

## **7.12 NOISE (REVISED)**

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### 7.12.1 INTRODUCTION

#### 7.12.1.1 Content

*The proposed project analyzed in the Monterey Plus EIR was the Monterey Amendment and the Settlement Agreement. The Monterey Plus EIR considered five “elements” of the Monterey Amendment as follows:*

- *Changes in the procedures for allocation of Table A water and surplus water among the SWP contractors;*
- *Approval to permanent transfers of 130,000 acre feet and retirement of 45,000 acre-feet of SWP long-term water supply contracts’ Table A amounts;*
- *Transfer of property known as the “Kern Fan Element property” in Kern County;*
- *Water supply management practices; and*
- *Restructured water rates.*

*This REIR has changed the description of the Kern Fan Element property transfer to be:*

- *Transfer of property known as the “Kern Fan Element property” in Kern County and its development and continued use and operation as a locally owned and operated groundwater banking and recovery project.*

*There are no revisions to the other elements of the Monterey Amendment or of the Settlement Agreement, and no changes have been made relating to them in this REIR. (See discussion in Introduction/Executive Summary.)*

*This REIR does not supersede the analysis of the Monterey Plus EIR but supplements the Monterey Plus EIR. The Monterey Plus EIR focused on the transfer of the KFE property, which was fully analyzed in the Monterey Plus EIR. This REIR did not identify any new impacts or changes to impacts caused by the transfer of the KFE property. Therefore, this REIR focuses on the development and continued use and operation of the KWB as a locally owned and operated groundwater banking and recovery project (“KWB activities”).*

*The Monterey Plus DEIR Section 7.12 identified potential impacts to noise as a result of the transfer of the Kern Fan Element. Text from DEIR Section 7.12 that discusses KWB activities is copied below and shows revisions to this section. All other text in DEIR Section 7.12 remains unchanged. In addition to the impacts discussed below, to the extent they apply, indirect impacts as a result of population growth are presented in Chapter 8, Growth-Inducing Impacts, and indirect impacts from potential cropping changes are presented in Section 10.1, Cumulative Environmental Impacts.*

Table 7.12-1A identifies the potentially affected environmental resources from impacts of KWB activities on noise.

TABLE 7.12-1A

**IMPACTS OF KWB ACTIVITIES~~PROPOSED PROJECT ELEMENTS~~ ON NOISE**

Proposed Project Element	Potentially Affected Environmental Resources	Impact Number
Transfer of Kern Fan Element lands, and KWB activities	Noise associated with construction and operation of groundwater storage facilities in Kern Fan Element	7.12-3

During public review of the NOP for ~~this~~ the Monterey Plus EIR, interested parties submitted no comments regarding noise.

### 7.12.1.2 Analytical Method

The assessment of potential noise impacts was conducted in accordance with standard professional practices. Factors considered in the qualitative analysis include:

- sources of new or increased noise levels;
- the nature and magnitude of changes in noise;
- the types of sensitive land uses that would be exposed to new or increased noise levels; and
- likely reactions to changes in community noise levels.

This analysis included a review of the environmental setting, impacts, and mitigation measures related to noise, to the extent they apply, presented in the 1997 Monterey Initial Study and Addendum (see Appendix 7-6a).

### 7.12.1.3 Standards of Significance

The following standards of significance are based on Appendix G of the CEQA Guidelines. For purposes of this REIR, implementation of the KWB activities~~proposed project~~ may have a significant adverse noise impact if it would result in any of the following:

- exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinances, or applicable standards of other agencies;
- exposure of persons to or generation of excessive and substantial groundborne vibration or groundborne noise levels;
- a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or
- a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The CEQA Guidelines also do not define the levels at which temporary and permanent increases in ambient noise are considered “substantial.” For the purposes of this analysis, noise impacts would be considered significant if the KWB activities~~project~~ resulted in the following:

- construction activities lasting more than one day that increase the ambient noise levels by 10 dBA or more at any noise-sensitive location;
- a permanent (i.e., long term operational) increase of 5 dBA Community Noise Equivalent Level (CNEL) over ambient noise levels at any noise-sensitive land use; or

- a permanent (i.e., long term operational) increase of 3 dBA CNEL over ambient noise levels at any noise-sensitive land use location where the future resulting noise level would exceed 70 dBA CNEL (i.e., the noise levels would be considered unacceptable for noise-sensitive uses by most public agencies).

The CEQA Guidelines do not define the levels at which groundborne vibration or groundborne noise is considered “excessive.” This analysis uses the Federal Railway Administration’s vibration impact thresholds for sensitive buildings, residences, and institutional land uses. These thresholds are 65 VdB at buildings where vibration would interfere with interior operations (e.g., sensitive research buildings), 80 VdB at residences and buildings where people normally sleep, and 83 VdB at institutional buildings with primarily daytime use.<sup>1</sup>

## 7.12.2 ENVIRONMENTAL SETTING

### 7.12.2.1 Introduction

#### Fundamentals of Sound and Environmental Noise

Sound is technically described in terms of amplitude (loudness) and frequency (pitch). The standard unit of sound amplitude measurement is the decibel (“dB”). The decibel scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound. The pitch of the sound is related to the frequency of the pressure vibration. Since the human ear is not equally sensitive to a given sound level at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (“dBA”) provides this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Noise, on the other hand, is typically defined as unwanted sound. A typical noise environment consists of a base of steady “background” noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These can vary from an occasional aircraft or train passing by to virtually continuous noise from, for example, traffic on a major highway. Table 7.12-2 lists representative noise levels for the environment.

Several rating scales have been developed to analyze the adverse effect of community noise on people. Since environmental noise fluctuates over time, these scales consider that the effect of noise upon people is largely dependent upon the total acoustical energy content of the noise, as well as the time of day when the noise occurs. Those that are applicable to this analysis are as follows:

- $L_{eq}$ —The equivalent energy noise level, is the average acoustic energy content of noise for a stated period of time. Thus, the  $L_{eq}$  of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
- $L_{dn}$ —The Day-Night Average Noise Level, is a 24-hour average  $L_{eq}$  with a 10 dBA “penalty” added to noise during the hours of 10:00 P.M. to 7:00 A.M. to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24 hour  $L_{eq}$  would result in a measurement of 66.4 dBA  $L_{dn}$ .
- *CNEL*—The Community Noise Equivalent Level, is a 24-hour average  $L_{eq}$  with a 10 dBA “penalty” added to noise during the hours of 10:00 P.M. to 7:00 A.M., and an additional 5 dBA penalty during the hours of 7:00 P.M. to 10:00 P.M. to account for noise sensitivity in the evening and nighttime. The logarithmic effect of these additions is that a 60 dBA 24 hour  $L_{eq}$  would result in a measurement of 66.7 dBA *CNEL*.

TABLE 7.12-2

## REPRESENTATIVE ENVIRONMENTAL NOISE LEVELS

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	—110—	Rock Band
Jet Fly-over at 100 feet		
	—100—	
Gas Lawnmower at 3 feet		
	—90—	
		Food Blender at 3 feet
Diesel Truck going 50 miles per hour at 50 feet	—80—	Garbage Disposal at 3 feet
Noisy Urban Area during Daytime		
Gas Lawnmower at 100 feet	—70—	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
Heavy Traffic at 300 feet	—60—	
		Large Business Office
Quiet Urban Area during Daytime	—50—	Dishwasher in Next Room
Quiet Urban Area during Nighttime	—40—	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime		
	—30—	Library
Quiet Rural Area during Nighttime		Bedroom at Night, Concert Hall (background)
	—20—	
		Broadcast/Recording Studio
	—10—	
Lowest Threshold of Human Hearing	—0—	Lowest Threshold of Human Hearing

Source: California Department of Transportation, 1998.

- $L_{50}$ —A statistical noise level, is the noise level which is exceeded 50 percent of the time during which the noise is measured.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day, night, or over a 24 hour period. Environmental noise levels are generally considered low when the  $L_{dn}$  or CNEL is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. Examples of low daytime levels are isolated natural settings that can provide noise levels as low as 20 dBA, and quiet suburban residential streets that can provide noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of low-moderate level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with more noisy urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA).

When evaluating changes in 24-hour community noise levels, a difference of 3 dBA is a barely-perceptible increase to most people.<sup>2</sup> A 5 dBA increase is readily noticeable, while a difference of 10 dBA would be perceived as a doubling of loudness.<sup>3</sup> Except in a carefully controlled laboratory condition, a change of 1 dBA is very difficult to perceive.

Noise levels from a particular source generally decline as distance to the receptor increases. Other factors such as the weather and reflecting or shielding also help intensify or reduce the noise level at any given location. A commonly used rule of thumb for roadway noise is that for every doubling of distance from the source, the noise level is reduced by about 3 dBA at acoustically “hard” locations (i.e., the area between the noise source and the receptor is nearly complete asphalt, concrete, hard-

packed soil, or other solid materials) and 4.5 dBA at acoustically “soft” locations (i.e., the area between the source and receptor is normal earth or has vegetation, including grass). Noise from stationary or point sources is reduced by about 6 to 7.5 dBA for every doubling of distance at acoustically hard and soft locations, respectively. Noise levels are also generally reduced by 1 dBA for each 1,000 feet of distance due to air absorption. Noise levels may also be reduced by intervening structures—generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The manner in which older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 dBA with closed windows. The exterior-to-interior reduction of newer homes is generally 30 dBA or more.

### Fundamentals of Environmental Groundborne Vibration

Vibration is sound radiated through the ground. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. The ground motion caused by vibration is measured as particle velocity in inches per second and in the U.S. is referenced as vibration decibels (VdB).

The background vibration velocity level in residential and educational areas is usually around 50 VdB. The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by sources within buildings such as operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration velocity level, and 100 VdB, which is the general threshold where minor damage can occur in fragile buildings.<sup>4</sup>

The general human response to different levels of groundborne vibration velocity levels is described in Table 7.12-3.

<b>HUMAN RESPONSE TO DIFFERENT LEVELS OF GROUNDBORNE VIBRATION</b>	
<b>Vibration Velocity Level</b>	<b>Human Reaction</b>
65 VdB	Approximate threshold of perception for many people.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

Source: Federal Railroad Administration, 1998.

#### 7.12.2.2 Physical Setting in 1995

Prior to the California Department of Water Resources’ (Department’s) purchase of the KFE property in 1988, approximately 17,068 acres of the property was under extensive cultivation (see Revised Appendix E). The remaining property contained 1,515 acres of isolated sensitive native plant communities and 1,317 acres of non-native grassland, which had been leased for oil recovery facilities. Most of the land was used for agriculture.

Before the KFE property was transferred to KCWA, the Department managed the KFE property by:

- performing demonstration studies and exploratory investigations for the potential development of the KFE property as a water banking facility; and
- controlling weeds, dust, trespassers, and vandalism.

Several tenants with active oil and gas extraction wells, brine disposal wells, and oil storage tanks were also on the property. One oil and gas lease tenant, Grayson Services Inc., had a residence with an equipment repair and storage yard on the property. The Kern County Fire Department operated a firefighting training facility on a portion of the KFE property.

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

~~The Kern Fan Element was farmed for many years until the mid-1980s. After the California Department of Water Resources (Department) purchased the land in 1986, the agricultural fields were gradually taken out of production. By 1995, agriculture had ceased on the property and introduced annual grasses and forbs had colonized the land. Therefore, vehicular traffic is the primary source of noise throughout the area. The Kern Fan Element is primarily bisected by rural roads, SRs 99, 119, 166, and 223, and I-5.~~

### **7.12.2.3 Changes in Physical Setting between 1996 – 201403**

~~Between 1996 and 201403, noise levels in the immediate vicinity of KWB Lands proposed project in the Kern Fan Element increased temporarily while recharge/percolation ponds, and the Kern Water Bank Canal, and other ancillary facilities were constructed as described above. Otherwise, ambient noise levels on KWB Lands in the Kern Fan Element are similar to those in 1995.~~

### **7.12.2.4 Regulatory Setting in 1995**

The California Government Code requires that a noise element be included in the general plan of each county and city in the state. These noise elements serve as comprehensive programs for including noise control in the land use planning process. They are tools that county and city planners use to ensure that sensitive land uses are not exposed to excessive noise levels, and that mitigation be identified and implemented to ensure noise-generating activities do not adversely affect such uses.

### **Kern County General Plan Noise Element**

The major goals of the Noise Element of the *Kern County General Plan* are to establish reasonable standards for maximum desired noise levels in Kern County and to develop implementation programs which could effectively deal with noise.<sup>5</sup> Because vehicular traffic is the primary source of noise throughout the area, the noise standards and programs were prepared to address this source. The noise standards adopted by the County are identified in Section 7.12.2.5 Table 7.12-4 below.

### **7.12.2.5 Changes in Regulatory Setting between 1996 – 201403**

#### **Kern County General Plan, Noise Element**

The *Kern County General Plan* was amended in 2009 with new noise standards. Kern County has identified the following as noise-sensitive land uses: residential areas, schools, convalescent and

acute-care hospitals, parks and recreational areas, and churches. The following goals and policies from the Noise Element of the Kern County General Plan (adopted in 2004 and amended in 2009) related to noise would be applicable to KWB activities:

Goal 1: Ensure that residents of Kern County are protected from excessive noise and that moderate levels of noise are maintained.

Goal 2: Protect the economic base of Kern County by preventing the encroachment of incompatible land uses near known noise producing roadways, industries, railroads, airports, oil and gas extraction, and other sources.

- Policy 1: Review discretionary industrial, commercial, or other noise-generating land use projects for compatibility with nearby noise-sensitive land uses.
- Policy 5: Prohibit new noise-sensitive land uses in noise-impacted areas unless effective mitigation measures are incorporated into the project design. Such mitigation shall be designed to reduce noise to the following levels:
  - a. 65 dB Ldn [day-night average noise level] or less in outdoor activity areas;
  - b. 45 dB Ldn or less within interior living spaces or other noise sensitive interior spaces.
- Policy 7: Employ the best available methods of noise control.<sup>6</sup>

The policies are to be implemented by requiring that proposed commercial and industrial uses or operations be designed or arranged so that they will not subject residential or other noise-sensitive land uses to exterior noise levels in excess of 65 dB Ldn and interior noise levels in excess of 45 dB Ldn.

### **Kern County Noise Ordinance**

According to Section 8.36.020, "Prohibited Sounds," of the Kern County Noise Ordinance, it is unlawful for any person to do, or cause to be done, any of the following acts within the unincorporated areas of the county:

- Paragraph H. To create noise from construction, between the hours of nine (9:00) p.m. and six (6:00) a.m. on weekdays and nine (9:00) p.m. and eight (8:00) a.m. on weekends, which is audible to a person with average hearing faculties or capacity at a distance of one hundred fifty (150) feet from the construction site, if the construction site is within one thousand (1,000) feet of an occupied residential dwelling except as provided below:
  1. The development services agency director or his designated representative may for good cause exempt some construction work for a limited time.
  2. Emergency work is exempt from this section.

### **Metropolitan Bakersfield General Plan, Noise Element**

Maintenance of desirable noise exposures for sensitive areas is addressed through consideration of sporadic noise normally associated with stationary land uses. Table 7.12-4A provides a method of determining land use compatibility for sensitive uses through the assignment of noise exceedance levels and time restrictions.<sup>7</sup>

**TABLE 7.12-4A****BAKERSFIELD NOISE LEVEL PERFORMANCE STANDARDS\*—EXTERIOR NOISE LEVEL STANDARDS**

• <u>Category</u>	• <u>Cumulative Number of Minutes in Any One-Hour Period</u>	• <u>Daytime 7 a.m. to 10 p.m.</u>	• <u>Nighttime 10 p.m. to 7 a.m.</u>
<u>1</u>	<u>30</u>	<u>55</u>	<u>50</u>
<u>2</u>	<u>15</u>	<u>60</u>	<u>55</u>
<u>3</u>	<u>5</u>	<u>65</u>	<u>60</u>
<u>4</u>	<u>1</u>	<u>70</u>	<u>65</u>
<u>5</u>	<u>0</u>	<u>75</u>	<u>70</u>

**Notes:**

\* Each of the noise level standards specified in this table shall be reduced by five (5) dB(A) [A-weighted decibels] for pure tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards should be applied at a residential or other noise-sensitive land use and not on the property of a noise generating land use.

Source: *Metropolitan Bakersfield General Plan*, Chapter VII, Noise Element, Page VII-8.

The following goals and policies from the Noise Element of the *Metropolitan Bakersfield General Plan* (adopted in 2002 and amended in 2007) related to noise would be applicable to KWB activities:

**Goal 1:** Ensure that residents of the Bakersfield Metropolitan Area are protected from excessive noise and existing moderate levels of noise are maintained.

**Goal 2:** Protect the citizens of the planning area from the harmful effects of exposure to excessive noise, and protect the economic base of the area by preventing the encroachment of incompatible land uses near known noise-producing roadways, industries, railroads, airports, and other sources.

- **Policy 3:** Review discretionary industrial, commercial or other noise-generating land use projects for compatibility with nearby noise-sensitive land uses. Additionally, the development of new noise-generating land uses which are not preempted from local noise regulation will be reviewed if resulting noise levels will exceed the performance standards contained within Table VII-2 [6.13-2] in areas containing residential or other noise-sensitive land uses.
- **Policy 6:** Encourage interjurisdictional coordination and cooperation with regard to noise impact issues.<sup>8</sup>

**City of Bakersfield Noise Ordinance**

Section 9.22.050, "Noise during Construction," of the Bakersfield Noise Ordinance includes the following provisions that would be applicable to KWB activities:

- (1) Except as provided herein or in subsection B, C or D of this section, it is unlawful for any person, firm or corporation to erect, demolish, alter or repair any building, or to grade or excavate land, streets or highways, other than between the hours of six a.m. and nine p.m. on weekdays, and between eight a.m. and nine p.m. on weekends; provided, however, that city crews and those of the city's contractors performing street work between nine p.m. and six a.m. are exempt herefrom if the city engineer has directed that work be performed between such hours to alleviate potential traffic congestion.
- (2) Notwithstanding any other provisions of this chapter, if the city manager determines that the public health and safety will not be impaired by the erection, demolition, alteration or repair of any building or the excavating and grading of land, streets or highways between the hours of nine p.m. and six a.m., and if he or she further determines that loss or inconvenience would

result to any party in interest by virtue of the requirements provided in subsection A of this section, he or she may grant a permit for such work to be done between the hours of nine p.m. and six a.m., upon application being made at the time the permit for the work is awarded or during the progress of the work. Such permit may be granted for a period not to exceed three days, and may be extended by the city manager for a period not to exceed three days.

- (3) The provisions of this section shall not apply to any work of construction performed one thousand feet or more from the nearest residential dwelling.
- (4) The provisions of this section shall not apply to performance of emergency work as defined in this chapter. (Ord. 3924 § 3, 1999).<sup>9</sup>

### 7.12.3 IMPACTS AND MITIGATION MEASURES

#### 7.12-3 Noise levels in the ~~KWB Lands~~~~Kern Fan Element~~ could be potentially affected by development of groundwater storage facilities.

#### 1996 — 201403

Construction of the new groundwater storage facilities required the use of heavy-duty diesel equipment such as bulldozers, graders, trucks, and drilling equipment. The U.S. EPA has compiled data regarding the noise generating characteristics of specific types of construction equipment and typical construction activities. These data are presented in Table 7.12-5 and Table 7.12-6 for a reference distance of 50 feet. These noise levels diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 84 dBA measured at 50 feet from the noise source to the receptor would reduce to 78 dBA at 100 feet from the source to the receptor, and reduce by another 6 dBA to 72 dBA at 200 feet from the source to the receptor.

**TABLE 7.12-5**

**NOISE RANGES OF TYPICAL CONSTRUCTION EQUIPMENT**

Construction Equipment	Noise Levels in dBA $L_{eq}$ at 50 feet <sup>1</sup>
Front Loader	73–86
Trucks	82–95
Cranes (moveable)	75–88
Cranes (derrick)	86–89
Vibrator	68–82
Saws	72–82
Pneumatic Impact Equipment	83–88
Jackhammers	81–98
Pumps	68–72
Generators	71–83
Compressors	75–87
Concrete Mixers	75–88
Concrete Pumps	81–85
Back Hoe	73–95
Pile Driving (peaks)	95–107
Tractor	77–98
Scraper/Grader	80–93
Paver	85–88

Note:

1. Machinery equipped with noise control devices or other noise-reducing design features does not generate the same level of noise emissions as that shown in this table.

Source: U.S. EPA 1971 as presented in City of Los Angeles, 1998.

TABLE 7.12-6

## TYPICAL OUTDOOR CONSTRUCTION NOISE LEVELS

Construction Phase	Noise Levels at 50 Feet (dBA L <sub>eq</sub> )	Noise Levels at 50 Feet with Mufflers (dBA L <sub>eq</sub> )
Ground Clearing	84	82
Excavation, Grading	89	86
Foundations	78	77
Structural	85	83
Finishing	89	86

Source: U.S. EPA 1971 as presented in City of Los Angeles, 1998.

Construction activities primarily affected noise levels in the immediate vicinity of the construction sites. Construction activities that occurred under the ~~KWB activities proposed project~~ also had the potential to generate low levels of groundborne vibration. Table 7.12-7 identifies various vibration velocity levels for the types of equipment that could have been operated at the project sites during construction.

TABLE 7.12-7

## TYPICAL VIBRATION LEVELS FOR CONSTRUCTION EQUIPMENT

Construction Equipment	PPV (in./sec.)			
	25 Feet	100 Feet	200 Feet	400 Feet
Pile Driver (Impact)	0.644	0.081	0.028	0.010
Vibratory Roller	0.210	0.026	0.009	0.003
Large Bulldozer	0.089	0.011	0.004	0.001
Loaded Trucks	0.076	0.010	0.003	0.001
Jackhammer	0.035	0.004	0.002	0.001
Small Bulldozer	0.003	<0.001	<0.001	<0.001

Source: Derived from Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006, p. 12-12.

The KWB facilities currently include approximately 7,200 acres of recharge ponds, 85 recovery wells, an extensive network of monitoring wells, 36 miles of pipeline, and the 6-mile-long KWB Canal. The ponds consist of low earthen berms that pond water to depths of a few feet. The ponded water infiltrates into the alluvial fan for recharge into the aquifer. Water flows between the ponds in small channels; KWBA operators control the flow with small weir boxes. The recovery wells average about 750 feet deep and produce as much as 5,000 gallons per minute of water. They are distributed throughout the KWB Lands and are spaced approximately one-third mile apart. The 16- to 20-inch-diameter wells are powered with electric motors. Small diameter (15- to 36-inch-diameter) PVC pipelines transport water recovered from wells to existing canals or, in some cases, to large diameter (> 36-inch-diameter) pipelines. Approximately 31 miles of small-diameter and 5 miles of large-diameter pipeline have been constructed.

~~The Monterey Amendment calls for ownership of the Kern Fan Element to be transferred from the Department to the KCWA. The transfer agreement was entered in 1995 and the transfer closed escrow in 1996. The KCWA then transferred ownership to a new agency, the KWBA. The KWBA built a groundwater storage facility, the Kern Water Bank. The primary reason for KWBA's acquisition of the KWB Lands and construction of a Kern Water Bank was to ensure a more reliable water supply for its member entities; storage of water during times of surplus in the service area for later recovery during times of shortage, and use in the service area (see primary water conservation objective of HCP/NCCP<sup>10</sup>).~~

~~At the end of 1995, approximately 3,034 acres of shallow percolation ponds existed in the Kern Fan Element. Between 1996 and 2003, as part of the Kern Water Bank, approximately 4,150,080 acres of land were converted to shallow percolation ponds, a six-mile long earthen canal, the Kern Water Bank Canal, and several wells and pump stations were built. In 2009, an additional 70 acres of percolation ponds were constructed, for a total of 7,184 acres.~~ Unpaved roads were built to provide access to the new facilities. However, there were no sensitive uses located in close proximity to the construction sites that were adversely impacted by daytime construction noise and groundborne vibration levels. Routine maintenance of the new facilities results in temporary noise levels. Operation of the ~~KWB Kern Fan Element~~ requires pumping to convey water to percolation ponds, to extract water from underground, and to convey water in the Kern Water Bank Canal. Electric motors power the pumps. A representative range of noise levels for pumps is estimated to be 68 to 72 dBA (see Table 7.12-5) at 50 feet. The installation and operation of pumps associated with the construction of ~~KWB recharge~~ percolation ponds on KWB Lands in the Kern Fan Element attributable to the proposed project ~~would~~ resulted in an increase in noise emissions from pumps compared to pre-1995 conditions. However, increased noise levels ~~would~~ did not affect sensitive receptors because the pumps are located in relatively remote areas far from homes and ~~other sensitive receptors~~ businesses. Ongoing maintenance of the new facilities is intermittent and not considered a substantial source of increased noise levels at sensitive land uses.

Therefore, these ~~impact of KWB activities with regard to noise levels was~~ land use changes are ~~were~~ considered to have a ***less-than-significant impact***.

#### Mitigation Measures

*None required.*

#### **Future Impacts 2015 – 2030**

Near-term future KWB activities include construction of approximately 190 acres of recharge ponds and three wells under the ongoing Integrated Regional Water Management (IRWM) program (Kern Water Bank Recharge and Recovery Project). Longer-term future construction of approximately 862 acres of additional recharge ponds and associated facilities is anticipated as part of full build-out. In addition to the new recharge ponds, wells, and associated facilities, other potential ground-disturbing activities could include: fencing, constructing replacement recovery wells, installing and replacing pipeline, and installing weir boxes. Maintenance of existing and new basins, wells, and ancillary facilities would also take place. The IRWM program ponds have been sited. The locations of additional ponds are approximate but will be 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.

~~In the future, an additional 1,2090 acres of percolation ponds are it is expected to be constructed by that the KWBA would construct an additional 1,200 acres of percolation ponds. The construction-related noise impacts would be are temporary and short-term impacts that and would be considered less than significant. Operation of the Kern Fan Element KWB operations requires pumping to convey water to recharge~~ percolation ponds and to extract water from underground. A representative range of noise levels for electric pumps is estimated to be 68 to 72 dBA (see Table 7.12-5) at 50 feet. If proper mufflers are provided, noise levels could be further reduced. The installation and operation of pumps associated with the operation of recharge ~~percolation ponds during in the KWB activities Kern Fan Element attributable to the proposed project could result in an increase in noise levels. 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 businesses. Additionally, maintenance of the new facilities would occur intermittently and would not constitute a significant increase in area noise levels.

~~Thus, any future such construction and operational activities would are considered to create result in a ***less-than-significant impact***.~~

The KWBA manages lands within the KWB Lands~~Kern Fan Element~~ in accordance with a Habitat Conservation Plan (HCP) and NCCP approved by the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game CDFG) in 1997 (see Appendix 7-7a). The KWB HCP/NCCP allows developed uses on about 4,000 acres of KWB Lands~~the Kern Fan Element~~. Developed uses include farming, permanent facilities for the KWB~~Water Bank~~, and commerce. Approximately 490 acres of land adjacent to Interstate 5 (I-5) ~~is~~ are designated for possible commercial use. Between 1995 and 2014~~03~~, no development occurred on the 490-acre parcel. ~~Since~~ After 2003, the Settlement Agreement ~~prohibits~~ development of this parcel was prohibited by the Settlement Agreement, and so under the KWB activities~~proposed project~~ the parcel would remain undeveloped. Noise levels at the parcel would be unchanged. Therefore, these land use changes are were considered to have a ***less-than-significant impact***.

Therefore, the impact of KWB activities from 2015 to 2030 with regard to noise levels would be ***less than significant***.

#### Mitigation Measures

*None required.*

## ENDNOTES

1. Federal Railroad Administration, *High-Speed Ground Transportation Noise and Vibration Impact Assessment*, December 1998.
2. Federal Highway Administration, *Highway Noise Fundamentals*, United States Department of Transportation, September 1980.
3. Federal Highway Administration, *Highway Noise Fundamentals*, United States Department of Transportation, September 1980.
4. Federal Railroad Administration, *High-Speed Ground Transportation Noise and Vibration Impact Assessment*, December 1998.
5. Kern County Planning Department, *Noise Element of the Kern County General Plan*, December 1989.
6. Kern County Planning Department. 2009 (September 22). *Kern County General Plan, Noise Element*. Originally adopted by Kern County Board of Supervisors June 15, 2004; updated through September 22, 2009.
7. Kern County. 2007 (December 11). *Metropolitan Bakersfield General Plan (Unincorporated Planning Area)*, Chapter VII, Noise Element. Bakersfield, CA. Page VII-8.
8. City of Bakersfield. 2007 (December 11). *Metropolitan Bakersfield General Plan (Unincorporated Planning Area)*, Noise Element. Adopted by Kern County Board of Supervisors December 3, 2002; updated through December 11, 2007. Pages VII-9 and VII-10.
9. City of Bakersfield. 2015. Bakersfield Municipal Code, Noise Ordinance. Section 9.22.050, "Noise during Construction."
10. ~~Kern Water Bank Authority (KWBA). 1997. *Habitat Conservation Plan / Natural Community Conservation Plan*. Page S-1.~~

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