means of reducing the effects of wind-generated noise at the microphone. Ambient noise level measurements may be performed when wind velocities at the proposed project site are sufficient to allow wind turbine operation, provided that the wind velocity does not exceed thirty (30) miles per hour (mph) at the ambient noise measurement location.

7. Any noise level falling between two (2) whole decibels shall be the lower of the two (2).

8. In the event that noise levels, resulting from a proposed development, exceed the criteria listed above, a waiver to said levels may be granted by the Planning Director provided that the following has been accomplished:

   a. Written consent from the affected property owners has been obtained stating that they are aware of the proposed development and the noise limitations imposed by this code, and that consent is granted to allow noise levels to exceed the maximum limits allowed.

   b. A permanent noise impact easement has been recorded in the County Hall of Records which describes the benefited and burdened properties and which advises all subsequent owners of the burdened property that noise levels in excess of those permitted by this code may exist on or at the burdened property.

**Vibration**

Kern County does not include thresholds of significance for vibration levels. Per the Federal Transit Administration, engineered concrete and masonry buildings (no plaster) susceptible to vibration damage begin to experience structural damage at vibration levels of 0.3 inch per second Peak Particle Velocity (PPV) (FTA, 2006 – Table 12-3).

### 4.12.4 Impacts and Mitigation Measures

#### Methodology

CEQA requires determination of the significance of noise impacts associated with proposed projects. The process of assessing the significance of noise impacts associated with the project involves establishing thresholds at which significant impacts on noise-sensitive uses may occur. Noise levels associated with construction and operational activities related to the project, which includes both the North Sky River Wind Energy Project and Jawbone Wind Energy Project, were predicted and compared to these significance thresholds.

Construction noise levels to be generated by the proposed project would be typical of comparable large construction project. Noise levels would vary during the construction period depending on the construction phase and types of equipment in use. Construction noise levels were estimated based on the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) estimates of noise levels for the operation of heavy equipment. The anticipated construction noise at the closest sensitive receptor was calculated based on the distance of the sensitive receptor from the potential construction areas. Predicted levels are conservative because the only attenuating mechanism considered was divergence of the sound waves in open air, which equates to a 6 dB reduction per doubling of distance. This noise level at the closest sensitive receptor was then compared to the significance threshold.

The operational noise level for the WTGs was calculated using the computer software noise model, CADNA/A® by DataKustick GmbH of Munich, Germany, with sound propagation factors adopted from ISO 9613-2 *Acoustics – Sound Attenuation During Propagation Outdoors* and VDI 2714.
Outdoor Sound Propagation. The model treated each WTG as a point source, where each WTG was assumed to emit noise at the hub height. As discussed in Section 3.2, the conceptual site plan for the project would include GE XLE (1.5 MW), GE XL (2.5 MW), GE XL (2.75 MW), Goldwind 2.5/90 (2.5 MW), Siemens SWT 2.3-93 (2.3 MW) and Siemens SWT 2.3-101 (2.3 MW) model WTGs.

A noise model of the project was developed using available typical source input octave band sound power levels for a wind turbine generator with a rated power output of 2.5 MW. The project proposes to include 2.75 MW WTGs; however, specific input octave band sound power level data is not currently available for the turbines proposed. The sound power levels that were used are anticipated to represent the standard performance of the WTGs and were assigned based on data supplied by the manufacturer. Using these sound power levels as a basis, the model then calculated the sound pressure levels that would occur at each receptor from each WTG after consideration of losses from distance, air absorption, ground effects, and screening, as required under the noise criteria of the WE Combining District. In addition, the software calculated the low frequency noise from the WTGs based on typical one-third octave band WTG sound power levels relative to the limits established by the WE Combining District. The low frequency limits in the Kern County WE Combining District ordinance are expressed as limits on one-third octave band sound pressure levels for center frequencies of 1 Hz, 2 Hz, and 20 Hz through 125 Hz; however, narrow band sound data were not available for WTG noise in the 1 Hz, 2 Hz, and 20 Hz bands, so the low frequency analysis addressed only the 25 Hz through 125 Hz one-third octave bands. Where a noise level is predicted to exceed a threshold, the impact is considered significant and mitigation measures are proposed, as applicable.

Audible corona noise levels for the 230-kV transmission line from the Tehachapi Substation to the Wilderness Substation, and the existing 230-kV single-circuit transmission line from the Sky River Substation through the Tehachapi Substation to the Wilderness Substation were estimated for both existing conditions and future conditions with implementation of the proposed project utilizing the EMF Workstation: ENVIRO (Version 3.52) modeling program. This modeling program requires inputs for the locations and voltages of the energized and grounded conductors, the conductor diameters and their bundling dimensions and geometry, the elevation of the site, as well as other parameters. The modeling input parameters are provided in Noise Technical Report, Table 6-3 (see Appendix J).

Thresholds of Significance

The Kern County CEQA Implementation Document and Kern County Environmental Checklist state that a project would normally be considered to have a significant impact if it would:

- Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies.
- Exposure of persons to, or generation of, excessive ground borne vibration or ground borne noise levels.
- Substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- Substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
• For a project located within the Kern County Airport Land Use Compatibility Plan, exposure of people residing or working in the project area to excessive noise levels.

• For a project within the vicinity of a private airstrip, exposure of people residing or working in the project area to excessive noise levels.

As discussed in Appendix A (Notice of Preparation/Initial Study [NOP/IS]), the proposed project was determined to have no impact with regard to the following impact thresholds:

• For a Project Located within the Kern County Airport Land Use Compatibility Plan, Exposure of People Residing or Working in the Project Area to Excessive Noise Levels; and

• For a project within the vicinity of a private airstrip, exposure of people residing or working in the project area to excessive noise levels.

These issues are being re-evaluated in the EIR because it was determined after circulation of the NOP/IS that the project site falls inside the boundaries of the Special Use Airspace of the Joint Service Restricted R-2508 Complex.

Project Impacts

Impact 4.12-1: Exposure of Persons to, or Generation of, Noise Levels in Excess of Standards Established in the Local General Plan or Noise Ordinance or Applicable Standards of Other Agencies

The information in this analysis is based on the Noise Technical Report (2011) prepared by CH2MHILL for the North Sky River Wind Energy Project and the Noise Memorandum (2010) for the Jawbone Wind Energy Project, which are included in Appendix J of this EIR. As discussed above and shown in Figures 4.12-1 and 4.12-2, sensitive receptors including residences and recreationists along the PCT are located in and near the proposed project site. Operations of the proposed project were analyzed, specifically related to noise generated from the operation of the WTGs, noise generated by operation of the wind energy supporting infrastructure (e.g., substation and transmission lines), and as a result of increased traffic in the project area. The following types of operational noise were analyzed:

• A-Weighted WTG Noise;

• Low Frequency WTG Noise;

• Substation and Transmission Line Noise; and

• Traffic Noise

A-Weighted WTG Noise

Based on the CADNA/A® modeling results, the estimated overall A-weighted sound pressure levels from all of the WTGs are shown in Figure 4.12-3 as contours of constant noise levels. These estimates are based on the WTGs operating at their maximum noise output levels. The highest noise level at a residence resulting from the WTGs is predicted to be 42 dBA, and 34 dBA at the PCT.

For the residences, the Noise Element of the KCGP sets an exterior noise limit of 65 dB L\text{dn} and an interior noise limit of 45 L\text{dn}). The regulations of the WE Combining District zoning, which are specific to WTG operations, specifies that audible noise levels due to WTG operations that cause the exterior noise levels to exceed 45 dBA for more than five minutes out of any 1-hour time period (L8.3) or to exceed 50 dBA for any period of time when measured within 50 feet of any existing
Wind Turbine Generator Noise Contours at Maximum Output, dBA

Figure 4.12-3

Source: CH2MILL, 2011.

North Sky River Wind Energy Project
and Jawbone Wind Energy Project
Draft Environmental Impact Report

May 2011
residence shall not be created. The more stringent of these shall be used to determine the noise impacts to residences. The WE District’s limits on noise from WTGs, however, do not apply to outdoor recreation areas such as the PCT; therefore, the KCGP exterior noise limit of 65 dB L_{dn} would be used to determine noise impacts to the PCT.

The predicted noise level from the WTGs at the closest residence, which is located 3,215 feet away from the closest North Sky River WTG, is less than the Kern County WE Combining District exterior limit of 45 dBA (for 5 minutes in any one hour). A worst-case 24 hour noise level at this residence, assuming the 42 dBA level would be consistent over the 24-hour period, would be 48 dBA an L_{dn}. This level is also less than the KCGP exterior noise limit of 65 dBA L_{dn}. For the PCT, the predicted noise level of 34 dBA would also fall well below the KCGP exterior noise limit of 65 dBA L_{dn}. These estimates are based on estimates from the 2.5 MW WTG; and the noise from the marginal increase in power of the proposed 2.75 MW turbine is not anticipated to exceed any limits.

**Low Frequency WTG Noise**

The CADNA/A® model was also used to calculate the maximum octave band low frequency WTG noise level at the nearest receptor and compared to the WE Combining District’s limits. The results of the modeling are summarized below in Table 4.12-4.

<table>
<thead>
<tr>
<th>One-third Octave Band Center Frequency, Hz</th>
<th>Limit</th>
<th>Estimated level from WTGs</th>
<th>Exceed Limit?</th>
<th>Amount of Exceedance</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>67 67</td>
<td>52</td>
<td>No</td>
<td>None</td>
</tr>
<tr>
<td>31.5</td>
<td>65 65</td>
<td>49</td>
<td>No</td>
<td>None</td>
</tr>
<tr>
<td>40</td>
<td>62 62</td>
<td>48</td>
<td>No</td>
<td>None</td>
</tr>
<tr>
<td>50</td>
<td>60 60</td>
<td>48</td>
<td>No</td>
<td>None</td>
</tr>
<tr>
<td>63</td>
<td>57 57</td>
<td>46</td>
<td>No</td>
<td>None</td>
</tr>
<tr>
<td>80</td>
<td>55 55</td>
<td>45</td>
<td>No</td>
<td>None</td>
</tr>
<tr>
<td>100</td>
<td>52 52</td>
<td>43</td>
<td>No</td>
<td>None</td>
</tr>
<tr>
<td>125</td>
<td>50 50</td>
<td>43</td>
<td>No</td>
<td>None</td>
</tr>
</tbody>
</table>

Source: CH2MHILL, February 2011 (Table 6-2). See Appendix J.

As shown in Table 4.12-4, there are no projected exceedances of the low frequency noise limits identified in the Kern County Zoning Ordinance, Section 19.64.140.J (WE Combining District). Therefore, the low frequency noise generated by the proposed WTGs would be less than significant. These estimates are based on estimates from the 2.5 MW WTG; and the noise from the marginal increase in power of the proposed 2.75 MW turbine is not anticipated to exceed any limits.

**Substation and Transmission Line Noise**

Operation of the proposed project’s collector substation and transmission lines (gen-tie line and transmission reinforcement line) would have the potential to result in noise impacts. Noise impacts attributed to the substations and transmission lines would be considered significant if they were to exceed the 65 dB L_{dn} exterior noise limit or the 45 L_{dn} interior noise limit specified in the Noise Element of the KCGP.

For the substations, the dominant noise source would be the transformers. Assuming a transformer operating at a maximum capacity of 350 megavolt ampere (MVA), noise levels from the collector substation at the nearest sensitive receptor would be approximately 25 dBA (CH2MHILL, 2011).
The substation noise levels would be lower when operating at lower loads (i.e., when there is less power being generated by the WTGs under low wind conditions). Therefore, the proposed substation would not result in significant noise impacts.

Future corona noise was not evaluated for the transmission reinforcement line due to the short distance traversed, and because there is an existing 230 kV transmission line in the area currently generating corona noise such that the short segment of new line would not noticeably increase ambient noise levels. Therefore, impacts related to corona noise for the Wilderness transmission reinforcement line are less than significant.

A new gen-tie line would be constructed between the project site and the Sky River Substation, and the potential exists for a gen-tie line to also be constructed between the Jawbone Wind Energy Project site and the Pine Tree Substation. The new gen-tie lines and associated corona noise would be introduced to an area where no corona noise currently exists. Future corona noise for the new 230-kV gen-tie lines have been estimated in the Noise Technical Report, Table 6-3 (see Appendix J) to be 47 dBA under foul (rain) weather conditions and 22 dBA under fair weather conditions at the edge of the ROW. This level of noise would be similar to existing ambient noise levels (40-45 dBA) and would attenuate quickly. Furthermore, these noise levels are below the KCGP limit of 65 dBA L_{dn}. Therefore, impacts related to corona noise from the gen-tie lines would be less than significant.

The gen-tie line proposed to be located between the project site and the Sky River Substation would be located in close proximity to the PCT, both paralleling the PCT and in several instances crossing the PCT. Under fair weather conditions, the previously referenced estimated corona noise level of 22 dBA at the edge of the transmission line ROW would be below ambient noise levels for the project area and would therefore result in a less-than-significant impact. Under rain (foul) weather conditions, the estimated corona noise level of 47 dBA would potentially be higher than existing ambient noise levels; however, ambient noise levels would also likely increase as a result of the rain itself. As such, the increase in corona noise levels under rain (foul) weather conditions would likely not be perceivable and would therefore be considered less than significant. Furthermore, these noise levels are below the KCGP limit of 65 dBA L_{dn}; therefore, impacts related to corona noise on the PCT are less than significant.

**Traffic Noise**

The proposed project site is accessed from SR-14 by continuing west on Jawbone Canyon Road for 13 miles. Operations of the proposed project would require up to 32 full- and part-time wind turbine technicians, operations personnel, administrative personnel, and managers. However, not all staff would be working at the same time. Normal operations could involve deployment of up to three crews of two technicians around the site and two to three personnel in the O&M office, resulting in up to nine staff at the project site at any given time. In addition, traffic would be generated as a result of periodic materials and equipment deliveries (e.g., cranes for major repairs, power line or substation repairs, etc.). The level of traffic generated by operation and maintenance staff and the occasional delivery of materials and equipment would not result in a noticeable increase in noise levels along Jawbone Canyon Road or be expected to exceed the KCGP Noise Element limit of 65 dB L_{dn} or less in outdoor activity areas. As such, traffic noise impacts would be less than significant.

**Mitigation Measures**

The project would comply with the goals, policies, and implementation measures of the KCGP. No additional mitigation measures are proposed.
Level of Significance

Impacts would be less than significant.

Impact 4.12-2: Exposure of Persons to, or Generation of, Excessive Ground borne Vibration or Ground borne Noise Levels

Construction activities have the potential to generate a substantial amount of vibration from earth moving activities such as impact pile driving and blasting, as well as from the use of large construction equipment, which can annoy residences and, in severe cases, damage structures.

As discussed in the Noise Technical Report, potential vibration impacts from construction were determined based on guidance provided in the Federal Transit Administration’s Transit Noise and Vibration Impact Assessment document (FTA, 2006). To avoid damage to structures considered to be extremely susceptible to vibration damage, a vibration velocity limit (or peak particle velocity, PPV) of 0.12 inches per second levels would apply. To avoid annoyance to residences, the appropriate criterion was determined to be a ground-borne vibration level of 80 VdB for infrequent events (see Table 4.12-3). An analysis using the Federal Transit Administration approach and typical source reference levels for impact pile driving concluded that impacts from construction of the proposed project would not occur beyond approximately 77 feet for damage to structures or beyond 158 feet for residential annoyance (CH2MILL, 2011). The closest residence is located 3,215 feet from the nearest WTG and would therefore not be affected by the groundborne vibrations generated during construction.

According to a recent study titled “Wind Turbine Sound and Health Effects: An Expert Panel Review” completed for the American Wind Association (Colby, et al., 2009), it was concluded that ground-borne vibrations from the operation of WTGs are too weak to be detected by, or to affect humans. As such, operation of the WTGs would not result in significant levels of ground-borne vibration at the sensitive receptors. Therefore, construction and operation of the proposed project is not anticipated to result in significant vibration impacts.

Mitigation Measures

No additional mitigation measures are proposed.

Level of Significance

Impacts would be less than significant.

Impact 4.12-3: Substantial Permanent Increase in Ambient Noise Levels in the Project Vicinity above Levels Existing without the Project

As discussed in Section 4.12.1, existing background noise levels in the vicinity of the project area are estimated to be approximately 40-45 dBA, and operation of the proposed WTGs would result in estimated noise levels of 42 dBA at the closest residence, which is within the range of existing noise levels. Modeled corona noise levels would be similar to existing ambient noise levels (40-45 dBA) and would attenuate quickly. As such, the proposed project would not result in a substantial permanent increase in ambient noise levels in the project vicinity.
Mitigation Measures

No additional mitigation measures are proposed.

Level of Significance

Impacts would be less than significant.

Impact 4.12-4: Substantial Temporary or Periodic Increase in Ambient Noise Levels in the Project Vicinity above Levels Existing without the Project

Construction of the proposed project (North Sky River Wind Energy Project and Jawbone Wind Energy Project) would result in temporary increases in ambient noise levels in the project vicinity, both on and off site, during the anticipated 12-month construction duration. On-site noise levels would fluctuate depending on the phase of construction, equipment type and duration of use, distance between the noise source and receptor, and presence or absence of noise-attenuation barriers. Project Description Table 3-7 lists the types of equipment that would be used during the various stages of construction for the North Sky River Wind Energy Project. The construction equipment requirements for the Jawbone Wind Energy Project are provided in Project Description Table 3-8.

A temporary water reservoir, back-up well, two underground water pipelines, and a post-construction low profile partially submerged concrete tank would also potentially be constructed on the water supply parcel located northwest of the project site. Excavation, grading, and compaction activities for the reservoir, back-up well, and two pipelines would require two 13-yard self-loading scrapers, one D6 bulldozer, a water truck, and an 84-inch sheep foot vibratory compactor (Sapphos, 2011). Construction of these elements would take approximately seven days and occur concurrently with the first month of grading activities required for the other elements of the proposed project (e.g., WTGs and met towers). Following construction of the above mentioned elements at the water supply parcel, 3.75 miles of Jawbone Canyon Road between the water supply parcel and the point of delivery would be repaired. Equipment required to repair the road would include a motor grader, 9-wheel rubber tire roller, and a water truck (Sapphos, 2011).

Typical noise levels from various equipment used during construction are listed in Table 4.12-5, below. This table shows noise levels of individual equipment at distances of 50 and 2,500 feet from the construction noise source. These noise levels are based on surveys conducted by the EPA in the early 1970s. Since 1970, regulations have been enforced to reduce noise generated by certain types of construction equipment to meet worker noise-exposure standards; however, many older pieces of equipment are still in use. As such, the construction equipment noise levels indicated in Table 4.12-5 represent worst-case conditions.

<table>
<thead>
<tr>
<th>Noise Source</th>
<th>Noise Level (dBA)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50 feet</td>
<td>2,500 feet</td>
</tr>
<tr>
<td>Backhoe</td>
<td>78</td>
<td>45</td>
</tr>
<tr>
<td>Compactor (ground)</td>
<td>83</td>
<td>50</td>
</tr>
<tr>
<td>Crane</td>
<td>81</td>
<td>48</td>
</tr>
<tr>
<td>Dozer</td>
<td>82</td>
<td>49</td>
</tr>
<tr>
<td>Dump Truck</td>
<td>76</td>
<td>43</td>
</tr>
<tr>
<td>Excavator</td>
<td>81</td>
<td>48</td>
</tr>
<tr>
<td>Flat Bed Truck</td>
<td>74</td>
<td>41</td>
</tr>
<tr>
<td>Front End Loader</td>
<td>79</td>
<td>46</td>
</tr>
</tbody>
</table>

As described in the *Noise Technical Report* (2011), the RCNM was used to estimate construction noise levels at specific receptor distances. The predicted noise level for equipment utilized for pole installation at a distance of 1,000 feet (distance to closest residence from the Wilderness transmission reinforcement line) is 59 dBA (CH2MHILL, 2011). (Note: Based on 78 dBA at 107 feet). The predicted noise level for equipment utilized during installation of the WTGs at a distance of 3,215 feet (distance to closest residence from a WTG) is 49 dBA (CH2MHILL, 2011). The predicted noise level for the concrete batch plant, which includes use of a rock crusher, at a distance of 11,155 feet (distance to closest residence) is 44 dBA (CH2MHILL, 2011). Excavation, grading, and compaction activities required for the reservoir, back-up well, and water pipelines occurring at the water supply parcel would result in noise levels of up to 52 dBA at 2,200 feet (distance to closest residence) (Aspen, 2011). Road repairs along the 3.75-mile segment of Jawbone Canyon Road would result in noise levels up to 57 dBA at a distance of 900 feet (distance to closest residence along the road segment) (Aspen, 2011). During the remainder of construction activities, the pumps, instrumentation, and controls to transport water to the reservoir would be powered by a 100-kW diesel-powered generator. The predicted noise level for the generator at a distance of 2,200 feet (distance to closest residence – assuming generator placed near northern boundary of water supply parcel) is 29 dBA (Sapphos, 2011; Aspen, 2011). Demolition would be conducted with equipment similar to that used for construction of the proposed project, and would therefore result in similar noise levels (CH2MHILL, 2011).

While the Ordinance Code of Kern County restricts the hours of construction for construction sites within 1,000 feet of an occupied residential dwelling (no construction between 9:00 p.m. and 6:00 a.m. weekdays and 9:00 p.m. and 8:00 a.m. on weekends), Kern County does not have regulations restricting construction noise levels.

Construction of the North Sky River Wind Energy Project is scheduled to occur between 6:00 a.m. to 9:00 p.m. Monday through Friday, and between 8:00 a.m. and 9:00 p.m. on Saturdays, which would comply with the limitations established in the Ordinance Code of Kern County. Construction noise levels at the closest sensitive receptor to a proposed WTG (49 dBA at 3,215 feet), to the water supply parcel (52 dBA at 2,200 feet), and to the Jawbone Canyon Road repairs (57 dBA at 900 feet) could potentially be considered significant, as they are above the ambient noise levels in the project area (estimated to be approximately 40-45 dBA); however, these noise levels would not exceed the KCGP Noise Element exterior noise limit of 65 dB L_{eq} for sensitive receptors.

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### 4.12-5. Maximum Noise Levels of Common Construction Equipment

<table>
<thead>
<tr>
<th>Noise Source</th>
<th>Noise Level (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generator</td>
<td>81</td>
</tr>
<tr>
<td>Grader</td>
<td>85</td>
</tr>
<tr>
<td>Compactor (ground)</td>
<td>83</td>
</tr>
<tr>
<td>Concrete Batch Plant</td>
<td>83</td>
</tr>
<tr>
<td>Concrete Mixer Truck</td>
<td>79</td>
</tr>
<tr>
<td>Paver</td>
<td>77</td>
</tr>
<tr>
<td>Pickup Truck</td>
<td>75</td>
</tr>
<tr>
<td>Pneumatic Tools</td>
<td>85</td>
</tr>
<tr>
<td>Rock Crusher</td>
<td>94</td>
</tr>
<tr>
<td>Roller</td>
<td>80</td>
</tr>
<tr>
<td>Scraper</td>
<td>84</td>
</tr>
<tr>
<td>Tractor</td>
<td>84</td>
</tr>
</tbody>
</table>

Source: FHWA, 2006 (Table 9.1); Yastrow, 1990 – Rock Crusher.
Notes: (1) Assumes a 6 dBA drop-off rate for noise generated by a “point source” and traveling over hard surfaces.

Notes: (1) Assumes a 6 dBA drop-off rate for noise generated by a “point source” and traveling over hard surfaces.
Construction of the Jawbone Wind Energy Project would occur between 5:30 a.m. to 9:00 p.m. Monday through Saturday, and between 7:00 a.m. and 6:00 p.m. on Sundays, which would conflict with the Ordinance Code of Kern County if such construction activities occur within 1,000 feet of an occupied residential dwelling. No residences are located within 1,000 feet of the main Jawbone Wind Energy Project site, and in fact the closest residence is located approximately two miles to the northwest. Therefore, construction at the main Jawbone Wind Energy Project site would not conflict with the limitations established in the Ordinance Code of Kern County. Construction noise levels at the nearest receptor to the main site would be at or below the ambient noise levels in the project vicinity (estimated to be approximately 40-45 dBA) such that construction of the main Jawbone Wind Energy Project site would not result in temporary increases in ambient noise levels above those existing without the project. However, one residence is located within 1,000 feet of the proposed road repairs along Jawbone Canyon Road between the water supply parcel and the point of delivery, where projected construction noise levels (57 dBA at 900 feet) would exceed ambient noise levels and could occur outside the construction hours identified in the Ordinance Code of Kern County. Implementation of Mitigation Measure (MM) 4.12-1 would ensure compliance with the construction hours established in the Ordinance Code of Kern County and reduce construction noise impacts from road repairs to a less-than-significant level.

Projected noise levels along the proposed Wilderness transmission reinforcement line (59 dBA at 1,000 feet or 78 dBA at 107 feet), which would be similar along the gen-tie line, would exceed ambient noise levels and would have the potential to exceed the KCMP Noise Element exterior noise level limit, specifically along the PCT, resulting in a potentially significant noise impact. However, implementation of MM 4.12-1 would reduce construction noise impacts from the North Sky River Wind Energy Project to a less-than-significant level.

Off-site noise levels would occur as a result of traffic generated by personnel going to and from the project site, as well as equipment and material deliveries. Access would occur via SR-14 to Jawbone Canyon Road to the project site. For the North Sky River Wind Energy Project, an average of approximately 120 workers would be employed during construction, with a peak workforce of 150 workers. For the Jawbone Wind Energy Project, the peak workforce is anticipated to include 30 workers. Off-site construction noise would occur along the construction traffic haul route. Construction traffic would vary by construction phase, where the maximum construction traffic (538 trips per day) would occur during the fifth month of construction for the North Sky River Wind Energy Project. Construction traffic noise for this volume of vehicles (all assumed to be heavy- or medium-duty trucks) would be 61 dBA at the closest receptor (Location N-13 on Figure 4.12-1), which is located adjacent to Jawbone Canyon Road (CH2MHILL, 2011). This level of noise would be considerable, as it is well above the ambient noise levels in the project area (estimated to be approximately 40-45 dBA); although, these noise levels would not exceed the KCMP Noise Element exterior noise limit of 65 dB L_A. However, construction traffic noise impacts would be short term and temporary (during construction only), and would be minimized with implementation of MM 4.12-1. As such, off-site construction noise impacts would be less than significant.

**Mitigation Measures**

**MM 4.12-1** During all grading and construction activities and throughout the operation of the project, the project proponents shall continuously comply with the following:
(a) All construction equipment shall be equipped with mufflers and other suitable noise attenuation devices, that equipment engines are enclosed, and that all construction equipment is in good working order.

(b) The project proponent shall require the construction contractor to utilize quieter equipment, when feasible (e.g., when such equipment is available and appropriate for on-site conditions), such as grading and construction equipment with rubber tires rather than tracks, or use of a vibratory pile driver instead of an impact pile driver.

(c) All stationary equipment, such as a concrete batch plants and long-term-use (greater than one month) staging areas, shall be located a minimum of 1,000 feet away from sensitive receptors.

(d) All construction equipment shall be turned off when not in use for prolonged periods.

(e) The project proponent shall comply with the Ordinance Code of Kern County, Chapter 8.36 (Section 8.36.020, Prohibited Sounds), such that no construction will occur at construction sites within 1,000 feet of an occupied residential dwelling between 9:00 p.m. and 6:00 a.m. weekdays and 9:00 p.m. and 8:00 a.m. on weekends.

(f) A noise disturbance coordinator shall be established. The disturbance coordinator shall be responsible for responding to any local complaints about construction noise. The disturbance coordinator shall determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and shall be required to implement reasonable measures to resolve the complaint. Signs posted at the construction site shall list the telephone number for the disturbance coordinator.

Level of Significance after Mitigation

Impacts would be less than significant.

Impact 4.12-5: For a Project Located within the Kern County Airport Land Use Compatibility Plan, Exposure of People Residing or Working in the Project Area to Excessive Noise Levels

The proposed project is not located within the Kern County Airport Land Use Compatibility Plan. The closest public airport to the project site is the California City Municipal Airport, which is located 12 miles southeast of the project site, and has a single runway. Tehachapi Municipal Airport, also a public single-runway airport, is located about 14 miles south-southwest of the project site. The Mojave Air and Space Port has three runways, is accessible for public use, and is 20 miles from the project site. Nearby military installations having air overflights in the project area include China Lake Naval Air Weapons Station (NAWS) to the northeast of the site and Edwards Air Force Base (AFB) to the southeast of the site. The project site falls inside the boundaries of the Special Use Airspace of the Joint Service Restricted R-2508 Complex. This complex is considered an extension of the airspace of the military installations within the complex (Edwards AFB, China Lake NAWS, and Fort Irwin/National Training Center) and covers 20,000 square miles. Coordination by the project proponent with the R-2508 Complex is ongoing.

Noise levels from military overflights often exceed County standards. These exceedances are not only typical in the project area, exposing residences throughout the years of operation of Edwards
AFB, China Lake NAWS, and Fort Irwin/National Training Center, but are of extremely short duration and have not been shown to result in hearing loss or other long-term impairments. In addition, because the nearest public airport/public use airport is located approximately 12 miles away, the proposed project is not expected to expose people working on the project to excessive noise levels from airport activities. As such, impacts would be less than significant.

**Mitigation Measures**

The project would comply with the goals, policies, and implementation measures of the KCGP. No additional mitigation measures are proposed.

**Level of Significance**

Impacts would be less than significant.

### Impact 4.12-6: For a Project within the Vicinity of a Private Airstrip, Exposure of People Residing or Working in the Project Area to Excessive Noise Levels

The nearest private airstrip is an unpermitted private airstrip located 1.2 miles northwest of the project site boundary. This airstrip is considered a basic utility airfield as defined by Federal Aviation Regulations Part 77; however, at this time, local land use approval has not been activated for this facility. Considering the minimal number of planes housed at this airport (1 single-engine aircraft, 2 gliders), and the small size of the planes (single-engine), noise generated by airplanes at this airport is not expected to be excessive (City-Data.com, 2010). Therefore, implementation of the proposed project would not expose individuals working in the project area to excessive noise levels from private airstrips in the area and impacts would be less than significant.

**Mitigation Measures**

The project would comply with the goals, policies, and implementation measures of the KCGP. No additional mitigation measures are proposed.

**Level of Significance**

Impacts would be less than significant.

### Cumulative Setting Impacts and Mitigation Measures

**Cumulative Setting**

The cumulative impact analysis considers the combined noise impacts of the proposed project with nearby related projects. As described in Section 3.11, *Cumulative Projects*, several existing, permitted, and proposed wind energy and transmission projects are located in the region. The Pine Tree Wind Development Project is located immediately south of the proposed project site and is currently in operation. Access to the Pine Tree Wind Project is from SR-14 via Jawbone Canyon Road, same as the proposed project. In addition, the existing 77-MW Sky River wind energy facility is located immediately south of the southwest portion of the proposed project site. The Alta-Oak Creek Mojave Wind Project is located 14 miles south of the proposed project site and is currently under construction, which is expected to continue through late 2011. The PdV Wind Project is located 25 miles south of the proposed project site and is also under construction (started in December 2010). Segments of the Tehachapi Renewable Transmission Project (TRTP) are expected to be approved and constructed in the vicinity of the proposed project site within the next several years or are already under construction. Segment 10 of the TRTP initiates at the Whirlwind
Substation and includes a new single-circuit 500-kV transmission line from the Whirlwind Substation to the Windhub Substation. Construction of this segment will begin in March 2011.

**Impact 4.12-7: Contribute to Cumulative Noise Impacts**

With regard to exposing persons to, or generation of, noise levels in excess of standards (Impact 4.12-1), the proposed project’s construction impacts would be reduced to a less-than-significant level with implementation of MM 4.12-1. All other impacts associated with the proposed project are less than significant. From a cumulative perspective, the proposed project site is located immediately south of the Pine Tree Wind Development Project, where such proximity presents the potential from noise from the proposed project to combine with noise from the Pine Tree Wind Development Project to result in a cumulative noise impact. However, the Pine Tree Wind Development Project is currently in operation and therefore is represented in the background noise levels of the project area. Furthermore, as noise impacts are generally site-specific, any potential combining of noise would only occur in the area where the two projects are located closest to each other. The receptor that would be located closest to both the Pine Tree Wind Development Project and the proposed project is identified as P-2 on Figure 4.12-1. The estimated noise at this receptor from operation of the proposed project is approximately 28 dBA (CH2MHILL, 2011). This noise level is well below existing noise levels in the project area and would result in a less than significant cumulative noise impact.

With regard to exposing persons to, or generation of, excessive ground borne vibration or ground borne noise levels (Impact 4.12-2), the proposed project would not result in substantial levels of ground-borne vibration at sensitive receptors. Ground borne vibration and ground borne noise dissipate more rapidly than airborne noise levels, limiting the geographic extent of ground vibration to the immediate vicinity of the vibration source, such that only projects located in close proximity to the proposed project would have the potential to combine. When considered cumulatively with the Pine Tree Wind Development Project, it is not anticipated that the proposed project would contribute to substantial ground-borne vibration levels at sensitive receptors. Therefore, impacts of the proposed project would not be cumulatively considerable.

With regard to the proposed project resulting in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project, as discussed above for Impact 4.12-3, the proposed project’s operational impacts would be less than significant. Operation of the proposed WTGs would result in noise levels within the range of existing noise levels in the project area. Modeled corona noise levels would result in an increase in existing corona noise levels of approximately 3 to 5 dBA, which is perceivable but not considered a substantial increase. The A-weighted noise generated by the proposed project’s WTGs when considered cumulatively with noise from the Pine Tree Wind Development Project, would not be anticipated to result in a perceptible increase in noise levels at sensitive receptors above those determined for operation of the proposed WTGs.

With regard to the proposed project resulting in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project (Impact 4.12-4), the proposed project’s construction impacts would be reduced to a less-than-significant level with implementation of MM 4.12-1. No other construction projects are scheduled to occur in the immediate vicinity of the proposed project; therefore no cumulative noise impact would occur.
With regard to the proposed project exposing people residing or working in the project area to excessive noise levels from a public airport or private airstrip (Impacts 4.12-5 and 4.12-6), the proposed project’s impacts are not significant. However, the proposed project would result in a greater number of people working in the project area and being exposed to airport noise. As stated for the proposed project, the noise generated by airplanes are part of the existing ambient noise conditions of the area, are of short duration, and are not known to cause hearing-loss or other long-term noise impacts. As such, these impacts would combine with impacts from past, present, or reasonably foreseeable projects, but would not result in a significant cumulative impact. Impacts would be less than significant.

**Mitigation Measures**

Implement Mitigation Measure 4.12-1.

**Level of Significance after Mitigation**

Cumulative impacts would be less than significant.