4.8 Noise and Vibration

4.8.1 Methods and Significance Criteria

Methods

This section addresses the potential noise and vibration effects on humans and structures that would result from implementation of the proposed action and alternatives. (For impacts on wildlife, see Section 4.3, *Biological Resources*.)

Anticipated changes in land cover/land use for each alternative are described in Chapter 2, *Proposed Action and Alternatives*. See Section 4.0 *Environmental Consequences*, for a description of the methodology used across all resource chapters for the analysis of cumulative effects.

The Placer Conservation Authority's (PCA's) potential construction and operations and maintenance (O&M) (using construction-type equipment) noise impacts were assessed using a reasonable worst-case assumption that four pieces of equipment (a grader, a truck, and two scrapers) would be operating simultaneously to implement a given noise-generating Covered Activity. Potential vibration impacts were assessed by presenting vibration levels at various distances from a variety of equipment that may be used for the project, and assessing the likelihood that sensitive land uses would be located close enough to vibration-generating activities to experience adverse effects. Modeled noise and vibration levels from project-related activities were then compared to the applicable thresholds (Placer County noise standards, Federal Transit Administration [FTA] vibration criteria) to determine if potentially significant impacts would occur.

Significance Criteria

According to Appendix G of the State CEQA Guidelines, a proposed action would be considered to have a significant effect if it would result in any of the following.

- Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies.
- Expose persons to or generate 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.
- Be located within an airport land use plan area, or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport and expose people residing or working in the Plan Area to excessive noise levels.
- Be located in the vicinity of a private airstrip and expose people residing or working in the Plan Area to excessive noise levels.

4.8.2 Impacts and Mitigation Measures

Alternative 1—No Action

As discussed in Chapter 2, *Proposed Action and Alternatives*, under Alternative 1, the no action alternative, project proponents would apply for take permits on a project-by-project basis, without a coordinated and comprehensive effort to minimize and mitigate biological impacts through the PCCP. Urban development and public infrastructure projects would continue to occur pursuant to the approved *Placer County General Plan* and *City of Lincoln General Plan* (i.e., the local jurisdictions' general plans), as would South Placer Regional Transportation Authority (SPRTA) and Placer County Water Agency (PCWA) planned projects. No regional conservation strategy or conservation measures would be implemented; therefore, impacts related to noise and vibration that are associated with the conservation strategy and conservation measures would not occur.

Impact NOI-1: Exposure of persons to or generation of noise levels in excess of applicable standards (NEPA: significant and unavoidable; CEQA: significant and unavoidable)

Under Alternative 1, noise from a variety of sources (including traffic, trains, aircraft, and construction) could exceed applicable noise thresholds throughout the Plan Area in the future. However, various general plan goals, objectives, and actions would restrict noise from transportation sources and would help to reduce potential impacts. As stated in the EIR for the *Placer County General Plan*, traffic noise impacts of general plan implementation would be significant. As described in the EIR for the *City of Lincoln General Plan*, future projects developed under the general plan could result in significant noise impacts related to the generation of noise in excess of thresholds, the generation of excessive vibration, and substantial temporary and permanent increases in noise levels. In addition, future projects of SPRTA and PCWA such as transportation and water projects would need to obtain project-specific approvals and would undergo project-level CEQA review and relevant NEPA review (if applicable) for construction and operations-related noise effects.

Specifically, with regard to construction noise, urban development and public infrastructure projects under Alternative 1 would continue to occur pursuant to the local jurisdictions' general plans, as would SPRTA and PCWA planned projects. Development of the local jurisdictions' general plans and infrastructure projects would be expected to require the use of construction equipment throughout the Plan Area. Throughout the Plan Area, it is expected that some construction activity for such projects could occur near noise-sensitive land uses such as rural residences. Reasonable worst-case noise modeling of construction was modeled assuming that four pieces of equipment (a grader, a truck, and two scrapers) would be operating simultaneously to implement a given noise-generating activity. Table 4.8-1 shows the calculated worst-case maximum sound level (L_{max}) and equivalent sound level (L_{eq}) (in A-weighted decibel [dBA]) of these four pieces of equipment operating simultaneously at various distances. Note that construction noise typically attenuates at a rate of 6 decibels (dB) per doubling of distance (called *geometric attenuation* in Table 4.8-1).

Table 4.8-1. Worst-Case Scenario Noise Levels of Construction Equipment (Grader, Truck, Two Scrapers) Operating Simultaneously

Distance between Source and Receiver (feet)	Geometric Attenuation (dB)	Calculated L_{max} Sound Level (dBA)	Calculated L_{eq} Sound Level (dBA)
50	0	89	85
100	-6	83	79
200	-12	77	73
300	-16	74	70
400	-18	71	67
500	-20	69	65
600	-22	68	64
700	-23	66	62
800	-24	65	61
900	-25	64	60
1,000	-26	63	59
1,200	-28	62	58
1,400	-29	60	56
1,600	-30	59	55
1,800	-31	58	54
2,000	-32	57	53
2,500	-34	55	51
3,000	-36	54	50

Notes: Noise reference levels from the Federal Highway Administration's *Road Construction Noise Model User's Guide* were used to assess noise from equipment (Federal Highway Administration 2006). This calculation does not include the effects, if any, of local shielding from walls, topography, or other barriers that may reduce sound levels further, nor does it include ground-effect attenuation from noise traveling over absorptive (grass, dirt, etc.) ground. Actual noise levels would likely be lower based on reductions from shielding and ground-effect attenuation.

dB = decibel.
dBA = A-weighted decibel.
L_{eq} = equivalent sound level.
L_{max} = maximum sound level.

In addition to the standard non-impact construction equipment used for most projects, it is possible that pile driving would be required for some development activities under Alternative 1. Pile driving typically generates more noise than most standard non-impact equipment. Table 4.8-2 shows the calculated L_{max} and L_{eq} sound level of a pile driver at various distances.

Table 4.8-2. Pile Driving Construction Noise Levels

Distance between Source and Receiver (feet)	Geometric Attenuation (dB)	Calculated L_{max} Sound Level (dBA)	Calculated L_{eq} Sound Level (dBA)
50	0	101	94
100	-6	95	88
200	-12	89	82
300	-16	85	78
400	-18	83	76
500	-20	81	74
600	-22	79	72
700	-23	78	71
800	-24	77	70
900	-25	76	69
1,000	-26	95	88
1,200	-28	73	66
1,400	-29	72	65
1,600	-30	71	64
1,800	-31	70	63
2,000	-32	69	62
2,500	-34	67	60
3,000	-36	65	58

Notes: Noise reference levels from the Federal Highway Administration's *Road Construction Noise Model User's Guide* were used to assess noise from equipment (Federal Highway Administration 2006). This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers that may reduce sound levels further, nor does it include ground-effect attenuation from noise traveling over absorptive (grass, dirt, etc.) ground. Actual noise levels would likely be lower based on reductions from shielding and ground-effect attenuation.

dB = decibel.
dBA = A-weighted decibel.
L_{eq} = equivalent sound level.
L_{max} = maximum sound level.

The City of Lincoln does not have noise limits for construction equipment, so the Placer County Noise Ordinance is used to assess construction noise effects. As shown in Tables 4.8-1 and 4.8-2, activities involving construction equipment could generate noise levels in excess of the Placer County Noise Ordinance's 55 dBA L_{eq} daytime (7 a.m. to 10 p.m.) noise standard at distances as great as 1,600 feet for non-impact construction equipment and over 3,000 feet for pile drivers. Noise levels from construction equipment could exceed Placer County's nighttime threshold (10 p.m. to 7 a.m.) of 45 dBA L_{eq} at even greater distances (though it is unlikely that pile driving would occur during nighttime hours).

These noise levels indicate that construction noise from development activities, although temporary and infrequent based on the type of activity (e.g., grading or scraping to restore riparian areas), could exceed local standards at noise-sensitive land uses. Although this is just an example construction project and the construction of other projects may involve less or quieter equipment, it is not possible to ensure that construction and operational noise from future projects would not be in excess of thresholds.

NEPA Determination: Individual projects that could take place with implementation of Alternative 1 could result in the exposure of persons to or generation of noise levels in excess of standards established in a local general plan or noise ordinance. The EIRs for the local jurisdictions' general plans both determined that noise impacts related to the generation of noise in excess of thresholds would be potentially significant. As discussed in the EIRs for the general plans, no mitigation is available to ensure that future potential impacts would be reduced to less-than-significant levels. Accordingly, noise impacts from Alternative 1 would be significant and unavoidable.

CEQA Determination: Individual projects that could take place with implementation of Alternative 1 could result in the exposure of persons to or generation of noise levels in excess of standards established in a local general plan or noise ordinance. The EIRs for the local jurisdictions' general plans both determined that noise impacts related to the generation of noise in excess of thresholds would be potentially significant. As discussed in the EIRs for the general plans, no mitigation is available to ensure that future potential impacts would be reduced to less-than-significant levels. Accordingly, noise impacts under Alternative 1 would be significant and unavoidable.

Impact NOI-2: Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels (NEPA: significant and unavoidable; CEQA: significant and unavoidable)

Urban development and public infrastructure projects under Alternative 1 would continue to occur pursuant to the local jurisdictions' general plans, as would SPRTA and PCWA planned projects. As described in the EIR for the *City of Lincoln General Plan*, future projects developed under the general plan could result in significant vibration impacts. Specifically, the EIR clarifies that vibration created through construction and industrial activities or through the operation of motor vehicles and railways could result in potentially significant impacts on local residents. Although mitigation measures are proposed in the EIR for the *City of Lincoln General Plan*, the ability to mitigate this potential impact is contingent on a variety of factors including the severity of the vibration impact, existing land use conditions, and the technical feasibility of being able to implement any proposed mitigation measures.

Development of the local jurisdictions' general plans, including SPRTA and PCWA projects, that require the use of construction equipment could result in the generation of construction vibration and potentially in the exposure of persons to excessive groundborne vibration. The main concern associated with this type of vibration is annoyance; however, vibration-sensitive instruments and operations can be disrupted at much lower levels than would typically affect other uses. In extreme cases, vibration can cause damage to buildings, particularly those that are old or otherwise fragile. Tables 3.8-14 and 3.8-15 in Section 3.8.2, *Environmental Setting*, show vibration criteria for annoyance and damage potential suggested by the California Department of Transportation (2013).

Refer to Section 3.8.1, *Regulatory Setting*, for more details related to FTA's guidance criteria for construction vibration effects. The potential construction-related vibration impacts depend primarily on the proximity of construction activities to sensitive receptors and the size and type of equipment. Impact pile drivers have the greatest potential to result in adverse effects. Perceptible groundborne vibration from construction equipment is generally limited to areas within a few hundred feet of construction activities.

Typical vibration levels for various pieces of equipment at a reference distance of 25 feet are included in Table 3.8-13 (Federal Transit Administration 2006). Table 4.8-3 shows calculated vibration levels for the same equipment at greater distances based on typical soil conditions

(Federal Transit Administration 2006). Note that the use of a pile driver for activities under Alternative 1 is low, but it is included in this table for informational purposes.

Table 4.8-3. Construction Equipment Vibration Levels at Various Distances

	Distance from Construction (feet)					
	25	50	75	100	175	200
Equipment	Peak Particle Velocity (in/sec)					
Pile driver (impact)	1.518	0.5367	0.2921	0.1898	0.0820	0.0671
Pile drive (vibratory)	0.734	0.2595	0.1413	0.0918	0.0396	0.0324
Vibratory roller	0.210	0.0742	0.0404	0.0263	0.0113	0.0093
Hoe ram	0.089	0.0315	0.0171	0.0111	0.0048	0.0039
Large bulldozer	0.089	0.0315	0.0171	0.0111	0.0048	0.0039
Caisson drilling	0.089	0.0315	0.0171	0.0111	0.0048	0.0039
Loaded truck	0.076	0.0269	0.0146	0.0095	0.0041	0.0034
Jackhammer	0.035	0.0124	0.0067	0.0044	0.0019	0.0015
Small bulldozer	0.003	0.0011	0.0006	0.0004	0.0002	0.0001

Note: Values derived from information in FTA's *Transit Noise and Vibration Impact Assessment* (Federal Transit Administration 2006) using the vibration attenuation equation ($PPV=PPV_{ref}\ (25/Distance)^{1.5}$).

Construction activities associated with Alternative 1 would be temporary, and related vibration effects would be short-term. At this time, it is not known how close vibration-generating equipment may come to nearby residences or vibration-sensitive land uses. However, using methods specified in FTA's (2006) *Transit Noise and Vibration Impact Assessment*, the distance within which vibration is estimated to exceed the peak particle velocity (PPV) threshold of 0.1 inch per second (in/sec) can be calculated. Predicted vibration in excess of 0.1 in/sec PPV is considered to result in an adverse impact relative to potential annoyance and structure damage based on the criteria in Tables 3.8-14 and 3.8-15.

As shown in Table 4.8-3, impact pile driving could exceed the 0.1 in/sec PPV threshold at a distance of close to 175 feet. However, impact pile driving would not be expected to occur frequently development of the local jurisdictions' general plans, including SPRTA and PCWA projects. Vibratory pile driving, which may be used instead of impact pile driving in many instances, could exceed the 0.1 in/sec PPV threshold at distances of less than 100 feet. Other construction equipment (such as a vibratory roller or hoe ram) could result in vibration levels of greater than 0.1 in/sec PPV at distances ranging from 25 to 50 feet. It is anticipated that there may be no need for pile driving. If pile drivers are required, they would not typically operate within close proximity of occupied buildings or structures. In general, construction equipment used for activities under Alternative 1 would not typically operate within close proximity to occupied buildings or other structures. However, there may be situations that result in excessive vibration. Should this occur, these potential construction activities could directly expose occupied buildings and other structures to ground vibration in excess of previously discussed 0.1 in/sec PPV threshold.

As none of these specific details for future projects can be known at this time, it is not possible to ensure that vibration impacts of these future projects would be able to be reduced to less-than-significant levels. In addition, future SPRTA and PCWA projects such as transportation and water

projects would need to obtain project-specific approvals and would undergo project-level CEQA review and relevant NEPA review (if applicable) for potential vibration effects. However, as specific details of those types of future projects are also not known at this time, it is not possible to conclude that vibration levels from future projects would not be excess of thresholds or applicable standards.

NEPA Determination: Implementation of Alternative 1 could result in the exposure to or generation of excessive vibration levels. Individual projects would need to obtain project-specific permits or undergo project-specific NEPA review (as applicable); however, it may not be possible to ensure that all future projects do not result in significant impacts related to vibration. Therefore, vibration impacts from Alternative 1 would be significant and unavoidable.

CEQA Determination: Implementation of Alternative 1 could result in the exposure to or generation of excessive vibration levels. Individual projects would need to obtain project-specific permits or undergo project-specific CEQA review (as applicable); however, it may not be possible to ensure that all future projects do not result in significant impacts related to vibration. Therefore, vibration impacts from Alternative 1 would be significant and unavoidable.

Impact NOI-3: Generation of a substantial permanent increase in existing ambient noise levels in the project vicinity (NEPA: significant and unavoidable; CEQA: significant and unavoidable)

As stated in the EIR for the *Placer County General Plan*, traffic noise impacts of general plan implementation would be significant, which also is indicative of a substantial permanent increase in noise. As described in the EIR for the *City of Lincoln General Plan*, future projects developed under the general plan could result in significant noise impacts related to substantial permanent increases in ambient noise levels. In addition, future SPRTA and PCWA projects such as transportation and water projects would need to obtain project-specific approvals and would undergo project-level CEQA review and relevant NEPA review (if applicable). However, future projects may not always be able to mitigate potentially significant noise impacts related to a permanent increase in noise to less-than-significant levels.

NEPA Determination: Implementation of Alternative 1 could result in the generation of a substantial permanent increase in noise. Individual projects would need to obtain project-specific permits or undergo project-specific NEPA review (as applicable); however, it may not be possible to ensure that all future projects do not result in substantial permanent increases in noise. Therefore, noise impacts from Alternative 1 related to a substantial permanent increase in noise would be significant and unavoidable.

CEQA Determination: Implementation of Alternative 1 could result in the generation of a substantial permanent increase in noise. Individual projects would need to obtain project-specific permits or undergo project-specific CEQA review (as applicable); however, it may not be possible to ensure that all future projects do not result in substantial permanent increases in noise. Therefore, noise impacts from Alternative 1 related to a substantial permanent increase in noise would be significant and unavoidable.

Impact NOI-4: Creation of a substantial temporary or periodic increase in existing ambient noise levels in the project vicinity (NEPA: significant and unavoidable; CEQA: significant and unavoidable)

As described in the EIR for the *City of Lincoln General Plan*, future projects developed under the general plan could result in significant noise impacts related to substantial temporary increases in ambient noise levels. The EIR for the *Placer County General Plan* concluded that such impacts would be less than significant. In addition, future SPRTA and PCWA projects such as transportation and water projects would need to obtain project-specific approvals and would undergo project-level CEQA review and relevant NEPA review (if applicable). However, future projects may not always be able to mitigate potentially significant noise impacts related to a temporary increase in noise to less-than-significant levels.

NEPA Determination: Implementation of Alternative 1 could result in the generation of a substantial temporary increase in noise. Individual projects would need to obtain project-specific permits or undergo project-specific NEPA review (as applicable); however, it may not be possible to ensure that all future projects do not result in substantial temporary increases in noise. Therefore, noise impacts from Alternative 1 related to a substantial temporary increase in noise would be significant and unavoidable.

CEQA Determination: Implementation of Alternative 1 could result in the generation of a substantial temporary increase in noise. Individual projects would need to obtain project-specific permits or undergo project-specific CEQA review (as applicable); however, it may not be possible to ensure that all future projects do not result in substantial temporary increases in noise. Therefore, noise impacts from Alternative 1 related to a substantial temporary increase in noise would be significant and unavoidable.

Impact NOI-5: Presence of project-related activities within an airport land use plan area or within 2 miles of a public airport or public use airport, resulting in exposure of people residing or working in the Plan Area to excessive noise levels (NEPA: less than significant; CEQA: less than significant)

Under Alternative 1, aircraft noise from public airports would not result in the exposure of people working or residing in the Plan Area to excessive noise levels. With implementation of Alternative 1, future individual projects would need to undergo project-specific analysis and environmental review, and would need to mitigate potentially significant noise impacts related to aircraft noise to less-than-significant levels. Further, as discussed in the EIRs for the *City of Lincoln General Plan* and the *Placer County General Plan*, impacts related to airport noise from implementation of these two general plans were determined to be less than significant. As noted in Section 3.8.2, *Environmental Setting*, Lincoln Regional Airport is the only airport in the Plan Area. High noise levels are generated by the Lincoln Regional Airport only in Hazard Zone A, which is contained within the airport property (Placer County Airport Land Use Commission 2014). Therefore, Alternative 1 would not result in the exposure of persons to excess aircraft noise from a public airport.

NEPA Determination: Lincoln Regional Airport is the only airport in the Plan Area. High noise levels are generated by the Lincoln Regional Airport only in Hazard Zone A, which is contained within the airport property (Placer County Airport Land Use Commission 2014). Therefore, Alternative 1 would not result in the exposure of persons to excess aircraft noise from a public airport, and impacts related to the exposure of persons to excessive aircraft noise would be less than significant.

CEQA Determination: Lincoln Regional Airport is the only airport in the Plan Area. High noise levels are generated by the Lincoln Regional Airport only in Hazard Zone A, which is contained within the airport property (Placer County Airport Land Use Commission 2014). Therefore, Alternative 1 would not result in the exposure of persons to excess aircraft noise from a public airport, and impacts related to the exposure of persons to excessive aircraft noise would be less than significant.

Impact NOI-6: Presence of project-related activities in the vicinity of a private airstrip, resulting in exposure of people residing or working in the Plan Area to excessive noise levels (NEPA: less than significant; CEQA: less than significant)

The effects of implementation of Alternative 1 related to aircraft noise from a private airstrip would be comparable to the noise effects from a public airport as described for Impact NOI-5 above, as private airstrips do not generate much noise outside of the immediate vicinity of the facility. In addition, there are few if any private airstrips in the Plan Area. Private airstrips do not generate noise a substantial distance from the runways. Further, as discussed in the EIRs for the local jurisdictions' general plans, impacts related to aircraft noise from implementation of these two general plans were determined to be less than significant.

NEPA Determination: Private airstrips do not generate noise a substantial distance from the runways. Further, as discussed in the EIRs for the local jurisdictions' general plans, impacts related to aircraft noise from implementation of these two general plans were determined to be less than significant. Therefore, impacts related to the exposure of persons to excessive aircraft noise would be less than significant.

CEQA Determination: Private airstrips do not generate noise a substantial distance from the runways. Further, as discussed in the EIRs for the local jurisdictions' general plans, impacts related to aircraft noise from implementation of these two general plans were determined to be less than significant. Therefore, impacts related to the exposure of persons to excessive aircraft noise would be less than significant.

Alternative 2—Proposed Action

Under Alternative 2, the proposed action, noise impacts could occur during construction or O&M of activities including habitat restoration and creation (conservation measures designed to protect, enhance, and restore and improve the ecological function of natural communities, and to avoid, minimize, and compensate for effects on Covered Species); adaptive management and monitoring activities; the existing, planned, and proposed land uses over which the local jurisdictions have land use authority; future SPRTA and PCWA projects such as local transportation and water projects.

Most Covered Activities would require individual permits and approvals pursuant to the local jurisdictions' general plans and land use regulations, or the requirements of the implementing agency, and would undergo subsequent project-level CEQA review and relevant NEPA review for construction and operations-related impacts; some Covered Activities, however, may be exempted from environmental review requirements due to project characteristics. Those activities that involve construction and the use of heavy construction equipment or those that involve earthmoving activities could generate noise.

Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) would have the potential to result in impacts as identified in the EIRs for the general

plans. Within the Plan Area, Alternative 2, the proposed action, would serve to streamline the development envisioned in the local jurisdictions' general plans as well as SPRTA and PCWA projects. The EIR for the *Placer County General Plan* determined that noise impacts from railroads and from industrial and other stationary noise sources would be less than significant. However, the EIR stated that traffic noise impacts of general plan implementation would be significant. No mitigation measures were identified that could reduce this impact to a less-than-significant level (Placer County 1994). The EIR for the *City of Lincoln General Plan* determined that general plan implementation, even while incorporating mitigation measures, would result in significant noise impacts related to the generation of noise in excess of thresholds, the generation of excessive vibration, and substantial temporary and permanent increases in noise levels. As stated in the EIR for the *City of Lincoln General Plan*, there are no feasible mitigation measures that would reduce impacts to a less-than-significant level (City of Lincoln 2008).

Impact NOI-1: Exposure of persons to or generation of noise levels in excess of applicable standards (NEPA: significant and unavoidable; CEQA: significant and unavoidable)

As under Alternative 1, urban development and public infrastructure projects under Alternative 2, the proposed action, would continue to occur pursuant to the local jurisdictions' general plans, as would SPRTA and PCWA planned projects. Covered Activities (i.e., development of the local jurisdictions' general plans and infrastructure projects) would be expected to require the use of construction equipment throughout the Plan Area. Implementation of PCCP conservation measures would also require the use of construction equipment throughout the Plan Area. The specific locations of future construction and O&M activities associated with the conservation measures are currently unknown. Throughout the Plan Area, it is expected that some construction activity for conservation measures and for other Covered Activities could occur near noise-sensitive land uses such as rural residences. As discussed under Alternative 1, reasonable worst-case noise modeling of construction was completed assuming that four pieces of equipment (a grader, a truck, and two scrapers) would be operating simultaneously to implement a given noise-generating Covered Activity or (under Alternative 2 but not under Alternative 1) conservation measure. Note that construction equipment used for conservation measures and Covered Activities would be similar. Tables 4.8-1 and 4.8-2 under the analysis for Alternative 1 show the calculated worst-case maximum L_{max} and L_{eq} sound levels of four pieces of equipment operating simultaneously at various distances, as well as for a pile driver at various distances.

As described under Alternative 1 and shown in Tables 4.8-1 and 4.8-2, activities involving construction equipment (including construction and O&M activities) could generate noise levels in excess of the Placer County Noise Ordinance's 55 dBA L_{eq} daytime (7 a.m. to 10 p.m.) noise standard at distances as great as 1,600 feet for combined construction noise and over 3,000 feet for pile driver noise. Note that this threshold also applies in the city of Lincoln, for the purposes of this analysis (as discussed previously). Noise levels from construction equipment could also exceed Placer County's nighttime threshold (10 p.m. to 7 a.m.) of 45 dBA L_{eq} at even greater distances (though it is unlikely that pile driving would occur during nighttime hours).

These noise levels indicate that construction noise, although temporary and infrequent based on the type of activity (e.g., grading or scraping to restore riparian areas), could exceed local standards at noise-sensitive land uses.

The PCCP includes a best management practice (BMP) measure that is primarily designed to reduce underwater noise effects on fish and wildlife that would result from conservation activities involving

pile driving. This BMP may also help reduce potential noise impacts on humans in the Plan Area. The following In-Stream and Stream System BMP relates to pile driving and impact equipment (Appendix A):

The following will be implemented to minimize noise effects on fish and wildlife during pile driving:

- Vibratory pile drivers or other Wildlife Agency–approved methods, shall be used to drive piles, to the maximum extent practicable.
- Where feasible, the use of impact hammers to drive piles will be limited to areas outside of the stream channel or in dry cofferdams.
- Bubble curtains will be used to attenuate sound when it is necessary to drive piles with an impact hammer in water.
- Where feasible, metal-to-metal contact of the driver hammer and metal piles will be avoided.
- The smallest pile driver and the minimum force necessary to complete the work will be used.
- All types of pile driving will be limited to daylight hours only to provide fish and wildlife with extended quiet periods.
- Prior to initiating pile driving with an impact hammer, an acoustic analysis using the most recent interagency standards and guidelines will be conducted to predict impacts of pile driving noise on listed fish species.
- A hydroacoustic monitoring plan will be developed and implemented and underwater noise levels will be monitored during all impact pile driving on land, in dry cofferdams and in water (using bubble curtains) to ensure that the peak and cumulative sound exposure levels do not exceed predicted values.

This measure would help to specifically reduce the potential noise effects of pile driving activity, but construction noise could still exceed local standards at noise-sensitive land uses. However, the Placer County Noise Ordinance provides an exception for construction noise (in Placer County Code Section 9.36.030) as long as all construction equipment is "fitted with factory installed muffling devices and that all construction equipment shall be maintained in good working order." Allowable time periods for this construction noise are as follows: 6 a.m. to 8 p.m., Monday through Friday, and 8 a.m. to 8 p.m., Saturdays and Sundays. Therefore, construction activity occurring during these daytime hours would comply with the Placer County Noise Ordinance. Should construction noise occur outside of these hours, the noise resulting from construction activities would result in significant noise effects.

NEPA Determination: Implementation of Alternative 2, the proposed action, could result in the generation of construction noise from the use of heavy equipment for conservation activities under the Plan and from Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects). Implementation of the PCCP BMP related to pile driving (shown above), which is intended to reduce negative noise effects on wildlife from pile driving in the Plan Area, would help reduce effects on humans in the vicinity of noise-generating Covered Activity work that involves pile driving. However, construction activities associated with implementation of the PCCP could still result in short-term exceedances in local noise standards. Implementation of Mitigation Measure NOI-1 would reduce impacts related to the generation of excessive noise levels from PCCP implementation; however, depending on the specific construction activities required for a future conservation measure or Covered Activity, it may not be possible to reduce construction noise impacts to less-than-significant levels. As described in the EIR for the *City of Lincoln General Plan*, future projects developed under the general plan could result in significant noise impacts related to the generation of noise in excess of thresholds from construction activities as well as

operations. In addition, as stated in the EIR for the *Placer County General Plan*, traffic noise impacts from general plan implementation related to an exceedance of thresholds would also be significant. Therefore, impacts from implementation of Alternative 2 related to the generation of noise in excess of thresholds would be significant and unavoidable.

CEQA Determination: Implementation of Alternative 2, the proposed action, could result in the generation of construction noise from the use of heavy equipment for conservation activities and from Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects). Implementation of the PCCP BMP related to pile driving (shown above), which is intended to reduce negative noise effects on wildlife in the Plan Area, would also help reduce impacts on humans in the vicinity of noise-generating Covered Activity work that involves pile driving. However, construction activities associated with implementation of the PCCP could still result in short-term exceedances in local noise standards. Implementation of Mitigation Measure NOI-1 would reduce the impacts related to the generation of excessive noise levels from PCCP implementation; however, depending on the specific construction activities required for a future conservation measure or Covered Activity, it may not be possible to reduce construction noise impacts to less-than-significant levels. Further, and as described in the EIR for the *City of Lincoln General Plan*, future projects developed under the general plan could result in significant noise impacts related to the generation of noise in excess of thresholds from construction activities as well as operations. In addition, as stated in the EIR for the *Placer County General Plan*, traffic noise impacts from general plan implementation related to an exceedance of thresholds would also be significant. Therefore, impacts from the proposed action related to the generation of noise in excess of thresholds from project implementation would be significant and unavoidable.

Mitigation Measure NOI-1: Implement measures to reduce noise resulting from conservation measures and Covered Activities during construction and O&M activities to ensure compliance with applicable noise standards, where feasible.

Employ Noise-Reducing Construction Practices during Construction and O&M Activities

During construction and O&M activities associated with PCCP conservation measures that include the use of heavy equipment, PCA contractors will employ BMPs to reduce construction noise near noise-sensitive land uses. Implementation of this measure will ensure that construction noise levels, as applicable, do not violate applicable local noise standards.

Measures used to limit construction noise include the following.

- Limiting above-ground noise-generating construction to the hours between 6:00 a.m. and 8:00 p.m., Monday through Friday, and between 8:00 a.m. and 8:00 p.m. on Saturdays and Sundays, in accordance with the Placer County Noise Ordinance.
- Locating stationary equipment (e.g., generators, compressors, rock crushers, cement mixers, idling trucks) as far as possible from noise-sensitive land uses.
- Prohibiting gasoline or diesel engines from having unmuffled exhaust.
- Requiring all construction equipment powered by gasoline or diesel engines to have sound-control devices that are at least as effective as those originally provided by the manufacturer, and requiring all equipment to be operated and maintained to minimize noise generation.
- Preventing excessive noise by shutting down idle vehicles or equipment.

- Using noise-reducing enclosures around noise-generating equipment.
- Selecting haul routes that affect the fewest numbers of people.
- Constructing barriers between noise sources and noise-sensitive land uses or taking advantage of existing barrier features (e.g., terrain, structures) to block sound transmission to noise-sensitive land uses. The barriers shall be designed to obstruct the line of sight between the noise-sensitive land use and onsite construction equipment. When installed properly, acoustic barriers can reduce construction noise levels by approximately 8–10 dBA (U.S. Environmental Protection Agency 1971).

Prior to Construction, Initiate a Complaint/Response Tracking Program

Prior to commencement of construction and O&M activities, PCA contractors will make a construction schedule available to residents living in the vicinity of the construction areas before construction begins and designate a noise disturbance coordinator. The coordinator will be responsible for responding to complaints regarding construction noise by determining the cause of the complaint, and ensuring that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.

Impact NOI-2: Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels (NEPA: significant and unavoidable; CEQA: significant and unavoidable)

As under Alternative 1, urban development and public infrastructure projects under Alternative 2, the proposed action, would continue to occur pursuant to the local jurisdictions' general plans, as would SPRTA and PCWA planned projects. Public infrastructure projects would be expected to require the use of construction equipment throughout the Plan Area. The implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) that require the use of construction equipment could therefore result in the generation of construction vibration and potentially in the exposure of persons to excessive groundborne vibration.

As discussed for Impact NOI-1, implementation of the PCCP would also result in construction and O&M activities associated with conservation measures described in the Plan. Some conservation measures would require the use of heavy duty construction equipment that could produce groundborne vibration that may affect adjacent uses. The main concern associated with this type of vibration is annoyance; however, vibration-sensitive instruments and operations can be disrupted at much lower levels than would typically affect other uses. In extreme cases, vibration can cause damage to buildings, particularly those that are old or otherwise fragile. Tables 3.8-14 and 3.8-15 in Section 3.8.2, *Environmental Setting*, show vibration criteria for annoyance and damage potential suggested by the California Department of Transportation (2013).

Refer to Section 3.8.1, *Regulatory Setting*, for more details related to FTA's guidance criteria for construction vibration effects. The potential construction-related vibration impacts depend primarily on the proximity of construction activities to sensitive receptors and the size and type of equipment. Impact pile drivers have the greatest potential to result in adverse effects. Perceptible

groundborne vibration from construction equipment is generally limited to areas within a few hundred feet of construction activities.

To help demonstrate the potential for Covered Activities, including conservation measures, to result in excessive vibration, typical vibration levels for various pieces of equipment at a reference distance of 25 feet are included in Table 3.8-13 (Federal Transit Administration 2006). Table 4.8-3 under Alternative 1 (Federal Transit Administration 2006).

Construction activities associated with conservation measures under the PCCP as well as Covered Activities would be temporary, and related vibration effects would be short-term. At this time, it is not known how close vibration-generating equipment associated with conservation measures or Covered Activities may come to nearby residences or vibration-sensitive land uses. However, using methods specified in FTA's (2006) *Transit Noise and Vibration Impact Assessment*, the distance within which vibration is estimated to exceed the peak particle velocity (PPV) threshold of 0.1 inch per second (in/sec) can be calculated. Predicted vibration in excess of 0.1 in/sec PPV is considered to result in an adverse impact relative to potential annoyance and structure damage based on the criteria in Tables 3.8-14 and 3.8-15.

As shown discussed under Alternative 1, impact pile driving could exceed the 0.1 in/sec PPV threshold at a distance of close to 175 feet and vibratory pile driving, which may be used instead of impact pile driving in many instances, could exceed the 0.1 in/sec PPV threshold at distances of less than 100 feet. Other construction equipment (such as a vibratory roller or hoe ram) could result in vibration levels of greater than 0.1 in/sec PPV at distances ranging from 25 to 50 feet. It is anticipated that, for conservation measures, there may be no need for pile driving. If pile drivers are required for conservation measures, they would not typically operate within close proximity of occupied buildings or structures. In general, construction equipment used to implement conservation measures would also not typically operate within close proximity to occupied buildings or other structures. However, there may be situations where Covered Activities result in excessive vibration, or when vibration-generating construction work for conservation measures may be required to occur closer to nearby structures. Should this occur, these potential construction activities could directly expose occupied buildings and other structures to ground vibration in excess of previously discussed 0.1 in/sec PPV threshold.

The PCCP includes a BMP that is primarily designed to reduce underwater noise effects on fish and wildlife that would result from pile driving. This BMP is described above, and may also help reduce potential vibration impacts on occupied buildings and other structures.

Although this BMP is mostly intended to reduce potential vibration effects on fish and wildlife in the stream systems, it would also help reduce potential vibration effects on humans working or residing near work areas for Covered Activities and conservation measures.

Even with implementation of this BMP, however, vibration-generating construction activities associated with both conservation measures as well as with Covered Activities may occur close enough to nearby residences to expose people and structures to excessive vibration levels.

NEPA Determination: Implementation of a PCCP BMP, which is intended to reduce negative vibration effects on fish and wildlife in the Plan Area, would also help reduce vibration effects on humans and structures in the vicinity of vibration-generating conservation measure work. However, implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) that require the use of construction equipment could result in

the generation of construction vibration and in the exposure of persons to excessive groundborne vibration or noise. In addition, construction activities for conservation measures under the PCCP, could also result in excessive vibration levels if impact pile driving activity were to occur within 175 feet, vibratory pile driving activity were to occur within 100 feet, and other vibration-generating construction activity (e.g., the use of a vibratory roller or hoe ram) were to occur within 25–50 feet of nearby vibration-sensitive uses. Since the exact locations of future vibration-generating construction activities are not known at this time, construction activity is assumed to potentially occur within these distances, and this impact would be potentially significant. Implementation of Mitigation Measure NOI-2 would reduce impacts related to the generation of excessive vibration. However, it may not be possible to reduce vibration to a less-than-significant level in all instances. Therefore, this impact would be significant and unavoidable.

CEQA Determination: Implementation of a PCCP BMP, which is intended to reduce negative vibration effects on fish and wildlife in the Plan Area, would also help reduce vibration effects on humans and structures in the vicinity of vibration-generating Covered Activity or conservation measure work. Implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) that require the use of construction equipment could result in the generation of construction vibration and in the exposure of persons to excessive groundborne vibration or noise. In addition, construction activities for conservation measures under the PCCP, could also result in excessive vibration levels if impact pile driving activity were to occur within 175 feet, vibratory pile driving activity were to occur within 100 feet, and other vibration-generating construction activity (e.g., the use of a vibratory roller or hoe ram) were to occur within 50 feet of nearby vibration-sensitive uses. Since the exact locations of future vibration-generating construction activities are not known at this time, construction activity is assumed to potentially occur within these distances, and this impact would be potentially significant. Implementation of Mitigation Measure NOI-2 would reduce impacts related to the generation of excessive vibration; however, it may not be possible to reduce vibration to a less-than-significant level in all instances. Therefore, this impact would be significant and unavoidable.

Mitigation Measure NOI-2: Employ vibration-reducing construction practices for vibration-generating activities associated with conservation measures and Covered Activities

The PCA construction contractor will, to the extent feasible, maintain a minimum distance of 200 feet between pile drivers (should these be used for construction related to conservation measures) and occupied buildings or structures, and 50 feet between other construction equipment and occupied buildings or structures, when utilizing construction equipment for the implementation of conservation measures under the PCCP.

For cases where this is not feasible, residents or property owners would be notified in writing prior to construction activity that construction may occur within the specified distances of their buildings. The PCA will inspect the potentially affected buildings prior to construction to inventory existing cracks in paint, plaster, concrete, and other building elements. The PCA shall retain a qualified acoustical consultant or engineering firm to conduct vibration monitoring at potentially affected buildings to measure the actual vibration levels during construction. If measured vibration exceeds 0.1 in/sec PPV, alternative construction approaches will be implemented to limit vibration to 0.1 in/sec PPV. Following completion of construction, the PCA will conduct a second inspection to inventory changes in existing cracks and new cracks or

damage, if any, which occurred as a result of construction-induced vibration. If new damage is found, then the PCA will promptly arrange to have the damaged repaired.

In addition, if construction activity is required within 100 feet of residences or other vibration-sensitive buildings, a designated complaint coordinator will be responsible for handling and responding to any complaints received during such periods of construction. A reporting program will be required to document complaints received, actions taken, and the effectiveness of these actions in resolving disputes.

Impact NOI-3: Generation of a substantial permanent increase in existing ambient noise levels in the project vicinity (NEPA: significant and unavoidable; CEQA: significant and unavoidable)

Although increases in noise levels as compared to the existing ambient noise level would occur during some construction or O&M activities related to implementation of the PCCP, implementation of Alternative 2, the proposed action, is not anticipated to result in a substantial permanent increase in noise since noise associated with temporary construction is not permanent. Minor increases in traffic associated with conservation measures including habitat restoration and construction activities in different locations throughout the Plan Area would be temporary and short-term in any given location as well. Although construction activities would not be expected to result in a permanent increase in ambient noise, it is possible that the implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) could result in longer-term traffic increases. As discussed in the EIRs for the local jurisdictions' general plans, future development could result in permanent increases in ambient noise levels that would be significant. Therefore, it is possible that Covered Activities could have a substantial and permanent effect on ambient noise levels due to traffic noise or the generation of new stationary sources of noise in a given area.

NEPA Determination: Conservation measures implemented under Alternative 2, the proposed action, are not anticipated to result in a substantial permanent increase in noise, as construction and O&M activities associated with conservation measures under Plan implementation would be short-term and temporary in any given area. However, as discussed in the EIRs for the local jurisdictions' general plans, it is possible that the implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) could result in traffic increases or in the development of stationary noise sources that could have a substantial and permanent effect on ambient noise levels in a given area. Because it would not be possible to reduce the noise impacts associated with Covered Activities to less-than-significant levels, this impact would be significant and unavoidable.

CEQA Determination: Conservation measures implemented under Alternative 2, the proposed action, are not anticipated to result in a substantial permanent increase in noise, as construction and O&M activities associated with conservation measures under Plan implementation would be short-term and temporary in any given area. This impact would be less than significant. However, as discussed in the EIRs for the local jurisdictions' general plans, it is possible that the implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) could result in traffic increases or in the development of stationary noise sources that could have a substantial and permanent effect on ambient noise levels in a given area. Because it would not be possible to reduce the noise impacts associated with Covered Activities to less-than-significant levels, this impact would be significant and unavoidable.

Impact NOI-4: Creation of a substantial temporary or periodic increase in existing ambient noise levels in the project vicinity (NEPA: significant and unavoidable; CEQA: significant and unavoidable)

As stated above under Alternative 2, Impact NOI-1, implementation of Alternative 2, the proposed action, would entail construction and O&M activities throughout the Plan Area associated with PCCP conservation measures, along with the implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects). Noise from heavy construction equipment used for implementation of conservation measures and Covered Activities could result in substantial temporary increases in ambient noise levels.

As shown in Tables 4.8-1 and 4.8-2, activities involving construction equipment could generate noise levels in excess of the 55 dBA L_{eq} daytime noise standard at distances as great as 1,600 feet for non-impact construction equipment and over 3,000 feet for pile drivers. Noise levels from construction equipment could also exceed the 45 dBA L_{eq} nighttime standard at even greater distances. This could result in a substantial temporary or periodic increase in ambient noise levels.

NEPA Determination: Implementation of conservation measures under Alternative 2, the proposed action, would involve the use of construction equipment and could result in a substantial temporary increase in noise. Although implementation of Mitigation Measure NOI-1 would reduce potential construction noise impacts from conservation measures, it is possible that construction noise generated would still constitute a substantial temporary increase in noise and that impacts related to a temporary increase in noise would remain significant. In addition, implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) could also result in significant noise impacts, even with implementation of Mitigation Measure NOI-1 because even though this mitigation measure would restrict noise-generating activities under the purview of the PCA to daytime hours and includes methods for reducing overall noise generated by heavy equipment, it cannot restrict construction activities outside of the purview of the PCA. It would not be possible to reduce the noise impacts associated with Covered Activities to a less-than-significant level, as the PCA would not be the approving authority for these activities. This impact would be significant and unavoidable.

CEQA Determination: Implementation of conservation measures under Alternative 2, the proposed action, would involve the use of construction equipment and could result in a substantial temporary increase in noise. Although implementation of Mitigation Measure NOI-1 would reduce potential construction noise impacts from conservation measures, it is possible that construction noise generated would still constitute a substantial temporary increase in noise and that impacts related to a temporary increase in noise would remain significant. In addition, implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) could also result in significant noise impacts even with implementation of Mitigation Measure NOI-1. This is because this mitigation measure would restrict noise-generating activities under the purview of the PCA to daytime hours and includes methods for reducing overall noise generated by heavy equipment. However, it would not be possible to reduce the noise impacts associated with Covered Activities to a less-than-significant level, as the PCA would not be the approving authority for these activities. This impact would be significant and unavoidable.

Mitigation Measure NOI-1: Implement measures to reduce noise resulting from conservation measures and Covered Activities during construction and O&M activities to ensure compliance with applicable noise standards, where feasible.

Impact NOI-5: Presence of project-related activities within an airport land use plan area or within 2 miles of a public airport or public use airport, resulting in exposure of people residing or working in the Plan Area to excessive noise levels (NEPA: less than significant; CEQA: less than significant)

Implementation of Alternative 2, the proposed action, would require the use of construction equipment throughout the Plan Area for both construction and O&M activities. It is not known at this time where all future activities would take place; however, construction workers may work within close proximity of the Lincoln Regional Airport at times. If this were to occur, the work would be intermittent and temporary, lasting for only the duration of the specific construction activity in any given location. Furthermore, construction workers would primarily experience noise from the actual construction work, rather than noise from Lincoln Regional Airport or nearby airports outside the Plan Area (i.e., Auburn Municipal Airport, McClellan Park, and Beale Air Force Base). Therefore, as construction activities would be temporary and intermittent, airport activities are not expected to expose construction workers to excessive noise.

As described in the EIRs for the local jurisdictions' general plans, impacts related to airport noise from implementation of these two general plans were determined to be less than significant.

NEPA Determination: As no Covered Activities would be expected to occur within the airport property, Covered Activities would not be expected to result in the exposure of persons to excess aircraft noise from a public airport. Similarly, conservation measures would not be expected to be located within the airport property. Further, as discussed in the EIRs for the local jurisdictions' general plans, impacts related to airport noise from implementation of these two general plans were determined to be less than significant. Therefore, impacts related to the exposure of persons to excessive aircraft noise would be less than significant.

CEQA Determination: As no Covered Activities would be expected to occur within the airport property, Covered Activities would not be expected to result in the exposure of persons to excess aircraft noise from a public airport. Similarly, conservation measures would not be expected to be located within the airport property. Further, as discussed in the EIRs for the local jurisdictions' general plans, impacts related to airport noise from implementation of these two general plans were determined to be less than significant. Therefore, impacts related to the exposure of persons to excessive aircraft noise would be less than significant. No mitigation has been identified.

Impact NOI-6: Presence of project-related activities in the vicinity of a private airstrip, resulting in exposure of people residing or working in the Plan Area to excessive noise levels (NEPA: less than significant; CEQA: less than significant)

Noise from private airstrips would not be considered excessive outside of the immediate vicinity of the airstrip. In addition, few private airstrips are located within the Plan Area, and the County and Cities have incorporated goals, policies, and objectives in their general plans to limit exposure to aircraft noise from these types of facilities. These measures would ensure that future development near airports and airstrips would meet applicable noise standards. For these reasons, the effects of implementation of Alternative 2, the proposed action, related to the exposure of persons to aircraft noise from a private airstrip would be comparable to the noise effects from a public airport as described for Alternative 2, Impact NOI-5.

NEPA Determination: Because it is unlikely that Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) would occur in the immediate vicinity (e.g., on the property) of a private airstrip, Covered Activities would not be expected to result in the exposure of persons to excess aircraft noise from a private airstrip. Similarly, conservation measures would not be expected to be located in the immediate vicinity of or on an airstrip property. In addition, although the completion of specific future Covered Activities could involve the locating of permanent employees within the Plan Area, it is unlikely that these projects would be adjacent to or on a private airstrip, and would therefore not be exposed to excessive aircraft noise from private airstrips. Further, the County and Cities have incorporated goals, policies, and objectives in their general plans to limit exposure to aircraft noise from these types of facilities. These measures would ensure that future development near airports and airstrips would meet applicable noise standards. Noise impacts related to private airstrips exposing workers to excessive noise levels would be less than significant.

CEQA Determination: Because it is unlikely that Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) would occur in the immediate vicinity (e.g., on the property) of a private airstrip, Covered Activities would not be expected to result in the exposure of persons to excess aircraft noise from a private airstrip. Similarly, conservation measures would not be expected to be located in the immediate vicinity of or on an airstrip property. In addition, although the completion of specific future Covered Activities could involve the locating of permanent employees within the Plan Area, it is unlikely that these projects would be adjacent to or on a private airstrip, and would therefore not be exposed to excessive aircraft noise from private airstrips. Further, the County and Cities have incorporated goals, policies, and objectives in their general plans to limit exposure to aircraft noise from these types of facilities. These measures would ensure that future development near airports and airstrips would meet applicable noise standards. Noise impacts related to private airstrips exposing workers to excessive noise levels would be less than significant.

Alternative 3—Reduced Take/Reduced Fill

Under Alternative 3, land conversion in the Potential Future Growth Area (PFG) would be approximately 1,000 acres than that under the proposed action. However, the overall construction activity that would occur under Alternative 3 would be comparable to that proposed under Alternative 2. Equipment would be used for construction as well as O&M activities, but the locations of construction and O&M activities are currently unknown for this and the other alternatives. Throughout the Plan Area, however, it is expected that some construction activity could occur near noise-sensitive land uses such as rural residences.

Impact NOI-1: Exposure of persons to or generation of noise levels in excess of applicable standards (NEPA: significant and unavoidable; CEQA: significant and unavoidable)

As under Alternative 1, urban development and public infrastructure projects would continue to occur pursuant to the approved general plans of the applicable jurisdictions, as would SPRTA and PCWA planned projects. Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) would be expected to require the use of construction equipment throughout the Plan Area. Like Alternative 2, the proposed action, Alternative 3 and the associated conservation measures would require the use of construction equipment throughout the Plan Area. Construction activities under Alternative 3 would be comparable to those for Alternative 2; and the associated noise levels are shown in Tables 4.8-1 and 4.8-2. As described previously,

activities involving construction equipment for both conservation measures under the PCCP (e.g., earthmoving for and re-contouring of vernal pools and excavating ponds and channels) and for Covered Activities could generate noise levels in excess of thresholds. This indicates that construction noise associated with both Covered Activities and PCCP conservation measures, although temporary and infrequent in any given location, could exceed local standards at noise-sensitive land uses.

Although implementation of Alternative 3 would reduce the amount of land converted in the PFG by approximately 1,000 acres compared to Alternative 2, the proposed action, the potential for construction activity associated with Covered Activities and conservation measures to result in excessive noise levels would be comparable to those described under Impact NOI-1 for Alternative 2.

NEPA Determination: Implementation of Alternative 3 could result in the generation of construction noise from the use of heavy equipment for both PCCP conservation measures and Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects). Implementation of the PCCP BMP (described under Alternative 2, the proposed cation) related to pile driving, intended to reduce negative noise effects from pile driving on wildlife in the Plan Area, would help reduce effects on humans in the vicinity of noise-generating Covered Activity work that involves pile driving. However, construction activities associated with implementation of Alternative 3 would still be expected to result in short-term exceedances in local noise standards. Implementation of Mitigation Measure NOI-1 would reduce impacts related to the generation of excessive noise from PCCP implementation; however, depending on the specific construction activities required for a future conservation measure or Covered Activity, it may not be possible to reduce construction noise impacts to a less-than-significant level. Further, and as described under Alternative 1 and in the EIR for the *City of Lincoln General Plan*, future projects developed under the general plan could result in significant noise impacts related to the generation of noise in excess of thresholds from construction activities as well as operations. As stated in the EIR for the *Placer County General Plan*, traffic noise impacts from general plan implementation related to an exceedance of thresholds would also be significant. Therefore, impacts from the proposed action related to the generation of noise in excess of thresholds would be significant and unavoidable under Alternative 3.

CEQA Determination: Implementation of Alternative 3 could result in the generation of construction noise from the use of heavy equipment for both PCCP conservation measures and Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects). Implementation of the PCCP BMP (described under Alternative 2, the proposed action) related to pile driving, intended to reduce negative noise effects from pile driving on wildlife in the Plan Area, would help reduce effects on humans in the vicinity of noise-generating Covered Activity work that involves pile driving. However, construction activities associated with implementation of Alternative 3 would still be expected to result in short-term exceedances in local noise standards. Implementation of Mitigation Measure NOI-1 would reduce impacts related to the generation of excessive noise from PCCP implementation; however, depending on the specific construction activities required for a future conservation measure or Covered Activity, it may not be possible to reduce construction noise impacts to a less-than-significant level. Further, and as described under Alternative 1 and in the EIR for the *City of Lincoln General Plan*, future projects developed under the general plan could result in significant noise impacts related to the generation of noise in excess of thresholds from construction activities as well as operations. As stated in the EIR for the *Placer County General Plan*, traffic noise impacts from general plan implementation

related to an exceedance of thresholds would also be significant. Therefore, impacts from the proposed action related to the generation of noise in excess of thresholds would be significant and unavoidable under Alternative 3.

Mitigation Measure NOI-1: Implement measures to reduce noise resulting from conservation measures and Covered Activities during construction and O&M activities to ensure compliance with applicable noise standards, where feasible.

Impact NOI-2: Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels (NEPA: significant and unavoidable; CEQA: significant and unavoidable)

As under Alternative 1, urban development and public infrastructure projects would continue to occur pursuant to the local jurisdictions' general plans, as would SPRTA and PCWA planned projects. Public infrastructure projects would be expected to require the use of construction equipment throughout the Plan Area. The implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) that require the use of construction equipment could therefore result in the generation of construction vibration and could result in exposure of persons to excessive groundborne vibration or noise.

Like Alternative 2, the proposed action, Alternative 3 would result in construction and O&M activities associated with PCCP conservation measures. Implementation of the associated conservation measures would require the use of construction equipment throughout the Plan Area. The locations of construction and O&M activities are currently unknown. Throughout the Plan Area, it is expected that some construction activity could occur near noise-sensitive land uses such as rural residences.

As described previously, construction activities associated with PCCP conservation measures would be temporary, and related vibration effects would be short-term. However, as is true of Alternative 2, the proposed action, it is not known how close to nearby residences or vibration-sensitive land uses vibration-generating equipment may be have to operate. Activities involving construction equipment (including construction and O&M activities) could generate vibration levels in excess of the FTA guidance criteria for construction vibration effects. Construction activities for conservation measures under Alternative 3 would be comparable to those under Alternative 2; the associated vibration levels are shown in Table 4.8-3. According to the vibration levels shown in that table, there may be situations where vibration-generating construction work may be required closer to nearby structures than these distances, directly exposing occupied buildings and other structures to ground vibration in excess of 0.1 in/sec PPV.

As also discussed for Alternative 2, the proposed action, the PCCP includes a BMP that is primarily designed to reduce underwater noise effects from pile driving on fish. Described under Alternative 2, this BMP would also help reduce potential vibration effects on wildlife in the stream systems, as well as on humans working or residing near work areas for conservation measures.

Even with implementation of this BMP, vibration-generating construction activities may occur close enough to nearby residences to expose people and structures to excessive vibration levels. In addition, although this BMP may reduce vibration effects of construction associated with conservation measures, it would not be expected to reduce vibration associated with construction for Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects).

Although implementation of Alternative 3 would result in a reduction in the amount of land converted in the PFG of approximately 1,000 acres, the potential for construction activity associated with Covered Activities to result in excessive vibration levels would be comparable to those described under Impact NOI-2 for Alternative 2, the proposed action.

NEPA Determination: Implementation of a PCCP BMP intended to reduce negative vibration effects on fish and wildlife in the Plan Area would also help reduce vibration effects on humans and structures in the vicinity of vibration-generating conservation measure work. However, implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) that require the use of construction equipment could result in the generation of construction vibration and in the exposure of persons to excessive groundborne vibration or noise. In addition, construction activities for conservation measures under the PCCP, could also result in excessive vibration levels if impact pile driving activity were to occur within 175 feet, vibratory pile driving activity were to occur within 100 feet, and other vibration-generating construction activity (e.g., the use of a vibratory roller or hoe ram) were to occur within 25–50 feet of nearby vibration-sensitive uses. Since the exact locations of future vibration-generating construction activities are not known at this time, construction activity is assumed to potentially occur within these distances, and this impact would be potentially significant. Implementation of Mitigation Measure NOI-2 would reduce impacts related to the generation of excessive vibration. However, it may not be possible to reduce vibration to a less-than-significant level in all instances. Therefore, this impact would be significant and unavoidable.

CEQA Determination: Implementation of a PCCP BMP, which is intended to reduce negative vibration effects on fish and wildlife in the Plan Area, would also help reduce vibration effects on humans and structures in the vicinity of vibration-generating conservation measure work. However, implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) that require the use of construction equipment could result in the generation of construction vibration and in the exposure of persons to excessive groundborne vibration or noise. In addition, construction activities for conservation measures under the PCCP, could also result in excessive vibration levels if impact pile driving activity were to occur within 175 feet, vibratory pile driving activity were to occur within 100 feet, and other vibration-generating construction activity (e.g., the use of a vibratory roller or hoe ram) were to occur within 25–50 feet of nearby vibration-sensitive uses. Since the exact locations of future vibration-generating construction activities are not known at this time, construction activity is assumed to potentially occur within these distances, and this impact would be potentially significant. Implementation of Mitigation Measure NOI-2 would reduce impacts related to the generation of excessive vibration. However, it may not be possible to reduce vibration to a less-than-significant level in all instances. Therefore, this impact would be significant and unavoidable.

Mitigation Measure NOI-2: Employ vibration-reducing construction practices for vibration-generating activities associated with conservation measures and Covered Activities

Impact NOI-3: Generation of a substantial permanent increase in existing ambient noise levels in the project vicinity (NEPA: significant and unavoidable; CEQA: significant and unavoidable)

Like Alternative 2, the proposed action, Alternative 3 would result in increases in noise levels from the existing ambient noise level. These increases would occur during some construction or O&M

activities for PCCP conservation measures and for Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects).

The implementation of conservation measures under Alternative 3 is not anticipated to result in a substantial permanent increase in noise since noise associated with temporary construction is not permanent. Minor increases in traffic associated with conservation measures including habitat restoration and construction activities in different locations throughout the Plan Area would be temporary and short-term in any given location.

Although construction activities would not be expected to result in a permanent increase in ambient noise, it is possible that the implementation of Covered Activities could result in longer-term traffic increases. In addition, Covered Activities could also include the development of stationary noise sources that could result in a permanent increase in noise. Therefore, it is possible that Covered Activities could have a substantial and permanent effect on ambient noise levels as a result of traffic noise or the generation of new stationary sources of noise in specific areas.

NEPA Determination: Conservation measures implemented under Alternative 3 are not anticipated to result in a substantial permanent increase in noise, as construction and O&M activities associated with conservation measures under Plan implementation would be short-term and temporary in any given area. However, as discussed in the EIRs for the local jurisdictions' general plans, it is possible that the implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) could result in traffic increases or in the development of stationary noise sources that could have a substantial and permanent effect on ambient noise levels in a given area. Because it would not be possible to reduce the noise impacts associated with Covered Activities to less-than-significant levels, this impact would be significant and unavoidable.

CEQA Determination: Conservation measures implemented under Alternative 2, the proposed action, are not anticipated to result in a substantial permanent increase in noise, as construction and O&M activities associated with conservation measures under Plan implementation would be short-term and temporary in any given area. However, as discussed in the EIRs for the local jurisdictions' general plans, it is possible that the implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) could result in traffic increases or in the development of stationary noise sources that could have a substantial and permanent effect on ambient noise levels in a given area. Because it would not be possible to reduce the noise impacts associated with Covered Activities to less-than-significant levels, this impact would be significant and unavoidable.

Impact NOI-4: Creation of a substantial temporary or periodic increase in existing ambient noise levels in the project vicinity (NEPA: significant and unavoidable; CEQA: significant and unavoidable)

As stated above under Impact NOI-1, implementation of Alternative 3 would entail construction and O&M activities throughout the Plan Area associated with PCCP conservation measures, along with the implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects, as described under Alternative 1). Noise from heavy construction equipment used for both conservation measures and Covered Activities could result in substantial temporary increases in ambient noise levels. As shown above in Tables 4.8-1 and 4.8-2, construction noise levels could result in noise levels exceeding the 55 dBA L_{eq} daytime standard at distances as great as 1,600 feet from combined construction activity assuming four pieces of equipment and 3,000 feet for pile driving activity (and the 45 dBA L_{eq} nighttime standard at even

greater distances). This could result in a substantial temporary or periodic increase in ambient noise levels.

NEPA Determination: Implementation of conservation measures under Alternative 3 would involve the use of construction equipment, and could result in a substantial temporary increase in noise. Although implementation of Mitigation Measure NOI-1 would reduce potential construction noise impacts, it is possible that construction noise generated would still constitute a substantial temporary increase in noise and that impacts related to a temporary increase in noise would remain significant. In addition, implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) could also result in significant noise impacts even with implementation of Mitigation Measure NOI-1 because this mitigation measure would only restrict noise-generating activities under the purview of the PCA to daytime hours and, although it includes methods for reducing overall noise generated by heavy equipment, it cannot restrict construction activities outside the purview of the PCA. It would not be possible to reduce the noise impacts associated with Covered Activities under Alternative 3 to a less-than-significant level, as the PCA would not be the approving authority for these activities. This impact would be significant and unavoidable.

CEQA Determination: Implementation of conservation measures under Alternative 3 would involve the use of construction equipment, and could result in a substantial temporary increase in noise. Although implementation of Mitigation Measure NOI-1 would reduce potential construction noise impacts, it is possible that construction noise generated would still constitute a substantial temporary increase in noise and that impacts related to a temporary increase in noise would remain significant. In addition, implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) could also result in significant noise impacts even with implementation of Mitigation Measure NOI-1 because this mitigation measure would only restrict noise-generating activities under the purview of the PCA to daytime hours and, although it includes methods for reducing overall noise generated by heavy equipment, it cannot restrict construction activities outside the purview of the PCA. It would not be possible to reduce the noise impacts associated with Covered Activities under Alternative 3 to a less-than-significant level, as the PCA would not be the approving authority for these activities. This impact would be significant and unavoidable.

Mitigation Measure NOI-1: Implement measures to reduce noise resulting from conservation measures and Covered Activities during construction and O&M activities to ensure compliance with applicable noise standards, where feasible.

Impact NOI-5: Presence of project-related activities within an airport land use plan area or within 2 miles of a public airport or public use airport, resulting in exposure of people residing or working in the Plan Area to excessive noise levels (NEPA: less than significant; CEQA: less than significant)

Implementation of Alternative 3 would require the use of construction equipment throughout the Plan Area for both construction and O&M activities. It is not known at this time where all future activities would take place; however, construction workers may work within close proximity of the Lincoln Regional Airport at times. If this were to occur, the work would be intermittent and temporary, lasting for only the duration of the specific construction activity in any given location. Furthermore, construction workers would primarily experience noise from the actual construction work, rather than noise from Lincoln Regional Airport or nearby airports outside the Plan Area (i.e.,

Auburn Municipal Airport, McClellan Park and Beale Air Force Base). Therefore, as construction activities would be temporary and intermittent, airport activities are not expected to expose construction workers to excessive noise.

As described in the EIRs for the local jurisdictions' general plans, impacts related to airport noise from implementation of these two general plans were determined to be less than significant.

NEPA Determination: As no Covered Activities would be expected to occur within the airport property, Covered Activities would not be expected to result in the exposure of persons to excess aircraft noise from a public airport. Similarly, conservation measures would not be expected to be located within the airport property. Further, as discussed in the EIRs for the local jurisdictions' general plans, impacts related to airport noise from implementation of these two general plans were determined to be less than significant. Therefore, impacts related to the exposure of persons to excessive aircraft noise would be less than significant.

CEQA Determination: As no Covered Activities would be expected to occur within the airport property, Covered Activities would not be expected to result in the exposure of persons to excess aircraft noise from a public airport. Similarly, conservation measures would not be expected to be located within the airport property. Further, as discussed in the EIRs for the local jurisdictions' general plans, impacts related to airport noise from implementation of these two general plans were determined to be less than significant. Therefore, impacts related to the exposure of persons to excessive aircraft noise would be less than significant. No mitigation has been identified.

Impact NOI-6: Presence of project-related activities in the vicinity of a private airstrip, resulting in exposure of people residing or working in the Plan Area to excessive noise levels (NEPA: less than significant; CEQA: less than significant)

Noise from private airstrips would not be considered excessive outside of the immediate vicinity of the airstrip. In addition, few private airstrips are located within the Plan Area, and the County and Cities have incorporated goals, policies, and objectives in their general plans to limit exposure to aircraft noise from these types of facilities. These measures would ensure that future development near airports and airstrips would meet applicable noise standards. For these reasons, the effects of implementation of Alternative 3 related to the exposure of persons to aircraft noise from a private airstrip would be comparable to the noise effects from a public airport as described for Impact NOI-5.

NEPA Determination: Because it is unlikely that Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) would occur in the immediate vicinity (e.g., on the property) of a private airstrip, Covered Activities would not be expected to result in the exposure of persons to excess aircraft noise from a private airstrip. Similarly, conservation measures would not be expected to be located in the immediate vicinity of or on an airstrip property. In addition, although the completion of specific future Covered Activities could involve the locating of permanent employees within the Plan Area, it is unlikely that these projects would be adjacent to or on a private airstrip, and would therefore not be exposed to excessive aircraft noise from private airstrips. Further, the County and Cities have incorporated goals, policies, and objectives in their general plans to limit exposure to aircraft noise from these types of facilities. These measures would ensure that future development near airports and airstrips would meet applicable noise standards. Noise impacts related to private airstrips exposing workers to excessive noise levels would be less than significant.

CEQA Determination: Because it is unlikely that Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) would occur in the immediate vicinity (e.g., on the property) of a private airstrip, Covered Activities would not be expected to result in the exposure of persons to excess aircraft noise from a private airstrip. Similarly, conservation measures would not be expected to be located in the immediate vicinity of or on an airstrip property. In addition, although the completion of specific future Covered Activities could involve the locating of permanent employees within the Plan Area, it is unlikely that these projects would be adjacent to or on a private airstrip, and would therefore not be exposed to excessive aircraft noise from private airstrips. Further, the County and Cities have incorporated goals, policies, and objectives in their general plans to limit exposure to aircraft noise from these types of facilities. These measures would ensure that future development near airports and airstrips would meet applicable noise standards. Noise impacts related to private airstrips exposing workers to excessive noise levels would be less than significant.

Alternative 4—Reduced Permit Term

Construction activities for Alternative 4 would be comparable to those for Alternative 2, the proposed action.

Impact NOI-1: Exposure of persons to or generation of noise levels in excess of applicable standards (NEPA: significant and unavoidable; CEQA: significant and unavoidable)

As under Alternative 1, urban development and public infrastructure projects would continue to occur pursuant to the approved general plans of the applicable jurisdictions, as would SPRTA and PCWA planned projects. Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) would be expected to require the use of construction equipment throughout the Plan Area. Like Alternative 2, the proposed action, Alternative 4 and the associated conservation measures would require the use of construction equipment throughout the Plan Area.

Construction activities under Alternative 4 would be comparable to those for Alternative 2; the associated noise levels are shown in Tables 4.8-1 and 4.8-2. As described previously, activities involving construction equipment for both conservation measures under the PCCP (e.g., earthmoving for and re-contouring of vernal pools and excavating ponds and channels) and for Covered Activities could generate noise levels in excess of thresholds. This indicates that construction noise associated with both Covered Activities and PCCP conservation measures, although temporary and infrequent in any given location, could exceed local standards at noise-sensitive land uses.

Although implementation of Alternative 4 would result in Covered Activities and conservation measures occurring over a period of 30 years rather than 50 years, the level of potential noise effects during the permit term would be comparable to those described under Impact NOI-1 for Alternative 2.

NEPA Determination: Implementation of Alternative 4 could result in the generation of construction noise from the use of heavy equipment for both PCCP conservation measures and Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects). Implementation of the PCCP BMP (described under Alternative 2, the proposed action) related to pile driving, intended to reduce negative noise effects from pile driving on wildlife in the Plan Area, would help reduce effects on humans in the vicinity of noise-generating Covered

Activity work that involves pile driving. However, construction activities associated with implementation Alternative 4 would still be expected to result in short-term exceedances in local noise standards. Implementation of Mitigation Measure NOI-1 would reduce impacts related to the generation of excessive noise from PCCP implementation; however, depending on the specific construction activities required for a future conservation measure or Covered Activity, it may not be possible to reduce construction noise impacts to a less-than-significant level. Further, and as described under Alternative 1 and in the EIR for the *City of Lincoln General Plan*, future projects developed under the general plan could result in significant noise impacts related to the generation of noise in excess of thresholds from construction activities as well as operations. As stated in the EIR for the *Placer County General Plan*, traffic noise impacts from general plan implementation related to an exceedance of thresholds would also be significant. Therefore, impacts from the proposed action related to the generation of noise in excess of thresholds would be significant and unavoidable under Alternative 4.

CEQA Determination: Implementation of Alternative 4 could result in the generation of construction noise from the use of heavy equipment for both PCCP conservation measures and Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects). Implementation of the PCCP BMP (described under Alternative 2, the proposed action) related to pile driving, intended to reduce negative noise effects from pile driving on wildlife in the Plan Area, would help reduce effects on humans in the vicinity of noise-generating Covered Activity work that involves pile driving. However, construction activities associated with implementation Alternative 4 would still be expected to result in short-term exceedances in local noise standards. Implementation of Mitigation Measure NOI-1 would reduce impacts related to the generation of excessive noise from PCCP implementation; however, depending on the specific construction activities required for a future conservation measure or Covered Activity, it may not be possible to reduce construction noise impacts to a less-than-significant level. Further, and as described for under Alternative 1 and in the EIR for the *City of Lincoln General Plan*, future projects developed under the general plan could result in significant noise impacts related to the generation of noise in excess of thresholds from construction activities as well as operations. As stated in the EIR for the *Placer County General Plan*, traffic noise impacts from general plan implementation related to an exceedance of thresholds would also be significant. Therefore, impacts from the proposed action related to the generation of noise in excess of thresholds would be significant and unavoidable under Alternative 4.

Mitigation Measure NOI-1: Implement measures to reduce noise resulting from conservation measures and Covered Activities during construction and O&M activities to ensure compliance with applicable noise standards, where feasible.

Impact NOI-2: Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels (NEPA: significant and unavoidable; CEQA: significant and unavoidable)

As under the no action alternative, urban development and public infrastructure projects would continue to occur pursuant to the local jurisdictions' general plans, as would SPRTA and PCWA planned projects. Public infrastructure projects would be expected to require the use of construction equipment throughout the Plan Area. The implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) that require the use of

construction equipment could therefore result in the generation of construction vibration and could result in exposure of persons to excessive groundborne vibration or noise.

Like Alternative 2, the proposed action, Alternative 4 would result in construction and O&M activities associated with PCCP conservation measures. Implementation of the associated conservation measures would require the use of construction equipment throughout the Plan Area. The locations of construction and O&M activities are currently unknown. Throughout the Plan Area, it is expected that some construction activity could occur near noise-sensitive land uses such as rural residences.

As described previously, construction activities associated with Project conservation measures or with other Covered Activities would be temporary, and related vibration effects would be short-term. However, as is true of Alternative 2, it is not known how close to nearby residences or vibration-sensitive land uses vibration-generating equipment may be have to operate. Activities involving construction equipment (including construction and O&M activities) could generate vibration levels in excess of the FTA guidance criteria for construction vibration effects. Construction activities for conservation measures under Alternative 4 would be comparable to those under Alternative 2; the associated vibration levels are shown in Table 4.8-3. According to the vibration levels shown in that table, there may be situations where vibration-generating construction work may be required closer to nearby structures than these distances, directly exposing occupied buildings and other structures to ground vibration in excess of 0.1 in/sec PPV.

As also discussed for Alternative 2, the proposed action, the PCCP includes a BMP that is primarily designed to reduce underwater noise effects on fish from pile driving. Described under Alternative 2 this BMP would also help reduce potential vibration effects on wildlife in the stream systems, as well as on humans working or residing near work areas for conservation measures.

Even with implementation of this BMP, vibration-generating construction activities may occur close enough to nearby residences to expose people and structures to excessive vibration levels. In addition, although this BMP may reduce vibration effects of construction associated with conservation measures, it would not be expected to reduce vibration associated with construction for Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects).

Although implementation of Alternative 4 would result in a reduction of the PCCP permit term from 50 years to 30, the potential for construction activity associated with Covered Activities to result in excessive vibration levels during the permit term would be comparable to those described under Impact NOI-2 for Alternative 2, the proposed action.

NEPA Determination: Implementation of a PCCP BMP intended to reduce negative vibration effects on fish and wildlife in the Plan Area would also help reduce vibration effects on humans and structures in the vicinity of vibration-generating conservation measure work. However, implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) that require the use of construction equipment could result in the generation of construction vibration and in the exposure of persons to excessive groundborne vibration or noise. In addition, construction activities for conservation measures under the PCCP, could also result in excessive vibration levels if impact pile driving activity were to occur within 175 feet, vibratory pile driving activity were to occur within 100 feet, and other vibration-generating construction activity (e.g., the use of a vibratory roller or hoe ram) were to occur within 25–50 feet of nearby vibration-sensitive uses. Since the exact locations of future vibration-generating

construction activities are not known at this time, construction activity is assumed to potentially occur within these distances, and this impact would be potentially significant. Implementation of Mitigation Measure NOI-2 would reduce impacts related to the generation of excessive vibration. However, it may not be possible to reduce vibration to a less-than-significant level in all instances. Therefore, this impact would be significant and unavoidable.

CEQA Determination: Implementation of a PCCP BMP intended to reduce negative vibration effects on fish and wildlife in the Plan Area would also help reduce vibration effects on humans and structures in the vicinity of vibration-generating conservation measure work. However, implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) that require the use of construction equipment could result in the generation of construction vibration and in the exposure of persons to excessive groundborne vibration or noise. In addition, construction activities for conservation measures under the PCCP, could also result in excessive vibration levels if impact pile driving activity were to occur within 175 feet, vibratory pile driving activity were to occur within 100 feet, and other vibration-generating construction activity (e.g., the use of a vibratory roller or hoe ram) were to occur within 25–50 feet of nearby vibration-sensitive uses. Since the exact locations of future vibration-generating construction activities are not known at this time, construction activity is assumed to potentially occur within these distances, and this impact would be potentially significant. Implementation of Mitigation Measure NOI-2 would reduce impacts related to the generation of excessive vibration. However, it may not be possible to reduce vibration to a less-than-significant level in all instances. Therefore, this impact would be significant and unavoidable.

Mitigation Measure NOI-2: Employ vibration-reducing construction practices for vibration-generating activities associated with conservation measures and Covered Activities

Impact NOI-3: Generation of a substantial permanent increase in existing ambient noise levels in the project vicinity (NEPA: significant and unavoidable; CEQA: significant and unavoidable)

Like Alternative 2, the proposed action, Alternative 4 would result in increases in noise levels from the existing ambient noise level. These increases would occur during some construction or O&M activities for PCCP conservation measures and for (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects).

The implementation of conservation measures under Alternative 4 is not anticipated to result in a substantial permanent increase in noise since noise associated with temporary construction is not permanent. Minor increases in traffic associated with conservation measures including habitat restoration and construction activities in different locations throughout the Plan Area would be temporary and short-term in any given location.

Implementation of Alternative 4 would result in a shorter overall duration of noise-generating Covered Activities and conservation measures (30 years as opposed to 50 years). However, it is possible that the implementation of Covered Activities could result in traffic increases or in the development of stationary noise sources that could have a substantial and permanent effect on ambient noise levels in a given area under this alternative, and could result in a permanent increase in noise.

NEPA Determination: Conservation measures implemented under Alternative 4 are not anticipated to result in a substantial permanent increase in noise, as construction and O&M activities associated with Plan implementation would be short-term and temporary in any given area. However, as discussed in the EIRs for the local jurisdictions' general plans, it is possible that the implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) could result in traffic increases or in the development of stationary noise sources that could have a substantial and permanent effect on ambient noise levels in a given area. Because it would not be possible to reduce the noise impacts associated with Covered Activities to less-than-significant levels, this impact would be significant and unavoidable.

CEQA Determination: Conservation measures implemented under Alternative 4 are not anticipated to result in a substantial permanent increase in noise, as construction and O&M activities associated with Plan implementation would be short-term and temporary in any given area. However, as discussed in the EIRs for the local jurisdictions' general plans, it is possible that the implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) could result in traffic increases or in the development of stationary noise sources that could have a substantial and permanent effect on ambient noise levels in a given area. Because it would not be possible to reduce the noise impacts associated with Covered Activities to less-than-significant levels, this impact would be significant and unavoidable.

Impact NOI-4: Creation of a substantial temporary or periodic increase in existing ambient noise levels in the project vicinity (NEPA: significant and unavoidable; CEQA: significant and unavoidable)

As stated above under Impact NOI-1, implementation of Alternative 4 would entail construction and O&M activities throughout the Plan Area associated with PCCP conservation measures, along with the implementation of Covered Activities as described under the Alternative a. Noise from heavy construction equipment used for both conservation measures and Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) could result in substantial temporary increases in ambient noise levels. As shown above in Tables 4.8-1 and 4.8-2, construction noise levels could result in noise levels exceeding the 55 dBA L_{eq} daytime standard at distances as great as 1,600 feet from combined construction activity assuming four pieces of equipment and 3,000 feet for pile driving activity (and the 45 dBA L_{eq} nighttime standard at even greater distances). This could result in a substantial temporary or periodic increase in ambient noise levels.

NEPA Determination: Implementation of conservation measures under Alternative 4 would involve the use of construction equipment, and could result in a substantial temporary increase in noise. Although implementation of Mitigation Measure NOI-1 would reduce potential construction noise impacts, it is possible that construction noise generated would still constitute a substantial temporary increase in noise and that impacts related to a temporary increase in noise would remain significant. In addition, implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) could also result in significant noise impacts even with implementation of Mitigation Measure NOI-1 because this mitigation measure would only restrict noise-generating activities under the purview of the PCA to daytime hours, and although it includes methods for reducing overall noise generated by heavy equipment, it cannot restrict construction activities outside the purview of the PCA. I It would not be possible to reduce the noise impacts associated with Covered Activities under Alternative 4 to a less-than-

significant level, as the PCA would not be the approving authority for these activities. This impact would be significant and unavoidable.

CEQA Determination: Implementation of conservation measures under Alternative 4 would involve the use of construction equipment, and could result in a substantial temporary increase in noise. Although implementation of Mitigation Measure NOI-1 would reduce potential construction noise impacts, it is possible that construction noise generated would still constitute a substantial temporary increase in noise and that impacts related to a temporary increase in noise would remain significant. In addition, implementation of Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) could also result in significant noise impacts even with implementation of Mitigation Measure NOI-1 because this mitigation measure would only restrict noise-generating activities under the purview of the PCA to daytime hours, and although it includes methods for reducing overall noise generated by heavy equipment, it cannot restrict construction activities outside the purview of the PCA. I It would not be possible to reduce the noise impacts associated with Covered Activities under Alternative 4 to a less-than-significant level, as the PCA would not be the approving authority for these activities. This impact would be significant and unavoidable.

Mitigation Measure NOI-1: Implement measures to reduce noise resulting from conservation measures and Covered Activities during construction and O&M activities to ensure compliance with applicable noise standards, where feasible.

Impact NOI-5: Presence of project-related activities within an airport land use plan area or within 2 miles of a public airport or public use airport, resulting in exposure of people residing or working in the Plan Area to excessive noise levels (NEPA: less than significant; CEQA: less than significant)

Implementation of Alternative 4 would require the use of construction equipment throughout the Plan Area for both construction and O&M activities. It is not known at this time where all future activities would take place; however, construction workers may work within close proximity of the Lincoln Regional Airport at times. If this were to occur, the work would be intermittent and temporary, lasting for only the duration of the specific construction activity in any given location. Furthermore, construction workers would primarily experience noise from the actual construction work, rather than noise from Lincoln Regional Airport or nearby airports outside the Plan Area (i.e., Auburn Municipal Airport, McClellan Park, and Beale Air Force Base). Therefore, as construction activities would be temporary and intermittent, airport activities are not expected to expose construction workers to excessive noise.

As described in the EIRs for the local jurisdictions' general plans, impacts related to airport noise from implementation of these two general plans were determined to be less than significant.

NEPA Determination: As no Covered Activities would be expected to occur within the airport property, Covered Activities would not be expected to result in the exposure of persons to excess aircraft noise from a public airport. Similarly, conservation measures would not be expected to be located within the airport property. Further, as discussed in the EIRs for the local jurisdictions' general plans, impacts related to airport noise from implementation of these two general plans were determined to be less than significant. Therefore, impacts related to the exposure of persons to excessive aircraft noise would be less than significant.

CEQA Determination: As no Covered Activities would be expected to occur within the airport property, Covered Activities would not be expected to result in the exposure of persons to excess aircraft noise from a public airport. Similarly, conservation measures would not be expected to be located within the airport property. Further, as discussed in the EIRs for the local jurisdictions' general plans, impacts related to airport noise from implementation of these two general plans were determined to be less than significant. Therefore, impacts related to the exposure of persons to excessive aircraft noise would be less than significant. No mitigation has been identified.

Impact NOI-6: Presence of project-related activities in the vicinity of a private airstrip, resulting in exposure of people residing or working in the Plan Area to excessive noise levels (NEPA: less than significant; CEQA: less than significant)

Noise from private airstrips would not be considered excessive outside of the immediate vicinity of the airstrip. In addition, few private airstrips are located within the Plan Area, and the County and Cities have incorporated goals, policies, and objectives in their general plans to limit exposure to aircraft noise from these types of facilities. These measures would ensure that future development near airports and airstrips would meet applicable noise standards. For these reasons, the effects of implementation of Alternative 4 related to the exposure of persons to aircraft noise from a private airstrip would be comparable to the noise effects from a public airport as described for Impact NOI-5.

NEPA Determination: Because it is unlikely that Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) would occur in the immediate vicinity (e.g., on the property) of a private airstrip, Covered Activities would not be expected to result in the exposure of persons to excess aircraft noise from a private airstrip. Similarly, conservation measures would not be expected to be located in the immediate vicinity of or on an airstrip property. In addition, although the completion of specific future Covered Activities could involve the locating of permanent employees within the Plan Area, it is unlikely that these projects would be adjacent to or on a private airstrip, and would therefore not be exposed to excessive aircraft noise from private airstrips. Further, the County and Cities have incorporated goals, policies, and objectives in their general plans to limit exposure to aircraft noise from these types of facilities. These measures would ensure that future development near airports and airstrips would meet applicable noise standards. Noise impacts related to private airstrips exposing workers to excessive noise levels would be less than significant.

CEQA Determination: Because it is unlikely that Covered Activities (i.e., development of the local jurisdictions' general plans, including SPRTA and PCWA projects) would occur in the immediate vicinity (e.g., on the property) of a private airstrip, Covered Activities would not be expected to result in the exposure of persons to excess aircraft noise from a private airstrip. Similarly, conservation measures would not be expected to be located in the immediate vicinity of or on an airstrip property. In addition, although the completion of specific future Covered Activities could involve the locating of permanent employees within the Plan Area, it is unlikely that these projects would be adjacent to or on a private airstrip, and would therefore not be exposed to excessive aircraft noise from private airstrips. Further, the County and Cities have incorporated goals, policies, and objectives in their general plans to limit exposure to aircraft noise from these types of facilities. These measures would ensure that future development near airports and airstrips would meet applicable noise standards. Noise impacts related to private airstrips exposing workers to excessive noise levels would be less than significant.

4.8.3 Cumulative Analysis

Methods and Approach

The cumulative analysis for noise is a qualitative evaluation taking into consideration past, present, and reasonably foreseeable future projects that could be developed under general plan buildout in all jurisdictions encompassed by the Plan Area as presented in Section 4.0, *Environmental Consequences*, of this document.

The cumulative effects analysis for noise considers the effects of implementing the action alternatives in combination with other past, present, and reasonably foreseeable projects or programs. This analysis determines whether the Covered Activities not analyzed in previous environmental documents would result in a cumulatively considerable incremental contribution that, when combined with the past, present, and reasonably foreseeable future projects, would result in a cumulatively significant impact.

Alternative 1—No Action

Alternative 1 would entail buildout of the general plans for the jurisdictions encompassed by the Plan Area; Alternative 1 is therefore anticipated to result in cumulative noise increases related to the construction of various projects in the Plan Area. However, the additional noise contributed by the conservation actions would not occur. Alternative 1 would not have a cumulatively considerable contribution to this cumulative impact, because substantial noise would be generated by the projects considered in the local jurisdictions' general plans, and the general plan impacts would be significant and unavoidable, as discussed above.

Alternative 2—Proposed Action

As discussed under Alternative 1 above, buildout of the general plans for the jurisdictions encompassed by the Plan Area is anticipated to result in cumulative noise increases related to the construction of various projects in the Plan Area. Noise from these construction projects, including projects considered to be Covered Activities under the PCCP (refer to Chapter 4 of the Plan), could combine with noise from conservation measures activities associated directly with the proposed action to result in significant cumulative noise impacts.

Buildout of the local jurisdictions' general plans, in conjunction with activities associated with the proposed action, could result in cumulative impacts related to construction noise. The proposed action's contribution to this effect would be considered cumulatively considerable, as it is currently not known how near to one another conservation measure activities and other Covered Activities could occur. Although Mitigation Measure NOI-1, described above, would reduce construction noise impacts associated with the conservation measures under the proposed action, cumulative impacts related to construction noise in the Plan Area (including impacts from construction for Covered Activities) may still be significant. Cumulative construction noise impacts would conservatively be considered to be significant and unavoidable.

Buildout under the local jurisdictions' general plans could potentially result in cumulative impacts related to transportation noise. Conservation measures under the proposed action would not contribute to this cumulative impact because the conservation measures would involve temporary construction and maintenance projects, and would not result in permanent increases in traffic noise

in the Plan Area. However, Covered Activities could result in increases in traffic in certain areas. Traffic increases associated with Covered Activities under the PCCP could result in excessive traffic noise. Accordingly, the proposed action's contribution to a cumulative transportation noise impact could be cumulatively considerable.

Alternative 3—Reduced Fill/Reduced Take

Implementation of Alternative 3 would result in the same cumulatively considerable contribution to a cumulative construction noise impact in the Plan Area as identified above for Alternative 2, the proposed action. As also discussed above under Alternative 2, the proposed action's contribution to a cumulative transportation noise impact could be cumulatively considerable.

Alternative 4—Reduced Permit Term

Implementation of Alternative 4 would result in the same cumulatively considerable contribution to a cumulative construction noise impact in the Plan Area as identified above for Alternative 2, the proposed action. As also discussed above under Alternative 2, the proposed action's contribution to a cumulative transportation noise impact could be cumulatively considerable.

4.8.4 References Cited

California Department of Transportation. 2013. *Transportation and Construction Vibration Guidance Manual*. September. Available: http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf.

City of Lincoln. 2008. *City of Lincoln General Plan Update Final Environmental Impact Report.* State Clearinghouse No. 2005112003. February.

Federal Highway Administration. 2006. *Roadway Construction Noise Model User's Guide*. January. Washington, DC. Available: http://www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/rcnm.pdf.

Federal Transit Administration. 2006. *Transit Noise and Vibration Impact Assessment*. FTA-VA-90-1003-06. Office of Planning and Environment. May. Available: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Noise_and_Vibration_Manual.pdf.

Placer County. 1994. *Placer County General Plan Update: Countywide General Plan Final Environmental Impact Report*. July. Auburn, CA. Prepared by Crawford Multari & Starr, DKS Associates, Psomas and Associates, Jones & Stokes Associates, Recht Hausrath & Associates, and J. Laurence Mintier & Associates.

Placer County Airport Land Use Commission. 2014. *Placer County Airport Land Use Compatibility Plans*. Adopted February 26, 2014. Available: http://www.pctpa.net/library/aluc/Final%20Report/document/PLC_Cover_TOC.2014-02-26.pdf. Accessed: March 16, 2018.

U.S. Environmental Protection Agency. 1971. *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*. Washington, DC.