

27. Noise

27.1 Introduction

This chapter describes the noise setting for the Extended, Secondary, and Primary study areas. Descriptions and maps of the three study areas are provided in Chapter 1 Introduction.

Permits and authorizations for Noise are presented in Chapter 4 Environmental Compliance and Permit Summary. The regulatory setting for Noise is presented in Appendix 4A Environmental Compliance.

The regulatory setting for noise is presented in Chapter 4 Environmental Compliance and Permit Summary.

This chapter focuses primarily on the Primary Study Area. Potential impacts in the Secondary and Extended study areas were evaluated and discussed qualitatively. Potential local and regional impacts from constructing, operating, and maintaining the alternatives were described and compared to applicable significance thresholds. Effects of Sites Reservoir Project (Project) noise on wildlife are discussed in Chapter 14 Terrestrial Biological Resources, and the effects of groundborne vibration on fish are discussed in Chapter 12 Aquatic Biological Resources. Mitigation measures are provided for identified potentially significant impacts, where appropriate.

27.2 Environmental Setting/Affected Environment

Noise is defined as unwanted sound. Levels of sound are measured and expressed in decibels (dB). Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Methods used to measure or quantify sound levels depend on the source, the receiver, and the reason for measurement.

The most common metric is the overall A-weighted sound level measurement, which measures sound in a manner similar to the way a person perceives or hears sound, thus achieving a strong correlation for evaluating acceptable and unacceptable sound levels. A-weighted measurement has been adopted by regulatory agencies worldwide. These sound levels are expressed as dBA.

A-weighted sound levels are typically measured or presented as L_{eq} , which is defined as the average sound level on an equal energy basis for a stated period of time. The L_{eq} is commonly used to measure steady state sound or noise that is usually dominant. The relative A-weighted noise levels of common sounds measured in the environment and industry for various qualitative sound levels are provided in Table 27-1.

Statistical methods are used to capture the dynamics of a changing acoustical environment. These measurements are typically denoted by L_{xx} , where xx represents the percent of time a sound level is exceeded. The L_{90} represents the noise level that is exceeded during 90 percent of the measurement period. Similarly, the L_{10} represents the noise level exceeded for 10 percent of the measurement period. Another sound level expression is L_{max} , which is the maximum sound pressure level over a defined period.

**Table 27-1
Typical Sound Levels Measured in the Environment and Industry**

Noise Source at a Given Distance	A-weighted Sound Level in Decibels (dBA)	Qualitative Description
Carrier Deck Jet Operation	140	
	130	Pain threshold
Jet Takeoff (200 feet)	120	
Auto Horn (3 feet)	110	Maximum vocal effort
Jet Takeoff (1,000 feet) Shout (0.5 feet)	100	
New York Subway Station Heavy Truck (50 feet)	90	Very annoying Hearing damage (8-hour, continuous exposure)
Pneumatic Drill (50 feet)	80	Annoying
Freight Train (50 feet)	70 to 80	
Freeway Traffic (50 feet)	70	Intrusive (Telephone use difficult)
Air Conditioning Unit (20 feet)	60	
Light Auto Traffic (50 feet)	50	Quiet
Living Room, Bedroom	40	
Library, Soft Whisper (5 feet)	30	Very quiet
Broadcasting/Recording Studio	20	
	10	Just audible

Source: New York Department of Environmental Conservation, 2001.

Another metric used in determining the effect of environmental noise is the difference in response that people have to daytime and nighttime noise levels. During the evening and at night, exterior background noises are generally lower than daytime levels. However, most household noise also decreases at night and exterior noise becomes more noticeable. Furthermore, most people sleep at night and are more sensitive to intrusive noises at that time. To account for human sensitivity to evening and nighttime noise levels, the Daytime-Nighttime Noise Level (DNL) (also abbreviated as L_{dn}) and the Community Noise Equivalent Level (CNEL) for California were developed. The DNL is a noise metric that accounts for the greater annoyance of noise during the nighttime hours (10:00 p.m. to 7:00 a.m.). The CNEL is a noise index that accounts for the greater annoyance of noise during the evening hours (7:00 p.m. to 10:00 p.m.) and nighttime hours.

DNL values are calculated by averaging hourly L_{eq} sound levels for a 24-hour period and applying a weighting factor to the nighttime L_{eq} values. CNEL values are calculated similarly, except that a weighting factor is also added to evening L_{eq} values. The weighting factors, which reflect the increased sensitivity to noise during evening and nighttime hours, are added to each hourly L_{eq} sound level before the 24-hour DNL or CNEL is calculated. For the purposes of assessing noise, the 24-hour day is divided into three time periods, with the following weightings:

- Daytime hours: 7:00 a.m. to 7:00 p.m. (12 hours) – Weighting factor of 0 dBA
- Evening hours (for CNEL only) 7:00 p.m. to 10:00 p.m. (3 hours) – Weighting factor of 5 dBA
- Nighttime hours (for both CNEL and DNL) 10:00 p.m. to 7:00 a.m. (9 hours) – Weighting factor of 10 dBA

The adjusted time period noise levels are then averaged (on an energy basis) to compute the overall DNL or CNEL value. For a continuous noise source, the DNL value is easily computed by adding 6.4 dBA to the overall 24-hour noise level (L_{eq}). For example, if the expected continuous noise level from a noise source is 60.0 dBA, the resulting DNL from the source would be 66.4 dBA. Similarly, the CNEL for a continuous noise source is computed by adding 6.7 dBA to the overall 24-hour L_{eq} . Given the small differences, the two are often used interchangeably.

The effects of noise on people can be listed in three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction
- Interference with activities, such as speech, sleep, learning
- Physiological effects, such as startling and hearing loss

In most cases, environmental noise effects are limited to the first two categories - creating an annoyance or interference with activities. No completely satisfactory way exists to measure the subjective effects of noise or to measure the corresponding reactions of annoyance and dissatisfaction. This lack of a common standard is primarily due to the wide variation in individual thresholds of annoyance and habituation to noise. Therefore, an important way of determining a person's subjective reaction to a new noise is to compare it to the existing or "ambient" environment to which that person has adapted. In general, the more the level or the tonal (frequency) variations of a noise exceed the previously existing ambient noise level or tonal quality, the less acceptable the new noise is, as perceived by the exposed individual.

The general human response to changes in noise levels that are similar in frequency content (for example, comparing increases in continuous [L_{eq}] traffic noise levels) are summarized as follows:

- A 3 dB change in sound level is considered a barely noticeable difference
- A 5 dB change in sound level is typically noticeable
- A 10 dB change is considered to be a doubling in loudness (PSU, 2016)

27.2.1 Extended Study Area

The Extended Study Area consists of the State Water Project (SWP) and the Central Valley Project (CVP) service areas located in northern and Southern California. Noise levels in these areas can vary considerably, depending on the location, season, and time of day. Noise levels in noisy urban settings can be as high as 75 dBA during the day. In extremely isolated outdoor locations with no wind, wildlife, or running water, noise levels may be less than 20 dBA. Typical noise levels in rural settings are approximately 40 dBA during the day and 30 dBA during the night. In wilderness areas, ambient noise levels are on the order of 20 dBA (U.S. Environmental Protection Agency, 1971). In rural areas with low population density, the L_{dn} likely varies between 35 to 40 dBA (Miller, 2002). Noise levels in recreational settings, such as San Luis Reservoir, can range from 55 to 65 dBA during the day, dropping to 50 to 60 dBA at night (Miller, 2002).

Noise-sensitive land uses generally are defined as locations where people reside or where the presence of unwanted sound could adversely affect the designated use of the land. Noise-sensitive land uses located in the Extended Study Area include residences, hospitals, places of worship, libraries, and schools, as well as nature and wildlife preserves and parks.

27.2.2 Secondary Study Area

The Secondary Study Area consists of numerous water delivery facilities in Northern California that may be affected by Project operation. Descriptions of the ambient noise levels in these counties are provided below; however, because noise is a local phenomenon that is influenced by discrete activities, noise levels at the existing facilities not proposed for modification are not discussed in this section. Similar to the Extended Study Area, noise-sensitive land uses located in the Secondary Study Area include residences, hospitals, places of worship, libraries, and schools, as well as nature and wildlife preserves and parks.

27.2.2.1 Methodology

The only direct, Project-related activities that would occur in the Secondary Study Area would be localized in Colusa, Glenn, and Tehama counties. Therefore, to characterize the types of noises typically occurring in the counties, data were collected from the counties' General Plans and the 2002 International Congress and Exposition on Noise Control Engineering.

27.2.2.2 Colusa

Ambient noise levels in portions of Colusa County are defined primarily by traffic on major roadways, including, but not limited to, Interstate (I) 5 and State Routes (SRs) 16 and 20. Agricultural activities, as well as aircraft from the Colusa County Airport, also contribute to the noise environment. In addition, there are numerous stationary noise sources (e.g., quarry operations, lumber mills, industrial facilities) dispersed throughout the county (Colusa County, 2012).

27.2.2.3 Glenn

Ambient noise levels in portions of Glenn County are defined primarily by traffic on major roadways, including, but not limited to, I-5 and SR 162. Aircraft from the Willow-Glenn County Airport also contribute to the noise environment. In addition, agricultural-related noises contribute to the noise environment, and there are numerous stationary noise sources throughout the county (Glenn County, 1993).

27.2.2.4 Tehama

The major noise sources in Tehama County consist of highway and local traffic on county roads, as well as commercial and industrial uses, airports, and railroad operations. Major roadways in the county include I-5 and SRs 32, 36, 89, and 99. The only active railroad operation within Tehama County is the Union Pacific Railroad. There are two public airports within Tehama County: Corning Municipal Airport and Red Bluff Municipal Airport (Tehama County, 2009). Existing sources of noise at/near the location of the existing Red Bluff Pumping Plant include roadway traffic and stationary noise sources, such as mechanical equipment at the existing Red Bluff Pumping Plant and Diversion Dam, and the Tehama-Colusa Canal Intake, as well as noise from activities on the Sacramento River.

27.2.3 Primary Study Area

27.2.3.1 Methodology

To characterize the types of noises typically occurring in the Primary Study Area, existing noise levels were described at each of the Project facility locations. Ambient noise levels were estimated based on existing land uses. Noise-sensitive land uses were described by Project feature and include residences, hospitals, places of worship, libraries, and schools, as well as nature and wildlife preserves and parks.

27.2.3.2 Sites Reservoir Complex

The majority of the footprint of the proposed Sites Reservoir Complex, including its proposed dams, pumping/generating plant, tunnel to the inlet/outlet structure, the inlet/outlet structure, electrical switchyard, field office maintenance yard, recreation areas, bridge, and roads, as well as the footprint of the temporary asphalt batch plant would be located within Colusa County in what is currently a rural and sparsely populated area. Within the vicinity of these Project features, there are several rural residences and one paved road (Maxwell Sites Road, which, as it continues west, becomes Sites Lodoga Road). Ambient noise levels in this area are generally low due to the few roads and the sparse population. The primary noise source is traffic noise and noise associated with ranching operations.

The northernmost portion of the proposed Sites Reservoir would be located within Glenn County. No developed road access exists in this area. Road 69 dead-ends 3 miles west of the existing Tehama-Colusa Canal, which is located to the east of the proposed reservoir site. Noise sources along/near Road 69 include a limited number of rural residences and agricultural operations. Ambient noise levels in this area are generally low due to the general lack of roads and residences in the area, and the limited accessibility of the area.

Offsite borrow areas would be required to acquire approximately 20 percent of the materials needed to construct the dams. Because the specific facilities materials would be sourced from is not yet known, existing noise sources in the area surrounding those facilities is speculative; however, it is anticipated that few, if any, residences or other sensitive receptors would be located within 0.5 mile.

27.2.3.3 Holthouse Reservoir Complex

The existing Funks Reservoir is located within Colusa County. There is no public access to the reservoir; the Tehama-Colusa Canal levee road that provides access to the reservoir has locked gates to provide access to only authorized personnel. Similar to Sites Reservoir, Funks Reservoir is located in an area that is expected to have low ambient noise levels. No noise-sensitive receptors are located within a 1-mile buffer around the proposed Funks Reservoir Dredging area. Primary noise sources at the reservoir include wildlife that visit the site, as well as human and vehicle noise when the reservoir is visited by authorized personnel.

The Holthouse Reservoir Complex is proposed to be located adjacent to and on the east side of the existing Funks Reservoir. The area is currently undeveloped open space that is not accessible to the public. This area experiences generally low ambient noise levels. No noise-sensitive receptors are located within a 1-mile buffer around the Hothouse Reservoir Complex. Primary noise sources in this area include wildlife that visit the site, agricultural operations, and human and vehicle noise from authorized personnel using the portion of the Tehama-Colusa Canal levee road that is nearby.

27.2.3.4 Terminal Regulating Reservoir Complex

The proposed terminal regulating reservoir (TRR), its connection to the Glenn-Colusa Irrigation District (GCID) Main Canal, the pumping plant and electrical switchyard, two pipelines, and maintenance road, as well as the footprint of the temporary concrete batch plant would be located within Colusa County. Similar to Sites Reservoir, the TRR and associated facilities would be located in an area that is expected to have low ambient noise levels. There are a few residences within a 0.5-mile radius of the proposed TRR location. The nearest residences are located northeast of and adjacent to the TRR. This area is agricultural, with the primary noise source being agricultural equipment that currently operates at and

adjacent to the TRR site. Due to the proposed TRR's location near existing local roads (Delevan, Mc Dermott, and Lenahan roads), limited traffic noise also contributes to the ambient noise setting.

The GCID Main Canal Facilities Modifications within the TRR Complex would be located in Glenn County. The proposed headgate and canal lining sites would be located approximately 5 miles northwest of Hamilton City within the existing GCID Main Canal. Existing land uses in the area, in all directions surrounding the GCID Main Canal facilities, include agriculture (row crops and orchards), a few rural residences, and undeveloped open space. This area experiences generally low ambient noise levels; noise sources include vehicle traffic and equipment associated with farming operations. The nearest residence is located approximately 680 feet west of the proposed headgate structure.

The site of the proposed railroad siphon replacement is at the GCID Main Canal at the southeast edge of the City of Willows. Existing land uses in the area include residential to the south and west, commercial to the west, light industrial and undeveloped open space to the north, and agricultural to the east. This area experiences generally low ambient noise levels; noise sources include vehicle traffic and equipment associated with farming operations. The nearest residence is located approximately 100 feet southwest of the proposed railroad siphon replacement location.

27.2.3.5 Delevan Complex

The proposed Delevan Pipeline, Inlet/Outlet Facilities, fish screen, forebay, levee tubes, afterbay, pumping/generating plant, and Electrical Switchyard would be located within agricultural fields and orchards in Colusa County. Similar to the Sites Reservoir Complex, the Delevan Complex would be located in an area that experiences generally low ambient noise levels. Intermittent noise sources include crop dusters and/or helicopters, the use of propane cannons to reduce bird depredation, gun shots during hunting season, and recreational boating traffic. There are various residences adjacent to and within a 0.5-mile radius of the proposed Delevan Complex facilities.

The proposed Delevan Pipeline Intake/Discharge Facilities would be located at the eastern terminus of the proposed Delevan Pipeline at the Sacramento River, northeast Willow Creek Road and SR 45. The footprint of the intake/discharge facilities proposed for Alternatives A and C is larger than the discharge-only facilities proposed for Alternative B; however, their location is the same. The existing noise sources in this area include agricultural operations associated with the orchards that are located at the site, vehicle traffic noise from SR 45, noise from boat traffic and humans on the Sacramento River, and the noise that is generated from the existing Maxwell Irrigation District pumps that are located adjacent to and north of the proposed intake/discharge facilities location. There are two residences within a 1-mile buffer of the proposed Delevan Pipeline Intake/Discharge Facilities.

27.2.3.6 Overhead Power Lines and Substations

Electrical overhead power lines would be required to connect many of the proposed facilities. There would be connections between the Sites, Delevan, and TRR pumping and generating plants, as well as the Holthouse Pumping Plant, and there would be a new substation. For alternatives A, B, and C, the proposed Sites/Delevan Overhead Power Line would be aligned from the existing Western Area Power Administration (WAPA) or Pacific Gas and Electric Company (PG&E) transmission lines, west to the Sites Pumping/Generating Plant and east to the Delevan Pumping and Generating Plant, and would connect to a new substation near Funks and Holthouse reservoirs. The segment from the existing transmission lines to the Sites Pumping and Generating Plant would cross rolling rangeland transitioning into flat agricultural land. For Alternatives A and C, the Sites/Delevan Overhead Power Line would

continue from the PG&E or WAPA transmission line for approximately 10 miles east to the proposed Delevan Pipeline Intake/Discharge Facilities along the Sacramento River. The existing noise sources in the areas surrounding these facilities includes vehicle traffic on local public and private roads and SR 45, noise from boat traffic and humans on the Sacramento River, and agricultural equipment associated with operations of surrounding orchards and row crops. There are few residences located within the 0.5-mile buffer of the facilities proposed for Alternatives A, B, and C.

For Alternative D, the proposed Delevan Overhead Power Line would be aligned north-south along SR 45 in Colusa County for the majority of its alignment before connecting to a new substation west of the City of Colusa. The segment of the Sites/Delevan Overhead Power Line that would deviate from SR 45 would continue through agricultural areas, where row crops and orchards dominate the existing visual environment; however, there is also a housing development west of the City of Colusa, and the Delevan Overhead Power Line may traverse the properties located within the development. The existing noise sources along this route include traffic from SR 45, agricultural equipment, and humans in a rural and urban settings and at rural businesses.

27.2.3.7 Project Buffer

The Project Buffer would surround all of the Primary Study Area Project facilities, except for the Delevan Pipeline and Overhead Power Line, TRR Pipeline and Road, Delevan Pipeline Electrical Switchyard, TRR to Funks Creek Pipeline, and portions of the roads. The existing noise sources and proximity of noise-sensitive receptors within a given area of the Project Buffer would, therefore, be the same as those described for the Project facilities that the Project Buffer surrounds.

27.3 Environmental Impacts/Environmental Consequences

27.3.1 Evaluation Criteria and Significance Thresholds

Significance criteria represent the thresholds that were used to identify whether an impact would be potentially significant. Appendix G of the *CEQA Guidelines* suggests the following evaluation criteria for noise:

Would the Project:

- Result in exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies?
- Result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?
- Result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?
- Result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?
- Expose people residing or working in the Project area to excessive noise levels (for a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport)?
- Expose people residing or working in the Project area to excessive noise levels (for a project within the vicinity of a private airstrip)?

The evaluation criteria used for this impact analysis represent a combination of the Appendix G criteria and professional judgment that considers current regulations, standards, and/or consultation with agencies, knowledge of the area, and the context and intensity of the environmental effects, as required pursuant to the National Environmental Policy Act. For the purposes of this analysis, an alternative would result in a potentially significant impact if it would result in any of the following:

- Expose persons to or generation of noise levels in excess of standards established in the local General Plans, or applicable standards of other agencies.
- Expose persons to or generation of excessive groundborne vibration or groundborne noise levels.
- Result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project.
- Result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project.
- Expose people residing or working in the Project area to excessive noise levels (for a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport).
- Expose people residing or working in the Project area to excessive noise levels (for a project within the vicinity of a private airstrip).

27.3.2 Impact Assessment Assumptions and Methodology

Combinations of Project facilities were used to create Alternatives A, B, C, C₁, and D. In all resource chapters, the Sites Project Authority (Authority) and Reclamation described the potential impacts associated with the construction, operation, and maintenance of each of the Project facilities for each of the five action alternatives. Some Project features/facilities and operations (e.g., reservoir size, overhead power line alignments, provision of water for local uses) differ by alternative, and are evaluated in detail within each of the resource areas chapters. As such, the Authority has evaluated all potential impacts with each feature individually, and may choose to select or combine individual features as determined necessary.

Impacts associated with the construction, operation, and maintenance for Alternative C₁ would be the same as Alternative C and are therefore not discussed separately below.

27.3.2.1 Assumptions

The following assumptions were made regarding Project-related construction, operation, and maintenance impacts to noise levels:

- Direct Project-related construction, operation, and maintenance activities would occur in the Primary Study Area.
- Direct Project-related operational effects would occur in the Secondary Study Area.
- The only direct Project-related construction activity that would occur in the Secondary Study Area would be the installation of two additional pumps into existing bays at the Red Bluff Pumping Plant.

- The only direct Project-related maintenance activity that would occur in the Secondary Study Area would be debris and sediment removal and disposal at the Red Bluff Pumping Plant.
- No direct Project-related construction or maintenance activities would occur in the Extended Study Area.
- Direct Project-related operational effects that would occur in the Extended Study Area would be related to San Luis Reservoir operation; increased reliability of water supply to agricultural, municipal, and industrial water users; and the provision of an alternate Level 4 wildlife refuge water supply. Indirect effects to the operation of certain facilities that are located in the Extended Study Area, and indirect effects to the consequent water deliveries made by those facilities, would occur as a result of implementing the alternatives.
- The existing bank protection located upstream of the proposed Delevan Pipeline Intake/Discharge Facilities would continue to be maintained and remain functional.
- No additional channel stabilization, grade control measures, or dredging in the Sacramento River at or upstream of the Delevan Pipeline Intake/Discharge Facilities would be required.
- All residences located outside of Project facility footprints, but within the Project Buffer, would be acquired, vacated, and demolished, as necessary, prior to the start of Project construction.
- Project construction activities and the transportation/delivery of construction vehicles, equipment, and materials would be anticipated to occur between the hours of 6:00 a.m. and 7:00 p.m. on Mondays through Fridays. Nighttime and weekend construction and transportation/delivery of construction vehicles, equipment, and materials are not planned, but could occur on an as-needed basis. Nighttime construction would not be conducted within 1,000 feet of occupied residences between 10:00 p.m. and 7:00 a.m. Project construction haul times in residential communities would be limited to 7:00 a.m. to 10:00 p.m., and air brake restrictions would be applied in residential communities.
- Construction of Project facilities would require a substantial number of workers traveling to construction sites during the construction period (refer to Chapter 26 Navigation, Transportation, and Traffic). Truck traffic associated with the transport of construction materials, borrow and spoil materials, and concrete would also increase the number of heavy vehicles on roadways in the vicinity of the work sites during construction. Construction would increase the number of construction vehicles on the roadways adjacent to the construction activities. Passenger vehicles transporting workers would add to existing volumes and associated noise levels along the major transportation roadways in the vicinity of Project facilities. Truck traffic would be distributed throughout the day. Construction would also require other noise- and vibration-generating activities such as clearing and grubbing, demolition of existing structures, excavation, drilling, and blasting.
- Project implementation would involve the long-term operation of noise-generating stationary equipment, including pumping plants, mechanical cleaning mechanisms on fish screens, and emergency generators.

27.3.2.2 Methodology

Existing conditions and the future No Project/No Action alternatives were assumed to be similar in the Primary Study Area given the generally rural nature of the area and limited potential for growth and development in Glenn and Colusa counties within the 2030 study period used for this EIR/EIS as further

described in Chapter 2 Alternatives Analysis. As a result, within the Primary Study Area, it is anticipated that the No Project/No Action Alternative would not entail material changes in conditions as compared to the existing conditions baseline.

With respect to the Extended and Secondary study areas, the effects of the proposed action alternatives would be primarily related to changes to available water supplies in the Extended and Secondary study areas and the Project's cooperative operations with other existing large reservoirs in the Sacramento watershed, and the resultant potential impacts and benefits to biological resources, land use, recreation, socioeconomic conditions, and other resource areas. The Department of Water Resources has projected future water demands through 2030 conditions that assume the vast majority of CVP and SWP water contractors would use their total contract amounts, and that most senior water rights users also would fully use most of their water rights. This increased demand in addition to the projects currently under construction and those that have received approvals and permits at the time of preparation of the EIR/EIS would constitute the No Project/No Action Condition. As described in Chapter 2 Alternative Analysis, the primary difference in these projected water demands would be in the Sacramento Valley; and as of the time of preparation of this EIR/EIS, the water demands have expanded to the levels projected to be achieved on or before 2030.

Accordingly, existing conditions and the No Project/No Action alternatives are assumed to be the same for this EIR/EIS and as such are referred to as the Existing Conditions/No Project/No Action Condition, which is further discussed in Chapter 2 Alternatives Analysis. With respect to applicable reasonably foreseeable plans, projects, programs and policies that may be implemented in the future but that have not yet been approved, these are included as part of the analysis of cumulative impacts in Chapter 35 Cumulative Impacts.

Construction

The area of influence for the evaluation of the impact of Project construction activities on ambient noise levels was defined as a 0.5-mile radius around the noise source. At a 0.5-mile radius around the noise source, there would be a 34-dBA noise reduction compared to a reference distance of 50 feet. It is important to note that other attenuating mechanisms, such as atmospheric or ground effects, may increase the amount of attenuation further, resulting in even lower noise levels. For construction equipment with typical reference noise levels of 80 and 90 dBA at 50 feet, this attenuation would result in noise levels from the equipment being reduced to 46 to 56 dBA at the 0.5-mile distance, respectively. Although these noise levels may still be noticeable at this distance, they would typically fall within the range of the Tehama, Colusa, and Glenn County General Plan requirements for steady operations.

Primary Study Area County noise ordinances were taken into consideration for determining level of impact; however, Colusa, Tehama, and Glenn each have ordinances that exempt most construction-related noises during specific times and days. Colusa County Ordinance 730 § 13.20.010 restricts noise generated from any agricultural, commercial or industrial use to a maximum daytime noise level of 60 dBA or less as measured at the nearest residential zoned property, and a maximum nighttime level of 55 dBA. However, Ordinance 730 § 13.20.030 exempts construction and maintenance activities that are authorized by valid county permit or business license from the aforementioned noise ordinance from 7:00 a.m. to 7:00 p.m. on weekdays and 8:00 a.m. to 8:00 p.m. on weekends. This exemption does not apply when any individual piece of equipment exceeds 83 dBA at a distance of 25 feet, or the noise level at any point outside of the property plane where activities are occurring exceeds 86 dBA. Under Tehama County Ordinance 167 § 10, 2007, construction activities and the alteration of structures are categorically exempt

from the noise ordinance from 10:00 a.m. and 6:00 p.m. Sundays and holidays and from 7:00 a.m. and 9:00 p.m. all other days. Glenn County Ordinance 1183 § 2, 2006 also exempts construction site sounds from 7:00 a.m. to 7:00 p.m. daily.

Construction noise impacts were evaluated by estimating noise levels from various construction activities. Table 27-2 lists equipment noise levels from Table 1 of the Federal Highway Administration (FHWA) Roadway Construction Noise Model User's Guide (FHWA, 2006). All listed noise levels are maximum A-weighted sound pressure levels (L_{max}) at a reference distance of 50 feet. The acoustical usage factor is the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation. The model calculates the total noise level at the receptor by logarithmically summing noise levels from each piece of equipment in use and accounting for the reduction of noise over distance caused by geometric divergence.¹ At farther distances, additional attenuation (e.g., ground effects and atmospheric attenuation) can be substantial, but the model does not account for this additional attenuation. Therefore, the model output should be considered conservatively high.

Table 27-2
Construction Equipment Noise Levels

Equipment Description	Acoustical Usage Factor (Percent)	Noise Control Specification L_{max} at 50 feet (dBA)	Actual Measured L_{max} at 50 feet (dBA)	Actual Data Samples (Count)
All Other Equipment >5 hp	50	85	N/A	0
Auger Drill Rig	20	85	84	36
Backhoe	40	80	78	372
Bar Bender	20	80	N/A	0
Blasting	NA	94	N/A	0
Boring Jack Power Unit	50	80	83	1
Chain Saw	20	85	84	46
Clam Shovel (dropping)	20	93	87	4
Compactor (ground)	20	80	83	57
Compressor (air)	40	80	78	18
Concrete Batch Plant	15	83	N/A	0
Concrete Mixer Truck	40	85	79	40
Concrete Pump Truck	20	82	81	30
Concrete Saw	20	90	90	55
Crane	16	85	81	405
Dozer	40	85	82	55
Drill Rig Truck	20	84	79	22
Drum Mixer	50	80	80	1
Dump Truck	40	84	76	31
Excavator	40	85	81	170
Flat Bed Truck	40	84	74	4
Front End Loader	40	80	79	96
Generator	50	82	81	19

¹ Geometric divergence is the primary mechanism of noise reduction close to a noise source.

Equipment Description	Acoustical Usage Factor (Percent)	Noise Control Specification L _{max} at 50 feet (dBA)	Actual Measured L _{max} at 50 feet (dBA)	Actual Data Samples (Count)
Generator (<25 kVA, variable message signs)	50	70	73	74
Gradall	40	85	83	70
Grader	40	85	N/A	0
Grapple (on backhoe)	40	85	87	1
Horizontal Boring Hydraulic Jack	25	80	82	6
Hydra Break Ram	10	90	N/A	0
Impact Pile Driver	20	95	101	11
Jackhammer	20	85	89	133
Man Lift	20	85	75	23
Mounted Impact Hammer (hoe ram)	20	90	90	212
Pavement Scarafier	20	85	90	2
Paver	50	85	77	9
Pickup Truck	40	55	75	1
Pneumatic Tools	50	85	85	90
Pumps	50	77	81	17
Refrigerator Unit	100	82	73	3
Rivet Buster/Chipping Gun	20	85	79	19
Rock Drill	20	85	81	3
Roller	20	85	80	16
Sand Blasting (single nozzle)	20	85	96	9
Scraper	40	85	84	12
Shears (on backhoe)	40	85	96	5
Slurry Plant	100	78	78	1
Slurry Trenching Machine	50	82	80	75
Soil Mix Drill Rig	50	80	N/A	0
Tractor	40	84	N/A	0
Vacuum Excavator (Vac-truck)	40	85	85	149
Vacuum Street Sweeper	10	80	82	19
Ventilation Fan	100	85	79	13
Vibrating Hopper	50	85	87	1
Vibratory Concrete Mixer	20	80	80	1
Vibratory Pile Driver	20	95	101	44
Warning Horn	5	85	83	12
Welder/Torch	40	73	74	5

Notes:

dBA = A-weighted decibel

hp = horsepower

kVA = kilovolt-amperes

L_{max} = maximum sound pressure level

N/A = not available

Source: FHWA, 2006.

Table 27-2 indicates that the loudest equipment proposed to potentially be used in the construction of project facilities generally emits noise in the range of 80 to 90 dBA at 50 feet. Noise at any specific receptor is dominated by the closest and loudest equipment. The types and numbers of construction equipment near any specific receptor location would vary over time. The construction noise estimate was based on assumptions of multiple pieces of loud equipment operating close together near the edge of the construction site. This is believed to be a conservative, yet realistic, scenario. Additional assumptions include the following:

- One piece of equipment generating a reference noise level of 85 dBA (at a 50-foot distance with a 40 percent usage factor) located at the edge of the construction site
- Two pieces of equipment each generating reference noise levels of 85 dBA located 50 feet farther away on the construction site
- Two more pieces of equipment each generating reference noise levels of 85 dBA located 100 feet farther away on the construction site

Table 27-3 provides construction equipment noise levels at various distances, as calculated using the preceding assumptions. This extrapolation is considered conservative because it considers only geometric spreading and does not account for absorption from atmospheric particles, physical topography, or vegetation.

Table 27-3
Construction Equipment Noise Levels Versus Distance

Distance from the Construction Site Boundary (feet)	L_{eq} Noise Level (dBA)
50	83
100	79
200	74
400	69
800	63
1,600	58
3,200	52
6,400	46

Notes:

dBA = A-weighted decibel

L_{eq} = equivalent sound pressure level

Source: Data developed using FHWA Roadway Construction Noise Model.

Vibration generated by construction equipment typically spreads through the ground and diminishes in magnitude with increases in distance. Although effects of ground vibration may be imperceptible at low levels, they may result in detectable vibrations and slight damage to nearby structures at moderate and high levels, respectively. At the highest levels of vibration, damage to structures is primarily architectural (e.g., loosening and cracking of plaster or stucco coatings) and rarely results in structural damage. There is significant potential for impact from construction activities, such as blasting, pile-driving, vibratory compaction, demolition, and drilling or excavation, that occur in proximity to vibration-sensitive structures (Federal Transit Administration, 2006). Vibratory impacts from construction activities were evaluated by examining the presence and extent of these activities and their proximity to

vibration-sensitive structures. Potential impacts to biological resources associated with proposed construction activities, such as installing sheet piling, are described in Chapter 14 Terrestrial Biological Resources, and Chapter 12 Aquatic Biological Resources.

Operations and Maintenance

Noise impacts from operation and maintenance of Project facilities were evaluated by comparing the noise levels generated by Project facility equipment to noise standards that were set by the counties, and by comparing projected noise levels to projected ambient noise levels.

27.3.3 Topics Eliminated from Further Analytical Consideration

Within the Extended Study Area, no Project-related, noise-generating construction, operations, or maintenance activities would occur or result in exposing people residing or working in the area to noise levels in excess of established standards (**Impact Noise-1**); excessive groundborne vibration or groundborne noise levels (**Impact Noise-2**); permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project (**Impact Noise-3**); or substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project (**Impact Noise-4**). Any increase in existing noise levels as a result of operational impacts to San Luis Reservoir or agricultural, wildlife refuge, and municipal and industrial water users would be both unlikely and highly speculative; therefore, these impacts are not discussed under the Extended Study Area. Additionally, these impacts would not occur at other water bodies in the Secondary Study Area; therefore, the impacts are not analyzed in the Secondary Study Area except at the Red Bluff Pumping Plant where two new pumps would be installed.

Within the Extended and Secondary study areas, no Project-related activities would expose people residing or working in the vicinity of the Project facilities to excessive aircraft-generated noise levels because of the distance of existing public airports or private airstrips to the Project facilities. Therefore, potential impacts related to aircraft-generated noise (**Impact Noise-5** and **Impact Noise-6**) are not discussed further for these two study areas. Within the Primary Study Area, a public airport is located near the site of proposed modifications to the GCID Main Canal railroad siphon; therefore, impacts related to public airport-generated noise are discussed for that Project facility only, which is included within the TRR Complex. Because a private airstrip is not located near Project facilities within the Primary Study Area, **Impact Noise-6** is not discussed further.

Although Project construction, operation, and maintenance activities would generate noise, there are no noise-sensitive receptors located within a 0.5-mile radius of many Project facilities or their associated construction disturbance areas. However, because the facilities are organized into complexes, all complexes except the Holthouse Reservoir would have at least one residence within 0.5 mile of one or more facilities. Therefore, many Project facilities, including the Sites Dams, Recreation Areas, Sites Pumping/Generating Plant and Electrical Switchyard, Tunnel from Sites Pumping/Generating Plant to Sites Inlet/Outlet Structure, Sites Reservoir Inlet/Outlet Structure, Field Office Maintenance Yard, and Delevan Pipeline Electrical Switchyard, are not explicitly evaluated even though other facilities within the respective complexes are.

27.3.4 Impacts Associated with Alternative A

27.3.4.1 Secondary Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

Pump Installation at the Red Bluff Pumping Plant

Impact Noise-1: Expose Persons to or Generation of Noise Levels in Excess of Established Standards

The only direct Project-related construction that would occur in the Secondary Study Area is the installation of two additional pumps into existing bays at the Red Bluff Pumping Plant. Tehama County exempts construction site sounds between 7:00 a.m. and 9:00 p.m. If construction activities occur outside of the exemption period, they would be conducted in compliance with applicable noise standards. Because the Red Bluff Pumping Plant was designed for the future installation of additional pumps, construction activities would be minor, requiring only a crane and small equipment operated by few construction workers, and brief, occurring over a short period of time, approximately 2 weeks. Therefore, construction activities associated with the installation of an additional pump would have a **less-than-significant impact** on noise levels when compared to the Existing Conditions/No Project/No Action Condition.

Pump operation would also generate noise. However, the pumping plant already has several pumps operating and the addition of one pump would not be expected to generate noise that could be distinguished from existing noise levels. Therefore, operation of two additional pumps at the Red Bluff Pumping Plant would have a **less-than-significant impact** on noise levels when compared to the Existing Conditions/No Project/No Action Condition.

The only direct Project-related maintenance activity that would occur in the Secondary Study Area is the removal of sediment from the Red Bluff Pumping Plant intake, located in Tehama County. Although the proposed additional Project pump would not increase the frequency of maintenance activities required at the pumping plant, nor would it require additional personnel to perform pump maintenance, Project-related operational changes at these facilities could result in increased sedimentation at the intakes and, consequently, require increased rates of sediment removal. Sediment removal activities, which would involve the use of heavy machinery and equipment (such as bulldozers, excavators, dump trucks, and gradalls²), would generate noise. It is expected that maintenance activities would occur during the day, between the hours that Tehama County exempts construction site sounds. If maintenance activities occur outside of the exemption period, they would be conducted in compliance with applicable noise standards. Therefore, maintenance activities associated with the removal of sediment from the existing Red Bluff Pumping Plant Intake would have a **less-than-significant impact** on noise levels when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-2: Expose Persons to or Generation of Excessive Groundborne Vibration or Groundborne Noise Levels

The installation of two additional pumps into existing bays at the Red Bluff Pumping Plant may generate groundborne vibration and noise. However, these activities would occur during the daytime and would be temporary. Therefore, construction activities at this facility would result in a **less-than-significant**

² Gradalls are hydraulic wheel-mounted backhoes often used with wide buckets for dressing earth slopes.

impact at the nearest noise-sensitive receptors when compared to the Existing Conditions/No Project/No Action Condition.

Pump operation would also generate noise and may generate groundborne vibration. However, the pumping plant already has several pumps operating and the addition of one pump would not be expected to generate noise or vibration that could be distinguished from existing levels. Therefore, operation of two additional pumps at the Red Bluff Pumping Plant would have a **less-than-significant impact** on groundborne noise and vibration levels when compared to the Existing Conditions/No Project/No Action Condition.

Maintenance activities associated with sediment removal and disposal at the Red Bluff Pumping Plant could also result in groundborne vibration or groundborne noise levels. However, these are generally standard activities, would occur during the daytime, and would be temporary. Therefore, maintenance activities would result in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-3: Result in a Substantial Permanent Increase in Ambient Noise Levels in the Project Vicinity above Levels Existing without the Project

There are three residences located on the opposite side of the river from the Red Bluff Pumping Plant, less than 1 mile from the Project construction site. In addition, the Sacramento River Discovery Center is located approximately 0.25 mile from the pumping plant.

Construction activities related to installation of two additional pumps at the Red Bluff Pumping Plant facility would generate noise that would be temporary, not permanent. Therefore, noise levels from construction would have a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Operation of the two additional pumps at the Red Bluff Pumping Plant would result in a permanent increase in ambient noise levels. However, the pumping plant already has several pumps operating and the addition of one pump would not be expected to generate noise that could be distinguished from existing levels. Therefore, operation of two additional pumps at the Red Bluff Pumping Plant would have a **less-than-significant impact** on noise levels when compared to the Existing Conditions/No Project/No Action Condition.

Maintenance activities at the Red Bluff Pumping Plant would increase the ambient noise levels at those facilities when the maintenance activities are occurring. Because maintenance activities would be required throughout the life of the Project, and those activities would generate noise, that noise is considered a long-term impact. Because the noise emitted from maintenance activities would be intermittent, i.e., lasting only as long as the activity occurred, the maintenance activities would not result in a permanent increase in noise levels. Therefore, Project maintenance activities would result in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-4: Result in a Substantial Temporary or Periodic Increase in Ambient Noise Levels in the Project Vicinity above Levels Existing without the Project

Construction activities related to installation of two additional pumps at the Red Bluff Pumping Plant facility would generate noise that would be temporary and periodic and would not be anticipated to be substantial. Therefore, noise levels from construction would have a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Operation of two additional pumps at the Red Bluff Pumping Plant would result in a permanent increase in ambient noise levels, not a temporary or periodic increase in noise levels. This would, therefore, result in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Long-term maintenance activities at the Red Bluff Pumping Plant would result in temporary and periodic increases in noise levels that would not be substantial. This would result in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

27.3.4.2 Primary Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

Modeling results presented in Table 27-2 indicate that noise-sensitive receptors would be subjected to noise levels from construction ranging from 83 dBA at 50 feet from the construction site boundary to 52 dBA at 3,200 feet. At the boundary for the area of influence for noise impacts, defined as 0.5 mile, construction noise would attenuate to approximately 55 dBA. Noise levels resulting from construction and operation activities could disturb adjacent uses if noise-sensitive receptors are located within this range of distances.

As discussed in section 27.3.3, Topics Eliminated from Further Analytical Consideration, facilities that would generate noise but are not located within 0.5 mile of sensitive receptors were not evaluated; therefore, the Holthouse Reservoir Complex and some facilities within other complexes are not discussed below. The sources of noise associated with construction, operation, and maintenance of the Road Relocations and South Bridge, GCID Main Canal Facilities Modifications, TRR and associated facilities, Delevan Pipeline Intake/Discharge Facilities, Sites/Delevan Overhead Power Line, and Project Buffer, as well as distances from those facilities to the nearest noise-sensitive receptors located within a 0.5-mile radius, are described below.

Construction of Alternative A would require the transport of construction workers, vehicles, and equipment, and would, as a result, increase traffic in the areas adjacent to and connecting all Primary Study Area facilities. These increases are presented in Chapter 26 Navigation, Transportation, and Traffic, and potential impacts to noise is discussed below. Additionally, the operation of all Primary Study Area facilities would require the modest increase of approximately 40 annual, full-time workers. The potential for this permanent increase to impact noise is discussed below.

Sites Reservoir Complex

There are three residences located near the affected roads in the Sites Reservoir Complex: one residence located approximately 0.6 mile east of Sulphur Gap Road, one residence located approximately 0.75 mile east of Sulphur Gap Road, and one residence located approximately 600 feet south of County Road 69/ North Road, to the west of the Tehama-Colusa Canal. The first two residences mentioned are beyond the noise impact boundary of 0.5 mile. Construction of all facilities included in the Sites Reservoir Complex under Alternative A is anticipated to occur over a duration of 8 years; however, the work constructed in proximity to the nearest residence would be substantially shorter.

Operation of the Sites Reservoir Complex facilities, specifically the Inundation Area and Recreation Areas, would bring new recreation visitors to the area, as discussed in Chapter 21 Recreation Resources, primarily during weekends and holidays during the primary recreation season, May 1 through September 30.

Impact Noise-1: Expose Persons to or Generation of Noise Levels in Excess of Established Standards

The residence located south of County Road 69/North Road would experience noise levels of approximately 66 dBA when Project construction work was occurring on the segment of the road nearest to the residence. Additionally, Colusa County's noise ordinance exempts construction and maintenance activities from 7:00 a.m. to 7:00 p.m. on weekdays and 8:00 a.m. to 8:00 p.m. on weekends. Therefore, although this would be a substantial increase in noise levels for the one residence located within 0.5 mile, an established standard would not be exceeded due to the noise ordinance exemption of construction activities, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Project construction would require the utilization of several aggregate borrow areas, within and adjacent to the Sites Reservoir Inundation Area. These facilities would provide an estimated 80 percent of required filter, drain, and transition materials for the proposed embankment dams, and an associated batch plant would screen and crush rock for the proposed facilities. These borrow areas, quarries, and batch plants within and around the Sites Inundation Area would not be located within 0.5 mile of any sensitive receptors. The remaining 20 percent of materials would need to be sourced from existing quarries located in the area, however, which could be located within 0.5 mile from sensitive receptors. Given that these materials would be sources from existing quarries which are expected to operate within exempted hours in Glenn or Colusa counties, it is not anticipated that ambient noise levels would increase substantially enough to exceed established standards, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Construction of Alternative A would require the transport of construction workers, vehicles, and equipment, and would, as a result, increase traffic in the areas adjacent to and connecting all Primary Study Area facilities. These increases, presented in Chapter 26 Navigation, Transportation, and Traffic, would occur during working, exempted hours, and generally are not substantial enough to reduce existing Levels of Service. Therefore, the increase in construction-related traffic is not anticipated to generate noise in exceedance of established standards, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Operation would result in a continuation of travel on the existing roads, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition. Travel on the new and/or relocated Project roads and the new bridge would introduce vehicle noise to areas that do not currently experience traffic noise. Traffic noise levels, although they would increase from the Existing Conditions/No Project/No Action Condition in those areas, are not expected to exceed established standards, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Maintenance of the bridge and the existing, new and/or relocated roads, as well as the traffic associated with these maintenance activities would occur periodically, and would generate noise. Maintenance activities associated with the road relocations and the new South Bridge would need to comply with applicable noise standards. By meeting the noise standards, construction activities would have a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

The borrow areas and temporary concrete batch plants would be used only during construction; therefore, Project operations and maintenance activities and would, therefore, not exceed any established noise

standards, thus resulting in **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-2: Expose Persons to or Generation of Excessive Groundborne Vibration or Groundborne Noise Levels

Project construction ground disturbing activities, such as grading and blasting, may generate localized groundborne vibration and noise in the immediate vicinity of the proposed road relocations, South Bridge, and borrow areas and temporary concrete batch plants. All Project construction groundborne vibration and noise, however, would occur during daytime, exempted hours and would be temporary. No construction activities with the potential for significant impact would occur. Therefore, road and bridge construction, and the operation of the offsite borrow area and batch plant during construction would result in a **less-than-significant impact** related to groundborne vibration and noise when compared to the Existing Conditions/No Project/No Action Condition.

Operation of the proposed roads and bridge would not result in groundborne vibration and noise, resulting in **no impact** when compared to the Existing Conditions/No Project/No Action Condition. Utilization of offsite borrow areas and batch plants would be discontinued following project construction; therefore, no Project-related operations would occur at those sites, which would result in **no impact** to groundborne vibration and noise when compared to the Existing Conditions/No Project/No Action Condition.

Typical road and bridge maintenance activities (such as chip sealing, patching, asphalt overlays, repair of guardrails, embankment and/or abutment repair, clearing debris, and safety/maintenance inspections) are not expected to cause groundborne vibration and noise, resulting in **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-3: Result in a Substantial Permanent Increase in Ambient Noise Levels in the Project Vicinity above Levels Existing without the Project

Construction activities and borrow material acquisition and crushing, including associated traffic, would be temporary, and therefore, would cause no permanent increase in ambient noise levels in the vicinity of these Project features, resulting in **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

The on-site borrow areas and concrete batch plants would be decommissioned prior to the commencement of Project operations, resulting in **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

During Project operation and maintenance, travel on existing roads would continue and approximately 40 annual workers required to operate Project facilities. This permanent increase would not be substantial enough to result in a reduction of existing Levels of Service, and would therefore not be anticipated to substantially increase ambient noise levels, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition. Travel on new and/or relocated roads and the South Bridge would introduce vehicle noise to areas that do not currently experience traffic noise. The introduction of vehicles onto new roads, relocated existing roads, and the South Bridge, which would be utilized to access the Sites Reservoir Inundation Area and associated Recreation Areas, as well as facilities that may require full-time operators, would result in a permanent increase in ambient noise levels from vehicle traffic. Traffic noise levels, although they would permanently increase from the

Existing Conditions/No Project/No Action Condition in those areas, however, are not expected to be substantial. Therefore, given the rural nature of the area surrounding the new roads and South Bridge, this increase in traffic and traffic noise would result in a **less-than-significant impact** on the ambient noise when compared to the Existing Conditions/No Project/No Action Condition because there would be no noise-sensitive receptors located within a 0.5-mile radius.

Road and bridge maintenance activities would occur periodically, and would result in travel on the existing, new, and relocated roads and the new bridge. Maintenance activities on the roads and bridge would also generate noise. Maintenance activities would be long-term, but would result in intermittent (not permanent) increases in noise, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-4: Result in a Substantial Temporary or Periodic Increase in Ambient Noise Levels in the Project Vicinity above Levels Existing without the Project

Construction activities associated with the existing, relocated, and new roads and the South Bridge would be temporary, emitting noise levels of 83 dBA at 50 feet from the construction site boundary to approximately 55 dBA at the boundary for the area of influence of noise impacts, 0.5 mile, resulting in an increase in ambient noise levels in the areas around the roads and bridge.

The residence located south of County Road 69/North Road would experience noise levels of approximately 66 dBA when Project construction work was occurring on the segment of the road nearest to the residence. Therefore, construction of this facility would result in a temporary increase to ambient noise levels to the residence when compared to the Existing Conditions/No Project/No Action Condition; however, Glenn County's noise ordinance would exempt noise generated from construction activities between 7:00 a.m. and 7:00 p.m. daily. Therefore, assuming construction activities would be performed within the exempted hours, there would be a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Project operation would result in a continuation of travel on the existing roads and also travel on the new and/or relocated roads and the new bridge. Travel on new and/or relocated roads would introduce vehicle noise to areas that do not currently experience traffic noise. These expected long-term travel patterns would not result in substantial temporary or periodic noise increases, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Road and bridge maintenance activities would occur periodically, and would result in travel on existing, new, and relocated roads and the new bridge. Maintenance activities on the roads and bridge would also generate noise. Maintenance activities would be long-term, and would result in a temporary and periodic increase in noise that would not be substantial, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Terminal Regulating Reservoir Complex

There is one residence located within the 0.5-mile buffer of the proposed TRR Complex facilities. Construction activities required for these facilities is expected to include transport of materials to the Project site, clearing and grading the construction work space, staging of construction materials, dewatering, and excavation and embankment construction. These activities would occur over a duration of approximately 3.5 years.

Impact Noise-1: Expose Persons to or Generation of Noise Levels in Excess of Established Standards

The residence located approximately 0.35 mile west of the TRR would experience noise levels of approximately 58 dBA when Project construction work was occurring at the eastern segment of the facility site. At this level, the noise emitted would not exceed levels defined in Colusa County's noise ordinance. Additionally, it is anticipated that construction and maintenance activities would occur during exempted hours from 7:00 a.m. to 7:00 p.m. on weekdays and 8:00 a.m. to 8:00 p.m. on weekends. Therefore, an established standard would not be exceeded due to the attenuation of the construction noise and the noise ordinance exemption of construction activities, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

The operation of the proposed TRR and its associated facilities would result in operation of noise-generating stationary equipment, including a pumping plant and emergency generators on an as-needed basis. This operational noise would be a change from the noise that is currently generated at the site from its existing agricultural practices but operations would be limited to County-specified hours and standards. As such, impacts to the one residence located within 0.5 mile of the facilities would have a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Project operation and maintenance activities at the improved GCID Main Canal headgate, canal lining, and railroad siphon locations and their associated minimal noise levels are not expected to increase from existing levels because the same noise-generating activities that currently occur along the GCID Main Canal would continue, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Maintenance activities associated with sediment removal and disposal at the TRR and the pump operation, as well as at the headgate, canal lining, and railroad siphon locations could result in an increase in ambient noise levels. However, these activities are not expected to occur during non-exempted hours, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-2: Expose Persons to or Generation of Excessive Groundborne Vibration or Groundborne Noise Levels

Construction activities associated with the construction of the TRR and its associated facilities may generate groundborne vibration and noise. However, given the one residence located within proximity to the TRR facilities is located at a distance of 0.35 mile, it is anticipated that the magnitude of groundborne vibration as a result of construction activities would be reduced to a minimal level. Therefore, these construction activities would result in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

The temporary bypass channel would be constructed using a combination of excavation, earth embankment, and sheetpile walls to isolate the construction site from the canal. These construction activities are considered to have a potential for impact when occurring in proximity to vibration-sensitive structures. There are several existing residences within 0.25 mile of the proposed GCID Main Canal headgate and canal lining location, and several more within a 0.5-mile radius of those Project facilities. The railroad siphon that would be replaced would be located adjacent to several neighborhoods in the City of Willows. Given construction noise would be temporary and would cease upon project completion, and construction would occur in compliance with the county's noise ordinance for construction activities,

construction would result in a **less-than-significant impact** associated with groundborne vibration and noise levels when compared to the Existing Conditions/No Project/No Action Condition.

Operation and maintenance activities associated with sediment removal and disposal and the Project's pump operation could also result in groundborne vibration or groundborne noise levels. However, these activities would result in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Project operation and maintenance activities at the headgate, canal lining, and railroad siphon locations are not expected to cause groundborne vibration or groundborne noise that would differ from existing levels because the same noise-generating activities that currently occur at the GCID headgate, along the Canal, and at the railroad siphon would continue, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-3: Result in a Substantial Permanent Increase in Ambient Noise Levels in the Project Vicinity above Levels Existing without the Project

Construction activities associated with the TRR Complex would result in temporary impacts, not permanent impacts, resulting in **no impact** to a permanent increase in ambient noise levels when compared to the Existing Conditions/No Project/No Action Condition.

The long-term operation and maintenance of the proposed TRR and its associated facilities would result in operation of noise-generating stationary equipment, including a pumping plant and emergency generators. This would be a change from the noise that is currently generated at the site from its existing agricultural practices. Vendor-specific noise information is not currently available for operation and maintenance equipment, however there would likely not be a noticeable change in ambient noise levels for surrounding noise-sensitive receptors. The nearest noise-sensitive receptor is approximately 0.35 miles from the proposed facility and, with attenuation of operation and maintenance noise, operation and maintenance activities would result in a **less-than-significant impact** to ambient noise levels when compared to the Existing Conditions/No Project/No Action Condition.

Project maintenance activities at the GCID Main Canal Intake/Discharge Facilities would be very similar to current maintenance; however, dredging of the Intake Channel would now occur periodically throughout the year instead of every 3 years. The intake and fish screen facility would operate year-round and would be very similar to existing operations. Therefore, maintenance activities would result in a **less-than-significant impact** on ambient noise levels when compared to the Existing Conditions/No Project/No Action Condition.

Project operation at the GCID Main Canal Intake/Discharge Facilities and their associated noise levels are not expected to increase substantially from existing levels because the same noise-generating activities that currently occur at the GCID headgate, along the Canal, and at the railroad siphon would continue, resulting in a **less-than-significant impact** on ambient noise levels when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-4: Result in a Substantial Temporary or Periodic Increase in Ambient Noise Levels in the Project Vicinity above Levels Existing without the Project

The construction of the TRR and its associated facilities as well as the proposed GCID Main Canal Facilities Modifications would require construction activities and equipment that would generate noise levels between 80 and 85 dBA at a 50-foot distance and approximately 55 dBA at 0.5 mile. Although

there are a limited number of residences within the vicinity of the proposed TRR Complex facilities, construction activities would result in a temporary increase in ambient noise levels during for those residences, particularly when working within the northeast corner of the TRR. Assuming construction hours would be confined to those hours exempted by Colusa County, this would result in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Operation of the TRR Complex facilities would be a long-term impact, not a temporary or periodic increase in noise levels. This would result in **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

Maintenance of the proposed TRR Complex facilities would be a long-term impact that would result in a temporary and periodic increase in noise levels that would not be substantial and would typically occur within Colusa County's exempted hours for maintenance activities. This would, therefore, result in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-5: Expose People Residing or Working in the Project Area to Excessive Noise Levels (for a Project Located within an Airport Land Use Plan or, Where Such a Plan Has Not Been Adopted, within 2 Miles of a Public Airport or Public Use Airport)

The Willows-Glenn County Airport is located approximately 1.3 miles from the railroad siphon that would be replaced during the GCID Main Canal Facilities Modifications. However, Project construction workers and operations and maintenance personnel would be provided OSHA-approved hearing protection if necessary. Therefore, exposure to airport-associated noise levels would result in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-6: Expose People Residing or Working in the Project Area to Excessive Noise Levels (for a Project within the Vicinity of a Private Airstrip)

The Project facilities within the TRR Complex would not be located within 2 miles of a private airstrip; therefore, construction workers and operations and maintenance personnel would not be exposed to airport-associated noise levels, and there would be **no impact** on noise levels for people working or residing in the area.

Delevan Pipeline Complex

There are no noise-sensitive receptors located within a 0.5-mile radius of the Delevan Pipeline alignment west of the TRR. This impact analysis, therefore, focuses on the segment of the Delevan Pipeline that is located between the Delevan Pipeline Intake/Discharge Facilities and the TRR. There are approximately 49 residences located within the construction disturbance area of the Delevan Pipeline. The nearest residence that was identified for the TRR is also located within this construction disturbance area. Construction of these facilities are anticipated to occur over approximately 3.5 years, with the location of construction activities moving east-west throughout the duration.

Impact Noise-1: Expose Persons to or Generation of Noise Levels in Excess of Established Standards

Construction of the Delevan Pipeline would require dewatering, as well as trenching of soils and alluvial material down to the design depth. Construction equipment would generate noise levels between 80 and

85 dBA at a 50-foot distance but would attenuate to approximately 55 dBA at 0.5 mile. Noise emitted from construction activities associated with the Delevan Pipeline, the Delevan Pipeline Intake/Discharge Facilities, and other facilities within the Delevan Pipeline Complex would, therefore, exceed Colusa County's noise ordinance for those residences nearest to the proposed Delevan Pipeline. However, Colusa County's noise ordinance exempts construction and maintenance activities from 7:00 a.m. to 7:00 p.m. on weekdays and 8:00 a.m. to 8:00 p.m. on weekends. Therefore, although this would be a potentially significant increase in noise levels for the residences located within 0.5 mile, an established standard would not be exceeded due to the noise ordinance exemption of construction activities, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

The long-term operation of the proposed Delevan Pipeline would generate only minimal and infrequent noise at the aboveground blow-off structures and air valve structures, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Operation activities at the Delevan Pipeline Intake/Discharge Facilities would involve the long-term operation of noise-generating stationary equipment, including the pumping plant, mechanical cleaning mechanisms on fish screens, and emergency generators. Noise is currently generated near the site from the existing adjacent Maxwell Irrigation District Pumping Plant. Vendor-specific noise information is not currently available for the equipment needed to operate this Project facility, however it is not likely that the generated noise levels would exceed Colusa County's noise ordinance during non-exempted hours, therefore the impact would be **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Maintenance of the proposed Delevan Pipeline Complex facilities would consist of periodic inspections and maintenance, as needed, and would include noise generated from vehicles and equipment, which would not be inconsistent with existing agricultural equipment noises in the area. These maintenance activities would be temporary, and would not be expected to occur during non-exempted hours, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-2: Expose Persons to or Generation of Excessive Groundborne Vibration or Groundborne Noise Levels

Construction activities (e.g., ground disturbing activities, including excavation and movement of heavy construction equipment) associated with the installation of the pipeline may generate groundborne vibration and noise. Given construction noise would be temporary and would cease upon project completion, and construction would occur in compliance with the county's noise ordinance for construction activities, impacts would be **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Construction of the Delevan Pipeline Intake/Discharge Facilities would require the use of a vibratory pile driver to install a cofferdam. Installation of the cofferdam would be expected to occur over a less-than-4-week period and in compliance with Colusa County's noise ordinance. The nearest residence is located approximately 0.3 mile away from the intake facility footprint. As such, groundborne vibration, or groundborne noise levels are not expected to be excessive, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Operation and maintenance of the pipeline and intake/discharge facilities would not involve the use of equipment that would emit groundborne vibration or groundborne noise and would thus result in **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-3: Result in a Substantial Permanent Increase in Ambient Noise Levels in the Project Vicinity above Levels Existing without the Project

Construction of the proposed Delevan Pipeline Complex facilities would result in temporary impacts, not permanent impacts on noise, resulting in **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

The long-term operation of the proposed Delevan Pipeline would generate minimal noise at the above-ground blow-off structures and air valve structures, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Operation of the Delevan Pipeline Intake/Discharge Facilities would involve the long-term operation of noise-generating stationary equipment, including the pumping plant, mechanical cleaning mechanisms on fish screens, and emergency generators. Noise is currently generated near the site from the existing adjacent Maxwell Irrigation District Pumping Plant. Vendor-specific noise information is not currently available for the equipment needed to operate this Project facility, however it is not likely that the noise levels would exceed Colusa County's noise ordinance during non-exempted hours, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Maintenance of the proposed facilities would generate noise from vehicles and equipment on a periodic and temporary basis, not permanently. Therefore, there would be **no impact** when compared to the Existing Conditions/No Project/No Action Condition

Impact Noise-4: Result in a Substantial Temporary or Periodic Increase in Ambient Noise Levels in the Project Vicinity above Levels Existing without the Project

Construction activities associated with the Delevan Pipeline would result in temporary periodic increases in noise levels of between 80 and 85 dBA at a 50-foot distance. Noise levels would attenuate to approximately 55 dBA at 0.5 mile. Given construction noise would be temporary and would cease upon project completion, and construction would occur in compliance with the county's noise ordinance for construction activities, impacts would be **less than significant** when compared to the Existing Conditions/No Project/No Action Condition.

The long-term operation of the proposed Delevan Pipeline would generate minimal noise at the above-ground blow-off structures and air valve structures, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

The construction of the Delevan Pipeline Intake/Discharge Facilities would require installation of a cofferdam within the Sacramento River; dewatering, clearing, and grading the construction workspace; excavating soils and alluvium from the forebay, afterbay, and pumping plant sites; construction of the levee, pump house, pump bays, forebay structure, and fish screens; and filling and re-grading, where needed. Modeling results presented in Table 27-3 indicate that noise-sensitive receptors would be subjected to noise levels from construction of approximately 58 dBA at 0.3 mile. Therefore, noise levels from construction would have a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Maintenance activities would be a long-term impact that would result in a temporary and periodic increase in noise levels that would not be substantial. This would result in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Overhead Power Lines and Substations

The Sites/Delevan Overhead Power Line would parallel and overlap with the construction disturbance area of the Delevan Pipeline from the Delevan Pipeline Intake/Discharge Facilities to the TRR. The overhead power line and pipeline would then diverge as their alignments would continue west of the TRR to other Project facilities. There are no noise-sensitive receptors located within a 0.5-mile radius of the divergence area. This impact analysis, therefore, focuses on the segment of the Sites/Delevan Overhead Power Line that is located between the Delevan Pipeline Intake/Discharge Facilities and the TRR. There are approximately 49 residences located within the construction disturbance area of the Delevan Pipeline and Overhead Power Line. The nearest residence that was identified for the TRR is also located within this construction disturbance area. The construction of these facilities is expected to occur over the course of one calendar year, with the location of construction activities moving east-west throughout the duration of construction.

Impact Noise-1: Expose Persons to or Generation of Noise Levels in Excess of Established Standards

Construction equipment required for the proposed facilities would generate noise levels between 80 and 85 dBA at a 50-foot distance. Although the noise emitted from construction activities would attenuate to approximately 55 dBA at 0.5 mile, and would be temporary, these noise levels would exceed Colusa County's noise ordinance for residences nearest to the proposed alignment. However, Colusa County's noise ordinance exempts construction and maintenance activities from 7:00 a.m. to 7:00 p.m. on weekdays and 8:00 a.m. to 8:00 p.m. on weekends. Therefore, although this would be a potentially significant increase in noise levels for the residences located within 0.5 mile, an established standard would not be exceeded due to the noise ordinance exemption of construction activities, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Corona associated with the operation of the proposed 115-kV or 230-kV overhead power and distributions lines may result in audible noise. Corona noise is generally characterized as a crackling, hissing, or humming noise; and the noise level is greatest during wet or foul weather conditions, such as rain or fog; however, the ambient noise level experienced during heavy rain events is anticipated to be greater than that generated by corona.

The level of corona noise is a function of the voltage of the line, the diameter of the conductors, the locations of the conductors in relation to each other, the elevation of the line above sea level, and the condition of the conductors and hardware. In general, corona is not considered a design concern for lines operating at voltages under 345 kVA (Tri State Generation and Transmission Association, 2012).

At this stage of the Project design, detailed engineering data necessary to evaluate corona noise are not available. As Project design progresses, the facility will be designed to ensure the overhead power line and associated corona is compliant with applicable County noise ordinances. Noise ordinances in Colusa County prohibit noise levels in excess of 50 dBA in residential areas between 9 p.m. and 7 a.m. and 55 dBA between 7 a.m. and 9 p.m. These ordinances also prohibit noise levels in excess of 55 dBA between 10 p.m. and 7 a.m. in agricultural, commercial, and industrial areas and 60 dBA between 7 a.m. and 10 p.m. As identified above, corona is not considered a design concern for lines operating at voltages under 345 kVA. As such, and given the anticipated rapid attenuation of noise with distance from the line,

given corona noise is typically a foul-weather phenome and is therefore limited in duration, the limited number of residences in the area and their distance from the proposed line, and the existing ambient noise during rain events associated with traffic and agricultural equipment, corona noise from either a 115-kV or 230-kV overhead power line would be expected to result in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Maintenance of the overhead power lines, substations, and distribution lines would consist of periodic inspections and maintenance, as needed, and would include noise generated from vehicles and equipment, which would not be inconsistent with existing agricultural equipment noises in the area. These maintenance activities would be temporary, and would not be expected to occur during non-exempted hours, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-2: Expose Persons to or Generation of Excessive Groundborne Vibration or Groundborne Noise Levels

Construction activities associated with installation of the overhead power lines, substations, and distribution lines, including clearing, grading, delivering construction materials at the staging areas, excavating tower footings, erecting the towers, and stringing the conductor, are not expected to generate groundborne vibration or noise, resulting in **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

Operation and maintenance of the overhead power lines, substations, and distribution lines would not involve the use of equipment that would emit groundborne vibration or noise, resulting in **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-3: Result in a Substantial Permanent Increase in Ambient Noise Levels in the Project Vicinity above Levels Existing without the Project

Construction of the overhead power lines, substations, and distribution lines would result in temporary impacts, not permanent impacts on noise, resulting in **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

The long-term operation of the proposed overhead power and distributions lines would result in noise generated from a “hum,” which would be more audible in summer months. This noise source would not cause a substantial permanent increase in ambient noise levels and would, therefore, result in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Maintenance of the overhead power lines, substations, and distribution lines would generate noise from vehicles and equipment on a periodic and temporary basis, not permanently. Therefore, there would be **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-4: Result in a Substantial Temporary or Periodic Increase in Ambient Noise Levels in the Project Vicinity above Levels Existing without the Project

Construction activities associated with the overhead power lines, substations, and distribution lines would result in temporary increases in noise, emitting noise levels of between 80 and 85 dBA at a 50-foot distance, which would attenuate to approximately 55 dBA at 0.5 mile. This would result in a temporary increase in ambient noise levels; however, given that these activities would occur during construction

noise exempted hours and would be brief at any one location, as the foundations and lines would be installed across the length of the alignment, this would result in a **less-than-significant impact** for the residences located within the construction disturbance area of the facilities when compared to the Existing Conditions/No Project/No Action Condition.

Operations activities associated with the overhead power lines, substations, and distribution lines would be a long-term impact, not a temporary or periodic increase in noise levels. This would result in **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

Maintenance activities associated with the overhead power lines, substations, and distribution lines would be a long-term impact that would result in a temporary and periodic increase in noise levels as a result of inspections and maintenance that would not be substantial. This would result in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Project Buffer

Impact Noise-1: Expose Persons to or Generation of Noise Levels in Excess of Established Standards

Within the Project Buffer, a fence would be constructed, several existing structures would be demolished, and a fuelbreak would be created. Noise generated from fence construction is not expected to exceed Colusa County's noise ordinance; however, noise emitted from demolition activities and fuelbreak discing may. Construction activities are expected to be performed within exempted hours; therefore, construction activities would have a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Maintenance activities, including fence and fuelbreak maintenance, would generate noise that could exceed Colusa County's noise ordinance; however, maintenance activities are expected to be performed within exempted hours, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-2: Expose Persons to or Generation of Excessive Groundborne Vibration or Groundborne Noise Levels

Construction of a fence, demolition of structures, and creation of a fuelbreak within the Project Buffer would not generate groundborne vibration or groundborne noise. This would result in **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

In addition, operation and maintenance activities, including fence and fuelbreak maintenance, would not generate groundborne vibration or groundborne noise, resulting in **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-3: Result in a Substantial Permanent Increase in Ambient Noise Levels in the Project Vicinity above Levels Existing without the Project

Construction and demolition activities associated with the Project Buffer would result in temporary impacts, not permanent impacts, resulting in **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

Long-term operation of the Project Buffer would not require the utilization of noise generating facilities or activities, resulting in **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

Maintenance activities associated with the Project Buffer would result in temporary and periodic increase in noise levels, and would not result in a permanent increase in ambient noise levels, resulting in **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-4: Result in a Substantial Temporary or Periodic Increase in Ambient Noise Levels in the Project Vicinity above Levels Existing without the Project

Construction and demolition activities would result in temporary noise impacts and a **less-than-significant impact** at noise-sensitive receptors when compared to the Existing Conditions/No Project/No Action Condition.

Operations activities would be a long-term impact, not a temporary or periodic increase in noise levels. This would result in **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

Maintenance activities would be a long-term impact that would result in temporary and periodic increases in ambient noise levels for residences located within the vicinity of the Project Buffer. Noise levels associated with fence maintenance and temporary and periodic fuelbreak maintenance would not be substantial, resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

27.3.5 Impacts Associated with Alternative B

27.3.5.1 Extended and Secondary Study Areas – Alternative B

Construction, Operation, and Maintenance Impacts

The impacts associated with Alternative B, as they relate to excessive noise levels (**Impact Noise-1**), excessive groundborne vibration or noise levels (**Impact Noise-2**), permanent increases in ambient noise levels (**Impact Noise-3**), and temporary or periodic increases in ambient noise levels (**Impact Noise-4**) would be the same as described for Alternative A for the Extended and Secondary study areas.

27.3.5.2 Primary Study Area – Alternative B

Construction, Operation, and Maintenance Impacts

Many of the same Project facilities are included in Alternatives A and B (see Table 3-1 in Chapter 3 Description of the Sites Reservoir Project Alternatives). These facilities would require the same construction methods and operation and maintenance activities regardless of alternative, and would thus result in the same construction, operation, and maintenance impacts to noise. Therefore, unless explicitly discussed below, impacts at all Project facilities are anticipated to be the same as described for Alternative A.

Sites Reservoir Complex

Alternative B includes the construction of a 1.8-million-acre-foot reservoir. The increased reservoir size necessitates the addition of two saddle dams and the movement of various associated Project features. However, similar to Alternative A, there is only one noise-sensitive receptor located within a 0.5-mile radius of these facilities. Also similar to Alternative A, construction of all facilities included in the Sites Reservoir Complex under Alternative B is anticipated to occur over a duration of 8 years; however, there would be a greater number of workers and equipment being utilized each day.

The Alternative B Road Relocations and South Bridge would differ slightly from those described for Alternative A. The lengths of the saddle dam access roads included in Alternative A would be reduced in Alternative B because the dams would be larger and would be located closer to the main roads. In addition, an extension of an access road would be constructed for Alternative B to provide access from Saddle Dam 3 to Saddle dams 1 and 2. However, there are no noise-sensitive receptors located within a 0.5-mile radius of these portions of the road relocations. Construction activities along the Road 69 segment of the North Road in the vicinity of a residence would have the same impact on excessive noise levels (**Impact Noise-1**), excessive groundborne vibration or noise levels (**Impact Noise-2**), permanent increases in ambient noise levels (**Impact Noise-3**), and temporary or periodic increases in ambient noise levels (**Impact Noise-4**) as described for Alternative A.

Delevan Pipeline Complex

Alternative B would replace the Delevan Pipeline Intake/Discharge Facilities with the Delevan Pipeline Discharge Facilities. The Delevan Pipeline would be operated as a release-only pipeline, so the associated Delevan Pipeline Discharge Facilities would, therefore, not include a fish screen or any of the facilities needed for the pumping and generating operations that were described for Alternative A. The construction, operation, and maintenance impacts on noise levels from this facility are discussed below.

The proposed Delevan Pipeline Discharge Facilities would be smaller than the Delevan Pipeline Intake/Discharge Facilities included in Alternative A. The proposed Discharge Facility would also have fewer Project features, which would result in a shorter construction timeframe for this facility when compared to the facilities included in Alternative A.

Despite these differences, the construction, operation, and maintenance activities associated with the Delevan Pipeline Discharge Facilities would have the same impact on excessive noise levels (**Impact Noise-1**), excessive groundborne vibration or noise levels (**Impact Noise-2**), permanent increases in ambient noise levels (**Impact Noise-3**), and temporary or periodic increases in ambient noise levels (**Impact Noise-4**) as described for Alternative A.

Overhead Power Lines and Substations

The Alternative B Sites/Delevan Overhead Power Line would differ from Alternative A. Alternative B includes no overhead power line alignment between the Sacramento River and the WAPA or PG&E transmission lines. The Sites/Delevan Overhead Power Line would be approximately 3 miles long, from the proposed Sites Electrical Switchyard to the WAPA or PG&E transmission line, which are located west of the TRR. However, similar to Alternative A, there are no noise-sensitive receptors located within a 0.5-mile radius of this construction disturbance area. Therefore, impacts on excessive noise levels (**Impact Noise-1**), excessive groundborne vibration or noise levels (**Impact Noise-2**), permanent increases in ambient noise levels (**Impact Noise-3**), and temporary or periodic increases in ambient noise levels (**Impact Noise-4**) would be the same as described for Alternative A.

Project Buffer

The size of the Alternative B Project Buffer would differ from that of Alternative A because the footprints of some of the Project facilities that are surrounded by the Project Buffer would differ between the alternatives. However, the boundary of the Project Buffer would be the same for Alternatives A and B and would be the same distance from noise-sensitive receptors as described for Alternative A. In addition, these differences in the size of the area included within the buffer would not change the type of

construction, operation, and maintenance activities that were described for Alternative A. The Project Buffer would, therefore, have the same impact on excessive noise levels (**Impact Noise-1**), excessive groundborne vibration or noise levels (**Impact Noise-2**), permanent increases in ambient noise levels (**Impact Noise-3**), and temporary or periodic increases in ambient noise levels (**Impact Noise-4**) as described for Alternative A.

27.3.6 Impacts Associated with Alternative C

27.3.6.1 Extended and Secondary Study Areas – Alternative C

Construction, Operation, and Maintenance Impacts

The impacts associated with Alternative C, as they relate to excessive noise levels (**Impact Noise-1**), excessive groundborne vibration or noise levels (**Impact Noise-2**), permanent increases in ambient noise levels (**Impact Noise-3**), and temporary or periodic increases in ambient noise levels (**Impact Noise-4**) would be the same as described for Alternative A for the Extended and Secondary study areas.

27.3.6.2 Primary Study Area – Alternative C

Construction, Operation, and Maintenance Impacts

Many of the same Project facilities are included in Alternatives A and C (see Table 3-1 in Chapter 3 Description of the Sites Reservoir Project Alternatives). These facilities would require the same construction methods and operation and maintenance activities regardless of alternative, and would thus result in the same construction, operation, and maintenance impacts to noise. Therefore, unless explicitly discussed below, impacts at all Project facilities are anticipated to be the same as described for Alternative A.

Sites Reservoir Complex

The Alternative C design of the Sites Reservoir Inundation Area and Sites Reservoir Dams is the same as described for Alternative B. Therefore, there are no noise-sensitive receptors located within a 0.5-mile radius of these proposed facilities. These facilities would require the same construction methods and operation and maintenance activities regardless of alternative, and would, therefore, result in the same construction, operation, and maintenance impacts to excessive noise levels (**Impact Noise-1**), excessive groundborne vibration or noise levels (**Impact Noise-2**), permanent increases in ambient noise levels (**Impact Noise-3**), and temporary or periodic increases in ambient noise levels (**Impact Noise-4**) as described for Alternative B.

The Alternative C design of the Road Relocations, South Bridge, TRR Pipeline Road, and the Electrical Distribution Lines is the same as described for Alternative B. Therefore, they would be located the same distance from noise-sensitive receptors as described for Alternative B. These facilities would require the same construction methods and operation and maintenance activities regardless of alternative, and would, therefore, result in the same construction, operation, and maintenance impacts to excessive noise levels (**Impact Noise-1**), excessive groundborne vibration or noise levels (**Impact Noise-2**), permanent increases in ambient noise levels (**Impact Noise-3**), and temporary or periodic increases in ambient noise levels (**Impact Noise-4**) as described for Alternative B.

Project Buffer

The boundary of the Project Buffer would be the same for all alternatives, but because the footprints of some of the Project facilities that are surrounded by the Project Buffer would differ between the alternatives, the acreage of land within the Project Buffer would also differ. However, this difference in the size of the area included within the buffer would not change the type of construction, operation, and maintenance activities that were described for Alternative B. It would, therefore, have the same impact on excessive noise levels (**Impact Noise-1**), excessive groundborne vibration or noise levels (**Impact Noise-2**), permanent increases in ambient noise levels (**Impact Noise-3**), and temporary or periodic increases in ambient noise levels (**Impact Noise-4**) as described for Alternative A.

27.3.7 Impacts Associated with Alternative D

27.3.7.1 Extended and Secondary Study Areas – Alternative D

Construction, Operation, and Maintenance Impacts

The impacts associated with Alternative D, as they relate to excessive noise levels (**Impact Noise-1**), excessive groundborne vibration or noise levels (**Impact Noise-2**), permanent increases in ambient noise levels (**Impact Noise-3**), and temporary or periodic increases in ambient noise levels (**Impact Noise-4**) would be the same as described for Alternative C for the Extended and Secondary study areas.

27.3.7.2 Primary Study Area – Alternative D

Construction, Operation, and Maintenance Impacts

Many of the same Project facilities are included in Alternatives A, B, C, and D (see Table 3-1 in Chapter 3 Description of the Sites Reservoir Project Alternatives). These facilities would require the same construction methods and operation and maintenance activities regardless of alternative, and would thus result in the same construction, operation, and maintenance impacts as they relate to excessive noise levels (**Impact Noise-1**), excessive groundborne vibration or noise levels (**Impact Noise-2**), permanent increases in ambient noise levels (**Impact Noise-3**), and temporary or periodic increases in ambient noise levels (**Impact Noise-4**). Therefore, unless explicitly discussed below, impacts under Alternative D are anticipated to be the same as those described for Alternatives A, B and C.

Sites Reservoir Complex

The Alternative D design of the Sites Reservoir Complex is generally the same as that described for Alternatives B and C. However, Alternative D would include the development of only two recreation areas (Stone Corral Creek Recreation Area and Peninsula Hills Recreation Area) instead of five for each of the other alternatives. Alternative D would include a boat ramp at the western side of the reservoir where the existing Sites Lodoga Road would be inundated. As a result of the modified recreation areas, the road segments providing access to Lurline Headwaters Recreation Area required for the other alternatives would not be required; however, Alternative D includes an additional 5.2 miles of roadway from Huffmaster Road to Leesville Road. Despite these differences, there are no noise-sensitive receptors located within a 0.5-mile radius of these proposed facilities, and they would require the same construction methods and operation and maintenance activities. Therefore, the modified Sites Reservoir Complex facilities would result in the same construction, operation, and maintenance impacts as they relate to excessive noise levels (**Impact Noise-1**), excessive groundborne vibration or noise levels (**Impact**

Noise-2), permanent increases in ambient noise levels (**Impact Noise-3**), and temporary or periodic increases in ambient noise levels (**Impact Noise-4**) as those described for Alternatives A, B and C.

Delevan Pipeline Complex

For Alternative D, the Delevan Pipeline alignment would be approximately 50 to 150 feet south of the alignment for Alternatives A, B, and C. This alignment takes advantage of existing easements to reduce impacts on local landowners. The shift in alignment is not expected to result in a change in noise associated with construction, operation, or maintenance activities when compared to the other Project alternatives.

TRR Complex

Under Alternative D, the TRR would be slightly smaller (approximately 80 acres smaller for Alternative D) when compared to the TRR for all other alternatives; however, the smaller TRR would not be expected to change the potential impacts related to noise when compared to the other alternatives.

Overhead Power Lines and Substations

Alternative D includes a north-south alignment of the Delevan Overhead Power Line, rather than the east-west alignment between the TRR and the Delevan Pipeline Intake/Discharge Facilities. This overhead power line would extend approximately 11 miles south from the Delevan Pipeline Intake/Discharge Facilities, approximately 1 mile longer than the length of the power line for Alternatives A, B, and C, and would connect to a new substation west of Colusa in addition to the substation near the Holthouse Reservoir. The overhead power line would primarily be within an existing PG&E electrical transmission corridor; however, it would require installation of new 100-foot-tall poles along the length of the alignment. The north-south aligned Delevan Overhead Power Line would pass a limited number of businesses, including the Colusa Casino, the Colusa Indian Wellness Center, and the Colusa Indian Health Clinic, as well as rural and urban residences, which increase in density as the facilities enter the City limits. The construction of this proposed re-alignment would be anticipated to occur over the same duration as described for all other alternatives – approximately 1 year.

Despite the modified alignment, the Delevan Overhead Power Line and new substation would result in the same construction, operation, and maintenance impacts as they relate to excessive noise levels (**Impact Noise-1**) and excessive groundborne vibration or noise levels (**Impact Noise-2**) as those under the other alternatives. The remaining impacts are described below.

Impact Noise-3: Result in a Substantial Permanent Increase in Ambient Noise Levels in the Project Vicinity above Levels Existing without the Project

Construction of the overhead power lines, substations, and distribution lines would result in temporary impacts, not permanent impacts on noise, resulting in **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

Consistent with the other alternatives, the long-term operation of the Delevan Overhead Power Line under Alternative D would result in noise generated from a “hum,” which would be more audible in summer months. This noise source would not cause a substantial permanent increase in ambient noise levels because it would be located within an existing transmission line corridor. This would, therefore, result in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Maintenance of the proposed north-south aligned Delevan Overhead Power Line would generate noise from vehicles and equipment on a periodic and temporary basis, not permanently. Therefore, there would be **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-4: Result in a Substantial Temporary or Periodic Increase in Ambient Noise Levels in the Project Vicinity above Levels Existing without the Project

Construction activities associated with the north-south aligned Delevan Overhead Power Line would result in temporary increases in noise, emitting noise levels of between 80 and 85 dBA at a 50-foot distance, which would attenuate to approximately 55 dBA at 0.5 mile. This would result in a temporary increase in ambient noise levels; however, given that the construction would occur in each location for a relatively short period of time, in order to construct 11 miles of overhead power line support foundations in 1 year, and the work would be performed during work hours exempted by Colusa County, this would result in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Operations activities associated with the Sites/Delevan Overhead Power Line would be a long-term impact, not a temporary or periodic increase in noise levels. Therefore, operations would result in **no impact** when compared to the Existing Conditions/No Project/No Action Condition.

Maintenance activities associated with the Sites/Delevan Overhead Power Line would be a long-term impact that would result in a temporary and periodic increase in noise levels as a result of inspections and maintenance. These increases are not anticipated to be substantial and, given the length of the Sites/Delevan Overhead Power Line, inspection and maintenance activities are not expected to occur frequently near any one sensitive receptor, therefore resulting in a **less-than-significant impact** when compared to the Existing Conditions/No Project/No Action Condition.

Impact Noise-5: Expose People Residing or Working in the Project Area to Excessive Noise Levels (for a Project Located within an Airport Land Use Plan or, Where Such a Plan Has Not Been Adopted, within 2 Miles of a Public Airport or Public Use Airport)

Although the exact alignment of the proposed Sites/Delevan Overhead Power Line and location of the new substation may be slightly modified, the southern end of the alignment and substation are expected to be approximately 2.25 miles from a public airport and would not be located within the jurisdiction of an Airport Land Use Plan. Therefore, unless the alignment and footprint change substantially, construction workers and operation and maintenance personnel would not be exposed to airport-associated noise levels, and there would be **no impact** on noise levels for people working or residing in the area.

Project Buffer

The boundary of the Project Buffer for Alternative D would be the same as for Alternatives A, B, and C, but because the footprints of some of the Project facilities that are surrounded by the Project Buffer would differ between the alternatives, the acreage of land within the Project Buffer would also differ. However, this difference in the size of the area included within the buffer would not change the type of construction, operation, and maintenance activities that were described for the other alternatives. It would, therefore, have the same impacts associated with excessive noise levels (**Impact Noise-1**), excessive groundborne vibration or noise levels (**Impact Noise-2**), permanent increases in ambient noise levels (**Impact Noise-3**), and temporary or periodic increases in ambient noise levels (**Impact Noise-4**), as those described for Alternative A.

27.4 Mitigation Measures

Because no potentially significant impacts were identified, no mitigation is required or recommended. Environmental commitments are included in all Project alternatives and discussed in Chapter 3 Description of the Sites Reservoir Project Alternatives.

This page intentionally left blank.