

10. OTHER CEQA CONSIDERATIONS (REVISED AND NEW)

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Section 15126 of the California Environmental Quality Act (CEQA) Guidelines requires that all aspects of a project must be considered when evaluating its impact on the environment, including planning, acquisition, development, and operation. As part of this analysis, the EIR must also identify (1) significant environmental effects of the proposed project, (2) significant environmental effects that cannot be avoided if the proposed project is implemented, (3) significant irreversible environmental changes that would result from implementation of the proposed project, and (4) growth-inducing impacts of the proposed project.

The Introduction/Executive Summary, Appendix E Revised) and Chapter 7 and Chapter 12 of this REIR provide a comprehensive identification of the ~~proposed project's~~KWB activities' environmental effects, including the level of significance both before and after proposed mitigation measures. In addition, Chapter 8 of this REIR provides a comprehensive analysis of growth-inducing effects.

Section 15130(a) of the CEQA Guidelines requires that an EIR contain an assessment of the cumulative impacts that could be associated with project implementation. This assessment for KWB activities is included in Section 10.1, Cumulative Environmental Impacts and includes an analysis of indirect impacts from potential cropping changes.

Section 15126.2(b) of the CEQA Guidelines requires that an EIR describe any significant impacts that cannot be avoided, even with the implementation of feasible mitigation measures. The effects of the ~~proposed project~~KWB activities on various aspects of the environment are discussed in detail in Section 10.2, Significant and Unavoidable Impacts.

Section 15126.2(c) of the CEQA Guidelines requires a discussion of any significant irreversible environmental changes that would be caused by the proposed project. This analysis is included in Section 10.3, Significant and Irreversible Environmental Impacts, for KWB activities.

Although not required by CEQA, this chapter includes an analysis of the ~~proposed project's~~KWB activities' potential impact on social and economic factors in Section 10.4, Environmental Justice.

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10.1 CUMULATIVE ENVIRONMENTAL IMPACTS (NEW)

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10.1.1 INTRODUCTION

This REIR cumulative impact analysis does not supersede the cumulative impact analysis of the Monterey Plus EIR but supplements the Monterey Plus EIR by focusing specifically on cumulative impacts related to KWB activities. The numbering of the impact statements in this chapter continues from where the Monterey Plus DEIR stopped. Therefore the first impact for this chapter is 10.1-23.

As defined in the California Environmental Quality Act (CEQA) Guidelines Section 15355, a cumulative impact is an environmental impact that is created as a result of the combination of the project evaluated together with other projects causing related impacts. CEQA requires that an EIR discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable (CEQA Guidelines Section 15130[a]). "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past, current, and probable future projects (CEQA Guidelines Section 15065(a)(3)). If an incremental effect is not cumulatively considerable, then the lead agency does not need to consider that effect significant and must briefly describe the reason why (CEQA Guidelines Section 15130(a)).

CEQA Section 15130(b) states that the discussion of cumulative impacts need not provide as much detail as the discussion of the effects attributable to the project. The level of detail should be guided by what is practical and reasonable.

The following elements are necessary for an adequate discussion of significant cumulative impacts (CEQA Guidelines Section 15130(b)):

- A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency; or a summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency.
- A defined geographic scope of the area affected by the cumulative effect and a reasonable explanation for the geographic limits identified.
- A summary of expected environmental effects that might be produced by those projects with specific reference to additional information stating where that information is available.
- A reasonable analysis of the cumulative impacts of the relevant projects. An EIR shall examine reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects.

10.1.2 METHOD OF ANALYSIS

The Monterey Plus EIR cumulative impact analysis has been updated for this REIR by including past, present, and probable future water and other development projects that potentially could impact resources affected by KWB activities. The update includes: 1) using new information to update project status for projects relevant to KWB activities in the Monterey Plus EIR cumulative impact analysis, and

2) including additional projects related specifically to KWB activities such as water banking programs and projects in the Kern Fan area; regional and local development plans and programs; and related development projects in the city of Bakersfield and Kern County (Table 10.1-1). The criteria used to identify individual projects for consideration in this cumulative analysis included:

- 1) whether the project is under active consideration (generally indicated by issuance of a notice of preparation of an EIR by a lead agency);
- 2) whether the project would be operational or contemplated within the timeframe of the KWB activities; and
- 3) whether the project in combination with KWB activities would have the potential to affect the same resources.

If a project met all of these criteria, then it was considered reasonably foreseeable and was selected for inclusion in the cumulative impact analysis. It was then determined whether KWB activities could cause a cumulatively considerable incremental contribution to an overall significant cumulative impact on each resource from all projects shown in Table 10.1-1 combined, including KWB activities.

The cumulative impact analyses for each resource could be qualitative or quantitative, depending on each resource and available data. The qualitative analysis considered projects that are in the planning stage and are being discussed by various entities, and projects that are not quantifiable using other modeling or analytical programs. These cumulative projects were addressed qualitatively to disclose information about potential cumulative impacts. Some resources were analyzed quantitatively (i.e., surface water hydrology and groundwater hydrology, air quality, climate change, and growth). All other resource topics are qualitatively assessed.

The following are summary descriptions of the projects, grouped into similar categories, considered in this cumulative impact analysis.

10.1.2.1 Water Banking Programs and Related Projects

This section describes projects that have been included in the groundwater modeling assumptions for Section 7.1, Surface Water and Groundwater Hydrology, and described in Appendix 7-2. The water banking programs and related projects not included in the groundwater modeling are still applicable to the cumulative impact analysis and were considered qualitatively. The reasonable foreseeable projects listed in Table 10.1-1 could incrementally contribute to the cumulative impact to the environment when considered with KWB activities described in Revised Appendix E.

Kern Water Bank Authority

Future KWB activities include construction of approximately 190 acres of recharge ponds and three wells under the ongoing Integrated Resources Water Management (IWRM) program (Kern Water Bank Recharge and Recovery Project). The IRWM program ponds have been sited whereas the locations of additional ponds are approximate but consistent with the KWB Habitat Conservation Plan/Natural Community Conservation Plan (KWB HCP/NCCP) requirements; final locations and areas will be determined as these facilities are designed. Future build-out of the KWB would include construction of approximately 862 acres of additional recharge ponds and associated facilities.

TABLE 10.1-1

PROJECTS CONSIDERED IN REVISED EIR CUMULATIVE IMPACT ANALYSIS

Line	Project	Criterion 1: Is the action under active consideration?	Criterion 2: Would the action be completed or operational within the timeframe being considered for the proposed project?	Criterion 3: Does the action, in combination with the proposed project alternatives, have the potential to affect the same resources?
Programs and Projects Related to Kern Water Bank Activities				
1	<u>Coordinated Long-Term Operation of the Central Valley Project and State Water Project</u>	√	√	No
2	<u>Proposed Long-Term Water Transfers of CVP Water for 2015-2024</u>	√	√	No
3	<u>CVP Water Transfer Program for the San Joaquin River Exchange Contractors for 2014–2038</u>	√	√	No
4	<u>SWP Water Supply Contract Extension Project 2014 to 2085</u>	√	√	No
5	<u>Isabella Lake Dam Safety Modification Project</u>	√	√	√
Water Banking Programs and Related Project Activities in the Kern Fan Subbasin				
Kern Water Bank Authority				
6	<u>Kern Water Bank Recharge and Recovery Project (Integrated Resources Water Management Program)*</u>	√	√	√
7	<u>Kern Water Bank Conservation and Storage Project</u>	√	√	√
8	<u>Kern Water Bank Short-Term Storage Program</u>	No	No	No
Arvin-Edison Water Storage District				
9	<u>Arvin-Edison Water Storage District/Metropolitan Water District Banking Program</u>	√	√	√
10	<u>Arvin-Edison Water Storage District Water Management Program; In-District Conjunctive Use/In-Lieu Recharge Program</u>	√	√	√
11	<u>Arvin-Edison Water Storage District and Westside Mutual Water Company, LLC. Water Supply Exchange Agreements 2011–2016</u>	√	√	√
12	<u>Arvin-Edison Water Storage District Intake Canal and Kern Delta Buena Vista River Canal Intertie Project</u>	No	No	No
13	<u>South Canal Balancing Reservoir Project</u>	No	No	No
Berrenda Mesa Water District				
14	<u>Berrenda Mesa Water Banking Project</u>	√	√	√
15	<u>Berrenda Mesa Property Joint Water Banking Project (BMWD/ID4)</u>	√	√	√
16	<u>Westside Districts' Groundwater Banking Project</u>	No	No	No
Buena Vista Water Storage District				
17	<u>Buena Vista Water Storage District Water Management Program (Groundwater Recharge and Recovery Project; Water Exchange Project Conservation Easement Water Acquisition and Management Project; Brackish Groundwater Remediation Project); Conjunctive Use/In-Lieu Recharge Program</u>	√	√	√
18	<u>Buena Vista Water Storage District/West Kern Water District Joint Water Supply Project (In Lieu/Direct Recharge Components)</u>	√	√	√
19	<u>Buena Vista/Rosedale–Rio Bravo Water Banking and Recovery Program</u>	√	√	√
20	<u>Buena Vista Water Storage District/Irvine Ranch Water District Exchange Agreements (2010 to 2038)</u>	√	√	√

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21	<u>James Groundwater Storage and Recovery Project*</u>	√	√	√
22	<u>California Aqueduct Turnout BV8</u>	√	√	√
23	<u>Water Use Efficiency Project</u>	√	√	√
24	<u>Palms Groundwater Banking Project</u>	√	√	√
25	<u>Northern Improvement Project</u>	No	No	No
26	<u>Kern Fan Direct Recharge and Recovery Project</u>	No	No	No
<u>Cawelo Water District Water Management Program</u>				
27	<u>Cawelo Water District/Dudley Ridge Water District Conjunctive Use Program</u>	√	√	√
28	<u>Cawelo-Modified Famoso Water Banking Project</u>	√	√	√
29	<u>Calloway Canal Lining Project*</u>	√	√	√
<u>City of Bakersfield</u>				
30	<u>City of Bakersfield 2800 Acre Groundwater Recharge Project</u>	√	√	√
31	<u>Kern River Flow and Municipal Water Program</u>	√	√	√
32	<u>Kern River Channel Maintenance Program</u>	√	√	√
<u>Kern Delta Water District</u>				
33	<u>Kern Delta Water District Groundwater Banking Program; In-Lieu Banking Program</u>	√	√	√
34	<u>Kern Delta/MWD Water Banking</u>	√	√	√
35	<u>Kern River Water Allocation Plan</u>	√	√	√
<u>Kern County Water Agency (ID4)</u>				
36	<u>Pioneer Project Banking Program</u>	√	√	√
	<u>Cross Valley Canal Extension Lining Project (Phase 1- Pool No. 7)</u>	No	√	√
37	<u>ID4 Joint Use Groundwater Recovery Programs (with Rosedale and BMWWD)</u>	√	√	√
38	<u>ID4/Kern Tulare & Rag Gulch Banking</u>	√	√	√
39	<u>Allen Road Complex Well Field Project</u>	√	√	√
40	<u>Cross Valley Canal Extension Lining Project (Phase 1— Pool No. 7)</u>	No	No	No
<u>North Kern Water Storage District</u>				
41	<u>North Kern Water District Groundwater Storage Project; Conjunctive Use/In-Lieu Recharge Program</u>	√	√	√
42	<u>Delano-Earlimart Irrigation District/North Kern Water Storage District Banking</u>	√	√	√
43	<u>Drought Relief Project</u>	√	√	√
<u>Rosedale-Rio Bravo Water Storage District</u>				
44	<u>Rosedale-Rio Bravo Water Storage District Groundwater Banking and Sale Program; In-District Conjunctive Use/In-Lieu Recharge Program</u>	√	√	√
45	<u>Rosedale-Rio Bravo Water Storage District and Kern Tulare & Rag Gulch</u>	√	√	√
46	<u>Rosedale-Rio Bravo Water Storage District Joint Use Groundwater Recovery Projects</u>	√	√	√
47	<u>Rosedale-Rio Bravo Water Storage District/Irvine Ranch Water District Exchange Agreements (2009 to 2039)</u>	√	√	√

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48	<u>Strand Ranch Integrated Banking Project</u>	√	√	√
49	<u>Stockdale West/Strand Ranch Water Banking Project</u>	√	√	√
50	<u>Drought Relief Project*</u>	√	√	√
<u>Semitropic Water District</u>				
51	<u>Semitropic Water District Banking Project</u>	√	√	√
52	<u>Semitropic In-District Conjunctive Use/In-Lieu Recharge Program</u>	√	√	√
53	<u>Semitropic/Metropolitan Water District et al. Water Banking</u>	√	√	√
54	<u>Semitropic/Shafter-Wasco Water Banking</u>	√	√	√
55	<u>Semitropic/Westlands Water District Water Banking</u>	√	√	√
56	<u>Semitropic/Santa Clara Valley Water District Water Banking</u>	√	√	√
57	<u>Semitropic/Poso Creek Mutual Water Company Water Banking</u>	√	√	√
58	<u>Semitropic/Madera Irrigation District Water Banking</u>	√	√	√
<u>West Kern Water District</u>				
59	<u>West Kern Water District Groundwater Banking Program</u>	√	√	√
60	<u>North Project Water Banking Expansion</u>	√	√	√
<u>Wheeler Ridge–Maricopa Water Storage District</u>				
61	<u>In-District Conjunctive Use/In-Lieu Recharge Program</u>	√	√	√
62	<u>Wheeler Ridge–Maricopa Groundwater Storage and Recovery Project</u>	No	No	No
<u>Lost Hills Water District</u>				
63	<u>Regional Brackish Water Treatment Project</u>	No	No	No
<u>Tejon-Castac Water District</u>				
64	<u>California Aqueduct Turnout for Tejon-Castac Water District</u>	√	√	√
<u>Regional and Local Development Plans and Programs</u>				
65	<u>Metropolitan Bakersfield General Plan*</u>	√	√	√
66	<u>Kern County General Plan*</u>	√	√	√
67	<u>Metropolitan Bakersfield Habitat Conservation Plan</u>	√	√	√
68	<u>Kern Council of Governments Regional Blueprint</u>	√	√	√
69	<u>Tehachapi Uplands Multiple Species Habitat Conservation Plan</u>	√	√	√
<u>Related Development Projects</u>				
<u>City of Bakersfield</u>				
70	<u>West Ming Specific Plan*</u>	√	√	√
71	<u>McAllister Ranch Specific Plan</u>	No	No	No
72	<u>Rosedale Ranch (approved residential development)*</u>	√	√	√
73	<u>Saco Ranch (approved commercial development)*</u>	√	√	√
74	<u>Strand Ranch (approved residential and commercial development)*</u>	√	√	√
75	<u>Stockdale Ranch (approved residential development)*</u>	√	√	√
76	<u>Old River Ranch (approved residential and commercial development)*</u>	√	√	√

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77	Bakersfield Commons (approved commercial development)*	√	√	√
78	Ashe No. 4 (approved residential development)*	√	√	√
79	Hosking Commercial Center (proposed commercial development)*	√	√	√
Kern County				
80	Tejon Mountain Village Specific and Community Plan	√	√	√
81	Tejon Industrial Complex Specific Plan	√	√	√
82	Grapevine Specific and Community Plan	√	√	√
83	Reina Ranch (proposed residential development and drill island for petroleum extraction)*	√	√	√
84	Rosedale & Referno Precise Development Plan*	√	√	√
85	Hydrogen Energy Power Plant	√	√	√
86	San Emidio Quarry Expansion	√	√	√
Related Capital Improvement Projects				
87	Centennial Corridor Project (Interstate 5 to State Route 58 alignment)	√	√	√
88	Rosedale Highway Widening	√	√	√
89	State Route 99 Auxiliary Land/Rosedale Highway Off-ramp Improvements	√	√	√
90	State Route 99/Hosking Avenue Interchange	√	√	√
91	State Route 178 at Morning Drive Interchange	√	√	√
92	State Route 99 Widening (8-Lane) Project, North Bakersfield	√	√	√
93	State Route 99 Widening (8-Lane) Project, South Bakersfield	√	√	√
<p>Notes: BMWD = Berrenda Mesa Water District; CVP = Central Valley Project; ID4 = Improvement District No. 4; Rosedale = Rosedale-Rio Bravo Water Storage District; SWP = State Water Project</p> <p>The decision-making criteria used to determine whether a project should be addressed in the cumulative impact analysis for the Revised EIR are listed in columns 2, 3, and 4 above. Projects determined to meet all three criteria are highlighted in gray and included in the cumulative analysis. For each of the three criteria listed above, a checkmark (√) is used to denote a "yes" decision. Unless otherwise noted above, projects that do not meet all three of the criteria were not included in the cumulative analysis discussed in this section.</p> <p>*Projects included in cumulative groundwater modeling analysis of KWB future operations.</p>				

The Kern Water Bank Authority (KWBA) also issued a Notice of Preparation in 2012 for the proposed Kern Water Bank Conservation and Storage Project, which would use existing facilities to divert additional water from the Kern River to increase reliability and enhance the dry-year water supply of KWBA's participants through storage in the KWB.

Berrenda Mesa Joint Project

The Berrenda Mesa Project encompasses 369 acres and is located near the farthest most northeast corner of KWB Lands along both sides of the Kern River channel. The participating water districts

include Berrenda Mesa Water District (WD), Belridge Water Storage District (WSD), Kern Delta WD, Lost Hills WD, and Wheeler Ridge–Maricopa WSD.

The project began operations in 1983 with 250 acres of recharge basins along the south side of the Kern River channel. The recharge basins can receive deliveries of State Water Project (SWP), Kern River, and Cross Valley Canal (CVC) water through the Wilson Ditch intake canal. The facility also has access to 65 acres of the Kern River channel for recharge when the river is not flowing. Recovery from the facility is from 14 water production wells: eight on-site and six in the Pioneer Project. Recovered water from the production wells is pumped directly to the CVC by either individual pipelines from wells or manifolds of multiple wells to the CVC. Berrenda Mesa WD, Belridge WSD, and Lost Hills WD are located over 10 miles north, and recovered water is delivered by exchange from the California Aqueduct.

Buena Vista Water Storage District

Buena Vista Water Storage District (Buena Vista WSD) and Rosedale-Rio Bravo Water Storage District (Rosedale) are in the planning stages for the James Groundwater Storage and Recovery Project, bordering the southeastern border of the KWB. It would include construction and operation of 1,400 acres of shallow recharge ponds, water conveyance facilities, and up to 14 groundwater wells and well pumping plants. Recharge on the property is estimated at up to 150,000 acre-feet per year (AFY) with recovery of water of up to 50,000 AFY.

The project includes water conveyance to and from the property using local canals and facilities that may be available, including but not limited to, the CVC, Kern River, Friant-Kern Canal, California Aqueduct, Buena Vista Canal, 2800 Acre Groundwater Recharge Project, Pioneer Project, KWB, Berrenda Mesa Project, and Kern River Canal, subject to applicable rules and regulations. The project would be constructed, operated, and managed by Buena Vista WSD and Rosedale, although day-to-day operations, or portions thereof, may be contracted to other parties. Sources of water for recharge could include water from the Kern River, Friant-Kern Canal, SWP, Central Valley Project (CVP), and possibly other sources that may be available to Buena Vista WSD or Rosedale from time to time.

The Buena Vista WSD is also implementing the Buena Vista Water Management Program, which consists of four project components: Groundwater Recharge and Recovery Project (GRRP), Water Exchange Project (WEP), Conservation Easement Water Acquisition and Management Project (CEWAMP), and Brackish Groundwater Remediation Project (BGRP). The components are described as follows:

Component 1: The GRRP consists of groundwater recharge that would be conducted through direct recharge methods, in-lieu methods, or a combination, resulting in an additional annual recovery of up to 20,000 AFY.

Component 2: The WEP would allow the Buena Vista WSD to deliver portions of its water supplies to other entities in exchange for later return of more regulated water supplies, increasing its overall supply during dry years.

Component 3: The CEWAMP consists of acquiring and actively managing some or all of the water service rights within the district that have already entered into, or that will enter into, conservation easements programs and that have transitioned away from full agricultural production. This project would result in substantial water savings.

Component 4: The BGRP is designed to remediate brackish groundwater conditions and shallow, perched groundwater conditions within the Buttonwillow Service Area by recovering

brackish groundwater and shallow brackish perched groundwater from strategic locations within the district. Annual brackish groundwater recovery could lead to up to 12,000 AFY in additional water supplies.

California Department of Water Resources

The 2014 Sustainable Groundwater Management Act (SGMA) went into effect on January 1, 2015. The California Department of Water Resources (Department) is responsible for oversight and implementation of SGMA, which establishes a new structure for managing groundwater in California. SGMA requires development of projects and programs to achieve long-term basin sustainability and includes: a) formation of groundwater sustainability agencies (GSAs) for all basins designated as high or medium priority by the Department; b) development of a groundwater sustainability plan (GSP); and c) implementation of the GSP to avoid “undesirable result” (California Water Code Section § 10721(x)) .

The Kern County subbasin (No. 5-22.14) has been designated a high priority basin by the Department. This means local agencies in this subbasin are required to form GSAs by June 2017, and to develop and adopt their GSPs by January 2020. Each GSP must include measurable goals and objectives, and implementation actions to achieve/maintain basin sustainability. The subbasin needs to be under sustainable management by 2040, by implementing monitoring, project implementation, and administrative actions.

City of Bakersfield

The City of Bakersfield has several sources of water supply for its urban customers. It can use surface water supplies from the Improvement District No. 4 (ID4) water treatment plant (from either the CVC or the Kern River), the California Water Service plant located at the mouth of the Kern River Canyon (Kern River water), or the City of Bakersfield treatment plant in northwest Bakersfield and groundwater delivered by various purveyors. Other agencies serving the unincorporated Bakersfield area include North of the River Municipal Water District and Oildale Mutual Water Company. These purveyors, and the city, purchase imported water (from state and federal water sources, mainly in the Sacramento-San Joaquin Delta area), through Kern County Water Agency (KCWA) and KCWA member unit, ID4. The City of Bakersfield can recharge water in its 2800 Acre Groundwater Recharge Project, the Parkway and Truxtun Lakes Facilities, and the Kern River channel.

In 1976, the City of Bakersfield entered into an agreement with Tenneco West Inc. to purchase Tenneco’s pre-1914 appropriative Kern River rights, yielding an average of 160,000 AFY of water. With the purchase of the water rights came 2,800 acres of land along the Kern River stretching approximately 6 miles between Renfro Road and Interstate 5 (I-5). Additionally, all of Tenneco’s canals and surface water conveyance facilities within the 2,800 acres and upstream of the facility went with the purchase.

The City of Bakersfield 2800 Acre Groundwater Recharge Project consists of 14 recharge basins and approximately 25 production water wells. Water for recharge can be delivered by the Kern River channel and the CVC. This water can derive from the Kern River, the SWP, or CVP sources via interconnections between the CVC, the Friant-Kern Canal (conveys CVP water), and the Arvin-Edison Canal (also conveys CVP water). Water recovered during dry years is delivered to the City of Bakersfield via pipelines or to water districts purchasing water via the City of Bakersfield River Canal. Between 1978 and 2007, approximately 1.3 million acre-feet (MAF) of water were recharged into the facility.

The City of Bakersfield also operates recharge facilities that consist of two ponds along Truxtun Extension (Truxtun Lakes), the Kern River channel within its city limits, and ponds in the vicinity of Allen

Road and Stockdale Highway (Parkway Facility). Water for recharge is delivered to these facilities via the Kern River channel and the CVC. Operation of the City of Bakersfield recharge facilities is the responsibility of the City of Bakersfield Water Department.

Improvement District No. 4

Pioneer Groundwater Recharge and Recovery Project

The Pioneer Project consists of approximately 2,233 acres of ponds on the Pioneer property, with the capacity to recharge 12,000 AF of water per month. The Kern River channel is considered to be part of the Pioneer Project. The group of participating water districts includes KCWA, Buena Vista WSD, Henry Miller WD, Kern Delta WSD, Rosedale, Wheeler Ridge–Maricopa WSD, Tejon-Castac WD (TCWD), Semitropic WSD, Lost Hills WD, Belridge WSD, Berrenda Mesa WD, and ID4.

The Pioneer Project participants and KCWA have rights to spread or recover water, or both, in (1) the Pioneer Property; (2) the City of Bakersfield 2800 Acre Groundwater Recharge Project; (3) the Kern River channel east of the 2800 Acre Groundwater Recharge Project; and (4) any land, other than the Pioneer Property, that KCWA has or acquires the use of for similar purposes. These rights provide a total recharge capacity of about 430 cubic feet per second (cfs).

In 1999, KCWA was awarded a \$5 million loan to fund construction of 11 new wells and rehabilitation of six existing wells described above on the Pioneer Property. During 1999 and 2000, KCWA constructed 11 new wells, adding approximately 33,000 AFY of recovery capacity for the Pioneer Project recovery participants and KCWA. The wells were completed in 2000. The loan was also used to construct pipelines from the wells to the CVC or Kern River Canal.

Rosedale-Rio Bravo Water Storage District

Rosedale-Rio Bravo Water Storage District Groundwater Storage, Banking, Exchange, Extraction and Conjunctive Use Program

Rosedale was formed in 1959 by an act of the California Legislature to develop a groundwater recharge program to offset overdraft conditions in the regional aquifer underlying the district. Rosedale is located to the north of the KWB. It is composed of approximately 44,150 acres, 28,500 of which are developed as irrigated agriculture and about 6,000 acres as developed urban use.

To meet the needs of its landowners, Rosedale has developed the Groundwater Storage, Banking, Exchange, Extraction and Conjunctive Use Program. This program includes six water entities that collectively can provide a maximum recharge of approximately 150,000 AFY and a maximum recovery of 45,750 AFY. Surface water for the Program is supplied by the participating entities through high-flow Kern River water, the CVP (via the Friant-Kern Canal), and the SWP (via the CVC). The infrastructure for the Program includes 1,400 acres of recharge ponds along the Goose Lake Slough, and seven recovery wells. High-flow Kern River waters can be diverted to Goose Lake Slough directly from the Kern River. SWP water via the CVC can be delivered to the recharge facilities via Rosedale's Turnouts 1 and 2. CVP water can be delivered to Rosedale via the Friant-Kern Canal Intertie or the Friant-Kern Kern River Intertie. The Buena Vista WSD East Side Canal can deliver either SWP water, Kern River water, or a mixture of both to the western portion of Rosedale.

Rosedale-Rio Bravo Water Storage District /ID4 Joint-Use Groundwater Recovery Program

Rosedale has partnered with ID4 in a joint-use groundwater recovery program which includes 45 cfs of well recovery, 60 cfs of transmission pipeline capacity, and 60 cfs of CVC capacity. Rosedale paid for

the construction of wells, pipelines, and turn-in facilities to the CVC, and ID4 operates and maintains the wells as part of its expanded Allen Road Well Field. This project was completed in 2007.

Rosedale-Rio Bravo Water Storage District /Irvine Ranch Water District Integrated Banking Project

Irvine Ranch WD was established in 1961 and receives SWP water from the Metropolitan Water District of Southern California. It provides potable and recycled water, sewage collection and treatment, and urban runoff treatment to municipal/industrial and agricultural customers within approximately 114,560 acres of service area in Orange County.

In 2004, Irvine Ranch WD purchased 611 acres of the former Strand Ranch, located adjacent to a portion of the northern KWB boundary. The CVC and Pioneer Canal run east-west through the middle of the project. Irvine Ranch WD currently participates in Rosedale's Conjunctive Use Program through its Strand Ranch Integrated Banking Project and was annexed into Rosedale. The Strand Ranch Project includes approximately 502 acres of recharge basins and seven recovery wells. Irvine Ranch WD has the ability to store up to 50,000 AF and to recover 17,500 AFY in accordance with its banking project terms with Rosedale. Buena Vista WSD also participates in this project.

Surface water (SWP, CVP, and Kern River) for groundwater recharge is delivered to the Strand Ranch project via turnouts and siphons from the CVC, the Rosedale West Intake Canal, and the North and South Supply Canals along the eastern boundary of the project. Recovered water is transported to the CVC via pipelines connecting multiple water production wells from both the northern and southern portions of the project.

West Kern Water District/Buena Vista Water Storage District Joint-Use Recharge Facility

West Kern WD and Buena Vista WSD operate a joint-use recharge facility within the West Kern WD well field. The recharge facility is located adjacent to the KWB along its northern, eastern, and southern boundaries. It is composed of 10 recharge basins and approximately 14 water production wells. The facility receives water via the Kern River through the West Kern WD–Buena Vista WSD Diversion Works and also from the California Aqueduct via the KWB Canal and the Buena Vista WSD Main Canal.

Additionally, West Kern WD has purchased land in the vicinity of the northwestern portion of the KWB and the southern end of Buena Vista WSD for groundwater banking and recovery operations. It entails an eventual build-out of approximately 480 acres of recharge basins; water production wells for approximately 24,000 AFY of recovery; and additional turnouts from the CVC, KWB "W" Ponds, and the Buena Vista WSD East Side Canal. Turn-in facilities for delivery of recovered water are from conveyance pipelines that connect the water production wells into the Buena Vista WSD East Side Canal, the CVC, and the KWB Canal, in addition to a turn-in to the California Aqueduct.

10.1.2.2 Region and Local Plans and Programs

Metropolitan Bakersfield General Plan

The *Metropolitan Bakersfield General Plan* is a joint planning document adopted by both the County of Kern and the City to provide for a cohesive planning effort for the entire metropolitan Bakersfield area. The boundaries of the planning area were mutually agreed upon by the City of Bakersfield and Kern County as part of the joint adoption of the *Metropolitan Bakersfield General Plan* and represent the area where planning and land use decisions could affect both Bakersfield and Kern County (see Figure 7.10-1 in Section 7.10, Land Use and Planning).

The *Metropolitan Bakersfield General Plan* was adopted by the Kern County Board of Supervisors on December 3, 2002, and was last amended on December 11, 2007. The *Metropolitan Bakersfield General Plan* is a policy document designed to give long-range guidance for decision-making affecting the future character of the Metropolitan Bakersfield planning area and represents the official statement of the community's physical development as well as its economic, social, and environmental goals.

Kern County General Plan

KWB Lands fall within both the *Kern County General Plan* and the *Metropolitan Bakersfield General Plan* (Unincorporated Planning Area) (see Figure 7.10-1 in Section 7.10, Land Use and Planning). The *Kern County General Plan* was adopted by the Kern County Board of Supervisors on June 15, 2004, and was last amended on September 22, 2009. The *Kern County General Plan* identifies policies that provide long-range guidance to county officials who make decisions that will affect growth and resources in unincorporated Kern County, excluding the unincorporated portion of the county within the metropolitan Bakersfield planning area. The general plan helps ensure that day-to-day planning and land use decisions conform with the long-range program. The plan is reviewed and updated periodically as the goals and requirements of the community evolve.

The general plan encourages economic development that creates jobs and capital investments in urban and rural areas that benefits residents, businesses, and industries, as well as ensuring future governmental fiscal stability while encouraging new development to use existing infrastructure and services wherever feasible in the County's urban areas and ensures the protection of environmental resources and the development of adequate infrastructure with specific emphasis on conserving agricultural areas, discouraging unplanned urban growth, ensuring water supplies and acceptable quality for future growth, and addressing air quality issues.

Metropolitan Bakersfield Habitat Conservation Plan

The goal of the Metropolitan Bakersfield Habitat Conservation Plan (MBHCP) is to acquire, preserve, and enhance native habitats that support endangered and sensitive species, while allowing urban development to proceed as set forth in the *Metropolitan Bakersfield General Plan*. The MBHCP includes implementing agreements and ordinances, identifying specific methods for collecting funds for the acquisition and perpetual management of habitat land.

The MBHCP is intended to meet the requirements of both state and federal endangered species acts. In addition, the MBHCP complies with state and federal environmental regulations set forth in the National Environmental Policy Act and CEQA. The study area covered by the MBHCP contains both City and Kern County jurisdictions. Upon payment of required mitigation fees and receipt of City project approval, a development applicant would become a sub-permittee and would be allowed the incidental take of species in accordance with state and federal endangered species laws.

Kern Council of Governments Regional Blueprint

The Kern Regional Blueprint Program, led by the Kern Council of Governments, sets forth principles for growth in the Kern region that will help inform decision-making in local communities. These principles focus on: conserving energy and natural resources; providing adequate and equitable services; enhancing economic vitality; providing a variety of housing choices; using and improve existing community assets and infrastructure; using compact, efficient development and/or mixed land uses where appropriate; providing a variety of transportation choices; conserving undeveloped land and spaces; and increasing civic and public engagement.

Tehachapi Uplands Multiple Species Habitat Conservation Plan

The Tehachapi Uplands Multiple Species Habitat Conservation Plan (Tehachapi Uplands MSHCP) provides an Incidental Take Permit under the U.S. Fish and Wildlife Service (USFWS Section 10(a)(1)(B) for 25 federally protected species within 141,886-acres of the 270,365-acre Tejon Ranch. (see discussion of Tejon projects below in Related Development and Capital Improvement Projects). The Tehachapi Uplands MSHCP is designed to preclude development of approximately 91 percent of the 141,886 acres of land covered under this plan. The length of the plan is for 50 years.

10.1.2.3 Related Development and Capital Improvement Projects

Table 10.1-1 identifies related development and capital improvement projects considered in the cumulative impact analysis. These projects are in the general location of KWB and some impacts could be cumulative with KWB activities. TCWD provides water supplies to the Tejon Industrial Complex project and to the Tejon Mountain Village (TMV) for residential, commercial, and recreational land uses.¹ Because these major development projects receive KWB water, they are summarized below.

Tejon Industrial Complex

The Tejon Industrial Complex includes a master-planned industrial complex and supporting commercial uses which serve commerce along the I-5 transportation corridor between Bakersfield and Los Angeles. The project site is located between I-5 on the east and Tecyua Creek on the west, near the Wheeler Ridge/Laval Road interchange, and north of the California Aqueduct. Three large warehouses have been built as part of a major industrial complex, which also includes restaurants, automobile service stations, and a large truck stop.

Tejon Mountain Village

The project site is approximately 26,417 acres located in southwestern Kern County east of I-5. The project includes 3,450 residences; up to 160,000 square feet of commercial development; hotel, spa, and resort facilities, which include up to 750 lodging units; and up to 350,000 square feet of facilities in support of two 18-hole golf courses, riding and hiking trails, equestrian facilities, two helipads, fire stations, private community centers, electrical sub-station facilities, permanent and interim water treatment and wastewater treatment facilities; access and utilities to serve the project; and ranchland and other undeveloped open space. Approximately 21,335 acres (80%) of the site is preserved as ranchland and other undeveloped open space.

TCWD provides water supplies to the Tejon Industrial Complex area and for residential, commercial, and recreational land uses as part of the Tejon Mountain Village (TMV).² Environmental impacts for these projects are analyzed in the *Tejon Industrial Complex Final Environmental Impact Report, Final Environmental Impact Report Tejon Industrial Complex East Specific Plan, Draft Environmental Impact Report Supplemental Analysis Tejon Industrial Complex East Specific Plan, and Final Environmental Impact Report Tejon Mountain Village by TMV, LLC*.^{3,4,5,6} The environmental impact analyses and cumulative impacts analyses from these documents are summarized in Chapter 8, Growth-Inducing Impacts.

Tejon Industrial Complex EIR

The Tejon Industrial Complex EIR (State Clearinghouse No. 99061016) was circulated for public review and adopted by Kern County in February 2000. The project included a master-planned industrial complex and supporting commercial uses which were intended to serve commerce along the Interstate 5 (I-5) transportation corridor.

Tejon Industrial Complex East EIR & Supplemental Analysis EIR

The Tejon Industrial Complex East Specific Plan EIR (State Clearinghouse No. 2001101133) was circulated for public review and adopted by Kern County on January 21, 2003. The project included a 1,100-acre Specific Plan General Industrial development and rezoning of agricultural land to general industrial, on a site located east of I-5 at the Wheeler Ridge/Laval Road interchange near the base of the Grapevine Pass in unincorporated Kern County.

Subsequent to the certification of the Tejon Industrial Complex East Specific Plan EIR, various parties challenged the County's certification and project approval in an action in Kern County Superior Court (the Court), entitled *Center for Biological Diversity; Center on Race, Poverty, and the Environment; the Sierra Club; and Kern Audubon Society v. County of Kern* (2003). A Supplemental Analysis, in accordance with the Court's direction, was prepared that provided new technical information on air quality and biological resources; evaluated the project for impacts to air quality and biological resources; identified mitigation measures and design features, as necessary, that would reduce the impacts to air quality and biological resources; and provided a determination of the level of significance of these impacts. The applicant also revised the Tejon Industrial Complex East Specific Plan based on supplemental analysis of air quality impacts.

Tejon Mountain Village Specific Plan EIR

The TMV Specific Plan EIR (State Clearinghouse No. 2005101018) was circulated for public review and adopted by Kern County on October 5, 2005. The project consisted of implementing the Tejon Mountain Village Specific and Community Plan, and also the Tejon Mountain Village Special Plan and related rezoning on approximately 26,417 acres in southwestern Kern County.

Potential Environmental Impacts from Development and Capital Improvement Projects

In general, land that would be converted to urban uses along transportation routes and on the fringes of existing urban and suburban areas is typically undeveloped or used for agriculture. Conversion to urban uses of agricultural lands removes this land permanently from being available for agricultural production. In addition, conversion of agricultural or undeveloped lands eliminates most of the wildlife habitat value of these lands. Landform and drainage patterns could be altered, with natural drainage channels largely replaced by engineered storm water systems. Impermeable roofs, parking lots, and roadways could replace permeable surfaces with a consequent increase in storm water runoff and a decrease in groundwater recharge. Various substances associated with homes, yards, and vehicle use (paints, pesticides, plasticizers, oil and grease, brake dust, pet wastes, etc.) could be deposited on urban surfaces and conveyed to natural waterways. The introduction of people and vehicles into previously unpopulated or lightly populated areas could increase traffic, noise levels, air pollutant emissions, the generation of sanitary wastewater and solid waste, and the demand for local services.

TCWD provides water supplies to the Tejon Industrial Complex area and residential, commercial, and recreational land uses identified in the proposed Tejon Mountain Village (TMV).⁷ Environmental impacts for these projects, described above, are analyzed in the *Tejon Industrial Complex Final Environmental Impact Report*, *Final Environmental Impact Report Tejon Industrial Complex East Specific Plan*, *Draft Environmental Impact Report Supplemental Analysis Tejon Industrial Complex East Specific Plan*, and *Final Environmental Impact Report Tejon Mountain Village by TMV, LLC*.^{8,9,10,11}

These key environmental documents prepared for large development and capital improvement projects in the area identified impacts that would remain significant and unavoidable because no feasible mitigation is available to reduce impacts to a less-than-significant level. The significant and unavoidable environmental impacts identified in the Industrial Complex East EIR and Supplemental Analysis EIR

and the TMV EIR are summarized in Chapter 8, Growth-Inducing Impacts, and include some of the following types of environmental impacts that could result from construction and operation of related development and capital improvement projects shown in Table 10.1-1:

- **Aesthetics**—Temporary and permanent degradation of visual character for developed land uses during construction and operation and creation of new light, glare, and skyglow.
- **Agricultural Resources**—Conversion of Important Farmland to nonagricultural urban uses; cancellation of Williamson Act contracts; conflicts with and disruption of existing agricultural operations; and conflicts among agricultural operations and new residential, commercial land uses, or other facilities, such as parks and schools.
- **Air Quality and Global Climate Change**—Temporary, short-term construction-generated emissions of criteria air pollutants, such as particulate matter with an aerodynamic resistance diameter of 10 micrometers or less (i.e., PM₁₀), and emissions of ozone precursors (e.g., reactive organic gases [ROG] and oxides of nitrogen [NO_x]); long-term operational-generated emissions that exceed SJVAPCD thresholds for criteria air pollutants (PM₁₀, ROG, and NO_x), exposure of sensitive receptors to toxic air contaminants and odors; long-term emissions of criteria air pollutants or local mobile-source carbon monoxide; emissions of greenhouse gases; and conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing greenhouse gas emissions.
- **Biological Resources**—Loss and degradation of habitat for special-status wildlife and plants; potential loss and degradation of jurisdictional wetlands and other waters of the United States or waters of the state; and impacts on fisheries resulting from changes in discharge to local waterways and the Kern River.
- **Cultural Resources**—Loss of or damage to known and as-yet-undiscovered cultural resources and human remains during construction.
- **Geology, Soils, and Paleontological Resources**—Temporary, short-term construction-related erosion; damage to structures and infrastructure from seismic activity; construction on expansive/unstable soils and soils with high shrink-swell potential; and loss of or damage to known and to as-yet-undiscovered paleontological resources during construction.
- **Hazards and Hazardous Materials**—Exposure of construction crews and the public to contaminated soil, groundwater, and hazardous materials used in construction or present in excavated soils or from the routine transport, use, and disposal of hazardous materials; temporary road hazards caused by lane closures, increased truck traffic, and other roadway impacts during construction; and exposure to wildlife collision hazards.
- **Hydrology and Water Quality**—Increased stormwater discharges of suspended solids, increased turbidity, and potential mobilization of other pollutants from project construction sites; and hydrologic and water quality impacts from discharge to local waterways and the Kern River.
- **Land Use and Agricultural Resources**—Conflict with Kern County or the City of Bakersfield General Plan policies, land use designations, or zoning; physically division of an established community; or incompatible land uses with adjacent agricultural land uses.
- **Population and Housing**—Induce substantial population growth in Kern County and the City of Bakersfield through construction of new homes and businesses or through the extension of roads or other infrastructure or displace people or existing housing that necessitates the construction of replacement housing elsewhere.
- **Public Services**—Increase demand for fire protection facilities and services, including the City of Bakersfield Fire Department, Kern County Fire Protection District, and Kern County Fire Department facilities and services; law enforcement facilities and services, including the City of

Bakersfield Police Department, Kern County Sheriff's Department, and California Highway Patrol facilities and services; schools; parks; or other public facilities, thus necessitating the construction of new or expansion of existing public facilities.

- **Recreation**— Increase the use of existing neighborhood and regional parks or other recreational facilities (e.g., Kern River Parkway Trail), such that substantial physical deterioration of the facility would occur or be accelerated.
- **Noise**—Temporary, short-term exposure of sensitive receptors to noise levels above noise ordinances during construction and long-term exposure of sensitive noise receptors to new stationary-source noise and increased vehicular-related traffic that exceed County noise standards.
- **Traffic and Transportation**— Conflict with the City of Bakersfield or Kern County ordinances, policies, or programs establishing measures of effectiveness for the performance of the circulation system or those related to bicycle or pedestrian facilities; result in traffic hazards from incompatible urban land uses and adjacent agricultural land uses; or result in inadequate emergency access; and increase traffic near centers of regional development.
- **Utilities and Service Systems**—Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities; increase demand for water supplies, including water supplies provided by the City of Bakersfield, ID4, and TCWD; require the construction of new stormwater drainage facilities; or generate solid waste beyond the capacity of existing landfills.

10.1.3 KERN COUNTY AND SOUTHERN SAN JOAQUIN VALLEY DESCRIPTION

The KWB is located in Kern County in the southern San Joaquin Valley. The economy is primarily linked to agriculture and to petroleum extraction. Groundwater banks are numerous in the area. The area has been heavily developed by agriculture, petroleum extraction, and urbanization. Natural habitats are limited, and many special-status species occur in the area because of the low level of development. Kern County has approximately 80% of the State's active oil wells. The area is also a significant producer of natural gas, hydroelectric power, wind turbine power, and geothermal power. The area is noted for its mineral wealth, including gold, borate, and kermite.

Surface Water

The Kern River is the primary surface water feature in Kern County. It originates in the southern Sierra Nevada and flows westward into the San Joaquin Valley. Upstream Lake Isabella Reservoir provides flood control, recreation, and water storage of the Kern River. The valley is arid, typically receiving five inches of rainfall over the valley floor and nine to thirteen inches in the foothills. Because of low rainfall, permeable surface soils and relatively flat terrain, little surface runoff occurs on the valley floor and there is a limited network of natural surface drainage channels. The few natural streams are ephemeral. The most prominent surface water features are manmade irrigation canals.

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 basin.

Geology

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 KWB is located within a large, deep, and symmetrical 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 semi-consolidated to unconsolidated sediments. These sediments are several thousand feet thick and encapsulate the primary groundwater basin. This area of the groundwater basin is dominated by alluvial fan and lake material. Groundwater development is limited to the upper portions of the fresh water aquifer system in this basin.

The southern San Joaquin Valley, including the Kern Fan Element, 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. 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 Kern Fan Element, 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 range from highly permeable, coarse sandy soils to silty loam with very low permeability. 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.

Groundwater

The Department divides the San Joaquin Valley Groundwater Basin into subbasins, one of which is the Kern County Subbasin, where the KWB is located. The 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, with saline water at greater depths. 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 semi-confined upper aquifer above the clay layer and a confined aquifer below it. 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.

Agriculture

Historically, shallow lakes and seasonal wetlands occupied much of the valley floor. In the early part of the twentieth century, the lakes and wetlands were drained and the valley bottom converted to agricultural use. Soils in the valley portion of Kern County have two general origins, delineated approximately by the trough of the valley. The eastern alluvial fans were developed from a much higher energy environment, deposited by the precipitation and runoff of the Sierra Nevada. The soils are mostly of granitic origin, well drained, absent of salinity, with large well developed groundwater basins and ideal for agriculture. However the western alluvial fans originated from sedimentary rock formed on the sea bottom and consequently resulted in poorly drained soils of marginal quality. Most of the soils on the west side of the valley required some reclamation before crops could be grown profitably.

Now, most of the southern San Joaquin Valley portion of Kern County is devoted to agriculture. Because the climate is arid, with an average of less than six inches of annual precipitation, almost all crops must be irrigated. There are many irrigation districts in the San Joaquin Valley portion of Kern County. The first irrigation districts were originally formed to deliver local surface water. Additional districts formed when the SWP and the Friant-Kern Canal, a part of the CVP, were built. KCWA was created by the state legislature and ratified by the electorate in Kern County in 1961. KCWA has the authority to acquire and contract for water supplies for the county. It has additional powers to manage flood and storm waters and to protect the quality of underground waters. Water sources in Kern County include local ground and surface water and imported water from the SWP and CVP. SWP water represents as much as 50 percent of the San Joaquin Valley portion of Kern County's supply in some years.

Kings County lies north of Kern County on the western side of the floor of the San Joaquin Valley. A large portion of the farmland in the county lies on the historical Tulare Lake bed. High water tables and clayey and saline soils in portions of the valley floor in Kings County influence the type of crops planted. Soil reclamation was necessary in some areas before any crops could be farmed. Farmland occupies 85 percent of the county. The climate is arid and almost all crops are irrigated. Agricultural lands in Kings County are served by three water districts: Kings County WD, Dudley Ridge WD, and Tulare Lake Basin WSD. Kings County WD boundaries encompass 143,000 acres of land. The district obtains most of its water supplies from the Kings and Kaweah Rivers. SWP water represents less than five percent of Kings County WD supplies. Tulare Lake Basin WSD boundaries encompass 178,000 acres of land, and most of the district lies within lands formerly occupied by Tulare Lake. Its sources of water include the Kings and Tule Rivers, groundwater, and the SWP. Dudley Ridge WD boundaries encompass 37,660 acres of land, about half of which is irrigated. Almost all its water is obtained from the SWP.

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. 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 contributed to subsidence in the Kern County Groundwater Subbasin. 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.

Conjunctive Use

KCWA, the largest of the SWP's agricultural contractors, and other water agencies use both 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 the Southern San Joaquin Valley have practiced conjunctive use of their surface and groundwater sources; that is, they use their surface and groundwater sources to take advantage of the unique characteristics of each type of water source. Water agencies use in-lieu recharge and direct recharge 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 in-lieu of groundwater pumping to increase

groundwater supplies and conserve groundwater for use in future years. Direct recharge (artificial recharge) is applied water to recharge ponds to increase groundwater recharge, and 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 farmers' (and municipal) needs, water agencies with groundwater recharge facilities will pump water into ponds for eventual recharge into the groundwater basin.

Southern San Joaquin Valley water agencies manage groundwater banks for use by other non-local water agencies, as well as their own in-county use. These agencies will store non-Kern County agencies' water in Kern County groundwater basins for later recovery. The "managing" agency can recover the water by direct pumping and conveyance of the water to the non-Kern County water agency, or through an in-lieu exchange. Under an in-lieu exchange, SWP or non-SWP surface water that would otherwise have been delivered to the Kern County water agency would instead be delivered to the non-Kern County water agency, and the Kern County agency would pump a like amount of the non-Kern County agency's stored water.

10.1.4 CUMULATIVE IMPACT ANALYSIS

The cumulative impact analysis takes into consideration whether the projects listed in Table 10.1-1 in combination with KWB activities would have the potential to affect the same resources. If there is not a combined effect, then a finding of no impact is made. If there would be a combined effect, then a determination is made whether (1) that combined effect would result in a significant cumulative effect, and (2) whether the incremental contribution of KWB activities to the effect would be cumulatively considerable. If both conditions occur, a determination is made as to whether feasible mitigation measures are available to reduce the KWB activities' incremental contribution to the significant cumulative impact to a less-than-cumulatively-considerable level and/or the overall significant cumulative impact to a less-than-significant cumulative impact.

If a technical issue area included a project-specific impact as a result of implementation of KWB activities, a cumulative context is presented. The context of the cumulative analysis varies by technical issue area. For example, air quality impacts are evaluated against conditions in the relevant air basin. The cumulative impact analysis is presented below by technical issue area.

10.1.5 KERN WATER BANK ACTIVITIES

10.1.5.1 Surface Water and Groundwater Hydrology

Section 7.1, Surface Water and Groundwater Hydrology, includes a cumulative impact analysis by including certain past, present, and probable (reasonably foreseeable) future projects in its modeling scenarios. Section 7.1 describes the methodology used to quantify cumulative impacts. For model-based analysis of groundwater hydrology, the appropriate analysis for cumulative impacts is the Analysis of Future Operations – Build-Out Conditions (AFO-BC scenario) in Section 7.1. The AFO-BC scenario includes probable future projects and conditions to the extent they could be modeled.

The future projects considered in the AFO-BC modeling analysis are identified in Table 7.1-2 and shown in Figure 7.1-3 (projects are also identified in Table 10.1-1 of this section). Because of the length of Section 7.1, and its coverage of cumulative impacts, this section presents a qualitative analysis that is based on the AFO-BC quantitative analysis in Section 7.1.

KWB activities would have only minor less-than-significant effects on flood-related impacts (see impacts 7.1-3, 7.1-4, 7.1-5, and 7.1-6 in Section 7.1). There is not a significant cumulative impact related to flooding, and the KWB activities would not make a cumulatively considerable incremental contribution. Therefore, flood-related cumulative impacts are not discussed further.

10.1-23 Implementation of KWB activities in combination with regional and local water banking projects could potentially deplete groundwater supplies so that a net deficit in aquifer volume of stored groundwater would occur.

As discussed in Impact 7.1-1 under 2015 – 2035 (AFO-BC), KWB activities would not deplete groundwater supplies in any substantial manner to cause a net deficit in aquifer volume of stored water. At the end of the 1995–2014 historical KWB modeled operations, an accumulated balance of about 617,000 AF of stored water existed from past KWB activities. When this prior balance is added to the additional water stored during the 2015–2035 period, there is a balance of 1,115,348 AF of stored water at the end of 2035 under the AFO-BC scenario, assuming a repeat of hydrology similar to the 1995-2014 period. This shows that future KWB activities under build-out conditions would not deplete groundwater supplies to cause a net deficit in aquifer volume of stored water; rather, KWB activities would add about 498,000 AF of water into storage during future operations from 2015 through 2035, under build-out conditions.

Therefore, the impact of KWB future operations under build-out conditions from 2015 to 2035 on groundwater supplies, such that a net deficit in aquifer volume of stored groundwater would occur, would be less than significant and would not make a cumulatively considerable incremental contribution to a significant cumulative impact. This impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1-24 Implementation of KWB activities in combination with regional and local water banking projects could potentially deplete groundwater supplies so that a lowering of the local groundwater table level would occur (e.g., the production rate of preexisting nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted).

The impact of lowering groundwater elevations because of future KWB operations under the build-out (2030) level of development would be potentially significant. Consecutive years of recovery may cause groundwater levels to decrease such that some existing wells in an area immediately outside KWB Lands could become inoperable, thereby reducing short-term water supplies and adversely affecting land uses dependent on these supplies. However, whether the impact actually would be significant (i.e., substantial) would depend on several factors, including the specific field conditions and physical characteristics of the agricultural and domestic wells in the affected area (e.g., well location, operational depth of the well pump, pump efficiency, and overlying land use). All groundwater banks generally have similar operations: recharge when water supplies are available and recovery when water supplies are scarce. Consequently, numerous water banks adjacent to the KWB and in the same region would operate similarly and potentially result in an overall significant cumulative impact. Therefore, this would be a ***potentially significant cumulative impact***.

Mitigation Measures

Mitigation Measure 7.1-2 includes modeling and a process for identifying and mitigating for adverse significant impacts on nearby wells. It builds on existing agreements in the area, as well as additional mitigation measures (See Chapter 7, Impact 7.1-2 and Mitigation Measure 7.1-2).

Continued well monitoring and implementation of existing agreements regarding KWB operations offer the most feasible and pragmatic approach to mitigation (i.e., the 1995 KWB MOU, see Appendix 7-5a; and the 2014 Interim Operations Plan, see Appendix 7-5b). Rosedale has also adopted a long-term operations plan to prevent, eliminate, or mitigate potential impacts from its projects. Rosedale's plan is part of its Stockdale Integrated Banking Project Final EIR dated November 2015. KWBA has adopted the 2016 Long-Term Project Recovery Operations Plan (see Appendix 7-5c) that prevents, eliminates, or mitigates potential impacts from the KWB. It is possible that a joint long-term agreement will be developed in the near future between KWBA, Rosedale, and the Pioneer Project for the coordinated implementation of a long-term banking operations plan that includes standards that address potential cumulative impacts of the participating banks. Mitigation Measure 7.1-2 therefore builds on these existing and proposed agreements.

Implementation of the following mitigation measure would reduce the KWB's cumulatively considerable incremental contribution to the significant cumulative impact of a substantial depletion of groundwater supplies, or of substantial interference with groundwater recharge, to a *less-than-considerable* level. Therefore, this impact would be a ***less-than-significant cumulative impact, with mitigation***.

10.1-24 *KWBA will implement Mitigation Measure 7.1-2.*

10.1-25 **Implementation of KWB activities in combination with regional and local water banking projects could potentially result in cumulatively considerable impacts related to the alteration of water levels in a groundwater basin that substantially affect existing infrastructure (e.g., conveyance facilities).**

Future recharge operations at the KWB could result in high groundwater elevations within KWB Lands and nearby lands. Historic recharge operations at the KWB during the past recharge periods of 1995-1998, 2005-2006, and 2011, concomitant with similar recharge operations at other neighboring groundwater banks, resulted in high groundwater elevations within KWB Lands and surrounding areas. Approximately 7 miles of the CVC are located within KWB Lands, and past high groundwater elevations resulted in damages to the CVC lining in the mid-1990s. KWB operations could interact with similar nearby groundwater banks on specific sections of the CVC to cause a cumulatively considerable incremental contribution to a significant cumulative impact. As summarized in Impact 7.1-7 discussion in Section 7.1, KWB operations under AFO-BC scenario conditions during periods of KWB recharge could cause groundwater levels to increase. High groundwater resulting from natural conditions, offsite recharging, or recharging on the KWB Lands could impact the integrity of CVC structures or cause cracks in sub-surface concrete panels. Therefore, KWB activities could make a cumulatively considerable incremental contribution to a significant cumulative impact on the CVC. Therefore, this impact would be a ***significant cumulative impact***.

Mitigation Measures

Mitigation Measure 7.1-7 would reduce impacts of KWB activities with regard to cumulative impacts on existing infrastructure to less than significant. KWBA is obligated to carry out the measures relating to its actions. Therefore, this impact would be a ***less-than-significant cumulative impact, with mitigation***.

10.1-25 *KWBA will implement Mitigation Measure 7.1-7.*

10.1-26 **Implementation of KWB activities in combination with regional and local water banking projects could potentially result in cumulatively considerable impacts related to the alteration of water levels in a groundwater basin that substantially affect existing infrastructure (e.g., residential septic systems).**

Future recharge operations at the KWB could result in high groundwater elevations within KWB Lands and nearby lands. Historic recharge operations at the KWB during the past recharge periods of 1995-1998, 2005-2006, and 2011, concomitant with similar recharge operations at other neighboring groundwater banks, resulted in high groundwater elevations within KWB Lands and surrounding areas. The analysis for Impact 7.1-8 in Section 7.1 showed that there is no adverse impact to residential septic systems from KWB activities. Therefore, this impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1-27 **Raise water levels in a groundwater basin sufficiently to substantially interfere with groundwater recharge.**

Historic recharge operations at the KWB during the recharge periods of 1995-1998, 2005-2006, and 2011, in conjunction with similar recharge operations at other neighboring groundwater banks, resulted in high groundwater elevations in KWB and surrounding areas. High groundwater elevations could potentially effect recharge operations at neighboring recharge facilities, such as Rosedale recharge basins north of KWB, Pioneer and 2800 Acre Recharge Project facilities east of KWB, and West Kern Water District recharge facilities south of KWB.

During recharge operations groundwater levels rise. The rise in water tables would be the result of the mutual interactions of the KWB and the neighboring groundwater banks and not due to the operation of any single groundwater bank. Impacts of KWB recharge operations on the recharge operations of neighboring recharge facilities were evaluated by using water level hydrographs at the neighboring recharge facilities. The evaluation showed a resulting groundwater level of approximately 16 feet below the ground surface. This would not result in a significant interference with groundwater recharge.

Therefore, the impact of KWB future operations under build-out conditions from 2015 to 2035 on groundwater supplies, such that groundwater recharge would be substantially interfered with, would be less than significant and would not make a cumulatively considerable incremental contribution to a significant cumulative impact. This impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1.5.2 Surface Water and Groundwater Quality

Section 7.2, Surface and Groundwater Quality, describes the methodology used to quantify cumulative impacts. The geographic extent of the water quality analysis for the underlying groundwater aquifer extended beyond KWB Lands using the DWR KWB Model to the following boundaries: northern edge, 6 miles; southern edge, 5.2 miles; eastern edge, 10 miles; and western edge, 7.7 miles. The greatest cumulative impacts would be closest to KWB Lands. The analysis of impacts on local surface water

quality includes the Kern River and associated channels and interties, and the following primary surface water conveyance facilities: California Aqueduct, CVC, and the KWB Canal (see Figures 7.2-1 and 7.2-2 in Section 7.2). Because of the length of Section 7.2, and its coverage of cumulative impacts, this section presents a qualitative analysis that is based on the quantitative analysis in Section 7.2.

10.1-28 Implementation of KWB activities in combination with regional and local water banking projects could potentially change groundwater quality from construction and maintenance activities.

Construction and maintenance activities would be subject to Best Management Practices (BMPs), Central Valley Regional Water Quality Control Board (CVRWQCB) authorization and permit requirements under National Pollutant Discharge Elimination System (NPDES) permits, and Article 14.08 of the Kern County Ordinance Code (specifically Article III Well Standards). Department Bulletins 74-81 and 74-90 provide specific State-issued minimum standards for well construction and well destruction, while the local city and county provide enforcement. Water well permits would be regulated by the Kern County Environmental Health Services (KCEHS) Water Program (See Section 7.0.4.1.6) under which new wells and well deepening, reconstruction, and destruction would be subject to permits requiring compliance. Drilling operations would follow grading permits (if needed) and well permit regulations in accordance to general conditions stipulated in KCEHS water well permit applications.

However, all infrastructure requires construction and maintenance, including the numerous production wells and monitoring wells on KWB Lands. Rehabilitation necessary to maintain the yield of production wells generally consists of the addition of chemicals to breakdown slime or iron bacteria mass or encrustation that reduce the size of the well perforations. KWB operations and maintenance activities in combination with KWBA's proposed Kern Water Bank Recharge and Recovery Project, KWB Conservation and Storage Project, and other similar nearby groundwater banks, could make a cumulatively considerable incremental contribution to a significant cumulative impact on groundwater quality. This impact would be a **potentially significant cumulative impact**.

Mitigation Measures

Mitigation Measure 7.2-1 would reduce impacts of KWB activities with regard to potential changes to groundwater quality to less than significant. KWBA is also subject to legal requirements regarding activities related to well drilling. Therefore, KWB activities with regard to potentially changing groundwater quality from KWB construction and maintenance activities would be a **less-than-significant cumulative impact, with mitigation**.

10.1-28 *KWBA will implement Mitigation Measure 7.2-1.*

10.1-29 Implementation of KWB activities in combination with regional and local water banking projects could potentially degrade groundwater quality from mobilization of contamination associated with hazardous waste sites or oil and gas production operations.

KWB operations under cumulative conditions would only result in groundwater levels that could rise above 50 feet and 25 feet below ground surface for limited periods of time with the potential to mobilize some constituents of concern (COCs). Particle tracking results indicate that groundwater particles (and COCs, if present and mobilized) would remain within a mile of the two sites of concern (the Uhler Firefighting Training Facility and the Grayson Site). Both sites are under CVRWQCB oversight with remediation of impacted soil considered complete (February 2012) and groundwater monitoring continuing at the Uhler Firefighting Training Facility and work just starting to be implemented under a CAO (issued August 15, 2015) at the Grayson Site respective to soil and groundwater contamination

associated with three onsite oil field production wastewater holding ponds. Therefore, the impact of KWB operations in relation to the two sites on groundwater quality would be a cumulatively considerable incremental contribution to this potentially significant cumulative impact until such time that the CVRWQCB indicates that groundwater under the Uhler Firefighting Training area is not impacted and that soil and/or groundwater under the Grayson Site is not impacted. This would be a ***potentially significant cumulative impact***.

Mitigation Measures

Mitigation Measure 7.2-2 would reduce impacts of KWB activities with regard to mobilization of contamination in soils or the unsaturated zones associated with hazardous waste sites or oil and gas production operations to less than significant. KWBA is obligated to carry out the measures relating to its actions in Mitigation Measure 7.2-2, subsections b-d (Section 7.0.4.3.2, 2016 KWBA Resolution). Therefore, with Mitigation Measure 7.2-2, KWB activities would not make a cumulatively considerable incremental contribution to a significant cumulative impact with respect to potentially degrading groundwater quality from mobilization of contamination associated with hazardous waste sites or oil and gas production operations. This impact would be a ***less-than-significant cumulative impact, with mitigation***.

10.1-29 *KWBA will implement Mitigation Measures 7.2-2.*

10.1-30 **Implementation of KWB activities in combination with regional and local water banking projects could potentially have their water quality degraded from the operation of oil and gas production wells on KWB Lands and nearby.**

KWB Lands are situated across four active oil and gas fields: Coles Levee, North; Strand Oil Field; Ten Section Oil Field; and Canal Oil Field. While these wells are situated on KWB Lands, they are not operated or associated with KWBA. KWB operation in combination with KWBA's proposed projects and other proposed nearby banking projects in the areas of other oil and gas production wells would represent a potentially significant impact to groundwater quality if new recharge ponds were constructed in areas of improperly plugged or abandoned oil and gas wells. Likewise, well casing failures during oil and gas production, wastewater injection, and/or well stimulation could cause a release of petroleum constituents, oil field brines, and/or well stimulation fluid into the freshwater aquifer, which may substantially degrade groundwater quality. Therefore, the cumulative impacts of the operation of oil and gas production wells within and surrounding KWB Lands on the quality of KWB water supplies during 2015 to 2035 could be a ***potentially significant cumulative impact***.

Mitigation Measures

Mitigation Measure 7.2-3 would reduce potential impacts of the operation of oil and gas production wells within and surrounding KWB Lands on the quality of KWB water supplies in the future to less than significant. Therefore, the impact of the operation of oil and gas production wells within and surrounding KWB Lands on the quality of KWB water supplies in the future would be a ***less-than-significant cumulative impact, with mitigation***.

10.1-30 *KWBA will implement Mitigation Measure 7.2-3.*

10.1-31 **KWB construction and maintenance activities could potentially change groundwater quality.**

Ongoing future facility maintenance and well rehabilitation or construction would occur as it has in the past for the 1996 through 2014 period. Impacts from KWB construction and maintenance activities from

2015 to 2035 on groundwater quality would be potentially significant. However, KWB construction and maintenance activities would be site specific on KWB Lands. These localized impacts were not cumulatively significant from 1996 through 2014 and would not be in the future because these potential impacts would not interact with similar impacts from other probable future projects. Therefore, KWB activities would not make a cumulatively considerable incremental contribution to a significant cumulative impact regarding changes to groundwater quality from construction and maintenance activities. Therefore, this impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1-32 KWB operations could mobilize contamination in soils or the unsaturated zones associated with hazardous waste sites or oil and gas production operations and potentially degrade groundwater quality.

As summarized for Impact 7.2-2 in Section 7.2, KWB operations under AFO-BC would only result in groundwater levels that could rise above 50 ft and 25 ft below ground surface (bgs) for limited periods of time with the potential to mobilize some COCs. Particle tracking results indicate that groundwater particles (and COCs, if present and mobilized) would remain within a mile of the two sites of concern (the Uhler Firefighting Training Facility (OP 1), and the Grayson Site (OP 2)). Both sites are under CVRWQCB oversight with remediation of impacted soil considered complete (February 2012) and groundwater monitoring continuing at the Uhler Firefighting Training Facility and work just starting to be implemented under a CAO (issued August 15, 2015) at the Grayson Site respective to soil and groundwater contamination associated with three onsite oil field production wastewater holding ponds. These two sites are localized on KWB Lands and are being remediated. These localized impacts were not cumulatively significant from 1996 through 2014 and would not be in the future because these potential impacts would not interact with similar impacts from other probable future projects. Therefore, KWB activities would not make a cumulatively considerable incremental contribution to a significant cumulative impact regarding degradation of groundwater quality from mobilization of contamination in soils or the unsaturated zones associated with hazardous waste sites or oil and gas production. Therefore, this impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1-33 The operation of oil and gas production wells within and surrounding KWB Lands could potentially degrade the quality of KWB water supplies.

As specified for Impact 7.2-3 in Section 7.2, future KWB recharge and recovery operations would be similar to 1996 through 2014 activities; however, recharge and recovery operations would be increased slightly with the addition of new facilities. Third party oil and gas production, wastewater injection, and well stimulation activities within and surrounding KWB Lands are expected to continue in 2015 through 2035 in the same manner as during 1996 through 2014.

Future recharge ponds are proposed in areas of plugged and abandoned oil production wells. Typical construction of oil wells includes an upper casing and cement seal from ground surface to a depth of approximately 500 feet. Groundwater level changes during recharge or recovery from KWB operations have maximum depths of approximately 250 feet. Changing water levels from KWB activities would not significantly impact active or abandoned oil wells.

Construction of recharge ponds may potentially damage the near surface portion or the top of plugged or abandoned wells and well casing failures during oil and gas production, wastewater injection, and/or well stimulation could cause a release of petroleum constituents, oil field brines, and/or well stimulation fluid into the freshwater aquifer, which may substantially degrade groundwater quality. These are potential site-specific impacts on KWB Lands that would not likely interact with other nearby groundwater banks, and are not known to have done so in the last 20 years of KWB operations. Therefore, this impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1-34 Implementation of KWB activities in combination with regional and local water banking projects could result in changes in water quality in the underlying aquifer as a result of lateral and vertical migration of poor water quality within and outside the limits of the KWB.

As specified in Impact 7.2-4 in Section 7.2, evaluation results indicate that KWB recharge and recovery operations in combination with KWBA's proposed projects, and potentially other nearby groundwater banks could change water quality in response to mixing with recharge water (predominantly in the shallower zone with successive movement to the deeper zones). The mixing is associated with both lateral and vertical movement of existing and mixed groundwater. As recharge and recovery operations continue, groundwater migrates outward during times of recharge and inward during times of recovery. This would result in a mixing of groundwater in the KWB and surrounding area. Water used for recharge in KWB is from three surface water sources: SWP water in the California Aqueduct, Friant-Kern Canal water, and Kern River water. These surface water sources are of a higher quality than the existing groundwater present in KWB. Therefore, KWB activities would not result in a cumulatively considerable incremental contribution to this potentially significant cumulative impact related to changes in water quality in the underlying aquifer as a result of lateral and vertical migration of poor water quality. This would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1-35 Implementation of KWB activities in combination with regional and local water banking projects could result changes in water quality in the underlying aquifer as a result of an accumulation of salts during recharge activities.

As specified in Impact 7.2-5 in Section 7.2, TDS concentrations in imported and local water supplies used for KWB recharge operations can vary year to year and among sources. Water delivered to the KWB has TDS concentrations that vary by source. The variation in TDS concentrations in a given year is primarily a result of the amount of precipitation, and volumes of agricultural return flows, stormwater runoff, and municipal discharges. During recharge periods in above normal and wet water years, the average TDS concentrations tend to be lower because there is more water within the system that dilutes the effects of salt loading from various sources.

It is expected the under cumulative conditions more salt would be removed from the aquifer below the KWB than is being recharged. The difference between the salt recharge and recovery volume in tons/acre foot indicate a lowering of salt content in the aquifer below KWB. This indicates that California Aqueduct water quality and groundwater quality beneath KWB have both been improved by operations of KWB with respect to TDS. Therefore, KWB activities would not result in a cumulatively considerable

incremental contribution to this potentially significant cumulative impact with respect to accumulation of salts during recharge activities. This would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1-36 Implementation of KWB activities in combination with regional and local water banking projects could result in a cumulatively considerable impact on water quality in the Kern River.

As specified in Impact 7.2-6 in Section 7.2, future construction of additional facilities associated with the build-out of the KWB has the potential to significantly impact surface water quality from excavation, grading, and recontouring of the soils at the recharge pond sites. Although there are no assurances that the cumulative projects would incorporate the same degree or methods of treatment as the project, each cumulative project that would discharge stormwater runoff would be required to comply with applicable regulatory requirements, including those of the NPDES General Construction Permit, which requires preparation of a project-specific Stormwater Pollution Prevention Plan (SWPPP) and implementation of BMPs, the potential for pollutants and sediment to adversely affect the water quality of adjacent water bodies would be minimized.

During construction and maintenance activities spills of equipment fuel, lubrication oil, and hydraulic oil could occur. Petroleum hydrocarbon products and other construction-related materials, as well as any hazardous materials, would be stored, handled, and used, although in relatively small quantities, during construction and maintenance. The potential release of hazardous materials to the environment as a result of construction or maintenance activities could also result in the degradation of water bodies, affecting water quality. Hazards and Hazardous Materials presents an analysis of the potential release of hazardous materials during construction and maintenance. However, these would be localized impacts and the probability of interacting with similar spills from other water banking projects such that the impacts would interact is highly unlikely. Therefore, KWB activities would not result in a cumulatively considerable incremental contribution to this potentially significant cumulative impact with respect to potential impacts on Kern River water quality. This would be a ***less-than-significant cumulative impact***.

10.1-37 Implementation of KWB activities in combination with regional and local water banking projects could result adverse impacts associated with water quality in surface water conveyance facilities and associated water supplies for downstream users.

As specified in Impact 7.2-7 in Section 7.2, KWBA has also applied for a water right to divert unappropriated water from the Kern River, which is the estimated maximum quantity that KWBA can physically divert and recharge at the KWB in the wettest years (KWB Conservation and Storage Project). The quantity of water available for diversion to the KWB would depend on annual and seasonal hydrologic and climatologic conditions. Appropriation of water under this application would also supplement and permit water historically diverted from the Kern River to the KWB in above-normal or wet water years.

Future projects may result in additional water diverted, recharged, and recovered at KWB, although primarily during wetter years. Water diversions from the Kern River under future operations, however, would be similar in quantity and timing as current operations, although some additional water may be available in the wettest of years, when water quality is generally improved. Future diversions from the

Kern River are not anticipated to reduce water quality in the Kern River downstream from the point of diversion.

During recovery operations, groundwater would be introduced into the CVC and the California Aqueduct and would be subject to the pump-in water quality requirements by KCWA and the Department. Recovered groundwater pumped into the CVC and California Aqueduct would be monitored. It is the intent to meet Pump-in Policy water quality objectives. The KWBA, with assistance from the KFMC, will continue to monitor water quality at production wells and continue blending efforts to ensure that MCLs, pump-in criteria, or SWP WQOs are not exceeded.

Potential impacts from future operations to water quality in the Kern River, California Aqueduct, and local conveyance systems should be similar to historical conditions, given the continuation of the current pump-in policies and water quality monitoring program. KWB operations, therefore, would not make a cumulatively considerable incremental contribution to a significant cumulative impact associated with water quality in local conveyance facilities and water supplies for downstream users. This would be ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1.5.3 Fisheries Resources

The cumulative context for fisheries resources consists of cumulative water banking projects adjacent to the Kern-Friant Canal and those adjacent to the Kern River in Kern County.

10.1-38 Implementation of KWB activities in combination with regional and local water banking projects in Kern County could potentially result in cumulatively considerable impacts on fish species of special concern through entrainment.

Kern brook lamprey is endemic to the east side of the San Joaquin Valley and is listed as a California species of high concern. Kern brook lamprey were first collected from the Friant-Kern Canal but have since been found in the lower Merced, Kaweah, Kings, and San Joaquin Rivers. The species is not known to occur in the Kern River and would be unable to maintain a self-sustaining population or survive long-term in the Kern River in the KWB area. Kern brook lamprey has been detected in the Friant-Kern Canal, and it is possible, although highly unlikely, for individuals of the species to be present in the canals directly delivering water to the KWB. Breeding habitat does not exist in the canals; any entrained lampreys would not spawn and would die. None of the cumulative projects would increase the potential for Kern brook lamprey to be exposed to KWB activities. KWB activities would not result in a cumulatively considerable incremental contribution to a significant cumulative impact on Kern brook lamprey.

KWB activities would continue to have the rare potential to cause entrainment of Kern River rainbow trout that reach KWB Lands. Populations of Kern River rainbow trout are currently restricted to reaches of the Kern River above Lake Isabella. The likelihood of this species being transported down the Kern River during flood flows and being entrained into the KWB or other water banks located along the Kern River (such as West Kern WD or City of Bakersfield), is extremely low. Trout would not be able to survive in the Kern River or in water bodies on KWB Lands. None of the cumulative projects would combine cumulatively with KWB activities to increase impacts to Kern River rainbow trout.

KWB activities would not result in a cumulatively considerable incremental contribution to a significant cumulative impact on Kern brook lamprey or Kern River rainbow trout. Therefore, this impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1.5.4 Terrestrial Biological Resources

The cumulative context for terrestrial biological resources consists of water banking and HCP projects in the local area and region.

10.1-39 Implementation of KWB activities in combination with regional and local water banking projects could potentially result in cumulatively considerable impacts on special-status terrestrial biological resources.

As discussed in Section 7.4, Terrestrial Biological Resources, KWBA manages KWB Lands in accordance with a KWB HCP/NCCP. Thus, KWBA is required to follow specific guidelines to prevent take of special-status species and to enhance and preserve the natural habitat currently present. Under the conditions of the KWB HCP/NCCP, KWBA is required to prepare annual reports summarizing activities within KWB Lands, including:

- updates on the water supply management and related activities,
- any amendments to the KWB HCP/NCCP,
- a summary of any take occurrences,
- land and habitat management and mitigation measures,
- monitoring programs and studies,
- mitigation measures and cooperation with wildlife agencies, and
- the status of conservation credits.

An independent study regarding the impacts related to the transfer, development, and operation of the KWB in light of the Kern Environmental Permits documented that the KWB is operating as intended and within the confines of the KWB HCP/NCCP (see Revised Appendix E). The KWB HCP/NCCP requires that KWB activities continue to follow the KWB HCP/NCCP requirements for 75 years from 1997.

Periodic recovery operations result in the intermittent wetting and drying of recharge ponds. This mimics the natural pattern for seasonal wetlands. As discussed above, this is to be expected and fully within the operating parameters set by the KWB HCP/NCCP.

While minimal incidental take has occurred since the creation of the KWB (temporary relocation of three live Tipton Kangaroo rats in 1995/1996), it is possible that KWB activities could result in take during construction, operation, and maintenance, through collapsed burrows, road kills, crushing by grading equipment, harassment, habitat loss, drowning, and other adverse effects. Special-status plants could also be adversely affected during future KWB construction of new facilities and continued operation and maintenance.

Cumulative water banking projects could result in similar impacts on special-status species with the construction of additional groundwater storage facilities. KWB activities could result in a cumulatively considerable incremental contribution to this potentially significant cumulative impact on special-status species. Therefore, this impact would be a ***potentially significant cumulative impact***.

Mitigation Measures

Mitigation Measure 7.4-3 was outlined in the 1997 Monterey Initial Study and Addendum (Appendix 7-6a). Mitigation Measure 7.4-3 has been and will continue to be implemented by KWBA. Mitigation Measure 7.4-3 would reduce impacts on special-status species on KWB Lands to a less-than-considerable level by requiring the use of a biological monitor, and implementing special construction activities and ongoing practices that would increase awareness of and education regarding sensitive biological resources. Specific individuals would be designated by KWBA as contact representatives between KWBA, USFWS, and the California Department of Fish and Wildlife to oversee compliance with protection measures and expedite notification regarding any take of a listed species.

Implementation of the following mitigation measure would reduce the KWB activities' incremental contribution to the potentially significant cumulative impacts associated with special-status biological resources on KWB Lands to a less-than-considerable level; KWBA is obligated to carry out this mitigation measure. Therefore, this impact would be a ***less-than-significant cumulative impact, with mitigation***.

10.1-39 *KWBA will implement Mitigation Measure 7.4-3.*

10.1-40 **Implementation of KWB activities in combination with regional and local water banking and development projects could potentially result in cumulatively considerable impacts on special-status terrestrial biological resources as a result of potential changes in agricultural practices.**

Although the value of agricultural land to wildlife is generally lower than that of natural habitat, some species have adapted and have extended their range into converted agricultural habitats. Rodents such as voles and ground squirrels, for example, can take advantage of increased food availability and water supply on agricultural lands to increase their populations, which in turn can provide a larger prey base for predators such as raptors. Grain and row crops (and the insects that feed on them) can support bird and mammal populations that otherwise would be constrained by the absence of such food resources in more xeric habitats. Conversely, increased levels of human activity, the plowing and tilling of soils, and the application of fertilizers, pesticides, and herbicides to stimulate agricultural production can adversely affect native wildlife, resulting in displacement or avoidance.

Some animals have adapted to exploit cultivated fields (in some cases becoming pests), but few special-status species benefit from agricultural cultivation. San Joaquin kit fox are able to use the habitat for migration, but no longer can den. Swainson's hawks (*Buteo swainsoni*), however, commonly rely on the increased insect and rodent populations in agricultural fields within 10 miles of their nests, actually preferring to forage in alfalfa, beet, tomato, rice (during the nonflooded period), cereal grain (including corn after harvest), and other low-growing, row, or field crops; fallow fields; and dry and irrigated pasture. Although only one Swainson's hawk nest has been recorded in the western portion of Kern County, it is highly unlikely that this nest would remain active if all of the surrounding farmland were converted from annual crops to permanent crops.

As discussed in Section 7.6, Agricultural Resources, KWB activities have had a relatively minor effect on the conversion of agricultural land uses to nonagricultural uses. Overall, the KWB provides recovery

water for agricultural uses at times when less water would be available without the KWB. Consequently, the KWB has helped maintain agricultural lands in agricultural production.

The USFWS and the California Department of Fish and Game approved the KWB HCP/NCCP in October 1997. The KWB HCP/NCCP planning area comprises the entire approximately 20,000-acre KWB Lands. KWB activities resulted in the reestablishment and preservation of intermittent wetland and upland habitat, both of which existed historically throughout much of the southwestern San Joaquin Valley. About 17,000 of the approximately 20,000 acres that compose the KWB Lands were farmed intensively before 1991. Now, the water conservation activities of the KWB are re-creating intermittent wetland habitat in/along the recharge ponds, where marsh-like environments are established during recharge periods and create ideal habitat for waterfowl, shorebirds, raptors, and other native and migrating birds. By expanding available habitat for numerous species, recharge operations have result in nearly doubling the number of special-status species that have been documented to occur on KWB Lands (see Tables 7.4-2A and 7.4-4).

Further, KWB activities expanded and protected riparian and other sensitive habitats, such as native saltbush and valley sink scrub habitat, on KWB Lands. On a limited basis, KWBA has planted various plant species based on the KWB HCP/NCCP. Cottonwoods, willows, and grasses are examples of species that are not planted but contribute to wildlife habitat. KWB development also resulted in the conversion of intensively farmed lands to annual grassland habitat that supports numerous plant and wildlife species. Therefore, on KWB Lands, KWB activities have had a beneficial effect on terrestrial biological resources. KWB activities do not have a cumulatively considerable incremental contribution to a significant cumulative impact on terrestrial biological species.

Impacts from KWB activities that provide water to KWB participants could also have a cumulative effect on terrestrial biological resources. Based on the historical trend of converting annual row crops to permanent crops in Kern and the KWB participants' service area, it is possible that KWB activities in combination with other water banking programs and projects could result in the conversion of additional annual row crops to permanent crops.

Some shifts in species distribution and abundance have and would continue to occur in the future with or without KWB activities. This cropping pattern shift, however, is primarily converting agricultural lands from annual row crops to permanent crops such as orchards; natural habitats generally are not being converted to agricultural lands. Past impacts of converting natural habitats to urban and agricultural lands in Kern and Kings Counties have resulted in a significant cumulative impact to many terrestrial biological resources, particularly special-status species.

Orchards provide lower quality habitat than row crops due to increased cover, pesticide/herbicide applications, and frequent disturbance. To the extent that some land was converted to orchards as a result of KWB activities, this would not prohibit San Joaquin kit fox migration, but could adversely impact Swainson's hawk, as this habitat is not suitable for foraging. However, there is only one recorded occurrence of Swainson's hawk within KWB Lands. As discussed in Section 7.6, Agricultural Resources, no change in the proportion of permanent crops occurred in the KWB participants' service area as a result of KWB activities.

KWB activities have not and would not result in a cumulatively considerable incremental contribution to this significant cumulative impact on special-status terrestrial biological resources as a result of potential changes in agricultural practices. Therefore, this impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1.5.5 Visual Resources

The cumulative context for visual resources consists of cumulative water banking projects in the Kern Fan area and other nearby development projects.

10.1-41 Implementation of KWB activities in combination with regional and local water banking and development projects could potentially result in cumulatively considerable impacts on visual resources.

As a consequence of future KWB activities, approximately 1,052 acres of additional lands would be converted to recharge ponds. Although these changes would alter the appearance of lands within KWB Lands, the alteration in appearance would be minimally visible, consistent with other water facility features common in the local area and region. Other existing and proposed water banks would have similar facilities. Development projects are distant from KWB Lands and would not overlap visually with KWB activities. KWB activities would also not contribute to skyglow and any cumulative impacts thereof as KWB lands are mostly open lands with limited lighting at a few facilities. Given the relatively unobtrusive nature of groundwater bank facilities in the local area and region, the overall cumulative impact to visual resources from past, present, and probable future groundwater banking projects, including the KWB, is less than significant. Moreover, the KWB facilities and activities would not cause a cumulatively considerable incremental contribution to a significant cumulative impact on visual resources.

KWB activities would not result in a cumulatively considerable incremental contribution to a significant cumulative impact on visual resources. This impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1-42 Implementation of KWB activities in combination with regional and local water banking and other water supply projects could potentially result in cumulatively considerable impacts on visual resources as a result of potential changes in agricultural practices.

KWB activities have increased water supply reliability, which may have contributed along with other water banking projects and regional economic conditions in changes from seed, field and vegetable crops on land that could be fallowed in dry/critically dry years to permanent crops like orchards and vines that require a dedicated water supply. Water banking projects locally and in the region that contribute to the availability and reliability of water supplies would likely continue to contribute to the existing trend towards permanent crops. Although existing agricultural acreages remain generally constant, the changes in cropping patterns could alter the appearance of the landscape. Permanent crops are generally taller and provide more visual variety than annual crops. Permanent crops break up the uninterrupted views across miles of flat land in the southern San Joaquin Valley.

Based on the historical trend of converting annual seed, field, and vegetable crops to permanent crops such as orchards and vines in Kern County and the KWB participants' service area, it is possible that

KWB activities in combination with cumulative water banking and other water supply projects have contributed to the conversion of annual crops to permanent tree and vineyard crops. This trend would have occurred with or without the KWB and is expected to continue in the future with or without KWB activities. Any shifts to permanent crops attributed to KWB activities and other water banking/water supply projects would result in views similar to existing views of permanent crops throughout the local area and region. Although the physical changes are noticeable in Kern County and the KWB participants' service area, the changes from seed, field and vegetable crops to orchards and vineyard are not considered to be a significant cumulative impact on visual resources. Each type of agricultural land has its attributes that different people find to be visually appealing, or not. The physical change from one crop to another, therefore, is not considered to be a significant cumulative impact.

KWB activities would not result in a cumulatively considerable incremental contribution to a significant cumulative impact on visual resources as a result of potential changes in agricultural practices. This impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1.5.6 Agricultural Resources

The cumulative context for agricultural resources, including forestry resources, consists of Kern County and the KWB participants' service area. There are no impacts to forestry resources so they are not discussed further.

10.1-43 Implementation of KWB activities in combination with regional and local water banking and development projects could potentially result in the conversion of agricultural lands, including Important Farmland, to nonagricultural uses.

The California Department of Conservation (DOC) estimated that Kern County had approximately 2,743,937 acres of agricultural land in 2012 (the most recent DOC farmland conversion data), of which approximately 900,332 acres were identified as Important Farmland and 1,843,605 acres were identified as Grazing Land.¹² Overall, the total acreage of Important Farmland decreased by approximately 7.4 percent between 2004 and 2012, and the total acreage of Grazing Land increased by 2.9 percent over the 8-year period. In total, the acreage of agricultural land decreased by approximately 0.5 percent between 2004 and 2012 (see Table 7.6-7 in Section 7.6, Agricultural Resources). The general trends in harvested agricultural lands in the Kern County and the KWB Participants' service area from 1995 to 2014 were slight increases in these acreages (see Tables 7.6-5 and 7.6-6 in Section 7.6, Agricultural Resources).

Future implementation of cumulative groundwater banking and development projects could convert Important Farmland to nonagricultural uses. Appendix G of the CEQA Guidelines focuses agricultural analysis on conversion of agricultural land, including Important Farmland, to nonagricultural uses; therefore, any conversion of these lands could be considered a significant impact under CEQA. The losses of agricultural resources, including Important Farmland (Prime Farmland, Unique Farmland, or Farmland of Statewide Importance) that have occurred locally and regionally from past water banking and development projects—and that would continue as a result of present and planned projects—are considered to be a significant cumulative impact on conversion of agricultural lands, including Important Farmland, to nonagricultural uses.

The Kern County Important Farmland Map, published by DOC's Division of Land Resource Protection, identifies approximately 15,390 acres of KWB Lands that are designated as Grazing Land, 9 acres

designated as Urban and Built-Up Land, and 5,035 acres designated as Other Land. These land use designations are not considered Important Farmland by DOC. In addition, the portions of KWB Lands that do not support KWBA facilities remain fallow.

KWB activities would not make a cumulatively considerable incremental contribution to the significant cumulative impact associated with the conversion of agricultural land, including Important Farmland, to nonagricultural use. Therefore, this impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1-44 Implementation of KWB activities in combination with regional and local water banking projects could potentially result in the conversion of annual crops to permanent crops.

As discussed in Section 7.6, Agricultural Resources, although there was a relatively small increase in harvested agricultural acreage in Kern County (approximately 1.2 percent) between 1996 and 2014, the county's cropping patterns changed substantially. As shown in Table 7.6-4 in Section 7.6, the acreage of nut crops increased by approximately 206 percent and almonds accounted for more than 65 percent of the total nut crops. The acreages of annual seed, field, and vegetable crops all decreased between 1995 and 2014.

As evidenced by Kern County and the KWB participants' service area, analysis in Section 7.6, changes in farming practices in these areas are consistent with the county-wide trend discussed above (Table 7.6-6). The acreage of nut crops increased by approximately 206 percent and almonds accounted for more than 60 percent of the total nut crops in 2015. This shift to permanent crops such as orchards and vineyards is also seen in areas that do not rely on groundwater banking.

KWB activities have increased water supply reliability, which may have contributed to changes from annual seed, field, and vegetable crops, on land that could be fallowed in dry/critically dry years, to permanent crops like orchards and vines that require a dedicated water supply. All water banking projects in the local area and region that contribute to the availability and reliability of water supplies could continue to contribute to the existing trend (which occurs even in areas not dependent upon water banks) toward shifting to permanent crops. However, local, regional, and even global economics also contribute substantially to this recent shift to permanent crops. The trend of shifting to permanent crops may continue in the future with or without KWB activities and cumulative water banking projects because such shifts are typically driven by crop production, supply, and demand; profit margins; and regional and global economics; as has been the case with California's almond industry, a leading crop type within Kern County and the KWB participants' service area (see Section 7.6 Agricultural Resources, subsection 7.6.2.2).¹³

KWB activities and other water banking projects could also result in the conversion of additional agricultural lands to permanent crops, such as orchards and vines, in the future as more projects are developed or expanded to increase water supply reliability. Based on the countywide trend discussed above, which is prevalent in adjoining counties in the southern San Joaquin Valley, it is likely that the trend of replacing annual seed, field, and vegetable crops with permanent crops in the local area and region could continue in the near future. Consequently, KWB activities could make a cumulatively considerable incremental contribution to this shift to permanent crops, at least during current economic conditions (always a critical factor driving agricultural cropping patterns).

The conversion of annual crops to permanent crops such as orchards and vines does not exceed any of the Appendix G standards of significance in the CEQA Guidelines related to agriculture and forestry resources. For instance, no agricultural lands, including Important Farmland, would be converted to nonagricultural uses, and such lands would remain in production. A shift in crop patterns, in and of itself, is not a significant adverse environmental impact.

The KWB's contribution to conversion of irrigated crops to permanent crops does not result in an overall significant adverse impact relative to any of the standards of impact significance for agriculture and forestry resources. Therefore, this impact would be a ***less-than-significant cumulative impact***.

Other indirect cumulative effects from conversion of irrigated crops to permanent crops, such as those associated with biological resources, visual resources, air quality, soils, noise, traffic and transportation, and cultural and paleontological resources, could occur. The cumulative effects on these resource areas of changes from irrigated crops and annual field crops to permanent crops such as orchards are discussed separately in this cumulative impacts analysis for each potentially affected resource area.

Mitigation Measures

None required.

10.1.5.7 Air Quality

The cumulative context for air quality is the San Joaquin Valley Air Pollution Control District (SJVAPCD). The San Joaquin Valley Air Basin is designated as nonattainment for the state standards for ozone and particulate matter with an aerodynamic resistance diameter less than 10 micrometers (PM₁₀) and 2.5 micrometers (PM_{2.5}). Although most projects would result in a net increase in air pollutant emissions, the impacts in this REIR evaluate whether that net increase in emissions would be considered a cumulatively considerable incremental contribution to a significant cumulative impact on air quality. According to SJVAPCD, projects that would generate air pollutant emissions exceeding applicable thresholds of significance would generate emissions above the allowable limit for the region to attain and maintain ambient air quality standards, and the contribution of such emissions would be cumulatively considerable.¹⁴

A quantitative discussion of cumulative air quality impacts is provided in Section 7.7, Air Quality. The following discussion briefly summarizes those impacts.

10.1-45 Implementation of KWB activities in combination with regional and local water banking and development projects could potentially generate cumulatively considerable air pollutant emissions that would violate air quality standards.

As discussed in Impacts 7.7-3, 7.7-9, and 7.7-10 of Section 7.7, KWB activities would not result in emissions of any air pollutants exceeding SJVAPCD thresholds of significance.

Construction emissions from proposed future KWB projects would not exceed SJVAPCD thresholds of significance (see Table 7.7-3 in Section 7.7). Operations and maintenance (O&M) activities associated with KWB activities are not expected to increase beyond the levels shown in Table 7.7-4 which do not exceed SJVAPCD thresholds of significance.

Thus, it is not anticipated that future KWB construction or O&M activities would result in a cumulatively considerable net increase in emissions toward the significant cumulative impact on local and regional air quality. Therefore, this impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

- 10.1-46 Implementation of KWB activities in combination with regional and local water banking and development projects could potentially result in cumulatively considerable exposure of sensitive receptors to substantial pollutant concentrations.**

Construction

Construction activities would generate short-term emissions of diesel particulate matter (PM) from the exhaust of off-road heavy-duty diesel equipment for earth-disturbing activities and diesel-fueled truck trips. Construction activities for KWB activities and proposed projects are anticipated to occur for approximately 6–8 months, or approximately 2% of the minimum exposure period required to complete a health risk assessment. The past completed KWB activities and probable future KWB activities would not occur within 1,000 feet of sensitive receptors.

Considering the intermittent and temporary construction emissions and the buffer distance from sensitive receptors, it is highly unlikely that construction activities associated with KWB activities, including its proposed projects, would expose sensitive receptors to substantial TAC concentrations. Since few sensitive receptors are near KWB Lands, it is not expected that other cumulative water banking and development projects would overlap with construction impacts from KWB future projects.

Construction-related toxic air contaminants (TAC) emissions associated with KWB activities would not result in a cumulatively considerable incremental contribution to a significant cumulative impact regarding the exposure of sensitive receptors to substantial pollutant concentrations. Therefore, this impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

Operations and Maintenance

As discussed in Impact 7.7-9 of Section 7.7, following construction of KWB facilities in combination with the planned Integrated Regional Water Management (IRWM) Plan (Kern Water Bank Recharge and Recovery Project) and full build-out projects, it is not anticipated that KWB O&M activities would substantially increase beyond existing levels. Such activities would continue to occur intermittently across KWB Lands and would be of relatively low intensity with respect to TAC emissions.

It is not anticipated that future KWB O&M activities would expose sensitive receptors to a cumulatively considerable incremental contribution to a significant net increase in TAC emissions. Therefore, this impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

- 10.1-47 Construction, operations, and maintenance of the existing and proposed KWB facilities with other cumulative projects could potentially generate objectionable odors in a cumulative manner affecting a substantial number of people.**

As discussed in Section 7.7, construction activities associated with future KWB activities would occur intermittently throughout their 6- to 8-month construction schedules. However, construction-related odor emissions would occur during the day and cease at night. Therefore, construction-related odors would not be constantly generated from the construction site. In addition, construction equipment would be used intermittently, and thus would not constantly generate emissions. Furthermore, it is anticipated that these planned projects would occur more than 1,000 feet from existing sensitive receptors. Given the intermittent nature of construction activities and the buffer distance, it is unlikely that KWB construction activities would combine with similar effects from other groundwater banks to expose a substantial number of receptors to odorous emissions.

Grazing activities would be similar to those described for 1996–2014 and would not be anticipated to generate substantial odor emissions. SJVAPCD would continue to regulate burns (i.e. enforcement and administering Rules 4103 and 4106) throughout its jurisdiction to ensure that burns do not affect overall air quality. KWB's O&M activities would be required to obtain permits from SJVAPCD for burns and comply with all applicable requirements, which would minimize potential odor impacts to surrounding receptors. With compliance with SJVAPCD Rules 4103 and 4106, the impact of KWB construction and O&M activities, in association with similar activities among other cumulative projects, would be extremely unlikely to combine into significant cumulative impacts regarding objectionable odors. Therefore, this impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1-48 Implementation of KWB activities in combination with regional and local water banking projects could potentially result in cumulatively considerable air pollutant emissions as a result of potential changes in agricultural practices.

KWB activities provide a more reliable water supply for KWB participants in Kern and Kings Counties. These water districts use KWB recovered water for their agricultural users. Therefore, increasing the reliability and capacity of KWB water services would also facilitate continued agricultural operations. In October 2015, an agricultural-related emissions analysis (Focused Air Analysis) was performed to evaluate the air quality emissions associated with agricultural land uses that may benefit from KWB recovered water.¹⁵ The Focused Air Analysis quantified agricultural-related emissions from fugitive dust, land preparation and harvesting, and agricultural equipment, which receive water from KWB. Overall, the Focused Ag Analysis determined that ROG, NO_x, PM₁₀, and PM_{2.5} emissions associated with KWB-supplied agricultural activities would decrease by approximately 41%, 46%, 8%, and 12%, respectively, from 1995 to 2015. The ROG and NO_x reductions are a result of turnover in equipment fleets, introduction of new equipment, and increasingly stringent emissions standards. Emissions reductions for PM₁₀ and PM_{2.5} are a result of both changes in agricultural equipment mentioned above and SJVAPCD Rule 4550 (Conservation Management Practices), which limits fugitive dust emissions from agricultural operations. Exhaust-related PM₁₀ and PM_{2.5} emissions, which are primarily diesel particulate matter (diesel PM), decreased by approximately 34% from 1995 to 2015.

Fugitive dust emission sources from 1995 to 2015 reflect the changing state and county-wide commodity markets (see Section 7.6 for further discussion). Annual crops, such as cotton production (which comprised over two-thirds of the total field crop acreage in production in 1995), generally generate more fugitive dust during land preparation than during harvesting activities. Conversely, almond production (which accounted for more than 60 percent of the total nut crops in 2015) generates substantially more fugitive dust during harvesting activities than during land preparation. Pistachio, citrus, and grape production generate roughly equivalent land preparation and harvesting fugitive dust

emissions, but the overall emissions on a per-acre basis are substantially less than that of cotton and almonds.

The SJVAPCD adopted Rule 4550, Conservation Management Practices, on May 20, 2004 to limit fugitive dust emissions (PM₁₀ and PM_{2.5}) from agricultural operation sites. Rule 4550 requires agricultural operation sites to implement a minimum number of conservation management practices (CMPs). Examples of CMPs include reducing or eliminating the need to disturb soil, protecting soil from wind, modifying equipment or processes to physically produce less dust, applying dust suppressants, and planting tree crops such as trees and vines. Rule 4550 requires growers with 100 or more contiguous acres to complete a CMP Plan and to implement the applicable CMPs as detailed in the Plan.

Subsequent to 1995, state and federal emission standards for new non-road diesel engines have been phased in and diesel fuel standards have enabled the use of sulfur-sensitive combustion control technology to meet the latest, more stringent emission standards. The result has been lower emissions of nitrogen oxides (NO_x), PM, reactive organic gases (ROG), sulphur oxides, and carbon monoxide from new mobile agricultural equipment. Emissions have been further reduced through incentive programs that are designed to accelerate the replacement of older, higher-emitting agricultural equipment.

Based on the historical trend of converting seed, field and vegetable crops to perennial crops in Kern County and the KWB participants' service area, it is possible that KWB activities in combination with cumulative water banking and development projects could contribute to the conversion of additional land to permanent crops. The trend of shifting from annual crops to permanent tree and vineyard crops is expected to continue in the future with or without KWB activities. However, a combination of federal and state regulations and SJVAPCD rules and incentive programs have resulted in substantial decreases in agriculturally-related air pollutant emissions. These various rules, regulations, and incentive programs have resulted in substantial reductions in emissions from land preparation, harvesting, mobile agricultural equipment, agricultural burning, and windblown dust from agricultural land, paved and unpaved roads, and other sources. The decreases in agriculturally-related air pollutant emissions are expected to continue.

KWB activities would not result in a cumulatively considerable incremental contribution to a significant cumulative impact regarding air pollutant emissions as a result of potential changes in agricultural practices. Therefore, this impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1.5.8 Geology, Soils, and Mineral Resources

10.1-49 Implementation of KWB activities in combination with regional and local water banking projects could expose people and structures to risks from unstable soils (liquefaction).

The KWB and cumulative water banking projects are located in a seismically active area. The White Wolf and San Andreas Faults are considered active and are known to have produced large-magnitude earthquakes in the Kern Fan area.

Although KWB Lands consist of unconsolidated Holocene sediments (which are more susceptible to liquefaction), the depth to groundwater is typically 50 feet or greater bgs. Therefore, the liquefaction

potential is low and no significant cumulative impact would be expected to occur from KWB activities and other cumulative projects. Furthermore, KWB activities would have no effect on liquefaction.

KWB activities would not result in a cumulatively considerable incremental contribution to significant cumulative hazards related to liquefaction. Therefore, this impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1-50 Implementation of KWB activities in combination with regional and local water banking projects could cause or contribute to subsidence as a result of groundwater extraction.

In Kern County, land subsidence is caused primarily by the dewatering and subsequent compaction of unconsolidated clay and silt deposits within the groundwater aquifer, and oil and natural gas extraction.¹⁶

The KWB aquifer contains a substantial amount of sand, with lesser amounts of gravel, silt, and clay.¹⁷ Aquifers with higher volumes of sand and gravel are not as susceptible to compaction as aquifers with higher volumes of clays and fine silts. A continuous reading extensometer located in KWB has shown little response to changes in water level changes during recharge or recovery operations.

KWB activities would not result in a cumulatively considerable incremental contribution to a significant cumulative impact on subsidence as a result of groundwater extraction. Therefore, this impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1-51 Implementation of KWB activities in combination with regional and local water banking projects could contribute to movement on regional faults.

Several researchers have indicated that historic fault creep along the Buena Vista, Premier, New Hope, and Kern Front Faults, as well as historic-period fault breaks along the Garlock Fault zone (in the Fremont Valley), are the result of subsurface withdrawal of oil, natural gas, and/or groundwater.^{18,19,20,21} KWB Lands are not, however, within the immediate vicinity of these areas, and there is no evidence of fault creep that could affect or be affected by KWB activities.

KWB activities have not and would not cause a cumulatively considerable incremental contribution to a significant cumulative impact related to movements on regional faults. Therefore, this impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1-52 Implementation of KWB activities in combination with regional and local water banking projects could potentially increase soil erosion.

Grading would be required to construct the proposed facilities, including the recharge ponds. Construction of the ponds and other improvements would occur on topography that is relatively flat and that would require only minor grading and compaction of soils. Soils on KWB Lands can generally be characterized as being moderately to highly erodible. KWBA is subject to legal requirements regarding NPDES permits (see Section 7.0.4.1.1 covering NPDES permits) and is obligated to carry out the measures (see Section 7.0.4.2.1 covering HCP Incidental Take Permits and Section 7.0.4.3.1 covering the 1997 Monterey IS and Addendum).

It is highly unlikely that soil erosion from KWB activities would combine with soil erosion from other cumulative projects. Such impacts would be highly site specific and geographically and temporally isolated. KWB activities have not and would not cause a cumulatively considerable incremental contribution to a significant cumulative impact related to soil erosion. Therefore, this impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1-53 Implementation of KWB activities in combination with regional and local water banking projects could potentially increase soil erosion as a result of potential changes in agricultural practices.

Agricultural activities include plowing, which disturbs the soil profile to a deeper level; discing, which disturbs the soil profile to a shallower level; and other ground-disturbing activities. The maintenance of annual crops usually involves plowing. These activities could result in land disturbance that increases the rate of soil erosion.

Based on the historical trend of converting annual seed, field, and vegetable crops to permanent crops in Kern County and the KWB participants' service area, it is possible that KWB activities in combination with cumulative water banking projects could result in the conversion of additional land to permanent crops. The trend of replacing irrigated annual crops with permanent crops is expected to continue in the future with or without KWB activities. Because permanent crops like orchards would require substantially fewer ground-disturbing activities associated with crop production, the conversion to permanent crops would likely reduce the amount of soil erosion over the long term. No significant cumulative impact would occur. Therefore, KWB activities would not result in a cumulatively considerable incremental contribution to a significant cumulative impact on erosion as a result of potential changes in agricultural practices. This impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1.5.9 Recreation

The cumulative context for recreation consists of recreation on KWB Lands and the local area.

10.1-54 Implementation of KWB activities in combination with regional and local water banking projects could potentially result in cumulatively considerable impacts on waterfowl and related recreational resources.

It is expected that existing limited public recreation use for hunting, interpretation, education, birdwatching, and hiking would continue, and possibly increase, as a result of existing KWB activities in combination with KWB's proposed projects to develop additional recharge ponds and ancillary facilities. KWB recharge operations with KWBA's proposed IRWM Project (Kern Water Bank Conservation and Storage Project) would not change substantially such that any of these recreation activities would be adversely affected. Moreover, development of several additional recharge ponds could increase the extent, quality, and availability of waterfowl habitat and recreation opportunities.

KWB recharge pond expansion and recharge operations would likely result in a beneficial impact on recreation resources on KWB Lands. Therefore, there would be ***no cumulative impact***.

Mitigation Measures

None required.

10.1.5.10 Land Use and Planning

The cumulative context for land use and planning consists of cumulative water banking and development projects in the local area and region.

10.1-55 Implementation of KWB activities in combination with regional and local water banking and development projects could potentially conflict with adopted general plan policies, land use designations, and zoning codes.

Construction of past KWBA facilities and construction of probable future KWBA facilities are in areas designated by the *Kern County General Plan* as Intensive Agriculture and Mineral and Petroleum and in areas designated by the *Metropolitan Bakersfield General Plan* as Intensive Agriculture, Mineral and Petroleum, and Open Space. The entirety of KWB Lands is zoned by Kern County as A (Exclusive Agriculture). Groundwater recharge facilities, including conveyance structures, are allowable land uses under the Intensive Agriculture, Mineral and Petroleum, and Open Space land use designations. In addition, construction of groundwater recharge facilities is a permitted use within the A zoning district.

Other water banking programs and projects in unincorporated Kern County, such as the Strand Ranch Integrated Banking Project and Stockdale West/Strand Ranch Water Banking Project, would be required to comply with the *Kern County General Plan* policies, land use designations, and zoning codes, as applicable. Other water banking programs and projects in Kings County would be required to comply with the applicable *Kings County General Plan* policies, land use designations, and zoning codes. If the land use planning authority were to change existing land use designations and zoning, the appropriate environmental review would be undertaken to approve such a change at that time. Therefore, KWB activities in combination with cumulative water banking projects in the local area and region would not conflict with general plan policies or result in inconsistencies with land use designations or zoning. Thus, no significant cumulative impact would occur.

KWB activities would not result in a cumulatively considerable incremental contribution to potential conflicts with applicable general plan policies, land use designations, and zoning codes. Therefore, there would be ***no cumulative impact***.

Mitigation Measures

None required.

10.1-56 Implementation of KWB activities in combination with regional and local water banking and development projects could potentially result in cumulatively considerable impacts on land use patterns as a result of potential changes in agricultural practices.

KWB activities have increased water supply reliability, which may result in changes from seed, field and vegetable crops on land that could be fallowed in dry/critically dry years to permanent crops like orchards and vines that require a dedicated water supply. Water banking and other water supply projects in the local area and region that contribute to the availability and reliability of water supplies could continue to contribute to the existing trend to permanent crops.

Based on the historical trend of converting to permanent crops in Kern County and the KWB participants' service area, it is possible that KWB activities and cumulative water banking projects would contribute to the conversion of additional land to permanent crops. This trend is expected to continue in the future with or without KWB activities. These changes in cropping patterns could alter land use patterns; however, agricultural use would continue and there would be no change in land use. No significant cumulative impact would occur. KWB activities would not result in a cumulatively considerable incremental contribution to effects on land use patterns as a result of potential changes in agricultural practices. This impact would be a *less-than-significant cumulative impact*.

Mitigation Measures

None required.

10.1.5.11 Hazards and Hazardous Materials

Impacts associated with the past or current uses of a project site usually occur on a project-by-project basis and are generally limited to the specific project site. Therefore, significant cumulative impacts generally do not occur because site-specific impacts do not overlap geographically with other similar impacts. The cumulative context for hazards and hazardous materials primarily consists of past, present, and probable future KWB activities on KWB Lands and possibly immediately adjacent lands.

10.1-57 Implementation of KWB activities in combination with regional and local water banking and development projects could potentially result in cumulatively considerable impacts related to the creation of a hazard to the public or environment through routine transport, use, or disposal of hazardous materials.

KWB activities involve construction activities at several locations on KWB Lands. Such activities would require the use of heavy equipment that would contain fuels and lubricants, which contain hazardous compounds. An accidental release of these materials could injure construction workers, contaminate soil or water, or present a fire/explosion hazard.

Construction contracts would include specific language requiring contractors to comply with applicable State hazardous materials management laws and regulations. These laws and regulations, found in California Code of Regulations (CCR) Titles 19 and 22, address proper storage and disposal of substances such as fuels. In addition, CCR Title 8 addresses the use of hazardous products in the work environment and would apply to construction contractors. Hazardous material transport would comply with any California Department of Transportation requirements and regulations. The potential for inadvertent spills of materials, which could affect nearby surface water bodies or groundwater, would be managed through construction site best management practices.

KWBA is subject to legal requirements regarding NPDES permits and is obligated to carry out the measures. Additionally, KWB activities would also include measures which were outlined in the 1997 Monterey IS and Addendum, including the use of a watering truck to minimize fugitive dust generation and ensure the use of rodenticides and herbicides are in accordance with the KWB HCP/NCCP Vegetation Management Plan (Appendix 7-7c) and a Worker Environmental Awareness Program (WEAP) in accordance with the 2016 KWBA Resolution (Appendix 7-5b).

No other cumulative water banking and development projects would occur on KWB Lands and, therefore, there would likely not be any spatial overlap in potential cumulative impact. No significant cumulative impact would occur. KWB activities would not result in a cumulatively considerable incremental contribution to a significant cumulative impact associated with routine transport, use, or disposal of hazardous materials. This impact would be a ***less-than-significant cumulative impact***.

10.1-58 Implementation of KWB activities in combination with regional and local water banking projects could potentially result in cumulatively considerable increases in airborne vector populations or in the likelihood of waterborne disease or illness.

KWB activities on KWB Lands and cumulative water banking projects near KWB Lands include construction and operation of recharge ponds by KWBA, Rosedale, and others. The construction of recharge ponds may disturb the soil and cause the San Joaquin Valley fever fungus to become airborne during earthmoving activities. The recharge basins can lead to standing pools of water and may increase areas for vectors to gather and provide a breeding ground for mosquito larvae. KWBA has a mosquito abatement plan in place and would implement other mitigation as specified in Section 7.11, Hazards and Hazardous Materials. The cumulative effect of additional and/or expanded nearby groundwater banking programs, in association with KWB expansion, could result in greater exposure to mosquitoes and Valley fever. The KWB activities could have a cumulatively considerable incremental contribution to increased airborne vector populations or the likelihood of waterborne disease or illness.

Consequently, KWB activities could make a cumulatively considerable incremental contribution to a potentially significant cumulative impact related to airborne vector populations or waterborne disease or illness. This impact would be a ***potentially significant cumulative impact***.

Mitigation Measures

Implementation of the following mitigation measure would substantially reduce the contribution of the KWB activities to the cumulative impacts with the regard to airborne vector populations or the likelihood of waterborne disease or illness. KWB activities will include measures which were outlined in the 1997 Monterey IS and Addendum, including the implementation of a Mosquito Abatement Plan, and requiring implementation of a WEAP program which includes providing construction workers at risk of inhaling dust with appropriate masks intended to prevent the Valley Fever fungus.

The cumulatively considerable incremental contribution would be less than considerable with mitigation. Therefore, this impact would be a ***less-than-significant cumulative impact, with mitigation***.

10.1-58 *KWBA will implement Mitigation Measure 7.11-6.*

10.1.5.12 Noise

The cumulative context for noise is the immediate vicinity of KWB activities on KWB Lands.

10.1-59 Implementation of KWB activities in combination with regional and local water banking projects could potentially result in cumulatively considerable increases in noise levels near sensitive receptors.

KWB operations require pumping to convey water to recharge ponds and extract water from underground. A representative range of noise levels for electric pumps is estimated to be 68 to 72 A-weighted decibels at 50 feet (see Table 7.12-5 in Section 7.12, Noise). If proper mufflers are provided, noise levels could be reduced. However, even without mufflers, increased noise levels would not affect sensitive noise receptors because the pumps are located in relatively remote areas far from homes and other sensitive receptors. The installation and operation of pumps for recharge ponds on KWB Lands attributable to KWB activities and KWBA's proposed IRWM and build-out projects could result in an increase in noise levels, primarily during construction. However, increased noise levels would not affect sensitive noise receptors because construction and pump operations are located in relatively remote areas far from homes and other sensitive receptors. Additionally, maintenance of the new facilities would occur intermittently and would create only minimal noise.

Noise levels are not directly additive, and they attenuate rapidly with distance. Noise associated with KWB pumps would be localized to KWB Lands and would not combine with noise from other water banking and development projects to produce cumulative noise impacts. No significant cumulative impact would occur.

KWB activities would not result in a cumulatively considerable incremental contribution to a significant cumulative impact related to noise. This impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1-60 Implementation of KWB activities in combination with regional and local water banking projects could potentially increase noise levels as a result of potential changes in agricultural practices.

Based on the historical trend of converting to permanent crops in Kern County and the KWB participants' service area, it is possible that KWB activities in combination with cumulative water banking projects could contribute to the conversion of additional land to permanent crops. This trend is expected to continue in the future with or without KWB activities. It is not expected that cumulative noise levels associated with changes in traffic volumes on rural roadways would increase substantially because of these changes in cropping patterns; the number of vehicular trips on rural roadways to fields with permanent crops associated with KWB activities and cumulative water banking projects would likely be the same as or slightly less than the number of trips to fields with annual crops.

No significant impact would occur. KWB activities would not result in a cumulatively considerable incremental contribution to a significant cumulative impact related to noise as a result of potential changes in agricultural practices. This impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1.5.13 Cultural and Paleontological Resources

The cumulative context for cultural and paleontological resources consists of reasonably foreseeable groundwater banking and development projects on and near KWB Lands where ground-disturbing activities occur during construction.

10.1-61 Implementation of KWB activities in combination with regional and local water banking and development projects could potentially result in cumulatively considerable impacts related to the damage to and/or destruction of cultural and paleontological resources.

Native Americans, specifically the Southern Valley Yokuts, occupied the southern portion of the San Joaquin Valley in Kern and Kings Counties; therefore, archaeological sites could be present. As discussed in Section 7.13, Cultural and Paleontological Resources, prehistoric sites have been recorded on KWB Lands and paleontological deposits have been identified in the southern portion of the county. Some of these deposits are exposed and others are buried.

KWB activities involve construction of additional recharge basins, wells, and ancillary facilities on KWB Lands that could expose cultural resources to damage and/or destruction. Other cumulative projects that involve ground-breaking activities, such as during construction, could also adversely affect cultural and paleontological resources. Prior to KWB construction activities, archaeological investigations were completed in the Kern Fan Element and for the KWB HCP/NCCP. Some of these investigations recorded significant archaeological sites at or near KWB Lands. Known cultural sites were avoided and/or preserved, and no new cultural sites were discovered during ground-disturbing construction activities during 1996-2014. Mitigation measures were also adopted in the 1997 Monterey IS and Addendum to ensure that if previously unidentified archaeological 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.

Well drilling and refurbishing activities associated with groundwater recharge, extraction, and monitoring may occur in the Older Alluvium, Older Stream and Terrace Deposits, and Tulare Formation. As discussed in Section 7.13, because of the number of vertebrate fossils that have been recovered there, these formations are considered paleontologically sensitive. Construction of cumulative water banking and development projects could increase the risk of damage to or destruction of known or previously unidentified cultural and paleontological resources.

KWB construction activities could make a cumulatively considerable incremental contribution to an overall significant cumulative impact with respect to cultural and paleontological resources. This impact to cultural and paleontological resources would be a ***potentially significant cumulative impact***.

Mitigation Measures

Impacts to cultural resources would be reduced to less than significant through implementation of Mitigation Measure 7.13-3(a) currently implemented by KWBA. The measures outlined in Mitigation Measure 7.13(a) specify that before any ground-disturbing work on the KWB, qualified professionals must conduct a pedestrian survey and any cultural resources identified during a survey must be recorded, evaluated, and the work halted and the Kern County Coroner notified if any human remains are found.

Mitigation Measure 7.13-3(b) requires that construction workers be alerted to the possibility of encountering paleontological resources, and specifies that if resources are encountered, fossil specimens would be recovered and recorded and would undergo appropriate curation.

Implementation of the following mitigation measures would substantially reduce the contribution of the KWB activities to the cumulative impacts associated with the damage or destruction of cultural and paleontological resources. KWBA is obligated to implement 7.13-1a and 7.13-1(b). Therefore, this impact to cultural resources would be a ***less-than-significant cumulative impact, with mitigation.***

10.1-61 *KWBA will implement Mitigation Measures 7.13-1(a) and 7.13-1(b).*

10.1-62 **Implementation of KWB activities in combination with regional and local water banking projects potentially result in cumulatively considerable impacts related to damage to or destruction of cultural and paleontological resources as a result of potential changes in agricultural practices.**

Agricultural activities include plowing, discing, and other ground-disturbing activities. The maintenance of annual seed, field, and vegetable crops usually involves plowing, which disturbs the soil profile to a deeper level. The maintenance of permanent crops or fallow land usually involves discing for weed control, which disturbs the soil profile to a shallower level. Because the reliability and availability of agricultural water supplies can affect the amount and types of crops that farmers plant, the extent and frequency of land disturbance is also expected to vary in response to water availability, as well as local, regional, and even global economic factors.

Agricultural activity existed before KWB activities began and the land had been disturbed for a variety of agricultural uses, depending on factors such as the availability of water. Based on the historical trend of converting annual to permanent crops in Kern County and the KWB participants' service area, it is possible that KWB activities in combination with cumulative water banking programs and projects could contribute to the conversion of additional land to permanent crops. The trend of converting to permanent crops is expected to continue in the future with or without KWB activities. Ground disturbance associated with changes in agricultural practices would be similar and highly unlikely to expose more cultural artifacts or fossils because similar ground-disturbing activities are associated with all cultivated agricultural land.

KWB activities would not result in a cumulatively considerable incremental contribution to a significant cumulative impact to cultural and paleontological resources. Therefore, this impact would be a ***less-than-significant cumulative impact.***

Mitigation Measures

None required.

10.1.5.14 Public Services and Utilities

The cumulative context for public services and utilities consists of potential impacts on or near KWB Lands.

10.1-63 **Implementation of KWB activities in combination with regional and local water banking and local development projects on or near KWB Lands could potentially result in cumulatively considerable impacts related to the need for new or expanded governmental facilities or an increase in demand for public services and utilities.**

As discussed in Section 7.14, Public Services and Utilities, KWB activities would not directly result in population changes that would generate a need for new or expanded governmental facilities or an increase in demand for public services (i.e., schools, parks, libraries). Similarly, there would be no increase in water supply treatment and/or distribution facilities, wastewater collection and treatment

facilities, stormwater runoff collection facilities, and/or solid waste collection and disposal. KWB activities would increase demand for fire and police protection services, but not to the extent that the construction of new or expansion of existing fire and police protection services and facilities would be required to maintain acceptable service ratios and response times.

KWBA's proposed future recharge pond expansion projects, and other proposed groundwater banking projects, would not directly result in population changes from construction of housing or businesses that would generate a need for new or expanded governmental facilities or an increase in demand for public services (i.e., schools, parks, libraries) and utilities (i.e., water supply treatment and/or distribution facilities, wastewater collection and treatment facilities, stormwater runoff collection facilities, and/or solid waste collection and disposal). No significant cumulative impact would occur.

KWB activities would not result in a cumulatively considerable incremental contribution to a significant cumulative impact on the need for new or expanded government facilities or an increase in demand for public services and utilities. This impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1.5.15 Traffic and Transportation

The cumulative context for traffic and transportation consists of potential impacts at or near KWB Lands.

10.1-64 Implementation of KWB activities in combination with regional and local water banking and local development projects on or near KWB Lands could potentially result in cumulatively considerable increases in traffic.

Traffic volumes associated with KWB activities and KWBA's proposed future recharge expansion projects would temporarily increase on some rural roads during construction. In addition, routine maintenance of the new facilities would result in a permanent increase in vehicular traffic on rural roads but the increase would be extremely minor. The small increases in vehicular movements attributable to KWB activities and KWBA's proposed future recharge expansion projects would result in a small, increase in average daily traffic levels and traffic flow on the affected rural roads in the vicinity of KWB Lands. Significant traffic and transportation cumulative impacts in the Bakersfield and other urban areas would result from future development. However, KWB activities would have a minimal impact on cumulative traffic and transportation patterns within the general KWB and Bakersfield area when considered with other banking and development projects.

KWB activities would not result in a cumulatively considerable incremental contribution to a significant cumulative impact on traffic and transportation. Therefore, this impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1-65 Implementation of KWB activities in combination with regional and local water banking projects could potentially result in cumulatively considerable increases in traffic as a result of potential changes in agricultural practices.

Based on the historical trend of converting annual seed, field, and vegetable crops to permanent tree and vineyard crops in Kern County and the KWB participants' service area, it is possible that KWB activities in combination with cumulative water banking and other water supply projects could result in the conversion of additional land to permanent crops. This trend is expected to continue in the future with or without KWB activities. It is not expected that cumulative traffic volumes on rural roadways would increase because the number of vehicular trips on rural roadways to fields with permanent crops would likely be the same as or slightly less than the number of trips to fields with annual crops. No significant cumulative impact would occur.

KWB activities would not result in a cumulatively considerable incremental contribution to a significant cumulative impact related to traffic increases as a result of potential changes in agricultural practices. This impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1.5.16 Energy

The cumulative context for energy consists of cumulative water banking, development, and capital improvement projects in Kern County and the region as well as reasonably foreseeable projects in the Pacific Gas & Electric Company (PG&E) service area, which includes all KWB Lands.

10.1-66 Implementation of KWB activities in combination with regional and local water banking, development, and capital improvement projects could develop land uses and patterns that cause cumulatively considerable impacts associated with the wasteful, inefficient, and unnecessary consumption of energy.

Increased demand for electrical and natural gas supplies and infrastructure is a byproduct of all future land uses and development in the southern San Joaquin Valley. Energy is consumed for heating, cooling, and electricity in homes and businesses; for public infrastructure and service operations; and for agriculture, industry, and commercial uses. The cumulative water banking projects, development projects, and capital improvement projects listed in Table 10.1-1 vary in size and have different amounts of development that would be expected to increase the consumption of energy. Each service provider is responsible for adequately providing these utilities within their jurisdictional boundaries and for upgrading their existing electrical and natural gas distribution systems or constructing new distribution systems to meet the demands of individual projects.

Construction-Related Energy Consumption

KWB activities would increase energy consumption during construction. However, construction associated with KWB future projects is not extensive and is similar to past construction-related activities. Energy consumption rates for construction equipment and vehicles would be reduced from past KWB construction activities because of improved fuel efficiency technologies and turnover in the KWBA's vehicle and equipment fleet used for KWB activities over time. The proposed KWBA construction projects would incrementally increase electricity demand beyond current levels; however, it is not anticipated that the planned construction projects would require PG&E to construct new electricity facilities that could cause additional environmental impacts.

This impact would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

Operational and Maintenance Energy Consumption

KWBA's O&M activities would consume energy in the form of petroleum fuel for equipment and on-road vehicles, and electricity for water recovery and conveyance. It is anticipated that as fuel efficiency increases and KWBA's vehicle fleets used for KWB activities turn over, the energy efficiency of construction equipment and vehicles would increase. In addition, the energy efficiency of O&M activities would increase as new water pumps and conveyance infrastructure are installed for the proposed future construction projects. Similarly, as older water pumps and conveyance infrastructure are replaced, retrofitted, or tuned, O&M activities would increase in energy efficiency. It is anticipated that the energy efficiency of future O&M activities would gradually increase with time.

KWB's activities would continue to use a similar amount of electrical energy as during 1996-2014. However, PG&E would continue increasing its renewable energy portfolio to meet its 2020 and 2030 Renewable Portfolio Standard (RPS) requirements and, as of April 2016, is continuing to administer the Advanced Pump Efficiency Program (APEP), which assists in KWBA's pump rehabilitation, retrofit, and replacement actions. KWBA has historically and currently performs pump efficiency actions to monitor and maintain pumps at optimal working conditions; there is no formal mechanism to require these pump efficiency actions that minimize energy consumption. Therefore, consistency with Scoping Plan Measure W-3 (Water System Energy Efficiency)(see Chapter 12, Climate Change, Mitigation Measure 12-1) cannot be tracked as part of an official plan or program approved by the KWBA Board of Directors. Furthermore, other groundwater banking programs may or may not minimize energy consumption to the same level as KWBA. Although KWBA's O&M activities would not consume energy in a more inefficient, wasteful, or unnecessary fashion than other similar O&M activities in the region, for the purposes of a conservative analysis, it is assumed that without a formal pump efficiency plan, KWBA operational and maintenance activities might result in a cumulatively considerable incremental contribution to a significant cumulative impact with respect to energy consumption. This impact would be a ***potentially significant cumulative impact***.

Mitigation Measures

Mitigation Measure 12.1 requires a formal Pump System Energy Efficiency Plan (PSEEP) to ensure that O&M activities are efficient. In addition, as new recharge ponds, water pumps, and conveyance infrastructures are installed in the future, procurements would be required to meet the most currently applicable pump efficiency standards as required in Mitigation Measure 12-1. Similarly, as older water pumps and conveyance infrastructures are replaced through passive turnover (not required in the PSEEP), O&M activities would increase in energy efficiency. Therefore, it is anticipated that the energy efficiency of future O&M activities would gradually increase with time independent of the PG&E APEP and Mitigation Measure 12-1. Mitigation Measure 12.1 would reduce impacts of KWB activities with regard to energy resources to less than significant. Therefore, KWB's O&M activities would not result in a cumulatively considerable incremental contribution to a significant cumulative impact from 2015 to 2030 with regard to energy consumption. This impact would be a ***less-than-significant, cumulative impact, with mitigation***.

10.1-66 *KWBA will implement Mitigation Measure 12-1.*

10.1-67 **Implementation of KWB activities in combination with regional and local water banking and local development projects could potentially require or result in the construction of new electrical or natural gas facilities.**

KWB facilities are provided with electricity and natural gas by PG&E. In terms of cumulative impacts, PG&E is responsible for providing adequate public utilities within its service boundaries. The cumulative water banking and development projects listed in Table 10.1-1 vary in size and have different amounts of development, and therefore also would be expected to increase the demand for electricity and natural gas supplies and related infrastructure. Individual cumulative projects within PG&E's service area would be required to assess project impacts during the environmental review process to ensure that PG&E has sufficient electrical and natural gas supplies to meet demand.

KWBA's O&M activities would require electricity to operate planned water pumps and other related water conveyance infrastructure. However, it is anticipated that KWBA's planned construction activities would not require PG&E to construct any new electricity facilities that would generate no more than minimal, if any, environmental impacts. KWB activities, therefore, would not make a cumulatively considerable incremental contribution to a significant cumulative impact requiring new electrical or natural gas facilities. This would be a ***less-than-significant cumulative impact***.

Mitigation Measures

None required.

10.1.5.17 Climate Change

The proper context for addressing global climate change is as a discussion of cumulative impacts. Although the emissions of one single project will not cause global climate change, greenhouse gas (GHG) emissions have global effects because of their long atmospheric lifetime and resulting long-term ability to continue contributing to climate change.

Cumulative climate change impacts are discussed in Chapter 12, Climate Change, and are summarized below.

10.1-68 Implementation of KWB activities in combination with regional and local water banking projects could potentially generate cumulatively considerable GHG emissions.

Construction

As presented in Table 12-4 in Chapter 12, it is reasonable to assume that construction-related GHG emissions from 1996 to 2014 would also be similar in magnitude and intensity to the planned future construction emissions shown in Table 12-4 for KWB activities, and would also fall below SMAQMD's construction-related threshold of significance. In addition, KWB-related construction emissions would be substantially less than any of the other contextual thresholds shown for GHG emissions. Therefore, KWB construction activities would not result in a cumulatively considerable incremental contribution to the significant cumulative impact on climate change and this cumulative impact would be a ***less-than-significant cumulative impact***.

Operations and Maintenance

The future O&M activities associated with KWB activities are anticipated to be similar to those shown in Table 12-3 in Chapter 12. Even with the addition of the KWB IRWM program and proposed future full buildout, O&M activities are not anticipated to increase substantially beyond the previous O&M levels. As shown in Table 12-3, annual 2015 KWB O&M activities would generate approximately 11,732 MT CO₂e, which would slightly exceed all but the highest contextual thresholds of significance presented in Standards of Significance. KWB's annual emissions would not exceed the Council of Environmental

Quality's quantitative analysis threshold (i.e., 25,000 million metric tons of carbon dioxide equivalent per year [MT CO₂e/yr]) or the U.S. Environmental Protection Agency's Mandatory Reporting threshold (i.e., 25,000 MT CO₂e/yr).

After 2015, it is anticipated that turnover in the vehicle and equipment fleet and improvements to emissions technology would cause emission rates for vehicles and equipment to decrease over time. Electricity-related GHG emissions also would decrease as a result of statewide GHG reduction measures that would reduce electricity-related GHG emissions, such as the RPS (see Senate Bills 1078 and 107 and Executive Orders S-14-08 and S-21-09) and Senate Bill 350. In addition, as PG&E continues to add renewable resources to its electricity portfolio, the GHG intensity of electricity used for O&M activities and overall electricity-related GHG emissions would decrease. These emissions account for approximately 91% of the KWB's current (2015) annual GHG emissions.

Although KWB has historically and currently performs pump efficiency actions to monitor and maintain pumps at optimal working conditions, there is no formal mechanism to require these pump efficiency actions. Therefore, consistency with Scoping Plan Measure W-3 (Water System Energy Efficiency) cannot be tracked as part of an official plan or program approved by the KWBA Board of Directors. Thus, for the purposes of a conservative analysis, it is assumed that without a formal pump efficiency plan, the KWBA might not be consistent with the applicable water-related Scoping Plan measures (i.e., Measure W-3). KWB's 2015–2030 O&M GHG emissions could result in a cumulatively considerable incremental contribution to the significant cumulative impact on climate change. This impact would be a **potentially significant cumulative impact**.

Mitigation Measures

As shown in Table 12-5 in Chapter 12, accounting for statewide reduction measures that would occur independently of KWB operations, KWB O&M activities would achieve an approximate 15% and 34% reduction from 2015 levels by 2020 and 2030, respectively. In addition, these emissions levels would be below all of the contextual thresholds of significance except for SMAQMD's construction and operational GHG thresholds developed for land use development projects. Furthermore, with implementation of Mitigation Measure 12-1, a formal PSEEP would ensure that O&M activities comply with the Scoping Plan's Measure W-3. Considering that statewide reduction measures would continue to reduce KWB's O&M GHG emissions, that future 2020 and 2030 emission levels would be less than most contextual thresholds, and that KWBA has adopted a formal pump efficiency program as part of Mitigation Measure 12-1, KWB's future O&M GHG emissions would not result in a cumulatively considerable incremental contribution to the significant cumulative impact on climate change.

KWBA is obligated to carry out the measures in Mitigation Measure 12-1. Therefore, impacts from KWB activities with regard to the cumulative impact on GHG emissions would not be cumulatively considerable and this impact would be a **less-than-significant cumulative impact, with mitigation**.

10.1-68 *KWBA will implement Mitigation Measure 12-1.*

10.1.5.18 Growth-Inducing Impacts

Growth-inducing impacts are covered in Chapter 8, Growth-Inducing Impacts, and summarized herein.

The stored water supply that is made available as a result of the KWB contributes to meeting the needs of KWB participants ID4 and TCWD. In both cases, the KWB stored water is one of several water sources relied upon by these two water suppliers as well as other water management options (i.e., reclaimed water). Participation in the KWB provides greater flexibility for these water suppliers, allowing them to use surface water when it is available and bank water to use in dry years. Additionally, in 2011, Irvine Ranch Water District obtained participation rights in the KWB through Dudley Ridge Water

District (DRWD) as a result of a land purchase in DRWD's service area. While an adequate water supply alone does not cause growth, it is a public service that supports growth and potentially related environmental impacts.

10.1-69 KWB participant water supplies provided for urban development, in combination with regional and local water banking projects, could potentially generate cumulatively considerable contributions to significant cumulative impacts from urban development.

The impacts of growth in ID4 and TCWD service areas have been analyzed in the City of Bakersfield and Kern County General Plan EIRs, respectively, and the relationship between growth and water supplies has been analyzed in applicable UWMPs and water supply assessments. When new developments are proposed within the City of Bakersfield and Kern County, the City and County prepare project-level environmental documents pursuant to CEQA. Four key EIRs cover the Tejon Industrial Complex Specific Plan and Tejon Mountain Village Specific Plan developments, which receive KWB water. These EIRs conclude that the projects would have several significant and unavoidable impacts, as summarized in Subsection 8.1.2.3 in Chapter 8.

The following significant and unavoidable cumulative impacts were identified in these EIRs:

- **Aesthetics**—Cumulatively considerable contributions to significant cumulative impacts related to visual changes from regional development, including along Interstate 5 and the Lebec Road interchange and introduction of new sources of light and glare.
- **Air Quality and Climate Change**—cumulatively considerable contributions to significant cumulative impacts on regional emissions of PM₁₀, ROG, and NO_x that exceed SJVAPCD thresholds; and cumulatively considerable contributions to significant cumulative impacts associated with GHG that do not meet AB 32 GHG reduction requirements.
- **Agricultural Resources** —Conversion of over 1,000 acres of Farmland of Statewide Importance to nonagricultural urban uses.
- **Biological Resources**—Cumulatively considerable contributions to significant cumulative impacts on the California condor population levels and range.
- **Noise**—Long-term exposure of sensitive receptors, and rural residences along Wheeler Ridge Road to increased noise from vehicular-related traffic and cumulatively considerable contributions to significant cumulative impacts on traffic noise that already exceed the County's General Plan noise standards.
- **Population and Housing**—Cumulatively considerable contributions to significant cumulative impacts from increases in population and housing relative to existing conditions.
- **Public Services**—Cumulatively considerable contributions to significant cumulative impacts related to generation of solid waste that exceed landfill capacity.
- **Transportation and Traffic**—Cumulatively considerable contributions to significant cumulative impacts from increases in traffic at intersections and freeway segments from regional development.

It is arguable whether KWB activities make a cumulative considerable incremental contribution to these identified significant cumulative impacts because of a relatively small amount of water provided by KWB participants to these urban areas. The impacts of growth in ID4 and TCWD service areas have been analyzed in the City of Bakersfield and Kern County General Plan EIRs, respectively, and the relationship between growth and water supplies has been analyzed in applicable UWMPs and water supply assessments. When new developments are proposed within the City of Bakersfield and Kern

County, the City and County prepare project-level environmental documents pursuant to CEQA. However, for the purposes of a conservative analysis, the contribution of KWB water supplies to ID4 and TCWD could have resulted in KWB activities making a cumulatively considerable incremental contribution to the significant cumulative impacts presented in bullets above. This impact would be a ***potentially significant cumulative impact***.

Mitigation Measures

The impacts identified above are significant and unavoidable impacts. There are no feasible mitigation measures or alternatives available to mitigate the impacts to less-than-significant levels.

Moreover, the Department and KWBA lack the authority to approve or deny development projects or to impose mitigation to address significant environmental impacts associated with development projects; that authority resides with local cities and counties. As discussed in Subsection 8.1.2.4, Local Decision Making on Land Use Planning, decisions regarding growth are made through the general planning process at regional and local levels. Cities and counties in the service areas affected by the increased population are responsible for considering the environmental effects of their growth and land use planning decisions. In addition, numerous federal, state, regional, and local agencies are specifically charged with protecting environmental resources, and ensuring that planned development occurs in a sustainable manner. Together, these agencies exercise the authority to reduce the effects of development on the environment. Where appropriate, they must consider feasible mitigation measures, feasible alternatives, and statements of overriding considerations.

Since no feasible mitigation is available, the resources identified above (Aesthetics, Air Quality and Climate Change, Agricultural Resources, Biological Resources, Noise, Population and Housing, Public Services, and Transportation and Traffic), and the specific impacts ascribed to them, cannot be mitigated and the cumulative impact is ***significant and unavoidable***.

ENDNOTES

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10.2 SIGNIFICANT AND UNAVOIDABLE IMPACTS (NEW)

10.2 SIGNIFICANT AND UNAVOIDABLE IMPACTS (NEW)

The following is a summary of potentially significant and unavoidable impacts identified and discussed in the technical sections of this REIR. Potentially significant and unavoidable impacts were identified for certain cumulative impacts related to growth (see Chapter 8, Growth-Inducing Impacts, and Section 10.1, Cumulative Environmental Impacts, for detailed information on these impacts).

California Environmental Quality Act (CEQA) Guidelines Section 15126.2(b) states that an EIR must include a description of those impacts identified as potentially significant and unavoidable should the proposed action be implemented. These impacts are unavoidable because it has been determined that no feasible mitigation is available to reduce the significant impact to a level that is less than significant.

The final determination of significance of impacts and of the feasibility of available mitigation measures would be made by the California Department of Water Resources (Department) as part of its action to certify the REIR.

Potential environmental impacts that would result from KWB activities are presented in Chapters 7, 8, 10, and 12 of this REIR and summarized in the Introduction/Executive Summary. Those impacts that cannot be feasibly mitigated to a less-than-significant level would remain as potentially significant and unavoidable adverse impacts. Impacts found to be potentially significant and unavoidable will require adoption of a Statement of Overriding Considerations by the Department prior to certification of the REIR. Those impacts found to be potentially significant and unavoidable are as follows:

10.1-69 KWB participant water supplies provided for urban development, in combination with regional and local water banking projects, could potentially generate cumulatively considerable contributions to significant cumulative impacts from urban development.

KWB activities could make a cumulatively considerable incremental contribution to the following significant cumulative impacts associated with the following significant and unavoidable cumulative impacts identified in EIRs for the Tejon Industrial Complex Specific Plan and the Tejon Mountain Village Specific Plan developments, which receive KWB water:

- **Aesthetics**—Cumulatively considerable contributions to significant cumulative impacts related to visual changes from regional development, including along Interstate 5 and the Lebec Road interchange and introduction of new sources of light and glare.
- **Air Quality and Climate Change**—cumulatively considerable contributions to significant cumulative impacts on regional emissions of PM₁₀, ROG, and NO_x that exceed SJVAPCD thresholds; and cumulatively considerable contributions to significant cumulative impacts associated with GHG that do not meet AB 32 GHG reduction requirements.
- **Agricultural Resources**—Conversion of over 1,000 acres of Farmland of Statewide Importance to nonagricultural urban uses.
- **Biological Resources**—Cumulatively considerable contributions to significant cumulative impacts on the California condor population levels and range.

- **Noise**—Long-term exposure of sensitive receptors, and rural residences along Wheeler Ridge Road to increased noise from vehicular-related traffic and cumulatively considerable contributions to significant cumulative impacts on traffic noise that already exceed the County’s General Plan noise standards.
- **Population and Housing**—Cumulatively considerable contributions to significant cumulative impacts from increases in population and housing relative to existing conditions.
- **Public Services**—Cumulatively considerable contributions to significant cumulative impacts related to generation of solid waste that exceed landfill capacity.
- **Transportation and Traffic**—Cumulatively considerable contributions to significant cumulative impacts from increases in traffic at intersections and freeway segments from regional development.

10.3 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL IMPACTS (NEW)

10.3 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL IMPACTS (NEW)

Section 15126.2(c) of the California Environmental Quality Act (CEQA) Guidelines requires a discussion of any potentially significant irreversible environmental changes that would be caused by the proposed project. Section 15126.2(c) states:

Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible, since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

Generally, a project would result in potentially significant irreversible environmental changes if:

- The primary and secondary impacts would generally commit future generations to similar uses in a significant manner;
- The project would involve uses in which significant irreversible damage could result from any potential environmental accidents associated with the project;
- The project would involve a significant commitment of nonrenewable resources;
- The proposed consumption of resources is significant and not justified (e.g., the project involves significant wasteful use of energy).

Implementation of the KWB activities would not directly commit future generations to similar uses because the primary effect of KWB activities is the development and continued use and operation of a water bank. KWB participants store water from sources available to them (State Water Project, Central Valley Project, and Kern River flood flows) in the KWB to recover the water at a later date.

KWB activities would increase the reliability of water deliveries in Kern County for both agricultural and urban uses. Most of the water recovered for KWB participants is used for agricultural purposes. Agricultural land use does not involve irreversible impacts to the environment.

10.3.1 GROWTH-INDUCING IMPACTS

A small amount of water recovered for KWB participants is used for urban purposes (see Chapter 8, Growth-Inducing Impacts). Future urban development could commit future generations to similar uses because restoration back to a less developed condition is not generally feasible depending on the degree of disturbance and level of capital involvement. At the local and statewide level, no change in population growth levels would result from water from the KWB used by KWB participants for urban development. The stored water supply that is made available as a result of the KWB contributes to meeting the needs of two KWB participants: Improvement District No. 4 (ID4) and Tejon-Castac Water District (TCWD). In both cases, the KWB stored water is one of several water sources relied upon by these two water suppliers as well as other water management options (i.e., reclaimed water). Participation in the KWB provides greater flexibility for these water suppliers, allowing them to use surface water when it is available and bank water to use in dry years. Additionally, in 2011, the Irvine

Ranch Water District (IRWD) obtained participation rights in the KWB through Dudley Ridge Water District (DRWD) as a result of a land purchase in DRWD's service area.

While an adequate water supply alone does not cause growth, it is a public service that supports growth. Other important factors influencing growth include: economic factors (such as employment opportunities); capacity of public services and infrastructure (e.g., wastewater, public schools, roadways); local land use policies; and land use constraints such as floodplains, sensitive habitat areas, and seismic risk zones.

Development projects that rely upon KWB recovered water, along with other more substantial water supplies, have been found to result in significant and unavoidable impacts. Therefore, it is possible that KWB activities contribute to the significant and unavoidable impacts identified for those projects.

The Department and KWBA lack the authority to approve or deny development projects or to impose mitigation to address significant environmental impacts associated with development projects; that authority resides with local cities and counties. Decisions regarding growth are made through the general planning process at regional and local levels. Cities and counties in the service areas affected by the increased population are responsible for considering the environmental effects of their growth and land use planning decisions. Availability of water is only one of many factors that land use planning agencies consider when making decisions about growth. Identifying water demands and available sources to meet those demands is now something that urban water suppliers must do in the Urban Water Management Plans and that cities and counties must do in water supply assessments required for projects above a certain size. When new developments are proposed, the cities and counties prepare environmental documents pursuant to CEQA. In addition, numerous federal, state, regional, and local agencies are specifically charged with protecting environmental resources, and ensuring that planned development occurs in a sustainable manner. Together, these agencies exercise the authority to reduce the effects of development on the environment. Where appropriate, they must consider feasible mitigation measures, feasible alternatives, and statements of overriding considerations.

As discussed in Chapter 8, Growth-Inducing Impacts, KWB activities do not involve the construction of new housing directly and would not substantially expand or establish new employment opportunities that, in turn, would generate housing development. Nor would KWB activities provide water supply infrastructure to a previously undeveloped or underserved region. Compliance with all applicable building codes, as well as mitigation measures, planning policies, and standard conservation features, would ensure that natural resources, including natural gas and electrical energy, are conserved.

10.3.2 OTHER IMPACTS

KWB activities could result in the use, transport, storage, and disposal of hazardous wastes, as described in Section 7.11, Hazardous and Hazardous Materials. All activities would comply with applicable state and federal laws related to hazardous materials, which significantly reduces the likelihood and severity of accidents that could result in irreversible environmental damage.

KWB would result in the irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels and fuels for automobiles and construction equipment and could add to the cumulatively significant impact of KWB activities in conjunction with other related projects. The proposed use of energy for KWB activities is not wasteful and has been determined to be less than significant with mitigation (see Section, 7.16, Energy and Chapter 12, Climate Change). KWB operational activities require electrical energy. Pacific Gas & Electric Company, which supplies electrical energy to KWB, is required to increase its renewable energy resources which will mean that KWB activities would use less nonrenewable natural resources in the future. In addition, KWB has committed to carrying out a pump efficiency program that would help assure that its operations would

not result in the unnecessary, inefficient, or wasteful use of resources (see Mitigation Measure 12-1 in Chapter 12, Climate Change). KWB operations would also consider new technologies or systems that emerge or become more cost-effective to further reduce its reliance upon nonrenewable natural resources. Resources would also be consumed during the construction of KWB facilities. In general, groundwater banks such as the KWB require limited resources for construction since the recharge ponds themselves use limited construction materials. Some limited energy resources are required for automobiles and construction equipment.

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10.4 ENVIRONMENTAL JUSTICE (REVISED)

10.4 ENVIRONMENTAL JUSTICE (REVISED)

10.4.1 INTRODUCTION

The concept of environmental justice embraces the principles of fair treatment of all people regardless of race, color, nation of origin, or income and meaningful involvement of people within communities. Environmental justice communities are commonly identified as those where residents are: (1) predominantly minorities or low-income; (2) excluded from the environmental policy setting or decision-making process; (3) subject to a disproportionate impact from one or more environmental hazards; and (4) subject to disparate implementation of environmental regulations, requirements, practices and activities. Environmental justice efforts attempt to address the inequities of environmental protection within these communities. Legal authorities to support these efforts include both statutory and common-law protections. Both the federal government and the State of California have taken formal steps in recent years to address this issue. Environmental justice considerations associated with the proposed project are presented below. Potential effects related to growth inducement are discussed in Chapter 8.

10.4.2 ENVIRONMENTAL SETTING

The Kern Integrated Regional Water Management Plan (Kern IRWMP) identifies disadvantaged communities within the Kern County region.¹ Disadvantaged communities are defined by Propositions 50 and 84 as communities whose average Median Household Income (MHI) is less than 80 percent of the statewide annual MHI. The California MHI for 2014 was \$61,489 for 2014.² In 2014, 80 percent of the California's MHI was \$49,191.

Two communities identified by the Kern IRWMP as disadvantaged communities are located adjacent to and within one mile of Kern Water Bank (KWB) Lands. Buttonwillow is located to the northwest, and Tupman is located west of KWB Lands, respectively.

Population, race/origin, and poverty data collected for these two communities are provided for 2014 by U.S. Department of Commerce's Census Bureau 2010-2014 American Community Survey 5-Year Estimates, and are discussed further in the subsequent section.

10.4.2.1 Regional Setting

Disadvantaged community socioeconomic characteristics are shown in Tables 10.4-3 and 10.4-4. The U.S. Census publishes the results of the completed census every 10 years and provides updated estimates annually. Both 1990 and 2010 best represent. However, no specific community information is available for 1995 or earlier for Buttonwillow and Tupman. Table 10.4-3 and 10.4-4 show the relevant statistics of the existing conditions in 2014.

TABLE 10.4-3**DISADVANTAGED COMMUNITIES
RACE/ORIGIN CHARACTERISTICS, 2014**

Disadvantaged Community	Total Population	White Alone (%)	Black (%)	Amer. Indian, Eskimo or Aleut (%)	Asian or Pacific Islander (%)	Hispanic Origin (%)
Buttonwillow	1,307	16.8	6.8	0	1.5	76.2
Tupman	176	82.4	0	0	0	17.6

Source: U.S. Census Bureau 2010-2014 American Community Survey 5-Year Estimates

TABLE 10.4-4**DISADVANTAGED COMMUNITIES
POVERTY STATISTICS, 2014**

Disadvantaged Community	Median Household Income	Individuals with Income Below Poverty Levels (percent of population)	Families with Income Below Poverty Levels (percent)
Buttonwillow	34,274	26.1	27.8
Tupman	45,313	31.7	33.3

Source: U.S. Census Bureau 2010-2014 American Community Survey 5-Year Estimates

10.4.2.2 Regulatory Setting**Federal**Executive Order 12898

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires that each federal agency, to the greatest extent practical and permitted by law, shall "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions..." Thus, federal agencies are to ensure that their actions do not result directly or indirectly in discrimination on the basis of color, race, or national origin, and that potential impacts on minority or low-income populations be taken into account during preparation of environmental and socioeconomic analyses of projects or programs that are proposed, funded, or licensed by federal agencies.

StateCalifornia Government Code Section 65040.12

California Government Code, Section 65040.12(e), defines environmental justice as "the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation and enforcement of environmental laws, regulations, and policies." California Government Code, Section 65040.12(a) designates the Governor's Office of Planning and Research (OPR) as the coordinating agency in state government for environmental justice programs, and requires OPR to develop guidelines for incorporating environmental justice into general plans.

Title 14 California Code of Regulations (CCR) Section 15131

Title 14, CCR Section 15131 provides that economic or social information may be included in an EIR, but those economic or social effects shall not be considered as significant effects on the environment. In an EIR, the lead agency can trace the chain of cause and effect from the proposed decision on the project through anticipated economic or social changes resulting from the project that, in turn, lead to physical changes in the environment. Identified potential economic/social changes also can be used to determine the significance of the physical changes on the environment.

Proposition 50 (Water Quality, Supply, and Safe Drinking Water Projects Act)

Proposition 50, approved in 2002, issued \$3.4 billion in general obligation bonds for water projects in California. The bond included competitive grants for water management and water quality improvement projects and drinking water disinfecting projects.

Proposition 84 (Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006)

Proposition 84 amended the Public Resources Code (PRC) to add among other articles, Section 75026 et seq., authorizing the Legislature to appropriate \$1 billion for Integrated Regional Water Management (IRWM) projects that assist local public agencies to meet the long-term water needs of the State, including the delivery of safe drinking water and the protection of water quality and the environment.

10.4.3 METHOD OF ANALYSIS AND SIGNIFICANCE CRITERIA

KWB activities~~The proposed project~~ could be expected to alter conditions affecting local and possibly some out-of-area water supply reliability.

Although the environmental justice approaches contained within Executive Order 12898 and California Government Code Section 65040.12 differ, the underlying intention of both regulations is the fair and equal treatment of all races, cultures, and incomes. In addition, the CEQA Guidelines, Section 15131, provide guidance in determining potential environmental justice impacts, and although the CEQA Guidelines do not recognize an economic or social change as a significant impact, social change may be considered as it relates to determining the significance of a physical change on the environment. The analysis of environmental justice impacts examines the extent to which each alternative would affect a local economy and the different socioeconomic groups participating in the local economy. For the purposes of this chapter, qualitative methods were used to evaluate whether the proposed project would result in fair and equal treatment of minorities and low-income persons in the service areas of the KWB participants~~state water contractors' service areas~~.

Concerns associated with environmental justice relate to minority and low-income populations that could be disproportionately affected by implementation of a proposed project. Environmental justice impacts would be considered potentially significant if implementation of the proposed project would result in direct or cumulative impacts on the natural or physical environment that would result in a proportionately high or adverse impact on a minority or low-income population, considering the population levels or income levels of all affected groups.

10.4.4 IMPACT ANALYSIS

Disadvantaged communities have been identified adjacent to KWB Lands (see Tables 10.4-3 and 10.4-4 above). KWB Lands do not include any populations of minority or low-income populations that could be affected by KWB activities. As discussed in Section 7.1, Surface Water and Groundwater Hydrology,

KWB activities would not result in a net deficit in aquifer volume of stored groundwater. Mitigation Measure 7.1-2 provides mitigation for any impacts to local well levels that could be affected by KWB activities. KWB activities have not reduced the allocation or distribution of water within Kern County in such a way that any minority or low-income communities would be disproportionately adversely affected. By providing a more reliable supply of water, the KWB contributes to sustaining agricultural production in the local areas of KWB participants; some of these agricultural areas could not sustain agricultural production during drought years without a more reliable source of water, such as supplied by the KWB. As discussed in Section 7.6, the KWB may contribute to the change from annual to more permanent crop types throughout Kern County by increasing the reliability of the existing water supply. The direct and indirect impacts from such a change in agricultural practices are not likely to have a disproportional impact on any minority or low-income populations.

Impacts from KWB activities to water quality are discussed under Section 7.2, Surface Water and Groundwater Quality. Specifically, as discussed under Impact 7.2-6, there has been no evidence that KWB activities have degraded water quality at the place of use outside of KWB Lands. This trend is expected to continue in the future.

Therefore, the ~~KWB activities proposed project~~ would not result in unfair or unequal treatment of ~~any socioeconomic group~~ to the identified disadvantaged communities within the regional context described above and would not result in any disproportionately high or adverse impacts on minority or low-income communities.

10.4.4.1 Cumulative Impacts

The ~~KWB activities proposed project~~ would not result in disproportionately high or adverse any environmental justice impacts to minority or low-income communities and, therefore, would not contribute to cumulative impacts.

10.4.4.2 Mitigation Measures

Mitigation Measure 7.1-2 provides mitigation for any impacts to local well levels that could be significantly affected by KWB activities. No other impacts were identified that would result in disproportionately high or adverse impacts to minority or low-income communities. Thus KWB activities proposed project would not result in disproportionately high or adverse impacts to minority or low-income communities. and, thus, no mitigation measures are required.

ENDNOTES

1. Kern County Water Agency. 2011 (November). *Kern Integrated Regional Water Management Plan*. Tulare Lake Basin Portion. Page 312. Available: <http://www.kernirwmp.com/documents.html>.
2. U.S. Census Bureau. 2016. Census Bureau website. Available: http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml. Accessed January 22, 2016.

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