6.7 TRAFFIC AND CIRCULATION

6.7.1 Introduction

A detailed discussion of the methodology used to analyze the reuse alternatives is provided in Appendix M, Volume III of the EIS. This section describes the changes to this methodology used in analyzing Alternative 6R.

At the time that the other reuse alternatives were analyzed, little information was available regarding the proposed SR 68 bypass across the southern portion of Fort Ord and the proposed multi-modal corridor through the northern part of the installation. Since more detailed information regarding these proposed routes is now available, these two facilities have been included in the analysis of Alternative 6R.

Another change involved trip generation rates. The land uses in Alternative 6R were, in some cases, more detailed than the uses analyzed in the other reuse alternatives. Information such as actual developed acreages, numbers of employees, and more specificity as to planned uses allowed some refinement in determining trip generation rates.

Documentation of all the assumptions used in conducting the traffic modeling for Alternative 6R is provided in Appendix M (in Volume IV, Section 6). This includes figures showing the traffic analysis zones, highway network, and screenline locations used in the analysis, and tables showing model land use inputs, details of the screenline analysis, and level of service (LOS) on selected roadways.

In interpreting the screenline analysis results reported below, caution should be exercised. Some double counting occurs in measuring trips across the three screenlines, not only in the analysis of Alternative 6R, but in all alternatives. For instance, trips between Salinas and the Monterey Peninsula through Fort Ord may be counted twice in the encircling screenline (once entering and once exiting the installation) and again in either the east-west or north-south screenline. Therefore, the lane requirements shown in Table 5-8 should not be added together to arrive at total lane requirements.

6.7.2 Disposal Impacts

There would be no disposal impacts and mitigation under Alternative 6R. Remediation of the site would not generate a substantial amount of traffic. Further, the duration of this impact would be relatively short. Given the reduction in traffic that would occur when the installation is closed and the additional roadway capacity that would become available, the roadway system would be sufficient to handle the traffic generated by the remediation activities.

6.7.3 Reuse Impacts

Traffic generated by construction of Alternative 6R would be much less than the traffic generated by the proposed land uses. The existing roadway system would be sufficient to handle that level of traffic. Therefore, all impacts relate to the traffic generated by the land uses on completion of construction .

- ***Impact: Increased Travel Demand between Fort Ord and the Surrounding Communities to Approximately 131,000 Trips Per Day***

The five currently active gates to Fort Ord have a daily capacity of approximately 70,000 trips. The land uses in Alternative 6R are estimated to create approximately 228,000 vehicle trips per day. Approximately 131,000 trips are projected to travel between Fort Ord and the surrounding communities each day. This would include vehicles traveling through Fort Ord to get to other destinations as well.

- ***Mitigation: Provide between 9 and 22 Lanes of Roadway for Access between Fort Ord and the Surrounding Communities to Avoid Traffic Congestion Worse than Level of Service C***

To provide capacity to handle 131,000 daily trips at LOS C, between 9 and 22 lanes of roadway would need to be provided between Fort Ord and surrounding communities. To meet this demand, 9 lanes of freeway, each lane capable of carrying approximately 16,000 vehicles per day at LOS C, could be needed. If the capacity were provided using access-controlled arterial roadways which can carry approximately 12,000 vehicles per day at LOS C, 11 lanes would be required. An arterial roadway with signalized intersections, can carry approximately 6,000 vehicles per day at LOS C, so 22 lanes would be needed to serve this level of demand. The needed roadway capacity could be provided with a mixture of facilities, including freeways, two-, four-, and six-lane arterials; and local two-lane collector streets. With the provision of transit service and aggressive measures to reduce single-occupant driving, the need for roadways could be reduced approximately 10%. Transit service could include elements such as shuttle buses, fixed-route public transit, and rail service. (Local agencies and private entities responsible for development)

At present, including the five active gates, there are 12 lanes of arterial roadway providing access to Fort Ord. If the Inter-Garrison Road/Reservation Road and North-South Road/SR 218 gates are opened, four additional lanes would be provided. The proposed multi-modal corridor, if built, would add up to 6 more lanes of capacity which would probably be sufficient to serve the demand created by Alternative 6R. The main hurdle to implementing this mitigation measure is the availability of funds. In addition to the money required to construct the multi-modal corridor, considerable funds would be required to bring existing Fort Ord roads up to local standards.

Implementation of this mitigation would result in secondary impacts on rare and endangered species and habitats of special concern. Although the precise locations of rare and endangered species have not yet been determined, some are known to occur in the northern portion of the installation in the vicinity of Imjin and Inter-Garrison Roads. Improvement of those roads could impact species such as sand gilia which tend to occur on the sides of roads. The provision of additional roadways could also contribute to water pollution problems because rainfall carries off contaminants left by automobiles on roadway surfaces.

- ***Impact: North-South Daily Travel Demand on Fort Ord of Approximately 40,000 Vehicles***

The land uses in Alternative 6R would create a demand for north-south travel on Fort Ord of approximately 40,000 vehicles per day. This would include travel between sections of Fort Ord, travel between Fort Ord and the surrounding communities, and travel through Fort Ord.

- ***Mitigation: Provide between Three and Seven Lanes of North-South Roadways on Fort Ord to Avoid Traffic Congestion Worse than Level of Service C***

To provide capacity to handle 40,000 daily trips at LOS C, between three and seven lanes of north-south roadways would be needed on Fort Ord. To meet this demand, three lanes of freeway, each lane capable of carrying approximately 16,000 vehicles per day at LOS C, could be needed. If the capacity were provided using access-controlled arterial roadways which can carry approximately 12,000 vehicles per day at LOS C, four lanes would be required. An arterial roadway with signalized intersections, can carry approximately 6,000 vehicles per day at LOS C, so seven lanes would be needed to serve this level of demand. The needed roadway capacity could be provided with a mixture of facilities, including freeways, two-, four-, and six-lane arterials; and local two-lane collector streets. With the provision of transit service and aggressive measures to reduce single-occupant driving, the need for roadways could be reduced approximately 10%. Transit service could include elements such as shuttle buses, fixed-route public transit, and rail service. (Local agencies and private entities responsible for development)

At present, the only roadways serving significant north-south travel on Fort Ord are North-South Road, Imjin Road and Barloy Canyon Road. Expansion of North-South Road could be accomplished, but would involve encroachment on the development on both sides of the road. In addition, for the Army's proposed POM annex, the Army could prohibit the widening of North-South Road to avoid encouraging non-Army travel through the POM annex. Widening of Barloy Canyon Road would be difficult due to the mountainous terrain through which this road travels. Widening would be further hampered by the existence of native plant preserves adjacent to this roadway. New roadways could be constructed but would have to avoid the inland range area and minimize intrusion through areas containing special-status species or habitats of special concern, and would entail considerable cost.

Implementation of this mitigation could result in secondary impacts on biological resources if the roadways are located through habitats of special concern and could contribute to water pollution problems because rainfall carries off contaminants left by automobiles on roadway surfaces.

- ***Impact: East-West Daily Travel Demand on Fort Ord of Approximately 22,000 Vehicles***

The land uses in Alternative 6R would create a demand for east-west travel on Fort Ord of approximately 22,000 vehicles. This would include travel between sections of Fort Ord, travel between Fort Ord and the surrounding communities, and travel through Fort Ord.

- ***Mitigation: Provide between Two and Four Lanes of East-West Roadways on Fort Ord to Avoid Traffic Congestion Worse than Level of Service C***

To provide capacity to handle 22,000 daily trips at LOS C, between two and four lanes of north-south roadways would be needed on Fort Ord. To meet this demand, two lanes of freeway, each lane capable of carrying approximately 16,000 vehicles per day at LOS C, could be needed. If the capacity were provided using access-controlled arterial roadways which can carry approximately 12,000 vehicles per day at LOS C, two lanes would be required. An arterial roadway with signalized intersections, can carry approximately 6,000 vehicles per day at LOS C, so four lanes would be needed to serve this level of demand. The needed roadway capacity could be provided with a mixture of facilities, including freeways, two-, four-, and six-lane arterials; and local two-lane collector streets. With the provision of transit service and aggressive measures to reduce single-occupant driving, the need for roadways could be reduced approximately 10%. Transit service could include elements such as shuttle buses, fixed-route public transit, and rail service. (Local agencies and private entities responsible for development)

At present, the only roadways serving significant east-west travel on Fort Ord are Light Fighter Drive, Inter-Garrison Road and Reservation Road. Widening of any of these roads would be hampered by the existence of habitats of special concern on large portions of the installation. New roadways could be constructed but would have to avoid the inland range area and would need to minimize intrusion in areas containing special-status species or habitats of special concern, and would entail considerable cost.

Implementation of this mitigation could result in secondary impacts on biological resources if the roadways are located through habitats of special concern and could contribute to water pollution problems because rainfall carries off contaminants left by automobiles on roadway surfaces.

- ***Impact: Incompatibility between the Existing Local General Plans and the Reuse Plans for Fort Ord***

Existing general plan circulation elements for the Cities of Seaside and Marina and for Monterey County were prepared before it was known that Fort Ord would be closed; these elements do not include the travel demand created by reuse and therefore understate the improvements that would be needed to satisfy future demand.

- ***Mitigation: Update Local General Plans to Include the Roadway and Transit Improvements Needed to Accommodate the Proposed Reuse of Fort Ord***

When a preferred reuse plan for Fort Ord is selected, the circulation elements of local general plans could be updated to include the roadway and transit improvements determined to be needed to serve the proposed land uses. Transportation Demand Management plans could also be developed to minimize the amount of additional roadway capacity required. Transportation Demand Management strategies are policies and actions aimed at reducing the number of vehicles using roadways during the peak hour. These include methods for encouraging carpooling, vanpooling, and transit use. (Local agencies)

This mitigation is considered feasible for this impact and would not result in foreseeable secondary impacts.

6.7.4 Cumulative Effects

The traffic analysis presented in this section is inherently a cumulative analysis because Alternative 6R is analyzed in a future year (2010). This alternative is modeled as being completely built, and background growth in the study area has been assumed.

6.7.5 Summary Comparison of Reuse Alternatives

Table 5-8 presents data that compare trips generated and trips crossing screenlines for each reuse alternative. The data in this table indicates that Alternative 1 would generate the most vehicle trips and create the greatest demand for additional roadways. Alternative 2 would generate the next highest number of trips, followed by Alternative 3. Alternative 4 would generate fewer trips than Alternative 3, and Alternative 5 would generate the fewest trips of any of the alternatives. Alternative 6R is projected to generate slightly fewer trips than Alternative 3; however, comparison of this reuse alternative to the other alternatives is limited by the fact that the land uses comprising Alternative 6R have been more precisely defined than previous alternatives.

6.8 AIR QUALITY

6.8.1 Introduction

Air emissions would result from both disposal and reuse. Air emissions during disposal would result from demolition of existing buildings and infrastructure. During reuse, there would be varying levels of construction and operational emissions.

The methodology used to estimate construction and operational emissions and emission impacts is described in Section II.8, "Air Quality", Volume II of the EIS. Emissions associated with Alternative 6R were based on the methodology described in Volume II. In addition, Alternative 6R emissions include those produced by general aviation use of Fritszche Army Airfield. These aircraft emissions represent a relatively small percent of total emissions and have been included in the area source emission category. Aircraft emissions have been quantified using emission factors for aircraft developed by the U.S. Environmental Protection Agency (U.S. Environmental Protection Agency 1985b) and aircraft operational estimates provided by P&D Aviation.

Information on air pollution terminology, dispersion modeling, microscale carbon monoxide (CO) impacts, and regional air quality impacts are contained in Appendix N (Volume III, with revisions in Volume IV, Section 6.0).

6.8.2 Disposal Impacts

- ***Impact: Exposure of the Public to Asbestos during Building Demolition or after Transfer of Buildings to Third Parties***

Asbestos surveys are being conducted for each of the 1,738 buildings in the cantonment area (U.S. Army Corps of Engineers, Sacramento District 1992c). Several Fort Ord buildings have been identified as containing asbestos.

- ***Mitigation: Implement U.S. Environmental Protection Agency Asbestos Cleanup Procedures to Limit Public Exposure to Asbestos***

For buildings slated for demolition, public exposure is possible if asbestos is not removed prior to demolition. For buildings not slated for demolition, public exposure is possible if asbestos if not removed or encapsulated prior to the transfer of buildings to third parties. To limit public exposure to asbestos, implement U.S. Environmental Protection Agency guidelines to remove or encapsulate asbestos in all buildings where asbestos has been identified (Army).

- ***Impact: Emissions of PM_{10} and Hazardous Air Pollutants***

Disposal would result in air emissions during hazardous waste cleanup and recovery of unexploded ordnance from the inland range area. Although a certain amount of remedial cleanup will occur whether of not the inland range area is reused, additional cleanup may be required for disposal and reuse. This additional cleanup may generate PM_{10} (particulate matter less than 10 microns in diameter) and hazardous air pollutants.

- ***Mitigation: Implement Dust-Reducing Measures during Disposal to Limit PM_{10} Emissions***

The following dust reducing measures will be implemented to limit PM_{10} emissions generated during hazardous waste and ordnance cleanup. (Army)

- Apply dust suppressants (such as water or chemical stabilizers) to all disturbed material daily. The cleanup teams should apply dust suppressants to all excavated material to prevent an excessive amount of dust. The application of suppressants should be conducted at least twice a day with complete coverage, preferably in the late morning and after daily work shifts.

- Minimize ground disturbance at all times. The cleanup teams should minimize the total area disturbed by clearing, earthmoving, or excavation activities at all times.

- Cover all material transported offsite. The cleanup teams should securely cover all material transported offsite to minimize dust release.

- Cease all earth-moving activities during high winds. The cleanup teams should cease all earthmoving, excavation, and ordnance removal activities when winds exceed 20 mph, averaged over 1 hour.

- Seed and water all inactive areas. The cleanup teams should seed and water all inactive portions of the cleanup sites until growth of vegetation is evident.

These mitigation measures represent the range of feasible mitigation measures needed to minimize PM_{10} emissions. These mitigation measures should not create any additional environmental impacts.

6.8.5 Summary Comparison of Reuse Alternatives

Construction emissions are a function of total developed acreage (Table 6.8-1). Consequently, Alternative 1 and subalternatives result in the largest amount of construction-related emissions. Alternative 2 and the subalternatives result in the second highest amount of construction related emissions. Only Alternative 5 would result in construction emissions that are less than MBUAPCD thresholds for NO_x and PM_{10}.

Tables 6.8-2 and 6.8-3 present operational emissions and worst-case carbon monoxide levels for each reuse alternative. Alternatives 1-4 (and the respective subalternatives) show a substantial increase in vehicle miles traveled compared to existing conditions. However, these same alternatives show a much lower rate of increase in traffic-related ROG, NO_x, and CO emissions, primarily because emission control devices on new vehicles will be much more stringent by 2010 and because a higher percentage of cars will have such devices installed.

Emissions are a function of the type and density of development. Only Alternative 1 would result in CO concentrations that exceed ambient standards. Alternatives 1, 1A, 1B, 1C, 2, and 2A would result in substantial increases in ROG, NO_x, and PM_{10} operational emissions while Alternative 2B would result in a substantial increase in NO_x and PM_{10} operational emissions.

The CO modeling analysis shows that Alternative 1 would result in a violation of the federal and California ambient air quality standards near 13 intersections. Alternatives 2-6R, would not cause violations of the federal or California CO standards.

The 1991 MBUAPCD Air Quality Management Plan assumed that Fort Ord population in 2010 would be similar to Fort Ord's existing population. Only Alternatives 4, 5, 5A, and 6R are consistent with the 1991 Air Quality Management Plan. All other alternatives and subalternatives would result in population increases above the population estimates used by AMBAG to prepare the 1991 Air Quality Management Plan. All alternatives, except Alternative 1 and its subalternatives, are consistent with AMBAG's population projections used to prepare the 1982 SIP. Table 6.8-4 presents population projections for each reuse alternative.

6.9 NOISE

6.9.1 Introduction

This analysis assumes that the proposed action and Alternative 6R would have a substantial effect if it resulted in:

- generation of noise that would conflict with applicable noise regulations,
- substantial increase (greater than 5 decibels [dB]) in the ambient noise levels for adjoining areas relative to existing conditions,
- exposure of people to severe noise levels, or
- land uses that are incompatible because of noise.

Although there may be some noise impacts resulting from remediation that would occur as a result of disposal, most of the impacts are anticipated to occur as a result of reuse. Mitigation of noise impacts under reuse would be the responsibility of the agency or agencies that would have ultimate jurisdiction over the land proposed for reuse, not the responsibility of the Army. Therefore, this analysis focuses on noise standards used by local agencies.

6.8.3 Reuse Impacts

Construction-Related Emissions

- ***Impact: Generation of 157 Pounds per Day of Nitrogen Oxide that Exceed the Emission Thresholds during Construction and Renovation***

During construction, Alternative 6R would generate nitrogen oxide (NO_x) emissions that exceed the MBUAPCD emissions thresholds of 150 pounds per day for NO_x. The following mitigation measure would reduce NO_x emissions to less than the emission threshold.

- ***Mitigation: Implement Measures during Construction and Renovation to Minimize Nitrogen Oxide Emissions***

The following measures to limit NO_x emissions from motor vehicles will be implemented during renovation (Army for establishment of POM annex only) and construction (Local agencies and private entities responsible for development):

- for diesel-powered heavy-duty construction equipment, use Caterpillar prechamber diesel engines (or equivalent) and properly maintain and operate equipment;
- implement engine-timing retard (four degrees) for diesel-powered equipment;
- substitute gasoline-powered for diesel-powered equipment, where feasible; and
- use electric equipment where feasible.

These mitigation measures represent the range of feasible mitigation measures needed to minimize NO_x emissions. These mitigation measures should not create any additional environmental impacts.

- ***Mitigation: Obtain Nitrogen Oxide Emission Offsets from the Emissions Bank Maintained by the Monterey Bay Unified Air Pollution Control District***

Emission offsets could be obtained to compensate for construction emissions, so that net NO_x emission increases would be limited to the emissions threshold of 150 pounds per day. The feasibility of this mitigation measure depends on the availability and cost of NO_x emission reduction credits at the time when this mitigation measure is necessary. (Local agencies and private entities responsible for development)

6.8.4 Cumulative Effects

The North Central Coast Air Basin is classified as a nonattainment area for the California ozone and PM_{10} standards. Ozone precursor emissions associated with reuse Alternatives 1 and 2 (and subalternatives) would contribute to the region's ozone nonattainment problem. These alternatives would also contribute to the region's PM_{10} nonattainment problem. Alternative 1 and the subalternatives would also lead to violation of the carbon monoxide (CO) ambient standards unless steps are taken to relieve congested intersections and to design the Alternative 1 network so that congested intersections are minimized. The remaining alternative and subalternatives, including Alternative 6R, would not contribute to violations of PM_{10}, ozone, or CO standards.

Table 6.8-1 Construction Emissions by Reuse Alternative

Reuse Alternative	Total Developable Acreage	Acreage Disturbed per Day[a]	Emissions (pounds/day)[b] ROG	NO_x	CO	PM_{10}[c]
Alternative 1	23,117	6.2	36	486	175	256 (146)
Subalternative A	22,082	5.9	35	463	166	243 (140)
Subalternative B	22,960	6.1	36	478	172	252 (144)
Subalternative C	22,427	6.0	36	471	169	247 (142)
Alternative 2	17,677	4.7	28	368	132	194 (111)
Subalternative A	16,723	4.5	27	353	127	186 (106)
Subalternative B	17,459	4.7	28	368	132	194 (111)
Alternative 3	9,962	2.7	16	212	76	111 (64)
Alternative 4	9,990	2.7	16	212	76	111 (64)
Alternative 5	1,921	0.5	3	39	14	21 (12)
Subalternative A	388	0.1	1	8	3	4 (2)
Alternative 6R	7,465	2.0	12	157	56	83 (47)

Note: Construction emissions are a function of the acreage proposed for development. The total developable acreage excludes acreage devoted to open space and existing land uses that would not require additional earthmoving.

[a] The acreage disturbed per day is estimated by dividing the total developable acreage by 15 years (1995-2010) and assumes 250 days per year during which construction would occur.

[b] Emission estimates assume the following construction vehicle usage for each disturbed acre per day:

1 cold planer or wheeled dozer,
1 scraper,
2 wheeled loaders,
0.5 static or vibratory roller, and
0.5 concrete or asphalt paver.

[c] Value in parenthesis represents 50% control of fugitive dust.

Table 6.8-2 Total Operational Emissions Associated with Each Reuse Alternative

Reuse Alternative	Emission Type	Emission (pounds/day) ROG	NO_x	CO	PM_{10}
Existing conditions	Motor vehicles	7,418	5,846	65,631	1,107
	Area sources	815	161	464	52
	Total	8,233	6,007	66,095	1,159
Alternative 1	Motor vehicles	5,986	10,876	184,988	3,934
	Area sources	9,091	1,791	5,178	583
	Total	15,077	12,667	190,166	4,517
Subalternative A	Motor vehicles	6,261	11,324	193,083	4,111
	Area sources	9,634	1,898	5,487	617
	Total	15,895	13,222	198,570	4,728
Subalternative B	Motor vehicles	6,231	11,302	192,963	4,104
	Area sources	9,149	1,802	5,211	586
	Total	15,380	13,104	198,174	4,690
Subalternative C	Motor vehicles	6,187	11,100	190,873	4,009
	Area sources	10,624	2,093	6,051	681
	Total	16,811	13,193	196,924	4,690
Alternative 2	Motor vehicles	3,274	5,920	101,831	2,103
	Area sources	4,141	816	2,359	265
	Total	7,415	6,736	104,190	2,369
Subalternative A	Motor vehicles	3,471	6,215	107,385	2,221
	Area sources	4,742	934	2,701	304
	Total	8,213	7,149	110,085	2,525
Subalternative B	Motor vehicles	3,399	6,112	105,583	2,182
	Area sources	4,508	888	2,567	289
	Total	7,907	7,000	108,150	2,471
Alternative 3	Motor vehicles	1,620	2,754	50,848	983
	Area sources	2,269	447	1,292	145
	Total	3,889	3,201	52,140	1,129
Alternative 4	Motor vehicles	880	1,878	28,262	653
	Area sources	0	0	0	0
	Total	880	1,878	28,262	653
Alternative 5	Motor vehicles	98	309	3,539	66
	Area sources	0	0	0	0
	Total	98	309	3,539	66
Subalternative A	Motor vehicles	4	10	113	3
	Area sources	0	0	0	0
	Total	4	10	113	3
Alternative 6R	Motor vehicles	1,506	3,245	48,603	1,103
	Area sources	253	60	2,544	1
	Total	1,762	3,305	51,147	1,104

ROG = reactive organic gases.
NOx = nitrogen oxides.
CO = carbon monoxide.
PM10 = inhalable particulate matter.

Emissions for motor vehicles and area sources are based on the following assumptions:

Reuse Alternative	Motor Vehicle Assumptions		Area Source Assumptions
	Vehicle Miles Traveled Per Day	Vehicle Trips Per Day	Residential Units
Existing conditions	1,067,816	193,278	21,315
Alternative 1	7,441,842	1,109,026	78,751
Subalternative A	7,776,958	1,169,412	83,451
Subalternative B	7,762,952	1,165,030	79,251
Subalternative C	7,584,208	1,121,414	92,033
Alternative 2	3,978,517	569,486	35,873
Subalternative A	4,202,181	610,473	41,073
Subalternative B	4,128,118	597,982	39,047
Alternative 3	1,859,706	258,288	19,656
Alternative 4	1,235,174	172,212	0
Alternative 5	124,278	14,682	0
Subalternative A	6,220	985	0
Alternative 6R	2,086,055	287,531	168

Notes: Except for Alternative 6R, emissions from area sources are for residential sources only. These emissions are for emissions from domestic water and space heating, landscape maintenance equipment, house paints, woodstoves, and fireplaces (U.S. Environmental Protection Agency 1985, Bay Area Air Quality Management District 1985).

Area source emissions for Alternative 6R include emissions associated with use of Fritzsche Army Airfield as a general aviation airport.

Motor vehicle emissions are based on the California Air Resources Board's EMFACSCF model. A more detailed description of the assumptions used to estimate motor vehicle emissions is available in Appendix N, Volume III.

Table 6.8-3 Predicted Worst-Case Carbon Monoxide Levels in Parts Per Million

Receptor Locations	Alternative 1 (2010)		Alternative 2 (2010)		Alternative 3 (2010)		Alternative 4 (2010)		Alternative 5 (2010)		Alternative 6R (2010)	
	Peak-Hour Average	8-Hour Average	Peak-Hour Average	8-Hour Average	Peak-Hour Average	8-Hour Average	Peak-Hour Average	8-Hour Average	Peak-Hour Average	8-Hour Average	Peak-Hour Average	8-Hour Average
1	11.5	7.5	8.2	5.3	8.4	5.5	7.9	5.1	7.7	5.0	8.2	5.3
2	11.3	7.3	8.7	5.7	9.2	6.0	8.6	5.6	8.2	5.3	8.8	5.7
3	9.5	6.2	8.0	5.2	8.1	5.3	7.8	5.1	7.3	4.7	7.7	5.0
4	11.8	7.7	9.0	5.9	7.5	4.9	7.0	4.6	6.8	4.4	7.8	5.1
5	10.6	7.0	8.3	5.4	8.0	5.2	7.3	4.7	7.0	4.6	7.5	4.9
6	10.1	6.6	8.1	5.3	8.1	5.3	7.4	4.8	7.1	4.6	7.4	4.8
7	12.0	7.6	8.7	5.7	9.3	6.0	8.2	5.3	7.7	5.0	8.4	5.5
8	14.2	9.2*	9.0	5.9	9.2	6.0	8.4	5.5	8.6	5.6	9.2	6.0
9	14.2	9.2*	9.5	6.2	9.6	6.2	8.6	5.6	8.5	5.5	9.2	6.0
10	17.0	11.1*	9.0	5.9	8.7	5.7	8.0	5.2	8.2	5.3	8.7	5.7
11	12.4	8.1	9.6	6.4	9.9	6.4	8.6	5.7	8.6	5.7	9.7	6.3
12	13.6	8.6	7.7	5.0	7.5	4.9	7.1	4.6	6.9	4.5	7.3	4.7
13	13.2	8.6	8.4	5.5	7.9	5.1	7.4	4.8	6.9	4.5	7.6	4.9
14	11.5	7.5	8.2	5.3	8.2	5.3	7.7	5.0	8.0	5.2	8.2	5.3
15	12.2	7.9	8.5	5.5	8.7	5.7	8.0	5.2	8.3	5.4	8.7	5.7
16	11.2	7.3	8.5	5.5	8.6	5.6	8.0	5.2	8.1	5.3	8.5	5.5
17	12.4	8.1	10.3	6.7	10.3	6.7	9.6	6.2	9.7	6.3	10.6	6.9
18	12.2	7.9	9.3	6.0	9.5	6.2	8.8	5.7	9.8	6.4	10.0	6.5
19	11.9	7.7	9.3	6.0	9.4	6.1	8.9	5.8	10.3	6.7	10.5	6.8
20	13.0	8.5	9.5	6.2	9.8	6.4	9.2	6.0	9.8	6.4	10.0	6.5
21	12.2	7.9	9.5	6.2	9.7	6.3	9.4	6.1	11.3	7.3	11.4	7.4
22	11.6	7.5	8.9	5.8	8.9	5.8	8.5	5.5	9.5	6.2	9.5	6.2
23	15.4	10.0*	9.4	6.1	9.0	5.9	8.9	5.8	10.3	6.7	10.3	6.7
24	12.1	7.9	8.3	5.4	8.3	5.4	7.9	5.1	8.2	5.3	8.3	5.4
25	10.8	7.0	8.3	5.4	8.2	5.3	8.1	5.3	8.4	5.5	8.8	5.8
26	13.8	9.0	8.9	5.8	8.9	5.8	8.4	5.5	8.3	5.4	8.8	5.7
27	12.4	8.1	8.5	5.5	8.5	5.5	8.1	5.3	8.2	5.3	8.4	5.5
28	11.7	7.6	8.2	5.3	7.7	5.0	7.2	4.7	7.2	4.7	7.6	4.9
29	13.4	8.7	8.7	5.7	7.9	5.1	7.1	4.6	7.0	4.6	8.0	5.2
30	13.1	8.5	9.0	5.9	9.3	6.0	8.5	5.5	8.8	5.7	9.4	6.1
31	11.0	7.2	9.3	6.0	9.3	6.0	9.0	5.9	9.1	5.9	9.5	6.2
32	11.9	7.7	9.3	6.0	9.1	5.9	8.5	5.5	8.8	5.7	9.4	6.1
33	10.5	6.8	8.4	5.5	8.4	5.5	8.1	5.3	8.0	5.2	8.4	5.5
34	12.8	8.3	9.4	6.1	9.5	6.2	8.7	5.7	9.0	5.9	9.0	5.9
35	10.8	6.9	8.8	5.8	8.5	5.5	8.2	5.3	8.3	5.4	8.7	5.7
36	13.3	8.6	8.4	5.5	7.9	5.1	7.0	4.6	7.0	4.6	8.2	5.3
37	11.1	7.2	7.5	4.9	7.2	4.7	7.0	4.6	7.1	4.6	7.1	4.6
38	13.4	8.7	7.2	4.7	7.4	4.8	7.2	4.7	6.9	4.5	7.0	4.6
39	10.5	6.8	7.1	4.6	7.3	4.7	7.2	4.7	6.8	4.4	6.8	4.4
40	16.1	11.6*	7.5	4.9	7.8	5.1	7.5	4.9	6.4	4.2	6.9	4.5
41	16.6	12.7*	7.9	5.1	7.8	5.1	7.5	4.9	6.5	4.2	7.3	4.7
42	12.3	8.0	8.1	5.3	9.0	5.9	8.1	5.3	7.4	4.8	7.7	5.0
43	11.2	7.3	8.2	5.3	8.5	5.5	8.6	5.6	7.2	4.7	7.8	5.1
44	11.2	7.3	7.7	5.0	8.6	5.6	8.1	5.3	7.0	4.6	9.0	5.9
45	10.3	6.7	7.8	5.1	8.1	5.3	8.0	5.2	6.7	4.4	8.2	5.3
46	14.5	9.4*	7.7	5.0	9.0	5.9	7.8	4.9	6.7	4.4	9.1	5.9
47	13.7	8.9	9.6	6.2	8.6	5.6	7.9	5.1	6.6	4.3	7.9	5.1
48	15.4	10.0*	8.7	5.7	8.4	5.5	7.5	4.9	6.9	4.5	8.5	5.5
49	14.1	9.2*	7.4	4.8	9.2	6.0	7.2	4.7	7.3	4.7	8.1	5.3
50	11.0	7.2	7.3	4.7	8.4	5.5	7.3	4.7	7.0	4.6	8.1	5.3
51	12.7	8.3	7.4	4.8	9.8	6.4	7.3	4.7	6.8	4.4	7.7	5.0
52	9.8	6.4	7.1	4.6	8.2	5.3	7.4	4.8	7.3	4.7	8.9	5.8
53	10.5	6.8	7.2	4.7	8.8	5.7	7.1	4.6	7.0	4.6	7.9	5.1
54	14.3	9.3*	8.2	5.3	8.1	5.3	7.0	4.6	7.1	4.6	9.3	6.0
55	11.6	7.5	8.6	5.6	7.9	5.1	7.0	4.6	7.6	4.9	7.3	4.7
56	12.7	8.3	7.9	5.1	7.9	5.1	7.2	4.7	7.3	4.7	7.2	4.7
57	12.3	8.0	7.9	5.1	7.6	4.9	7.8	5.1	7.3	4.7	7.2	4.7
58	12.2	7.9	8.1	5.3	7.7	5.0	7.7	5.0	NAR	NAR	7.0	4.6
59	10.6	6.9	7.4	4.8	7.6	4.9	8.0	5.2	NAR	NAR	7.0	4.6
60	11.1	7.2	7.8	5.1	8.4	5.5	7.1	4.6	NAR	NAR	7.0	4.6
61	10.2	6.6	8.2	5.3	7.6	4.9	7.2	4.7	NAR	NAR	NAR	NAR
62	9.6	6.2	8.6	5.6	7.2	4.7	6.9	4.5	NAR	NAR	NAR	NAR
63	11.5	7.5	8.9	5.8	NAR	NAR	7.3	4.7	NAR	NAR	NAR	NAR
64	10.5	6.8	8.9	5.8	NAR	NAR	7.1	4.6	NAR	NAR	NAR	NAR
65	10.5	6.8	8.0	5.2	NAR	NAR	7.4	4.8	NAR	NAR	NAR	NAR
66	10.2	6.6	7.5	4.9	NAR	NAR	7.1	4.6	NAR	NAR	NAR	NAR
67	12.0	7.8	7.5	4.9	NAR	NAR	7.0	4.6	NAR	NAR	NAR	NAR
68	12.6	8.2	8.1	5.3	NAR	NAR	7.2	4.7	NAR	NAR	NAR	NAR
69	12.2	7.9	7.6	4.9	NAR	NAR	7.0	4.6	NAR	NAR	NAR	NAR
70	11.0	7.2	7.6	4.9	NAR	NAR	7.1	4.6	NAR	NAR	NAR	NAR
71	10.7	7.0	7.3	4.7	NAR	NAR	9.1	5.9	NAR	NAR	NAR	NAR
72	10.6	6.9	7.4	4.8	NAR	NAR	7.2	4.7	NAR	NAR	NAR	NAR
73	11.1	7.2	8.0	5.2	NAR	NAR	7.2	4.7	NAR	NAR	NAR	NAR
74	14.2	9.2*	8.7	5.7	NAR	NAR	6.9	4.5	NAR	NAR	NAR	NAR
75	11.9	7.7	8.0	5.2	NAR	NAR	6.9	4.5	NAR	NAR	NAR	NAR
76	11.0	7.2	7.8	5.1	NAR	NAR	6.8	4.4	NAR	NAR	NAR	NAR
77	11.1	7.2	7.8	5.1	NAR	NAR	6.8	4.4	NAR	NAR	NAR	NAR

Table 6.8-3 Continued

Receptor Locations	Alternative 1 (2010)		Alternative 2 (2010)		Alternative 3 (2010)		Alternative 4 (2010)		Alternative 5 (2010)		Alternative 6R (2010)	
	Peak-Hour Average	8-Hour Average	Peak-Hour Average	8-Hour Average	Peak-Hour Average	8-Hour Average	Peak-Hour Average	8-Hour Average	Peak-Hour Average	8-Hour Average	Peak-Hour Average	8-Hour Average
78	12.1	7.9	6.4	5.5	NAR	NAR	6.7	4.4	NAR	NAR	NAR	NAR
79	11.6	7.5	7.8	5.1	NAR	NAR	6.8	4.4	NAR	NAR	NAR	NAR
80	10.5	6.8	7.8	5.1	NAR	NAR	7.3	4.7	NAR	NAR	NAR	NAR
81	11.3	7.3	7.8	5.1	NAR	NAR	7.3	4.7	NAR	NAR	NAR	NAR
82	12.1	7.9	8.2	5.3	NAR	NAR	7.8	5.1	NAR	NAR	NAR	NAR
83	10.7	7.0	9.0	5.9	NAR	NAR	7.7	5.0	NAR	NAR	NAR	NAR
84	10.8	7.0	8.0	5.2	NAR	NAR	7.3	4.7	NAR	NAR	NAR	NAR
85	10.7	7.0	7.5	4.9	NAR	NAR	6.8	4.4	NAR	NAR	NAR	NAR
86	10.8	7.0	8.6	5.6	NAR	NAR	6.7	4.4	NAR	NAR	NAR	NAR
87	11.7	7.6	9.0	5.9	NAR	NAR	6.8	4.4	NAR	NAR	NAR	NAR
88	12.1	7.9	8.3	5.4	NAR	NAR	6.6	4.3	NAR	NAR	NAR	NAR
89	12.3	8.0	8.3	5.4	NAR	NAR	6.7	4.4	NAR	NAR	NAR	NAR
90	10.0	6.5	8.5	5.5	NAR	NAR	7.0	4.6	NAR	NAR	NAR	NAR
91	11.8	7.7	8.3	5.4	NAR	NAR	6.9	4.5	NAR	NAR	NAR	NAR
92	12.9	8.4	8.4	5.5	NAR	NAR	6.6	4.3	NAR	NAR	NAR	NAR
93	12.9	8.4	9.2	6.0	NAR	NAR	6.9	4.5	NAR	NAR	NAR	NAR
94	11.1	7.2	8.8	5.7	NAR	NAR	6.9	4.5	NAR	NAR	NAR	NAR
95	11.7	7.6	8.8	5.7	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
96	13.2	8.6	8.5	5.5	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
97	13.2	8.6	8.4	5.5	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
98	11.4	7.4	8.0	5.2	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
99	12.1	7.9	8.0	5.2	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
100	11.5	7.5	8.3	5.4	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
101	11.0	7.2	7.3	4.7	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
102	12.0	7.8	8.0	5.2	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
103	12.4	8.1	7.0	4.6	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
104	11.4	7.4	7.5	4.9	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
105	14.9	9.7*	7.7	5.0	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
106	13.8	8.8	7.7	5.0	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
107	13.4	8.7	8.2	5.3	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
108	11.2	7.3	7.9	5.1	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
109	13.1	8.5	7.4	4.8	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
110	12.3	8.0	7.6	4.9	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
111	14.2	9.2*	7.8	5.1	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
112	12.3	8.0	7.6	4.9	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
113	14.3	9.3*	8.2	5.3	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
114	13.3	8.6	7.2	4.7	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
115	12.8	8.3	7.3	4.7	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
116	13.8	9.0	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
117	16.0	10.4*	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
118	13.3	8.6	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
119	13.0	8.5	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
120	14.8	9.6*	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
121	16.0	10.4*	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
122	13.9	9.0	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
123	11.1	7.2	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
124	11.1	7.2	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
125	12.0	7.8	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
126	12.2	7.9	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
127	10.6	6.9	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
128	12.8	8.3	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
129	13.8	9.0	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
130	13.2	8.8	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
131	13.4	8.7	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
132	12.3	8.0	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
133	15.4	10.0*	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
134	12.6	8.2	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
135	11.6	7.5	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
136	11.4	7.4	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
137	11.6	7.5	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
138	15.4	10.0*	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
139	12.4	8.1	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
140	10.6	6.9	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
141	11.1	7.2	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
142	12.8	8.3	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
143	10.7	7.0	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
144	11.1	7.2	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
145	13.1	8.5	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR	NAR
Maximum ->	19.8	12.7	10.3	6.7	10.3	6.7	9.8	6.2	11.3	7.3	11.4	7.4

Table 6.8-3. Continued

Notes: NAR = No additional receptors selected for this alternative.

Receptors 1 through 41 are located off base in the areas surrounding Fort Ord.These receptors remain the same for each alternative and are based on existing sensitive receptor locations.These sensitive receptors were identified by the use of aerial photographs and a site visit.Receptors numbered 42 and above were selected based on the roadway intersections modeled for each alternative.These receptors were placed 250-300 feet from intersection centerpoints.

Receptor locations for the reuse alternatives are illustrated in Appendix N (Volume III and Volume IV, Section 6.0)

Federal and state 8-hour standards for CO = 9 parts per million (ppm).
Federal standard for CO = 35 ppm.
California 1-hour standard for CO = 20 ppm.
8-hour average values equal 65 percent of peak hour average value.
CO concentrations include a background level of 6 ppm for 8-hour average and 3.9 ppm for 1-hour average.
See Appendix N for an in-depth description of the CO modeling analysis.

* = Indicates a violation of the state 8-hour CO standards.

Table 6.8-4 Fort Ord Population Projections

Scenario	1995	2000	2005	2010	2015
AMBAG 1991 Forecast	5,700	28,590	28,600	28,600	28,600
AMBAG 1981 Forecast	NA	24,700	NA	NA	NA
Alternative 1	4,770	28,991	53,211	77,432	101,652
Subalternative A	0	25,688	51,376	77,064	102,752
Subalternative B	4,770	29,045	53,319	77,594	101,868
Subalternative C	0	28,263	56,525	84,788	113,051
Alternative 2	4,770	15,570	26,370	37,171	47,971
Subalternative A	0	12,360	24,720	37,081	49,441
Subalternative B	4,770	16,522	28,275	40,027	51,779
Alternative 3	4,770	12,587	20,404	28,220	36,037
Alternative 4	4,770	6,690	8,610	10,530	19,450
Alternative 5	4,770	4,770	4,770	4,770	4,770
Subalternative A	0	0	0	0	0
Alternative 6R	4,770	9,270	13,770	18,270	22,770

Notes: The AMBAG 1991 forecast is used to determine the consistency with the Monterey Bay Unified Air Pollution Control District's 1991 Air Quality Management Plan.

The AMBAG 1981 forecast is used to determine consistency with the 1982 Air Quality Management Plan for the Monterey Bay Region, also known as the state implementation plan (SIP).

Source: Association of Monterey Bay Area Governments pers. comm.

A single set of noise criteria that is a composite of the local agency standards is used in evaluating the significance of impacts. The noise sensitivity of land uses are broken down into four broad categories and noise compatibility criteria are assigned to each land use category. Land use compatibility criteria used in this evaluation are summarized in Table 6.9-1.

Changes in land uses at Fort Ord would result in changes in traffic volumes generated. These changes in traffic volumes would result in changes in traffic noise levels along roads both on and off the installation. Traffic noise levels along these roads have been evaluated using the Federal Highway Administration Traffic Noise Prediction Model and traffic volumes developed from the traffic analysis discussed in Section II.7, "Traffic and Circulation", in Volume II. The traffic noise modeling results were calculated from a conceptual planning level of analysis and should not be used for project-specific environmental evaluation.

Some of the land uses being considered for the alternatives would support activities that would be sources of noise (Table 6.9-2). The noise sensitivity of land uses proposed under the reuse alternatives is broken down into four broad categories, with noise compatibility criteria assigned to each category. The noise sensitivities of proposed land uses are summarized in Table 6.9-1.

6.9.2 Disposal Impacts

- *Impact: Excessive Noise from Remediation Activities*

Soil contamination, groundwater contamination, and unexploded ordnance would be remediated to a level commensurate with reuse at Fort Ord before reuse. The type of future land use selected for each contaminated site would determine cleanup levels and remedial actions to be taken. Specific cleanup levels for each proposed reuse alternative have not yet been determined, and the specific technology used to remediate a specific contamination would not be determined until site characterization studies have been completed.

The level of remediation would generally be tied to the intensity of the development. For soil and groundwater contamination, noise levels generated by remediation activities are largely independent of the level of remediation because the same technology would generally be used for various levels of remediation. However, the duration of the remediation activity may be longer when a higher level of remediation is required. For remediation of unexploded ordnance, higher levels of remediation may require extended excavation periods to achieve deeper excavations. As more unexploded ordnance is uncovered, more ordnance would need to be detonated, which would create more noise. Although specific levels of noise and specific locations for noise-generating activities cannot be determined, remediation activities that may generate noise can be identified.

Remediation of soil contamination can involve excavation and onsite treatment or *in situ* treatment. Noise-generating activities associated with excavation and onsite treatment include the use of heavy equipment to excavate soil and low temperature thermal treatment, which enhances volatilization by thermal oxidation. The only noise-generating activity generally associated with *in situ* soil remediation is soil vapor extraction, which involves potentially noisy vacuum and vapor combustion systems.

Remediation of groundwater contamination can involve containment or pump-and-treat technologies. Noise-generating activities associated with containment are limited to construction activities during construction of slurry walls and collection trenches. The use of air strippers that force streams of clean air through streams of groundwater in a series of cooling towers and basins is the only noise-generating activity generally associated with pump-and-treat technologies.

Remediation of unexploded ordnance involves locating, excavating, and detonating ordnance. For any land use other than open space or grazing, unexploded ordnance must be removed below the ground surface to the depth to which excavations would occur, plus a freeboard. Residential land uses would require greater freeboard than commercial or industrial uses. Once ordnance has been located, the preferred treatment is *in situ* detonation. Operation of equipment used for excavation and the detonation of ordnance are noise-generating activities associated with the remediation of unexploded ordnance.

Table 6.9-1 Land Use Compatibility Criteria
Used in Evaluation of Noise Impacts

Noise Sensitivity of Land Use	Typical Land Use or Activity	Outdoor Criteria (dB L_{dn})
High	Places where people live and sleep Educational facilities Healthcare facilities Religious facilities Libraries Passively used open space Outdoor interpretive areas	60
Moderate	Auditoriums Concert halls Amphitheaters Actively used open space Outdoor cultural facilities Outdoor training areas	65
Low	Office buildings Commercial use Industrial use Agricultural use Utilities Manufacturing Sports arenas Outdoor spectator sports Habitat areas with no human access	70
None	High noise areas (e.g., airports) Parking lots Storage areas	N/A

Note: The Army standard for acceptable noise for housing, schools, medical facilities, and noise-sensitive land uses is 65-dB L_{dn}; 45-dB L_{dn} is used as the standard for interior noise levels in buildings where people live and sleep.

Table 6.9-2 Land Uses Potentially Containing Sources of Noise

Land Use	Potential Source of Noise
Fairgrounds	Carnivals, fairs, amusement facilities
Sports complex	Outdoor sporting events
Sports field	Outdoor sporting events
Amphitheater	Open air concerts
Film complex	Films or activities at complex
Theme park	Rides or activities at theme park
Agri-center	Agri-business processing activities
Airport	Aircraft
Police academy	Shooting center, pistol range
Peace Officers Standards and Training academy	Handgun, shotgun training
Transit center	Transportation systems

Table 6.9-3 Distance Attenuation for Noise Near a Construction Site

Distance Attenuation		Distance to dB Contours	
Receptor Distance (feet)	Noise Level at Receptor (dBA)	Noise Contour Value (dBA)	Contour Distance (feet)
50	94.0	105	14
100	87.9	100	25
200	81.8	95	45
400	75.5	90	79
600	71.7	85	138
800	68.9	80	240
1,000	66.6	75	417
1,500	62.3	70	736
2,000	59.1	65	1,115
2,500	56.4	60	1,918
3,000	54.1	55	2,902
4,000	50.0	50	4,006
5,280	45.7	45	5,365
7,500	39.3	40	7,407

Notes: The following assumptions were used:

Basic sound-level dropoff rate = 6.0 dB/doubling.
Atmospheric absorption coefficient = 0.5 dB/100 meters.
Reference noise level = 94 dBA.
Distance for reference noise level = 50 feet.

Dropoff calculations include atmospheric absorption at 0.5 dB/100 meters, centered at reference distance.

Except for sounds with highly distinctive tonal characteristics, noise from a particular source will not be identifiable when its incremental noise level contribution is significantly less than background noise levels.

Contour distance calculations are most accurate within the decibel range of the direct attenuation calculations.

The remediation activities described above have the potential to substantially affect noise-sensitive land uses if remediation activities occur immediately adjacent to these uses. Except for unexploded ordnance that is in designated impact or inland range areas, most of the remediation sites are in the Main Garrison, the East Garrison, and Fritzsche Army Airfield. Given that remediation activities would typically occur well away from occupied areas, the extent of remediation-related impacts is anticipated to be small. Because of the remoteness of the impact areas, excavation and detonation of unexploded ordnance is not likely to affect any noise-sensitive locations. This mitigation is considered feasible to implement for this impact and would not result in any substantial secondary environmental effects.

- ***Mitigation: Develop Noise-Reducing Measures to Avoid Remediation Noise Impacts through the Remedial Investigation/Feasibility Study***

The following noise-reducing remediation practices will be employed through the remedial investigation/feasibility study (RI/FS) to avoid remediation-related noise impacts. (Army)

- Determine noise levels generated by remediation activities and establish minimum operating distances between remediation activities and noise-sensitive land uses. The minimum operating distance should be defined as the distance the activity must be before noise from the activity is equal to the existing ambient noise level.

- Restrict noise-generating remediation activities located within the minimum operating distance of residences to daytime hours. No remediation activities should be performed within the minimum operating distance of an occupied dwelling unit on Sundays, legal holidays, or between 8:00 p.m. and 8:00 a.m. on other days.

- All equipment should have sound-control devices no less effective than those provided on the original equipment. No equipment should have an unmuffled exhaust.

- All equipment should comply with pertinent equipment noise standards set by federal, state, and local agencies.

- As directed by the Army, the remediation contractor should implement appropriate additional noise mitigation measures, including changing the location of stationary equipment, shutting off idling equipment, rescheduling remediation activity, notifying adjacent residents in advance of remediation work, installing acoustic barriers around stationary remediation noise sources, or rerouting heavy trucks to avoid roads with nearby noise-sensitive land uses.

This mitigation is considered feasible to implement for this impact and would not result in any substantial secondary environmental effects.

6.9.3 Reuse Impacts

- ***Impact: Excessive Noise from Construction Activities***

Figure O-1 in Appendix O, Volume III, illustrates noise levels produced by various types of construction equipment. Properly maintained equipment would produce noise levels near the middle of the indicated ranges. The types of equipment that would be used for grading and constructing the proposed development would typically generate noise levels of 80-90 A-weighted decibels (dBA) at a distance of 50 feet while the equipment is operating (U.S. Environmental Protection Agency 1971). Construction equipment operations can vary from intermittent to fairly continuous, with several pieces of equipment operating concurrently. Assuming that a bulldozer (87 dBA), backhoe (90 dBA), grader (90 dBA), and front-end loader (82 dBA) are operating concurrently in the same area, peak construction-period noise would generally be about 94 dBA at 50 feet from the construction site.

Noise impacts expected in the vicinity of an active construction site based on a composite source noise level of 94 dBA at 50 feet are summarized in Table 6.9.3. The atmospheric absorption parameter in Table 6.9-3 reflects minimal absorption for typical construction equipment noise spectra (e.g., bulldozer, water truck). The atmospheric absorption parameter was calculated using procedures described in Acoustical Society of America (1978).

Locations within about 1,900 feet of a construction site would be exposed to occasional episodes of noise levels greater than 60 dBA. Areas within about 740 feet of a construction site would be exposed to episodes of noise levels greater than 70 dBA. However, such episodes of high noise levels would not be continuous throughout the day, and would typically be restricted to daytime hours.

Heavy trucks transporting construction materials to construction sites could be a source of excessive noise. The extent of potential noise impacts is highly variable depending on the intensity of construction on a given site, the amount of materials that must be trucked to the site, the number of access roads to the construction site, and the distance of noise-sensitive receptors to access roads.

Under Alternative 6R, approximately 23,000 acres of land would be disturbed by construction. This construction would result in increased noise levels in areas around construction sites and along access roads to construction sites. These increased noise levels have the potential to adversely affect residences and other noise-sensitive land uses near these sites or roads. Ambient noise levels may be substantially increased or local noise standards may be exceeded.

- ***Mitigation: Avoid Construction Noise Impacts by Employing Noise-Reducing Construction Practices***

The following noise-reducing construction practices could be employed to avoid construction-related noise impacts. (Local agencies and private entities responsible for development)

- Restrict construction within 1,000 feet of residences to daytime hours. No construction shall be performed within 1,000 feet of an occupied dwelling unit on Sundays, legal holidays, or between 8:00 p.m. and 8:00 a.m. on other days. Any change from this condition must be approved by the appropriate local jurisdiction.
- All equipment shall have sound-control devices no less effective than those provided on the original equipment. No equipment shall have an unmuffled exhaust.
- All equipment shall comply with pertinent equipment noise standards set by federal, state, and local agencies.
- No pile-driving or blasting operations shall be performed within 3,000 feet of an occupied dwelling unit on Sundays, legal holidays, or between the hours of 8:00 p.m. and 8:00 a.m. on other days. Any change from this condition must be approved by the appropriate local jurisdiction.
- The noise from any rock-crushing or screening operations performed within 3,000 feet of any occupied dwelling unit shall be mitigated by strategic placement of material stockpiles between the operation and the affected dwelling or by other means approved by the appropriate local jurisdiction.
- As directed by the local jurisdiction, the contractor shall implement appropriate additional noise mitigation measures, including changing the location of stationary construction equipment, shutting off idling equipment, rescheduling construction activity, notifying adjacent residents in advance of construction work, installing acoustic barriers around stationary construction noise sources, or rerouting heavy trucks to avoid roads with noise- sensitive land uses nearby.

This mitigation is considered feasible to implement for this impact and would not result in any substantial secondary environmental effects.

- ***Impact: Increased and Excessive Noise from Traffic on Existing Noise-Sensitive Land Uses***

Traffic noise levels have been evaluated along existing roadway segments and other roadway segments proposed under Alternative 6R that would be located within the boundaries of Fort Ord. Table O-8 in Appendix O (Volume IV, Section 6.0) summarizes the L_{dn} at a fixed distance of 100 feet from the centerline of each roadway segment analyzed. Table O-8 also summarizes the predicted distance to the 55-, 65-, 70-, and 75-dB-L_{dn} contour lines that would occur under Alternative 6R and compares noise levels under Alternative 6R to existing noise levels.

Noise-sensitive land uses (primarily residential) exist adjacent to all of the existing roadway segments evaluated. Some of the noise-sensitive land uses adjacent to these roadways include educational, religious, and healthcare facilities. Residential land uses vary from rural residential uses with scattered houses adjacent to roadways to high-density urban residential development. Commercial, industrial, and recreational land uses also exist adjacent some of the roads. However, impacts are evaluated based on the most sensitive land use that exists adjacent to a given roadway segment. Figure 3-15 illustrates land uses and roadways.

The noise criterion for residential land uses of 60-dB-L_{dn} is exceeded within 100 feet of all existing roadway segments evaluated. In most cases, this is also true for existing conditions. Although implementing Alternative 6R would substantially increase noise (5 dB or greater relative to existing conditions) along only one of the existing roadway segments evaluated, this alternative would result in increased noise levels along roads where local noise standards are already exceeded.

- ***Mitigation: Avoid Traffic Noise Impacts by Providing Sound Barriers between the Roads and Noise-Sensitive Land Uses Located within the 60-dB-L_{dn} Traffic Noise Contour Lines***

Where existing noise-sensitive land uses are located within the 60-dB-L_{dn} contour lines and where barriers are feasible, the traffic noise impacts could be avoided by constructing sound barriers between the roadway and noise-sensitive land uses. A sound barrier may consist of a constructed wall, an earth berm, or a combination of the two. Sound barriers must attenuate noise to less than 60-dB-L_{dn} at noise-sensitive receptor locations. (Local agencies and private entities responsible for development).

The feasibility of construction of sound walls depends on a number of factors, including the topographical relationship between roadways and receptors and the number of sensitive land uses that benefit from construction of a wall. In general, sound walls are feasible to implement if there are not unusual terrain limitations and a reasonable number of people will benefit from the wall. The primary secondary environmental effects that sound walls can have relate to aesthetics and views. In some instances, people find that the negative visual and aesthetics effects outweigh the noise-reducing benefits of a sound wall.

- ***Mitigation: Avoid Traffic Noise Impacts by Providing Acoustical Treatment to Existing Noise-Sensitive Buildings to Reduce the Interior Noise Level from Traffic to Less than 45-dB-L_{dn}***

In some cases, noise reduction from sound barriers cannot be feasibly achieved. These cases include situations where access driveways preclude the use of a sound barrier or where a sound barrier cannot built high enough to reduce the noise impact on a multistory structure. In these cases, traffic noise impacts could be avoided by financing and providing acoustical treatment to existing noise-sensitive buildings to result in an interior noise level of 45-dB-L_{dn} or less at locations exposed to exterior noise in excess of 60-dB-L_{dn}. Standard residential building construction with windows closed would typically provide at least 20 dB of noise reduction of exterior noise. Where additional noise reduction is required to achieve an interior noise levels of 45-dB-L_{dn} or less, the following features can be incorporated into existing structures: (Local agencies and private entities responsible for development)

- Minimize the extent of windows, glass sliding doors, vents, and other openings in building shell walls that face roads or railways.

- Install extra wall and ceiling insulation, additional wallboard material, and acoustical caulking when a substantial improvement in building shell sound transmission loss can be achieved.

- Use acoustically rated glazing for windows and sliding doors.

- Install airtight seals between window or door frames at exterior walls.

Increased acoustical insulation is generally feasible unless the value of the structure to be treated is so low that the cost of increased insulation is unreasonable. This mitigation would not result in any substantial secondary environmental effects.

- ***Mitigation: Eliminate Traffic Noise Impacts by Removing Noise-Sensitive Land Uses from Locations Where Noise Levels are High and Impacts Cannot Be Otherwise Mitigated***

In some cases, noise reduction from sound barriers and improved acoustical insulation of buildings cannot be feasibly achieved. In these cases, traffic noise impacts could be eliminated by removing noise-affected land uses from high noise areas and relocating the displaced use. (Local agencies and private entities responsible for development).

The primary factor affecting the feasibility of this mitigation is cost, which can be substantial in some cases. This mitigation would not result in any substantial secondary environmental effects.

- ***Impact: Excessive Noise from Traffic on New Noise-Sensitive Land Uses***

Traffic noise modeling results for new roadways proposed under Alternative 6R are summarized in Table O-8 in Appendix O (Volume IV, Section 6.0). Major arterials would pass through or adjacent to all of the noise-sensitive land uses proposed under Alternative 6R. These noise-sensitive uses include residential land uses and educational land uses. Noise-sensitive land uses would be exposed to traffic noise levels in excess of local noise standards for these uses under this alternative.

- ***Mitigation: Avoid Traffic Noise Impacts by Locating New Residences and Other Noise-Sensitive Land Uses outside the 60-dB-Ldn Contour Lines Caused by Traffic***

Traffic noise impacts could be avoided by requiring developers to employ setbacks to locate noise-sensitive land uses, such as residences, schools, and healthcare facilities, outside the 60-dB-L_{dn} contour lines caused by traffic on roads adjacent to these land uses. Distances to 60-dB-L_{dn} contour lines for roads in the study area based on a planning level of analysis are given in Table O-2 in Appendix O in Volume III, and can be used as an approximate guide for the types of setbacks that would be needed. (Local agencies and private entities responsible for development). This mitigation is considered feasible to implement for this impact and would not result in any substantial secondary environmental effects.

- ***Mitigation: Avoid Traffic Noise Impacts by Constructing Sound Barriers between Roadways and Noise-Sensitive Land Uses That Must Be Located within the 60-dB-L_{dn} Contour Lines***

Where noise-sensitive land uses must be located within the 60-dB-L_{dn} contour lines, traffic noise impacts could be avoided by requiring developers to construct sound barriers between roadways and noise-sensitive land uses. Sound barriers must attenuate noise to less than 60-dB-L_{dn} at noise-sensitive receptor locations. (Local agencies and private entities responsible for development)

The feasibility of construction of sound walls depends on a number of factors, including the topographical relationship between roadways and receptors and the number of sensitive land uses that benefit from construction of a wall. In general, sound walls are feasible to implement if there are not unusual terrain limitations and a reasonable number of people will benefit from the wall. The primary secondary environmental effects that sound walls can have relate to aesthetics and views. In some instances, people find that the negative visual and aesthetics effects outweigh the noise-reducing benefits of a sound wall.

- ***Mitigation: Avoid Traffic Impacts by Incorporating Acoustical Treatment into the Design and Construction of Residences and Other Buildings That House Noise-Sensitive Uses to Provide an Interior Noise Level of 45-dB-L_{dn} or Less at Locations Exposed to Exterior Noise in Excess of 60-dB-L_{dn}***

In some cases, the use of setbacks and sound barriers may be insufficient to reduce exterior noise to less than 60-dB-L_{dn}. An example of this would be a two-story home located within the 60-dB-L_{dn} contour of a road. Although a sound barrier would reduce the noise at ground-floor locations, it would have little or no effect on the second story of the home. In cases where setbacks and sound barriers do not reduce exterior noise to less than 60 L_{dn}, traffic noise impacts would be avoided by requiring developers to incorporate acoustical treatment into the construction of residences and other buildings housing noise-sensitive uses to provide an interior noise level of 45-dB-L_{dn} or less at locations exposed to exterior traffic noise in excess of 60-dB-L_{dn}.

Standard residential building construction with windows closed would typically provide at least 20 dB of noise reduction of exterior noise. Where additional noise reduction is required to achieve an interior noise level of 45-dB-L_{dn} or less, the developers could incorporate the following features into project design and construction to reduce interior noise levels: (Local agencies and private entities responsible for development)

- Minimize the extent of windows, glass sliding doors, vents and other openings in building shell walls that face roads or railways.
- Orient garages and activity rooms so that they would shield bedrooms and other noise-sensitive areas of dwellings from exterior noise sources.
- Install extra wall and ceiling insulation, additional wallboard material, and acoustical caulking when a substantial improvement in building shell sound transmission loss can be achieved.
- Use acoustically rated glazing for windows and sliding doors.
- Install airtight seals between window or door frames and exterior walls.

Increased acoustical insulation is generally feasible unless the value of the structure to be treated is so low that the cost of increased insulation is unreasonable. This mitigation would not result in any substantial secondary environmental effects.

- ***Impact: Exposure of Recreational Land Uses to Noise from the Agri-Center***

With implementation of this alternative, recreational land uses (i.e., an RV park/campground, natural resources management area) would be located adjacent to an agri-center. Noise from operations at the agri-center has the potential to be incompatible with this land use. Noise from the agri-center could adversely affect users of the RV park/campground and natural resources management area under this alternative (Table 6.9-1).

- ***Mitigation: Employ Design and Construction Methods to Reduce Agri-Center Sound Transmission to the Adjacent Residential and Educational Land Uses***

Design, layout, and construction methods could be employed for the agri-center to reduce sound levels at adjacent land uses to acceptable levels. This could include use of setbacks, building orientation, enclosure of noisy operations, construction of sound barriers between noisy operations and residences. (Local agencies and private entities responsible for development). This mitigation is considered feasible to implement for this impact and would not result in any substantial secondary environmental effects.

- ***Mitigation: Restrict the Hours of Operation of the Agri-Center***

The hours of operation of the agri-center could be restricted to daytime. (Local agencies responsible for development and owner/operator of the agri-center). This mitigation is considered feasible to implement for this impact and would not result in any substantial secondary environmental effects.

- ***Impact: Exposure of Proposed University Science Offices, University Research Area, and Existing Noise-Sensitive Land Uses to Noise from Aircraft Accessing the General Aviation Airport***

Under this alternative, university science offices and the university research area would be located adjacent to the general aviation airport that is proposed for the Fritzsche Army Airfield site and would be exposed to aircraft noise. Existing noise-sensitive land uses in and around Fort Ord and proposed noise-sensitive land uses outside the limits of Fort Ord also could be exposed to noise from aircraft activities.

An analysis of potential reuse alternatives for Fritzsche Army Airfield has been prepared by the Fort Ord Economic Development Authority. Based on market research and analysis, the study identified four alternative development scenarios:

- 1A. Basic General Aviation
- 1B. Enhanced General Aviation
- 2. Enhanced General Aviation and Supporting Development
- 3. Regional Air Carrier/Air Cargo Operations

The economic analysis in the study suggests that Scenario 1 would be at best marginally viable economically. Conversely, Scenario 3 would involve a level of capital expenditure that would be prohibitive for the community. Scenario 2 was selected as the preferred alternative and the most likely to be implemented.

A noise analysis was prepared based on implementation of either Scenario 1B or 2 with 60,000 annual operations. The report states that this level of activity is commensurate with 1992 military activity levels at Fritzsche Army Airfield and would not be expected to be achieved by civil operations until after the year 2000. The report concludes that noise impacts due to aircraft operations are not expected to exceed those currently generated by military operations and that there would be no residential or other noise sensitive land uses within the 65 dB-CNEL and above contours. Noise contour lines anticipated under scenario 1B or 2 are depicted in Figure 6.9-1. As a point of comparison, the noise contour for existing operations (primary helicopters) is shown in Figure 3-5 of the Other Physical Attributes Baseline Study of Fort Ord, California (U.S. Army Corps of Engineers, Sacramento District 1992e).

Use of Fritzsche Army Airfield for fixed wing aircraft, currently used by the Army, would result in a change in the extent and character of noise impacts. Although noise contours generated for reuse of Fritzsche Army Airfield indicate that noise levels will not exceed 65 dB-CNEL at residential locations, the 55 and 60 dB-CNEL contour lines will extend outside the boundaries of the installation as a result of the use of fixed wing aircraft. Aircraft noise at these levels has the potential to adversely affect proposed land uses adjacent to the airport, existing noise-sensitive land uses both on and off Fort Ord, and proposed noise-sensitive land uses outside the limits of Fort Ord. Proposed noise-sensitive land uses outside the limits of Fort Ord include the proposed Armstrong Ranch residential development.

Mitigation to reduce the effect on the university science offices and the university research area to acceptable levels can be reasonably incorporated into the layout of facilities and the design of building structures. However, it is unlikely that mitigation to reduce noise effects on the habitat reserve and existing and proposed noise-sensitive land uses can be reasonably achieved.

- ***Mitigation: Employ Design and Construction Methods to Reduce Interior Sound Levels at the University Science Offices and the University Research Area***

Design, layout, and construction methods could be employed for the university science offices and the university research area to reduce interior sound levels resulting from aircraft flyovers to acceptable levels. This could include use of setbacks, building orientation, and upgraded acoustical insulation of the buildings. This mitigation is considered feasible to implement for this impact and would not result in any substantial secondary environmental effects. No mitigation is available for aircraft noise impacts on residential land uses or the habitat preserve. (Local agencies and private entities responsible for development)

- ***Impact: Exposure of the Community Park and the Natural Area Expansion at the Southwest End of Fort Ord to Noise from Activities at the Corporation Yard***

With implementation of this alterative the community park and the natural area expansion at the southwest end of Fort Ord would be located adjacent to the corporation yard. Noise from activities at the corporation yard has the potential to be incompatible with outdoor uses at the community park and the natural area expansion. Noise from the corporation yard could adversely affect users of these areas under this alternative.

- ***Mitigation: Employ Design and Construction Methods to Reduce Corporation Yard Sound Transmission to the Adjacent Outdoor Activity Areas***

Design, layout, and construction methods could be employed for the corporation yard to reduce sound levels at adjacent land uses to acceptable levels. This could include use of setbacks, building orientation, enclosure of noisy operations, construction of sound barriers between noisy operations and residences. (Local agencies and private entities responsible for development). This mitigation is considered feasible to implement for this impact and would not result in any substantial secondary environmental effects.

6.9.4 Cumulative Effects

Cumulative noise effects could result from individually minor but collectively significant projects developed over time. For example, if five different projects individually cause traffic noise levels to increase by 1 dB along a road with nearby residences, the noise impact of each of those projects when considered separately would not be significant. However, the collective impact of all five projects would be a substantial increase in noise.

The traffic noise analysis for each reuse alternative is inherently cumulative because traffic volumes resulting from background growth and development outside of Fort Ord are included. Cumulative traffic noise effects can be identified at those roadway segments where implementation of an alternative contributes to an excess noise condition or where the overall increase in noise relative to existing conditions is substantial (i.e., 5 dB or greater).

Table 5-10 in Section 5.0 summarizes the number of existing roadway segments for each alternative where substantial noise increases (5 dB or greater) occur. The number of existing roadway segments where traffic noise increases are in the range of 0-5 dB are also summarized. Given that existing traffic noise levels along all of the existing roadway segments analyzed are close to or exceed the 60-dB-L_{dn} standard for residences, any increase in noise along these roadway segments could be considered a substantial cumulative effect. The net result of this is that substantial cumulative traffic noise effects would occur along any of the existing roadway segments where any traffic noise increase occurs.

The number of traffic noise increases is related to the intensity of the development, with more cumulative effects occurring with greater development. Based on the number of roadway segments with

noise increases, there would be 23 segments with substantial cumulative effects for Alternative 1, 17 segments for Alternative 2, 22 segments for Alternative 3, 15 segments for Alternative 4, 11 segments for Alternative 5, and 17 segments for Alternative 6R.

Cumulative effects could occur as a result of noise from stationary sources combining with other stationary or mobile sources. For example, noise from a industrial facility when combined with traffic noise or aircraft noise could result in an excess noise condition and a cumulative noise effect. These types of effects are not anticipated to occur for any of the proposed reuse alternatives because mitigation would be required for the direct effects from new sources of noise.

6.9.5 Summary Comparison of Reuse Alternatives

Noise-related issues for each reuse alternative are compared using aggregate comparison parameters. The following is a discussion of each parameter used.

Acres of Construction-Related Land Disturbance. Although the types of construction-related impacts would generally be the same for all of the reuse alternatives, this parameter is an indicator of the duration and extent of construction-related noise impacts.

Logarithmic Sum in dB of Calculated L_{dn} Values for 30 Existing Roadway Segments. This parameter is an aggregate indicator of the relative amount of traffic noise that is occurring under existing conditions or would occur with each reuse alternative. The absolute value of this parameter has no meaning.

Number of Existing Roadway Segments Where Traffic Noise Increases Are Greater than 5 dB or Greater Relative to Existing Conditions. The parameter identifies the number of roadway segments where substantial traffic noise increases would occur and is an indicator of both direct and cumulative impacts.

Number of Existing Roadway Segments Where Traffic Noise Increases Are Greater than 0 dB and Less than 5 dB Relative to Existing Conditions. This parameter identifies the number of roadway segments where traffic noise increases less than 5 dB would occur. Given that existing traffic noise levels along all existing roadway segments analyzed are close to or exceed the 60-dB-L_{dn} standard for residences, any increase in noise along these roadway segments can be considered a substantial cumulative effect. This parameter is thus an indicator of cumulative impacts.

Number of Existing Roadway Segments Where Traffic Noise Decreases Relative to Existing Conditions. This parameter is an indicator of the beneficial effects of an alternative on reducing traffic noise.

Number of Substantial Noise-Related Land Use Compatibility Impacts Identified. Substantial noise-related land use compatibility impacts have been identified for each alternative. This parameter is simply the number of substantial impacts identified and is an indicator of the relative amount of compatibility problems that may occur with implementation of each reuse alternative.

Values for each comparison parameter for each reuse alternative are summarized in Table 5-10 in Section 5.0. Overall, the alternatives can be ranked as follows from greatest noise effects to least: Alternative 1, Alternative 2, Alternative 3, Alternative 6R, Alternative 4, and Alternative 5.

6.10 HAZARDOUS AND TOXIC WASTE SITE REMEDIATION

6.10.1 Introduction

This analysis assumes that each contaminated parcel will be remediated to a level commensurate with the land uses proposed in Alternative 6R. Cleanup levels for hazardous and toxic waste will be determined after the six steps in the Superfund cleanup process outlined in the Other Physical Attributes Environmental Baseline Study (U.S. Army Corps of Engineers, Sacramento District 1992e) are completed, risk assessments have been performed, and all applicable regulatory agencies have reviewed and approved the proposed actions.

This analysis assumes that unexploded ordnance will be cleared from all areas of occurrence at Fort Ord using the surface clearing techniques described in Section 2.0, "Proposed Action". Subsurface clearance of ordnance would be necessary where sites are proposed for human habitation or activities. Subsequent periodic surface clearance to remove ordnance that rises to the ground surface would be conducted by the Army as necessary. Ordnance clearance techniques and the level of clearance will be determined after the Army conducts its initial characterization of the location and extent of ordnance on the installation.

Impacts of remediation activities on vegetation and wildlife, soils, noise, air quality, and water quality are addressed in their respective sections in this volume.

6.10.2 Disposal Impacts

The impacts identified below would occur for both disposal and reuse because remediation commensurate with reuse is required for disposal. Long-term remediation may be required for some parcels. In those instances, deed restrictions could be applied to facilitate disposal.

- ***Impact: Potential Risks to Public Health and Safety Associated with Unidentified Hazardous Waste Sites or Unexploded Ordnance***

Because Fort Ord is on the National Priorities List as a Superfund site, the installation must be investigated, characterized, and remediated for hazardous and toxic waste before disposal. Hazardous waste investigations and remediation activities are currently underway at Fort Ord.

For potentially contaminated land or remediated parcels to be transferred, EPA must issue a record of decision (ROD) certifying the lands as clean or protective of human health and the environment (refer to description in Section 2.0, "Proposed Action"). The ROD will identify the Army's responsibility for long-term monitoring and cleanup of contamination. For clean parcels to be transferred under CERFA, the Army must identify and evaluate potentially uncontaminated property and obtain EPA concurrence.

Alternative 6R would involve low-density development. Most development and reuse would occur in previously developed areas. Minimal development would occur in the formerly used trainfire ranges. However, the proposed SR 68 bypass would traverse the southern boundary of the ranges, and the density of unexploded ordnance along this corridor could be high. If unidentified hazardous wastes or unexploded ordnance remain on the installation during and after disposal and reuse, the potential for human exposure to these risks from development on those parcels would continue or increase.

The potential for development on unidentified hazardous waste sites or transferring unidentified hazardous waste to local government or private entities under Alternative 6R would be slight because reuse under this alternative would occur primarily in areas with known hazardous waste histories and in areas that have been investigated under CERFA and as part of the Superfund cleanup process.

The Army is responsible for investigation and removal of unexploded ordnance at Fort Ord and is currently initiating the ordnance investigation activities discussed in Section 4.10, "Hazardous and Toxic Waste Site Remediation". The potential for unexploded ordnance to remain on the installation after clearance activities exists because buried ordnance rises to the ground surface through a combination of soil erosion and upward migration.

Under the Defense Environmental Restoration Program for Formerly Used Defense Sites, the Army is responsible for environmental restoration if hazardous waste or unexploded ordnance is discovered after land disposal and reuse.

The potential for unidentified hazardous waste or unexploded ordnance to remain on the installation after completion of the Superfund cleanup process and ordnance clearance is slight under Alternative 6R because proposed land use patterns are similar to existing land use patterns, minimal development is proposed in and around historically used trainfire ranges, the Army is responsible for remediating contaminated parcels and parcels containing unexploded ordnance to a level commensurate with reuse, and the Army is responsible for cleanup of contamination or unexploded ordnance discovered subsequent to land transfers.

- *Mitigation: None required*

- *Impact: Potential for Generation of Hazardous Waste during Building Demolition*

The majority of buildings at Fort Ord contain asbestos. Some buildings may contain lead-based paint, polychlorinated biphenyls, or petrochemicals. Potentially hazardous materials in buildings at Fort Ord could be transferred to the public or local government as part of disposal activities. Asbestos may become airborne when buildings are demolished for reuse, which would be considered hazardous. The building debris may also be considered a hazardous waste, depending on the concentrations of lead and other chemicals in the debris. The generation and disposal of hazardous waste during demolition activities would be regulated by Title 22 CCR Section 26 and Army Regulation AR 200-1.

The Army is conducting an installation-wide building investigation to determine the possible presence of hazardous materials such as lead and asbestos. The Army's policy is to remediate buildings with friable asbestos; if asbestos is encapsulated, the Army provides full disclosure of known or suspected hazardous materials to the new owners.

Under Alternative 6R, the risk of public exposure to airborne asbestos during building demolition could be substantial. However, under this alternative, the buildings proposed for McKinney Act housing and university housing would not be demolished, potentially reducing the amount of asbestos that would be generated during demolition.

- ***Mitigation: Ensure Compliance with Applicable Regulations Regarding Generation and Disposal of Hazardous Waste***

All asbestos would be required to be removed by a certified contractor before building demolition to reduce risks to human health caused by exposure to friable asbestos. In addition, representative samples of building debris could be collected after demolition to determine whether it is considered hazardous waste. If the debris is considered a hazardous waste, the owners must comply with all federal, state, and local regulations regarding generation and disposal of hazardous waste to avoid regulatory violations (Local agencies or private entities responsible for development).

If the local agencies or private entities responsible for redevelopment at Fort Ord retain certified asbestos abatement and building demolition contractors, this mitigation measure could be implemented.

6.10.3 Reuse Impacts

The impacts identified above under "Disposal Impacts" would also occur for reuse. In addition, the following impacts associated with reuse of the landfill and Fritzsche Army Airfield could occur.

- ***Impact: Potential for Increased Soil and Groundwater Contamination and Risk to Human Health or the Environment Associated with Reuse of the Landfill***

The proposed reuse for the Fort Ord landfill as a university research area and environmental restoration research site may be inconsistent with California regulations CCR, Title 23, Chapter 15, and CCR, Title 14, and federal regulation CFR Subtitle D, CERCLA, Section 120 (H), 1980, as amended by CERFA, 1992. These regulations prohibit activities that could potentially breach landfill caps or modify groundwater remediation systems at the landfill. Breaching the cap could expose landfill materials and increase groundwater contamination, potentially increasing the risk to human health and the environment.

University research at the landfill could also adversely affect ongoing approved and required remediation plans and activities, increasing liabilities and risks of exposure. In addition, CERCLA and CERFA requirements may prohibit or restrict transfer of the landfill area until remedial actions and environmental restoration consistent with Army, EPA, and state regulatory agency approvals are complete.

- ***Mitigation: Ensure Compliance with Applicable Regulations on Landfill Closure and Postclosure Activities***

The Army and regulatory agencies responsible for closing the landfill will apply administrative covenants to ensure that landfill restoration activities are completed in compliance with all applicable regulations and to limit future land uses. The Army and regulatory agencies will identify liability responsibilities for the entity intending to use the landfill after disposal and will identify specific land uses that are consistent with the administrative covenants. Regulatory agencies may negotiate and implement land use restrictions to ensure that proposed research activities meet established guidelines for the protection of human health and the environment (Army and regulatory agencies).

- ***Impact: Potential for Increased Hazardous Waste Generation Associated with Reuse of Fritzsche Army Airfield***

As Fritzsche Army Airfield is converted from military use to a civilian airport, aircraft maintenance and fueling activities and the number of aircraft stationed at the airfield could increase, resulting in a potential increase in the amount of hazardous materials used, stored, and disposed at the airport.

- ***Mitigation: Ensure Compliance with All Applicable Regulations Regarding Fuel Storage and Hazardous Waste Disposal***

The agencies or entities responsible for operating the airport after it is transferred should ensure compliance with all applicable regulations regarding use, storage, and handling of chemicals and potentially hazardous materials used for fueling and maintaining aircraft. This mitigation measure can be implemented if the entities responsible for airport management follow all applicable procedures and regulations for underground or aboveground storage tanks, proper inventory and documentation of hazardous materials use and storage, and disposal of hazardous waste at properly certified facilities (local agencies or private entities responsible for development).

6.10.4 Cumulative Effects

Cumulative effects of toxic and hazardous waste site remediation are expected to be beneficial because existing identified hazardous waste and unexploded ordnance will be removed. Remediation efforts are expected to improve groundwater quality on and around the installation.

6.10.5 Summary Comparison of Reuse Alternatives

The risk of human exposure to hazardous waste and unexploded ordnance is greatest under Alternative 1 because the types of land reuses involve high-density development. The effects of Alternatives 2 and 3 are similar to Alternative 1; however, the risk of human exposure would be reduced under these alternatives.

Alternatives 4 and 6 pose little or no threat to human health and safety because reuse patterns would be similar to existing land uses, minimal development is proposed in the formerly used trainfire ranges, and the number of buildings that would be demolished for reuse would be substantially less than under Alternatives 1, 2, and 3.

The risks to human health and safety under Alternative 6R are slightly greater than under Alternative 4 because the proposed SR 68 bypass in the southern portion of the installation traverses the southern end of the formerly used trainfire ranges and could require more intensive ordnance clearance activities. In addition, the amount of hazardous waste generated at Fritzsche Army Airfield could increase under Alternative 6R.

Alternative 5 is expected to have beneficial effects because remediation activities associated with the Superfund cleanup process are resulting in identification and remediation of hazardous waste and unexploded ordnance and improved groundwater quality.

6.11 VEGETATION, WILDLIFE, AND WETLAND RESOURCES

6.11.1 Introduction

This section describes the impacts on vegetation, wildlife, and wetland resources from disposal and reuse of Fort Ord as described in Alternative 6R. Impacts were evaluated for disposal activities based on the locations and the anticipated types of actions required, and the locations of biological resources. Impacts were evaluated for the reuse scenario described in Alternative 6R by determining changes in acres of biological communities or habitat for individual special-status resources. The approach and methods of analysis, including the assumptions and evaluation criteria that were used in determining impacts, are described below.

Changes in the amount and distribution of biological communities, including special native biological communities, were calculated using a geographic information system (GIS). Changes in area were based on the footprint of land uses for Alternative 6R overlaid on the biological community distributions.

Changes in the amount and distribution of special-status plant species were determined by calculating the habitat areas known to support plant populations affected by land uses incompatible with plant survival. Occupied habitat affected was calculated, using the GIS, based on the land use footprints for Alternative 6R overlaid on the special-status plant distributions. Impacts resulting from non-site-specific actions, such as loss of federal protection for plants, were analyzed qualitatively or with reference to general quantitative effects.