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August 25, 2009

CA Dept. of Fish and Game New Ranch EIS/EIR Comments c/o Dennis Bedford 4949 Viewridge Ave. San Diego, CA 92123 Fax: (858) 467-4203

RE: NEWHALL RANCH RESOURCE MANAGEMENT AND DEVELOPMENT PLAN (RMDP) AND THE SPINEFLOWER CONSERVATION PLAN (SCP) EIS/EIR

Dear Mr. Bedford,

The Planning and Conservation League (PCL) appreciates the extension of the comment period to allow greater public participation in the review of the Newhall Ranch Resource Management and Development Plan (RMDP) and the Spineflower Conservation Plan (SCP). We have concerns about the adequacy of the current and future reliability of presumed water supplies and the assessment of climate change's impacts to the proposed water supply for the RMDP, SCP and the Specific Project Plan.

RELIABILITY OF WATER SUPPLY

The EIS/ EIR claims the proposed 12,000 acre development with 20,885 homes will have more than enough water available without jeopardizing supplies to current residents of the area. The EIS/EIR states, "Imported SWP supplies from CLWA are not needed or relied upon to serve the Specific Plan's potable water demands. Instead, the Specific Plan will use local groundwater, Nickel water, and recycled water from local WRPs to meet its potable and non-potable demands."¹ The EIS/EIR continues to claim that the non-adjudicated aquifer is sustainable for 25 years. The water supply assessment (WSA) is not accurate and grossly underestimates the water demand of the Specific Plan. The current WSA is inconsistent with recent court decisions and relies heavily on unverified water supplies, water projects and reports that are under legal challenge.

Groundwater

The EIS/ EIR does not actually analyze the reliability of local groundwater supply for the life of the project, especially as the region's existing residents are becoming increasingly more dependent on groundwater. The history of this basin's pumping record is not provided in the EIS/EIR. Specifically the amount of water annually pumped out of the specific basin for Newhall agricultural use and by Castaic Lake Water Agency (CLWA). As the existing communities are becoming dependant on this aquifer, the Specific Plan will harden water demand for nearly 21,000 new homes; when previously in times of drought the land could be fallowed. The transition from agricultural lands to a permanent landscape must



RMDP – SCP EIS/EIR, page 4.3-14

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be analyzed in this document. The question of how this development impacts the existing communities, if the local groundwater supplies become unreliable and/ or contaminated, must be answered in this document.

The years cited in the EIS/EIR are all wet years and all of the proceeding years have been dry years; with court mandated pumping restrictions from the Delta. How have the existing communities made up for the decrease in imported water? How would have that changed with an additional 21,000 new homes relying on the same source of water? These questions must be answered as part of the water supply assessment.

State Water Project (SWP)

"The analysis shows that annual SWP deliveries would decrease virtually every year in the future (93% of future years)." Lester Snow, Director of DWR^2

Regionally State Water Project (SWP) water is not as reliable as it has been in previous years. There are more restrictions on the timing and amount of water pumped south of the San Joaquin-Sacramento Delta (Delta). SWP water deliveries from the Delta remain in jeopardy with the continued requirements from the federal biological opinions requiring decreases in water pumping from the Delta in order to limit danger to endangered species and to meet required Delta flows. No new development should be considered until the contracts and rights for existing users of the Delta are met.

The EIS/EIR bases it water supply assessment (WSA) on wet years prior to the current dry conditions and court mandated pumping restrictions. In DWR's *Drought Reliability Report*, DWR writes:

"Standing where we are now in 2007 it would be a reasonable conclusion that southwestern North America - and the subtropics in general - will have a drier climate in the future and that transition may already be underway. Or to put it another way, though wet years will still occur, on average they will be drier than prior wet years while the dry years will be drier than prior dry years. (emphasis added) The two decade period of overall wet conditions from 1976 to 1998 is likely to never be repeated as the region faces an intensifying aridity that will simply get worse as the century progresses (barring actual stabilization and then reduction of atmospheric GHGs)."³

The EIS/EIR WSA must analyze on a regional basis how the existing populace is compensating to the
decreased "Table A" allocation and how the regional supplies will be impacted by the Specific Plan.
Alternatives 2 - 7 all have the same potable water demand of 8,645 AFY, of that 7,038 AFY is coming
from the non-adjudicated basin. Considering the increased local pumping and the reliance on local water
recycling plants, where will the Specific Plan get water? This needs to be analyzed in the EIS/EIR. The
41,000AFY Table A amount is not reliable legally or practically considering the limitations of Delta
exports.⁴10

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² Dale Yurong, "Dwindling Water Supply," <u>http://abclocal.go.com/kfsn/story?section=news/local&id=5930299</u> Feb. 01, 2008

³ The California Department of Water Resources, Drought Reliability Report 2008, April 2008, pg 70

⁴ DWR, Monterey EIR Appendix E

Recycled Water

According to the data provided, the capacity for the amount of recycled water referenced does not exist. For the reasons mentioned above, CLWA and all of the other retailed water purveyors in the region are transitioning from imported water to regional self sufficient resources such as recycled water. The EIS/EIR lists the current water supply as 1,700 AFY⁵ and claims that 3,000 AFY of recycled water will be available for non-potable use of the Specific Plan. However, no contract or option exists between the Sanitation Districts and the owners of Newhall Ranch for the purchase of the recycled water. Currently the water and the capacity to produce the 3,000 AFY recycled water does not exist. The EIS/EIR must provide documentation proving the availability of the recycled water for the Specific Plan, as well as an assessment of the impact to the existing communities as their demand for recycled water increases as imported and groundwater supplies become less reliable.

Nickels Water Transfer

Alternatives 2 – 7 all rely on a 1,607 AFY water transfer from Nickels family in Kern county to Newhall 13 Ranch. The EIS/EIR claims that the Environmental Document exists for the water transfer, however the reference cannot be found in the appendix to verify that the transfer is certified. The EIS/EIR does not describe how the water will be transferred to the Newhall Specific Plan. If the water is to be allocated via a water "wheeling" agreement, it should be included in the EIS/EIR with verification from the California Department of Water Resources (DWR). Currently DWR does not allow the "wheeling" of private water in the SWP aqueduct, hence questioning how and if the water will be able reach the Specific Plan. Until the certifications can be provided, the Nickels family water transfer is speculative and should not be considered a reliable source of water.

Well Contamination and Water Quality Issues

In addition to groundwater, SWP, and Nickels water being unreliable, water quality is also in jeopardy. According to the State Water Resources Control Board, over one third of California's public drinking wells (8,000+) have been shut down since 1984 – in most cases due to contamination. Castaic Lake Water Agency's 2000 Urban Water Management Plan was invalidated by the court specifically for its failure to 16 adequately address perchlorate problems. Despite this decision, the EIS/EIR summarily relies on speculation from Valencia Water Company that it will do a sufficient job in the future of containing perchlorate contamination in the alluvial aquifer and elsewhere. Given this clear direction from the court, an adequate water supply assessment must scrutinize the lead water agency's assurances before accepting 17 its supply guarantees without validation.

Misrepresentation of Proposed Legislation and Drought Safeguards

In an attempt to prove that the state is making strides to protect water resources and create "new supply" the EIS/EIR cites recent actions taken by Governor Schwarzenegger to help mitigate the impact of

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⁵ RMDP-SCP EIS/EIR, page 4.3 - 31

drought in California. The first action cited in this section is the Governor's "20 X 2020" initiative. This initiative asks that water agencies implement conservation programs to reduce statewide average percapita water use by 20 % by the year 2020. Currently this is not a required program and there is no mechanism for enforcement. The second action cited is DWR's establishment of the Drought Water Bank. Last year DWR was only able to grant 5% of the requested water transfers. Currently the Drought Water Bank is a 2-yr program and outside of the scope of the Specific Plan.

Lastly, the EIS/EIR cites the Governor's request that the Legislature craft a comprehensive plan to address California's water needs in the form of a water bond. The bond package referenced in the document is no longer being discussed.⁶ Proposed legislation should not be used as a justifiable means to claim water supply reliability. Even if passed, the construction of the new infrastructure is outside of the scope of this project and is proven that it will not increase water supply. The "20 X 2020" and the Drought water Bank are also outside of the scope of this process. Therefore any attempt to assess the future reliability of the water based on this information is purely speculative and does not hold any weight.

CLWA Unverified Water Supply and Environmental Certification

As you are probably aware, we have opposed this project for some time due to issues surrounding the 41,000 AF "Monterey" water transfer.

The EIS/EIR relies centrally on a legally deficient SB 610 Water Supply Assessment (WSA) from Newhall County Water District. This proposal relies on highly uncertain "paper" water amounts that may not be available from the State Water Project, including a controversial, non-final and legally contested Monterey Amendments-based transfer of 41,000 acre feet of water allocation amounts from the Kern County Water Agency to the Castaic Lake Water Agency. The EIS/EIR fails to establish the reliability of water from this contested transfer to support final approval of this project, and fails to identify and analyze reliable water to support the project in its absence.

The EIS/EIR falsely represents the transfer as contractually complete. The Monterey Settlement Agreement, to which Castaic Lake Water Agency is a signatory, expressly excludes that transfer from its list of "final" transfers, and makes clear that this transfer is still subject to DWR's statewide programmatic review and decision in its still-forthcoming "Monterey Plus" review. This Agreement precludes reliance on the 41,000 AF transfer and on projects approved after March 26, 2001 until the new Monterey agreement EIR is completed.

The EIS/EIR relies heavily on very problematic assumptions about the availability of imported State Water Project (SWP) supplies to support its conclusion that there is a substantial "surplus" of local water. It lists, among other sources, "flexible storage" and water stored in Semitropic and through the Rosedale-Rio Bravo program. It does not discount, or even really discuss, the prospect that water from the latter categories may be from unstable sources that cannot really support permanent development, including "interruptible" Article 21 water. The EIS/ EIR doesn't disclose enough about the source of imported water for the reader to ascertain whether any of it is reliably available. Finally, to the extent that these

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⁶ RMDP-SCP EIS/EIR, page 4.3-32, 4.3-74

sources rely upon the definitions and operational rules established in the Monterey Amendments, those Amendments remain non-final and subject to the outcome of DWR's still-pending "Monterey Plus" review.

CLIMATE CHANGE

The EIS/EIR does not accurately incorporate information regarding the impacts of climate change on the availability of water for the project. The EIS/EIR fails to adequately analyze the Specific Plan's impacts to climate change that would result from the release of greenhouse gas emissions during the construction, long-term implementation and treatment of water supplies for the Specific Plan and CLWA region.

PCL is concerned that the EIS/EIR significantly understates the substantial direct and cumulative contribution that the Specific Plan, the largest single development proposals in state's history, will have on California's greenhouse gas emissions. The cumulative climate impact resulting from the construction of nearly 21,000 units, the delivery and service of water to those units and the transportation impacts from both the permanent and temporary residents of the Newhall Ranch development will create an enormous impediment to California's 2020 targets for established greenhouse gas reduction, codified by AB 32. Given this new state objective, initiated by the administration and legislature, PCL urges that a revised EIS/EIR must consider climate change mitigation measures for Specific Plan in all, but not limited to, the following sectors: water services, energy demands, transportation infrastructure, building technology, habitat encroachment and flood control.

WATER NEUTRAL DEVELOPMENT

The EIS/ EIR should, but does not consider project alternatives that would reduce the impacts of climate change and demand on California's water resources. The EIS/EIR should but does not include an 26 alternative for 100% water neutrality in the design of the Specific Plan and a mitigation program within CLWA jurisdiction. The mitigation program would offset the new demand from the development to achieve net 100% water neutrality of the Specific Plan in its development area. Water neutral development should be considered as an alternative or mitigation measure to the Specific Plan.

CLOSING REMARKS

As one of the largest proposed developments in California's history, this EIS/EIR will establish statewide precedent for similar sized developments, their water supply assessments and adherence to AB 32. We urge the California Department of Fish and Game (DFG) request a new water supply assessment before consider moving the proposed project forward. Decision makers and the public must have access to accurate, thorough information, including the reliability of water sources, to allow for thoughtful consideration of the proposed project and reasonable project alternatives. As currently written in is not a sustainable development and sets bad precedent for development in California. PCL requests 28 consideration of our comments and strongly urges DFG to reassess the impacts of the proposed Newhall Ranch Development.

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Thank you,

hambers

Evon Parvaneh Chambers Water Policy & Planning Analyst Planning and Conservation League Sacramento, CA 95814 echambers@pcl.org 916.313.4509

Cc: Aaron O. Allen, U.S. Army Corps of Engineers, Sent via fax (805) 585-2154

From:"Evon Chambers" <echambers@pcl.org>To:NEWHALLRANCH@dfg.ca.govDate:Tue, Aug 25, 2009 4:28 PM

Hello Mr. Bedford,

Please see PCL's comments that are attached to this e-mail. I also sent over our comments via fax.

Thank you,

Evon Parvaneh Chambers

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-----Original Message-----From: Evon Chambers [mailto:echambers@pcl.org] Sent: Tuesday, August 25, 2009 4:08 PM To: Allen, Aaron O SPL Subject:

Hello Mr. Allen,

Please see PCL's comments that are attached to this e-mail. I also sent over our comments via fax.

Thank you,

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E. STUDY OF TRANSFER, DEVELOPMENT, AND OPERATION OF THE KERN WATER BANK

Study of the Transfer, Development, and Operation of the Kern Water Bank

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Introduction

A. Overview of KFE Property

In the early 1980s, the Department began exploring the feasibility of developing a State Water Project (SWP) groundwater storage facility in Kern County, which it called the Kern Water Bank (KWB). As envisioned, the KWB would consist of a series of "elements," which would be geographically separate projects that would be operationally integrated. The largest of these elements, the Kern Fan Element (KFE), was to be developed first, followed by a number of local elements developed with several water districts in Kern County. After evaluating the feasibility of the KFE, in 1988, the Department purchased approximately 20,000 acres of land in the Kern Fan area from Tenneco West, Inc.

However, the Department encountered many legal, institutional, and political impediments to implementation of a groundwater storage facility on the KFE property. SWP contractors also expressed concerns regarding their ongoing costs for feasibility studies and ownership of the KFE property given their assessment of the likelihood of realizing a functional groundwater storage program. In 1993, uncertainties regarding the proposed groundwater storage facility ultimately convinced the Department to halt feasibility studies and design work on the project.¹ The uncertainties included proposed revisions of Delta water quality standards and measures to protect threatened and endangered species, which affected the SWP's ability to pump water from the Delta for recharge on the KFE property. Expected changes in arsenic standards for drinking water also raised questions regarding the ability of the project to meet water quality standards for pump-in to the California Aqueduct.ⁱⁱ In addition to environmental and water quality issues, the Department and KCWA could not reach agreement on measures to comply with Water Code Section 11258, which required approval of local agencies for development of the groundwater banks. Later, the Department concluded that these constraints on Delta pumping made development of an SWP groundwater storage facility in the Kern Fan Element infeasible.ⁱⁱⁱ In 1994, the potential of the Department's proposed KFE for SWP groundwater storage remained unrealized.

In 1994, the Department and representatives of the agricultural and urban contractors negotiated a set of principles known as the Monterey Agreement. As part of these principles, the parties agreed to the Department's sale or lease of the KFE property to designated SWP agricultural contractors, in exchange for the permanent retirement of 45,000 acre-feet (AF) of these contractors' Table A amount. The Monterey Amendment, which was the amendment to the SWP contractors' long-term water supply contracts that implemented the Monterey Agreement principles, provided for the State's transfer of ownership of the KFE property to Kern County Water Agency (KCWA), and then to the Kern Water Bank Authority (KWBA), for local agency development and use as a groundwater bank.

B. Purpose

The purpose of this report is to provide an independent study by the Department of the KWB, as required under the May 5, 2003 Settlement Agreement between the Planning and Conservation

League et al., the Department, and SWP contractors. Section III (F) of the Settlement Agreement requires the Department to prepare an independent study, and exercise "its judgment regarding the impacts related to the transfer, development, and operation of the KWB in light of the Kern Environmental Permits." The agreement also requires that the study "identify SWP and any non-SWP sources of water deliveries to KWB." To evaluate the impacts, the Department used the KFE property conditions and facilities that existed before the Department conveyed the KFE property to KCWA as the baseline for the evaluation.

II. Method

Information from three sources was used to evaluate the transfer, development, and operation of the KWB by the Kern Water Bank Authority (KWBA). The first source was the Annual Compliance reports for 1999 through 2005. These reports are prepared each year by the KWBA and submitted to the California Department of Fish and Game (CDFG) and the U.S. Fish and Wildlife Service (USFWS), as required under their environmental permits, and were used in this study to determine what facilities were constructed, how the project is operated (recharge and extraction operation), identify vegetation, terrestrial and aquatic wildlife use of the site, and identify incidences of "take" in light of the Kern Environmental Permits. The second source was staff from KCWA and KWBA, who were consulted to provide additional information on recharge and recovery activities of SWP and non-SWP water at the KWB, and to evaluate where water could have been banked in Kern County in the absence of the KWB. The third source was personnel from CDFG and USFWS, who were contacted to determine if the resources agencies had any concerns with the development or operation of the KWB in light of the KWB environmental permits.

III. Existing Conditions

The KFE property ¹ is located in Kern County, about 12 miles southwest of the City of Bakersfield (Figure 1). It consists of approximately 20,000 acres of gently sloping land overlying the Kern River Alluvial Fan. Surrounding lands are used primarily for agriculture, habitat preserves, or other water banking programs. Prior to the development of the KWB, most of the land was used for agriculture, and irrigation water was provided by surface water deliveries by the former James-Pioneer Improvement District of North Kern Water District, and by groundwater pumping. Agricultural water supplies for lands surrounding the KWB are provided by Rosedale – Rio Bravo Water Storage District for most lands to the north, by Kern Delta Water District for lands to the southeast, by Henry Miller Water District for lands to the

¹ The court referred to the KFE property as the KWB in its decision. The KFE property consists of the approximately 20,000 acres acquired by the Department from Tenneco West, Inc. The property was acquired for the purpose of developing the KFE, one of a series of groundwater banking "elements" that together would constitute the KWB. As envisioned, the eight or so elements of the KWB would be geographically separate projects that would be operationally integrated. Therefore, the terms KFE and KWB are not interchangeable, and what is now called the KWB is only a portion of the KWB envisioned by the Department. For simplicity, this document will use the term KWB to refer to the groundwater bank developed by the KWBA on the KFE property, and the term KFE property to refer to the 20,000 acres of land acquired by the Department.



south, and by Buena Vista Water Storage District for lands to the northwest. The Tule Elk State Reserve, Coles Levee Ecosystem Preserve, and Lokern Management Area are located west and south the KWB.

The KWB is one of several groundwater banks in Kern County. Other groundwater banks include: Berrenda Mesa Project (operational since 1983); City of Bakersfield 2,800 Acre Recharge Basin (operational since 1978); Pioneer Project, including Kern River Channel (operational since 1995); West Kern/Buena Vista (operational since 1978); Arvin-Edison Water Storage District (operational for groundwater banking for other districts since 1990); and Semitropic Water Storage District (operational for groundwater banking for other districts since 1990). With the exception of the Arvin-Edison and Semitropic groundwater banks, all of the projects are located adjacent to the KWB on the Kern River Alluvial Fan. While KWB provisions allow for lower priority use by others (see Section V.B.4), such use has only been by KCWA member agencies and has been very limited in scope. The Arvin-Edison and Semitropic banks allow participation by non-Kern County entities; the other banks mentioned above allow participation by Kern County entities only.

A. Existing KFE Property Facilities

The facilities that existed on the KFE property in early 1995 are shown in Figure 2.



1. Recharge

Tenneco constructed approximately 300 acres of recharge ponds in the northwestern portion of the KFE property prior to its acquisition by the Department in 1988. These ponds are known informally as the Stockdale Highway Ponds. The Department did not construct any recharge ponds on the KFE property during its ownership of the property.

2. Recovery

Sixty-five agricultural wells were present on the KFE property when it was acquired by the Department in 1988. During the Department's ownership of the property, it initiated a program of refurbishing some of these existing wells, so that it could recover water it had purchased from La Hacienda, Inc.² At the time the property was transferred to KCWA, 31 of the 65 existing

² The purchase was of 98,000 acre-feet of stored Kern River water, which had originally be recharged at the City of Bakersfield's 2800 acre project. (KWB First Stage KFE Feasibility Report, December 1990)

wells were considered operable, although 3 of these were not connected to any conveyance facilities. The remaining 34 were idle wells in various states of disrepair.

3. Conveyance

At the time the Department acquired the KFE property in 1988, the property included a number of conveyance facilities that had been constructed primarily for the delivery of irrigation water for the agricultural activity occurring then and historically on the property. These facilities were not constructed for water bank operations of recharge and recovery, and many were not suitable for these purposes. An exception was the Pioneer Canal, which could have been used to deliver water for recharge to the existing approximately 300 acres of Stockdale Highway Ponds. Other nearby facilities, including the Cross Valley Canal, the City of Bakersfield's Kern River Canal, and Buena Vista WSD's Alejandro Canal, could have been used to convey water recovered from the 31 operable wells on the KFE property. However, these facilities were owned by others and could only have been used for banking purposes when unused capacity was available. During the Department's ownership of the property, the Department constructed conveyance facilities of small capacity to convey water recovered from certain of the individual operable wells to these larger nearby conveyance facilities.

B. KCWA Flood Emergency Program

In 1995, KCWA requested and was granted the use of the KFE property for emergency spreading of water to mitigate projected flooding of agricultural lands due to high flows on the Kern and Kaweah Rivers. KCWA requested use of approximately 3,200 acres of the KFE property for the emergency delivery and controlled spreading of local floodwater flows. KCWA proposed spreading water from the Kern and Kaweah Rivers onto existing Kern County spreading basins (including KCWA's Pioneer Project, the City of Bakersfield's 2,800 acres, Berrenda Mesa Ponds, and Rosedale-Rio Bravo Ponds), and diverting the remaining flood flows (up to 500 cubic feet per second (cfs)) onto a portion of the Department's KFE property. KCWA proposed constructing up to 2,300 acres of recharge ponds on 3,200 acres of the property.

The Department conditioned its approval of KCWA's construction plans upon KCWA satisfaction of the endangered species acts requirements. In consultation with the USFWS and CDFG, KCWA performed biological surveys of the areas that it proposed to flood in order to avoid any threatened or endangered species, in compliance with federal and State endangered species acts. KCWA obtained endangered species agreements with USFWS and CDFG to develop 2,300 acres of spreading ponds. The Department added additional conservation conditions in a separate agreement. KCWA prepared a CEQA Negative Declaration and filed a Notice of Exemption for the project's CEQA compliance. Subsequently, the Department approved³ a second request by KCWA to divert water onto an additional 1,800 acres of spreading ponds on an additional 5,000 acres of KFE land. The Department also agreed to extend its initial agreement with KCWA to March 31, 1997.⁴

³ Letter, John J. Silveira, DWR to Thomas Clark, KCWA; June 2, 1995

⁴ Letter, Robert G. Potter, DWR to Thomas Clark, KCWA; March 11, 1996

As a result of these agreements, in 1995 KCWA constructed 1,518 acres of recharge ponds on the initial 3,200 acres of KFE property, and 1,516 acres of recharge ponds on the additional 5,000 acres of KFE land (Figure 3). Under the flood emergency program, about 230,000 AF of water was recharged in 1995 and about 144,000 AF in 1996.



C. Land Use

Prior to the Department's purchase of the KFE property in 1988, approximately 17,068 acres of the property was under extensive cultivation.^{iv} The remaining property contained 1,515 acres of isolated sensitive native plant communities (valley saltbush scrub, Great Valley mesquite scrub and valley sacaton grassland) and 1,317 acres of non-native grassland, which had been leased for oil recovery facilities. No wetland habitat was present in the project area, except for the canals used to convey water for agricultural use.

A Memorandum of Understanding was signed between the Department and KCWA on March 25, 1987, that provided for the phase out of all agricultural production on the KFE property by the end of 1993. In fact, one of the tenants' leases was terminated in 1989. Then in 1991, at the peak of the drought, all the remaining tenant leases were terminated, and thereafter the agricultural lands were fallowed. The land use on the KFE property in 1995 is shown in Figure 4.



IV. Transfer of KFE Property from the Department

By 1994, the potential of the Department's proposed KFE for SWP groundwater storage remained unrealized. As is described in more detail in Section I.A, by this time the Department had concluded that constraints on Delta pumping and a number of other uncertainties made development of an SWP groundwater storage facility on the KFE property infeasible. In 1994, the Department and representatives of the agricultural and urban contractors negotiated a set of principles, subsequently implemented through the Monterey Amendment, that provided for the State's transfer of the KFE property to KCWA, and then to the KWBA, for local agency development and use as a groundwater bank, as discussed in more detail below.

A. Monterey Amendment

The Department deferred development efforts of the KFE in the early 1990s. Subsequently, the Monterey Amendment provided for the State's transfer of ownership of the KFE property to KCWA for local agency development and use as a groundwater bank, in exchange for the permanent retirement of 45,000 AF of SWP Table A amount by KCWA and Dudley Ridge WD.

Article 52 of the Monterey Amendment states that:

- a) The State shall convey to the Kern County Water Agency (KCWA) in accordance with the terms set forth in the agreement between the State of California Department of Water Resource and Kern County Water Agency entitled, "Agreement for the Exchange of the Kern Fan Element of the Kern Water Bank" (the Kern Water Bank Contract), the real and personal property described therein.
- b) Subject to the approval of KCWA, other contractors may be provided access to and use the property conveyed to KCWA by the Kern Water Bank Contract for water storage and recovery. Fifty percent (50 %) of any project water remaining in storage on December 31, 1995, from the 1990 Berrenda Mesa Demonstration Program and the La Hacienda Water Purchase Program shall be transferred to KCWA pursuant to the Kern Water Bank Contract. The remaining fifty percent (50%) of any such water (approximately 42,828.5 AF) shall remain as project water and the State's recovery of such project water shall be pursuant to the provisions of a separate recovery contract. Any other Kern Water Bank demonstration program water shall remain as project water and the State's recovery of such water shall be pursuant to the provisions of the respective contracts for implementation of such demonstration programs.

Article 53(i) of the Monterey Amendment states, in part, that:

i) On January 1 following the year in which such Monterey Amendments take effect and continuing every year thereafter until the end of the project repayment period: (i) Kern County Water Agency's (KCWA) annual entitlement for agricultural use as currently designated in Table A-1 of its contract shall be decreased by 40,670 AF; (ii) Dudley Ridge Water District's (DRWD) annual entitlement as currently designated in Table A of its contract shall be decreased by 4,330 AF; and (iii) the State's prospective charges (including any adjustments for past costs) for the 45,000 AF of annual entitlements to be relinquished by KCWA and DRWD thereafter shall be deemed to be costs of project conservation facilities and included in the Delta Water Charge for all contractors in accordance with the provisions of Article 22.

In accordance with the Monterey Amendment, the Department conveyed the KFE property to KCWA in exchange for KCWA and DRWD permanently retiring a total of 45,000 AF of agricultural Table A amounts. On December 13, 1995, the same date the Department executed the Monterey Amendments of KCWA and DRWD, the Department executed the "Agreement for the Exchange of the Kern Fan Element of the Kern Water Bank" between the Department and KCWA. This agreement provided the specific terms and conditions for the transfer of the KFE property to KCWA.

B. Exchange Agreement between the Department and KCWA

The "Agreement for the Exchange of the Kern Fan Element of the Kern Water Bank" between the Department and KCWA was executed on December 13, 1995. This agreement provided for

the transfer of the KFE acreage and its fixtures from the Department to KCWA in exchange for agricultural contractors' permanent reduction and retirement of 45,000 AF of their SWP Table A amount. The agreement transferred the property to KCWA and identified certain KCWA obligations, covenants, and agreements associated with the property, including KCWA assumption of responsibility for the Department's endangered species agreements, in total.

It was intended that KCWA would transfer the KFE property to a joint powers authority made up of those entities that had retired a portion of their Table A amounts. Therefore, the exchange agreement between the Department and KCWA included a provision that stated that the parties' agreed that KCWA could transfer all or a portion of the property and assign its rights and obligations to transferees who concurrently executed an agreement accepting the transfer and assignment and assumption of KCWA's obligations, covenants, and agreements.

C. Conveyance Agreement from KCWA to KWBA

Simultaneous with the December 13, 1995, execution of the exchange agreement between the Department and KCWA, KCWA executed an agreement between it and the Kern Water Bank Authority (KWBA). This agreement transferred the KFE property from KCWA to the KWBA:⁵ to develop, operate, and maintain the KFE property as a local groundwater banking project, which they called the Kern Water Bank (KWB); to develop and improve the KWB for the importation, percolation and storage of water in underground aquifers for later extraction, transportation, and; for the beneficial use of Project Participants.⁶ KWBA assumed control of the KFE property and prepared a plan for development fo the property as a groundwater bank and an operating plan to bank available water from three sources – the Kern River, the Central Valley Project's (CVP) Friant-Kern Canal, and the SWP.

V. KWBA's Development of KWB

A. Environmental Documents and Permits

1. CEQA

A final programmatic EIR on the Monterey Agreement ("Monterey Agreement EIR") was issued in October 1995. The Monterey Agreement EIR describes, among other things, the environmental impacts of the development of a groundwater bank on the KFE property, including construction of banking facilities and operation of a groundwater bank. The KWBA, as a responsible agency, approved the Monterey Agreement EIR on October 30, 1995. The principles of the Monterey Agreement were implemented through the Monterey Amendment. As described in Section IV above, upon execution of the Monterey Amendment, the Department

⁵ The Kern Water Bank Authority is a joint power authority formed pursuant to California Government Code section 6500 et seq.

⁶ The transfer of the KFE property from KCWA to KWBA was made possible by provisions specified in Section 3, subsection 3.3 (Immediate Reconveyance) of the Kern Water Bank Contract, dated December 13, 1995.

transferred the KFE property to KCWA, which simultaneously transferred the property to the KWBA.

The KWBA prepared specific plans for the development and operation of a groundwater bank on the KFE property, referred to by the KWBA as the Kern Water Bank (KWB). The CEQA guidelines indicate that "subsequent activities in a program must be examined in the light of the programmatic EIR to determine whether an additional environmental document must be prepared." A subsequent EIR is only allowed if certain findings are made, which was not the case for the proposed KWB. Instead, an addendum to the Monterey Agreement EIR was prepared pursuant to §15164 of the guidelines. This addendum addressed the environmental issues related to development and construction of the KWB that had not been addressed in the programmatic EIR. The primary focus of the addendum was the Kern Water Bank Habitat Conservation Plan (HCP) and the Natural Community Conservation Plan (NCCP), which primarily address the impacts of the project on endangered species. However, the addendum also addressed the impact on cultural resources, groundwater impacts on surrounding landowners, and mosquito abatement, among other things. The HCP/NCCP is discussed in more detail below.

After completion of the environmental analysis, and establishment of appropriate mitigation measures, the KWBA concluded that the entire project, as revised by the mitigation measures, would have no significant effect on the environment. A Notice of Determination was filed July 4, 1996, and no legal challenge was filed.

2. CESA/ESA

a. Permits

To allow the management and operation of the KWB in accordance with the incidental take of endangered, threatened and certain other listed species, KWBA applied to the USFWS for two permits pursuant to the federal Endangered Species Act, and to the CDFG for two management authorizations pursuant to the California Endangered Species Act and the Natural Community Conservation Planning Act. One permit and one management authorization (the Project Permit/Authorization) is related to the KWB project. The other permit and management authorization (the Master Permit/Authorization) is related to a conservation bank to be used as potential mitigation for activities by third parties within designated areas of the Southern San Joaquin Valley. The conservation bank can be used to provide mitigation for the incidental take of listed species by qualified third parties for activities that take place within Kern County, the Allensworth area of Tulare County, and the Kettleman Hills area of Kings County. Both Permits and both Master Authorizations are for a period of 75 years. The agencies prepared a Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP), an implementation agreement (IA), and a federal environmental assessment (EA) as part of the permit/authorization process.

b. HCP/NCCP

To protect endangered species on the property, the KWBA, the USGWS, and the CDFG developed the HCP/NCCP to preserve and restore habitat for threatened, endangered, and protected species. The HCP/NCCP permits certain uses for the KFE property and designates general areas (referred to as "sectors") and acreages for those uses (Figure 5 and Table 1).

Table 1. HCP/NCCP Land Use Designations		
	AREA (In Acres)	
Recharge Basins	5,900	
Other Water Banking Facilities	481	
Compatible Habitat	5,592	
Sensitive Habitat	960	
Department Mitigation Land	530	
Farming (including recharge ponds)	3,170	
Conservation Bank	3,267	
TOTAL	19,900	



One of the HCP's primary management tools is its Vegetation Management Plan. The Plan incorporates an adaptive management approach to improve upland habitat for the threatened and endangered species that are found on the property. The program uses methods that are compatible with the water banking activities and economically feasible for a large-scale project. Since desert species prefer low-density vegetation, the primary method used to control vegetation has been grazing and burning. To control tumbleweeds (the largest problem), KWBA has timed grazing and burning activities to promote desired native plant growth and retard the growth of the tumbleweeds.

Water banking has also caused a resurgence in wetland habitat and the return of waterfowl to the area. To date, more than 40 new species of birds have been sighted on the KFE property, including the Caspian tern, the white-faced ibis, the double-crested cormorant, and the tricolored blackbird.

The Implementation Agreement of the KWBA HCP/NCCP requires the KWBA to prepare and submit an Annual Report to the USFWS and the CDFG that includes the following information from the previous year:

- A summary of all activities on the KWB, including construction, and operation and maintenance of water recharge and water extraction facilities;
- A summary of Take of Covered Species and Covered Habitat;
- A summary of mitigation measures implemented;
- Results of studies completed;
- Results from the implementation of monitoring programs;
- Results from the implementation of avoidance and minimization measures;
- A report regarding the status of the Species Viability Fund;
- A copy of the KWBA's financial report evidencing KWBA's ability to fund its affirmative obligations under the KWBA HCP/NCCP and the Implementation Agreement; and
- A certification from a responsible officer of the KWBA.

Exhibit H of the HCP/NCCP requires KWBA to meet the Minimization of Impacts Requirements during construction and repair activities. The following actions are specified in Exhibit H:

- The delineation of all construction zones;
- Oversight of all phases of the construction on a daily basis by KWBA inspectors;
- Compliance with minimum construction standards for canals;
- An orientation program for all KWBA employees and contractors that explains endangered species concerns, notification requirements for dead, injured, or entrapped listed animals, and on-going practices requirements (e.g. construction site review and traffic, food and dog control);
- Monitoring major construction activities by a qualified biologist; and
- Biological surveys to identify San Joaquin kit fox dens, burrows occupied by burrowing owls, and signs of the presence of fully-protected species.

Table 2 shows the amount of land disturbance that was estimated in the HCP/NCCP to accompany the construction of infrastructure on the KWB, and the amount of disturbance that has actually occurred. Land disturbance is tracked in all land use sectors on the KFE property but the Farming Sector.⁷ Note that permanent water banking facilities occupy only 258 acres.

Table 2. Estimated versus actual land dis	turbance resulting from	recharge/recovery
Tacinities throug	n December 2005 KWB HCP/NCCP Estimated Disturbance (acres)	Actual Disturbance (through 12/31/2005) (acres)
Recharge Basins in Recharge Sector*	5,900	4,699
Permanent Water Banking Facilities		
Recovery Facilities		
Wells - Existing Hooked Up	28	14
Wells - Existing Not Hooked Up	38	6
Wells - Proposed New	66	21
Conveyance Facilities		
Proposed-Lined	87	0
Existing – Unlined	225	117
Supply/Recovery Canal	73	75
Pump Stations	12	2
Kern River Reverse Flow		
Earthwork (levees)	4	0
Pump Stations		
Kem River	10	0
City of Bakersfield	4	0
New Roads	0	23
Subtotal	547	258
Temporary Disturbed Areas		
Canal Construction	73	68
Recovery Wells	0	16
Pipelines – Proposed	218	144
Subtotal	291	228
Total	6,738	5,185
* Does not include 2 415 acres of recharge ponds locate	d in the Farming Sector	

Source: Kern Water Bank Authority. Annual Report, May1, 2006

B. Other Agreements and Restrictions

1. Statement of Principles – March 1995

A Statement of Principles (SOP) establishing several guidelines for a later agreement amongst the KWB participants on the establishment of a public agency to own, develop, operate and maintain the KWB project was agreed to on March 31, 1995. The key provisions of the SOP are:

⁷ Land disturbance in the Farming Sector is not tracked since it was anticipated in the KWB HCP/NCCP to be disturbed from farming or other activities. In fact, with the exception of 45 acres currently farmed for the CDFG for an annual Heritage Game Bird hunt, no farming has occurred in the Farming Sector. Instead, this acreage has developed into exceptional upland and wetland habitat.

- An allocation of the amount of firm SWP Table A amounts to be permanently retired by each of the participants, and a mechanism for other KCWA Member Units to participant in the KWB as the project moved forward;
- A statement that the KWB's primary purpose is to augment water supplies for KWB participants;
- A statement indicating the proposed public agency will be responsible for all KWB costs;
- The establishment of priorities for the use of the KWB by others;
- A statement that the KWB will be operated pursuant to the pending *Memorandum of* Understanding Regarding Operation and Monitoring of the Kern Water Bank Groundwater Banking Program (see V.B.3. below);
- A mechanism to establish agreements to share Cross Valley Canal capacity amongst other banking projects; and
- The establishment of covenants for the limitation on the future consumptive use of groundwater by the property and restrictions on the future sale, transfer, lease, etc., of the property as long as KCWA has determined that the property can be used economically for groundwater storage and recovery.

2. Joint Powers Agreement – October 1995

The entities that permanently retired a portion of their SWP Table A amounts (i.e., SWP contractors KCWA and Dudley Ridge WD, and KCWA member agencies Semitropic WSD, Tejon-Castac WD, and Wheeler Ridge-Maricopa WSD, and Westside Mutual Water Company, LLC) formed a joint powers authority called the Kern Water Bank Authority on October 16, 1995, with the execution of a Joint Powers Agreement (JPA). The JPA:

- Created the KWBA and established its term, purpose and powers;
- Established the internal organization of the KWBA (i.e., governed by a Board of Directors);
- Established procedures for handling KWBA's finances;
- Described the KWBA's KWB project and established participant rights in the project directly proportional to the amount of Table A water each participant retired to acquire the project;
- Established the relationship between the KWBA and its participants (e.g., indemnities, withdrawals, etc.); and
- Established other procedures necessary to the operation of the KWBA (e.g., amendment procedures, dispute resolution procedures, etc.)

Table 3 lists the Table A amounts retired by each KWBA participants and their corresponding ownership allocations.

Table 3. Kern Water Bank Authority Participants		
Participants	Table A Amount	Allocation (%)
	Retired (AF)	
Dudley Ridge WD	'D 4,330	
Improvement District 4	4,330	9.62
Semitropic WSD	3,000	6.67
Tejon-Castac WD	900	2.00
Westside Mutual Water Co. ^a	21,625	48.06
Wheeler Ridge-Maricopa WSD	10,815 24.03	
Total	45,000	100.00
a. Westside Mutual Water Co. was formed by a landowner that owned land within two		
KCWA member agencies, for the retirement of a portion of its Table A amounts. The		
landowner retired 15,335 AF of its Table A amount from Belridge WSD and 6,290 AF of		
its Table A amount from Lost Hills WD.		

3. Operations and Monitoring MOU – October 1995

The KWBA operates the KWB under the requirements of the *Memorandum of Understanding Regarding Operation and Monitoring of the Kern Water Bank Groundwater Banking Program* (KWB MOU; Appendix B). Negotiation and execution of the KWB MOU was a prerequisite of the KWBA Member Entities' agreement to retire the 45,000 AF of Table A amounts in exchange for the transfer of the KFE lands from the Department for the Member Entities' development of a water bank.

a. Impact Mitigation

The overall objective of the KWB MOU parties (KWBA, its Member Entities, and the districts surrounding the property [Adjoining Entities]) is 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 [Member Entities] 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 Entitles." The adjoining entities include Buena Vista WSD, Rosedale-Rio Bravo WSD, Kern Delta WD, Henry Miller WD, and West Kern WD.

Some of the measures prescribed in the KWB MOU to protect water levels include: 1) spread out recovery area; 2) provide buffer areas between recovery wells and neighboring overlying users; 3) limit the monthly, seasonal, and/or annual recovery rate; 4) provide sufficient recovery wells to allow rotation of use of recovery wells or the use of alternate wells; 5) provide adequate well spacing; 6) adjust pumping rates or terminate pumping to reduce impacts, if necessary; 7) impose time restrictions between recharge and extraction to allow for downward percolation of water to the aquifer; and 8) provide recharge of water that would otherwise not recharge the Kern Fan Basin.

Some of the measures prescribed in the KWB MOU to protect water quality include: 1) giving recharge priority to the best quality water available, 2) removing more salts than are recharged, 3) controlling the migration of poor quality water, and 4) extracting poorer quality groundwater

where practicable (and where blending with excellent quality water from elsewhere in the project results in the water quality objectives of downstream users being met).

In order to ensure that the above goals are met, the MOU provides for the establishment of a Monitoring Committee to oversee banking operations and the results of an extensive monitoring program. The committee is made up of several basin stakeholders including KCWA and all adjoining water districts. This committee has completed a number of tasks required by the MOU, including:

- Preparation of a monitoring plan;
- Specification of monitoring wells;
- Preparation of annual water balance studies and other interpretive studies of sources and uses of water within the project area and within adjoining water districts;
- Determination of the impacts of project operations on surrounding areas; and
- Development of criteria for identifying, verifying, avoiding, eliminating, or mitigating significant adverse impacts from project operations.

b. Loss Factors

The KWB MOU prescribes loss factors for banking operations. Evapotranspiration losses are assumed to be 6 percent of the gross amount of all water recharged. A study conducted by the KWBA using a methodology developed by the Department and KCWA for the KFE indicates actual losses by evapotranspiration will typically range from 2 percent to 4 percent. The 6 percent loss factor provides assurance that KWB banking operations will not recover more water than that actually recharged.

The KWB MOU provides that an additional 5 percent loss factor will apply to any sales of water to entities outside of Kern County. This additional water provides an overall benefit to the groundwater basin, and cannot be recovered for other uses.

In addition to these losses, 4 percent of the water recharged and stored in the KWB can be purchased by adjoining groundwater districts for overdraft correction purposes.

4. Covenants, Conditions, & Restrictions between KCWA and KWBA – December 1995

A declaration of covenants, conditions, and restrictions (CC&Rs) on the use of the KFE property was executed by the KWBA for the benefit of the KCWA on December 14, 1995, and subsequently recorded as a covenant running with the property. The CC&Rs provided for several of the provisions of the *Statement of Principles*, including:

• A limitation on consumptive use of groundwater by the KWB project of 0.3 AF/acre;

- Restrictions on the sale, transfer, lease, etc., of parts of the KFE property as long as KCWA has determined that the property can be used economically for groundwater storage and recovery,
- Restrictions on the use of any proceeds from approved KFE property sales, transfers, leases, etc.;
- Remedies for violations of the CC&Rs; and
- Priorities for the use of the KFE property.

The priorities for the use of the KFE property as described in the CC&Rs are as follows: 1st priority – KWBA Member Entities; 2nd priority – KCWA Basic Contract Member Units; 3rd priority – KCWA Non-Basic Contract Member Units; and 4th priority – Kern County entities. Any excess capacity beyond that needed for the first four priorities can be used by others under terms and conditions acceptable to KWBA and KCWA.

5. Limitations of Exports and Sales

All transfers from member districts of KCWA require the approval of KCWA. Current KCWA policy places limitations on the sale of banked SWP water. Department approval is required for conveyance of banked SWP water through SWP facilities. CVP contracts place limitations on potential sales of Friant-Kern CVP water. A place-of-use restriction requires the use of banked Friant-Kern groundwater to be within the CVP place of use. Consequently, these agreements and restrictions limit the classification of water that may be transferred to non-Kern County agencies.

C. Facilities

1. Facilities Development Plans

KWBA's purpose for development of the KWB was to permit the delivery, percolation, and storage of water in aquifers for later extraction, conveyance, and use for the benefit of the project participants.⁸ KWBA's construction plans for the KWB included the completion of a Master Plan, the repair and rehabilitation of existing wells under an energy conservation program funded in part by the State of California (SB 583), the expansion of the turnout and channel providing water to the W-4 pond, and the River Area Construction Project, as described in Table 4.

⁸ The Kern Water Bank, Dec. 14, 2004, Appendix A, p. 2

		Table 4. KWBA Development Projects
Project	Years	Activity
KCWA Flood Emergency Program	1995	Construction of 3,034 acres of recharge ponds.
KWBA pond construction	1998- 2002	Construction of 4,080 acres of recharge ponds.
Master Plan	1999- 2002	Rehabilitation of 10 existing wells, installation of 31 new wells, installation of pipeline to the new wells, and the construction of the Kern Water Bank Canal, that connects the Kern River and the California Aqueduct.
SB 583 Pump Repair and Well Rehabilitation Program	2002- 2003	Repair and/or rehabilitation of 10 existing wells pursuant to this program, including the removal of existing well pumping equipment, well-testing, well- casing rehabilitation of some wells, pump repair or replacement, and the reassembly of the wells.
Expansion of the W-4 Pond Turnout and Channel	2003	Enlarged turnout structures and channel to the W-4 pond.
River Area Construction Project	2004	Construction of eight additional recovery wells, pipelines for these eight wells and an additional seven wells, a conveyance pipeline to route the recovered water from these 15 wells to the Kern Water Bank Canal, and a lift station (100 cfs capacity) to convey water for recharge purposes to River Area ponds.
Source: The Kern V May 1, 2004.	Vater Bank	: Authority, HCP/NCCP 2003 Annual Report and 2004-2005 Management Plan.

2. Facilities Constructed

Since the transfer of the KFE property, KWBA has constructed recharge ponds, the Kern Water Bank Canal, extraction wells, and pipelines to convey recovered water from operational wells, and has rehabilitated some existing wells (Figure 6).

a. Recharge Ponds

In 1995, under the KCWA flood emergency program (see Section III.B) and prior to the formation of the KWBA, KCWA and the other future participants of the KWBA constructed 3,034 acres of recharge ponds (Figure 3). From 1998 through 2003, KWBA constructed an additional 4,080 acres of recharge ponds, for a total of 7,114 acres. Of this total, 4,699 acres of the recharge ponds constructed are located within the Recharge Sector and 2,415 acres within the Farming Sector. The ponds consist of low earthen levees that pond water to depths of a few feet. This water percolates into the alluvial fan for recharge into the aquifer. Water flows between the ponds in small channels; operators control the flow with small weir boxes.



b. Recovery Wells

Sixty-five agricultural wells were present on the KFE property when it was acquired by the Department in 1988. At the time the property was transferred to KCWA, 31 of these wells were considered operable, although 3 of these were not connected to any conveyance facilities. The remaining 34 were idle wells in various states of disrepair.

KWBA installed 39 new wells in two phases to accommodate groundwater recovery. The first phase of 31 wells was completed in 2001. Eight additional wells were completed in early 2005. KWBA also rehabilitated ten existing wells and repaired an additional 13 wells. As of December, 2006, a total of 79 wells are operable. All KWB well pumps are electric.

c. Conveyance Facilities

The KWBA constructed the Kern Water Bank Canal from the Kern River to the California Aqueduct; the canal is approximately 6 miles long and 90 feet wide. Associated structures include headworks at the Kern River, a check structure, a 545 cfs pump station, and diversion facilities at the California Aqueduct. The canal is bi-directional and will receive or deliver about 800 cfs from or to the California Aqueduct or from the Kern River. The western reach of the canal is at the same elevation as the California Aqueduct; therefore, conveyance of water through the western reach does not require pumping energy. KWBA began construction of the Kern Water Bank Canal in 1999 and completed the canal in October 2000.⁹

The KWBA installed small diameter (15" to 24") PVC pipelines to transport water recovered from extraction wells to existing canals or to large diameter (60") high-density polyethylene pipelines.

D. Land Use

The KWBA utilizes the lands of the KFE property for various purposes. The KFE property is used primarily as a water recharge and recovery facility. Numerous recharge ponds, wells, conveyance facilities, etc. (see Facilities section above) have been constructed on the property.

In 1997, the KWBA initiated vegetation and restoration programs. The goal of these programs is to protect existing and newly established sensitive habitats for long-term management. Exotic pest plant control is also an important long-term management activity. Annual mowing, livestock grazing (both cattle and sheep), and prescribed burning are all utilized for vegetation management. Limited applications of selective herbicides are used in most years to help control exotic pest plants.

On a limited basis, KWBA has planted various plant species based on the HCP/NCCP. Cottonwoods, willows, and grasses are examples of species planted to enhance percolation within the recharge basins and for wildlife habitat. In retired farm areas that are returning to natural conditions, there is an increase in the number of species and individuals at the KWB, including listed species like Tipton kangaroo rats, and San Joaquin kit foxes.

Under the direction of CDFG, safflower is farmed annually, usually around 70 acres, to enhance dove habitat and to be utilized in an annual dove hunt. In years with sufficient water, there is also a CDFG sponsored waterfowl hunt on designated recharge ponds on the KFE property.

Various oil and gas companies maintain use of parcels on the KFE property to exercise their mineral rights on the property. Since 1996, several oil company-related construction projects have occurred. For example, Chevron Pipeline Company in 1998 removed 44,227 feet of pipeline, of which 27,000 was on the KFE property. Various companies enter the KFE property regularly to conduct maintenance-related surveys of their equipment and to ensure environmental compliance. If environmental issues are observed by the KWBA related to any oil or gas facilities, the representative companies are contacted immediately to ensure proper action.

As part of the monitoring undertaken by the KWBA in compliance with the HCP/NCCP, annual reports are issued summarizing land use by wildlife, any environmental take related to activities on KFE property, and habitat and vegetation restoration efforts. There has been only one occurrence of the take of an endangered species on the KFE property; Tipton kangaroo rats were

⁹ The Kern Water Bank: Infrastructure Development, the Kern Fan Monitoring Committee, and Groundwater Conditions. December 14, 2004

temporarily relocated during the construction of the Kern Water Bank Canal, then placed back in the area alive and well after the construction was complete.

1. Mitigation Lands

The HCP/NCCP establishes permanent mitigation lands on the KWB. These lands include a DWR Mitigation Parcel of 530 acres, and a KWBA Mitigation Parcel of 635 acres (which is part of the Compatible Habitat acreage shown in Table 1). As part of the mitigation effort laid out in the HCP/NCCP, agencies and qualified third parties are allowed to purchase Conservation Credits for projects that may cause temporary or permanent disturbance to lands that includes much of the San Joaquin Valley portions of Kern, Kings, and Tulare counties.¹⁰ For more information on this process, refer to the "Conservation Bank Agreement" included in Volume II of the HCP/NCCP.

VI. KWBA's KWB Operations

A. Overview of Kern County Water Operations

This section provides an overview of general water operations within Kern County. While these operations are not directly related to the KWBA's KWB operations, this is intended to provide some background for general water operations within the county, and some context for how KWB operations fit within that.

1. Water Sources

Kern County residents have historically used surface water primarily from three sources: the Kern River and other local streams, SWP, and CVP. The SWP delivers water from the north via the California Aqueduct. The CVP delivers water from the north via the California Aqueduct and Cross Valley Canal, and from the central Sierra via the Friant-Kern Canal. The Kern River system and other local streams drain the southern Sierra. Local conveyance facilities, including the Kern Water Bank Canal, Cross Valley Canal, and Pioneer Canal, can be used convey water from these primary sources to various parts of the KFE property.

a. Kern River and Other Local Streams

The Kern River has historically been a primary source of surface water to Kern County. North Kern WSD, Kern Delta WD, Buena Vista WSD, KCWA, and the City of Bakersfield are the major holders of Kern River surface water rights.

In most years, water users divert all Kern River flow downstream from its entrance to the valley, northeast of Bakersfield, and as a result the river channel through the KFE property is typically

¹⁰ More information on this process is contained in the "Conservation Bank Agreement" included in Volume II of the HCP/NCCP, on file with the Department.

dry. However, in extremely wet years, the Kern River Intertie diverts Kern River flows into the California Aqueduct to prevent downstream flooding. Since 1978, over 1,000,000 AF of Kern River water has flowed through the Kern River-California Aqueduct Intertie. During the same period, an additional 430,000 AF of Kern River water bypassed the Intertie via the Kern River flood channel. These flood flows have exceeded the available capacity of recharge facilities in Kern County since KCWA constructed the Intertie in 1977.

In very wet years the significant quantities of flood waters that otherwise would be diverted into the Intertie are available for recharge in the KFE area. At other times, other pre-1914 appropriative water right holders can provide Kern River water for recharge in the KWB. Although these right holders are not partners in the KWB, KWBA participants may purchase Kern River water from them for storage in the KWB.

Water users can divert the flows of the Kaweah, Tule, and Kings Rivers stream groups on the east side of the San Joaquin Valley and convey the water via the Friant-Kern Canal to its terminus. From the terminus, water users can release the water into the Kern River channel or through various connections into the Cross Valley Canal. As with Kern River water, pre-1914 appropriative water right holders can provide Kaweah, Tule, and Kings Rivers water for recharge in the KWB. Although these right holders are not partners in the KWB, KWBA participants may purchase water from them for storage in the KWB.

b. SWP

The SWP is a large source of non-local water for Kern County. KCWA has a SWP Table A amount of 998,730 AF. Thirteen Kern County member agencies contract for this water from KCWA, and KCWA has retained a portion for itself and its Improvement District No. 4 (Table 5). Dudley Ridge WD, an SWP contractor located in Kings County, currently has a SWP Table A amount of 57,343 AF.

KCWA and Dudley Ridge WD can recharge SWP Table A and Article 21 water when they have SWP water in excess of their immediate in-district demands. They can also transfer or exchange water with other agencies to increase or reduce their water supplies in a year, or participate in arrangements that change the year of water deliveries.

Table 5. KCWA Member Ur	its I hat Hold	
Contracts With KCWA to Receive SWP Table A Water		
Agency	Contractual Table A Amount (AF)	
Belridge WSD	121,508	
Berrenda Mesa WD	108,600	
Buena Vista WSD	21,300	
Cawelo WD	38,200	
Henry Miller WD	35,500	
KCWA	8,000	
Kern Delta WD	25,500	
Lost Hills WD	119,110	
Improvement District No. 4	82,946	
Rosedale-Rio Bravo WSD	29,900	
Semitropic WSD	155,000	
Tehachapi-Cummings County WD	19,300	
Tejon-Castac WD	5,278	
West Kern WD	31,500	
Wheeler Ridge-Maricopa WSD	197,088	
Total	998,730	
Semitropic WSD Tehachapi-Cummings County WD Tejon-Castac WD West Kern WD Wheeler Ridge-Maricopa WSD Total Source: KCWA. 2006.	155, 155, 19, 5, 31, 197, 998,	

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e. CVP

CVP contractors in Kern County may receive water via the Friant-Kern Canal or the Cross Valley Canal, either directly or by exchange or transfer according to contract provisions with Reclamation.¹¹ Arvin-Edison WSD, Delano-Earlimart ID, Shafter-Wasco ID, and Southern San Joaquin MUD have Friant Division long-term contracts with USBR.

Reclamation's contracts with Friant-Kern contractors include a two-class system of water allocation. Municipal and industrial (M&I) and agricultural water users who have limited access to good-quality groundwater have Class 1 contracts, which are based on a firm water supply. Reclamation delivers the Friant-Kern's first 800 TAF of annual water supply under Class 1 contracts.¹² Class 2 water is a supplemental supply; Reclamation delivers Class 2 water directly for agricultural use or for groundwater recharge, and these are areas that generally experience groundwater overdraft.

In addition to Class 1 and Class 2 water deliveries, Reclamation delivers water that would otherwise be released for flood control purposes. Section 215 of the Reclamation Reform Act of 1982 authorizes the delivery of unstorable irrigation water that would be released in accordance with flood control criteria or unmanaged flood flows. Reclamation's delivery of Section 215

¹¹ While CVP water can be delivered to the KWB through the Cross Valley Canal, such deliveries are not considered further in this study because, to date, no excess water has been made available for KWB recharge from this source.

¹² USBR and DWR, 2003, Upper San Joaquin River Basin Storage Investigation, Phase 1 Investigation Report
water has enabled contractors to recharge more water for groundwater replenishment than could otherwise be supported with only Class 1 and Class 2 contract deliveries.

In addition to the Class 1, Class 2, and conjunctive management aspects of Friant Division operations, some districts often arrange annual water transfers with other districts. These transfers provide opportunities to improve water management within the Friant service area. In wet years, districts that have water surplus to their needs can transfer water to other districts with the ability to recharge groundwater. Conversely, in dry years, districts that store water can return water to districts with little or no groundwater supply; these arrangements provide an informal groundwater banking program within the Friant Division.

KWBA participants do not have long term contracts for CVP water, but have purchased Section 215 and other flood waters from the CVP system through temporary contracts with Reclamation.

2. Water Management Exchanges and Landowner Transfers

Water transfers and exchanges have historically been and continue to be a regular part of water management in the San Joaquin Valley. Transfers are one-way transactions, where water from one agency is transferred to another, with no future return of that water. For KCWA, transfers with another agency are typically "landowner transfers," where a landowner that owns land within both KCWA and another agency's service area wants to transfer the water available to it from one agency for use on its land in the other agency's service area. Exchanges are two-way transactions, where water from one agency or source is delivered to another agency, in exchange for the return of a specified quantity of water. An exchange may involve a change in the timing of delivery of water (e.g., water from one agency is delivered to another, in exchange for water from the other agency delivered later that year or in a following year), or a change in the source of water delivered (e.g., water from a source available to one agency is delivered to another, in exchange for water from a different source). These transactions can provide a number of benefits, including improved water management, reduced costs for water delivery, and/or improved water quality.

3. Water Sales

Table 6 gives an account of water sales by KCWA member agencies and other entities within Kern County to the Environmental Water Account (EWA) in the years 2000 and 2001. The table gives the SWP water exchange total for both 2000 and 2001, lists the seller and their amount (in AF), the type of water banked, which facility or agency banked the water, and the date the water was released to the EWA. These sales are representative examples of the types of water sales that occur from Kern County groundwater banks.

Table 6. Sales by Kern County Entities to the Environmental Water Account in 2000 and								
	•	2001						
		Banked	Groundwater					
	Amount	Groundwater	Banking Facility					
Seller	(AF)	Туре	or Agency	Date Water Released to EWA				
2000 SWP Table A Allocation E	xchange Wa	ater Purchased an	d Delivered in 2000	······				
Kern Water Bank Participants	31,555	Friant-Kern Flood	KWB	7/00				
Kern Water Bank Participants	40,725	Kern River Flood	KWB	8/00				
2000 SWP Carryover Table A A	llocation Ex	change Water Pu	rchased and Delivere	d in 2001				
Arvin-Edison	10,000	Friant-Kern Flood	Arvin-Edison WSD	3/01				
Rosedale Rio Bravo	19,036	Friant-Kern Flood	Rosedale Rio Bravo WSD	3/01				
Westside Mutual Water Co.	15,000	SWP Table A Allocation	KWB	3/01				
2000 SWP Exchange Subtotal	•		1	16,316				
2000 SWP Table A Allocation E	xchange Wa	ater Purchased an	d Delivered in 2001					
KCWA for Nickel Family	10,000	Kern River Flood	Pioneer Project	5/01				
KCWA/ID 4	10,000	Kern River Flood	KWB	6/01				
Buena Vista/ Rosedale/ West Kern	20,218	SWP Table A Allocation	Buena Vista WSD	5/01				
Buena Vista/ Rosedale/ West Kern	1,000	SWP Table A Allocation	Buena Vista WSD	5/01				
Buena Vista/ Rosedale/ West Kern	2,500	SWP Table A Allocation	Buena Vista WSD	7/01				
Semitropic WSD	10,767	SWP Table A Allocation	KWB	10/01				
Semitropic/ Tulare ID	4,233	Friant-Kern ²	Semitropic WSD	11/01				
Westside Mutual/Tejon Castaic	21,000	SWP Table A Allocation	KWB	10/01				
Cawelo WD	5,000	SWP Table A Allocation	KWB	11/01				
2001 SWP Exchange Subtotal			8	4,718				
2000 & 2001 Total	01,034							

The Nickel Family LLC is a private company primarily invested in farming. Nickel was the owner of a pre-1914 Kem River Water Right, referred to as the Lower River Water Rights. KCWA recently purchased the Lower River Rights from Nickel, and as part of the deal, Nickel is supplied with 10,000 AF of water per year by KCWA. Nickel banks this water in KCWA's portion of the Pioneer Project. ²Tulare ID delivered non-CVP water to Semitropic WSD via a Friant-Kern exchange.

³Westside Mutual pumped its KWB account in exchange for a like amount of Cawelo's 2800-acre account that was assigned to Belridge on behalf of Westside Mutual.

Source: KCWA 2002

In addition to these types of sales, 4 percent of the water recharged and stored at the KWB can be purchased by adjoining groundwater districts within Kern County for overdraft correction purposes.

B. KWB Banking Operations

1. Recharge Operations

From 1995 through 2005, KWBA delivered approximately 1.3 million AF of water for recharge. Most of this recharge occurred during 1995-1998 and 2005 (see Figure 7). As would be expected, the volumes of water available for recharge are dependent upon California's annual water conditions. Table 7 shows the annual variability of statewide precipitation, Tulare Lake regional precipitation, SWP allocations, and CVP allocations.



Figure 7

	Table 7. California Water Conditions Data Relevant to Kern County									
Year	State-wide Precipitation (% of	State-wideTulare LakePrecipitationHydrolog. Region(% ofPrecipitationaverage)(% of average)		CVP Friant- Kern Allocation (Class 1/ Class	Kern River Flows ¹³ (AF)					
1005	average)	(% of average)	A request)	2)	1 240 905					
1995	165	105	100	100/100	1,240,895					
1996	115	105	100	100/58	953,127					
1997	125	130	100	100/60	1,160,099					
1998	170	190	100	100/10	1,533,906					
1999	95	80	100	100/20	410,403					
2000	100	95	90	100/17	465,213					
2001	75	60	39	100/5	495,616					
2002	75	80	70	100/8	350,547					
2003			90	100/5	457,176					
2004			65	100/8	421,423					

Table 8 provides a summary of gross deliveries for recharge by source, as of December 31, 2005. Sixty percent of the deliveries were SWP water, 27 percent were Kern River water, and 13 percent were Friant-Kern water.

Tab	Table 8. Gross Deliveries for Recharge by Source Through December 2005								
SWP (AF)	SWPFriant - KernKern RiverTotal(AF)(AF)(AF)								
782,598	165,451	363,750	1,311,799						
60%	13%	27%	na						

Water delivered to recharge ponds is subject to losses by evapotranspiration. As prescribed in the KWB MOU, 6 percent evapotranspiration losses are deducted from all gross deliveries to KWB recharge ponds to determine the net amount of these deliveries that is recharged and stored. Annual gross deliveries for recharge and net recharge after losses are shown in Table 9, rows 1 and 2. Other changes to storage accounts, including miscellaneous acquisitions of stored water and exchanges between KWB participants, are shown in rows 3 and 4.

2. Recovery Operations

Water stored in the KWB has been recovered by the KWB participants either for their direct use or for sale to others. From 1995 through 2005, recovery for participant use totaled 138,224 AF. All of this water was recovered during the dry years from 2001 through 2004 (see Figure 8). During this same 1995 through 2005 period, water sales totaled 423,320 AF. About three quarters of these sales were to the EWA, with the remaining sales to:

- agricultural entities within the San Joaquin Valley,
- a wildlife refuge,

¹³ Kern River downstream of Lake Isabella (Source: CDEC)

- a power plant located within Kern County,
- and the "4%" water made available to adjoining water districts for overdraft correction pursuant to the KWB MOU (see Figure 9).

All of these sales occurred in 1998 and 2000 through 2005.



Data from Table 9, row 8. Includes Recovery by Pumping for Participant Use and Recovery by Exchange for Participant Use. See Figure 9 for further explanation for Recovery by Exchange for Participant Use

Figure 8



Data from Table 9, rows 14 through 18. Includes Recovery by Exchange for Water Sales Sea Figure 11 for further explanation of Recovery by Exchange for Water Sales



Water stored in the KWB can be recovered by one of two mechanisms, 1) recovery by pumping or, 2) recovery by exchange. Recovery by pumping entails the physical pumping of water from the aquifer using the KWB's groundwater wells. This type of recovery occurred in the dry years of 2001 through 2004. From 1995 through 2005, a total of 204,639 AF was recovered by pumping. Of this total, 132,099 AF was recovered for participant use and 72,540 AF for water sale (see Table 9, rows 6 and 9).

Stored water can also be recovered by exchange. For example, West Kern WD, which operates a separate banking project adjacent to the KWB, may need to recharge water at times when KWB participants need to recover water. Rather than recharge and recover water at the same time in adjacent projects, West Kern WD's surface water is made available for KWB participant use, and a like amount of KWB stored water is shifted in the groundwater storage accounts from the KWB to West Kern WD. Such exchanges may also occur between KWB participants. These exchanges reduce energy consumption and costs to both parties. From 1995 through 2005, a total of 326,634 AF was recovered by exchange. Of this total, 6,125 AF was recovered for participant use and 320,509 AF for water sales (see Table 9, rows 7 and 10).

3. Water Exchanges

Operational exchanges may be used to increase the efficiency of both recharge and recovery operations. These exchanges can occur at two levels. The first would be a local exchange within Kern County coordinated entirely by KCWA. For example, one of the KWB participants might have Kern River water available to it at the same time that a participant in one of the adjacent Kern Fan banking projects has SWP water available to it. In this situation, the SWP water would be delivered to western banking facilities (e.g., the KWB) to reduce energy consumption costs, and the Kern River water would be delivered to eastern banking facilities (e.g., the Berrenda Mesa Project). However, the water recharged at the KWB would be accounted for as Kern River water, as if the exchange did not occur.

The second level of exchange that can occur uses facilities outside of Kern County, and typically requires the approval of the Department and/or Reclamation. For example, one of the KWBA participants might exchange its SWP Table A water for a like amount of CVP water available to a CVP contractor, such as Westlands Water District (WWD). In this situation, the Department would deliver the SWP Table A water to WWD via Reach 7 of the California Aqueduct in Kings County for use within the SWP service area, and Reclamation would deliver a like amount of CVP water to KCWA via the Friant-Kern Canal for recharge in Kern County banking facilities. As in the case of the local exchange described above, the water would be accounted for as if the exchange did not occur, or in this example, as SWP water.

4. Storage Accounting

The KCWA oversees all water transactions in Kern County and provides important water accounting for the banking projects in the Kern Fan area. An accounting of KWB storage activities from 1995 through 2005 is shown in Table 9. The table shows:

- Additions to Storage
 - o Gross deliveries for recharge
 - Net amount recharged, after 6 percent evapotranspiration losses
 - Acquisitions (e.g., the portion of the Hacienda Program water transferred to KCWA as part of the KFE property transfer)
 - o Exchanges between KWB participants
- Recovery for Participant Use
 - Recovered by pumping
 - Recovered by exchange (see Figure 10 for an explanation of the accounting for this type of exchange)
- Water Sales
 - o Categorized by method of recovery
 - Recovered by pumping

- Recovered by exchange (see Figure 11 for an explanation of the accounting for this type of exchange)
- Placed in trust (15,000 AF of stored water placed in trust for use by a power plant located within the service area of KWBA participant Wheeler Ridge-Maricopa WSD)
- "4%" water sales (4 percent of stored water made available for purchase by water districts adjoining the KWB, for overdraft correction pursuant to the KWB MOU)
- o Categorized by use
 - EWA
 - Agricultural entities in San Joaquin Valley
 - Wildlife refuge
 - Power plant located in Kern County (15,000 AF of stored water placed in trust)
 - "4%" water sales
- Losses for water sales (5 percent losses are applied to all sales of water leaving Kern County, for the overall benefit of the groundwater basin pursuant to the KWB MOU)
- Total storage reduction for sales (recovery by pumping for water sale, plus water placed in trust, plus"4%" water sales, plus losses for water sales)

The KWB storage balance is the net of additions to storage, minus recovery for participant use and total reductions for sales. These KWB activities and total storage balances are shown on an annual and cumulative basis in Figures 12 and 13, respectively. As of December 31, 2005, the KWB participants had a total cumulative balance of 1,050,778 AF of water stored in the KWB.



Recovery by Exchange for Participant Use

Recovery by exchange for participant use is used to deliver water at times when a KWB participant wishes to recover water from the KWB at the same time an adjoining entity with a groundwater banking program has SWP water available in the California Aqueduct that it would have otherwise recharged. The exchange allows the delivery to occur without

Figure 10

Recovery by Exchange for Water Sale

Recovery by exchange for water safe is used to deliver water at times when a KWB participant wishes to recover an exportable water supply from the KWB for safe to another endity, at the same time it has SWP water available in the California Aqueduct that it would have otherwise rechanged. The exchange allows the delivery to occur without incurring energy costs or wear and tear on equipment. In the example below, 1,000 AF of water is physically delivered to the EWA in San Lus Reservor. The KWB MCU prescribes a 5% loss to the groundwater basin for safes leaving Kern County. Therefore, in this example, a 6% loss of 50 AF is applied. For accounting purposes 1,000 AF of water is deducted from the KWB Participant's previously rechanged exportable supply for "delivery" to San Luis Reservor, 50 AF is deducted from the KWB Participant's account for the 5% loss factor, and 1,000 AF is added to the KWB Participant's account as stored SWP water. In Table 9, the amount exchanged is shown as Recovery by Exchange for Water Safe (row 10), and for safes of water leaving Kern County, the 5% reduction for losses is shown as Losses for Safes (row 20).







Data from Table 9, row 5, 8, 21, and 22.

Figure 12



Figure 13

Table 9. KWB Account Summary

	Row	Formula	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004 0	2005e	Totals
Additions to Storage		278 W IS						in designed a						
Recharge														
Gross Deliveries	1		230,938	143,890	115,590	306,641	35,684	40,341	10,030	13,439	40,374	18,065	356,807	1,311,799
Net Recharge (after 6% losses)1	2	row 1 x .94	217,082	135,256	108,654	288,243	33,544	37,920	9,429	12,632	37,951	16,981	335,399	1,233,091
Acquisitions	3		-	49,518	28,359	-	-	-	-	-	-	-	-	77,877
Exchanges Between Participants2	4		(8,200)	(9,208)	(227)	(327)	-	17,962	-	-	-	-	•	-
Total Additions to Storage	5	rows 2 + 3 + 4	208,882	175,566	136,786	287,916	33,544	55,882	9,429	12,632	37,951	16,981	335,399	1,310,968
Recovery for Participant Use				ing the star		9997 Q 99								
Recovery By Pumping for Participant Uses	6		-	-	1	-	-	-	(47,098)	(21,991)	(16,267)	(46,743)	-	(132,099)
Recovery By Exchange for Participant Use4	7		-	-	-	-	~	-	-	-	-	(6,125)	-	(6,125)
Total Recovery for Participant Use	8	rows 6 + 7		-	-	-	-	-	(47.098)	(21,991)	(16,267)	(52,868)		(138,224)
Water Sales														
					S	ales by Meth	od							
Recovery By Pumping for Water Sales	9		-	-	-	-	-	-	(38,203)	(34,337)	-	-	-	(72,540)
Recovery By Exchange for Water Sale4	10		-	-	-	(20,000)	-	(118,155)	(18,564)	(33,063)	(75,620)	(20,242)	(34,865)	(320,509)
Trust Accountss	11		-	-	-	-	-	-	(15,000)	-	-	-	-	(15,000)
"4%" Water Saless	12		-	+	-	-	-	-	(11,530)	(1,342)	(1,516)	(377)	(506)	(15,271)
Total Sales	13	sum rows 9 - 12	-	-	-	(20,000)	-	(118,155)	(83,297)	(68,742)	(77,136)	(20,619)	(35,371)	(423,320)
		- r	r			Sales by Us	e			r		,		
EWA	14		-	-	-	-	-	(72,280)	(56,767)	(67,400)	(65,620)	(20,242)	(34,865)	(317,174)
Agricultural Entities	15		-	-	-	(20,000)		(45,875)	-	-	-	-	-	(65,875)
Wildlife Refuge	16		-	-	-	-	-	-	-	-	(10,000)	-	-	(10,000)
Power Plant in Kern Countys	17		-	-	1	-	+	-	(15,000)	-	-	-	-	(15,000)
"4%" Water Saless	18		-	-	-	-	-	-	(11,530)	(1,342)	(1,516)	(377)	(506)	(15,271)
Total Sales	19	5um rows 14 - 18	-	-	-	(20,000)		(118,155)	(83,297)	(68,742)	(77,136)	(20,619)	(35,371)	(423,320)
Losses for Sales7	20	out-of-co sales x .05	-	-	-	(1,000)	-	(5,910)	(2,838)	(3,370)	(3,282)	(1,013)	(1,743)	(19,156)
Total KWB Storage Reduction for Sales8	21	rows 9 + 11 + 12 + 20	-	-	-	(1,000)	-	(5,910)	(67,571)	(39,049)	(4,798)	(1,390)	(2,249)	(121,966)
KWB Storage Balance		d Strong					2							
Annual Storage Balance	22	rows 5 + 8 + 21	208,882	175,566	136,786	286,916	33,544	49,972	(105,240)	(48,408)	16,887	(37,277)	333,150	1,050,778
Cumulative Storage Balance	23	row 230 + row 221	208,882	384,448	521,234	808,150	841,694	891,666	786,426	738,018	754,905	717,628	1,050,778	

1 Net Recharge is the amount of Gross Deliveries stored after deducting 6% for evapotranspiration losses. 2 Exchanges between KWB participants using existing KWB storage accounts. Note that there in no net change to KWB storage resulting from these exchanges. 3 Recovery By Pumping is stored water recovered by physically pumping it from wells. 4 Recovery By Exchange is stored water recovered by exchange with surface water available at the same time. See Figures 9 and 11 for further explanation. 5 Stored water placed in Trust for use by a power plant located within the service area of KCWA member agency Wheeler Ridge-Maricopa WSD. 5 "4%" Water Sales is 4% of stored water available of purchase by water distributes adjoining the KWB for overdraft correction, pursuant to the KWB MOU. 7 Losses for Sales are losses of 5% applied to all sales of water leaving Kem County, pursuant to the KWB MOU. 8 9 Data for 2005 are preliminary and subject to minor revision. Total KWB Storage Reduction for Sales is Recovery By Pumping for Water Sale + Trust Account + "4%" Water Sales + Losses for Sales. Recovery By Exchange for Water Sale is not included in this total because it is an exchange with surface water supplies and so does not result in physical storage reductions (see Figure 11 for further explanation).

5. Operations Monitoring

As discussed in Section V.B.3, the KWB is operated under the requirements of the *Memorandum* of Understanding Regarding Operation and Monitoring of the Kern Water Bank Groundwater Banking Program, which provides for the establishment of an extensive monitoring program and a Monitoring Committee to oversee banking operations and the results of said monitoring. The committee is made up of several basin stakeholders including the KCWA and all adjoining water districts.

a. Groundwater Monitoring

KWBA has used extensive monitoring to establish baseline groundwater quality and ensure that groundwater problems are not developing. This monitoring consists of two elements: 1) the regular sampling of 50 dedicated monitoring wells for several potential constituents of concern, and 2) the sampling of all recovery wells according to a Monitoring Schedule developed by the Department of Health Services.

The sampling of the monitoring wells is mandated by the KWB MOU. Under this program, water levels are measured at least semiannually, and water samples are analyzed for several potential constituents of concern at least annually. The results of this monitoring are reported to and reviewed by the Monitoring Committee to ensure that excellent groundwater quality is maintained.

The second element of groundwater monitoring includes sampling the recovery wells according to a DHS Title 22 Monitoring Schedule for wells providing water to municipal purveyors (KCWA, 1997). In addition to providing extensive information regarding groundwater quality, the results of this sampling are used to model expected changes in water quality in conveyance facilities receiving the recovered water.

b. Mitigation

A primary purpose of the Monitoring Committee is to evaluate groundwater information and determine if adverse impacts are likely to occur as a result of project operations. If the Monitoring Committee determines that adverse impacts are likely, then mitigation strategies are developed, as discussed in more detail in Section V.B.3. No mitigation measures have been necessary to date.

C. Maintenance and Other Operations

1. Water Operations Facilities Management

The KWB HCP allows the KWBA to install, construct, repair, maintain, and operate water recharge, water recovery, and water conveyance facilities within the Recharge Basin Sector and

the Other Water Banking Facilities Sector of the KWB. The management of these facilities is described in Annual Management Plans submitted to the wildlife agencies. These plans ensure that management activities comply with the HCP's Vegetation Management Plan, the Minimization of Impacts Requirements, and other measures prescribed by the HCP (see Section V.A.2.b.).

Typical activities include grazing, burning, and mowing in conformance with the Vegetation Management Plan, the application of herbicides with hand sprayers at wells and gate structures, road grading, and fence repair.

2. Land Maintenance

The primary tool for managing the habitat and fauna of the Kern Water Bank is the HCPs Vegetation Management Plan, with the primary goal being the minimization of tumbleweed and other noxious non-native plant growth (primarily salt cedar). This in turn encourages native plant growth and the continued conversion of water bank lands into exceptional upland, riparian, and alkali flat habitats. The tools provided in the Vegetation Management Plan include burning, grazing, disking, mowing, and herbicide application. From 1996 through 1999, tumbleweeds were primarily controlled with burning. In 2003, tumbleweeds were primarily controlled with cattle and sheep grazing programs. Other management programs include burning in ditches and chopping old tumbleweed drifts. Chopping removes the dense cover of the drifts and allows for the reestablishment of grasses and forbs which compete with the tumbleweeds. Salt cedar is controlled with herbicide spraying at various locations on an as-needed basis.

3. Habitat Restoration and Enhancement

The creation of the KWB is resulting in the reestablishment and preservation of exceptional wetland and upland habitat that existed historically throughout much of the southwestern San Joaquin Valley. About 17,000 of the 20,000 acres that comprise the KFE property were farmed intensively prior to 1991. Now, the water conservation activities of the KWB are re-creating intermittent wetland habitat. Willows, cottonwoods, sedges, and other wetland vegetation are reemerging, and the recharge basins and basin edges are providing nesting and foraging habitat for waterfowl and other birds. To date, more than 40 species of waterfowl have been sighted on the KFE property, including Caspian terns, the white-faced ibis, double-crested cormorants, and white pelicans.

Recharge activities only occur on about one third of the KFE property; upland habitat is becoming reestablished on the remaining two thirds of the property. Vegetation management in these areas is focusing on regenerating native grasses and plants that help to promote the threatened and endangered species associated with this area. This upland habitat is supporting large populations of raptors, kangaroo rats, rabbits, badgers, bobcats, and coyotes. Of particular importance are the populations of Tipton kangaroo rats, burrowing owls, and tri-colored blackbirds.

4. Clean-up of Areas of Environmental Concern

A *Preliminary Environmental Assessment* report prepared by Luft Environmental Consultants in October 1995 identified "Areas of Potential Environmental Concern" (APECs) on the KFE property. All of the APECs which are KWBAs' responsibility have been cleaned up, remediated and/or closed. These include:

- Buena Vista Ranch Headquarters and the HSST Ranch Headquarters: The pesticides in soil identified at the Buena Vista Ranch Headquarters and the HSST Ranch Headquarters, each an APEC, were remediated by the Kern Water Bank Authority. The scope of the clean-up involved excavating contaminated soil and treating it in a thermal-desorption unit. The Department of Toxic Substances Control certified that the remedial activities were complete in 2001 and that the land could be used for all uses, including the "intended purpose of maintaining a groundwater resource bank."
- *S&M Farms, Tumbleweed Farms, Red Dirt, Two Tanks:* No significant environmental issues were identified at these sites. The trash at S&M farms and the two tanks have been removed.
- Underground Storage Tanks: The Kern Water Bank Authority has also removed two underground storage tanks (USTs) not identified in previous environmental reports. The USTs were uncovered at the Buena Vista Ranch Headquarters on April 30, 1999, and removed May 7, 1999 under a Kern County Environmental Health Services Department permit. No soil contamination was detected beneath the USTs, and the county has indicated the tank closure is complete with no further action necessary.

The balance of the APECs identified in the Luft Report are not the responsibility of KWBA. However, KWBA is tracking these issues and coordinating with the appropriate regulatory agency where appropriate. For example, KWBA has been discussing potential impacts at the former Uhler Fire Training Facility with both Kern County and the Regional Water Quality Control Board. (All of the facilities at this site have been removed, and Kern County is in the process of developing a bid to have soil and groundwater at the site assessed). KWBA is also actively tracking assessment and clean-up activities associated with the former Wait-Midway Pipeline and the Strand Oil Field.

D. HCP/NCCP Mitigation and Monitoring

The HCP/NCCP requires the KWBA to be responsible for establishing, maintaining, and enhancing habitat preserves, carrying out site-specific mitigation measures and for monitoring and reporting the results of management activities to the USFWS and CDFG in Annual Reports. KWBA compiles the annual report with input from professional biologists and botanists.

1. Monitoring Compliance

From 1999 through 2005, with the assistance of wildlife biologists and the cooperation of the USFWS and CDFG, KWBA staff have spent many hours in the field observing, photographing, trapping, and enumerating wildlife to document any instances of "take", either though construction activities or KWB operations. These monitoring activities are, in part, prescribed in the HCP. For example, populations of the San Joaquin Kit fox are surveyed with a nighttime spotlighting program, and Tipton Kangaroo rat populations are surveyed with trapping grids. Other surveys are conducted voluntarily (e.g., waterfowl and tumbleweeds). The only instance of "take" ever reported was the temporary relocation of live Tipton kangaroo rats during the construction of the Kern Water Bank Canal headworks. The kangaroo rats were successfully reintroduced to the area after construction was completed.

2. Mitigation Measures

The HCP prescribes various mitigation measures for construction and repair activities (see Section V.A.2.b.). According to the KWB's annual reports, these measures were adhered to as required.

VII. Alternatives for Recharge at KWB

The following analysis was prepared to determine how much of the SWP water that was recharged in the KWB from 1995 through 2004 could have been recharged in other existing recharge projects in Kern County, assuming no access was available to the KFE property.

A. Method

The amount of SWP water recharged in the KWB was compared to the unused absorptive capacities available in other existing recharge projects in Kern County to which the KCWA had access. If the SWP water was less than the total unused absorptive capacity of the other recharge projects in the Kern Fan area, it was assumed that the SWP water recharged in the KWB could have all been recharged elsewhere. This comparison was done on a monthly basis using delivery records from 1995-2004 and is limited to recharge projects in the Kern Fan area.

The Kern Fan Projects include the: Berrenda Mesa Project (operational since 1983); City of Bakersfield (COB) 2800 Acres (operational since 1978); Pioneer Project, including the Kern River Channel (operational since 1995);¹⁴ and the Kern Water Bank (operational since 1995). The KCWA owns the Pioneer Project, and provides services to operate the KWB, owned by the KWBA, and the Berrenda Mesa Project, owned by the Berrenda Mesa Water District. The KCWA has a contract with the City of Bakersfield for use of the COB 2800 Acres.

¹⁴ The Kern River Channel is part of the Pioneer Project but is also used by others, in accordance with established priorities for its use. To account for higher priority use by others, the Kern River Channel was analyzed separately from the rest of the Pioneer Project.

This analysis does not include KCWA use of certain KWB facilities that existed and had been used by KCWA for recharge prior to 1995. The KWB facilities that existed prior to 1995 included: KWB canals, which DWR allowed KCWA to use for recharge purposes in 1993; and KWB recharge ponds constructed by Tenneco on the KFE property prior to DWR's purchase of the property from Tenneco. The additional absorptive capacity provided by these KWB facilities and the local districts was not included in this analysis since adequate capacity was available in the other Kern Fan Projects to absorb the SWP water recharged on the KWB.

B. Analysis Assumptions

1. Absorptive capacity

- a. The absorptive capacity for each Kern Fan Project was determined based on an initial recharge rate for that project, and during periods of continuous use, assumed rates of decline. Declines were determined based on analysis of historic rate declines. Absorptive capacities were determined by project and by month from 1995 through 2004.
- b. Initial fill rates, based on historic initial recharge rates, were used for the first month of the first recharge period, and for the first month of any subsequent recharge periods if the project had not been operated for three or more months between recharge periods. If the project had not been operated for less than three months, the initial fill rate for the subsequent recharge period was assumed to be 88% of the initial fill rate.
- c. In a month when water had not historically been recharged at a particular Kern Fan Project, the shifting of water that had been recharged on the KWB to that project would trigger a recharge rate decline. The water that had been recharged on the KWB was assumed to be absorbed at the Kern Fan Projects in the following order of priority: 1) Pioneer, 2) COB 2800 Acres, 3) Berrenda Mesa, and 4) Kern River Channel. Recharge rate declines were triggered once that project was needed.
- d. Daily deliveries to each recharge project were reviewed. During certain months when Article 21 water was not available for the entire month, absorptive capacities were further reduced to reflect only the number of days when that water was available.
- e. Details for each of the other Kern Fan Projects on initial fill rates and assumed rates of decline are included at the end of this section.
- 2. Unused absorptive capacity available

The unused absorptive capacity available for recharge of the SWP deliveries to the KWB at a project in a given month was calculated as the absorptive capacity that month minus the total of all actual deliveries from all sources to that project in that month.

3. Ability to absorb SWP deliveries to KWB in other recharge projects

The ability to move SWP water recharged on the KWB in a particular month to other months in that same year depends on the type of SWP water delivered. Table A water or other SWP water that can be scheduled, can be rescheduled and shifted to any other month that year. Article 21 water is unregulated water DWR makes available for only temporary periods, and can only be shifted among those months within a year this water is available. For these water types, the following assumptions were made:

- a. An "Article 21 period" was identified during which Article 21 water was delivered to KCWA. The timing and duration of this period was determined using DWR Bulletin 132 and KCWA records. When Article 21 water was available for only part of the month, absorptive capacities were limited to the number of days Article 21 water was available. SWP deliveries to the KWB could be shifted to available capacity in the other Kern Fan Projects in any other month Article 21 water was available during that same year.
- b. Months that were not in the Article 21 period were assumed to be "regulated". Table A or other scheduled SWP water could be shifted to available capacity in the other Kern Fan Projects in any other month during that same year.

Absorptive Capacity Assumption Details in Order of Priority

Pioneer Project

- Jan. Mar. 1995 Recharge capacity was only available in the James and Pioneer Canal systems. Initial delivery rates were 85 cfs/day, or 5,226 AF/month. Recharge amounts have been adjusted for the number of days in each month.
- Apr. Jun. 1995 New construction completed the Pioneer recharge facilities in June of 1995. Initial delivery rates increased to 260 cfs/day.
- Using historical delivery data to the Pioneer Project, and assuming continuous recharge, monthly recharge capacity declines are assumed as follows:
 - \circ 1st month 100% (initial fill capacity)
 - \circ 2nd month 6% decline (1st month x 0.94)
 - \circ 3rd 6th month 12% decline per month (previous month x 0.88)
 - \circ 7th month forward 1% decline per month (previous month x 0.99)

City of Bakersfield 2800 Acres

- Initial fill rate in COB 2800 Acres 500 cfs. Assumption based on actual 30-day average of flow rates to the project at start up.
- Using historical delivery data from the COB 2800 Acres and assuming continuous recharge, monthly recharge capacity declines are assumed as follows:
 - \circ 1st month 100% (initial fill capacity)
 - \circ 2nd month 6% decline (1st month x 0.94)
 - \circ 3rd 8th month 12% decline per month (previous month x 0.88)
 - \circ 9th 12th month 6% decline per month (previous month x 0.94)
 - \circ 13th month forward 1% decline per month (previous month x 0.99)

Berrenda Mesa Project

- Initial fill rate in Berrenda Mesa Project Ponds 75 cfs.
- Additionally, initial Kern River losses to COB 2800 Acres 15 cfs.
- Using historical delivery data to the Berrenda Mesa Project and assuming continuous recharge, monthly recharge capacity declines are assumed as follows:

- \circ 1st month 100% (initial fill capacity)
- \circ 2nd month 6% decline (1st month x 0.94)
- \circ 3rd 6th month 12% decline per month (previous month x 0.88)
- \circ 7th month forward 1% decline per month (previous month x 0.99)

Kern River Channel

- Maximum absorptive capacity 11,900 AF/month (Approximately 200 cfs)
- Assuming continuous recharge, monthly recharge capacity declines are assumed as follows:
 - \circ 1st month 100% (initial fill capacity)
 - \circ 2nd month 6% decline (1st month x 0.94)
 - \circ 3rd 6th month 12% decline per month (previous month x 0.88)
 - \circ 7th month forward 1% decline per month (previous month x 0.99)

Note: The absorptive capacity on the Kern River Channel was needed and evaluated only in 1995 and 1996. Use of this capacity was not needed in the remaining years.

C. Results

A summary of the results of this analysis are presented in Table 16. The summary table shows the ability to absorb the SWP supplies recharged on the KWB considering the unused absorptive capacity of Kern Fan Projects (i.e., the Berrenda Mesa Project, the COB 2800 Acres, and the Pioneer Project, including the Kern River Channel).

Table 10 presents results separately for the Article 21 period (when Article 21 water was determined to be available), the regulated period when only scheduled supplies were available, and the total for January through December.

Within Table 10, actual SWP deliveries to the KWB are shown as negative numbers. The positive numbers for the other projects show the unused absorptive capacity. Therefore, if the total shown at the bottom of each table is positive, it means the unused absorptive capacity available exceeded the amount of SWP water delivered to the KWB, so all of that SWP water could have been recharged in these other projects. If the total shown at the bottom of each table is negative, the unused absorptive capacity available was less than the amount of SWP water delivered to the KWB, so some of that SWP water would not have been recharged.

The results show that all SWP deliveries to the KWB from 1995 through 2004 could have been recharged in the other Kern Fan Projects.

Table 10. Kern Fan Banking Project's Abilitity to Absorb State Water Project Supplies Recharged on Kern Water Bank YEARLY SUMMARY BY SWP TYPE

NO RECHARGE CAPACITY ON KERN WATER BANK

	Γ	ARTICLE 21 PERIOD SUMMARY									
Project	Year>	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Berrenda Mesa		3,934	4,404	4,363	0	3,983	4,507	1,964	1,785	295	770
2800 Acres		15,412	5,588	3,189	0	12,523	15,149	8,370	13,594	5,441	12,218
Kern Water Bank		0	-17,237	-9,386	0	-5,970	-18,898	-10,030	-6,380	-4,632	-16,151
Pioneer Property		12,374	7,083	1,866	0	20,085	5,833	4,420	3,723	1,452	4,974
Kern River Channel		3,370	3,740	0	0	0	0	0	0	0	0
	Total	35,090	3,579	32	0	30,620	6,591	4,723	12,723	2,556	1,811

	ſ	REGULATED SUMMARY									
Project	Year>	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Berrenda Mesa		5,067	17,376	0	19,800	0	0	0	0	5,234	4,527
2800 Acres		47,425	52,822	33,304	100,868	55,143	40,532	0	0	30,403	0
Kern Water Bank	-	-70,329	-70,255	-30,663	-51,155	-20,041	-557	0	0	-35,742	-1,914
Pioneer Property	_	29,481	45,402	47,755	37,795	46,413	44,091	0	0	36,484	18,963
Kern River Channel		13,191	4,163	0	0	0	0	0	0	0	0
	Total	24,835	49,508	50,395	107,309	81,514	84,066	0	0	36,378	21,575

	1		YEARLY SUMMARY								
Project	Year>	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Berrenda Mesa		9,002	21,780	4,363	19,800	3,983	4,507	1,964	1,785	5,529	5,297
2800 Acres		62,837	58,411	36,493	100,868	67,665	55,681	8,370	13,594	35,844	12,218
Kern Water Bank		-70,329	-87,492	-40,049	-51,155	-26,011	-19,455	-10,030	-6,380	-40,374	-18,065
Pioneer Property		41,855	52,485	49,620	37,795	66,497	49,925	4,420	3,723	37,935	23,937
Kern River Channel		16,560	7,903	0	0	0	0	0	0	0	0
	Total	59,925	53,087	50,427	107,309	112,134	90,658	4,723	12,723	38,934	23,387

VIII. Effects of KWB Development and Operations

A. Groundwater Hydrology and Quality

1. Existing Conditions in 1995

The Department divides the Central Valley of California into two groundwater basins, the Sacramento Valley Groundwater Basin and the San Joaquin Valley Groundwater Basin. It further divides the San Joaquin Valley Groundwater Basin into subbasins, one of which, the Kern County Subbasin, would be affected by the proposed project. Kern County subbasin lies at the south end of the San Joaquin Groundwater Basin.

The San Joaquin Valley was formed by deposition of sediment in a north-northwestern trending trough. The aquifer system in the valley consists of continental and marine deposits several miles deep. The upper 2,000 feet generally contain fresh groundwater. The sediments that contain the aquifer system are primarily Tertiary– and Quaternary–aged continental sediments derived from the Coast Range to the west and the Sierra Nevada to the east. Overlying these formations are flood plain deposits. A significant hydrogeologic feature is the Corcoran Clay. This clay layer divides the aquifer system into two distinct aquifers, an unconfined to semiconfined upper aquifer above the clay layer and a confined aquifer below it.^v However, the clay layer is not continuous, and is absent in portions of the Kern County Subbasin.

Historically, the upper aquifer system in the Kern County Subbasin was recharged by precipitation, infiltration from rivers and lakes and lateral inflow along the basin boundaries. The main surface water feature in the Kern County Subbasin is the Kern River. Before European settlement the Kern River flowed to Kern and Buena Vista Lakes and extensive wetlands. During wet periods, the lakes overflowed to Tulare Lake to the north, which itself overflowed into the San Joaquin River watershed. Groundwater levels in the basin varied but reached artesian conditions in the lowest parts of the subbasin.

In the 1860s, ranchers raised livestock and dry farmed wheat in the San Joaquin Valley portion of Kern County. In the 1870s, farmers began diverting the waters of the Kern River to irrigate their crops. For two decades, irrigators relied almost exclusively on surface waters for their water supplies, but in the 1890s, some took advantage of improvements in pumping technology and began turning to more reliable groundwater supplies.^{vi} Increasing use of groundwater caused the water table in parts of Kern County to fall by as much as 400 feet by 1960. Groundwater extraction between 1926 and 1970 has caused the ground surface to subside by eight to nine feet in the central part of the Kern County Groundwater Subbasin.^{vii}

Surface water imports to the area began in 1949 with the completion of the CVP's Friant-Kern Canal and increased in the 1960s and 1970s, as water from the SWP became available. Many irrigators contracted for deliveries of imported surface water and were able to reduce their use of groundwater. As a result, groundwater levels in some parts of the southern San Joaquin Valley began to rise.

KCWA, the largest of the SWP's agricultural contractors, and other agencies in Kern County, manage surface and groundwater in the San Joaquin Valley portion of Kern County. Their surface water sources include flood flows from the Kern River, CVP deliveries from the Friant-Kern Canal and SWP deliveries from the California Aqueduct. Their groundwater source is the aquifer that underlies much of the land within the KCWA boundaries.

For many years, water agencies in Kern County have practiced conjunctive use of their surface and groundwater sources; that is, they actively manage their surface and groundwater sources to take advantage of the unique characteristics of each type of water source. Kern County agencies utilize in-lieu recharge and direct recharge management practices. In-lieu recharge is a water management practice that modifies the irrigation practices of water users who have access to surface water supplies and groundwater supplies. It substitutes surface water for irrigation inlieu of normal groundwater pumping to increase groundwater supplies and conserve groundwater for use in future years. Direct recharge (artificial recharge) is a water management practice that applies water to percolation ponds to increase groundwater recharge and store water in an aquifer for later extraction.

When surface waters are available from the Kern River, the CVP or the SWP, farmers use surface waters to irrigate crops. When surface water supplies are insufficient, farmers supplement their surface water supplies with groundwater. When surface water availability exceeds farmer's needs, KCWA and those other water agencies with groundwater recharge facilities percolate the surface water to recharge the groundwater basin. Other agencies that manage groundwater banks with in-lieu recharge will then use any excess surface water in lieu of pumped groundwater, with the objective of allowing the basin to recover and/or storing this water for subsequent withdrawal.

Kern County water agencies manage groundwater banks for use by other agencies as well as their own in-county use. The agencies use direct and in-lieu recharge to bank groundwater for their own later recovery. Some Kern County agencies also offer groundwater banking, which is the storage of a non-Kern County agency's water in Kern County groundwater basins for later recovery. The agencies can recover the water for the non-Kern County agency by direct pumping and conveyance of the water to the non-Kern County agency, or the Kern agencies can recover the water through an in-lieu exchange. Under an in-lieu exchange, the SWP or non-SWP water that would otherwise have been delivered to the Kern County agency would instead be delivered to the non-Kern County agency's stored water for use within the Kern County agency's service area. The third party could be a water agency located outside Kern County, or it could be a KCWA member agency that has access to the groundwater basin underlying parts of the KCWA service area. The third party makes an agreement with the groundwater bank operator to store and recover water from the groundwater basin.

Figure 9.2-1 shows total water supplies and water demand in the San Joaquin Valley portion of Kern County between 1970 and 1999. In years when total surface water supplies exceeded demand, the excess supply was added to groundwater storage. In years when total surface water supplies were insufficient to meet demand, groundwater was pumped to meet demand and groundwater storage decreased. Between 1970 and 1995, groundwater storage declined by 6.6

million AF, an average reduction in storage of 264,000 AF per year. Figure 9.2-2 shows cumulative groundwater storage for the period 1970 to 1995. During most of the 1970s, groundwater storage declined as a result of dry conditions and limited access to SWP water due to distribution system limitations. Groundwater storage increased from 1978 until the mid-1980s when a ten-year dry period began, resulting in a decline of approximately 7.3 million AF, compared to 1970 storage levels.^{viii}

2. Effects of Transfer, Development, and Operations

For many years, Kern County farmers and water agencies have practiced conjunctive use of surface and groundwater sources. They also practice groundwater banking. Between 1971 and 1994, 1.15 million AF of water was delivered for banking within the San Joaquin Valley portions of Kern County, an average of about 48,000 AFY, using water from local, SWP, and CVP supplies. With a few exceptions, this water was banked for KCWA and its member agencies.

Groundwater banking in Kern County increased after 1995. Between 1995 and 2000, 2.38 million AF of water was delivered for banking within the San Joaquin Valley portions of Kern County, an average of about 397,000 AF per year. There were four reasons for the increase, two of them related to the Monterey Amendment.

A primary reason for increased groundwater banking was recognition by Kern County that they would need to take measures to improve the reliability of their water supplies. The extended drought of 1987 through 1992, including 1991 when agricultural contractors received a zero percent SWP allocation, highlighted the hydrologic uncertainty of SWP supplies. At the same time, the listing in the early 1990s of several Delta fish species as threatened or endangered, along with proposed regulatory and operational constraints to protect them, highlighted the regulatory uncertainty that could further reduce SWP supply reliability. In response, KCWA and its member agencies began aggressive development of banking programs to store wet-year supplies for their use in dry years.

A second reason for increased banking was the series of wet years that followed the drought. Beginning in 1995 and continuing through the late 1990s, these consecutive wet years provided abundant excess water for the contractors and others to store in the Kern County Groundwater Subbasin.

The next two reasons relate to the Monterey Amendment. Although DWR, on a policy basis, had approved out-of-service area banking prior to the Monterey Amendment (i.e., the Semitropic WSD banking program), the Amendment provided a contractual assurance that contractors would be able to store SWP water outside their service areas. Of the total amount delivered for banking within Kern County between 1995 and 2000, about 503,000 AF was provided by contractors for storage outside their service areas in banking programs approved after implementation of the Monterey Amendment. The Monterey Amendment also transferred ownership of the KFE property to local interests, and the KWBA developed percolation ponds and wells on the property for groundwater banking by its participating members. Of the total amount delivered for banking within Kern County between 1995 and 2000, about 595 and 2000, about 873,000 AF

was for banking at the KWB. As was shown in Section VII, all of the SWP water banked at the KWB during this period could have been banked in available capacity in other existing banking projects in the Kern Fan area. Therefore, much of the water banked at the KWB would have been banked in Kern County, even without the KFE property transfer.

So while groundwater banking increased in Kern County after 1995, it occurred for a number of reasons. Of the total 2.38 million AF delivered for banking in Kern County between 1995 and 2000, more than half was, or otherwise would have been, banked in existing banking programs unrelated to the Monterey Amendment.

Between 1995 and 2005, KWB participants placed about one million AF more water in groundwater storage in Kern County than they withdrew (see Table 9). KCWA estimates that every 100,000 AF of water placed in storage causes a rise of one foot in the groundwater level in the San Joaquin Valley portion of Kern County. Thus, storage of water in the KWB probably raised groundwater levels by about 10 feet between 1995 and 2005.

During the late 1990s and early 2000s, KWB participants appeared to be setting aside the stored water for use in dry periods rather than using it to increase their average annual deliveries of SWP water. This operating practice would result in water remaining in storage for several years and only being drawn down occasionally. Overall, the effect of the additional groundwater banking facilitated by the KWB was to raise groundwater levels in Kern County by several feet relative to the baseline scenario. Thus, the KWB had a modestly beneficial effect on groundwater levels in Kern County between 1995 and 2005 relative to the baseline, and is therefore a *less-than-significant impact*.

B. Terrestrial Biological Resources

1. Existing Conditions in 1995

The approximately 19,900 acre KFE property is located in Kern County, about 20 miles west of Bakersfield and 10 miles south of Buttonwillow. Interstate 5 and the Kern River both bisect the area. The KFE property had historically been subject to periodic flooding from the Kern River, and is able to absorb water at an extremely high rate, retaining it in underground aquifers. The land was used for cattle grazing in the 1880s, and then crop production in the 1930s. It was also explored for gas and oil resulting in numerous wells and pipelines. The Department purchased the land in 1988 with the intention of creating a groundwater bank. In 1994, four special-status plants and eleven special-status animals were known to occur on the KFE property (see Table 11) Note: for this study, ADEIR Table 9.4-2 was revised to include only that information relevant to the KFE property).

Prior to the Department's purchase of the KFE property, approximately 17,068 acres of the property was under extensive cultivation.^{ix} The remaining property contained 1,515 acres of isolated sensitive native plant communities (valley saltbush scrub, Great Valley mesquite scrub and valley sacaton grassland) and 1,317 acres of non-native grassland, which had been leased for

oil recovery facilities. No wetland habitat was present in the project area, except for the canals used to convey agricultural water.

After the Department acquired the property, it continued to be farmed by tenants for several years. One of the tenants' leases was terminated in 1989. Then in 1991, at the peak of the drought, all the remaining tenants leases were terminated, and thereafter the lands were fallowed.

	TA	BLE 11			
SPECIAL-STATUS SPE POTENTIAL TO BE IMP	ECIES WIT	H KNOWN THE KER	OCCURRENCES AND T	THE ERTY	
Species Name	Stat Federal/S	tate/CNPS	Habitat	Kern Fan Element Property	
Plants	1774	1 2005		roperty	
Hoover's wolly- star (eriastrum) Eriastrum hooveri	T/-/4	D/-/4	Alkali sinks, washes. Usually on silty to sandy soils.	Х	
Recurved larkspur Delphinium recurvatum	C2/-/1B	SC/-/1B	On alkaline soils	х	
San Joaquin woollythreads Monolopia (Lembertia) congdonii	E/-/1B	E/-/1B	Alkaline or loamy plains, sandy soils	х	
Slough thistle Cirslum crassicaule	C2/-/1B	SC/-/1B	Sloughs, riverbanks, and marshy areas	х	
Amphibians			······		
Western spadefoot Scaphiopus hammondii	C2/CSC	SC/CSC	Primarily grassland habitats, requires vernal pools for breeding and egg-laying.	х	
Reptiles					
Blunt-nosed leopard lizard Gambelia sila	E/E, FP	E/E, FP	Sparsely vegetated alkali and desert scrub habitats, in areas of low topographic relief.	х	
Western pond turtle Emys marmorata (includes both subspecies)	C2/CSC	SC/CSC	Permanent or nearly permanent bodies of water; requires basking sites, and suitable nesting sites	х	
Birds					
Burrowing owl Athene cunicularia	C2/CSC	SC,BCC/CSC	Subterranean nester, dependant upon burrowing mammals, Burrow sites typically in open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation.	x	
California thrasher Toxostoma redivivum	-/-	SC/-	Lowland and coastal chaparral, riparian thickets	х	
Cooper's hawk Accipiter cooperii	-/CSC	-/CSC	Nests in riparian growths of deciduous trees, as in canyon bottoms of river floodplains, within open, interrupted or marginal woodland.	х	
Double-crested cormorant Phalacrocorax auritus	-/CSC	-/CSC	Fresh, brackish, and salt water, along coastal regions and inland lakes	Х	

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POTENTIAL TO BE IMP.	ACTED ON	H KNOWN N THE KER	N FAN ELEMENT PROP	ERTY Kern Fan	
Species Name	Federal/S	State/CNPS	Habitat	Element Property	
Lawrence's goldfinch Carduelis lawrencei		SC/	Oak and riparian woodland, chaparral, pinion/juniper woodland, and weedy areas near water.	x	
Loggerhead Shrike Lanius ludovicianus	C2/CSC	SC,BCC/CSC	Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting. Typically nests in broken woodlands, savannah, pinyon- juniper, Joshua tree, and riparian woodlands, desert oases, scrub, and wash.	х	
Northern Harrier	-/CSC	-/CSC	Breeds in shrubby vegetation within marshes, or grasslands,	x	
Swainson's hawk Buteo swainsoni	-/T	SC,BCC/T	Breeds in stands with few trees in Juniper-sage flats, riparian areas and oak savannahs. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	X	
White-tailed (black shouldered) kite Elanus leucurus	_/*	SC,MNBMC/ FP	Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching. General nesting habitat is rolling foothill/valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland.	х	
Mammals	·······				
American badger Taxidea taxus	-/CSC	-/SA (CSC in 2006)	Need friable soils and open, uncultivated ground in drier open stages of most shrub, forest, and herbaceous habitats.	X	
Buena Vista Lake shrew Sorex ornatus relictus	C1/CSC	E/CSC	Marshlands and riparian areas in the Tulare Basin. Prefers moist soil. Uses stumps, logs and litter for cover.	Х	
San Joaquin antelope squirrel Anmospermophilus nelsoni	C2/T	SC/T	Western San Joaquin Valley on dry, sparsely vegetated loam soils. Need widely scattered shrubs, forbs and grasses in broken terrain with gullies and washes	Х	
San Joaquin kit fox <i>Vulpes macrotis mutica</i>	E/T	E/T	Needs loose-textured sandy soils for burrowing, and suitable prey base, in annual grasslands or grassy open stages with scattered shrubby vegetation.	х	

TABLE 11									
SPECIAL-STATUS SPECIES WITH KNOWN OCCURRENCES AND THE									
FOIEINIAL TO DE INTACIED ON THE KEKINFAN ELEMIENT PROPERTY Status ⁽¹⁾									
	Federal/St	ate/CNPS		Element					
Species Name	1994	2003	Habitat	Property					
Tipton kangaroo rat Dipodomys nitratoides nitratoides	E/E	E/E	Needs soft friable soils which escape seasonal flooding within saltbrush scrub and sink scrub communities in the Tulare Lake Basin of the southern San Joaquin Valley	х					
Yuma myotis Myotis yumanensis	C2/-/-	SC/	Optimal habitats are open forests and woodlands with sources of water over which to feed. Distribution in closely tied to the bodies of water. Maternity colonies in caves, mines, buildings or crevices.	x					
E Listed as endangered under the Federal Endan T Listed as threatened under the Federal Endan C1 Category 1 Candidate for which the USFWS as endangered or threatened species. Proposed rules not y C2 C2 Category 2 Candidate for which information possibly appropriate, but for which persuasive data on bio SC Federal Species of Concern. The USFWS do termed "Species of Concern." The Sacramento Fish & W of the term does not mean that they will eventually be pro D D Delisted – Delisted species are monitored for BCC US Fish and Wildlife Service, Bird of Conserva MNBMC US Fish and Wildlife Service, Migratory Nong - No listing State E E Listed as endangered nuder the California End CSC California Special Concern Species – categor therm vulnerable to extinction. FP FP Fully Protected – Fully protected species may * Taxa listed with an asterisk (*) fall into one or declining throughout their range; (2) population(s) in Cali within California; and (3) taxa closely associated with a h SA Taxa found on the July 2003 Special Animals	ngered Species Act. gered Species Act. has on file sufficient et issued because this now in the possession logical vulnerability a cided to no longer maintain posed for listing. In 2 five years after being tion Concern ame Bird of Manager dangered Species Act. ized as such because v not be taken or poss r more of the followi fornia that are peripho- bitat that is declining t List, which have no	information on bi a action is preclud a of the USFWS is and threat are not sintain C2 and C3 us a list of <i>Specie</i> . 2006, the USFWS g delisted. nent Concern L of declining popu essed without a ping categories – (1 tral to the major pi in California (e.g legal or protection	ological vulnerability and threat(s) to support prop ed at present by other listing activity. ndicated that proposing to list and endangered or the currently available to support proposed rules. lists, and species formerly categorized as such we s of Concern. These species receive no legal protect stopped maintaining a Federal Species of Concern lation levels, limited ranges, and/or continuing thr emit from the Fish and Game Commission.) Taxa that are biologically rare, very restricted in ortion of a taxon's range, but which are threatened g, wetlands, riparian, old growth forest). In status.	oosals to list them hreatened is tre informally ction and the use a list. eats have made distribution , or I with extirpation					
Other – California Native Plant Society 1B Rare, threatened or endangered in California 4 Plants of limited distribution.	Other – California Native Plant Society IB Rare, threatened or endangered in California and elsewhere 4 Plants of limited distribution.								
Sources: USFWS List of Candidate Fauna from California and Nev Endangered and Threatened Wildlife and Plants 50 CFR 1 State and Federal Endangered Animals for California and California Department of Fish and Game Natural Diversit	ada as of 31 August 1 7.11 and 17.12, Augu Listing Dates, Depart y Data Base Special A	1994 (59 FR 5898 1st 20, 1994. ment of Fish and Animals, Decembe	2) Game, Revised January 1994. r 1992 (The 1994 version could not be located).						

2. Effects of Transfer, Development, and Operations

The Monterey Amendment called for ownership of the KFE property to be transferred from the Department to the KCWA, and then to the KWBA, which was completed in 1996 (upon

completion of the title search). In 1995, the KCWA received interim permits/authorizations from the USFWS and CDFG to initiate water banking to take advantage of a high availability of water due to a heavy snow pack in the Sierras. As a condition of the interim permit, KCWA was required to set aside permanent habitat mitigation land, which had moderate habitat value, or natural vegetation, until the long term HCP could be implemented on the KFE property.^x The interim project was carried out in two stages. The first stage resulted in the rehabilitation of disused canals and inundation of 1,518 acres of former agricultural land. Pre-construction surveys were conducted, and revealed poor habitat values throughout the Stage 1 area, and no suitable habitat for listed species.

The second stage resulted in the inundation of 1,516 acres of grassland and fallow agricultural land, which had the potential to support listed species. Biological surveys were conducted in all areas proposed for disturbance by either construction or flooding and 58 potential San Joaquin kit fox dens were found to be unoccupied and destroyed; the animals did not return prior to construction. Approximately 300 potential Tipton kangaroo rat burrows were located during surveys, but were not monitored for the presence of Tipton kangaroo rat. If any of these burrows were inhabited, then a take may have occurred if the animals were unable to escape. Approximately one-quarter to one-third of a known population of San Joaquin woolly threads were inadvertently covered with excavated soils during project construction. The location of this plant was not identified prior to construction, but upon discovering the damage, the area was flagged and avoided. [Comment: Could you please provide us with a reference for these statements regarding the Tipton Kangaroo rats and San Joaquin woolly threads. Current KWBA staff are unfamiliar with these incidents and would like to verify their accuracy.] Construction of the recharge basins resulted in the loss of potential San Joaquin kit fox and Tipton kangaroo rat habitat, the potential take of Tipton kangaroo rat, and the destruction of a portion of the San Joaquin woolly thread population. This was not fully mitigated for prior to project construction, but has been mitigated for through post-construction participation in the KWB HCP/NCCP.

Since 1996, the KWBA has been responsible for land management on the KFE property. Lands have been managed in accordance with a HCP/NCCP approved by USFWS and CDFG in 1997.^{xi} The KWB HCP/NCCP documents a plan to accomplish both water conservation and environmental objectives, mitigating project specific impact to less than significant at a regional level. The primary water conservation objective is the storage of water in aquifers during times of surplus for later recovery during times of shortage. The primary environmental objective is to set aside large areas of the KFE property for endangered, threatened and other sensitive species and to implement a program to protect and enhance the habitat.

Under the KWB HCP/NCCP, the 19,900-acre KFE property was divided up for different land uses (see Table 1).

- Recharge Basins and Other Banking Facilities Permanent operation of the banking facilities included the flooding of basins, constructing facilities for recovery of the water from underground aquifers and maintenance of all project facilities.
- Compatible Habitat This habitat is largely fallowed agricultural land that has become established as non-native annual grassland that has been preserved and managed around

the banking facilities. It will provide upland habitat for San Joaquin kit foxes and other upland species.

- Sensitive Habitat Three areas of sensitive habitat containing remnant native saltbush and valley sink scrub habitat have been identified. They are comprised of historic upland habitat and non-farmed locations of the KFE property and will benefit native upland species. These areas will be protected throughout the life of the permit.
- Department Mitigation Land A 530-acre conservation easement has been established on the KFE property to mitigate other projects carried out by the Department prior to the transfer of this land to the KCWA. This easement will be managed by KWBA in accordance with the management plan established for the area.
- KWBA Mitigation Land A 435-acre conservation easement has been established in the Kern Fan Element to mitigate KWBA projects on KWB lands. This easement will be managed by KWBA in accordance with the management plan established for the area.
- Farming 3,170 acres of the project site may be farmed in a manner appropriate to soil conditions found on site. The land may also be used for water recharge and recovery purposes, including recharge basins, levees and related uses.
- Conservation Bank 3,267 acres of potential and occupied habitat has been designated for a conservation bank. Pursuant to the HCP, KWBA may use, or sell up to 490 acres of this habitat for commercial development. However, KWBA has agreed not to sell or use the 490 acres as a condition of the Monterey Settlement Agreement. Much of this land was pre-approved mitigation land by CDFG and is adjacent to other land preserved in the area. KWBA can use or sell up to 3,267 conservation credits to landowners, developers and others for mitigation for projects within the Master Permit Credit Area.

Between 1998 and 2003, the KWBA built an additional 4,080 acres of shallow recharge basins on the KFE property. Some of acres were located within an area designated for farming.^{xii} Of the original 3,267 acres of available conservation credits, 744 acres have been sold as of December 31, 2005.

Several measures were implemented in accordance with the KWB HCP/NCCP, to reduce impacts on native or migratory wildlife using the KFE property, including:

- 1) Maintaining water levels constant, to the extent possible to prevent impacts on birds nesting in the recharge basins;
- 2) Slowly refilling basins and canals that have been idle for more than two years, so that any covered animals will be able to escape before drowning;
- 3) Constructing shallow canal side slopes to allow animals to escape from the interior and extending internal access roads across new canals, which would provide access for animals to cross the canal when wet;
- 4) Surveying unused canals that will be used in the near future, prior to the burrowing owl nesting season. Any burrows found will be collapsed, in consultation with the Resource Agencies, to prevent nesting in those locations.
- 5) Vegetation removal from roadways, turnouts, interbasin structures, road crossings and control structures will be accomplished by burning, motor grading (used minimally), mowing, herbicide or hand. Vegetation removed from canals and basins will be

accomplished by hand control, lightweight equipment (weed-eaters), grazing, mowing and burning; and

6) Complying with the "Interim Measures for Use of Rodenticides in Kern County," in order to prevent damage to facilities from rodents and to prevent the poisoning of listed species.

A Vegetation Management Plan was created to describe cost effective vegetation management and restoration practices for the long-term adaptive management and enhancement of the Kern Water Bank. Protection of existing and newly established sensitive habitats, vegetation management of compatible habitat using effective, low-cost adaptive methods and exotic pest plant control are primary goals under this management plan.

Under the HCP, the KWBA has authorization to incidentally take (including harm or harass) 161 covered species that are listed, or may be listed in the future under FESA. Of these species, fourteen special-status plants and animals have recorded occurrences on the KFE property. Since the approval of the HCP/NCCP, only one incidence of take has been reported or is known to have occurred on the KFE property.^{xiii} In 1999, during the construction of the KWB Canal, some Tipton kangaroo rats were captured and temporarily relocated to avoid harming them. After construction was complete, they were reintroduced into the area they had originally inhabited.

In addition to the KWB HCP/NCCP, an Initial Study and Addendum was prepared for the KWB, which included mitigation measures to reduce impacts on terrestrial biological resources. These mitigation measures, in addition to measures from the HCP/NCCP have reduced the impact of the KWB to a *less-than-significant level*, and are incorporated into this document to mitigate for future impacts of the proposed project, as discussed under Impact 9.4-3B.

C. Visual Resources

1. Existing Conditions in 1995

The KFE property consists of about 19,900 acres of land located in Kern County, southwest of Bakersfield. The KFE property lies on both sides of the Kern River but does not include the river itself, or the lands within the river levees. The terrain is flat with no more than a few feet of topographical relief. Prior to 1995, there were no major structures on KFE property except for Interstate 5 (I-5), the Cross Valley Canal, some abandoned tanks and other oil-field equipment, and about 300 acres of percolation ponds.

The KFE property was farmed for many years until the mid-1980s. After the Department purchased the land in 1988, it continued to be farmed by tenants for several years. One of the tenants' leases was terminated in 1989. Then in 1991, at the peak of the drought, all the remaining tenants leases were terminated, and thereafter the lands were fallowed. By 1995, introduced annual grasses and forbs had colonized the land.

2. Effects of Transfer, Development, and Operations

Prior to 1995, approximately 300 acres of shallow percolation ponds existed on the KFE property. These ponds had been constructed before the Department acquired the property. Between 1995 and 2003, KWBA constructed 4,699 acres of recharge ponds within the Recharge Sector and 2,415 acres of ponds within the Farming Sector, for a total of 7,114 acres of recharge ponds (see Section V.C.2.a). The KWBA also constructed the Kern Water Bank Canal, a six-mile long earthen canal extending from the Kern River to the California Aqueduct.^{xiv} The Kern Water Bank Canal has a uniform cross-section and is confined between earthen levees. It is a prominent feature in the landscape but one that is visually consistent with other waterways in the area including the Cross Valley Canal and the California Aqueduct.

Although these land use changes have altered the appearance of lands within the KFE property, they did not alter the overall visual character of the area. The changes would be seen by a limited number of viewers and would probably be noticed by even fewer. The alteration in visual resources is considered to be a *less-than-significant impact*.

D. Air Quality

1. Existing Conditions in 1995

Kern and Kings Counties are in the San Joaquin Valley Air Basin (SJVAB). This air basin is in non-attainment of federal and State standards for both PM_{10} and ozone. The SJVAB also has areas where TACs are problematic. In 1995, the SJVAB was designated by the U.S. Environmental Protection Agency (EPA) as being in "serious" non-attainment for the federal one-hour ozone standard. No other federal ozone standard was in place at the time. This led to the preparation of the 1994 Ozone Attainment Plan, which was prepared by the local air agency and was adopted in November of 1994. The SJVAB was also in "serious" non-attainment of the federal PM₁₀ standard and developed a plan to bring the basin into attainment of the standard.

In 1995, the State as a whole experienced health impacts from TACs, mostly from diesel particulate matter. At that time, Kern County had several areas where the estimated inhalation cancer risk was greater than 250 per million people.

2. Effects of Transfer, Development, and Operations

By 2003, the air basin's attainment status had been changed to "severe" nonattainment for the federal ozone standard. The SJVAPCD was also readying to petition the EPA to reclassify the Basin to "extreme" for one-hour ozone standard to allow the Basin more time to attain the standard. The Basin remained a "serious" non-attainment area for the federal PM_{10} standard. The Basin also remained a non-attainment area for State ozone and PM_{10} standards. The SJVAPCD thresholds of significance in 2003 was 10 tons/year of ROG, 10 tons/year NO_x, and an excess cancer risk of 10 in one million from TACs. Risk from diesel particulate matter in the

Basin had improved since 1995, but areas still existed where Toxic Air Contaminants (TAC) risk was high.

Prior to 1995, approximately 300 acres of shallow percolation ponds existed on the KFE property. These ponds had been constructed before the Department acquired the property. Between 1995 and 2003, KWBA constructed 4,699 acres of recharge ponds within the Recharge Sector and 2,415 acres of ponds within the Farming Sector, for a total of 7,114 acres of recharge ponds (see Section V.C.2.a). The KWBA also constructed the Kern Water Bank Canal, a sixmile long earthen canal extending from the Kern River to the California Aqueduct.^{xv}

Construction of the percolation ponds, canal, and other facilities required the use of heavy-duty construction equipment. This equipment generated diesel particulate matter, which is a TAC, as well as emissions of ozone precursors such as ROG and NO_x. The disturbance of the soil associated with the various earthmoving activities also generated PM₁₀. Because the proposed project would have implemented all of the SJVAPCD's suggested PM₁₀ control measures, PM₁₀ construction emissions would be below SJVAPCD thresholds. Based on a conservative assumption of 800 acres per year of soil disturbance to construct the ponds, NO_x and ROG emissions would not have exceeded SJVAPCD thresholds. Further, the duration of construction-generated air pollutant emissions was limited to the construction periods only.

Operation of the facilities requires pumping to convey water to percolation ponds and to extract water from underground. With the KWB, there would have been increased pumping to convey water through the system, as compared to pre-project conditions. While electric pump use would have increased, this would not have increased air emissions, as electric pumps are relatively pollution-free.

Therefore, because the KWB did not result in a net increase in criteria air pollutants over SJVAPCD annual thresholds in a non-attainment area, there would have been no conflict with implementation of the adopted air quality plan for the region. This is considered to be a *less-than-significant impact*. Further, any construction-related emissions would have been temporary. Operational emissions would not likely have exceeded adopted criteria.

E. Geology and Soils

1. Existing Conditions in 1995

The San Joaquin Valley basin is bordered to the south and east by the Sierra Nevada and Tehachapi mountains, which are composed of crystalline igneous and metamorphic rock. Exposed consolidated marine sedimentary rock from the Coast Range are evident in the layer of sediment above bedrock underlying the San Joaquin basin. The KFE property overlies a large, deep, and asymmetrical sedimentary basin located in the southern portion of the San Joaquin Valley.

The marine sedimentary rock is overlain by a thick series of continental rocks and semiconsolidated to unconsolidated sediments. These sediments are several thousand feet thick under the KFE lands, and encapsulate the primary groundwater basin. The portion of this sediment that is usable for groundwater storage is located above the base of the fresh water in the basin. This area of the groundwater basin is dominated by the alluvial fan and lake material that comprise the KFE lands. Further, groundwater development is limited to the upper portions of the fresh water aquifer system in this basin.

The southern San Joaquin Valley, including the KFE property, is dominated by the alluvial fan deposited by the Kern River, and consists of thick deposits of sand and gravel with extensive but discontinuous silt and clay beds.^{xvi} The sand and gravel deposits are remnants of old streambed channels which generally occur in long, winding, and interconnecting stingers and sheets that are prevalent throughout the KFE property, but less evident along its borders. These sand and gravel deposits are highly permeable, but are imbedded with less permeable areas comprised of fine-grained silt and clay deposits. These silt and clay deposits are more extensive along the edges of the alluvial fan and in some areas may intersect with clay beds deposited in lakes. In general, the upper layers of the alluvial fan deposits form an unconfined to semi-confined aquifer system that provides a large amount of groundwater recharge area.

Soils in the southern portion of the San Joaquin Valley, including the KFE lands, range from highly permeable, coarse sandy soils to silty loam with very low permeability.^{xvii} In general, the soils present are characterized as deep, well-drained sandy loam that have moderate to rapid permeability with low water retention, and have a slight erosion potential. These soils are interspersed with pockets of clay deposits that are characterized by low-permeability and are often associated with saline-alkali conditions.^{xviii}

2. Effects of Transfer and Development and Operations

Prior to 1995, approximately 300 acres of shallow percolation ponds existed on the KFE property. These ponds had been constructed before the Department acquired the property. Between 1995 and 2003, KWBA constructed 4,699 acres of recharge ponds within the Recharge Sector and 2,415 acres of ponds within the Farming Sector, for a total of 7,114 acres of recharge ponds (see Section V.C.2.a). The KWBA also constructed the Kern Water Bank Canal, a sixmile long earthen canal extending from the Kern River to the California Aqueduct.^{xix} As previously described, grading was required to construct the percolation ponds. However, construction of the ponds and associated levees occurred on topography that is relatively flat and required only minor grading and compaction of soils. Furthermore, soils on the KFE property can generally be characterized as being slightly erodible. Therefore, although conversion of approximately 7,114 acres of land to percolation ponds changed rates of erosion, this impact is considered *less than significant*.

F. Land Use and Planning

1. Existing Conditions in 1995

In the 1980s, the Department began exploring the feasibility of developing an SWP groundwater storage facility in Kern County, which it called the KWB. As envisioned, the KWB was to consist of a series of "elements," which would be geographically separate projects that would be operationally integrated. In 1988, Tenneco West sold approximately 20,000 acres of land in the Kern Fan area to the Department, which was intended to be used for development of one of these groundwater storage elements – the KFE. In 1993, uncertainties regarding the proposed groundwater storage facility ultimately convinced the Department to halt feasibility studies and design work on the project.^{xx} The uncertainties were created by proposed water quality standards for the Delta and issues associated with the protection of threatened and endangered species, both of which would have reduced the amount of water that could be pumped from the Delta. Later, the Department concluded that these constraints on Delta pumping and other uncertainties made development of an SWP groundwater storage facility on the KFE property not feasible at the time.^{xxi} In 1994, the potential of the Department's proposed KFE for SWP groundwater storage remained unrealized, and the land on the KFE property remained undeveloped.

2. Effects of Transfer, Development, and Operations

Prior to 1995, approximately 300 acres of shallow percolation ponds existed on the KFE property. These ponds had been constructed before the Department acquired the property. Between 1995 and 2003, KWBA constructed 4,699 acres of recharge ponds within the Recharge Sector and 2,415 acres of ponds within the Farming Sector, for a total of 7,114 acres of recharge ponds (see Section V.C.2.a). KWBA also constructed the Kern Water Bank Canal, a six-mile long earthen canal extending from the Kern River to the California Aqueduct.^{xxii}

An HCP was developed for the KFE property. The HCP allows developed uses on about 4,000 acres of the KFE property (not including recharge ponds).^{xxiii} Developed uses include farming, permanent facilities for the KWB and commerce. Approximately 490 acres of land adjacent to Interstate 5 (I-5) is designated for possible commercial use. However, KWBA has agreed not to sell or use the 490 acres as a condition of the Monterey Settlement Agreement.

Implementation of the KWB has altered the physical use of the land; however, overall land use and designations have not changed. The operation of percolation ponds is compatible with the surrounding existing uses. No commercial, retail, office, residential or other uses were developed, and an established community has not been divided. In addition, development of uses on the KFE property was consistent with the HCP. Therefore, the impact of the KWB on land use is considered to be *less than significant*.

G. Hazards and Hazardous Materials

1. Existing Conditions in 1995

In the 1980s, the Department began exploring the feasibility of developing an SWP groundwater storage facility in Kern County, which it called the KWB. As envisioned, the KWB was to consist of a series of "elements," which would be geographically separate projects that would be operationally integrated. In 1988, Tenneco West sold approximately 20,000 acres of land in the Kern Fan area to the Department, which was intended to be used for development of one of these groundwater storage elements – the KFE. Prior to the Department acquiring the KFE property, the land was historically used for agricultural production. Once the land was acquired by the Department, it continued to be farmed by tenants for several years. One of the tenants' leases was terminated in 1989. Then in 1991, at the peak of the drought, all the remaining tenants leases were terminated, and thereafter the lands were fallowed.

The hazards and hazardous materials setting for the KFE property was described in the Department's 1990 Supplemental EIR for the first stage of the KFE of the KWB project ("1990 Supplemental EIR"). The setting described was generally related to the hazardous materials present in the soils on the KFE property. The 1990 Supplemental EIR described the results of soil sampling done throughout the KFE property to characterize potential contamination. Pesticides, herbicides, and other contaminants were found in soil samples near the pond sites, with isolated pockets of petroleum compounds found near oil pipelines or facilities.^{xxiv} Soil samples were used to determine the safest location for the construction of the percolation ponds. In addition, the 1990 Supplemental EIR identified mitigation measures in the form of further testing and monitoring of the soil and groundwater in the area of the percolation ponds to prevent future contamination of groundwater or potential for release of contaminants.^{xxv}

2. Effects of Transfer, Development, and Operations

Prior to 1995, approximately 300 acres of shallow percolation ponds existed on the KFE property. These ponds had been constructed before the Department acquired the property. Between 1995 and 2003, KWBA constructed 4,699 acres of recharge ponds within the Recharge Sector and 2,415 acres of ponds within the Farming Sector, for a total of 7,114 acres of recharge ponds (see Section V.C.2.a). The KWBA also constructed the Kern Water Bank Canal; a sixmile long earthen canal extending from the Kern River to the California Aqueduct.^{xxvi} The construction of percolation ponds resulted in ground-disturbing activities that could have exposed construction workers to residual chemicals associated with past and present agricultural practices involving the use of pesticides, fungicides, and similar agricultural products on crops and soils.

Soil samples were used to determine the safest location for the construction of the percolation ponds. In addition, the 1990 Supplemental EIR identified mitigation measures in the form of further testing and monitoring of the soil and groundwater in the area of the percolation ponds to prevent future contamination of groundwater or potential for release of contaminants.^{xxvii}

Residues of agricultural chemical products in farmed soils as a result of routine agricultural operations are not typically managed as hazardous waste when used in accordance with adopted laws and regulations. Nonetheless, individuals performing excavation and grading activities would be at a greater risk of exposure to agricultural chemical residues in soil through inhalation of dust from soil movement. Construction of the ponds would also involve the use of heavy equipment that would contain fuels and lubricants. These products contain hazardous compounds, and an accidental release of these materials could injure construction workers, contaminate soil or water, or present a fire/explosion hazard.

Construction contracts included specific language requiring contractors to comply with applicable hazardous materials management laws and regulations adopted at the State level in Titles 19 and 22 of the CCR, which address proper storage and disposal of substances such as fuels. Title 8 of the CCR also addresses the use of hazardous products in the work environment, which would apply to construction contractors. The potential for inadvertent spills of materials, which could affect nearby surface water bodies or groundwater, was managed through construction site Best Management Practices (BMPs). Therefore, impacts would be *less than significant*.

H. Noise

1. Existing Conditions in 1995

The KFE property consists of 19,900 acres of land located in Kern County southwest of Bakersfield. The KFE property lies on both sides of the Kern River but does not include the river itself, or the lands within the river levees. In 1995, there were no major structures on the KFE property except for I-5, the Cross Valley Canal, and some abandoned tanks and other oil field equipment.

The KFE property was farmed for many years until the mid-1980s. After the Department acquired the property, it continued to be farmed by tenants for several years. One of the tenants' leases was terminated in 1989. Then in 1991, at the peak of the drought, all the remaining tenants leases were terminated, and thereafter the lands were fallowed. Therefore, vehicular traffic was the primary source of noise throughout the area. The KFE property is primarily bisected by rural roads, SRs 99, 119, 166, and 223, and I-5.

2. Effects of Transfer, Development, and Operations

Between 1995 and 2005, as part of the KWB, approximately 7,114 acres of land were converted to shallow percolation ponds, and a six-mile long earthen canal (the Kern Water Bank Canal) and several wells and pump stations were built. Unpaved roads were built to provide access to the new facilities. However, there were no noise-sensitive land uses located in close proximity to the construction sites that were adversely impacted by daytime construction noise and groundborne vibration levels. Routine maintenance of the new facilities results in temporary noise levels. Operation of the KWB requires pumping to convey water to percolation ponds, to extract water from underground, and to convey water in the Kern Water Bank Canal. Electric
motors power the pumps. A representative range of noise levels for pumps is estimated to be 68 to 72 dBA (see Table 12) at 50 feet. [Comment: Note that the reference to Table 9.12-3 in ADEIR is incorrect; the correct reference is Table 9.12-5.] The installation and operation of pumps associated with the construction of percolation ponds on the KFE property attributable to the KWB would result in an increase in noise emissions from pumps compared to pre-1995 conditions. However, increased noise levels would not affect sensitive receptors because the pumps are located in relatively remote areas far from homes and businesses. Ongoing maintenance of the new facilities is intermittent and not considered a substantial source of increased noise levels at sensitive land uses. Therefore, these land use changes are considered to have a *less-than-significant impact*.

TABLE 12	
NOISE RANGES OF TYPICAL CONSTRUCTION EQUIPMENT	
Construction Equipment	Noise Levels in dBA Leq at 50 feet
Front Loader	73–86
Trucks	82–95
Cranes (moveable)	75–88
Cranes (derrick)	86–89
Vibrator	68-82
Saws	72–82
Pneumatic Impact Equipment	83-88
Jackhammers	81–98
Pumps	68–72
Generators	71–83
Compressors	75-87
Concrete Mixers	75–88
Concrete Pumps	81–85
Back Hoe	73–95
Pile Driving (peaks)	95–107
Tractor	77–98
Scraper/Grader	80–93
Paver	85-88
Note: 1. Machinery equipped with noise control devices or other noise-reducing design features does not generate the same level of noise emissions as that shown in this table. Source: U.S. EPA 1971 as recented in City of Los Anueles 1998.	

I. Cultural and Paleontological Resources

1. Existing Conditions in 1995

Archeological Resources

The Southern Valley Yokuts included a large number of distinct small tribes. The groups depended on diverse resources, but freshwater lake and marsh resources were predominant.^{xxviii} Their territory was in the southern end of the San Joaquin Valley, around Tulare, Buena Vista and Kern lakes, and the lower ends of the streams that fed those lakes.^{xxix} The Wechihit Yokuts lived on the lower Kings River, and undoubtedly traded and intermarried with the Holkoma and Wobonuch Mono; the Koyeti Yokuts lived on the lower Tule River, and probably interacted closely with their relatives, the Yawdanchi, upstream. On the Kern River, the Yawelmani

occupied present-day Bakersfield and the stream course for some distance upstream, as indicated by archaeological evidence. The *Tachi* Yokuts occupied land that comprises present-day Kings County. The KFE property falls within *Yawelmani* Yokuts territory, and sites have been recorded in the area.^{xxx}

Paleontological Resources

During the Miocene Epoch, most of Kern County was an ocean bay which extended as far north as Redding and as far south as Bakersfield. The waters lapped against rolling hills that were soon to be pushed up to form the Sierra Nevada Mountains. Northeast of Bakersfield, where the modern Kern River leaves the Sierra Nevada, a river flowed into the bay. The river carried sediments and the remains of plants and animals into the bay. These materials, along with the plentiful remains of marine organisms, sank to the bottom and much of the organic remains were fossilized. Subsequent geologic events pushed up the sediments, and they then eroded to form the rolling hills that include Sharktooth Hill. Exposed in these hills is the bone bed that formed from those fossil-rich sediments. The Sharktooth Hill bone bed encompasses more than 110 square miles, most of it deep underground only exposed east of the Bakersfield area.^{xxxi}

This bed is the most fossil-rich Miocene marine bone bed in the world. And, like the great La Brea discoveries in Los Angeles provide for the Pleistocene, the Sharktooth Hill bone bed offers a surprisingly complete view of the marine Miocene period. The bed contains the fossilized remains of all major marine groups of animals.^{xxxii}

Kings County is home to Kettleman Hills, which contain three geological rock deposits from the Etchegoin, San Joaquin, and Tulare Formations, with the Etchegoin Formation being the oldest and the Tulare Formation being the youngest.^{xxxiii} The Kettleman Hills contain an abundance of invertebrate, vertebrate, and botanical fossils from the Pliocene Epoch (4.5 to 2.0 million years old). The area contains 370 registered fossil localities, while there are a total of approximately 570 registered fossil localities throughout the entire Kings County.^{xxxiv} Many of these fossils were preserved and deposited within a complex integrating fresh water, estuarine, and marine conditions directly related to the sea that existed during the Tertiary Period of the Cenozoic Era. The Kettleman Hills continue to produce the well preserved fossils they are famous for today.

2. Effects of Transfer, Development, and Operations

Prior to 1995, approximately 300 acres of shallow percolation ponds existed on the KFE property. These ponds had been constructed before the Department acquired the property. Between 1995 and 2003, KWBA constructed 4,699 acres of recharge ponds within the Recharge Sector and 2,415 acres of ponds within the Farming Sector, for a total of 7,114 acres of recharge ponds (see Section V.C.2.a). The KWBA also constructed the Kern Water Bank Canal, a six-mile long earthen canal extending from the Kern River to the California Aqueduct.^{xxxv}

As previously noted in Impact 9.13-1A, prehistoric sites have been recorded in the Kern Fan Element, and paleontological deposits have been identified in the southern portion of the county. Some of these deposits are exposed while others are underground. Ground disturbance

associated with the construction of groundwater storage facilities could expose paleontological resources. Prior to construction, archeological investigations were completed in the Kern Fan Element and for the Kern Water Bank Habitat Conservation Plan/ Natural Community Conservation Plan (HCP/NCCP). Some of these investigations recorded significant archeological sites at or near the Kern Fan Element project area.^{xxxvi} Mitigation measures were also adopted to ensure that if previously unidentified archeological resources were discovered during construction activities, that work would cease and a qualified archaeologist would examine the discovery and make recommendations for appropriate data recovery.

Therefore, the proposed project is considered to have had a less than significant impact.

J. Traffic and Transportation

1. Existing Conditions in 1995

The KFE property consists of 19,900 acres of land located in Kern County southwest of Bakersfield. The KFE property was farmed for many years until the mid-1980s. After the Department purchased the land in 1988, it continued to be farmed by tenants for several years. One of the tenants' leases was terminated in 1989. Then in 1991, at the peak of the drought, all the remaining tenants leases were terminated, and thereafter the lands were fallowed. By 1995, introduced annual grasses and forbs had colonized the land. The area is traversed by I-5, SRs 99, 119, 166, and 223 and paved and unpaved rural roads.

2. Effects of Transfer, Development, and Operations

Prior to 1995, approximately 300 acres of shallow percolation ponds existed on the KFE property. These ponds had been constructed before the Department acquired the property. Between 1995 and 2003, KWBA constructed 4,699 acres of recharge ponds within the Recharge Sector (see Section V.C.2.a) and 2,415 acres of ponds within the Farming Sector, for a total of 7,114 acres of recharge ponds. KWBA also constructed the Kern Water Bank Canal, and a six-mile long earthen canal extending from the Kern River to the California Aqueduct.xxxvii Unpaved roads were constructed to provide access to the new facilities. Traffic volumes on some rural roads temporarily increased during the construction period. In addition, routine maintenance of the new facilities resulted in a permanent increase in vehicular traffic. While there had been vehicular traffic related to agricultural activities on the KFE property through the 1991, in the several years prior to 1995, the land now occupied by the ponds lay fallow and generated little or no traffic. The small increases in vehicular movements attributable to construction and operation of the KWB had little adverse effect on traffic flow on the affected rural roads. Consequently, the KWB is considered to have a less-than-significant impact.

IX. Summary

Compliance reports from 1999 through 2005 were reviewed to determine construction activities, recharge and extraction operations, wildlife use of the site, vegetation trends, and identify any

incidences of "take" in light of the Kern Environmental Permits. Since 1999, a number of structures have been added to the site (canals, recharge ponds, levees, etc). These structures were developed based on the HCP/NCCP guidelines. Section VI highlights recharge and extraction operations at the Kern Water Bank that was determined from the Annual Reports and from staff at the KWCA.

Several "no take" projects have been authorized on the KWB property. The qualified biologists who spent many hours at the KWB since 1999 observing, photographing, and trapping, have reported no instances of "take" nor have any reports of "take" from staff or third party operators on the site been received. Due to the construction of more recharge ponds and the growth of riparian trees and other native vegetation, waterfowl and other bird species numbers and biodiversity have generally increased since 1999. Other wildlife species have benefited from the restoration and preservation activities at the KWB (coyotes, bobcat, etc.), however; numbers of the endangered San Joaquin kit fox and Tipton kangaroo rat continue to be low.

Based on the Annual Reports, and conversations with staff at the KWBA, the Department of Water Resources concludes that the KWB is operating as intended and within the confines of the HCP/NCCP.

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052. Letter from Planning and Conservation League, dated August 25, 2009

Response 1

The comment includes an introduction to comments that follow, to which no further response is provided. The comment also reiterates factual information from the Draft EIS/EIR and states that the Draft EIS/EIR "continues to claim" that the non-adjudicated groundwater aquifer is sustainable for 25 years. However, the Draft EIS/EIR does not state that local groundwater is sustainable for only 25 years. Several studies included in the Draft EIS/EIR indicate that local groundwater is adequate to serve the proposed Project and all other known development in the Santa Clarita Valley on a long-term basis. These studies include:

- Analysis of Groundwater Basin Yield, Upper Santa Clara River Groundwater Basin, East Subbasin, Los Angeles County, California, prepared by CH2M HILL, in cooperation with Luhdorff & Scalmanini, in support of the August 2001 Memorandum of Understanding between the Upper Basin Water Purveyors and the United Water Conservation District August 2005 (Basin Yield Study). (See Draft EIS/EIR, Appendix 4.3, for a copy of the Basin Yield Study.)
- 2001 Update Report: Hydrogeologic Conditions in the Alluvial and Saugus Formation Aquifer Systems, prepared for Santa Clarita Valley Water Purveyors by Richard C. Slade and Associates, LLC, July 2002 (Slade, 2002).
- *Groundwater Management Plan Santa Clara River Valley Groundwater Basin, East Subbasin,* prepared for CLWA by Luhdorff & Scalmanini Consulting Engineers, December 2003.
- *Regional Groundwater Flow Model for the Santa Clarita Valley: Model Development and Calibration*, prepared for Upper Basin Water Purveyors (CLWA, CLWA Santa Clarita Water Division, Newhall County Water District and Valencia Water Company) by CH2M HILL, April 2004. (See Draft EIS/EIR, Appendix 4.3, for a copy of the April 2004 Flow Model.)
- Technical Memorandum: Potential Effects of Climate Change on Groundwater Supplies for the Newhall Ranch Specific Plan, Santa Clarita Valley, California, prepared by GSI Water Solutions, Inc. (John Porcello), March 18, 2008. (See Draft EIS/EIR, Appendix 8.0, for a copy of this technical memorandum.)

The anticipated water supply impacts received extensive analysis in the Draft EIS/EIR, with project-level impacts assessed in **Section 4.3**, Water Resources, and cumulative impacts assessed in **Subsection 6.5.3**. Please also refer to **Topical Response 8: Groundwater Supplies and Overdraft Claims** for further responsive information. In addition, it is correct that the local groundwater basin is unadjudicated; this fact has been regularly reported in annual Santa Clarita Valley Water Reports since 1998, and the Draft EIS/EIR included in **Appendix 4.3** the latest version of the Santa Clarita Valley Water Report for public review. Under California law, the applicant, as an overlying landowner, has the right to take water from the ground underneath for use on the "overlying" land within the basin or watershed -- the right is based on ownership of the land and is appurtenant to that ownership. The overlying owner, in this case Newhall Land, is authorized to take such amounts as are reasonably needed for beneficial purposes. (See, *e.g.*, *City of Pasadena v. City of Alhambra* (1949) 33 Cal.2d 908, 925; Cal. Const., art. X, section 2.) The rights of the overlying owner also are generally paramount. (*City of Pasadena, supra*, 33 Cal.2d at p. 927.)

As reported in the Draft EIS/EIR, **Section 4.3**, Water Resources, the applicant would meet all of the Specific Plan's potable water demands by using groundwater pumped from the Alluvial aquifer, which is presently committed to agricultural uses. The amount of water historically and presently available from this source is approximately 7,038 acre-feet per year (afy). No additional water would be pumped; instead, the water presently and historically used to irrigate crops would be pumped from sanitary-sealed municipal supply wells (as compared to open air agricultural wells), treated at the wellhead to meet Title 22 drinking water standards, and then used to meet the Specific Plan's potable demand, as agricultural areas are taken out of production. The amount of groundwater that will be used to serve the potable demands of the Specific Plan would not exceed the amount of water historically used for agricultural uses. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project. (Please also see revised **Section 4.3** of the Final EIS/EIR.)

Response 2

The comment states that a water supply assessment (WSA) has been prepared, is inaccurate, and "grossly underestimates the water demand of the Specific Plan." The comment also states that the "WSA is inconsistent with recent court decisions and relies heavily on unverified water supplies, water projects, and reports that are under legal challenge." Contrary to this comment, a WSA is not required under state law for the proposed Project; and, consequently, was not prepared in conjunction with the Draft EIS/EIR. A WSA is only required for projects that meet the definition of Water Code section 10912. (Wat. Code, § 10910(a).) The RMDP and SCP are not projects under this definition, which includes residential, commercial, and industrial projects of a certain size and projects that would require an equivalent amount of water. (Wat. Code, §10192.) The RMDP is a conservation, mitigation, and permitting plan for the long-term management of sensitive biological resources within the Specific Plan Area. (Draft EIS/EIR, Subsection 2.1.1.) The SCP consists of a conservation and management plan to permanently protect and manage a system of preserves designed to maximize the long-term persistence of core occurrences of spineflower. (Draft EIS/EIR, Subsection 2.1.2.) WSAs will be required, however, for each 500-unit tentative tract map (or commercial/industrial development of the size indicated in the California Water Code) proposed in association with build-out of the Newhall Ranch Specific Plan, and the Entrada and VCC planning areas. In addition, the anticipated water supply impacts received extensive analysis in the Draft EIS/EIR, with project-level impacts assessed in Section 4.3, Water Resources, and cumulative impacts assessed in **Subsection 6.5.3**. The Draft EIS/EIR concluded that an adequate supply of water is available for the proposed Project. Please also see Topical Response 4: Nickel Water; Topical Response 5: Water Litigation and Regulatory Action Update; Topical Response 6: CLWA's 41,000 AFY Water Transfer; Topical Response 7: Perchlorate Treatment Update; Topical Response 8: Groundwater Supplies and Overdraft Claims; and Topical Response 9: State Water Project Supply **Reliability**, which address various water-related issues, and provide further responsive information. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 3

The comment states that the Draft EIS/EIR does not actually analyze the reliability of the local groundwater supply for the life of the proposed Project. The comment does not provide any evidence to support this statement. In fact, the Draft EIS/EIR analyzed the reliability of the local groundwater supplies, and the proposed Project's impacts on those supplies, in **Section 4.3**, Water Resources. As described in that analysis, the groundwater model prepared for the groundwater studies completed by the

Santa Clarita Valley water purveyors determined that the proposed Project would not impact the longterm sustainability of the groundwater basin to provide water to the Santa Clarita Valley, including the proposed Project. Please refer to **Topical Response 8: Groundwater Supplies and Overdraft Claims** for further responsive information. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 4

The comment states that the Draft EIS/EIR does not provide a history of the groundwater basin's pumping record and, more specifically, the amount of water annually pumped for Newhall agricultural use and by Castaic Lake Water Agency (CLWA). However, the Draft EIS/EIR included a history of groundwater pumping amounts in the Santa Clarita Valley in **Section 4.3**, Water Resources, **Subsection 4.3.4.4**, Description of Groundwater Supplies, and includes the Santa Clarita Valley Water Report 2007, prepared for CLWA, Los Angeles County Waterworks District No. 36, Santa Clarita Water Division, Newhall County Water District and Valencia Water Company by Luhdorff and Scalmanini, Consulting Engineers, April 2008 (SCVWR, 2008), in **Appendix 4.3**. This report specifically reported on the amount of water annually pumped for Newhall agricultural use (10,939 acre feet (af) in 2007) and by CLWA (31,355 af in 2007). (See, Santa Clarita Valley Water Report 2007, Tables II-2 and II-7) In addition, the Draft EIS/EIR, **Appendix 4.3**, included the 2005 Urban Water Management Plan (UWMP), which also contained the requested information. Please also refer to **Topical Response 8: Groundwater Supplies and Overdraft Claims**, for further responsive information. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 5

The comment opines that the proposed Project will "harden water demand," such that the Draft EIS/EIR must analyze the impact on existing communities if local groundwater supplies become unreliable and/or contaminated. As previously indicated in **Responses 1 through 4**, above, the subject of groundwater availability received extensive analysis in Draft EIS/EIR, **Section 4.3**, Water Resources. As discussed in **Section 4.3**, no evidence exists that indicates groundwater will become unreliable and/or contaminated in the future, with or without the proposed Project. Therefore, the Draft EIS/EIR concluded that local groundwater is sustainable with implementation of the proposed Project and other cumulative development. The comment does not raise any specific issue regarding the analysis provided in **Section 4.3** and, therefore, no more specific response is provided. Please also refer to **Topical Response 7**: **Perchlorate Treatment Update**, and **Topical Response 8**: **Groundwater Supplies and Overdraft Claims**, for further responsive information. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 6

The comment states that because the proceeding years have been dry years and because of courtmandated pumping restrictions in the Delta, the Draft EIS/EIR must consider how existing and proposed communities would make up for the decrease in imported water. As stated in the Draft EIS/EIR, the Specific Plan development enabled by Project approval relies on groundwater and recycled water, not State Water Project (SWP) water. The Draft EIS/EIR, **Section 4.3**, Water Resources, identified the water supplies used in the Santa Clarita Valley, including those supplies relied upon when SWP deliveries to the Santa Clarita Valley are reduced. The Draft EIS/EIR, **Section 4.3**, also assessed the impact of the proposed Project on local groundwater supplies. In addition, the Draft EIS/EIR, Section 6.0, Cumulative Impacts, assessed the cumulative impacts of supplying water to the proposed Project and other cumulative development in the Santa Clarita Valley. Based on that analysis (see, specifically, Subsection 6.5.3), the Draft EIS/EIR determined that the proposed project would not result in significant cumulative water supply impacts. Please also refer to Topical Response 6: CLWA's 41,000 afy Water Transfer, Topical Response 8: Groundwater Supplies and Overdraft Claims, and Topical Response 9: State Water Project Supply Reliability, for further responsive information. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 7

The comment opines that no new development should be considered throughout the State of California "until the contracts and rights for existing users of the Delta are met." The impact of reduced SWP water deliveries due to environmental, legal, and regulatory constraints received extensive analysis in the Draft EIS/EIR, specifically in **Subsection 4.3.4.2.2**, SWP Operations, Deliveries, and Constraints. In addition, please refer to **Topical Response 5: Water Litigation and Regulatory Action Update**, and **Topical Response 9: State Water Project Supply Reliability**, for further responsive information. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 8

Please see **Response 2**, above, for clarification on the requirements for a WSA and the reasons why no WSA was required or prepared for the proposed Project. The comment quotes language from a document it cites as the Department of Water Resources (DWR) "Drought Reliability Report." The lead agencies (Corps and CDFG) are not aware of any report from DWR by that name, and the comment did not provide a copy of the report. However, the lead agencies believe the commentor may be referring to a report prepared by DWR, prepared in April 2008, entitled, "California Drought: An Update 2008" (Drought Update). Please note that the text quoted in the comment letter is not authored by DWR and, therefore, is not an official statement by DWR. This text comes from a report by Richard Segar entitled, "Making a Bad Situation Worse: Human-Induced Climate Change and Intensifying Aridity in Southwestern North America," (Lamont Doherty Earth Observatory of Columbia University Palisades, New York, September 2007), which is one of several articles included in DWR's 2008 Drought Update. Also, to clarify, the quoted text appears on page 76 of DWR's Drought Update.

Please note that DWR prepared the Drought Update in response to dry conditions in 2007, when some Southern California communities experienced their driest year of record and when the Colorado River Basin continued in a period of unprecedented dryness. According to DWR, although 2007 was dry, a wet 2006 "left a fortunate legacy of good storage conditions in the majority of California's reservoirs and groundwater basins," and due to "past investments in the state's water infrastructure, serious impacts of last year's dry conditions were minimal for most water agencies, with depletion of stored supplies being the most widespread outcome of dry conditions." (Drought Update, Forward.) DWR pointed out that the Drought Update "reviews hydrologic conditions experienced since 2000, updates the status of selected water management activities having a bearing on drought preparedness, and highlights advances in hydroclimate research related to droughts." (Drought Update, p. 1.) As stated above, the DWR Drought Update includes articles from climate scientists whose work spans a broad spectrum of research, and

included selected articles in one of the chapters of DWR's Drought Update. DWR characterized the scientific research and its report as follows:

"As scientific research yields new insights into climate prediction and forecasting, we may some day be able to use such information to put in place longer-range response plans and to reduce drought's multi-faceted impacts. The purpose of this report is to update an earlier Department report on drought published on 2000, with special emphasis on advances in drought-related research. To this end, the report features contributed articles from climate scientists whose research covers a wide range of drought and climate change or variability topics. The report also provides updates on hydrologic conditions and selected resource management subjects since publication of the Department's 2000 report." (Drought Update, Forward.)

Specific to the text quoted in the comment, in Chapter 3 of DWR's Drought Update, DWR states that the chapter covers recent advances in climate and drought research and that the research has improved basic understanding of the climate system. (Drought Update, p. 25.) In addition, DWR states that significant improvements in global climate model capabilities have occurred since preparation of DWR's previous drought report in 2000 and that available information has allowed DWR to make a preliminary quantitative estimate of climate change impacts on SWP and CVP deliveries, as described in DWR's report entitled, "Progress on Incorporating Climate Change into Management of California's Water Resources." According to DWR, findings in the "2007 Fourth Assessment of the Intergovernmental Panel on Climate Change (IPCC, 2007)," are not encouraging with respect to drought conditions. The findings from the IPCC Fourth Assessment provide as follows:

- (a) Wet extremes are projected to become more severe in many areas where mean precipitation is expected to increase, and dry extremes are projected to become more severe in areas where mean precipitation is projected to decrease.
- (b) All of North America is very likely to warm during this century. . . In northern regions, warming is likely to be largest in the winter, and in the southwest U.S. largest in the summer.
- (c) Annual mean precipitation is very likely to increase in Canada and the northeast U.S., and likely to decrease in the southwest U.S.
- (d) Snow season length and snow depth are very likely to decrease in most of North America.
- (e) Anthropogenic warming and sea level rise would continue for centuries due to time scales associated with climate processes and feedbacks, even if greenhouse gas concentrations were to be stabilized.

DWR also notes that further research is required and that the need for research specific to drought-related topics has been expressed in a variety of sources, including DWR's 2000 drought report and the Western Governors Association (WGA) 2004 report on creating a drought early warning system. According to DWR, information gaps/action items that are of particular interest with respect to near-term water management include:

(a) Improved understanding of El Niño/Southern Oscillation (ENSO) events and storm tracks, especially as they affect winter precipitation.

- (b) Additional paleoclimate studies (streamflow and precipitation reconstructions) to illuminate past hydroclimate variability.
- (c) Filling in gaps in hydrologic monitoring, especially for high evaluation snowpack.
- (d) Development of remote sensing applications that would provide early warning of drought impacts.

While DWR included articles intended to illustrate the breadth of recent climate research, DWR made two important points responsive to the above-quoted text in this comment. First, DWR generally summarized three articles, including the one cited above in this comment, as addressing various aspects of climate change, including climate change impacts in the Colorado River Basin and use of climate models to understand causes of major historical droughts such as the 1930s Dust Bowl drought. Second, DWR made it clear that the "[v]iewpoints expressed in the articles are those of the authors, and do not necessarily represent the view of [DWR]." (Drought Update, p. 27.) DWR's Drought Update is included in **Appendix F4.3** of the Final EIS/EIR.

The comment (and DWR Drought Update) will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 9

The comment states that the Draft EIS/EIR WSA must analyze, on a regional basis, how the existing population is compensating for the decreased "Table A" allocation, and how the regional supplies "will be impacted by the Specific Plan Alternatives 2-7." Please see **Response 2**, above, for clarification on the requirements for a WSA and the reasons why no WSA was required or prepared for the proposed Project. The anticipated water supply impacts of the proposed Project received extensive analysis in the Draft EIS/EIR, with project-level impacts assessed in Section 4.3, Water Resources, and cumulative impacts assessed in Subsection 6.5.3. Please also refer to Topical Response 5: Water Litigation and Regulatory Action Update: Topical Response 6: CLWA's 41,000 AFY Water Transfer: Topical Response 8: Groundwater Supplies and Overdraft Claims, and Topical Response 9: State Water **Project Supply Reliability**, for further responsive information. Please note that the Draft EIS/EIR does not use the same projected water demand levels for Alternatives 2 through 7, as suggested by the comment. Instead, the Draft EIS/EIR, Tables 4.3-19 through 4.3-25, presents the water demands of each studied alternative, and those demands vary dependently upon each alternative. As to the reference in the comment to the "unadjudicated" basin, please refer to **Response 1**, above. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 10

The comment asks where the Specific Plan development would obtain water in light of the increased local pumping and increased reliance on local water recycling projects. The Draft EIS/EIR, Section 4.3, Water Resources, included a listing of the water supplies to be used for the proposed Project and the development facilitated by the proposed Project. Please also see Draft EIS/EIR Table 4.3-20, Alternative 2 Water Demand and Supplies. Project-level water supply impacts were assessed in the Draft EIS/EIR, Section 4.3, Water Resources, and cumulative impacts were assessed in the Draft EIS/EIR, Subsection 6.5.3. The Draft EIS/EIR concluded that an adequate supply of water is available for the proposed Project.

Please also see **Topical Response 4: Nickel Water**; **Topical Response 5: Water Litigation and Regulatory Action Update**; **Topical Response 6: CLWA's 41,000 AFY Water Transfer**; **Topical Response 7: Perchlorate Treatment Update**; **Topical Response 8: Groundwater Supplies and Overdraft Claims**; and **Topical Response 9: State Water Project Supply Reliability**, which address various water-related issues. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 11

The comment states that the 41,000 afy water transfer is not reliable. The Draft EIS/EIR, Section 4.3, addressed this water transfer and determined that it was both an available and reliable source of water for the proposed Project. Please see **Topical Response 6: CLWA's 41,000 AFY Water Transfer**; and **Topical Response 9: State Water Project Supply Reliability**, for additional responsive information. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 12

The comment states that the water and capacity to produce the referenced amount of recycled water does not exist. The comment further requests that the Draft EIS/EIR provide documentation of the recycled water availability, as well as an assessment of the potential impacts to the existing communities as the demand for recycled water increases (due to the decreasing availability of imported water and local groundwater).

The Draft EIS/EIR included information regarding CLWA's existing and future supplies of recycled water and the amount of recycled water expected from the Newhall Ranch Water Reclamation Plant (WRP). Several documents were relied upon in the Draft EIS/EIR's analysis of recycled water. Those documents, incorporated in the Draft EIS/EIR by reference, include:

- 2002 Draft Recycled Water Master Plan prepared for CLWA by Kennedy/Jenks Consultants.
- Draft Program Environmental Impact Report Recycled Water Master Plan, prepared for CLWA by Bon Terra Consulting, November 2006 (SCH No. 2005041138).
- *Final Program Environmental Impact Report Recycled Water Master Plan*, prepared for CLWA by Bon Terra Consulting, March 2007 (SCH No. 2005041138).

As stated in the comment and the Draft EIS/EIR, 1,700 afy of recycled water is presently available for use in the Santa Clarita Valley. Expansion of the use of recycled water in the Santa Clarita Valley, including on the Specific Plan site, by another 15,700 afy is addressed in CLWA's Recycled Water Master Plan and in Draft EIS/EIR, **Subsection 4.3.4.3.5**, CLWA Recycled Water. In addition, the 2005 Urban Water Management Plan indicated that CLWA's available future supply of recycled water will be 17,400 afy. CLWA's Recycled Water Master Plan and the initiation of recycled water deliveries as part of that Master Plan provides substantial evidence that this source of water can be relied upon in the Draft EIS/EIR as a source of water for the proposed Project. The Draft EIS/EIR, **Subsection 4.3.4.3.5**, CLWA Recycled Water, stated:

"As shown on **Tables 4.3-6 through 4.3-9**, above, since 2003, existing local supplies have been augmented by the initiation of recycled water deliveries from CLWA's recycled water program. CLWA currently has a contract with the Los Angeles County Sanitation District for 1,700 afy of recycled water. This supply is available in an average/normal year, a single-dry year, and in each year of a multiple-dry year period.

In addition, in the 2005 UWMP, CLWA projects an increase of 15,700 afy in recycled water by 2030. Similar to the existing recycle water supply, the 15,700 afy of planned recycled water supply is to be available in an average/normal year, a single-dry year, and in each year of a multiple-dry year period.

As the Specific Plan is developed, recycled water also will be available to the Specific Plan from the Newhall Ranch WRP. Water from the Newhall Ranch WRP would be used to meet the non-potable demands of the Specific Plan. Areas that would use recycled water include common areas, slopes, landscaped areas, and parks."

The Draft EIS/EIR, Subsection 4.3.6.2.2, Indirect Impacts, further stated:

"A portion of the Specific Plan's non-potable demand would be met with recycled water from the Newhall Ranch WRP. The availability of this source would occur in stages, mirroring the staged construction of the WRP on the Specific Plan site. Approximately 4,984 afy of the non-potable supply (treated discharges from the Newhall Ranch WRP) would be available to meet a portion of the Specific Plan's non-potable demand. The balance of the total non-potable demand (3,280 afy) would be met by using other recycled water from the two existing upstream WRPs, consistent with CLWA's "Reclamation Water System Master Plan." This additional recycled water supply would meet the remaining non-potable water demand of the Specific Plan. The source of CLWA's recycled water is imported water delivered to CLWA's service area, consumptively used, discharged to the two local WRPs, and made available for reuse under a contract between the Los Angeles County Sanitation Districts and CLWA (see 2005 UWMP, section 4.3.3)."

The Newhall Ranch WRP has been approved by the Los Angeles County (County) Board of Supervisors and a sanitation district has been formed for the construction and operation of the WRP. The WRP also is approved for the delivery of recycled water to the Specific Plan site. Additionally, it is reasonable to assume that contracts for recycled water deliveries in the Santa Clarita Valley and to the Specific Plan site will occur at the time of need and as build-out occurs. Based on this information, sufficient documentation exists supporting the fact that this source can be relied upon for the purposes of the Draft EIS/EIR. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 13

The comment states that the environmental document for the Nickel water transfer could not be located. The Newhall Ranch Specific Plan Program EIR, certified by the County's Board of Supervisors on May 27, 2003, constitutes the certified environmental documentation for the Nickel water transfer to the Specific Plan site. Specifically, Appendix 2.5 of the Newhall Ranch Specific Plan Revised Additional Analysis, Volume I (November 2002) includes the environmental documentation. This document was incorporated by reference into the Draft EIS/EIR and was available to the public during the comment period during normal business hours at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191. Please also refer to **Topical Response 4: Nickel Water**, for further responsive information. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 14

The comment challenges the proposed Project's reliance on the Nickel water, stating that DWR currently does not allow the "wheeling" of private water in the SWP aqueduct. Please refer to **Topical Response 4:** Nickel Water, which discusses "wheeling" or "point of delivery" agreements, for responsive information. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 15

The comment expresses concern regarding the potential water quality impacts of the proposed Project. The comment addresses water quality generally, and does not provide a specific comment on the content or adequacy of the Draft EIS/EIR. Please see the analysis of the proposed Project's impacts on water quality in the Draft EIS/EIR, **Section 4.4**, Water Quality, and see **Section 4.3**, Water Resources. (Please also see revised **Sections 4.3** and **4.4** of the Final EIS/EIR.) The comment does not raise any issue regarding that analysis and, therefore, no more specific response can be provided. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 16

The comment states that the Draft EIS/EIR relies upon speculative information when stating that the Valencia Water Company will successfully contain perchlorate contamination in the Alluvial aquifer and elsewhere. The Draft EIS/EIR presented substantial information regarding perchlorate contamination in the Santa Clarita Valley, including the program currently in place to contain and treat perchlorate contamination in **Section 4.3**, Water Resources and **Section 4.4**, Water Quality. Please also see **Topical Response 7: Perchlorate Treatment Update**, for further responsive information. As shown in the Draft EIS/EIR and the referenced Topical Responses, the Draft EIS/EIR's reliance on information provided by CLWA and the Santa Clarita Valley water purveyors was reasonable. Studies relied upon for preparation of the Draft EIS/EIR included:

- *Mitigated Negative Declaration -- Groundwater Containment, Treatment and Restoration Project*, prepared by Kennedy/Jenks Consultants for Castaic Lake Water Agency, September 2005.
- *Interim Remedial Action Plan*, to facilitate and restore pumping of groundwater from two Saugus Formation production wells impacted by perchlorate, prepared by Kennedy/Jenks Consultants for Castaic Lake Water Agency and approved by the Department of Toxic Substances Control, December 2005.

- *Impact and Response to Perchlorate Contamination, Valencia Water Company Well Q2*, prepared by Luhdorff & Scalmanini Consulting Engineers, April 2005 (Q2 Report).
- *Groundwater Management Plan Santa Clara River Valley Groundwater Basin, East Subbasin,* prepared for CLWA by Luhdorff & Scalmanini Consulting Engineers, December 2003.
- Regional Groundwater Flow Model for the Santa Clarita Valley: Model Development and Calibration, prepared for Upper Basin Water Purveyors (CLWA, CLWA Santa Clarita Water Division, Newhall County Water District and Valencia Water Company) by CH2M HILL, April 2004.
- Analysis of Perchlorate Containment in Groundwater Near the Whittaker-Bermite Property, Santa Clarita, California, prepared for Upper Basin Water Purveyors in support of the Department of Health Services 97-005 Permit Application by CH2M HILL, December 2004.
- Analysis of Near-Term Groundwater Capture Areas for Production Wells Located Near the Whittaker-Bermite Property (Santa Clarita, California), prepared for Upper Basin Water Purveyors in support of the amended 2000 UWMP by CH2M HILL, December 21, 2004.

The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 17

The comment states that the WSA must "scrutinize" the lead water agency's assurances before accepting them. Please see **Response 2**, above, for clarification on the requirements for a WSA and the reasons why no WSA was required or prepared for the proposed Project. Please also note that the information included in the Draft EIS/EIR is based on data and studies obtained from public water agencies and agencies regulated by the California Public Utilities Commission. It provides substantial evidence upon which the analysis in the Draft EIS/EIR relied. As required by CEQA and NEPA, the Draft EIS/EIR, including **Section 4.3**, Water Resources reflects the independent judgment of the lead agencies. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 18

The comment indicates that a statewide water conservation goal of 20 percent per capita by 2020 is not required by law. The comment also includes opinion and other information regarding the State's Drought Water Bank. Please note that since circulation of the Draft EIS/EIR in April 2009, the Governor signed legislation requiring this level of conservation by 2020. Please refer to **Topical Response 5: Water Litigation and Regulatory Action Update** for additional responsive information. The Draft EIS/EIR did not rely on this legislation to create "new supply." As reported in the Draft EIS/EIR, the 2005 Urban Water Management Plan showed a 10 percent decrease in Santa Clarita Valley water demand based on the purveyors water use experience. The Draft EIS/EIR also does not rely on the Drought Water Bank water transfers to analyze the proposed Project's impact on water resources.

The comment does not address the adequacy of the information or impact analysis provided in the Draft EIS/EIR; and, therefore, no additional response is provided. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 19

The comment questions the potential for a water-related bond measure to increase SWP reliability. Such a bond measure is now part of approved water legislation and its inclusion in the Final EIS/EIR is not speculative. The Draft EIS/EIR does not rely on the passage of this legislation to justify a certain level of reliability of SWP water. The Draft EIS/EIR relied on DWR's State Water Project Delivery Reliability Report 2007 to describe the reliability of SWP water. Please refer to **Topical Response 5: Water Litigation and Regulatory Action Update**, for further responsive information. Please note that the proposed Project is not reliant upon this legislation to "increase water supply." The Draft EIS/EIR included a discussion of the legislation to provide the reviewer with a more complete description of the regulatory water setting in California. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 20

The comment states that the commentor has opposed the proposed Project for some time due to issues surrounding the 41,000 afy water transfer. For information regarding the 41,000 afy water transfer under the Monterey Agreement, please refer to **Topical Response 5: Water Litigation and Regulatory Action Update**, and **Topical Response 6: CLWA's 41,000 AFY Water Transfer**; and **Topical Response 9: State Water Project Supply Reliability**. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 21

The comment claims that the Draft EIS/EIR "relies centrally" on a legally deficient WSA from Newhall County Water District. To clarify, the Draft EIS/EIR, **Subsection 4.3.2**, relied on the 2005 UWMP, the 2005 Basin Yield Study, Santa Clarita Valley Water Reports (2006, 2007), and at least 38 other documents, plus two Water Supply Assessments from two projects in the Santa Clarita Valley (Landmark Village and Skyline project) to analyze the proposed Project's impacts on Water Resources. Based on the referenced documents and the analysis provided in **Section 4.3**, Water Resources, the Draft EIS/EIR, at page 4.3-73, determined that substantial evidence existed to support the conclusion that there is sufficient water to serve the proposed Project and the alternatives, as well as anticipated cumulative development in the Santa Clarita Valley. Please see **Response 2**, above, for further responsive information regarding requirements for preparation of a WSA. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 22

The comment claims that the proposed Project relies on "paper water" that may not be available from the SWP, focusing on the 41,000 afy water transfer. The Draft EIS/EIR, **Subsections 4.3.4.1.1**, **4.3.4.6.1**, **4.3.4.6.2**, and **4.3.4.6.3**, addressed the reliability of CLWA's 41,000 afy water transfer and concluded that it is reasonable to include the 41,000 afy transfer in the calculation of CLWA's available imported water supplies. (Draft EIS/EIR, **Subsection 4.3.4.6.2**.) Please refer to that section of the EIS/EIR for additional information about this water transfer. For further information regarding the reliability of SWP water,

including the 41,000 afy water transfer, please refer to **Topical Response 5: Water Litigation and Regulatory Action Update; Topical Response 6: CLWA's 41,000 AFY Water Transfer;** and **Topical Response 9: State Water Project Supply Reliability**. The comment also states that the Monterey Settlement Agreement precludes reliance on the 41,000 afy water transfer until the new Monterey Agreement EIR is completed. Recent court decisions have held that this is not the case. (See *Planning and Conservation League v. Castaic Lake Water Agency* (2009) 180 Cal.App.4th 210; *Santa Clarita Organization for Planning the Environment v. County of Los Angeles* (2007) 157 Cal. App.4th 149 (*SCOPE II*).)) See **Response 11** to the letter from the California Water Impact Network, dated August 24, 2009 (Letter 044) for further information on this issue. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 23

The comment states that the Draft EIS/EIR failed to provide sufficient information about the imported water sources for the public to ascertain whether the water is reliably available. Please refer to Draft EIS/EIR, **Section 4.3**, Water Resources, which provided a thorough analysis of the water supply available for the proposed Project. Sources of water for the Specific Plan include local groundwater, Nickel water, and recycled water from local water reclamation plants, and not state water (including Article 21 water) or other water stored in groundwater banks. The groundwater banks cited in this comment were studied in documents prepared by the Lead Agencies for those projects. Studies incorporated by reference into the Draft EIS/EIR included:

- 2002 Semitropic Groundwater Storage Program and Point of Delivery Agreement among the Department of Water Resources of the State of California, CLWA and Kern County Water Agency
- 2002 and 2003 Semitropic Groundwater Storage Programs prepared for CLWA by Kennedy/Jenks Consultants.
- Draft Environmental Impact Report Rosedale-Rio Bravo Water Storage District (RRBWSD) Water Banking and Exchange Program, prepared for CLWA by Science Applications International Corporation, August 2005 (SCH No. 2005061157).
- Final Environmental Impact Report Rosedale-Rio Bravo Water Storage District (RRBWSD) Water Banking and Exchange Program, prepared for CLWA by Science Applications International Corporation, October 2005 (SCH No. 2005061157).
- Draft Environmental Impact Report Castaic Lake Water Agency Water Acquisition from the Buena Vista Water Storage District and Rosedale-Rio Bravo Water Storage District Water Banking and Recovery Program, prepared for CLWA by Science Applications International Corporation, June 2006 (SCH No. 2006021003).
- Final Environmental Impact Report Castaic Lake Water Agency Water Acquisition from the Buena Vista Water Storage District and Rosedale-Rio Bravo Water Storage District Water Banking and Recovery Program, prepared for CLWA by Science Applications International Corporation, October 2006 (SCH No. 2006021003).

The Draft EIS/EIR addressed Article 21 water by reference to the 2005 UWMP, which was appended to the Draft EIS/EIR (see **Appendix 4.3**). As stated in the 2005 UWMP, pages 3-5 and 3-6:

"While the primary supply of water available from the SWP is allocated Table A supply, SWP supplies in addition to Table A water may periodically be available, including 'Article 21' water, Turnback Pool water, and DWR dry-year purchases. Article 21 water (which refers to the SWP contract provision defining this supply) is water that may be made available by DWR when excess flows are available in the Delta (i.e., when Delta outflow requirements have been met, SWP storage south of the Delta is full, and conveyance capacity is available beyond that being used for SWP operations and delivery of allocated and scheduled Table A supplies). Article 21 water is made available on an unscheduled and interruptible basis and is typically available only in average to wet years, generally only for a limited time in the late winter."

Article 21 water is not a source of supply relied upon by CLWA and the Santa Clarita Valley water purveyors as part of the water supply plan for the Santa Clarita Valley. (See Draft EIS/EIR, **Table 4.3-6**, Summary of Current and Planned Water Supplies and Banking Program.) As indicated in the 2005 UWMP and above, Article 21 water is available only during average to wet years, and for limited times in the late winter. Constraints on the SWP (*e.g.*, drought conditions, ongoing Delta pumping limitations, *etc.*) may limit the availability of Article 21 water in future years.

The Corps and CDFG appreciate the commentor's opinion about the amount of information provided in the Draft EIS/EIR. Additional information regarding the reliability of SWP supplies (including Article 21 water) is included in **Topical Response 9: State Water Project Supply Reliability**. Please also see **Topical Response 4: Nickel Water; Topical Response 5: Water Litigation and Regulatory Action Update; Topical Response 6: CLWA's 41,000 AFY Water Transfer; Topical Response 7: Perchlorate Treatment Update; and Topical Response 8: Groundwater Supplies and Overdraft Claims, for information regarding water supply availability for the proposed Project. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.**

Response 24

The comment states that the definitions and operational rules established in the Monterey Amendments remain "non-final." The Draft EIS/EIR, **Subsections 4.3.4.6.1** and **4.3.4.6.2**, addressed the Monterey Agreements and associated amendments. The status of the amendments will not affect CLWA's use of its 41,000 afy water transfer as that transfer is already completed. For further information regarding the Monterey Agreement, amendments, and the 41,000 afy water transfer, please refer to **Topical Response 5**: Water Litigation and Regulatory Action Update; Topical Response 6: CLWA's 41,000 AFY Water Transfer; and Topical Response 9: State Water Project Supply Reliability. The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 25

The comment states that the Draft EIS/EIR failed to accurately incorporate information regarding the impacts of global climate change on the availability of water for the proposed Project. Please note that

Draft EIS/EIR **Subsection 8.3.6.4**, The Effects of Global Warming, identified the potential environmental ramifications associated with global climate change, including the increased likelihood of drought, the continued recession of polar ice caps, and the modification in the seasonal pattern of snow accumulation and snow melt. (See Draft EIS/EIR, pp. 8.0-26-8.0-28.)

Additionally, **Appendix 8.0** of the Draft EIS/EIR contains two documents that addressed the water supply issue in greater detail: (i) GSI Water Solutions, Inc.'s (GSI) "Technical Memorandum regarding Potential Effects of Climate Change on Groundwater Supplies for the Newhall Ranch Specific Plan, Santa Clarita Valley, California" (March 18, 2008); and, (ii) Impact Sciences, Inc.'s (ISI) "Global Climate Change and Its Effects on California Water Supplies" (February 2009). Therefore, the Draft EIS/EIR adequately addressed the potential impacts of climate change on the availability of water supply for the proposed Project. Please also see **Topical Response 13: Global Climate Change Update** and **Appendix F8.0** of the Final EIS/EIR, for additional responsive information.

As to GSI's Technical Memorandum, GSI addressed whether future climate change may preclude the Alluvial aquifer (*i.e.*, the local groundwater source from which water would be drawn to satisfy the proposed Project's water demand) from providing sufficient yield. In undertaking its analysis, GSI considered the local climate, the global-scale and regional-scale predictions for future rainfall and temperature trends, the effect of rainfall timing and intensity on basin recharge, and evidence from historical fluctuations in local hydrology and groundwater conditions. In the memorandum, GSI reached the following conclusion:

"The historical hydrograph records indicate that the groundwater resources in the western portion of the Santa Clarita Valley are relatively unaffected by local fluctuations in rainfall. . . . [T]he available data and groundwater modeling simulations indicate that rainfall fluctuations primarily affect groundwater levels and groundwater availability in the easternmost portion of the valley, where most of the recharge occurs to the Alluvial Aquifer. Consequently, if rainfall and groundwater recharge rates were to decline in the future because of climate change, these changes are likely to be fairly small as indicated by the various climatologic studies . . . that have been conducted by the various California state agencies involved in water resources management and planning. For this reason, and also because of the well-developed understanding to date of the valley's hydrology and its shallow and deep aquifer systems, it is anticipated that only minor fluctuations in groundwater levels will occur in the Alluvial Aquifer west of I-5, and that these fluctuations will not reduce the availability or sustainability of Alluvial Aquifer groundwater in this area."

(See Draft EIS/EIR, Appendix 8.0, Technical Memorandum, pp. 10-11.)

In ISI's literature survey of "Global Climate Change and its Effects on California Water Supplies," ISI analyzed and summarized the findings of a number of water resources reports, including those prepared by DWR. The literature survey concludes that DWR has not yet fully incorporated parameters to account for global climate change in its assessment of certain effects to water supply due, in part, to the unavailability of accurate regional-based models that predict such changes. However, as the literature and modeling tools continue to develop in their assessment of such risks, DWR would incorporate such information into successive updates to the California Water Plan and biennial assessment reports addressing the delivery reliability of the SWP. The development enabled by approval of the proposed

Project would employ a number of water conservation measures. (See, *e.g.*, **Subsection 4.3.7**, Mitigation Measures SP 4.11-1 through 4.11-14, 4.12-1; see also, Los Angeles County Code, Green Building Ordinance, § 22.52.2100 *et seq.* [requiring implementation of both outdoor and indoor water conservation measures, such as smart irrigation controllers for all landscaped areas, compliance with selected drought-tolerant plant palettes, and installation of high-efficiency toilets].)

After circulation of the Draft EIS/EIR in April 2009, the Santa Clarita Valley water purveyors concluded that an updated analysis was needed to further assess groundwater development potential and possible augmentation of the groundwater operating plan, partly in preparation for the next UWMP in 2010, and partly because of recent events that are expected to impact the future reliability of the principal supplemental water supply for Santa Clarita Valley (*i.e.*, from the SWP). The document entitled, "Analysis of Groundwater Supplies and Groundwater Basin Yield Upper Santa Clara River Groundwater Basin, East Subbasin," was published in August 2009. One objective of the updated groundwater basin yield analysis was to investigate and describe potential impacts of expected climate change on the groundwater basin and its yield. As stated in Section 5.4, Climate Change Summary:

"Examination of the three simulated climate change scenarios was undertaken to provide a level of quantification to the possible impact of climate change on local groundwater basin yield and availability of groundwater as part of overall water supply to the Valley. In light of the range of global climate model output that was considered for development of the local scenarios analyzed herein, it is obvious that there is neither a unique result that can be expected to become a representative hydrologic condition in the Valley, nor is there a unique result that can be expected in terms of basin yield and associated sustainable groundwater supply as an outcome of climate change. Obviously, the Valley does not get to "choose" a future climate scenario, but rather will have to manage within whatever future patterns of rainfall actually occur over time, whether the future rainfall exhibit wet-dry cycles that are similar to or different from historically recorded conditions. . . . For the range of relatively wet to relatively dry conditions analyzed herein, all three scenarios suggest that the 2008 Operating Plan can be considered sustainable and, with the same local exceptions as simulated through a repetition of historical hydrology (e.g., mainly at and above Mint Canyon), achievable over the UWMP planning horizon. Beyond that horizon, greater uncertainty exists because the global climate models use different emissions scenarios and also become increasingly uncertain over time because of predictive uncertainty pertaining to the forward-looking representation of the many physical processes that affect climate into the future. As a result, for time periods beyond the UWMP planning horizon, some models predict longterm drying and subsequent sustained declines in groundwater levels, which would result in a smaller local groundwater supply over time, while other models predict hydrologic conditions similar to or wetter than those that have been historically observed, in which case the 2008 Operating Plan can be considered sustainable, albeit with some local issues relative to actual pumping capability at certain times (mainly in the Alluvium at the eastern end of the Valley)."

Also, please note that ISI's literature survey has been updated to account for newly available water resources literature; a revised version of the survey is available in **Appendix F8.0** of the Final EIS/EIR.

ASSEMBLY BILL 32

The comment also states that the proposed Project would create an "enormous impediment" to the achievement of California's 2020 greenhouse gas emission reduction target, as codified by Assembly Bill 32 (AB 32). However, the Draft EIS/EIR, Section 8.0, determined that the proposed Project would not impair the ability of the State of California to return to 1990 emission levels by 2020, as discussed below. Section 8.0 evaluated the significance of the proposed Project's greenhouse gas emissions by considering whether those emissions would impair the ability of the State of California to return to 1990 emission levels by 2020. The amount of greenhouse gases that would be emitted as a result of proposed Project (*i.e.*, about 250,000 tonnes of carbon dioxide equivalents (CO_2e) per year) would be more than 32 percent below the level that would be anticipated if the proposed Project were constructed in a manner consistent with the California Air Resources Board's (CARB) projections for year 2020 if "no actions are taken." CARB found that a reduction of 29 percent below the "no actions are taken" scenario is required to meet the goals of AB 32, Global Warming Solutions Act of 2006. (See, e.g., Scoping Plan, p. ES-1 ["Reducing greenhouse gas emissions to 1990 levels means cutting approximately 30 percent from business-as-usual emission levels projected for 2020."]; see also Health & Saf. Code, §38500 et seq.) As the proposed Project's emissions would exceed the 29 percent requirement, the proposed Project would not impede the implementation of AB 32 and is consistent with the overall trajectory the State of California has established for greenhouse gas reductions. (Please see Section 8.0, Global Climate Change, of the Final EIS/EIR; ENVIRON's "Climate Change Technical Report" (February 2009; Appendix 8.0 of the Draft EIS/EIR); and ENVIRON's "Climate Change Technical Addendum" (October 2009; Appendix F8.0 of the Final EIS/EIR) for additional information regarding the emissions inventories for the proposed Project and the Project alternatives, and the subsequent assessment of the inventory projections against the parameters established by AB 32.)

CLIMATE CHANGE MITIGATION

The comment further states that climate change mitigation measures should address the following sectors: water services; energy demands; transportation infrastructure; building technology; habitat encroachment; and, flood control. As discussed below, the Draft EIS/EIR identified and recommended the adoption of various project design features and mitigation measures in each of these sectors that would reduce the amount of greenhouse gases resulting from the proposed Project and/or serve to minimize the impacts of global climate change on the proposed Project.

Water Services:

- Los Angeles County has adopted green building and drought-tolerant landscaping ordinances that would apply to the proposed Project and would reduce water consumption. (See Los Angeles County Code, §§ 22.52.2100 *et seq.*, 22.52.2200 *et seq.*) The green building ordinance addresses indoor and outdoor water conservation, while the drought-tolerant landscaping ordinance identifies appropriate plant palettes.
- The Project applicant is committed to using native (or non-native/non-invasive) and drought-tolerant vegetation when revegetating the Project site. (See Draft EIS/EIR, **Subsection 4.3.7**, Mitigation Measures SP-4.11-2 and SP-4.11-3.)

• The proposed Project would use reclaimed/recycled water for landscape irrigation, and the infrastructure needed to deliver and use this water would be provided as part of the Newhall Ranch Water Reclamation Plant. (For additional information, please see the discussion of "Water Conservation and Efficiency" strategies in **Table 8.0-50**, Compatibility with California Attorney General GHG Emission Reduction Strategies, of the Draft EIS/EIR.)

Energy Demands and Building Technology:

- The Project applicant is committed to exceeding whatever is the currently applicable version of the Title 24 standards by 15 percent as build-out of the development that would be facilitated by Project approval and certification of the EIS/EIR occurs. (See Mitigation Measures GCC-1 and GCC-2 in Draft EIS/EIR **Subsection 8.6.2**.)
- Los Angeles County has adopted a green building program that requires achievement of LEED design standards. Specifically, section 22.52.2130 of the Los Angeles County Code requires the following for projects whose building permit applications are filed on or after January 1, 2010:
 - For a residential project containing five (5) or more dwelling units, the project shall achieve GPR, CGB, or LEEDTM certification or, at the option of the applicant, shall achieve the equivalency of any such certification, as determined by Public Works.
 - For a hotel/motel, lodging house, non-residential or mixed-use building, or first-time tenant improvement, with a gross floor area of at least 10,000 square feet but less than 25,000 square feet, the project applicant shall retain a LEEDTM accredited professional or other green building professional, approved by the Director and the Director of Public Works, to be part of the project design team. In addition, the project shall achieve the equivalency of LEEDTM certification, either through USGBC certification or through an equivalency determination by Public Works. The building design submitted to Public Works shall show all of the building elements that will be used to achieve such certification or such equivalency determination.
 - For a hotel/motel, lodging house, non-residential or mixed-use building, or first-time tenant improvement project, with a gross floor area greater than 25,000 square feet or for a high-rise building greater than seventyfive (75) feet in height, the project applicant shall retain a LEEDTM accredited professional or other green building professional, approved by the Director and the Director of Public Works, to be part of the project design team. In addition, the project shall achieve the equivalency of a LEEDTM silver certification, either through USGBC certification or through an equivalency determination by Public Works. The building design submitted to Public Works shall show all of the building elements

that will be used to achieve such certification or such equivalency determination.

Therefore, in accordance with existing regulatory requirements in Los Angeles County, the build-out enabled by approval of the proposed Project would follow the U.S. Green Building Council's LEED program.

Transportation Infrastructure:

As discussed in **Table 8.0-50**, Compatibility with California Attorney General GHG Emission Reduction Strategies, "the land use and circulation plans for the development enabled by the proposed Project have been designed to minimize car trips and reduce GHG emissions. Accordingly, mass transit would be conveniently located through the development of a new transit station, park-and-ride lots(s), and bus stops. In addition, an approximate 5-mile right-of-way for a potential Metrolink extension also is included in the circulation plan. Trails and bike paths leading to close-to-home jobs, neighborhood serving retail, and the elementary school would encourage residents to enjoy the walkability of the community." (Draft EIS/EIR, **Subsection 8.6.4**, pp. 8.0-117-8.0-118.)

Habitat Encroachment:

- Section 4.5 of the Draft EIS/EIR contains a detailed analysis of potential impacts to sensitive biological resources and identifies feasible mitigation capable of reducing all potentially significant impacts to less-than-significant levels.
- As discussed in **Section 4.16**, Parks, Recreation, and Trails, of the Draft EIS/EIR, build-out of the Specific Plan would provide the following acreages of parks and Open Area: 10 public Neighborhood Parks totaling 55 acres; Open Areas totaling 1,106 acres, of which 186 acres are Community Parks; High Country Special Management Area of 4,214 acres; River Corridor Special Management Area of 819 acres; a 15-acre Lake; an 18-hole Golf Course; and, a trail system consisting of a Regional River Trail, Community Trails, and Unimproved Trails. The proposed Project also would result in a managed preserve comprised, in part, of a 1,517-acre portion of the Salt Creek watershed and wildlife corridor in Ventura County and the grant of a conservation easement to CDFG over approximately 167.6 acres of the applicant's land holdings in Los Angeles County. The extensive open space and preserve commitments identified in the Draft EIS/EIR would assist in the avoidance of habitat encroachment.

Flood Control:

As discussed in **Table 8.0-50**, Compatibility with California Attorney General GHG Emission Reduction Strategies, the primary goal of low-impact site design is to maintain a landscape functionally equivalent to predevelopment hydrologic conditions and to minimize the generation of pollutants of concern. (Draft EIS/EIR **Subsection 8.6.4**.) The Los Angeles County Municipal Stormwater Permit and the State Board's Construction Storm Water General Permit regulate construction Best Management

Practices for private and public construction in Los Angeles County, and the Newhall Ranch Specific Plan is featured as a "low impact development." **Section 4.4**, Water Quality, of the Draft EIS/EIR discusses various low-impact project design features of the development enabled by the proposed Project (*e.g.*, clustered development; reserved open space; minimizing impervious areas through landscaping; buffer areas between the project site and the Santa Clara River Corridor; *etc.*).

Relatedly, Los Angeles County has adopted low-impact development standards, the purpose of which is to encourage "site sustainability and smart growth in a manner that respects and preserves the characteristics of the County's watersheds, drainage paths, water supplies and natural resources." (Los Angeles County Code, § 12.84.410 *et seq.*)

The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 26

The comment states that the Draft EIS/EIR does not consider project alternatives that reduce impacts of climate change and demand for water resources. Please note that the Draft EIS/EIR included six alternatives to the proposed Project (Alternative 2), including the "No Project" alternative, each of which reduce water demand and impacts of climate change relative to the proposed Project. (Draft EIS/EIR, **Section 5.0**.) The Draft EIS/EIR did not identify any significant project-specific or cumulative water resource impacts from the proposed Project or any alternatives, and, therefore, no additional water-related mitigation measures are required, including water neutral development. The Draft EIS/EIR included several mitigation measures that would reduce the water demand of the proposed Project, including the use of recycled water for irrigation purposes. (See Draft EIS/EIR, **Subsection 4.3.7**, Mitigation Measures.) The comment will be included as part of the record and made available to the decision makers prior to a final decision on the proposed Project.

Response 27

The comment includes an opinion about the size and importance of the proposed Project. The Corps and CDFG appreciate the opinion expressed in the comment, which will be included as part of the record and made available to decision makers prior to a final decision on the proposed Project. Because the comment expresses an opinion regarding the project and does not address the content of the Draft EIS/EIR, no additional response is provided. The comment also requests a "new" WSA. Please see **Response 2**, above, for clarification on the requirements for a WSA and the reasons why no WSA was required or prepared for the proposed Project. Please also refer to **Topical Response 5**: Water **Litigation and Regulatory Action Update**; **Topical Response 6**: **CLWA's 41,000 AFY Water Transfer**; and **Topical Response 9**: **State Water Project Supply Reliability** for additional information regarding the reliability of water sources.

Response 28

The comment includes an opinion about the sustainability of the proposed Project. The Corps and CDFG appreciate the opinion expressed in the comment, which will be included as part of the record and made available to decision makers prior to a final decision on the proposed Project. Because the comment

expresses an opinion regarding the project and does not address the content of the Draft EIS/EIR, no additional response is provided.