

# 5.6 Noise

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The CALFED Bay-Delta Program is not expected to result in any long-term potentially significant adverse noise impacts. Potential long-term noise benefits could result from Program actions that increase open space by converting agricultural land to wildlife habitat.

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## 5.6 Noise

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### 5.6.1 SUMMARY

Sounds accentuate our everyday life, whether it's the steady hum of machinery or the buzz of bees in the garden. Our world of sound can be punctuated with bird song or the blare of a car radio passing by. Noise resources are closely associated with land use and population density. In California, projected population growth can reasonably be expected to increase some types of noise levels, regardless of CALFED Bay-Delta Program (Program) activities. Overall, Program actions will not contribute substantially either beneficially or adversely to noise.

**Preferred Program Alternative.** Restoration projects, storage and conveyance projects, water quality actions, and levee system improvements could contribute to short-term construction-related potentially significant adverse noise impacts under the Preferred Program Alternative. These impacts can be mitigated to less-than-significant levels. Most noise-related impacts would occur in the Delta Region because more Program-related construction would take place in this area. Facility operation and maintenance activities could result in long-term potentially significant adverse noise impacts, but these impacts also can be mitigated to less-than-significant levels.

The Ecosystem Restoration and the Levee System Integrity Programs could result in long-term noise benefits from land conversion. For example, changes from cultivated agricultural land uses to riparian habitat could decrease the level of noise associated with farm machinery.

**Alternatives 1, 2, and 3.** Alternatives 1, 2, and 3 would result in similar benefits and potentially significant adverse impacts as those described for the Preferred Program Alternative. Alternatives 2 and 3 have greater potential for short-term impacts associated with construction noise because of larger-scale water conveyance projects possible under these alternatives.

The following table presents the potentially significant adverse impacts and mitigation strategies associated with the Preferred Program Alternative. Mitigation strategies that correlate to each listed impact are noted in parentheses after the impact.

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Noise resources are closely associated with land use and population density. In California, projected population growth can reasonably be expected to increase some types of noise levels, regardless of CALFED Bay-Delta Program activities.

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**Potentially Significant Adverse Impacts and Mitigation Strategies  
Associated with the Preferred Program Alternative**

**Potentially Significant Adverse Impacts**

Increased noise from heavy equipment operation during construction (1,4,5,6,7,8,9,10,11).

Increased noise from increases in traffic along major access and haul routes, and increased vehicle traffic associated with the construction labor force (2,3,4,8,11).

Increased noise from facility operation of spillways, pumping generating plants, and switchyards (1,4,5,6,9,10).

Increased noise from automobile or boat traffic associated with recreational use at enlarged reservoirs (10).

**Mitigation Strategies**

1. Using electrically powered equipment instead of internal combustion equipment where feasible.
2. Locating staging and stockpile areas, and supply and construction vehicle routes as far away from sensitive receptors as possible.
3. Establishing and enforcing construction site and haul road speed limits.
4. Restricting the use of bells, whistles, alarms, and horns to safety warning purposes.
5. Designing equipment to conform with local noise standards.
6. Locating equipment as far from sensitive receptors as possible.
7. Equipping all construction vehicles and equipment with appropriate mufflers and air inlet silencers.
8. Restricting hours of construction to periods permitted by local ordinances.
9. Locating noisy equipment within suitable sound-absorbing enclosures.
10. Erecting sound wall barriers or noise attenuation berms between noise generation sources and sensitive receptors.
11. Scheduling construction activities to avoid breeding seasons of sensitive species and peak recreation use.

**No potentially significant unavoidable noise impacts are associated with the Preferred Program Alternative.**

## 5.6.2 AREAS OF CONTROVERSY

Areas of controversy as defined by CEQA involve differences of opinion among technical experts or information that is not available and cannot be readily obtained. According to this definition, no areas of controversy relate to noise. In addition, no areas of concern are associated with noise.



### 5.6.3 AFFECTED ENVIRONMENT/ EXISTING CONDITIONS

#### 5.6.3.1 ALL REGIONS

Historically, the noise character of the five Program regions and the upper watershed areas was dominated by sounds from natural sources. Beginning in the 1850s, the advent of mining, timber harvesting, and other human activities brought higher noise levels associated with these uses. The development of new highways, water resources, and residential communities added construction, vehicular, and urban noises.

Noise level measurements are expressed in units called "decibels" and are related to human perception of loudness on a scale called "dBA." Another measurement,  $L_{dn}$  (day-night sound level), is the average sound level for a 24-hour period.  $L_{dn}$  is usually expressed in dBA. The noise planning standards and the noise level control ordinances in the communities within the five Program regions are fairly uniform, typically ranging within 5 dBA for a similar land use category. Land use categories throughout the Program study area range from undeveloped rural land to densely developed urban land. The noise levels associated with the range of land uses occurring in the Program area, in turn, range from quiet to very noisy.

Based on the results of environmental noise studies conducted in the United States and in the study area, planners and decision makers generally accept that a consistent and direct relationship exists between population density and the associated noise level environment. The more rural and less populated (and less developed) areas in the study area typically have lower noise levels (measured in dBA  $L_{dn}$ ) than the more urban and densely populated (and more developed) areas. Table 5.6-1 presents this relationship between the population density and associated noise levels in the study area.

It was assumed for this analysis that the affected environment includes the range of population density and land use categories presented in Table 5.6-1, plus potentially noisier land uses, such as industrial and commercial, and areas adjacent to transportation corridors and airports.

The development of new highways, water resources, and residential communities added construction, vehicular, and urban noises.

Table 5.6-1. Relationship Between Population Density and Average Day-Night Noise Levels

LOCATION	PERSONS/SQ. KM	$L_{dn}$ (dBA)
Rural		
Undeveloped	8	35
Partially developed	23	40
Suburban		
Quiet	77	45
Normal	230	50
Urban		
Normal	770	55
Noisy	2,300	60
Very noisy	7,700	65

Source:  
National Research Council, USA.



## 5.6.4 ASSESSMENT METHODS

For this analysis, the primary sources of project-related noise were assumed to be construction and operations activities. Because construction-related impacts would occur only during the construction period, they are considered direct and short-term impacts. Typical sources of construction-related noise would include the following:

- Heavy equipment operation.
- Blasting operations at fill material quarry sites.
- Truck traffic along major access and haul routes associated with hauling fill and spoil material.
- Vehicle traffic associated with the construction labor force.

Facility operation and maintenance activities also would become noise sources. Because operations-related impacts would continue throughout the operation of the Program, these impacts are considered indirect and long term. Localized increases in noise levels would occur at spillways, pumping generation plants, and switchyards. Traffic and boating activities associated with recreational use of enlarged reservoirs could generate additional noise.

The specific locations of potential new facilities and the associated site-specific noise generation characteristics for each alternative are not yet known. Therefore, the following assumptions about the noise-generating potential of the alternatives were made:

- Standardized levels of construction and operations would occur for each alternative.
- The proximity of people and sensitive receptors to proposed sources of noise would be equal for all alternatives.
- The density of population or sensitive receptors in the area of potential effect would be equal for all alternatives.

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The specific locations of potential new facilities and the associated site-specific noise generation characteristics for each alternative are not yet known.

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For this analysis, the evaluation of potential noise effects from the alternatives primarily is concerned with the amount of construction activities and the extent and type of facilities likely to be constructed and operated for each alternative and Program element.

## 5.6.5 SIGNIFICANCE CRITERIA

Potential noise-related impacts are considered significant if the construction or operations of facilities associated with a particular implementation alternative or Program element



would cause a substantial increase in the existing (ambient) noise conditions in the affected area.

### 5.6.6 NO ACTION ALTERNATIVE

Under the No Action Alternative, expected and potential noise sources would continue as at present. Trends in population growth could increase some levels of noise in some areas, but substantial changes are not anticipated.

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Under the No Action Alternative, expected and potential noise sources would continue as at present.

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### 5.6.7 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES

For noise resources, the environmental consequences of the Ecosystem Restoration, Water Quality, Levee System Integrity, Water Use Efficiency, Water Transfer, and Watershed Programs, and the Storage element are similar under all Program alternatives, as described below. The environmental consequences of the Conveyance element vary among Program alternatives, as described in Section 5.6.8.

#### 5.6.7.1 DELTA REGION

##### *Ecosystem Restoration Program*

Construction-related noise is associated with restoration projects. In most cases, the noise would be short term, and impacts generally are considered less than significant. However, construction could result in potentially significant adverse impacts on residents, recreation users, and sensitive wildlife species, depending on where specific projects are constructed. These impacts will be identified in project-specific analysis and can be mitigated to less-than-significant levels.

Installing new fish screens at certain diversions in the Delta Region could be accompanied by construction-related noise. Wetlands development and other habitat restoration efforts would involve activities that could cause construction-related noise. Potentially significant noise impacts would be direct and short term, and can be mitigated to less-than-significant levels. Agricultural-related noise would decrease when land use was converted for habitat, resulting in a potential noise benefit.

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Installing new fish screens at certain diversions in the Delta Region could be accompanied by construction-related noise. Wetlands development and other habitat restoration efforts would involve activities that could cause construction-related noise.

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### *Water Quality, Water Transfer, and Watershed Programs*

The Water Quality, Water Transfer, and Watershed Programs are not expected to affect existing noise levels in the Delta Region.

#### *Levee System Integrity Program*

Land conversion to create buffer areas associated with improved levees and flood control operations in the Delta Region could result in decreased agricultural operations-related noise impacts; however, in the short term, construction activities would increase noise levels. Improving existing levee systems and constructing new levees, as well as dredging, would result in potentially significant construction-related noise impacts. These construction-related noise impacts are direct but short term and can be mitigated to less-than-significant levels.

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Land conversion associated with improved levees and flood control operations in the Delta Region could result in decreased agricultural operations-related noise. In the short term, however, construction would increase noise levels.

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#### *Water Use Efficiency Program*

Both beneficial and potentially significant adverse noise impacts could result from modifying existing filtration plants; developing new pipelines, well fields, and pump stations; and increasing or decreasing pumping. These impacts are associated with construction- and operations-related activities in agricultural and urban environments. Potentially significant adverse noise impacts can be mitigated to less-than-significant levels.

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Both beneficial and potentially significant adverse noise impacts could result from facilities associated with the Water Use Efficiency Program.

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#### *Storage*

Construction- and operations-related noise impacts are associated with storage. Construction-related noise levels that exceed local noise standards would last for short, intermittent periods and, in most cases, would be located at a sufficient distance from sensitive receptors to avoid potentially significant impacts. New pumps in storage conveyance systems could result in operations-related noise impacts. These potentially significant adverse impacts can be mitigated to less-than-significant levels.

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New pumps in storage conveyance systems could result in operations-related noise impacts.

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## 5.6.7.2 BAY REGION

### *Ecosystem Restoration and Levee System Integrity Programs*

Noise impacts in the Bay Region associated with the Ecosystem Restoration Program would be similar to those described for the Delta Region.

Noise levels would increase in the Suisun Marsh while levee rehabilitation is taking place; however, no long-term changes in noise levels are anticipated.



### *Water Quality, Water Use Efficiency, and Water Transfer Programs, and Storage*

The Water Quality, Water Use Efficiency, and Water Transfer Programs, and Storage are not expected to increase noise levels in the Bay Region.

### *Watershed Program*

Construction associated with Watershed Program activities in the Bay Region could generate noise. Noise impacts would be short term and generally are considered less than significant. However, construction activities could result in potentially significant impacts on residents, recreation users, and sensitive wildlife species, depending on where specific projects are constructed. These impacts will be identified in project-specific analysis and can be mitigated to less-than-significant levels.

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Construction associated with Watershed Program activities in the Bay Region could generate noise.

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## 5.6.7.3 SACRAMENTO RIVER AND SAN JOAQUIN RIVER REGIONS

### *Ecosystem Restoration and Watershed Programs*

Noise impacts in the Sacramento River and San Joaquin River Regions associated with the Ecosystem Restoration and Watershed Programs would be similar to those described for the Delta Region.

### *Water Quality Program*

Land conversion activities intended to reduce drainage-related pollution in the San Joaquin River Region could result in decreased agricultural operations-related noise. Revegetation of agricultural lands potentially would reduce the level of noise, as less farm equipment would be operated on the land—such as tractors, pumps, and harvesters.

Activities to improve existing and to construct new filtration and treatment facilities could result in both construction- and operations-related noise impacts. Short- and long-term noise impacts can be mitigated to less-than-significant levels.

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Land conversion activities intended to reduce drainage-related pollution could result in decreased agricultural operations-related noise.

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### *Levee System Integrity, Water Use Efficiency, and Water Transfer Programs*

The Levee System Integrity, Water Use Efficiency, and Water Transfer Programs are not expected to increase noise levels in the Sacramento River or San Joaquin River Region.



### *Storage*

The noise impacts in the Sacramento River and San Joaquin River Regions associated with the Storage element would be similar to those described for the Delta Region.

#### 5.6.7.4 OTHER SWP AND CVP SERVICE AREAS

##### *Ecosystem Restoration, Water Quality, Levee System Integrity, Water Use Efficiency, Water Transfer, and Watershed Programs, and Storage*

None of these Program elements are expected to affect noise levels in the Other SWP and CVP Service Areas.

### 5.6.8 CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES

For noise resources, the Conveyance element results in environmental consequences that differ among the alternatives, as described below.

#### 5.6.8.1 PREFERRED PROGRAM ALTERNATIVE

This section includes a description of the consequences of a pilot diversion project. If the pilot project is not built, these consequences would not be associated with the Preferred Program Alternative.

Construction- and operations-related noise impacts are associated with the Conveyance element. Construction-related noise levels that exceed local noise standards would last for short, intermittent periods and, in most cases, would be located at a sufficient distance from sensitive receptors to avoid potentially significant adverse impacts. New pumps in conveyance systems could result in potentially significant operations-related noise impacts that can be mitigated to less-than-significant levels.

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New pumps in conveyance systems could result in potentially significant operations-related noise impacts.

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#### 5.6.8.2 ALTERNATIVE 1

Alternative 1 includes fewer conveyance facilities than the Preferred Program Alternative; therefore, the magnitude of noise impacts would be less.



### 5.6.8.3 ALTERNATIVE 2

Noise impacts associated with Alternative 2 would be similar to those described for the Preferred Program Alternative if a pilot diversion facility is built, although the magnitude may be greater given the difference in size of the diversion facility.

### 5.6.8.4 ALTERNATIVE 3

Alternative 3 includes an isolated facility. Consequently, the level of direct, short-term, construction-related and indirect, long-term, operations-related noise impacts is potentially greater than for all the other alternatives. Nevertheless, potentially significant noise impacts under Alternative 3 can be mitigated to less-than-significant levels.

## 5.6.9 PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS

This section presents the comparison of existing conditions to the Preferred Program Alternative and Alternatives 1, 2, and 3. This programmatic analysis found that the potentially beneficial and adverse impacts from implementing any of the Program alternatives when compared to existing conditions are essentially the same impacts as those identified in Sections 5.6.7 and 5.6.8, which compare Program alternatives to the No Action Alternative.

The analysis indicates an increase in noise levels for any Program alternative when compared to existing conditions. As population levels would not increase under the existing conditions scenario, noise impacts for all Program alternatives would be greater when compared to existing conditions instead of the No Action Alternative. However, at the programmatic level, these differences are not significant.

At the programmatic level, the comparison of the Program alternatives to existing conditions did not identify any potentially significant environmental consequences other than those identified in the comparison of Program alternatives to the No Action Alternative.

Program benefits include reductions in noise attributed to land use conversion. Changes in land use from existing cultivated agricultural land uses to riparian habitat, for example, would reduce noise associated with farm machinery.

The following potentially significant adverse noise impacts are associated with the Preferred Program Alternative:

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The analysis indicates an increase in noise levels for any Program alternative when compared to existing conditions.

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- Increased noise from heavy equipment operation during construction.
- Increased noise from increases in traffic along major access and haul routes, and increased vehicle traffic associated with the construction labor force.
- Increased noise from facility operation of spillways, pumping generating plants, and switchyards.
- Increased noise from automobile or boat traffic associated with recreational use at enlarged reservoirs.

No potentially significant unavoidable noise impacts are associated with the Preferred Program Alternative.

### 5.6.10 ADDITIONAL IMPACT ANALYSES

**Cumulative Impacts.** For a summary of cumulative impacts for all resource categories, please refer to Chapter 3. For a description of the projects and programs considered in this analysis of cumulative impacts, please see Attachment A.

For all regions except the Other SWP and CVP Service Areas, Program actions and the projects listed in Attachment A would result in noise impacts.

Potentially significant adverse noise impacts relate to construction or facility operations. The cumulative impacts of construction noise would depend largely on the timing of the various construction projects. Operational noise from pump stations, hatcheries, and storage facilities would contribute to operations-related noise. Operations-related noise associated with Program actions may combine with operations-related noise from the various other projects.

Cumulative noise impacts are considered potentially significant, but can be mitigated. Mitigation strategies have been identified that will reduce noise impacts associated with Program actions and the projects described in Attachment A.

**Growth-Inducing Impacts.** It is unlikely that any noise impacts from the Preferred Program Alternative would induce growth. However, improvements in water supply caused by the Preferred Program Alternative could induce growth, depending on how the additional water supply was used. If the additional water was used to expand agricultural production or urban housing development, the proposed action would foster economic and population growth. Expansion of agricultural production and population could affect noise resources, but the significance of the noise impact would depend on where agricultural or population growth occurred and how it was managed.

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The cumulative impacts of construction noise would depend largely on the timing of the various construction projects.

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It is unlikely that any noise impacts from the Preferred Program Alternative would induce growth.

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**Short- and Long-Term Relationships.** The Preferred Program Alternative would cause no long-term increase in noise levels but may cause potentially significant adverse noise impacts from short-term uses of the environment. Most short-term impacts would be construction related and would cease when construction is complete. Where possible, avoidance and mitigation measures would be implemented as a standard course of action to lessen noise impacts.

Potential long-term noise benefits could result from Program actions that increase open space by converting agricultural land to wildlife habitat.

**Irreversible and Irretrievable Commitments.** No irreversible or irretrievable commitments of noise resources are associated with the Preferred Program Alternative.

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Potential long-term noise benefits could result from Program actions that increase open space by converting agricultural land to wildlife habitat.

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### 5.6.11 MITIGATION STRATEGIES

These mitigation strategies will be considered during specific project planning and development. Specific mitigation measures will be adopted, consistent with Program goals and objectives and the purposes of site-specific projects. Not all mitigation strategies will be applicable to all projects because site-specific projects will vary in purpose, location, and timing.

Mitigation strategies have been identified that can be used to avoid or minimize construction- and operations-related noise impacts. Additional site-specific mitigation measures could be developed to further minimize potential noise impacts when locations for specific facilities are identified.

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Mitigation strategies have been identified that can be used to avoid or minimize construction- and operations-related noise impacts.

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Measures to avoid impacts include:

- Using electrically powered equipment instead of internal combustion equipment where feasible.
- Locating staging and stockpile areas, and supply and construction vehicle routes as far away from sensitive receptors as possible.
- Establishing and enforcing construction site and haul road speed limits.
- Restricting the use of bells, whistles, alarms, and horns to safety warning purposes.
- Designing equipment to conform with local noise standards.
- Locating equipment as far from sensitive receptors as possible.

Measures to minimize impacts include:



- Equipping all construction vehicles and equipment with appropriate mufflers and air inlet silencers.
- Restricting hours of construction to periods permitted by local ordinances.
- Locating noisy equipment within suitable sound-absorbing enclosures.
- Erecting sound wall barriers or noise attenuation berms between noise generation sources and sensitive receptors.
- Scheduling construction activities to avoid breeding seasons of sensitive species and peak recreation use.

### 5.6.12 POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS

No potentially significant unavoidable noise impacts are associated with the Preferred Program Alternative.

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No potentially significant unavoidable impacts related to noise are associated with the Preferred Program Alternative.

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