8.6 NOISE

8.6.1 Affected Environment

Limited noise data are available for PTA. The dominant noise sources at PTA include military aircraft (mostly helicopters), military vehicle traffic, and ordnance use during live fire and other training exercises. Figure 8-17 illustrates estimated annual average noise contours from heavy weapons firing at PTA under existing conditions. Zone III noise conditions are contained within the present boundaries of PTA. Zone II noise conditions affect BAAF and the western portion of the cantonment area. Zone II noise conditions extend beyond the boundaries of PTA from BAAF westward to the northwest corner of the post. Except for the cantonment area, no noise-sensitive land uses are affected by existing Zone II noise conditions. No troops are permanently based at PTA. All troop housing is used for troops who are visiting PTA to participate in training exercises.

The Army is developing an environmental noise management plan (ENMP) that will be used for exploring:

- Improvements in land use compatibility adjacent and proximal to USARHAW facilities;
- The feasibility of providing increased acoustical insulation to structures or areas where noise-sensitive receptors may reside, specifically in areas that are or may become exposed to Zone III and Zone II noise conditions, with a priority given to family and troop housing areas affected by Zone III conditions; and
- Ways to improve notification to surrounding communities about the scheduling and nature of nighttime training exercises, which are possible sources of complaints about noise and vehicle activity. While enhanced public information programs will not reduce actual noise levels, they can help reduce the frequency of noise complaints.

8.6.2 Environmental Consequences

Summary of Impacts

Noise sources associated with project alternatives at PTA would include construction activity, ordnance use, military vehicle traffic, and military aircraft operations. Noise from ordnance use would generate significant but mitigable impacts at the cantonment area and at the Mauna Kea State Park cabins under the Proposed Action or the RLA Alternative. In addition, noise from the use of blank ammunition and simulators in the WPAA may produce significant but mitigable noise impacts on the Waikiʻi Ranch development and the Kilohana Girl Scout Camp. Noise impacts from construction activities, military vehicle use, and military aircraft operations would be less than significant under all project alternatives.

Table 8-13
Summary of Potential Noise Impacts at Pōhakuloa Training Area

Impact Issues	Proposed Action	Reduced Land Acquisition	No Action
Noise from construction activities	⊙	⊙	○
Noise from ordnance use	⊘	⊘	⊙
Noise from military vehicle use	⊙	⊙	⊙
Noise from aircraft operations	⊙	⊙	⊙
Noise from added personnel vehicle traffic	○	○	○

In cases when there would be both beneficial and adverse impacts, both are shown on this table. Mitigation measures would only apply to adverse impacts.

LEGEND:

⊗ = Significant
⊘ = Significant but mitigable to less than significant
⊙ = Less than significant
○ = No impact
\+ = Beneficial impact
N/A = Not applicable

Construction projects at PTA would be far enough from noise-sensitive areas to avoid significant noise impacts under both the Proposed Action and the RLA Alternative. There would be no construction noise impacts under No Action. The use of blank ammunition and SRTA would continue at PTA under all alternatives. The quantity of training ammunition used at PTA would increase somewhat under the Proposed Action or the RLA Alternative. Training activities at PTA would result in an increased number of vehicle convoys between Kawaihae Harbor and PTA under the Proposed Action or the RLA Alternative. Most convoy traffic on the proposed PTA military vehicle trail would occur as groups of 24 or fewer vehicles spaced at least 15 minutes apart. Consequently, vehicle convoy traffic on the proposed PTA Trail would involve no more than 100 vehicles per hour. Somewhat higher traffic volumes might occur on the section of the PTA Trail within the WPAA during maneuver training exercises. Resulting hourly average traffic noise levels along the PTA military vehicle trail would have less than significant impacts under all alternatives. Similarly, noise from vehicle maneuver activity at PTA would be a less than significant impact under all alternatives. Extensive helicopter flight operations would continue at PTA under all alternatives. The distribution of helicopter flight activity within PTA would be altered somewhat by the use of WPAA for maneuver training. Helicopter flight activity over the WPAA would increase under both the Proposed Action and the RLA Alternative. Noise levels associated with flight activity over the WPAA would be a less than significant impact. UAV flight operations also would occur at PTA under the Proposed Action and the RLA Alternative. Noise generated by the added UAV flight activity would be a less than significant impact under the Proposed Action and the RLA Alternative.

Figure 8-17
Existing Noise Levels at Pōhakuloa Training Area

Proposed Action

The Army was concerned about the accuracy of significant adverse noise impacts that had been identified in the draft EIS. As such, the noise model input parameters that were used for the draft EIS were more closely evaluated, and it was found that certain incorrect assumptions had been made. Namely, it was found that the following noise model input parameter was incorrect:

- The blast noise modeling efforts were found to reference a slightly outdated and inaccurate equipment package; the input parameters were corrected to include the correct SBCT equipment package.

Correction of these blast noise model input parameters reduced the lateral noise contours slightly, subsequently resulting in a modification of the environmental impact determination to significant, but mitigable to less than significant.

Significant Impacts Mitigable to Less Than Significant

Impact 1: Noise From Ordnance Use. Noise levels from weapons firing and ordnance detonations are quite variable, with noise levels at long distances influenced in part by weather conditions. Small arms firing can produce relatively high peak noise levels at distances of up a few thousand feet when live ammunition is used and might remain audible at distances of up to 2 miles (3 kilometers). Peak unweighted noise levels for standard ammunitions used by 5.56 mm and 7.62 mm firearms are typically about 103 to 110 dB at 1,000 feet (305 meters), 93 to 96 dB at 2,500 feet (762 meters), and 72 to 79 dB at 5,000 feet (1,524 meters). Human hearing does not respond as rapidly to impulse noise as do noise meters; consequently, the 1/8 second Lmax value tends to be a more representative description of what people hear than the instantaneous peak noise level. The A-weighted Lmax noise levels for small arms firing are typically about 86 to 93 dBA at 1,000 feet (305 meters), 72 to 79 dBA at 2,500 feet (762 meters), and 55 to 62 dBA at 5,000 feet (1,524 meters).

Blank ammunition for small arms and machine guns generally has a smaller propellant charge than that used for live ammunition (US Army 1994), so noise from small arms blank ammunition typically generates noise levels about 4 to 5 dB below noise from live ammunition. The A-weighted Lmax noise levels for blank ammunition (such as that used in the WPAA) would typically be about 81 to 88 dBA at 1,000 feet (305 meters), 67 to 74 dBA at 2,500 feet (762 meters), and 50 to 57 dBA at 5,000 feet (1,524 meters).Army noise level criteria for Zone II exposure conditions typically correlate with annoyance ratings of 15 to 39 percent of people being highly annoyed (see Chapter 3, Section 3.6.3, Table 3-7). Based on data from Sorensen and Magnusson (1979), 1/8 second Lmax levels of 67 to 80 dBA would correlate with Zone II conditions. Noise sensitive land uses are generally not compatible with Zone II noise exposure conditions. Noise levels from the firing of blank small arms ammunition typically drops below levels that cause significant annoyance at distances of 2,500 to 3,000 feet (762 to 914 meters).

Firing of large caliber weapons can produce high noise levels at further distances, especially when weather conditions favor sound propagation. Detonations of high explosive ordnance can produce high noise levels at distances of several miles.

Future noise contours under the Proposed Action are illustrated in Figure 8-18, accounting for the latest proposed changes in firing points and range configurations. These noise contours (US Army CHPPM 2004) are based on artillery firing and other high explosives use. The Proposed Action noise contours reflect the following changes in munitions use at PTA:

- 5 percent decrease in 105mm high explosive artillery rounds (howitzer plus Stryker MGS);
- 1,428 percent increase in other types of 105mm artillery/weapons rounds (howitzer plus Stryker MGS);
- 90 percent increase in 155mm high explosive artillery rounds;
- 70 percent increase in other types of 155mm artillery rounds;
- 37 percent increase in high explosive mortar rounds;
- 11 percent increase in other types of mortar rounds;
- 1 percent decrease in grenades;
- 120 percent increase in mines;
- 39 percent decrease in rockets; and
- 23 percent increase in demolition charges.

Under the Proposed Action, Zone III conditions (with an Ldn above 70 dBC) would expand slightly but would remain within the boundaries of PTA. Zone II conditions (with an Ldn of 62 to 70 dBC) would expand slightly within the ordnance impact area at PTA but would contract slightly in the area north of Saddle Road. There would be a slight expansion of Zone II conditions in the cantonment area, but this change would not include most of the on-post housing units. The Zone II noise contour would not expand toward the Kilohana Girl Scout Camp or Waikiʻi Ranch and would actually contract slightly in the eastern portion of WPAA. The Zone II noise at Mauna Kea State Park would expand slightly to include a small amount of land on the west side of Saddle Road, but there would be very little change in the location of the Zone II noise contour near the picnic area and rental cabins east of Saddle Road. Changes in the SBCT equipment package, firing point locations, and range configurations collectively quantify the overall increase in munitions use and at the same time account for the limited changes in noise contours when compared to existing conditions.

Use of blank ammunition and simulator devices in the WPAA area may potentially create noise impacts within the Waikiʻi Ranch development and the Kilohana Girl Scout Camp, both of which share fence line boundaries with the WPAA. AR 200-1 uses an unweighted peak dB value of 87 dB for defining Zone II conditions for land use compatibility evaluations near small arms firing activities. The 87 dB unweighted peak dB value is

Figure 8-18
Proposed Action Noise Levels at Pōhakuloa Training Area

equivalent to a 1/8 second Lmax value of approximately 66.5 dBA. Noise from blank ammunition firing would fall below the Zone II threshold at approximately 3,500 feet (1,067 meters) for common types of small arms blank ammunition. Thus, noise from small arms firing with blank ammunition could have significant noise impacts at Waikiʻi Ranch and the Kilohana Girl Scout Camp when training occurs within a few thousand feet of these locations.

Substantial portions of WPAA are more than 1 mile (1.6 kilometers) from the Waikiʻi Ranch development. An even greater portion of the WPAA is more than 1 mile (1.6 kilometers) from the Kilohana Girl Scout Camp. Training exercises are expected to occur 40 to 60 times a year in the WPAA, and some training events might last several days. However, blank ammunition and weapons simulators would not be used during all training events in the WPAA. Given the large size of the WPAA, it is reasonable to expect that management actions could be taken to reduce the frequency of noise disturbance at Waikiʻi Ranch and Kilohana Girl Scout Camp to acceptable levels. Because appropriate management actions could be implemented to reduce small arms noise impacts at Waikiʻi Ranch and Kilohana Girl Scout Camp, noise from ordnance use at PTA would be a significant but mitigable impact under the Proposed Action.

Regulatory and Administrative Mitigation 1. None proposed.

Additional Mitigation 1.

The Army proposes to establish a minimum 1,000- foot (305-meter) noise buffer around the Waikiʻi Ranch property and the Kilohana Girl Scout Camp. In addition, the Army will consider training guidelines that minimize nighttime training activities that involve weapons fire or aviation activity within a minimum of 2,000 feet (610 meters) of those properties. The Army will continue to work with affected communities on noise buffers and may adjust the buffer size dependent upon these discussions.

Less than Significant Impacts

Noise from Construction Activities. The Proposed Action would include nine construction projects at PTA, with construction activities occurring from 2004 into 2007. Construction projects would include two training range facilities (a BAX and AALFTR), a tactical vehicle wash facility, an ammunition storage facility, a range maintenance facility, an upgrade and realignment of BAAF, a military vehicle trail between Kawaihae Harbor and PTA, a communications cable system, and 11 FTI towers. UXO clearance would be required prior to construction of the BAX and AALFTR ranges.

Individual items of construction equipment typically generate noise levels of 80 to 90 dBA at a distance of 50 feet (15 meters). With multiple items of equipment operating concurrently, noise levels can be relatively high during daytime periods at locations within several hundred feet of active construction sites. The zone of relatively high construction noise levels typically extends to distances of 400 to 800 feet (122 to 244 meters) from the site of major equipment operations. Locations more than 1,000 feet (305 meters) from construction sites seldom experience significant levels of construction noise. Table 8-14 summarizes the estimated

minimum distance between the sites for proposed construction projects and the nearest noise-sensitive land uses.

Table 8-14
Estimated Minimum Distance Between Construction Sites and Noise-Sensitive Land Uses

Proposed Project	Distance to Closest Noise-Sensitive Receptor	Noise-Sensitive Land Use Type
P1. Battle Area Complex	7,230 feet	troop housing
	10,750 feet	Mauna Kea State Park cabins
	40,060 feet	Kilohana Girl Scout Camp
	44,500 feet	Waikiʻi Ranch
P2. Anti-Armor Live Fire & Tracking Range	21,510 feet	troop housing
	23,540 feet	Mauna Kea State Park cabins
	52,460 feet	Kilohana Girl Scout Camp
	56,900 feet	Waikiʻi Ranch
P5. Ammunition Storage	4,960 feet	troop housing
	5,990 feet	Mauna Kea State Park cabins
P6. Tactical Vehicle Wash	2,690 feet	troop housing
	7,030 feet	Mauna Kea State Park cabins
P8. Range Maintenance Facility	390 feet	troop housing
	5,790 feet	Mauna Kea State Park cabins
P9. Bradshaw Airfield Upgrade	2,890 feet	troop housing
	8,270 feet	Mauna Kea State Park cabins
	36,250 feet	Kilohana Girl Scout Camp
	40,690 feet	Waikiʻi Ranch
P10. Fixed Tactical Internet	not evaluated	construction activities too limited to create noise issues
P3. PTA Vehicle Trail	9,540 feet	Kilohana Girl Scout Camp
	6,670 feet	Waikiʻi Ranch
P11. Installation Information Infrastructure Architecture	not evaluated	minor construction noise from trenching along roadway shoulders in cantonment area
S10. Qualification Training Range 2 (QTR2)	24,350 feet	troop housing
	22,730 feet	Mauna Kea State Park cabins
	57,230 feet	Kilohana Girl Scout Camp
	61,680 feet	Waikiʻi Ranch

Note: QTR2 would be built at PTA only under Reduced Land Acquisition.
Source: Tetra Tech staff analyses

Most construction activity would be too far from noise-sensitive land uses to create any noise problems. Troop housing in the cantonment area would be the only noise-sensitive land use within 1 mile (1.6 kilometers) of any construction project sites. The range maintenance facility would be constructed at a site within the cantonment area that is close to some of the troop housing facilities. Although further removed from the cantonment area troop housing, construction activities at BAAF would involve substantial pavement removal and repaving activities.

Figure 8-19 illustrates expected construction noise levels for the noisiest stage of construction activity for the proposed range management facility. Construction activities for the range maintenance facility would generate average daytime noise levels of about 71 dBA at the closest troop housing Quonsets huts. The Ldn increment generated by construction activities would be about 68 dBA at these housing units. No nighttime construction activity is expected. Because there would be no nighttime construction activity and occupants of the troop housing facilities are not at PTA for extended periods of time, noise from construction of the range maintenance facility would be a less than significant impact.

Figure 8-20 illustrates expected construction noise levels during the noisiest stage of construction at BAAF. The closest noise-sensitive land uses are more than 2,500 feet (762 meters) from the end of the proposed new runway at BAAF. As indicated in Figure 8-19, average daytime noise increments at the western side of the cantonment area would be less than 55 dBA during the noisiest stage of construction. Consequently, construction activities associated with modifications to BAAF would have a less than significant noise impact.

The proposed tactical vehicle wash facility at PTA would be slightly closer to the cantonment area than BAAF. As illustrated previously by Figure 5-19 in Chapter 5, construction activities for vehicle wash facilities would produce noise levels slightly lower than those generated at the cantonment area by the BAAF modifications. All other construction projects are either further away from noise-sensitive land uses or would require minimal construction equipment. Consequently, noise from construction projects at PTA would be a less than significant impact under the Proposed Action.

Noise from Military Vehicle Use. Military vehicle use at PTA would involve troop and equipment transport activities and vehicle maneuver activities. Troop and equipment transport activities would occur within PTA boundaries, between PTA and Kawaihae Harbor, and between PTA and other locations on the island of Hawai'i. Most military vehicle travel between Kawaihae Harbor and PTA would occur on the proposed PTA Trail, resulting in less military vehicle traffic on Saddle Road. Saddle Road would continue to provide access to other off-post areas.

Figure 8-21 illustrates typical hourly average noise levels along PTA Trail during hours when there is a relatively large volume of military vehicle traffic. Military vehicle convoys between Kawaihae Harbor and PTA would involve groups of up to 24 vehicles spaced at least 15 minutes apart to minimize traffic problems where the PTA Trail crosses public roadways. Consequently, convoy traffic generally would involve no more than 100 vehicles per hour. Total daily traffic volumes on the PTA Trail normally would be less than 500 vehicles per day. As indicated in Figure 8-17, normal military convoy traffic on the PTA Trail would produce hourly average noise levels of about 65 dBA at a distance of 100 feet (30 meters) from the trail, about 55 dBA at 500 feet (152 meters) from the trail, and about 50 dBA at 1,000 feet (305 meters). If five hours of convoy traffic were to occur during daytime hours, the resulting Ldn level (a 24-hour weighted average noise level) would be about 58.5 dBA at a distance of 100 feet (305 metersfrom the trail. Even in areas such as Kawaihae where residential development is close to PTA Trail, normal convoy traffic would not produce a significant noise impact.

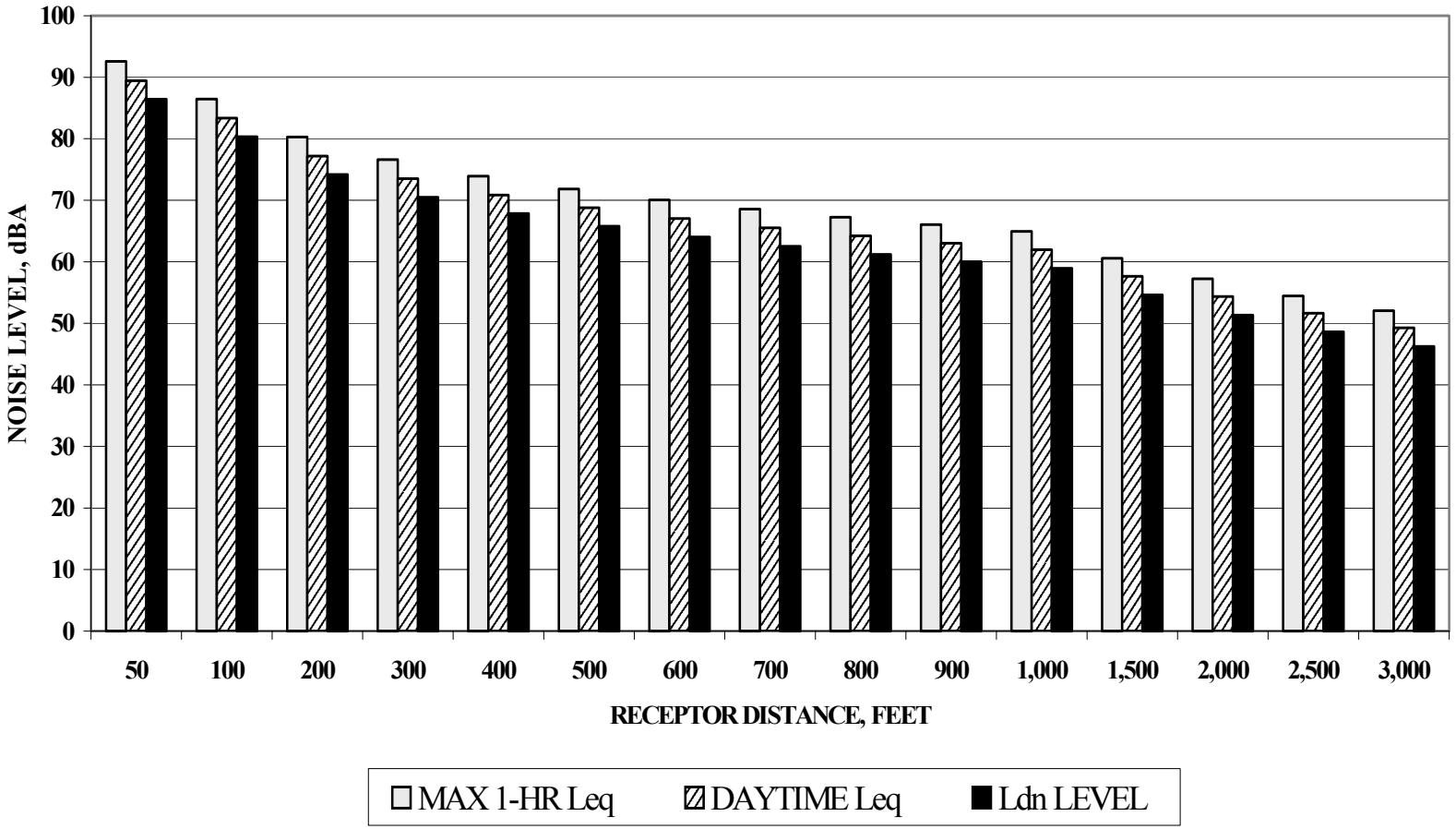


Figure 8-19 Construction Noise Impacts for PTA Range Maintenance Facility: Building Shells and Paving

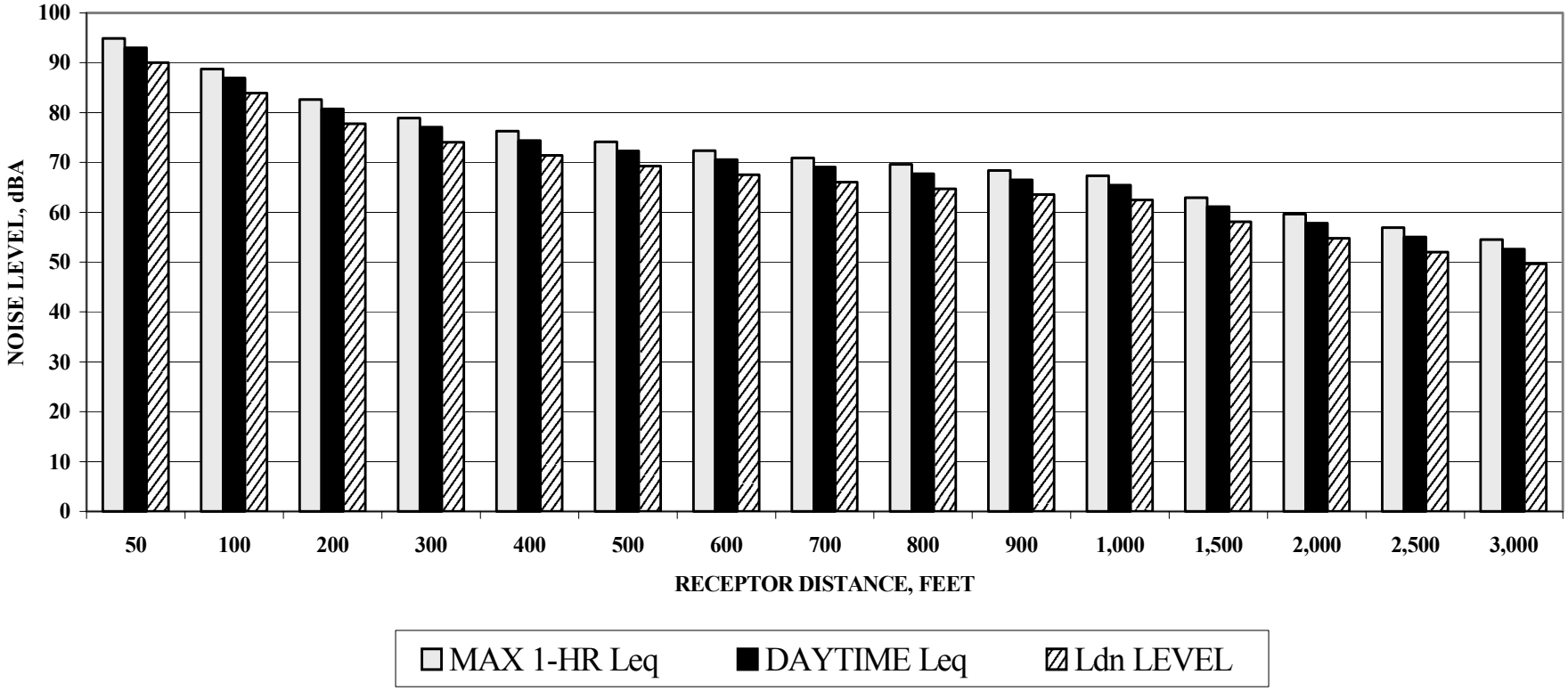


Figure 8-20 Construction Noise impacts for PTA Bradshaw Airfield Upgrade: Pavement Removal

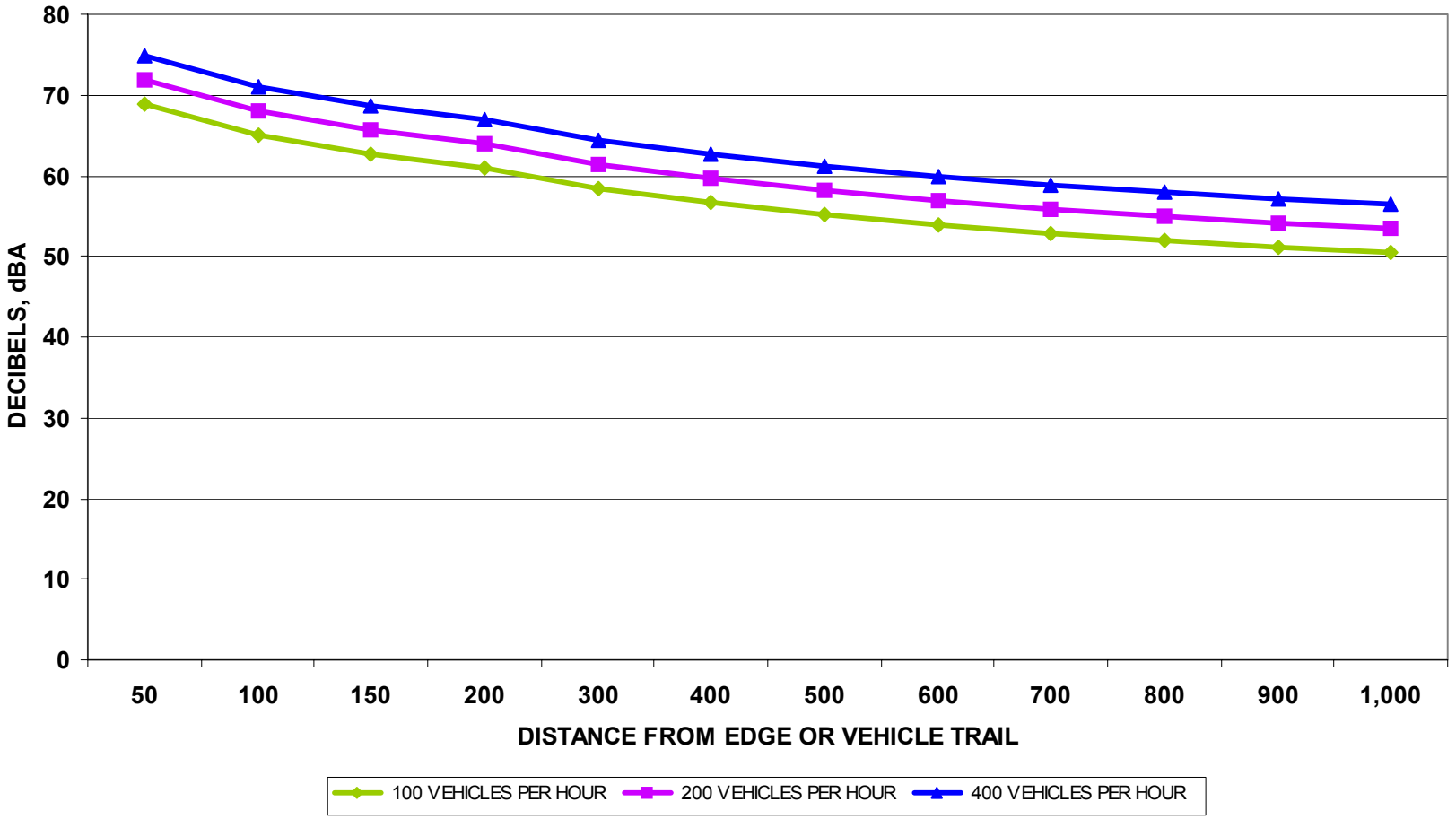


Figure 8-21 Hourly Average Noise Levels along Pōhakuloa Military Vehicle Trail

The closest segment of PTA Trail is about 1.25 miles (2 kilometers) from Waikiʻi Ranch and about 1.8 miles (3 kilometers) from the Kilohana Girl Scout Camp. Noise from normal convoy traffic on PTA trail would be about 37 dBA at a distance of 1 mile (1.6 kilometers) and about 31 dBA at a distance of 2 miles (3.1 kilometers). Typical daytime background noise levels would be 35 to 45 dBA when winds are light, and perhaps up to 50 dBA during periods of strong winds. Normal military convoy traffic on PTA Trail would not produce any significant noise impacts at Waikiʻi Ranch or the Kilohana Girl Scout Camp.

Training activities at WPAA normally would use PTA Trail as a major access corridor from the cantonment area. Vehicle traffic between the cantonment area at PTA and WPAA might not be limited to 100 vehicles per hour. But as a practical matter, it is unlikely that traffic volumes would exceed 400 vehicles per hour on the PTA Trail segment in WPAA. As indicated in Figure 8-21, if 400 vehicles traveled along PTA Trail in a single hour, the resulting hourly average noise level would be about 71 dBA at a distance of 100 feet (30 meters) from the vehicle trail, about 65 dBA at 300 feet (91 meters) from the vehicle trail, about 61 dBA at 500 feet (152 meters) from the trail, and about 56 dBA at 1,000 feet (305 meters) from the trail. This noise level would drop to about 43 dBA at a distance of 1 mile (1.6 kilometers) and to less than 37 dBA at a distance of 2 miles (3.1 kilometers). As indicated in Table 8-14, PTA Trail is about 1.25 miles (2 kilometers) from the Waikiʻi Ranch development and about 1.8 miles (3 kilometers) from the Kilohana Girl Scout Camp. Even at a traffic level of 400 vehicles per hour, traffic on PTA Trail would not generate noise levels above typical daytime background conditions at Waikiʻi Ranch or the Kilohana Girl Scout Camp. Consequently, vehicle traffic on PTA Trail would have a less than significant noise impact.

Vehicle maneuver activity at PTA would include use of unpaved roads and use of off-road maneuver areas. Unpaved roads used by military vehicles occur throughout the installation. Most off-road vehicle maneuver activity under the Proposed Action would occur in or close to the WPAA. Vehicle noise during these activities would include peak pass-by noise levels and average hourly noise levels as illustrated in Figure 8-17. Estimated peak pass-by noise levels and average traffic noise levels for military vehicles were discussed in Section 5.6.2 and were illustrated in Figure 5-23. Noise levels from individual vehicle pass-bys vary with vehicle type and speed. Vehicle speeds would be relatively low on unpaved roads and during off-road vehicle maneuvers. Noise levels generated by HMMWVs and two-axle military trucks would be comparable to noise from medium trucks (about 65 to 70 dBA at 50 feet [15 meters]). Multi-axle heavy trucks would generate noise levels comparable to other heavy duty trucks (about 78 to 80 dBA at 50 feet [15 meters]). The Stryker vehicle is expected to produce peak pass-by noise levels a few decibels higher than the noise generated by multi-axle heavy trucks (about 85 dBA at 50 feet [15 meters]). Peak pass-by noise levels would drop by 15 dBA at a distance of 500 feet (152 meters) from the travel path.

Vehicle maneuvers would occur during both daytime and nighttime hours, making vehicle maneuver activity noise an issue of concern for the Waikiʻi Ranch development and the Kilohana Girl Scout Camp. Because vehicle speeds are low during most maneuver activities and because vehicles tend to be relatively dispersed during off-road maneuvers, maneuver activities would be expected to produce hourly average noise levels of less than 55 dBA at a

distance of about 500 feet (152 meters), with brief peaks of 65 to 70 dBA. Such noise levels would not cause significant noise impacts at off-post noise-sensitive land uses during daytime hours. These noise levels would be more disturbing during nighttime hours. As long as nighttime vehicle maneuver activity is minimized within 1,000 feet (305 meters) of the Waikiʻi Ranch and the Kilohana Girl Scout Camp, vehicle noise from training and maneuver activities would be a less than significant impact under the Proposed Action.

The Army will establish a minimum 1,000-foot (305-meter) noise buffer around the Waikiʻi Ranch property and the Kilohana Girl Scout Camp. In addition, the Army will consider training guidelines that minimize nighttime training activities that involve weapons fire or aviation activity within a minimum of 2,000 feet (610 meters) of those properties. The Army will continue to work with affected communities on noise buffers and may adjust the buffer size dependent upon these discussions.

Noise from Aircraft Operations. The Proposed Action would result in three types of changes to current aircraft and helicopter flight operations at PTA: accommodation of a limited number of C-17 cargo aircraft flights to and from BAAF, addition of UAV flight operations over the main portion of PTA and WPAA, and changes in the geographic distribution of helicopter flight activity at PTA. As discussed further below, cargo aircraft flight operations and UAV flight operations are not expected to have significant noise consequences. While overall USARHAW helicopter flight activity would not change under the Proposed Action, there would be changes in the geographic distribution of flight operations due to changes in the locations and types of training conducted. A portion of helicopter flight operations at PTA would be shifted into WPAA to support maneuver training exercises. As noted in Section 8.4.1, BAAF had an average of 33 flight operations per day in 2001 (somewhat more than 900 flight operations per month), with 99 percent of the flight operations being made by helicopters.

The distribution of helicopter flight activity at PTA would change under the Proposed Action, with a portion of the existing helicopter flight activity shifting to the airspace over WPAA. Current estimates are that helicopter flight operations over WPAA would be up to 426 flight operations per month during major training events (totaling about 1,000 flight hours). Less than half of the flight activity would occur at night (US Army CHPPM 2004). The noise implications of this change in flight activity locations has been evaluated in a preliminary manner. Figure 8-22 illustrates average Ldn noise contours for helicopter activity over WPAA. The Ldn day-night average noise level is a 24-hour time-weighted measure that adds a 10 dBA penalty factor to noise generated during nighttime hours (10 PM to 7 AM). The noise modeling analysis assumed that fight operations would be concentrated over two centralized activity areas, with much less flight activity occurring over the outer portions of WPAA. In addition, the noise modeling assumed that helicopter flight activity would remain at least 1,000 feet from the property line of Waikiʻi Ranch. The helicopter noise modeling analysis indicates that noise levels from helicopter activity over WPAA would result in Zone I noise exposure conditions at surrounding off-post locations, such as Waikiʻi Ranch and the Kilohana Girl Scout Camp.

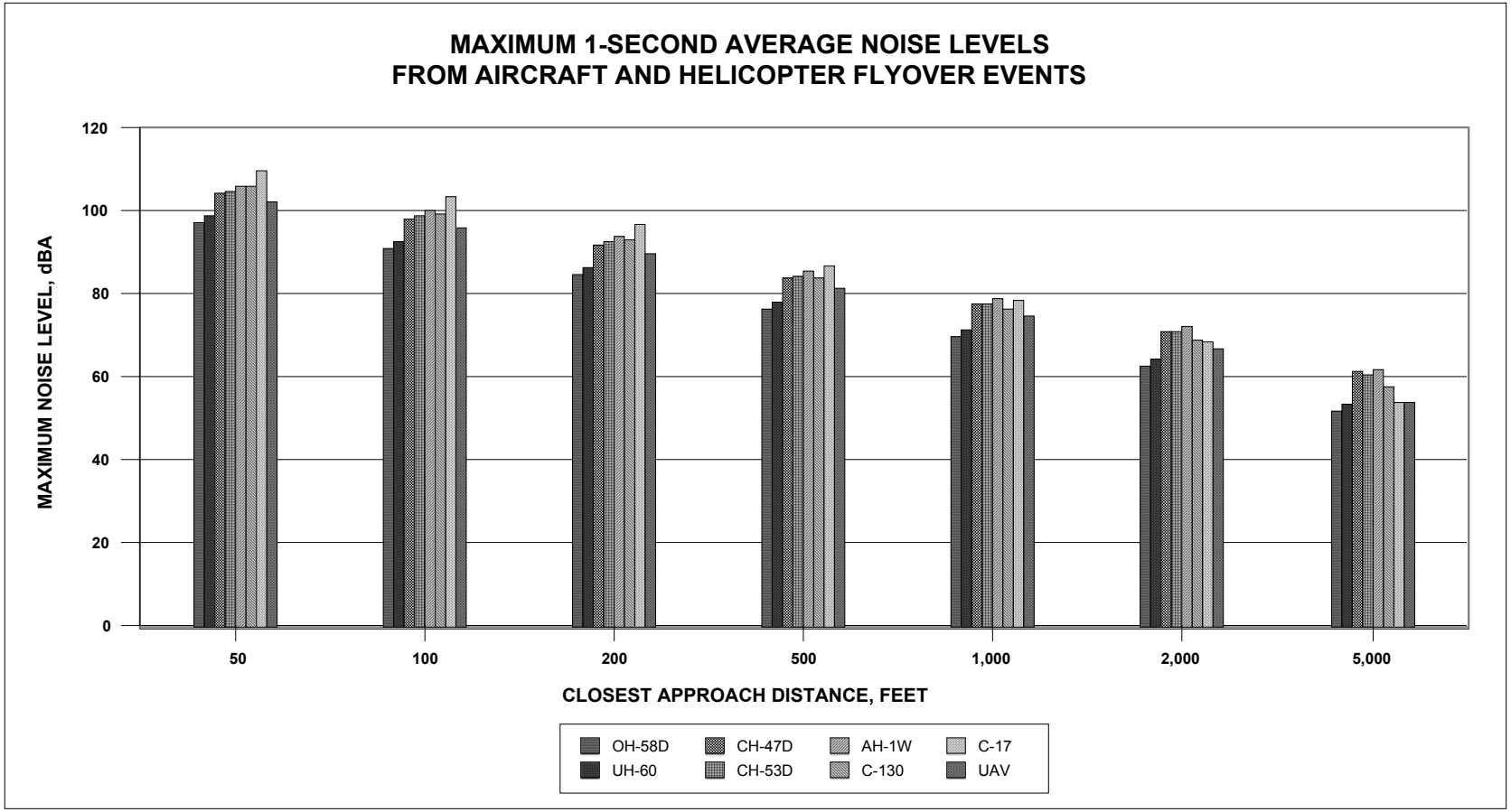
Figure 8-22
Proposed Helicopter Noise at the West Pōhakuloa Acquisition Area

While Figure 8-22 addresses overall average noise increments from helicopter flight activity over WPAA, Figure 8-23 summarizes maximum flyover or flyby noise levels from individual helicopters and aircraft. Smaller helicopters such as the OH-58 and UH-60, produce maximum noise levels of 75 dBA at distances of 500 to 700 feet (152 to 213 meters) from the flight path. Large helicopters, such as the CH-47, produce peak noise levels of 75 dBA at distances of about 1,300 feet (396 meters) from the flight path. Data summarized in US Army CHPPM (2001) indicate that annoyance with individual aircraft and helicopter flyover and flyby events can be correlated with maximum noise levels during the event. The percent of people highly annoyed by aircraft flyover events increases as maximum noise levels of the event increase above 65 dBA. Only about six percent of people are highly annoyed when maximum flyover or flyby noise is about 70 dBA. About 15 percent of people are highly annoyed by individual aircraft or helicopter flyover events when the peak noise level reaches 75 dBA. About 20 percent of people are highly annoyed when maximum flyover noise is 80 dBA. Most helicopter flight activity over WPAA would be well over 1,000 feet (305 meters) from the boundaries of Waikiʻi Ranch and the Kilohana Girl Scout Camp.

The relatively gentle terrain of the WPAA suggests that most helicopter flight activity over WPAA would be visible from Waikiʻi Ranch, and thus at least potentially audible. Helicopter flight activity may be less visible and less audible from the Kilohana Girl Scout Camp. Given the relatively low normal background noise conditions at WPAA, helicopter flight activity generally would be audible at distances of up to 2.5 miles (4 kilometers). Flight activity at greater distances may not be readily audible. Even though actual noise levels at off-post locations may not be very loud, the tonal characteristics of helicopter noise will make helicopter noise increments readily distinguishable from normal background noise conditions. Thus, the overall increase in helicopter flight activity over WPAA would be noticeable to residents of Waikiʻi Ranch and probably would lead to an increase in the frequency of noise complaints. Overall noise levels at Waikiʻi Ranch would remain within the Army's guidelines for noise levels compatible with residential land uses. Consequently, although the change in noise conditions would be readily noticeable, this impact is considered less than significant.

The Army will establish a minimum 1,000-foot (305-meter) noise buffer around the Waikiʻi Ranch property and the Kilohana Girl Scout Camp. In addition, the Army will consider training guidelines that minimize nighttime training activities that involve weapons fire or aviation activity within a minimum of 2,000 feet (610 meters) of those properties. The Army will continue to work with affected communities on noise buffers and may adjust the buffer size dependent upon these discussions.

Modifications to BAAF would accommodate fixed wing cargo aircraft operations, allowing the use of C-17 aircraft for troop and cargo transport between Oʻahu and PTA. A typical troop deployment from SBMR to PTA would involve two C-130 or C-17 aircraft. UAV flight operations also would be introduced at PTA under the Proposed Action. As noted in Section 2.3.4, the Proposed Action would include acquiring four UAVs, which are expected to make a combined total of 600 sorties per year, mostly in restricted airspace areas over



Approximately 15 percent of people are highly annoyed when the maximum flyover noise level is 76.5 dBA and approximately 27.5 percent are highly annoyed by a maximum flyover noise level of 85 dBA. Aircraft and helicopters are typically audible at distances of 1.5 to 2 miles.

Figure 8-23 Maximum Flyover Noise Levels from Aircraft and Helicopters Used in Army and Marine Corps Exercises

O'ahu and PTA. It is not yet clear what fraction of those sorties would occur at PTA versus the restricted airspace over O'ahu. Most UAV sorties at PTA would occur in the R-3103 restricted airspace area over PTA, but some would also occur outside the R-3103 airspace. UAV flight operations outside the R-3103 area would be conducted in accordance with FAA requirements and procedures.

Figure 8-23 illustrates peak flyover event noise levels for various helicopters, fixed-wing aircraft, and the UAV. Maximum flyover event noise levels vary with aircraft type and flight altitude. Fixed-wing cargo aircraft produce maximum noise levels of about 85 dBA at distances of about 500 to 600 feet (152 to 183 meters)from the flight path. The Shadow 200 UAV would produce peak noise levels of 85 dBA at distances of about 300 feet (91 meters) from the flight path. Maximum flyover noise levels for fixed-wing cargo aircraft would be about 75 dBA at distances of about 1,250 feet (381 meters) from the flight path. Maximum flyover noise levels from the Shadow 200 UAV would be about 75 dBA at distances of about 1,000 feet (305 meters) from the flight path.

Helicopters normally operate at low flight altitudes, often within 300 feet (91 meters) of ground level. C-130 and C-17 cargo aircraft would be at low flight altitudes during the final landing approach to and the early stages of departures from BAAF. In most cases, the UAV would be expected to operate at relatively high altitudes to avoid conflict with other helicopter and aircraft flight activity. UAV takeoffs and landings normally would occur within the R-3103 area at PTA, rather than at BAAF. Overall aircraft activity at PTA would continue to be dominated by helicopter operations. The number of added cargo aircraft and UAV flight operations would be relatively small in comparison to continuing helicopter flight operations. In addition, the noise buffers proposed as mitigation under Impact 1 would apply to helicopter training activities. The Army will continue to work with affected communities on noise buffers and may adjust the buffer size dependent upon these discussions. Consequently, noise from aircraft operations at PTA and BAAF would be a less than significant impact under the Proposed Action.

No Impact

Noise from Added Personal Vehicle Traffic. None of the personnel added under the Proposed Action would be based at PTA. Consequently, there would be no noise from added personal vehicle traffic at PTA under the Proposed Action.

Reduced Land Acquisition

Significant Impacts Mitigable to Less Than Significant

Impact 1: Noise From Ordnance Use. Noise levels from weapons firing and ordnance detonations under the RLA Alternative would be essentially the same as under the Proposed Action. Small arms firing at QTR2 would not alter overall noise contours, which are dominated by heavy weapons firing. Future noise contours from heavy weapons use would be the same as illustrated in Figure 8-18. As under the Proposed Action, Zone II conditions (with an Ldn of 62 to 70 dBC) would expand slightly within the ordnance impact area at PTA but would contract slightly in the area north of Saddle Road. There would be a slight expansion of Zone II conditions in the cantonment area, but this change would not include most of the on-

post housing units. The Zone II noise contour would not expand toward the Kilohana Girl Scout Camp or Waikiʻi Ranch and would actually contract slightly in the eastern portion of WPAA. The Zone II noise at Mauna Kea State Park would expand slightly to include a small amount of land on the west side of Saddle Road, but there would be very little change in the location of the Zone II noise contour near the picnic area and rental cabins that are east of Saddle Road. Changes in firing point locations, range configurations, and the distribution of daytime versus nighttime firing compensate for the overall increase in munitions use for the limited changes in noise contours compared to existing conditions.

As discussed for the Proposed Action, use of blank ammunition and simulator devices in the WPAA have the potential to create noise problems in the Waikiʻi Ranch development and the Kilohana Girl Scout Camp. Given the large size of the WPAA, it is reasonable to expect that management actions could be taken to reduce the frequency of noise disturbance at Waikiʻi Ranch and Kilohana Girl Scout Camp to acceptable levels.

Because appropriate management actions would be able to reduce heavy weapons noise impacts at Mauna Kea State Park and small arms noise impacts at Waikiʻi Ranch and Kilohana Girl Scout Camp, noise from ordnance use at PTA would be a significant but mitigable impact under the RLA Alternative.

Additional Mitigation 1. The Army will establish a minimum 1,000-foot (305-meter) noise buffer around the Waikiʻi Ranch property and the Kilohana Girl Scout Camp. In addition, the Army will consider training guidelines that minimize nighttime training activities that involve weapons fire or aviation activity within a minimum of 2,000 feet (610 meters) of those properties. The Army will continue to work with affected communities on noise buffers and may adjust the buffer size dependent upon these discussions.

Less than Significant Impacts

Noise from Construction Activities. Reduced Land Acquisition would require the same new facilities as the Proposed Action. In addition, QTR2 would be constructed at PTA instead of at SBMR. As noted in the discussion for the Proposed Action, noise-sensitive land uses would be far enough from construction sites to avoid significant noise impacts. Consequently, construction activities would have a less than significant noise impact under the RLA Alternative.

Noise from Military Vehicle Use. Military vehicle use associated with PTA would be the same under the RLA Alternative as previously discussed under the Proposed Action. As would be the case for the Proposed Action, military vehicle use at PTA would have a less than significant noise impact under the RLA Alternative.

Noise from Aircraft Operations. Aircraft, helicopter, and UAV use associated with PTA would be the same under the RLA Alternative as previously discussed under the Proposed Action. Although residents of areas near PTA would continue to file occasionally complaints about low flying aircraft and helicopters, the complaints generally would be about discrete flyover events rather than overall average noise levels. As noted in the discussion of the Proposed

Action, aircraft operations at PTA would have a less than significant noise impact under the RLA Alternative.

No Impact

Noise from Added Personal Vehicle Traffic. None of the personnel added under RLA would be based at PTA. Consequently, there would be no noise from added personal vehicle traffic at PTA under the RLA Alternative.

No Action

Less than Significant Impacts

Noise from Ordnance Use. Existing training exercises would continue at PTA under No Action. The PTA West acquisition would not occur, so there would be no added small arms firing near Waikiʻi Ranch or the Kilohana Girl Scout Camp. Noise contours from heavy weapons firing would remain as illustrated in Figure 8-17. While individual detonation events would continue to produce occasional events of high noise levels in the cantonment area and at off-post noise-sensitive areas, overall noise conditions would remain acceptable for current land use patterns. Consequently, noise from ordnance use under No Action would be a less than significant impact.

Noise from Military Vehicle Use. Military vehicle use associated with PTA would be less under No Action than under the Proposed Action or the RLA Alternative. No Stryker vehicles would be used under No Action. Noise levels produced by a continuation of existing vehicle use patterns at PTA would have a less than significant noise impact under No Action.

Noise from Aircraft Operations. Existing patterns of aircraft and helicopter use of airspace over PTA would continue under No Action. Although residents of areas near PTA would continue to file occasionally complaints about low flying aircraft and helicopters, the complaints generally would be about discrete flyover events rather than overall average noise levels. Noise levels produced by a continuation of existing aircraft operations at PTA would have a less than significant noise impact under No Action.

No Impact

Noise from Construction Activities. No specific construction projects are proposed under No Action. Consequently, there would be no construction noise impacts under No Action.

Noise from Added Personal Vehicle Traffic. There would be no personnel based at PTA under No Action. Consequently, there would be no noise impact from added personal vehicle traffic.