page 8, the NOP indicates that diversion and recharge of unappropriated water to the Kern Water Bank will be accomplished through "existing infrastructure and facilities on the Kern River and Kern Water Bank, which includes a diversion structure on the Kern River." It is not clear from the NOP whether the referenced facilities and diversion structure are located within the Kern Water Bank. It is also not clear whether such facilities are owned and operated by the KWBA, or some other entity, such as the City. The NOP should provide such information so that the public understands and is informed of the actual Project Area, and the areas which will be impacted in connection with the Project.

### 3. Conclusion

The statements and comments in this letter only constitute the City's comments to the NOP. The City reserves the right to raise all appropriate objections and challenges to the Project, the EIR for the Project, KWBA's application to appropriate, and any other actions or activities undertaken by KWBA in connection with or as a result of the Project.

We thank you for your consideration of these comments. Please let us know if you have any questions with regard to these comments.

Sincerely,



Colin L. Pearce  
For DUANE MORRIS

CLP:meh

cc: Art Chianello  
Virginia Gennaro



**CENTRAL VALLEY FLOOD PROTECTION BOARD**

3310 El Camino Ave., Rm. 151  
SACRAMENTO, CA 95821  
(916) 574-0609 FAX: (916) 574-0682  
PERMITS: (916) 574-2380 FAX: (916) 574-0682



March 6, 2012

MAR 9 2012

Mr. Jonathan Parker  
Kern Water Bank Authority  
1620 Mill Rock Way, Suite 500  
Bakersfield, California 93309

Subject: Kern Water Bank Conservation and Storage Project  
SCH Number: 2012021041  
Document Type: NOP – Notice of Preparation of a Draft Environmental Impact Report

Dear Ms. Parker:

Staff of the Central Valley Flood Protection Board (Board) has reviewed the subject document and provides the following comments:

The proposed project is located within the regulated areas of the Kern River under the jurisdiction of the Central Valley Flood Protection Board. The Board is required to enforce standards for the construction, maintenance and protection of adopted flood control plans that will protect public lands from floods. The jurisdiction of the Board includes the Central Valley, including all tributaries and distributaries of the Sacramento River and the San Joaquin River, and designated floodways (Title 23 California Code of Regulations (CCR), Section 2).

A Board permit is required prior to starting the work within the Board's jurisdiction for the following:

- The placement, construction, reconstruction, removal, or abandonment of any landscaping, culvert, bridge, conduit, fence, projection, fill, embankment, building, structure, obstruction, encroachment, excavation, the planting, or removal of vegetation, and any repair or maintenance that involves cutting into the levee (CCR Section 6);
- Existing structures that predate permitting or where it is necessary to establish the conditions normally imposed by permitting. The circumstances include those where responsibility for the encroachment has not been clearly established or ownership and use have been revised (CCR Section 6);
- Vegetation plantings will require the submission of detailed design drawings; identification of vegetation type; plant and tree names (i.e. common name and scientific name); total number of each type of plant and tree; planting spacing and irrigation method that will be utilized within the project area; a complete vegetative management plan for maintenance to prevent the interference with flood control, levee maintenance, inspection, and flood fight procedures (CCR Section 131).

Mr. Jonathan Parker  
March 6, 2012  
Page 2 of 2

Vegetation requirements in accordance with Title 23, Section 131 (c) states "Vegetation must not interfere with the integrity of the adopted plan of flood control, or interfere with maintenance, inspection, and flood fight procedures."

The accumulation and establishment of woody vegetation that is not managed has a negative impact on channel capacity and increases the potential for levee over-topping. When a channel develops vegetation that then becomes habitat for wildlife, maintenance to initial baseline conditions becomes more difficult as the removal of vegetative growth is subject to federal and State agency requirements for on-site mitigation within the floodway.

Hydraulic Impacts - Hydraulic impacts due to encroachments could impede flood flows, reroute flood flows, and/or increase sediment accumulation. The DEIR should include mitigation measures for channel and levee improvements and maintenance to prevent and/or reduce hydraulic impacts. Off-site mitigation outside of the State Plan of Flood Control should be used when mitigating for vegetation removed within the project location.

The permit application and Title 23 CCR can be found on the Central Valley Flood Protection Board's website at <http://www.cvfpb.ca.gov/>. Contact your local, federal and State agencies, as other permits may apply.

If you have any questions, please contact me by phone at (916) 574-0651, or via email at [jherota@water.ca.gov](mailto:jherota@water.ca.gov).

Sincerely,



James Herota  
Staff Environmental Scientist  
Flood Projects Improvement Branch

cc: Governor's Office of Planning and Research  
State Clearinghouse  
1400 Tenth Street, Room 121  
Sacramento, California 95814

GENE R. MCMURTREY  
ROBERT W. HARTSOCK  
JAMES A. WORTH

ISAAC L. ST. LAWRENCE  
DANIEL N. RAYTIS

LAW OFFICES  
**McMURTREY, HARTSOCK & WORTH**  
A PROFESSIONAL CORPORATION

2001 22ND STREET, SUITE 100  
BAKERSFIELD, CALIFORNIA 93301

AREA CODE 661  
TELEPHONE 322-4417  
FAX 322-8123

## FACSIMILE TRANSMISSION COVER SHEET

DATE: 3-22-12

TO:

Jonathan Parker, General Manager  
KWBA

FAX NO.:

398-4959

FROM:

Gene McMurtrey

RE:

KWB Conservation + Storage Project

NO. OF PAGES: 11 (Including Cover Sheet)

HARD COPY:

WILL

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Should you have any questions or do not receive all pages of this transmittal, please contact:

Kept at (661) 322-4417.

GENE R. MCMURTREY  
ROBERT W. HARTSOCK  
JAMES A. WORTH

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ISAAC L. ST. LAWRENCE  
DANIEL N. RAYTIS

LAW OFFICES  
**McMURTREY, HARTSOCK & WORTH**  
A PROFESSIONAL CORPORATION

2001 22ND STREET, SUITE 100  
BAKERSFIELD, CALIFORNIA 93301

AREA CODE 661  
TELEPHONE 322-4417  
FAX 322-8123

March 22, 2012

**VIA FACSIMILE: (661) 398-4959**  
**and U.S. MAIL**

Mr. Jonathan Parker, General Manager  
Kern Water Bank Authority  
1620 Mill Rock Way, Suite 500  
Bakersfield, California 93309

Re: Kern Water Bank Conservation and Storage Project  
Comments on Notice of Preparation of Environmental Impact Report

Dear Mr. Parker:

We are in receipt of your Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the Kern Water Bank Conservation and Storage Project (CSP). The following comments are provided by the Kern Fan Authority (*aka* Kern River Fan Group), a joint powers authority composed of Buena Vista Water Storage District, Rosedale-Rio Bravo Water Storage District, Kern Delta Water District, and Henry Miller Water District. Please note that each of said member entities may choose to provide comments on the NOP in addition to the collective comments contained herein.

The comments of the Kern Fan Authority are:

1. The Project Description is Fatally Flawed:

An accurate, stable and finite project description is an essential element of an informative and legally sufficient EIR. [*County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 192-193.] If a project description is incomplete or inadequate, the environmental analysis will necessarily be incomplete and inadequate. [*Laurel Heights Improvement Association v. Regents of University of California* (1988) 47 Cal.3d 376, 399-400.] More particularly, a project description that omits integral components of the project is deficient since it prevents disclosure and review of the actual impacts of the full project. [*Cadiz Land Co. v. Rail Cycle, L.P.* (2000) 83 Cal.App.4<sup>th</sup> 74; *City of Santee v. County of San Diego* (1989) 214 Cal.App.3d 1438, 1450; *Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3d 818, 829.]

Here, the project description treats the CSP as an incremental addition to an existing project, namely, the Kern Water Bank Project (KWBP). [See, e.g., NOP at p. 9.] The problem with this approach is that the Kern Water Bank Authority (KWBA) has yet to comply with the

Kern Water Bank Authority  
March 22, 2012  
Page 2 of 9

California Environmental Quality Act (CEQA) with respect to the underlying KWBP. Layering the CSP on top of the unexamined KWBP results in improper segmentation of the larger project. [See, e.g., *Orinda Association v. Board of Supervisors* (1986) 182 Cal.App.3d 1145, 1171; *Riverwatch v. County of San Diego* (1999) 76 Cal.App.4<sup>th</sup> 1428.] It is necessary that the project description be amended to include the KWBP and that the larger project be examined in its entirety. Alternatively, the EIR must identify with specificity any and all documents claimed by the KWBA to constitute CEQA compliance for the KWBP.

2. The Initial Study is Fatally Flawed:

For the same reason that the project description is inadequate, so also is the Initial Study. The Initial Study analyzes the impacts of the CSP as a stand-alone project, without regard to the underlying KWBP itself. Checklist determinations are based on the false assumption that the impacts of the CSP are “incremental” to the KWBP. The Initial Study is replete with conclusions that project impacts are either non-existent or less than significant because (1) the KWBP is an existing project, (2) no new facilities would be built, (3) existing operations would not change, and the like. [See, e.g., Aesthetics 1.a., 1.c.; Agriculture and Forestry Resources 2.a., 2.c.; Air Quality 3.a., 3.b., 3.d., 3.e.; Biological Resources 4.d., 4.e.; Cultural Resources 5.a., 5.b., 5.c., 5.d.; Geology and Soils 6.a.ii., 6.b., 6.c., 6.d.; Greenhouse Gas Emissions 7.a.; Hazards and Hazardous Materials 8.h., 8.i.; Hydrology and Water Quality 9.c., 9.d., 9.h., 9.i.; Land Use and Planning 10.a., 10.b.; Mineral Resources 11.a., 11.b.; Noise 12.a., 12.b., 12.c., 12.d.; Population and Housing 13.b., 13.c.; Public Services 14.a.i., 14.a.ii., 14.a.iii.; Utilities and Service Systems 17.b., 17.f.] For the reasons stated above, the Initial Study must be reconsidered when the project description has been revised.

3. Issues To Be Addressed In the EIR:

Preferably with, but even without, amendment of the project description, the EIR for the CSP must analyze<sup>1</sup> and address each and all of the following issues and concerns:

a. The NOP acknowledges, as it must, that the EIR will include a description of the environmental setting which “...provides a baseline on which to evaluate how the proposed project may affect environmental resources.” [NOP at p. 10.] To this end, it is said that the EIR will “...identify criteria and thresholds on which the impact evaluations will be based...” and “...will evaluate whether potential impacts are significant based on identified thresholds of significance”. Establishment of the baseline is critical to a meaningful assessment of the environmental impacts of the project because the significance of environmental impacts

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<sup>1</sup> *With respect to any and all analyses please remember that an EIR must contain facts and supporting evidence, not bare conclusions or opinions. [14 Cal. Code Regs. § 15088(c); Citizens of Goleta Valley v. Board of Supervisors (1990) 52 Cal.3d 553, 568.]*

Kern Water Bank Authority  
March 22, 2012  
Page 3 of 9

can only be determined by reference to the baseline. [14 Cal. Code Regs. § 15125; *Save Our Peninsula Committee v. Monterey County Board of Supervisors* (2001) 87 Cal.App.4<sup>th</sup> 99, 119.] The problem here is that the KWBA is treating the CSP as incremental to an existing project, namely the KWBP. Accordingly, the anticipated “baseline” assumes the existence and operation of the KWBP. The EIR must not be based upon such faulty assumption. The baseline for the EIR should reflect conditions extant prior to implementation of the KWBP.

b. The NOP describes the source of supply for the CSP as Kern River water “...available for diversion or diverted into the Intertie on the California Aqueduct for flood control purposes.”<sup>2</sup> [NOP at p. 8.] If made available to the KWBA it is said that “...this water will remain in the Kern River alluvial watershed for instream beneficial purposes until diverted west and downstream of the greater Bakersfield area.” [*Id.*] Since construction of the Kern River/California Aqueduct Intertie in 1975, that facility has been utilized in only 9 years. [See Attachment 1.] The EIR must analyze the actual diversion, use and disposition of Kern River water in each year of Intertie operation and identify changes that will result from implementation of the CSP. Particular attention should be paid to how much water will “remain in the Kern River alluvial watershed” as a result of the CSP and how much water will be available for “instream beneficial purposes” as a result of the CSP.<sup>3</sup>

c. Again, the NOP describes the source of supply for the CSP as Kern River water “...available for diversion or diverted into the Intertie on the California Aqueduct for flood control purposes.” [NOP at p. 8] The NOP also correctly notes that this water is made available by and through a “Policy re – Utilization of Isabella Reservoir Flood Releases” (Flood Policy) which is entirely voluntary on the part of participating Kern River water right holders. [*Id.* at p. 6.] Since the availability of Intertie water is permissive, the list of public agencies whose approval is required for the CSP should be expanded to include at least those Kern River water right holders whose water is sought for project purposes.

d. The EIR should take into account the existence and effect of 2<sup>nd</sup> priority rights in and to the use of KWBP recharge facilities. For example, Kern Delta Water District and Buena Vista Water Storage District are Kern River water right holders with 2<sup>nd</sup> priority rights to use KWBP recharge facilities. Before the Kern River Flood Policy is implemented, and before any Kern River water is offered to the Intertie, all demands of all Kern River water right holders are met. Accordingly, in any year of potential Intertie operation, either Buena Vista or

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<sup>2</sup> This fact was confirmed by Mr. Parker at the scoping meeting held February 8, 2012. In response to a question from the audience as to the intended source of supply, Mr. Parker stated that the KWBA is “only after Intertie water” and is “not looking to upset existing rights on the River”.

<sup>3</sup> It is noted that the Initial Study Checklist, at Section 17.d, states that “[a] water availability analysis is being conducted for the water right proceeding before the SWRCB, which will serve as the project’s analysis of whether sufficient water is available to serve this new entitlement.” It is assumed that said water availability analysis can and will address the issues and concerns raised in these comments.

Kern Water Bank Authority  
March 22, 2012  
Page 4 of 9

Kern Delta (or both) can and would use all available recharge capacity of the KWBP before offering water to the Intertie. Under such circumstances, the only time Kern River water will be or become available for purposes of the CSP is at a time when the recharge capacity of the KWBP facilities is fully occupied by Kern River water right holders exercising their 2<sup>nd</sup> priority rights. The EIR should provide a detailed analysis of how the CSP is expected to function without invasion of or detriment to existing 2<sup>nd</sup> priority rights of Kern River water right holders.

e. The NOP states that the CSP will provide multiple benefits to the region such as "...enhancing riverine and wetland ecology and habitats, improving water quality, and improving the aesthetic quality of the river and the Kern Water Bank." [NOP at p. 6.] The EIR should recognize that all such regional benefits will occur whenever Kern River water destined for the Intertie is, instead, diverted to the KWBP – regardless of whether such diversion is generated by the KWBA under the CSP or by existing Kern River water right holders exercising 2<sup>nd</sup> priority rights to use the KWBP facilities. The significant difference between the former and the latter is what happens to the water after it has been salvaged from the Intertie and recharged into the groundwater basin. According to the NOP, any such water recharged by the KWBA will be used to "...enhance the dry-year water supply to the KWBA's Participating Members..." because this water is intended "...for later recovery and delivery in dry years for beneficial use..." within the boundaries of those Participating Members. [NOP at p. 6, 8.] The EIR must provide a detailed analysis of the potential environmental impacts associated with shifting ownership, place of use, and purpose of use of a substantial amount of Kern River water from existing water right holders to KWBA Participating Members. Such analysis must fully discuss the potential place of use and purpose of use of such water with and without the project.

f. The KWBA admits that, in September 2007, it filed an application with the SWRCB seeking to appropriate up to 500,000 AFY of Kern River water.<sup>4</sup> [NOP at p. 7.] It is further stated that the purpose of the CSP is to allow the KWBA to appropriate such water for the uses and purposes of the KWBA Participating Members. [*Id.*] It is important that the EIR not be written as a *post hoc* rationalization of a project to which the KWBA is already committed. To do so would be a clear and direct violation of CEQA. [*Save Tara v. City of West Hollywood* (2008) 45 Cal.4<sup>th</sup> 116.] Accordingly, the EIR must fairly and honestly consider reasonable alternatives to the CSP, including without limitation the "no project" alternative, alternatives involving 2<sup>nd</sup> priority recharge by Kern River water right holders, alternatives involving Kern River water purchases<sup>5</sup>, exchanges (balanced and unbalanced), and the like. One of an EIR's major functions "...is to ensure that all reasonable alternatives to proposed projects are thoroughly assessed by the responsible official." [*Wildlife Alive v. Chickering* (1976) 18

<sup>4</sup> Although not stated in the NOP, it is known that the KWBA paid non-refundable filing fees in excess of \$450,000 in support of such application.

<sup>5</sup> The NOP states that the "KWBA members have also purchased Kern River supplies from Kern River water rights holders." [NOP at p. 7.] The details of such sales should be provided in the EIR and all CEQA documentation relating thereto should be identified to fully assess this potential alternative.



Kern Water Bank Authority  
March 22, 2012  
Page 5 of 9

Cal.3d 190, 197.] An EIR must therefore “describe a range of reasonable alternatives to the project...which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives.” [14 Cal. Code Regs. § 15126.6(a).]

g. The KWBP and the CSP must be operated in accordance with the terms and conditions specified in that certain Memorandum of Understanding (MOU) executed by the KWBP Participants and various adjoining entities (including all members of the KFA). Among other things, the MOU provides that “[o]perators of projects within the Kern Fan Area will avoid operating recharge projects in a fashion so as to significantly diminish the natural, normal and unavoidable recharge of water native to the Kern Fan Area as it existed in pre-project condition.” [MOU § 2.b.(3).] Here, the NOP acknowledges that the “...Kern River passes through the Kern Water Bank, generally flowing in an east-northeast to west-southwest direction” and that “[t]he Kern Water Bank is located on the Kern River alluvial fan, an area consisting of alluvial deposits that provide a highly effective mechanism for direct groundwater recharge.” [NOP at p. 3.] To ensure compliance with the MOU, the EIR must analyze, quantify and account for natural, normal and unavoidable recharge as it existed in pre-project conditions. Again, it is important for purposes of this analysis to understand that pre-project (or “baseline”) conditions refer to those conditions existing before the KWBP, not just those conditions existing before the CSP.

h. The MOU further provides that project operators, in cooperation with adjoining entities, will “...prepare annual water balance studies and other interpretive studies, which will designate all sources of water and the use thereof within the study area.” To ensure compliance with the MOU, the EIR must provide water balance studies from baseline to present and a plan or procedure to maintain the same in the future.

i. The MOU further provides that project operators, in cooperation with the adjoining entities, will “...[d]evelop criteria for determining whether excessive mounding or withdrawal is occurring or is likely to occur in an area of interest.” To ensure compliance with the MOU, the EIR must provide such criteria.

j. The MOU further provides that project operators, in cooperation with adjoining entities, will “...[a]nnually or as otherwise needed determine the impacts of the Project on each of the Adjoining Entities by evaluating with and without Project conditions.” To ensure compliance with the MOU, the EIR must provide impact assessments from baseline to present and a plan or procedure to maintain the same in the future.

k. The MOU further provides that project operators, in cooperation with adjoining entities, will “...[d]evelop procedures, review data, and recommend Project operational criteria for the purpose of identifying, verifying, avoiding, eliminating or mitigating, to the extent practicable, the creation of significant imbalances or significant adverse impacts.” To ensure compliance with the MOU, the EIR must provide such procedures, data review and



Kern Water Bank Authority  
March 22, 2012  
Page 6 of 9

operational criteria. More particularly, the EIR must include an operating plan for the entire KWBP, not just the CSP, which identifies realistic recharge and recovery parameters, resources (lands, bank accounts, etc.) devoted to marketing, resources devoted to meeting the dry-year requirements of KWB participants, and the like. The operating plan should include the following:

- A forecast of the expected average annual recharge and recovery operations (rates, volumes, sources, and durations) on behalf of project-participant water supplies through the year 2035 for all waters including unregulated, high-flow waters.
- A forecast of the expected average annual recharge and recovery operations (rates, volumes, sources, and durations) on behalf of 3<sup>rd</sup> party water supplies (i.e., non-participant banking operations) through the year 2035.
- A forecast of the long-term predicted high-flow water recharge and recovery events (rates, volumes, sources, and durations) through the year 2035.
- A forecast of the projected or desired in-county and out-of-county water sales (rates, volumes, sources, and durations) and out-of-county water transfers through the year 2035.
- A forecast of the estimated facilities and estimated time periods during which the project can be made available to second-priority rights holders.
- Operating limits based on sustainable, non-impacting criteria which may be significantly less than the physical capacity of the facilities (which were understood to be over-built for operational flexibility rather than full use).
- Expected and maximum recharge and recovery scenarios including rates, durations, critical limits, and trigger conditions for impact avoidance.
- A priority-of-use schedule for all scenarios so that water level and water quality impacts from discretionary extraction does not occur under adverse circumstances.

1. The NOP states that the “Kern Water Bank provides an efficient, reliable and environmentally sound water source for... local urban water supplies ...”; that the CSP will increase reliability of the water supply available to the KWBA’s Participating Members; that such “...greater certainty is important to address the residential ... needs in the area – especially in dry years”; that CSP water will be put to beneficial use “...including municipal...uses”; and that, therefore, the EIR will consider “...growth inducing effects of the proposed project.” [NOP at pp. 2, 3, 8, 10] However, in the Initial Study checklist, at Section 13.a., it is stated that the CSP will not directly induce population growth and, therefore, the impact is considered less than significant. The EIR should fully analyze the growth inducing impacts of the project. It should not be assumed that growth inducing impacts will be less than significant until such analysis is completed.

Kern Water Bank Authority  
March 22, 2012  
Page 7 of 9

m. The NOP states that, if the SWRCB determines that other water is available, the KWBA reserves the right to make claims to it. [NOP at p. 8.] This general reference to "other water" does not constitute a sufficient description of this aspect of the CSP to allow for a fair assessment of potential impacts. Since all Kern River water has been put to beneficial use by one or more of the Kern River water right holders for well over 100 years, any change in place of use, purpose of use, point of diversion and/or method of diversion is bound to have environmental consequences which warrant review. Absent details of what water is being shifted from one place or purpose to another, an adequate assessment is impossible. The EIR cannot adequately address ill-defined activities and, therefore, a more accurate and full description of this portion of the CSP is required.

n. An EIR must identify and summarize "[a]reas of controversy known to the Lead Agency including issues raised by agencies and the public." [14 Cal. Code Regs. § 15123(b)(2).] In this regard, the EIR should identify and address issues raised in pending litigation affecting the KWBP, including without limitation *Rosedale-Rio Bravo Water Storage District, et al. v. California Department of Water Resources*, Sacramento County Superior Court Case No. 34-2010-80000703; *Central Delta Water Agency, et al v. Department of Water Resources*, Sacramento County Superior Court Case No. 34-2010-80000561 (and related cases); *Rosedale-Rio Bravo Water Storage District, et al. v. Kern Water Bank Authority*, Kern County Superior Court Case No. S-1500-CV-271619 DRL. The EIR should also address issues raised in various landowner claims filed with the KWBA and its Participating Members within the recent past.

o. From 1995 to 2005, fully seventy-five percent (75%) of banked water recovered from the KWBP has been for water sales to third parties (i.e., 138,224 AF was recovered for Participant use whereas 423,320 AF was recovered for water sales). [Monterey FEIR, App-E, p. 27]. If the KWB lands and facilities will continue to be used for water marketing purposes, particularly with respect to out-of-county sales, the EIR should clearly identify this fact, should define the parameters of the water marketing program, and should analyze the environmental effects thereof.

p. Operations within the Kern Fan area from (2007 to date) have completely dewatered the shallow aquifer under the KWB lands due to excessive project-wide recovery pumping. Such operations offer potentially adverse impacts on flow dynamics, contaminant-plume mobilization, downward interzonal flow, and water quality. A change in water levels of this magnitude is unprecedented and unstudied. The EIR must analyze or model the potential impacts and consequences of literally dewatering the entire shallow aquifer. The EIR must identify and/or determine the "critical maximum recovery (non-impacting) level" for the entire KWBP, not just the CSP. The EIR must identify and/or determine single and multi-year recovery limits necessary to avoid significant adverse impacts. The EIR must identify and/or determine a priority-of-use rule during critically dry years to eliminate discretionary third party sales when participant needs are greatest and to avoid excessive drawdown in impacted areas.

Kern Water Bank Authority  
March 22, 2012  
Page 8 of 9

q. Poor quality water is allowed and/or induced to migrate from the shallow aquifer (approx. 0-300 ft deep) into the deep aquifer (approx. 400-700 ft deep) within the Kern Fan Area because of multi-zone completion intervals in new or re-worked KWB water wells. For example, the KWB installed 39 new wells during the period 2001 - 2005 and used long, multi-zone, completion intervals in some wells to maximize the volumetric recovery capacity. Hydrographs for the period since 1995 published by KCWA on behalf of the Kern Fan Monitoring Committee show that recovery operations have created a persistent potentiometric head difference between the shallow and deep zones which is causing significant shallow-to-deep interzonal flow which did not exist prior to KWBP operations. The EIR must analyze the potential impacts and consequences of shallow-to-deep interzonal flow on water quality. Such analysis should take into account that the KWB currently has more than 70 operating wells and has proposed installing and operating as many as 132 recovery wells.

r. The EIR must describe where water is or will be recharged on and recovered from the KWB lands, any expected imbalances in the quantities of recharge versus recovery in particular areas, and differences in water quality between these areas. The EIR must discuss potential environmental impacts (e.g., changes in the basin's salt balance, migration of poor quality water, etc.) which may result from recharging and recovering water from different areas or failing to do so where indicated.

s. Attempted recharge during conditions of very shallow water table can result in various impacts including a temporary levee breach, accidental pond-water release, and/or potentially catastrophic surface structure destabilization due to shallow soil saturation and liquefaction. For example, during the year 2006 the recharge operations of the KWB caused the water table to rise all the way to the ground surface over several square miles in T30s/R25e, causing recharge-water rejection and potentially threatening the Cross Valley Canal and other surface features in that township. The EIR must analyze or model the potential impacts and consequences of mounding. The EIR must identify and/or determine the "critical maximum recharge (non-impacting) level" for the entire KWBP, not just the CSP. The EIR must identify and/or determine single and multi-year recharge limits necessary to avoid significant adverse impacts. The EIR must identify and/or determine a priority-of-use rule when mounding occurs to avoid significant adverse impacts.

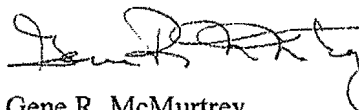
t. The NOP states that "...[a]pproximately 1 million acre-feet of water is currently stored in the Kern Water Bank." [NOP at p. 3.] The EIR must provide an analysis demonstrating the availability of storage capacity and/or infiltration rates sufficient to support this amount, as well as additions thereto contemplated by the CSP. For example, in 2003, at the insistence of KWB Participants, Rosedale-Rio Bravo Water Storage District completed a detailed study and report as to storage capacity underlying that District. The Rosedale report demonstrated that approximately 900,000 acre feet of storage capacity was available beneath the 44,000 acres comprising the District at that time. Given that the KWB is less than ½ the size of Rosedale, it is highly improbable that 1,000,000 acre feet of storage capacity underlies the

Kern Water Bank Authority  
March 22, 2012  
Page 9 of 9

20,000 acres comprising the KWB lands. The EIR must fully assess, by use of competent evidence, the storage capacity and infiltration rates available to the KWB lands. Such study should include (1) an analysis of whether past, present or proposed future use and operation of available capacity and rates will adversely impact the ability of the KWB participants or adjoining entities to balance water supplies, correct overdraft, or otherwise meet their respective water needs; (2) a tabulation of the actual physical properties, historical recharge rates of the existing pond facilities, pumping rates and durations, and a geotechnical evaluation of the aquifer properties and aquifer storage capacity under the project site; (3) geotechnical studies which fully and properly evaluate the storage coefficients, infiltration rates, and conveyance capacities of the entire recharge facility including the better sands in the east, the poorer sands in the middle of the project, and the poor quality hardpan areas which constitute roughly the western half of the entire KWB area; and (4) an analysis of the various components of water use and losses throughout this area to include evapotranspiration of plants and evaporation rates on the above cited three classes of soils.

Thank you for the opportunity to comment on the scope of the environmental analysis for the proposed project. As noted, we believe that the NOP and supporting documents are fatally flawed and that CEQA compliance will require a revised project description, revised Initial Study and revised NOP. Anything less will most assuredly invite judicial intervention.

Very truly yours,



Gene R. McMurtrey

GRM:gg  
Attachment

## *REPORT of the KERN RIVER WATERMASTER*

### TABLE OF WATER DIVERSIONS VIA THE KERN RIVER / CALIFORNIA AQUEDUCT INTERTIE

Quantities in acre-feet  
Except Where Noted...

YEAR	KERN RIVER WATER	DAYS OF OPERATION	FRIANT-KERN WATER	DAYS OF OPERATION	TOTAL WATER	TOTAL DAYS OF OPERATION	KERN RIVER ANNUAL FLOW IN PERCENT OF NORMAL
1978	168,818	84	9,113	16	177,931	84	234%
1980	138,816	112	0	0	138,816	112	212%
1982	10,339	13	11,958	21	22,307	34	171%
1983	664,036	283	96,200	83	760,236	338	331%
1984 1)	26,720	40	0	0	26,720	40	91%
1986	1,868	3	15,580	22	17,448	25	190%
1997	1,793	7	51,055	48	52,848	48	122%
1998	130,226	71	57,822	44	188,048	97	243%
2006 2)	73,411	49	28,329	30	101,740	49	170%
TOTALS	1,216,027	662	270,057	264	1,486,094	827	

- 1) KR Intertie flows carryover from 1983 Isabella storage.  
2) KR Intertie flows due to storage restrictions imposed on Isabella Reservoir

**“ATTACHMENT 1”**

**NATIVE AMERICAN HERITAGE COMMISSION**

915 CAPITOL MALL, ROOM 364  
SACRAMENTO, CA 95814  
(916) 653-6251  
Fax (916) 657-5390  
Web Site [www.nahc.ca.gov](http://www.nahc.ca.gov)  
ds\_nahc@pacbell.net



April 10, 2012

APR 12 2012

Mr. Jonathan Parker, General Manager

**Kern Water Bank Authority**

1620 Mill Rock Way, Suite 500  
Bakersfield, CA 93309

Re: SCH#2012021041 CEQA Notice of Preparation (NOP); draft Environmental Impact Report (DEIR) for the "Kern Water Bank Conservation and Storage Project;" located in Kern County, California

Dear Mr. Parker:

The Native American Heritage Commission (NAHC) is the State of California 'Trustee Agency' for the protection and preservation of Native American cultural resources pursuant to California Public Resources Code §21070 and affirmed by the Third Appellate Court in the case of EPIC v. Johnson (1985: 170 Cal App. 3<sup>rd</sup> 604). The court held that the NAHC has jurisdiction and special expertise, as a state agency, over affected Native American resources, impacted by proposed projects including archaeological, places of religious significance to Native Americans and burial sites. The NAHC wishes to comment on the proposed project.

This letter includes state and federal statutes relating to Native American historic properties of religious and cultural significance to American Indian tribes and interested Native American individuals as 'consulting parties' under both state and federal law. State law also addresses the freedom of Native American Religious Expression in Public Resources Code §5097.9.

The California Environmental Quality Act (CEQA – CA Public Resources Code 21000-21177, amendments effective 3/18/2010) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the CEQA Guidelines defines a significant impact on the environment as 'a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ... objects of historic or aesthetic significance.' In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the 'area of potential effect (APE), and if so, to mitigate that effect.

The NAHC Sacred Lands File (SLF) search resulted as follows: **Native American cultural resources were not identified** within the project area identified. Also, the absence of archaeological resources does not preclude their existence. . California Public Resources Code §§5097.94 (a) and 5097.96 authorize the NAHC to establish a Sacred Land Inventory to record Native American sacred sites and burial sites. These records are exempt from the provisions of the California Public Records Act pursuant to California Government Code §6254(r). The purpose of this code is to protect such sites from vandalism, theft and destruction. The NAHC "Sacred Sites," as defined by the Native American Heritage Commission and the California Legislature in California Public Resources Code §§5097.94(a) and 5097.96. Items in the NAHC

Sacred Lands Inventory are confidential and exempt from the Public Records Act pursuant to California Government Code §6254 (r).

Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries of cultural resources or burial sites once a project is underway. Culturally affiliated tribes and individuals may have knowledge of the religious and cultural significance of the historic properties in the project area (e.g. APE). We strongly urge that you make contact with the list of Native American Contacts on the list of Native American contacts, to see if your proposed project might impact Native American cultural resources and to obtain their recommendations concerning the proposed project. Special reference is made to the *Tribal Consultation* requirements of the California 2006 Senate Bill 1059: enabling legislation to the federal Energy Policy Act of 2005 (P.L. 109-58), mandates consultation with Native American tribes (both federally recognized and non federally recognized) where electrically transmission lines are proposed. This is codified in the California Public Resources Code, Chapter 4.3 and §25330 to Division 15.

Furthermore, pursuant to CA Public Resources Code § 5097.95, the NAHC requests that the Native American consulting parties be provided pertinent project information. Consultation with Native American communities is also a matter of environmental justice as defined by California Government Code §65040.12(e). Pursuant to CA Public Resources Code §5097.95, the NAHC requests that pertinent project information be provided consulting tribal parties pursuant to CA Public Resources Code §5097.95. The NAHC recommends *avoidance* as defined by CEQA Guidelines §15370(a) to pursuing a project that would damage or destroy Native American cultural resources and Section 2183.2 that requires documentation, data recovery of cultural resources.

Consultation with tribes and interested Native American consulting parties, on the NAHC list, if the project is under federal jurisdiction, should be conducted in compliance with the requirements of federal NEPA and Section 106 and 4(f) of federal NHPA (16 U.S.C. 470 *et seq.*), 36 CFR Part 800.3 (4)(f) (2) & .5, the President's Council on Environmental Quality (CSQ, 42 U.S.C 4371 *et seq.* and NAGPRA (25 U.S.C. 3001-3013) as appropriate. The 1992 *Secretary of the Interiors Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including cultural landscapes. Also, federal Executive Orders Nos. 11593 (preservation of cultural environment), 13175 (coordination & consultation) and 13007 (Sacred Sites) are helpful, supportive guides for Section 106 consultation. The aforementioned Secretary of the Interior's *Standards* include recommendations for all 'lead agencies' to consider the historic context of proposed projects and to "research" the cultural landscape that might include the 'area of potential effect.'

Confidentiality of "historic properties of religious and cultural significance" should also be considered as protected by California Government Code §6254(r) and may also be protected under Section 304 of the NHPA or at the Secretary of the Interior discretion if not eligible for listing on the National Register of Historic Places. The Secretary may also be advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C., 1996) in issuing a decision on whether or not to disclose items of religious and/or cultural significance identified in or near the APEs and possibility threatened by proposed project activity.

Furthermore, Public Resources Code Section 5097.98, California Government Code §27491 and Health & Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be

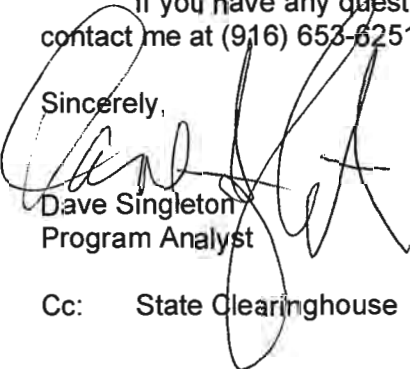


followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery'.

To be effective, consultation on specific projects must be the result of an ongoing relationship between Native American tribes and lead agencies, project proponents and their contractors, in the opinion of the NAHC. Regarding tribal consultation, a relationship built around regular meetings and informal involvement with local tribes will lead to more qualitative consultation tribal input on specific projects.

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251.

Sincerely,



Dave Singleton  
Program Analyst

Cc: State Clearinghouse

Attachment: Native American Contact List



## Native American Contacts

Kern County

April 10, 2012

Santa Rosa Rancheria  
Rueben Barrios, Chairperson  
P.O. Box 8  
Lemoore , CA 93245  
(559) 924-1278  
(559) 924-3583 Fax

Tache  
Tachi  
Yokut

Tejon Indian Tribe  
Katherine Montes- Morgan, Chairperson  
2234 4th Street  
Wasco , CA 93280  
kmorgan@bak.rr.com  
661-758-2303

Yowlumne  
Kitanemuk  
Kawaiisu

Tule River Indian Tribe  
Neil Peyron, Chairperson  
P.O. Box 589  
Porterville , CA 93258  
chairman@tulerivertribe-nsn.  
(559) 781-4271  
(559) 781-4610 FAX

Yokuts

Kawaiisu Tribe of Tejon Reservation  
David Laughinghorse Robinson  
PO Box 1547  
Kernville , CA 93238  
(661) 664-3098 - work  
(661) 664-7747 - home  
horse.robinson@gmail.com

Kawaiisu

Ron Wermuth  
P.O. Box 168  
Kernville , CA 93238  
warmoose@earthlink.net  
(760) 376-4240 - Home  
(916) 717-1176 - Cell

Tubatulabal  
Kawaiisu  
Koso  
Yokuts

Tejon Indian Tribe  
Ernie Garcia  
23437 Via Gayo  
Valencia , CA 91355  
661-254-4856

Yowlumne  
Kitanemuk

Kitanemuk & Yowlumne Tejon Indians  
Delia Dominguez, Chairperson  
115 Radio Street  
Bakersfield , CA 93305  
deedominguez@juno.com  
(626) 339-6785

Yowlumne  
Kitanemuk

Kern Valley Indian Council  
Robert Robinson, Co-Chairperson  
P.O. Box 401  
Weldon , CA 93283  
brobinson@iwvisp.com  
(760) 378-4575 (Home)  
(760) 549-2131 (Work)

Tubatulabal  
Kawaiisu  
Koso  
Yokuts

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH#2012021041; CEQA Notice of Preparation (NOP); draft Environmental Impact Report (DEIR) for the Kern Water Bank Conservation and Storage Project; located in Kern County, California.

**Native American Contacts**  
Kern County  
April 10, 2012

Tubatulabals of Kern Valley  
Dr. Donna Begay, Tribal Chairwoman  
P.O. Box 226 Tubatulabal  
Lake Isabella, CA 93240  
drbegay@aol.com  
(760) 379-4590  
(760) 379-4592 FAX

Santa Rosa Tachi Rancheria  
Lalo Franco, Cultural Coordinator  
P.O. Box 8 Tachi  
Lemoore , CA 93245 Tache  
(559) 924-1278 - Ext. 5 Yokut  
(559) 924-3583 - FAX

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH#2012021041; CEQA Notice of Preparation (NOP); draft Environmental Impact Report (DEIR) for the Kern Water Bank Conservation and Storage Project; located in Kern County, California.

P.O. Box 81435  
Bakersfield, CA 93380-1435  
Administration  
Telephone: 661-393-2696  
Facsimile: 661-393-6884



33380 Cawelo Avenue  
Bakersfield, CA 93308-9575  
Water Orders and Operations  
Telephone: 661-393-3361  
www.northkernwsd.com

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## NORTH KERN WATER STORAGE DISTRICT

March 22, 2012

Jonathan Parker, General Manager  
Kern Water Bank Authority  
1620 Mill Rock Way, Suite 500  
Bakersfield, CA 93309

Subject: Comments on the Kern Water Bank Authority, February 16, 2012 Notice of Preparation of an Environmental Impact Report for the Kern Water Bank Conservation and Storage Project

Dear Mr. Parker:

Thank you for the opportunity to comment on the Kern Water Bank Authority (Authority) February 16, 2012 letter soliciting comments regarding its Notice of Preparation of an Environmental Impact Report for the proposed Kern Water Bank Conservation and Storage Project (Project). This letter is prepared by North Kern Water Storage District (North Kern) to provide input on the recommended scope and content of a Draft Environmental Impact Report (DEIR) for the Project.

North Kern strongly supports and encourages the Authority in its effort to develop a mutually beneficial water management program which will continue the Authority's current practice to maximize to the fullest extent possible the conservation and beneficial use of Kern River water consistent with historic Kern River water rights and priorities. In particular, North Kern supports the Authority in its effort to design and operate a Project which will provide significant environmental benefits while avoiding or minimizing adverse environmental impacts in the region.

As you know, North Kern along with several other public agencies administer water projects located in the region north of Kern River (e.g., Shafter-Wasco Irrigation District, Semitropic Water Storage District, Cawelo Water District, Kern Tulare Water District, and others). These agencies all share and rely on groundwater existing in a common and interconnected groundwater basin. For over 130 years that portion of the groundwater basin has annually been replenished and sustained in substantial part from tens of thousands of acre-feet of pristine Kern River waters. Any plan or project which proposes to alter the historic Kern River supply in this region has the potential of causing significant environmental impacts.



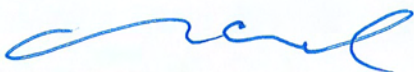
Jonathan Parker, General Manager  
Kern Water Bank Authority  
March 22, 2012  
Page 2 of 2

We understand that the primary objective of the Authority's Project is to continue the historic use by the Authority of Kern River supply which may be determined by the State Water Resources Board to be available for appropriation.

To the extent that the Project contemplates including any Kern River water supply which historically has been diverted and used by North Kern in the northern region, then we recommend that the DEIR include a reasonable range of alternatives, mitigation measures and analysis which will ensure that the Project is designed and implemented in a manner which will avoid causing injury to North Kern and the underlying groundwater resources and aquifer in the region north of the Kern River. In particular, the DEIR will need to provide a comprehensive analysis of all direct, indirect and cumulative effects within North Kern and the broader region relating to potential reductions in Kern River water supply: associated increased pumping or reduced recharge of groundwater in a currently overdrafted aquifer; acceleration of the rate of decline of groundwater levels; land subsidence; deterioration of groundwater quality due to increased concentration of salts or other minerals; operational expenses to replace reduced Kern River supplies including increasing the operation of wells, pumps and any commensurate increase in the consumption of energy and potential for air quality and greenhouse gas impacts; changes to agricultural land and land uses; and, socio-economic impacts.

We look forward to working with you on this matter. Thank you for the opportunity to comment on the Notice of Preparation. Should you have any questions please contact me at your convenience.

Sincerely,



Richard A. Diamond  
General Manager  
North Kern Water Storage District

# WEST SIDE MOSQUITO & VECTOR CONTROL DISTRICT

P.O. BOX 205  
TAFT, CALIFORNIA 93268

7004 GAS CO. RD.

PHONE (661) 763-3510  
FAX (661) 763-5793  
EMAIL [wsm.mosq@wildblue.net](mailto:wsm.mosq@wildblue.net)

Trustees  
VIRGIL BELL  
DAVID HOSKING  
ROY HOUSE  
PAUL RUBADEAU

Manager  
MARGY TIMS

March 1, 2012

MAR 5 2012

Mr. Jonathan Parker  
Kern Water Bank Authority  
1620 Mill Rock Way, Suite 500  
Bakersfield, CA 93309

Re: Response to Environmental Impact Report for the Kern Water Bank Conservation  
and Storage Project.

Dear Mr. Parker:

As you know the mosquito breeding in these ponds is our main concern. I believe the mosquito breeding in these ponds "IS" a Potentially Significant Impact, due to the Health and Safety issues from the disease carrying mosquitoes. Now that we have to operate under the NPDES Permit; it is going to make the chemical treatment of these ponds more difficult. The expenses to the District in April – July of 2011 for Aerial spray, chemicals and fish was almost \$77,000. These expenses do not include personnel and equipment. The total expense through October 2011 was well over \$150,000.

If these ponds were mowed before flooding so that vegetation is below the water line, and also, having drivable roads around each pond would be ideal in helping to control the mosquito population and expenses. If this could be done in all of the ponds that are in the vicinity of any houses in the area would be very helpful. We did have positive WNV mosquito pools in the area in 2011.

As I stated, any mowing or road work done in and around these ponds would be very helpful in reducing the disease carrying mosquito population, chemical usage and our overall expenses. Your consideration in these issues would be appreciated.

Sincerely,



Margy Tims  
Manager

**APPENDIX B**  
**1995 MEMORANDUM OF UNDERSTANDING REGARDING OPERATION AND**  
**MONITORING OF THE KERN WATER BANK GROUNDWATER BANKING PROGRAM**

**MEMORANDUM OF UNDERSTANDING**

**REGARDING OPERATION AND MONITORING  
OF THE  
KERN WATER BANK  
GROUNDWATER BANKING PROGRAM**

This Memorandum of Understanding is entered into the 26<sup>th</sup> day of October, 1995, by and among DUDLEY RIDGE WATER DISTRICT, KERN COUNTY WATER AGENCY, SEMITROPIC WATER STORAGE DISTRICT, TEJON CASTAC WATER DISTRICT & WESTSIDE MUTUAL WATER COMPANY, LLC, and WHEELER RIDGE-MARICOPA WATER STORAGE DISTRICT, which have collectively formed the KERN WATER BANK AUTHORITY ("KWBA") hereinafter collectively referred to as "Project Participants," and BUENA VISTA WATER STORAGE DISTRICT ("BVWSD"), ROSEDALE-RIO BRAVO WATER STORAGE DISTRICT ("RRBWS"), KERN DELTA WATER DISTRICT ("KDWD"), HENRY MILLER WATER DISTRICT ("HMWD"), and WEST KERN WATER DISTRICT ("WKWD"), hereinafter collectively referred to as "Adjoining Entities."

**R E C I T A L S**

WHEREAS, Project Participants expect title to that certain real property more particularly shown on the map attached hereto as Exhibit "A" and incorporated herein by this reference ("Project Site") to be transferred to the KWBA as provided for in the "Statement of Principles . . . for the Development, Operation and Maintenance of the Kern Fan Element of the Kern Water Bank" ("Statement of Principles") agreed to March 30, 1995; and

WHEREAS, the KWBA intends to develop and improve the Project Site as necessary to permit the importation, percolation and storage of water in underground aquifers for later extraction, transportation and use for the benefit of Project Participants, all as more fully described in Exhibit "B" attached hereto and incorporated herein by this reference ("Project"); and

WHEREAS, Adjoining Entities encompass lands and/or operate existing projects lying adjacent to the Project Site as shown on said Exhibit A; and

WHEREAS, in recent years, water banking, extraction and transfer programs in Kern County have become increasingly numerous and complex; and

WHEREAS, it is appropriate and desirable to mitigate or eliminate any short-term and long-term significant adverse impacts of new programs upon potentially affected projects and landowners within the boundaries of Adjoining Entities; and

WHEREAS, Adjoining Entities and Project Participants desire that the design, operation and monitoring of the Project be conducted and coordinated in a manner to insure that the beneficial effects of the Project to the Project Participants are maximized but that the Project does not result in significant adverse impacts to water levels, water quality or land subsidence within the boundaries of Adjoining Entities, or otherwise interfere with the existing and ongoing programs of Adjoining Entities;

NOW THEREFORE, BE IT RESOLVED that, based upon the mutual covenants contained herein, the parties hereto agree as follows:

1. Project Design and Construction. Project Participants have completed a preliminary design of the Project described in Exhibit B hereto representing the maximum facilities for the Project. Said preliminary design has been reviewed and approved by the Parties hereto. The KWBA intends to, and if it does so will, construct all or a portion of the Project



consistent with such preliminary design. Any major modifications of the facilities and/or significant changes from that described in Exhibit B and in the environmental documentation for the Project will be subject to additional environmental review pursuant to CEQA and will be subject to review of the Monitoring Committee prior to implementation.

2. Project Operation. The Project shall be operated to achieve the maximum water storage and withdrawal benefits for Project Participants consistent with avoiding, mitigating or eliminating, to the greatest extent practicable, significant adverse impacts resulting from the Project. To that end, the Project shall be operated in accordance with the Statement of Principles and the following Project Objectives and the Minimum Operating Criteria:

a. Project Objectives. Consistent with the Project Description, the Project Participants will make a good faith effort to meet the following objectives, which may or may not be met:

(1) The Parties should operate their projects in such manner as to maintain and, when possible, enhance the quality of groundwater within the Project Site and the Kern Fan Area, as shown at Exhibit C.

(2) If supplies of acceptable recharge water exceed recharge capacity, all other things being equal, recharge priority should be given to the purest or best quality water.

(3) Each project within the Kern Fan Area should be operated with the objective that the average concentration of total dissolved salts in the recovered water will exceed the average concentration of total dissolved salts in the recharged water, at a minimum, by a percentage equal to or greater than the percentage of surface recharge losses. The average shall be calculated from the start of each Project.

(4) To maintain or improve groundwater quality, recovery operations should extract poorer quality groundwater where practicable. Blending may be used to increase

extraction of lesser quality groundwater unless doing so will exacerbate problems by generating unfavorable movement of lesser quality groundwater. It is recognized that the extent to which blending can help to resolve groundwater quality problems is limited by regulatory agency rules regarding discharges into conveyance systems used for municipal supplies, which may be changed from time to time.

(5) All groundwater pumpers should attempt to control the migration of poor quality water. Extensive monitoring will be used to identify the migration of poor quality water and give advance notice of developing problems. Problem areas may be dealt with by actions including, but not limited to:

(a) limiting or terminating extractions that tend to draw lesser quality water toward or into the usable water areas;

(b) increasing extractions in areas that might generate a beneficial, reverse gradient;

(c) increasing recharge within the usable water area to promote favorable groundwater gradients.

(6) It is intended that all recovery of recharged water be subject to the so-called "golden rule." In the context of a banking project, the "golden rule" means that, unless acceptable mitigation is provided, the banker may not operate so as to create conditions that are worse than would have prevailed absent the project giving due recognition to the benefits that may result from the project, all as more fully described at paragraph 2(b)12 below.

(7) The Project should be developed and operated so as to prevent, eliminate or mitigate significant adverse impacts. Thus, the Project shall incorporate mitigation measures as necessary. Mitigation measures to prevent significant adverse impacts from occurring include but are not limited to the following: (i) spread out recovery area; (ii) provide

buffer areas between recovery wells and neighboring overlying users; (iii) limit the monthly, seasonal, and/or annual recovery rate; (iv) provide sufficient recovery wells to allow rotation of recovery wells or the use of alternate wells; (v) provide adequate well spacing; (vi) adjust pumping rates or terminate pumping to reduce impacts, if necessary; (vii) impose time restrictions between recharge and extraction to allow for downward percolation of water to the aquifer; and (viii) provide recharge of water that would otherwise not recharge the Kern Fan Basin. Mitigation measures that compensate for unavoidable adverse impacts include but are not limited to the following: (i) with the consent of the affected overlying user, lower the pump bowls or deepen wells as necessary to restore groundwater extraction capability to such overlying user; (ii) with the consent of the affected overlying user, provide alternative water supplies to such overlying user; and (iii) with the consent of the affected overlying user, provide financial compensation to such overlying user.

b. Minimum Operating Criteria.

(1) The Monitoring Committee shall be notified prior to the recharge of potentially unacceptable water, such as "produced water" from oilfield operations, reclaimed water, or the like. The Monitoring Committee shall review the proposed recharge and make recommendations respecting the same as it deems appropriate. Where approval by the Regional Water Quality Control Board is required, the issuance of such approval by said Board shall satisfy this requirement.

(2) Recharge may not occur in, on or near contaminated areas, nor may anyone spread in, on or near an adjoining area if the effect will be to mound water near enough to the contaminated area that the contaminants will be picked up and carried into the uncontaminated groundwater supply. When contaminated areas are identified within or adjacent to the Project, the KWBA and the Project Participants shall also:

(a) participate with other groundwater pumpers to investigate the source of the contamination;

(b) work with appropriate authorities to ensure that the entity or individual, if any, responsible for the contamination meets its responsibilities to remove the contamination and thereby return the Project Site to its full recharge and storage capacity;

(c) operate the Project in cooperation with other groundwater pumpers to attempt to eliminate the migration of contaminated water toward or into usable water quality areas.

(3) Operators of projects within the Kern Fan Area will avoid operating recharge projects in a fashion so as to significantly diminish the natural, normal and unavoidable recharge of water native to the Kern Fan Area as it existed in a pre-project condition. If and to the extent this occurs as determined by the Monitoring Committee, the parties will cooperate to provide equivalent recharge capacity to offset such impact.

(4) The mitigation credit for fallowed Project land shall be .3 acre-feet per acre per year times the amount of fallowed land included in the Project Site in the year of calculation (which for the present approximately 19,890 acre Project Site is 5,967 acre-feet per year).

(5) The lands described in Exhibit A (19,883 acres) may be utilized for any purpose consistent with the Statement of Principles, by the KWBA provided, however, the use of said property shall not cause or contribute to overdraft of the groundwater basin. In this connection, any consumptive use of water on the Property which exceeds .3 acre-feet per acre (i.e., the mitigation credit) on a acre by acre basis shall be provided from supplemental sources that do not create or contribute to overdraft.

(6) Each device proposed to measure recharge water to be subsequently recovered and/or recovery of such water will be initially evaluated and periodically reviewed by the Monitoring Committee. Each measuring device shall be properly installed, calibrated, rated, monitored and maintained by and at the expense of the owner of the measuring device.

(7) It shall be the responsibility of the user to insure that all measuring devices are accurate and that the measurements are provided to the Monitoring Committee at the time and in the manner required by the Monitoring Committee.

(8) A producer's flow deposited into another facility, such as a transportation canal, shall be measured into such facility by the operator thereof and the measurement reported to the Monitoring Committee at the time and in the manner required by such Monitoring Committee.

(9) The Monitoring Committee or its designee will maintain official records of recharge and recovery activities, which records shall be open and available to the public. The Monitoring Committee will have the right to verify the accuracy of reported information by inspection, observation or access to user records (i.e., P.G.&E. bills). The Monitoring Committee will publish or cause to be published annual reports of operations.

(10) Losses shall be assessed as follows:

(a) Surface recharge losses shall be fixed and assessed at a rate of 6% of water diverted for recharge.

(b) To account for all other actual or potential losses (including migration losses), a rate of 4% of water placed in a bank account shall be deducted to the extent that the Project Participant has been compensated within three (3) years following the end of the calendar year in which the water was banked at the SWP Delta Water Rate charged by DWR at

the time of payment; provided further, however, that the water purchased and subtracted from a groundwater bank account pursuant to this provision shall only be used for overdraft correction.

(c) An additional 5% loss shall be assessed against any water diverted to the Project Site for banking by, for, or on behalf of any out-of-County person, entity or organization and/or against any banked water sold or transferred to any out-of-County person, entity or organization (except current SWP Ag Contractors).

(d) All losses provided for herein represent amounts of water that are non-bankable and non-recoverable by Project Participants.

(11) Recovery of banked water shall be from the Project Site and recovery facilities shall be located therein. Recovery from outside the Project Site may be allowed with the consent of the District or entity having jurisdiction over the area from which the recovery will occur and upon review by the Monitoring Committee.

(12) Recovery of banked water may not be allowed if not otherwise mitigated if it will result in significant adverse impacts to surrounding overlying users. "Adverse impacts" will be evaluated using data applicable in zones including the area which may be affected by the Project of approximately five miles in width from the boundaries of the Project as designated by the Monitoring Committee. In determining "adverse impacts," as provided at this paragraph and elsewhere in this MOU, consideration will be given to the benefits accrued over time during operation of the Project to landowners surrounding the Project Site including higher groundwater levels as a result of operation of the Project. In determining non-Project conditions vs Project conditions, credit toward mitigation of any otherwise adverse impacts shall be recognized to the extent of the 4% loss and 5% loss recognized under paragraphs 2.b.(10) (b) and (c), for the mitigation credit recognized under paragraph 2.b.(4), if any, and to the extent of recharge on the Project Site for overdraft correction.

(13) To the extent that interference, other than insignificant interference, with the pumping lift of any existing active well as compared to non-Project conditions, is attributable to pumping of any wells on the Project Site, KWBA will either stop pumping as necessary to mitigate the interference or compensate the owner for such interference, or any combination thereof. The Monitoring Committee will establish the criteria necessary to determine if well interference, other than insignificant interference, is attributable to pumping of Project wells by conducting pumping tests of Project wells following the installation of monitoring wells (if not already completed) and considering hydrogeologic information.

(14) The Kern Fan Element Groundwater Model, with input from the Project Participants and Adjoining Entities, and utilizing data from a comprehensive groundwater monitoring program, may be used by the Monitoring Committee as appropriate to estimate groundwater impacts of the Project.

3. Project Monitoring. Adjoining Entities agree to participate in a comprehensive monitoring program and as members of a Monitoring Committee, as hereinafter more particularly described, in order to reasonably determine groundwater level and water quality information under Project and non-Project conditions. The monitoring program will more particularly require the following:

a. Monitoring Committee. A Monitoring Committee shall be established, comprised of one representative of each of the Adjoining Entities (initially 5) and one representative of each of the Project Participants (initially 6). The Committee shall:

(1) Engage the services of a suitable independent professional groundwater specialist who shall, at the direction of the Committee, provide assistance in the performance of the tasks identified below;

(2) Meet and confer monthly or at other intervals deemed to be appropriate in furtherance of the monitoring program;

(3) Establish a groundwater evaluation methodology or methodologies;

(4) Prepare a monitoring plan and two associated maps, "Well Location, Water Quality Network," and "Well Location, Water Level Network," which plan and maps depict the location and types of wells anticipated to be used in the initial phase of groundwater monitoring (said plan and maps are expected to be modified from time to time as the monitoring program is developed and operated);

(5) Specify such additional monitoring wells and ancillary equipment as are deemed to be necessary or desirable for the purposes hereof;

(6) Prepare annual water balance studies and other interpretive studies, which will designate all sources of water and the use thereof within the study area;

(7) Develop criteria for determining whether excessive mounding or withdrawal is occurring or is likely to occur in an area of interest;

(8) Annually or as otherwise needed determine the impacts of the Project on each of the Adjoining Entities by evaluating with and without Project conditions; and

(9) Develop procedures, review data, and recommend Project operational criteria for the purpose of identifying, verifying, avoiding, eliminating or mitigating, to the extent practicable, the creation of significant imbalances or significant adverse impacts.

b. Collection and Sharing of Data. The Adjoining Entities will make available to the Monitoring Committee copies of all relevant groundwater level, groundwater quality, and other monitoring data currently collected and prepared by each. KWBA shall annually report, by areas of interest, water deliveries for banking and other purposes and groundwater withdrawals.



c. Monitoring Costs.

(1) The cost of constructing monitoring wells and ancillary equipment, as identified in Exhibit B, shall be borne by Project Participants. The cost of any additional monitoring wells and ancillary equipment shall be borne as may be determined by separate agreement of the Project Participants and Adjoining Entities.

(2) Each of the parties shall be responsible for the personnel costs of its representative on the Monitoring Committee. In addition, the Adjoining Entities shall be responsible for all costs of monitoring operations and facilities within their respective boundaries and the Project Participants shall be responsible for all costs of monitoring operations and facilities within the Project Site.

(3) All other groundwater monitoring costs, including employment of the professional groundwater specialist, collection, evaluation and analyses of data as adopted by the Monitoring Committee, shall be allocated among and borne by the parties as follows: Project Participants = 50%; Adjoining Entities = 50%. Cost sharing among Project Participants shall be as agreed by them. Cost sharing among Adjoining Entities shall be as agreed by them. Any additional monitoring costs shall be determined and allocated by separate agreement of those parties requesting such additional monitoring.

(4) It is intended that one Monitoring Committee shall deal with all projects operating within the Kern Fan Area. If, as and when existing or additional projects are brought within the purview of the Monitoring Committee, the participants in said projects and the adjoining entities for said projects may join the Monitoring Committee and, upon doing so, shall share in the costs of monitoring operations on the same basis as provided herein for the original parties.

4. Modification of Project Operations. The Monitoring Committee may make recommendations to the KWBA and Project Participants, including without limitation recommendations for modifications in Project operations based upon evaluation(s) of data which indicate that excessive mounding or withdrawal is occurring or is likely to occur in an area of interest. The Monitoring Committee and its members shall not act in an arbitrary, capricious or unreasonable manner.

5. Dispute Resolution.

a. Submission to Monitoring Committee. All disputes regarding the operation of the Project or the application of this agreement, or any provision hereof, shall first be submitted to the Monitoring Committee for review and analysis. The Monitoring Committee shall meet and review all relevant data and facts regarding the dispute and, if possible, recommend a fair and equitable resolution of the dispute. The Monitoring Committee and its members shall not act in an arbitrary, capricious or unreasonable manner. In the event that (1) the Monitoring Committee fails to act as herein provided, (2) any party disputes the Monitoring Committee's recommended resolution or (3) any party fails to implement the Monitoring Committee's recommended resolution within the time allowed, any party to this agreement may seek any legal or equitable remedy available as hereinafter provided.

b. Arbitration. If all of the parties agree that a factual dispute exists regarding any recommendation of the Monitoring Committee made pursuant hereto, or implementation thereof, such dispute shall be submitted to binding arbitration before a single neutral arbitrator appointed by unanimous consent and, in the absence of such consent, appointed by the presiding judge of the Kern County Superior Court. The neutral arbitrator shall be a registered civil engineer, preferably with a background in groundwater hydrology. The arbitration shall be called and conducted in accordance with such rules as the contestants shall agree upon, and, in the

absence of such agreement, in accordance with the procedures set forth in California Code of Civil Procedure section 1282, et seq. Any other dispute may be pursued through a court of competent jurisdiction as otherwise provided by law.

c. Burden of Proof. In the event of arbitration or litigation under this Agreement, all parties shall enjoy the benefit of such presumptions as are provided by law but, in the absence thereof, neither party shall bear the burden of proof on any contested legal or factual issue.

d. Landowner Remedies. Nothing in this agreement shall prevent any landowner within the boundaries of any party from pursuing any remedy at law or in equity in the event such landowner is damaged as a result of projects within the Kern Fan Area.

6. Term. This agreement shall commence on the day and year first above written and shall continue in force and effect until terminated by (1) operation of law, (2) unanimous consent of the parties, or (3) abandonment of the Project and a determination by the Monitoring Committee that all adverse impacts have been fully eliminated or mitigated as provided in this agreement.

7. Complete Agreement/Incorporation Into Banking Agreements. This agreement constitutes the whole and complete agreement of the parties regarding Project operation, maintenance and monitoring. Project Participants shall incorporate this agreement by reference into any further agreement they enter into respecting banking of water in or withdrawal of water from the Project Site.

8. Future Projects. With respect to any future project within the Kern Fan Area, the Parties hereto shall use good faith efforts to negotiate an agreement substantially similar in substance to this MOU.

9. Notice Clause. All notices required by this agreement shall be sent via first class United States mail to the following and shall be deemed delivered three days after deposited in the mail:

Project Participants

Dale Melville  
Dudley Ridge Water District  
286 W. Cromwell Avenue  
Fresno, California 93711-6162

William Taube  
Wheeler Ridge-Maricopa  
Water Storage District  
P.O. Box 9429  
Bakersfield, CA 93389-9429

Tom Clark  
Kern County Water Agency  
P.O. Box 58  
Bakersfield, California 93312

Bill Phillimore  
Westside Mutual Water Company  
33141 Lerdo Highway  
Bakersfield, California 93302-0058

Will Boschman  
Semitropic Water District  
P.O. Box Z  
Wasco, California 93280

Dennis Mullins  
Tejon-Castac Water District  
P.O. Box 1000  
Lebec, CA 93243

Bill Phillimore, Chairman  
Kern County Water Bank Authority  
c/o YOUNG WOOLDRIDGE  
1800 - 30th Street, Fourth Floor  
Bakersfield, CA 93301

Adjoining Entities

Martin N. Milobar  
Buena Vista Water Storage District  
P.O. Box 756  
Buttonwillow, CA 93206

Hal Crossley  
Rosedale-Rio Bravo  
Water Storage District  
P.O. Box 867  
Bakersfield, CA 93302-0867

L. Mark Mulkay  
Kern Delta Water District  
501 Taft Highway  
Bakersfield, CA 93307

Joe Lutje  
Henry Miller Water District  
P.O. Box 9759  
Bakersfield, CA 93389

Jerry Pearson  
West Kern Water District  
P.O. Box MM  
Taft, CA 93268-0024

Notice of changes in the representative or address of a Party shall be given in the same manner.

10. California Law Clause. All provisions of this agreement and all rights and obligations of the parties hereto shall be interpreted and construed according to the laws of the State of California.

11. Amendments. This agreement may be amended by written instrument executed by all of the parties. In addition, recognizing that the parties may not now be able to contemplate all the implications of the Project, the parties agree that on the tenth anniversary of implementation of the Project, if facts and conditions not envisioned at the time of entering into this agreement are present, the parties will negotiate in good faith amendments to this agreement. If the parties cannot agree on whether conditions have changed necessitating an amendment and/or upon appropriate amendments to the agreement, such limited issues shall be submitted to an arbitrator or court, as the case may be, as provided above.

12. Successors and Assigns. This agreement shall bind and inure to the benefit of the successors and assigns of the parties.

13. Severability. The rights and privileges set forth in this agreement are severable and the failure or invalidity of any particular provision of this agreement shall not invalidate the other provisions of this agreement; rather all other provisions of this agreement shall continue and remain in full force and effect notwithstanding such partial failure or invalidity.

14. Force Majeure. All obligations of the parties shall be suspended for so long as and to the extent the performance thereof is prevented, directly or indirectly, by earthquakes, fires, tornadoes, facility failures, floods, drownings, strikes, other casualties, acts of God, orders of court or governmental agencies having competent jurisdiction, or other events or causes beyond the control of the parties. In no event shall any liability accrue against a party, or its

officers, agents or employees, for any damage arising out of or connected with a suspension of performance pursuant to this paragraph.

IN WITNESS WHEREOF the parties have executed this agreement the day and year first above written at Bakersfield, California.

PROJECT PARTICIPANTS

DUDLEY RIDGE WATER DISTRICT

BY:   
Dale Melville, Manager

BY: \_\_\_\_\_

WHEELER RIDGE-MARICOPA  
WATER STORAGE DISTRICT

BY:   
William Taube, Engineer/Manager

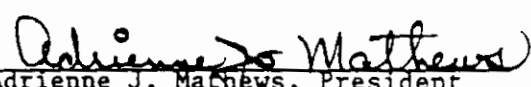
BY: \_\_\_\_\_

SEMITROPIC WATER STORAGE DISTRICT

BY:   
Wil Boschman, Engineer/Manager


BY: \_\_\_\_\_

KERN COUNTY WATER AGENCY

BY:   
Adrienne J. Mathews, President

BY: October 26, 1995

WESTSIDE MUTUAL WATER COMPANY

BY:   
Bill Phillimore, Executive  
Vice-President


BY: \_\_\_\_\_

TEJON-CASTAC WATER DISTRICT

BY:   
Dennis Mullins, President

BY: \_\_\_\_\_

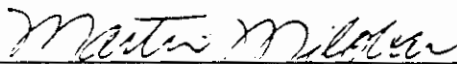
KERN WATER BANK AUTHORITY

BY:   
Bill Phillimore, Chairman

BY: \_\_\_\_\_

ADJOINING ENTITIES

BUENA VISTA WATER STORAGE DISTRICT

BY:   
Martin Milobar, Engineer-Manager

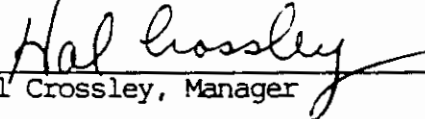
BY: \_\_\_\_\_

WEST KERN WATER DISTRICT

BY:   
Bob G. Bledsoe, President

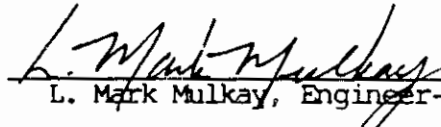
BY: \_\_\_\_\_

ROSEDALE RIO BRAVO WATER STORAGE DISTRICT

BY:   
Hal Crossley, Manager

BY: \_\_\_\_\_

KERN DELTA WATER DISTRICT

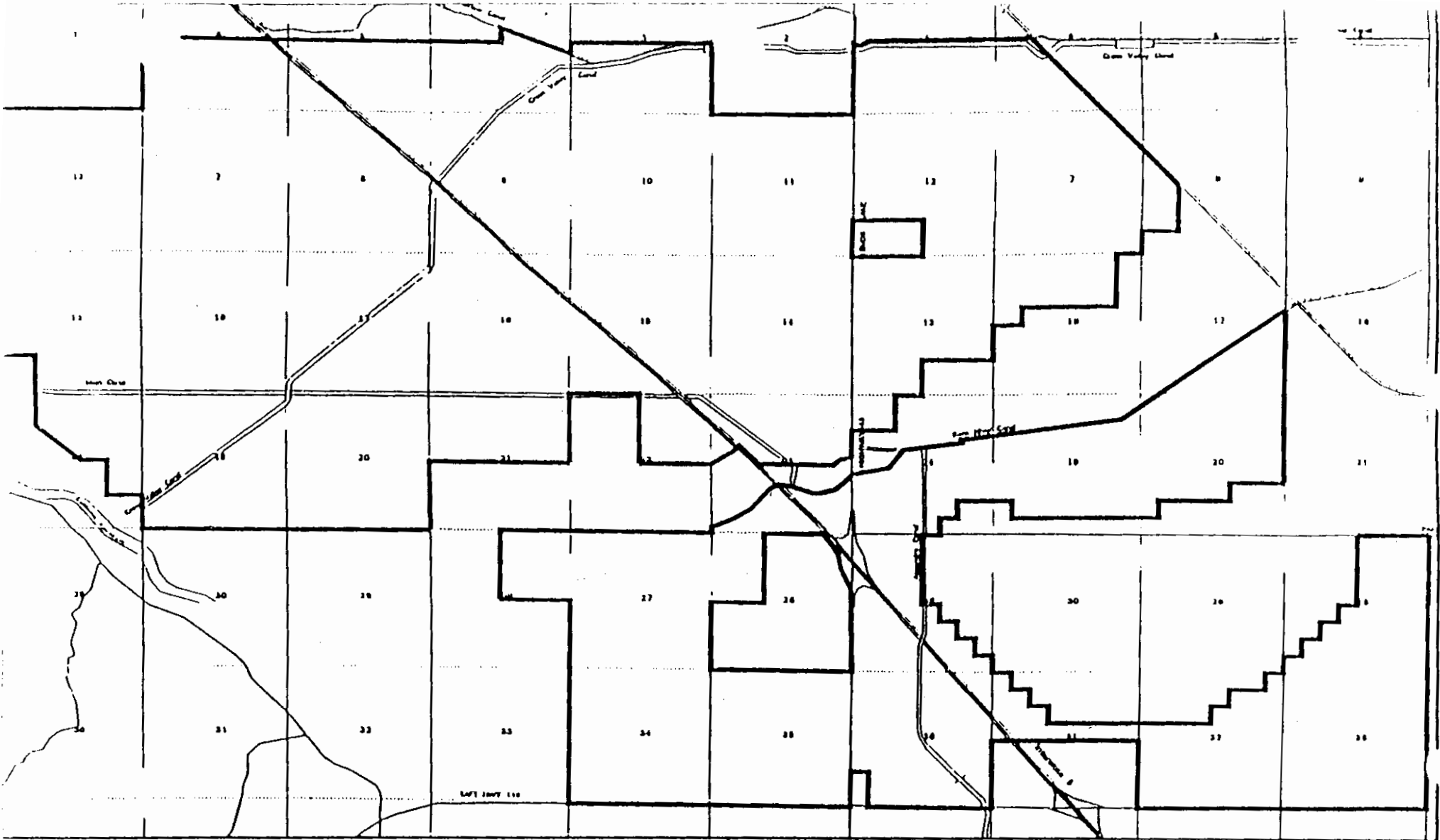
BY:   
L. Mark Mulkey, Engineer-Manager

BY: \_\_\_\_\_

HENRY MILLER WATER DISTRICT

BY:   
Joe Lutje, Manager

BY: \_\_\_\_\_



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S

**EXHIBIT A**

**Kern Water Bank Project Site**



1 - 8280



## PROJECT DESCRIPTION

### Purposes

The primary water management objective of the Kern Water Bank (KWB) is to enhance water supplies for SWP contractors and entities in Kern County. Water would be stored in aquifers during times of surplus and either recovered during times of shortage or remain in the ground to assist with overdraft correction.

### Sources of Water

It is anticipated that water from numerous sources will be recharged on the property in cooperation with the water rights holders and the approval of the necessary authorities. Such sources include: the Kern River, Friant-Kern, SWP, CVP, flood water and other sources that may be available from time to time.

### Facilities

To achieve its water management objectives, the KWB will require the construction of recharge ponds, water conveyance facilities, and water wells. The ponds will be created by constructing low levees along contours. The ponds bottoms would be left, as far as possible, in their natural condition. The habitat surrounding and between ponds may be modified and enhanced depending on the outcome of negotiations with resources agencies and other habitat management objectives.

Of the 19,883 acres that presently constitute the Kern Water Bank property, approximately 5,000 acres are proposed for routine recharge, although, during high flow conditions, additional acreage may be utilized which would also serve to prevent flooding elsewhere in the Valley. In the wettest of years, it is hoped that close to a million acre feet can be recharged on the property. The ponds would be formed by constructing approximately 35 miles of levees with a maximum height of 3 feet.

It is proposed that water would be conveyed to and from the property using available capacity in any of the canals and conveyance facilities that may serve the property including: the Cross Valley Canal, the Friant Kern Canal, the California Aqueduct, the Pioneer Canal, the River Canal, the Kern River, Buena Vista's Main Canal and the Alejandro Canal. In each case the permission of the relevant authority will be sought for the use of each facility. It is also proposed to build a new canal that would link the River Canal to the California Aqueduct and would convey water to and from the property. Additionally, it is proposed that a diversion and conveyance facility be constructed that would divert water from the Kern River to the eastern end of the property. Such a conveyance facility would probably cross the north Pioneer property and, as such, is subject to approval from the KCWA and the City of Bakersfield.

Fifty-seven water wells currently exist on the property. Another 43 may be added before the project is complete to provide adequate recovery capacity and the necessary operational flexibility to avoid or minimize adverse impacts. Once build out of the recovery facilities is complete, the

recovery capacity will be maintained by constructing new wells to replace the capacity of older wells as they fail. New wells shall be placed no closer than one third mile from any functioning wells off the property. Wells on the property shall be located and operated so as to prevent significant non-mitigable adverse impacts to neighboring land owners.

### Operation

The project shall be managed by the Kern Water Bank Authority. Day-to-day operation of the project may be contracted to other parties. Operation of the project shall be coordinated with adjoining projects.

**APPENDIX C**  
**LONG-TERM PROJECT RECOVERY OPERATIONS PLAN REGARDING**  
**KERN WATER BANK AUTHORITY PROJECT**

**LONG-TERM PROJECT  
RECOVERY OPERATIONS PLAN  
REGARDING KERN WATER BANK AUTHORITY PROJECT**

**Purpose.**

Consistent with Kern Water Bank Authority’s (KWBA) Memorandum of Understanding governing its banking project (MOU), this Long Term Operations Plan Regarding Kern Water Bank Authority (“Plan”) designates specific measures to be employed to “... *prevent, eliminate or mitigate significant adverse impacts*” resulting from project operations. KWBA will carry out its duties and responsibilities under this Plan in good faith and in cooperation with Adjoining Entities to the end that the objectives and purposes of this Plan will be achieved and/or carried out to the greatest extent practicable.<sup>1</sup> This plan applies to neighboring landowners currently using groundwater for overlying uses from an agricultural supply or domestic well. It does not apply to new wells that are installed to unsuitable depths based on historic water level fluctuations.

**Plan Components:**

**A) Monitor and Report Groundwater Conditions to KWBA’s Board of Directors and the Public.**

- 1) KWBA will monitor groundwater levels monthly, except during periods of no recovery when monitoring will occur at least quarterly. KWBA may rely on monitoring conducted by the Kern Fan Monitoring Committee to meet these requirements.
- 2) KWBA will report current groundwater levels to its Board of Directors at each monthly regular meeting, and will make the reports available to the public on its website (<http://www.kwb.org/>).
- 3) KWBA will regularly update its Groundwater Model (Model) to actual conditions and use the Model to project future groundwater conditions. KWBA will endeavor to use the best practicable science and latest information available in all modeling and technical matters. KWBA will report the results of its modeling to its Board of Directors and will make the results available to the public on its website (<http://www.kwb.org/>). Recovery in any calendar year beyond March 15 of that year shall not commence (or continue) until the Model has been run for projected operations and the results have been reported to the Board and made available to the public.<sup>2</sup>

**B) Implement Proactive Measures (in addition to A. above).**

- 1) KWBA will use its Model as a tool to evaluate potential groundwater impacts

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<sup>1</sup> Rosedale Rio Bravo Water Storage District (Rosedale) has proposed and adopted a similar plan to prevent, eliminate or mitigate potential impacts from their projects, which plan is part of their Stockdale Integrated Banking Project Draft Environmental Report dated April, 2015. KWBA expects that an agreement will be developed with Rosedale and others for the coordinated implementation of long-term banking operations plans.

<sup>2</sup> Model data for a preceding year becomes available at different times in the following year. Modeling at the beginning of any given year will necessitate estimating certain model input data for the preceding year (e.g. Kern River losses). These estimates will be replaced with actual data at regular intervals when the model is updated.

resulting from its project operations. The Model will be periodically run and updated as projected recovery plans become known or change and the Model will assume such conditions as described in A)3).

- 2) The Model will be used to:
  - a) Forecast groundwater levels.
  - b) Forecast and predict the contribution of KWB operations to groundwater level declines in the area.
  - c) Determine water level conditions with “Without KWB Operations” for purposes of evaluating the potential impact of “With KWB Operations.” The “Without KWB Operations” condition is the water level that would have been at any particular well location absent “KWB Operations.”
  - d) Identify, based upon an analysis of “Without KWB Operations” versus “With KWB Operations,” if a **negative potential impact (“NPI”)** has or is likely to occur for which the measures described at D, E, and F may be operative. NPI is determined according to C)1) below.
  - e) Forecast any localized areas for special attention and/or additional monitoring, where groundwater levels will decline 30 or more feet below the “Without KWB Operations” groundwater level.
  - f) Identify wells at risk of potential impacts during recovery operations.
- 3) KWBA will provide notification on its website if the Model shows that an **NPI** has or is likely to occur, including steps that potentially affected landowners must follow if the landowner desires to make a claim to KWBA regarding potential well impacts due to KWBA’s recovery operations.

### C) Implement Triggers and Actions.

The actions described in sections D, E, and F, will be implemented in consultation with affected landowners/well owners that make a claim to KWBA regarding well impacts relating to KWBA’s recovery operations and groundwater level declines, subject to the following:

- 1) The trigger for mitigation shall be based upon an analysis and comparison of Model generated “Without KWB Operations” versus “With KWB Operations.” When “With KWB Operations” are 30 feet deeper than the “Without KWB Operations” at an operative well, and the well has (or is expected to) experience mechanical failure or other operational problems due to declining water levels, a negative potential impact (“NPI”) is triggered.
- 2) For a well owner to be eligible for mitigation as provided below, the affected landowner shall submit a claim to KWBA, in accordance with the Government Claims Act, which shall, at a minimum, provide information concerning the condition of the well and casing and pumping equipment of the well, and other information that is relevant to the landowner’s claim. Upon receipt of a claim, KWBA shall use the Model (or the results of modeling as reported to the Board and the public) to determine whether an NPI exists at the landowner’s well and respond with the appropriate action described below.
- 3) KWBA will provide mitigation and/or compensation for the KWB operations’ contribution to the adverse impact. Mitigation and/or compensation is not required for a well owner’s lack of well maintenance, normal wear and tear, depreciation, failure of well equipment, well casing degradation, etc., or other reasons not relating to KWB

operations.

**D) Implement Action for Agricultural Wells When Well Adjustment Is Needed and Available**

- 1) Trigger: When the Model predicts NPI for an operational agricultural well outside the current operating range of the pump but within the potential operating range of the well.
- 2) KWBA actions will be completed within 60 days (provided that the land/well owner cooperates) from receipt of a claim as follows:
  - a) Field verify (with the affected landowner if requested) static depth to groundwater levels within the well and compare to Model values to determine if flow stoppage is due to groundwater level decline due to KWB operations. If needed:
    - (1) Obtain right of entry permit and well data release from well owner.
    - (2) Collect pump manufacturer data, the in-situ pump setting, and casing depth information.
  - b) Compare pump setting information with Model projected pumping water levels throughout the year to determine pump submergence levels and evaluate the necessity and feasibility of lowering the well pump to meet the landowner's needs to provide the least-cost short- and long-term solution.
  - c) Develop a cost estimate to complete the necessary work.
  - d) Develop and submit a report to the landowner informing the landowner of the findings and proposed actions, including denying the claim because groundwater declines are not due to KWB operations.
- 3) At KWBA's option, it may reduce or adjust pumping of its wells as necessary to prevent avoid, or eliminate the NPI, using the Model to identify the well or wells that may require reduction or adjustment in pumping.
- 4) If groundwater declines are due to KWB operations, unless KWBA implements D)3), once agreement is reached between KWBA and the landowner pursuant to D)2)b) and all cost estimates have been completed, pay costs associated with the landowner claim (considering C)3) above), including the cost to complete the necessary work.

**E) Action for Ag Wells – Well Adjustment Unavailable**

- 1) Trigger: When the Model predicts NPI for an operational agricultural well outside the current and potential operating range of the well.
- 2) KWBA actions will be completed within 60 days (provided that the land/well owner cooperates) from receipt of a claim as follows:
  - a) Field verify (with the affected landowner if requested) static depth to groundwater levels within the well and compare to Model values to determine if flow stoppage is due to groundwater level decline due to KWB operations. If needed:
    - (1) Obtain right of entry permit and well data release from well owner.
    - (2) Collect pump manufacturer data, the in-situ pump setting, and casing depth information.
  - b) Identify water of an equivalent water quantity and quality suitable for agricultural uses for the affected landowner from an alternate source at no greater cost to the affected landowner or, with the consent of the affected landowner, identify acceptable mitigation (for example, drill and equip a new well) to provide the least-cost short- and

- long-term solution, including an estimate to complete the necessary work.
- c) Develop and submit a report to the landowner informing the landowner of the findings and proposed actions, including denying the claim because groundwater declines are not due to KWB operations.
- 3) At KWBA's option, it may reduce or adjust pumping of its wells as necessary to prevent avoid, or eliminate the NPI, using the Model to identify the well or wells that may require reduction or adjustment in pumping.
- 4) If groundwater declines are due to KWB operations, unless KWBA implements E)3), once agreement is reached between KWBA and the landowner pursuant to E)2)b) and all cost estimates have been completed, pay costs associated with the landowner claim (considering C)3) above), including the cost to complete the necessary work.

**F) Implement action for Domestic Wells.**

- 1) Trigger: When the Model predicts NPI for an operational domestic well.
- 2) KWBA actions will be completed within 60 days (provided that the land/well owner cooperates) from receipt of a claim as follows:
  - a) Field verify (with the affected landowner if requested) static depth to groundwater levels within the well and compare to Model values to determine if flow stoppage is due to groundwater level decline due to KWB operations. If needed:
    - (1) Obtain right-of-entry permit and well data release from well owner.
    - (2) Collect pump manufacture data, the in-situ pump setting and the casing depth information.
  - b) Identify availability of and cost of a permanent connection to the nearest water service provider.
  - c) Identify acceptable mitigation (for example, lower the domestic submersible pump bowl setting sufficient to restore and maintain service or drill and equip a new well that complies with applicable county well standards) to provide the least-cost short- and long-term solution, including an estimate to complete the necessary work.
  - d) Develop and submit a report to the landowner informing the landowner of the findings and proposed actions, including denying the claim because groundwater declines are not due to KWB operations.
  - e) If necessary for emergency health and safety concerns, provide interim in-home water supplies within 14 days after receipt of the claim until a permanent mitigation action is implemented or the claim has been denied because groundwater declines are not due to KWB operations.
- 3) At KWBA's option, it may reduce or adjust pumping of its wells as necessary to prevent, avoid, or eliminate the NPI using the Model to identify the well or wells that may require reduction or adjustment in pumping.
- 4) If groundwater declines are due to KWB operations, unless KWBA implements F)3), once an agreement is reached for KWBA to provide mitigation pursuant to F)2)c) above and all cost estimates have been completed, pay costs associated with the landowner claim (considering C)3) above), including the cost to complete the necessary work.

## **G) Action for Other Landowner Claims.**

- 1) Trigger: A landowner makes a claim of impact on his groundwater use (which could be due to KWBA's operations, adjacent landowners, or a combination) that does not relate to the actual (or likely) cessation of production at a well.
- 2) Actions:
  - a) Refer claim to the Board of Directors to evaluate and respond to landowner claim at its next regularly scheduled meeting.
  - b) Process claim according to agreed upon dispute resolution process (e.g., mediation, arbitration, etc.) in the event the affected landowner does not agree with the Board of Directors' response.

## **Development of Joint Operating Plan**

The Triggers and Actions described above apply to the operations of the Kern Water Bank. In the evaluation of KWB operations, the Model compares groundwater conditions with the operation of the KWB (the "With KWB Operations" condition) against groundwater conditions without the operation of the KWB (the "Without KWB Operations" condition). In the "Without KWB Operations" condition, the Model assumes the continued operation of other groundwater banks in the area of the project. This KWB Long-Term Operations Plan is modeled after and is substantially similar to Rosedale's "Long-Term Project Recovery Operations Plan Regarding Rosedale-Rio Bravo Water Storage District Projects," (Rosedale Operations Plan) included as a part of Rosedale's April 2015 Stockdale Integrated Banking Project Draft Environmental Impact Report (SCH#: 2013091076). The implementation of the Long-Term Operations Plan and the Rosedale Operations Plan address the cumulative impacts on groundwater of both projects. KWBA and Rosedale are coordinating to develop a joint operations plan applicable to the combined groundwater impacts of the KWB and Rosedale operations. Under a joint plan, the modeling of the "Without KWB Operations" condition will assume that neither the KWB nor the Rosedale banks will be in operation. As a result, the joint plan may include triggers applicable to the joint operations that may be applied in lieu of the Triggers described in this KWB Long-Term Operations Plan and the Rosedale Operations Plan.

## **Release; KWBA's Rights Against Others**

In all instances when KWBA takes action to mitigate the effects of declining groundwater levels under this Plan, the affected landowner shall be required to execute an appropriate release in favor of KWBA. Nothing in this Plan or any action taken by KWBA hereunder shall affect KWBA's rights or remedies against any other person or entity (e.g., adjacent landowners, other recovery projects in the area and participants in such projects, etc.) which may have caused or contributed to the effects for which KWBA has mitigated; if appropriate, an affected landowner that receives assistance from KWBA hereunder shall assign its rights against such other person(s) or entity(ies) to KWBA.



**APPENDIX D**  
**WATER RIGHT APPLICATION NO. 31676**

TYPE OR PRINT  
IN BLACK INK  
(For instructions, see  
booklet: "How to File an  
Application to Appropriate  
Water in California")

## California Environmental Protection Agency

State Water Resources Control Board  
Division of Water Rights  
P.O. Box 2000, Sacramento, CA 95812-2000  
Tel: (916) 341-5300 Fax: (916) 341-5400  
www.waterrights.ca.gov

2007 FEB 26 11:00 AM  
341-5300

APPLICATION NO. \_\_\_\_\_  
(leave blank)

# APPLICATION TO APPROPRIATE WATER

## SECTION A: NOTICE INFORMATION

**1. APPLICANT/AGENT**

a.

	APPLICANT	ASSIGNED AGENT (if any)
Name	Kern Water Bank Authority	Downey Brand LLP Kevin M. O'Brien
Mailing Address	5500 Ming Ave., Ste. 490	555 Capitol Mall, 10th Floor
City, State & Zip	Bakersfield, CA 93309	Sacramento, CA 95814
Telephone	(661) 398-4958	(916) 444-1000
Fax	(661) 398-4959	(916) 444-2100
E-mail	jparker@kwb.org	kobrien@downeybrand.com

**2. OWNERSHIP INFORMATION (Please check type of ownership.)**

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Sole Owner           | <input type="checkbox"/> Limited Liability Company (LLC) | <input type="checkbox"/> General Partnership*  |
| <input type="checkbox"/> Limited Partnership* | <input type="checkbox"/> Business Trust                  | <input type="checkbox"/> Husband/Wife Co-Ownership   |
| <input type="checkbox"/> Corporation          | <input type="checkbox"/> Joint Venture                   | <input checked="" type="checkbox"/> Other Joint Powers Authority (Cal. Govt. Code §§ 6500 et seq.) |

\*Please provide a copy of your partnership agreement.

**3. PROJECT DESCRIPTION (Provide a detailed description of your project, including, but not limited to, type of construction activity, area to be graded or excavated, and how the water will be used.)**

Kern Water Bank Authority ("KWBA") manages 20,500 acres of property along the Kern River to recharge water into the Kern County Sub-Basin of the San Joaquin Groundwater Basin for later extraction and delivery for beneficial use by its member agencies.

For continuation, see Attachment No. \_\_\_\_

**4. PURPOSE OF USE, DIVERSION/STORAGE AMOUNT AND SEASON**

a. PURPOSE OF USE (Irrigation, domestic, etc.)	DIRECT DIVERSION				STORAGE		
	AMOUNT		SEASON OF DIVERSION		AMOUNT	SEASON OF COLLECTION	
	Rate (cfs or gpd)*	Acre-feet per year	Beginning date (month & day)	Ending date (month & day)	Acre-feet per year	Beginning date (month & day)	Ending date (month & day)
Groundwater Storage for Municipal, Industrial, and Irrigation Uses					500,000	Oct. 1	Sept. 30
Municipal	10 cfs	5,000	Oct. 1	Sept. 30			
Irrigation	1,500 cfs	490,000	Oct. 1	Sept. 30			
Industrial	15 cfs	5,000	Oct. 1	Sept. 30			

9/26/07  
\$1,850.00  
DC

(Power Generation)							
--------------------	--	--	--	--	--	--	--

See Attachment No. \_\_\_\_

\*If rate is less than 0.025 cubic feet per second (cfs), use gallons per day (gpd).

- b. Total combined amount taken by direct diversion and storage during any one year will be 500,000 acre-feet.
- c. Reservoir storage is:  onstream  offstream  underground (If underground storage, attach Form APP-UGSTOR.)
- d. County in which diversion is located: Kern County in which water will be used: Various
- e. Assessor's Parcel Number(s): Water will be used throughout KWBA's member agencies' service areas in Kings and Kern Counties as depicted on the attached map, Attachment No. 4, or as otherwise provided by agreements with others and agreed to by the KCWA.

**5. SOURCES AND POINTS OF DIVERSION/REDIVERSION**

- a. Sources and Points of Diversion (POD)/Points of Rediversion (PORD):
  - POD /  PORD #: \_\_\_\_\_ tributary to \_\_\_\_\_  
thence \_\_\_\_\_
  - POD /  PORD #: \_\_\_\_\_ tributary to \_\_\_\_\_  
thence \_\_\_\_\_
  - POD /  PORD #: \_\_\_\_\_ tributary to \_\_\_\_\_  
thence \_\_\_\_\_
  - POD /  PORD #: \_\_\_\_\_ tributary to \_\_\_\_\_  
thence \_\_\_\_\_

See Attachment No. 1

b. State Planar and Public Land Survey Coordinate Description:

POD/ PORD #	CALIFORNIA COORDINATES (NAD 27)	ZONE	POINT IS WITHIN (40-acre Subdivision)	SECTION	TOWN- SHIP	RANGE	BASE AND MERIDIAN
			¼ of ¼				
			¼ of ¼				
			¼ of ¼				
			¼ of ¼				

See Attachment No. 1

c. Name of the post office most often used by those living near the proposed point(s) of diversion:  
Camino Media, 10001 Camino Media, Bakersfield, CA 93311-1309

**6. WATER AVAILABILITY**

- a. Have you attached a water availability analysis for this project?  YES  NO If NO, provide sufficient information to demonstrate that there is reasonable likelihood that unappropriated water is available for the proposed appropriation:  
The Kern River is currently considered fully appropriated. However, as stated at page 585 of the decision in North Kern Water Storage District v. Kern Delta Water District. (2007) 147 Cal.App.4th 555, Kern Delta has forfeited a significant portion of its pre-1914 appropriative Kern River water rights. Such water may be unappropriated water subject to the jurisdiction of the State Water Resources Control Board.
- See Attachment No. \_\_\_\_
- b. Is your project located on a stream system declared to be fully appropriated by the State Water Resources Control Board during your proposed season of diversion?  YES  NO
- c. In an average year, does the stream dry up at any point downstream of your project?  YES  NO There is no "average" year because the flow of the Kern River is highly variable.  
If YES, during which months?  Jan  Feb  Mar  Apr  May  Jun  Jul  Aug  Sep  Oct  Nov  Dec
- d. What alternate sources of water are available if a portion of your requested diversion season must be excluded because water is not available for appropriation? (e.g., percolating groundwater, purchased water, etc.)  
KWBA reserves the right to assert that it holds riparian rights in accordance with California law, based on KWBA's ownership of lands contiguous to the Kern River. In addition, KWBA has previously purchased water from the Central Valley Project. KWBA's member agencies are also member units of the Kern County Water Agency, which is a State Water Project contractor, and so receive water from the State Water Project.

See Attachment No. \_\_\_\_

**7. PLACE OF USE**

USE IS WITHIN (40-acre subdivision)	SECTION*	TOWNSHIP	RANGE	BASE & MERIDIAN	IF IRRIGATED	
					Acres	Presently cultivated?
¼ of ¼						<input type="checkbox"/> YES <input type="checkbox"/> NO
¼ of ¼						<input type="checkbox"/> YES <input type="checkbox"/> NO
¼ of ¼						<input type="checkbox"/> YES <input type="checkbox"/> NO
¼ of ¼						<input type="checkbox"/> YES <input type="checkbox"/> NO
¼ of ¼						<input type="checkbox"/> YES <input type="checkbox"/> NO
¼ of ¼						<input type="checkbox"/> YES <input type="checkbox"/> NO
¼ of ¼						<input type="checkbox"/> YES <input type="checkbox"/> NO
Total:						

\*Please indicate if section is projected with a "(P)" following the section number.

See Attachment No. 2

**8. PROJECT SCHEDULE**

a. Project is:

- proposed. Year construction will begin: \_\_\_\_\_  
 partially complete. Extent of completion: \_\_\_\_\_

complete. Year completed: 2002

b. Year of first use: Kern Water Bank Authority first began water recharge activities in 1995.

Year water will be used to the full extent intended: KWBA can put appropriated water to use immediately following issuance of a permit by the State Water Resources Control Board, subject to necessary hydrologic conditions.

**SECTION B: MISCELLANEOUS DIVERSION INFORMATION**

**1. JUSTIFICATION OF AMOUNTS REQUESTED**

a.  IRRIGATION: Maximum area to be irrigated in any one year: 757,800 acres.

CROP	ACRES	METHOD OF IRRIGATION (sprinklers, flooding, etc.)	WATER USE (Acre-feet/Yr.)	SEASON OF WATER USE	
				Beginning date (month & day)	Ending date (month & day)
Alfalfa, Cotton, Fruits, Grain/Pasture, Grapes, Nursery, Nut Crops, Vegetables	757,800	Sprinklers, Flooding, Drip	2,500,000	Oct. 1	Sept. 30

See Attachment No. \_\_\_\_\_

b.  DOMESTIC: Number of residences to be served: \_\_\_\_\_ Separately owned?  YES  NO

Number of people to be served: \_\_\_\_\_ Estimated daily use per person is: \_\_\_\_\_ gallons per day

Area of domestic lawns and gardens: \_\_\_\_\_ square feet

Incidental domestic uses: \_\_\_\_\_  
(dust control area, number and kind of domestic animals, etc.)

c.  STOCKWATERING: Kind of stock: \_\_\_\_\_ Maximum number: \_\_\_\_\_

Describe type of operation: \_\_\_\_\_  
(feedlot, dairy, range, etc.)

d.  RECREATIONAL: Type of recreation:  Fishing  Swimming  Boating  Other \_\_\_\_\_

e.  MUNICIPAL:

POPULATION <small>List for 5-year periods until use is completed</small>		MAXIMUM MONTH		ANNUAL USE		
Period	Population	Average daily use (gallons per capita)	Rate of diversion (cfs)	Average daily use (gallons per capita)	Acre-foot (per capita)	Total (acre-feet)
Present	28	325	0.02	325	0.36	10
2010	2778	325	1.6	325	0.36	1,000
2015	6944	325	4.1	325	0.36	2,500
2020	13,889	325	8.1	325	0.36	5,000
2025	13,889	325	8.1	325	0.36	5,000

See Attachment No. \_\_\_\_\_

Month of maximum use during year: July Month of minimum use during year: March

f.  HEAT CONTROL: Area to be heat controlled: \_\_\_\_\_ net acres

Type of crops protected: \_\_\_\_\_

Rate at which water is applied to use: \_\_\_\_\_ gpm per acre

Heat protection season will begin \_\_\_\_\_ and end \_\_\_\_\_  
(month & day) (month & day)

g.  FROST PROTECTION: Area to be frost protected: \_\_\_\_\_ net acres

Type of crops protected: \_\_\_\_\_

Rate at which water is applied to use: \_\_\_\_\_ gpm per acre

The frost protection season will begin \_\_\_\_\_ and end \_\_\_\_\_  
(month & day) (month & day)

h.  INDUSTRIAL: Type of industry: Power Generation

Basis for determination of amount of water needed: Option and Water Services Agreement between Azurix-Pastoria, Inc. and Kern Water Bank Authority, dated March 15, 2001

i.  MINING: Name of the claim: \_\_\_\_\_  Patented  Unpatented

Nature of the mine: \_\_\_\_\_ Mineral(s) to be mined: \_\_\_\_\_

Type of milling or processing: \_\_\_\_\_

After use, the water will be discharged into \_\_\_\_\_ (watercourse)

in \_\_\_\_\_ ¼ of \_\_\_\_\_ ¼ of Section \_\_\_\_\_, T \_\_\_\_\_, R \_\_\_\_\_, \_\_\_\_\_ B. & M.

j.  POWER: Total head to be utilized: \_\_\_\_\_ feet

Maximum flow through the penstock: \_\_\_\_\_ cfs

Maximum theoretical horsepower capable of being generated by the works (cfs x fall ÷ 8.8): \_\_\_\_\_

Electrical capacity (hp x 0.746 x efficiency): \_\_\_\_\_ kilowatts at: \_\_\_\_\_ % efficiency

After use, the water will be discharged into \_\_\_\_\_ (watercourse)

in \_\_\_\_\_ ¼ of \_\_\_\_\_ ¼ of Section \_\_\_\_\_, T \_\_\_\_\_, R \_\_\_\_\_, \_\_\_\_\_ B. & M. FERC No.: \_\_\_\_\_

k.  FISH AND WILDLIFE PRESERVATION AND/OR ENHANCEMENT: List specific species and habitat type that will be preserved or enhanced in Item 7a of Section C. See Attachment No. 3, which identifies species that will be benefited by KWBA's water recharge activities.

l.  OTHER: Describe use: \_\_\_\_\_

Basis for determination of amount of water needed: \_\_\_\_\_

2. DIVERSION AND DISTRIBUTION METHOD

a. Diversion will be by gravity by means of: Gated Structures and Weirs  
(dam, pipe in unobstructed channel, pipe through dam, siphon, weir, gate, etc.)

b. Diversion will be by pumping from: N/A  
(sump, offset well, channel, reservoir, etc)

Pump discharge rate: \_\_\_\_\_  cfs or  gpd Horsepower: \_\_\_\_\_ Pump Efficiency: \_\_\_\_\_

c. Conduit from diversion point to first lateral or to offstream storage reservoir:

CONDUIT (pipe or channel)	MATERIAL (type of pipe or channel lining; indicate if pipe is buried or not)	CROSS-SECTION (pipe diameter, or ditch depth and top and bottom width) (inches or feet)	LENGTH (feet)	TOTAL LIFT OR FALL		CAPACITY (cfs, gpd or gpm)
				feet	+ or -	
Pipe or Channel	CMP, RCP, HDPE	Varies	Varies	Varies	(-)	40 to 800 cfs

See Attachment No. 1

d. Storage reservoirs: (For underground storage, complete and attach form APP-UGSTOR)

RESERVOIR NAME OR NUMBER	DAM					RESERVOIR	
	Vertical height from downstream toe of slope to spillway level (feet)	Construction material	Length (feet)	Freeboard: dam height above spillway crest (feet)	Surface area when full (acres)	Capacity (acre-feet)	Maximum water depth (feet)

See Attachment No. \_\_\_\_\_

e. Outlet pipe: Complete for storage reservoirs having a capacity of 10 acre-feet or more.

RESERVOIR NAME OR NUMBER	OUTLET PIPE				
	Diameter (inches)	Length (feet)	Fall: vertical distance between entrance and exit of outlet pipe (feet)	Head: vertical distance from spillway to entrance of outlet pipe (feet)	Dead Storage storage below entrance of outlet pipe (acre-feet)

See Attachment No. \_\_\_\_\_

f. If water will be stored and the reservoir is not at the point of diversion, the maximum rate of diversion to off-stream storage will be 1,200 cfs. Diversion to offstream storage will be made by:  Pumping  Gravity

\* Storage is in an underground storage reservoir. See Underground Storage Supplement.

**3. CONSERVATION AND MONITORING**

a. What methods will you use to conserve water? Explain. KWBA does not consumptively use water, but only delivers water to its member agencies and stores water underground. Thus, all water conservation practices are carried out by the consumptive water users, KWBA's member agencies.

b. How will you monitor your diversion to be sure you are within the limits of your water right and you are not wasting water?  Weir  Meter  Periodic sampling  Other (describe) All diversions into and extractions are monitored by the California Department of Water Resources through State Water Project facilities, the Kern River Watermaster, or the Kern County Water Agency.

**4. RIGHT OF ACCESS**

a. Does the applicant own all the land where the water will be diverted, transported and used?  YES  NO  
If NO, I  do  do not have a recorded easement or written authorization allowing me access.

\* KWBA has recorded easements and agreements for all of its diversion points except for the California Aqueduct, as explained below.

b. List the names and mailing addresses of all affected landowners and state what steps are being taken to obtain access: Department of Water Resources, 1416 N. 11th Street, Sacramento, CA 95814. KWBA currently operates under an interim agreement between Kern County Water Agency and the Department of Water Resources. KWBA will need to enter into a long-term agreement with the Department of Water Resources to use the California Aqueduct consistent with established Departmental policy.

See Attachment No. \_\_\_\_\_

**5. EXISTING WATER RIGHTS AND RELATED FILINGS**

a. Do you claim an existing right for the use of all or part of the water sought by this application?  YES  NO  
If YES, please specify:  Riparian  Pre-1914  Registration  Permit  License  
 Percolating groundwater  Adjudicated  Other (specify) \_\_\_\_\_

b. For each existing right claimed, state the source, year of first use, purpose, season and location of the point of diversion (to within quarter-quarter section). Include number of registration, permit, license, or statement of water diversion and use, if applicable. KWBA reserves the right to assert that it holds riparian rights in accordance with California law, based on KWBA's ownership of lands contiguous to the Kern River.

c. List any related applications, registrations, permits, or licenses located in the proposed place of use or that utilize the same point(s) of diversion? \_\_\_\_\_

See Attachment No. \_\_\_\_\_

## 6. OTHER SOURCES OF WATER

Are you presently using, or do you intend to use, purchased water or water supplied by contract in connection with this project?  Yes  No If yes, please explain: KWBA has used, and will likely continue to use, Central Valley Project water and/or State Water Project water pursuant to the Kern County Water Agency's contractual rights.

## 7. MAP REQUIREMENTS

The Division cannot process your application without accurate information showing the source of water and location of water use. You must include a map with this application form that clearly indicates the township, range, section and quarter/quarter section of (1) the proposed points of diversion and (2) the place of use. A copy of a U.S.G.S. quadrangle/topographic map of your project area is preferred, and can be obtained from sporting goods stores or through the Internet at <http://topomaps.usgs.gov>. A certified engineering map is required when (1) appropriating more than three cfs by direct diversion, (2) constructing a dam which will be under the jurisdiction of the Division of Safety of Dams, (3) creating a reservoir with a surface area in excess of ten acres or (4) appropriating more than 1000 acre-feet per annum by underground storage. See the instruction booklet for more information.

See Attachment No. 4, 5, 6, and 7

## SECTION C: ENVIRONMENTAL INFORMATION

Note: Before a water right permit may be issued for your project, the State Water Resources Control Board (SWRCB) must consider the information contained in an environmental document prepared in compliance with the California Environmental Quality Act (CEQA). This form is not a CEQA document. If a CEQA document has not yet been prepared for your project, a determination must be made of who is responsible for its preparation. If the SWRCB is determined to be responsible for preparing the CEQA document, the applicant will be required to pay all costs associated with the environmental evaluation and preparation of the required documents. Please answer the following questions to the best of your ability and submit with this application any studies that have been conducted regarding the environmental evaluation of your project.

### 1. COUNTY PERMITS

a. Contact your county planning or public works department and provide the following information:

Person contacted: Thomas Hardy Date of contact: Most recent permit dated June 9, 2004

Department: Environmental Health Services Department Telephone: (661) 862-8700

County Zoning Designation: Various

Are any county permits required for your project?  YES  NO If YES, check appropriate box below:

Grading permit  Use permit  Watercourse  Obstruction permit  Change of zoning

General plan change  Other (explain): Permits to Construct, Reconstruct, Deepen or Destroy a Well

b. Have you obtained any of the required permits described above?  YES  NO

If YES, provide a complete copy of each permit obtained.

See Attachment No. 8

### 2. STATE/FEDERAL PERMITS AND REQUIREMENTS

a. Check any additional state or federal permits required for your project:

Federal Energy Regulatory Commission  U.S. Forest Service  U.S. Bureau of Land Management

U.S. Corps of Engineers  U.S. Natural Res. Conservation Service  Calif. Dept. of Fish and Game

State Lands Commission  Calif. Dept. of Water Resources (Div. of Safety of Dams)

Calif. Coastal Commission  State Reclamation Board  Other (specify) U.S. Fish and Wildlife Service

KWBA has permits for the project from California Department of Fish and Game and the United States Fish and Wildlife Service.

b. For each agency from which a permit is required, provide the following information:

AGENCY	PERMIT TYPE	PERSON(S) CONTACTED	CONTACT DATE	TELEPHONE NO.
U.S. Fish and Wildlife Service	Federal Endangered Species Act Take Permits Nos. PRT-828086 and PRT-835054	Susan Jones	Permits Signed and Dated Oct. 2, 1997	(916) 414-6631
California Department of Fish and Game	Habitat Conservation Plan/Natural Community Conservation Plan and Take Authorization	William Loudermilk	Authorization signed by Jacqueline E. Schaefer, Director of California Department of Fish and Game, and dated Oct. 2, 1997	(559) 243-4005 x 156
California Department of Fish and Game	California Endangered Species Act Management Authorization for Implementation of the Habitat Conservation Plan/Natural Community Conservation Plan and Take Authorization	William Loudermilk	Authorization signed by Jacqueline E. Schaefer, Director of California Department of Fish and Game, and dated Oct. 2, 1997	(559) 243-4005 x 156

See Attachment No. \_\_\_\_\_

c. Does your proposed project involve any construction or grading-related activity that has significantly altered or would significantly alter the bed, bank, or riparian habitat of any stream or lake?  YES  NO  
If YES, explain: \_\_\_\_\_

See Attachment No. \_\_\_\_\_

d. Have you contacted the California Department of Fish and Game concerning your project?  YES  NO  
If YES, name and telephone number of contact: William Loudermilk, (559) 243-4005 x 156

### 3. ENVIRONMENTAL DOCUMENTS

- a. Has any California public agency prepared an environmental document for your project?  YES  NO
- c. If YES, submit a copy of the latest environmental document(s) prepared, including a copy of the notice of determination adopted by the California public agency. Public agency: Kern Water Bank Authority
- d. If NO, check the appropriate box and explain below, if necessary:
- The applicant is a California public agency and will be preparing the environmental document.\*
  - I expect that the SWRCB will be preparing the environmental document.\*\*
  - I expect that a California public agency other than the State Water Resources Control Board will be preparing the environmental document.\* Public agency: \_\_\_\_\_

See Attachment No. 9, Notice of Determination for the Kern Water Bank Habitat Conservation Plan/Natural Community Conservation Plan and Initial Study and Addendum to Monterey Agreement EIR

\* Note: When completed, submit a copy of the final environmental document (including notice of determination) or notice of exemption to the SWRCB, Division of Water Rights. Processing of your a application cannot proceed until these documents are submitted.

\*\* Note: CEQA requires that the SWRCB, as Lead Agency, prepare the environmental document. The information contained in the environmental document must be developed by the applicant and at the applicant's expense under the direction of the SWRCB, Division of Water Rights.

### 4. WASTE/WASTEWATER

- a. Will your project, during construction or operation, (1) generate waste or wastewater containing such things as sewage, industrial chemicals, metals, or agricultural chemicals, or (2) cause erosion, turbidity or sedimentation?  
 YES  NO

If YES, or you are unsure of your answer, explain below and contact your local Regional Water Quality Control Board for the following information (See instruction booklet for address and telephone no.):

See Attachment No. \_\_\_\_\_



- b. Will a waste discharge permit be required for your project? YES  NO
- Person contacted: \_\_\_\_\_ Date of contact: \_\_\_\_\_
- c. What method of treatment and disposal will be used? N/A

See Attachment No. \_\_\_\_\_

**5. ARCHEOLOGY**

- a. Have any archeological reports been prepared on this project?  YES  NO
- b. Will you be preparing an archeological report to satisfy another public agency?  YES  NO (already completed)
- c. Do you know of any archeological or historic sites located within the general project area?  YES  NO

See Attachment No. \_\_\_\_\_

**6. ENVIRONMENTAL SETTING**

Attach **three complete sets of color photographs**, clearly dated and labeled, showing the vegetation that exists at the following three locations:

- : Along the stream channel immediately downstream from the proposed point(s) of diversion.
- : Along the stream channel immediately upstream from the proposed point(s) of diversion.
- : At the place(s) where the water is to be used.

See Attachment No. 10

\* KWBA is submitting its photographs electronically on the attached CD. If the SWRCB wishes to have three hard copy sets of each photograph, we would be happy to provide such upon request.

**SECTION D: SUBMITTAL FEES**

Calculate your application filing fee using the "Water Right Fee Schedule Summary" that was enclosed in the application packet. The "Water Right Fee Schedule Summary" can also be viewed at the Division of Water Rights' website ([www.waterrights.ca.gov](http://www.waterrights.ca.gov)).

A check for the application filing fee, payable to the "Division of Water Rights" and an \$850 check for the environmental review fee, payable to the "California Department of Fish and Game," must accompany this application. All applicable fees are required at the time of filing. Your application will be returned to you if it is not accompanied by all required fees.

**SECTION E: 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. I authorize my agent, if I have designated one above, to act on my behalf regarding this water right application.

Jon [Signature] \_\_\_\_\_ General Manager 9-26-07  
 Signature of Applicant Title or Relationship Date

\_\_\_\_\_  
 Signature of Co-Applicant (if any) Title or Relationship Date

## "APPLICATION TO APPROPRIATE WATER" CHECKLIST

Before you submit your application, be sure to:

- Answer each question completely in Sections A, B, and C.
- Number and include all necessary attachments.
- Include a legible map that meets the requirements discussed in the instruction booklet (Item B6).
- Include the Water Availability Analysis or sufficient information to demonstrate that there is reasonable likelihood that unappropriated water is available for the proposed appropriation (Item A6).
- Include three complete sets of color photographs of the project site (Item C6).
- Enclose a check for the required fee, payable to the Division of Water Rights, as specified in Section D.
- Enclose a \$850 check for the environmental review fee, payable to the Department of Fish and Game, as specified in Section D.
- Sign and date the application in Section E.

Send the original and one copy of the entire application to:

State Water Resources Control Board  
Division of Water Rights  
P.O. Box 2000  
Sacramento, CA 95812-2000

**APPENDIX E**  
**INTERIM PROJECT RECOVERY OPERATIONS PLAN REGARDING KERN**  
**WATER BANK AUTHORITY AND ROSEDALE-RIO BRAVO WATER STORAGE**  
**DISTRICT PROJECTS**

**INTERIM PROJECT RECOVERY  
OPERATIONS PLAN  
REGARDING KERN WATER BANK AUTHORITY (KWB) AND ROSEDALE-RIO  
BRAVO WATER STORAGE DISTRICT (ROSEDALE) PROJECTS**

**Purpose.**

Consistent with the MOUs governing their respective projects, this interim Operations Plan (“Plan”) designates measures to be employed to “... *prevent, eliminate or mitigate significant adverse impacts*” resulting from project operations within areas of concern (AOC’s).

Projects included within this Plan are the following:

1. Kern Water Bank Project.
2. All Rosedale Projects which are subject to an MOU wherein the KWBA is a signatory as an “adjoining entity.”

**Plan Components:**

**A. Establish a separate KWB/Rosedale Operations Plan Implementation Committee (“Joint Operations Committee”) for the following purposes.**

1. The Joint Operations Committee will be separate from the Kern Fan Monitoring Committee. Rosedale and the KWBA will jointly participate in the Joint Operations Committee. Each party will have equal representation on the Joint Operations Committee and an equal voice in its determinations. The Parties will agree on an appropriate level of Director participation.
2. The Committee will not duplicate the water quality and water level monitoring conducted by the Kern Fan Monitoring Committee, but conduct additional monitoring as needed.
3. The Committee will regularly update and compare the AMEC and Harder Models to actual conditions; and for purposes of making determinations hereunder an average of the output for the two models shall be utilized. The Joint Operations Committee may, based on experience gained, select and regularly update a mutually agreeable groundwater model capable of accurately predicting groundwater impacts resulting from project operations (“Model”). As a matter of practice, the Committee will use the best and latest science and information available in all modeling and technical matters. In case of a dispute concerning a model or its application, the Parties shall consult with a third party to resolve the matter.

**Operations Plan**

4. Provide status of groundwater conditions, pumping rates and volumes, and model projections to each entity to identify any developing problems.
5. Provide a forum for and facilitate discussions within any localized area of concern (“AOC”).
6. Fund the actions described below at D, E, F and G in recognition of the joint impact (both positive and possibly negative) on landowners by both the KWB and Rosedale banking projects.

**B. Implement Proactive Measures (in addition to A. above).**

1. KWBA and Rosedale will be obligated to contribute funds to meet mitigation obligations hereunder (“Action Fund”), which shall be \$2.00/AF of recovered water from future project operations (actually pumped, not exchanged), until the Action Fund balance reaches \$1.0 million. If the Action Fund balance drops below \$500,000 contributions shall be resumed until the Action Fund balance again reaches \$1.0 million. In addition, KWBA and Rosedale shall initially provide \$250,000 and \$50,000, respectively. Rosedale shall maintain an accounting of funds obligated by the parties and shall serve as fiscal agent for the Action Fund. As actions are taken by the Joint Operations Committee pursuant to D, E, F and G, the fiscal agent shall invoice to the extent funds are obligated to the Action Fund, and each shall remit the requested funds within 30 days of invoice.
2. KWBA and Rosedale will use the Models as a tool to evaluate groundwater impacts as well as the With Project verses Without Project groundwater levels. For purposes of this Plan, the Parties have agreed the Without Project Condition shall assume no farming on the KWB lands and the KWB shall receive a basin credit of 6,000 acre-feet per year. The Models will be periodically run and updated as the Parties projected recovery plans become known or change and With Project conditions will assume such conditions. Recovery in any calendar year shall not commence until the Models have been run for the projected operations and the Committee has met to review the results.
3. The models have been and will be used to:
  - (a) forecast groundwater levels.
  - (b) forecast when With Project water levels become deeper than Without Project water levels (with both KWB and Rosedale projects). For purposes of this plan a condition shall be considered a negative project impact (“NPI”) for which the measures described at D, E, F and G may be

operative where the With Project water level is 45 feet deeper than the Without Project water level, as forecasted by the Model.

- (c) forecast any localized areas for special attention and/or monitoring, i.e., AOC's.
  - (d) identify domestic wells at risk of impacts.
4. KWBA and Rosedale will jointly research potential emergency response for domestic well health and safety issues within Rosedale and Buena Vista and jointly respond as described below at F.
5. The Joint Operations Committee will:
- (a) establish a process to respond to and evaluate landowner claims associated with Project operations.
  - (b) determine whether landowner outreach should be proactive, reactive or both.
6. In the event the Joint Operations Committee cannot agree on the implementation of this agreement or the proper action in response to a landowner claim, such dispute shall be submitted to binding arbitration before a single neutral arbitrator appointed by the Parties, and in absence of such consent, appointed by the presiding judge of the Kern County Superior Court. The arbitration shall be called and conducted in accordance with such rules as the Parties shall agree upon, and if the absence of such agreement, in accordance with the procedures set forth in California Code of Civil Procedure section 1282, et seq. The parties shall attempt to jointly appoint the neutral arbitrator within ten days after a dispute arises, and in the event the parties cannot agree to a neutral arbitrator within said ten-day period, either party may make a request to the presiding judge of the Kern County Superior Court immediately thereafter. Notwithstanding the time periods prescribed by the Code of Civil Procedure section 1282, et seq., all arbitration conducted hereunder shall be commenced within thirty days of the selection of the neutral arbitrator, unless agreed to otherwise by the Joint Operations Committee and the affected landowner, if any. The dispute resolution process selected by the Parties shall be the exclusive remedy for landowners agreeing to participate in and receive the benefits hereunder.
7. With respect to the interpretation and enforcement of this Plan, and with respect to the resolution of any matter left for future determination or implementation, the Parties agree to carry out such duties and responsibilities in good faith and in cooperation with one another, to the end that the objectives and purposes of this agreement will be achieved and/or carried out to the greatest extent practicable.

**Operations Plan**

**C. Establish Triggers and Actions within any identified AOC.**

As described below at sections D, E, F, and G, these actions will be implemented in consultation with the Parties through the Joint Operations Committee. The triggers and actions below are for wells within any identified AOC, subject to the following:

1. These actions would not occur in years when average water levels (measured at the following wells: 29S/25E-27N1&2, 29S/25E-25M1&2, 29S/26E-31H1&2, and 29S/25E-35G01) are less than 140 feet from the surface as measured on March 31 of a given year because it is expected that water levels will not decline during such year to an extent resulting in an NPI.
2. It is the intent of the Parties to mitigate and/or compensate for legitimate Project impacts; it is not the intent of the Parties or the Plan to generate a windfall for landowners. Accordingly, reasonable adjustments in the form or level of mitigation and/or compensation will be made where it can be demonstrated that the affected well requires remediation for reasons other than temporary groundwater level declines resulting from Project operations (i.e., general overdraft conditions, lack of well maintenance, normal wear and tear, failure of well equipment, etc.).
3. For agricultural wells to be eligible for mitigation as provided below, the affected landowner shall provide information concerning the condition of the well and casing and pumping equipment, as determined appropriate by the Joint Operations Committee.

**D. Action for Ag Wells – Well Adjustment Needed and Available**

1. Trigger: When the Model predicts NPI for an operational ag well outside the current operating range of the pump but within the potential operating range of the well.
2. Actions:
  - (a) Jointly field verify static depth to groundwater levels within the well and compare to Model values.
  - (b) Compare pump setting information with Model projected pumping water levels throughout the year to determine pump submergence levels and evaluate the necessity and feasibility of lowering the well pump to meet the landowner's needs.
  - (c) Secure an estimate to complete the necessary work.

- (d) Using the Action Fund, pay all costs associated with the landowner claim, including the cost to complete the necessary work (less negotiated offsets), upon the landowner executing a release.

**E. Action for Ag Wells – Well Adjustment Unavailable**

1. Trigger: When the Model predicts NPI for an operational ag well outside the current and potential operating range of the well.
2. Actions:
  - (a) Jointly field verify static depth to groundwater levels within the well and compare to Model values.
  - (b) Supply equivalent water supply to the affected landowner from an alternate source at no greater cost to the affected landowner; or
  - (c) With the consent of the affected landowner, provide other acceptable mitigation; or
  - (d) Reduce or adjust pumping as necessary to prevent, avoid or eliminate the NPI. Use the Model(s) to identify the well or wells that may require reduction or adjustment in pumping. The Parties agree to share available Project water supplies in a manner such that the burden of reduced pumping shall be borne by the Parties in proportion to the Model(s) projection of their respective impacts.

**F. Action for Domestic Wells.**

1. Trigger: Emergency health and safety concerns exist because a domestic submersible pump production ceases or is likely to cease as a result of pumping by either or both of the Parties' Projects.
2. Actions:
  - (a) Jointly field verify if flow stoppage is due to groundwater level decline.
  - (b) Obtain joint right-of-entry permit and well data release from well owner.
  - (c) Collect pump manufacture data, the in-situ pump setting and the casing depth information.



- (d) If flow stoppage is due to causes unrelated to groundwater level decline (i.e., pump failure, casing degradation, etc.) repairs are the responsibility of the landowner.
- (e) If flow stoppage is due to groundwater level decline in the aquifer proximate to the impacted well, regardless of cause, offer to fund from the Action Fund one of the following, as determined by the Joint Operations Committee, if possible, in order to provide the least cost short and long term solution:
  - (1) Lower the domestic submersible pump bowl setting sufficient to restore and maintain service.
  - (2) Provide a one-time permanent connection to the nearest water service provider.
  - (3) Drill and equip a new domestic well. Joint Operating Committee to decide if the landowner should contribute based on betterment.
  - (4) If necessary, provide interim in-home water supplies until action (1), (2) or (3) above is completed.
- (f) Using the Action Fund, pay all costs associated with the landowner claim, including the cost to complete the necessary work (less negotiated offsets), upon the landowner executing a release.

**G. Action for Other Landowner Claims.**

- 1. Trigger: A landowner makes a claim of impact on his groundwater use (which could be due to the projects, adjacent landowners, or a combination)
- 2. Actions:
  - (a) Refer claim to the Joint Operations Committee to evaluate and respond to landowner claim.
  - (b) Process claim according to agreed upon dispute resolution process (see B.6., above) in the event the Joint Operations Committee does not agree on an appropriate response.

## H. Additional Actions and Miscellaneous.

1. Subject to H.3, this interim operations Plan will become effective on September 5, 2014.
2. The Joint Operations Committee will evaluate and, if appropriate, mitigate 2010 landowner claims according to the process set forth in this Plan, provided the claims have not been dismissed or are intended to be dismissed in the pending Pioneer Litigation.
3. Petitioners Rosedale and Buena Vista Water Storage District shall support and not object to this Plan in any and all of its filings and argument for the remedies hearing(s) in *Rosedale v. DWR* and *CDWA v. DWR*, currently set for September 5, 2014. The effectiveness of this Plan is conditioned on issuance of a remedy order by the Court pursuant to CEQA and Public Resources Code section 21168.9 that does not restrict KWB operations, while DWR is conducting further CEQA review of same, provided the operations are conducted subject to the Plan. This Plan shall be in effect until DWR's certification of its environmental document prepared in response to the Court's order in *Rosedale v. DWR* and *CDWA v. DWR*, and filing of its Return to Writ in such proceeding. The parties have negotiated a remedy order in the form of a peremptory writ which incorporates this Operations Plan and which will be jointly presented to the Court for signature. If the Court accepts the negotiated peremptory writ in the form presented and issues a judgment consistent with the same in both cases, then the Kern Water Bank Authority and its member entities waive any right to appeal or challenge both (i) the peremptory writ and (ii) the order on which it is based (i.e., March 5, 2014 decision in *Rosedale-Rio Bravo Water Storage District, et al. vs. Department of Water Resources, et al.*).
4. This interim Plan is not intended to and shall not establish any precedent for the supplemental environmental document DWR is required to prepare in *Rosedale v. DWR* and *CDWA v. DWR*, or its compliance with CEQA, including, but not limited to, with respect to the appropriate baseline(s), significance threshold(s), and what appropriate mitigation measure(s), if any, should apply following the term of this interim Plan. Nothing in this Plan is intended to act or be construed as a waiver of the parties respective rights to challenge any increase in facilities or operations of the other parties, either in the *Rosedale v. DWR* action (pursuant to the continuing jurisdiction of the Court), or in other legal proceedings, as appropriate.

5. While this Plan is in effect, KWBA may repair or replace existing facilities but shall not take any action that would increase or augment their ability to recover water beyond their existing capacity, as of the date of this Plan, to and including not increasing the horsepower of any well beyond that currently in place. KWBA shall provide Rosedale and Buena Vista a copy of energy statements demonstrating the horsepower of each well operational on the KWBA and provide access to Buena Vista and Rosedale to physically inspect each well. Additionally, the three new wells to be constructed by the KWBA as part of the IRWMP grant program shall be replacement wells with the KWBA to eliminate production from at least one well located within 1.5 miles of Stockdale Highway. Further, the three replacement wells shall be not be constructed within 1.5 miles of Stockdale Highway, and shall not be subject to the horsepower limitations provided above.
  
6. This agreement will not prejudice petitioners' (Rosedale and/or Buena Vista's) right to claim costs and reasonable attorneys' fees incurred in connection with the *Rosedale v. DWR* litigation. Nothing herein shall be construed as a waiver of any party's right to appeal from any order regarding the recovery of attorneys' fees.

APPROVED this \_\_\_ day of \_\_\_\_\_, 2015

KERN WATER BANK AUTHORITY

By \_\_\_\_\_

ROSEDALE-RIO BRAVO WATER STORAGE DISTRICT

By \_\_\_\_\_

BUENA VISTA WATER STORAGE DISTRICT

By \_\_\_\_\_

**APPENDIX F**  
**JOINT PROJECT RECOVERY OPERATIONS PLAN REGARDING PIONEER**  
**PROJECT, ROSEDALE-RIO BRAVO WATER STORAGE DISTRICT, AND KERN**  
**WATER BANK AUTHORITY PROJECTS**

**PROJECT RECOVERY OPERATIONS PLAN REGARDING  
PIONEER PROJECT, ROSEDALE-RIO BRAVO WATER STORAGE DISTRICT,  
AND KERN WATER BANK AUTHORITY PROJECTS**

**Purpose:**

The Kern County Water Agency, on behalf of itself and the Pioneer Project Recovery Participants, Rosedale- Rio Bravo Water Storage District, and the Kern Water Bank Authority (the Parties) have developed this Operating Plan to designate measures, consistent with the MOUs<sup>1</sup> governing their respective projects, to “... *prevent, eliminate or mitigate significant adverse impacts*” resulting from project recovery operations. This plan applies to all recovery programs undertaken by any of the Parties’ projects that are governed by MOUs. Pioneer mitigation includes the Pioneer Project, Berrenda Mesa Banking Project and Improvement District No. 4’s Allen Road well field. This plan applies to landowners using groundwater for overlying agricultural or domestic uses as of the date this plan is executed. It does not apply to wells installed after the date of this plan that are installed to unsuitable depths based on historic water level fluctuations.

**Plan Components:**

**1. Establish a Joint Operations Committee (JOC):**

- a. Representatives from each of the Parties will participate in the JOC. Each Party will have equal representation on the JOC and an equal voice in its determinations, except that with respect to claims made to the JOC, only those parties contributing to mitigation will have a vote in determinations made on such claims.
- b. The JOC will meet as needed during years in which recovery operations are occurring (or expected to occur) to evaluate groundwater conditions, model results, landowner claims, and any other topics of concern. It is expected that the JOC will meet at least monthly during years when recovery operations are occurring.
- c. The JOC may establish a technical subcommittee to assist with compiling information to use in evaluating claims.
- d. The JOC will evaluate all claims with respect to model results and other appropriate information and the triggers established in Section 3, and approve or reject such claims. If claims are approved, appropriate mitigation will be determined as further described in Section 3. If mitigation is provided, the JOC will fund and/or contribute to the actions as described in Section 4.

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<sup>1</sup> MOU refers to all of those MOUs executed by the parties that contain terms substantially similar to the *Memorandum of Understanding Regarding Operation and Monitoring of the Kern Water Bank Groundwater Banking Program* (dated October 26, 1995).

## 2. Evaluate Groundwater Conditions

- a. The Parties have developed groundwater models (AMEC and Harder) as a tool to evaluate With Project versus Without Project groundwater levels and predict potential groundwater impacts. The Parties shall mutually agree on the assumptions used for Without Project conditions, and for purposes of making determinations hereunder an average of the output for the two models shall be utilized. The Pioneer Without Project condition shall assume farming is continued on its footprint.
- b. The models will be updated regularly (at least annually) and compared to actual conditions during years in which recovery occurs. The Parties shall mutually cooperate to attain all data necessary for such updates. The Parties will utilize the water quality and water level monitoring data collected by the Kern Fan Monitoring Committee, and may conduct additional monitoring as needed. The Parties will report the results of the modeling to their respective Boards of Directors and shall publish on their respective websites maps and data showing current and projected water level information in the general area of the projects. As a matter of practice, the Parties will use the best and latest science and information available in all modeling and technical matters.
- c. Absent unanimous approval of the JOC, recovery in any calendar year beyond March 15 of that year shall not commence (or continue) until the Models have been run for the projected operations and the Committee has met to review the results.<sup>2</sup>
- d. The Models will be used to:
  - i. Forecast With Project and Without Project groundwater levels at the outset of recovery programs.
  - ii. Forecast any localized areas for special attention and/or monitoring.
  - iii. Attempt to identify domestic wells at risk of impacts.
  - iv. Determine if mitigation triggers have been met (See Section 3b).
- e. The Parties may, based on experience gained, select a mutually agreeable groundwater model capable of accurately predicting groundwater impacts resulting from project operations.
- f. In case of a dispute concerning a technical issue with a model, such as data inputs or the results based thereon, the Parties shall consult with a third party to resolve the matter.

## 3. Triggers and Actions

- a. These actions will not occur in years when average water levels (measured at the following wells: 29S/25E-25M1&2, 29S/26E-31H1&2, 29S/26E-34M1, and 29S/26E-35H) are less than 140 feet from the surface as measured on March 31 of a given year

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<sup>2</sup> Model data for a preceding year becomes available at different times in the following year. Modeling at the beginning of any given year will necessitate estimating certain model input data for the preceding year (e.g. Kern River losses). These estimates will be replaced with actual data at regular intervals when the model is updated.

because it is expected that water levels will not decline during such year to an extent resulting in a mitigatable impact.

- b. The trigger for whether mitigation is considered shall be based upon an analysis and comparison of Model generated Without Project conditions to Model generated With Project conditions. When the With Project conditions are fifteen (15) or forty-five (45) feet deeper than the Without Project conditions at any operative domestic or agricultural well, respectively, and mechanical failure or other operational problems have occurred or are reasonably likely to occur due to declining water levels, mitigation will be provided as described below.
- c. To be eligible for mitigation as provided below, the affected landowner shall allow the JOC (or representatives thereof) to perform a field inspection as described in 3.d. below, and provide claim information concerning the condition of the well and casing and pumping equipment, as determined appropriate by the JOC. The JOC shall evaluate all submitted claims within forty-five (45) days of receipt, provided that the landowner cooperates with the collection of necessary information. All mitigation actions are contingent upon the claimant executing an appropriate release, the terms of which will depend upon the nature of the mitigation provided.
- d. For all claims, a field inspection will be conducted with the consent and coordination of the landowner to determine static depth to groundwater levels within the well and verify well construction information and pump setting information, if possible.
- e. Well construction information and pump setting information will be compared to Model projected pumping water levels to determine pump submergence levels and evaluate the necessity and feasibility of mitigation measures. Mitigation measures, if warranted, will include one or more of the following:
  - i. Providing a short-term emergency water supply to domestic well owners. Short-term emergency supplies shall be provided as soon as reasonably possible, but in all cases within 14 days of notification to the JOC of such needs;
  - ii. Providing funds to lower a well pump;
  - iii. Providing funds to complete a connection to an M&I water provider;
  - iv. Supplying an equivalent water supply from an alternate source;
  - v. Providing funds to replace the affected well with a deeper well that meets Kern County well ordinance standards;
  - vi. Reducing or adjusting recovery pumping as necessary to avoid the impact; or
  - vii. With the consent of the affected landowner, providing other acceptable mitigation.
- f. Mitigation will not be provided where it can be demonstrated that the affected well requires remediation for reasons other than temporary groundwater level declines resulting from Project operations (i.e., general overdraft conditions, lack of well maintenance, normal wear and tear, failure of well equipment, etc.).

#### **4. Mitigation Funding**

- a. It is the intent of the Parties to mitigate and/or compensate for legitimate Project impacts; it is not the intent of the Parties or the Plan to generate a windfall for landowners. Accordingly, adjustments will be made for depreciation of existing equipment and landowner contributions based on betterment for all mitigation measures. See Exhibit A for an example of such adjustments.
- b. All costs paid, water supplies provided, and/or pumping reductions used by the Parties to prevent, eliminate or mitigate claimed impacts at a well site shall be initially allocated among the parties according to their respective projects' proportionate contributions to the With Project water level as compared to Without Project water level, as determined by using an average of the most recent versions of the models. After years end, the models shall be updated with the actual operations data for that year and recalibrated, and the average of the results of such modeling shall be used for a final allocation of the projects' proportionate contributions levels. If appropriate, the parties shall exchange funds and/or water supplies among them in accordance with the final allocation. For administrative ease, only an initial and final allocation for a given year shall be required. This procedure shall apply to mitigation for both domestic and agricultural wells.
- c. All costs expended by any Party for equipment, water supplies or labor that is/are purchased or provided to address emergency health and safety concerns at domestic wells (exclusive of the costs described in 4.b. above) shall initially be allocated equally between the Parties. These costs shall be reallocated among the parties after years end per the procedure described in 4.b. above, provided that only those domestic wells for which emergency health and safety costs were incurred by a party shall be included in such reallocation, and further provided that the projects' proportionate contribution levels shall be based on the melded average of the results of the reallocation at all of the wells included in the reallocation.
- d. All costs expended by any JOC participant in the administration of the JOC on behalf of all participants (e.g., processing claim response letters, calls from claimants, postage, notary public services, etc.) shall initially be allocated equally between the Parties. These costs shall be reallocated after years end per the procedure described in 4.b. above.

#### **5. Additional Actions and Miscellaneous.**

- a. The term of this Operations Plan shall commence on February 1, 2017, and shall terminate on January 31, 2019. The Parties may agree to extend this Operations Plan and will meet starting October 1, 2018 to discuss any extension.
- b. Modification language - This Operations Plan may not be altered, amended, or modified in any respect, except by unanimous consent of the Parties. Any modification to this Operations Plan must be made in writing and executed by all the Parties.



- c. Except as set forth below, in the event the Joint Operations Committee cannot agree on (1) the implementation of this agreement, or (2) the proper action in response to a landowner claim, such dispute shall be submitted to binding arbitration before a single neutral arbitrator appointed by the Parties, and in absence of such consent, appointed by the presiding judge of the Kern County Superior Court. Any arbitrator selected by the parties shall have experience arbitrating groundwater disputes. The arbitration shall be called and conducted in accordance with such rules as the Parties shall agree upon, and in the absence of such agreement, in accordance with the procedures set forth in California Code of Civil Procedure section 1282, et seq. Notwithstanding the foregoing, in any arbitration the Parties agree that discovery will be allowed pursuant to Code of Civil Procedure section 1283.05. The Parties shall attempt to jointly appoint the neutral arbitrator within ten (10) days after a dispute arises, and in the event the Parties cannot agree to a neutral arbitrator within said ten-day period, either Party may make a request to the presiding judge of the Kern County Superior Court immediately thereafter. In the event a landowner submits a claim and the Joint Operations Committee cannot agree on the proper action in response, the arbitration requirement shall be contingent upon the landowner's express written consent to proceed and be bound by arbitration and to pay his/her/its proportionate share of arbitrator fees and related costs. Absent such landowner consent, there shall be no obligation on the part of either Party to arbitrate any such dispute.
  
- d. With respect to the interpretation and enforcement of this Plan, and with respect to the resolution of any matter left for future determination or implementation, the Parties agree to carry out such duties and responsibilities in good faith and in cooperation with one another, to the end that the objectives and purposes of this agreement will be achieved and/or carried out to the greatest extent practicable.

APPROVED this \_\_\_ day of \_\_\_\_\_, 2017

**“PARTIES”**

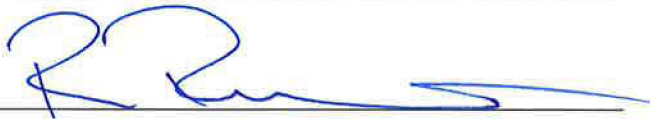
**KERN COUNTY WATER AGENCY, on behalf of itself and the Pioneer Project Recovery Participants**

By:  \_\_\_\_\_

**KERN WATER BANK AUTHORITY**

By: \_\_\_\_\_

**ROSEDALE-RIO BRAVO WATER STORAGE DISTRICT**

By: \_\_\_\_\_

Joint Operations Committee  
Well Cost Alternatives Worksheet

Date: October 13, 2015  
Case No. 15-017  
Name: Ross Johnson

A. Notes:

1. Pump was lowered in 2015.
2. Pump was pulled in October 2015 and found to be sanded up. (ME Beggs Invoice)
3. Bottom of well was tagged in October 2015 at 288 ft or 6 ft shallower than a year ago. (ME Beggs Invoice)
4. Casing is flaking off (ME Beggs Invoice)

B. Exhibit A Analysis:

<u>I. Pump Capacity Analysis:</u>			
Required Pump Flow Rate (Estimated)			10 GPM
Measured Pump Flow Rate (Estimated)			0 GPM
Difference			10 GPM
Adequate Capacity	Yes	No	X
<u>II. Pump Setting Analysis:</u>			
Depth of Casing:			288 Ft
Depth to Water (Static)			222 Ft
Depth to Pumping Water Level (Estimated)			231.5 Ft
Drawdown			9.5 Ft
Pump Setting			284 Ft
Pump Submergence			52.5 Ft
Adequate Submergence	Yes	X	No
Projected static depth to water level (From Study)			250 Ft
Drawdown			9.5
Required Submergence			50
Projected 10 Year Casing Setting			175
Modified Pump Setting			485 Ft
Existing Casing Depth			288 Ft
Modified Pump Setting			485 Ft
15 feet minimum pump clearance			15 Ft
Required casing depth in ten years			500 Ft
Existing Casing Depth below Required Casing Depth			(212) Ft
Adequate Clearance	Yes	No	X

C. Well Replacement Analysis

<u>Well Replacement Depreciation Analysis:</u>			
Existing well casing - Expected Life			50 Years
Existing well casing - Age			38
Existing well casing - Expected Remaining Life (Casing has failed)			0
Existing pump - Expected Life			15 Years
Existing pump - (Pump replaced in July 2015)			0
Existing pump - Expected Remaining Life			15
<i>Note: In some cases, existing column, tube, shaft and motor should also be evaluated, or included with Existing pump.</i>			
Facility Remaining Replacement Cost Analysis:			
	Cost	Cont. Amount	Total
Drilling and casing cost for new well.	90,000	9,000	\$99,000
Purchase and installation of new pumping equipment.	5,000	500	\$5,500
Salvage Value			\$0
	Total:		\$104,500
Unit Well Replacement Cost	\$99,000 /	500 FT =	\$198 /FT
Existing Well - Replace Cost	\$198 /FT x	288 FT =	57,024
Existing Well - Depreciated Value			57,024
Existing Well - Remaining Value			0
New Well - Incremental Cost	\$198 /FT x	212 FT =	41,976
Action Fund Mitigation Cost			\$41,976
Unit Pump Replacement Cost	\$5,500 /	485 FT =	\$11 /FT
Existing Pump - Replace Cost	\$11 /FT x	284 FT =	3,224
Existing Pump - Depreciated Value			0
Existing Pump - Remaining Value			3,224
New Pump - Incremental Cost	\$11 /FT x	201 FT =	2,276
Action Fund Mitigation Cost			\$5,500
<u>Facility Replacement Cost Summary:</u>			
Owner Cost for Facility Replacement			\$57,024
Action Fund Cost for Facility Replacement			\$47,476
Total Replacement Cost			\$104,500

D. Cost Alternative Summary:

- |   |           |
|---|-----------|
| 1) Cost to drill new well to a depth of 495 ft.                   | \$99,000  |
| 2) Incremental cost to drill new well from 288 ft down to 495 ft. | \$41,976  |
| 3) Drill New Well & Provide Pump (Full Cost)                      | \$104,500 |

E. Action Fund Cost

Exhibit A - Incremental cost to drill new well from 288 ft down to 495 ft and lower pump from 284 ft to 485 ft.	\$47,476
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**APPENDIX G**  
**KERN WATER BANK BIRD SURVEY REPORT**

**Sterling Wildlife Biology**

**Woodland CA 95695**

**Phone: 530 908-3836**

**E-Mail: [jsterling@wavecable.com](mailto:jsterling@wavecable.com)**

**Web: [www.sterlingbirds.com](http://www.sterlingbirds.com)**

# Kern Water Bank

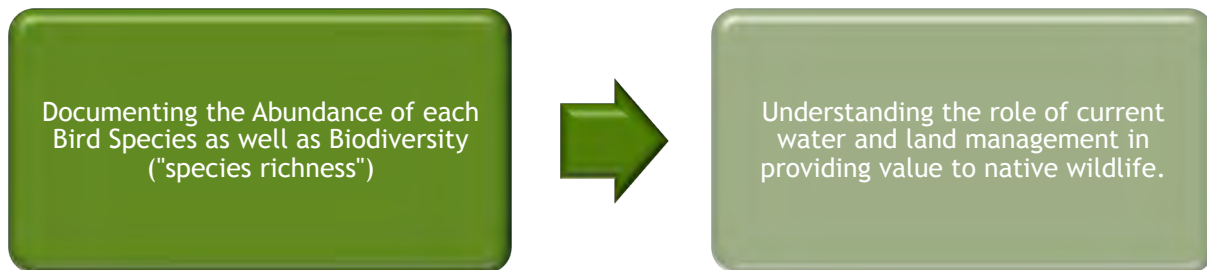
Bird Survey Report: October - mid-April 2012

27 April 2012



## Introduction

The property managed by the Kern Water Bank Authority supports a wealth of native wildlife, especially an abundance of water birds and raptors attracted to the recharge ponds and/or the upland habitats. In order to document and quantify this natural resource value, John Sterling of Sterling Wildlife Biology conducted bird surveys from mid October 2011 to mid April 2012. These surveys were intended to capture a snapshot of the bird use of the project area during the winter and early spring season. The resulting data serve to document the regional and statewide importance of these wetlands to waterbirds during this period. The data may also be used to inform management practices with regard to productive bird habitat.



## Methods

For the waterbird surveys, John Sterling visited watered ponds over ten survey periods. The dates of the surveys were 18-19 October, 25-26 October, 15-16 November, 30 November - 1 December, 13-14 December, 23-25 January, 10-11 February, 28-29 February, 10-11 March, and 8-9 April. Each pond was labeled in the datasheet according to the name on the map provided by the Kern Water Bank Authority. One pond was not marked on the map and was labeled CX for this study. For each pond, Mr. Sterling counted all individuals for species with fewer than one hundred individuals. For species with larger numbers of individuals, he made estimates by counting in increments of ten or one hundred. All watered ponds were visited in all ten surveys with the exception of Pond W3. All data were entered into Microsoft Excel spreadsheets (See attached Appendix A excel file).

Mr. Sterling conducted upland bird surveys by walking transects and recording all birds heard or seen within 100 meters of the transect line (Figure 1). He tabulated the numbers of each species. Each transect was surveyed twice, once in October (one transect in December) and again in February. Transects were 0.25 - 0.5 miles long. For five sets of raptor surveys (14 December, 9 January, 24 January, 29 February and 1 April), Mr. Sterling drove most roads to cover the entire project area and kept running tallies of numbers of individuals of all raptor species and Loggerhead Shrike detected in wetland and upland habitats.

## Results

### Waterbirds

A total of sixty-six native waterbird species were detected during these surveys. Overall numbers were consistently high during the first eight survey periods (mid-October through February) with 19,823 - 34,945 individuals estimated (Figure 2). After mid December, ponds started drying out. However, numbers climbed and remained high through February despite the drop in the number of watered ponds (Figures 2 and 3). The study area was able to absorb these increases as watered ponds held higher concentrations of birds. The peak was on 24-25 January when large numbers of ducks were present (Figure 5), most likely pushed south by winter storms in the north. There was a sharp decline in waterbird numbers by mid March and April as there were few watered ponds remaining—most of which had greatly reduced water levels and surface area.

The sixty-six species of waterbirds are grouped according to foraging ecology and evolutionary relationships. Grebes (Figure 4), gulls (Figure 5), dabbling and diving ducks (Figure 6), egrets/herons (Figure 7), and shorebirds (sandpipers and plovers) (Figure 8) were classified into separate categories. American Coot (*Fulica americana*), White-faced Ibis, Double-crested Cormorant (*Phalacrocorax auritus*), and White Pelican (*Pelicanus erythrorhynchos*) were treated individually in the summary data (Figures 9-11). There were two over-arching seasonal patterns in abundance amongst the groups of waterbirds. Grebes, herons and egrets, coots, and pelicans and cormorants numbers peaked during the late fall and early winter surveys, while ducks, gulls, shorebirds and White-faced Ibis (*Plegadis chihi*) numbers peaked in late winter and early spring surveys (Figures 3-10). Overall numbers of species per pond (species richness) as an index of biodiversity increased from mid October to 14 December, then slowly decreased (Table 1). The ponds that were most important for high numbers of species and populations throughout the winter were W2, W4, W5, W6, M1, M8, and M10. But many other ponds were important, especially earlier in the season when water was most prevalent east of Hwy 5 (for details see Appendix excel file). The average number of birds per pond varied across the survey periods but didn't change dramatically until decreases started in late February



(Table 2). The variation in ponds was dramatic with several ponds consistently having over 2,000 birds and others fewer than 100. Because of the varied topography of many of the ponds and the lack of direct measurements of water depths, it was not possible to determine average depths or the range of depths for the ponds during the surveys. Likewise, because many of the ponds were drying during the late winter and spring, the acreages of these ponds were not measured. However, the largest ponds consistently had the largest number of species and concentrations of birds.

Marsh species such as Sora (*Porzana carolina*), Virginia Rail (*Rallus limicola*), Black-crowned Night-Heron (*Nycticorax nycticorax*), and Marsh Wren (*Cistothorus palustris*) were found in nearly every pond with substantial amount of cattails, sedges and other emergent wetland vegetation. Curiously, no American Bitterns (*Botaurus lentiginosus*) or Least Bitterns (*Ixobrychus exilis*) were found despite plenty of suitable habitat, but these species are cryptic and usually in low density so are difficult to detect when not vocalizing.

### Upland Birds

Additional bird surveys that sampled the diverse upland habitats had 9 - 21 species with 9 - 245 individual birds in October (Table 3). By far the most abundant species was White-crowned Sparrow (*Zonotrichia leucophrys*), but large numbers of the typically uncommon Lincoln's Sparrow (*Melospiza lincolnii*) were found on two transects. All birds found during these surveys were typical wintering species with the exception of Yellow Warbler (*Setophaga petechia*), which was a late migrant.

The second set of surveys conducted in February had fewer species and individuals than in October with the exception of Transect G, which was surveyed in December, not October. These results may indicate an overall reduction in the populations of upland bird species on the study area. Among the factors that could play a role are reduced food (seed, insects), birds were temporarily stopping on the study area while enroute to wintering locations further south, and the loss of individuals through predation. Predators such as long-tailed weasel (*Mustela freneta*), bobcat (*Lynx rufus*), coyote (*Canis latrans*), striped skunk (*Mephitis mephitis*), many raptors including owls, and Loggerhead Shrikes were observed on the study area during the surveys and undoubtedly prey upon many upland birds during the winter.

### Raptors and Shrikes

The comprehensive survey for raptors and Loggerhead Shrikes (*Lanius ludovicianus*) on the entire project area resulted in high numbers of Red-tailed Hawks (*Buteo jamaicensis*) and Loggerhead Shrikes, but also documented thirteen species of raptors using either the wetland or upland habitats during the surveys (Figure 12-16). Ferruginous Hawks (*Buteo regalis*), American Kestrels (*Falco sparverius*), Prairie Falcons (*Falco mexicanus*) and Loggerhead Shrikes preferred upland to wetland habitats, but Red-tailed Hawks and Northern Harriers (*Circus cyaneus*) were found nearly equally in both sets of habitats during the first survey (Figure 11). During subsequent surveys, Red-tailed Hawks were found primarily in upland habitats. The sample sizes are too small to draw definitive conclusions based upon the data, but Osprey (*Pandion haliaetus*), and Peregrine Falcon (*Falco peregrinus*) preference for wetlands and Prairie Falcon preference for uplands can be inferred based upon their primary diet—fish for Osprey, ducks and shorebirds for Peregrine Falcons, and rodents and upland birds for Prairie Falcons. Red-shouldered Hawk (*Buteo lineatus*) and White-tailed Kites (*Elanus leucurus*) were present in very small numbers and primarily associated with wetlands and/or rank fallow fields. Both Cooper's (*Accipiter cooperi*) and Sharp-shinned (*Accipiter striatus*) hawks, which prey upon small birds, were also found in small numbers in both upland and wetlands, but primarily where there were flocks of sparrows.

Overall numbers of raptors dipped sharply on 9 January, then rebounded on 24 January and declined to low levels found on 1 April. Likewise, Loggerhead Shrikes followed the same trend to drop to ~30% of the peak number by 1 April. The 17 remaining shrikes on 1 April were likely resident breeders. The decline from December was likely due to an influx of winter visitors that departed by April to their breeding grounds outside of the study area. The extent of immigration to the Central Valley is unknown, but it is likely that some shrikes breeding eastern Washington, Oregon and the Great Basin winter in the Central Valley.

### Rare Birds

A few rare birds were discovered during the surveys. A female Barrow's Goldeneye was on M10 on 25 January, which established only the third documented record for Kern County. Two female Greater Scaup on 14 December on E2 were the only ones reported in Kern County during 2011. Several Eurasian Wigeon were also seen including a female and three males. Other than Canada Goose, geese are rare in the Tulare Basin, so multiple records of Snow, Ross's, Cackling and Greater White-fronted geese were notable. A Glaucous Gull was on M1 on 29 February, which established the fourth or fifth record for the Tulare Basin. Other rare gulls included several Glaucous-winged, Thayer's and Mew gulls. Although not rare, an adult Golden Eagle put in a visit on 29 February. On 1 April, a Cassin's Kingbird and a male Purple Martin were photographed on the study area. The kingbird is a very rare breeder in Kern County and is only known from the South Fork Kern River Valley and a location near Bakersfield. This bird was probably a very rare wandering migrant. Purple Martins are only known to breed in Kern County in the high mountains of the Tejon Ranch, and there are very few records of migrants in the San Joaquin Valley and Tulare Basin.

The Kern Water Bank has exceptional habitats for birds and many rare birds will likely be found and documented in the future dependent upon survey efforts.

Figure 1. Locations of Upland Bird Survey Transects on the Kern Water Bank

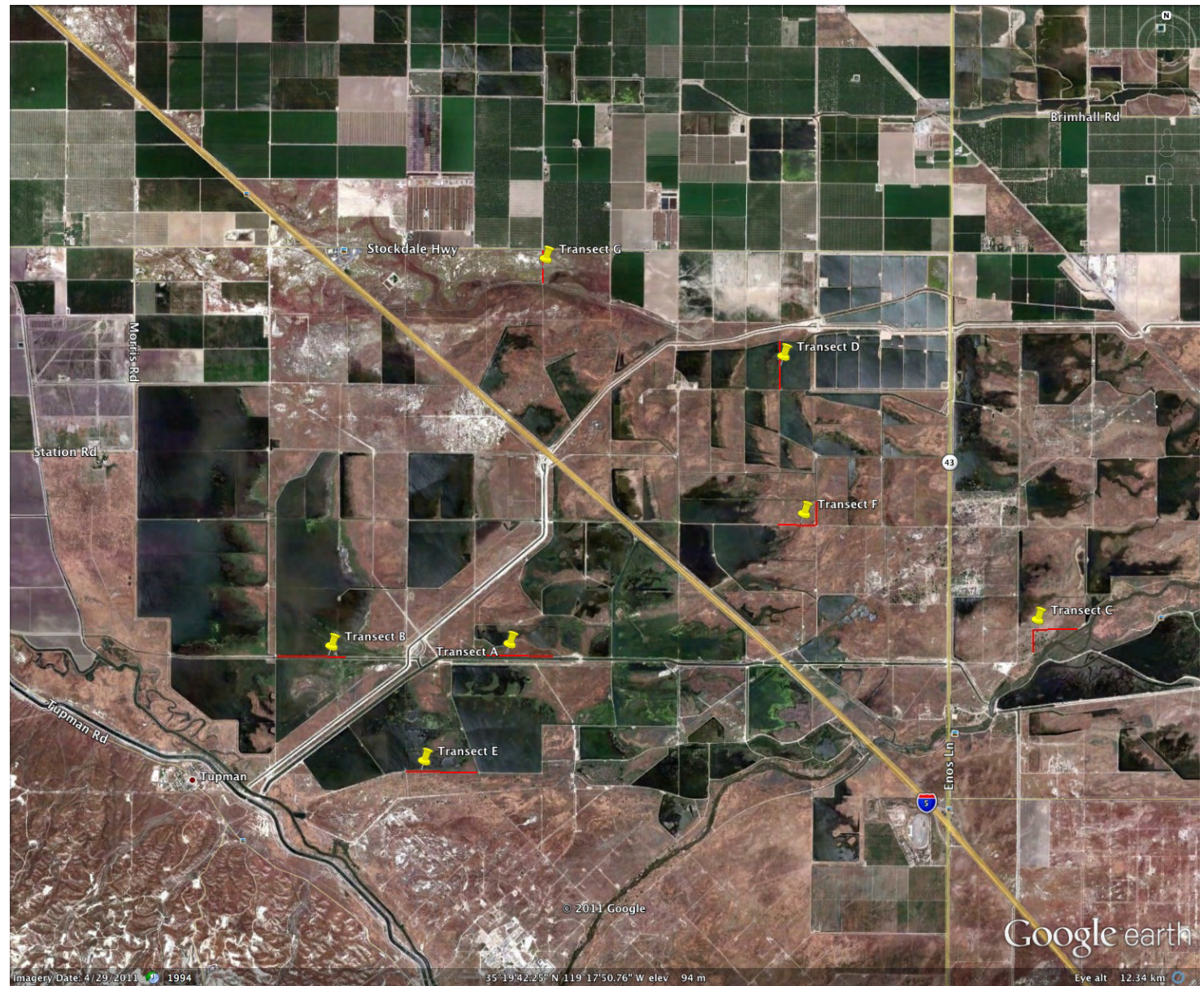
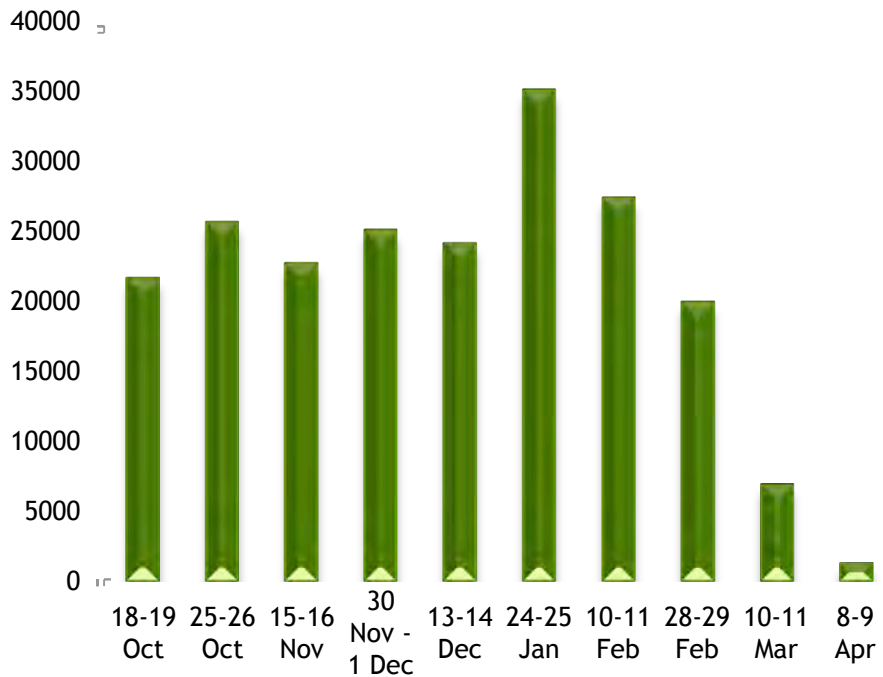




Figure 2. Results of Ten Waterbird Surveys in Winter 2011-2012: total waterbird counts.

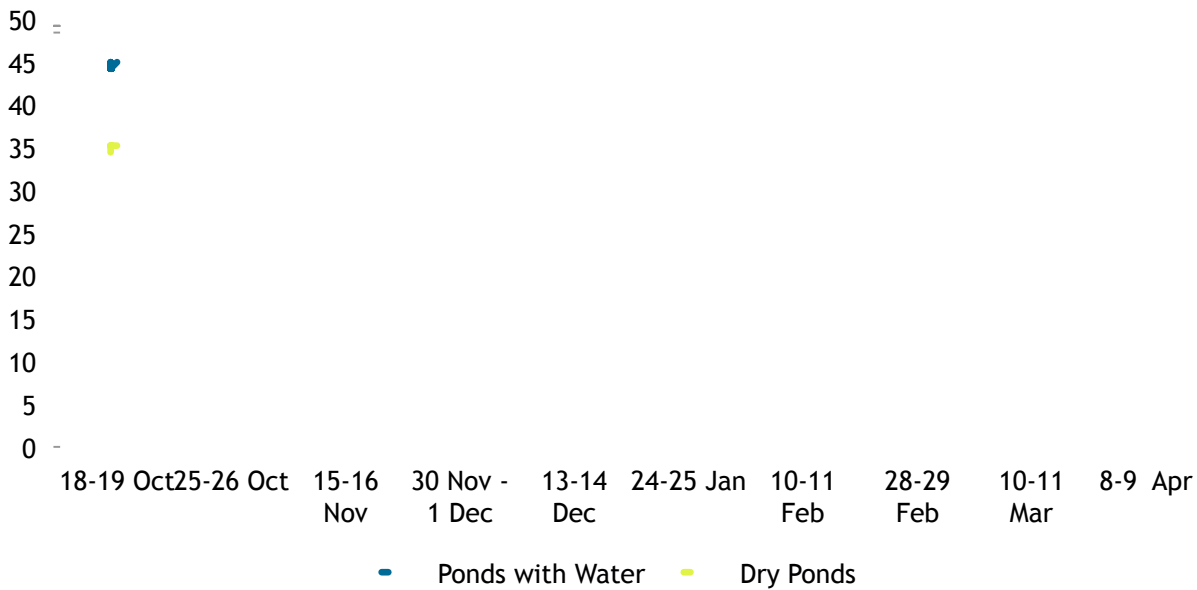
**Total Water Bird Counts: Winter 2011-12**



■ Total Water Bird Population 21539 25514 22578 24944 24015 34945 27236 19823 6841 1212

Figure 3. Seasonal Variation in Watered Ponds Surveyed for Birds: Winter 2011-2012.

**Number of Watered and Dry Ponds: Winter 2011-2012**





Great and Snowy egrets, White-faced Ibis, American White Pelicans and Double-crested Cormorants

Figure 4. Results of Grebe Counts.

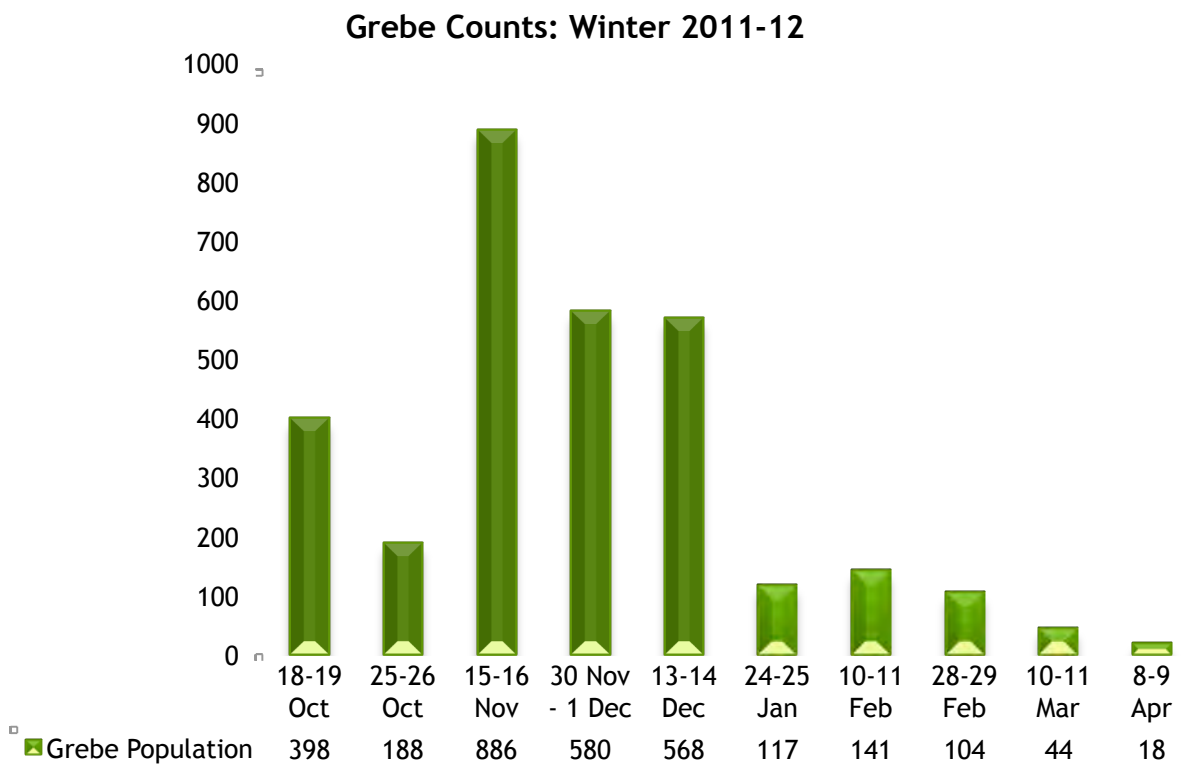


Figure 5. Results of Gull Counts.

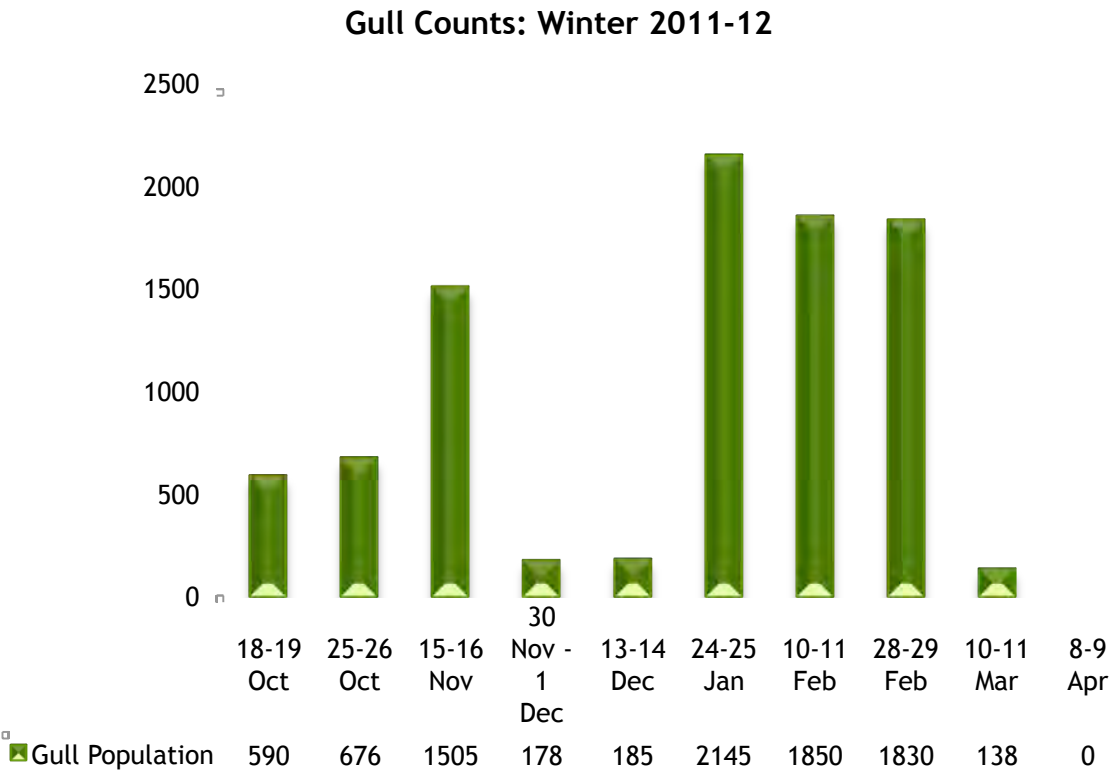


Figure 6. Results of Duck Counts.

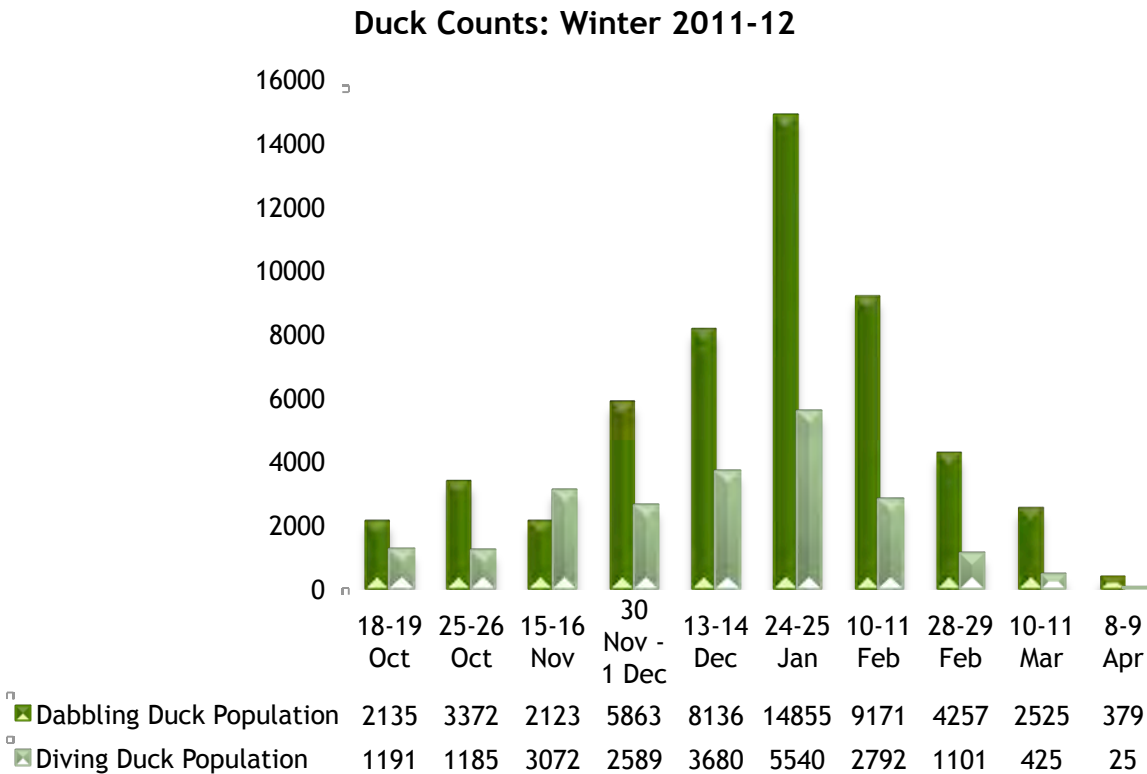


Figure 7. Results of Egret and Heron Counts.

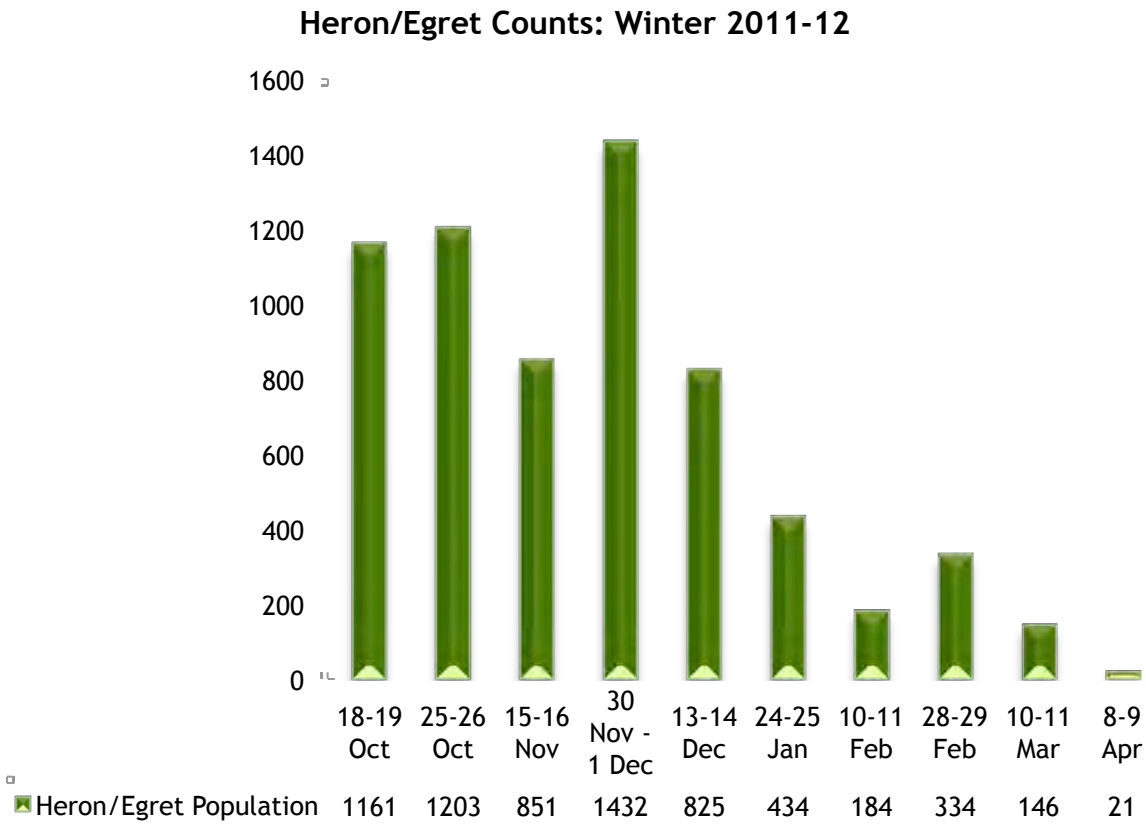


Figure 8. Results of Shorebird Counts.

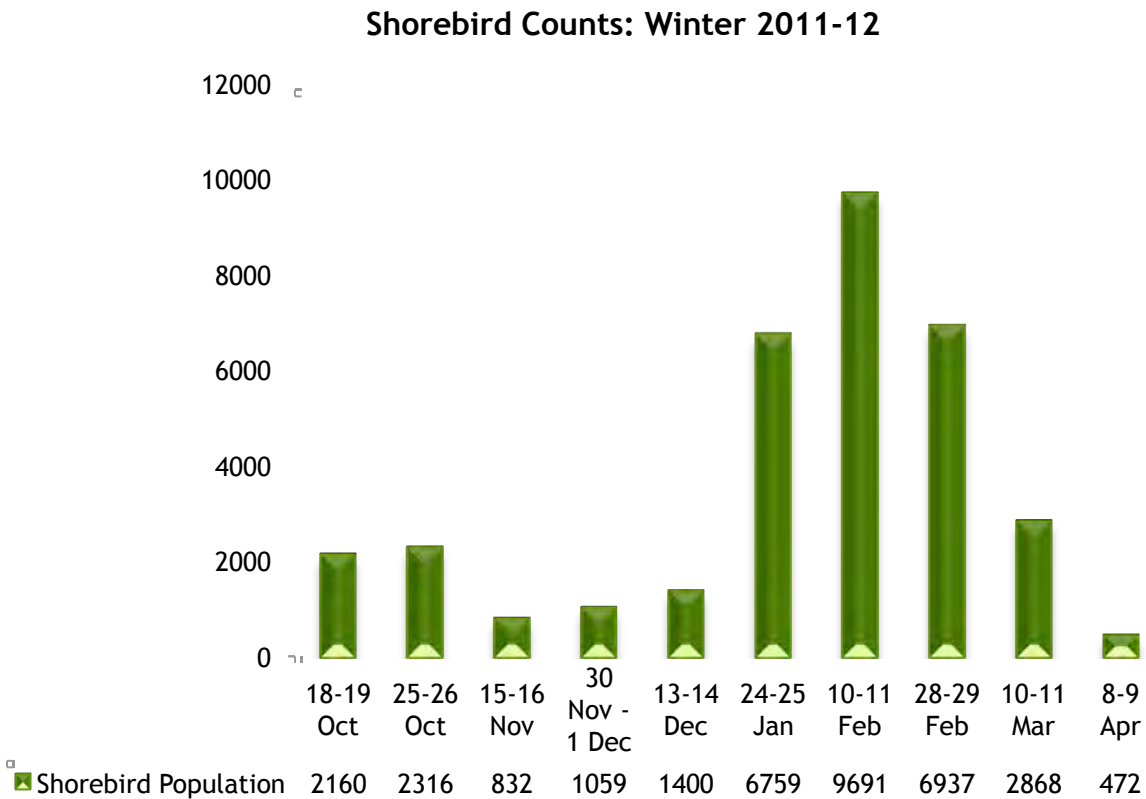


Figure 9. Results of American Coot Counts.

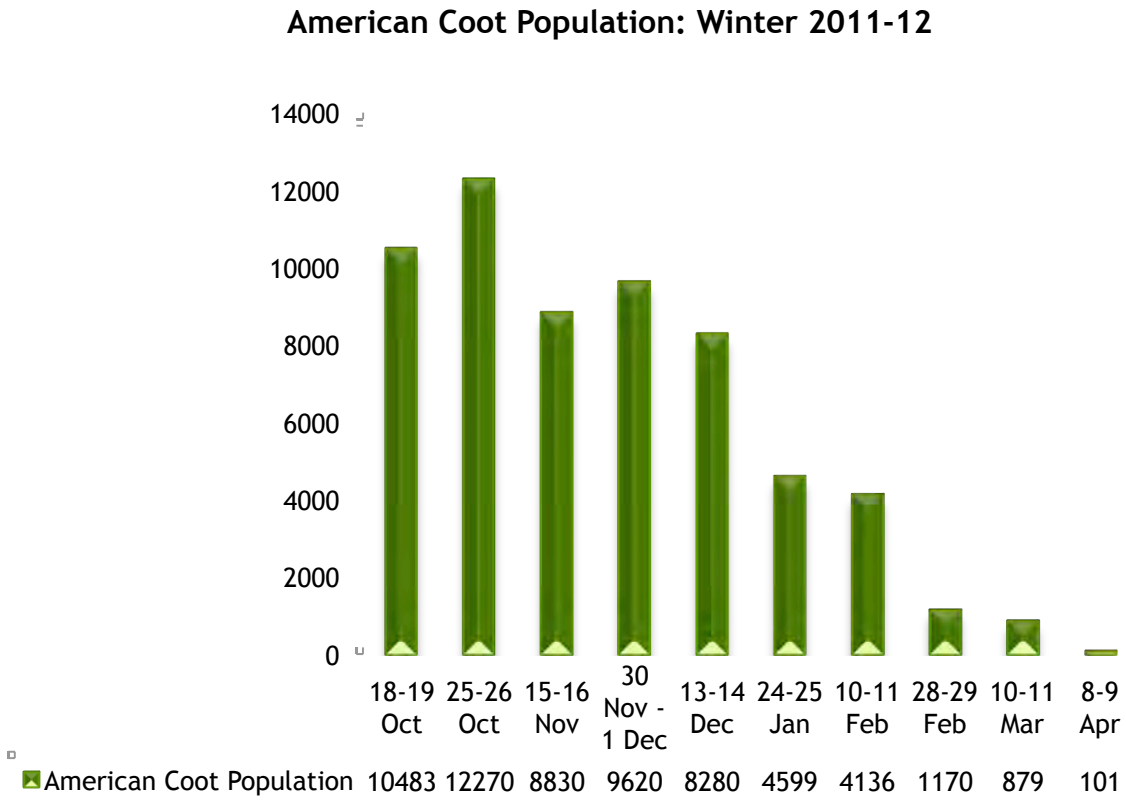


Figure 10. Results of White-faced Ibis Counts.

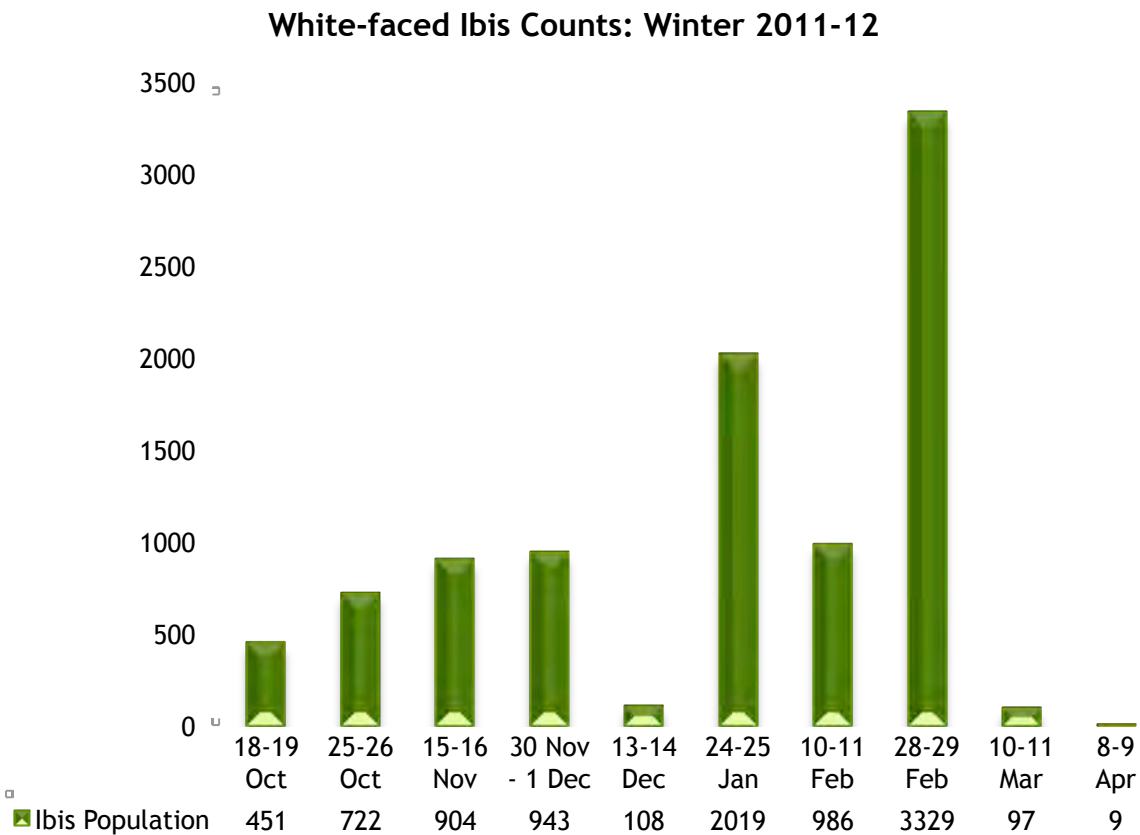
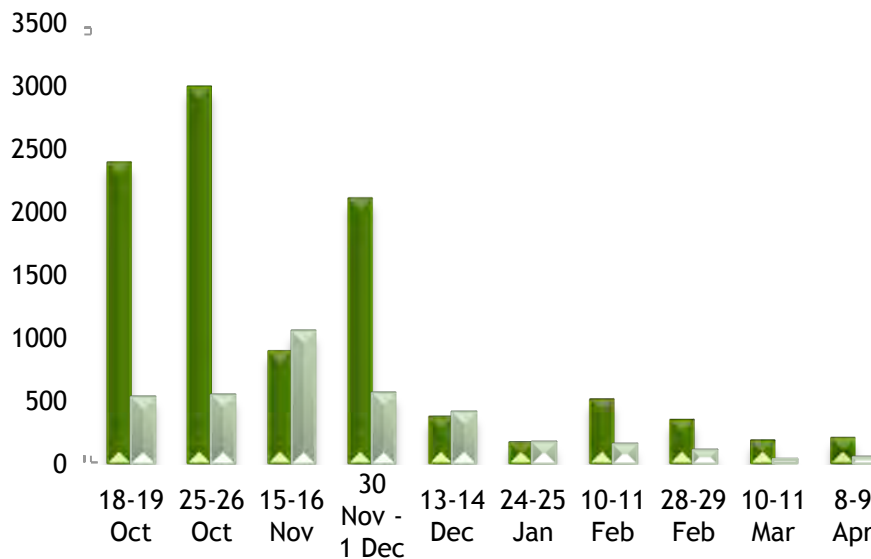


Figure 11. Results of Cormorant and Pelican Counts.

## Pelican and Cormorant Counts: Winter 2011-12



American White Pelican Population	2380	2976	886	2095	367	165	504	341	179	202
Double-crested Cormorant Population	515	531	1036	547	392	157	140	97	23	44

Table 1. Number of Species per Pond.

Survey Period	Average Species Richness	Standard Error	Range
18-19 Oct	9.56	5.47	1 - 23
25-26 Oct	10.35	5.67	0 - 21
15-16 Nov	11.95	6.44	1 - 28
30 Nov - 1 Dec	13.36	5.75	0 - 26
13-14 Dec	13.25	7.41	0 - 28
23-25 Jan	10.82	9.20	0 - 31
10-11 Feb	8.22	8.69	0 - 26
28-29 Feb	6.02	9.56	0 - 32
11 Mar	4.24	7.75	0 - 27
9 Apr	2.38	5.34	0 - 22

Table 2. Number of Birds per Pond.

Survey Period	Average Number of Birds	Standard Error	Range
18-19 Oct	552	660	12 - 2539
25-26 Oct	668	997	0 - 4373
15-16 Nov	599	638	3 - 3042
30 Nov - 1 Dec	640	691	0 - 3725
13-14 Dec	536	586	0 - 2274
23-25 Jan	790	1935	0 - 11432
10-11 Feb	637	1249	0 - 7050
28-29 Feb	445	1221	0 - 6121
11 Mar	162	443	0 - 2390
9 Apr	31	74	0 - 334

Table 3. Results of Upland Bird Surveys: October.

	Transect A	Transect B	Transect C	Transect D	Transect E	Transect F	Transect G
Date	19-Oct	19-Oct	20-Oct	20-Oct	26-Oct	27-Oct	12-Dec
Transect Length (miles)	0.5	0.5	0.5	0.35	0.5	0.5	0.25
<b>Species</b>							
COOPER'S HAWK	2				1		
RED-SHOULDERED HAWK		1	1				
RED-TAILED HAWK		1		2		2	1
AMERICAN KESTREL			1			1	
KILLDEER							1
CALIFORNIA QUAIL			71		43	2	
MOURNING DOVE			2	1		12	1
GREATER ROADRUNNER			1		1		
BARN OWL	3						
NORTHERN FLICKER			1		1		
BLACK PHOEBE	1	1	1	2	4	2	
SAY'S PHOEBE			1				
HORNED LARK			3			40	1
TREE SWALLOW	4			40			
WESTERN SCRUB-JAY			3				
COMMON RAVEN			3				1
BEWICK'S WREN			11		7		
HOUSE WREN	6			1	4		
MARSH WREN				4	1		
AMERICAN ROBIN			1				
NORTHERN MOCKINGBIRD	4	1	6	3	3	1	1
CALIFORNIA THRASHER			1		1		
AMERICAN PIPIT						3	
LOGGERHEAD SHRIKE	2	2	2	2	5	1	1
ORANGE-CROWNED WARBLER			2	6	1		
YELLOW WARBLER		2		1			
AUDUBON'S WARBLER		3	5	3	6		
COMMON YELLOWTHROAT		2		1			
LARK SPARROW					1		
SAVANNAH SPARROW					2	2	
SONG SPARROW	2	7		3	1		
LINCOLN'S SPARROW	47	3		33	4	1	
WHITE-CROWNED SPARROW	130	50	60	60	150	40	
RED-WINGED BLACKBIRD	10			60			
WESTERN MEADOWLARK	3		2	1		8	1
BROWN-HEADED COWBIRD				2			
HOUSE FINCH	18	6		2	1	9	1
AMERICAN GOLDFINCH		20		2	8		
<b>Individuals</b>	<b>232</b>	<b>99</b>	<b>183</b>	<b>229</b>	<b>245</b>	<b>124</b>	<b>9</b>
<b>Species</b>	<b>13</b>	<b>13</b>	<b>21</b>	<b>20</b>	<b>20</b>	<b>14</b>	<b>9</b>

Table 3. Results of Upland Bird Surveys: February.

	Transect A	Transect B	Transect C	Transect D	Transect E	Transect F	Transect G
Date	29-Feb	29-Feb	9-Feb	9-Feb	29-Feb	9-Feb	9-Feb
Transect Length (miles)	0.5	0.5	0.5	0.35	0.5	0.5	0.25
<b>Species</b>							
GREEN HERON		1					
COOPER'S HAWK			1				
WHITE-TAILED KITE	2						
NORTHERN HARRIER	1			1			
RED-TAILED HAWK			3				1
AMERICAN KESTREL				2			1
KILLDEER							1
CALIFORNIA QUAIL	20		1		40		
RING-NECKED PHEASANT	1						
MOURNING DOVE			4	4	3		
GREATER ROADRUNNER							1
GREAT HORNED OWL	1		3				
NORTHERN FLICKER			1				
BLACK PHOEBE		1	2	2			
HORNED LARK			14				2
TREE SWALLOW				3			
CLIFF SWALLOW					2		
WESTERN SCRUB-JAY							1
COMMON RAVEN			1		2		
BEWICK'S WREN		1	5	1	2		
HOUSE WREN					2		
MARSH WREN	1	1		8			
RUBY-CROWNED KINGLET		1	1	1			
NORTHERN MOCKINGBIRD	1		4				2
CALIFORNIA THRASHER			2		1		
AMERICAN PIPIT				1			
EURASIAN STARLING			4				
LOGGERHEAD SHRIKE	1		2		6		2
ORANGE-CROWNED WARBLER				1	1		
AUDUBON'S WARBLER	1	5	3		3		
SAVANNAH SPARROW		6				12	
SONG SPARROW		2		10			
LINCOLN'S SPARROW	6	4		17	1		
WHITE-CROWNED SPARROW	20	10	50	7	50	8	10
RED-WINGED BLACKBIRD				21			
WESTERN MEADOWLARK	4		2	2	6	6	10
HOUSE FINCH	2		1	2			
<b>individuals</b>	<b>61</b>	<b>32</b>	<b>104</b>	<b>83</b>	<b>119</b>	<b>26</b>	<b>31</b>
<b>species</b>	<b>13</b>	<b>10</b>	<b>19</b>	<b>16</b>	<b>13</b>	<b>3</b>	<b>10</b>



Figure 12. Results of the Raptor Survey on 14 December 2011.

Numbers of Raptors and Shrikes Counted in Upland and Wetland Habitats: 14 December

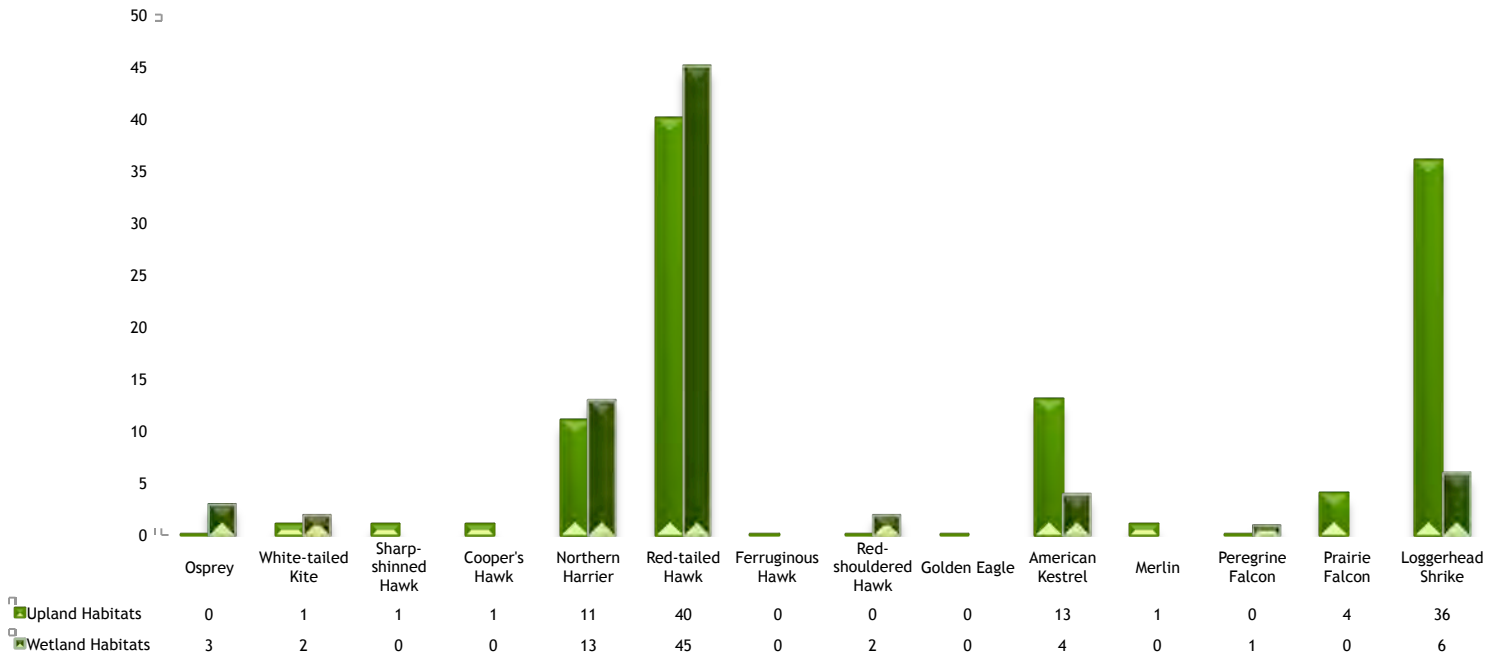


Figure 13. Results of the Raptor Survey on 9 January 2012.

Numbers of Raptors and Shrikes Counted in Upland and Wetland Habitats: 9 January

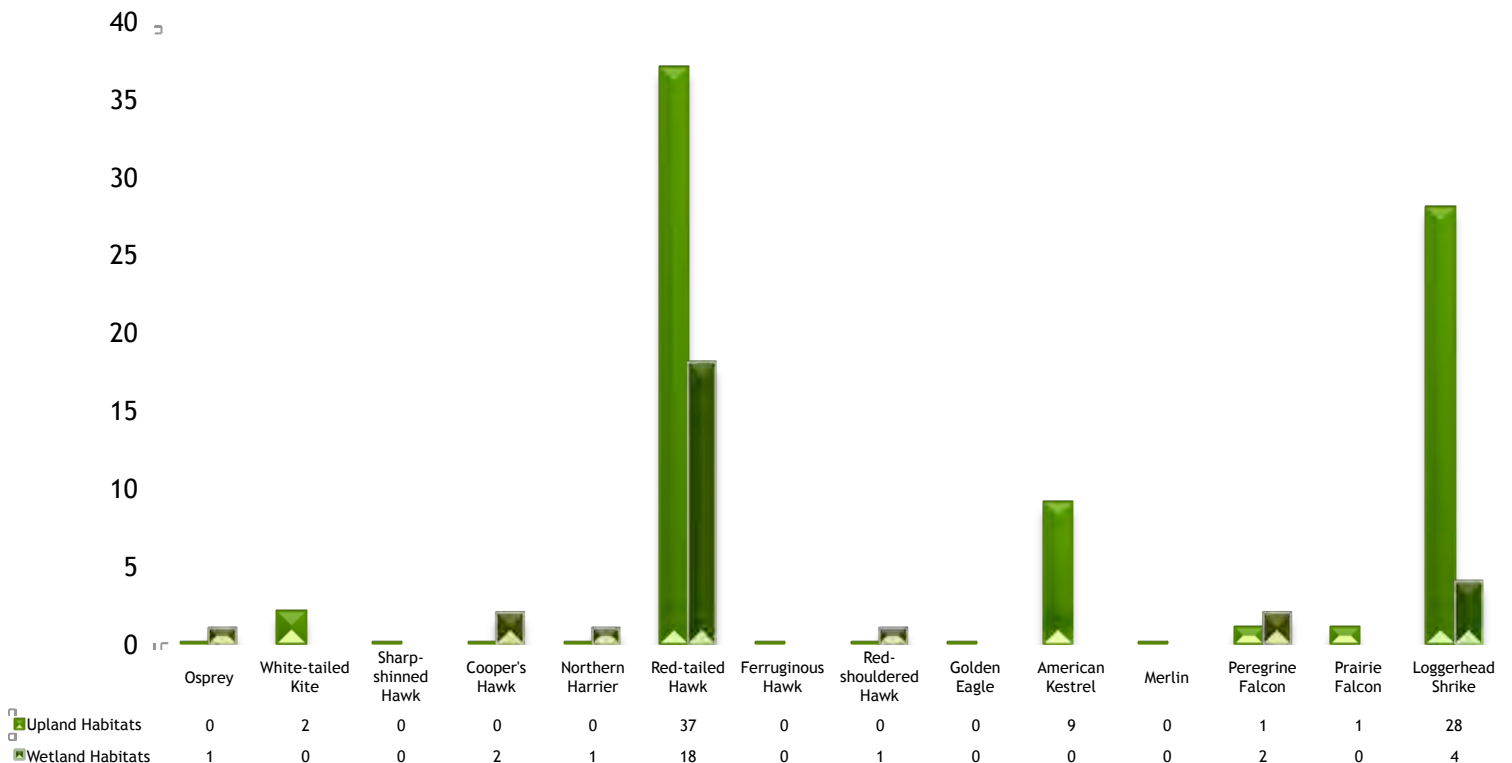


Figure 14. Results of the Raptor Survey on 24 January 2012.

Numbers of Raptors and Shrikes Counted in Upland and Wetland Habitats: 24 January

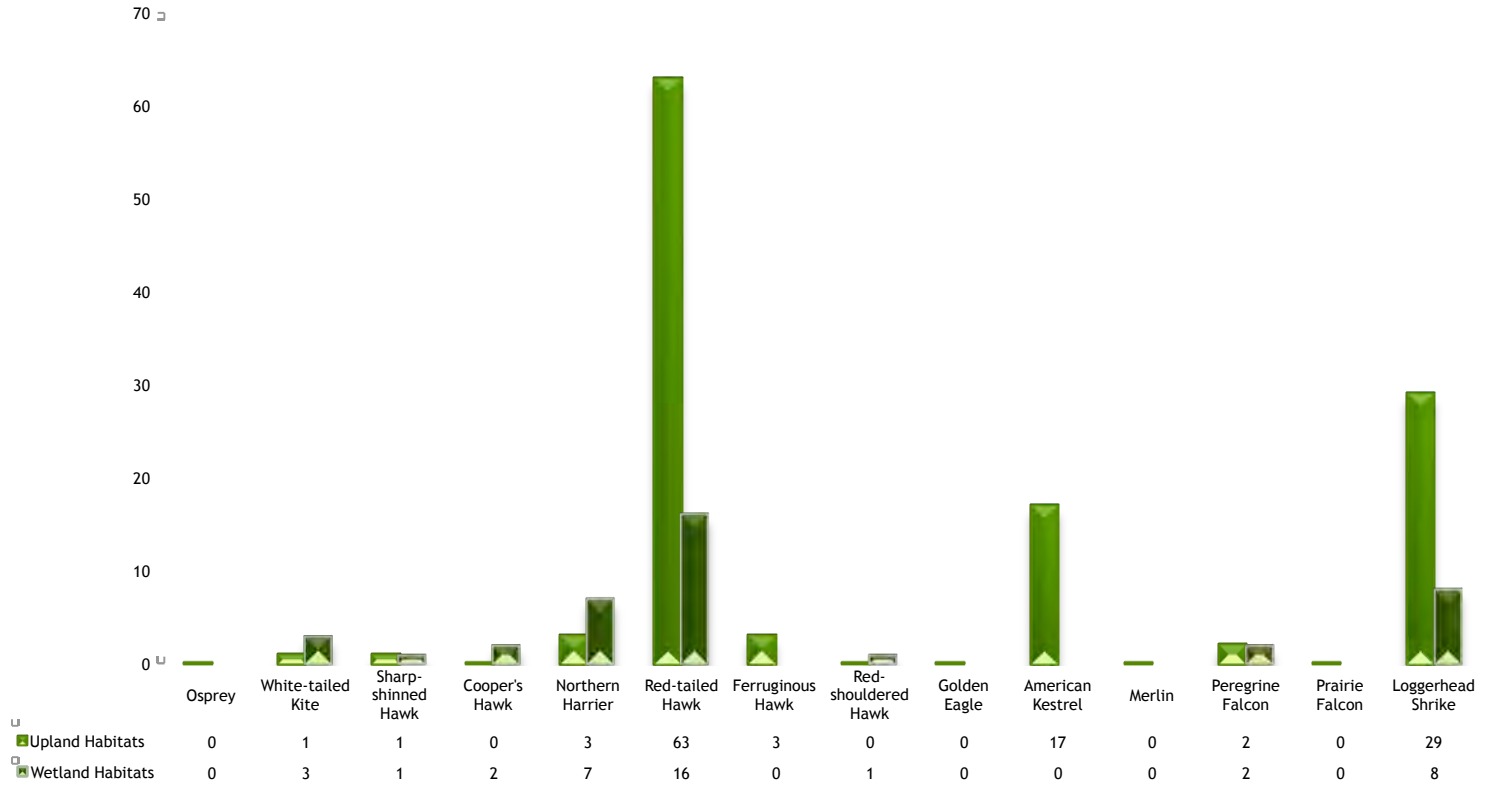


Figure 15. Results of the Raptor Survey on 29 February 2012.

Numbers of Raptors and Shrikes Counted in Upland and Wetland Habitats: 29 February

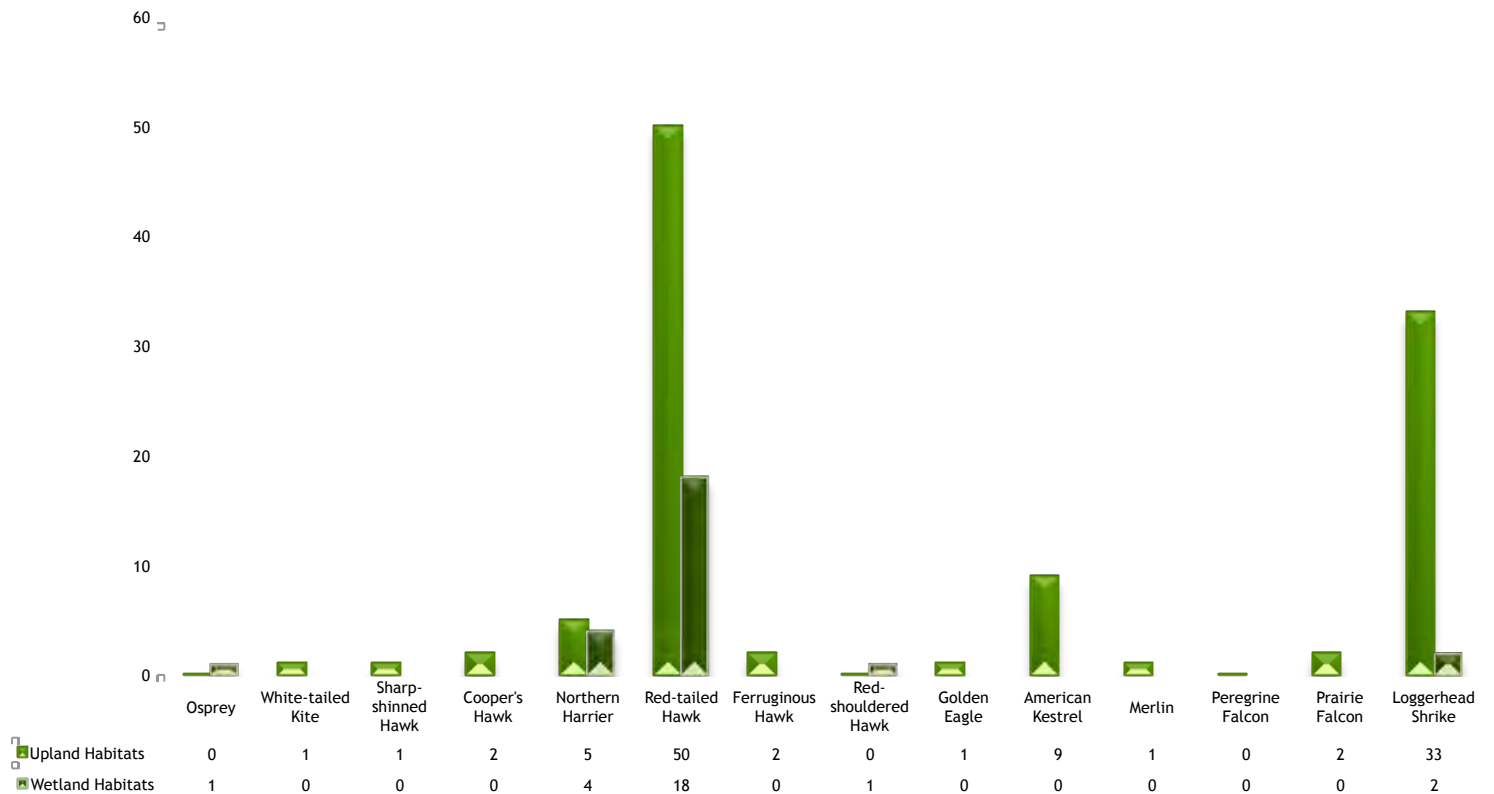


Figure 16. Results of the Raptor Survey on 1 April 2012.

**Numbers of Raptors and Shrikes Counted in Upland and Wetland Habitats: 1 April**

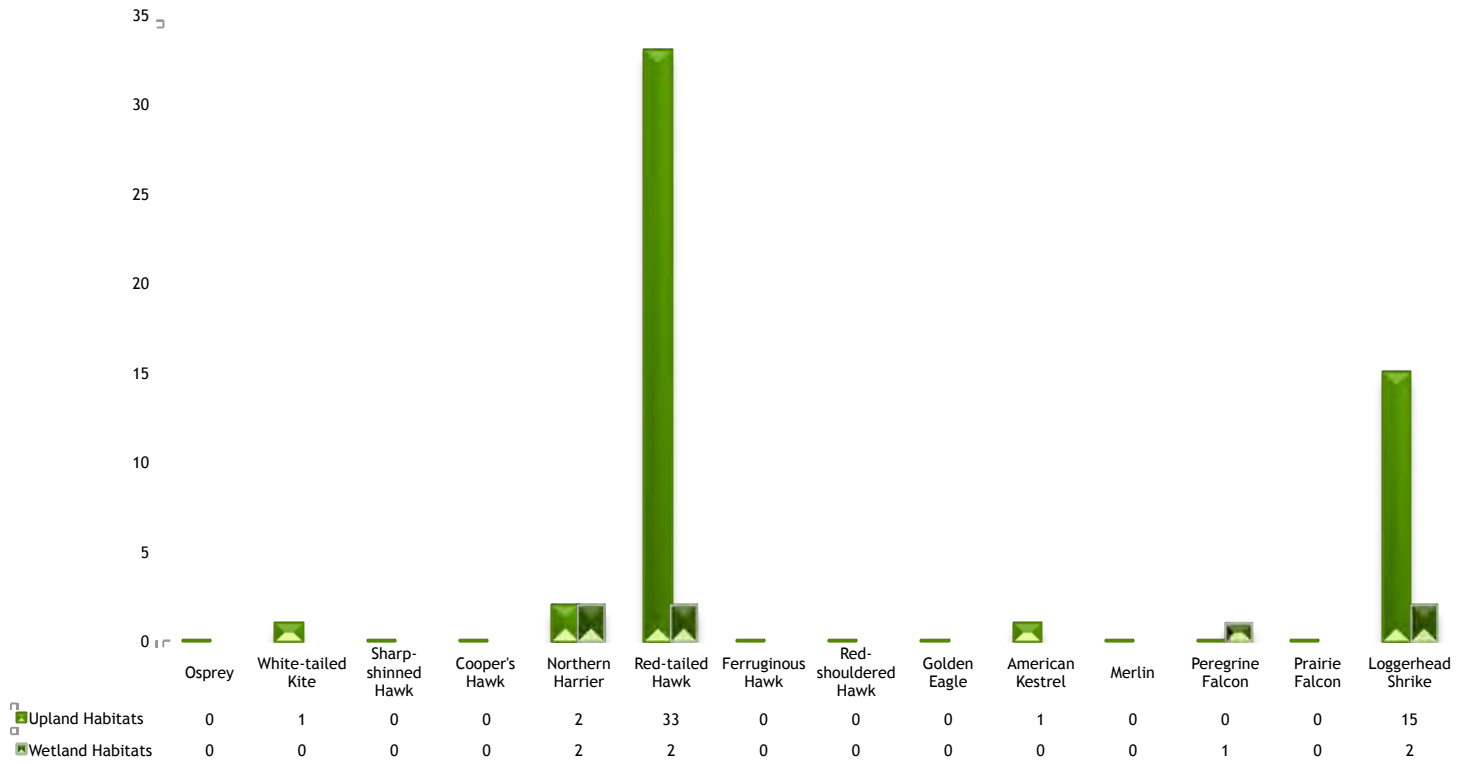


Figure 17. Total Numbers of Raptors Surveyed through the Winter 2011-12.

**Numbers of Raptors Surveyed in Upland and Wetland Habitats during Winter 2011-12**

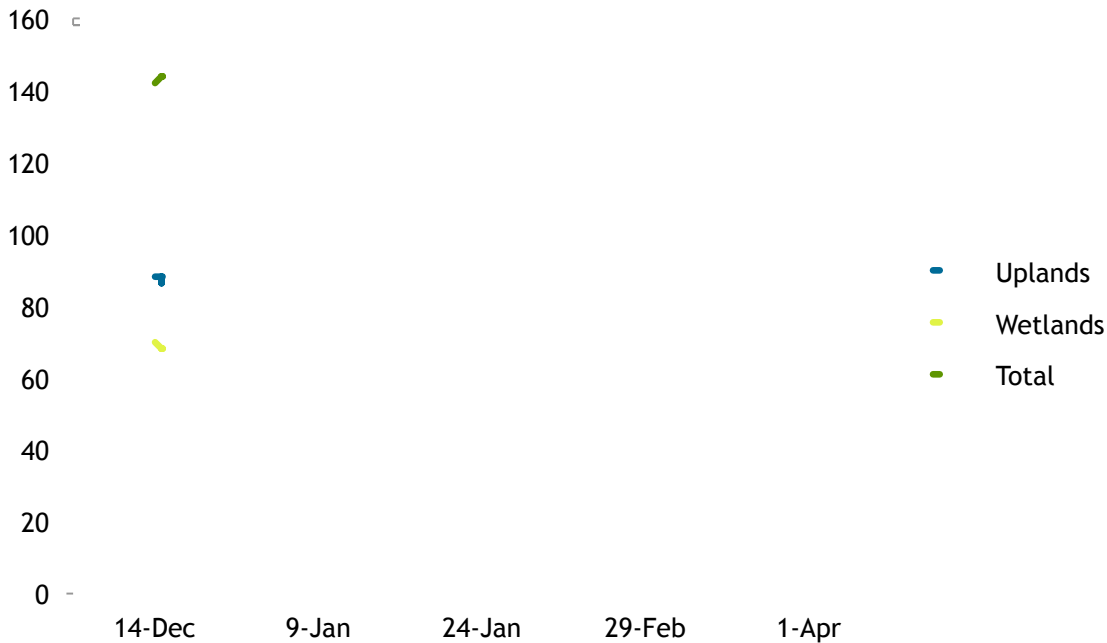
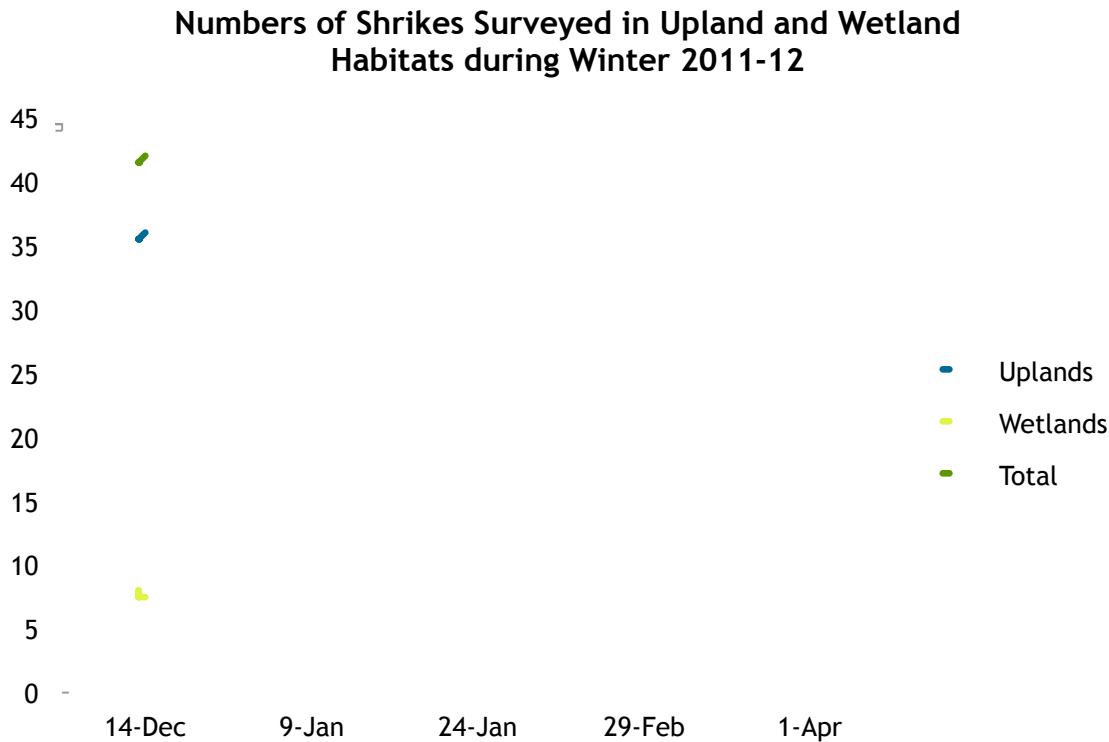


Figure 18. Total Numbers of Shrikes Surveyed through the Winter 2011-12.



## Discussion

The bird use of property managed by the Kern Water Bank Authority is clearly very high in accordance to the large acreages of diverse wetland and upland habitats. Overall, in terms of bird abundance, species diversity, acreage, location and habitat diversity, it is one of the most important freshwater wetlands in California, especially when compared to other privately managed wetlands. These surveys documented particularly large populations of waterfowl, herons/egrets (late fall/early winter), raptors and shorebirds (late winter). Additionally, the wetlands of the Kern Water Bank are very important for large numbers of American White Pelicans, Double-crested Cormorants, and White-faced Ibis that visit these wetlands from throughout this region in search of concentrations of prey. Some of the population changes documented during this study may be caused by birds moving to and from other nearby wetlands, including those adjacent to the project area, the Buena Vista Lake, the Kern National Wildlife Refuge, South Wilbur Flood Control Area and other wetlands in the Tulare Basin. There is a lot to be learned about the population dynamics not only of the project area but also of this greater region in the Tulare Basin. An important topic of future study would be the annual variation in species richness, overall abundance and species use throughout the winter. From a management perspective, research exploring the relationship and seasonal dynamics of water, food and bird abundance/diversity may provide meaningful recommendations to further enhance the carrying capacity of the existing habitats. Furthermore, it would be important to monitor spring and fall migrations as well as breeding bird populations, in both wetland and upland habitats in order to more fully understand bird use of this important area. Research on ecology and seasonal movements of Loggerhead Shrikes (a California Species of Special Concern and a federal Species of Conservation Concern) could provide significant and valuable information on this species that has not been studied much in the Central Valley and California. The project area has a large enough population to warrant such a study.

**APPENDIX H**  
**CALIFORNIA NATURAL DIVERSITY DATABASE LIST OF SPECIAL-STATUS**  
**SPECIES FOR THE PROJECT VICINITY**

California Department of Fish and Game

Natural Diversity Database

KWBA -- Special-Status Plants

Tupman, Stevens, Buttonwillow, Rio Bravo, Rosedale, Oildale, East Elk Hills, Gosford, Taft, Mouth of Kern, Millux, Conner Quads

Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 Astragalus hornii var. hornii Horn's milk-vetch	PDFAB0F421			G4G5T2T3	S1	1B.1
2 Atriplex cordulata var. cordulata heartscale	PDCHE040B0			G3T2	S2.2?	1B.2
3 Atriplex coronata var. vallicola Lost Hills crownscale	PDCHE04250			G4T2	S2	1B.2
4 Atriplex minuscula lesser saltscale	PDCHE042M0			G1	S1.1	1B.1
5 Atriplex subtilis subtle orache	PDCHE042T0			G2	S2.2	1B.2
6 Atriplex tularensis Bakersfield smallscale	PDCHE04240		Endangered	GX	SX	1A
7 Calochortus striatus alkali mariposa-lily	PMLIL0D190			G2	S2	1B.2
8 Caulanthus californicus California jewel-flower	PDBRA31010	Endangered	Endangered	G1	S1	1B.1
9 Chloropyron molle ssp. hispidum hispid bird's-beak	PDSCR0J0D1			G2T2	S2.1	1B.1
10 Cirsium crassicaule slough thistle	PDAST2E0U0			G2	S2.2	1B.1
11 Delphinium recurvatum recurved larkspur	PDRAN0B1J0			G3	S3	1B.2
12 Eremalche kernensis Kern mallow	PDMAL0C031	Endangered		G3?T2Q	S2	1B.1
13 Eriastrum hooveri Hoover's eriastrum	PDPLM03070	Delisted		G3	S3.2	4.2
14 Eschscholzia lemmonii ssp. kernensis Tejon poppy	PDPAP0A071			G5T1	S1.1	1B.1
15 Imperata brevifolia California satintail	PMPOA3D020			G2	S2.1	2.1
16 Lasthenia glabrata ssp. coulteri Coulter's goldfields	PDAST5L0A1			G4T3	S2.1	1B.1
17 Monolopia congdonii San Joaquin woollythreads	PDASTA8010	Endangered		G3	S3	1B.2
18 Opuntia basilaris var. treleasei Bakersfield cactus	PDCAC0D055	Endangered	Endangered	G5T1	S1	1B.1
19 Pterygoneurum californicum California chalk moss	NBMUS65020			GH	SH	1B.1
20 Stylocline citroleum oil neststraw	PDAST8Y070			G2	S2	1B.1
21 Stylocline masonii Mason's neststraw	PDAST8Y080			G1	S1.1	1B.1

**APPENDIX I**  
**CALIFORNIA NATIVE PLANT SOCIETY LIST OF RARE AND ENDANGERED**  
**PLANTS FOR THE PROJECT VICINITY**

Status: Home Page - Mon, Aug. 6, 2012, 16:31 b

### Basic Tools:

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- [Checkbox and Preset search](#)
- [Getting Started guide](#)

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- [Query Builder](#)
- [Query by list of names](#)
- [Nine-quad search](#)

### Database indexes

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- [State Status](#)
- [Federal Status](#)
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- [County](#)
- [Life Form](#)
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### 8th EDITION interface now available

**online!..... Same data**, but now includes GIS and many improvements.

Not all 7th Edition features have been added yet - you can continue to use them here. To simplify access to the new features, such as GIS, each record in the 7th Edition now has a link to the corresponding details page in the 8th Edition.

### INTRODUCTION to the 7th EDITION

The CNPS Inventory of Rare and Endangered Plants is now published on-line and updated quarterly. Along with the latest Inventory data from CNPS, you will find a variety of search tools, maps, thumbnail illustrations, and links to additional information.



CalPhotos archive  
What rare plant is this?  
(Click on image.)

The statewide CNPS website has extensive • **background information** about the Inventory. Since the publication of the last hardcopy 6th Edition in 2001, the review process and revisions have been ongoing. Stay informed and get involved!

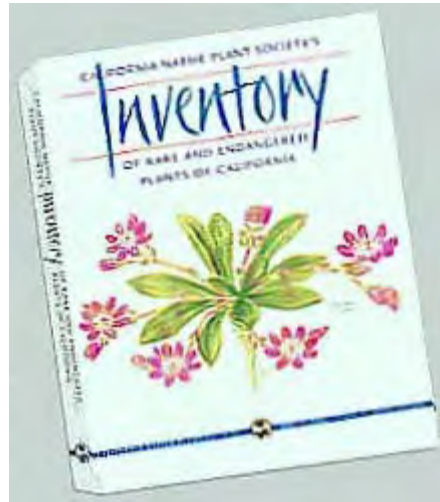
Users of the Inventory may find it helpful to read the • **FAQ**.  
**example:** "Which search method should I use?" ([answer](#))  
New users might want to consult the • **Getting Started** guide.

### The last hardcopy edition was August 2001, but much of the front matter remains useful and informative:

Rarity in Vascular Plants - Peggy L. Fiedler  
Rare Bryophytes in California - James R. Shevock  
Bibliography for Biology and Conservation of Rare Plants - Peggy L. Fiedler and James P. Smith, Jr.  
Conserving Plants with Laws and Programs under the California Department of Fish and Game - Sandra Morey and Diane Ikeda  
The California Natural Diversity Database- Roxanne L. Bittman



The Natural Communities Program - Todd Keeler-Wolf  
The Federal Endangered Species Act and Rare Plant Protection in California - Jim A. Bartel, Jan C. Knight, and Diane Elam  
Sensitive Plant Management on the National Forests and Grasslands in California - Bradley E. Howell  
Rare Plant Conservation on Bureau of Land Management Lands - John Willoughby  
History of the CNPS Rare Plant Program



## CNPS Inventory of Rare and Endangered Plants

Status: Plant Press Manager window with 20 items - Mon, Aug. 6, 2012, 16:35 b

Reformat list as:

### ECOLOGICAL REPORT

scientific	family	life form	blooming	communities	elevation	CNPS
<u><b>Astragalus hornii</b></u> <u>var. <b>hornii</b></u>	Fabaceae	annual herb	May-Oct	<ul style="list-style-type: none"> <li>•Meadows and seeps (Medws)</li> <li>•Playas (Plyas)/lake margins, alkaline</li> </ul>	60 - 850 meters	List 1B.1
<u><b>Atriplex cordulata</b></u> <u>var. <b>cordulata</b></u>	Chenopodiaceae	annual herb	Apr-Oct	<ul style="list-style-type: none"> <li>•Chenopod scrub (ChScr)</li> <li>•Meadows and seeps (Medws)</li> <li>•Valley and foothill grassland (VFGrs) (sandy)/saline or alkaline</li> </ul>	0 - 560 meters	List 1B.2
<u><b>Atriplex coronata</b></u> <u>var. <b>vallicola</b></u>	Chenopodiaceae	annual herb	Apr-Aug	<ul style="list-style-type: none"> <li>•Chenopod scrub (ChScr)</li> <li>•Valley and foothill grassland (VFGrs)</li> <li>•Vernal pools (VnPIs)/alkaline</li> </ul>	50 - 635 meters	List 1B.2
<u><b>Atriplex minuscula</b></u>	Chenopodiaceae	annual herb	May-Oct	<ul style="list-style-type: none"> <li>•Chenopod scrub (ChScr)</li> <li>•Playas (Plyas)</li> <li>•Valley and foothill grassland (VFGrs)/alkaline, sandy</li> </ul>	15 - 200 meters	List 1B.1
<u><b>Atriplex subtilis</b></u>	Chenopodiaceae	annual herb	Jun-Aug(Oct), Months in parentheses are uncommon.	<ul style="list-style-type: none"> <li>•Valley and foothill grassland (VFGrs)</li> </ul>	40 - 100 meters	List 1B.2
<u><b>Atriplex tularensis</b></u>	Chenopodiaceae	annual herb	Jun-Oct	<ul style="list-style-type: none"> <li>•Chenopod scrub (ChScr)</li> </ul>	90 - 200 meters	List 1A
<u><b>Calochortus striatus</b></u>	Liliaceae	perennial bulbiferous herb	Apr-Jun	<ul style="list-style-type: none"> <li>•Chaparral (Chprl)</li> <li>•Chenopod scrub (ChScr)</li> <li>•Mojavean desert scrub (MDSr)</li> <li>•Meadows and seeps (Medws)/alkaline, mesic</li> </ul>	70 - 1595 meters	List 1B.2
<u><b>Caulanthus californicus</b></u>	Brassicaceae	annual herb	Feb-May	<ul style="list-style-type: none"> <li>•Chenopod scrub (ChScr)</li> <li>•Pinyon and juniper woodland (PJWld)</li> </ul>	61 - 1000 meters	List 1B.1

<b><u>Chloropyron molle</u></b> <b><u>ssp. hispidum</u></b>	Orobanchaceae	annual herb hemiparasitic	Jun-Sep	<ul style="list-style-type: none"> <li>•Valley and foothill grassland (VFGrs)/sandy</li> <li>•Meadows and seeps (Medws)</li> <li>•Playas (Plyas)</li> <li>•Valley and foothill grassland (VFGrs)/alkaline</li> </ul>	1 - 155 meters	List 1B.1
<b><u>Cirsium crassicaule</u></b>	Asteraceae	annual/perennial herb	May-Aug	<ul style="list-style-type: none"> <li>•Chenopod scrub (ChScr)</li> <li>•Marshes and swamps (MshSw)(sloughs)</li> <li>•Riparian scrub (RpScr)</li> </ul>	3 - 100 meters	List 1B.1
<b><u>Delphinium recurvatum</u></b>	Ranunculaceae	perennial herb	Mar-Jun	<ul style="list-style-type: none"> <li>•Chenopod scrub (ChScr)</li> <li>•Cismontane woodland (CmWld)</li> <li>•Valley and foothill grassland (VFGrs)/alkaline</li> </ul>	3 - 750 meters	List 1B.2
<b><u>Eremalche kernensis</u></b>	Malvaceae	annual herb	Mar-May	<ul style="list-style-type: none"> <li>•Chenopod scrub (ChScr)</li> <li>•Valley and foothill grassland (VFGrs)</li> </ul>	70 - 1290 meters	List 1B.1
<b><u>Eschscholzia lemmonii</u></b> <b><u>ssp. kernensis</u></b>	Papaveraceae	annual herb	Mar-May	<ul style="list-style-type: none"> <li>•Chenopod scrub (ChScr)</li> <li>•Valley and foothill grassland (VFGrs)</li> </ul>	160 - 1000 meters	List 1B.1
<b><u>Imperata brevifolia</u></b>	Poaceae	perennial rhizomatous herb	Sep-May	<ul style="list-style-type: none"> <li>•Chaparral (Chprl)</li> <li>•Coastal scrub (CoScr)</li> <li>•Mojavean desert scrub (MDScr)</li> <li>•Meadows and seeps (Medws)(often alkali)</li> <li>•Riparian scrub (RpScr)/mesic</li> </ul>	0 - 1215 meters	List 2.1
<b><u>Lasthenia glabrata</u></b> <b><u>ssp. coulteri</u></b>	Asteraceae	annual herb	Feb-Jun	<ul style="list-style-type: none"> <li>•Marshes and swamps (MshSw)(coastal salt)</li> <li>•Playas (Plyas)</li> <li>•Vernal pools (VnPls)</li> </ul>	1 - 1220 meters	List 1B.1
<b><u>Monolopia congdonii</u></b>	Asteraceae	annual herb	Feb-May	<ul style="list-style-type: none"> <li>•Chenopod scrub (ChScr)</li> <li>•Valley and foothill grassland (VFGrs)(sandy)</li> </ul>	60 - 800 meters	List 1B.2
<b><u>Opuntia basilaris</u></b> <b><u>var. treleasei</u></b>	Cactaceae	perennial stem succulent	Apr-May	<ul style="list-style-type: none"> <li>•Chenopod scrub (ChScr)</li> <li>•Cismontane woodland (CmWld)</li> <li>•Valley and foothill grassland (VFGrs)/sandy or gravelly</li> </ul>	120 - 1140 meters	List 1B.1

<b><u>Pterygoneurum californicum</u></b>	Pottiaceae	ephemoral moss		<ul style="list-style-type: none"> <li>•Chenopod scrub (ChScr)</li> <li>•Valley and foothill grassland (VFGrs) (alkali)/soil</li> </ul>	10 - 100 meters	List 1B.1
<b><u>Stylocline citroleum</u></b>	Asteraceae	annual herb	Mar-Apr	<ul style="list-style-type: none"> <li>•Chenopod scrub (ChScr)</li> <li>•Coastal scrub (CoScr)</li> <li>•Valley and foothill grassland (VFGrs)/clay</li> </ul>	50 - 400 meters	List 1B.1
<b><u>Stylocline masonii</u></b>	Asteraceae	annual herb	Mar-May	<ul style="list-style-type: none"> <li>•Chenopod scrub (ChScr)</li> <li>•Pinyon and juniper woodland (PJWld)/sandy</li> </ul>	100 - 1200 meters	List 1B.1

**APPENDIX J**  
**KERN RIVER BOTANICAL SURVEY**



# Botanical Survey of the Kern River and Adjacent Area, from One-half Mile East of Enos Lane to the California Aqueduct

Prepared by: South Valley Biology Consulting LLC for Kern Water Bank Authority

April 3, 2013

# Table of Contents

<b>Introduction</b>	<b>1</b>
<b>Survey Area Description</b>	<b>1</b>
<b>Pre-survey Work</b>	<b>1</b>
<b>Database Searches</b>	<b>1</b>
<i>Figure 1. Kern River Floristic Survey Area Vicinity Map</i>	<b>2</b>
<i>Figure 2. Kern River Floristic Survey Area USGS Topographic Map</i>	<b>3</b>
<i>Figure 3. Kern River Floristic Survey Area Aerial Map (2012)</i>	<b>4</b>
<i>Table 1. Special-status plant species reported to occur in the Tupman, Stevens, and ten surrounding USGS 7.5-minute quadrangles</i>	<b>5</b>
<b>Botanical Surveys</b>	<b>8</b>
<b>Botanical Surveyors</b>	<b>8</b>
<b>Field Survey Methodology</b>	<b>9</b>
Reference Population Site Visits	<b>9</b>
Field Surveys of the Survey Area	<b>13</b>
<b>Existing Conditions in the Survey Area</b>	<b>13</b>
<b>Results of Field Surveys</b>	<b>18</b>
<b>Potential for False Negative Surveys</b>	<b>18</b>
<i>Table 2. List of plant species observed in the Survey Area</i>	<b>19</b>
<b>Conclusion</b>	<b>22</b>
<b>References</b>	<b>23</b>

# Introduction

This report documents the results of a botanical survey conducted by South Valley Biology Consulting LLC of the Kern River from a point approximately 0.5 mile east of Enos Lane (State Route 43) to the terminus of the river at the California Aqueduct **Figure 1**. The survey was conducted in portions of the Stevens and Tupman USGS 7.5-minute quadrangles in Township 30 South, Range 25 East, Sections 22, 23, 24, 27, 28, 32, and 33; and Township 31 South, Range 25 East, Section 5 (MDB&M) **Figure 2**.

## Survey Area Description

The area that is the subject of this botanical survey is indicated on **Figure 3** as Survey Area. It included all areas on and within the banks of the Kern River, and all associated basins, ditches, and other waterways having connectivity to the river. The survey commenced from a point approximately 1,500 feet upstream of the Kern Water Bank Canal gate at the Kern River, for approximately 5 miles to the Intertie Basin at the terminus of the river where it meets the California Aqueduct and Kern River Outlet Canal (**Figure 3**).

# Pre-survey Work

## Database Searches

Prior to conducting field surveys of the Survey Area, the California Natural Diversity Data Base (CNDDDB)<sup>1</sup> and California Native Plant Society Electronic Inventory of Rare and Endangered Plants (CNPSEI)<sup>2</sup> were queried for the Tupman, Stevens, and the ten surrounding (Buttonwillow, Rio Bravo, Rosedale, Oildale, Gosford, East Elk Hills, Taft, Mouth of Kern, Millux, and Conner) USGS 7.5-minute quadrangles in an effort to provide information on special-status plant species that are known to occur in the area. The California Department of Fish and Wildlife website<sup>3</sup>. The results of these database queries were used to formulate survey strategies and timing, based upon the potential for the Survey Area to support these species. Table 1 represents the results of these database queries.

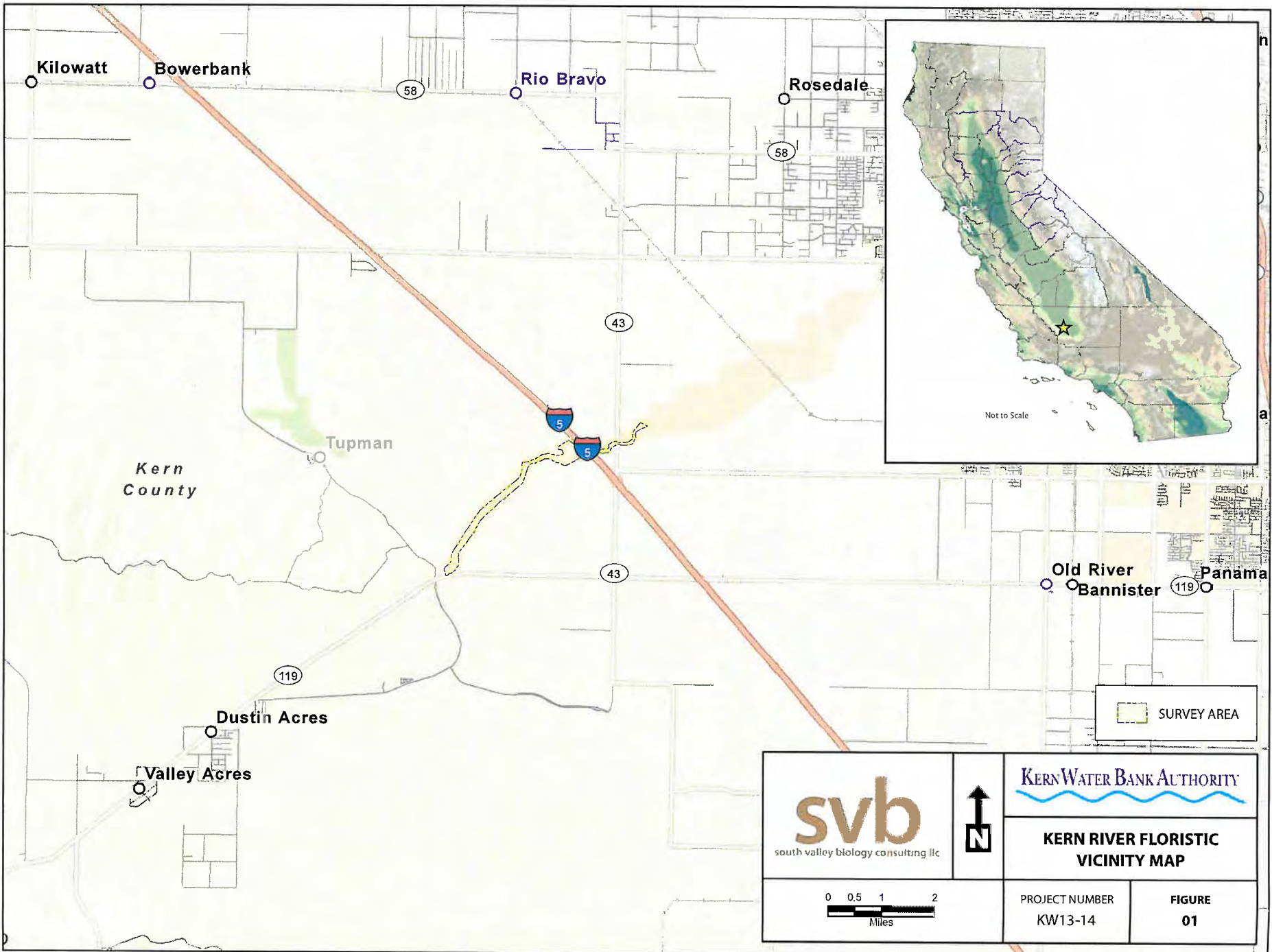
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<sup>1</sup> California Dept. of Fish & Wildlife. 2013. California Natural Diversity Database, Calif. Dept. of Fish & Wildlife, Sacramento, CA.




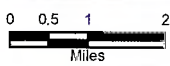
<sup>2</sup> California Native Plant Society. 2013. Inventory of rare and endangered plants of California. Rare Plant Scientific Advisory Committee. Calif. Native Plant Society, Sacramento, CA. <http://www.cnps.org/inventory>

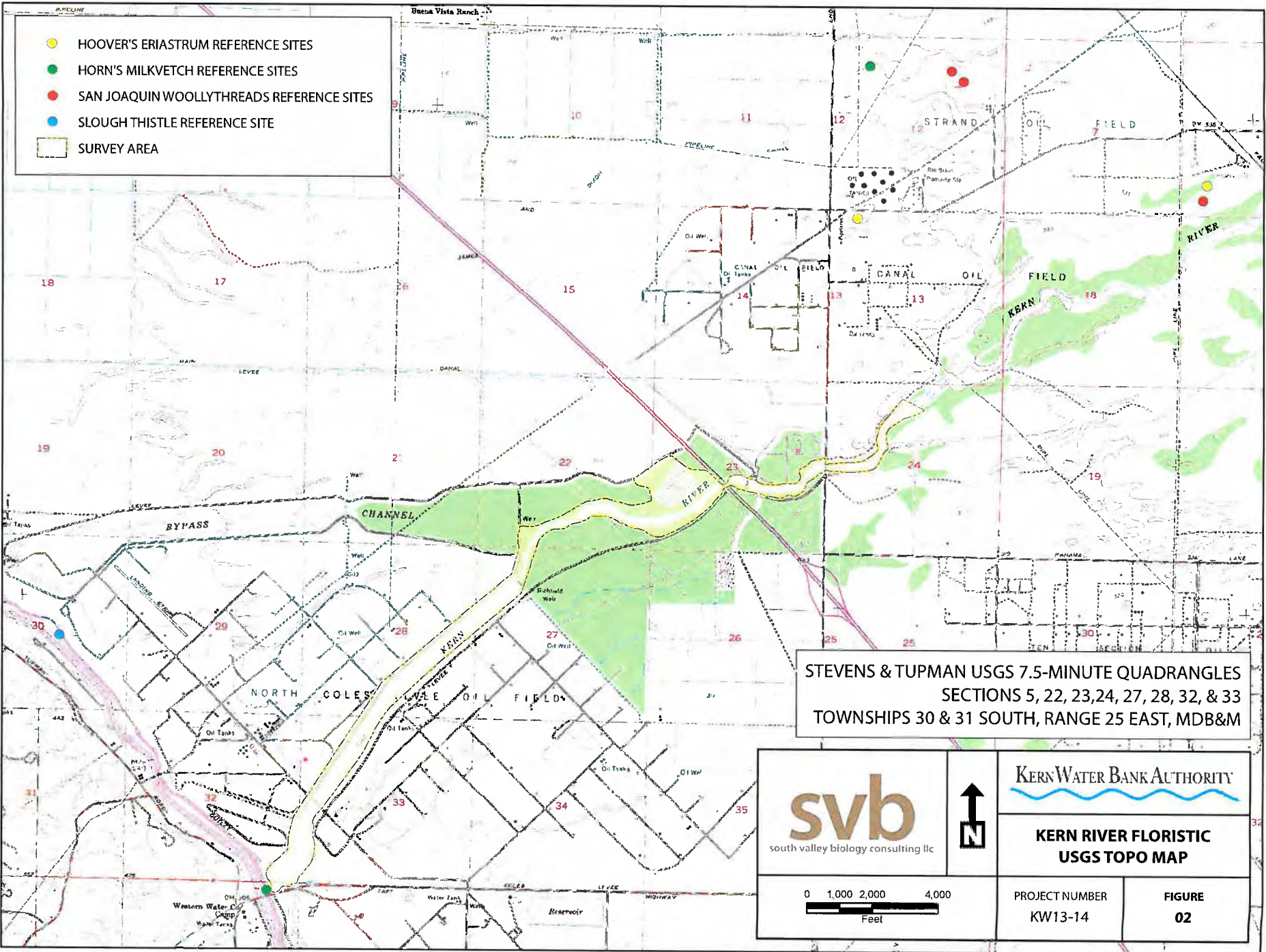
<sup>3</sup> California Dept. of Fish & Wildlife. <http://www.dfg.ca.gov/biogeodata>








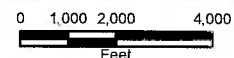
 SURVEY AREA

 south valley biology consulting llc		 <b>KERN WATER BANK AUTHORITY</b>	
		<b>KERN RIVER FLORISTIC VICINITY MAP</b>	
		PROJECT NUMBER KW13-14	FIGURE 01

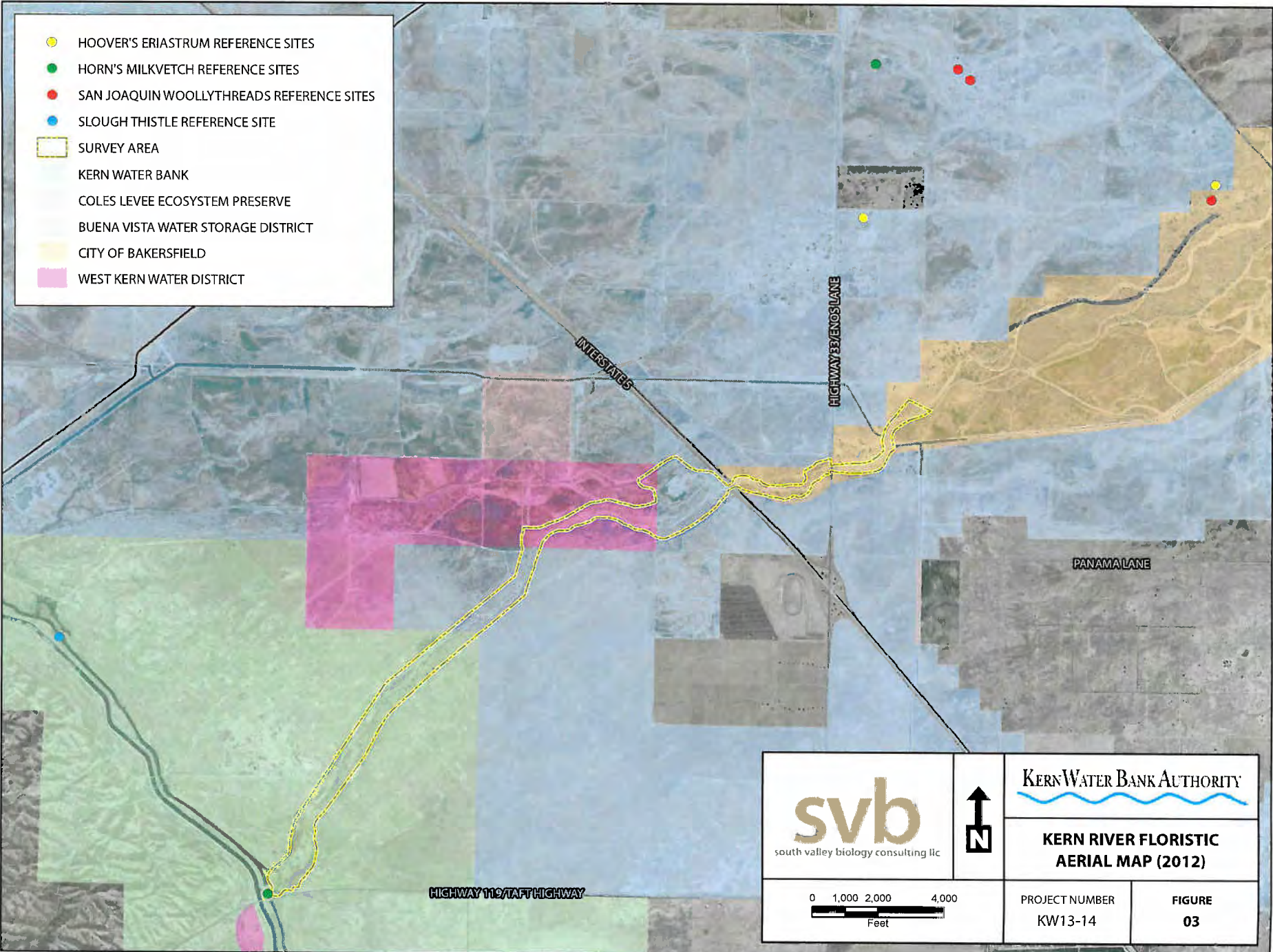


- HOOVER'S ERIASTRUM REFERENCE SITES
- HORN'S MILKVETCH REFERENCE SITES
- SAN JOAQUIN WOOLLYTHREADS REFERENCE SITES
- SLOUGH THISTLE REFERENCE SITE
- SURVEY AREA

STEVENS & TUPMAN USGS 7.5-MINUTE QUADRANGLES  
 SECTIONS 5, 22, 23, 24, 27, 28, 32, & 33  
 TOWNSHIPS 30 & 31 SOUTH, RANGE 25 EAST, MDB&M

 south valley biology consulting llc		 <b>KERN RIVER FLORISTIC USGS TOPO MAP</b>	
		PROJECT NUMBER KW13-14	FIGURE <b>02</b>
			





**Table 1. Special-status plant species reported to occur in the Tupman, Stevens, and ten surrounding USGS 7.5-minute quadrangles**

Species	Habitat	Status	Potential for Occurrence in the Survey Area
<i>Astragalus hornii</i> var. <i>hornii</i> Horn's milkvetch	Meadows, seeps, playas, and lake margins with alkaline soils. Also known to occur in artificially created similar habitats (e.g., groundwater recharge basins and earthen canals west of Bakersfield). Blooms: May-October	1B.1	<b>Possible.</b> This species is known to occur in the Kern River Outlet Canal (a.k.a. Buena Vista Slough), and in some of the recharge ponds, canals, and ditches on the Kern Water Bank.
<i>Atriplex cordulata</i> var. <i>cordulata</i> Heartscale	Alkaline flats and scalds with sandy soils, within chenopod scrub, grasslands, and meadows. Blooms: April-October	1B.2	<b>Unlikely.</b> Suitable habitat for this species does not occur in the Survey Area.
<i>Atriplex coronata</i> var. <i>coronata</i> Crownscale	Alkaline flats and scalds with sandy soils, within chenopod scrub, grasslands, and meadows. Blooms: March-October	4.2	<b>Unlikely.</b> Suitable habitat for this species does not occur in the Survey Area.
<i>Atriplex coronata</i> var. <i>vallicola</i> Lost Hills crownscale	Found in powdery, alkaline soils that are vernal moist in chenopod scrub, grassland, and vernal pool habitats. Blooms: April-August	1B.2	<b>Unlikely.</b> Suitable habitat for this species does not occur in the Survey Area.
<i>Atriplex minuscula</i> Lesser saltscale	Found in alkali sink habitats and grasslands with sandy, alkaline soils. Blooms: May-October	1B.1	<b>Unlikely.</b> Suitable habitat for this species does not occur in the Survey Area.
<i>Atriplex subtilis</i> Subtle orache	Can be found in grasslands, often in the vicinity of alkali rain pools. Blooms: June-October	1B.2	<b>Unlikely.</b> Suitable habitat for this species does not occur in the Survey Area.
<i>Atriplex tularensis</i> Bakersfield smallscale	Historically in alkali sink scrub habitats or with saltgrass within chenopod scrubs and alkali meadow habitats. Blooms: June-October	CE, 1A	<b>Unlikely.</b> Suitable habitat for this species does not occur in the Survey Area.
<i>Azolla microphylla</i> Mexican mosquito fern	Marshes, swamps, ponds, and other bodies of fresh, still water that is not saline. Blooms: August	4.2	<b>Possible.</b> This species could potentially occur in the Survey Area within some of the basins and backwater areas where water may pool.
<i>Calochortus striatus</i> Alkali mariposa lily	Alkali meadows and dry washes within chenopod scrub, chaparral, and Mojavean desert scrub habitats. Blooms: April-June	1B.2	<b>Unlikely.</b> Suitable habitat for this species does not occur in the Survey Area.



Species	Habitat	Status	Potential for Occurrence in the Survey Area
<i>Caulanthus californicus</i> California jewel-flower	Chenopod scrubs and various grassland habitats in the San Joaquin Valley and Carrizo Plain. Blooms: February-May	FE, CE, 1B.1	<b>Unlikely.</b> Suitable habitat for this species does not occur in the Survey Area.
<i>Chloropyron molle</i> ssp. <i>hispidum</i> Hispid bird's-beak	In damp alkaline soils, especially in alkaline meadows and alkali sinks with saltgrass. Blooms: June-September	1B.1	<b>Unlikely.</b> Suitable habitat for this species does not occur in the Survey Area.
<i>Cirsium crassicalule</i> Slough thistle	Sloughs, riverbanks, marshy areas. Blooms: May-August	1B.1	<b>Possible.</b> This species is known to occur in the Kern River Outlet Canal (a.k.a. Buena Vista Slough), and at the Coles Levee Nature Center Pond to the north of the Survey Area. However, soils within the Survey Area are predominantly coarse sandy and would likely not be suitable for this species.
<i>Delphinium recurvatum</i> Recurved larkspur	Alkaline soils in chenopod scrubs and alkaline grasslands or woodlands. Blooms: March-June	1B.2	<b>Unlikely.</b> Suitable habitat for this species does not occur in the Survey Area.
<i>Eremalche kernensis</i> Kern mallow	Within chenopod scrubs or grasslands, on dry, open sandy to clayey soils. Often at edge of balds. Blooms: March-May	FE, 1B.1	<b>Unlikely.</b> Suitable habitat for this species does not occur in the Survey Area.
<i>Eriastrum hooveri</i> Hoover's eriastrum	Usually, alkaline conditions within chenopod scrubs and grasslands. Especially on cryptogamic crusts. Also known to occur on older pipeline rights-of-ways and abandoned roadways through habitat areas. Blooms: March-July	Delisted, 4.2	<b>Possible.</b> Suitable habitat for this species does not occur in the majority of the Survey Area, but could occur in nearby areas just outside the river banks, as many occurrences of this species are known from elsewhere on the Kern Water Bank and Coles Levee Ecosystem Preserve.
<i>Eriogonum gossypinum</i> Cottony buckwheat	Chenopod scrubs and grasslands with clay soils, primarily on south-facing slopes. Blooms: March-September	4.2	<b>Unlikely.</b> Suitable habitat for this species does not occur in the Survey Area.
<i>Eschscholzia lemmonii</i> ssp. <i>kernensis</i> Tejon poppy	Grassland habitats, often on south-facing slopes in hilly terrain. Blooms: March-May	1B.1	<b>Unlikely.</b> Suitable habitat for this species does not occur in the Survey Area.

Species	Habitat	Status	Potential for Occurrence in the Survey Area
<i>Goodmania luteloa</i> Golden goodmania	Meadows, desert scrub, playas, and grasslands in the Central Valley from Madera County to Kern County. Blooms: April-August	4.2	<b>Unlikely.</b> Suitable habitat for this species does not occur in the Survey Area.
<i>Imperata brevifolia</i> California satintail	Coastal scrub, chaparral, riparian scrub, mojavean scrub, alkali meadows and seeps. Sites are generally moist or wet for long periods. Blooms: September-May	2.1	<b>Possible.</b> This species has not been reported in the Bakersfield region for many years; however, the last reported occurrence in the CNDDDB indicates that it was found on drain banks. Therefore, it is reasonable to assume that portions of the Survey Area could support habitat for this species.
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i> Coulter's goldfields	Marshes, playas, and vernal pools within grasslands. Usually is found on alkaline soils. Blooms: February-June	1B.1	<b>Unlikely.</b> Suitable habitat for this species does not occur in the Survey Area.
<i>Monolopia congdonii</i> San Joaquin woollythreads	Sandy soils, often on small "rises" or depositional areas with chenopod shrubs and grasses or other herbaceous vegetation. Blooms: February-May	FE, 1B.2	<b>Possible.</b> This species occurs at a location just outside the Kern River on property owned by the City of Bakersfield (CNDDDB EO#65) and could potentially be found elsewhere along the Kern River.
<i>Opuntia basilaris</i> var. <i>treleasei</i> Bakersfield cactus	Within chenopod scrub, grasslands, and cismontane woodlands. Soils are typically coarse sandy or sometimes cobbly and must be well drained. Blooms: April-May	FE, CE, 1B.1	<b>Unlikely.</b> Suitable habitat for this species does not occur in the Survey Area.
<i>Pterygoneurum californicum</i> California chalk moss	Can be found growing on alkali soil within chenopod scrubs, playas, and grasslands.	1B.1	<b>Unlikely.</b> Suitable habitat for this species does not occur in the Survey Area.
<i>Stylocline citroleum</i> Oil neststraw	Clay soils and cryptogamic crusts within oil producing areas. Blooms: March-April	1B.1	<b>Unlikely.</b> Suitable habitat for this species does not occur in the Survey Area.
<i>Stylocline masonii</i> Mason's neststraw	On sandy washes within chenopod scrub, and pinyon-juniper woodlands. Blooms: March-May	1B.1	<b>Unlikely.</b> Suitable habitat for this species does not occur in the Survey Area.

Abbreviations:

FE Federal Endangered Species  
CE California State Endangered Species

- 1A Plants presumed extinct in California. The California Native Plant Society established this category in part to encourage field studies to relocate extant populations.
- 1B.1 Plants categorized by the California Native Plant Society as Rare, Threatened, or Endangered in California and elsewhere – Seriously endangered in California.
- 1B.2 Plants categorized by the California Native Plant Society as Rare, Threatened, or Endangered in California and elsewhere – Fairly endangered in California.
- 4.2 Plants categorized by the California Native Plant Society as Plants of Limited Distribution (A Watch List) – Fairly endangered in California.

Sources:

California Department of Fish and Wildlife, 2013. California Natural Diversity Data Base, California Department of Fish and Game, Sacramento, CA.

California Native Plant Society. 2013. Inventory of Rare and Endangered Plants of California (online edition). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. <http://www.cnps.org/inventory>.

## Botanical Surveys

### Botanical Surveyors

The botanical surveyors that conducted the field surveys are all employed by South Valley Biology Consulting LLC (SVB). SVB is based in Bakersfield, California and employs several botanists and biologists with a total combined field survey experience of over 50 years in the Bakersfield area and surrounding region within the southern San Joaquin Valley. The botanical surveyors for this survey were as follows:

#### **James W. Jones, Jr. (Field Survey Leader)**

Mr. Jones has conducted botanical surveys for private and public entities within California since the late 1980's. He is the co-founder of SVB and serves as the firm's Senior Botanist. Mr. Jones has spent the past 18 years conducting botanical and wildlife surveys for numerous special-status plant and animal species in western Kern County and has a thorough familiarity with the special-status species that occur in the region.

#### **Kimberly Fiehler (Senior Biologist)**

Ms. Fiehler has been employed as a professional biologist in the Kern County area for over 15 years. She has worked with numerous private and public entities as a consulting biologist/botanist within the Bakersfield and surrounding area. She has a thorough working knowledge of the special-status plants that occur in the region and Ms. Fiehler has supervised and participated in many field survey crews over the years.

#### **Steven Jones (Field Assistant II)**

Mr. Jones has participated in several field surveys for special-status plants and animals for the past 3 years. He has a good working knowledge of the plants and wildlife that occur in the western Kern County area and he has special familiarity with Hoover's eriastrum, San Joaquin woollythreads, recurved larkspur, Horn's milkvetch, slough thistle, and Lost Hills crownscale.

### **Zack Brisco (Field Assistant II)**

Mr. Brisco has just over one year experience conducting special-status plant and animal species surveys for SVB. He has participated in several surveys for San Joaquin woollythreads, Hoover's eriastrum, recurved larkspur, slough thistle, and Horn's milkvetch.

### **Field Survey Methodology**

The field surveys consisted of both site visits to nearby reference populations for species with the highest potential for occurrence in the Survey Area, and foot transect surveys throughout all portions of the Survey Area.

### **Reference Population Site Visits**

Reference population site visits were conducted to provide the botanical surveyors with the current phenological development and visual search images for four of the five special-status plant species that have the highest potential to occur within the Survey Area. These species are the San Joaquin woollythreads, slough thistle, Hoover's eriastrum, and Horn's milkvetch. No nearby reference populations of the California satintail are known; therefore, digital photographs of the plant in vegetative, flowering, and fruiting stages were used as visual references during the field surveys.

### **San Joaquin woollythreads**

All of the botanical surveyors visited the three known occurrences of this species on the Kern Water Bank, and another nearby occurrence just to the east of the Kern Water Bank property boundary, on several occasions beginning in mid-February and continuing through mid-March (**Figure 3**). These site visits are conducted annually by SVB to these known occurrences and in 2013 additional targeted surveys for this species resulted in the discovery of one new small occurrence (approx. 50 individuals) within the old Strand Oilfield in one of the Sensitive Habitat sectors on the Kern Water Bank. **Photograph 1** indicates the phenological development of this species at this site on March 13, 2013.



*Photograph 1: San Joaquin woollythreads on Kern Water Bank, March 13, 2013.*



### Slough thistle

The botanical surveyors visited a known occurrence of slough thistle that is located within the Outlet Canal on North Coles Levee (**Figure 3**). This site visit took place on March 11, 2013. The surveyors observed numerous plants within the banks of the canal. All plants were in the “rosette” vegetative stage at the time of the site visit and no plants were flowering. Photograph 2 indicates the phenological development of one of the larger plants observed at this location. This species can either be a biennial or annual species. When it is biennial, it will remain in this rosette stage for the first season before growing flowering stems in the second season. These plants can be very large --- up to 10 feet tall or higher. At this particular site, SVB has observed mainly annual specimens of slough thistle that germinate and flower in just one season; however, we have also observed biennial plants on occasion.



*Photograph 2. Slough thistle in the Outlet Canal on North Coles Levee on March 11, 2013.*

### Hoover's eriastrum

The botanical surveyors looked at two of the known locations of this species on the Kern Water Bank in 2013. One occurrence is located near the Kern River, in close proximity to where one of the reference occurrences of San Joaquin woollythreads is located, and one occurrence is located further away from the river in Valley Saltbush Scrub habitat, north of Munzer Road and east of Enos Lane (**Figure 3**). Hoover's eriastrum is not uncommon in the area and in good rain years can be almost ubiquitous in many places on the Kern Water Bank, Coles Levee Ecosystem Preserve and elsewhere in the general area. **Photograph 3** indicates the stage of development on March 13, 2013.



*Photograph 3. Hoover's eriastrum on Kern Water Bank on March 13, 2013.*

### Horn's milkvetch

SVB has observed Horn's milkvetch in several of the recharge ponds and water conveyances on the Kern Water Bank in recent years. We have also observed this species in the Outlet Canal that borders the Coles Levee Ecosystem Preserve and the California Aqueduct. The literature indicates this species blooms from May through October<sup>4</sup>; however, we have noticed that when conditions are favorable earlier in the year, this species appears to have the ability to bloom as early as March. This was the case in 2013 during our

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<sup>4</sup> California Native Plant Society. 2013. Inventory of rare and endangered plants of California. Rare Plant Scientific Advisory Committee. Calif. Native Plant Society, Sacramento, CA. <http://www.cnps.org/inventory>



reference site visits to one of the recharge basins on the Kern Water Bank where only vegetative plants were observed on March 13 (**Photograph 4, Figure 3**), and in the Outlet Canal where numerous flowering and fruiting plants were observed on that same day (**Photograph 5, Figure 3**).



*Photograph 4. Horn's milkvetch, Kern Water Bank March 13, 2013.*



*Photograph 5. Horn's milkvetch, Outlet Canal March 13, 2013.*

## Field Surveys of the Survey Area

The Survey Area was surveyed on March 15 and March 18, 2013 by four botanical surveyors. This yielded a total of approximately 64 person hours of survey time.

The four botanical surveyors walked transects throughout the Survey Area. Transect spacing varied with the topography and boundaries of the river and its associated basins and other features. In the narrower portions of the river where it is highly channelized, transect spacing was 25 to 30 feet. In areas where the river was wider and in areas where vegetation was sparse, transect spacing was 50 to 75 feet or more. In the larger basins, such as the Intertie Basin where the vegetation was relatively dense, transects were mostly maintained at approximately 20 feet.

A list of all of the plant species encountered during the survey was compiled by the Field Survey Leader. This was accomplished by communicating quickly with hand-held two way radios as each botanical surveyor encountered a new species. Although the surveyors maintained continual visual contact with each other, the radios made for more efficient communications by minimizing the number of times needed to pause walking the transects in order to communicate observations to the Field Survey Leader. In instances where a surveyor could not make a positive identification sufficient to determine rarity, transects were paused long enough for the Field Survey Leader and Senior Biologist to make an identification or a collection was made and the identification was later accomplished using a dissecting scope and taxonomic keys found in the *Jepson Manual*<sup>5</sup>.

This methodology was appropriate for the terrain and resulted in a thorough and systematic examination of the Survey Area.

## Existing Conditions in the Survey Area

The Survey Area consists primarily of a remnant Fremont Cottonwood Forest (Natural Community Code 61.103.14, *Populus fremontii* - *Salix gooddingii* - *Baccharis salicifolia*<sup>6</sup>). This alliance is highly decadent along this portion of the Kern River due to infrequent flows. The dominant trees, Fremont cottonwood and Goodding's willow are mostly very widely spaced and most of the cottonwoods are older, mature trees that are able to persist by reaching the ground water. Relatively few younger trees are present in this portion of the river. Other vegetation alliances and stands observed in the Survey Area consisted of the following:

- Mesquite Alliance (Natural Community Code 61.512.01, *Prosopis glandulosa*<sup>7</sup>), which was present on a few areas outside the channel on raised areas with mostly sandy soils.
- Black Willow Thickets (Natural Community Code 61.211.01, *Salix gooddingii*<sup>8</sup>), dense patches of small black willows were encountered on several of the depositional sand bars within the river channel.

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<sup>5</sup> Hickman, J.C. [Ed.]. 1993. The Jepson manual: higher plants of California. University California Press, Berkeley, CA. 1400 pp.

<sup>6</sup> CDFW September 2010 [http://www.dfg.ca.gov/biogeodata/vegcamp/natural\\_communities.asp](http://www.dfg.ca.gov/biogeodata/vegcamp/natural_communities.asp)

<sup>7</sup> *ibid.*

<sup>8</sup> *ibid.*

- Mulefat Thickets (Natural Community Code 63.510.07, *Baccharis salicifolia* - *Tamarix ramosissima*<sup>9</sup>), this community was encountered infrequently, and in only a few small areas within the channels and along some of the depositional banks of the river.
- Tamarisk Thickets (Natural Community Code 63.810.00<sup>10</sup>), several moderately dense thickets of *Tamarix ramosissima* were encountered mostly east of Interstate 5, especially within the river bottom on Coles Levee within the stretch that is approximately 1 to 2 miles from the terminus of the river.
- Creeping Rye Grass Turfs (Natural Community Code 41.080.01, *Leymus triticoides*<sup>11</sup>), creeping wild rye grasses occur at many places within the Survey Area, however, dense stands of this grass were well developed under and in association with some of the larger cottonwoods outside the river channel.
- Cattail Marsh (Natural Community Code 52.103.02, *Typha latifolia*<sup>12</sup>), Some relatively small stands of cattails were observed in the larger basins within the Survey Area.

**Photographs 6 - 18** provide a visual illustration of vegetation conditions progressing from east to west within the Survey Area. The approximate locations of the photograph points are indicated on **Figure 5**.



Photograph 6. Kern Water Bank Canal and Kern River Tie-in



Photograph 7. Looking downstream at Kern River and bike path bridge crossing

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<sup>9</sup> *ibid.*

<sup>10</sup> *ibid.*

<sup>11</sup> *ibid.*

<sup>12</sup> *ibid.*





*Photograph 8. Looking downstream at Kern River from bike path bridge crossing*



*Photograph 9. Looking downstream at Kern River and Highway 43 bridge crossing*



*Photograph 10. Looking downstream at Kern River and Interstate 5 bridge crossing*



*Photograph 11. Looking downstream at Earthen Dam located west of Interstate 5*



*Photograph 12. Looking at large basin west of Interstate 5*



*Photograph 13. Looking northeast at mesquite thicket*



*Photograph 14. Tamarisk thicket*



*Photograph 15. Gooddings black willow thicket*



*Photograph 16. Looking downstream at the Kern River, from the Kern Water Bank and Coles Levee boundary*





*Photograph 17. Looking south west from the eastern portion of the Intertie Basin*



*Photograph 18. Looking at Intertie Basin near where it meets the California Aqueduct*

## Results of Field Surveys

No special-status plant species were observed during the field surveys. A total of 108 plant species from 31 different plant families were identified within the Survey Area. **Table 2** provides a list of all species observed during the field surveys.

## Potential for False Negative Surveys

The field surveys were conducted during a rain season with below normal precipitation having been recorded<sup>13</sup>. However, as documented above, site visits to known reference population sites for almost all of the species with the highest potential for occurrence in the Survey Area revealed identifiable individuals, with 3 of the four species in bloom (San Joaquin woollyheads, Hoover's eriastrum, and Horn's milkvetch). It is reasonable that if any of these species were present in the Survey Area, they would have been detectable at the time of the field surveys.

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<sup>13</sup> <http://cdec.water.ca.gov/cgi-progs/queryMonthly?BFK&d=02-Apr-2013+17:37&span=2years>

**Table 2. List of plant species observed in the Survey Area**

Family	Scientific Name	Common Name
<b>ALISMATACEAE</b>	<i>Alisma plantago-aquatica</i>	Water plantain
<b>AMARANTHACEAE</b>	<i>Amaranthus albus</i>	White amaranth
<b>APIACEAE</b>	<i>Conium maculatum</i>	Poison hemlock
<b>ASCLEPIADACEAE</b>	<i>Asclepius fascicularis</i>	Narrowleaf milkweed
<b>ASTERACEAE</b>	<i>Achillea millefolium</i>	Yarrow
	<i>Acroptilon repens</i>	Russian knapweed
	<i>Ambrosia acanthicarpa</i>	Annual bur-sage
	<i>Artemisia douglasiana</i>	Mugwort
	<i>Baccharis salicifolia</i>	Mulefat
	<i>Conyza canadensis</i>	Horseweed
	<i>Conyza coulteri</i>	Coulter's conyza
	<i>Eclipta prostrata</i>	Yerba de tajo
	<i>Gnaphalium palustre</i>	Cudweed
	<i>Grindelia camporum</i>	Gumplant
	<i>Helianthus annuus</i>	Annual sunflower
	<i>Hernizonia pungens</i> ssp. <i>pungens</i>	Spikeweed
	<i>Heterotheca grandiflora</i>	Telegraph weed
	<i>Isocoma acradenia</i> var. <i>bracteosa</i>	Goldenbush
	<i>Lactuca serriola</i>	Prickly lettuce
	<i>Lasthenia californica</i>	Goldfields
	<i>Lessingia glandulifera</i> var. <i>glandulifera</i>	Lessingia
	<i>Malacothrix coulteri</i>	Snake's head
	<i>Senecio vulgaris</i>	Common groundsel
	<i>Sonchus asper</i>	Prickly sowthistle
	<i>Sonchus oleraceus</i>	Common sowthistle
	<i>Stephanomeria pauciflora</i> var. <i>pauciflora</i>	Wire lettuce
	<i>Xanthium strumarium</i>	Common cocklebur
<b>BORAGINACEAE</b>	<i>Amsinckia menziesii</i> var. <i>intermedia</i>	Small-flowered fiddleneck
	<i>Amsinckia menziesii</i> var. <i>menziesii</i>	Common fiddleneck
	<i>Amsinckia tessallata</i>	Devil's lettuce
	<i>Heliotropium curassivicum</i>	Alkali heliotrope
	<i>Heliotropium europaeum</i>	Heliotrope
	<i>Pectocarya penicillata</i>	Pectocarya
<b>BRASSICACEAE</b>	<i>Brassica nigra</i>	Black mustard
	<i>Capsella bursa-pastoris</i>	Shepherd's purse
	<i>Hirschfeldia incana</i>	Short-pod mustard
	<i>Rorippa curvisiliqua</i>	Western yellow cress
	<i>Rorippa nasturtium-aquaticum</i>	Water cress

Family	Scientific Name	Common Name
	<i>Sysimbrium irio</i>	London rocket
<b>CAPRIFOLIACEAE</b>	<i>Sambucus mexicana</i>	Blue elderberry
<b>CARYOPHYLLACEAE</b>	<i>Cerastium glomeratum</i>	Mouse-eared chickweed
	<i>Silene gallica</i>	Common catch-fly
	<i>Spergularia rubra</i>	Ruby sandspurry
<b>CHENOPODIACEAE</b>	<i>Atriplex lentiformis</i> ssp. <i>lentiformis</i>	Quailbush
	<i>Atriplex polycarpa</i>	Allscale
	<i>Atriplex serenana</i> var. <i>serenana</i>	Bractscale
	<i>Bassia hysopifolia</i>	Five-hook bassia
	<i>Chenopodium ambrosioides</i>	Mexican tea
	<i>Salsola tragus</i>	Russian thistle
<b>CUCURBITACEAE</b>	<i>Cucurbita palmata</i>	Coyote melon
<b>CYPERACEAE</b>	<i>Cyperus eragrostis</i>	Tall flatsedge
	<i>Cyperus esculentis</i>	Nut grass
	<i>Eleocharis macrostachya</i>	Creeping spikerush
	<i>Scirpus acutus</i> var. <i>occidentalis</i>	Bulrush
<b>FABACEAE</b>	<i>Astragalus lentiginosus</i> var. <i>nigricalicis</i>	Milk-vetch
	<i>Loyus purshianus</i> var. <i>purshianus</i>	Spanish clover
	<i>Medicago polymorpha</i>	Burclover
	<i>Melilotus alba</i>	Sweetclover
	<i>Melilotus indica</i>	Sourclover
	<i>Prosopis glandulosa</i> var. <i>torreyana</i>	Mesquite
<b>GERANIACEAE</b>	<i>Erodium botrys</i>	Broadleaf filaree
	<i>Erodium cicutarium</i>	Red-stem filaree
	<i>Erodium moschatum</i>	White-stem filaree
<b>JUNCACEAE</b>	<i>Juncus balticus</i>	Baltic rush
	<i>Juncus bufonius</i> var. <i>bufonius</i>	
<b>LAMIACEAE</b>	<i>Lamium amplexicaulus</i>	Henbit
	<i>Marrubium vulgare</i>	Horehound
<b>LYTHRACEAE</b>	<i>Ammannia coccinea</i>	Purple ammannia
	<i>Ammannia robusta</i>	Grand ammannia
	<i>Lythrum californicum</i>	California loosestrife
<b>MALVACEAE</b>	<i>Malva parviflora</i>	Cheeseweed
	<i>Malvella leprosa</i>	Alkali mallow
<b>MARSILEACEAE</b>	<i>Marsilea vestita</i> ssp. <i>vestita</i>	Hairy pepperwort
<b>ONAGRACEAE</b>	<i>Epilobium brachycarpum</i>	Panicled willowherb
	<i>Ludwigia peploides</i> var. <i>peploides</i>	Water primrose
<b>OXALIDACEAE</b>	<i>Oxalis pes-caprae</i>	Bermuda buttercup
<b>POACEAE</b>	<i>Bromus diandrus</i>	Rippgut brome



Family	Scientific Name	Common Name
	<i>Bromus hordeaceus</i>	Soft chess
	<i>Bromus madritensis</i> ssp. <i>rubens</i>	Red brome
	<i>Cynodon dactylon</i>	Bermuda grass
	<i>Deschampsia danthanoidea</i>	Annual hairgrass
	<i>Distichlis spicata</i>	Saltgrass
	<i>Ecinochloa crus-gali</i>	Barnyard grass
	<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Mediterranean barley
	<i>Hordeum murinum</i> ssp. <i>leporinum</i>	Wild barley
	<i>Leptochloa uninervia</i>	Mexican sprangletop
	<i>Leymus triticoides</i>	Creeping wildrye
	<i>Lolium multiflorum</i>	Italian ryegrass
	<i>Panicum capillare</i>	Witchgrass
	<i>Polypogon monspeliensis</i>	Annual beard grass
	<i>Paspalum dilatatum</i>	Dallis grass
	<i>Schismus</i> sp.	Mediterranean grass
	<i>Vulpia myuros</i>	Rattail fescue
<b>POLYGONACEAE</b>	<i>Polygonum amphibium</i> var. <i>stipulaceum</i>	Water smartweed
	<i>Polygonum arenastrum</i>	Prostrate knotweed
	<i>Rumex crispus</i>	Curly dock
<b>PONTEDERIACEAE</b>	<i>Eichhornia crassipes</i>	Water hyacinth
<b>PORTULACACEAE</b>	<i>Calandrinia ciliata</i>	Redmaids
<b>SALICACEAE</b>	<i>Populus fremontii</i> ssp. <i>fremontii</i>	Fremont cottonwood
	<i>Salix exigua</i>	Sandbar willow
	<i>Salix gooddingii</i>	Gooding's willow
<b>SCROPHULARIACEAE</b>	<i>Mimulus guttatus</i>	Common monkeyflower
<b>SOLANACEAE</b>	<i>Datura wrightii</i>	
	<i>Nicotiana attenuata</i>	Coyote tobacco
	<i>Nicotiana glauca</i>	Tree tobacco
<b>TAMARACEAE</b>	<i>Tamarix ramosissima</i>	Saltcedar
<b>TYPHACEAE</b>	<i>Typha angustifolia</i>	Broadleaf cattail
<b>URTICACEAE</b>	<i>Urtica dioica</i> ssp. <i>holosericea</i>	Hoary nettle
	<i>Urtica urens</i>	Dwarf nettle

Source: Field surveys conducted by South Valley Biology Consulting LLC on March 15 and 18, 2013.

Although slough thistle was not in bloom during the field surveys, numerous vegetative individuals were observed at the reference location. This could possibly make detection more difficult, but not impossible, with the familiarity the botanical surveyors have with this species. This difficulty was discussed by the botanical surveyors prior to conducting the field surveys and it was agreed that any observed *Cirsium* spp. or other similar-looking plants that might be encountered by a botanical surveyor during the field surveys would

be closely examined by the entire group. No such plants were observed at any location within the Survey Area.

As indicated above, there are no known reference populations of California satintail near the Survey Area<sup>14</sup>. Therefore, no reference population was available. However, this species has a long blooming period (September - May), and would have been in bloom at the time of the field surveys. Additionally, it is a rhizomatous grass with a characteristic growth form indicative of such species -- culms that rise from the underground stems resulting in typically rather dense, linear stands of plants. Within the Survey Area, creeping wild rye (*Leymus triticoides*) is also a rhizomatous grass having the same growth form. Creeping wild rye is easily differentiated from California satintail from its very morphologically different flowering spikes. Still, anytime stands of creeping wild rye were observed, special attention was given to make certain that the species was in fact creeping wild rye. In all instances, numerous flowering spikes were available for observation to quickly determine no collections or further analysis was needed to identify the grass.

## Conclusion

Although precipitation and survey timing were not necessarily optimal for all of the species that could occur within the Survey Area, site visits to nearby reference populations of these species and information from the pre-survey work indicated that all of these species would likely have been identifiable at the time of the field surveys. Therefore, we believe that it is reasonable that if any of these species occur in the Survey Area, they would have been detected during the field surveys.

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<sup>14</sup> Records searches for reported locations of California satintail (*Imperata brevifolia*) conducted during the pre-survey work for this survey did not reveal any known extant locations near or within a reasonable, meaningful distance of the Survey Area.

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**APPENDIX K**  
**SPECIAL-STATUS SPECIES KNOWN OR WITH POTENTIAL**  
**TO OCCUR IN THE BIOLOGICAL STUDY AREA**

**Special-Status Species Known or with Potential to Occur in the Biological Study Area**

Common Name Scientific Name	Legal Status <sup>a</sup> Federal/State/ Other	Geographic Distribution	Habitat Requirements	Potential for Occurrence
<b>Plants</b>				
Horn's milk-vetch <i>Astragalus hornii</i> var. <i>hornii</i>	-/-/1B.1 <sup>1</sup>	Inyo, Kern, San Bernardino*, Tulare Counties; also Nevada	Lake margins and alkaline substrates in meadows, seeps, and playas; 60–850 meters. Reported blooming period is May–Oct.	Known to occur; observed in dry recharge basins and canals in the KWB.
Heartscale <sup>2</sup> <i>Atriplex cordulata</i> var. <i>cordulata</i>	-/-/1B.1	Western Central Valley and valleys of adjacent foothills	Saline or alkaline area in chenopod scrub, meadows and seeps, sandy soils in valley and foothill grassland; below 560 meters. Reported blooming period is Apr– Oct.	Potential habitat present in saltbush scrub and annual grassland.
Lost Hills crownscale <sup>2</sup> <i>Atriplex coronata</i> var. <i>vallicola</i>	-/-/1B.2	Lost Hills, vicinity of McKittrick in Kern County, scattered locations in Fresno, Kings, Kern, Merced, and San Luis Obispo Counties	Alkaline soils in chenopod scrub, valley and foothill grassland, vernal pools; 50–635 meters. Reported blooming period is Apr–Aug.	Potential habitat present in saltbush scrub and annual grassland.
Lesser saltscale <sup>2</sup> <i>Atriplex minuscula</i>	-/-/1B.1	Sacramento and San Joaquin Valley, Butte County and from Merced County to Kern County	Sandy alkaline soils in chenopod scrub, playas, valley and foothill grassland; 15–200 meters. Reported blooming period is May– Oct.	Potential habitat present in saltbush scrub and annual grassland.
Subtle orache <i>Atriplex subtilis</i>	-/-/1B.2	Central Valley, especially San Joaquin Valley with occurrences in Butte, Fresno, Kings, Kern, Madera, Merced, and Tulare Counties	Alkali scalds and alkali grasslands, often near vernal pools; 40–100 meters. Reported blooming period is Jun–Aug (uncommonly Oct).	Potential habitat present in saltbush scrub and annual grassland.
Bakersfield smallscale <sup>2</sup> <i>Atriplex tularensis</i>	-/E/1A	Historic range included Southern San Joaquin Valley, Kern Lake bed, Kern County	Chenopod scrub; 90–200 meters. Reported blooming period is Jun– Oct.	Potential habitat present in saltbush scrub.
Alkali mariposa- lily <sup>2</sup> <i>Calochortus</i> <i>striatus</i>	-/-/1B.2	Western Mojave Desert, Kern, Los Angeles, San Bernardino, and Tulare Counties; Nevada	Alkaline mesic soils in chaparral, chenopod scrub, Mohavean desert scrub; 70–1,595 meters. Reported blooming period is Apr–Jun.	Potential habitat present in saltbush scrub.



Common Name Scientific Name	Legal Status <sup>a</sup> Federal/State/ Other	Geographic Distribution	Habitat Requirements	Potential for Occurrence
California jewel- flower <sup>2</sup> <i>Caulanthus</i> <i>californicus</i>	E/E/1B.1	Historically common in western San Joaquin Valley and interior foothills, currently known from scattered locations in Fresno, Kern, Santa Barbara, and San Luis Obispo Counties	Sandy soils in valley and foothill grassland, chenopod scrub, and pinyon-juniper woodland; 61–1,000 meters. Reported blooming period is Feb–May.	Potential habitat present in saltbush scrub and annual grassland.
Hispid bird's-beak <sup>2</sup> Chloropyron molle ssp. hispidum	-/-/1B.1	Central Valley: Alameda, Fresno, Kern, Merced, Placer, and Solano Counties	Meadow and seeps, valley and foothill grassland, playa, on alkaline soils; 1–155 meters. Reported blooming period is Jun–Sep.	Potential habitat present in annual grassland.
Slough thistle <sup>2</sup> <i>Cirsium crassicaule</i>	-/-/1B.1	San Joaquin Valley: San Joaquin, Kings and Kern Counties	Chenopod scrub, riparian scrub, sloughs in swamps and marshes; 3–100 meters. Reported blooming period is May–Aug.	Historically present in Section 34; although species not reported in recent years, habitat is present in riparian areas.
Recurved larkspur <sup>2</sup> <i>Delphinium</i> <i>recurvatum</i>	-/-/1B.2	Central Valley from Colusa* to Kern Counties	Alkaline soils in valley and foothill grassland, saltbush scrub, cismontane woodland; 3–790 meters. Reported blooming period is Mar–Jun.	Known to occur; observed in the area west of the Alejandro Canal in Section 36 and could occur in other areas of saltbush scrub and annual grassland in the KWB.
Kern mallow <sup>2</sup> <i>Eremalche</i> <i>kernensis</i>	E/-/1B.1	Vicinity of Lokern in Kern and Tulare Counties	Valley sink scrub, saltbush scrub, chenopod scrub, valley and foothill grassland, on sandy clay-loam soils; 70–1,290 meters. Reported blooming period is Mar–May.	Potential habitat is present in chenopod scrub and annual grassland.
Hoover's woolly star <sup>2</sup> <i>Eriastrum hooveri</i>	delisted/-/4.2	Western side of San Joaquin Valley from San Benito County to Kern and Los Angeles Counties	Chenopod scrub, valley and foothill grassland, pinyon-juniper woodland, sparsely vegetated alkaline alluvial fans; 50–915 meters. Reported blooming period is Mar–Jul.	Known from many locations in the KWB; largest population is just south of the Ten Section Oil Field.

Special-Status Species Known or with Potential to Occur in the Biological Study Area

Common Name Scientific Name	Legal Status <sup>a</sup> Federal/State/ Other	Geographic Distribution	Habitat Requirements	Potential for Occurrence
Tejon poppy <sup>2</sup> <i>Eschscholzia lemmonii</i> ssp. <i>kernensis</i>	-/-/1B.1	Scattered occurrences in western Kern County	Chenopod scrub and valley and foothill grassland; 160–1,000 meters. Reported blooming period is Mar–May.	Potential habitat present in saltbush scrub and annual grassland.
California satintail <i>Imperata brevifolia</i>	-/-/2.1	Butte, Fresno, Imperial, Inyo, Kern, Lake*, Los Angeles, Orange, Riverside, San Bernardino, Tehama, Tulare, Ventura Counties; Arizona, Baja California-Mexico, New Mexico*, Nevada, Texas, Utah	Mesic sites in chaparral, coastal scrub, Mojave desert scrub, meadows (often alkali), riparian scrub; below 1,251 meters. Reported blooming period is Sep–May.	Potential habitat present in riparian areas.
Coulter's goldfields <sup>2</sup> <i>Lasthenia glabrata</i> ssp. <i>coulteri</i>	-/-/1B.1	Scattered locations in southern California from San Luis Obispo County to San Diego County, in the Outer South Coast Ranges, south coast, northern Channel Islands, Peninsular Ranges, western Mojave desert, also in Yolo and Tehama Counties	Coastal salt marshes and swamps, Grasslands, vernal pools, alkali sinks, playas, in alkaline soils; 1–1,220 meters. Reported blooming period is Feb–Jun.	Potential habitat present in annual grassland.
San Joaquin woollythreads <sup>2</sup> <i>Monolopia congdonii</i>	E/-/1B.2	Southern San Joaquin Valley.	Saltbush scrub, sandy soils in valley and foothill grassland, on flats in alkaline or loamy soils; 60–800 meters. Reported blooming period is Feb–May.	Known to occur; three populations within the sensitive habitat and compatible habitat areas of the KWB.
Bakersfield cactus <sup>2</sup> <i>Opuntia basilaris</i> var. <i>treleasei</i>	E/E/1B.1	Southern San Joaquin Valley in Kern County	Chenopod scrub, cismontane woodland, valley and foothill grassland, granitic sandy or gravelly soil on bluffs, low hills, and flats; 120–1,140 meters. Reported blooming period is Apr–May.	Potential habitat present in saltbush scrub and annual grassland.
California chalk moss <i>Pterygoneurum californicum</i>	-/-/1B.1	Historical location in Kern County most likely extirpated; habitat still exists in Kern County	Chenopod scrub, playas, alkaline soils in valley and foothill grassland; 10–100 meters.	Potential habitat present in saltbush scrub and annual grassland.

Common Name Scientific Name	Legal Status <sup>a</sup> Federal/State/ Other	Geographic Distribution	Habitat Requirements	Potential for Occurrence
Oil nestraw <sup>2</sup> <i>Stylocline citroleum</i>	-/-/1B.1	Kern County, in Elk Hills and near Taft and McKittrick; historically known from San Diego* County	Chenopod scrub, coastal scrub, valley and foothill grassland, flats, on clay soils, often near oil seeps; 50–400 meters. Reported blooming period is Mar–Apr.	Potential habitat present in saltbush scrub and annual grassland.
Mason's neststraw <sup>2</sup> <i>Stylocline masonii</i>	-/-/1B.1	Scattered locations from Monterey County to Los Angeles County	Sandy soils in chenopod scrub, pinyon-juniper woodland, in sandy washes; 100–1,200 meters. Reported blooming period is Mar–May.	Potential habitat present in saltbush scrub.
<b>Amphibians</b>				
Western spadefoot <sup>2</sup> <i>Spea hammondi</i>	-/SSC	Sierra Nevada foothills, Central Valley, Coast Ranges, coastal counties in southern California.	Shallow streams with riffles and seasonal wetlands such as vernal pools in annual grasslands and oak woodlands	Known to occur on the KWBA property. Suitable breeding habitat is present within water storage ponds in the study area.
<b>Reptiles</b>				
Blunt-nosed leopard lizard <sup>2</sup> <i>Gambelia silus</i>	E/E, FP	San Joaquin Valley from Stanislaus County through Kern County and along the eastern edges of San Luis Obispo and San Benito Counties.	Open habitats with scattered low bushes on alkali flats, and low foothills, canyon floors, plains, washes, and arroyos; substrates may range from sandy or gravelly soils to hardpan	Known to occur on the KWBA property. Suitable habitat is present within annual grassland, saltbush scrub and Valley Sacaton scrub habitats within the study area.
California horned lizard <i>Phrynosoma coronatum frontale</i>	--/SSC	Shasta County southward along the edges of the Sacramento Valley into much of the South Coast Ranges, San Joaquin Valley, and Sierra Nevada foothills to northern Los Angeles, Santa Barbara and Ventura counties.	Grasslands, brushlands, woodlands, and open coniferous forest with sandy or loose soil; requires abundant ant colonies for foraging	Known to occur on the KWBA property. Suitable habitat is present within upland habitats in the study area.

Common Name Scientific Name	Legal Status <sup>a</sup> Federal/State/ Other	Geographic Distribution	Habitat Requirements	Potential for Occurrence
Pacific pond turtle <i>Actinemys marmorata</i>	--/SSC	Occurs along the central coast of California east to the Sierra Nevada and along the southern California coast inland to the Mojave and Sonora Deserts; range overlaps with that of the northwestern pond turtle throughout the Delta and in the Central Valley.	Woodlands, grasslands, and open forests; aquatic habitats, such as ponds, marshes, or streams, with rocky or muddy bottoms and vegetation for cover and food.	Known to occur in the Kern River within the study area. Suitable habitat is present within managed wetlands on the KWB and the Kern River.
<b>Birds</b>				
Loggerhead shrike <sup>2</sup> <i>Lanius ludovicianus</i>	-/SSC	Resident and winter visitor in lowlands and foothills throughout California. Rare on coastal slope north of Mendocino County, occurring only in winter.	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches	Known to occur in the study area. Trees and shrubs throughout the study area provide suitable nesting habitat.
California horned lark <i>Eremophila alpestris actia</i>	-/SSC	Found throughout much of the state, less common in mountainous areas of the north coast and in coniferous or chaparral habitats.	Common resident in a variety of open habitats, usually where large trees and shrubs are absent; prefers grasslands and deserts to dwarf shrub habitats above the tree line	Known to occur in the study area. Annual grasslands in the study area provide suitable nesting habitat.
Yellow-headed blackbird <i>Xanthocephalus xanthocephalus</i>	-/SSC	Spring and summer residents throughout much of the interior western United States and winter primarily in Arizona, New Mexico, Texas, and Mexico.	Breeds in loose colonies in freshwater wetlands (e.g., marshes) with tall dense emergent vegetation adjacent to deep water, and along borders of lakes or ponds	Known to occur on the KWBA property. Suitable nesting habitat is present within the study area when water storage ponds support dense emergent vegetation.

Common Name Scientific Name	Legal Status <sup>a</sup> Federal/State/ Other	Geographic Distribution	Habitat Requirements	Potential for Occurrence
Tricolored blackbird (nesting colony) <sup>2</sup> <i>Agelaius tricolor</i>	--/SSC	Permanent resident in the Central Valley from Butte County to Kern County. Breeds at scattered coastal locations from Marin County south to San Diego County, and at scattered locations in Lake, Sonoma, and Solano Counties. Rare nester in Siskiyou, Modoc, and Lassen Counties.	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grainfields; nesting habitat must be large enough to support 50 pairs; probably requires water at or near the nesting colony; requires large foraging areas, including marshes, pastures, agricultural wetlands, dairies, and feedlots, where insect prey is abundant	Known to occur on the KWBA property. Suitable nesting habitat is present within the study area when water storage ponds support dense emergent vegetation.
White-tailed kite (nesting) <sup>2</sup> <i>Elanus leucurus</i>	--/FP	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Rare along south coast.	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging	Large trees along the Kern River provide suitable nesting habitat within the study area.
Western burrowing owl <sup>2</sup> <i>Athene cucularia</i>	-/SSC	San Joaquin Valley, northeastern plateau, southeastern deserts, and coastal areas. Rare along south coast.	Level, open, dry, heavily grazed or low-stature grassland or desert vegetation with available burrows	Known to occur on the KWBA property. Suitable habitat is present within annual grasslands and fallow agricultural fields within the study area.
Swainson's hawk <sup>2</sup> <i>Buteo swainsonii</i>	--/FP	Occurs throughout Sacramento and San Joaquin Valley. Highest nesting densities occur near Davis and Woodland, Yolo County.	Nests in large trees in the Central Valley; forages in grasslands, irrigated pastures, and grain fields	Large trees along the Kern River provide suitable nesting habitat within the study area. Species was observed nesting on the KWB within a willow tree in 2012 (Sterling pers. comm. 2013)
Northern harrier <sup>2</sup> <i>Circus cyaneus</i>	--/SSC	Occurs throughout lowland California. Has been recorded in fall at high elevations.	Grasslands, meadows, marshes, and seasonal and agricultural wetlands	Known to occur on the KWBA property. Suitable nesting habitat is present within annual grasslands and fallow agricultural fields within the study area. Managed wetlands may also provide suitable nesting sites.

Common Name Scientific Name	Legal Status <sup>a</sup> Federal/State/ Other	Geographic Distribution	Habitat Requirements	Potential for Occurrence
Black tern <sup>2</sup>	--/SSC	Spring and summer resident of the Central Valley, Salton Sea, and northeastern California where suitable emergent wetlands occur.	Freshwater wetlands, lakes, ponds, moist grasslands, and agricultural fields; feeds mainly on fish and invertebrates while hovering over water	Known to occur on the KWBA property. Suitable habitat is present within managed wetlands in the study area.
Brown pelican	D/D, FP	Only breeding colonies in the United States are on Anacapa and Santa Barbara Islands.	In estuarine, marine subtidal, and marine pelagic waters, fairly common to common June to November, rare the rest of the year.	Potential migrants at the KWBA property.
<b>Mammals</b>				
San Joaquin pocket mouse <sup>2</sup> Perognathus inornatus	SC/-	Occurs throughout the San Joaquin Valley and in the Salinas Valley.	Eastern side of San Joaquin Valley within grasslands and oak savannas with friable soils	Known to occur on the KWBA property. Suitable habitat is present within annual grasslands and scrub habitats on the project site.
Tipton kangaroo rat <sup>2</sup> Dipodomys nitratoides nitratoides	E/E	Occurs in the Tulare Lake Basin in portions of Fresno, Tulare, King and Kern Counties	Tipton kangaroo rats are found in saltbush scrub and sink scrub communities in the Tulare Lake Basin of the southern San Joaquin Valley. Burrows are commonly found in soft friable soils in elevated mounds associated with road berms, canal embankments, railroad beds, and bases of shrubs.	Known to occur on the KWBA property. Suitable habitat is present within saltbush scrub and Valley Sacaton scrub habitats within the study area.
San Joaquin kit fox <sup>2</sup> Vulpes macrotis mutica	E/T	Principally occurs in the San Joaquin Valley and adjacent open foothills to the west; recent records from 17 counties extending from Kern County north to Contra Costa County.	Principally occurs in San Joaquin Valley and adjacent open foothills to the west within saltbush scrub, grasslands, oak, savannas, and freshwater scrub	Known to occur on the KWBA property. Suitable habitat is present within annual grassland, fallow agricultural fields, saltbush scrub and Valley Sacaton scrub habitats within the study area.

**Special-Status Species Known or with Potential to Occur in the Biological Study Area**

Common Name Scientific Name	Legal Status <sup>a</sup> Federal/State/ Other	Geographic Distribution	Habitat Requirements	Potential for Occurrence
Nelson's antelope ground squirrel <sup>2</sup> <i>Ammospermophilus nelsoni</i>	SC/T	Merced County south to Kern and Tulare Counties; also found on the Carrizo Plain in San Luis Obispo County and the Cuyama Valley in San Luis Obispo and Santa Barbara Counties.	Arid grasslands from 200 to 1,200 feet in elevation, with loamy soils and moderate shrub cover of <i>Atriplex</i> and other shrub species	Known to occur on the KWBA property. Suitable habitat is present within annual grassland, saltbush scrub and Valley Sacaton scrub habitats within the study area.
Buena Vista Lake shrew <i>Sorex ornatus relictus</i>	SC/E	Known from eight locations spanning a 70-mile stretch along the west side of the Tulare Basin.	Riparian and wetland vegetation communities that support an abundance of leaf litter and dense herbaceous cover that provide adequate food, cover, and moisture.	Within the study area species is known to occur along north side of Kern River within the Kern Fan Recharge area. Known occurrences also on the Cole's Levee Preserve adjacent to the western boundary of the KWBA property. to occur adjacent to the study area.
American badger <sup>2</sup> <i>Taxidea taxius</i>	-/SSC	Uncommon, permanent resident throughout most of the state, with the exception of the North Coast area.	Requires sufficient food, friable soils, and relatively open uncultivated ground; preferred habitat includes grasslands and oak savanna habitats	Known to occur on the KWBA property. Suitable habitat is present within annual grassland, saltbush scrub and Valley Sacaton scrub habitats within the study area.

Common Name	Legal Status <sup>a</sup> Federal/State/ Scientific Name Other	Geographic Distribution	Habitat Requirements	Potential for Occurrence
<sup>a</sup> Status explanations:				
-	=	no listing.		
<b>Federal</b>				
E	=	listed as endangered under the federal Endangered Species Act.		
T	=	listed as threatened under the federal Endangered Species Act.		
SC	=	species of concern; species for which existing information indicates it may warrant listing but for which substantial biological information to support a proposed rule is lacking.		
P	=	officially proposed (in the Federal Register) for listing as endangered or threatened.		
C	=	candidate to become a proposed species.		
<b>State</b>				
E	=	listed as endangered under the California Endangered Species Act.		
T	=	listed as threatened under the California Endangered Species Act.		
FP	=	fully protected under the California Fish and Game Code.		
C	=	candidate to become a listed species.		
SSC	=	species of special concern in California.		
<sup>1</sup> For plants, this designation is the California Rare Plant Rank. In March, 2010, DFG changed the name of “CNPS List” or “CNPS Ranks” to “California Rare Plant Rank” (or CRPR). This was done to reduce confusion over the fact that CNPS and DFG jointly manage the Rare Plant Status Review groups (300+ botanical experts from government, academia, NGOs and the private sector) and that the rank assignments are the product of a collaborative effort and not solely a CNPS assignment. The definitions are as follows:				
1A	=	List 1A species: presumed extinct in California and elsewhere.		
1B	=	List 1B species: rare, threatened, or endangered in California and elsewhere.		
4	=	List 4 species: plants of limited distribution that are on a watch list		
0.1	=	seriously endangered in California.		
0.2	=	fairly endangered in California.		
?	=	population status within County is uncertain.		
*	=	presumed extirpated from location.		
<sup>2</sup>	=	Indicates species covered by Kern Water Bank HCP/NCCP		



**APPENDIX L**  
**WATER AVAILABILITY ANALYSIS**

# **Kern Water Bank Authority**

## **Water Availability Analysis**

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Prepared for

**Downey Brand LLP**

March 2014

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ASSOCIATES  
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# Table of Contents

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1.0 Introduction .....	1
1.1 Water Availability Analysis Objectives .....	1
1.2 Historical and Legal Context for Water Availability Analysis .....	1
1.3 Water Availability Analysis Focus .....	2
2.0 Project Description .....	3
2.1 Overview of the KWBA and the Kern Water Bank .....	3
2.2 Project Location .....	3
2.3 Kern Water Bank Diversion and Recharge Capacity .....	4
3.0 Kern River Overview .....	6
3.1 Physical System .....	6
3.2 Kern River Pre-1914 Water Right Allocations .....	8
3.3 Pre-1914 Water Right Holders .....	11
3.4 Appropriative Water Right Applications .....	11
4.0 Analysis .....	13
4.1 Analysis of Delivery Capacities During Flood Conditions .....	13
4.2 Evaluation of Flows Below Second Point .....	16
4.2.1 Evaluation of Flows Between Second Point and the Intertie .....	16
4.2.2 Evaluation of Flows to the Kern River Flood Channel .....	18
4.3 Analysis of Potential KWB Water Deliveries based on Historical Data .....	18
4.4 Public Trust Analysis .....	20
4.5 Public Interest Analysis .....	21
5.0 References .....	22

## List of Tables

Table 1. Kern Water Bank Diversion Locations .....	5
Table 2. Kern Water Bank Estimated Recharge Capacity .....	6
Table 3. Recharge and Spreading Projects that Use Kern River Water .....	8
Table 4. First Point Natural Flows, Entitlements, and Intertie Deliveries 1978 through 2012 .....	10
Table 5. Summary of Appropriative Water Right Applications that Have been Filed .....	12
Table 6. Summary of Intertie Operations and River Diversions, 1998 .....	15
Table 7. Flows at the Kern River Channel at Second Point and at the Intertie .....	17
Table 8. Estimated Intertie and KWBA Water Deliveries (1894 through 2011 Calendar Years), AFY .....	19

## List of Figures

Figure 1. Kern Water Bank Location .....	23
Figure 2. Kern Water Bank Facilities .....	24
Figure 3. Kern Water Bank Points of Diversion .....	25
Figure 4. Kern River Key Facilities .....	26
Figure 5. Flow Routing Under Various Hydrologic Conditions .....	27
Figure 6. Kern Fan Banking Projects .....	28
Figure 7. First Point, Intertie and Estimated KWBA Deliveries, Oct 1982 - Dec 1983 .....	29

## 1.0 INTRODUCTION

This report summarizes the results of the Water Availability Analysis conducted for water right application 31676 submitted to the State Water Resources Control Board (SWRCB) by Kern Water Bank Authority (KWBA).

### 1.1 Water Availability Analysis Objectives

The objectives of the analysis are as follows:

- To provide information required under California Water Code sections 1275(a), 1375 (d), 1243, 1243.5 and California Code of Regulations, Title 23, sections 695, 782, to demonstrate whether water is available for appropriation; and
- To determine the impact of the application/project on stream flow in order to evaluate potential impacts to public trust resources and provisions for compliance with various federal and state requirements, including the California Environmental Quality Act (CEQA), the California Endangered Species Act (CESA), California Fish and Game Code and the federal Endangered Species Act (ESA).

### 1.2 Historical and Legal Context for Water Availability Analysis

The natural flow of the Kern River has been apportioned among various water users pursuant to a series of court decisions and agreements including, but not limited to, the following: (1) 1888 Miller-Haggin Agreement; (2) 1900 decree of the Kern County Superior Court in *Farmers Canal Company, et al. v. J.R. Simmons, et al.*, Case No. 1901 (hereinafter "Shaw Decree"); (3) 1930 amendment to the Miller-Haggin Agreement; (4) 1955 amendment to the Miller-Haggin Agreement; (5) 1964 Amendment to the Miller-Haggin Agreement; (6) 1962 Kern River Water Rights and Storage Agreement; and (7) Lake Isabella Recreation Pool Agreement. These decisions and agreements are collectively administered by the Kern River Watermaster.

Pursuant to the 1962 Kern River Water Rights and Storage Agreement, the Kern River Watermaster prepares records of Kern River flows, storage, and releases from Isabella Reservoir. A summary of these records is compiled and published in the annually produced Annual Hydrographic Report.

Since at least 1986, the Kern River Watermaster has implemented a "Policy Re-Utilization of Isabella Reservoir Flood Releases" (hereinafter "Flood Policy"). The Flood Policy has been implemented pursuant to the agreement and consent of all water right holders on the Kern River. The Flood Policy provides that when (1) abnormal flow is being released from Isabella Reservoir by order of the Corps of Engineers (also called mandatory release conditions), and (2) such flow is entering into the California Aqueduct through the Kern River-California Aqueduct Intertie (Intertie):

*[w]ater will be made available to any person, interest or group in Kern County who wish to divert that water, up to the amount of water flowing into the Intertie, provided such interest, person or group acknowledges their desire to divert said water by executing an "Order" which shall include, among other things, a description of the point they wish to divert such flow, the rate of flow they wish to divert and provide a schedule such that the request may be honored by the operating Kern River entity. This policy is without prejudice to the rights of any of the Parties.*

In recent years, KWBA has diverted and utilized Kern River water for groundwater recharge purposes in accordance with the Flood Policy. KWBA's diversion and storage of Kern River flood flows has been under the direction, authority and control of the Kern River Watermaster. KWBA members have also purchased Kern River water from holders of pre-1914 appropriative rights on the Kern River and this purchased water has likewise been used by KWBA for groundwater recharge purposes.

Between 1996 and 2007 certain Kern River water right holders were involved in litigation to determine the extent of appropriative Kern River water rights held by the Kern Delta Water District (Kern Delta). As a result of those proceedings, California courts concluded that Kern Delta had “forfeited” a significant portion of its pre-1914 appropriative Kern River water rights due to non-use.

The Kern River was formally designated a fully appropriated stream (FAS) by the SWRCB in 1989 (Order 89-25).<sup>1</sup> In 2007, five petitions were filed with the SWRCB, Division of Water Rights; requesting revision of the Kern River’s FAS status based on the 2007 court decision regarding Kern Delta. Water right applications were also submitted by these same entities. The petitions and applications were received from: North Kern Water Storage District and the City of Shafter (Application 31673), the City of Bakersfield (31674), Buena Vista Water Storage District (31675), Kern Water Bank Authority (31676), and Kern County Water Agency (31677).

The SWRCB held an evidentiary hearing on the petitions to modify the FAS designation for the Kern River on October 26-27, 2009. In February 2010, the SWRCB issued Order WR-2010-0010, removing the FAS status for the Kern River, citing evidence received during the evidentiary hearing that water has historically been diverted into the Kern River - California Aqueduct Intertie (Intertie) when all Kern River water right claims had already been satisfied, and concluding that the water flowing into the Intertie was unappropriated water. The SWRCB did not make a determination as to whether Kern River water that was deemed to have been forfeited in the litigation involving Kern Delta is unappropriated water available for appropriation or is instead being fully used by pre-1914 right holders other than Kern Delta.

### 1.3 Water Availability Analysis Focus

This Water Availability Analysis focuses on periods in which the Intertie was operated to receive mandatory release flood flows from the Kern River, which SWRCB Order WR 2010-010 deems to be unappropriated water.<sup>2</sup>

At times when mandatory release conditions are declared and water is diverted to the Intertie, physical constraints (lack of ability to use water for irrigation purposes or for groundwater recharge, and risk of potentially causing flooding by diverting more water) prevent water right

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<sup>1</sup> Order 89-25 cited SWRCB’s Decision 1196 (D-1196), issued on October 29, 1964, as the basis for including the Kern River on the Declaration. D-1196 concluded that the applicants had failed to show “that there is unappropriated water available” in the Kern River watershed.

<sup>2</sup> However, should the State Water Board determine that other water is available for appropriation; the KWBA reserves the right to make a claim for that water.

holders and others with physical access to Kern River flood flows from using all of the available Kern River water supply. None of the other five applicants<sup>3</sup> have identified or proposed the construction of new diversion, conveyance or storage facilities in conjunction with their water right applications. Therefore, the same constraints that prevent entities from fully using available flood releases under mandatory release conditions would also exist for any new appropriative water right holders other than KWBA.

Section 2.0 presents a Project Description, Section 3.0 provides an overview of Kern River hydrology, focusing on periods in which the Intertie has operated, and Section 4 analyzes water availability under flood control mandatory release conditions.

## 2.0 PROJECT DESCRIPTION

### 2.1 Overview of the KWBA and the Kern Water Bank

The KWBA is a Joint Powers Authority (JPA) formed in October 1995 pursuant to California Government Code 6500 *et seq.* The JPA is a public agency that includes as its members several water districts, a water agency, and a mutual water company. The JPA members include: Dudley Ridge Water District, Kern County Water Agency on behalf of its Improvement District 4, Semitropic Water Storage District, Tejon-Castac Water District, Westside Mutual Water Company, and Wheeler Ridge-Maricopa Water Storage District. Water right application 31676 was filed by KWBA on behalf of all of the JPA members except Kern County Water Agency on behalf of its Improvement District 4.

The JPA operates the Kern Water Bank for the benefit of its members and their constituents including farmers and residents in the City of Bakersfield and Kern and Kings Counties. The primary purpose of the Kern Water Bank is to recharge, store, and recover water to improve water supply for KWBA members. The Kern Water Bank also provides significant environmental benefits, including the enhancement of habitat for threatened and endangered species, waterfowl, and other wildlife.

### 2.2 Project Location

Figure 1 shows the general project area for the Kern Water Bank. The Kern River passes through the Kern Water Bank, generally flowing from the northeast to the southwest. The Kern Water Bank is located about 12 miles southwest of the City of Bakersfield in Kern County. The Kern Water Bank is situated between Taft Highway (State Route 119) on the south, Rosedale Highway (State Route 58) on the north, Tupman Road and the California Aqueduct on the west, and Heath Road on the east. The Kern Water Bank is east of the California Aqueduct, and is bisected from northwest to southeast by Interstate 5 (I-5).

The Kern Water Bank is well situated for groundwater banking operations due to its geology and proximity to water supply and delivery systems. The Kern Water Bank is located on the Kern River alluvial fan, an area consisting of alluvial deposits that provide a highly effective

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<sup>3</sup> Five water right applications, including that of KWBA, were filed as part of the FAS proceedings. Rosedale-Rio Bravo Water Storage District subsequently filed a water right application in 2010.

mechanism for direct groundwater recharge. The Kern Water Bank receives water from three sources: the Kern River, the California Aqueduct, and the Friant-Kern Canal. Approximately 900,000 acre-feet of water is currently stored in the Kern Water Bank.

Figure 2 shows key features of the Kern Water Bank area including the numerous canals that can be used to deliver recharge water, and recharge basins located both north and south of the Kern River. The Kern Water Bank encompasses a total area of 20,500 acres, of which about 7,000 acres are recharge basins. Recharge basins are shown in blue on Figure 2. Figure 2 also shows the Kern Water Bank's numerous wells that are used to recover groundwater from the aquifer, and the pipeline network to convey recovered water to adjacent canals for delivery to project participants.

### **2.3 Kern Water Bank Diversion and Recharge Capacity**

Application 31676 seeks to divert water for direct diversion and underground storage during the season from October 1<sup>st</sup> through September 30th. The application requests diversion to underground storage for the purpose of groundwater recharge. The Kern Water Bank diverts water to recharge ponds via several points of diversion, including weirs and diversion works on the Kern River and other secondary points of diversion as referenced in the KWBA's water right application. The KWB also proposes to re-divert flood water to the California Aqueduct via the Kern Water Bank Canal or the Pioneer Canal Headworks and Cross Valley Canal for subsequent delivery to KWB members for beneficial uses.

Table 1 and Figure 3 summarize the fifteen diversion points and two re-diversion points to the California Aqueduct listed in the water right application. Table 1 also summarizes the diversion capacities, in cfs.

WATER AVAILABILITY ANALYSIS  
Application 31676 of the Kern Water Bank Authority

**Table 1. Kern Water Bank Diversion Locations**

No.	Diversion Location	Capacity, cfs <sup>(a)</sup>	Notes
1	River Canal Weir	n/a	Onstream impoundment.
2	River Canal East	900	Used to deliver Kern River water to the main canal and West Kern Basin 1. Supplied from River Canal Weir.
3	Bellevue Weir	n/a	Onstream impoundment.
4	Pioneer Canal Headworks	350	Used to deliver water to the project via the Cross Valley Canal. Supplied from Bellevue Weir.
5	McClung Weir/City of Bakersfield Basin 1	n/a	Onstream impoundment.
6	City of Bakersfield Basin 2	500	Used to deliver water to the Kern Water Bank via Pioneer Project. Basins are supplied from McClung Weir.
7	City of Bakersfield Basin 9	600	
8	City of Bakersfield Basin 10	150	
9	Second Point Diversion Weir	n/a	Onstream impoundment.
10	Kern Water Bank Canal	800	Main diversion point for the Kern Water Bank. Supplied from Second Point Diversion Weir.
11	River Canal West	300	Alternate means of delivering water to the Main Canal. Supplied from Second Point Diversion Weir.
12	Sand Plug	n/a	Onstream impoundment.
13	Main Canal	250	Supplied from Sand Plug.
14	KWB Basin L1	40	Supplied from Sand Plug.
15	West Kern Basin 1	200	Used to deliver water to L2 pond. Supplied from Sand Plug.
<b>Points of Re-diversion to the California Aqueduct</b>			
16	Kern County Water Agency Turnout, Milepost 238.19	750	Supplied from Kern Water Bank Canal.
17	Kern County Water Agency Turnout 280.04	800	Supplied from Pioneer Canal Headworks via Cross Valley Canal. Pioneer Canal headworks capacity would limit re-diversion amount to 350 cfs.
<sup>(a)</sup> n/a = not applicable			



During recharge operations, recharge capacity, rather than diversion capacity, is the limiting factor for water deliveries to KWB facilities. Estimated recharge capacity is shown in Table 2, based on estimates provided by KWBA. As shown in the table, recharge capacity decreases over time, as groundwater levels rise.

Month of Operation	Days of operation, days	Recharge Rate, AF/mo	Recharge Rate, AF/day
1	30	72,000	2,400
2	60	60,000	2,000
3	90	57,000	1,900
4	120	54,000	1,800
5	150	51,000	1,700
6	180	48,000	1,600
7	210	45,000	1,500
8	240	42,000	1,400
9	270	39,000	1,300
10	300	36,000	1,200

<sup>(a)</sup> As reported by KWBA.

### 3.0 KERN RIVER OVERVIEW

This section first describes the physical river system, and reviews the pre-1914 water right and appropriative water right applications that have been filed. Section 4 analyzes historical operations and potential diversions using appropriative rights to demonstrate water availability.

#### 3.1 Physical System

The 1888 Miller-Haggin Agreement established two points along the river, the First Point of Measurement (First Point), and the Second Point of Measurement (Second Point) to measure and apportion river flows. As described in Section 3.2, all allocations of river flow are based on computed natural flows at First Point. A measurement station was established at First Point in 1893, and flows have been recorded at First Point since 1894. Kern River flows vary greatly, with annual First Point natural flows over the 1894 through 2011 period ranging from a low of 178,000 acre-feet in 1961 to a high of 2.5 million acre-feet in 1916. The average annual First Point natural flow is 730,000 acre-feet and the median annual First Point natural flow is 550,000 acre-feet.

Figure 4 shows key features of the Kern River, including the locations of First Point and Second Point, local river weirs and canals used to distribute water, and the State and Federal project facilities that can deliver water to or from the Kern River. Except under high flow conditions, the Carrier Canal and the River Canal, which are adjacent to the Kern River Channel, are used in lieu of the Kern River Channel to reduce water losses between First Point and Second Point. Past Second Point, the Alejandro Canal is used annually by Buena Vista Water Storage District to deliver Kern River water to the Outlet Canal and Eastside Canal for irrigation purposes. Six river weirs can also be used to distribute water to local canals, pipelines and channels at various points along the river.

Figure 4 also shows the Kern River in relation to the federal Friant-Kern Canal and Cross Valley Canal and the State's California Aqueduct. The Kern River Channel can be used to receive water from or deliver water to the State Water Project and the Friant-Kern Project via these facilities. The Friant-Kern Canal crosses the river and is used to deliver flood water from the San Joaquin, Kaweah and Tule Rivers to the Kern River Channel. Purchased Kern River water can also be delivered to the Friant-Kern Canal for delivery to agricultural interests south of the river. The river can also receive water from the State Water Project or Friant-Kern Canal via turnouts into the Kern River Channel from the Cross Valley Canal, on the north side of the river. The Kern River Channel terminates at the Intertie, which was constructed in 1977, and water from the Kern River Channel can be delivered to the California Aqueduct or the Outlet Canal.

Figure 5 shows facilities along the Lower Kern River, and routing of flows in three hydrological conditions: normal years; high flow conditions; and expected flood deliveries. During normal years, BVWSD delivers irrigation water down the Alejandro Canal to the Outlet Canal and then to the Eastside Canal into the district. During high flow conditions, if water is diverted past Second Point down the Kern River Channel, water can also be delivered to the Outlet Canal via a gate structure at the Intertie. The Kern River Flood Channel can receive flow from a gate structure from the Outlet Canal. BVWSD uses the Flood Channel to recharge non-flood Kern River water under its existing rights. Prior to the construction of the Intertie, the Flood Channel was also used to divert flood flows north to the Tulare Lake bed. Since completion of the Intertie, flood flows have not been diverted to the Tulare Lake bed. Under flood conditions, flood water would also be routed into the Kern Water Bank facilities. Additional flood water would be routed to the California Aqueduct through Kern Water Bank Facilities, or through the Intertie.

Kern River water is used to meet local municipal and irrigation needs, as well as for recharge to groundwater banking programs in the area. Local entities with access to Kern River water preferentially use Kern River water over other sources due to its high quality and low cost. The Kern Fan is a highly permeable aquifer and there are several water banking projects located on the Kern Fan area as well as other areas of Kern County.

Table 3 summarizes recharge and spreading projects that regularly recharge Kern River water. Figure 6 shows the water banking projects which are located in the Kern Fan area. North Kern Water Storage District and Kern Delta Water District, which have recharge facilities elsewhere in the county, also use Kern River water for recharge. All of the entities that use the banking programs listed in Table 3 either have pre-1914 water rights, purchase pre-1914 water or divert Kern River flood water under the Flood Policy.

**Table 3. Recharge and Spreading Projects that Use Kern River Water<sup>(a)</sup>**

Project	Estimated Monthly Delivery Capacity from Kern River, acre-feet	Notes
Berrenda Mesa Water Storage District	4,000	Berrenda Mesa Water Storage District is a member unit of Kern County Water Agency, which owns the Lower River rights and purchases pre-1914 First Point water. Water from the Kern River is delivered via Berrenda Mesa Pipeline. Pipeline monthly deliveries estimated from 2006 Kern River Annual Hydrographic Report.
Buena Vista Water Storage District	1,700	Buena Vista Water Storage District owns the Second Point water rights and is a member unit of Kern County Water Agency, which owns the Lower River rights. Recharge areas include 160 acres, Elk Pen recharge area and M1 lateral area. Buena Vista Water Storage District also provides direct channel recharge through its Outlet Canal, Main Canal and portions of the Kern River Flood Channel. Monthly delivery capacity for 160 acres, Elk Pen and M1 recharge areas estimated from Buena Vista Water Storage District flow records.
City of Bakersfield 2800 Acre Recharge Facility	14,300	The City of Bakersfield holds First Point water rights. Monthly delivery capacity estimated from the 2006 Kern River Annual Hydrographic Report.
Kern Water Bank	36,000 – 72,000	Kern Water Bank purchases First Point water and has also historically received Kern River flood flows. Monthly delivery capacity estimated by KWBA.
North Kern Water Storage District	21,900	North Kern Water Storage District has a permanent right to access First Point water and also purchases First Point water. Kern River water is delivered through Beardsley and Calloway Canals. Monthly delivery capacity estimated from 2006 Kern River Annual Hydrographic Report.
Pioneer Project	19,900	Owned and operated by Kern County Water Agency. Kern County Water Agency purchases First Point water and owns the Lower River rights. KCWA member units Kern Delta Water District, Buena Vista Water Storage District, and Rosedale-Rio Bravo Water Storage District have priority rights for groundwater recharge. Project monthly delivery capacity estimated from 2006 Kern River Annual Hydrographic Report.
Rosedale-Rio Bravo Water Storage District	15,800	Rosedale-Rio Bravo Water Storage District purchases First Point water and has historically used Kern River flood flows. Kern River water is delivered through Rosedale Channel. Rosedale Channel also used for recharge and flood control during flood control mandatory release conditions. Monthly delivery capacity estimated from 2006 Kern River Annual Hydrographic Reports.
West Kern Water District	3,600	West Kern Water District is a member unit of Kern County Water Agency. Kern River water is delivered through Buena Vista Water Storage District, which has priority rights for use of recharge facilities. Monthly delivery capacity estimated by KWBA.

<sup>(a)</sup> Kern Delta Water District banking program not included in table. Kern Delta uses pre-1914 water rights for groundwater spreading. Quantities not enumerated in Kern River Annual Hydrological Reports.

### 3.2 Kern River Pre-1914 Water Right Allocations

As noted previously, the Kern River is allocated to several interests based on the 1888 Miller-Haggin Agreement, several subsequent amendments and a storage agreement. Interests are subdivided into three groups: First Point, Second Point, and Downstream. The Downstream Group is also known as the Lower River Group. First Point rights are further subdivided into rights and priorities established in the 1900 Shaw Decree.

Allocations are made based on the computed natural flow at First Point. Daily flow measurements at First Point, recorded upstream use, changes in storage at Lake Isabella and evaporative losses from Lake Isabella are all used to compute the natural flow at First Point.

## WATER AVAILABILITY ANALYSIS

### Application 31676 of the Kern Water Bank Authority

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Allocations of First Point and Second Point flows are made on a daily basis. In January, February and September through December, flows up to 1,200 cfs are allocated to First Point users. Flows above 1,200 cfs are apportioned between First Point and Second Point users. From March through August, flows up to 300 cfs are allocated to First Point users. Flows above 300 cfs are apportioned to First Point and Second Point users in varying ratios, depending on the amount natural flow. All of the First Point rights are filled when the river is running over 3,162 cfs, so that any flow over that amount would also necessarily be surplus, excess water that would be released to Second Point (Bogart, 2009). This typically occurs in very wet years. When an individual right-holder is unable to use all of its allocation, water is released to the river and is made available for junior right holders to use. As discussed in Section 4.1, once Kern River regulated flow reaches about 200,000 acre-feet/month (just under 3,400 cfs), the use of existing facilities is maximized and flood water flows to the Intertie.

Lower River allocations are historically defined by flood flows that were delivered from the Second Point service area to the Lower River area, north of Highway 46, via the Kern River Flood Channel (see Figures 4 and 5), which drains to the historical Tulare Lakebed in Kings County. Allocations to the Lower River are based on the total aggregate water volume of the Kern River. In practice, the First and Second Point interests review California Department of Water Resources April through July runoff estimates for the San Joaquin River as a tool to determine if and when to start delivery of Lower River water.

For the months of January through March, the Lower River Group receives no allocation of flow until the First Point cumulative natural flow has reached 250,000 acre-feet. In April through July, the Lower River Group receives allocations once the First Point cumulative natural flow reaches 550,000 acre-feet to 600,000 acre-feet, depending on antecedent conditions. Flow allocations are made in varying percentages, depending on the cumulative First Point natural flow. In August through December, the Lower River group receives no allocation. Lower River allocations are provided from First Point and Second Point allocations, with First Point providing 90 percent of flow and Second Point providing 10 percent of flow.

Table 4 summarizes annual First Point natural flow for 1978 through 2011, sorted in ascending order. The table also includes calculated allocations to First Point, Second Point and Lower River users and Intertie deliveries. Calculated allocations are approximate, as they are based on monthly natural flow at First Point, while actual allocations are based on daily flow records. As the table shows, Lower River allocations only occur in years in which the annual First Point natural flow is 110 to 120 percent of the long-term annual average of First Point natural flow. Intertie deliveries typically occur only in the wettest years, when the annual natural flow at First Point is at least 150 percent of the long-term average. The year 1984 is the one exception, in which the intertie operated for two months, due to extremely wet antecedent conditions.

**Table 4. First Point Natural Flows, Entitlements, and Intertie Deliveries 1978 through 2012 (Acre-feet)**

Year	First Point Annual Natural Flow	Index <sup>(a)</sup>	Allocations <sup>(b)</sup>			
			First Point	Second Point	Lower River	Intertie Deliveries
1990	203,571	28%	186,763	16,808	0	0
2007	252,692	35%	228,242	24,450	0	0
1988	294,685	40%	260,954	33,731	0	0
1992	296,829	41%	257,943	38,886	0	0
1994	336,456	46%	290,264	46,192	0	0
1987	375,935	51%	321,958	53,977	0	0
2001	391,451	54%	325,958	65,493	0	0
1989	397,038	54%	326,756	70,282	0	0
1991	406,289	56%	328,679	77,610	0	0
2004	407,305	56%	340,174	67,131	0	0
2002	424,696	58%	372,742	51,954	0	0
1999	433,971	59%	367,286	66,685	0	0
1981	449,263	61%	380,175	69,088	0	0
2009	470,166	64%	387,853	82,313	0	0
2000	476,819	65%	387,846	88,973	0	0
2008	517,997	71%	418,970	99,027	0	0
2003	519,724	71%	423,452	96,272	0	0
1985	672,431	92%	538,980	133,451	0	0
1979	672,661	92%	532,951	139,710	0	0
1984	821,797	112%	670,334	151,463	0	26,720
1993	853,760	117%	631,697	210,615	11,448	0
2010	910,975	125%	690,629	210,315	10,031	0
1996	1,038,261	142%	795,014	226,967	16,279	0
2006	1,071,851	147%	683,889	290,837	97,125	73,411
2005	1,156,109	158%	763,973	298,196	93,940	0
1997	1,181,969	162%	833,129	268,744	80,097	23,980
1982	1,271,139	174%	876,601	296,948	97,589	10,339
2011	1,374,894	188%	841,671	371,365	161,858	0
1995	1,385,160	189%	837,573	391,072	156,515	0
1986	1,444,939	198%	856,339	402,819	185,782	1,868
1980	1,639,957	224%	945,746	443,823	250,388	138,816
1978	1,653,505	226%	1,082,352	494,197	76,956	168,818
1998	1,717,967	235%	1,102,292	514,328	101,347	209,347
1983	2,489,128	340%	1,321,879	766,536	400,713	664,036

<sup>(a)</sup> The index is computed as the annual natural flow divided by the long-term average natural flow.

<sup>(b)</sup> Allocations are approximate, calculated using monthly records. Actual allocations are calculated using daily records.

### 3.3 Pre-1914 Water Right Holders

The City of Bakersfield and Kern Delta Water District hold all of the First Point rights. The North Kern Water Storage District also diverts and uses water from the First Point service area, pursuant to a water supply agreement that gives the District access to the First Point rights held by the City of Bakersfield in perpetuity. The Buena Vista Water Storage District holds essentially all of the Second Point rights, and the Kern County Water Agency holds the Lower River rights.

The City of Bakersfield has historically used Kern River water for municipal and industrial uses within the City, as well as for groundwater replenishment, with principal replenishment at the City's 2800 Acre recharge facility. In 1976, Bakersfield entered into 35-year long-term contracts to sell a portion of its Kern River water supply to four agricultural districts.<sup>4</sup> As indicated in its 2009 testimony for the Kern River Fully Appropriated Stream hearings, Bakersfield proposes to take back a significant quantity of this water both to meet increasing demand and to discharge water to the Kern River (Core, 2009). The City also has a long-term contract with Rosedale-Rio Bravo Water Storage District. In addition to the long-term contract water, Bakersfield also sells surplus water to local agencies when available.

North Kern Water Storage District uses Kern River water for irrigation and recharge. The District is also a Central Valley Project contractor, receiving Class 1 and Class 2 water from the Friant-Kern project. The District takes diversions through the Beardsley and Calloway canals, for both irrigation deliveries and recharge. The District also has spreading basins that are filled using flood waters from the Kern River.

Kern Delta Water District uses Kern River water for irrigation and groundwater recharge. The District also has access to State Water Project water via a water contract from Kern County Water Agency.

### 3.4 Appropriative Water Right Applications

Table 5 summarizes the agencies and/or municipalities that have filed appropriative water right applications. The table summarizes the entity, the filing date and the maximum annual quantity to be diverted and provides a summary of the project description provided in the water right application. As noted in Section 1.2, five of these applications were filed along with petitions requesting revision of the Kern River's fully appropriated stream status.

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<sup>4</sup> North Kern Water Storage District, 20,000 acre-feet/year; Cawelo Water District, 27,000 acre-feet/year; Kern-Tulare Water District, 20,000 acre-feet/year; Rag Gulch Water District, 3,000 acre-feet/year.



**Table 5. Summary of Appropriative Water Right Applications that Have been Filed**

Applicant	Filing Date	Maximum Annual Quantity to Be Diverted, acre-feet	Project Description
North Kern Water Storage District and City of Shafter	April 25, 2007	500,000	The project consists of continued implementation of the District's 1950 project. Application is to appropriate water to supplement the existing water supplies available to North Kern's Project with additional Kern River water supplies for direct diversion and storage necessary to meet existing and future water demands of North Kern and future water demands of Shafter, estimated to be 5.6 mgd by 2035 in the City's Urban Water Management Plan. No new facilities will be constructed.
City of Bakersfield	May 2, 2007	90,000	Project will divert water through existing facilities and into the natural Kern River Channel through the Bakersfield area. As documented in the Kern River Flow and Municipal Water Program Draft EIR, the purpose of the project is to restore more regular flows of water to the Kern River Channel, with up to 160,000 acre-feet per year provided to the channel. No new facilities will be constructed.
Buena Vista Water Storage District	August 22, 2007	700,000	Project consists of continued implementation of the 1926 District Plan. Application is to appropriate water to supplement existing water rights and water supplies. No new facilities will be constructed.
Kern Water Bank Authority	August 26, 2007	500,000	Project consists of diversion of Kern River floodwaters for groundwater recharge at the existing Kern Water Bank, when the river is operating under flood control mandatory release conditions. No new facilities will be constructed.
Kern County Water Agency	August 27, 2007	2,279,000	Project seeks to supplement existing water rights to serve its member units through existing facilities. No new facilities will be constructed.
Rosedale-Rio Bravo Water Storage District	January 29, 2010	65,750	Project seeks to divert up to 65,750 acre-feet of water from the Kern River via the Intertie. Applicant would use existing Intertie and California Aqueduct facilities to deliver water to third parties.

All of the projects listed above propose to make use of existing facilities to appropriate water. Applications by the first five applicants shown on the table would make use of existing facilities on the Kern River. Rosedale-Rio Bravo's application proposes to divert water after water has been diverted to the Intertie. The one project that could significantly change river operations is the proposal by the City of Bakersfield to divert water through the Kern River Channel to supplement flows in the Kern River Channel. However, the City's proposed operation, if implemented, is not expected to significantly change operations under flood conditions, because the Kern River Channel is already used to convey flow, to maximize local water use, and divert remaining flows into the Intertie.

All of the applicants already have access to Kern River water by virtue of pre-1914 entitlements, long-term contracts, short-term sales, or under flood conditions, when flood mandatory releases have been declared under the Flood Policy.

#### 4.0 ANALYSIS

Since its completion in 1977, the Intertie has operated during Lake Isabella mandatory release periods in nine years, with total volumes delivered annually ranging from about 2,000 acre-feet in 1986 (3 days of operation) to 660,000 acre-feet in 1983 (283 days of operation). This section presents three evaluations of the flood flows that have historically been diverted into the Intertie:

- Water availability during flood conditions, derived from historical records of diversion and use by existing water right holders and estimates of ability to use and recharge water under pending appropriative water right applications.
- Flows in the lower portion of the river between Second Point and the Intertie to assess computed changes in historical flows if Intertie flows are reduced as a result of new appropriations.
- Potential deliveries to Kern Water Bank using historical records.

The section concludes with an analysis of public trust and public interest issues.

#### 4.1 Analysis of Delivery Capacities During Flood Conditions

Historical records were used to assess water availability during flood conditions, where flood conditions refer to mandatory release periods in which the intertie was historically operated.<sup>5</sup> Typically, a water availability analysis would assess availability of water based on stream flow records, quantities required to remain in the source for protection of beneficial uses (e.g., recreation, fisheries), existing rights and the face value of new entitlements being sought. However, when the Kern River below Lake Isabella is operating under flood conditions, the principal limitations are immediate municipal and irrigation demands and ability of spreading projects to accept water based on their recharge capacities. Since maximizing use of spreading basins is a regular part of the Kern River flood management strategy, this analysis assesses recharge operations to demonstrate whether water is available for diversion by the Kern Water Bank Authority.

A two-step process was used to evaluate the availability of water for diversion. First, historical operations, as documented in the Kern River Annual Hydrological Reports, were used to quantify deliveries of water to local recharge projects, and to assess maximum deliveries to these projects. Second, using maximum delivery estimates, additional possible deliveries using appropriative filings were assessed.

Historical operations represent use by existing right holders of Kern River water that was available. For the analysis, 2006 conditions were used to evaluate current project facilities and operations using Kern River water. Intertie operations were due to mandatory releases from Lake Isabella by the U.S. Army Corps of Engineers starting in late April due to concerns over an increase in seepage at the base of the dam. Although hydrology was not the only factor in the

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<sup>5</sup> Kern Delta Water District First Point rights that were determined by the courts to have been forfeited were not considered in this analysis. Rights and use, as reported in the Annual Hydrographic Reports, were used without adjustment.



mandatory release, the records provide a snapshot of river operations under high flow conditions. These records were used to establish the recharge and spreading projects that accept Kern River water, and to assess diversion rates to the different recharge and spreading projects.<sup>6</sup>

Based on the facilities' capacities identified, river operations were then evaluated for 1998. 1998 was an El Nino year, which had the sixth largest volume of runoff on record. Kern River water was introduced to the Intertie under mandatory flood control releases, starting April 29<sup>th</sup>, with deliveries made to the Intertie through July 10<sup>th</sup>. Average monthly flow at First Point for May 1998 was 3,900 cfs, and average monthly flow for June 1998 was 4,625 cfs, both of which exceed the total First Point rights of 3,162 cfs.

Information from the Annual Hydrological Report and Buena Vista Water Storage District Second Point flow records was used to establish historical deliveries of flood flows during the period when the Intertie was flowing. Historical deliveries were then compared with maximum delivery rates for the facilities to determine whether more water could have been delivered based on the appropriate water right applications that have been filed.

The results of this analysis are shown in Table 6, which summarizes historical river operations and potential diversions for the period in which the Intertie operated. Information is drawn from monthly records. Flows and diversions are shown in acre-feet, with the corresponding mean daily flow or diversion rates shown on the right hand side of the table.

The top portion of the table summarizes flow statistics at various points along the river. Statistics include computed natural flow at First Point, regulated flow at the Kern River at First Point, total flow at the Kern River Channel at Second Point, water diverted into the Buena Vista Water Storage District Outlet Canal, Friant-Kern water delivered to the Intertie and Kern River water diverted to the Intertie. The Outlet Canal is immediately adjacent to the Intertie, so the difference between Total Flow at Second Point and Flow to the Outlet Canal and Intertie represents use by Buena Vista Water Storage District.

Comparisons of May 1998 and June 1998 Kern River regulated flow at First Point with Kern River Intertie deliveries indicate that once regulated flows reach about 200,000 acre-feet per month (just under 3,400 cfs), the use of existing facilities is maximized and flood water flows to the Intertie. Similar comparisons for May 2006, when the Intertie operated for nearly the whole month indicate a similar threshold (210,000 acre-feet).

The middle portion of the table summarizes deliveries to the various existing recharge projects. Historical deliveries reflect facilities that were in place in 1998, not all of which may have been fully constructed. For example, Kern Water Bank had not yet constructed all of its existing recharge ponds.

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<sup>6</sup> Some spreading projects operate year-round, with different sources of water. Maximum diversion capacities were assessed based on all monthly records from 1998 and 2006.

Table 6. Summary of Intertie Operations and River Diversions, 1998

Location	Maximum Delivery Rate <sup>(a)</sup>	Flow or Diversion, acre-feet				Mean Daily Flow or Diversion, cfs			
		Apr	May	Jun	July	Apr	May	Jun	July
Kern River at First Point, Computed Natural Flow, when intertie is operating <sup>(b)</sup>		21,366	308,440	371,835	89,690	5,386	5,016	6,249	5,652
Kern River at First Point, Regulated Flow		13,994	239,423	284,408	75,220	3,528	3,894	4,780	4,740
Kern River Channel at Second Point of Measurement (excluding Friant-Kern water) <sup>(c)</sup>		6,373	115,392	112,011	29,705	1,607	1,877	1,882	1,872
Kern River Water to the BVWSD Outlet Channel		1,033	28,219	10,536	16,635	260	459	177	1,048
Friant-Kern Water Diverted Into Kern River/California Aqueduct Intertie		-	13,933	265	2,786	-	227	4	176
Kern River Water Diverted Into Kern River/California Aqueduct Intertie		3,118	48,614	68,477	10,017	786	791	1,151	631
<b>Historical Recharge Operations, 1998</b>									
North Kern WSD spreading areas via Beardsley and Calloway Canals	21,900	1,096	16,179	16,491	4,804	276	263	277	303
Floodwater to Arvin Edison Water Storage District		-	484	6,101	4,455	-	8	103	281
Rosedale Channel	15,800	985	13,207	15,813	5,069	248	215	266	319
Pioneer Project	19,900	200	5,718	11,126	2,796	50	93	187	176
Berrenda Mesa Pipeline	4,000	792	2,594	2,303	1,744	200	42	39	110
2800 Acre Recharge Facility	14,300	603	10,345	9,530	2,381	152	168	160	150
Kern Water Bank	57,000	1,556	32,381	26,585	7,096	392	527	447	447
BVWSD Recharge Facility (Elk Pen, Other Ponds) <sup>(d)</sup>	1,700	-	-	-	-	-	-	-	-
West Kern Water District Recharge Facility <sup>(e)</sup>	3,600	-	-	-	-	-	-	-	-
		5,232	80,908	87,949	28,345	1,319	1,316	1,478	1,786
<b>Additional Possible Recharge Deliveries under Appropriative Filings</b>									
North Kern WSD spreading areas via Beardsley and Calloway Canals		364	5,721	5,409	847	92	93	91	53
Rosedale Channel		68	2,593	-	-	17	42	-	-
Pioneer Project		1,126	14,182	8,774	2,339	284	231	147	147
Berrenda Mesa Pipeline		-	1,406	1,697	-	-	23	29	-
2800 Acre Recharge Facility		350	3,955	4,770	1,310	88	64	80	83
BVWSD Recharge Facility (Elk Pen, Other Ponds) <sup>(d)</sup>		113	1,700	1,700	439	29	28	29	28
West Kern Water District Recharge Facility <sup>(e)</sup>		240	3,600	3,600	929	60	59	60	59
Kern Water Bank		856	15,457	30,415	4,153	216	251	511	262
Total additional possible recharge deliveries under Appropriative Filings		3,118	48,614	56,365	10,017	786	791	947	631
Deliveries to California Aqueduct via Kern Water Bank Canal or Cross Valley Canal, after additional possible recharge deliveries		-	-	12,112	-	-	-	204	-

(a) Estimated from maximum monthly deliveries in 2006 and 1998 records for all entities. Kern Water Bank delivery based on monthly recharge after two months of operation.

(b) Intertie operated from April 29, 1998 to July 8, 1998.

(c) Total flows at Second Point include Kern River and Friant-Kern flood flows. Totals include Friant-Kern inflow of 13,922 acre-feet in May, 264 acre-feet in June and 2,786 acre-feet in July.

(d) Maximum delivery capacity estimated from BVWSD 2006 flow records.

(e) Estimated based on approximate 60 cfs delivery capacity, per KWBA.

The bottom portion of the table summarizes additional deliveries that could potentially have been made using appropriative water rights. These calculations are made by subtracting historical deliveries from estimated maximum delivery rates. This analysis shows that up to an additional 56,000 acre-feet (approximately 950 cfs), could possibly have been delivered to recharge and spreading areas, based on existing facilities capacities. This estimate is likely high, since river operations cannot be perfectly matched with available flood flows. The analysis also shows that after these additional deliveries, water could have been re-diverted by KWBA to KWB members for irrigation use. This water would be delivered to the California Aqueduct via the Cross Valley Canal or the Kern Water Bank Canal, provided that canal and aqueduct capacity is available.

The analysis presented in Table 6 does not include municipal demands. Two appropriative applications list diversions for municipal demands. NKWSD lists a direct diversion for municipal use to supply surface water to the City of Shafter, but does not indicate how much water would potentially be directly diverted for municipal use. According to the application, the City's current demand is 2,870 acre-feet/year (average daily demand of 4.0 cfs) and the City's 2025 demand is estimated to be 21,838 acre-feet/year (30 cfs average daily demand). KCWA's application lists 192 cfs for direct diversion for municipal use and KWBA's application lists 10 cfs for direct diversion for municipal use. Therefore, the total direct diversion for municipal use is estimated to be about 230 cfs using direct diversion rates for the KWBA and KCWA applications and estimated 2020 average daily use for the City of Shafter. If these diversions were made, amounts available for recharge or re-diversion would be reduced by this amount. Average potential recharge or re-diversion deliveries for the months evaluated range from 630 cfs to 950 cfs.

## 4.2 Evaluation of Flows Below Second Point

### 4.2.1 Evaluation of Flows Between Second Point and the Intertie

Flows that are delivered to the Kern River Channel at Second Point are under the control of the Buena Vista Water Storage District, which claims rights to flows delivered at Second Point. Buena Vista Water Storage District operates all diversion facilities below Second Point and uses Kern River water for irrigation and recharge within its service area. During flood control mandatory release conditions, flow not diverted to others, such as flood flows delivered to KWB facilities, or used within the District's service area, is delivered to the Intertie.

Table 7 summarizes total flows in the Kern River Channel at Second Point, flows to the Buena Vista Water Storage District Outlet Canal via the Kern River Channel, which is adjacent to the Intertie, and Kern River water delivered to the Intertie. The table is developed from Second Point records from 1988 through 2011, and shows years in which the Outlet Canal received water via the Kern River Channel. Of the five years since 1988 in which the Outlet Canal received water, water was also sent to the Intertie in three of those years (1997, 1998, and 2006). In each of these three years, all of the months in which water was delivered to the Intertie, water was also delivered to the Outlet Canal. Typically, Buena Vista Water Storage District would divert flow to the Outlet Canal for in-channel recharge first, and then divert flow to the Intertie if there is risk of flooding by sending more flow to the Outlet Canal, and to the Kern River Flood Channel for recharge. Thus, if Intertie flows are reduced or eliminated during flood mandatory release conditions, the lower Kern River Channel would remain wetted by flows delivered to the Buena Vista Water Storage District's Outlet Canal.

**Table 7. Flows at the Kern River Channel at Second Point and at the Intertie**

Year	Location	Index	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Acre Feet</b>														
1995	2nd Point	189%	-	641	3,955	3,766	5,839	5,505	978	9,917	-	-	321	1,002
	Outlet Canal		-	-	30	1,994	3,396	2,906	-	-	-	-	-	-
	Kern River to Intertie		-	-	-	-	-	-	-	-	-	-	-	-
1997	2nd Point	162%	36,670	52,712	23,023	3,039	-	-	-	-	-	-	-	-
	Outlet Canal		912	5,175	6,684	-	-	-	-	-	-	-	-	-
	Kern River to Intertie		-	1,793	-	-	-	-	-	-	-	-	-	-
1998	2nd Point	235%	887	16,381	15,941	70,814	115,392	112,011	65,798	16,187	2,225	-	8,741	2,610
	Outlet Canal		-	4,092	4,243	1,033	28,219	10,536	16,635	250	-	-	-	-
	Kern River to Intertie		-	-	-	3,118	48,615	68,478	10,017	-	-	-	-	-
2006	2nd Point	147%	4,084	-	323	22,401	101,706	62,826	7,891	722	-	-	-	-
	Outlet Canal		-	-	-	5,431	5,181	17,421	264	-	-	-	-	-
	Kern River to Intertie		-	-	-	-	60,932	12,479	-	-	-	-	-	-
2011	2nd Point	188%	6,064	871	3,322	29,753	62,613	32,754	1,787	-	-	-	-	-
	Outlet Canal		260	-	-	1,353	7,505	9,667	536	-	-	-	-	-
	Kern River to Intertie		-	-	-	-	-	-	-	-	-	-	-	-
<b>Mean cfs</b>														
1995	2nd Point	189%	-	12	64	63	95	93	16	161	-	-	5	16
	Outlet Canal		-	-	0	34	55	49	-	-	-	-	-	-
	Kern River to Intertie		-	-	-	-	-	-	-	-	-	-	-	-
1997	2nd Point	162%	596	949	374	51	-	-	-	-	-	-	-	-
	Outlet Canal		15	93	109	-	-	-	-	-	-	-	-	-
	Kern River to Intertie		-	32	-	-	-	-	-	-	-	-	-	-
1998	2nd Point	235%	14	295	259	1,190	1,877	1,882	1,070	263	37	-	147	42
	Outlet Canal		-	74	69	17	459	177	271	4	-	-	-	-
	Kern River to Intertie		-	-	-	52	791	1,151	163	-	-	-	-	-
2006	2nd Point	147%	66	-	5	376	1,654	1,056	128	12	-	-	-	-
	Outlet Canal		-	-	-	91	84	293	4	-	-	-	-	-
	Kern River to Intertie		-	-	-	-	991	210	-	-	-	-	-	-
2011	2nd Point	188%	99	16	54	500	1,018	550	29	-	-	-	-	-
	Outlet Canal		4	-	-	23	122	162	9	-	-	-	-	-
	Kern River to Intertie		-	-	-	-	-	-	-	-	-	-	-	-

#### 4.2.2 Evaluation of Flows to the Kern River Flood Channel

As described in Section 3.1, prior to the construction of the Intertie, flood flows from the Kern River were routed to the Kern River Flood Channel via Buena Vista Water Storage District's Outlet Canal. The Intertie has a flow capacity of 3,500 cfs. Analysis of historical diversions through the Intertie indicates that daily flows reported to the Intertie have been less than 3,500 cfs in all the years that the Intertie has operated. In May 1983, the maximum daily Kern River intertie flow was 3,374 cfs on May 28<sup>th</sup>, 1983. In most years, flows to the Intertie were significantly less than the Intertie diversion capacity.

Diversions to the Kern Water Bank could possibly reduce flows to the Kern River Flood Channel during a period in which available Kern River flood flow exceeds 3,500 cfs and the Kern Water Bank is maximizing recharge operations and diverting water to the California Aqueduct via the Kern Water Bank Canal. This condition would be very rare, and would not have occurred historically, based on Intertie flow records.

Under less extreme flood conditions described above, Buena Vista Water Storage District uses both the Outlet Canal and the Flood Channel for recharge operations when water is available from the Kern River. These deliveries are made under Buena Vista Water Storage District's operation of second point facilities, and would be unaffected by reductions in Intertie flows, since Buena Vista Water Storage District would maximize its use of Kern River water under its existing right before mandatory release (flood) conditions would be reached.

#### 4.3 Analysis of Potential KWB Water Deliveries based on Historical Data

An analysis was performed using the daily records for Kern River deliveries to the Intertie, along with First Point records, to estimate the delivery potential to the KWB. Using the daily records from years in which the Intertie operated, potential KWB diversions for the 1978 through 2012 period were estimated as the minimum of: 1) the flow delivered to the Intertie; 2) facilities diversion capacity; and 3) the monthly recharge rate plus re-diversion of up to 1,100 cfs to the California Aqueduct to meet irrigation deliveries.<sup>7</sup> These estimates are considered to be an upper bound of potential deliveries to the KWB of water that has historically been delivered to the Intertie. The analysis assumes that all flows that would have historically been diverted to the Intertie would be available to the KWB. The analysis also neglects changes in land use over time that would affect Intertie deliveries.

Table 8 summarizes the results of this analysis. The table summarizes years in which the Intertie operated, and provides corresponding estimates of KWB diversions, based on the daily model for 1978 through 2011. The last column of the table shows actual KWB diversions of Kern River water for 1997 and 1998.

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<sup>7</sup> 1,100 cfs re-diversion rate is based on the re-diversion to the California Aqueduct from the Kern Water Bank Canal (750 cfs) and the Cross Valley Canal via the Pioneer Canal Headworks (350 cfs) for a total of 1,100 cfs.

**Table 8. Estimated Intertie and KWBA Water Deliveries  
 (1894 through 2011 Calendar Years), AFY**

	1st Point	Intertie, Estimated	Intertie, Actual	KWB Deliveries, Estimated	KWB Deliveries, Actual
1978	1,654,000	148,000	169,000	169,000	--
1980	1,640,000	143,000	139,000	139,000	--
1982	1,271,000	18,000	12,000	12,000	--
1983	2,489,000	679,000	664,000	500,000	--
1984	822,000	0	27,000	27,000	--
1986	1,445,000	77,000	1,900	1,900	--
1997	1,182,000	0	24,000 <sup>(a)</sup>	24,000	22,187
1998	1,718,000	170,000	209,000 <sup>(a)</sup>	209,000	79,121

<sup>(a)</sup> 1997 and 1998 Intertie deliveries also include KWB deliveries of Kern River water that would have reached the Intertie if the KWB were not in place. In 1997, 22,187 AF was delivered to the KWB. In 1998, 79,121 AF was delivered to the KWB.

Since its construction, the Intertie has operated in nine years: 1978, 1980, 1982, 1983, 1984, 1986, 1997, 1998 and 2006, typically when First Point natural flow is greater than about 1.2 million acre-feet per year. The year 2006 was excluded from the analysis, because flood releases were made due to reservoir level restrictions at Lake Isabella, to address dam safety concerns. Of the years listed above, 1983 was an extremely wet year, with the April through July runoff the third highest in the 90-year record (1916 was highest, 1906 was second highest).

A review of First Point natural flow and Intertie flow records shows that the Intertie typically operates once First Point cumulative flow for the water year reaches about 500,000 acre-feet (AF) (the capacity of Lake Isabella is 570,000 AF). In most years in which the Intertie operated, the Intertie generally flowed over a three to five month period. In 1983, due to the extremely wet conditions, the Intertie operated continuously over twelve months, from March 1983 through February 1984.

The KWBA water right application includes an annual diversion amount of 500,000 AFY, based on the KWB facility recharge capacity over a twelve month period. As shown on Table 8, up to 500,000 AFY could have been diverted in 1983 through a combination of diversion to recharge ponds for storage and direct diversions for irrigation deliveries. Figure 7 shows First Point natural flow, Intertie flow and estimated KWB diversions by month, from October 1982 through December 1983. The Intertie operated for eleven months in the calendar year, with a small amount of flow in January, and substantial flow starting in March, with flow continuing through December. In January through May, all Intertie water could be delivered to the KWB. In June and July, Intertie flow exceeds the combined capacity of recharge facilities and facilities to re-divert flow to the California Aqueduct. In the late summer and fall months, all Intertie flow can be diverted until the 500,000 acre-foot/year annual diversion rate is reached.



#### 4.4 Public Trust Analysis

The SWRCB will take into account the amounts of water needed to remain in the Kern River for protection of beneficial uses, including instream beneficial uses such as the preservation of fish and wildlife habitat. The Kern River below the KWB's points of diversion supports both aquatic and upland riparian habitats. Before European settlement the Kern River flowed to Kern and Buena Vista Lakes and extensive wetland complexes. During wet periods, the lakes overflowed to Tulare Lake to the north, which itself overflowed into the San Joaquin River watershed. Under present day conditions, water users divert a majority of Kern River flow downstream from its entrance to the valley, northeast of Bakersfield, and as a result the Kern River Channel through the KWBA property is typically dry except during very wet years. The reaches of the Kern River below the KWB's points of diversion support only scattered patches or isolated individual riparian trees and shrubs. Flood flows under predicted project conditions will be reduced from flood flows occurring during baseline conditions. However, channel flows down the Kern River within the study area will be maintained to continue deliveries to the Buena Vista Water Storage District.

Implementation of the proposed project would in some years provide substantial amounts of additional water to recharge basins in the study area, which would be beneficial for large numbers of water fowl and shore birds, and other species of birds and wildlife. Proposed project operations would in some years reduce peak flows in the Kern River and associated riparian areas within the study area. Downstream of the primary diversion point 10, habitat conditions are drier and potentially suitable habitat for terrestrial species such as the Buena Vista Lake Shrew becomes more fragmented. Based on an evaluation of project impacts on riparian habitat, changes in flood flows that would result from the project are not expected to cause a significant adverse effect on the riparian vegetation (particularly the cover of willow and cottonwood trees) along the Kern River Channel because there is currently little to no riparian recruitment and existing vegetation is likely dependent on groundwater rather than flood flows.

The proposed project is not expected to have an effect on wildlife habitat (including designated critical habitat for Buena Vista Lake Shrew) downstream from the Kern River Channel because flows to the Outlet Canal and Kern River Flood Channel are almost entirely dependent on water deliveries made by the Buena Vista Water Storage District, which would not be affected by the project. As described in Section 4.2.2, excess flood flows not diverted by other Kern River users are currently delivered to the Intertie. Future flood flows would only be diverted to the Outlet Canal when the Intertie exceeds its flow capacity of 3,500 cfs, which would be extremely rare. Historically, the Intertie has never exceeded 3,374 cfs. Therefore, under the proposed project, a reduction in flood flows to the Outlet Canal and Kern River Flood Channel would be extremely rare and would only occur in an abnormally wet year when water would be abundant everywhere. Under these conditions, water availability would not be a limiting factor for downstream habitat. Based on existing riparian and instream habitat conditions, as well as current water availability within and downstream from the study area, changes in flood flows are not expected to result in a substantial adverse effect on potential habitats downstream of the points of diversion.

#### 4.5 Public Interest Analysis

Issuing a water right permit to KWBA pursuant to application 31676 would best develop, conserve and utilize in the public interest the water resources of the Kern River. KWBA's member units have historically relied on Kern River water that would otherwise have flowed into the Intertie. The Kern Water Bank began operation in 1995. Since that time, whenever the Kern River Watermaster has implemented the Flood Policy, KWBA has diverted water that otherwise would have been directed into the Intertie, percolated it into groundwater storage through the KWB facilities, and made the water available to its member units for irrigation of valuable seasonal and permanent crops and to help meet the needs of Kern County residents for drinking water. The continued use of this local water supply by permit to meet future needs in and around Kern County is increasingly important as imported supplies from northern California remain uncertain.

Kern River water diverted into the KWB plays a critical role in ensuring the availability of habitat for common and special-status wildlife species along the river and upland acreage. If application 31676 is approved, the KWBA will be able to continue diverting the water onto 7,000 acres of recharge ponds that serve, by turns, as aquatic, semi-aquatic, and riparian habitat. In years when these facilities are flooded, KWBA helps facilitate and sustain additional wetland habitat, which is important for the continued viability and recovery of various local species. Waterfowl in particular would benefit from use of additional water in the facilities.

By diverting water into the recharge ponds instead of the allowing it to flow into the Intertie, the KWB also helps sustain species that frequent the additional 4,227 of interconnected acres that KWBA maintains for conservation and the preservation of sensitive habitat for listed plants pursuant to the Kern Water Bank Habitat Conservation Plan/Natural Community Conservation Plan (HCP). Twenty special-status wildlife species have the potential to occur on KWBA's lands, along with numerous rare and listed plant species. These lands, supplemented by application of local water when available, not only aid in species survival, they are also a vital resource for public education, with thousands of members of the public having toured the area since implementation of the HCP.



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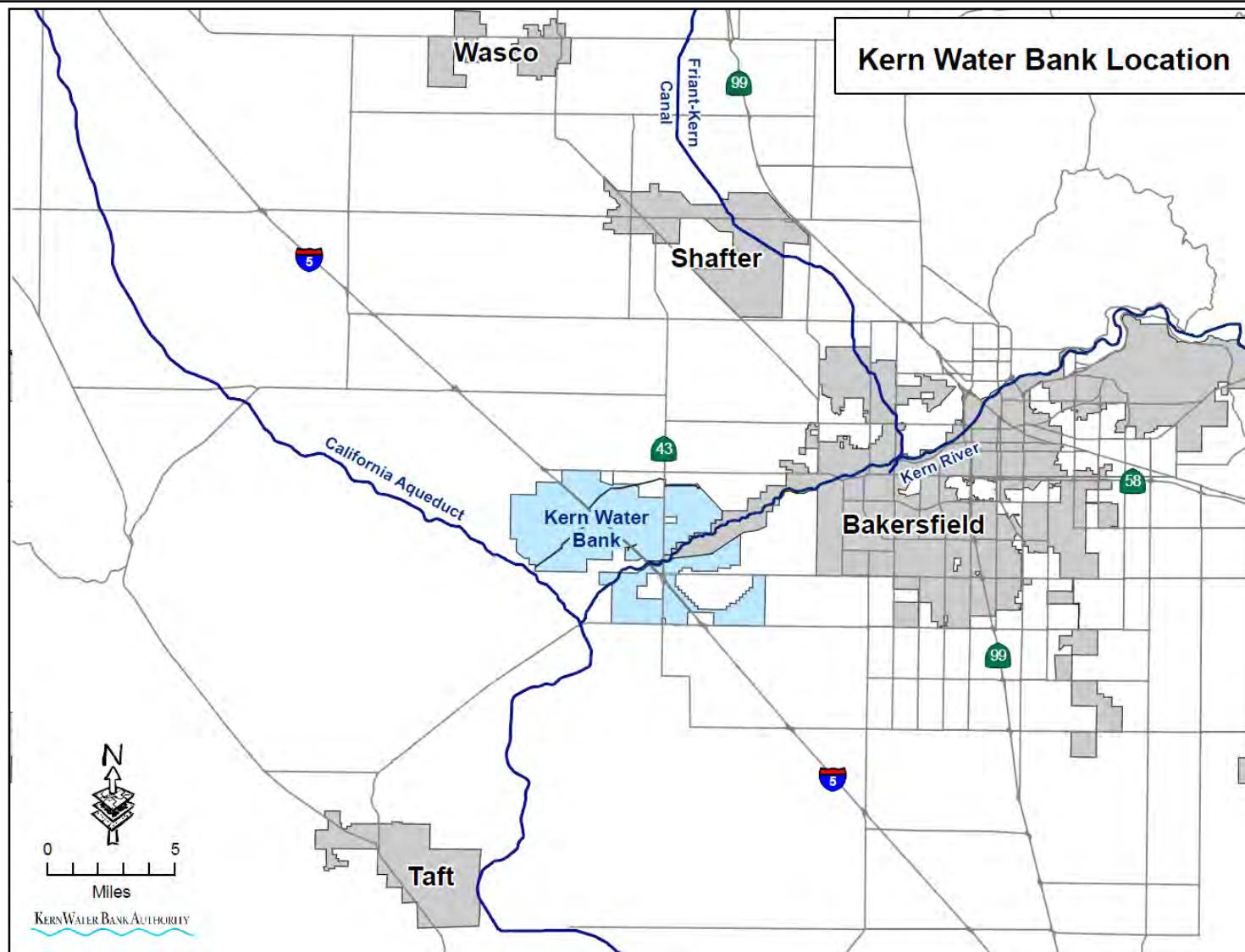
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**Kern Water Bank Location**

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Notes:  
1. Source: Kern Water Bank Authority.

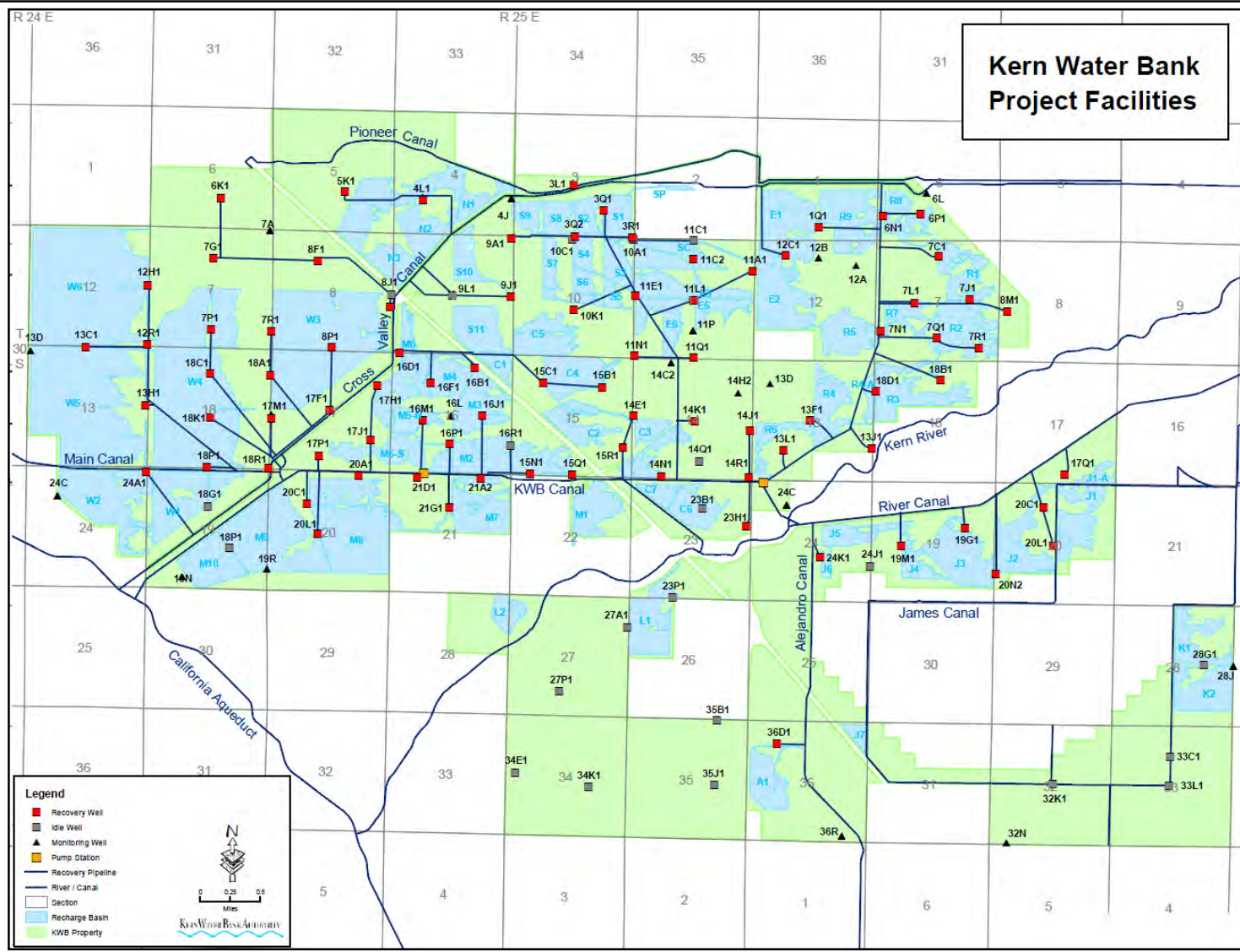
Not to Scale

**FIGURE 1**

**Kern Water Bank Authority  
Water Availability Analysis**

**KERN WATER BANK LOCATION**





# Kern Water Bank Project Facilities

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Notes:  
 1. Source: Kern Water Bank Authority.

### FIGURE 2

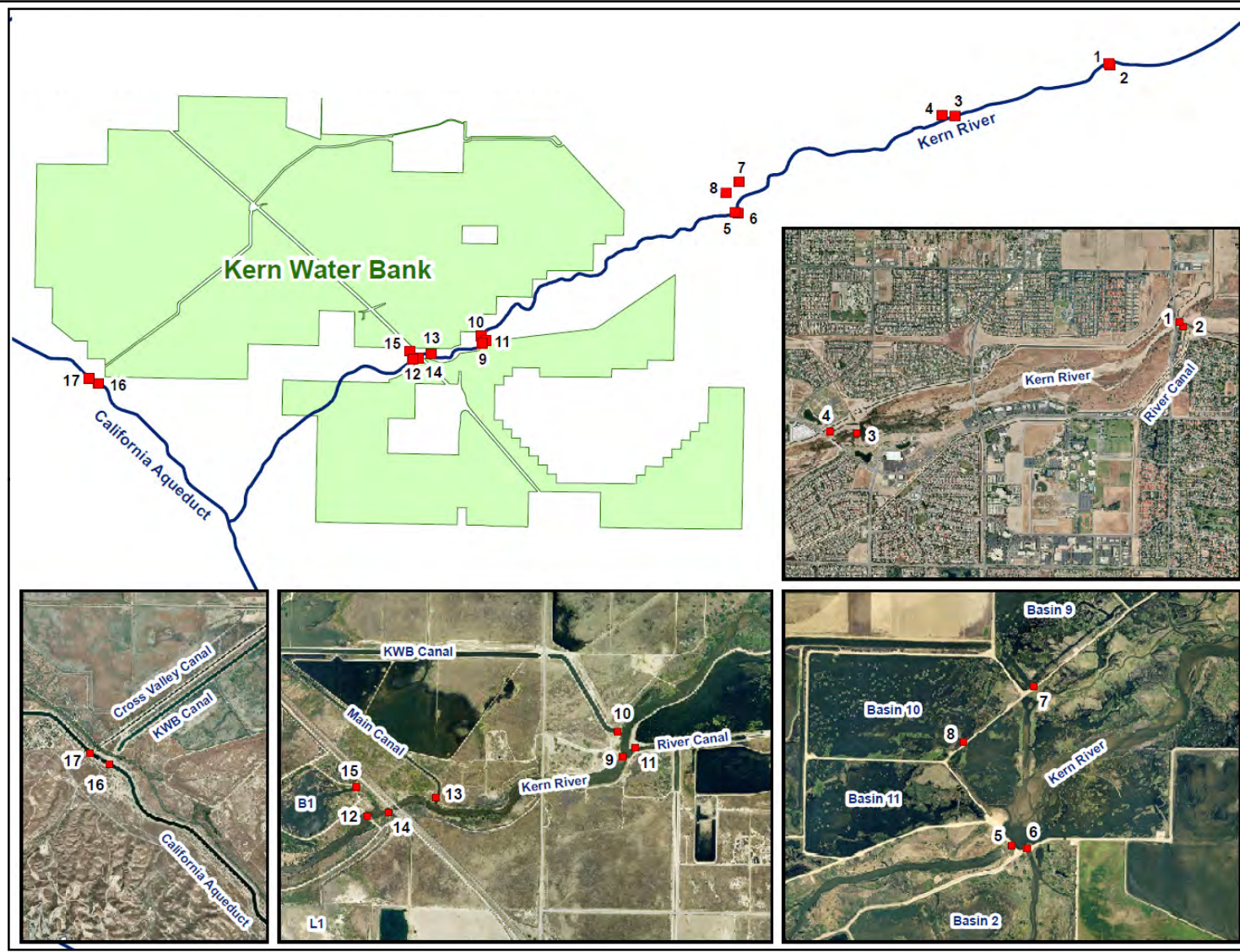


**Kern Water Bank Authority**  
**Water Availability Analysis**

## KERN WATER BANK FACILITIES







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Notes:  
 1. Source: Kern Water Bank Authority.

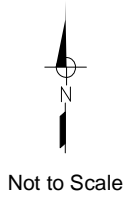
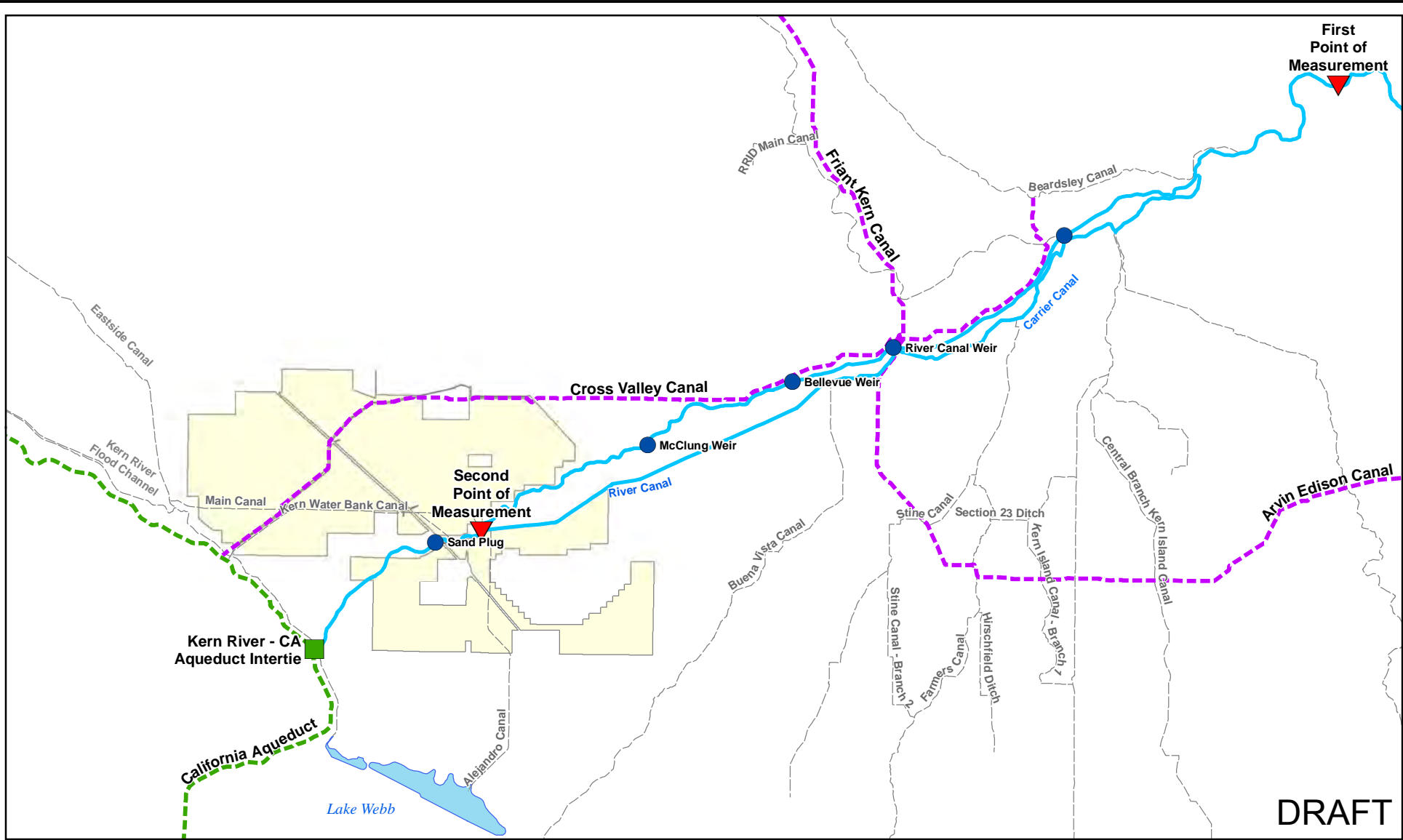


FIGURE 3

**Kern Water Bank Authority  
 Water Availability Analysis**

**KERN WATER BANK  
 POINTS OF DIVERSION**

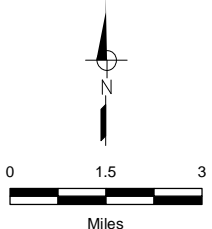




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**LEGEND**

- Point of Measurement
- River Weir
- Federal Canal
- State Canal
- Local Distribution Canal
- Kern River Facilities
- Kern Water Bank



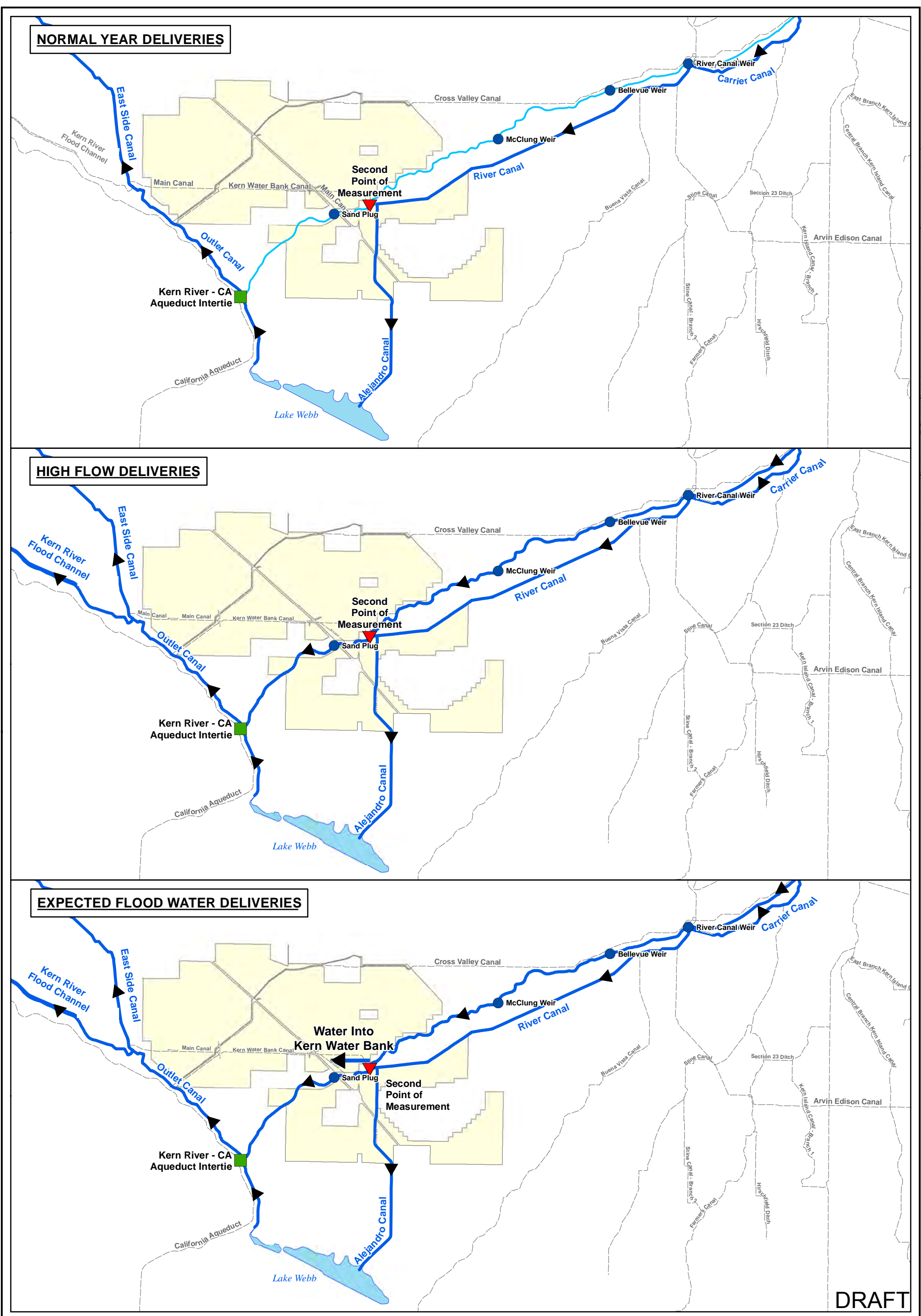
**FIGURE 4**

**Kern Water Bank Authority  
Water Availability Analysis**

**KERN RIVER  
KEY FACILITIES**



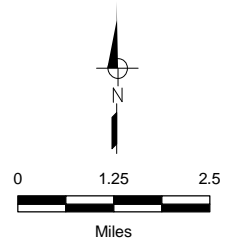




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**LEGEND**

- Kern River - California Aqueduct Intertie
- ▼ Point of Measurement
- River Weir
- Flowing Canal or Channel
- Kern River
- Distribution Canal



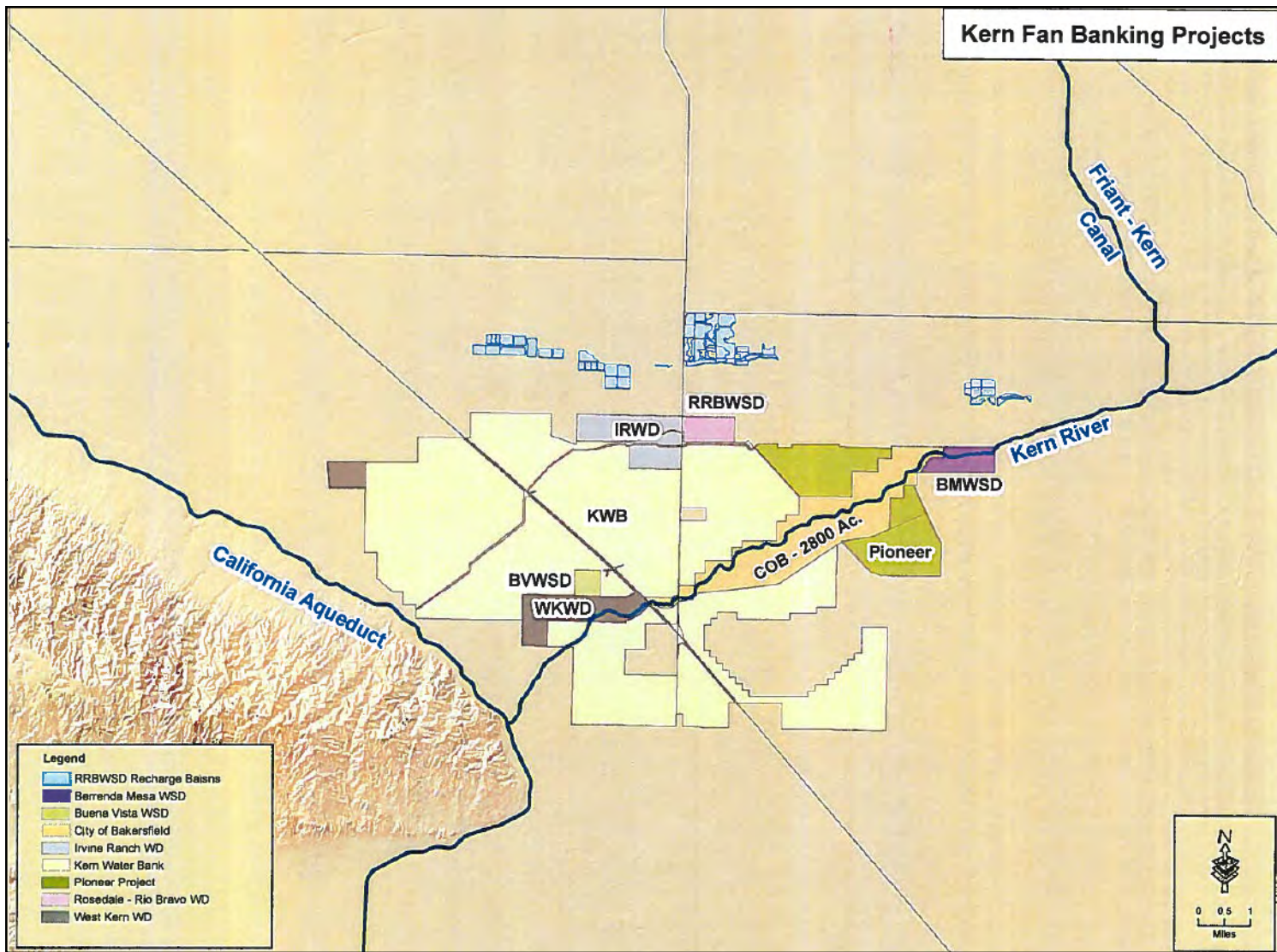
**FIGURE 5**

**Kern Water Bank Authority  
Water Availability Analysis**

**FLOW ROUTING UNDER VARIOUS  
HYDROLOGIC CONDITIONS**



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Notes:  
 1. Source: Kern Water Bank Authority.

Not to Scale

FIGURE 6

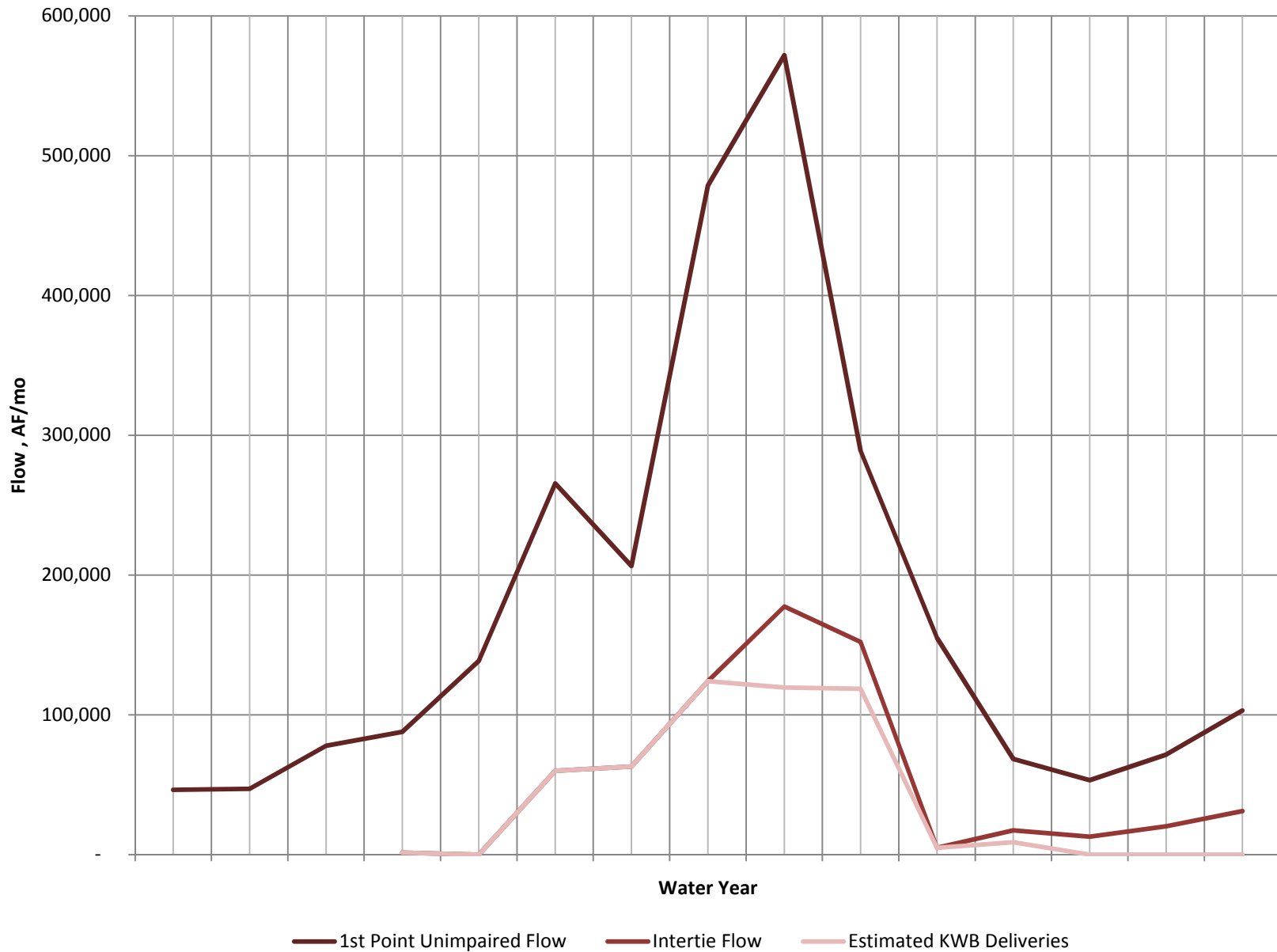
**Kern Water Bank Authority  
 Water Availability Analysis**

**KERN FAN BANKING PROJECTS**





Figure 7. First Point, Intertie and Estimated KWBA Deliveries, Oct 1982 - Dec 1983



**APPENDIX M**  
**CROSS VALLEY CANAL / KERN WATER BANK OPERATING GUIDELINES**  
**DURING SHALLOW GROUNDWATER CONDITIONS**

# **CROSS VALLEY CANAL / KERN WATER BANK OPERATING GUIDELINES DURING SHALLOW GROUNDWATER CONDITIONS**

## **1 INTRODUCTION**

The Cross Valley Canal (CVC) and the Kern Water Bank (KWB), which coexist along 7 ¼ miles in the southwestern San Joaquin Valley, contribute significantly to water supply management and conservation in Kern County. The Kern County Water Agency (KCWA) and the KWB Authority (KWBA) believe it is in the best interests of both projects to develop guidelines that will allow the projects to operate to the fullest extent possible while at the same time being protective of facilities.

It should be noted that several proactive measures have already been undertaken by the CVC and KWBA. These include:

- Installing a shallow groundwater monitoring network and conducting regular monitoring and evaluation of shallow groundwater conditions;
- Raising the low-level cut-off float switch and installing a secondary low-level cut-off float switch at the forebay of CVC Pumping Plant No. 1;
- Increasing the range of the forebay level gauge for CVC Pumping Plant No. 1;
- Installing a low-level cut-off switch at the KWBA's Pool 1 Pump turnout;
- Conducting frequent inspections of the CVC's concrete liner for voids, displacement, etc. and making repairs as needed and as conditions permit;
- Expanding real-time forebay level monitoring and trending analyses capabilities;
- Increasing recharge pond setbacks
- Reducing recharge activities in the vicinity of the CVC

The implementation of the following guidelines should further these initial efforts to protect facilities and, at the same time, allow for project flexibility. It is expected that, as time goes on and additional information is developed, modifications to these operating guidelines may be made.

## **2 GROUNDWATER MONITORING PROGRAM**

The groundwater monitoring program will include the installation of additional piezometers along the CVC in areas where the CVC lining is below grade and the formalization of a monitoring and evaluation plan. Each of these aspects of the program is described below.

### **2.1 Piezometer Installation**

Several piezometers have already been installed to monitor groundwater conditions near the CVC. Approximately 32 additional piezometers will be installed at the locations shown in Figure 1 to supplement this monitoring network. Three of the piezometers will be installed to a depth of 50 feet; the remaining 29 will be installed to a depth of 20 feet. The piezometers will be

# **CROSS VALLEY CANAL / KERN WATER BANK OPERATIONAL GUIDELINES**

**October 16, 2000**

**Page 2 of 3**

constructed with 2- inch diameter PVC to industry standard specifications. A licensed surveyor will determine the location and elevation of each. All direct costs for the installation and monitoring of the piezometers, as well as the evaluation of the resulting data shall be shared equally between the CVC and the KWBA

## **2.2 Groundwater Monitoring Frequency**

The frequency of groundwater monitoring will vary as groundwater levels change. Unless depth to groundwater is known to exceed 75 feet, the monitoring schedule will be as follows:

- During periods of adjacent recharge:
  - Groundwater > 20 feet – monitor monthly
  - Groundwater < 20 feet – monitor weekly
  
- During periods with no recharge – monitor weekly until depth to groundwater is > 20 feet, then monitor semi-annually

## **2.3 Evaluation of Groundwater Conditions**

CVC and KWBA staff will jointly evaluate groundwater conditions and, as necessary, determine appropriate modifications to operations as described in these guidelines. These evaluations will be conducted according to the following schedule:

- During periods of adjacent recharge:
  - Groundwater < 50 feet – evaluate monthly
  - Groundwater < 20 feet – evaluate weekly, prepare gradient maps weekly, prepare written recommendations regarding modifications to operations and submit to KCWA/KWBA
  - Groundwater within 5 feet of design operational levels of the CVC – implement written recommendations regarding modifications to operations
  
- During periods with no recharge:
  - Groundwater < 20 feet – evaluate weekly, prepare gradient maps monthly
  - Groundwater > 20 feet – evaluate semiannually
  - Groundwater > 50 feet – no evaluations

The evaluations are expected to consist of brief teleconferences between CVC and KWBA staff unless depth to groundwater is 20 feet of ground surface or less. Under these conditions and when recharge is occurring, written evaluations and recommendations will be prepared weekly as a joint effort by CVC and KWBA staff.

# **CROSS VALLEY CANAL / KERN WATER BANK OPERATIONAL GUIDELINES**

**October 16, 2000**

**Page 3 of 3**

## **3 GROUNDWATER RECHARGE MANAGEMENT**

The KWBA will manage recharge operations to help ensure that groundwater gradient is away from the CVC during shallow groundwater conditions. Should groundwater conditions develop that might induce piping behind the CVC's liner, the KWBA will minimize recharge adjacent to the CVC either by reducing inflow to adjacent ponds or increasing the setbacks of adjacent ponds<sup>1</sup>. The goal of these actions will be to prevent flow into the CVC.

It is important to note that controlling groundwater levels in the vicinity of the CVC cannot be entirely achieved by managing recharge. At times, the canal has been operated at levels above the liner, thereby recharging groundwater. As a result, groundwater elevations near the CVC are maintained at or above the level of the lining. Irrespective of the foregoing, the protective measures described above will be undertaken.

## **4 CVC OPERATIONS MANAGEMENT**

The management of CVC operations will also play an important role in preventing future lining damage. During periods where shallow groundwater conditions exist, the CVC will be operated in such a manner as to maintain higher than normal pool levels, unless prohibited by delivery demands. Also, additional low-level cut-off float switches, adjustment of low-level alarms and improved monitoring of CVC forebay levels have been incorporated into CVC operations during periods where shallow groundwater conditions exist.

In addition to the above, regular inspections of the CVC's concrete liner will continue to be conducted, and any observed voids will be repaired promptly.

## **5 CONCLUSION**

CVC and KWBA staff have developed these operating guidelines to maximize the flexibility of their respective projects while preventing structural damage to facilities. Both projects will work together to ensure that the goals of the guidelines are met. It is expected that these guidelines may be modified in response to structural changes to the CVC (e.g. liner modifications) and as more knowledge is gained regarding the behavior of the shallow aquifer.

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<sup>1</sup> The current setback is 20:1. CVC and KWBA staff have considered engaging a consultant to determine a "safe" setback. However, given the varying soil conditions present on the KWB and CVC properties, determining a single "safe" setback would be very difficult to achieve.