

# 3.10: NOISE

## Introduction

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This section describes the ambient noise levels in the project area and the potential impacts resulting from the proposed project construction and operation. Mitigation measures for significant impacts are also provided.

## Environmental Setting

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### TECHNICAL BACKGROUND

Sound is a pressure wave transmitted through the air and is described in terms of loudness or amplitude (measured in decibels [dBA]), frequency of pitch (measured in Hertz [Hz] or cycles per second), and duration (measured in minutes or seconds).

Typical human hearing can detect changes in sound levels of approximately 3 dBA under normal conditions. Changes as low as 1 dBA are discernible under quiet, controlled conditions. The human ear is not equally sensitive to all sound frequencies. Sound waves below 16 Hz are not heard at all but can be felt as vibrations. While people with extremely sensitive hearing can discern sounds with pitches as high as 20,000 Hz, most people cannot hear sound with a frequency above 5,000 Hz or below 200 Hz. A special frequency-dependent rating scale is used to relate noise to human sensitivity. The A-weighted decibel compensates by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Noise is defined as unwanted or objectionable sound, and usually reflects changes from typical background noise levels and spectra. Airborne sound is described as a rapid fluctuation of air pressure above and below the atmospheric pressure. Magnitude, frequency and duration are the variables used to characterize noise. In general, people can perceive a 3 dB difference in noise levels, and a difference of 6-10 dB is perceived as a doubling of loudness. Distance serves to attenuate noise levels and changes frequencies.

With every doubling of distance, there is a corresponding reduction in noise levels of approximately 5 to 6 dB. Noise levels from familiar sources are shown in Table 3.10-1.

**Table 3.10-1: Typical Residential/Commercial Noise Sources and Levels**

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Noise Source	Noise Level (dBA)
Rustle of leaves in breeze	25
Whisper (at 6 feet)	35
Inside average residence	40
Refrigerator (in same room)	40
Average office	55
Normal female speech (at 3 feet)	60
Vacuum cleaner (at 10 feet)	70
Garbage disposal (at 3 feet)	80
Food blender (at 3 feet)	90
Auto horn (at 10 feet)	100

SOURCE: J.J. Van Houten, 1974

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## REGIONAL SETTING

In Butte County there have been few noise complaints and most of these involve in-city noise problems. The unincorporated areas of the County generally have low noise levels and most of the noise-producing activities (motorcycle tracks, gravel-crushing operations, etc.) are sufficiently remote from populated areas and cause few complaints. There are few persons exposed to noise levels above an  $L_{dn}$ <sup>1</sup> of 60 dBA in the unincorporated areas of the County. Railroads, high-speed highways, industries, and airports currently affect few residential areas or other sensitive receptors.

In Colusa County noise is perceived as a relatively minor problem. There are no large urban centers or major airports, few noise-producing industrial uses, and few congested highways. Most residents view agricultural noises, such as the hum of crop dusters or washing and scraping at plum packing sheds, as part of life in a farm community. In some parts of the county, residents have lived beside rice dryers or concrete batch plants for years and have become accustomed to their sound qualities. Typical noise levels on a tomato farm over a 24-hour period are about 44 dBA. The 24-hour noise level in a typical upland valley area is about 40 dBA. Even along county roads in undeveloped areas, the average noise level in a day is 50 dBA. These noise levels are typical of rural, uncongested environments.

The primary sources of noise in Colusa County are highways, namely Interstate 5 and Highway 20, the Southern Pacific Railroad, low-flying airplanes, agricultural industries,

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<sup>1</sup>  $L_{dn}$ , the day-night average noise level, is based on human reaction to cumulative noise exposure over a 24-hour period.  $L_{dn}$  accounts for community receptors' greater sensitivity to unwanted noise intrusion during the night. Noise between 10:00 p.m. and 7:00 a.m. is weighted by 10 dBA to take into account the greater annoyance of nighttime noise.

and farm machinery. Noise is also generated within each community through everyday activities such as lawn-mowing, leaf-blowing, or chainsaw operation.

## LOCAL SETTING

### Ambient Noise Sources

Noise surveys conducted in the Butte County project area (inclusive of the Well Pad Site, Remote Facility Site, Loop Pipeline and part of the Connection Pipeline routes) prior to initial project development indicated that ambient noise levels were in the range of 38 to 40 dBA ( $L_{eq}$ )<sup>2</sup> during the day and about 36 dBA ( $L_{eq}$ ) at night (Bollard Acoustical Consulting 1998). These noise levels are considered representative of existing agricultural uses in the project area. Primary noise sources are vehicle traffic on local roads, agricultural equipment operating in fields, crop dusters and other low flying aircraft, and wildlife noises. The wetlands maintenance activities in the area use various sizes of tractors and occasionally a bulldozer during the summer months. During the spring and fall months, farmers in the area typically use bulldozers for deep plowing, leveling and creation of rice dikes. Backhoes are used for repairing and maintaining water control structures. Combines are used for harvesting rice. Tractors are used for other field preparation activities. Additional seasonal noise sources include:

- Propane powered zone guns used in mid- to late-summer to scare birds from the rice fields as the seed heads mature,
- Low-flying crop dusters applying seed, fertilizer, or pesticides, or buzzing the fields to scare off birds in the spring, summer, and fall just before harvest, and
- Firearm noise from upland game bird and waterfowl hunting during the fall and winter.

Since the project area in Colusa County (inclusive of most of the Connection Pipeline route and Interconnect Facility site) is also principally used for agriculture, it has similar existing noise sources and ambient noise levels as the Butte County portion of the project area. In addition to the noise sources described above, Interstate 5, State Route 45, and the Union Pacific Railroad tracks adjacent to Interstate 5 are principal noise sources in the Colusa County portion of the project area. PG&E's Delevan Compressor Station is also a noise source, although noise emission levels are unknown.

**Remote Facility Site.** Ambient noise surveys were taken on June 23, 1999 while both compressors installed during initial project development were operating. Survey locations included the perimeter fence and the two nearest residences. Noise measurements taken along the fence line ranged from 48 dBA at the southeast corner of the site, to 72 dBA along the north side between the two compressor engine exhaust stacks. The residential measurements were taken at the Waterbury residence, located approximately 4,500 feet east of the site on Pennington Road, and the Weiking residence (the Gray Eagle Hunting

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<sup>2</sup>  $L_{eq}$  equivalent steady-state sound level, is a single value of sound level for any desired duration that includes all time-varying sound energy occurring during the measurement period.

Club), located approximately 5,800 feet to the west at the end of West Liberty Road. The results of these surveys indicated both by specific measurement and subjectively that the noise emissions from the Remote Facility Site were not audible at either location. A copy of the noise survey is included in Appendix N.

### **Sensitive Receptors**

Sensitive receptors in the Butte County project area are either farm or hunting club caretaker residences, and are classified based on their proximity to either the pipeline routes (where only construction noise may be an issue) or the Remote Facility Site (where operational noise for the life of the project may be an issue). The other aboveground facilities would generate little, if any, noise. Residences within 220 yards (660 feet) of the pipeline route are considered to be sensitive receptors, and residences within one mile of the Remote Facility Site in Butte County are considered to be sensitive receptors. There are five residences that meet these criteria. Two residences are within 220 yards (660 feet) of the Loop Pipeline route, and three are within this distance of the Connection Pipeline. One of the residences along the Connection Pipeline is associated with a private airstrip, and one of those along the Loop Pipeline is associated with the Tule Goose Gun Club. One residence is within one mile of the Remote Facility Site.

Another category of sensitive receptors is seasonal hunters between early-September and mid-January. Hunting areas include the hunting clubs in the Butte Sink, the rice fields adjacent to project facilities, and the Gray Lodge area.

Sensitive receptors in Colusa County are either farm or hunting club caretaker residences, and are classified based on their proximity to either the pipeline routes where only construction noise may be an issue. Residences within 220 yards (660 feet) of the pipeline route were considered to be sensitive receptors. As the Line 400/401 Connection Pipeline crosses Colusa County, it would mainly pass through agricultural land uses. There are a total of six residences that are within 220 yards (660 feet) of the Connection Pipeline, one of which is associated with a private airstrip.

## **Regulatory Setting**

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The following regional and local plans and policies seek to preserve the noise levels in the project area.

### **FEDERAL SETTING**

The US EPA suggests a noise reduction goal of 55 dBA ( $L_{dn}$ ) in residential areas for the protection of health and welfare. The US Department of Housing and Urban Development maintains a minimum standard for noise in residential areas of 65 dBA ( $L_{dn}$ ). However, no federal regulations apply to potential impacts on noise in the project area.

### **STATE/REGIONAL SETTING**

California Government Code Section 65302(g) requires that a county's general plan include a Noise Element. However, no state regulations apply to the proposed project.

Table 3.10-2 shows suggested noise standards per land use designation from the Governor’s Office of Planning and Research.

**Table 3.10-2: Community Noise Exposure**

Land Use Category	Community Noise Exposure					
	L <sub>dn</sub> or CNEL, dB					
	55	60	65	70	75	80
<b>Residential – Low Density Single Family, Duplex, Mobile Homes</b>						
<b>Residential – Multi Family</b>						
<b>Transient Lodging – Motels, Hotels</b>						
<b>Schools, Libraries, Churches, Hospitals, Nursing Homes</b>						
<b>Auditoriums, Concert Halls, Amphitheaters</b>						
<b>Sports Arena, Outdoor Spectator Sports</b>						
<b>Playgrounds, Neighborhood Parks</b>						

**Community Noise Exposure**

Land Use Category

$L_{dn}$  or CNEL, dB

55      60      65      70      75      80

Land Use Category	Community Noise Exposure					
	55	60	65	70	75	80
<b>Golf Courses, Riding Stables, Water Recreation, Cemeteries</b>						
<b>Office Buildings, Business Commercial and Professional</b>						
<b>Industrial, Manufacturing, Utilities, Agriculture</b>						

**Interpretation**

**Normally Acceptable**

Specified land use is satisfactory based on the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.



**Conditionally Acceptable**

New Construction or development should be undertaken only after a detailed analysis is made of the noise reduction requirements and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.



**Normally Unacceptable**

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.



**Clearly Unacceptable**

New construction or development should generally not be undertaken.



SOURCE: Governor’s Office of Planning and Research 1998

As shown in the table, the normally acceptable maximum noise level in agricultural areas is 75 “A-weighted” decibels (dBA). These noise levels are measured as “ $L_{dn}$ ” which applies a 10-dBA penalty to noise-producing sources during the night and evening hours (10:00 p.m. to 7:00 a.m.) because of people’s greater sensitivity to noise during those hours. When prorated over a 24-hour period, the  $L_{dn}$  represents a 6.4-dBA penalty for noise-producing sources. For example, a noise source that produces an equivalent noise level ( $L_{eq}$ ) of 60 dBA is assumed to be producing the noise effect of 66.4 dBA on the  $L_{dn}$  scale.

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## LOCAL SETTING

### Butte County

The current Butte County General Plan Noise Element, completed in 1985, is a minor revision of the 1975 element. Although the 1985 update included development of a Noise Ordinance as an implementation measure, it has not been adopted. The following policies contained within the Butte General Plan are applicable to potential noise impacts in the project area.

**Policy 1.** Endeavor to maintain an acceptable noise environment in all areas of the County.

**Policy 2.** Where possible, control the sources of transportation noise to maintain acceptable levels.

**Policy 3.** Special consideration should be given to residential development another noise sensitive activities near railroads and highways.

**Policy 4.** Plan for airport development and discourage noise-sensitive activities near airports.

**Policy 6.** Provide 60 dB noise contours around major sources where this information is not presently available.

Currently, disputes over excessive noise in Butte County are settled in local courts. In the interim, the County is using the Land Use Compatibility for Community Noise Environments table shown as Table 3.10-1. This noise compatibility standard has been adopted from the November 1998 California General Plan Guidelines published by the Governor's Office of Planning and Research. The  $L_{dn}$  scale is used in County General Plan documents as a means of better describing the compatibility of various land uses within a community. Unless otherwise noted, all noise levels used in this chapter are  $L_{dn}$ .

### Colusa County

The Colusa County Noise Element has been incorporated into the Safety Element of the General Plan adopted in 1989. In Colusa County, noise is perceived as a relatively minor problem, and therefore the County has not undertaken a community-wide noise survey or mapping of noise contours exceeding 60 dBA. The following noise policies are applicable to the project:

**SAFE-14.** New projects should be conditioned, improved, or denied according to the standards of Table 3.10-1. When necessary, environmental impact reports should be used to gauge the existing and projected noise environments for proposed projects. All projects in areas above the "conditionally acceptable" noise level should provide the county with proof from a professional acoustical consultant that occupants of the project will be protected from excessive noise.

**SAFE-20.** Colusa County should enforce state and federal laws, which prohibit the operation of vehicles equipped with illegal or faulty, exhaust systems.

Both the Butte and Colusa County General Plan contain Noise/Land Use compatibility guidelines that consider agriculture zone exposures above 75 dBA  $L_{dn}$  to be unacceptable uses.

## Impact Analysis

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### AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

The following are areas of potential environmental concern that may be associated with implementation of the proposed project:

- The potential for the 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 potential for the exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels
- The potential for the substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project
- The potential for the substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project
- The potential for the exposure of people residing or working in the project area to excessive noise levels where an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport
- The potential for the exposure of people residing or working in the project area to excessive noise levels within the vicinity of a private airstrip

### THRESHOLD OF SIGNIFICANCE

The proposed project would be considered to have a significant effect on the environmental if it would:

- **Exposure of people to emissions greater than appropriate standards.** Because construction of proposed facilities would occur entirely on areas designated for agriculture, the project would have a significant impact if it results in the chronic exposure of people (or residences within agriculture zones) to noise in excess of 75 dBA in the surrounding agricultural areas, as presented in the Table 3.10-1. An exterior short-term maximum of 75 dBA would likely waken a sleeping person with partially open bedroom windows. The  $L_{dn}$  standard is normally applied to chronic noise sources and is considered the annual average exposure. It is an appropriate standard for Remote Facility Site noise exposure.
- **Exposure of people to excessive ground borne vibration.** The project shall have a significant impact if it results in the exposure of people to excessive ground borne vibration from either construction or operation of the proposed components.
- **Permanent increase in ambient noise levels.** The project shall have a substantial impact if it results in a significant permanent increase in ambient noise levels as compared to current ambient noise levels in the vicinity of all facility sites and ROWs.



Permanent increases would be direct or cumulative impacts during expanded operations.

- **Temporary or periodic increase in ambient noise levels.** The project shall have a substantial impact if it results in a significant temporary increase in ambient noise levels in the vicinity of all facility sites and ROWs. Temporary noise sources would primarily relate to construction. Project-related noise impacts would be considered significant if temporary noise sources occurred at noise sensitive uses during normally quiet hours from 10 p.m. to 6 a.m. at levels that might be intrusive. Since construction would be occurring entirely in agricultural areas, the target construction noise level would be the maximum standard for agricultural areas as shown in Table 3.10-1 – 75 dBA.

Construction noise is generally treated differently because it is a temporary source, especially for a linear project such as a pipeline. Any receiver would only be exposed to a few days of noise along the pipeline alignment. Unless construction noise occurs during period of normal sleep, it is considered to have a less-than-significant impact in most California jurisdictions.

- **Exposure of people to excessive noise in areas designated for airport use.** The project shall have a significant effect if it shall expose people to excessive noise levels within a two-mile radius of a public airport.
- **Exposure of people to excessive noise in the vicinity of a private airstrip.** The project shall have a significant effect if it shall expose people to excessive noise levels within the vicinity of private airstrips, two of which are associated with residences in the vicinity of the project area.

## IMPACT DISCUSSION

### Impact 3.10-1: Potential for exposure to noise levels in excess of standards

Noise generated from construction of the proposed facilities is temporary and are discussed under Impact 3.10-4. Discussion for this impact relate to expanded operations.

**Well Pad Site.** The equipment proposed at the Well Pad Site would be low profile and surrounded by an earthen berm. The only noise-producing equipment at the site is the blowdown for the Storage Pipeline. Since this is a small diameter vent, the larger vent at the Remote Facility Site is typically used instead. Blowdowns at the Well Pad Site would thus occur very infrequently.

Relief valve discharge noise has been reported at 120 dBA for the 5-10 second discharge. This process generates substantial high frequency noise that is more effectively attenuated by absorption losses than the rumble from RFS rotating equipment. Peak noise levels for an emergency discharge event are calculated as follows:

500 ft to vent -	100 dB Lmax <sup>3</sup>
1000 ft to vent -	94 dB Lmax
2000 ft to vent -	86 dB Lmax
4000 ft to vent -	74 dB Lmax

<sup>3</sup> Lmax is the maximum noise level that could be expected to occur.

The 75 dB Lmax significance threshold is met within 4,000 feet of the event. The nearest residences to the Well Pad Site are at about 1,500 feet and about 2,300 feet, and receptors may exist at nearby hunting areas during hunting season. WGSi has proposed the following measure:

**WGSi Measure 3.10-1.** Pipeline operators will notify nearby residents when a blowdown is planned at the Well Pad Site, so they will not be alarmed by the noise or can make plans to be elsewhere while it is occurring.

Through implementation of the above measure, and because actual blowdowns occurring at this site would be atypical and brief, impacts are considered less than significant.

**Loop Pipeline.** Noise produced from operation of the Loop Pipeline is not expected to be greater than 75 dBA. Blowdown events for the Loop Pipeline would be located at the Well Pad Site or Remote Facility. No impacts are thus anticipated from the Loop Pipeline.

**Remote Facility Site.** Noise impacts governed by general plan policies relate to chronic noise generation from compressor operations at the Remote Facility Site (RFS). The greatest potential noise impacts would come from pressure relief valves and frequent station sectional pipeline blowdowns. These activities can produce a noise level of over 120 dBA at 50 feet from the source each time the valve releases. This noise is equivalent to a diesel locomotive whistle or a commercial jet plane during takeoff. Without proper mitigation, the sudden impulsive events of the pressure releases can be harmful to wildlife as well as humans near the valve. The radius of effect from these impulsive releases could be extended by atmospheric conditions. Loud, impulsive noises such as these create a higher level of annoyance than steady noise levels.

Pressure relief from compressor station piping is necessary for safe operation of the facility. The WGSi gas compressor facility has incorporated a number of redundant safety systems into the overall operation of the facility. During normal operations, sectional piping is usually automatically blown down whenever a compressor unit shuts down. Fire and gas readings of 40% and higher trigger activation of emergency shutdown (ESD) valves, which blow down the entire facility. Both of these blowdowns are rapid depressurization and are routed to a silencer for noise attenuation. Three silenced blowdown vents were installed as part of the initial project development. Additional silenced blowdown vents would be installed to serve the proposed expansion compressor and pipeline systems to reduce blowdown noise to acceptable levels.

The third type of depressurization is via the pressure safety valves. In normal operating mode and even under the first level of alarm mode where the ESDs are activated, the pressure relief valves do not open. These valves activate only when the pressure exceeds the safe operating parameters of piping or vessels. Under these circumstances, the safest method is to immediately relieve the pressure directly to the atmosphere, not by controlled release through a silencer. Consequently, these blowdowns are extremely loud, but last only five to ten seconds. Forty-nine pressure safety valves were installed during initial project development. Similar pressure safety valves would be installed to serve the proposed expansion facilities.

During initial operations at the Remote Facility Site there were multiple pressure safety valve blowdowns. Some of these blowdowns occurred as part of the initial system adjustment

process, and others occurred inadvertently as a result of general activities on the site. One valve in particular proved to be problematic, improperly activating on numerous occasions. After several repair visits by a service company, the manufacturer finally became involved to provide a permanent solution. The following measure would mitigate noise impacts from normal operations and blowdowns:

**WGS Measure 3.10-2.** During the design of the additional compressor building, noise modeling would be conducted to determine the noise attenuation design criteria needed to meet the maximum noise level. WGS shall house the compressors and engine drivers in a metal-framed and sided building with sound insulation designed into the wall thickness, openings, and vents and shall route normal operations blowdowns and ESD blowdowns into silencers.

Compressor noise was monitored at the RFS fenceline. This measurement was adjusted for the increased numbers of compressors operating at RFS buildout (three more operating, one back-up), and the distance of L<sub>dn</sub> noise contours were calculated. At far distances, both spreading losses and atmospheric absorption would diminish the steady-state site operations noise. Combined spreading/absorption losses are shown in Table 3.10-3.

**Table 3.10-3: Noise Attenuation from Remote Facility Site**

Distance to RFS	Existing L <sub>dn</sub> (dBA)	L <sub>dn</sub> (dBA) w/Project
500 ft	68	73
2000 ft	55	60
4000 ft	45	50
5000 ft	41	46

SOURCE: Giroux and Associates 2001

Noise emissions during expanded operations at the Remote Facility would be attenuated to less than 75 dBA at 500 feet. There are no residences within 500 feet of the RFS. Hunting areas do occur within 500 feet of the RFS. The overlapping portion of the hunting area, however, would be a relatively small portion of the adjacent Gray Lodge Waterfowl Management area in which hunting would not occur for the most of the year. Chronic noise emissions from the Remote Facility are considered to be less than significant.

**Line 400/401 Connection Pipeline.** Noise-producing operations would consist primarily of blowdowns, which would rarely occur on the pipeline and more likely occur within the Delevan Interconnect Facility. Blowdowns normally occur only during emergencies or very infrequent maintenance, since large volumes of natural gas are vented from the pipeline at great expense. The residence nearest to the Delevan Interconnect Facility is a farm residence located approximately 1.1 miles (6,000 feet) to the southeast and would thus not be significantly affected by blowdowns at this site. Seasonal hunters in surrounding wetlands would be affected if they were within 500 feet of the source. However, this occurrence would be infrequent and would thus be less than significant.

Location of the valve lot(s) on the pipeline alignment would be determined in cooperation with the property owners (consistent with the federal requirements) and would preferably be sited near an existing access road, where they do not interfere with existing agricultural

operations. The lot(s) would contain aboveground valves and a pipe vent to blowdown the pipeline if needed for emergency situations or for the very infrequent pipeline maintenance activity that requires de-pressurization. To reduce noise impacts, the following measures have been proposed:

**WGS Measure 3.10-3.** WGS will reduce the gas pressure/volume in the pipeline to a minimum prior to a planned maintenance blowdown.

**WGS Measure 3.10-4.** Pipeline operators will notify nearby residents when a maintenance blowdown is planned, so they will not be alarmed by the noise or can make plans to be elsewhere while it is occurring. If the valve lot(s) are located adjacent to the Sacramento River with its significant stand of riparian vegetation, blowdowns at these locations will not be planned between April 15 and August 1, unless absolutely necessary, to preclude impacts to Swainson's hawk or other sensitive bird species that may be nesting in the area.

With the implementation of the above measures and the infrequency and short duration of blowdowns, noise impacts at these sites would be less than significant.

### **Level of Significance Without Mitigation**

Impacts related to the exposure of people to noise emissions greater than appropriate levels are considered to be less than significant through implementation of proposed WGS measures.

### **Mitigation Measures**

No mitigation is required in addition to those proposed by WGS.

### **Impact 3.10-2: Potential for exposure of people to excessive ground borne vibration**

Ground borne vibration or noise propagates not more than perhaps 100 feet from the types of equipment or processes associated with the proposed project. There are no vibration-sensitive uses within this small zone of influence.

**Well Pad Site.** Possible groundborne vibration would occur from drilling of the gas wells. The nearest residence to the Well Pad Site is about 1,500 feet away and thus would not be susceptible to groundborne vibration, which attenuates to less than significant levels at about 100 feet from the source. Seasonal hunters would generally be beyond this distance as well.

**Storage Loop Pipeline.** Potential receptors would be roughly 200 and 250 feet from the Storage Loop Pipeline, beyond the area of significant impact. Also, no construction or operation-related activities would generate excessive groundborne vibration. No impacts are anticipated from the Storage Loop Pipeline in relation to exposure of people to excessive groundborne vibration.

**Remote Facility.** The residence nearest to the Remote Facility is about 4,500 feet away and seasonal hunters would generally be beyond 100 feet from the site. Also, construction and operation-related activities would not generate excessive groundborne vibration. No impacts are anticipated from the Remote Facility in relation to exposure of people to excessive groundborne vibration.

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**Line 400/401 Connection Pipeline.** Construction or operation-related activities at the Connection Pipeline ROW would not generate excessive groundborne vibration. No impacts are anticipated from the Loop Pipeline in relation to exposure of adjacent residents and other nearby receptors to excessive groundborne vibration.

**Level of Significance Without Mitigation.** No impacts are anticipated in relation to excessive groundborne vibration.

**Mitigation Measures.** No mitigation is necessary in relation to excessive groundborne vibration.

**Impact 3.10-3: Potential for permanent increase in ambient noise levels.**

**Well Pad Site.** Permanent increases in ambient noise levels would be associated with blowdown for the Storage Pipeline, which would occur very infrequently. Permanent noise increases were demonstrated to be less than significant under Impact 3.10-1 discussion above.

**Storage Loop Pipeline.** No permanent increases in ambient noise levels are anticipated from the Storage Loop Pipeline.

**Remote Facility.** Permanent increases would be associated with RFS operations, including blowdowns at this site for the Storage Loop Pipeline. Noise emissions were demonstrated to be less than significant under Impact 3.10-1 discussion above.

**Line 400/401 Connection Pipeline.** Permanent increases in ambient noise levels would be associated with occasional inspection and maintenance activities along the pipeline alignment as well as from blowdowns at the Delevan Interconnect Facility. Permanent noise increases were demonstrated to be less than significant under Impact 3.10-1 discussion above.

**Level of Significance Without Mitigation.** Permanent impacts on ambient noise levels are considered to be significant for seasonal hunters near the Remote Facility Site.

**Mitigation Measures.** The mitigation discussed under Impact 3.10-1 would reduce the effects to less than significant levels.

**Level of Significance After Mitigation.** Implementation of measures identified under Impact 3.10-1 would decrease impact level to less than significant.

**Impact 3.10-4: Potential for temporary or periodic increase in ambient noise levels**

Temporary noise sources would mainly be associated with construction activities. For the loudest construction equipment, the 75-dBA noise level would be experienced at about 200 feet from the source.

**Well Pad Site.** Fill placement at the Well Pad Site would occur from September 6, 2002 to October 3, 2002. Well drilling and piping would occur from May 1, 2003 to August 20, 2003 (see Figure 2.7-1 for construction schedule). Placement of fill for the well pad extension

would involve construction equipment producing noise types and levels similar to pipeline construction. There are no residences within 200 feet of the Well Pad Site, although the site is located within hunting areas. There should be no significant noise impacts from this activity because construction would not occur during hunting season. Drilling of gas wells would produce short-term, discernible mechanical sounds at night while drilling would occur on a 24-hour basis. While the sound levels would not be sufficient to exceed recommended noise levels for an agricultural area, the distinctiveness and time of the noise produced could be noticeable to the four residences within a mile of the Well Pad Site. The closest of the residences is at the Tule Goose Gun Club. During initial project development, the resident at this location indicated that the noise from well drilling was occasionally audible, but was not a nuisance. Consequently, well drilling noise is considered less than significant.

**Storage Loop Pipeline.** Pipeline construction would occur from March 17, 2003 to October 23, 2003. Specific estimated peak construction equipment noise levels associated with pipeline construction are shown in Table 3.10-4. Noise produced from the Storage Loop Pipeline construction may be noticeable to the two residents within 220 yards (660 feet). The noise levels would be less than 75dBA at the residences because they are located beyond 200 feet from the ROW. The pipeline construction schedule would overlap with hunting season by several days; however, hunters would not likely be within 200 feet of the construction ROW. Impacts are thus considered less than significant.

**Table 3.10-4: Estimated Peak Pipeline Construction Noise Emissions**

Construction Phase	Loudest Equipment	Distance from Equipment & Noise Level (dBA) at Receiver		
		50 ft	100 ft	200 ft
Clearing/grubbing	Bulldozer	85	79	73
Trenching/earthwork	Bulldozer/backhoe	80	74	68
Positioning Pipe	Sideboom/tractor	85	79	73
Backfilling	Bulldozer/backhoe	85	79	73

Assumes a basic sound level drop-off rate of 6.0 dB per doubling of distance.

SOURCE: Federal Transit Administration, 1995.

Pipeline construction noise impacts would be considered less than significant, the following measures would be implemented to reduce noise impacts:

**WGS Measure 3.10-5.** Limiting construction activities to daylight hours, except within 1,000 feet of any residence within 200 feet of the pipeline ROW, where the limitation will be from 7:00 a.m. to 6:00 p.m., unless otherwise requested by the residents.

**WGS Measure 3.10-6.** Coordinating construction with residents within 200 feet of the route and accommodating any unique or unusual noise-related situations if possible.

**WGS Measure 3.10-7.** Ensuring all construction equipment have mufflers no less effective than original equipment and maintained to minimize noise generation.

**WGS Measure 3.10-8.** Changing the location of stationary construction equipment to minimize noise impacts to sensitive receptors where feasible.

**WGS Measure 3.10-9.** Rescheduling construction activities to accommodate specific situations where feasible.

**Remote Facility.** Construction of the Remote Facility Site during initial project development occurred on several schedules. During summer heat waves in 1998, construction occasionally began as early as 4:00 a.m. when concrete foundation pours needed to be placed before the mid-day heat. Otherwise, construction typically occurred between 6:00 a.m. and 7:00 p.m. During the 1998 hunting season, construction was restricted to low noise-producing outside activities during daylight hours to preclude impacts to local hunting activities. Beginning in early-January 1999, two work schedule adjustments were implemented to ensure that the project met its April 1, 1999 operation date. Starting January 4, 1999, normal outside daytime construction activities resumed after compensation for lost waterfowl hunting opportunities was negotiated with the Gray Lodge and the hunting lessee on the adjacent rice fields. On January 18, a 10-hour night welding shift (from 6:00 p.m. to 4:00 a.m.) was added for eight weeks. Provisions were made to minimize noise during this shift by saving the low-noise-producing tasks for the evening shift, and ensuring that the workers understood the noise sensitivity of the area. The following measures were implemented to minimize noise impacts during the night welding shift:

- The existing site electrical power was used in lieu of internal-combustion-engine-driven generators for the arc welders' power source.
- A small flashing light was used in lieu of the back-up safety beeper on the small crane or forklift.
- Heavy canvas portable enclosures were placed over work locations to limit grinding noise.
- Four-inch grinders were used in lieu of the standard seven-inch grinders to reduce noise.

The Gray Lodge manager was contacted and initially expressed concern that noise during the late afternoon and evening might deter waterfowl from feeding in the Gray Lodge area across from the Remote Facility Site. Based on implementation of the above mitigation measures, the manager indicated that the reduction in noise satisfied his initial concerns, and that actual adverse effects on waterfowl in the immediate area were minimal, if any. In summary, through close coordination with adjacent property owners and implementation of effective mitigation measures, no significant noise impacts resulted during construction of the existing facilities at the Remote Facility Site.

RFS site preparation would occur from September 9, 2002 to October 17, 2002, and the mechanical/electrical phases would occur from April 4, 2003 to April 1, 2004. This schedule would overlap with the 2003-2004 waterfowl-hunting season for a few days. However, noise impacts associated with the construction at the RFS are expected to be less than significant through implementation of the following measure:

**WGS Measure 3.10-10.** Construction work hours and the adjustment during the hunting season will be similar to that described above. While the normal workday will be between 6:00 a.m. and 7:00 p.m., weather or construction schedule variables may require noise-producing work outside this 13-hour window. Similar coordination with waterfowl

management facilities and noise mitigation will be implemented for the construction of the proposed facilities, as was implemented during initial project development.

**Line 400/401 Connection Pipeline.** Construction noises associated with the pipelines, main line block valve lot(s) and the Delevan Interconnect Facility would be in the same noise level ranges as agricultural equipment, which typically operate in the project area during daylight hours. Specific estimated peak construction equipment noise levels associated with pipeline construction are shown in Table 3.10-3. As indicated by the table, there would be no potential impact (levels exceeding 75 dBA) to sensitive receptors located more than 200 feet from the pipeline route. However, there are residences within 200 feet of the pipeline route. While construction noise may be noticeable to these residents, the impact would be considered less than significant since pipeline construction noises are similar in type and level to noises from existing agricultural equipment, are short-term in nature, and would occur only during daylight hours over the course of several days near any sensitive receptor. In addition, WGSII Measures 3.10-5 through 3.10-9 would be implemented for all pipeline and associated facilities construction.

**Level of Significance Without Mitigation.** Temporary increases in ambient noise levels are considered to be less than significant.

**Mitigation Measures.** No construction noise mitigation is required in addition to those proposed by WGSII.

**Impact 3.10-5: Exposure of people to excessive noise in areas designated for airport use**

**Well Pad Site.** There are no public airports within two miles of the Well Pad Site. The project would thus not expose people to excessive noise in areas designated for airport use.

**Storage Loop Pipeline.** There are no public airports within two miles of the Storage Loop Pipeline. The project would thus not expose people to excessive noise in areas designated for airport use.

**Remote Facility.** There are no public airports within two miles of the Remote Facility Site. The project would thus not expose people to excessive noise in areas designated for airport use.

**Line 400/401 Connection Pipeline.** There are no public airports within two miles of the Line 400/401 Connection Pipeline or the Delevan Interconnect Facility. The project would thus not expose people to excessive noise in areas designated for airport use.

**Level of Significance Without Mitigation.** No impacts are anticipated related to exposure of people to excessive noise in areas designated for airport use.

**Mitigation Measures.** No mitigation is required.

**Impact 3.10-6: Potential exposure of people to excessive noise in the vicinity of a private airstrip**

**Well Pad Site.** No private airstrips are located within the vicinity of the Well Pad Site. Well Pad Site activities involve no uses that would be sensitive to private aircraft noise.



No impacts to people in the vicinity of an airport are anticipated from construction and operation at the Well Pad Site.

**Storage Loop Pipeline.** No private airstrips are located within the vicinity of the Storage Loop Pipeline. No impacts are anticipated from construction and operation of the Storage Loop Pipeline.

**Remote Facility.** No private airstrips are located within the vicinity of the Remote Facility Site. Remote Facility activities involve no uses that would be sensitive to private aircraft noise. No impacts are anticipated from construction and operation at the Remote Facility Site.

**Line 400/401 Connection Pipeline.** Two residences along the Line 400/401 Connection Pipeline ROW are associated with a private airstrip. Excessive noise would potentially be emitted during blowdowns at the valve lot(s). Application of WGSII Measures 3.10-3, 3.10-4, and 3.10-6 through 3.10-9 would mitigate this impact to a less than significant level.

**Level of Significance Without Mitigation.** Less than significant impacts are anticipated related to exposure of people to excessive noise in the vicinity of private airstrips.

**Mitigation Measures.** No mitigation is required other than those proposed by WGSII.

