

4.4 NOISE

4.4.1 EXISTING CONDITIONS

Community noise levels are measured in terms of the A-weighted decibel (dBA). The community noise equivalent level (CNEL) has been adopted (by reference) by Sacramento County to evaluate noise impacts. CNEL represents a time-weighted 24-hour average noise level based on the A-weighted decibel. A detailed description of noise scales and measurement definitions is provided in Appendix D of this EIR.

Federal, state and local governments have established noise standards and guidelines to protect citizens from potential hearing damage and various other adverse physiological and social effects associated with noise. The applicable standards and guidelines for the Zone 40 study area are briefly discussed in Appendix D.

The existing noise environment in the project area is primarily influenced by the noise produced from major freeways, primary arterials, city streets, trains; and aircraft noise from local airports. In general, areas containing noise-sensitive land uses (i.e., residences) are quiet, except those near major roadways, airports, or industrial areas. Results from a countywide community noise survey indicate that typical noise levels in noise-sensitive areas of the county are in the range of 50 to 60 dBA L_{dn} .

SENSITIVE RECEPTORS

Although noise pollution can affect all segments of the population, certain groups are more susceptible to its adverse affects than others. Children, the elderly, and the chronically or acutely ill are the most sensitive population groups, and hospitals, churches, and residences are the most susceptible land uses.

4.4.2 ENVIRONMENTAL IMPACTS

The potential noise effects of the project on adjacent areas can be separated into short-term and long-term impacts. Short-term impacts would result from noise generated by equipment during the construction phase. Long-term impacts would be associated with future project-related traffic noise and project-related stationary and operational noise impacts to the adjacent area.

THRESHOLDS OF SIGNIFICANCE

A significant impact would occur if project noise levels exceed the Sacramento County noise standards presented in Tables 4.4-1 and 4.4-2.

Noise impacts also would be considered significant if implementing the 2002 Zone 40 WSMP would result in a noticeable increase of 3 dBA or greater along roadways located in the vicinity of noise-sensitive receptors.

Table 4.4-1 Sacramento County Noise Level Performance Standards for Residential Areas Affected by Non-transportation Noise		
Statistical Noise Level Descriptor	Exterior Noise Level Standard	
	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
L ₅₀	50 dB	45 dB
L _{max}	70 dB	65 dB

Notes:
 These standards are for planning purposes and may vary from standards of the County Noise Ordinance, which are established for enforcement purposes
 These standards apply to new or existing residential areas affected by new or existing non-transportation sources.
 Source: Sacramento County 1993

Table 4.4-2 Sacramento County Noise Ordinance Standards			
Cumulative Duration of the Intrusive Sound	Descriptor	Exterior Noise Standard (dB)	
		Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
30–60 minutes per hour	L ₅₀	55	50
15–30 minutes per hour	L ₂₅	60	55
5–15 minutes per hour	L ₀₈	65	60
1–5 minutes per hour	L ₀₂	70	65
Level not to be exceeded at any time	L _{max}	75	70

Source: EDAW 2003

IMPACT ANALYSIS

Impact 4.4-1: Short-Term Construction-Generated Noise. Construction activities associated with development of project facilities could exceed County noise thresholds at nearby noise-sensitive land uses. This would be a potentially significant noise impact.

The principal short-term noise impact associated with the 2002 Zone 40 WSMP would occur during construction. Construction noise represents a short-term impact on ambient noise levels on and around the sites over the entire period of project construction. Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. The U.S. Environmental Protection Agency has found that the noisiest equipment types operating at construction sites typically range from 88 dBA to 91 dBA at 50 feet. Typical operating cycles may involve 2 minutes of full power, followed by 3 or 4 minutes at lower settings. Although noise ranges were found to be similar for all construction phases, the erection phase tended to be less noisy. Peak noise levels vary from 79 dBA to 88 dBA at 50 feet during the erection phase of construction. Table 4.4-3 lists noise levels generated by typical construction equipment at a distance of 50 feet and the suggested sound levels for analysis.

Table 4.4-3 Noise Levels Generated by Typical Construction Equipment		
Type of Equipment	Range of Sound Levels	Suggested Sound Levels for Analysis
	(dBA at 50 feet)	
Pile driver (12,000-18,000 ft-lb/blow)	81 - 96	93
Rock drill	83 - 99	96
Jack hammer	75 - 85	82
Pneumatic tools	78 - 88	85
Pumps	68 - 80	77
Dozer	85 - 90	88
Tractor	77 - 82	80
Concrete mixer	75 - 88	85
Front-end loader	86 - 90	88
Hydraulic backhoe	81 - 90	86
Hydraulic excavator	81 - 90	86
Grader	79 - 89	86
Air compressor	76 - 86	86
Truck	81 - 87	86
Source: EPA 1971		

Implementing the 2002 Zone 40 WSMP involves construction of water conveyance pipelines, expansion of an existing water treatment plant or construction of a new water treatment plant, groundwater treatment facilities, and groundwater injection wells. As previously noted, construction noise would vary depending on the specific construction activities involved. The following analysis identifies potential noise impacts using assumptions regarding the types of equipment to be used during construction activities at each of the proposed facilities.

Water Conveyance Pipelines

The placement of new water conveyance pipelines would be primarily within existing roadways. Noise sensitive receptors that occur along the alternative alignment routes include residential dwellings, schools, churches, and medical facilities. These sensitive receptors may be adversely affected by construction-generated noise.

Based on construction equipment used for similar projects, construction of the water conveyance pipelines would be anticipated to include the use of backhoes, forklifts, trucks, and various other equipment. Assuming the simultaneous operation of construction equipment, the maximum exterior sound levels would be approximately 89 dBA at a distance of 50 feet. Depending on the duration and type of construction activities being performed, noise levels at sensitive receptors located within 2,500 feet of construction activities could exceed 55 dBA.

Excessive noise levels occurring during the evening and nighttime hours could result in sleep disruption, which is generally considered to result in the greatest impact and annoyance to noise-sensitive receptors. Construction of the proposed water conveyance pipelines could exceed County noise thresholds; therefore, this would be a potentially significant noise impact.

Water Treatment Plant

The water treatment plant scenarios consider expansion of the Sacramento River Water Treatment Plant or construction of a new water treatment plant. Construction activities would occur in phases with the initial phase of development involving site preparation activities, including site clearing, grading, and excavation. Subsequent phases would include the construction and installation of onsite utilities and the placement of mechanical and electrical equipment. Noise-sensitive receptors in the vicinity could be adversely affected by construction-generated noise. Residential dwellings are located 100 feet northwest and 2,000 feet northeast of the Freeport intake project site, and a youth sports complex is located 1,000 feet east of the site. No noise sensitive land uses are located at the Bufferlands site or the City of Sacramento Water Treatment Plant site. Further, noise impacts associated with the expansion of the City's Water Treatment Plant were appropriately evaluated in the Final EIR for the City of Sacramento Water Facilities Expansion Project certified by the City in November 2000. Noise-sensitive receptors in the vicinity of the Central Water Treatment Plant would consist of agricultural residences and a few churches. Distance between plant facilities and these noise receptors would vary from approximately 500 feet to 2 miles, depending on the location of the plant.

Peak noise-generating construction activities would likely occur during the initial phase of development assuming the use of multiple heavy-duty construction equipment associated with site preparation activities and the installation of onsite facilities. Based on construction equipment used for similar projects, equipment used in the initial phase of construction activities would likely include the use of a grader, scraper, backhoe, front-end loader, trucks, and various other types of equipment. Assuming the simultaneous operation of onsite construction equipment, maximum exterior noise levels would be approximately 93 dBA at a distance of 50 feet.

Depending on the duration and type of construction activities being performed, noise levels at sensitive receptors located within approximately 3,500 feet of construction activities could exceed 55 dBA. This would be a potentially significant impact.

Groundwater Facilities

Implementing the 2002 Zone 40 WSMP involves the construction or expansion of a number of groundwater extraction wells and groundwater treatment facilities. The specific location of these facilities has not yet been identified. As previously discussed, noise sensitive receptors in the vicinity could be adversely affected by construction-generated noise, including residential dwellings, schools, churches, and medical facilities. Based on construction equipment used for similar projects, anticipated equipment used during construction activities would include the

use of a drill rig, portable hoist, front-end loader, truck, and various other types of equipment. Assuming the simultaneous operation of construction equipment, maximum intermittent exterior sound levels could reach approximately 97 dBA at 50 feet. Depending on the duration and type of construction activities being performed, noise levels at sensitive receptors located approximately 4,500 feet from construction activities could exceed 55 dBA. Construction activities associated with the proposed groundwater injection wells and treatment facilities would be a potentially significant noise impact.

Impact 4.4-2: Offsite Construction Traffic Noise. Construction traffic volumes would not be anticipated to change traffic noise contours of area roadways and would not result in a substantial increase (i.e. 3 dBA or greater) in average daily noise levels at nearby noise-sensitive receptors. This would be a less-than-significant impact.

Construction of the proposed facilities would generate heavy truck traffic associated with construction activities. Based on similar projects, offsite truck traffic associated with the construction of the proposed surface water diversion structure, water conveyance pipelines, water treatment plants, groundwater extraction wells, and groundwater treatment facilities would each generate approximately 4 daily truck trips and approximately 20 to 40 one-way daily construction employee trips. Construction of the proposed water treatment plant is anticipated to generate a total of 40 one-way daily truck trips and 100 one-way daily construction employee trips during peak periods of construction.

Noticeable increases of 3 dBA (CNEL/L_{dn}) typically occur with a doubling of roadway traffic volumes. Noise impacts on sensitive receptors (i.e., greater than 60 dBA CNEL/L_{dn}) do not typically occur until several thousand vehicles are on a roadway. Assuming that the construction of the proposed facilities were to occur simultaneously, the most intensive construction activities associated with the 2002 Zone 40 WSMP would generate an average of 140 one-way truck and 440 one-way employee trips daily. Because project-generated construction traffic volumes would not substantially increase the number of vehicles on area roadways in comparison to existing roadway volumes (see Section 4.5, Transportation), construction associated with the 2002 Zone 40 WSMP would not result in a change in the traffic noise contours of area roadways and would not result in a substantial increase (i.e., 3 dBA or greater) in average daily traffic noise levels at nearby receptors. Temporary increases in offsite construction traffic noise levels would be less than significant.

Impact 4.4-3: Long-Term Traffic Noise. Project-generated traffic volumes would not substantially increase existing roadway volumes. Operation of the proposed facilities would not result in a noticeable change in the traffic noise contours of area roadways and would not result in a substantial increase (i.e., 3 dBA or greater) in average daily traffic noise levels at nearby receptors. As a result, long-term increases in offsite traffic noise levels would be less than significant.

Operation of the proposed facilities would result in increased use of motor vehicles, primarily associated with employees traveling to and from the proposed water treatment plant and routine maintenance and inspection activities. Based on the operation of similar facilities, the

2002 Zone 40 WSMP would likely require the addition of 20 to 40 full-time employees. Assuming an average of two trips per employee, operation of the proposed facilities would result in a maximum of approximately 80 one-way daily employee trips. Based on estimates obtained from similar facilities, routine maintenance and inspection activities, including the delivery of equipment and supplies to the treatment plant, would result in approximately 30 one-way additional daily trips on area roadways.

As previously discussed, noticeable increases of 3 dBA (CNEL/L_{dn}) typically occur with a doubling of roadway traffic volumes. Noise impacts to sensitive receptors (i.e., greater than 60 dBA CNEL/ L_{dn}) do not typically occur until several thousand vehicles are on a roadway. Due to the relatively low project-generated traffic volumes, operation of the proposed facilities would not result in a change in the traffic noise contours of area roadways and would not result in a substantial increase (i.e., 3 dBA or greater) in average daily traffic noise levels at nearby receptors. As a result, long-term increases in offsite traffic noise levels would be less than significant.

Impact 4.4-4: Stationary Source Noise. Operation of proposed stationary noise sources could result in noise levels at nearby noise-sensitive receptors which could exceed County noise ordinance standards. This would be a potentially significant impact.

Implementation of the proposed facilities could increase noise levels in noise-sensitive areas. The potential increases would depend on the design and location of stationary noise-generating equipment. Noise from stationary point sources, such as water pump motors, typically decrease at a rate of about 6 dBA per doubling of distance from the source. For purposes of this analysis, sound levels generated during the various operational activities were estimated based on this noise attenuation rate and assuming the simultaneous operation of identified equipment at each facility. Noise-producing equipment typically associated with these types of facilities includes electrical pump motors, transformers, and emergency use power generators. Depending on the type and size of the pumps required, operational noise levels can range from approximately 65 to 90 dBA at 10 feet. Electrical generators and transformers can generate noise levels of approximately 80 dBA at 3 feet (EPA 1971). Additional equipment, such as water filtration and chlorination systems typically generate noise levels of approximately 58 dBA or less, at 3 feet.

Pumps used for water conveyance systems typically generate noise levels ranging from approximately 70 to 75 dBA at 3 feet. Assuming a maximum noise level of 75 dBA at 3 feet and no noise attenuation from intervening structures (e.g., buildings, fences) or vegetation, areas within approximately 500 feet of the pump stations could exceed the County's maximum allowable noise standards for stationary sources.

Operational noise levels associated with proposed facilities, depending on the location in relation to noise-sensitive land uses, could exceed County Noise Ordinance standards. This would be a potentially significant impact.

4.4.3 ENVIRONMENTAL MITIGATION GUIDELINES

No environmental mitigation guidelines are necessary for the following less-than-significant impacts.

4.4-2: Offsite Construction Traffic Noise

4.4-3: Long-Term Traffic Noise

The following environmental mitigation guidelines are provided for significant and potentially significant impacts.

4.4-1: Short-Term Construction-Generated Noise

- ▶ Construction activities shall be limited to the hours of 6:00 a.m. and 8:00 p.m. on weekdays and to the hours of 7:00 a.m. and 8:00 p.m. on weekends.
- ▶ Construction equipment shall be properly outfitted and maintained with noise reduction devices to minimize construction-generated noise. Wherever possible, noise-generating construction equipment shall be shielded from nearby residences by noise-attenuating buffers, such as structures or trucks. Stationary construction equipment shall be centrally located onsite at the greatest distance possible from nearby noise-sensitive receptors.
- ▶ Prior to construction of project facilities, the contractor shall develop and implement a construction noise attenuation plan as needed on a project-by-project basis to reduce noise-related impacts at nearby sensitive receptors to the degree feasible.

Because it is unknown whether construction contractors could comply with the above mitigation, this impact would be potentially significant and unavoidable.

4.4-4: Stationary Source Noise. Project-specific CEQA review will be conducted prior to the construction of any project facilities. Stationary noise sources located at the diversion structure, water treatment plant, groundwater injection wells, and groundwater treatment facilities shall be designed to meet Sacramento County noise standards and shall be located as far as possible from nearby noise-sensitive land uses. Stationary noise sources shall be sufficiently designed and constructed, including the incorporation of shielding or enclosures, to ensure that operational noise levels at the nearest noise-sensitive land uses comply with the noise standards identified in the County of Sacramento noise ordinance. Project-specific environmental mitigation measures are expected to reduce potential impacts to levels at or below standards. However, because of the uncertainty associated with facilities that have not yet been designed, this impact is considered potentially significant and unavoidable.

4.4.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Adherence to the above environmental mitigation guidelines would reduce the construction-related and stationary source noise impacts; however, it may not reduce these impacts to a less-than-significant level. These would be potentially significant and unavoidable impacts of the project.