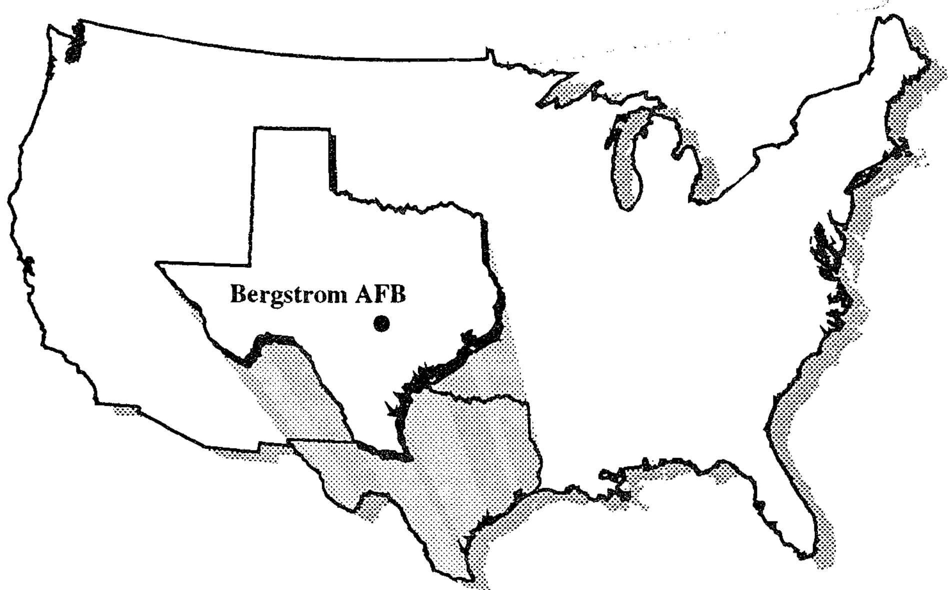
FINAL
ENVIRONMENTAL IMPACT STATEMENT
JULY 1993



DISPOSAL AND REUSE OF
BERGSTROM AIR FORCE BASE, TEXAS

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Pursuant to the Base Closure and Realignment Act Bergstrom AFB, TX was scheduled for closure in September 1995. This EIS was prepared in accordance with the National Environmental Policy Act to analyze the potential environmental consequences of the disposal of the base. Although disposal will create few direct impacts, reuse by others will create indirect impacts. The EIS analyzes the effects a range of reasonable foreseeable alternative reuses may have on the local community; including land use and aesthetics, transportation, utilities, hazardous materials/wastes, geology and soils, water resources, air quality, noise, biological resources, and cultural resources.

Preservation covenants within the disposal document could eliminate or reduce any negative environmental effects to a non-adverse level. Because the Air Force is disposing of the property, some of the mitigation measures are beyond Air Force control. Remediation of Installation Restoration Program sites will continue to be the responsibility of the Air Force.

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FINAL

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COVER SHEET

FINAL ENVIRONMENTAL IMPACT STATEMENT
DISPOSAL AND REUSE OF BERGSTROM AIR FORCE BASE, TEXAS

a. Lead Agency: U.S. Air Force

b. Cooperating Agency: Federal Aviation Administration

c. Proposed Action: Disposal of Bergstrom Air Force Base (AFB), Travis County, Texas

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e. Designation: Final Environmental Impact Statement (FEIS).

f. Abstract: Pursuant to the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510, Title XXIX), Bergstrom AFB is scheduled for closure on September 30, 1993. This EIS has been prepared in accordance with the National Environmental Policy Act to analyze the potential environmental consequences of disposal of the base. All property in which the City of Austin has claimed equitable interest must be surrendered to the city, to use as it sees fit. Although disposal will have few, if any, direct effects, future use by others will create indirect effects. This document, therefore, includes analyses of the potential impacts that a range of reasonably foreseeable alternative reuses may have on community setting, land use and aesthetics, transportation, utilities, hazardous materials/waste, soils and geology, water resources, air quality, noise, biological resources, and cultural and paleontological resources. Reuse alternatives consist of two aviation alternatives, including the Proposed Action, and one nonaviation alternative. Impacts of the No-Action Alternative are also considered. Potential environmental impacts associated with the Proposed Action include aircraft- and traffic-related noise, increased traffic in the vicinity of the base, disturbance of native vegetation, increased soil erosion, and increased air pollutant emissions. Proposed mitigations include avoiding native vegetation areas to the extent possible and use of best management practices, such as water application to reduce dust during construction and proper maintenance of construction equipment. Additional mitigation measures to reduce impacts on air quality and noise include transportation planning to reduce traffic and resultant vehicle pollution, and acquisition of properties or limitation of future development within the areas affected by noise. Impacts of the alternatives would be similar to those for the Proposed Action, except that the nonaviation alternative would not have any aircraft-related noise.

Realignment of Air Force units which would remain at Bergstrom AFB following closure under the Proposed Action and the aviation alternative to another installation, as recommended to the Base Closure and Realignment Commission in March 1993, would measurably reduce potential environmental impacts identified for the Proposed Action and aviation alternative for traffic, air quality, hazardous materials/waste management, and noise.

Because the Air Force is disposing of the property, some mitigation measures are beyond the control of the Air Force. Remediation of Installation Restoration Program sites is, and will continue to be, the responsibility of the Air Force.

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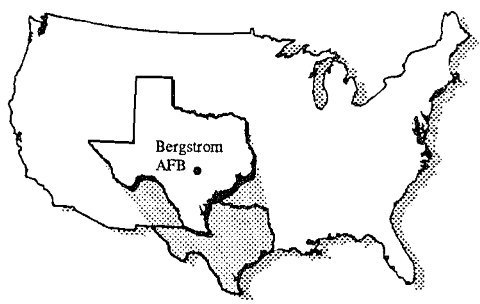


SUMMARY

SUMMARY

PURPOSE AND NEED

Bergstrom Air Force Base (AFB), Texas, was one of the bases recommended for closure by the 1991 Defense Base Closure and Realignment Commission. The Commission's recommendations were accepted by the President and submitted to Congress on July 12, 1991. Because Congress did not disapprove the recommendations in the time given under the Defense Base Closure and Realignment Act (DBCRA) of 1990 (Public Law 101-510, Title XXIX), the recommendations have become law. Bergstrom AFB is scheduled to close in September 1993.

The U.S. Air Force is required to comply with the National Environmental Policy Act (NEPA) in the implementation of base disposal and reuse. The Air Force will make a series of interrelated decisions concerning the disposition of base property. This Environmental Impact Statement (EIS) has been prepared to provide information on the potential impacts resulting from Air Force decisions regarding disposal and proposed reuse of the small portion of the base property within the Air Force's decision-making authority. The Federal Aviation Administration (FAA), as a cooperating agency in the preparation of this EIS, will make decisions on their own and assist the Air Force in making related decisions concerning all Bergstrom AFB property. Several alternative reuse concepts have been studied to identify the range of potential direct and indirect environmental consequences of disposal.

After completion and consideration of this EIS, the Air Force will prepare decision documents stating what property is excess and surplus, and the terms and conditions under which the dispositions will be made. These decisions may affect the environment by influencing the nature of the property's future use. However, most of the property must be surrendered to the City of Austin to use as it sees fit. This is based on considerations included in the original land transfer documents completed when the base was established in the 1940s, whereby the City of Austin has claimed equitable interest in approximately 2,892 acres of the 3,216 acres comprising Bergstrom AFB. It has been determined that the United States, acting through the Air Force, must surrender title to the land in question to the City of Austin when the base is closed. This surrender of property is subject to certain rights of the United States, such as retaining a cantonment area for the Air Force Reserve 924th Fighter Group (FG). Air Force decisions will be made regarding the disposal of four government fee-purchased land parcels totaling 324 acres. The environmental impacts of alternative reuse scenarios for the entire base are addressed in this EIS to consider cumulative impacts in making Air Force decisions regarding disposal of the 324 acres, as well as decisions on the siting of the government-retained cantonment area for Reserve operations.

ALTERNATIVES INCLUDING THE PROPOSED ACTION

For the purpose of evaluating potential environmental impacts resulting from the incident reuse of the land, the Air Force has based its Proposed Action on the City of Austin's expressed interest in relocating its municipal airport to the base. The Proposed Action, therefore, is the development of a commercial air carrier airport, with construction of a new parallel 9,000-foot runway with a 6,500-foot centerline-to-centerline separation from the existing 12,250-foot primary runway at Bergstrom AFB. Acquisition of up to 917 acres of land south of the base by the City of Austin may be required. A passenger terminal building complex and other aviation support facilities would be constructed between the two runways.

With the Proposed Action, four Air Force units — the 924th FG (including the 704th Fighter Squadron and its F-16 aircraft), Headquarters 10th Air Force, Air Combat Command Regional Corrosion Control Facility, and Ground Combat Readiness Center — would remain at the base. Compatible nonaviation reuses would include industrial, commercial, institutional, and recreational uses. For the Proposed Action, it was assumed that Robert Mueller Municipal Airport (RMMA) would be closed and converted to industrial, commercial, institutional, and residential uses.

The following alternatives to the Proposed Action are considered:

- Redevelopment of the base as an airport supporting only air cargo, general aviation, and military flying operations, with retention of the four Air Force units previously mentioned and development of mixed nonaviation uses (General Aviation/Air Cargo Airport Alternative). This alternative would reuse the existing runways and airfield area. It was assumed that RMMA would remain open for air carrier operations with this alternative.

- Redevelopment of the base for nonaviation mixed uses (Mixed-Use Development Alternative). The nonaviation reuses would include industrial, commercial, institutional, residential, agricultural, and recreational uses. The four Air Force units would not remain with this alternative because there would be no operational airfield. RMMA would remain open with this alternative.

- The No-Action Alternative, which would result in the United States Government retaining ownership of the four government fee-purchased land parcels after closure. Surrender of the property in which the City of Austin has claimed an equitable interest would occur, but it was assumed that the property would not be developed. RMMA would remain open with the No-Action Alternative.

SCOPE OF STUDY

The Notice of Intent to prepare an EIS for the disposal and reuse of Bergstrom AFB was published in the *Federal Register* on October 9, 1991. Issues related to the disposal and reuse of Bergstrom AFB were identified during an ensuing scoping period. A public scoping meeting was held on November 4, 1991, at the Lyndon B. Johnson Auditorium in Austin, Texas. The comments and concerns expressed at this meeting and in written correspondence received by the Air Force, as well as information from other sources, were used to determine the scope and direction of studies and analyses required to accomplish this EIS.

This EIS discusses the potential environmental impacts associated with the Proposed Action and reasonable alternatives, as well as with interim reuse activities (e.g., interim outleases) which may be allowed by the Air Force before final disposal of the base. To establish the context in which these environmental impacts may occur, potential changes in population and employment, land use and aesthetics, transportation, and community and public utility services are discussed as reuse-related influencing factors. Issues related to current and future management of hazardous materials and waste are also discussed. Potential impacts to the physical and natural environment are evaluated for soils and geology, water resources, air quality, noise, biological resources, and cultural and paleontological resources. These impacts may occur as a direct result of disposal and reuse actions or as an indirect result of changes in the surrounding region.

The baseline against which the Proposed Action and alternatives are analyzed consists of the conditions projected at base closure in 1994 (first full year after base closure in September 1993). Although the baseline assumes a closed base, a reference to preclosure conditions is provided in several sections (e.g., air quality and noise) to allow a comparative analysis over time. This will assist the Air Force decision-maker and other agencies that may be required to make decisions relating to reuse of Bergstrom AFB in understanding potential long-term trends compared to historic conditions when the installation was active.

The Air Force has also prepared a separate Socioeconomic Impact Analysis Study (SIAS) on the economic effects expected in the region as a result of the disposal and reuse of Bergstrom AFB. That document, although not required by NEPA, will assist the local community in planning for the transition of the base from military to civilian use. Population and employment data developed for the SIAS were used to establish influencing factors in this EIS.

SUMMARY OF ENVIRONMENTAL IMPACTS

This EIS considers environmental impacts of the Air Force's disposal of the installation and presents a variety of potential land uses to cover reasonably foreseeable future uses of the property and facilities by others. Several alternative scenarios, including the City of Austin's proposed plan, were used to group reasonable land uses and to examine the environmental effects of likely reuse of Bergstrom AFB.

Environmental impacts of the Proposed Action and reasonable alternatives are briefly described in the following sections. Influencing factors, which include projections of reuse activities that would likely influence the biophysical environment, include ground disturbance, socioeconomic factors, and infrastructure demands, and are summarized in Table S-1. The employment and population trends are shown in Figures S-1 and S-2. Impacts of the Proposed Action and alternatives through the year 2012 are summarized in Table S-2 and described below.

Mitigations and Pollution Prevention

Options of mitigating potential environmental impacts that might result from the Air Force disposing of property or from the implementation of the Proposed Action or alternatives by property recipients are presented and discussed. Because most potential environmental impacts would result directly from reuse by others, the Air Force would not typically be responsible for implementing such mitigations. Full responsibility for these suggested mitigations, therefore, would be borne primarily by future property recipients or local governmental agencies. Mitigation suggestions, where appropriate, are listed in terms of their potential effectiveness if implemented for affected resource areas, and are summarized along with the environmental impacts of the Proposed Action and alternatives in Table S-2.

PROPOSED ACTION

Local Community

The Proposed Action would result in increases in employment and population in Travis County. A total of 17,571 total direct jobs (6,656 new direct jobs) and an additional 5,284 secondary jobs would be generated by 2012. The population of Travis County is projected to increase by 6,460 because most jobs would either be filled locally or would be transferred from RMMA and office, industrial, and commercial centers in the Austin area. Most of these people are expected to reside in the Austin metropolitan area.

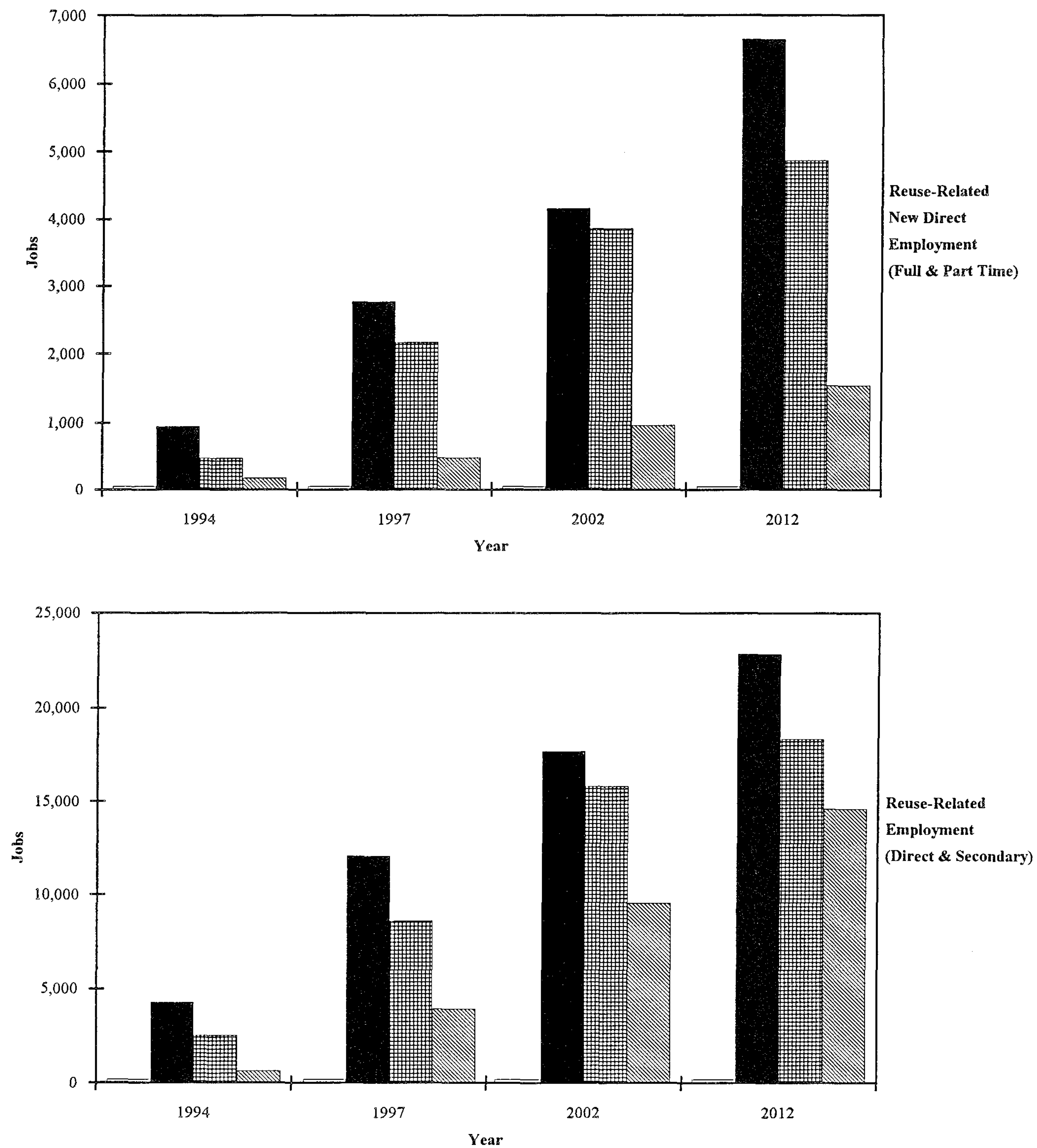
Land use on the base would change substantially from the current pattern of mixed use, and demolition of a number of facilities would be required. Specific changes would include construction of a new runway, a passenger terminal complex, additional aviation support facilities (including facilities for the 924th FG and the Texas Army National Guard, which would be relocated from RMMA), and some industrial, institutional, and commercial facilities. Reuse proposals would generally be consistent with local land use plans and policies, although local zoning may need to be changed north of the base to reflect the existence of an airport. The Proposed Action would improve use of airspace in the Austin area with closure of RMMA. Average daily traffic on local roads

Table S-1

Summary of Reuse-Related Influencing Factors

Factor	Proposed Action				General Aviation/Air Cargo Airport Alternative				Mixed-Use Development Alternative				No-Action Alternative[1]
	1994	1997	2002	2012	1994	1997	2002	2012	1994	1997	2002	2012	
Ground Disturbance (acres by phase)	0	1,295	290	230	0	309	143	57	0	809	475	138	0
Aircraft Operations (annual)	19,862	206,624	219,764	254,804	19,862	121,247	120,181	121,123	0	0	0	0	0
Direct Employment[2]	949	2,762	4,161	6,656	477	2,161	3,860	4,870	178	482	959	1,542	50
Local Transfer Employment	1,426	5,852	10,145	10,915	1,426	4,391	8,791	9,581	95	2,847	7,902	11,993	0
Secondary Employment	1,912	3,452	3,397	5,284	622	2,066	3,172	3,914	381	606	694	1,083	20
Population Increase	496	568	1,964	6,460	223	255	1,882	3,423	76	132	160	244	0
Traffic (average daily one-way trips)	3,617	25,945	44,660	56,823	3,770	15,257	33,059	37,179	2,358	11,344	27,891	42,182	150
Water Demand (MGD)[3]	0.06	0.09	0.27	0.76	0.03	0.06	0.25	0.42	0.01	0.02	0.04	0.06	<0.01
Wastewater Generation (MGD)	0.04	0.07	0.20	0.56	0.02	0.04	0.19	0.31	0.01	0.02	0.03	0.04	<0.01
Solid Waste Generation (tons/day)	1.71	3.78	9.60	24.14	1.03	2.81	8.94	14.31	0.29	0.89	1.95	3.27	<0.01
Electricity Demand (million kWh/day)[4]	0.02	0.07	0.16	0.29	0.01	0.07	0.15	0.19	<0.01	0.01	0.03	0.05	<0.01
Natural Gas Demand (MMcf/day)[5]	0.07	0.29	0.65	1.20	0.05	0.26	0.62	0.79	0.02	0.05	0.12	0.17	<0.01

Notes: [1]The No-Action Alternative summarizes influencing factors relative to closure baseline conditions.
[2]Includes construction workers in 1994 and 1997.
[3]MGD = million gallons per day.
[4]kWh = kilowatt-hours.
[5]MMcf = million cubic feet.



LEGEND

No-Action Alternative

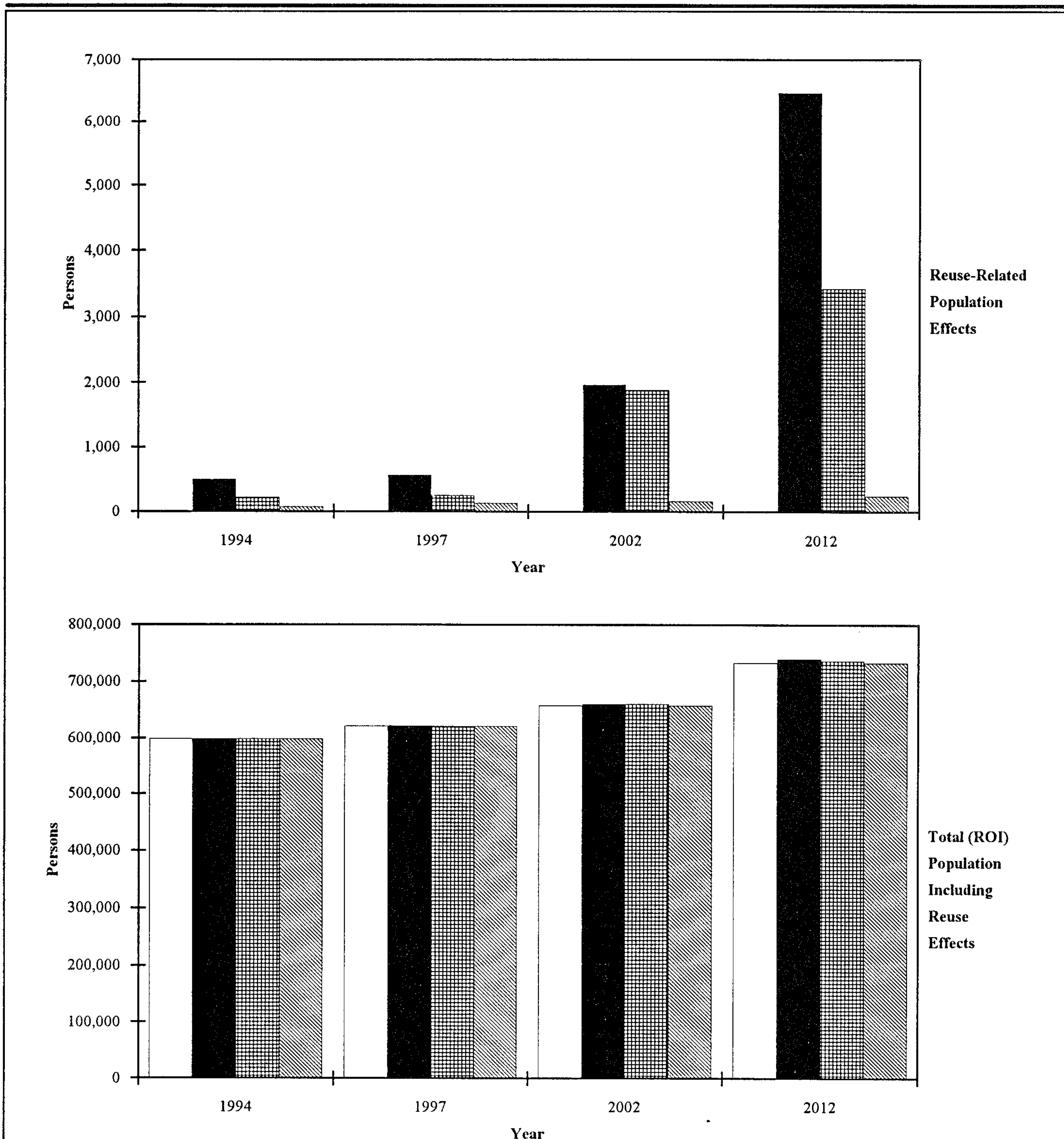
Proposed Action

General Aviation/Air Cargo Airport Alternative

Mixed-Use Development Alternative

Travis County Reuse-Related Employment Effects

Figure S-1



LEGEND

- No-Action Alternative
- Proposed Action
- General Aviation/Air Cargo Airport Alternative
- Mixed-Use Development Alternative

Travis County Reuse-Related Population Effects

Figure S-2

Table S-2

Summary of Environmental Impacts and Mitigation Measures for the Proposed Action and Reuse Alternatives

Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
Local Community				
Land Use and Aesthetics	**Impacts:** • Construction of new passenger terminal complex; aviation support, institutional, and industrial facilities; and new access road to base.	• Construction of aviation support, industrial, institutional, and commercial facilities.	• Construction of industrial, institutional, and commercial facilities.	• No change in land use on the base, including four government fee-purchased parcels.
	• Potential conflicts with offbase land use from noise.	• No offbase land use conflicts.	• No offbase land use conflicts.	
	• Substantial change in general base appearance.	• Some change in general base appearance.	• Some change in general base appearance.	
	• *Demolition of a number of facilities.*			
	• Retention and reuse of many existing facilities.	• Retention and reuse of most existing facilities.	• Retention and reuse of most existing facilities.	
			• Airfield converted to agricultural, commercial, and industrial uses.	
	Mitigations: • Adopt zoning and building standards to ensure new development in the vicinity of the airport is compatible with aviation operations.	• Same as Proposed Action.	• No mitigations required.	• No mitigations required.
Transportation	**Impacts:** • Additional average daily traffic (ADT) would degrade existing roadway LOS on U.S. 183 and State Highway 71, but not to unacceptable levels.	• Similar to Proposed Action. ADT slightly lower.	• Similar to Proposed Action. ADT slightly lower.	• No impacts on roadways or airspace.
	• No airspace conflicts.	• Airspace conflicts would still occur between Bergstrom AFB and RMMA air traffic.		
	Mitigations: • Improve State Highway 71 and U.S. 183 as planned.	• Same as Proposed Action.	• Same as Proposed Action.	• No mitigations required.
	• Monitor traffic conditions and plan improvements, as needed.			

Table S-2, Page 2 of 11

Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
Utilities	**Impacts:** • Small increase in utility demands.	• Similar to Proposed Action. Demand slightly lower.	• Similar to Proposed Action. Demand slightly lower.	• Minimal increase in utility demands.
	• Minimal effect on local suppliers.			
	Mitigations: • No mitigations required.	• No mitigations required.	• No mitigations required.	• No mitigations required.
Hazardous Materials and Hazardous Waste Management				
Hazardous Materials Management	**Impacts:** • Quantities used would increase over closure baseline.	• Same as Proposed Action.	• Same as Proposed Action.	• Small quantities of hazardous materials managed by Air Force and the City of Austin.
	• Each reuse tenant would have to comply with Superfund Amendments and Reauthorization Act, Section 311, Title III.			
	• Need for adequate emergency response capability.			
	Mitigations: • Establish cooperative planning body to reduce costs of environmental compliance, health and safety training, and waste management.	• Same as Proposed Action.	• Same as Proposed Action.	• Implement contingency plans to address spill response by the caretaker team.
	• Increase recycling, minimize waste, and assist in mutual spill responses.			
	• Implement pollution prevention and minimization strategies recommended by the Environmental Protection Agency (EPA).			
Hazardous Waste Management	**Impacts:** • Increase in types and quantities of hazardous waste generated compared to closure baseline.	• Same as Proposed Action, but quantity generated would likely be smaller.	• Same as Proposed Action, but quantity generated would likely be smaller.	• Small quantities of waste generated.
	• Individual reuse tenants would need to comply with Occupational Safety and Health Administration and Resource Conservation and Recovery Act regulations.			

Table S-2, Page 3 of 11

Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
	Mitigations: • Same as described for Hazardous Materials Management category.	• Same as Proposed Action.	• Same as Proposed Action.	• Same as described for Hazardous Materials Management category.
Installation Restoration Program (IRP) (Hazardous Waste Cleanup)	**Impacts:** • Redevelopment of some Bergstrom AFB properties could be delayed or limited as a result of continuing IRP activities.	• Same as Proposed Action.	• Same as Proposed Action.	• No impact.
	Mitigations: • Address and close out all IRP sites.	• Same as Proposed Action.	• Same as Proposed Action.	• Same as Proposed Action.
Storage Tanks	**Impacts:** • All underground and aboveground storage tanks required for reuse activities would be subject to all applicable federal, state, and local regulations.	• Same as Proposed Action.	• Same as Proposed Action.	• Caretaker maintenance of underground and aboveground tanks.
	• Underground and aboveground tanks not required for reuse activities will be removed.			• Tanks not required for maintenance activities will be removed.
	Mitigations: • Coordination of use of tanks remaining in service with planning agencies to ensure integrity of tanks and piping systems during construction of facilities.	• Same as Proposed Action.	• Same as Proposed Action.	• No mitigations required.
Asbestos	**Impacts:** • All renovation and demolition of existing buildings with asbestos-containing materials would be subject to all applicable federal, state, and local regulations.	• Same as Proposed Action.	• Same as Proposed Action.	• Continued management of facilities containing asbestos.
	Mitigations: • Coordinate asbestos removal or management in conjunction with renovation activities.	• Same as Proposed Action.	• Same as Proposed Action.	• Structures with asbestos-containing materials will be managed in accordance with applicable regulations.

Table S-2, Page 4 of 11

Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
	• Comply with National Emission Standards for Hazardous Air Pollutants and Occupational Safety and Health Administration regulations.	• Same as Proposed Action.	• Same as Proposed Action.	• Same as Proposed Action.
Pesticides	**Impacts:** • Pesticide use would increase from amounts used under baseline (caretaker status).	• Same as Proposed Action.	• Same as Proposed Action.	• Minimal use as part of caretaker activities.
	Mitigations: • Comply with all applicable federal and state regulations.	• Same as Proposed Action.	• Same as Proposed Action.	• Same as Proposed Action.
Polychlorinated Biphenyls (PCBs)	**Impacts:** • A number of PCB-containing capacitors will be transferred with the lighting vault building to the City of Austin for airport use. • Base hospital with PCB transformer will likely be demolished; transformer will be removed prior to demolition. Transformer in hospital is being retrofilled to reduce PCB concentration. It is scheduled to be certified as non-PCB in March 1994.	• Same as Proposed Action except that the hospital building would be retained.	• Same as General Aviation/Air Cargo Airport Alternative.	• Continued management of facilities with PCB-containing equipment.
	Mitigations: • Routine inspection of equipment. • Perform confirmatory testing.	• Same as Proposed Action.	• Same as Proposed Action.	• Routine inspection of equipment.
Radon	**Impacts:** • Some structures have radon levels greater than EPA-recommended levels for residential and school structures (i.e., 4 picoCuries/per liter of air).	• Same as Proposed Action.	• Same as Proposed Action.	• No impact.
	Mitigations: • Property recipient may need to provide mitigation for reuse of buildings with radon levels greater than 4 picoCuries per liter of air.	• Same as Proposed Action.	• Same as Proposed Action.	• No mitigations required.

Table S-2, Page 5 of 11

Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
Medical/Biohazardous Waste	**Impacts:** • No impacts would occur because *hospital is not proposed for reuse* as a medical facility. Hospital building was assumed to be *demolished with* Proposed Action.	• No impacts would occur because *hospital is not proposed for reuse* as a medical facility.	• With reuse of the hospital, generation of medical/biohazardous wastes and disposal requirements would not *appreciably change from* preclosure conditions.	• None generated.
	Mitigations: • No mitigations required.	• No mitigations required.	• Comply with applicable state regulations.	• No mitigations required.
Ordnance	**Impacts:** • Remediation of ordnance-contaminated areas may delay redevelopment of some parcels of land.	• Same as Proposed Action.	• Same as Proposed Action.	• No impact.
	Mitigations: • Address remediation of affected areas.	• Same as Proposed Action.	• Same as Proposed Action.	• Same as Proposed Action.
Natural Environment				
Soils and Geology	**Impacts:** • A total of 1,815 acres of land would be disturbed. This would minimally alter soil profiles and have little effect on local topography. • Some erosion potential during construction.	• A total of 509 acres of land disturbed; impacts similar to the Proposed Action.	• A total of 1,422 acres of land disturbed, mainly by agricultural activities; impacts similar to the Proposed Action.	• No impact.
	Mitigations: • Minimize length of time vegetation and other cover are absent. • Stockpile topsoil for use elsewhere.	• Same as Proposed Action.	• Same as Proposed Action.	• No mitigations required.

Table S-2, Page 6 of 11

Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
	• When cut slopes are exposed: - Add protective cover (i.e., mulch, straw). - Limit amount of area disturbed and length of time slopes and barren ground are exposed. - Construct diversion dikes and interceptor ditches to divert water from construction areas. - Install slope drains and/or water velocity-control devices to reduce high-velocity streams. • Control short-term wind and water erosion by applying mulch, straw, or synthetic material. • Control long-term erosion by keeping soils under vegetative cover and planting windbreaks. • Use appropriate engineering practices to reduce effect of shrinking and swelling of soils.			
Water Resources	**Impacts:** • Increase in impervious surfaces would result in increased stormwater runoff. Stormwater discharge may contain contaminants (e.g., oils) that could degrade water quality, particularly in Onion Creek.	• Stormwater discharge expected to contain lower levels of residual contaminants than with the Proposed Action.	• Same as Proposed Action.	• No impact.
	Mitigations: • Implementation of applicable EPA stormwater discharge requirements during construction period and for the duration of airport operations. • Incorporate provisions into construction designs to control stormwater runoff. • Create landscaped areas pervious to surface water. • Minimize areas of surface disturbance.	• Same as Proposed Action.	• Same as Proposed Action.	• No mitigations required.

Table S-2, Page 7 of 11

Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
	• During construction phase, control site runoff through ditching, sediment traps, berms, and other devices. • Minimize time that disturbed areas are exposed to erosion and provide timely revegetation. • Schedule surface-disturbing activities during dry seasons. • Regularly sweep streets and clean up construction zones. • Place drainage ditches strategically to direct runoff away from critical areas. • Pretreat water prior to discharge to the city water treatment system. • Establish spill control and countermeasure plans and other safety regulations designed to reduce the threat of a spill. • Install permanent detention/filtration ponds to clean runoff prior to discharge. • Install and properly maintain oil/water separators. • Use aboveground storage tanks or corrosion-resistant underground tanks with the most effective containment and leak monitoring available. • Follow established regulations and implement a special hazardous materials management plan and procedures. • Avoid washing or flushing washwater or other wastewater into ditches or swales.			

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Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
	• Avoid discharging or injecting any water or waste to groundwater.			
Air Quality	**Impacts:** • Increase in pollutant emissions would not violate federal and state ambient standards.	• Same as Proposed Action.	• Same as Proposed Action.	• No measurable increase in air pollutant emissions.
	Mitigations: • Apply water twice daily during ground-disturbing activities to control fugitive dust. • Decrease time during which newly graded sites are exposed. • Schedule equipment use to be most efficient to control combustive emissions. • Implement a phased construction schedule. • Perform regular vehicle engine maintenance. • For motor vehicle emissions, reduce vehicle miles traveled, vehicle trips, and peak-hour travel. • For operations, develop an airport shuttle system, develop a light-rail or trolley (electric) transportation system, schedule aircraft operations to minimize peak-hour operations, promote car and vanpools, encourage use of public transit through financial incentives, promote bicycling as a form of transportation, locate facilities such as child care centers and cafeterias on the site to reduce offsite travel.	• Same as Proposed Action.	• Same as Proposed Action except for those specific to airport development and operation.	• No mitigations required.
Noise	**Impacts:** • Maximum of about 7,830 acres exposed to DNL 65 dB or greater in 1997, decreasing to 5,000 acres in 2012.	• Maximum of about 4,275 acres exposed to DNL 65 dB or greater in 1997, decreasing to about 4,140 acres in 2012.	• No aircraft noise.	• No impact.

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Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
	• About 4,065 persons estimated to *reside in noise impact area in* 1997, decreasing to 2,965 persons in 2012.	• About 4,065 persons estimated to *reside in noise impact area in* 1997, decreasing to 2,305 persons in 2012.		
	• Increased traffic noise along some roads.	• Increased traffic noise along some roads.	• Increased traffic noise along some roads.	
	Mitigations: • Change takeoff, climb-out, or landing procedures.	• Same as Proposed Action.	• No mitigations required.	• No mitigations required.
	• Change flight track limit or rotate *primary runway usage*.			
	• Enforce prescribed flight track use.			
	• Fan-out departure flight tracks.			
	• Prohibit or limit Stage 2 aircraft operations.			
	• Acquire undeveloped land adjacent to runways exposed to DNL 65 dB or greater; restrict residential and hospital development to areas outside the DNL 65 dB contour.			
	• Acquire residential areas (i.e., mobile homes and single-family housing) exposed to aircraft noise of DNL 70 dB or greater.			
	• Conduct sound attenuation program in noise-sensitive areas exposed to aircraft noise of DNL 65 dB or greater.			
	• Impose curfews and noise-related landing fees, develop noise monitoring system, and establish a community relations office.			
Biological Resources	**Impacts:** • Potential to disturb up to 460 acres *of mowed weedy vegetation and* 90 acres of mesquite thicket depending on siting of proposed reuses.	• Potential to disturb up to 160 *acres of mowed weedy* vegetation.	• Potential to disturb up to 210 acres of native vegetation and 1,430 acres of mowed weedy vegetation.	• No impact. Potential increase in habitat value.

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Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
	Mitigations: • Avoid known sensitive or unique biological habitats to the extent possible. • Revegetate temporarily disturbed sites and landscape with native species to the extent possible. • Implement measures to promote soil stabilization. • Operate construction equipment only on roads or within designated disturbance areas. • Where practical, decrease frequency of mowing and clearing of vegetation from drainage channels. • Maintain pesticide and fertilizer management plans. • Avoid disturbance to waters of the United States, drainages, and riparian areas through controlling runoff from construction sites by using berms, silt curtains, straw bales, and other appropriate techniques; and by washing equipment in areas where washwater could be contained and treated, or evaporate.	• Same as Proposed Action.	• Same as Proposed Action. • Avoid the grassland/deciduous tree area north of Runway 17R/35L.	• No mitigations required.
Cultural and Paleontological Resources	**Impacts:** • No NRHP-eligible prehistoric or historic sites, Native American resources, or important paleontological resources would be affected onbase. At least three NRHP-eligible sites may be affected offbase.	• No NRHP-eligible prehistoric or historic sites, Native American resources, or important paleontological resources would be affected.	• No NRHP-eligible prehistoric or historic sites, sensitive Native American resources, or important paleontological resources would be affected.	• No onbase impacts.

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Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
	Mitigations: • No mitigation measures would be required for onbase *areas;* however, if NRHP-eligible sites are affected offbase,discussions with Texas State Historic Preservation Officer on appropriate mitigation measures may be required.	• No mitigations required.	• No mitigations required.	• No mitigations required.

providing access to the base would increase substantially above closure baseline levels, but the level of service (LOS) during peak hours on key roads (U.S. 183 and Texas State Highway 71) would remain at LOS C or better (i.e., good operating conditions) if planned improvements by the Texas Department of Transportation are implemented on time. Utility consumption associated with the Proposed Action would represent a relatively small increase in the total demand over closure baseline conditions, but all utility providers currently have excess capacity.

Hazardous Materials and Hazardous Waste Management

The types of hazardous materials and waste used and generated as a result of the Proposed Action are expected to be similar to those used and generated during preclosure conditions. The responsibility for managing hazardous materials and waste would shift from a single user to multiple, independent users. This may result in a reduction of service if there is no single onsite organization capable of responding to hazardous material and waste spills. The reusers would also implement pollution prevention and waste minimization strategies that have been recommended by the Environmental Protection Agency (EPA) in its *Guides to Pollution Prevention* series of publications and *Waste Minimization Opportunity Assessment Manual.* It was assumed that adequate management procedures would be imposed, as required by applicable laws and regulations, to ensure proper use and handling of hazardous materials.

Reuse activities are not expected to affect the remediation and/or closure of Installation Restoration Program (IRP) sites or Solid Waste Management Units (SWMUs). However, the IRP remediation schedule could result in delays in the redevelopment of some portions of the base. Existing underground storage tanks not required for reuse activities will be removed by the Air Force. All polychlorinated biphenyl (PCB) and PCB-contaminated equipment has been removed from the base except in two facilities: an aircraft lighting system vault with 15 PCB-containing capacitors and the base hospital with a large PCB transformer. The airfield lighting system vault capacitors are hermetically sealed and will be transferred with the building to the City of Austin; the transformer in the hospital is being regularly retrofilled with non-PCB dielectric fluid to reduce the PCB concentration. It is scheduled to be certified as non-PCB in March 1994. However, it was assumed that it will be removed because this building will likely be demolished during airfield construction for the Proposed Action. Demolition and renovation of structures with asbestos-containing materials were assumed to be performed by the new owners in compliance with applicable regulations and National Emissions Standards for Hazardous Air Pollutants. Reuse of some structures on the base may require mitigation for radon levels greater than the EPA-recommended level for residential and school structures.

Natural Environment

A total of 1,815 acres would be disturbed with the Proposed Action. Of this, about 300 acres would be on land off the base that would potentially be acquired by the City of Austin. Soils on the base are not particularly susceptible to erosion, but some soil erosion is expected to occur during construction. Construction activity would change some surface drainage flows and would increase the amount of impervious surface. Groundwater supplies would not be affected. Air pollutant emissions associated with the Proposed Action would increase above baseline closure levels. However, the increases would not be large enough to cause any exceedance of federal or state ambient standards.

Aircraft noise associated with reuse of the airfield for an air carrier airport with military operations would be less than prior to base closure. Approximately 4,330 acres would be exposed to day-night noise levels (DNL) of 65 decibels (dB) or greater in 1994, increasing to about 7,830 acres by 1997 when the air carrier airport would be fully operational. Approximately 4,065 persons are estimated to reside in this area. The area exposed to DNLs of 65 dB or greater would decrease to about 5,070 acres by 2002 and 5,000 acres by 2012, when new, quieter aircraft would be used. Approximately 2,955 persons in 2002 and 2,965 in 2012 are estimated to reside in the area affected by noise. This contrasts with approximately 14,720 acres exposed to noise levels greater than 65 dB with preclosure conditions. Surface traffic noise would increase along U.S. 183 and State Highway 71 above baseline closure levels. Residences located less than 300 feet from these highways may be exposed to DNLs of 65 dB or greater.

The Proposed Action could disturb a maximum of 460 acres of mowed weedy vegetation and about 90 acres of mesquite thicket. Three known sites considered NRHP-eligible or potentially eligible may be affected offbase.

GENERAL AVIATION/AIR CARGO AIRPORT ALTERNATIVE

Local Community

This alternative would generate 14,451 total direct jobs (4,870 new direct jobs) and 3,914 secondary jobs by 2012. Most jobs would be filled locally or transferred from other office, industrial, and commercial centers in the Austin area. The population in Travis County is projected to increase by 3,423 by 2012, with most residing in the Austin metropolitan area.

Land use on the base would be similar to preclosure conditions, maintaining the existing airfield for general aviation/air cargo and military operations. The mixed-use pattern that currently characterizes the developed portion of the base would be retained. Specific land use changes would include conversion of existing office space to institutional, industrial, and commercial uses. With this alternative, a much larger area would be retained by the Air Force for the units that would remain at the base. Acquisition of private land south of the base would not be required because a new runway would not be constructed. The General Aviation/Air Cargo Airport Alternative would be generally consistent with local land use plans and policies. With the continued operation of RMMA and the Bergstrom AFB airfield, airspace conflicts would still occur because of the proximity of the airfields and orientation of their respective runways. Utilities effects would be essentially the same as those described for the Proposed Action. Traffic impacts would be somewhat lower than for the Proposed Action.

Hazardous Materials and Hazardous Waste Management

There would be minor differences between the General Aviation/Air Cargo Airport Alternative and the Proposed Action with respect to hazardous materials and waste management. A smaller amount of hazardous waste would likely be generated because of the reduction in aviation-related activities. The remediation and/or closure of IRP sites and SWMUs could delay redevelopment of some portions of the base.

Natural Environment

A total of 509 acres would be disturbed with this alternative. Impacts associated with this alternative on soils and geology, water resources, and air quality would be similar to those described for the Proposed Action. Aircraft noise impacts would be less than with the Proposed Action; only about 4,180 acres would be exposed to DNLs of 65 dB or greater in 1994, increasing to about 4,275 acres in 1997, and decreasing to 4,185 acres by the year 2002 and 4,140 acres by 2012. Approximately 2,415 persons are estimated to reside in the area affected by noise in 1997 and 2,305 in 2012. Surface traffic noise would increase on some local roads, but no residences would be affected. With this alternative, approximately 160 acres of mowed weedy vegetation could be disturbed.

MIXED-USE DEVELOPMENT ALTERNATIVE

Local Community

This alternative would generate 13,535 total direct jobs (1,542 new direct jobs) and 1,083 secondary jobs by the year 2012. Most of these jobs would be transferred from other office, industrial, and commercial centers in the Austin area. The population of Travis County is projected to increase by only 244 people by 2012, with most of the people expected to reside in the Austin metropolitan area.

Land use in the developed portion of the base would remain similar to existing uses, including administrative, industrial, and commercial. The airfield would be converted to agricultural, industrial, and commercial uses. The proposed reuses are arranged to incorporate existing buildings into land uses that are similar to their existing uses to minimize redevelopment costs. Reuses proposed with this alternative would generally be consistent with local plans and policies. Transportation and utilities effects would be slightly lower than with the Proposed Action.

Hazardous Materials and Hazardous Waste Management

There would be some difference between this nonaviation alternative and the Proposed Action and General Aviation/Air Cargo Airport Alternative with respect to hazardous materials and waste management. Without aviation-related uses, decreased quantities of fuel and other hazardous materials would likely be required on the site. However, pesticide and fertilizer use could increase with use of the airfield for certain types of agricultural uses. The remediation and/or closure of IRP sites and SWMUs could delay the redevelopment of some portions of the base.

Natural Environment

A total of 1,422 acres, including about 1,100 acres for potential agricultural uses, would be disturbed with this alternative. Impacts associated with this alternative on soils and geology, water resources, and air quality would be similar to the Proposed Action. There would be no aircraft operations with this alternative. Traffic noise would increase on some roads, but no residences would be affected. Approximately 210 acres of native vegetation (woodlands and grasslands) and 1,430 acres of mowed weedy vegetation could be disturbed with this alternative; however, avoidance of sensitive areas is possible because more land would be available than would be required.

OTHER LAND USE CONCEPTS

In compliance with the Federal Property and Administrative Services Act of 1949, the Air Force solicited proposals from other federal agencies regarding their interest in acquiring any lands or facilities identified for disposal at Bergstrom AFB. However, no proposals for direct federal use or sponsorship of local governmental programs were received by the Air Force for use of the 324 acres of land to be disposed of at Bergstrom AFB. In addition, no other formal proposals were received by the Air Force from any entity for use of lands or facilities at the base.

NO-ACTION ALTERNATIVE

Local Community

Surrender of the property in which the City of Austin has claimed an equitable interest would occur with this alternative. The only activities associated with the No-Action Alternative would be maintenance of the base and four government fee-purchased land parcels totaling 324 acres. Caretaker activities would generate approximately 50 direct and 20 secondary jobs. There would be no overall increase in employment or population. Minimal effects on utilities and on road, air, or railroad transportation are expected.

Hazardous Materials and Hazardous Waste Management

Small quantities of various types of hazardous materials and pesticides would be used with this alternative. All hazardous materials and waste would be managed and controlled in accordance with applicable regulations. Storage tanks not required for maintenance activities would be removed.

Natural Environment

The No-Action Alternative would not affect soils and geology, water resources, air quality, noise, biological resources, or cultural and paleontological resources relative to baseline conditions.

SUMMARY OF PUBLIC COMMENTS

The Draft EIS (DEIS) for disposal and reuse of Bergstrom AFB was made available for public review and comment in January 1993. A public hearing was held in Austin, Texas, on February 9, 1993, at which the Air Force presented the findings of the DEIS. Public comments received both verbally at the public meeting and in writing during the response period have been reviewed and are addressed by the Air Force in Chapter 9.0 of this EIS. In addition, the text of the EIS itself has been revised, as appropriate, to reflect the concerns expressed in the public comments. The responses to the comments in Chapter 9.0 indicate the relevant sections of the EIS that have been revised.

SUMMARY OF CHANGES FROM THE DEIS TO THE FEIS

Based on more recent studies or comments from the public, the following sections of the EIS have been updated or revised:

- Section 4.4.4, Noise, has been revised to incorporate some minor changes in the assumptions used in modeling the military aircraft considered in the noise analysis. These changes resulted from verification of the assumptions used in the modeling analysis with 924th FG and Air Training Command (ATC) (at Randolph AFB, Texas) personnel. Changes to the assumptions suggested by the 924th FG and ATC involved slight revisions to the altitude, power setting, and airspeed profiles for the respective aircraft (i.e., 924th FG F-16s and ATC T-38s) for three flight tracks. The 924th FG and ATC personnel verified that all other aircraft profile and flight tracks assumptions used in the noise modeling were representative of the manner in which air operations are and would be conducted in the Bergstrom AFB airspace.

In addition, a revision was also made to the number of nighttime 727Q15 and 737QN aircraft operations allocated to the proposed new runway (Runway 17L/35R) for 1997 (Appendix H, Table H-5a) to correct an error which resulted in an overprediction of the noise impact to the south of this runway in the DEIS analysis. Overall, these revisions resulted in minor changes to the number of acres exposed to DNL noise levels greater than 65 decibels (Table 4.4-7) and the DNL at five representative noise receptors listed in Table 4.4-8. Figures 4.4-7 through 4.4-14 have been changed to show the revised noise contours for each of the modeled years.

Revisions to the number of persons located within the DNL 65, 70, and 75 dB contours were also made based on an evaluation of 1990 U.S. Census data for those census tracts within the delineated contours. These changes are presented in Table 4.4-7.

- The City of Austin provided the Air Force a list of 56 noise-sensitive receptors which they plan to consider in the Supplemental EIS. In this EIS (Section 4.4.4), 16 representative receptors are used to evaluate the noise impacts in terms of day-night average noise levels (DNLs) and sound exposure levels (SELs). These 16 representative locations cover all sensitive receptors likely to be affected by proposed aircraft operations at Bergstrom AFB. Only some outlying receptors listed by the City of Austin to the north and west of the base are not represented because they fall well outside the potential impact areas. Table 4.4-8a has been added to Section 4.4.4 showing correspondence between the sensitive receptors provided by the city and the representative receptors considered in this EIS. The location of sensitive receptors is shown on Figures 4.4-7 through 4.4-14 as background information.

- Section 4.4.6, Cultural and Paleontological Resources, has been revised to incorporate the results of survey and testing requested by the Texas State Historic Preservation Officer (SHPO) for sites 41TV435 and 41TV436. Test results have indicated that the sites are not eligible for the National Register of Historic Places and the SHPO has concurred with this conclusion. Additional documentation and information has been provided to the Texas SHPO on Building 3920, and a finding of no effect has been issued.

- On March 12, 1993, the Secretary of Defense submitted a list of military installations recommended for closures and/or realignment to the Defense Base Closure and Realignment Commission. This list included the realignment of all remaining military units at Bergstrom AFB (i.e., the 924th FG, Headquarters 10th Air Force, and the Ground Combat Readiness Center) to another installation. The Air Combat Command Regional Corrosion Control Facility was also recommended for closure. Realignment of these military units was contingent upon a final recommendation to be made to the President by the Base Closure and Realignment Commission by July 1, 1993, and acceptance of that recommendation by the President and subsequent approval by the Congress. On July 1, 1993, the Commission recommended to the President that the 704th Fighter Squadron (AFRES) with its F-16 aircraft and the 924th Fighter Group (AFRES) support units remain at the Bergstrom AFB cantonment area until at least the end of 1996. They also recommended the closure and relocation of the Regional Corrosion Control Facility at Bergstrom AFB by September 30, 1994, unless a civilian airport authority assumes the responsibility for operating and maintaining the facility before that date. Although not specifically mentioned in the Commission's recommendations, it is assumed that Headquarters 10th Air Force and the Ground Combat Readiness Center will remain at Bergstrom AFB at least until the end of 1996. The President accepted the Commission's recommendations and forwarded them to Congress on July 2, 1993.

Because the Congressional action is still pending and the Commission's recommendations may be reviewed in 1996, the potential environmental impacts that could result from the realignment action are included in Section 4.6 of this document. A new section (Section 2.3.3) has also been added to Chapter 2.0 describing the changes that would occur to the Proposed Action and General Aviation/Air Cargo Airport Alternative.

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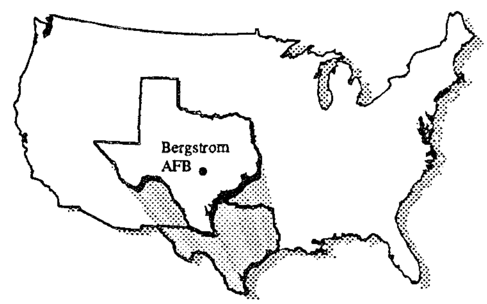

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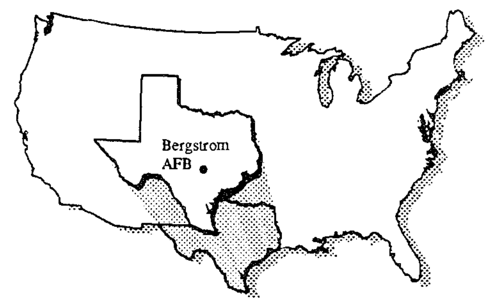


CHAPTER 1.0
PURPOSE OF AND NEED FOR ACTION

1.0 PURPOSE OF AND NEED FOR ACTION

This Environmental Impact Statement (EIS) examines the potential impacts to the environment that may result from the disposal and reuse of Bergstrom Air Force Base (AFB), Texas, as well as from interim reuse activities (e.g., interim outleases) which may be allowed by the Air Force before final disposal of the base. This document has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500-1508).

1.1 PURPOSE AND NEED

As a result of the changing international political scene and the accompanying shift toward a reduction in defense spending, the Department of Defense (DOD) must realign and reduce its military forces pursuant to the Defense Base Closure and Realignment Act (DBCRA) of 1990 (Public Law [P.L.] 101-510, Title XXIX). DBCRA established new procedures for closing or realigning military installations in the United States.

DBCRA established an independent Defense Base Closure and Realignment Commission to review the Secretary of Defense's base closure and realignment recommendations. After reviewing these recommendations, the 1991 Commission forwarded its recommended list of base closures and realignments to the President, who accepted the recommendations and submitted them to Congress on July 12, 1991. Because Congress did not disapprove the recommendations within the time period provided under DBCRA, the recommendations have become law. Because Bergstrom AFB was on the Commission's list, the decision to close the base is final. Bergstrom AFB is scheduled to close in September 1993.

To fulfill the requirement of reducing defense expenditures, the Air Force plans to dispose of excess and surplus real property and facilities at Bergstrom AFB. DBCRA requirements relating to disposal of excess and surplus property include:

- Environmental restoration of the property as soon as possible with funds made available for such restoration;
- Consideration of the local community's reuse plan prior to Air Force disposal of the property; and
- Compliance with specific federal property disposal laws and regulations.

The Air Force action, therefore, is to dispose of the small portion of Bergstrom AFB property and facilities within its decision-making authorities. Usually, this action would be performed by the Administrator of General

Services. However, DBCRA required the Administrator to delegate to the Secretary of Defense the authorities to utilize excess property, dispose of surplus property, convey airport and airport-related property, and determine the availability of excess or surplus real property for wildlife conservation purposes. The Secretary of Defense has since redelegated these authorities to the respective Service Secretaries.

1.2 DECISIONS TO BE MADE

The purpose of this EIS is to provide information for interrelated Air Force and Federal Aviation Administration (FAA) decisions concerning the disposition of Bergstrom AFB. The EIS provides the decision-maker and the public the information required to understand the potential environmental consequences of disposal and proposed reuse options at Bergstrom AFB.

Based on considerations included in the original land transfer documents completed when the base was established in the 1940s, the City of Austin claimed equitable interest in approximately 2,892 of the 3,216 acres of land comprising Bergstrom AFB. It has been determined that the United States, acting through the Air Force, will surrender title to the land in question to the City of Austin when the base is closed. This surrender of the property is subject to certain rights of the United States, such as retaining a Reserve forces cantonment area. The disposal methods described below will apply only to Bergstrom AFB property not surrendered to the City of Austin.

After completion of this EIS, the Air Force will issue a Record of Decision (ROD) on the disposal of the 324 acres of Bergstrom AFB within its decision-making authority. The ROD will determine the following:

- What property is excess to the needs of the DOD and what property is surplus to the needs of the United States;
- The methods of disposal to be followed by the Air Force;
- The terms and conditions of disposal; and
- The size and location of an area(s) to be retained by the U.S. Government for the Air Force Reserve 924th Fighter Group and other Air Force units that will remain on the Bergstrom AFB property.

Separately, the FAA will issue one or more RODs to determine whether a public airport is acceptable and needed at this site.

The methods of disposal granted by the Federal Property and Administrative Services Act of 1949 and the Surplus Property Act of 1944 and implemented in the Federal Property Management Regulations (FPMR) are:

- Transfer to another federal agency;
- Public benefit conveyance to an eligible entity;
- Negotiated sale to a public body for a public purpose; and
- Competitive sale by sealed bid or auction.

The potential environmental impacts of the Air Force's disposal of its 324 acres of government fee-purchased property at Bergstrom AFB within the context of the City of Austin's reuse plans for the property in which it has equitable interest are considered in this EIS. A variety of potential land uses covering reasonably foreseeable future uses of all of the current base property and facilities by others are presented in this EIS. Several alternative scenarios were used to group reasonable land uses and to examine the environmental effects of redevelopment of Bergstrom AFB. This methodology was employed because, although the disposal of the 324 acres will have few, if any, direct effects, future use and control of use of the entire base by others will create various indirect effects. Therefore, reasonable redevelopment scenarios are analyzed in this EIS to determine the potential direct and indirect environmental effects of Air Force and FAA decisions.

1.3 DISPOSAL PROCESS AND REUSE PLANNING

DBCRA requires compliance with NEPA (with some exceptions) in the implementation of the base closures and realignments. Among the issues that were excluded from NEPA compliance in DBCRA actions were:

- The selection of installations for closure or realignment; and
- Analysis of closure impacts.

The Air Force's goal is to dispose of its 324 acres of Bergstrom AFB property through transfer and/or conveyance to other government agencies, state or local governmental bodies, or private parties. The Proposed Action reflects the community's goal for base reuse, which is to convert the base to a municipal airport.

The Air Force has based its Proposed Action on conceptual plans developed by the City of Austin for the purpose of conducting the environmental analysis. The Air Force developed additional reasonable alternatives to provide the basis for a broad environmental analysis, thus ensuring that reasonably foreseeable impacts resulting from potential reuses have been identified and the decision-maker has multiple options regarding ultimate property disposition. Subject to the terms of transfer or conveyance, the recipients of the property and the local zoning authorities and elected officials will ultimately determine the reuse of the property. Three reasonable alternatives to the Proposed Action have been identified: an aviation reuse proposal, a nonaviation reuse proposal, and a No-Action Alternative that would not involve reuse.

The Secretary of the Air Force has discretion in determining how the Air Force will dispose of the 324 acres of government fee-purchased property. The Air Force must adhere to applicable laws, including General Services Administration (GSA) regulations (41 CFR 101-47) in accordance with DBCRA. The Services were authorized to issue additional regulations, if required, to implement their delegated authorities and the Air Force has issued such regulations (41 CFR 132). Another provision of DBCRA requires each of the Services to consult with the Governor, heads of local governments, or equivalent political organizations to consider any plan for the use of such property by the local community concerned. Accordingly, the Air Force is working with state authorities and the City of Austin to meet this requirement.

In some cases, compliance with environmental laws may delay the Air Force's final disposal of some areas of the base. Restrictions may be necessary to ensure protection of human health and to allow implementation of required remedial actions. Until property can be transferred by deed, the Air Force may execute interim or long-term leases to allow reuse to begin as quickly as possible. In these cases, the Air Force intends to dispose of leased property by converting leases to deeds at the earliest possible date.

Certain activities inherent in the development or expansion of an airport constitute federal actions that fall under the statutory and regulatory authority of the FAA. The FAA generally reviews these activities through the processing and approval of an Airport Layout Plan (ALP). Goals of the ALP review system are to (1) determine its effectiveness in achieving safe and efficient utilization of airspace, (2) assess factors affecting the movement of air traffic, and (3) establish conformance with FAA design criteria. The FAA approval action may also include other specific elements such as preparation of the *Airport Certification Manual* (Part 139); the *Airport Security Plan* (Part 107); the location, construction, or modification of an air traffic control tower, terminal radar approach control facility, other navigational and visual aids, and facilities; and establishment of instrument approach procedures.

Because of its involvement with the disposal of Bergstrom AFB, the FAA is serving as a cooperating agency in the preparation of this EIS. If surplus property is conveyed to a local agency for airport purposes, the FAA will be the federal agency that would enforce deed covenants requiring the property to be used for airport purposes. Additionally, the FAA may later provide airport improvement program grants to the airport sponsor (i.e., local agency taking title). The FAA also has special expertise and the legal responsibility to make recommendations to the Air Force for the disposal of surplus property for airport purposes. The Surplus Property Act of 1944 (50 U.S.C. Appendix 1622(g)) authorized disposal of surplus real and related personal property for airport purposes and requires the FAA to certify the property is necessary, suitable, and desirable for an airport.

In accordance with NEPA and FAA Orders 1050.1D, *Policies and Procedures for Considering Environmental Impacts* (U.S. Department of Transportation, Federal Aviation Administration 1988d), and 5050.4A, *Airport Environmental*

Handbook (U.S. Department of Transportation, Federal Aviation Administration 1985a), the potential environmental impacts of airport development must be assessed prior to commitment of federal funding. The FAA's objective is to enhance environmental quality and avoid or minimize adverse environmental impacts that might result from a proposed federal action in a manner consistent with the FAA's principal mission to provide for the safety of aircraft operations.

The FAA requires the preparation of an airport master plan, approval of an ALP, and a positive environmental finding prior to the commitment of any funding. If the reuse proponent has prepared only conceptual plans for the airport area, then only the conceptual plans can be assessed for potential environmental impacts. Once specific reuse plans are developed and approved, the FAA may use this document to assist in completing its NEPA requirements, supplementing it as necessary. The reuse proponent may then be eligible for substantial federal funding under the Airport Improvement Program.

1.4 ENVIRONMENTAL IMPACT ANALYSIS PROCESS

NEPA established a national policy to protect the environment and ensure that federal agencies consider the environmental effects of actions in their decision-making. The CEQ was authorized to oversee and recommend national policies to improve the quality of the environment. Subsequently, CEQ published regulations that described how NEPA should be implemented. The CEQ regulations encourage federal agencies to develop and implement procedures that address the NEPA process to avoid or minimize adverse effects on the environment. Air Force Regulation (AFR) 19-2, *Environmental Impact Analysis Process*, addresses implementation of NEPA as part of the Air Force planning and decision-making process.

NEPA, CEQ regulations, and AFR 19-2 provide guidance on the types of actions for which an EIS must be prepared. Once it has been determined that an EIS must be prepared, the proponent must publish a Notice of Intent (NOI) to prepare an EIS. This formal announcement signifies the beginning of the scoping period, during which the major environmental issues to be addressed in the EIS are identified. Following data collection and analysis, a Draft EIS (DEIS) is prepared, which includes the following:

- A statement of the purpose of and need for the action;
- A description of the proposed action and alternatives, including the no-action alternative;
- A description of the environment that would be affected by the proposed action and alternatives; and
- A description of the potential environmental consequences of the proposed action and alternatives.

The DEIS is filed with the Environmental Protection Agency (EPA), and is circulated to government agencies and the interested public for at least 45 days for review and comment. During this period, a public hearing is held so that the proponent can summarize the findings of the analysis and receive input from the affected public. At the end of the review period, all substantive comments received must be addressed. A Final EIS (FEIS) is then prepared that contains responses to comments as well as changes to the document, if necessary.

The FEIS is filed with the EPA and distributed in the same manner as the DEIS. Once the FEIS has been available for at least 30 days, the Air Force may publish its ROD for the action.

1.4.1 Scoping Process

The scoping process identified the significant environmental issues relevant to disposal and reuse and provided an opportunity for public involvement in the development of the EIS. The NOI to prepare an EIS for disposal and reuse of Bergstrom AFB was published in the *Federal Register* on October 9, 1991. Notification of public scoping was also made through local media as well as letters sent to federal, state, and local agencies and officials, and interested groups and individuals.

The scoping period for the disposal and reuse of Bergstrom AFB was from October 9, 1991, to January 2, 1992. A public scoping meeting was held on November 4, 1991, at the Lyndon Baines Johnson Library in Austin, Texas, to solicit comments and concerns from the general public on disposal and reuse of Bergstrom AFB. Approximately 37 people attended the meeting. Representatives of the Air Force presented an overview of the meeting's objectives, agenda, and procedures, and described the process and purpose for the development of a disposal and reuse EIS. In addition to verbal comments, written comments were received during the scoping process. These comments, as well as information from meetings with local officials and agencies, experience with similar programs, and NEPA requirements, were used to determine the scope and direction of studies/analyses to accomplish this EIS.

1.4.2 Public Comment Process

The DEIS was made available for public review and comment in January 1993. Copies of the DEIS were mailed to local libraries and provided to those requesting copies. The distribution list is contained in Appendix C. At a public hearing held on February 9, 1993, the Air Force presented the findings of the DEIS and invited public comments. All comments were reviewed and addressed, when applicable, and have been included in their entirety in this document. Responses to comments offering new or changes to data and questions about the presentation of data are also included. Comments simply stating facts or opinions, although appreciated, did not require specific responses. Chapter 9.0, Public Comments and Responses, more thoroughly describes the comment and response process.

1.5 CHANGES FROM THE DEIS TO THE FEIS

The text of this EIS has been revised, where appropriate, to make typographical corrections and minor editorial changes or to incorporate new information generated after the DEIS publication. The comments on the DEIS have been addressed in Chapter 9.0, and responses to comments indicate the relevant sections of the EIS that have been reviewed.

Based on more recent investigations, the following sections of the EIS have been updated:

- Section 4.4.4, Noise, has been revised to incorporate some minor changes in the assumptions used in modeling the military aircraft considered in the noise analysis. These changes resulted from verification of the assumptions used in the modeling analysis with 924th FG and Air Training Command (ATC) (at Randolph AFB, Texas) personnel. Changes to the assumptions suggested by the 924th FG and ATC involved slight revisions to the altitude, power setting, and airspeed profiles for the respective aircraft (i.e., 924th FG F-16s and ATC T-38s) for three flight tracks. The 924th FG and ATC personnel verified that all other aircraft profile and flight tracks assumptions used in the noise modeling were representative of the manner in which air operations are and would be conducted in the Bergstrom AFB airspace.

  In addition, a revision was also made to the number of nighttime 727Q15 and 737QN aircraft operations allocated to the proposed new runway (Runway 17L/35R) for 1997 (Appendix H, Table H-5a) to correct an error which resulted in an overprediction of the noise impact to the south of this runway in the DEIS analysis. Overall, these revisions resulted in minor changes to the number of acres exposed to DNL noise levels greater than 65 decibels (Table 4.4-7) and the DNL at five representative noise receptors listed in Table 4.4-8. Figures 4.4-7 through 4.4-14 have been changed to show the revised noise contours for each of the modeled years.

  Revisions to the number of persons located within the DNL 65, 70, and 75 dB contours were also made based on an evaluation of 1990 U.S. Census data for those census tracts within the delineated contours. These changes are presented in Table 4.4-7.

- The City of Austin provided the Air Force a list of 56 noise-sensitive receptors which they plan to consider in the Supplemental EIS. In this EIS (Section 4.4.4), 16 representative receptors are used to evaluate the noise impacts in terms of day-night average noise levels (DNLs) and sound exposure levels (SELs). These 16 representative locations cover all sensitive receptors likely to be affected by proposed aircraft operations at Bergstrom AFB. Only some outlying receptors listed by the City of Austin to the north and west of the base are not represented because they fall well outside the potential impact areas. Table 4.4-8a has been added to Section 4.4.4 showing correspondence between the sensitive receptors provided by the city and the representative receptors considered in this EIS. The location of sensitive receptors is shown on Figures 4.4-7 through 4.4-14 as background information.

- Section 4.4.6, Cultural and Paleontological Resources, has been revised to incorporate the results of survey and testing requested by the Texas State Historic Preservation Officer (SHPO) for sites 41TV435 and 41TV436. Test results have indicated that the sites are not eligible for the National Register of Historic Places and the SHPO has concurred with this conclusion. Additional documentation and information has been provided to the Texas SHPO on Building 3920, and a finding of no effect has been issued.

- On March 12, 1993, the Secretary of Defense submitted a list of military installations recommended for closures and/or realignment to the Defense Base Closure and Realignment Commission. This list included the realignment of all remaining military units at Bergstrom AFB (i.e., the 924th FG, Headquarters 10th Air Force, and the Ground Combat Readiness Center) to another installation. The Air Combat Command Regional Corrosion Control Facility was also recommended for closure. Realignment of these military units was contingent upon a final recommendation to be made to the President by the Base Closure and Realignment Commission by July 1, 1993, and acceptance of that recommendation by the President and subsequent approval by the Congress. On July 1, 1993, the Commission recommended to the President that the 704th Fighter Squadron (AFRES) with its F-16 aircraft and the 924th Fighter Group (AFRES) support units remain at the Bergstrom AFB cantonment area until at least the end of 1996. They also recommended the closure and relocation of the Regional Corrosion Control Facility at Bergstrom AFB by September 30, 1994, unless a civilian airport authority assumes the responsibility for operating and maintaining the facility before that date. Although not specifically mentioned in the Commission's recommendations, it is assumed that Headquarters 10th Air Force and the Ground Combat Readiness Center will remain at Bergstrom AFB at least until the end of 1996. The President accepted the Commission's recommendations and forwarded them to Congress on July 2, 1993.

  Because the Congressional action is still pending and the Commission's recommendations may be reviewed in 1996, the potential environmental impacts that could result from the realignment action are included in Section 4.6 of this document. A new section (Section 2.3.3) has also been added to Chapter 2.0 describing the changes that would occur to the Proposed Action and General Aviation/Air Cargo Airport Alternative.

1.6 ORGANIZATION OF THIS ENVIRONMENTAL IMPACT STATEMENT

This EIS is organized into a number of chapters and appendices. Chapter 2.0 includes a description of the Proposed Action and alternatives to the Proposed Action identified for reuse of Bergstrom AFB property. Chapter 2.0 also includes a review of alternatives eliminated from further consideration and identifies other, unrelated actions anticipated to occur in the region during the same time frame as the reuse activities, to be considered in the analysis of cumulative impacts. Finally, Chapter 2.0 provides a comparison of the Proposed Action and alternatives with respect to effects on the local community and the natural environment.

Chapter 3.0 includes a description of the affected environment under the baseline conditions of base closure, which provides a basis for analyzing the potential impacts of the Proposed Action and alternatives. When needed for analytical comparisons, a preclosure reference is provided for certain resource areas. It describes a point in time at or near the closure announcement, and depicts an active base condition. The results of the environmental analysis are presented in Chapter 4.0. Chapter 5.0 includes a list of individuals and organizations consulted during the preparation of the EIS; Chapter 6.0 provides a list of the document's preparers; Chapter 7.0 contains references; Chapter 8.0 contains an index; and Chapter 9.0 includes the public's comments and responses to those comments.

The following appendices are included in this document:

- Appendix A - a glossary of terms and acronyms/abbreviations used in this document;
- Appendix B - the NOI to prepare this disposal/reuse EIS;
- Appendix C - a list of individuals and organizations who were sent a copy of the FEIS;
- Appendix D - an Installation Restoration Program (IRP) bibliography;
- Appendix E - a description of the methods used to evaluate the impacts of base reuse on resources of the local community and the environment;
- Appendix F - permits held by Bergstrom AFB;
- Appendix G - the Air Force's policy on management of asbestos at closing bases;

- Appendix H - a detailed description of issues and assumptions related to noise impacts;

- Appendix I - an air emissions inventory for Bergstrom AFB; and

- Appendix J - influencing factors and environmental impacts by land use category.

1.7 RELATED ENVIRONMENTAL DOCUMENTS

The environmental documents listed below have been or are being prepared separately and address environmental issues at Bergstrom AFB. These documents provided supporting information for the environmental analysis.

- *Draft Environmental Impact Statement, Proposed Closure of Bergstrom Air Force Base, Texas* (U.S. Air Force 1990c);

- IRP documentation (see Appendix D);

- *Bergstrom AFB Feasibility Study, Final Report* (Murfee Engineering Company et al. 1990a); and

- *Preliminary Bergstrom AFB Feasibility Study, Inventory Report* (Murfee Engineering Company et al. 1990b).

1.8 FEDERAL PERMITS, LICENSES, AND ENTITLEMENTS

Federal permits, licenses, and entitlements that may be required by recipients of Bergstrom AFB property for purposes of redevelopment are presented in Table 1.8-1.

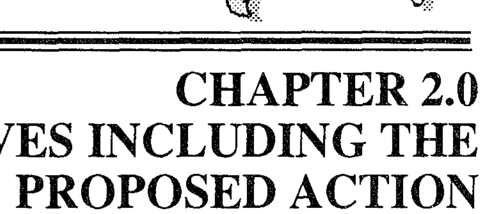
Table 1.8-1

Federal Permits, Licenses, and Entitlements Potentially Required for Reusers or Developers of Disposed Base Property

Federal Permit, License, or Entitlement	Typical Activity, Facility, or Category of Persons Required to Obtain the Federal Permit, License, or Entitlement	Authority	Regulatory Agency
Title V Permit under the Clean Air Act, as amended by the 1990 Clean Air Act Amendments	Any major source (source that emits more than 100 tons per year of criteria pollutants in a nonattainment area for that pollutant or is otherwise defined in Title I of Clean Air Act as a major source); affected sources as defined in Title IV of Clean Air Act; sources subject to Section 111 regarding New Source Performance Standards; sources of air toxics regulated under Section 112 of the Clean Air Act; sources required to have new source or modification permits under Parts C or D of Title I of Clean Air Act; and any other source designated by EPA regulations.	Title V of the Clean Air Act as amended by the 1990 Clean Air Act Amendments	EPA; Texas Air Control Board
National Pollutant Discharge Elimination System Permit	Discharge of pollutant from any point source into waters of the United States.	Section 402 of the Clean Water Act, 33 U.S.C. 1342; 40 CFR 122	EPA
	Stormwater discharges associated with industrial activity or from medium and large municipal separate storm sewer systems.	Section 402 of the Clean Water Act (added by Section 405 of the Water Quality Act of 1987), 33 U.S.C. 1342; 40 CFR 122	
Section 404 (Dredge and Fill) Permit	Any project activities resulting in the discharge of dredged or fill material into bodies of water, including wetlands, within the United States.	Section 404 of the Clean Water Act, 33 U.S.C. 1344	U.S. Army Corps of Engineers, in consultation with EPA; Texas Parks and Wildlife Department
Industrial Waste Discharge Permit	Discharge of industrial wastewater into a publicly owned treatment works.	Section 54 of the Clean Water Act, 33 U.S.C. 1251; 40 CFR 403	EPA; City of Austin

Table 1.8-1, Page 2 of 2

Federal Permit, License, or Entitlement	Typical Activity, Facility, or Category of Persons Required to Obtain the Federal Permit, License, or Entitlement	Authority	Regulatory Agency
Underground Injection Control Permit	Owners or operators of certain types of underground injection wells.	Section 1424 of the Safe Drinking Water Act, 42 U.S.C. 300h-3; 40 CFR 144	EPA; Texas Water Commission
Hazardous Waste Treatment, Storage, and Disposal (TSD) Facility Permit	Owners or operators of a new or existing hazardous waste TSD facility.	Section 3005 of the Resource Conservation and Recovery Act as amended, 42 U.S.C. 6925; 40 CFR 270	EPA; Texas Water Commission
EPA Manifest Identification Number	Generators or transporters (offsite) of hazardous waste.	40 CFR 262.12 (generators); 40 CFR 263, Subpart B (transporters)	EPA; Texas Water Commission
Antiquities Permit	Excavation and/or removal of archaeological resources from public lands or Indian lands and carrying out activities associated with such excavation and/or removal.	Archaeological Resource Protection Act of 1979, 16 U.S.C. 470cc	U.S. Department of the Interior, National Park Service
Endangered Species Act, Section 10 Permit	Taking endangered or threatened wildlife species; engaging in certain commercial trade of endangered or threatened species or removing such species from property subject to federal jurisdiction.	Section 10 of Endangered Species Act, 16 U.S.C. 1539; 50 CFR 17, Subparts C,D,F, and G.	U.S. Department of the Interior, Fish and Wildlife Service
Airport Operating Certificate	Operating a land airport serving any scheduled or unscheduled passenger operation of air carrier aircraft designed for more than 30 passenger seats.	Federal Aviation Act of 1958, 49 U.S.C. App. 1432.	U.S. Department of Transportation, Federal Aviation Administration



CHAPTER 2.0
ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 INTRODUCTION

This chapter describes the Proposed Action, reasonable alternatives to the Proposed Action, and the No-Action Alternative. Other alternatives that were identified but eliminated from further consideration are also briefly described. The potential environmental impacts of the Proposed Action and alternatives are summarized in Section 2.6.

In most instances, the Administrator of the General Services Administration has authority to dispose of excess and surplus real and personal property belonging to the federal government. With regard to base closures, however, the Defense Base Closure and Realignment Act (DBCRA) delegates the disposal authority of the Administrator to the Secretary of Defense. Federal Property Management Regulations (FPMR), which govern disposal methods associated with base closure, allow the Secretary of Defense to dispose of closure property by transfer to another federal agency, public benefit conveyance, negotiated sale to state or local government, and public sale by auction or sealed bid. These methods, or a combination of them, could be used to dispose of property at Bergstrom Air Force Base (AFB), Texas.

Based on considerations included in the original land transfer documents, completed when Bergstrom AFB was established in the 1940s, the City of Austin has claimed equitable interest in approximately 2,892 acres of the 3,216 acres comprising the base. It has been determined that the United States, acting through the Air Force, will surrender title to the land in question to the City of Austin when the base is closed. This surrender is subject to certain rights of the United States, such as retaining a cantonment area for the Air Force Reserve 924th Fighter Group (FG) and three other Air Force units. The disposal methods mentioned above are valid options in the disposal of four parcels of government fee-purchased land totaling approximately 324 acres.

Provisions of DBCRA and FPMR require the Air Force to first notify other Department of Defense (DOD) departments when portions of Bergstrom AFB are scheduled for disposal. Any proposals from these departments for the reuse of Bergstrom AFB are given priority consideration.

In addition, under provisions of FPMR implementing the Stewart B. McKinney Homeless Assistance Act (Public Law [P.L.] 100-77), the Air Force must report to the U.S. Department of Housing and Urban Development (HUD) all underutilized, unutilized, and/or excess buildings and land. HUD determines the suitability of those properties for use by homeless assistance providers. The Air Force will report to HUD that Bergstrom AFB will be "excess on or about September 1993." Announcement of the suitability of Bergstrom AFB excess property will be made in the *Federal Register*.

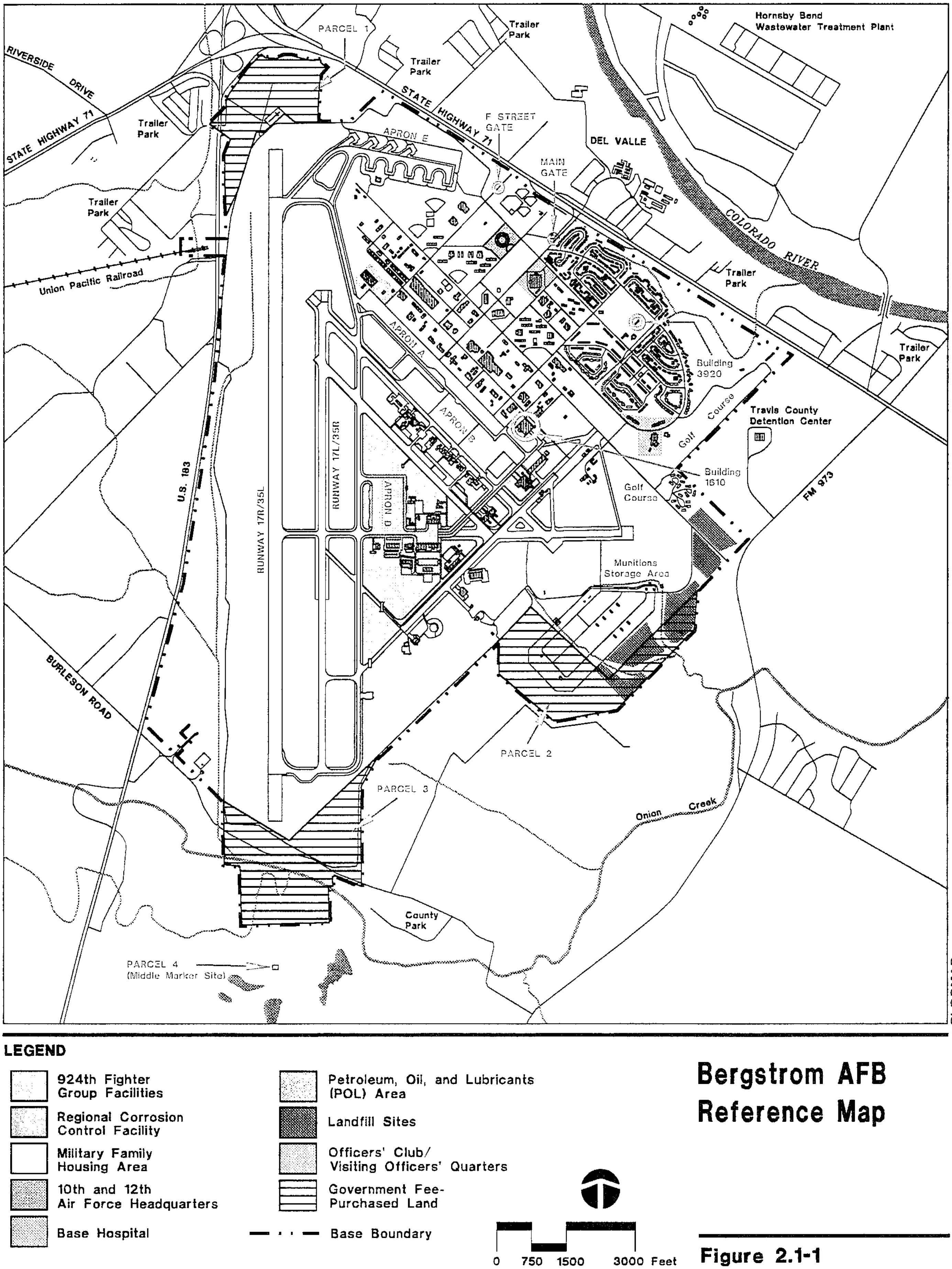
After publication of this notice, homeless assistance providers will have 60 days to make an expression of interest on suitable property to the Department of Health and Human Services (HHS) and to submit a lease application within 90 days. HHS is required to determine, within 25 days, the suitability of the homeless assistance provider. Homeless assistance providers determined to be suitable by HHS may be able to lease available property prior to closure of the base. The minimum term of such a lease is 1 year.

The Proposed Action analyzed in this Environmental Impact Statement (EIS) was developed based on the City of Austin's expressed interest in relocating its municipal airport to the base. Two reasonable alternatives to the Proposed Action (i.e., General Aviation/Air Cargo Airport Alternative and Mixed-Use Development Alternative) were developed by the Air Force to provide an analysis of a range of potential reuses of the base property should the relocation of commercial air carrier operations at the city's airport not occur.

In developing the Proposed Action and two alternatives, a number of specific factors were considered. As stated previously, title to up to 2,892 acres (excluding the land retained by the Air Force) will be surrendered to the City of Austin and the remaining 324 acres contained in the four parcels will be disposed of in accordance with federal regulations. Because Bergstrom AFB is located within the city limits of Austin, it was assumed that reuse of all base lands (excluding any government-retained land) would be subject to the land use and zoning requirements of the City of Austin, including the four government fee-purchased parcels (Figure 2.1-1). For the purpose of discussion in this EIS, the four parcels have been numbered (Parcels 1 to 4) as shown in Figure 2.1-1.

Current and projected market conditions in the Austin area and, in particular, the southeast Austin area, were considered to determine the types of future reuses that might occur with, and without, the relocation of the municipal airport to the base. The layout of existing base facilities, and their current and potential use, were also considered in the development of each reuse alternative. Demolition of some facilities would be required with the Proposed Action and could be required with each of the alternatives. In addition, various environmental factors were considered in designating specific land use types and potential reuses, particularly surface water features (including wetlands) on and near the base, and several old landfills in the southeast portion of the base (Figure 2.1-1).

The status of the Installation Restoration Program (IRP) (i.e., the Air Force program to identify, characterize, and remediate environmental contamination on its installations) at Bergstrom AFB was considered in developing the land use plans for the Proposed Action and two alternatives, specifically the effect that pending IRP remedial action decisions may have on the viability of reuses. IRP remedial actions at Bergstrom AFB may result in identifying possible lease/deed restrictions, or limiting reuse options or the timing of development to some degree (e.g., a temporary lease to allow access to specific sites such as monitoring wells may be required while the remainder of the site is



Bergstrom AFB Reference Map

Figure 2.1-1

developed for reuse). Reuses in areas with IRP sites need to be compatible with selected remedial actions; therefore, compatible land uses for areas containing IRP sites were considered in the development of the land use plan for each alternative.

Retention of four existing Air Force units (i.e., the 924th FG [including the 704th Fighter Squadron and its F-16 aircraft], Headquarters 10th Air Force, the Air Combat Command Regional Corrosion Control Facility [RCCF] [i.e., stripping and painting facility for aircraft], and the Air Force Reserve Ground Combat Readiness Center [GCRC]), which were authorized under DBCRA to remain at the base following closure, was also considered in the development of each reuse plan. Two of the units, the 924th FG and RCCF, require an operating airfield; therefore, retention of the four Air Force units was only considered in the aviation-related reuse proposals.

As described in Section 1.2, this EIS will support a decision by the Air Force on the size and location of an area(s) to be retained by the Air Force for the 924th FG and other Air Force units that would remain at the base. The Air Force Reserve's preferred location for a cantonment area for these units is an approximately 740-acre parcel in the south-central portion of the base that includes the existing 924th FG facilities, the Munitions Storage Area, the RCCF, and the Officers' Club and Visiting Officers' Quarters (Figure 2.1-1). The Air Force Reserve has also considered an alternative location in the north-central portion of the base that includes Apron E and the area south of this apron.

Because the city's proposed airport configuration (particularly the siting of the proposed new runway) would not be compatible with the Air Force Reserve's preferred location, the City of Austin has proposed locating the Air Force units in an area that includes the existing 924th FG facilities and land to the south and east of these facilities, including the RCCF. For the purpose of analysis in this EIS, the Air Force Reserve's preferred location for the cantonment area is considered as part of the General Aviation/Air Cargo Airport Alternative and the City of Austin's proposed location is considered as part of the Proposed Action. Because the Air Force Reserve's alternative location would generally be compatible with the city's proposed airport configuration, it is evaluated as an optional location under the Proposed Action.

The Proposed Action considered in this EIS is development by the City of Austin of a commercial air carrier airport, with construction of a parallel 9,000-foot runway with a 6,500-foot centerline-to-centerline separation from the existing 12,250-foot primary runway (Runway 17R/35L). A passenger terminal building complex and other aviation support facilities would be constructed between the two runways. For the construction of a new runway and associated facilities, the City of Austin may acquire approximately 917 acres south of the base. With the Proposed Action, the four Air Force units would remain in a government-retained area(s) of the base. New facilities would need to be constructed for the 924th FG, but the RCCF would remain in its current location. Compatible nonaviation reuses would include industrial, commercial, institutional (government/education), and recreation uses.

The General Aviation/Air Cargo Airport Alternative would use the existing runway and taxiway system for aviation operations other than air carrier. The four Air Force units would remain in a government-retained area of the base. With this alternative, the amount of land available for nonaviation reuse development would be greater than with the Proposed Action. Nonaviation reuses would include industrial, commercial, institutional (government/ education), residential, and recreation uses.

The Mixed-Use Development Alternative focuses on reuse of the base for entirely nonaviation functions, including industrial, commercial, institutional (government/education/medical), residential, and recreation uses. With this alternative, a large area of the base would be used for agriculture. The four Air Force units would not remain because there would not be an operating airfield with this alternative.

Each reuse plan is conceptual in nature, and represents generalized designations of potential future land uses, based on development opportunities provided by the existing facilities and current and projected market conditions. To analyze potential environmental impacts, various assumptions were made for each reuse proposal, including employment and population changes resulting from implementation of each reuse plan, the amount of ground disturbance anticipated for each land use type, transportation and utility effects of each proposal as a function of increased population growth resulting from proposed reuses, and anticipated phasing of the various elements of each reuse plan. Details regarding the development of these assumptions are presented in Appendix E, Methods of Analysis. Specific assumptions developed for individual reuse plans are identified in the discussions of each proposal in Sections 2.2 and 2.3.

In general, the results of the environmental analyses are presented in this EIS for the years 1994, 1997, 2002, and 2012, reflecting the first full year after base closure in September 1993, the current City of Austin planning schedule for the opening of the new commercial airport (1997), and subsequent 5- and 10-year intervals.

2.2 DESCRIPTION OF PROPOSED ACTION

Section 2905(b)(2)(E) of DBCRA requires the Secretary of Defense, as part of the disposal process, to consult with the applicable Governor, heads of local governments, and equivalent political organizations to consider any plan for the use of base property by the concerned local community. Air Force policy is to encourage timely community reuse planning by offering to use the community's plan for reuse or development of land and facilities as the Air Force's Proposed Action in the EIS. The Proposed Action considered in this EIS is the redevelopment of the Bergstrom AFB property by the City of Austin into an air carrier airport.

Background. The City of Austin has been pursuing a new site for an air carrier airport since the mid-1970s. Air carrier operations in the Austin area are located at Robert Mueller Municipal Airport (RMMA), northeast of the Austin central business district and approximately 6 miles north of Bergstrom AFB. In 1991, there were approximately 182,000 total operations at the airport, of which 62,665 were air carrier operations.

The airport is currently faced with two problems that restrict increased operational capability and expansion of the airport. The existing 7,270-foot-long runway does not allow some commercial and air cargo aircraft operations. Extending the runway to a length required to accommodate larger aircraft is restricted by the density of adjacent development. Adjacent development is also subjected to high levels of noise. Noise from aircraft operations has resulted in state-ordered mandates to mitigate area noise levels by 1995. The City of Austin must either implement extensive soundproofing measures and airport operational limitations, or relocate the airport.

The City of Austin was studying a site near Manor, Texas, east of Austin, for construction of a new airport when Bergstrom AFB was first announced for closure in January 1990. The potential availability of Bergstrom AFB for possible relocation of air carrier activities from RMMA resulted in the reorientation of studies from the Manor site to Bergstrom AFB. Bergstrom AFB was investigated in 1975 and 1981 for development of a joint-use (i.e., military-civilian) airport, but these plans were never carried forward.

Several planning studies concerned with various issues related to the closure and reuse of Bergstrom AFB as a municipal airport have been completed by the City of Austin. The largest of these efforts was the *Bergstrom AFB Feasibility Study* (Murfee Engineering Company et al. 1990a) prepared for the city in 1990 when the base was first considered for closure. This 60-day study focused on the feasibility of using Bergstrom AFB to establish a new commercial airport to serve the Austin metropolitan region into the next century.

These initial studies yielded favorable results, and when the base was designated for closure under DBCRA in 1991, the City of Austin hired an airport master planning consultant to develop alternative layout plans for redevelopment of Bergstrom AFB as an air carrier airport. If Federal Aviation Administration (FAA) needs and development criteria are met, substantial federal funding would be available to support development of the base as an air carrier airport. One of the FAA's particular areas of interest, related to the potential relocation of air carrier service to Bergstrom AFB, has been the need to provide for additional operational capacity above the existing capacity at RMMA.

Various options for the physical layout of a new air carrier airport at Bergstrom AFB have been analyzed. Preliminary base reuse plans developed by the city's planning consultant in June 1992 identified 12 potential airfield layout alternatives, ranging from reuse of the two existing runways to construction of two new diagonal runways east of the primary runway. A primary element in each alternative was the potential to increase runway capacity by improving an existing runway on the base and/or constructing a new runway(s) to accommodate the forecasted 250,000 annual aircraft operations through the year 2012.

The City of Austin narrowed the possible options to four recommended concepts in August 1992 and selected a preferred alternative in November 1992. The city's preferred alternative is construction of a new 9,000-foot parallel runway with an approximately 6,700-foot centerline separation from the existing 12,250-foot primary runway, although the exact location of the runway is still to be determined (i.e., runway separation may be plus or minus 100 to 200 feet). The final runway alignment will be based on a goal of preserving several existing buildings on the base, particularly Building 1610 (Figure 2.1-1), a large aircraft maintenance hangar, and avoiding the landfill sites in the southeastern portion of the base. Submittal of a final Airport Layout Plan to the FAA by the city is not anticipated until early 1993. A voter referendum scheduled for May 1993 will determine citizen support for redevelopment of Bergstrom AFB by the city as an air carrier facility to replace the existing RMMA.

Because of the schedule for the city's planning efforts, the Proposed Action described in this EIS is based on the latest planning studies available prior to the publication of this EIS, regarding the proposed layout of facilities for development of a civilian air carrier airport at Bergstrom AFB. For the purpose of analysis in this EIS, the Proposed Action is based on the city's preferred alternative; however, the runway separation analyzed for the Proposed Action is 6,500 feet, which would completely avoid the landfill sites in the southeast portion of the base. Movement of the runway centerline by 100 to 200 feet may still be possible without disturbing the landfills. This runway configuration is not compatible with the Air Force Reserve's preferred location of the government-retained land for the Air Force units that will remain following base closure, but would generally be compatible with the Reserve's alternative location in the north-central portion of the base.

A supplemental EIS, based on the final Airport Layout Plan for an air carrier airport at Bergstrom AFB, will be prepared by the FAA. The FAA EIS will be tiered off of this EIS, in accordance with the Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (NEPA) (40 CFR 1502.20) and FAA Order 5050.4A. Tiering is a procedure that allows an agency to avoid duplication of effort by referencing the general discussions and relevant specific discussions from an EIS of broader scope into an EIS of more specific scope. The FAA EIS will include a more detailed evaluation of the specific environmental impacts that could result with construction and operation of an air carrier airport at Bergstrom AFB, based on the final Airport Layout Plan submitted to the FAA by the City of Austin.

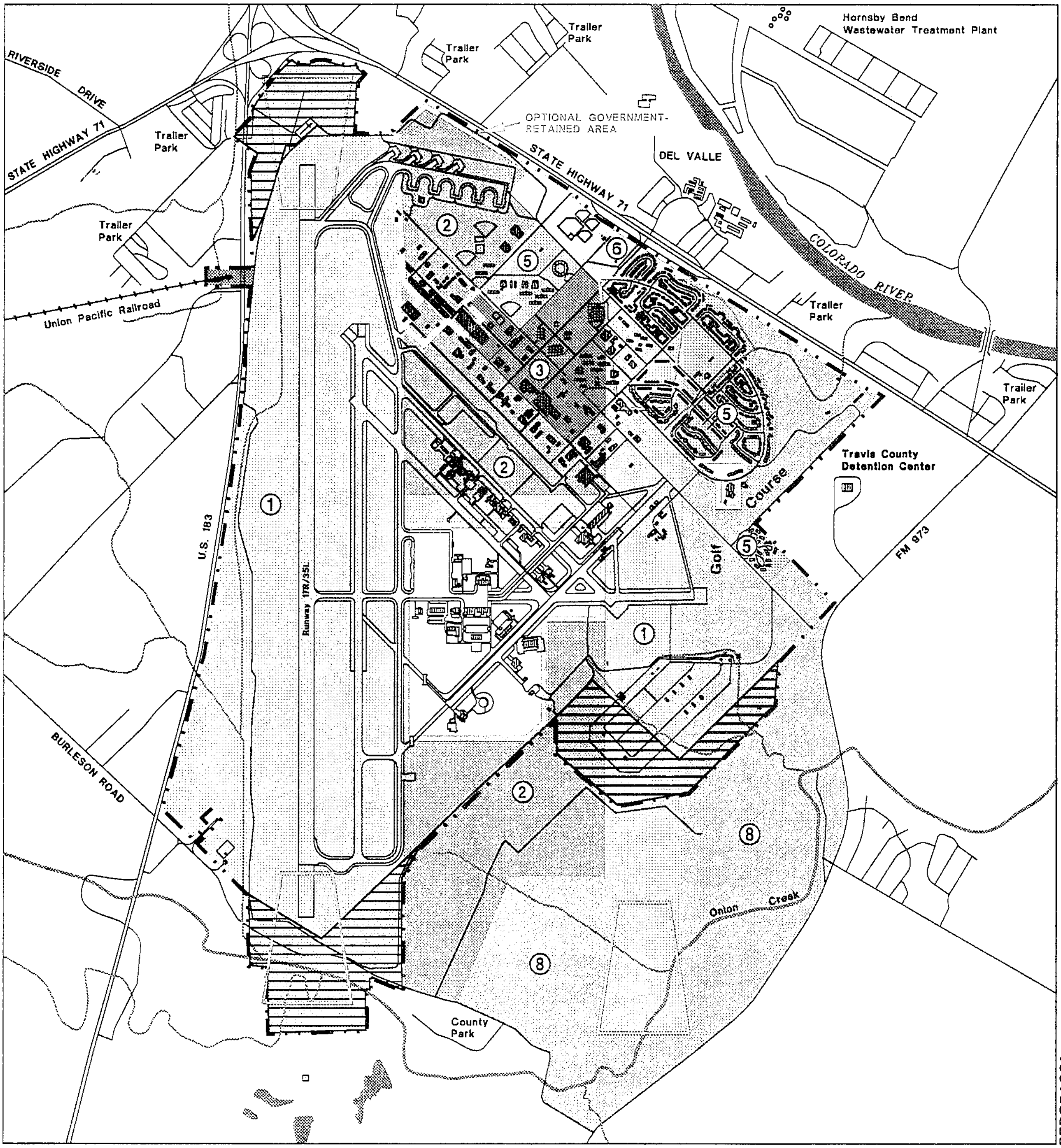
Proposed Action. The Proposed Action is based on an air carrier airport with dual instrument flight rules (IFR) capability between two parallel runways (i.e., capability to conduct simultaneous approaches to the runways) (Figure 2.2-1). Dual IFR capability, as defined by FAA criteria, requires a minimum runway separation of 4,300 feet (centerline-to-centerline). Construction of a new runway, 6,500 feet (centerline-to-centerline) from the existing 12,250-foot primary runway and 5,500 feet from the existing 6,700-foot secondary runway, would provide this capability. The new runway would be located toward the south, so the north runway protection zone (RPZ) would be within the base property and not cross Texas State Highway 71.

The Proposed Action is also based on the assumption that RMMA will be closed and all of its aviation activity relocated to Bergstrom AFB (i.e., air passenger, air cargo, general aviation, and military). The area between the two parallel runways would allow reuse of existing, and development of new, aviation support facilities, including terminal facilities, automobile parking, hangar and maintenance facilities, and areas for the 924th FG, Headquarters 10th Air Force, RCCF, GCRC, and the Texas Army National Guard (ANG). The Texas ANG would be relocated from RMMA. Industrial, commercial, institutional (government/education), and recreation uses would be located adjacent to the aviation-related uses. These uses would be compatible with and support the primary reuse of the base as an air carrier airport. It was assumed that RMMA would be converted to industrial, commercial, and institutional uses (see Chapter 4.0, Section 4.5).

A 300-acre area between the parallel runways would be retained by the Air Force as a cantonment area for the 924th FG and other Air Force units that will remain following base closure. This area includes the existing 924th FG area and the RCCF. The 924th FG would initially use several facilities dispersed throughout the developed portion of the base, but these activities would be relocated to the cantonment area as new facilities are constructed. Initially, the Air Force would also retain a 10-acre area east of the new runway that includes the Officers' Club and Visiting Officers' Quarters (Figure 2.2-1). Eventually, replacement facilities would be built within the main cantonment area.

As an option to this cantonment area, the Air Force may retain an approximately 200-acre area in the north-central portion as a cantonment area for the Air Force units (Figure 2.2-1). This option would require the construction of additional aircraft parking apron space and a complete aircraft maintenance complex. The 10-acre area east of the new runway would not be retained. With this option, aviation support land uses designated for this area on Figure 2.2-1 would be located in the south-central portion of the base.

The total acreage for each land use designated for the Proposed Action at full buildout is summarized in Table 2.2-1. Construction of the new runway and associated aviation support facilities may require acquisition by the City of Austin of approximately 917 acres of private land adjacent to the southern boundary of the base. Government fee-purchased land to be disposed of by the Air Force is designated for airfield, aviation support, and recreation uses (Figure 2.2-1). Parcel 4, the middle marker site, is designated for airfield use.



LEGEND

① Airfield	⑤ Institutional (Government)	⑨ Agriculture *	Cemetery
② Aviation Support	⑥ Commercial	⑩ Vacant Land *	Runway Protection Zone
③ Industrial	⑦ Residential *	Government-Retained Land	
④ Institutional * (Medical)	⑧ Public/ Recreation	Government Fee-Purchased Land	

0 750 1500 3000 Feet

Base Boundary

*Not Applicable

Proposed Action [Air Carrier Airport]

Figure 2.2-1

Table 2.2-1

Land Use Acreage - Proposed Action

Land Use	Acreage Onbase	Acreage Offbase
Airfield	1,626	149
Aviation Support	512	367
Industrial	122	0
Institutional (Government/Education)	173	0
Commercial	141	0
Residential	0	0
Public/Recreation	332	401
Agriculture	0	0
Subtotal	2,906	917
Government-Retained Land	**310**	**0**
Total:	**3,216**	**917**

Information used to develop the Proposed Action was obtained from the City of Austin and its master planning consultant. The following data were provided by the City of Austin:

- Projected commercial and general aviation flight operations and fleet mixes through 2012; and

- Fleet mix involving 30 percent Stage 2 aircraft operations (e.g., B-727-200) and 70 percent Stage 3 aircraft operations (e.g., MD-80) in 1997, with complete conversion to the quieter Stage 3 aircraft by 2002, as required by FAA regulations (U.S. Department of Transportation, Federal Aviation Administration 1988c).

Because some data were not available from the City of Austin for the Proposed Action, for the purpose of this analysis, assumptions were made for the following:

- Layout and acreage totals for the proposed land uses;

- Extent of construction/demolition activities required;

- Acreage of ground disturbance resulting from construction/demolition activities;

- Employment and population projections through 2012 for the Austin area and Travis County;

- Traffic generation and daily trip projections through 2012;

- Proposed transportation improvements;
- Utility requirement projections through 2012; and
- Phasing plans for reuse of Bergstrom AFB through 2012.

The amount of development for each land use category assumed to occur with the Proposed Action, including existing facility demolition and retention and new facility construction, is summarized in Table 2.2-2. With the Proposed Action, approximately 1.25 million square yards of airfield pavement (i.e., runways, taxiways, and parking aprons) would be retained and approximately 0.4 million square yards would be constructed. The acreage for each type of land use category assumed to be disturbed by construction of facilities, infrastructure improvements, or other operational activities is presented in Table 2.2-3 for the three phases of development analyzed in this EIS.

Table 2.2-2

Facility Development - Proposed Action

	Building Floor Space (in thousands of square feet)		
Land Use	**Existing Facility Demolition[1]**	**Existing Facility Retention[2]**	**New Facility Construction**
Airfield	841	0	0
Aviation Support	112	352	1,325[3]
Industrial	214	697	599
Institutional	502	359	1,166
Commercial	48	0	983
Public/Recreation	12	44	0

Notes: [1]Square footage of facilities that would be demolished within each designated land use area.
[2]Includes only facilities over 1,000 square feet in area.
[3]Includes construction of approximately 100,000 square feet of new facilities for 924th FG and other Air Force units. With the optional cantonment area, approximately 50,000 additional square feet of construction would be required.

Table 2.2-3

Acres Disturbed By Phase - Proposed Action

Land Use	1994-1997	1997-2002	2002-2012	Total
Airfield	710	0	0	710
Aviation Support	525	140	125	790
Industrial	20	25	15	60
Institutional	20	80	20	120
Commercial	20	30	55	105
Public/Recreation	0	15	15	30
Total:	**1,295**	**290**	**230**	**1,815**

Construction of the new runway and related airfield pavements, and associated airport facilities, including the passenger terminal complex, new facilities for the 924th FG and Texas ANG, and some general aviation and air cargo facilities, would occur between 1994 and 1997. It is anticipated that the air carrier airport with dual IFR capability would be operational by late 1997. Construction of industrial, commercial, institutional, recreation, and additional airport facilities would occur throughout the analysis period. Proposed reuses identified for the Proposed Action are discussed in the following sections.

2.2.1 Airfield

The airfield land use category includes 1,775 acres (1,626 acres on the base and 149 acres off the base) and consists of the runways, taxiways, RPZs, and control tower (Figure 2.2-1). The airfield would be used primarily for commercial passenger and general aviation aircraft. Air cargo and military operations would comprise a small percentage of the overall airfield use.

With the Proposed Action, the existing runway and taxiway system in the western part of the base would be incorporated into the airfield layout, and a new 9,000-foot runway would be constructed 6,500 feet east of the 12,250-foot primary runway (Runway 17R/35L). The area proposed for the new parallel runway, associated taxiway system, and required safety areas (e.g., RPZs) includes a portion of the military family housing area, Munitions Storage Area, the base vehicle maintenance complex, the Small Arms Range, and various administrative, medical, recreation, and dormitory facilities. Construction of the new runway would require the demolition of these facilities. The southern part of the runway would be located on land outside the base boundary that is currently used for agriculture.

A conceptual plan for the civilian use of aviation facilities at Bergstrom AFB will be developed and provided in an Airport Layout Plan, to be submitted by the City of Austin to the FAA in accordance with FAA Advisory Circular YI150/5300-13-40, *Airport Design* (U.S. Department of Transportation, Federal Aviation Administration 1989). The plan will include a layout of the elements (e.g., dimensions, separations, and clearances) of the airfield to allow operation of all commercial aircraft. The airfield, as currently designed, is capable of handling widebody aircraft, such as the Boeing 747.

The following airfield improvements would be required for precision/non-precision runway use, and would be constructed in accordance with FAA advisory circulars, standards, and recommendations:

- Reuse of existing Runway 17R/35L as a 12,250-foot by 150-foot runway with 1,000-foot paved overruns at each end. The existing 300-foot-wide runway would be striped at 150 feet, with the remainder utilized as paved shoulders.

- Construction of a new Runway 17L/35R with a 6,500-foot centerline-to-centerline separation from existing Runway 17R/35L. The new runway would be 9,000 feet long and 150 feet wide, with 35-foot-wide shoulders.

- Construction of a taxiway system incorporating portions of the existing (both active and inactive) taxiway system. Most taxiways would be 75 feet wide, with 35-foot paved shoulders. Two parallel cross-taxiways would be constructed, north of the government-retained area, to connect the parallel runways and provide access to the terminal area. Construction of the cross-taxiways would require demolition of facilities on the southwest side of Apron B.

- Taxiways parallel to existing Runway 17R/35L and new Runway 17L/35R would be constructed with a 600-foot centerline separation to the east and west of the runways, respectively. Existing Runway 17L/35R would be converted to a second parallel taxiway for Runway 17R/35L. This runway is 150 feet wide and 6,700 feet long, with displaced thresholds, although the pavement is actually 10,000 feet long. Reuse of this runway as a taxiway would require strengthening the entire 10,000 feet. The taxiway network would also include a series of angled high-speed and right-angled exit taxiways.

- Establishment of RPZs at the ends of the runways, in accordance with FAA airport design criteria.

- Installation of appropriate instrumentation, lighting, pavement markings, signage, and other visual aids, in accordance with FAA criteria. Existing Runway 17R/35L and new Runway 17L/35R would be equipped with instrument landing systems (ILSs). The ILSs would include a localizer, glide slope, approach light system, and middle and outer marker facilities.

The annual estimated capacity (i.e., annual service volume) of the airfield with the new parallel runway is estimated at 514,000 aircraft operations. Projected annual operations were generated for four overall categories: air carrier, air taxi (commuter), general aviation, and military. Air cargo operations are included in the air carrier, air taxi, and general aviation categories. The military category includes operations associated with the 924th FG, Texas ANG, and transient military aircraft associated with Headquarters 10th Air Force, the RCCF, and Air Training Command (ATC) T-37/T-38 aircraft using the airfield for training flights. An operation is defined as one landing, one takeoff, or touch-and-go (i.e., closed pattern).

Projected annual operations for 1994, 1997, 2002, and 2012 are presented in Table 2.2-4. Only military operations involving the 924th FG and transient military aircraft and air cargo operations would occur in 1994. Air passenger (i.e., air carrier and air taxi) operations would result in an estimated 2.7 million enplaned passengers by 1997, increasing to 3.3 million by 2002, and 4.9 million by 2012. The total volume of enplaned air cargo (i.e., freight and mail) is projected to be approximately 20,400 tons by 1997, 24,600 tons by 2002, and 35,700 tons by 2012.

Based on the projected annual operations (Appendix H), approximately 85 percent of operations in 1994 would occur during the daytime hours (7 a.m. to 10 p.m.) and 15 percent during nighttime hours (10 p.m. to 7 a.m.). In 1997, 2002, and 2012, 95 percent of operations were assumed to occur during daytime hours and 5 percent during nighttime hours. It was also assumed that 65 percent of the air passenger and air cargo operations would occur on existing Runway 17R/35L and 35 percent on new Runway 17L/35R. It was assumed that 95 percent of general aviation operations would occur on new Runway 17L/35R and 5 percent on existing Runway 17R/35L. Military aircraft operations would be conducted only on Runway 17R/35L. Based on prevailing wind conditions, it was assumed that approximately 30 percent of departures would be to the north, and 70 percent to the south, for both runways.

2.2.2 Aviation Support

The proposed aviation support area includes two areas totaling 879 acres (512 acres on the base and 367 acres off the base) between the existing and proposed runways and north and south of the parallel cross-taxiways. Land uses in these areas would be compatible with and support the primary reuse of the base as an air carrier airport. The northern area includes aircraft parking aprons (i.e., Aprons A, B, D, and E) (Figure 2.1-1), hangar and other flightline facilities, various warehousing and other industrial facilities, and several recreation fields.

The area south of the proposed cross-taxiways and the government-retained land includes several industrial and administrative buildings and the fire-fighter training area. Depending on the location selected for construction of the airport-related facilities, demolition of some facilities in these areas would be required.

The City of Austin has considered various design concepts and locations for construction of a passenger terminal complex, which will include a terminal building and concourses, associated aircraft parking aprons, automobile parking areas, rental car facilities and parking, and access roads. The passenger terminal and concourses would cover approximately 335,000 square feet, with the capability to expand to more than 500,000 square feet. The city's proposed location for the passenger terminal complex is centered around Apron B north of the cross-taxiways.

Table 2.2-4

Projected Flight Operations - Proposed Action

Year	Operations	Function	%	Fleet Mix	Annual Operations
1994	Air Cargo		6	B-727/B-737/DC-8/DC-9	1,248
			26	Single-Engine Turboprop	5,110
	Military (Fixed-Wing)	924th FG	45	F-16	9,000
		Transient	<1	F-16/F-15/A-10/KC-135	180
		Transient (ATC)	22	T-37/T-38	4,324
				Total:	**19,862**
1997	Air Passenger	Air Carrier	35	B-727/B-737/B-757/B-767/DC-8/ DC-9/DC-10/MD-11/MD-80/MD-88	72,237
		Air Taxi	6	Multi-Engine Turboprop	11,680
			<1	Multi-Engine Piston Prop	1,460
	Air Cargo		1	B-727/B-737/B-757/B-767/ DC-8/DC-9/MD-80	2,223
			<1	Multi-Engine Turboprop	1,460
			2	Single-Engine Turboprop	5,110
	General Aviation		23	Single-Engine Piston Prop	47,450
			8	Multi-Engine Piston Prop	16,790
			<1	Single-Engine Turboprop	730
			8	Multi-Engine Turboprop	16,060
			6	Business Jet	11,680
	Military (Fixed-Wing)	924th FG	4	F-16	9,000
		Transient	<1	F-16/F-15/A-10/KC-135	180
		Transient (ATC)	2	T-37/T-38	4,324
		Texas ANG	<1	Multi-Engine Turboprop (C-12)	1,560
		Texas ANG	<1	Single-Engine Piston Prop (T-34)	1,560
	Military (Helicopter)	Texas ANG	2	AH-1F/OH-58/UH-1A/UH-60	3,120
				Total:	**206,624**
2002	Air Passenger	Air Carrier	39	B-737/B-757/B-767/DC-9/ DC-10/MD-11/MD-80/MD-88	84,983
		Air Taxi	6	Multi-Engine Turboprop	13,140
			<1	Multi-Engine Piston Prop	1,460
	Air Cargo		1	B-757/B-767/DC-9/MD-80	2,617
			1	Multi-Engine Turboprop	2,190
			2	Single-Engine Turboprop	5,110
	General Aviation		20	Single-Engine Piston Prop	43,800
			7	Multi-Engine Piston Prop	16,060
			<1	Single-Engine Turboprop	730
			8	Multi-Engine Turboprop	16,790
			6	Business Jet	13,140
	Military (Fixed-Wing)	924th FG	4	F-16	9,000
		Transient	<1	F-16/F-15/A-10/KC-135	180
		Transient (ATC)	2	T-37/T-38	4,324
		Texas ANG	<1	Multi-Engine Turboprop (C-12)	1,560
		Texas ANG	<1	Single-Engine Piston Prop (T-34)	1,560
	Military (Helicopter)	Texas ANG	1	AH-1F/OH-58/UH-1A/UH-60	3,120
				Total:	**219,764**

Table 2.2-4, continued

Year	Operations	Function	%	Fleet Mix	Annual Operations
2012	Air Passenger	Air Carrier	45	B-737/B-757/B-767/DC-9/ DC-10/MD-11/MD-80/MD-88	115,431
		Air Taxi	7	Multi-Engine Turboprop	16,790
			<1	Multi-Engine Piston Prop	1,460
	Air Cargo		1	B-757/B-767/DC-9/MD-80	3,559
			2	Multi-Engine Turboprop	4,380
			2	Single-Engine Turboprop	5,110
	General Aviation		16	Single-Engine Piston Prop	40,150
			6	Multi-Engine Piston Prop	16,060
			<1	Single-Engine Turboprop	730
			7	Multi-Engine Turboprop	17,520
			5	Business Jet	13,870
	Military (Fixed-Wing)	924th FG	4	F-16	9,000
		Transient	<1	F-16/F-15/A-10/KC-135	180
		Transient (ATC)	2	T-37/T-38	4,324
		Texas ANG	<1	Multi-Engine Turboprop (C-12)	1,560
		Texas ANG	<1	Single-Engine Piston Prop (T-34)	1,560
	Military (Helicopter)	Texas ANG	1	AH-1F/OH-58/UH-1A/UH-60	3,120
				Total:	**254,804**

With construction of a passenger terminal complex north of the taxiways, many of the buildings surrounding Aprons A and B would be demolished. General aviation would be located in the area south of the cross-taxiways and west of the new runway, requiring the construction of aircraft parking aprons and support facilities (e.g., hangars, offices, and terminals). General aviation activities would include Fixed-Base Operator and Texas State Aircraft Pooling Board (i.e., aircraft motor pool) operations.

New facilities, including new aircraft parking aprons, would be constructed in the northern portion of this area (centered around Aprons E and A, respectively) for the Texas ANG and air cargo operations. Demolition of some existing facilities would be required, although many existing facilities would be reused. Various warehouse and administrative facilities could be reused to support FAA, air cargo, in-flight catering, aircraft maintenance, and U.S. Postal Service activities. The existing fuel farm (i.e., petroleum, oil, and lubricants [POL] area) would be reused to support the airfield operations.

2.2.3 Industrial

A total of 122 acres in the central portion of the developed area are proposed for industrial uses such as light industrial, research and development, and warehousing. This area includes the base hospital, base chapel, several dormitories and administrative buildings (e.g., the base personnel office and wing headquarters), and the base commercial center, consisting of the base exchange, commissary, theater, bank, and credit union.

It was assumed that the base exchange and commissary would be reused for warehousing or light industrial activities, and the administrative-type buildings would be reused for research and development facilities. It was also assumed that the multistory base hospital and several of the dormitories in the eastern portion of this area would be demolished because of their proximity to the airfield. Construction of new facilities would also be required.

2.2.4 Institutional (Government/Education)

Government/education uses are planned for three parcels totaling 173 acres east and west of the new 9,000-foot runway. These areas are proposed for development of a state and/or local government office complex and aviation-related training and vocational education facilities. The area west of the new runway includes the Headquarters 12th and 10th Air Force building and several dormitories and other administrative buildings. Most of the buildings in this area would be reused. The two areas in the eastern portion of the base include a large portion of the existing military family housing area, the child care and youth centers, and several recreation facilities. Most structures in these areas would be demolished or relocated off the base.

2.2.5 Commercial

A total of 141 acres in the northern portion of the base, near the existing entrance gates and adjacent to State Highway 71, are proposed for commercial reuses, including administrative-type offices and retail establishments, to provide services compatible with airport activities. This area includes a portion of the military family housing area and several recreation fields. The military family housing units would be demolished or relocated off the base.

2.2.6 Public/Recreation

A total of 733 acres are proposed for public/recreation uses. The 210-acre area in the far eastern portion of the base, which includes the existing 18-hole golf course, is proposed to be reused as a golf course. A 100-acre area south of the golf course, which includes the eastern half of the Munitions Storage Area and several old landfill sites, would be left as open space/parkland, or developed as additional golf facilities (e.g., driving range or additional golf holes) or recreation fields. Approximately 400 acres of private land, south of the base boundary, are proposed for recreation/open space uses, because of the riparian nature of this area (transected by Onion Creek and several tributaries) and its proximity to the new runway.

2.2.7 Government-Retained Land

With the Proposed Action, a 300-acre area between the parallel runways and south of the cross-taxiways would be retained by the Air Force as a cantonment area for the 924th FG and other Air Force units that would remain following base closure (Figure 2.2-1). This area includes most of the facilities currently used by the 924th FG and the RCCF. As stated previously, the 924th FG would initially use several facilities dispersed throughout the developed portion of the base, but these activities would be relocated to the cantonment area as new facilities are constructed. New facility construction would include a supply warehouse and some administrative buildings and industrial shops. In addition to the 300-acre area, the Air Force would also retain a 10-acre area that includes the Officers' Club and Visiting Officers' Quarters until replacement facilities are constructed.

As an option to this cantonment area, the Air Force may retain an approximately 200-acre area in the north-central portion as a cantonment area for the Air Force units (Figure 2.2-1). With this option, a number of existing facilities would be reused, including several administrative buildings, the civil engineering complex, a portion of the POL area, various warehouse facilities, and two dormitories. This option would require the construction of additional aircraft parking apron space and a number of facilities, including a complete aircraft maintenance complex. The 10-acre area containing the Officers' Club would not be retained.

2.2.8 Employment and Population

Approximately 15,855 direct (full-time) jobs are expected to be generated by 2012 with the Proposed Action. In addition, employment with the Proposed Action would include approximately 1,720 part-time jobs associated with the Air Force Reserve and Texas ANG. Approximately 5,285 secondary jobs would be generated by 2012 in Travis County as a result of base reuse. A peak of approximately 900 direct, short-term, construction-related jobs would be generated in 1995.

Much of the employment generated by base reuse, particularly for aviation support and institutional reuses, would result from the relocation of existing jobs within the Austin area. Most of the aviation-related jobs would be filled by people who transfer from existing jobs at RMMA (estimated at 1,700 in 1992). Estimated full- and part-time employment at closure, and in 1997, 2002, and 2012 with reuse, is presented in Table 2.2-5. Employment related to base reuse is expected to result in the inmigration of 6,460 persons into Travis County by 2012.

2.2.9 Transportation

Vehicular access to the air carrier airport would be provided primarily via U.S. 183 and State Highway 71. A number of roadway improvements have been identified by the State of Texas, Travis County, and the City of Austin, which would accommodate airport access and circulation requirements at the airport through the year 2012. Access to the northern portion of the base, including the terminal area, would be provided by State Highway 71 via the existing entrances (F Street and Presidential Boulevard). Widening of this roadway by two additional lanes, and construction of a four-level directional interchange at the intersection of U.S. 183 and State Highway 71, are already planned by the Texas Department of Transportation.

Table 2.2-5

Reuse-Related Employment and Population - Proposed Action

	1994	1997	2002	2012
Employment				
Construction	603	603	0	0
Direct - Full-Time				
Relocated	426	4,352	8,645	9,415
New	346	1,942	3,944	6,439
Direct - Part-Time				
Relocated*	1,000	1,500	1,500	1,500
New	0	217	217	217
Secondary	1,912	3,452	3,397	5,284
Population Increase	496	568	1,964	6,460

Note: *Includes part-time Air Force Reserve personnel currently at Bergstrom AFB and Texas ANG personnel at RMMA.

Depending on the final layout of facilities, some improvements to the existing Bergstrom AFB road system would be required to improve circulation. Widening of Presidential Boulevard to a four-lane, divided access road would be required to provide access to the proposed passenger terminal complex area. Access to the area east of the new runway could be provided off State Highway 71 or via Farm to Market Road (FM) 973 and Third Street on Bergstrom AFB. Access to the southern portion of the airfield would be provided via Burleson Road. A new access road would need to be constructed between the two runways from Burleson Road to provide access to this area.

Based on proposed land uses and employment projections, the average daily vehicular traffic to and from the base property generated with the Proposed Action would be approximately 56,820 trips by 2012.

2.2.10 Utilities

By 2012, the projected reuses of Bergstrom AFB, and associated population increases in the region surrounding the base, would generate the following increases in utility demands over projected closure conditions:

- Water - 0.76 million gallons per day (MGD), or an increase of approximately 0.5 percent;
- Wastewater - 0.56 MGD, or an increase of approximately 0.4 percent;

- Solid waste - 24.14 tons per day, or an increase of 0.8 percent;

- Electricity - 0.29 million kilowatt-hours (kWh) per day, or an increase of 0.7 percent; and

- Natural gas - 1.20 million cubic feet (MMcf) per day, or an increase of about 3.1 percent.

Proposed reuses associated with the Proposed Action would generate the following onsite utility demands by 2012:

- Water - 0.11 MGD;

- Wastewater - 0.08 MGD;

- Solid waste - 7.99 tons per day;

- Electricity - 0.22 million kWh per day; and

- Natural gas - 0.83 MMcf per day.

No major utility system improvements have been identified for the Proposed Action.

2.3 DESCRIPTION OF ALTERNATIVES

Two comprehensive reuse alternatives, as well as the No-Action Alternative, have been identified for analysis and are described in this section. One of the comprehensive alternatives involves aviation-related reuse of Bergstrom AFB, while the other consists of entirely nonaviation reuses. No acquisition of land outside the base boundary would be required with either alternative. Both alternatives maintain the same land use designations for several areas of the base that were identified for the Proposed Action, including some areas designated for commercial and institutional (government/education) uses, and the existing base golf course. With these two alternatives, portions of the existing military family housing area would be retained for residential uses.

2.3.1 General Aviation/Air Cargo Airport Alternative

As with the Proposed Action, the base airfield and supporting facilities would be converted to civilian aviation-related reuses. The primary difference between the Proposed Action and this alternative is that a new runway would not be constructed and only general aviation, air cargo, and military operations are proposed. Commercial air operations would not relocate to Bergstrom AFB from RMMA. However, air cargo, general aviation, and Texas ANG operations would relocate to the base. The 924th FG and RCCF would remain in their current location, but with an expanded cantonment area.

Without construction of a new runway, the amount of land designated for airfield use is reduced to approximately 1,300 acres. No land outside the base boundary would need to be acquired. The area designated for aviation support would be reduced to about 520 acres. Nonaviation uses would include industrial, institutional (government and education), commercial, residential, and recreation.

A 742-acre area would be retained by the Air Force as a cantonment area for the 924th FG and the three other Air Force units. This area would include the RCCF. The 924th FG would initially use several facilities dispersed throughout the developed portion of the base, but these activities would be relocated to the cantonment area as new facilities are constructed. Government fee-purchased land requiring disposal is designated for airfield uses. The government fee-purchased parcel in the southeast portion of the base would be included in the government-retained area. Proposed land use areas for this alternative are shown in Figure 2.3-1, and acreages by land use category are listed in Table 2.3-1.

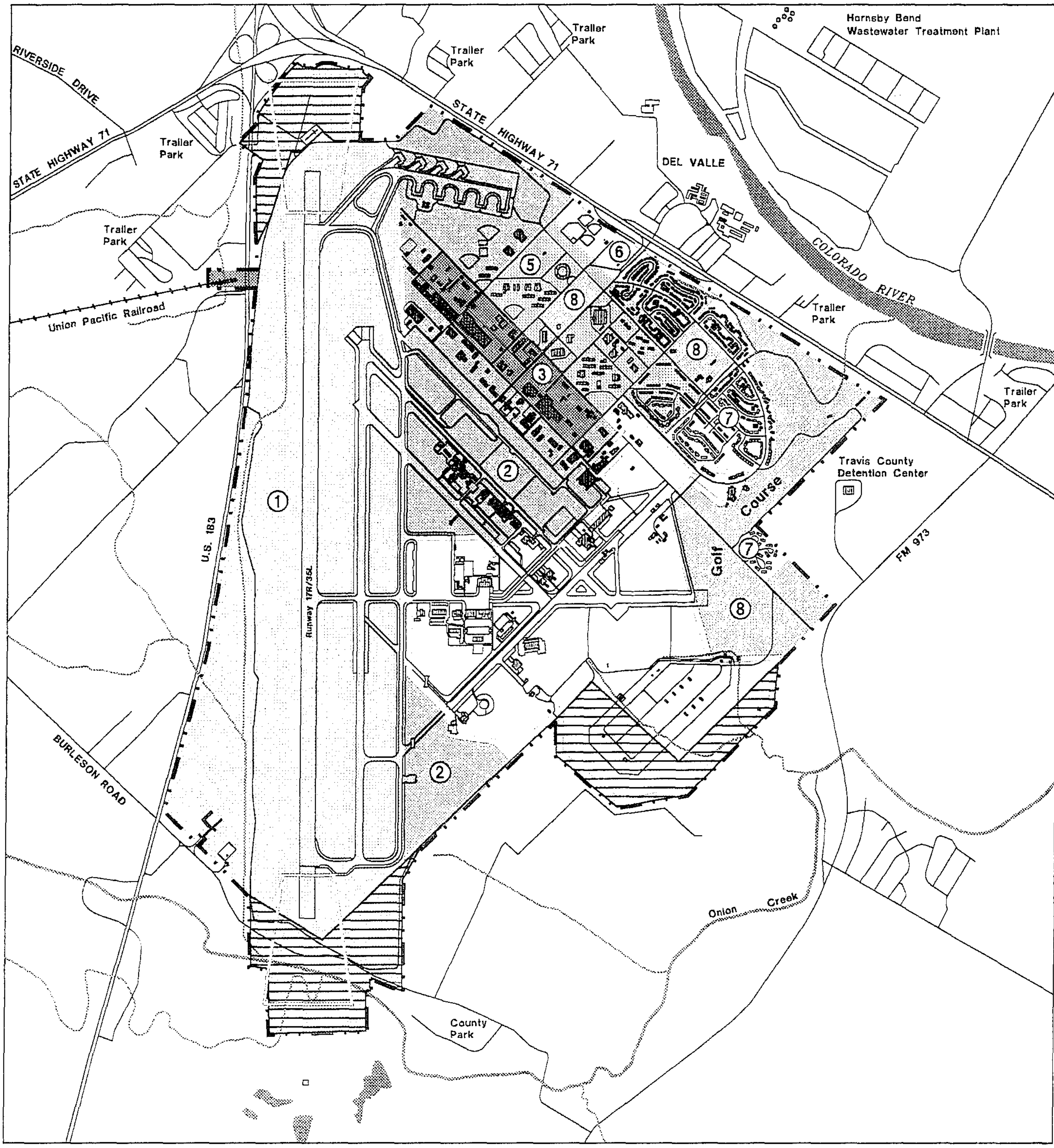
Table 2.3-1

Land Use Acreage - General Aviation/Air Cargo Airport Alternative

Land Use	Acreage
Base Property	
Airfield	1,303
Aviation Support	519
Industrial	84
Institutional (Government/Education)	154
Commercial	61
Residential	92
Public/Recreation	261
Agriculture	0
Vacant Land	0
Subtotal	2,474
Government-Retained Land	742
Total:	**3,216**

To further define the General Aviation/Air Cargo Airport Alternative for the purpose of this analysis, assumptions were made for the following:

- Layout and acreage totals for proposed land use categories;
- Extent of construction/demolition activities required;
- Acreage of ground disturbance resulting from construction/demolition activities;
- Projected flight operations and fleet mixes through 2012;



LEGEND

① Airfield	⑤ Institutional (Government)	⑨ Agriculture *	Cemetery
② Aviation Support	⑥ Commercial	⑩ Vacant Land *	Runway Protection Zone
③ Industrial	⑦ Residential	Government Fee-Purchased Land	
④ Institutional * (Medical)	⑧ Public/ Recreation	Government-Retained Land	

0 750 1500 3000 Feet

Base Boundary

* Not Applicable

General Aviation/ Air Cargo Airport Alternative

Figure 2.3-1

- Fleet mix involving 30 percent Stage 2 aircraft operations and 70 percent Stage 3 aircraft operations in 1997, with complete conversion to the quieter Stage 3 aircraft by 2002;
- Employment and population projections through 2012 for the Austin area and Travis County;
- Traffic generation and daily trip projections through 2012;
- Proposed transportation improvements;
- Utility requirement projections through 2012; and
- Phasing plans for reuse of Bergstrom AFB through 2012.

The amount of development for each land use category assumed to occur for this alternative, including existing facility demolition and retention and new facility construction, is summarized in Table 2.3-2. Approximately 1.3 million square yards of existing airfield pavement would be reused with this alternative. Acreages assumed to be disturbed during each phase of development are summarized in Table 2.3-3. Construction of required airport facilities, including new facilities for the 924th FG and other Air Force units and the Texas ANG, and some general aviation and air cargo facilities, would occur between 1994 and 1997. Construction of industrial, commercial, institutional, recreation, and additional airport facilities would occur throughout the analysis period. Proposed reuses associated with each land use category shown in Figure 2.3-1 are described below.

Table 2.3-2

Facility Development - General Aviation/Air Cargo Airport Alternative

	Building Floor Space (in thousands of square feet)		
Land Use	**Existing Facility Demolition[1]**	**Existing Facility Retention[2]**	**New Facility Construction**
Airfield	0	0	0
Aviation Support	126	513	376
Industrial	169	467	448
Institutional	311	713	964
Commercial	221	0	664
Residential	0	483	0
Public/Recreation	0	38	0

Notes: [1]Square footage of facilities that would be demolished within each designated land use area.
[2]Includes only facilities over 1,000 square feet in area.

Table 2.3-3

Acres Disturbed By Phase - General Aviation/Air Cargo Airport Alternative

Land Use	1994-1997	1997-2002	2002-2012	Total
Airfield	0	0	0	0
Aviation Support	210	0	0	210
Industrial	37	33	14	84
Institutional	46	82	26	154
Commercial	16	28	17	61
Total:	**309**	**143**	**57**	**509**

2.3.1.1 Airfield

Reuse of the airfield would be similar to the Proposed Action, except that a new runway would not be constructed. For this alternative, the airfield would consist of approximately 1,300 acres, including the runways, taxiways, RPZs, and control tower (Figure 2.3-1). The airfield would be used primarily for general aviation, air cargo, and military aircraft. Runway 17R/35L would be used for all air cargo and military operations and some general aviation operations, and Runway 17L/35R would be used only for general aviation operations. For the purpose of analysis in this EIS, it was assumed that all general aviation operations at RMMA would relocate to Bergstrom AFB. It was also assumed that approximately 30 percent of departures would be to the north, and 70 percent to the south, for both runways. An Airport Layout Plan has not been developed for this alternative.

Projected airfield operations for the years 1994, 1997, 2002, and 2012 are presented in Table 2.3-4. Projected annual operations were estimated for general aviation, air cargo, and military operations. Only military involving the 924th FG and transient military aircraft, and air cargo operations, were assumed to occur in 1994, with 85 percent of operations occurring during the daytime hours (7 a.m. to 10 p.m.) and 15 percent occurring during nighttime hours (10 p.m. to 7 a.m.). In 1997, 2002, and 2012, 98 percent of all operations were assumed to occur during daytime hours and 2 percent during nighttime hours.

2.3.1.2 Aviation Support

Aviation support uses are proposed for two areas covering approximately 520 acres north and south of the government-retained area. The north area includes three existing aircraft parking aprons (Aprons A, B, and E) and various hangar and other flightline facilities. The northern portion of this area includes the POL area, various industrial and warehouse facilities, and several recreation fields. The south area is undeveloped, with the exception of a section of taxiway.

Table 2.3-4

Projected Flight Operations - General Aviation/Air Cargo Airport Alternative

Year	Operations	Function	%	Fleet Mix	Annual Operations
1994	Air Cargo		6	B-727/B-737/DC-8/DC-9	1,248
			26	Single-Engine Turboprop	5,110
	Military (Fixed-Wing)	924th FG	45	F-16	9,000
		Transient	1	F-16/F-15/A-10/KC-135	180
		Transient (ATC)	22	T-37/T-38	4,324
				Total:	**19,862**
1997	Air Cargo		2	B-727/B-737/B-757/B-767/ DC-8/DC-9/MD-80	2,223
			1	Multi-Engine Turboprop	1,460
			4	Single-Engine Turboprop	5,110
	General Aviation		39	Single-Engine Piston Prop	47,450
			14	Multi-Engine Piston Prop	16,790
			1	Single-Engine Turboprop	730
			13	Multi-Engine Turboprop	16,060
			10	Business Jet	11,680
	Military (Fixed-Wing)	924th FG	7	F-16	9,000
		Transient	<1	F-16/F-15/A-10/KC-135	180
		Transient (ATC)	2	T-37/T-38	4,324
		Texas ANG	1	Multi-Engine Turboprop (C-12)	1,560
		Texas ANG	1	Single-Engine Piston Prop (T-34)	1,560
	Military (Helicopter)	Texas ANG	3	AH-1F/OH-58/UH-1A/UH-60	3,120
				Total:	**121,247**
2002	Air Cargo		2	B-757/B-767/DC-9/MD-80	2,617
			2	Multi-Engine Turboprop	2,190
			4	Single-Engine Turboprop	5,110
	General Aviation		36	Single-Engine Piston Prop	43,800
			13	Multi-Engine Piston Prop	16,060
			1	Single-Engine Turboprop	730
			14	Multi-Engine Turboprop	16,790
			11	Business Jet	13,140
	Military (Fixed-Wing)	924th FG	8	F-16	9,000
		Transient	<1	F-16/F-15/A-10/KC-135	180
		Transient (ATC)	2	T-37/T-38	4,324
		Texas ANG	1	Multi-Engine Turboprop (C-12)	1,560
		Texas ANG	1	Single-Engine Piston Prop (T-34)	1,560
	Military (Helicopter)	Texas ANG	3	AH-1F/OH-58/UH-1A/UH-60	3,120
				Total:	**120,181**
2012	Air Cargo		3	B-757/B-767/DC-9/MD-80	3,559
			4	Multi-Engine Turboprop	4,380
			4	Single-Engine Turboprop	5,110
	General Aviation		33	Single-Engine Piston Prop	40,150
			13	Multi-Engine Piston Prop	16,060
			1	Single-Engine Turboprop	730
			14	Multi-Engine Turboprop	17,520
			11	Business Jet	13,870
	Military (Fixed-Wing)	924th FG	8	F-16	9,000
		Transient	<1	F-16/F-15/A-10/KC-135	180
		Transient (ATC)	2	T-37/T-38	4,324
		Texas ANG	1	Multi-Engine Turboprop (C-12)	1,560
		Texas ANG	1	Single-Engine Piston Prop (T-34)	1,560
	Military (Helicopter)	Texas ANG	3	AH-1F/OH-58/UH-1A/UH-60	3,120
				Total:	**121,123**

The parking apron and adjacent flightline facilities, northeast of the 924th FG area, are proposed for general aviation functions supporting private and corporate aircraft. Construction of some facilities (e.g., T-hangars, common hangars, and terminals) would be required. The apron parking area and adjacent hangars and other facilities east of this area are proposed for air cargo, with the potential for some aircraft maintenance/overhaul operations. The northernmost aircraft parking apron (Apron E) would be used for construction of facilities for the Texas ANG, as described for the Proposed Action.

2.3.1.3 Industrial

Approximately 85 acres in the north-central portion of the base are designated for industrial uses. Reuses for this area could include light industrial, research and development, and warehousing. This area includes the base civil engineering compound, a number of warehouse facilities, the base gymnasium, several administrative and mission support buildings, and the existing base commercial center, consisting of the base exchange, commissary, theater, bank, and credit union.

2.3.1.4 Institutional (Government and Education)

Government and/or education uses are proposed for an area totaling approximately 155 acres in the north-central portion of the base. This area is proposed for development of a state and/or local government office complex and aviation-related training and vocational education facilities. This area includes a portion of the existing military family housing area, the base hospital and chapel, two dormitory complexes, the Headquarters 12th and 10th Air Force building, and several other administrative and mission support buildings.

2.3.1.5 Commercial

Approximately 60 acres in the northern portion of the base, near the existing entrance gates and adjacent to State Highway 71, are proposed for commercial reuses, including administrative-type offices and some retail establishments to provide services compatible with airport activities. Similar to the area described for the Proposed Action, this area includes the northern portion of the military family housing area and several recreation facilities.

2.3.1.6 Residential

A portion of the existing military family housing area would be retained with this alternative for private-sector housing, including approximately 35 acres of single-family and 55 acres of multifamily housing. To reduce the density of residential development, some units would be demolished.

2.3.1.7 Public/Recreation

Approximately 260 acres in three areas are proposed for public/recreation uses. A small area, near the existing Main Gate along Presidential Boulevard, would be retained as parkland. The area adjacent to the proposed residential area, which currently contains the child care center, youth center, and various recreation facilities, would also be retained as a park. The third area, consisting of approximately 210 acres in the far eastern portion of the base, includes the 18-hole golf course and two old landfills. The golf course would be reused, and other recreation facilities, such as softball/baseball or football/soccer fields, could eventually be developed in the landfill area. Depending on which existing Munitions Storage Area igloos are reused by the 924th FG and the types of munitions stored, acquisition of explosive safety easements by the Air Force on a portion of the public/recreation land adjacent to the northeast part of the Munitions Storage Area may be required.

2.3.1.8 Government-Retained Land

With this alternative, approximately 740 acres would be retained by the Air Force to provide a cantonment area for the 924th FG. This area includes most of the facilities currently used by the 924th FG, the RCCF, the Munitions Storage Area and adjacent onbase explosive safety zones, the Visiting Officers' Quarters, the Officers' Club, the Small Arms Range, and various other administrative, mission support, and industrial facilities. As previously described, the 924th FG would initially use several facilities dispersed throughout the developed portion of the base, but these activities would be relocated to the cantonment area as new facilities are constructed.

2.3.1.9 Employment and Population

Approximately 12,735 direct (full-time) jobs and 3,915 secondary jobs would be generated by 2012 with the General Aviation/Air Cargo Airport Alternative. In addition, employment for this alternative would include approximately 1,720 part-time jobs associated with the Air Force Reserve and Texas ANG. A peak of approximately 200 direct, short-term, construction-related jobs would be generated in 1995.

Much of the employment generated with reuse of the base for this alternative, particularly for aviation support and institutional reuses, would result from the relocation of existing jobs within the Austin area. Some of the aviation-related jobs would be filled by people who transfer from existing jobs at RMMA. Estimated full- and part-time employment at closure, and in 1997, 2002, and 2012 with reuse, is presented in Table 2.3-5. Employment related to base reuse is expected to result in the inmigration of approximately 3,425 persons into Travis County by 2012.

Table 2.3-5

Reuse-Related Employment and Population
General Aviation/Air Cargo Airport Alternative

	1994	1997	2002	2012
Employment				
Construction	131	131	0	0
Direct - Full-Time				
Relocated	426	2,891	7,291	8,081
New	346	1,813	3,643	4,653
Direct - Part-Time				
Relocated*	1,000	1,500	1,500	1,500
New	0	217	217	217
Secondary	622	2,066	3,172	3,914
Population Increase	223	255	1,882	3,423

Note: *Includes part-time Air Force Reserve personnel currently at Bergstrom AFB and Texas ANG personnel at RMMA.

2.3.1.10 Transportation

Access to the base for this alternative would be provided via State Highway 71 and the two entrance gates currently used by Bergstrom AFB employees. Widening of State Highway 71 by two additional lanes is already planned. Depending on the final layout of facilities, some improvements to the existing Bergstrom AFB road system would be required to improve circulation. Based on proposed land uses and employment projections, the average daily vehicular traffic to and from the base property generated with this alternative would be approximately 37,180 trips by 2012.

2.3.1.11 Utilities

By 2012, the projected reuses of Bergstrom AFB for the General Aviation/Air Cargo Airport Alternative, and associated population increases in the region surrounding the base, would generate the following increases in utility demands over projected closure conditions:

- Water - 0.42 MGD, or an increase of approximately 0.3 percent;
- Wastewater - 0.31 MGD, or an increase of approximately 0.2 percent;
- Solid waste - 14.31 tons per day, or an increase of 0.5 percent;
- Electricity - 0.19 million kWh per day, or an increase of 0.5 percent; and

- Natural gas - 0.79 MMcf per day, or an increase of about 2.1 percent.

Proposed reuses associated with the General Aviation/Air Cargo Airport Alternative would generate the following onsite utility demands by 2012:

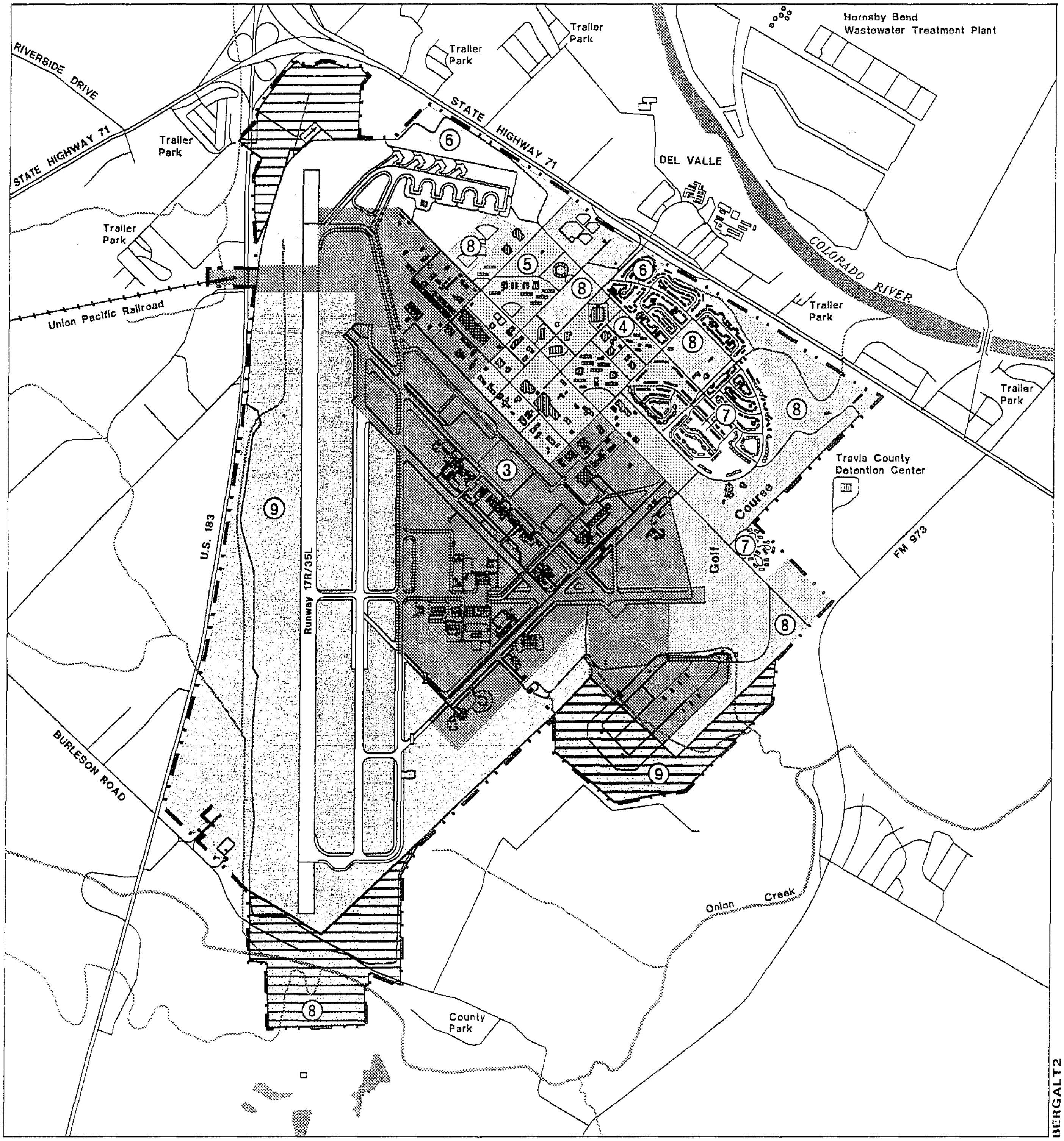
- Water - 0.08 MGD;
- Wastewater - 0.05 MGD;
- Solid waste - 5.75 tons per day;
- Electricity - 0.15 million kWh per day; and
- Natural gas - 0.60 MMcf per day.

No major utility system improvements have been identified for this alternative.

2.3.2 Mixed-Use Development Alternative

This alternative emphasizes conversion of Bergstrom AFB to entirely nonaviation reuses and focuses on reuse of the base as a mixed-use development centered around an office and warehousing complex. With this alternative, the four Air Force units would not remain because there would not be an operational airfield. To minimize redevelopment costs, proposed land uses are arranged to incorporate existing buildings into land uses that are similar to their existing uses. Based on current and projected market demand in this portion of the Austin metropolitan area, not all of the land area designated for specific reuses would be reused within the analysis period. Reuse of much of the base, particularly those areas designated for industrial and commercial uses, would likely occur well beyond the time frame considered in this EIS.

Proposed land uses for the developed portion of the base include industrial, both manufacturing and warehousing; institutional (government, education, and medical); commercial; and recreation. The existing airfield would be converted to agricultural, industrial, and commercial uses. The three onbase government fee-purchased land parcels are designated for commercial and public/recreation uses. Parcel 4, the middle marker site, is designated for public/recreation uses. Proposed land use areas for this alternative are shown in Figure 2.3-2, and acreages by land use category are listed in Table 2.3-6.



LEGEND

1 Airfield *	5 Institutional (Government)	9 Agriculture
2 Aviation * Support	6 Commercial	10 Vacant Land *
3 Industrial	7 Residential	Government Fee-Purchased Land
4 Institutional (Medical)	8 Public/ Recreation	Base Boundary
		Cemetery
		* Not Applicable

0 750 1500 3000 Feet

Mixed-Use Development Alternative

Figure 2.3-2

Table 2.3-6

Land Use Acreage - Mixed-Use Development Alternative

Land Use	Acreage
Base Property	
Airfield	0
Aviation Support	0
Industrial	936
Institutional (Government, Education, and Medical)	266
Commercial	314
Residential	126
Public/Recreation	466
Agriculture	1,108
Vacant Land	0
Subtotal	3,216
Government-Retained Land	0
Total:	**3,216**

To further define the Mixed-Use Development Alternative for the purpose of this analysis, assumptions were made for the following:

- Layout and acreage totals for proposed land use categories;
- Extent of construction/demolition activities required;
- Acreage of ground disturbance resulting from construction/demolition activities;
- Employment and population projections through 2012 for the Austin area and Travis County;
- Traffic generation and daily trip projections through 2012;
- Proposed transportation improvements;
- Utility requirement projections through 2012; and
- Phasing plans for reuse of Bergstrom AFB through 2012.

The amount of development for each land use category assumed to occur for this alternative, including existing facility demolition and retention and new facility construction, is summarized in Table 2.3-7. Acreages assumed to be disturbed during each phase of development are summarized in Table 2.3-8. Construction of industrial, commercial, institutional, and recreation facilities would occur throughout the analysis period. Proposed reuses associated with each land use category, shown in Figure 2.3-2, are described below.

Table 2.3-7

Facility Development - Mixed-Use Development Alternative

Land Use	Building Floor Space (in thousands of square feet)		
	Existing Facility Demolition[1]	Existing Facility Retention[2]	New Facility Construction
Industrial	225	947	145
Institutional	825	953	1,552
Commercial	95	0	446
Residential	0	686	218
Public/Recreation	0	67	0
Agriculture	6	0	0

Notes: [1]Square footage of facilities that would be demolished within each designated land use area.
[2]Includes only facilities over 1,000 square feet in area.

Table 2.3-8

Acres Disturbed By Phase - Mixed-Use Development Alternative

Land Use	1994-1997	1997-2002	2002-2012	Total
Industrial	6	11	26	43
Institutional	46	92	92	230
Commercial	7	14	20	41
Residential	0	0	0	0
Public/Recreation	0	0	0	0
Agriculture	750	358	0	1,108
Total:	**809**	**475**	**138**	**1,422**

2.3.2.1 Industrial

Approximately 935 acres in the central part of the base are proposed for industrial reuses, including large areas that are currently used as aircraft parking aprons. Other current land uses in this area include the 924th FG facilities, the RCCF, various hangars and maintenance shops, industrial and warehousing facilities, the Munitions Storage Area, and the POL area. These areas could be reused for similar functions, such as warehousing, manufacturing, and other industrial uses (e.g., a recycling center or automobile component specialty shops). The aircraft parking aprons and taxiways could be used by industries requiring large, open storage areas. The rail spur, which terminates immediately west of the base and U.S. 183, could be extended into the base to provide rail access to this industrial area.

2.3.2.2 Institutional (Government, Education, and Medical)

Institutional land uses totaling approximately 265 acres are proposed for the central part of the developed area of the base. This area includes the base hospital, the base chapel, the current base commercial area (e.g., base exchange and commissary), and various dormitories and administrative buildings. The administrative and dormitory buildings are proposed to be reused for vocational educational training facilities, or as part of a federal, state, and/or local government office complex.

The base hospital could be reused to provide either public- or private-sector medical services, or for research or specialty medical services. The small buildings located southeast of the hospital, three of which currently support hospital operations, could be reused as medical offices or specialty clinics.

2.3.2.3 Commercial

Two areas on Bergstrom AFB covering approximately 315 acres are designated for commercial reuses, including office and retail. The area adjacent to the northern boundary of the base and State Highway 71 is currently undeveloped except for Apron E. The other area includes the portion of the military family housing area adjacent to the Main Gate. Demolition or relocation off the base of existing housing units would be required.

2.3.2.4 Residential

A large portion of the existing military family housing area would be retained with this alternative for market housing, including approximately 40 acres of single-family and 85 acres of multifamily housing. To reduce the density of residential development, some units would be demolished or relocated off the base. This area also includes the two Visiting Officers' Quarters buildings.

2.3.2.5 Public/Recreation

Approximately 465 acres are proposed for public/recreation uses. Most of the existing recreation facilities throughout the base would be designated for community reuse. The open area near the existing Main Gate would be retained as parkland. The adjacent recreation fields and other fields to the west would also be retained. The area within the proposed residential area, which currently includes the child care center, youth center, and various recreation facilities, would also be retained as a park.

The approximately 210-acre area in the far eastern part of the base would be reused as a golf course. The 70-acre government fee-purchased area designated for recreation use, south of the existing runways and Burleson Road, could be linked with the existing county park.

2.3.2.6 Agriculture

Agricultural uses totaling approximately 1,100 acres are proposed for the western portion of the existing airfield. The Air Force has previously leased areas adjacent to and between the runways and taxiways to local farmers for hay cropping. It was assumed that agricultural reuses would include hay cropping or farming of typical regional crops (nonirrigated crops). Access would be provided via the existing runways and taxiways. The agricultural designation is an interim land use until the market demand (+20 years) would justify use of this land for other uses.

2.3.2.7 Employment and Population

A total of 13,535 direct (full-time) and 1,083 secondary jobs would be generated by 2012 with this alternative. A peak of approximately 190 short-term, construction-related jobs would be generated in 1995. Much of the employment generated with reuse of the base for this alternative, particularly for industrial and institutional reuses, would result from the relocation of existing jobs within the Austin area. Estimated employment at closure, and in 1997, 2002, and 2012 with reuse, is presented in Table 2.3-9. Employment related to base reuse is expected to result in the inmigration of approximately 245 persons into Travis County by 2012.

Table 2.3-9

Reuse-Related Employment and Population - Mixed-Use Development Alternative

	1994	1997	2002	2012
Employment				
Construction	126	126	0	0
Direct				
Relocated	95	2,847	7,902	11,993
New	52	356	959	1,542
Secondary	381	606	694	1,083
Population Increase	76	132	160	244

2.3.2.8 Transportation

Access to the base for this alternative would be provided via State Highway 71 and the two entrance gates currently used by Bergstrom AFB employees. Widening of State Highway 71 by two additional lanes is already planned. Some improvements to the existing Bergstrom AFB road system may be required to improve circulation, depending on the final layout of facilities. Based on proposed land uses and employment projections, the average daily vehicular traffic to and from the base property generated with this alternative would be approximately 42,200 trips by 2012.

2.3.2.9 Utilities

By 2012, the projected reuses of Bergstrom AFB and associated population increases in the region surrounding the base with the Mixed-Use Development Alternative would generate the following increases in utility demands over projected closure conditions:

- Water - 0.06 MGD, or an increase of less than 0.1 percent;
- Wastewater - 0.04 MGD, or an increase of less than 0.1 percent;
- Solid waste - 3.27 tons per day, or an increase of 0.1 percent;
- Electricity - 0.05 million kWh per day, or an increase of 0.1 percent; and
- Natural gas - 0.17 MMcf per day, or an increase of approximately 0.4 percent.

Proposed reuses associated with the Mixed-Use Development Alternative would generate the following onsite utility demands by 2012:

- Water - 0.04 MGD;
- Wastewater - 0.02 MGD;
- Solid waste - 2.66 tons per day;
- Electricity - 0.05 million kWh per day; and
- Natural gas - 0.16 MMcf per day.

No major utility system improvements have been identified for this alternative.

2.3.3 Proposed Air Force Realignment Actions

On March 12, 1993, the Secretary of Defense submitted a list of military installations recommended for closures and/or realignment to the Defense Base Closure and Realignment Commission. This list included the realignment of all remaining military units at Bergstrom AFB (i.e., the 924th FG, Headquarters 10th Air Force, and the Ground Combat Readiness Center) to another installation. The Air Combat Command Regional Corrosion Control Facility was also recommended for closure. Realignment of these military units was contingent upon a final recommendation to be made to the President by the Base Closure and Realignment Commission by July 1, 1993, and acceptance of that recommendation by the President and subsequent approval by the Congress. On July 1, 1993, the Commission recommended to the President that the 704th Fighter Squadron (AFRES) with its F-16 aircraft and the 924th

Fighter Group (AFRES) support units remain at the Bergstrom AFB cantonment area until at least the end of 1996. They also recommended the closure and relocation of the Regional Corrosion Control Facility at Bergstrom AFB by September 30, 1994, unless a civilian airport authority assumes the responsibility for operating and maintaining the facility before that date. Although not specifically mentioned in the Commission's recommendations, it is assumed that Headquarters 10th Air Force and the Ground Combat Readiness Center will remain at Bergstrom AFB at least until the end of 1996. The President accepted the Commission's recommendations and forwarded them to Congress on July 2, 1993.

Because the Congressional action is still pending and the Commission's recommendations may be reviewed in 1996, the potential environmental impacts that could result from the realignment action are included in Section 4.6 of this document.

Implementation of this realignment action would result in the elimination of certain components described for the Proposed Action and General Aviation/Air Cargo Airport Alternative in Sections 2.2 and 2.3.1, respectively. The following summarizes changes that would occur with each of these proposed alternatives. The potential changes in environmental impacts for both alternatives that would result with implementation of this realignment action are discussed in Section 4.6.

2.3.3.1 Proposed Action Without Air Force Presence

The relocation of all Air Force activities from Bergstrom AFB would result in the following changes to the Proposed Action:

- The 924th FG, Headquarters 10th Air Force, and GCRC would be realigned to another installation. For the purpose of analysis, it was assumed that the RCCF would be closed and the City of Austin, or other follow-on users of the property, would not choose to operate it as a civilian corrosion control facility. All F-16 aircraft based at Bergstrom AFB would depart the base.

- The Air Force would not retain a 300-acre area between the parallel runways as a cantonment area for the 924th FG and other Air Force units as described for the Proposed Action (Figure 2.2-1). This area would be used for aviation support activities at the proposed airport. New facilities proposed to be built in this area to accommodate the relocation of existing Air Force activities from other parts of the base would not be constructed. The City of Austin would reuse some buildings in this 300-acre area. The Air Force would also not retain a 10-acre area east of the proposed runway which includes the Officers' Club and Visiting Officers' Quarters.

- The 267-acre aviation support area within the 917 acres to be acquired outside the base boundary would be used for either aviation support activities, as shown on Figure 2.2-1, or for public/recreation uses.

- Approximately 200 acres in the north-central portion of the base had been identified as an optional cantonment area to the 300-acre area to be retained by the Air Force. This area would not be retained by the Air Force and would be used for aviation support activities.

- The Air Training Command (ATC) would still use the airfield for training flights without an Air Force presence at the base, but the number of T-37 and T-38 operations that would occur would be reduced by approximately 50 percent. Military aircraft operations associated with the Texas Army National Guard would also occur at the base.

- With the realignment of the three Air Force units, approximately 400 additional military personnel and dependents would leave Travis County.

2.3.3.2 General Aviation/Air Cargo Airport Alternative Without Air Force Presence

The relocation of all Air Force activities from Bergstrom AFB to another installation would result in the following changes to this alternative:

- The 924th FG, Headquarters 10th Air Force, and GCRC would be realigned to another installation. For the purpose of analysis, it was assumed that the RCCF would be closed and the City of Austin, or other follow-on users of the property, would not choose to operate it as a civilian corrosion control facility. All F-16 aircraft based at Bergstrom AFB would depart the base.

- The Air Force would not retain 742 acres proposed as a cantonment area for the 924th FG and the other Air Force units. Of this land, approximately 639 acres would be available to the City of Austin for development of aviation support and other suitable uses adjacent to the airfield area; the remaining 103 acres of government fee-purchased land could be disposed of by the Air Force for industrial, public/recreation, or agricultural uses as shown under the Mixed-Use Development Alternative.

- The ATC would still use the airfield for training flights without an Air Force presence at the base, but the number of T-37 and T-38 operations that would occur would be reduced by approximately 50 percent. Military aircraft operations associated with the Texas Army National Guard would also occur at the base.

- With the realignment of the three Air Force units, approximately 400 additional military personnel and dependents would leave Travis County.

2.3.4 Other Land Use Concepts

In compliance with the Federal Property and Administrative Services Act of 1949, the Air Force solicited proposals from other federal agencies regarding their interest in acquiring any of the 324 acres of government fee-purchased lands or facilities identified for disposal at Bergstrom AFB. However, no proposals for direct federal use or sponsorship of local governmental programs were received by the Air Force for uses of lands or facilities to be disposed of at Bergstrom AFB. In addition, no other formal proposals were received by the Air Force from any entity for use of lands or facilities at the base.

2.3.5 No-Action Alternative

The No-Action Alternative would result in the U.S. Government retaining ownership of the government fee-purchased property after closure. Surrender of the property in which the City of Austin has claimed an equitable interest would occur. For the four government fee-purchased parcels, the property would not be put to further use and would be preserved (i.e., placed in a condition intended to limit deterioration and ensure public safety). The Air Force would conduct caretaker activities on the four parcels to ensure that resource protection, grounds maintenance, necessary utility operations, and building care are accomplished. It was assumed that the city would not use the base land it acquires, but would maintain it in a manner similar to that described for the four government fee-purchased parcels. No military activities or missions, including those associated with the 924th FG, Headquarters 10th Air Force, GCRC, and RCCF, would occur on the property.

The future land uses and levels of maintenance would be as follows:

- Maintain structures to limit deterioration;
- Isolate or deactivate utility distribution lines;
- Provide limited maintenance on roads to ensure access; and
- Provide limited grounds maintenance of open areas to control fire, health, and safety hazards.

For the purpose of environmental analysis, it was assumed that the caretaker maintenance activities would require a workforce of approximately 50 people.

2.4 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

In addition to the City of Austin airport proposal considered for the Proposed Action, as described earlier, the city developed a number of alternative airfield concepts that were also considered. This section describes alternative air carrier airport layouts considered by the City of Austin and other proposals considered by the Air Force. These alternatives were considered and eliminated from detailed analysis.

2.4.1 Alternative Air Carrier Airport Layouts

In the initial screening of alternative airfield concepts, each alternative was considered and screened based on various qualitative factors, including the ability to accommodate demand at an acceptable level of service, operational flexibility, estimated cost of development, and potential environmental impacts.

Those airfield alternatives that passed the preliminary screening analysis were further evaluated based on more specific criteria, including airside capacity and potential aircraft delays, aircraft taxiing time, environmental impacts, nonaviation land use benefits, potential for reuse of existing aviation facilities, cost of development, ability to implement and provide future expansion, and flexibility for terminal building development. The following provides a discussion of some of the alternative runway configurations eliminated from further consideration.

2.4.1.1 East Parallel Runway With 3,400-Foot Separation

This runway configuration was eliminated from further consideration because it did not meet the airport capacity requirements of dual IFR capability. A minimum 4,300-foot separation is required for dual IFR operations. The FAA has indicated that their financial participation in the relocation of RMMA to Bergstrom AFB is contingent on construction of an airport with dual IFR operational capabilities. In addition, the 3,400-foot runway separation would have limited the area available for a mid-field passenger terminal complex.

2.4.1.2 West Parallel Runway With 5,000-Foot Separation

The west parallel runway configuration was eliminated because it would require construction of a bridge over, or depressed roadway under, U.S. 183; require acquisition of a large amount of land west of this highway; and result in longer taxiing distances with a terminal east of the existing 12,250-foot runway.

2.4.1.3 East Parallel 9,000-Foot Runway With 4,300-Foot or 5,300-Foot Separation

Construction of a 9,000-foot runway with either a 4,300-foot or 5,300-foot separation was eliminated because it would not make best use of the existing base assets and would require the demolition of many key administrative and warehouse buildings which could be reused for an air carrier airport. These two configurations, while providing for simultaneous IFR operations, would provide less room for construction of a passenger terminal complex than a more widely spaced parallel runway.

2.4.1.4 East Parallel 6,000-Foot Runway With 4,300-Foot Separation

The reasons for elimination of this alternative are the same as described above for the 9,000-foot runway. In addition, the 6,000-foot runway option would not provide the required operational capacity, resulting in a higher number of delays.

2.4.1.5 Dual Parallel Diagonal Runways

The City of Austin considered the construction of two new parallel diagonal runways with 3,400- and 4,300-foot separations to reduce noise-related concerns. The existing 12,250-foot runway would have remained operational with these alternatives. However, these alignments were eliminated as operationally unsatisfactory because they did not make best use of the existing airfield assets, required greater taxiing distances, and would result in operational constraints. Winds in the Austin/Bergstrom AFB area are predominantly from the south-southeast. Runways oriented diagonally from the north-south alignment of the existing runways would be subject to cross-winds a substantial portion of the year. In addition, capacity of the airfield during IFR conditions would be reduced because of converging arrivals and diverging departures. Construction of one diagonal runway was also considered, but eliminated for many of the same reasons.

2.4.1.6 Close Parallel Runways

This alternative, which would have involved upgrading and extending the secondary runway (Runway 17L/35R) to 9,000 feet, was eliminated because it did not provide for dual IFR capability.

2.4.2 Facility-Specific Proposals

A number of facility-specific proposals were suggested by individuals during the Draft EIS scoping period, including proposals for reuse of the base hospital, military family housing area, dormitories, various administrative and industrial buildings, and recreation facilities. The most feasible components of these community-generated concepts have been included in the Mixed-Use Development Alternative.

2.5 INTERIM USES

Interim uses include predisposal short-term uses of the base facilities and property. Predisposal interim uses would be conducted under lease agreements with the U.S. Government. The terms and conditions of such leases will be arranged to ensure that predisposal interim uses do not prejudice future disposal and reuse plans of the base. The continuation of interim uses beyond disposal would be arranged through agreements with the new property owner(s).

A zero baseline representing conditions at the point of closure was used for the environmental analysis. The interim uses that could occur prior to property disposal are not considered within this baseline. Certain postdisposal interim-use scenarios have been incorporated into the reuse alternatives. Where appropriate, impacts of these operations are reflected in the environmental analysis of pertinent resource areas.

2.6 OTHER FUTURE ACTIONS IN THE REGION

The only reasonably foreseeable action identified that could be considered as contributing to potential cumulative impacts on the disposal and reuse of Bergstrom AFB is the redevelopment of the RMMA property following closure of the airport for commercial/industrial uses. The existing environmental conditions at RMMA are described in Chapter 3.0 (Section 3.5) and the potential environmental impacts resulting from reuse of this property are discussed in Chapter 4.0 (Section 4.5).

2.7 COMPARISON OF ENVIRONMENTAL IMPACTS

A summary comparison of the influencing factors and environmental impacts, as well as their potential mitigations, on each biophysical resource affected by the Proposed Action and alternatives is presented in Tables 2.7-1 and 2.7-2. Influencing factors are nonbiophysical elements, such as population and employment, land use, aesthetics, public utility systems, and transportation networks, which directly affect the environment. These activities have been analyzed to determine their effects on the environment. Impacts to the environment are described briefly in the Summary and discussed in detail in Chapter 4.0.

Table 2.7-1

Summary of Reuse-Related Influencing Factors

Factor	Proposed Action				General Aviation/Air Cargo Airport Alternative				Mixed-Use Development Alternative				No-Action Alternative[1]
	1994	1997	2002	2012	1994	1997	2002	2012	1994	1997	2002	2012	
Ground Disturbance (acres by phase)	0	1,295	290	230	0	309	143	57	0	809	475	138	0
Aircraft Operations (annual)	19,862	206,624	219,764	254,804	19,862	121,247	120,181	121,123	0	0	0	0	0
Direct Employment[2]	949	2,762	4,161	6,656	477	2,161	3,860	4,870	178	482	959	1,542	50
Local Transfer Employment	1,426	5,852	10,145	10,915	1,426	4,391	8,791	9,581	95	2,847	7,902	11,993	0
Secondary Employment	1,912	3,452	3,397	5,284	622	2,066	3,172	3,914	381	606	694	1,083	20
Population Increase	496	568	1,964	6,460	223	255	1,882	3,423	76	132	160	244	0
Traffic (average daily one-way trips)	3,617	25,945	44,660	56,823	3,770	15,257	33,059	37,179	2,358	11,344	27,891	42,182	150
Water Demand (MGD)[3]	0.06	0.09	0.27	0.76	0.03	0.06	0.25	0.42	0.01	0.02	0.04	0.06	<0.01
Wastewater Generation (MGD)	0.04	0.07	0.20	0.56	0.02	0.04	0.19	0.31	0.01	0.02	0.03	0.04	<0.01
Solid Waste Generation (tons/day)	1.71	3.78	9.60	24.14	1.03	2.81	8.94	14.31	0.29	0.89	1.95	3.27	<0.01
Electricity Demand (million kWh/day)[4]	0.02	0.07	0.16	0.29	0.01	0.07	0.15	0.19	<0.01	0.01	0.03	0.05	<0.01
Natural Gas Demand (MMcf/day)[5]	0.07	0.29	0.65	1.20	0.05	0.26	0.62	0.79	0.02	0.05	0.12	0.17	<0.01

Notes: [1]The No-Action Alternative summarizes influencing factors relative to closure baseline conditions.
[2]Includes construction workers in 1994 and 1997.
[3]MGD = million gallons per day.
[4]kWh = kilowatt-hours.
[5]MMcf = million cubic feet.

Table 2.7-2

Summary of Environmental Impacts and Mitigation Measures for the Proposed Action and Reuse Alternatives

Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
Local Community				
Land Use and Aesthetics	**Impacts:**			
	• Construction of new passenger terminal complex; aviation support, institutional, and industrial facilities; and new access road to base.	• Construction of aviation support, industrial, institutional, and commercial facilities.	• Construction of industrial, institutional, and commercial facilities.	• No change in land use on the base, including four government fee-purchased parcels.
	• Potential conflicts with offbase land use from noise.	• No offbase land use conflicts.	• No offbase land use conflicts.	
	• Substantial change in general base appearance.	• Some change in general base appearance.	• Some change in general base appearance.	
	• Demolition of a number of facilities.			
	• Retention and reuse of many existing facilities.	• Retention and reuse of most existing facilities.	• Retention and reuse of most existing facilities.	
			• Airfield converted to agricultural, commercial, and industrial uses.	
	Mitigations: • Adopt zoning and building standards to ensure new development in the vicinity of the airport is compatible with aviation operations.	• Same as Proposed Action.	• No mitigations required.	• No mitigations required.
Transportation	**Impacts:** • Additional average daily traffic (ADT) would degrade existing roadway LOS on U.S. 183 and State Highway 71, but not to unacceptable levels.	• Similar to Proposed Action. ADT slightly lower.	• Similar to Proposed Action. ADT slightly lower.	• No impacts on roadways or airspace.
	• No airspace conflicts.	• Airspace conflicts would still occur between Bergstrom AFB and RMMA air traffic.		
	Mitigations: • Improve State Highway 71 and U.S. 183 as planned.	• Same as Proposed Action.	• Same as Proposed Action.	• No mitigations required.
	• Monitor traffic conditions and plan improvements, as needed.			

Table 2.7-2, Page 2 of 11

Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
Utilities	**Impacts:** • Small increase in utility demands. • Minimal effect on local suppliers.	• Similar to Proposed Action. Demand slightly lower.	• Similar to Proposed Action. Demand slightly lower.	• Minimal increase in utility demands.
	Mitigations: • No mitigations required.	• No mitigations required.	• No mitigations required.	• No mitigations required.
Hazardous Materials and Hazardous Waste Management				
Hazardous Materials Management	**Impacts:** • Quantities used would increase over closure baseline. • Each reuse tenant would have to comply with Superfund Amendments and Reauthorization Act, Section 311, Title III. • Need for adequate emergency response capability.	• Same as Proposed Action.	• Same as Proposed Action.	• Small quantities of hazardous materials managed by Air Force and the City of Austin.
	Mitigations: • Establish cooperative planning body to reduce costs of environmental compliance, health and safety training, and waste management. • Increase recycling, minimize waste, and assist in mutual spill responses. • Implement pollution prevention and minimization strategies recommended by the Environmental Protection Agency (EPA).	• Same as Proposed Action.	• Same as Proposed Action.	• Implement contingency plans to address spill response by the caretaker team.
Hazardous Waste Management	**Impacts:** • Increase in types and quantities of hazardous waste generated compared to closure baseline. • Individual reuse tenants would need to comply with Occupational Safety and Health Administration and Resource Conservation and Recovery Act regulations.	• Same as Proposed Action, but quantity generated would likely be smaller.	• Same as Proposed Action, but quantity generated would likely be smaller.	• Small quantities of waste generated.

Table 2.7-2, Page 3 of 11

Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
	Mitigations: • Same as described for Hazardous Materials Management category.	• Same as Proposed Action.	• Same as Proposed Action.	• Same as described for Hazardous Materials Management category.
Installation Restoration Program (IRP) (Hazardous Waste Cleanup)	**Impacts:** • Redevelopment of some Bergstrom AFB properties could be delayed or limited as a result of continuing IRP activities.	• Same as Proposed Action.	• Same as Proposed Action.	• No impact.
	Mitigations: • Address and close out all IRP sites.	• Same as Proposed Action.	• Same as Proposed Action.	• Same as Proposed Action.
Storage Tanks	**Impacts:** • All underground and aboveground storage tanks required for reuse activities would be subject to all applicable federal, state, and local regulations.	• Same as Proposed Action.	• Same as Proposed Action.	• Caretaker maintenance of underground and aboveground tanks.
	• Underground and aboveground tanks not required for reuse activities will be removed.			• Tanks not required for maintenance activities will be removed.
	Mitigations: • Coordination of use of tanks remaining in service with planning agencies to ensure integrity of tanks and piping systems during construction of facilities.	• Same as Proposed Action.	• Same as Proposed Action.	• No mitigations required.
Asbestos	**Impacts:** • All renovation and demolition of existing buildings with asbestos-containing materials would be subject to all applicable federal, state, and local regulations.	• Same as Proposed Action.	• Same as Proposed Action.	• Continued management of facilities containing asbestos.
	Mitigations: • Coordinate asbestos removal or management in conjunction with renovation activities.	• Same as Proposed Action.	• Same as Proposed Action.	• Structures with asbestos-containing materials will be managed in accordance with applicable regulations.

Table 2.7-2, Page 4 of 11

Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
	• Comply with National Emission Standards for Hazardous Air Pollutants and Occupational Safety and Health Administration regulations.	• Same as Proposed Action.	• Same as Proposed Action.	• Same as Proposed Action.
Pesticides	**Impacts:** • Pesticide use would increase from amounts used under baseline (caretaker status).	• Same as Proposed Action.	• Same as Proposed Action.	• Minimal use as part of caretaker activities.
	Mitigations: • Comply with all applicable federal and state regulations.	• Same as Proposed Action.	• Same as Proposed Action.	• Same as Proposed Action.
Polychlorinated Biphenyls (PCBs)	**Impacts:** • A number of PCB-containing capacitors will be transferred with the lighting vault building to the City of Austin for airport use. • Base hospital with PCB transformer will likely be demolished; transformer will be removed prior to demolition. Transformer in hospital is being retrofilled to reduce PCB concentration. It is scheduled to be certified as non-PCB in March 1994.	• Same as Proposed Action except that the hospital building would be retained.	• Same as General Aviation/Air Cargo Airport Alternative.	• Continued management of facilities with PCB-containing equipment.
	Mitigations: • Routine inspection of equipment. • Perform confirmatory testing.	• Same as Proposed Action.	• Same as Proposed Action.	• Routine inspection of equipment.
Radon	**Impacts:** • Some structures have radon levels greater than EPA-recommended levels for residential and school structures (i.e., 4 picoCuries/per liter of air).	• Same as Proposed Action.	• Same as Proposed Action.	• No impact.
	Mitigations: • Property recipient may need to provide mitigation for reuse of buildings with radon levels greater than 4 picoCuries per liter of air.	• Same as Proposed Action.	• Same as Proposed Action.	• No mitigations required.

Table 2.7-2, Page 5 of 11

Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
Medical/Biohazardous Waste	**Impacts:** • No impacts would occur because hospital is not proposed for reuse as a medical facility. Hospital building was assumed to be demolished with Proposed Action.	• No impacts would occur because hospital is not proposed for reuse as a medical facility.	• With reuse of the hospital, generation of medical/biohazardous wastes and disposal requirements would not appreciably change from preclosure conditions.	• None generated.
	Mitigations: • No mitigations required.	• No mitigations required.	• Comply with applicable state regulations.	• No mitigations required.
Ordnance	**Impacts:** • Remediation of ordnance-contaminated areas may delay redevelopment of some parcels of land.	• Same as Proposed Action.	• Same as Proposed Action.	• No impact.
	Mitigations: • Address remediation of affected areas.	• Same as Proposed Action.	• Same as Proposed Action.	• Same as Proposed Action.
Natural Environment				
Soils and Geology	**Impacts:** • A total of 1,815 acres of land would be disturbed. This would minimally alter soil profiles and have little effect on local topography. • Some erosion potential during construction.	• A total of 509 acres of land disturbed; impacts similar to the Proposed Action.	• A total of 1,422 acres of land disturbed, mainly by agricultural activities; impacts similar to the Proposed Action.	• No impact.
	Mitigations: • Minimize length of time vegetation and other cover are absent. • Stockpile topsoil for use elsewhere.	• Same as Proposed Action.	• Same as Proposed Action.	• No mitigations required.

Table 2.7-2, Page 6 of 11

Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
	• When cut slopes are exposed: - Add protective cover (i.e., mulch, straw). - Limit amount of area disturbed and length of time slopes and barren ground are exposed. - Construct diversion dikes and interceptor ditches to divert water from construction areas. - Install slope drains and/or water velocity-control devices to reduce high-velocity streams. • Control short-term wind and water erosion by applying mulch, straw, or synthetic material. • Control long-term erosion by keeping soils under vegetative cover and planting windbreaks. • Use appropriate engineering practices to reduce effect of *shrinking and swelling of soils.*			
Water Resources	**Impacts:** • Increase in impervious surfaces would result in increased stormwater runoff. Stormwater discharge may contain contaminants (e.g., oils) that could degrade water quality, particularly in Onion Creek.	• Stormwater discharge expected to contain lower levels of residual contaminants than with the Proposed Action.	• Same as Proposed Action.	• No impact.
	Mitigations: • Implementation of applicable EPA stormwater discharge requirements during construction period and for the duration of airport operations. • Incorporate provisions into construction designs to control stormwater runoff. • Create landscaped areas pervious to surface water. • Minimize areas of surface disturbance.	• Same as Proposed Action.	• Same as Proposed Action.	• No mitigations required.

Table 2.7-2, Page 7 of 11

Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
	• During construction phase, control site runoff through ditching, sediment traps, berms, and other devices. • Minimize time that disturbed areas are exposed to erosion and provide timely revegetation. • Schedule surface-disturbing activities during dry seasons. • Regularly sweep streets and clean up construction zones. • Place drainage ditches strategically to direct runoff away from critical areas. • Pretreat water prior to discharge to the city water treatment system. • Establish spill control and countermeasure plans and other safety regulations designed to reduce the threat of a spill. • Install permanent detention/filtration ponds to clean runoff prior to discharge. • Install and properly maintain oil/water separators. • Use aboveground storage tanks or corrosion-resistant underground tanks with the most effective containment and leak monitoring available. • Follow established regulations and implement a special hazardous materials management plan and procedures. • Avoid washing or flushing washwater or other wastewater into ditches or swales.			

Table 2.7-2, Page 8 of 11

Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
	• Avoid discharging or injecting any water or waste to groundwater.			
Air Quality	**Impacts:** • Increase in pollutant emissions would not violate federal and state ambient standards.	• Same as Proposed Action.	• Same as Proposed Action.	• No measurable increase in air pollutant emissions.
	Mitigations: • Apply water twice daily during ground-disturbing activities to control fugitive dust. • Decrease time during which newly graded sites are exposed. • Schedule equipment use to be most efficient to control combustive emissions. • Implement a phased construction schedule. • Perform regular vehicle engine maintenance. • For motor vehicle emissions, reduce vehicle miles traveled, vehicle trips, and peak-hour travel. • For operations, develop an airport shuttle system, develop a light-rail or trolley (electric) transportation system, schedule aircraft operations to minimize peak-hour operations, promote car and vanpools, encourage use of public transit through financial incentives, promote bicycling as a form of transportation, locate facilities such as child care centers and cafeterias on the site to reduce offsite travel.	• Same as Proposed Action.	• Same as Proposed Action except for those specific to airport development and operation.	• No mitigations required.
Noise	**Impacts:** • Maximum of about 7,830 acres exposed to DNL 65 dB or greater in 1997, decreasing to 5,000 acres in 2012.	• Maximum of about 4,275 acres exposed to DNL 65 dB or greater in 1997, decreasing to about 4,140 acres in 2012.	• No aircraft noise.	• No impact.

Table 2.7-2, Page 9 of 11

Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
	• About 4,065 persons estimated to reside in noise impact area in 1997, decreasing to 2,965 persons in 2012.	• About 2,415 persons estimated to reside in noise impact area in 1997, decreasing to 2,305 persons in 2012.		
	• Increased traffic noise along some roads.	• Increased traffic noise along some roads.	• Increased traffic noise along some roads.	
	Mitigations: • Change takeoff, climb-out, or landing procedures. • Change flight track limit or rotate primary runway usage. • Enforce prescribed flight track use. • Fan-out departure flight tracks. • Prohibit or limit Stage 2 aircraft operations. • Acquire undeveloped land adjacent to runways exposed to DNL 65 dB or greater; restrict residential and hospital development to areas outside the DNL 65 dB contour. • Acquire residential areas (i.e., mobile homes and single-family housing) exposed to aircraft noise of DNL 70 dB or greater. • Conduct sound attenuation program in noise-sensitive areas exposed to aircraft noise of DNL 65 dB or greater. • Impose curfews and noise-related landing fees, develop noise monitoring system, and establish a community relations office.	• Same as Proposed Action.	• No mitigations required.	• No mitigations required.
Biological Resources	**Impacts:** • Potential to disturb up to 460 acres of mowed weedy vegetation and 90 acres of mesquite thicket depending on siting of proposed reuses.	• Potential to disturb up to 160 acres of mowed weedy vegetation.	• Potential to disturb up to 210 acres of native vegetation and 1,430 acres of mowed weedy vegetation.	• No impact. Potential increase in habitat value.

Table 2.7-2, Page 10 of 11

Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
	Mitigations: • Avoid known sensitive or unique biological habitats to the extent possible. • Revegetate temporarily disturbed sites and landscape with native species to the extent possible. • Implement measures to promote soil stabilization. • Operate construction equipment only on roads or within designated *disturbance areas*. • Where practical, decrease frequency of mowing and clearing of vegetation from drainage channels. • Maintain pesticide and fertilizer management plans. • Avoid disturbance to waters of the United States, drainages, and riparian areas through controlling runoff from construction sites by using berms, silt curtains, straw *bales, and other appropriate* techniques; and by washing equipment in areas where washwater could be contained and treated, or evaporate.	• Same as Proposed Action.	• Same as Proposed Action. • Avoid the grassland/deciduous tree area north of Runway 17R/35L.	• No mitigations required.
Cultural and Paleontological Resources	**Impacts:** • No NRHP-eligible prehistoric or historic sites, Native American resources, or important paleontological resources would be affected onbase. At least three NRHP-eligible sites may be affected offbase.	• No NRHP-eligible prehistoric or historic sites, Native American resources, or important paleontological resources would be affected.	• No NRHP-eligible prehistoric or historic sites, sensitive Native American resources, or important paleontological resources would be affected.	• No onbase impacts.

Table 2.7-2, Page 11 of 11

Resource Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative	No-Action Alternative
	Mitigations: • No mitigation measures would be required for onbase areas; however, if NRHP-eligible sites are affected offbase,discussions with Texas State Historic Preservation Officer on appropriate mitigation measures may be required.	• No mitigations required.	• No mitigations required.	• No mitigations required.

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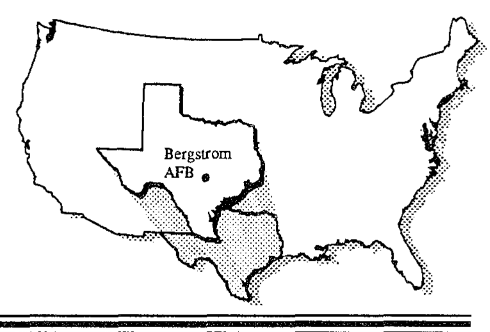


CHAPTER 3.0
AFFECTED ENVIRONMENT

3.0 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter includes a description of the existing environmental conditions at Bergstrom Air Force Base (AFB), Texas, and its Region of Influence (ROI) at the time of base closure in September 1993. It provides the baseline information that was used to identify and evaluate potential environmental changes resulting from disposal and reuse of the base. Although this Environmental Impact Statement (EIS) focuses on the biophysical environment, some nonbiophysical elements are addressed to the extent that they directly affect the environment. The nonbiophysical elements (influencing factors) of population and employment, land use and aesthetics, public utility systems, and transportation networks in the region and local communities are addressed.

This chapter also includes a description of the storage, use, and management of hazardous materials and waste at the base, including storage tanks, asbestos, pesticides, polychlorinated biphenyls, radon, medical/biohazardous waste, and ordnance. The current status of the Installation Restoration Program is also described. Finally, the chapter includes a description of the pertinent natural resources of soils and geology, water resources, air quality, noise, biological resources, and cultural and paleontological resources.

An ROI was defined for each resource potentially affected by the Proposed Action and alternatives, constituting the geographic area addressed as the affected environment. Although the base boundary may constitute the ROI limit for many resources, potential impacts associated with certain resources (e.g., air quality, utility systems, and water resources) may occur outside of the base boundary.

The baseline conditions assumed for the purposes of analysis are the conditions projected at the time of closure of Bergstrom AFB in September 1993. Therefore, the most descriptive year for the closure baseline is 1994. Impacts associated with disposal and/or reuse activities were evaluated by comparing projected conditions under various reuses to closure conditions. Baseline data for years preceding closure conditions are included, where appropriate, to provide a basis for comparison over time. Data used to describe the preclosure reference point are those that depict conditions as close as possible to the closure announcement date. This provides the decision-maker and resource agencies a more comprehensive understanding of the potential long-term impacts of various reuses compared to conditions when the installation was active.

3.2 LOCAL COMMUNITY

Bergstrom AFB, consisting of 3,216 acres, is located in Travis County about 8 miles southeast of downtown Austin. Austin is located in the central part of Texas approximately 75 miles north of San Antonio and 150 miles west of

Houston (Figures 3.2-1 and 3.2-2). The community of Del Valle is located adjacent to the base.

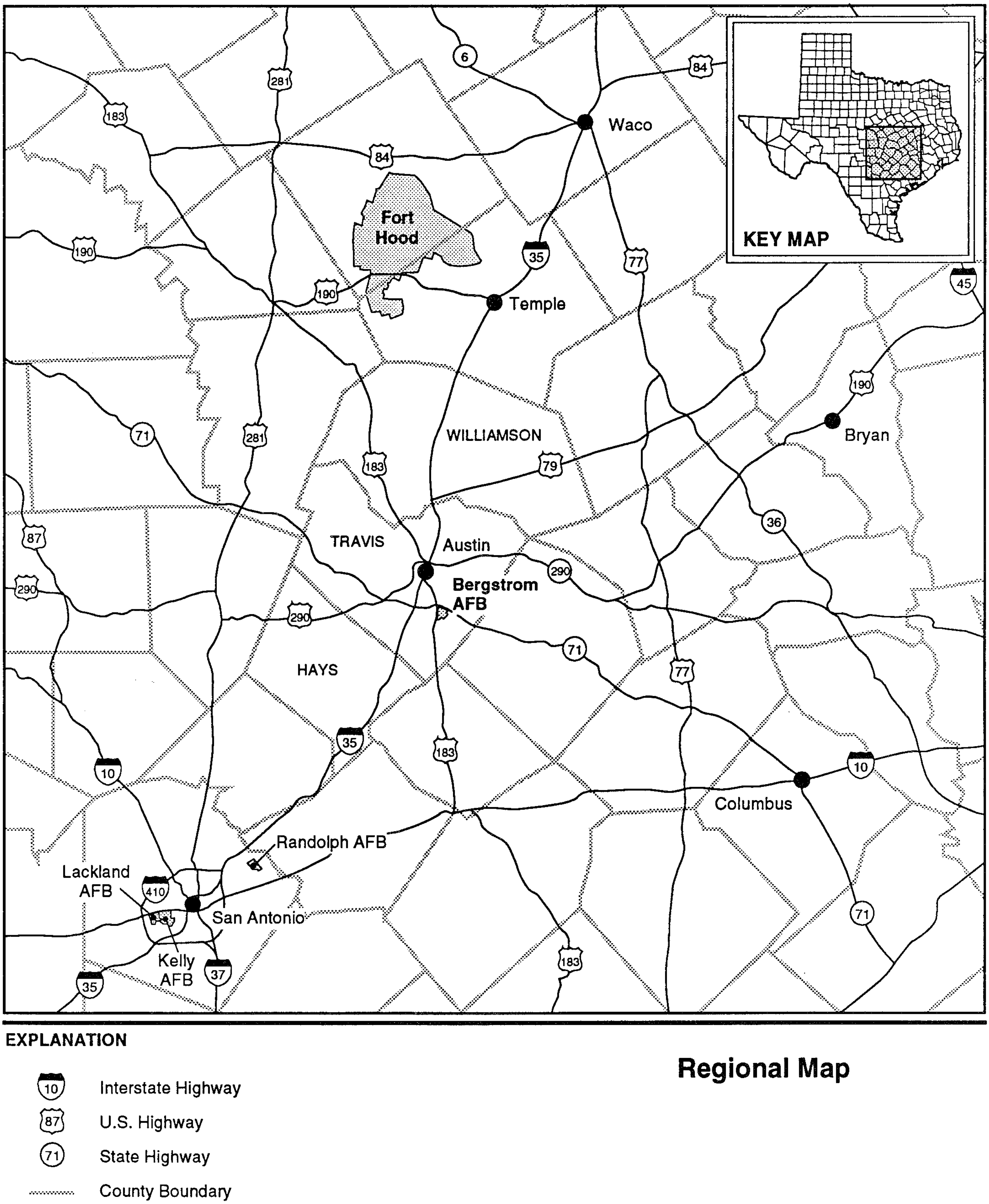
The climate of the Bergstrom AFB area is humid subtropical with hot summers and mild winters. Precipitation is fairly evenly distributed throughout the year, with the heaviest amounts occurring in late spring. Prevailing winds are southerly throughout the year. Northerly winds accompanying the colder air masses in winter soon shift to southerly as these air masses move out over the Gulf of Mexico. The average temperature is 68°F, with below freezing temperatures occurring about 20 days per year. Humidity in the area averages 50 percent during the daytime. Average rainfall is 31.5 inches per year.

Activated as Del Valle Army Air Base in September 1942, the field was renamed Bergstrom Army Air Field in 1943 at the suggestion of former President (then Congressman) Lyndon B. Johnson. The base was named after Captain John August Earl Bergstrom, who was believed to be the first casualty from Austin during World War II. In December 1948, after the creation of the Air Force as a separate branch of service, it officially became Bergstrom AFB. The base was transferred to the Strategic Air Command (SAC) in March 1949.

Bergstrom AFB transferred from SAC to the Tactical Air Command (TAC) in July 1957 and transferred back to SAC in October 1958. Bergstrom AFB again came under the jurisdiction of TAC in July 1966, and became a unit of the 12th Air Force and home of the 75th Tactical Reconnaissance Wing (TRW). The 91st Tactical Reconnaissance Squadron (TRS) was activated at the base in 1967. In August 1968, Headquarters 12th Air Force, responsible for all TAC reconnaissance, fighter, and airlift operations based west of the Mississippi River, relocated to the base.

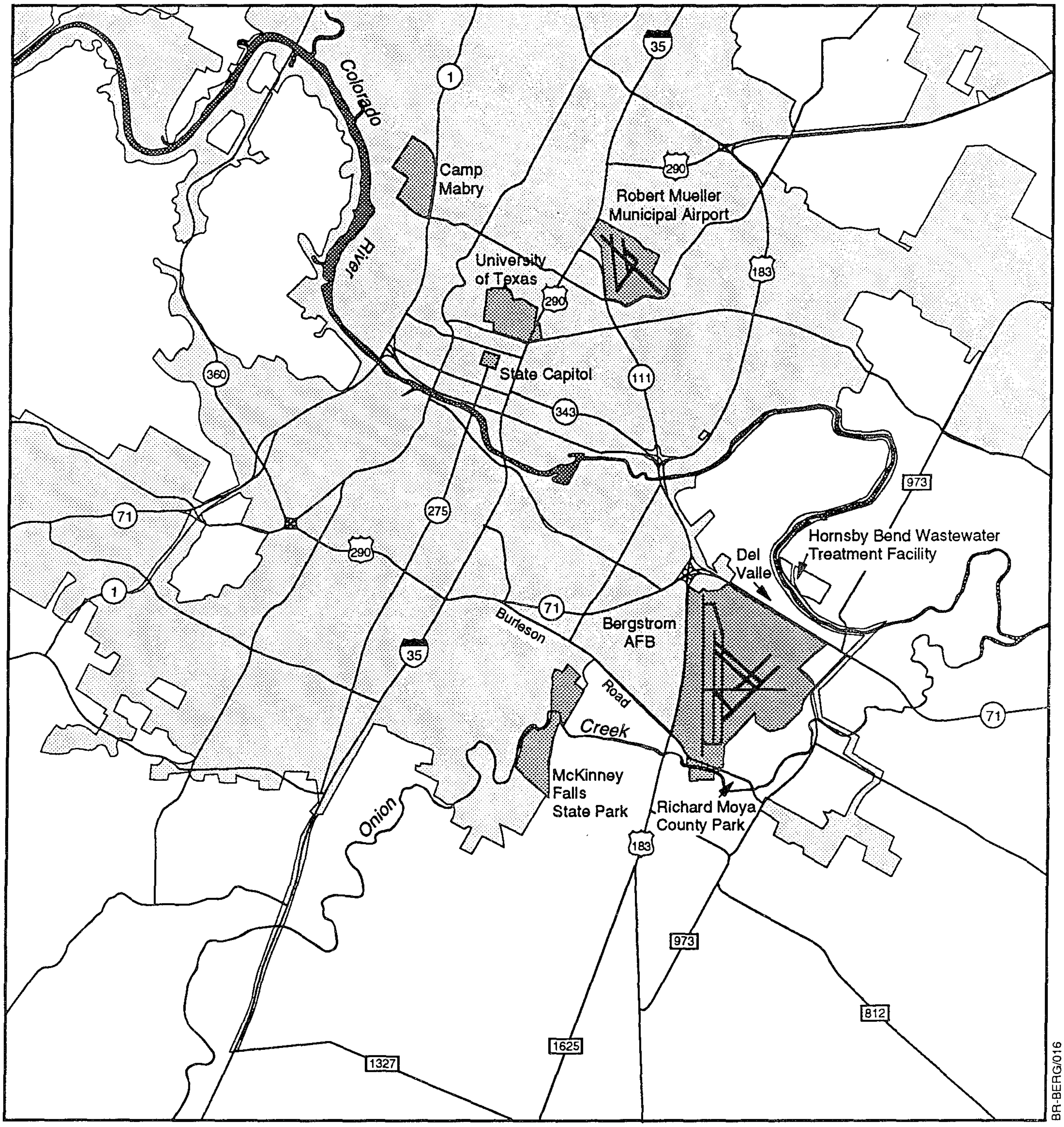
The 75th TRW was deactivated in July 1971 and replaced by the 67th TRW. The 12th TRS was assigned to Bergstrom AFB in August 1971. In March 1976, the Central Air Force Reserve (AFRES) Regional Headquarters (redesignated in October 1976 as Headquarters 10th Air Force) and the 924th Tactical Airlift Group (later redesignated the 924th Tactical Fighter Group) transferred to Bergstrom AFB. Tenth Air Force is the headquarters for SAC and TAC AFRES units in the United States and supervises the training of more than 20,000 reservists in 18 flying and 90 nonflying units. In October 1982, Bergstrom AFB became the Air Force's primary tactical reconnaissance base with the addition of two tactical reconnaissance training squadrons (the 45th and 62nd) and the 67th Tactical Training Squadron, an academic tactical training squadron, to train pilots and weapons systems officers in the RF-4C aircraft. These squadrons were deactivated in 1989.

The 91st TRS was deactivated in August 1991 and the 12th TRS was deactivated in August 1992. With the reorganization of the major Air Force commands in June 1992, Bergstrom AFB became part of the Air Combat Command (ACC).



Regional Map

Figure 3.2-1



LEGEND

35 Interstate Highway

183 U. S. Highway

71 State Highway

973 Farm-to-Market Road

Austin City Limits (Including Bergstrom AFB)

0 1 2 3 MILES

Bergstrom AFB and Vicinity

Figure 3.2-2

3.2.1 Community Setting

The ROI for the community setting analysis includes Travis County, the City of Austin, and the community of Del Valle.

The population in Travis County increased from 295,516 to 419,573 between 1970 and 1980, an increase of 42 percent or 124,057. The population in 1990 was 576,407, an increase of 37.4 percent or 156,834 over the 1980 total. Permanent-party military personnel and dependents affiliated with Bergstrom AFB, living on and off the base, represented 1.8 percent of the total Travis County population in 1990. Approximately 79 percent of all permanent-party military personnel living off the base resided in Travis County; the remaining 21 percent lived in adjacent counties.

Between 1980 and 1990, Austin's population increased from 345,496 to 465,622, an increase of 34.8 percent or 120,126. In 1990, Austin accounted for 81 percent of the total population of Travis County. Permanent-party military personnel and their dependents living off the base in Austin represented approximately 1 percent of the city's total population in 1990. Approximately 70 percent of the permanent-party military personnel living off the base resided in Austin.

The community of Del Valle, located northeast of the base, accounted for less than 1 percent of the total population in Travis County in 1990. Del Valle's population totaled 2,606 in 1990, an increase of 289, or 12.5 percent, from the 1980 population of 2,317. Permanent-party military personnel and their dependents residing in Del Valle comprised 23 percent of the 1990 population, but only 8.3 percent of the total permanent-party personnel living off the base.

The economy of the region is diverse and includes the University of Texas, state and local governments, electronics industries, and an expanding tourist industry, all of which contribute substantially to the area's economy. In 1990, total employment in the Austin Metropolitan Statistical Area (MSA), defined as Travis, Williamson, and Hays counties, was 471,277, of which Travis County accounted for 85.8 percent. The largest employment sectors were services (28%), government (23.8%), retail trade (15.7%), and manufacturing (10.4%). The 1990 unemployment rate for Travis County was 4.6 percent, which was less than the Texas rate of 6.2 percent and the United States rate of 5.5 percent.

At the end of fiscal year (FY) 1991, Bergstrom AFB employed 6,867 military and civilian personnel, of which 5,227 were military personnel, 634 were appropriated fund civilians, and 1,006 were nonappropriated fund civilians. Total employment at Bergstrom AFB, including reservists and civilian personnel, fluctuated between FY 1987 and FY 1991; the lowest level occurred in FY 1987 with a total of 6,463. Military retirees in the region from all armed forces totaled 11,976.

At the end of FY 1991, 10,498 persons, including 3,870 permanent-party military and 6,628 dependents, were stationed at Bergstrom AFB. In FY 1990, there were 4,205 permanent-party military personnel and 7,085 dependents. The 1991 population level decreased 7.0 percent or 792 persons (335 permanent-party military and 457 dependents) over the 1990 level.

Between 1980 and 1990, the housing stock in Travis County increased from 173,732 to 264,173 units, an average annual increase of 5.2 percent. In 1990, approximately 56 percent of the total housing units in Travis County were single-family, 40 percent were multifamily, and 4 percent were mobile homes and trailers.

The housing stock in the City of Austin between 1980 and 1990 increased from 146,503 to 217,054 units, an average annual increase of 4.8 percent. Austin accounted for 82 percent of all housing units in Travis County in 1990. Of the 217,054 housing units, 52 percent were single-family, 46 percent were multifamily, and 2 percent were mobile homes and trailers.

Between 1980 and 1990, the housing stock in the community of Del Valle increased from 857 to 1,225 units, an average annual increase of 4.3 percent. Del Valle accounts for less than 1 percent of the total housing stock in Travis County.

Closure Conditions. With closure of Bergstrom AFB, total employment in Travis County is estimated to be 328,789 by the end of 1992. Total employment between 1993 and 1994 is projected to increase from 335,203 to 335,867, an increase of less than 1 percent. Although total employment is expected to increase after 1993, the figure is less than the anticipated employment growth without base closure. The unemployment rate is expected to increase from 4.6 percent in 1992 to 5.7 percent by the end of 1994.

The population of Travis County is projected to increase from 592,396 in 1992 to 600,556 by the end of 1993, a 1.4 percent increase. Between 1993 and 1994, population is projected to decrease by approximately 2,000, or less than 1 percent, for a total of 598,555 by the end of 1994. By the end of 1992, the population of Austin is projected to be 482,296, increasing to 489,980 in 1993 and 492,801 in 1994. This represents an increase of less than 1 percent; however, these figures are less than the anticipated population growth without base closure. The population of Del Valle is projected to increase by 1.2 percent, from a 1992 estimate of 2,668 to 2,700 by the end of 1993. The population is projected to be 2,084 by the end of 1994, a decrease of 22.8 percent.

The year-round housing stock in Travis County is estimated to be 271,461 units in 1992, an increase of 7,288 units from the 1990 total of 264,173. With closure of the base, approximately 2,546 households are expected to leave Travis County by the end of 1994. This reduction in demand for permanent housing will increase the available vacancy rate in the county from an estimated 11.0 percent in 1992 to 11.9 percent by the end of 1994.

It is estimated that the City of Austin will have a year-round housing stock of 224,668 units in 1992, an increase of 7,614 units over the 1990 total of 217,054 units. With base closure, approximately 1,057 households are expected to leave the city, increasing the available vacancy rate from an estimated 11.2 percent in 1992 to 11.6 percent by the end of 1994. The housing stock in the community of Del Valle is estimated to be 1,225 units in 1992. Relocation of an estimated 159 households will increase the available vacancy rate from an estimated 16.3 percent in 1992 to 27.3 percent by the end of 1994.

3.2.2 Land Use and Aesthetics

The ROI for the land use and aesthetics analysis includes Bergstrom AFB and potentially affected lands within the unincorporated areas of Travis County and the corporate limits of the City of Austin (Figure 3.2-3). Bergstrom AFB is located in the City of Austin. Prior to annexation in 1985, the base was within Austin's extraterritorial jurisdiction (ETJ). The ETJ extends 5 miles from the corporate limits of the City of Austin, into the outlying suburban and rural areas of Travis County. Land uses at closure were assumed to be similar to existing land uses in the vicinity of the base because no specific development plans are proposed in this portion of Travis County.

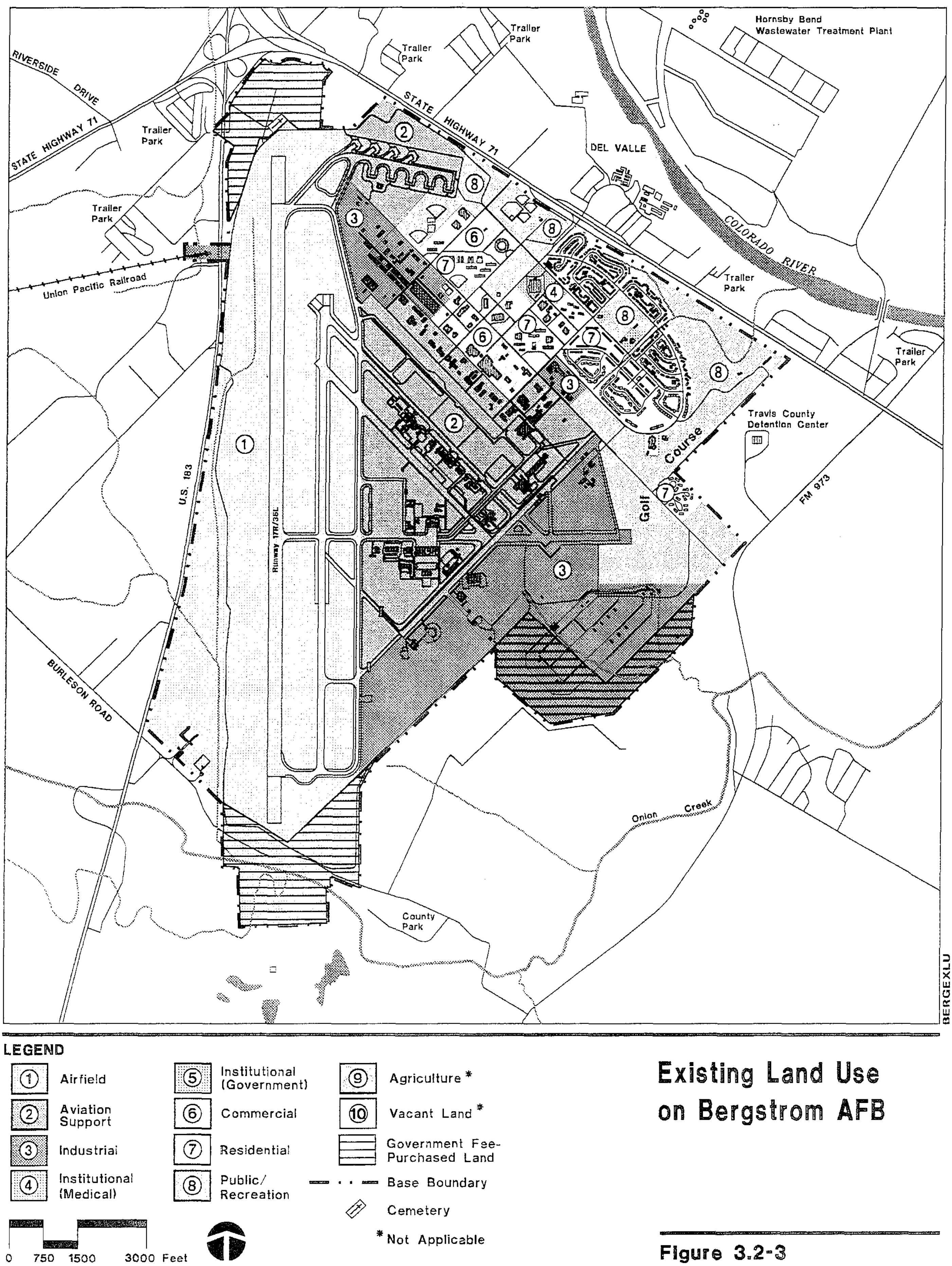
3.2.2.1 Land Use

Onbase Land Use. Bergstrom AFB consists of 3,216 acres, of which 2,892 acres were donated by the City of Austin and 324 acres were government fee-purchased. In addition, the base maintains 726 acres of easements and 116 acres in two leases for property outside the base boundaries. Clearance and avigation easements occur on the north and south ends of the primary runway. The clearance easements consist of the areas in the clear zones; the avigation easements are for the actual airspace over the land in the vicinity of the base. The base also has explosive safety easements adjacent to the Munitions Storage Area and utilities easements in various onbase locations.

When the base was fully operational, onbase lands were leased to a bank, the Bergstrom Federal Credit Union, the Travis County Sheriff's Department, and the Bergstrom Riding Club.

For the purpose of this EIS, preclosure land uses on Bergstrom AFB were grouped into the following land use categories: airfield, aviation support, industrial, institutional (educational and medical), commercial, residential, and public/recreation. These land uses are described below and shown on Figure 3.2-3.

Airfield land uses, consisting of approximately 1,215 acres, include two runways, associated taxiways, and various navigational aids in the western portion of the base. Both runways are oriented north/south. The primary runway, 17R/35L, is 12,250 feet long and 300 feet wide. The secondary



Existing Land Use on Bergstrom AFB

Figure 3.2-3

runway, 17L/35R, is 10,000 feet long and 150 feet wide, and is east of the primary runway. Only 6,700 feet of the secondary runway are currently operational. The existing taxiway system consists of original taxiways, several former runways that have been converted to taxiways, and special military-type taxiways. The navigation aids consist of an instrument landing system (ILS) and a military Precision Approach Radar (PAR) facility.

Aviation support land uses cover approximately 650 acres and consist of the aircraft parking aprons, aircraft hangars, and other facilities along the flightline used to support the flying mission of the base. These uses are all located east of Runway 17L/35R.

Industrial land uses consist of approximately 590 acres and are located north and southeast of the aviation support area. Industrial land uses include the Munitions Storage Area; the petroleum, oil, and lubricants (POL) area; the civil engineering compound; and various warehouse facilities.

Institutional (medical and education) land uses, consisting of approximately 35 acres, include the base hospital, the day care center in the northeastern portion of the base, and a flight medicine facility.

Commercial land uses, covering approximately 120 acres, consist of various retail-type facilities, including the base exchange, the commissary, a bank, the Bergstrom Federal Credit Union, a theater, a package store, a fast-food restaurant, and various administrative offices.

Residential land uses consist of approximately 240 acres in two areas of the base and include single- and multifamily housing (719 total), unaccompanied personnel housing (dormitories), temporary living facilities, and visitors' quarters. Public/recreation land uses, covering approximately 365 acres, include an 18-hole golf course, various athletic fields, and the base gymnasium.

Issues related to onbase land use, development, and capital improvements are addressed in the *Commander's Long Range Facility Improvement Plan, Bergstrom 2000* (U.S. Air Force 1990b). This plan summarizes existing and future land uses, constraints, and the goals and objectives of the base capital improvements program as they existed prior to the base closure announcement. The plan was developed to guide base physical facilities planning for the future with efficient, economical goals while protecting environmental and cultural resources. Land development restrictions within the airfield and flightline areas of the base are also addressed in the *Air Installation Compatible Use Zone (AICUZ), Bergstrom Air Force Base, Texas* (U.S. Air Force 1987a).

Adjacent Land Use. Lands east, south, and west of the base include agricultural and residential areas. Residential uses in the vicinity of the base consist of mainly scattered single-family structures on large lots. Land uses north of the base consist of strip commercial, industrial, and residential, including several mobile home parks along Texas State Highway 71. Two elementary schools, a junior high school, a high school, and district offices for the Del Valle Independent School District are also located in this area.

Some commercial, industrial, and residential uses occur in the corridor created by U.S. 183 west of the base and State Highway 71 (Ben White Boulevard) north of the base (Figure 3.2-4). Additional residential development is located south of the base along Farm to Market Road (FM) 973. Land uses surrounding the base also include Richard Moya County Park, the Travis County Detention Center, and the Hornsby Bend Wastewater Treatment Plant.

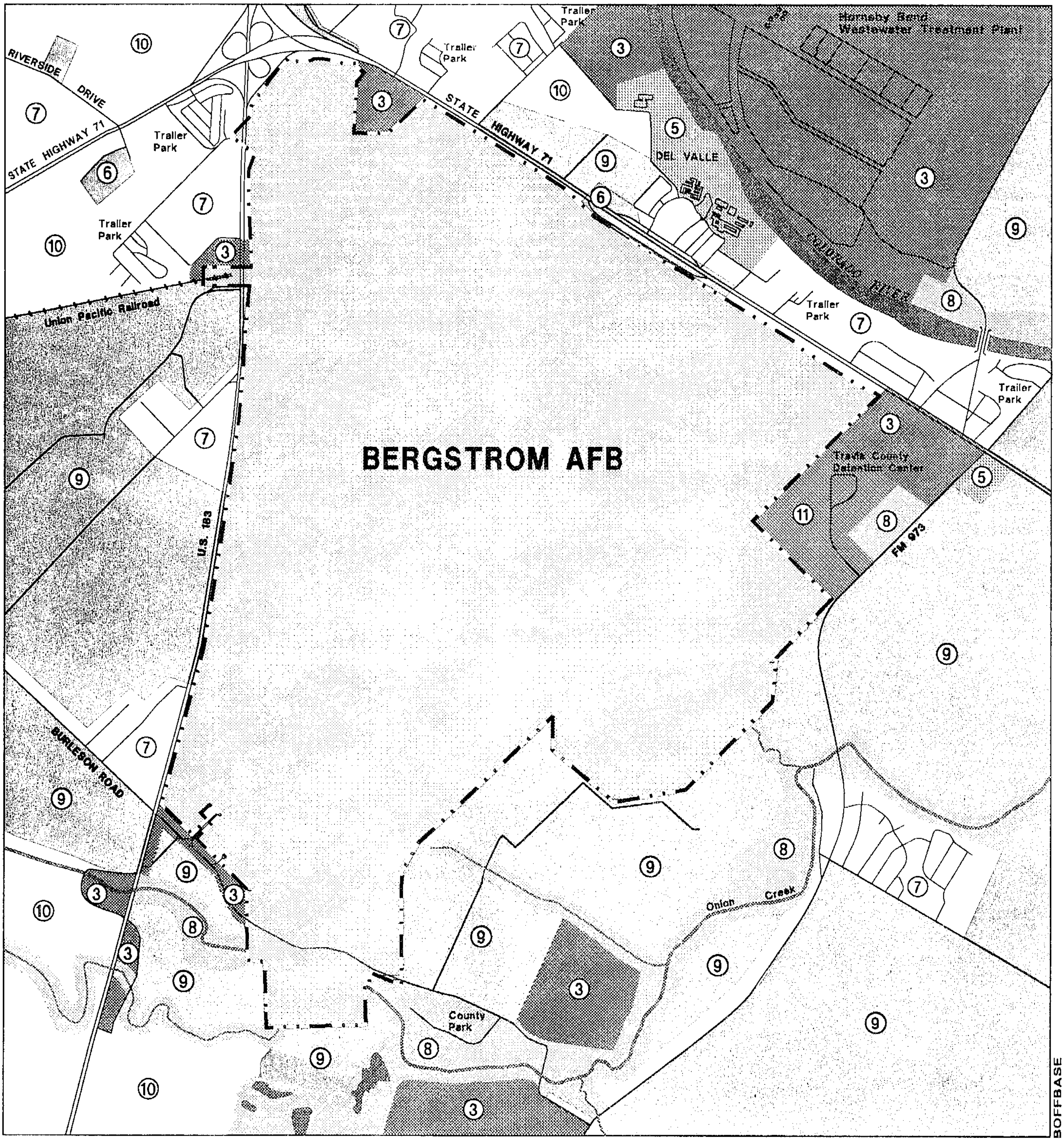
Land north of Burleson Road and west of U.S. 183 is located in the City of Austin. Del Valle, Elroy, Garfield, and Pilot Knob are other unincorporated communities located in the vicinity of the base.

Air Force Policies Affecting Adjacent Land Uses. The Air Force has developed the AICUZ program to minimize development that is incompatible with aviation operations in areas on or adjacent to military airfields. The AICUZ land use recommendations are based on land uses compatible with exposure to aircraft noise and safety considerations. Data on noise contours and safety zones are combined to make 13 Compatible Use Districts (CUDs). CUDs are delineated for each base using operational information derived from the base's mission. Municipalities with jurisdiction over adjacent lands may zone this land in accordance with AICUZ recommendations, but they are not required to do so.

The current contours are based on standard noise ratings calculated from aircraft flight patterns, the number and type of aircraft, power settings, time of operations, and climatic conditions. A day-night weighted average sound level (DNL) is used to describe the noise environment. Noise contours for preclosure conditions at Bergstrom AFB are presented and discussed in Section 3.4.4. Based on the noise contours developed for the U.S. Air Force 1987 AICUZ study, approximately 14,720 acres are exposed to a DNL of 65 decibels (dB) and above. This area includes residential areas in Del Valle, the Montopolis Park area, Pilot Knob, and the area directly north of the main runway. There are approximately 2,800 housing units within the DNL 65 dB contour.

The AICUZ delineates areas at both ends of the runways where the probability of aircraft accidents is highest, based on statistical analysis of past accident data at various bases. Certain land use restrictions are recommended in high risk areas, identified as clear zones and Accident Potential Zones (APZs) I and II. The clear zones and APZs for Bergstrom AFB are shown in Figure 3.2-5.

The Air Force recommends that no development occur in the clear zones. At Bergstrom AFB, undeveloped land is in the clear zones. Some types of industrial uses, and all agricultural, recreational, and vacant land uses, are compatible with APZ I, but residential and other high-density land uses are discouraged. At Bergstrom AFB, a number of single-family dwellings are located within APZ I toward the northern end of Runway 17R/35L.



LEGEND

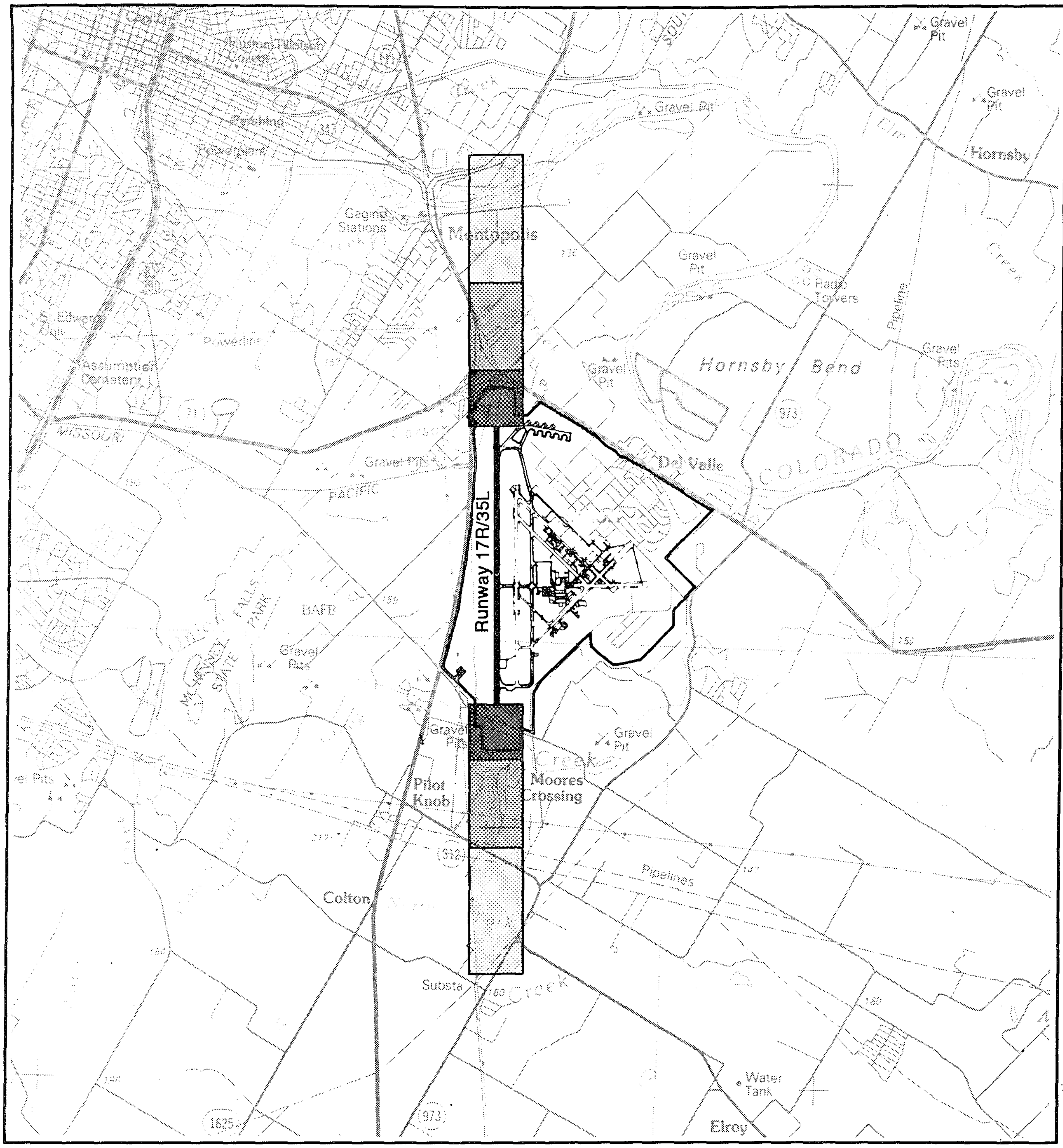
① Airfield *	⑤ Institutional (Government)	⑨ Agriculture
② Aviation Support *	⑥ Commercial	⑩ Vacant Land
③ Industrial	⑦ Residential	⑪ Institutional (Judicial)
④ Institutional * (Medical)	⑧ Public/ Recreation/ Riparian	Base Boundary

* Not Applicable

0 750 1500 3000 Feet

Offbase Land Use in the Vicinity of Bergstrom AFB

Figure 3.2-4



LEGEND
- Base Boundary
- Clear Zone
- Accident Potential Zone I
- Accident Potential Zone II

0 1 2 MILES

Source: U.S. Air Force 1987a.

Bergstrom AFB Clear Zones and Accident Potential Zones

Figure 3.2-5

Low-density residential and low-intensity retail uses are compatible with APZ II, in addition to those uses listed for APZ I. A small number of single-family residences are located within APZ II toward the north end of Runway 17R/35L.

The AICUZ program applies only to military airfields. Similar criteria are established by the Federal Aviation Administration (FAA) for civilian airports.

Land Use Plans and Regulations. A general plan represents a jurisdiction's official position on long-range development and resource management. This position is expressed in goals, policies, plans, and actions regarding the physical, social, and economic environments, both now and in the future. Currently, the State of Texas does not directly implement and administer land use regulations. The Texas Municipal Airport Act (Article 46e-1, et seq.) enables individual jurisdictions to control airport hazards. This Act was amended by the Texas Legislature to allow cities and counties to adopt land use ordinances that provide compatibility in specific areas.

The Bergstrom AFB AICUZ document recommended that Travis County consider adding the land use determinants of aircraft accident potential, aircraft noise, and building height restrictions into the local land use controls and plans. The City of Austin and Travis County Joint Airport Zoning Board control height limitation regulations.

In 1985, the City of Austin was required by referendum to develop a comprehensive plan; the *Austinplan* (City of Austin 1988) was the result of that action. However, in 1991, the state legislature passed a bill that diminished Austin's capacity to regulate land use within the ETJ. This plan was never officially adopted because the method of implementation for a major portion of the area covered within the plan was no longer feasible.

Austinplan divides the city into 22 individual sectors that are classified into urban sectors (1-14) or suburban sectors (15-22). Bergstrom AFB is located in Sector 18. The *Austinplan* was to be implemented using the mechanisms of the Land Development Code, the Capital Improvements Program (CIP), and the Annexation Program.

The purpose of the Land Development Code was to establish order and predictability for the City of Austin development process. Decisions related to zoning and subdivisions would be reviewed in accordance with the Land Development Code. The CIP was to be used to develop 6-year plans for Austin's investment in land and infrastructure, and the Annexation Program to increase the geographic boundaries of the City of Austin.

Because the City of Austin is the only jurisdiction in the vicinity of the base that has zoning ordinances, the majority of the land (85%) under Travis County control around the base has no land use regulations. The Airport Zoning Regulations of Austin and Travis County, Texas (adopted in 1963), address the issue of airport land use compatibility. The AICUZ also recommends that the Capital Area Planning Council (CAPCO) and the City of Austin, the local governmental agencies with some authority over the land in the vicinity of the base, incorporate AICUZ criteria into any comprehensive plans or zoning ordinances to assist in any future land use decisions. CAPCO has no legislative power, but can withhold a recommendation of approval for federal funds to any project within its development area.

Zoning. Zoning divides a jurisdiction into districts within which the height, open space, building coverage, density, and type of future land uses are set forth. Zoning is designated to achieve various community development goals, including base reuse plans.

Areas west, south, and north of Bergstrom AFB include unincorporated portions of Travis County, which have no zoning regulations. However, these areas are within the City of Austin's 5-mile ETJ and are categorized as Development Reserve and subject to subdivision review by the City of Austin. The purpose of the Development Reserve designation is to prevent development in areas with inadequate infrastructure or inadequate public services. Northwest of the base, land is zoned for commercial, residential, or small business uses. Although the base was annexed by the City of Austin in 1985, it is exempt from land use regulations or other established codes of Travis County and the City of Austin because it is federally owned.

Closure Baseline. Land use conditions at the time of closure will remain basically unchanged. If the No-Action Alternative is implemented, the existing land use conflicts and constraints associated with the AICUZ, especially in the area north and west of the airfield, would be removed.

The local zoning district, Aviation Services, and the local Airport Zoning Regulations for the City of Austin and Travis County address the issue of establishing land use compatibility with an aviation-related land use. If necessary, this zoning district and the regulations can be amended to specifically address the zoning and/or land use scenario that may develop on or around Bergstrom AFB.

3.2.2.2 Aesthetics

Visual resources include natural and man-made features that give a particular environment its aesthetic qualities. Criteria used in the analysis of these resources include visual sensitivity, which is the degree of public interest in a visual resource, and concern over adverse changes in visual quality. Visual sensitivity is categorized in terms of high, medium, or low levels.

High visual sensitivity exists in areas where views are rare, unique, or in other ways special, such as in remote or pristine environments. High-sensitivity views include landscapes that have landforms, vegetative patterns, water bodies, or rock formations of unusual or outstanding quality.

Medium visual sensitivity areas are more developed than those of high sensitivity. Human influence is more apparent in these areas and the presence of motorized vehicles and other evidence of modern civilization is commonplace. The landscapes generally have features containing varieties in form, line, color, and texture, but tend to be more common than high visual sensitivity areas. Low visual sensitivity areas tend to have minimal landscape features, with little change in form, line, color, and texture.

Developed land comprises the majority of Bergstrom AFB property. Bergstrom AFB has adopted guidelines to ensure that buildings are compatible with the contemporary architectural style emphasized at the base. Landscaping design and planning for improved areas include the incorporation of regional drought-resistant plants. Developed areas of the base have low levels of visual sensitivity. Approximately 690 acres of unimproved land in the airfield area were previously leased for hay production and have a low level of visual sensitivity. An undeveloped area south of the primary runway adjacent to Onion Creek is the most well-developed woodland on the base with a low to medium level of visual sensitivity. No areas of the base have a high level of visual sensitivity.

Areas north of the base adjacent to State Highway 71 are surrounded by land that is mainly commercial with some residential uses; these areas have a low level of visual sensitivity. The areas south of the base are surrounded by land that is open space or agricultural with low levels of visual sensitivity. Richard Moya County Park, southeast of the base adjacent to Onion Creek, contains the best example of undisturbed native vegetation, and has a medium level of visual sensitivity. The agricultural, undeveloped areas east of the base have a low level of visual sensitivity. The commercial, agricultural, and undeveloped areas along U.S. 183 west of the base also have a low level of visual sensitivity. No areas in the vicinity of the base are considered to have a high level of visual sensitivity.

3.2.3 Transportation

The ROI for the transportation analysis includes principal road, air, and rail networks in the urbanized area of the City of Austin with emphasis on the immediate area surrounding Bergstrom AFB. The analysis focuses on the segments of the transportation networks in the region that serve as direct or necessary indirect linkages to the base, and those that are commonly used by personnel employed at Bergstrom AFB.

3.2.3.1 Roadways

Evaluation of existing roadway conditions focuses on capacity, which reflects the ability of the network to serve the traffic demand and volume. The capacity of a roadway depends on street width, number of lanes, intersection control, and other physical factors. Traffic volumes typically are reported, depending on the project and data base available, as the daily number of vehicular movements in both directions on a segment of roadway, averaged over a full calendar year (average annual daily traffic [AADT]) and/or the number of vehicular movements on a road segment during the average peak hour. The average peak-hour volume on urban arterials typically is about 10 percent of the AADT (Transportation Research Board 1985). These values are useful indicators in determining the extent to which the roadway segment is used and in assessing the potential for congestion and other problems.

The performance of a roadway segment is generally expressed in terms of level of service (LOS). The LOS scale ranges from A to F, with each level defined by a range of volume-to-capacity ratios. LOS A, B, and C are considered good operating conditions where minor or tolerable delays are experienced by motorists. LOS D represents below average conditions. LOS E corresponds to the maximum capacity of the roadway. LOS F represents a jammed situation. The LOS designations and their associated volume-to-capacity ratios are presented in Table 3.2-1. These levels are based primarily on the Transportation Research Board's (1985) estimates, and are adjusted for local conditions.

Table 3.2-1

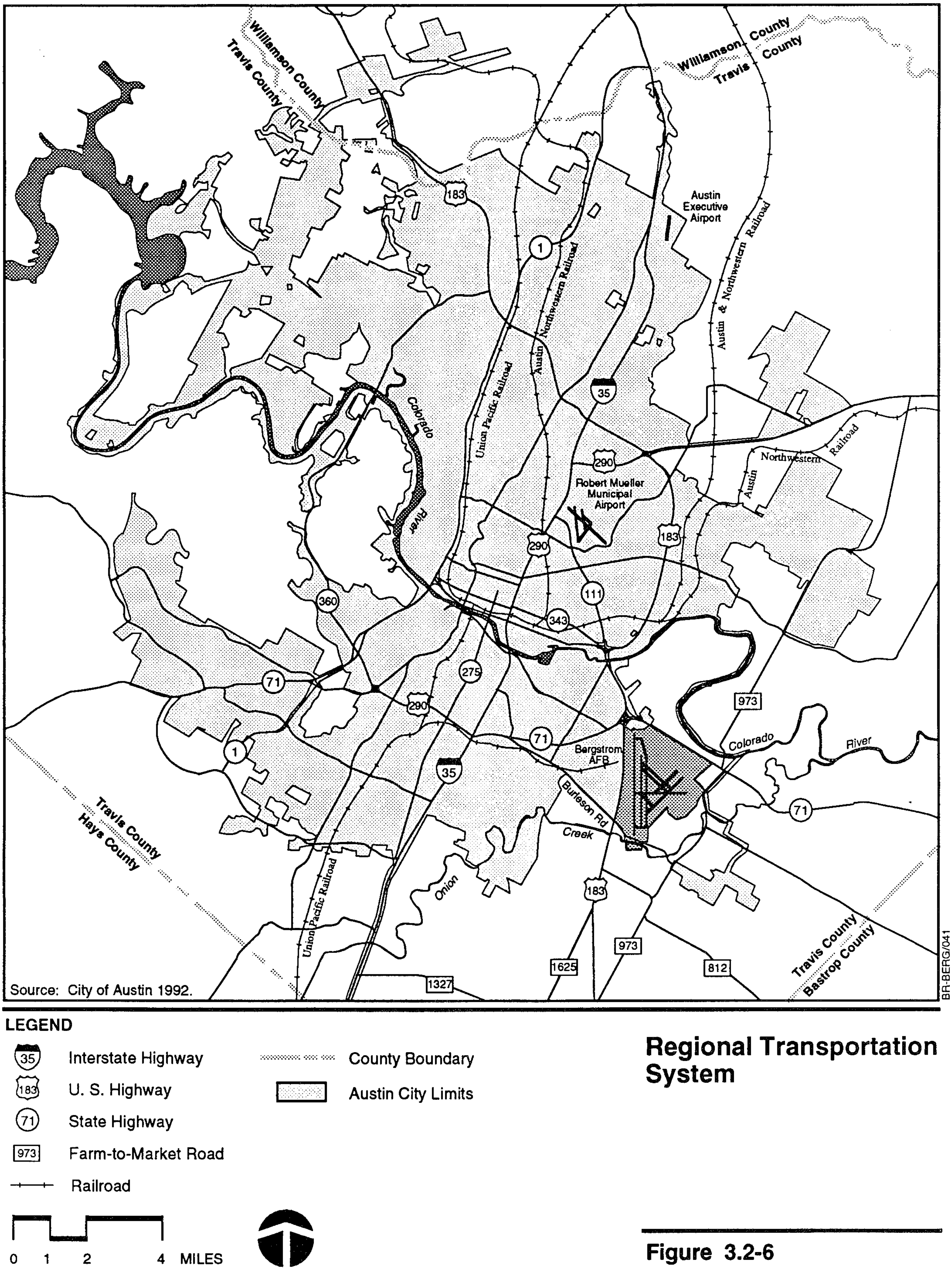
Road Transportation Levels of Service

LOS	Description	Criteria (Volume-to-Capacity) Freeway	4-Lane Arterial	2-Lane Highway
A	Free flow with users unaffected by presence of other users of roadway	0-0.35	0-0.28	0-0.10
B	Stable flow, but presence of users in traffic stream becomes noticeable	0.36-0.54	0.29-0.45	0.11-0.23
C	Stable flow, but operation of single users becomes affected by interactions with others in traffic stream	0.55-0.77	0.46-0.60	0.24-0.39
D	High density but stable flow; speed and freedom of movement are severely restricted; poor level of comfort and convenience	0.78-0.93	0.61-0.76	0.40-0.57
E	Unstable flow; operating conditions at capacity with reduced speeds, maneuvering difficulty, and extremely poor levels of comfort and convenience	0.94-1.00	0.77-1.00	0.58-0.94
F	Forced or breakdown flow with traffic demand exceeding capacity; unstable stop-and-go traffic	>1.00	>1.00	>0.94

Source: Transportation Research Board 1985.

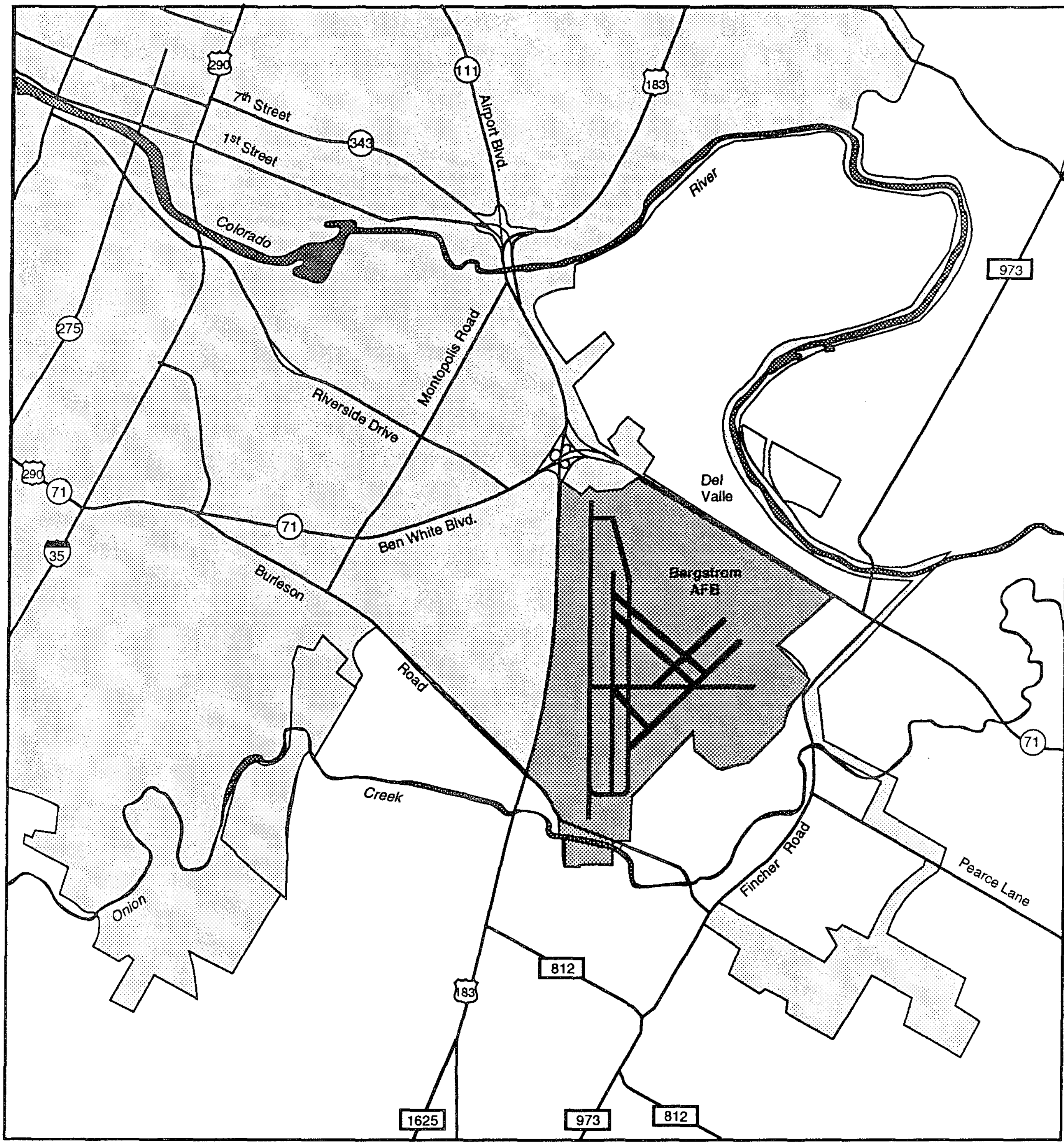
The region surrounding Bergstrom AFB is served by a network of interstate, U.S., and state highways, and city and county roads (Figure 3.2-6). Major roads in the immediate vicinity of the base include Interstate 35, U.S. 183, U.S. 290, Texas State Highways 71 and 111 (Airport Boulevard), and East 7th Street (Figure 3.2-7).

Interstate 35 is the major north-south route through Austin and routes traffic to Bergstrom AFB via city routes east of the central business district (CBD). Interstate 35 is congested along its entire route through Austin during peak



Regional Transportation System

Figure 3.2-6



LEGEND

35 Interstate Highway
183 U. S. Highway
71 State Highway
973 Farm-to-Market Road

Austin City Limits
(Includes Bergstrom AFB)

0 35 70 105FEET

Transportation System in the Vicinity of Bergstrom AFB

Figure 3.2-7

periods and severely congested in the vicinity of the CBD. Interstate 35 has eight lanes north of the Central Business District and six lanes through downtown and South Austin. It is double-decked at some locations, and is constructed to controlled-access freeway standards.

U.S. 183 is a six-lane, divided arterial north of State Highway 71 and a four-lane, divided arterial south of State Highway 71. It is the major northwest/southeast traffic artery in Austin. The segment east of Interstate 35 is heavily congested during peak periods, as is the segment that crosses the Colorado River. The highway segment north of State Highway 71 is proposed to be improved to an eight-lane freeway with frontage roads with a tentative completion date of 1998. South of State Highway 71, U.S. 183 would be improved to a six-lane freeway with frontage roads (Texas Department of Transportation 1992).

U.S. 290 serves Bergstrom AFB from the southwest, north, and northeast. This roadway is a four-lane, divided, noncontrolled-access highway west of Interstate 35. From the intersection of this road with Interstate 35, south to State Highway 71, U.S. 290 is also designated as Interstate 35. The segment of this road west of Interstate 35 is also designated as State Highway 71.

State Highway 71 is the main east-west arterial serving Bergstrom AFB. State Highway 71 is a six-lane, divided, and partially access-controlled arterial between Interstate 35 and FM 973. The portion of this route west of Interstate 35 is heavily congested during peak periods. This highway is proposed to be improved to a six-lane freeway with frontage roads by the turn of the century.

East 7th Street is an east-west roadway located north of the Colorado River and northwest of Bergstrom AFB. This road provides access between Interstate 35 and U.S. 183. East 7th Street is a four-lane, undivided roadway between Interstate 35 and U.S. 183. The Austin Metropolitan Area Roadway Plan (AMARP) calls for East 7th Street between Interstate 35 and U.S. 183 to be upgraded to a six-lane, divided roadway with bike lanes; however, there are no plans at this time to upgrade this roadway.

State Highway 111 (Airport Boulevard) is a north-south roadway located north of Bergstrom AFB which provides access from Interstate 35 to U.S. 183. Airport Boulevard is a six-lane, divided roadway between Interstate 35 and Manor Road; a five-lane, undivided roadway from Manor Road to Oak Springs Drive; and a four-lane, divided roadway from Oak Springs Drive to U.S. 183.

Other routes serving Bergstrom AFB include Burleson Road and FM 973. Burleson Road is a two-lane roadway between U.S. 183 and FM 973. The section of Burleson Road between Ben White Boulevard and Montopolis Drive west of U.S. 183 was widened to five lanes by the City of Austin. The section of Burleson Road between Montopolis Drive and U.S. 183 is scheduled to be widened to five lanes by Travis County with a total pavement width of 60 feet. Construction began in 1990 and will be completed in the near future. For the section of Burleson Road between U.S. 183 and FM 973, reconstruction began in 1992 and will be completed in 1994. This road will be widened to a four-lane, undivided road with 6-foot paved shoulders.

FM 973 extends from U.S 183, southwest of Bergstrom AFB, northeast to Taylor, Texas. It is two lanes with posted speed limits ranging from 30 to 55 miles per hour (mph).

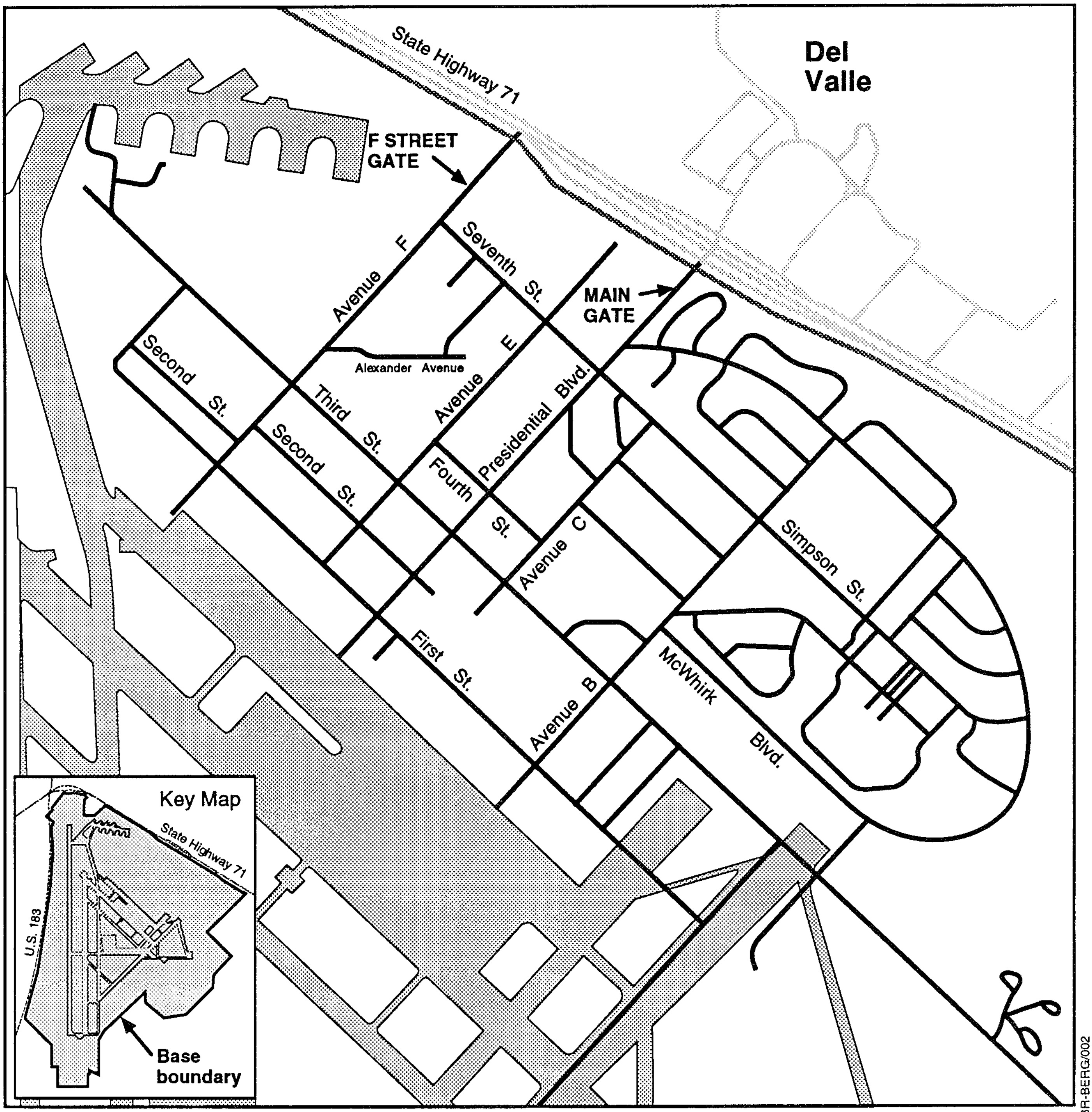
The Bergstrom AFB Main Gate is located off State Highway 71 at Presidential Boulevard (Figure 3.2-8). A second gate at Avenue F is approximately 1,600 feet west of the Main Gate on State Highway 71. A third gate, on Third Street at FM 973 on the southeast side of the base, is open during certain periods of the day. Bergstrom AFB generated approximately 21,170 vehicle trips per day in 1990.

The main roadways on Bergstrom AFB are Avenue F, Presidential Boulevard, First Street, Third Street, and Seventh Street. Avenue F and Presidential Boulevard provide access to the base from State Highway 71 to all onbase destinations. Presidential Boulevard provides ingress and egress to the Main Gate. Avenue F is four lanes and divided at the gate area narrowing to three lanes at its intersection with First Street. There are signals at its intersection with State Highway 71.

Presidential Boulevard is a four-lane, divided road at the base entrance/exit area, narrowing to two lanes at its intersection with Simpson Street. There are signals at its intersections with Simpson, Third Street, and State Highway 71. First, Third, and Seventh streets provide access to most areas from Presidential Boulevard and Avenue F.

Preclosure Reference. Preclosure (1990) traffic volumes and LOS on key regional roads are presented in Table 3.2-2. In 1990, the ADT on U.S. 183 was 14,400 vehicles with an LOS of B south of State Highway 71, and 34,000 vehicles with an LOS of D north of State Highway 71. In 1990, the ADT on State Highway 71 was 42,000 vehicles with an LOS of E east of U.S. 183, and 37,000 vehicles with an LOS of D west of U.S. 183 (Figure 3.2-9). The base does not have any traffic problems on either Avenue F or Presidential Boulevard.

Closure Baseline. Closure of Bergstrom AFB will reduce traffic volumes on major roads providing access to the base. In 1990, Bergstrom AFB generated approximately 21,170 trips a day (Murfee Engineering Company et al. 1990a), of which 16,935 (80%) were on State Highway 71 west of the base (i.e., Main Gate area) and 2,120 (10%) were on State Highway 71 east of the base. The remaining 10 percent of the trips were estimated to occur on local roads in Del Valle and other nearby areas. Of the 16,935 trips generated west on State Highway 71, about 6,775 (40%) were estimated to continue west after the intersection of State Highway 71 and U.S. 183; the remaining 10,160 (60%) would occur north (9,315 or 55%) or south (845 or 5%) on U.S. 183.



EXPLANATION

Onbase Road

Offbase Road

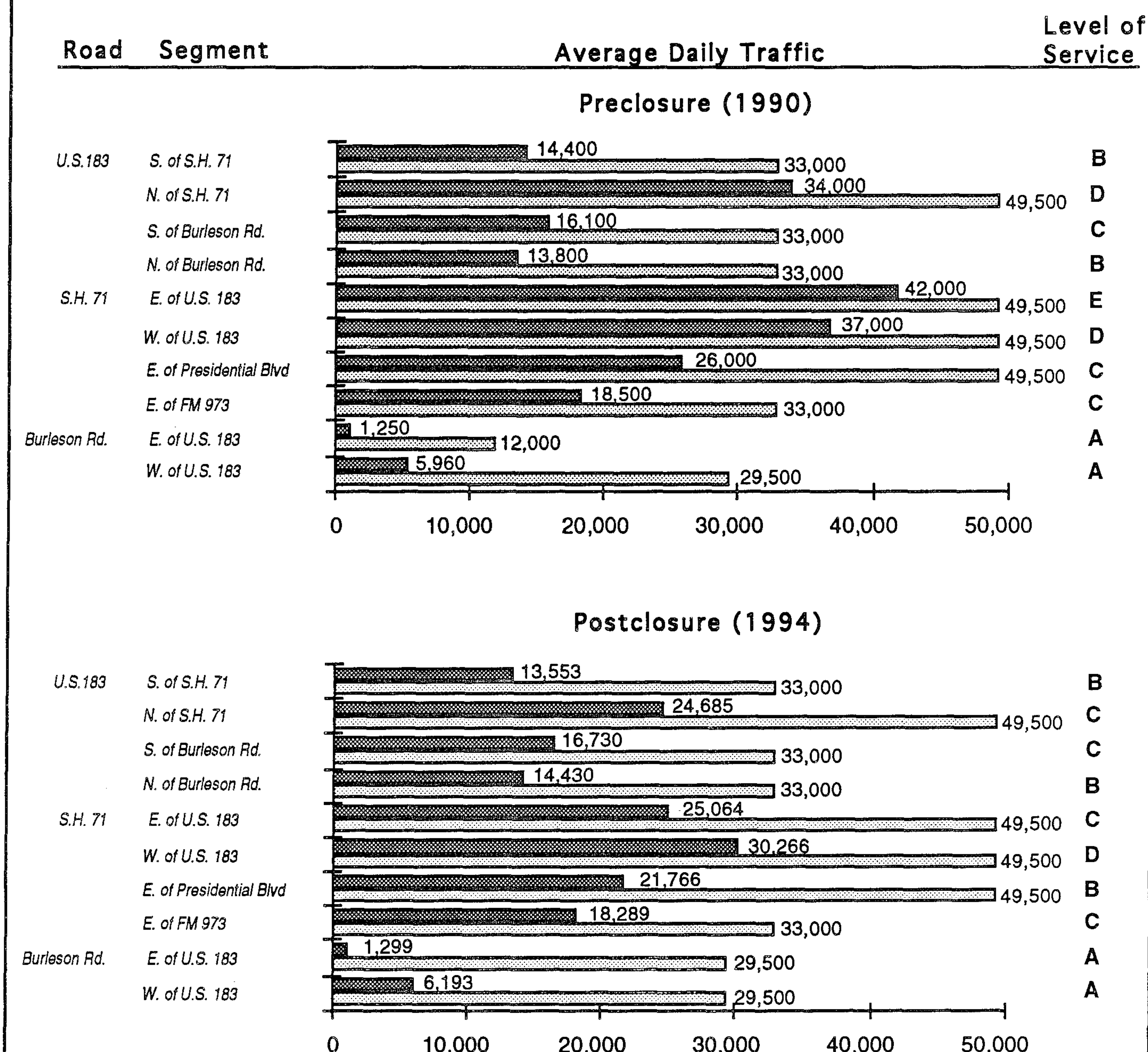
Base Boundary

Runway/Taxiway/Apron

0 750 1500 3000 FEET

Bergstrom AFB Road System

Figure 3.2-8



Source: Texas Department of Transportation 1990.

BR-BERG/003

LEGEND

Daily Traffic Volume (passenger cars per day)

Daily Traffic Capacity (passenger cars per day)

Traffic Volumes on Key Roads in the Vicinity of Bergstrom AFB

Figure 3.2-9

Table 3.2-2

Existing and Postclosure Traffic Volumes and Level of Service on Major Roadways in the Vicinity of Bergstrom AFB

Roadway	Location	1990 ADT	1990 Capacity	Volume-to-Capacity Ratio	LOS
	Existing ADT				
U.S. 183	South of State Highway 71	14,400	33,000	0.44	B
	North of State Highway 71	34,000	49,500	0.69	D
	South of Burleson Road	16,100	33,000	0.49	C
	North of Burleson Road	13,800	33,000	0.42	B
State Highway 71	East of U.S. 183	42,000	49,500	0.85	E
	West of U.S. 183	37,000	49,500	0.75	D
	East of Presidential Blvd.	26,000	49,500	0.53	C
	East of FM 973	18,500	33,000	0.56	C
Burleson Road	East of U.S. 183	1,250	12,000	0.10	A
	West of U.S. 183	5,960	29,500	0.20	A
	Postclosure (1994) ADT				
U.S. 183	South of State Highway 71	13,553	33,000	0.41	B
	North of State Highway 71	24,685	49,500	0.50	C
	South of Burleson Road	16,730	33,000	0.51	C
	North of Burleson Road	14,430	33,000	0.44	B
State Highway 71	East of U.S. 183	25,064	49,500	0.51	C
	West of U.S. 183	30,226	49,500	0.61	D
	East of Presidential Blvd.	21,766	49,500	0.44	B
	East of FM 973	18,289	33,000	0.55	C
Burleson Road	East of U.S. 183	1,299	29,500	0.04	A
	West of U.S. 183	6,193	29,500	0.21	A

Source: Texas Department of Transportation 1990.

With closure of the base, State Highway 71 east of U.S. 183 is projected to experience a 40 percent reduction in ADT. U.S. 183 south of State Highway 71 is projected to have a 6-percent decrease and U.S. 183 north of State Highway 71 is projected to experience a 27-percent decrease in ADT. These reductions, however, would change the LOS rankings on some of these highways, although peak-hour congestion would be only slightly reduced.

3.2.3.2 Airspace/Air Traffic

Airspace is a finite resource that can be defined vertically and horizontally, as well as temporally, when describing its use for aviation purposes. As such, it must be managed and utilized in a manner that best serves the competing needs of commercial, general, and military aviation interests. The FAA is responsible for the overall management of airspace and has established different airspace designations that are designed to protect aircraft while operating to or from an airport, transiting enroute between airports, or operating within "special use" areas identified for defense-related purposes.

Rules of flight and air traffic control procedures have been established to govern how aircraft must operate within each type of designated airspace. All aircraft operate under either instrument flight rules (IFR) or visual flight rules (VFR).

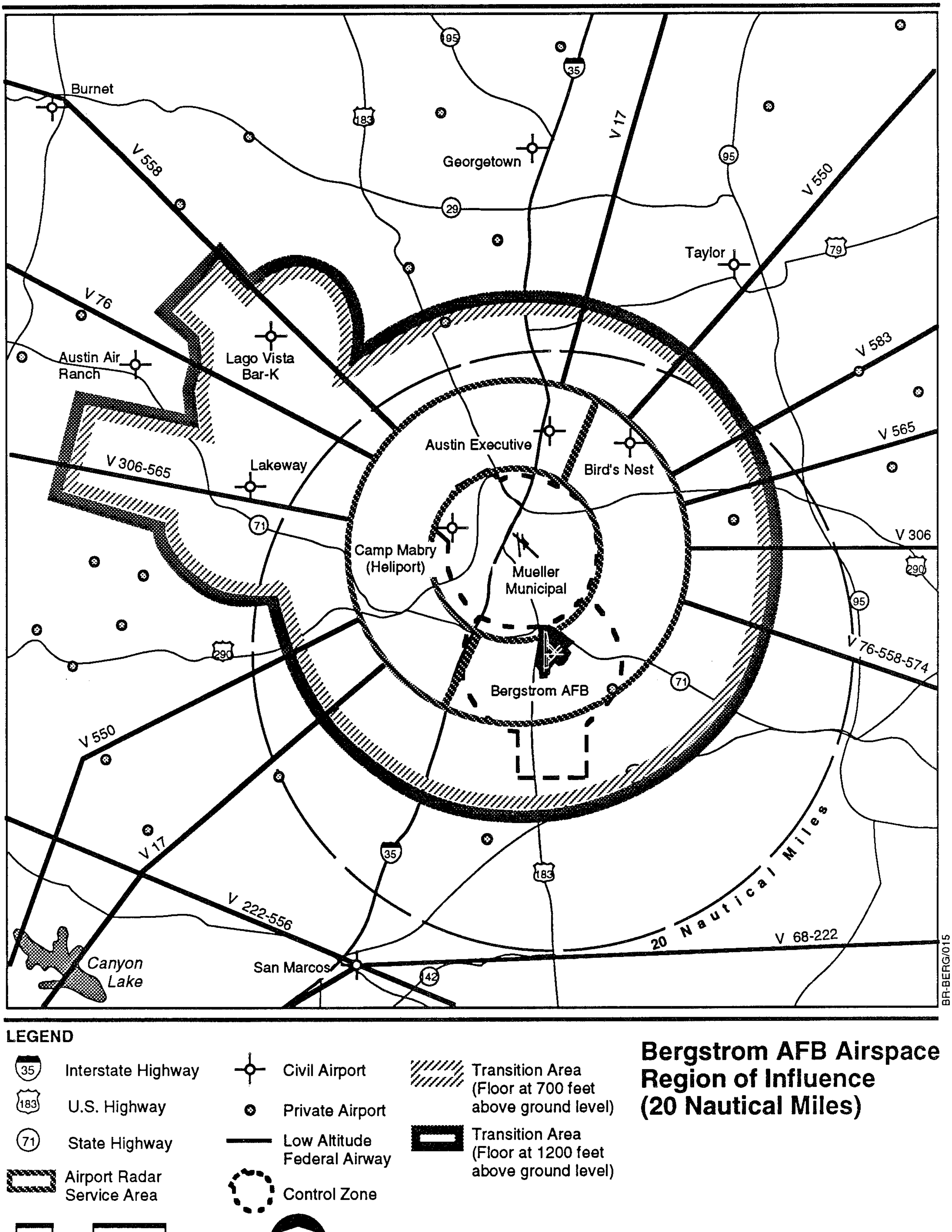
The type and dimension of individual airspace areas established within a given region and their spatial and procedural relationship to each other is contingent on the different aviation activities conducted in that region. When any significant change is planned for this region, such as an airport expansion or a new military flight mission, the FAA will reassess the airspace configuration to determine if such changes will adversely affect (1) air traffic control systems and/or facilities; (2) movement of other air traffic in the area; or (3) airspace already designated and used for other purposes (i.e., Military Operating Areas [MOAs] or restricted areas). Therefore, considering the limited availability of airspace for air traffic purposes, a given region may or may not be able to accommodate any significant airport or airspace area expansion plans.

The ROI for this analysis is the area within a 20-nautical-mile radius of Bergstrom AFB (Figure 3.2-10). Airspace in the Austin area can be characterized as complex because of the proximity of Bergstrom AFB to Robert Mueller Municipal Airport (RMMA) and the orientation of the runways at these two facilities, which creates overlapping air traffic control zones.

The use of airspace in the Bergstrom AFB area is also constrained by the encroachment of heavily populated areas northwest of the base. Flight tracks for military aircraft have been established to reduce conflicts with civilian aircraft operations in the Austin area and to minimize community disturbance.

Preclosure Reference. An understanding of the ROI airspace/air traffic environment and its use under the preclosure reference is necessary to help determine its capability and capacity to assimilate future aviation activities into the National Airspace System (NAS). The same constraints and considerations, such as terrain, runway alignments, and other air traffic flows, would apply under alternate aviation uses of Bergstrom AFB. The traffic patterns, instrument approaches, and departure procedures used at Bergstrom AFB under preclosure conditions basically represent the airspace requirements for aircraft operations at the base, and transitioning between the base and the enroute airspace system (airway or other transit routes).

Bergstrom AFB is located within airspace under the jurisdiction of Austin Approach Control. The Austin Approach Control area boundaries are contiguous with three other air traffic control areas: the Robert Gray Approach



Bergstrom AFB Airspace Region of Influence (20 Nautical Miles)

Figure 3.2-10

Control area to the north, the San Antonio Approach Control to the southwest, and the Houston Air Route Traffic Control Center (ARTCC) to the west, east, and southeast. Coordinated and developed procedures provide expeditious and safe flow of air traffic between these air traffic control areas.

Approach control and air traffic control facilities in the Austin area include the Austin Approach Control facility at RMMA and the air traffic control towers at RMMA and Bergstrom AFB. An Airport Radar Service Area (ARSA) has been established at RMMA to provide radar vectoring and sequencing for all VFR and IFR aircraft landing in, taking off in, or overflying the airspace (Figure 3.2-10). Aircraft that use the airspace include air carrier and air taxi aircraft, high performance military aircraft, military and civilian rotorcraft, and all types of general aviation aircraft.

In addition to Bergstrom AFB, there are 12 civil airports in the Austin Approach Control area (Figure 3.2-10). Six of the airports (RMMA, Austin Executive, Lakeway, Georgetown, Lago Vista Bar-K, and San Marcos) and Bergstrom AFB have published instrument approach procedures, and RMMA, Bergstrom AFB, and San Marcos each have at least one precision landing aid (ILS or PAR).

The remaining airports (Taylor, Burnet, Austin Air Ranch, Smithville, Bird's Nest, and Lockhart [approximately 10 miles southeast of San Marcos Airport]) have nonprecision navigation aids and operate primarily under VFR, although departures may be made during inclement weather.

There are two basic air traffic flows associated with approach control and IFR operations in the Austin area: north and south. The majority of Bergstrom AFB air traffic is to and from a number of MOAs northwest of Austin. With north flows, Bergstrom AFB traffic and traffic for RMMA traverse common airspace. To avoid aircraft arriving at RMMA, departures from Bergstrom AFB are cleared to 4,000 feet and inbound RMMA traffic is held at 5,000 feet until clear of each other.

Radar approach control and Bergstrom AFB precision approach control are used to ensure that pilots comply with established glide slopes to the north and with local pattern approach altitudes. Where controller techniques/procedures cannot resolve individual conflicts, depending on traffic volumes and routings, the two traffic flows must be on a one-to-one basis. No simultaneous operations are possible for north flow operations.

With south flows, departures are away from RMMA and the Bergstrom AFB tower is permitted to have automatic, independent releases of departures. When sufficient altitude is attained, the aircraft is vectored to an MOA or onto an established airway. During certain VFR conditions, Bergstrom AFB traffic can make approaches to the base airfield independent of RMMA traffic. However, during IFR conditions, traffic flows into the base are sequenced with RMMA operations.

Military aircraft from the base use steeper approaches and higher pattern altitudes. Arriving aircraft approach the airfield from the south whenever weather conditions permit. These procedures are used to minimize air traffic and noise in developed areas north of the base.

The Bergstrom AFB airfield consists of two runways. Runway 17R/35L, the primary runway, is 12,250 feet long and 300 feet wide. Runway 17L/35R, the secondary runway, is 10,000 feet long and 150 feet wide. However, only 6,700 feet of the runway length are currently operational. Runway 17L/35R is designed to accommodate only light aircraft because of low pavement strength. These parallel runways have a 1,000-foot centerline-to-centerline separation. Commercial and general aviation aircraft are not permitted to land except in emergency situations.

Approximately 43,500 and 29,515 operations (departure, arrival, or closed pattern) occurred at Bergstrom AFB in 1990 and 1991, respectively (Table 3.2-3). In 1990, approximately 80 percent of the operations were conducted by military aircraft based at Bergstrom AFB and 20 percent by transient military aircraft. The percentage of based aircraft operations in 1991 decreased to approximately 75 percent of total operations, primarily because of decreased flight activity by the 67th Reconnaissance Wing (RW) and 924th Fighter Group (FG).

Table 3.2-3

Bergstrom AFB Aircraft Operations[1]

Assignments	Type	Annual Operations 1990	Annual Operations 1991
Aircraft Based at Bergstrom AFB[2]	RF-4C	25,188	19,134
	F-4E	9,519	996
	F-16	--	1,902
Transient	A-4J	104	92
	A-10	508	268
	C-12	118	70
	C-21	252	182
	C-130A-G	126	202
	C-130H	248	204
	F-4C/D/F	172	102
	F-4E/G	172	102
	RF-4C	346	202
	F-15	434	442
	F-16	898	776
	F-18	42	104
	P-3C	110	90
	T-2	80	108
	T-37	1,227	1,134
	T-38	3,078	2,508
	AT-38	178	326
Other Transient		706	568
Total:		43,506	29,512

Notes: [1]An aircraft operation is one takeoff, landing, or closed pattern.
[2]Based on number of sorties with an average of three operations per sortie.
Sources: U.S. Air Force 1990b, 1991j.

In 1990 and 1991, there were 25,188 and 19,134 operations by based RF-4C aircraft, respectively. In the same years, total operations by based F-4E aircraft (formerly used by the 924th FG) were 9,519 and 996, respectively. In 1991, there were 1,902 operations involving based F-16 aircraft (currently used by the 924th FG).

Six MOAs are located northwest of the Austin area: Brownwood 1, Brownwood 2, Brownwood 3, Brownwood 4, Brady High and Low, and Texon (Figure 3.2-11). An MOA is a block of airspace reserved by the FAA for military aircraft training purposes. The base is responsible for scheduling airspace activity in two of the MOAs (Brady High and Low, and Texon) and associated Military Training Routes and air refueling airspace. The majority of air traffic from Bergstrom AFB is to/from these MOAs, through the ARSA. The MOAs also affect IFR traffic into and out of the Austin area. The primary preclosure arriving and departing aircraft flight patterns for Bergstrom AFB are shown on Figure 3.2-12.

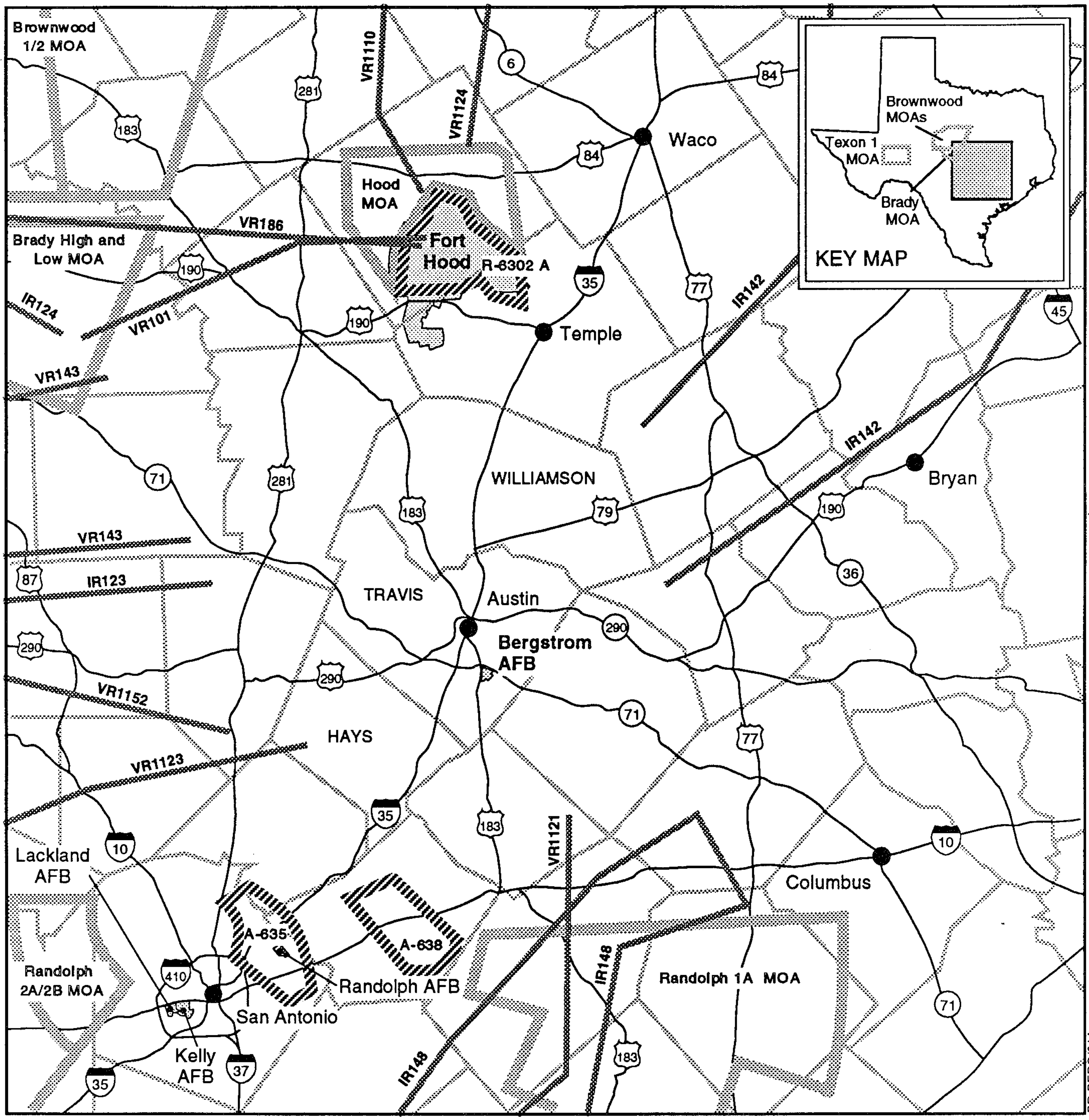
Closure Baseline. With closure of Bergstrom AFB, the number of military operations in the base area will be reduced to approximately 13,500 per year, resulting from the deactivation of the 67th RW and a decrease in the number of transient aircraft operations that will occur without an operational military airfield. Operations associated with the 924th FG (approximately 9,000 operations per year [3,000 sorties]), Air Training Command (T-37 and T-38) training (approximately 4,325 operations per year), and transient military aircraft visiting the ACC Regional Corrosion Control Facility (RCCF) and Headquarters 10th Air Force will still occur at Bergstrom AFB following base closure, if an operational airfield is maintained. Approximately 180 annual transient aircraft operations are expected to occur following base closure.

Closure of Bergstrom AFB may result in a decrease in the use of Special Use Airspace areas and Military Training Routes. Scheduling responsibility for MOAs and Military Training Routes previously scheduled by the 67th RW has been transferred to the 924th FG. Some airspace scheduled by the 924th FG may be returned to the NAS, if a lack of utilization by military flight activity occurs.

If RMMA closes, the Austin airspace environment will be simplified and the FAA will likely restructure the terminal airspace system in the Austin area. Even with restructuring of the airspace system, conflicts between military and civilian air traffic may still occur if the 924th FG remains at Bergstrom AFB with the General Aviation/Air Cargo Airport Alternative.

3.2.3.3 Air Transportation

Preclosure Reference. Robert Mueller Municipal Airport (RMMA), approximately 9 miles north of the base, is the closest commercial airport to Bergstrom AFB. It is the region's primary commercial airport, with 192,974 operations in 1990 and 182,079 operations in 1991. Currently, nine scheduled passenger airlines and six all-cargo airlines serve RMMA. The commercial airlines include



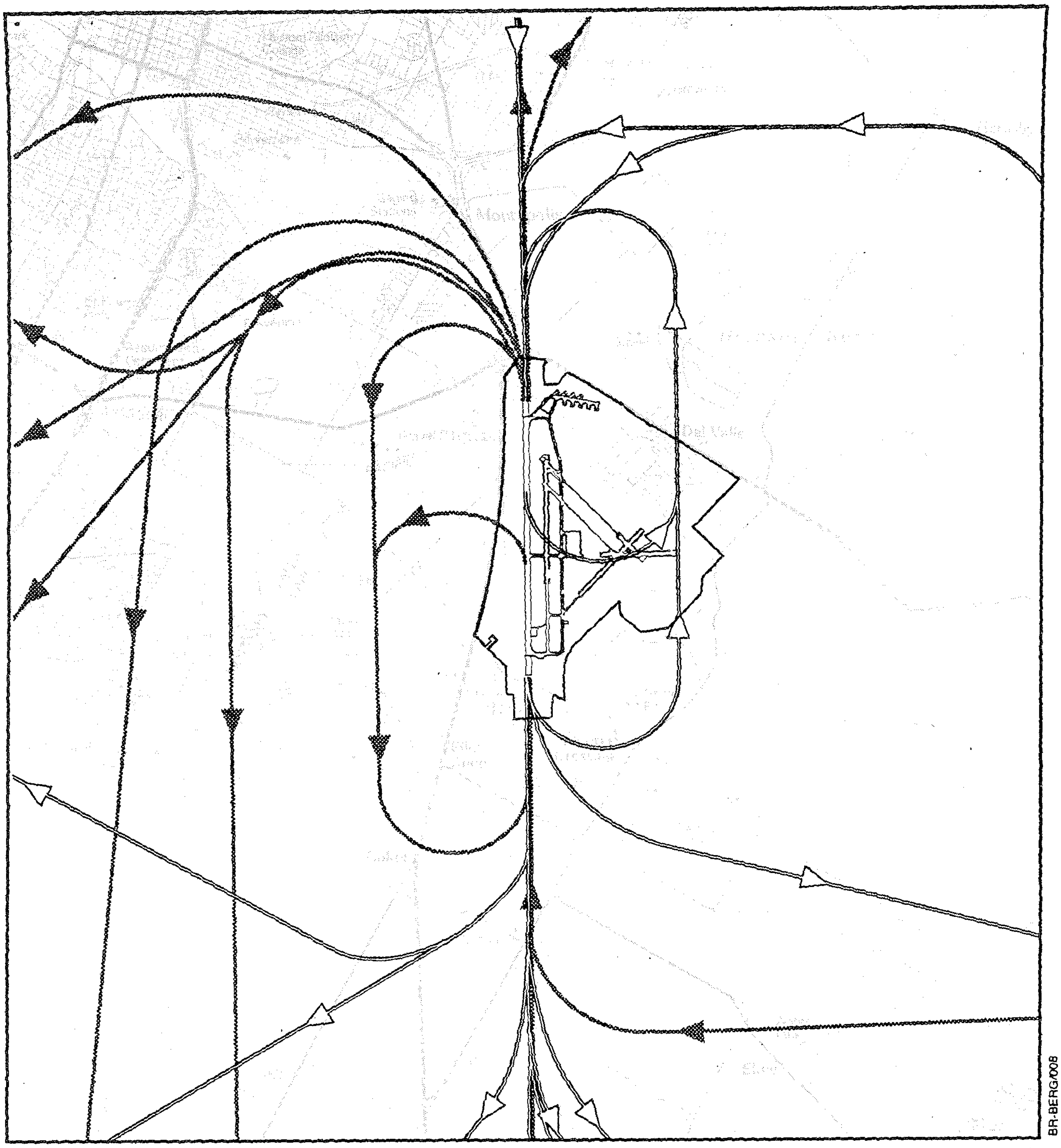
EXPLANATION

- Interstate Highway (10)
- U.S. Highway (87)
- State Highway (71)
- County Boundary
- Restricted or Alert Area Airspace
- Military Operating Area
- Military Training Route

0 15 30 MILES

Existing Special Use Airspace and Military Training Routes

Figure 3.2-11



LEGEND

Base Boundary

Runway 35L

Runway 17R

Direction of Travel on Flight Track
(Arrival, Departure, and Closed-Pattern)

0 1 2 MILES

Source: U.S. Air Force 1987a.

Preclosure Bergstrom AFB Aircraft Flight Tracks

Figure 3.2-12

American, American West, Conquest, Continental, Delta, Northwest, Southwest, United, and USAir. All-cargo airlines include Airborne Express, Baron Aviation, Cirrus Air, Emery Worldwide, and Federal Express. United Parcel Service flies into RMMA seasonally. In 1990, the Austin region accounted for 0.47 percent of the total United States passenger traffic, compared with 0.31 percent in 1980.

RMMA is classified by the FAA as a small hub airport. Aircraft operations (landings and takeoffs) are reported by the FAA for four categories: air carrier, air taxi and commuter, general aviation, and military. Historical aircraft operations at RMMA in 1975 and between 1980 and 1991 are presented in Table 3.2-4. Total aircraft operations increased from 172,223 in 1975 to 192,050 in 1980, or an average increase of 2.2 percent a year. Total operations decreased to 186,628 in 1982, then increased to a high of 231,024 in 1985. Since 1985, the number of aircraft operations has decreased by approximately 3.5 percent per year. The decrease is primarily attributable to a steady decrease in general aviation operations, a trend which has also occurred nationally (KPMG Peat Marwick 1992).

Table 3.2-4

Robert Mueller Municipal Airport Aircraft Operations

Year	Air Carrier	Air Taxi	General Aviation	Military	Total Operations	Percent Increase (Decrease)
1975	16,816	3,589	141,441	10,377	172,223	--
1980	31,962	18,217	131,945	9,926	192,050	2.2*
1981	35,619	15,649	130,664	7,706	189,638	(1.3)
1982	35,556	16,418	127,852	6,802	186,628	(1.6)
1983	39,653	16,390	131,590	7,644	195,277	4.6
1984	56,654	14,648	150,325	8,462	230,089	17.8
1985	60,646	15,382	146,551	8,445	231,024	0.4
1986	61,256	12,300	127,929	7,473	208,958	(9.6)
1987	64,615	9,769	115,046	6,836	196,266	(6.1)
1988	62,847	13,844	105,305	6,984	188,980	(3.7)
1989	61,511	25,165	92,292	7,181	186,149	(1.5)
1990	60,979	28,439	96,558	6,998	192,974	3.7
1991	62,665	18,173	95,229	6,012	182,079	(5.6)

Note: *Represents average annual increase between 1975 and 1980.
Source: KPMG Peat Marwick 1992.

Air carrier operations are performed by large certificated airlines. Between 1975 and 1985, air carrier operations more than tripled at an average of 13.7 percent a year. Deregulation of the industry spurred expansion in airline services at RMMA and resulted in economic growth for the Austin area. Between 1985 and 1991, air carrier operations increased gradually at 0.5 percent a year. In 1991, there were 62,665 air carrier operations at RMMA.

Between 1975 and 1980, air taxi and commuter aircraft operations increased nearly six-fold, an average annual increase of 38.4 percent. Since 1980, the number of air taxi and commuter aircraft operations has varied depending on the level of commuter airline service. Between 1988 and 1990, air taxi and commuter operations doubled as a result of increased service by Conquest Airlines; however, in 1991, Conquest Airlines decreased its air taxi and commuter operations. A total of 18,173 air taxi and commuter operations occurred at RMMA in 1991.

General aviation aircraft operations reached a peak of 150,325 in 1984, but have steadily decreased since then. In 1991, there were 95,229 general aviation operations.

Military operations at RMMA are primarily associated with the Texas Army National Guard (ANG), which conducts routine training activities using 36 based aircraft (35 helicopters and 1 twin-engine turboprop). The number of military operations has decreased steadily since 1975. In 1991, a total of 6,012 military aircraft operations occurred at RMMA.

The B-737 aircraft type (B-737-200, B-737-300, and B-737-500) is the most common aircraft in service at RMMA and accounted for nearly half of scheduled aircraft departures, followed by the MD-80 and B-727. Commuter airlines generally use 19-seat aircraft.

Historical airline passenger volumes at RMMA between 1975 and 1991 are presented in Table 3.2-5. Economic growth in the Austin region and deregulation of the airline industry in the early 1980s resulted in an approximately five-fold increase in the number of enplaned passengers at RMMA between 1974 and 1985. Since 1985, the annual increase in enplaned passengers has not been as large. In 1991, the number of enplaned passengers decreased by 4.0 percent, compared to the total nationally, which decreased by 3.1 percent (KPMG Peat Marwick 1992).

The Scheduled Airlines Traffic Office (SATO) at Bergstrom AFB ticketed approximately 8,900 passengers in 1989, 9,900 in 1990, and 9,400 in 1991. Of these, approximately 5,700, 6,400, and 6,000 of the ticketed passengers, respectively, were on military travel orders (Scheduled Airlines Traffic Office 1992). The remainder of the tickets issued were for personal travel.

Historical enplaned cargo (freight and mail) volumes are summarized in Table 3.2-6 for 1980 to 1991. Freight at RMMA is transported by passenger and all-cargo airlines. In 1991, the all-cargo airlines accounted for about 75 percent of all freight enplaned, which reflects the heavy use of express cargo by the government sector and high-technology industries. Mail is transported only by passenger airlines. The amount of deplaned cargo slightly exceeds enplaned cargo on average.

Table 3.2-5

Historical Airline Passenger Volume at Robert Mueller Municipal Airport 1975 to 1991

Year	Enplaned Passengers	Percent Increase (Decrease)	Annual/Daily Aircraft Departures	Daily Aircraft Departures	Passengers Enplaned Per Departure
1975	371,275	--	8,856	24	42
1980	895,542	19.3*	17,946	49	50
1981	982,593	9.7	19,454	53	51
1982	1,108,874	12.8	18,019	49	62
1983	1,255,270	13.2	21,564	59	58
1984	1,655,334	31.9	29,458	81	56
1985	1,852,160	11.9	31,790	87	58
1986	1,819,955	(1.7)	31,533	86	58
1987	1,915,770	5.3	32,009	88	60
1988	1,940,225	1.3	32,675	90	59
1989	2,100,195	8.2	40,514	111	52
1990	2,140,860	1.9	39,538	108	54
1991	2,054,310	(4.0)	36,121	99	57

Note: *Represents an average annual increase between 1975 and 1980.
Source: KPMG Peat Marwick 1992.

Table 3.2-6

Historical Enplaned Cargo at Robert Mueller Municipal Airport 1980 to 1991 (in tons)

Year	Freight	Mail	Total	Percent Increase (Decrease)
1980	2,042	1,692	3,734	--
1981	2,456	1,692	4,148	11.1
1982	2,111	1,654	3,765	(9.3)
1983	2,750	2,183	4,933	31.1
1984	3,694	5,589	9,283	88.2
1985	3,057	3,225	6,282	(32.3)
1986	3,795	3,419	7,214	14.9
1987	5,065	3,528	8,593	19.1
1988	8,595	3,713	12,308	43.2
1989	15,125	3,892	19,017	54.5
1990	14,633	3,959	18,592	(2.2)
1991	12,580	3,756	16,336	(12.1)

Source: KPMG Peat Marwick 1992.

Between 1980 and 1989, the amount of enplaned cargo increased an average of 19.8 percent a year, from 3,734 tons to 19,017 tons. Two major increases in cargo activity occurred during this period. In 1984, the amount of enplaned cargo increased by approximately 90 percent as a result of the introduction of service by Emery Worldwide, which subsequently discontinued service in 1985.

In addition, between 1988 and 1989, the amount of cargo enplaned increased about 43 and 54 percent, respectively, as a result of strong economic growth in the Austin region, the continued development of the all-cargo airline market nationally and at RMMA, and the addition of all-cargo airline services at RMMA by Spirit of America and Baron Aviation (KPMG Peat Marwick 1992).

Since 1989, the amount of enplaned cargo has decreased. Decreases in cargo activity in 1990 and 1991 were primarily related to a decrease in the volume of freight enplaned by the all-cargo airlines. Freight enplaned by all-cargo airlines decreased by 6.7 percent and 23.4 percent, respectively, in these years, while the amount of freight enplaned by the passenger airlines increased 20.9 percent and 36.0 percent, respectively. During the first 2 months of 1992, the volume of cargo enplaned at RMMA increased 31.5 percent compared with the same period in 1991 (KPMG Peat Marwick 1992).

The closest general aviation airport to RMMA is Austin Executive Air Park, a small general aviation airport with a 5,000-foot-long, 75-foot-wide runway, approximately 7 miles northeast of RMMA (Figure 3.2-6). In 1991, there were 76 based fixed-wing aircraft, including 65 single engine, 9 multi-engine, and 2 jet-engine, as well as 7 helicopters. There were 59,000 operations in 1991. Austin Executive Air Park does not have an air traffic control tower and air traffic services are provided to IFR.

Closure Baseline. With closure of Bergstrom AFB, there will be a minimal reduction in travel through RMMA and other airports. The reduction in base-related air travel will be compensated by projected population growth in Austin and adjacent areas.

3.2.3.4 Railroads

Two rail freight companies serve the Austin area: the Union Pacific and Austin & Northwestern railroads. A spur off of the Union Pacific Railroad main line through Austin terminates west of the base and U.S. 183 (Figure 3.2-6). Tracks for the Austin & Northwestern Railroad are located north of Bergstrom AFB and the Colorado River. No direct line is provided to the main portion of the base.

AMTRAK provides passenger service in the Austin area (Railroad Commission of Texas 1990). In 1989, 11,973 passengers boarded and deboarded in the City of Austin. This number increased to 19,633 passengers in 1992.

3.2.4 Utilities

Utility systems addressed in this analysis include the facilities and infrastructure used for:

- Potable water pumping, treatment, storage, and distribution;
- Wastewater collection and treatment;

- Solid waste collection and disposal; and
- Energy generation and distribution, including the provision of electricity and natural gas.

The ROI for the utilities analysis consists of the service areas of each utility provider servicing Bergstrom AFB and surrounding areas, including the City of Austin and the community of Del Valle. The major attributes of utility systems in the ROI are processing and distribution capacities, storage capacities, average daily consumption, peak demand, and related factors required to determine whether such systems are adequate to provide services in the future.

3.2.4.1 Offbase Systems

The City of Austin Water and Wastewater Utility Department supplies water to the area within and outside the corporate limits of the City of Austin, including Bergstrom AFB. The source of this water is a 150-mile-long network of lakes and six dams located along the Colorado River. The storage capacity of these lakes is 3.3 million acre-feet. This system, which supplies water to approximately 143,900 meters, is connected to approximately 14,800 fire hydrants and has 25 booster pump stations. The service area for this system is approximately 430 square miles.

The Davis, Ullrich, and Green Water treatment plants supply water to the city. The rated peak capacity for the City of Austin water system in 1991 was 225 million gallons per day (MGD). The city supplied an average of 97.5 MGD in 1991, down from an average of 104.5 MGD in 1990. From 1987 to June 1992, the average consumption was approximately 89.1 MGD. The 1991 average daily per capita consumption was 160 gallons, down from 176 gallons in 1990.

The Green Water Treatment Plant, located northwest of the base, supplies water to Bergstrom AFB. This plant pumped approximately 8,000 million gallons (MG) in 1991, or 21.9 MGD. The Green Water Treatment Plant supplied 22.5 percent of the total water used by the City of Austin in 1991, compared to 21.0 percent in 1990.

Other water purveyors in the Austin/Travis County area supply water to small areas in unincorporated Travis County. These areas consist of neighborhoods and other small developments.

The City of Austin Water and Wastewater Utility Department provides wastewater treatment services for the City of Austin, unincorporated Travis County, and Bergstrom AFB. Wastewater in the ROI is treated at four treatment plants throughout the city: Bergstrom Wastewater Treatment Plant at Hornsby Bend, South Austin Regional, Govalle, and Walnut Creek. Sludge from the four wastewater treatment plants is sent to the central sludge processing facility at Hornsby Bend.

The average design capacity of the Bergstrom Wastewater Treatment Plant at the Hornsby Bend Complex is 2.5 MGD. The City of Austin plans to close the Bergstrom Wastewater Treatment Plant by October 1993 and divert flows from the Bergstrom AFB area to the South Austin Regional Wastewater Treatment Plant. This plant, which has a capacity of 40 MGD, is located near the confluence of Onion Creek and the Colorado River. The City of Austin has provisions for the expansion of South Austin Regional and Walnut Creek plants.

The combined capacity of the four wastewater treatment plants is 122.5 MGD. These plants currently maintain an average flow of 68.5 MGD. The City of Austin generated an average of 62.2 MGD of wastewater in 1990 and 71.6 MGD in 1991.

The City of Austin Solid Waste Services Department collects and disposes of solid waste generated in the city. The City of Austin landfill, located approximately 3,500 feet from the south end of the main runway, received approximately 300.6 tons per day of solid waste in 1990, 310.7 tons per day in 1991, and approximately 324.6 tons per day in 1992. This landfill is used for the disposal of various types of municipal waste and is projected to reach capacity in 2005. Businesses and independent waste-hauling companies also dispose of waste in this landfill. A Type 4 landfill (construction rubble and nonputrescible waste) permit is adjacent to this landfill but is currently not operating. By agreement between the FAA and the City of Austin, this landfill will be closed if a commercial airport is located on the base.

There are three other landfills in Travis County: Browning-Ferris Industries (BFI), Austin Community, and Texas Disposal Systems, Inc. The BFI landfill and the Austin Community landfill are located north of Interstate 290 approximately 10 miles northeast of the base. The BFI landfill, which opened in 1981, currently has 32 years of remaining capacity. BFI received approximately 750.3 tons of solid waste per day in 1990 and 695.5 tons per day in 1991. The City of Austin sends approximately 15,000 tons of residential waste to this landfill. The Austin Community landfill received approximately 828.7 tons of solid waste per day in 1990 and 844.9 tons per day in 1991. The Texas Disposal Systems, Inc. landfill, which opened in February 1991, contains approximately 341 acres and has a capacity of 45 million cubic yards. This landfill, located southwest of the City of Austin landfill, received 192,507 tons of solid waste between February 1991 and July 1992.

The City of Austin Electric Utility Department provides electricity to the ROI. The city generated 18.6 million kilowatt-hours (kWh) per day in 1990, compared to approximately 19.0 million kWh per day in 1991.

Three electric power plants, with a combined capacity of 1,550 megawatts (MW), supply power to the City of Austin. The city also uses a joint-venture power plant with a maximum capacity of 970 MW. The peak demand for electricity in the City of Austin service area is 1,408 MW. The electric distribution system consists of approximately 7,560 miles of overhead distribution lines and 3,140 miles of underground distribution lines.

Natural gas service in the ROI is provided by the Valero Transmission Company (VTC), Southern Union Gas (SUG), Lone Star Gas (LSG), and Entex, a division of the Arkansas Louisiana Gas Company.

VTC provides service to Bergstrom AFB. In 1991, VTC supplied 0.52 million cubic feet (MMcf) of natural gas, compared to 0.58 MMcf in 1990. As a natural gas supplier, VTC does not construct or maintain any internal distribution lines. SUG, a natural gas distributor, provided an estimated 26.45 MMcf in 1990 and 27.09 MMcf in 1991. SUG's service area includes parts of unincorporated Travis County. LSG, also a natural gas distributor, supplied an estimated 3.12 MMcf of natural gas to the Austin area in 1990, and 3.10 MMcf in 1991. LSG's service area includes most of Williamson County and part of Travis County. Entex, which supplies natural gas to unincorporated Travis County, supplied 0.013 MMcf in 1990 and in 1991.

3.2.4.2 Onbase Systems

Bergstrom AFB does not maintain utility production (except for emergency generators) or processing facilities; instead, all utilities are supplied from outside sources. Utility usage for water, wastewater, solid waste, electricity, and natural gas for the base from 1989 to 1992 is summarized in Table 3.2-7.

Table 3.2-7

Bergstrom AFB Utility Usage, 1989-1993

Utility	1989	1990	1991	1992	1993	1994 (Closure)
Water (MGD)	0.93	0.98	0.74	0.53	0.32	<0.01
Wastewater (MGD)	0.53	0.57	0.62	0.34	0.20	<0.01
Solid Waste (tons per day)	30.0	32.5	32.7	32.2	19.3	<0.01
Electricity (million kWh/day)	0.18	0.18	0.18	0.17	0.10	<0.01
Natural Gas (MMcf/day)	0.48	0.58	0.52	0.47	0.28	<0.01

Sources: U.S. Air Force 1992a,b.

Potable drinking water is supplied to Bergstrom AFB by the City of Austin Water Department. In 1991, the base consumed 270.1 MG of water, or an average of 0.74 MGD. In 1991, less than 1 percent of the 97.5 MGD supplied by the City of Austin Water Department was consumed by the base. The Green Water Treatment Plant, which has a capacity of 45 MGD, supplies water to the base.

The City of Austin treats wastewater generated by Bergstrom AFB at the Bergstrom Wastewater Treatment Plant at the Hornsby Bend Complex, which has a capacity of 2.5 MGD. From 1987 to 1991, the plant treated an average of 0.65 MGD. During this period, flows from Bergstrom AFB accounted for approximately 84 percent of the wastewater treated by the plant. Bergstrom AFB generated 0.57 MGD in 1990 and 0.62 MGD in 1991. The city plans to close the Bergstrom Wastewater Treatment Plant and divert the base's wastewater to South Austin Regional Wastewater Treatment Plant, which has a capacity of 40 MGD. The base has an industrial waste discharge permit from the City of Austin for the discharge of industrial wastewater into the city's sanitary sewer system. The base is required to conduct regular monitoring of its wastewater to ensure compliance with discharge standards specified in the permit.

Bergstrom AFB generated 32.5 tons of solid waste per day in 1990 and 32.7 tons per day in 1991. BFI, a private contractor, collects and disposes of solid waste generated on the base. The base recycling program, which is managed by the Bergstrom AFB Morale, Welfare, and Recreation, recycles paper, cardboard, aluminum cans, plastic, and glass. This program consists of weekly pickups in the base housing area. Currently, 7.5 tons of these materials are collected monthly. Approximately 3,600 pounds of cardboard are recycled per day. Metal, textiles, and tires are recycled by the Defense Reutilization and Marketing Office (DRMO). Grass clippings are used as mulch on the base.

Electric service is provided to Bergstrom AFB by the City of Austin Electric Utility Department. In 1990, onbase electricity consumption was 67.4 million kWh, or 0.18 million kWh per day. In 1991, the base consumed a total of 67.1 million kWh, or an average of 0.18 million kWh per day. The substation for onbase electricity distribution is located directly north of the northern base boundary at the end of the main runway. This substation has two 30 megavolt-ampere (MVA) transformers. The demand on this substation ranges from approximately 20 MVA to 25 MVA.

VTC, a large-scale natural gas supplier, supplies natural gas to Bergstrom AFB. In 1990, onbase natural gas consumption was 210.6 MMcf, or 0.58 MMcf per day. In 1991, the base consumed 190.8 MMcf of natural gas, or an average of 0.52 MMcf per day. Natural gas is supplied to Bergstrom AFB via a 4-inch-diameter service line that enters the base just southeast of FM 973, and originates from a 20-inch-diameter transmission main located approximately 4.5 miles southeast of the base.

Preclosure Reference. Utility demand in the ROI has historically remained relatively stable, with no significantly large yearly increases or decreases (Table 3.2-8). Utility demand has also been consistent with population changes in the Austin/Travis County area.

Closure Baseline. Closure of the base will reduce utility use at Bergstrom AFB to a very small percentage of current use (Table 3.2-7). Potable water supplied by the City of Austin would be used by the caretakers, but the amount required would be significantly reduced. Nonessential water lines would be drained and turned off. Wastewater treatment provided by the City of Austin Water and

Wastewater Utility Department would be required under caretaker status, but the flow would be negligible. Solid waste collection by BFI would also be reduced to a negligible level. Demand for electric power provided by the City of Austin Electric Utility Department, primarily for security lighting and maintaining essential building systems, would be substantially reduced. Natural gas supplied by VTC would be required during the winter months to maintain minimal space heating in mothballed facilities.

Table 3.2-8

Utility Demands in the Region of Influence

Utility	1989	1990	1991	1992	1993	1994 (Closure)
Water (MGD)	106.2	104.5	97.5	98.6	100.2	99.9
Wastewater (MGD)	63.5	62.2	71.6	72.5	73.5	73.4
Solid Waste (tons/day)	1,941.0	1,879.6	2,378.5	2,411.3	2,444.5	2,438.0
Electricity (million kWh/day)	17.8	18.6	19.0	19.9	20.1	19.5
Natural Gas (MMcf/day)	29.30	30.16	30.72	31.00	31.42	31.32

Sources: City of Austin 1992c,d,e.

Closure of the base will also reduce the consumption of utilities in the ROI because most of the personnel employed at the base live in the Austin/Travis County area (Table 3.2-8). Daily demands for water from Austin and unincorporated Travis County would be reduced by 0.3 MGD. Flows to the wastewater treatment plants operated by the City of Austin would be reduced by 0.1 MGD. Solid waste generation would be reduced by 6.5 tons per day. Electricity demands on the City of Austin would be reduced by 0.6 kWh per day. Natural gas demands would decrease by 0.1 MMcf per day.

3.3 HAZARDOUS MATERIALS AND HAZARDOUS WASTE MANAGEMENT

Hazardous materials and hazardous waste management activities at Bergstrom AFB are governed by specific environmental regulations. For the purpose of this analysis, the terms hazardous materials and hazardous waste mean those substances defined as hazardous by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S. Code (USC) 9601-9675, as amended, and the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA), 42 USC 6901-6992, as amended. In general, this includes substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may present substantial danger to public health or welfare or the environment when released into the environment.

The U.S. Environmental Protection Agency (EPA) has granted the State of Texas the authority to promulgate and enforce environmental regulations under RCRA. The state regulations, which must be at least as stringent as the federal regulations, are outlined in Texas Administrative Code Title 31, Part IX, Chapter 335, and are administered by the Texas Water Commission.

Transportation of hazardous materials is regulated by the U.S. Department of Transportation in accordance with regulations implementing the Hazardous Materials Transportation Act (HMTA), as amended (49 CFR 171-179 and 190-197). State regulations regarding the transportation of hazardous waste are outlined in Texas Administrative Code Title 31, Part XI, Chapter 335, and are also administered by the Texas Water Commission.

The ROI encompasses all geographic areas that are exposed to the possibility of a release of hazardous materials or hazardous waste. The ROI for known contaminated sites is within the existing boundaries of Bergstrom AFB, except for contaminants from base operations that may have been carried to adjacent areas by stormwater runoff or as a result of percolation to a shallow aquifer underlying the base. These areas include Carson Creek to the north, the Colorado River to the north and east, and Onion Creek to the south. Specific areas of Bergstrom AFB affected by past and current hazardous materials and waste operations, including remediation activities, are discussed in the following sections.

The preclosure reference for the purpose of this analysis was established as September 1991. This date represents conditions of full mission operation prior to the initiation of drawdown activities.

3.3.1 Hazardous Materials Management

Preclosure Reference. Hazardous materials are stored and used at Bergstrom AFB in connection with flightline, mission support, base support, and various industrial operations, including aircraft repair and maintenance, aerospace ground equipment (AGE) repair and maintenance, nondestructive inspection (NDI) testing, photographic processing interpretation (PPI), vehicle maintenance, corrosion control, painting, and insect and weed control. The most commonly used hazardous materials at Bergstrom AFB include jet (JP-4) and motor fuels, other types of petroleum products, paints, thinners, adhesives, cleaners, lead-acid batteries, pesticides, hydraulic fluids, and halogenated and nonhalogenated solvents.

Management and use of hazardous materials are undertaken in accordance with regulations under Air Force Occupational Safety and Health (AFOSH) requirements (29 CFR 1910 and AFOSH Standard 161). Materials are delivered to Base Supply (Building 604) and distributed to the workplaces in which they are used, except for bulk or pipeline fuel deliveries.

JP-4 jet fuel is supplied by a 4-inch-diameter commercial fuel transmission line on the east side of U.S. 183 to a receiving station opposite the northern end of Runway 17R/35L. Ten tanker unloading stations have been abandoned in favor of an underground 6-inch-diameter fuel line to the base storage tanks. A network of 6- and 8-inch underground fuel lines supplies the various fuel hydrant service points. Forty-four active hydrant outlets occur on two aprons. Apron B contains 24 outlets, and Apron D, 20. Aircraft fueling at locations other than Aprons B and D is accomplished by fuel tanker trucks.

Corrosives, acids, compressed gases, and various other hazardous materials are received and temporarily stored at the Supply Storage Area and the RCCF. Chemicals stored in supply open storage are distributed to the various industrial shops and other base operations, such as the hospital, armament shop, and labs, to replenish depleted stocks.

Bergstrom AFB has a *Spill Prevention and Response Plan* (U.S. Air Force 1991k) that contains a description of facilities in which hazardous materials are used and a list of all hazardous materials on the premises. The plan also identifies procedures and resources for preventing or remediating hazardous material and waste spills, outlines spill prevention practices and site-specific contingency plans in case of a spill, and contains the Material Safety Data Sheets (MSDSs) for common hazardous materials stored on the base. A complete list of MSDSs is maintained in the Bioenvironmental Engineering office.

Closure Baseline. After base closure, only the Air Force, the City of Austin, and associated contractors will be using hazardous materials. All parties will be responsible for managing these materials in accordance with applicable federal, state, and local regulations to protect their employees from occupational exposure to hazardous materials and to protect the public health of the surrounding community. Hazardous materials use will be in compliance with the Superfund Amendments and Reauthorization Act (SARA), RCRA facilities storage design criteria, and Texas Administrative Code Title 31, Part IX, Chapter 335.

The Air Force and the City of Austin will be responsible for the safe storage and handling of all hazardous materials used in conjunction with all postclosure maintenance operations, such as paint, paint thinner, solvents, corrosives, ignitables, pesticides, and materials associated with vehicle and machinery maintenance (e.g., motor oils and fuels). These materials will be delivered to the base in compliance with applicable regulations (49 CFR 171-179 and 190-197).

3.3.2 Hazardous Waste Management

Preclosure Reference. Normal operations at Bergstrom AFB generate waste defined as hazardous by RCRA (40 CFR 261-265) and the State of Texas (Texas Administrative Code Title 31, Part IX, Chapter 335). The Texas Water Commission enforces RCRA regulations as modified by the state's regulations.

The primary activities that generated approximately 8,500 pounds of hazardous waste per month in 1991, when the base was fully operational, were aircraft and vehicle maintenance, including spray painting, solvent degreasing, paint stripping, and corrosion control. Paint and paint stripping wastes and spent solvents are the primary wastes generated. The RCCF (Building 1608) is the largest generator of hazardous waste on the base. The base also generated various waste POL products (e.g., engine and synthetic oils, hydraulic and lubricating fluids, and JP-4) that are not regulated under RCRA. The facilities listed in Table 3.3-1 routinely generated hazardous waste and waste POL products.

A hazardous waste management plan (U.S. Air Force 1987b) has been prepared and implemented to ensure compliance with RCRA requirements. The plan establishes specific policies, responsibilities, and procedures for hazardous waste management operations including petroleum products and polychlorinated biphenyls (PCBs). All personnel who manage or handle hazardous waste must receive annual safety and documentation protocol training, in addition to annual RCRA and Hazard Communication training.

Several waste minimization projects have been established by the base to reduce and minimize quantities of hazardous waste generated. Waste minimization is accomplished through recycling of spent materials, substitution of biodegradable products for hazardous materials, implementation of technological changes, silver reclamation, segregating hazardous waste from POL waste, and using good operating practices.

In general, hazardous waste is stored at various satellite accumulation points, near the points of generation, where up to 55 gallons of waste can be stored. The waste is then either transferred to one of four designated accumulation points or to the interim treatment, storage, and disposal (TSD) facility (Building 1638) for offsite recycling or disposal by permitted contractors. Storage at the accumulation points is temporary and cannot exceed 90 days from the time the waste begins to accumulate. These storage structures meet all requirements for accumulation points as specified in 40 CFR 265, Subpart I, and are regularly inspected to ensure compliance with all RCRA and state regulations. The accumulation points and satellite accumulation points at Bergstrom AFB are listed in Table 3.3-2.

A RCRA Part B Permit application was submitted to the Texas Water Commission in 1987 that would have permitted storage of hazardous waste beyond 90 days. Construction of a new conforming storage facility was proposed, but with the closure of Bergstrom AFB, the existing interim TSD facility will continue to be used through base closure. An application for the withdrawal of the RCRA Part B Permit was submitted to the Texas Water Commission in October 1992. The withdrawal has not been approved or finalized as of January 1993. Hazardous waste generated at the base, except for waste generated by the RCCF, is removed from the base by permitted waste haulers contracted by the DRMO and taken to permitted TSD facilities for recycling or disposal. Waste generated by the RCCF is removed from the base by permitted waste haulers contracted by the facility operator.

A number of facilities use parts cleaners leased under service contracts from Safety-Kleen Corporation. These self-contained parts cleaners are serviced at

Table 3.3-1

Industrial Operations Generating Hazardous Waste and Waste POL Products

Facility	Waste Material	Hazard Code[1]	EPA Hazardous Waste Number[2]	Annual Generation Rate
Armory Section (Bldg. 208)	Safety-Kleen Solvent	I	D001	120 gal
	Nickel-Cadmium Batteries	E	D006	Unknown
Intelligence Support (Bldg. 318/320)	Waste Paint Thinner	I, T	D001, F005	40 gal
	Paint Remover	T	F002	5 gal
	Lead-Acid Battery Casings	E	D008	12 casings
	Lead-Acid Battery Electrolyte	C	D002	6 gal
	Waste Fixer	E	D011	Unknown
	Used Engine Oil	U	-	150-200 gal
	Diesel Fuel	I	D001	100-150 gal
Vehicle Maintenance (Bldg. 400)	Waste Poly-Isocyanate Paint/Enamel Paint/Thinner	I, T	D001, F005	Unknown
	Safety-Kleen Solvent	I	D001	180 gal
	Lead-Acid Battery Casings	E	D008	8 casings
	Lead-Acid Battery Electrolyte	C	D002	12 gal
	Used Engine Oil	U	-	660 gal
	Brake Fluid	-	-	4 gal
	Diesel Fuel	I	D001	12 gal
	Used Transmission Fluid	U	-	0.25 gal
Air Base Ground Defense/ATC Radar Maintenance (Bldg. 401/2900)	Mineral Spirits/Paint Waste	I	D001	1 gal
	Nickel-Cadmium Batteries	U	D006	Unknown
Ground Radio (Bldg. 402)	Nickel-Cadmium Batteries	C, E	D002, D006	Unknown
Aero Club (Bldg. 406)	Safety-Kleen Solvent	I	D001	Unknown
Fuels Branch (Bldg. 520/522)	Waste Paint/Thinner	I	D001, F005	60-120 gal
	Paint Stripper	T	F002	Unknown
	JP-4, Diesel Fuel, Gasoline (see Note 3)		D001	(see Note 4)
	Used Synthetic Oil	U	-	(see Note 4)
	Used Engine Oil	U	-	(see Note 4)
Auto Hobby Shop (Bldg. 600)	Waste Paint/Thinner	U	?	10 gal
	Safety-Kleen Solvent	I	D001	630 gal
	Lead-Acid Batteries	C	D002, D008	8 batteries
	Used Engine Oil	U	-	2,600 gal
	Used Transmission Fluid	U	-	20 gal
	Used Synthetic Oil	U	-	15 gal
	Brake Fluid	-	-	0.75 gal
Refueling Maintenance (Bldg. 635)	Used Engine Oil	U	-	144 gal
	Used Transmission Fluid	U	-	6 gal
	JP-4 (see Note 3)	-	-	Unknown
CE Liquid Fuels Maintenance (Bldg. 713)	Tank Cleaning Sludge	I	D001	110 gal
	Contaminated Rags and Absorbent Pads	I	D001	330 gal

Table 3.3-1, Page 2 of 6

Facility	Waste Material	Hazard Code[1]	EPA Hazardous Waste Number[2]	Annual Generation Rate
Entomology Shop (Bldg. 722)	Miscellaneous Unused Pesticides	E	D012-D017, D020, D021, D022, D031	Varies
	Cleaning Solvents	T	F002	10 qt
CE Power Production (Bldg. 723)	Lead-Acid Battery Casings	E	D008	12 casings
	Lead-Acid Battery Electrolyte	C	D002	6 gal
	Used Engine Oil	U	-	200 gal
	Diesel Fuel	I	D001	50 gal
	Type 140 Solvent	-	-	60 gal
CE Protective Coatings (Bldg. 734/736)	Waste Paint/Primer	I	D001	60 gal
	Sludge Bottoms From Kerosene Cleaning Vat	I	D001	Included above
	Paint/Varnish Remover and Paint	I	F002, F005	0.5 gal
Wing Intelligence (Bldg. 1400)	Waste Fixer	E	D011	1,200 gal
	Activator, Developer Cleaner, and Stop Bath	C	D002?	Unknown
Base Service Station (Bldg. 1520)	Safety-Kleen Solvent	I	D001	90 gal
	Used Engine Oil	U	-	2,000 gal
	Used Transmission Fluid	U	-	Included above
Structural Repair (Bldg. 1602)	Waste Paint/Thinner	I, T, E	D001, D035, F005	90-120 gal
	Plastic Bead Blast Media	E	D007	8,640-28,080 lb
	Filters With Plastic Blast Media	E	D007	1,293 lb
	Used Paint Arrestor Filters	E	D007	Varies
	Paint Thinner-Contaminated Rags	T	F005	Varies
Regional Corrosion Control Facility (Bldg. 1608)	Contaminated Rinsewater	-	-	101,150 gal
	Plastic Bead Blast Media	E	D006, D007	70 drums
	Used Paint Arrestor Filters	-	-	10 drums
	Paint Stripper Residue	-	-	7 drums
	Paint Thinner	-	-	45 drums
	Paint-Contaminated Rags	E	D007	41 drums
	Paint-Contaminated Paper and Tape	E	D007	84 drums
	Used Engine Oil	U	-	110 gal
Inspection Support Section (Bldg. 1609)	Safety-Kleen Solvent	I	D001	60 gal
	Hydraulic Fluid	-	-	200 gal
	Used Synthetic Oil	U	-	100 gal
	Used Transmission Fluid	U	-	Negligible
	Brake Fluid	-	-	Negligible
Corrosion Control (Bldg. 1609/1640)	Waste Polyurethane Paint, Thinner, Methyl Ethyl Ketone	I, T, E	D001, D035, F005	527 gal
	Used Paint Arrestor Filters	E	D007	1,245 lb
Contract Field Team (Bldg. 1610)	Hydraulic Fluid	-	-	60 gal
Repair and Reclamation (Bldg. 1610)	Safety-Kleen Solvent	I	D001	1,280 gal
67 TRW/MACBH (Bldg. 1610)	Safety-Kleen Solvent	I	D001	Unknown

Table 3.3-1, Page 3 of 6

Facility	Waste Material	Hazard Code[1]	EPA Hazardous Waste Number[2]	Annual Generation Rate
Electro-Environmental Shop (Bldg. 1610/1630)	Lead-Acid Battery Casings	E	D008	60 casings
	Lead-Acid Battery Electrolyte	C	D002	60 gal
	Nickel-Cadmium Cells (Drained)	E	D006	320 cells
	Potassium Hydroxide Solution	C	D002	5 gal
	1,1,2-Trichloro-1,2,2-Trifluoroethane	T	F002	Unknown
Communication/Navigation (Bldg. 1611)	Safety-Kleen Solvent	I	D001	60 gal
	PSI-690 Primer	I	D001	Unknown
TMDE Branch (Bldg. 1611)	Cleaning Compound Solvent (95% Trichlorotrifluorethane)	T	F002	1 gal
	Nickel-Cadmium Batteries	E	D006	200 batteries
	Mercury	T	D009	Varies
	Oil-Contaminated Cleaning Compound Solvent	T	F002	0.125 gal
Propulsion Branch (Bldg. 1612)	Carbon-Removing Compound	T	F004	5 gal
	Fingerprint Remover	U	?	Unknown
	Type 140 Solvent With Contaminated Wastes #1 and #2	T	F004	Varies
	Lead-Acid Batteries	C, E	D002, D008	Unknown
	Nickel-Cadmium Cells	C, E	D002, D006	Unknown
	Safety-Kleen Solvent	I	D001	240 gal
	Used Synthetic Oil	U	-	25 gal
	Hydraulic Fluid	-	-	12 gal
	JP-4 (see Note 3)	-	-	120 gal
NDI Lab (Bldg. 1615)	Waste 1,1,1-Trichloroethane Mixed With Oil	T	F002	6 gal
	Waste Fixer	E	D011	Unknown
Vehicle Maintenance (Bldg. 1801/1806)	Paint Waste Mixed With Thinner	I, T	D001, F002, F005	36 gal
	Waste Paint Remover	T	F002	6 gal
	Safety-Kleen Solvent	I	D001	960 gal
	Used Paint Arrestor Filters	U	D008	112 filters
	Lead-Acid Batteries	C	D002, D008	60 batteries
	Used Engine Oil	U	-	9,600 gal
	Hydraulic Fluid	-	-	120 gal
	Used Transmission Fluid	U	-	110 gal
	Gasoline	I	D001	110 gal
	Diesel	I	D001	Included above with gasoline total
Small Arms Range (Bldg. 1810)	Safety-Kleen Solvent	I	D001	60 gal
Base Graphics (Bldg. 2003)	Waste Fixer	E	D011	96 gal
	Developer, Activator, and Processor Cleaner	C	D002?	Unknown

Table 3.3-1, Page 4 of 6

Facility	Waste Material	Hazard Code[1]	EPA Hazardous Waste Number[2]	Annual Generation Rate
Photo Laboratory (Bldg. 2003)	Waste Fixer	E	D011	Unknown
	Color Developer Starter, Developer System Cleaner, and Flexicolor Developer	C	D002?	Unknown
Reprographics (Bldg. 2202)	Blanket Wash (Tetrachloroethylene)	E, T	D001 D039 F002	5 gal
Dental Clinic (Bldg. 2700)	Waste Fixer	E	D011	Unknown
	Developer Cleaner	C,E	D002, D007	20-28 gal
X-Ray (Bldg. 2700)	Waste Fixer	E	D011	Unknown
Pharmacy (Bldg. 2700)	Off-Specification Chemotherapy Drugs	T	Varies	400 pills
67 TRW/MAABC (12th AMU)/ 67 TRW/MAAAC (91st AMU) (Bldg. 4529/4585)	Nickel-Cadmium Cells	C,E	D002, D006	Unknown
	Used Synthetic Oil	U	-	540 gal
	Hydraulic Fluid	-	-	540 gal
	JP-4 (see Note 3)	-	-	Unknown
Life Support (Bldg. 4531)	Mercury Batteries	T	D009	120 batteries
Fuel System Repair Shop (Bldg. 4533)	JP-4 (See Note 3)	-	-	120-240 gal
Repair and Reclamation (Bldg. 4534)	Safety-Kleen Solvent	I	D001	1,920 gal
924 TFG/MACDH (Bldg. 4535)	Safety-Kleen Solvent	I	D001	Unknown
Electric Shop (Bldg. 4535)	Nickel-Cadmium Cells (Drained)	E	D006	76 cells
	Potassium Hydroxide Solution	C	D002	2 gal
Corrosion Control (Bldg. 4535)[5]	Paint Mixed With Thinner	I,T,E	D001 D035 F005	30 gal
	Toluene	I,T	F005	Included above
Flightline Support Equipment Branch (Bldg. 4548)	Lead-Acid Batteries	C	D002, D008	50-100 batteries
	Nickel-Cadmium Cells	C,E	D002, D006	Unknown
	Used Synthetic Oil	U	-	3,000 gal
	Used Engine Oil	U	-	1,860 gal
	Hydraulic Fluid	-	-	660 gal
	JP-4 (see Note 3)	-	-	660 gal
AGE Shop (Bldg. 4562)	Safety-Kleen Solvent	I	D001	720 gal
	Lead-Acid Battery Casings	E	D008	60 casings
	Lead-Acid Battery Electrolyte	C	D002	120 gal
	Nickel-Cadmium Cells	C,E	D002, D006	Unknown
	Used Synthetic Oil	U	-	1,200 gal
	Used Engine Oil	U	-	480-720 gal
	Hydraulic Fluid	-	-	360-600 gal
	JP-4 (see Note 3)	-	-	300 gal
Vehicle Maintenance (Bldg. 4577)	Waste Paint Thinner	I,T	D001, F005	36 gal
	Lead-Acid Battery Casings	E	D008	96 casings
	Lead-Acid Battery Electrolyte	C	D002	144 gal
	Safety-Kleen Solvent	I	D001	60 gal
	Used Engine Oil	U	-	1,000 gal
	Diesel Fuel	I	D001	100 gal
	Used Transmission Fluid	U	-	30 gal
	Hydraulic Fluid	-	-	10 gal

Table 3.3-1, Page 5 of 6

Facility	Waste Material	Hazard Code[1]	EPA Hazardous Waste Number[2]	Annual Generation Rate
	Brake Fluid	-	-	5 gal
Environmental Services (Bldg. 4580)	Waste Paint/Thinner	I, T	D001, F005	120-240 gal
	Contaminated Paint Arrestor Filters	E	D007	750 filters
	Contaminated Rags	U	Unknown	Unknown
AGE Maintenance (Bldg. 4580)	Lead-Acid Batteries	C	D002, D008	2 batteries
	Nickel-Cadmium Cells	C,E	D002, D006	Unknown
	Safety-Kleen Solvent	I	D001	60 gal
	Used Synthetic Oil	U	-	300 gal
	Used Engine Oil	U	-	120 gal
	Diesel Fuel	I	D001	132 gal
	JP-4 (see Note 3)	-	-	132 gal
12th Intelligence Maintenance (Bldg. 4588)	Paint Waste Mixed With Thinner	I,T	D001, F005	3 gal
	Lead-Acid Battery Casings	E	D008	2 casings
	Lead-Acid Battery Electrolyte	-	-	8 gal
	Used Engine Oil	U	-	Varies
Propulsion Section (Bldg. 4589)	Used Synthetic Oil	U	-	30-60 gal
	Hydraulic Fluid	-	-	3 gal
	JP-4 (see Note 3)	-	-	84 gal
Armaments Systems (Bldg. 4593)	Safety-Kleen Solvent	I	D001	240 gal
Golf Course Maintenance (Bldg. 4704)	Paint Waste Mixed With Thinner	I	D001	1 gal
	Degreasol	I	D001	4 gal
	Miscellaneous Unused Pesticides	E	D012-D017, D020, D021, D022, D031	Varies
	Used Engine Oil	U	-	80 gal
Munitions Branch (Bldg. 4865)	Waste Munitions	R	D003	550 lb
Quick Check Shop (Bldg. 4870/4872)	Used Synthetic Oil	U	-	Varies
	Hydraulic Fluid	-	-	Varies
	JP-4 (see Note 3)	-	-	24,000 gal
Det. 2, 17th MI Co. Motor Pool (Bldg. 4934)	Safety-Kleen Solvent	I	D001	60 gal
	Lead-Acid Batteries	C	D002, D008	6 batteries
	Paint Waste Mixed With Thinner	-	D001, F00?	
	Used Engine Oil	U	-	7 gal
	Diesel Fuel	I	D001	8 gal
Housing Maintenance (Bldg. 5025)	Kerosene	I	D001	5 gal

Notes: [1]Hazard Code
- I - Ignitable Waste
- R - Reactive Waste
- T - Toxic Waste
- C - Corrosive Waste
- E - Toxicity Characteristic Waste
- U - Unclassified, to be verified

Table 3.3-1, Page 6 of 6

Notes, continued

[2]EPA Hazardous Waste Number as defined in 40 CFR 261:

D001	Ignitable waste
D002	Corrosive waste
D003	Reactive waste
D006	Cadmium
D007	Chromium
D008	Lead
D009	Mercury
D011	Silver
D012	Endrin
D013	Lindane
D014	Methoxychlor
D015	Toxaphene
D016	2,4-D
D017	2,4,5-TP (Silvex)
D020	Chlorodane
D021	Chlorobenzene
D022	Chloroform
D031	Heptachlor (and its epoxide)
D035	Methyl Ethyl Ketone
D039	Tetrachloroethylene
F001	The following spent halogenated solvents used in degreasing: tetrachloroethylene; trichloroethylene; methylene chloride; 1,1,1-trichloroethane; carbon tetratchloride; and chlorinated fluorocarbons; all spent solvent mixtures/blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F002	The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures/blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F001, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F004	The following spent non-halogenated solvents: cresols and cresylic acid and nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above nonhalogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F005	The following spent nonhalogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above nonhalogenated solvents or those solvents listed in F001, F002, and F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

"?" indicates that laboratory analysis of the waste is required to make hazardous waste determination.

[3]Contaminated JP-4 is not considered a solid waste, but is a product that can be used as a fuel. Mixing JP-4 with waste diesel fuel and gasoline may cause the JP-4 to become a waste product because it cannot be used as a product.

[4]Building 520/522 has three 25,000-gallon underground tanks for storage of contaminated JP-4, used engine oil, and used synthetic oil. These POL products are not generated at this location.

[5]Approximately 144 aerosol cans of paint stripper are also used per year.

Source: Entech, Inc. 1991b.

Table 3.3-2

Hazardous Waste and Waste Oil Accumulation Points*

Location (Building No.)	Organization	Stored Materials
Accumulation Points (90-day Storage)		
1608	Regional Corrosion Control Facility	Contaminated rinsewater
1609	Maintenance Dock	Mixed polyurethane paint, thinners, and methyl ethyl ketone
4580	602 TACC/MA	Mixed paint and thinner
4980	Waste Oil Storage	Oil/water separator waste
Satellite Accumulation Points		
208	Armory Section	Nickel-cadmium batteries (nonspillage type)
318	Intelligence Support	Paint waste mixed with thinner
401	Air Base Ground Defense/ ATC Radar Maintenance	Mineral spirits/paint waste
402	Ground Radio	Nickel-cadmium batteries
520	Fuels Branch	Waste paint/thinner
600	Auto Hobby Shop	Waste paint/thinner
713	CE Liquid Fuels Maintenance	Tank cleaning sludge
713	CE Liquid Fuels Maintenance	Contaminated rags and absorbent pads
722	CE Entomology Shop	Cleaning solvent
734	CE Protective Castings	Paint sludge bottoms and waste paint/primer
1602	Structural Repair	Plastic blast media
1602	Structural Repair	Filters containing plastic blast media
1602	Structural Repair	Waste paint/thinner
1602	Structural Repair	Used paint arrestor filters
1602	Structural Repair	Paint-contaminated rags
1608	Regional Corrosion Control Facility	Waste paint solvent
1608	Regional Corrosion Control Facility	Paint stripper residue
1608	Regional Corrosion Control Facility	Used paint arrestor filters
1608	Regional Corrosion Control Facility	Plastic bead blast media
1608	Regional Corrosion Control Facility	Paint-contaminated paper and tape
1610	Electro-environmental shop	Nickel-cadmium cells (drained)
1611	Communication/Navigation	PSI-690 primer
1611	TMDE Branch	Nickel-cadmium batteries (nonspillage type)
1611	TMDE Branch	Oil contaminated with cleaning compound solvent
1612	Propulsion Branch	Fingerprint remover
1612	Propulsion Branch	Contaminated Type 140 solvent
1612	Propulsion Branch	Carbon-removing compound
1615	NDI Lab	Oil contaminated with 1,1,1 trichloroethane
1640	Corrosion Control Shop	Used paint arrestor filters
1801	Vehicle Maintenance	Waste paint mixed with thinner and paint remover
1806	Vehicle Maintenance	Waste paint mixed with thinner and paint remover
2202	Reprographics	Waste blanket wash
2700	Dental Services	Developer cleaner
2700	Pharmacy	Off-specification chemotherapy drugs
2900	Maintenance Inspection Division	Nickel-cadmium batteries (nonspillage type)
4531	Life Support	Mercury batteries (nonspillage type)
4535	924 FG Corrosion	Paint mixed with thinner and toluene
4535	924 FG Electric Shop	Nickel-cadmium cells (drained)
4588	Intelligence Maintenance	Waste synthetic enamel and paint thinner
4704	Golf Course Maintenance	Paint waste mixed with thinner
4704	Golf Course Maintenance	Degreasol
4865	Munitions Branch	Waste munitions
4934	Detachment 2 Motor Pool	Paint waste mixed with thinner
5025	Housing Maintenance	Waste kerosene

Note: *Data current as of September 30, 1991.
Source: U.S. Air Force 1991g.

regular intervals by the service contractor, who replaces the used cleaning solvent with fresh solvent. The waste solvent is then recycled by the service contractor.

Several facilities recover silver from waste photochemical fixer using either Automatic Silver Recovery Units (ARUs) and/or silver recovery cartridges. Spent fixer is passed through the silver recovery equipment prior to discharge into the sanitary sewer system. An ARU-11 is used at medical X-ray at the base hospital (Building 2700), and Wing Intelligence (Building 1400) uses an ARU-21 in series with a silver recovery cartridge. Dental Services (Building 2700) processes waste fixer through a single silver recovery cartridge; the base Photo Lab (Building 2003), Photo Maintenance (Building 320), and the NDI Laboratory (Building 1615) use two silver recovery cartridges in series to recover silver. Waste fixer generated at Base Graphics (Building 2003) is taken to the Photo Lab for processing. Silver sludge collected from the ARUs and the spent silver recovery cartridges are turned in to DRMO for recycling.

Used engine and synthetic oils are collected at a central location (Building 590) in 25,000-gallon underground storage tanks (USTs) and sold for energy recovery, provided the waste oil meets the requirements of 40 CFR 266, Subparts D and E. Type 140 solvent, hydraulic fluid, brake fluid, and transmission fluid wastes are turned in to DRMO for disposal as nonhazardous waste. JP-4 that does not meet specifications (e.g., has a high water content or contains impurities) is collected at several locations and taken to Building 590 and placed in a 25,000-gallon UST.

Approximately 97,350 gallons and 208,730 pounds of hazardous waste were turned in to DRMO in 1991 (Table 3.3-3). Contaminated rinsewater, paint waste (e.g., thinners, lacquers, and paint sludge), used paint arrestor filters, waste bead blast media, nickel-cadmium batteries, mercury batteries, oil/water separator waste, and miscellaneous halogenated and nonhalogenated solvents are the primary hazardous wastes generated.

Closure Baseline. At the time of closure, all hazardous waste generated by base functions will have been collected from the interim TSD facility and all accumulation and satellite accumulation points and disposed of through DRMO. The accumulation points and satellite accumulation points, as well as the interim TSD facility, will be closed in accordance with RCRA. A closure plan for this facility will be submitted to the EPA and the Texas Water Commission.

Hazardous waste generated by the Air Force following base closure will be tracked to ensure proper identification, storage, transportation, and disposal, as required by applicable regulations.

3.3.3 Installation Restoration Program Sites

The Installation Restoration Program (IRP) is an Air Force program designed to identify, characterize, and remediate environmental contamination on Air Force installations. Although widely accepted at the time, procedures followed prior

Table 3.3-3

Hazardous Wastes Generated at Bergstrom AFB[1]

Waste Description	EPA Hazardous Waste Number[2]	1990	1991
Wastewater Containing Organics and Metals	D006, D007, D008	130,725 gal	88,422 gal
Pesticide Waste/Pesticide-Contaminated Wastewater		1,2000 gal	none
Paint Solvents	F005	2,600 gal	2,420 gal
Paint Strippers	D007	50 gal	23,892 lb
Paint and Solvents	F005	50 gal	670 lb
Paint Sludge, Paint Stripping, Caustic	F002	1,750 gal	1,430 gal
Spray Booth Media Filters	D006, D007	2,636 lb	4,833 lb
Plastic Sander Dust	D006, D007	177,760 lb	57,892 lb
Contaminated Paper Trash	D007	1,829 gal	9,264 lb
Contaminated Rags	F005	20,799 lb	5,890 lb
Characteristic of Ignitability	D001	2,975 gal	4,893 lb
Characteristic of Reactivity	D003	720 lb	110 lb
Spent Nonhalogenated Solvents; Xylene, Acetone, Ethyl Acetate	F003	11,238 gal	2,566 lb
Spent Nonhalogenated Solvents, Toluene	F005	807 gal	21,163 lb
Contaminated Rags	F005	none	5,890 lb
Waste Lithium Batteries	D001, D002, D003	1,200 lb	none
Waste Soil With Concentrated Pesticides		390 cu yd	none
Methyl Ethyl Ketone, Xylene, and Toluene	D001	none	580 lb
Waste Methylene Chloride	D002	none	23,892 lb
Oil/Water Separator Waste (Benzene, Xylene)	D001, D018, F003, F005	none	3,000 gal
Waste Hydraulic Fluid (Non-RCRA)		2,849 gal	none
Oils, Grease, and Solvents (Non-RCRA)		220 gal	none
Waste Antifreeze (Ethylene Glycol) (Non-RCRA)		340 gal	none
Petro Dirt (Non-RCRA)		1,715 lb	none
Waste Asbestos Material		20 cu yd	none

Table 3.3-3, Page 2 of 2

Waste Description	EPA Hazardous Waste Number[2]	1990	1991
Wastewater Contaminated With Pesticides		4,299 gal	none
Polychlorinated Biphenyls		2,286 kg	1,184 kg
Mercury Batteries	D009	none	78 lb
Spent Silver Recovery Cartridges	D011	none	3,110 lb
Phosphoric Acid	D007	none	660 gal
Methyl Ethyl Ketone and Methylene Chloride	F005	none	660 gal
Latex Paint (Non-RCRA)		none	119 lb
Emulsifier Water		none	800 lb
Soil Tainted With Arsenic		none	1,360 cu yd
Sand With Oil		none	5,260 lb
Waste Bromochloromethane		none	3,225 lb
Asbestos (Transite Debris)		none	3 cu yd
Waste Hydrochloric Acid	D002	none	751 gal

Notes: [1]Quantities generated as reported in *Annual Waste Summary* submitted to Texas Water Commission.

[2]EPA Hazardous Waste Number as defined in 40 CFR 261.

D001 Ignitable waste
D002 Corrosive waste
D003 Reactive waste
D007 Chromium
D009 Mercury
D011 Silver
D018 Benzene
F002 The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures/blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F001, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F003 The following spent nonhalogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, one or more of the above nonhalogenated solvents, and a total of 10 percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F005 The following spent nonhalogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above nonhalogenated solvents or those solvents listed in F001, F002, and F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

Sources: U.S. Air Force 1992a,b.

to the mid-1970s for managing and disposing of many wastes often resulted in contamination of the environment. The program has established a process to evaluate past disposal sites, control the migration of contaminants, and control potential hazards to human health and the environment. Section 211 of SARA, codified as the Defense Environmental Restoration Program (DERP), of which the Air Force IRP is a subset, ensures that the Department of Defense (DOD) has the authority to conduct its own environmental restoration programs. The DOD coordinates IRP activities with the EPA and appropriate state agencies.

Prior to passage of SARA and the establishment of the National Contingency Plan (NCP) for hazardous waste sites, Air Force IRP procedures followed DOD policy guidelines mirroring the EPA's Superfund program. Since SARA was passed, many federal facilities have been placed on a federal docket and the EPA has been evaluating the facilities' waste sites for possible inclusion on the National Priorities List (NPL). Based on a site evaluation conducted under EPA's quantitative Hazard Ranking System, Bergstrom AFB was determined not to be eligible for listing on the NPL, and therefore does not warrant any further action under the federal Superfund program (Biasco 1992).

Originally, the IRP was divided into four phases that were consistent with CERCLA:

- Phase I: Problem Identification and Records Search
- Phase II: Problem Confirmation and Quantification
- Phase III: Technology Development
- Phase IV: Corrective Action

After SARA was passed in 1986, the IRP was realigned to incorporate the terminology used by the EPA and to integrate the new requirements in the NCP. The result was the creation of three action stages:

- Preliminary Assessment/Site Inspection (PA/SI)
- Remedial Investigation/Feasibility Study (RI/FS)
- Remedial Design/Remedial Action (RD/RA)

The PA portion of the first stage under the NCP is comparable to the original IRP Phase I and consists of a records search and interviews to determine whether potential problems exist. A brief SI, which may include soil and water sampling, is performed to give an initial characterization or to confirm the presence of contamination at a potential site.

The RI portion of the second stage is similar to the original Phase II and consists of additional fieldwork and evaluations to assess the nature and extent of contamination. It includes a risk assessment and determines the need for site remediation.

The original IRP Phase IV has been replaced by the FS portion of the second stage and the RD/RA portion of the third stage. The development, evaluation, and selection of alternatives to remediate the site are documented in the FS. The selected alternative is then designed (RD) and implemented (RA). Long-term monitoring is often performed, if necessary, in association with site remediation to assure future compliance with contaminant standards or achievement of remediation goals.

The Phase III portion of the IRP process is not included in the normal SARA process. Technology Development (TD) under SARA is performed through separate processes including the Superfund Innovative Technology Evaluation program. The Air Force has an active TD program in cooperation with the EPA to find solutions to problems common to Air Force facilities. A representation of the IRP management process under CERCLA is shown in Figure 3.3-1.

The closure of Bergstrom AFB will not affect ongoing IRP activities. These IRP activities, managed by the Air Force, will continue in accordance with applicable federal, state, and local regulations to protect human health and the environment, regardless of the disposal decision.

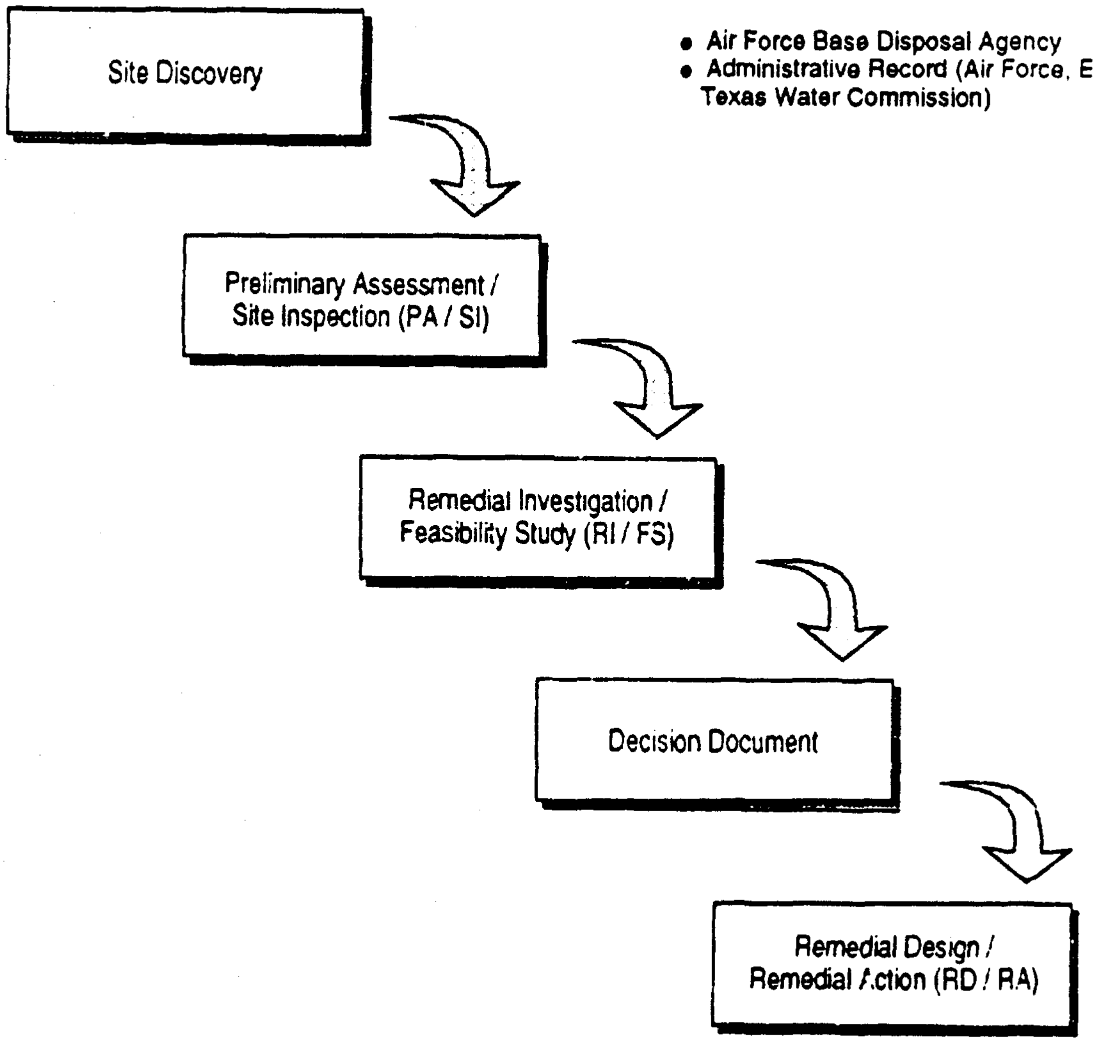
In addition to the mandates of the IRP, prior to the transfer of any property at Bergstrom AFB, the Air Force must also comply with the provisions of CERCLA Section 120. CERCLA Section 120(h) requires that, before property can be transferred from federal ownership, the United States must provide notice of specific hazardous waste activities on the property and include in the deed a covenant warranting that "all remedial action necessary to protect human health and the environment with respect to any [hazardous] substance remaining on the property has been taken before the date of such transfer." Furthermore, the covenant must warrant that "any additional remedial action found to be necessary after the date of such transfer shall be conducted by the United States." The Community Environmental Response Facilitation Act, described below, clarified that "all remedial action necessary to protect human health and the environment," for purposes of the deed covenant, has been taken if an EPA-approved remedial action is operating properly and successfully. This provision allows more timely transfers by deed of contaminated property undergoing long-term remediation (e.g., extraction and treatment of contaminated groundwater).

In October 1992, Congress amended CERCLA Section 120(h) to add the provisions of the Community Environmental Response Facilitation Act (CERFA). CERFA establishes a streamlined process for identifying property, prior to termination of federal activities, that does not contain contamination from the storage, release, or disposal of hazardous substances or petroleum products or their derivatives. The expeditious identification of property that will not require environmental remediation is intended to facilitate the ultimate transfer by deed of such property for economic redevelopment or other purposes. For non-NPL bases, CERFA requires the Air Force to obtain the State's concurrence with the identification efforts prior to established deadlines. The Air Force must provide a covenant in the deed for the "uncontaminated" property that warrants the Air Force's continuing responsibility to undertake any cleanup action found to be necessary after the date of transfer.

INSTALLATION RESTORATION PROGRAM PROCESS
(The CERCLA Process)

Sources of Information on IRP:

- Air Force Base Disposal Agency
- Administrative Record (Air Force, EPA, and Texas Water Commission)



IRP Process for Bergstrom AFB

Figure 3.3-1

The Air Force is committed to the identification, assessment, and remediation of contamination from hazardous substances at Bergstrom AFB. This commitment will assure the protection of public health as well as restoration of the environment. Additionally, the Air Force will work aggressively with the regulatory community to ensure that parcel disposal occurs at the earliest reasonable date so as not to impede the economic redevelopment of the area through reuse of Bergstrom AFB. Quantification of those delays based on the conceptual plans for all redevelopment alternatives and current knowledge of the IRP is not possible.

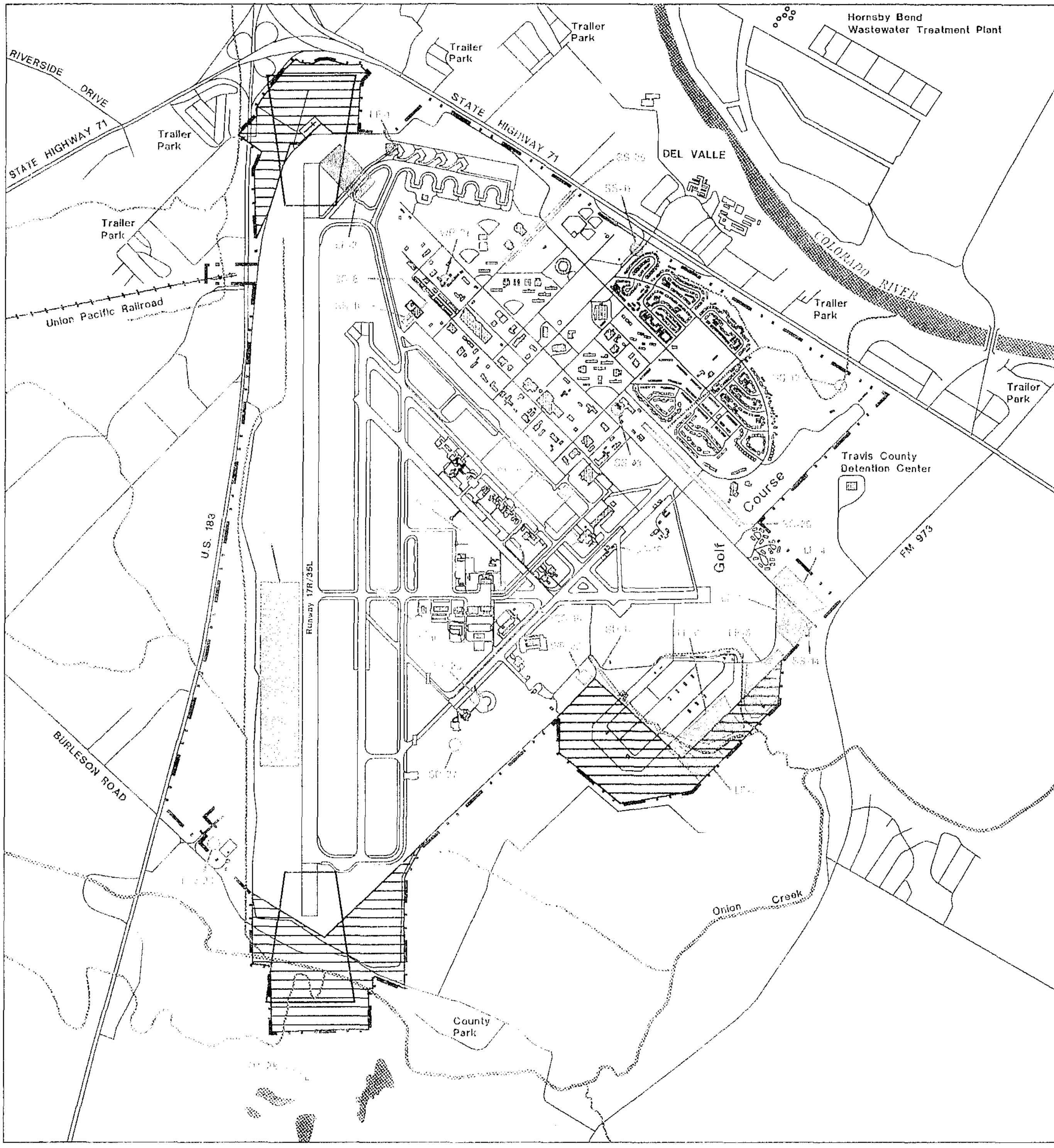
Preclosure Reference. Because the Air Force initiated the IRP process at Bergstrom AFB in 1982, prior to terminology and procedural changes, references to both phases and stages are contained in the IRP administrative record.

The Phase I, Problem Identification/Records Search, published in 1983 (CH2M Hill 1983), was conducted to identify sites of potential contamination. This study involved a review of past and present industrial operations conducted at the base. Applicable federal, state, and local agencies were also contacted for pertinent base-related environmental information. The collected information was used to determine the past management practices regarding the use, storage, treatment, and disposal of hazardous materials from various base operations and to identify all known past disposal sites and other possible sources of contamination.

Twenty-six disposal or spill sites on Bergstrom AFB were identified in the Phase I study, including 13 fuel spill sites, 2 asphalt primer spill sites, 7 landfill sites, a sludge weathering pit, a pesticide evaporation pit, a fire department training area, and a low-level radioactive waste disposal site (Figure 3.3-2). In addition, three offbase sites were identified in the Phase I study. Descriptions of the 29 sites identified in the Phase I study and 1 site identified subsequent to the Phase I study (described below) are presented in Table 3.3-4.

Of the 26 sites on Bergstrom AFB identified in the Phase I study, 24 were assessed using the EPA Hazard Assessment Rating Methodology (HARM). Two onbase sites (Sites 11 and 24) and the three offbase sites were not considered to have the potential for contamination and were not evaluated. Based on the HARM scores, 10 sites (Sites 3, 4, 5, 6, 7, 8, 13, 14, 17, and 23) were considered to have a moderate potential for environmental contamination and were recommended for further study in IRP Phase II. The other 14 sites were determined to have a low potential for environmental contamination and no further action was recommended at that time.

A Phase II Stage 1 study, conducted between March 1984 and August 1986, considered the 10 sites recommended for further investigation in the Phase I study and 1 additional site (new Site 9) identified for study by base personnel (Radian Corporation 1987a,b). The original Site 9 identified in the Phase I study was subsequently combined with Site 8, and a new Site 9, a JP-4 pipeline leak, was added beginning with the Phase II Stage 1 study. The



LEGEND

IRP Sites

Government Fee-Purchased Land

Base Boundary

0 750 1500 3000 Feet

Bergstrom AFB IRP Site Locations

Figure 3.3-2

Table 3.3-4

IRP Sites Identified at Bergstrom AFB

IRP ID	Site Name	Description of Site
LF-1	Landfill No. 1	This approximately 2-acre landfill, the original base landfill, is located at the north end of the base in the area of the present Apron E. The landfill operated from 1943 to 1946 and received primarily domestic solid waste. Other materials that may have been disposed of include empty pesticide containers, paint cans, and incidental quantities of waste paints, thinners, paint strippers, oils, and solvents from the industrial shops area. Burning or incineration followed by burying in trenches was apparently the landfill's mode of operation. Some buried materials were uncovered and removed in 1959 to satisfy compaction requirements during the construction of Apron E. The nature and disposition of the excavated materials are unknown.
LF-2	Landfill No. 2	This approximately 16-acre landfill is located at the north end of the base, between the end of the runway and Landfill No. 1, and operated from 1946 to 1952. The landfill received primarily domestic solid waste. Other materials that may have been disposed of include empty pesticide containers, paint cans, and incidental quantities of waste paints, thinners, paint strippers, oils, and solvents from the industrial shops area. Burning or incineration followed by burying in trenches was apparently the landfill's mode of operation. Some buried materials were uncovered and removed in 1959 to satisfy compaction requirements during the construction of Apron E. The nature and disposition of the excavated materials are unknown.
LF-3	Landfill No. 3	This 10-acre landfill operated from 1952 to 1957 and is located on the east side of the base along the south side of Third Street just southeast of the senior officers' military family housing (Facilities No. 4402-4428). It received primarily domestic solid waste; however, construction rubble was also disposed of at this site. Other materials that may have been disposed of include empty pesticide containers, paint cans, and incidental quantities of waste paints, thinners, paint strippers, oils, and solvents from the industrial shops area. Burning or incineration followed by burying in trenches was apparently the landfill's mode of operation. Historical aerial photographs show evidence of at least two covered trenches. An asphalt emulsion tank had been located at the site until 1975. No environmental problems were known to be associated with this tank.
LF-4	Landfill No. 4	This approximately 10-acre landfill is located on the east side of the base, southeast of the senior officers' military family housing (Facilities No. 4402-4428 and across Third Street from Landfill No. 3. The landfill operated from 1957 to 1965. The site is now a grass-covered field with no evidence of recent use or unauthorized dumping. The landfill received primarily domestic solid waste; however, construction rubble was also disposed of at this site. Other materials that may have been disposed of include empty pesticide containers, paint cans, and incidental quantities of waste paints, thinners, paint strippers, oils, and solvents from the industrial shops area. Burning or incineration followed by burying in 12-foot-deep trenches was apparently the landfill's mode of operation. Historical aerial photographs show evidence of at least three covered trenches. Landfill No. 4 was the last landfill at which routine burning was practiced.
LF-5	Landfill No. 5	This 12-acre landfill operated from 1965 to 1971 and is located in the southeast corner of the base and is bordered on the east and southeast by the reservation boundary and on the west and southwest by a deep drainage ditch that flows off the base. The site is bordered on the northwest by an access road. The landfill received primarily domestic solid waste and construction rubble. Other materials that may have been disposed of include empty pesticide containers, paint cans, and incidental quantities of waste paints, thinners, paint strippers, oils, and solvents from the industrial shops area. Two asphalt storage tanks (each approximately 6,000 gallons) are located near the center of the site and are believed to have been installed when the emulsion tank at Landfill No. 3 was removed. No evidence of tank or nozzle leakage has been observed or reported. No evidence of hazardous waste or vegetative stress was observed when the site was inspected in 1983. The site currently serves as the storage point for three solid waste collection bins. This landfill was operated by trenching and burial; there was no burning or incineration prior to burial.

Table 3.3-4, Page 2 of 5

IRP ID	Site Name	Description of Site
LF-6	Landfill No. 6	This 12-acre landfill operated from 1971 to 1976, and is located in the southeast corner of the base between Landfills No. 5 and 7. It is bordered on the southwest, south, and southeast by South Fork Drainage Ditch; on the northwest by the Munitions Storage Area; and on the northeast by a drainage ditch which separates it from Landfill No. 5. The landfill received primarily domestic solid waste and construction rubble. Other materials that may have been disposed of include empty pesticide containers, paint cans, and incidental quantities of waste paints, thinners, paint strippers, oils, and solvents from the industrial shops area. In the early 1970s, seven 55-gallon drums of DDT were found abandoned at this landfill. One of the drums was corroded, and its contents had leaked onto the ground. It is not known if the drum was full prior to leaking. The remaining six drums were given to the City of Austin. Four other 55-gallon drums were found during a 1983 inspection. One of the four drums, marked PD-680, had been leaking because of a loose bung hole cap. It appeared to be about 20 percent full; the other three drums appeared to be empty. Whether the PD-680 drum had been full prior to leaking is not known. Based on their physical appearance, the four drums were probably placed in the landfill after 1976 when the landfill was closed. The drums have been removed by base personnel. This landfill was operated by trenching and burial; there was no burning or incineration prior to burial.
LF-7	Landfill No. 7	This 7-acre landfill operated from 1976 to 1980. The landfill is located in the southeast corner of the base, south of Landfill No. 6, and is bordered on the southeast by the reservation boundary. The landfill received primarily domestic solid waste and construction rubble. Other materials that may have been disposed of include empty pesticide containers, paint cans, and incidental quantities of waste paints, thinners, paint strippers, oils, and solvents from the industrial shops area. In 1978, a small quantity of antifreeze was reportedly poured into the landfill. This landfill was operated by trenching and burial; there was no burning or incineration prior to burial.
SS-8	JP-4 Spill/ Overtopped Tank	Site 8, at the POL bulk storage area (Facility No. 513), was the site of a 1975 tank filling accident that resulted in the loss of 2,000 to 8,000 gallons of JP-4. The spill occurred when the floating top on the larger of the two vertical storage tanks was allowed to exceed its normal maximum height, permitting JP-4 to overtop the tank wall. The lost fuel soaked into the gravel base of the POL area. No attempts to recover the spilled fuel were reported.
SS-9	JP-4 Spill/ Open Pipeline	Site 9 is a small area around a JP-4 line low point valve in the vicinity of the Bergstrom AFB Flight Tower (Building 4544). In 1984, an Air Force Corrosion Team conducting gas line testing suggested that there might be a pipeline leak at Site SS-9. Acoustic emission testing of the pipeline confirmed that a leak existed at the low point drain box, specifically at the drain valve. A 6.5-foot-deep pit was dug to inspect the 8-inch JP-4 line. Water with a sheen was noted at the bottom of the pit. The leak was confirmed to be related to periods of excessive line pressure. Following replacement of the valve, field investigations were initiated.
SS-10	JP-4 Spill/Faulty Valve	Site 10, at the POL bulk storage area (Facility No. 590), was the site of a 950-gallon JP-4 spill in September 1982, caused by a defective shut-off float valve in an underground storage tank (UST) (Tank No. 8). Fuel being transferred by gravity from the JP-4 bulk storage tank overflowed the UST when an automatic high-level shut-off valve failed to close. Approximately 500 of the 950 gallons lost were recovered and pumped into an adjacent tank used for storage of waste fuels. The remaining lost fuel soaked into the gravel base of the POL area or was lost through evaporation.
SS-11	Dibrom/Diesel Fuel Spill at Entrance Gate	Site 11, located at the main entrance to the base on Presidential Boulevard, was the site of a spill of less than 50 gallons of diesel fuel containing approximately 1.5 quarts of Dibrom, an insecticide for killing adult mosquitos. The spill occurred in the early 1970s when an insecticide-fogging vehicle overturned while making a turn. The spill was onto pavement and was covered and soaked up with sand. The disposition of the sand is not known. It may have been disposed of in Landfill No. 6, which was in operation at the time. The spill occurred on pavement and was reportedly cleaned up.

Table 3.3-4, Page 3 of 5

IRP ID	Site Name	Description of Site
SS-12	Dibrom/Diesel Fuel Spill at Golf Course	Site 12, located at the base golf course, was the site of a spill of less than 50 gallons of diesel fuel containing approximately 1.5 quarts of Dibrom, an insecticide for killing adult mosquitos. The spill occurred in 1975 when an insecticide-fogging vehicle overturned on a bridge over an unnamed tributary of the Colorado River. The spill was onto pavement and was covered and soaked up with sand. However, because the bridge is narrow and does not have curbing or sides, it is assumed that some of the spill ran off into the creek. The disposition of the sand used for cleanup is not known. It may have been disposed of in Landfill No. 6, which was in operation at the time.
SS-13	Mogas Spill at Motor Pool Area	Site 13, located at the Motor Pool in a gravel-covered area between two vehicle fueling stands (Facilities No. 1803 and 1804), is the site of spills which occurred during the routine filling of three USTs. Spills soaked into the gravel-covered ground, and no known attempts were made to recover the fuel. The spills ceased in 1978 when a retrofit connection was installed between the fill lines and the filler pipes. Total spillage from 1974 to 1978 was estimated to be 1,600 to 3,200 gallons. The replacement of the three tanks in early 1991 and excavation/bioremediation of the contaminated soil reduced the level of contamination to acceptable regulatory levels.
SS-14	Road Oiling Area	Site 14, located at the southern end of Third Street, was the site of road oiling for dust control from the mid-1950s to 1962. The site extends for about 0.5 mile, covering the length of Third Street between Landfills No. 3 and 4, and the perpendicular extension of Third Street around the southeast side of Landfill No. 3, between the fill and the base property line. Sources of waste oils were the industrial shops located along the flightline. Oil was dispensed from a spreader bar on the back of a 250- to 500-gallon bowser. It was estimated that about twice a year up to 300 gallons of waste oil were spread on the road. Over an approximately 7-year period, an estimated 4,200 gallons of waste oil may have been spread on this unimproved road.
SS-15	Spill/Apron Excavation	Site 15, located at the southeast end of Apron A, is the site of a JP-4 fuel accumulation below the original apron. The source is unknown but suspected to be the accumulation of small spills on the apron that seeped through cracks and joints in the concrete. An estimated 500 to 600 gallons of JP-4 were discovered during demolition and removal of the original apron concrete in 1955. An area of approximately 900 square feet was reported to have an estimated 1-inch-thick layer of JP-4 above a layer of water. The fuel was pumped off by the base fire department and subsequently used in fire training exercises.
SS-16	Spill/Refueling Truck	Site 16, located at the intersection of Taxiways 12 and 14, is the site of a JP-4 fuel spill. The accident occurred in 1974 when a JP-4 refueling truck overturned while making a turn. The fuel spilled on a grassy area (about 30 feet by 30 feet) and soaked into the ground. Although the quantity of the spill is unknown, it was reported to be small. No information was obtained through interviews. Review of base files indicated that no remedial actions were taken at the site to remove fuel-contaminated soil.
SD-17	South Fork Drainage Ditch	Site 17, located at the south end of the base, is a drainage ditch which begins near Facility No. 4602, extends between Landfills No. 6 and 7, and travels beyond the reservation boundary. The ditch is the open portion of a storm drainage system that drains Apron A and the fuel hydrant area of Apron B and some of the major industrial shop areas. This ditch has provided major drainage since construction of the base in 1942. Because of the nature of the areas being drained, fuels and oils are probably the major contaminants that have entered this drainage ditch. Prior to installation of an oil/water separator near the head of the ditch in 1981, waste materials could have (1) flowed through the ditch and off the reservation property, (2) soaked into the ground along the route of the ditch, or (3) evaporated. It is probable that all three occurred. The oil/water separator captured fuel and oil layers, preventing their escape from the base, and reducing the potential area of contamination to that segment of the ditch upstream of the separator. Routine, however inadvertent, releases of 650 to 900 gallons of JP-4 fuel per month occurred into the South Fork Ditch for a period of years until 1982. The source of the JP-4 was an overloaded oil/water separator located at the Fuel Systems Repair Shop. Two signs of contamination were observed during the IRP site inspection in 1983: (1) a small patch of red oily substance noted downstream of the oil/water separator between Landfills No. 6 and 7, and (2) a similar-appearing patch floating upstream of the oil/water separator. It was suspected that the material was red dye used in the Fuel System Repair Shop for leak detection. It was not suspected that the material was leachate from the landfills. The 1983 IRP Records Search

Table 3.3-4, Page 4 of 5

IRP ID	Site Name	Description of Site
SD-17 (Cont.)	South Fork Drainage Ditch	reported that Bioenvironmental Engineering personnel routinely collected and analyzed water samples from Onion Creek. As of 1983, such testing had shown no significant contamination of Onion Creek downstream of the South Fork Drainage Ditch.
SS-18	JP-4 Spill at Fuel Systems Repair Shop	Site 18, located at the Fuel Systems Repair Shop (Facility No. 4533), is the site of a JP-4 fuel spill. In 1982, a fuel truck was accidently drained onto the ground near the southeast corner of the maintenance facility. The quantity of the spill was not known, but less than the capacity of the fuel truck (assumed to be 2,000 gallons). The spill soaked into the ground. No information about the spill was obtained through interviews, and review of base files indicates that no remedial efforts were made to remove fuel-contaminated soil.
SS-19	JP-4 Spill From A/C Fuel Tank	Site 19, located on the mid-field taxiway (T/W8) between the primary and secondary runways, is the site of a JP-4 fuel spill in January 1981. The spill occurred when the left wing tank of a C-130 aircraft leaked. The fuel was flushed from beneath the aircraft by the base fire department. Absorbent pads and sand were placed along the edge of the spill to soak up fuel being flushed from the area. The total quantity of the spill was estimated at about 200 gallons. No fuel was allowed to enter the storm drain system; however, it is likely that fuel soaked into the ground at the edge of the runway prior to the placement of absorbent pads.
SS-20	Fuel Tank Jettison Area	Site 20, located at the south end of the base between Runway 17R and the perimeter road, is the area officially designated for the emergency jettison of fuel tanks. This 75-acre area is currently covered with grass. It is not known how often or how many fuel tanks have been dropped in the area since it was first designated in the late 1950s. It has been reported that, in 1983, tanks were dropped on at least two occasions in the preceding several years. The quantity of fuel contained in the dropped tanks is not known; however, it is believed to have been small. No data were available for the site; however, data were developed for another area that has soil characteristics similar to those at Bergstrom AFB and was the site of an emergency fuel tank jettison. That incident involved an estimated 1,400 gallons of JP-4. Soil samples indicated contamination extended down to at least 12 inches. It is possible that similar contamination exists at Site 20.
WP-21	Entomology Evaporative Pit	Site 21 is a 5-foot by 5-foot-deep concrete evaporative pit with a metal grate cover behind Building 722 which was used to evaporate liquids resulting from the rinsing of pesticide containers. The pit has not been used since 1988, when a pipe connecting the pit to a sink inside of Building 722, the Entomology Shop, was disconnected. The surface surrounding the pit is predominantly covered with asphalt. However, the surface area immediately surrounding the pit does not contain an asphalt cover, but is surrounded by a gravel apron.
WP-22	Sludge Weathering Pit	Site 22, located at the south end of the base, approximately 1,000 feet east of Facility No. 4580, is a former sludge weathering pit which is thought to have been used until 1962, at which time it was converted to an oxidation pond to serve Facilities No. 4580 and 4582. It was abandoned in 1975 when sanitary sewers were connected to those facilities. Materials weathered at Site No. 22 are assumed to have included AVGAS and JP-4 fuel tank sludges. The frequency of weathering and the quantities of weathered sludges are not known; however, quantities are assumed to have been small. Disposition of weathered sludges is not known. They may have been disposed of in the landfills operated prior to 1962 (i.e., Landfills No. 1 through 4).
FT-23	Fire Department Training Area	Site 23, located at the south end of the base adjacent to Taxiway 9, is the only identified site of fire department training activities in use since the base was activated. The training site is an unlined circular pit about 120 feet in diameter surrounded by a dirt berm. A drain and an oil/water separator were also connected to the sanitary sewer in 1982 to collect and pretreat the runoff. Prior to that time, runoff percolated into the ground within the pit area. Prior to 1972, recovered fuels, waste oils, and spent solvents were burned at the site. These were poured directly into the unlined pit prior to the burn. From 1972 to 1983, only clean JP-4 fuel was burned at the site, and presaturation of the ground with water was routinely practiced. Most materials would have been consumed in the onsite fires; however, some percolation into the ground may have occurred, especially prior to 1972, when presaturation was not practiced. It is not known what quantities of fuels, waste oils, and spent solvents may have percolated into the ground.

Table 3.3-4, Page 5 of 5

IRP ID	Site Name	Description of Site
RW-24	Radioactive Waste Disposal Site	Site 24, located at the southwest corner of the base adjacent to the Small Arms Range, is the site of three closed radioactive waste disposal cells. Two of the cells consist of 18-inch-diameter cast-iron pipe; the third consists of 12-inch-diameter cast-iron pipe. All three extend vertically approximately 20 feet into the ground. Each has been covered with a 4-inch-thick concrete slab. The cells, installed in the mid-1950s and closed in 1971, were used to dispose of low-level radioactive materials such as luminous watch dials and electron tubes. Concrete was reportedly poured into the cells with each batch of radioactive materials. Data regarding the frequency of use or the quantity of materials in the cells were not available. A radiological survey conducted in support of the 1983 IRP Records Search found no activity above background levels. Water wells within a 1-mile radius of the site were tested in 1991; all samples revealed levels at or below background. Furthermore, annual radiological surveys failed to detect levels above background. With the containment provided by the cast-iron pipes, and because concrete was poured into each cell, it was concluded that there was no potential for contaminant migration from the site.
SS-25	Asphalt Primer Spill/Avenue F	Site 25, located near the intersection of Avenue F and Third Street, is the site of an asphalt primer spill. In 1981, shortly after the application of asphalt primer to a parking lot, rain and ensuing runoff washed an unknown quantity of primer into a drainage ditch that parallels Avenue F. The primer was washed away with the ditch flow; however, some primer may have soaked into the ground.
SS-26	Asphalt Primer Spill/Star Drive	Site 26, located on the east side of the base between Star Drive and McWhirk Boulevard, is the site of an asphalt primer spill. In 1981, asphalt primer applied to Star Drive was washed by stormwater into the drainage ditch that runs parallel to the road. The primer was washed away with the ditch flow; however, it is probable that some primer soaked into the ground in the ditch and between the road and the ditch. The quantities of primer washed away and what may have soaked into the ground are not known; however, they are assumed to be small.
SD-27	Jet Engine Test Facility	The jet engine test cell in Building 4576 is near the intersection of Taxiways 7 and 9. Water was sprayed for air pollution control during test activities. Contaminated water was inadvertently routed to an open drainage ditch when an inadequate oil/water separator overflowed. The oil/water separator was replaced with a larger one in 1988. During the previous IRP Phase II-Stage II investigation, trace amounts of total petroleum hydrocarbons were detected in the soils. Groundwater samples taken from nearby monitoring wells showed trace amounts of trichloroethane.
OT-28	Middle Marker Site	A 0.23-acre plot of fee-purchased land just south of Bergstrom AFB was operated as a navigation system site from 1958 to about 1980. The site has been maintained, but not used since. A 1,000-gallon aboveground fuel oil tank was removed in 1991. No contamination or other significant environmental concerns are known to exist at the site.
OT-29	Communications Transmitter Site	This site was sold/transferred by the General Services Administration in 1987. Documents indicate that all environmental concerns were properly addressed prior to the transfer.
OT-30	Lake Travis Recreation Site	This is a 64.4-acre plot on Lake Travis leased from the Lower Colorado River Authority since 1969. No significant environmental concerns have yet been found.

Sources: CH2M Hill 1983; Radian Corporation 1987a, b, and 1989.

Stage 1 study was conducted to confirm a contamination problem at each of the sites. Based on the Stage 1 study results, additional Stage 2 investigations were recommended to quantify the contamination at all sites except Site 14, which received a no further action recommendation.

The RI/FS (formerly Phase II) Stage 2 study, performed between November 1988 and June 1989, considered the 10 sites (Sites 3, 4, 5, 6, 7, 8, 9, 13, 17, and 23) recommended for further investigation in the Stage 1 study and two additional sites (Sites 21 and 27) (Radian Corporation 1989). Site 21 was considered in the Phase I study, and Site 27 was identified subsequent to the Phase I study. In the Stage 2 study, the five landfill sites (Sites 3-7) were evaluated as a single site (i.e., Sites 3-7, Combined Southeast Landfill Area) because of the proximity of the landfills to one another and the similarity in the type of waste disposed of in each landfill. Based on results of the Stage I study, preparation of Phase IV-A Remedial Action Plan for Site 23 was initiated; this work was performed separately from the RI/FS Stage 2 study.

Based on the results of the RI/FS Stage 2 study, all sites were recommended for further investigation (including additional monitoring), further efforts to quantify or assess the extent of contamination, and/or a detailed evaluation of remedial alternatives. A summary of the types of studies that have been completed for all 30 IRP sites is presented in Table 3.3-5.

Closure Baseline. The closure of Bergstrom AFB will not affect ongoing IRP activities. These activities will continue in accordance with federal and state regulations to protect human health and the environment, regardless of the alternative selected for reuse. IRP remediation activities may continue well past the September 1993 closure date for Bergstrom AFB. To accelerate the remediation process, the IRP sites at Bergstrom AFB have been grouped into seven operable units. Sites designated to each operable unit were determined by common contamination type and/or geographic location. The sites associated with each operable unit are listed in Table 3.3-5.

No Further Action decision documents for 7 sites (Sites 11, 12, 16, 19, 20, 25, and 26) were submitted to the EPA and Texas Water Commission for regulatory concurrence in 1992 (Table 3.3-5). The 10 IRP sites in Operable Unit 1 (Sites 1, 2, 10, 14, 15, 18, 22, 28, 29, and 30) will be reassessed to verify earlier no further action recommendations made based on the IRP Phase I study. Sites in Operable Units 2 through 7 (Sites 3, 4, 5, 6, 7, 8, 9, 13, 17, 21, 23, 24, and 27) are being investigated further under the IRP to determine remediation requirements. The Air Force will oversee the coordination of all IRP contractors and ensure that EPA and Texas Water Commission concerns are addressed and all applicable regulations are complied with.

Table 3.3-5

Status of Bergstrom AFB IRP Sites

Old Site No.	New Site ID	Title	Type of Study*	Operable Unit
1	LF-1	Landfill No. 1	PA	1
2	LF-2	Landfill No. 2	PA	1
3	LF-3	Landfill No. 3	PA/RI/FS	2
4	LF-4	Landfill No. 4	PA/RI/FS	2
5	LF-5	Landfill No. 5	PA/RI/FS	2
6	LF-6	Landfill No. 6	PA/RI/FS	2
7	LF-7	Landfill No. 7	PA/RI/FS	2
8,9	SS-8	JP-4 Spill/Overtopped Tank	PA/RI/FS	3
-	SS-9	JP-4 Spill/Pipeline Leak	PA/RI/FS	4
10	SS-10	JP-4 Spill/Faulty Valve	PA/RI/FS	1
11	SS-11	Dibrom/Diesel Fuel Spill at Entrance Gate	PA	NFA
12	SS-12	Dibrom/Diesel Fuel Spill at Golf Course	PA	NFA
13	SS-13	Mogas Spill at Motor Pool Area	PA/RI/FS/RA	4
14	SS-14	Road Oiling Area	PA	1
15	SS-15	Spill/Apron Excavation	PA	1
16	SS-16	Spill/Refueling Truck	PA	NFA
17	SD-17	South Fork Drainage Ditch	PA/RI/FS	2
18	SS-18	JP-4 Spill at Fuel Systems Repair Shop	PA	1
19	SS-19	JP-4 Spill From A/C Fuel Tank	PA	NFA
20	SS-20	Fuel Tank Jettison Area	PA	NFA
21	WP-21	Pesticide Evaporation Pit	PA/RI/FS	5
22	WP-22	Sludge Weathering Pit	PA	1
23	FT-23	Fire Department Training Area	PA/EA/RI/FS	6
24	RW-24	Radioactive Waste Disposal Site	PA	7
25	SS-25	Asphalt Primer Spill/Avenue F	PA	NFA
26	SS-26	Asphalt Primer Spill/Star Drive	PA	NFA
27	SD-27	Jet Engine Test Cell (Facility 4576)	RI/FS	4
28	OT-28	Middle Marker Site	PA	1
29	OT-29	Communications Transmitter Site	PA	1
30	OT-30	Lake Travis Recreation Site	PA	1

Note: *PA = Preliminary Assessment (or Records Search)
RI = Remedial Investigation
EA = Environmental Assessment and Phase IV Remedial Action Plan
FS = Feasibility Study
NFA = No Further Action
RA = Remedial Action

3.3.4 Storage Tanks and Oil/Water Separators

Preclosure Reference. USTs are subject to RCRA regulations (40 CFR 280) as mandated by the Hazardous and Solid Waste Amendments of 1984. The State of Texas has adopted the federal UST regulations under Texas Administrative Code Title 31, Part IX, Chapter 334, which is administered by the Texas Water Commission.

As of November 1991, Bergstrom AFB had 68 USTs, of which 61 were in use (Table 3.3-6) and 7 were closed in place (Table 3.3-7), including a UST located at an offbase communications transmitter site. USTs are regulated by the Texas Water Commission and the EPA. The tanks contain various petroleum products, such as JP-4, diesel, and gasoline, and range in size from 250 to 50,000 gallons. In addition, a 6,000-gallon subsurface tank is located at the RCCF. Paint stripping waste, a RCRA hazardous waste, is stored in this tank before it is collected for offbase disposal.

Table 3.3-6

Inventory of Active Underground Storage Tanks at Bergstrom AFB[1]

Tank No.[2]	Capacity (gallons)	Contents	Installation Date
135	575	Diesel	1958
201	250	Diesel	1970
207	600	Diesel	1970
210	1,000	Diesel	1970
590A	25,000	JP-4	1953
590B	25,000	Diesel	1953
590C	25,000	JP-4	1953
590D	25,000	JP-4	1953
590E	25,000	Synthetic Oil	1953
590F	25,000	Mogas	1953
590G	25,000	Waste JP-4	1953
590H	25,000	Slop Waste	1953
590I	25,000	Mogas	1953
590J	25,000	JP-4	1953
590K	25,000	JP-4	1953
590L	25,000	Waste Motor Oil	1953
1101	1,000	Diesel	1956
1520	4@10,000	Gasoline	1970
1603	250	Diesel	1959
1609	8,000	Diesel	1959
1803A	10,000	Diesel	1958
1803B	10,000	Mogas	1958
2700A	9,500	Fuel Oil	1970
2700B	3,250	Diesel	1970
2900	35,000	Diesel	1968
2909	550	Diesel	1958
4514	275	Diesel	1961
4537	8@50,000	JP-4	1959
4544	500	Diesel	1972
4552	475	Diesel	1962
4553	6@50,000	JP-4	1956
4554	6@50,000	JP-4	1956
4559A	2,000	JP-4	1964
4559B	2,000	JP-4	1964
4559C	2,000	Mogas	1964
4562A	10,000	JP-4	1977
4562B	1,000	Mogas	1977
4564	300	Diesel	1977
4574[3]	250	Diesel	1970
4575[3]	250	Diesel	1970
Comm. Transmitter	1,000	Diesel	--

Notes: [1]Inventory as of November 1991.
[2]Tank number indicates the building tank is associated with.
[3]Tanks 4574 and 4575 have since been removed as part of the base closure process.

Source: U.S. Air Force 1991b.

Table 3.3-7

Inventory of Inactive Underground Storage Tanks at Bergstrom AFB[1,2]

Tank No.[3]	Capacity (gallons)	Contents	Installation Date
208	250	Diesel	1973
217	1,000	Diesel	1955
1610	275	Diesel	1961
4202	515	Diesel	1958
4517	285	Diesel	1977
4551	575	Diesel	1959
4577	500	Fuel Oil	1958

Notes: [1]Inventory as of November 1991.
[2]These tanks have since been removed as part of the base closure process.
[3]Tank number indicates the building that the tank is associated with.
Source: U.S. Air Force 1991b.

The *Storage Tank Management Plan, Final Report* (U.S. Air Force 1991i) documents maintenance procedures to ensure environmentally safe and responsible management of USTs. The plan addresses current and anticipated regulatory requirements, tank performance standards, operating requirements, monitoring, inventory procedures, physical testing for leaks, and release reporting. Appropriate corrective action in the event of a leaking UST, and effective maintenance and management to reduce the potential of leaking USTs, are also addressed in the plan.

All of the tanks and their associated piping had leak detection devices (i.e., Tracer leak detection system) installed in 1990, and they are monitored monthly. Soil gas probe samples are taken and analyzed for chemicals which are added as innoculants to the USTs and for total volatile hydrocarbons. The large active tanks are drained, cleaned, visually inspected every 3 years, and volumetrically tested yearly. The major pipelines were internally sealed and coated years ago. The base is in full compliance with leak detection requirements. Two USTs have had cathodic protection installed to help prevent corrosion.

Bergstrom AFB has 21 active aboveground storage tanks, ranging in size from 100 to 778,225 gallons, which are used to store various petroleum products, including fuel oil, diesel fuel, JP-4, and gasoline (Table 3.3-8). There are also aboveground storage tanks located at two offbase sites. Most of the aboveground storage tanks are surrounded by a secondary containment system equal to the volume of the storage tank, plus 1 foot of freeboard. The largest tanks store JP-4 jet fuel and are maintained by the Fuels Branch in the POL area. These bulk storage tanks are supplied by an offbase pipeline as described in Section 3.3.1 and are located adjacent to the liquid fuel pump station and associated USTs which supply the hydrant fueling system. Aboveground storage tanks are removed as they are deactivated.

Table 3.3-8

Inventory of Aboveground Storage Tanks at Bergstrom AFB*

Tank No.	Capacity (gallons)	Contents	Installation Date
406	1,000	Avgas	1955
504	10,108	Avgas	--
506	250	Diesel	1991
513	778,223	JP-4	1955
515	538,594	JP-4	1955
590	550	Diesel	1991
709	100	Diesel	1978
1613-01	250	Diesel	1978
1613-02	250	Diesel	1978
1613-03	250	Diesel	1978
1613-04	250	Diesel	1978
4202	515	Diesel	1959
4537	550	Diesel	--
4551	515	Diesel	1959
4553	550	Diesel	--
4554	550	Diesel	--
4570	550	Diesel	1956
4576	5,000	JP-4	1982
4578	1,000	JP-4	1975
4911	1,000	JP-4	--
5519	550	Diesel	--
Lake Travis	2,000	Gasoline	1970
Middle Marker Site	275	Fuel Oil	--

Note: *Inventory as of June 25, 1992. Tank number indicates the building tank is associated with.
Source: U.S. Air Force 1991b.

The base has 34 oil/water separators ranging in size from 70 gallons to 36,000 gallons (Table 3.3-9). Most of the oil/water separators are connected to the sanitary sewer system, but some discharge into storm drainage ditches. The oil/water separators are cleaned on a regular basis, depending on their specific use.

Closure Baseline. All USTs are tested monthly for leaks. Those that conform with the Texas Water Commission regulations (Texas Administrative Code, Title 31, TAC Section 334) may be left in place to support reuse activities. Currently, 38 USTs have been designated for use by the 924th FG following base closure. In accordance with Air Force policy, the remaining USTs will be removed. The City of Austin has not identified any UST tanks for retention. The aboveground tanks will be purged and cleaned prior to base closure. Oil/water separators not required to support base reuse operations will be removed. Oil/water separators that are retained will be pumped and cleaned of all contaminants.

Table 3.3-9

Inventory of Oil/Water Separators at Bergstrom AFB*

Location (Building No.)	Facility	Capacity (gallons)	Point of Discharge
201	Fire Station Washrack	400	Sewer
320	Support Building Washrack	250	Sewer
400	Vehicle Maintenance Shop Washrack	450	Sewer
507	POL Storage Area, Pump Station	450	Sewer
532	POL Operations Building, Laboratory	320	Sewer
590	POL Storage Area, Pump Station	350	Sewer
600	Automotive Hobby Shop	970	Sewer
635	Vehicle Refueling Repair Shop	420	Sewer
725	CE Vehicle Service Washrack	720	Sewer
1520	Base Exchange Service Station	450	Sewer
1602	General Purpose Shop, Corrosion Control	150	Sewer
1609	Aircraft Maintenance Dock	645	Sewer
1610	Maintenance Hangar, Wheel Degreasing Shop	400	Sewer
1612	Jet Engine Inspection and Maintenance Shop	70	Sewer
1618	Supply and Equipment Warehouse Washrack	300	Sewer
1801	Vehicle Maintenance Shop, Motor Pool	960	Sewer
1807	Vehicle Service Washrack	375	Sewer
4533	Flight Systems Maintenance Dock, Fuel Cell Repair	500	Storm Drainage
4534	Aircraft Maintenance Dock	1,000	Storm Drainage
4535	Aircraft Maintenance Dock	600	Sewer
4540	Aircraft Pad Washrack	250	Sewer
4548	A/SE Storage Facility Shop, AGE Washrack	1,200	Sewer
4562	A/SE Storage Facility Shop, AGE Washrack	590	Sewer
4576	Test Cell	590	Storm Drainage
4577	Vehicle Maintenance Shop	250	Sewer
4578	Fireman Training Area	1,200	Sewer
4586	Vehicle Service Washrack	1,080	Sewer
4589	Jet Engine Inspection and Maintenance Shop	5,000	Sewer
4592	Weapons and Release Systems Shop (2 units)	735	Sewer
7105A	POL Storage Area	36,000	Storm Drainage
7105B	Munitions Storage Area	34,000	Storm Drainage
7105C	Munitions Storage Area	35,000	Storm Drainage
8024	Power Check Pad	590	Storm Drainage

Note: *Inventory as of September 1991.
Source: U.S. Air Force 1991k.

3.3.5 Asbestos

Asbestos-containing material (ACM) remediation is regulated by the EPA, the Occupational Safety and Health Administration (OSHA), and the State of Texas. Asbestos fiber emissions into the ambient air are regulated in accordance with Section 112 of the Clean Air Act, which established the National Emissions Standards for Hazardous Air Pollutants (NESHAP). The NESHAP regulations address the demolition or renovation of buildings with ACM. The Toxic Substances Control Act (TSCA) and the Asbestos Hazard Emergency Response Act (AHERA) provide the regulatory basis for handling ACM in kindergarten through 12th grade school buildings. AHERA and OSHA regulations cover worker protection for employees who work around or remediate ACM.

Renovation or demolition of buildings with ACM has the potential to release asbestos fibers into the air. Asbestos fibers could be released due to disturbance or damage of various building materials, such as pipe and boiler insulation, acoustical ceilings, sprayed-on fire-proofing, and other materials used for sound-proofing or insulation.

Two primary categories describe ACM. Friable ACM is defined as any material containing more than 1 percent asbestos (as determined using the method specified in 40 CFR 763, Appendix A, Subpart F, Section 1, polarized light microscopy) that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Nonfriable ACM are those materials that contain more than 1 percent asbestos, but do not meet the rest of the criteria for friable ACM.

Preclosure Reference. The current Air Force practice is to manage or remove ACM in active facilities, and remove ACM, according to regulatory requirements, prior to facility demolition. Removal of ACM occurs when there is the potential for asbestos fiber release that would affect the environment or human health. The Air Force policy concerning the management of asbestos at closing bases is presented in Appendix G. A basewide survey for ACM is required by Federal Property Management Regulations (FPMR) disclosure law prior to base disposal.

Policies and procedures regarding the control of health hazards created by ACM are documented in the *Draft Bergstrom AFB Asbestos Management Plan* (U.S. Air Force 1991c). Asbestos surveys were initiated in 1987 and results are recorded in the Bergstrom AFB *Asbestos Facility Register Verification Listing* (U.S. Air Force 1992c). The list provides a record of ACM location and status. A total of 149 buildings have been partially surveyed for asbestos. ACM has been identified in 98 buildings based on the partial surveys conducted to date (U.S. Air Force 1992c).

Closure Baseline. Asbestos will be removed as necessary to protect human health. An analysis will be conducted to determine the cost-effectiveness of removing ACM versus managing in place. Such management would be the responsibility of the property recipient. ACM will be removed if a building is, or is intended to be, used as a school or child-care facility. Exposed friable asbestos will be removed according to applicable health laws, regulations, and standards, if it is determined that a health hazard exists.

3.3.6 Pesticides

The registration and use of pesticides are regulated under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) of 1972, as amended (7 USC 136 et seq.). Pesticide management activities are subject to federal regulations contained in 40 CFR 162, 165, 166, 170, and 171, and Texas regulations contained in Texas Administrative Code, Title 31.

Preclosure Reference. Pest management at Bergstrom AFB is performed by the Base Civil Engineering staff through the Pest Management Shop. Pest management activities at the base include pest control in buildings (e.g., for ants, roaches, wasps, and mosquitos) and vertebrate pest control (e.g., for rats, mice, and snakes). The base entomologist is also responsible for vegetation control (e.g., weeds) on base property.

The Bergstrom AFB Pest Management Program is conducted in accordance with DOD guidelines and Air Force Regulation (AFR) 19-21. Pest management activities are monitored by the Bioenvironmental Engineering Office, including physical examinations of personnel who apply pesticides, periodic monitoring of their activities, and performing annual industrial hygiene surveys. Bioenvironmental Engineering also ensures that only qualified personnel obtain regulated pesticides. The base pest management program is conducted under the day-to-day supervision of DOD-certified pesticide applicators.

A variety of chemicals are used at Bergstrom AFB to control pest infestations and ground foliage. Assorted insecticides and herbicides are stored at the Pest Management Shop (Building 722) and two temporary buildings. An inventory of pesticides used at the base prior to closure is presented in Table 3.3-10. The pesticides are stored in containers ranging in size from 5-gallon cans to 55-gallon drums. Pesticides are purchased on an as-needed basis; therefore, the quantity on hand at any one time is relatively small.

In addition, pesticides are also used by the golf course under the supervision of a DOD-certified applicator. Pesticides for golf course use are stored in Building 4704. The Bergstrom AFB land management plan (U.S. Air Force 1989c) emphasizes use of biological or cultural controls with chemical controls to be used as a last resort.

Closure Baseline. At the time of closure, a limited amount of pesticides will continue to be used by the Air Force, on an as needed basis, for pest management and grounds maintenance.

Table 3.3-10

Pesticide Storage at Bergstrom AFB Prior to Closure

Pesticide Name	Quantity	Units
Altosid Briquets	110	Bricks
Apache Fly Bait	3	5-lb cans
Avitrol	6	5-lb boxes
Baygon 2% Bait	1	5-lb bottle
Baygon PT250	23	28-oz cans
Broad Spectrum Fungicide	18	bags
Copper Sulfate	20	1-lb bags
D-Phenothrin	26	12-oz cans
Diazinon	1	25-lb can
Diazinon 4E	7	1-gal cans
Diquat	5	gal
Drione	3	1 lb
Dursban 4E	6	5-gal cans
Dursban 2.5% G	3	25-lb boxes
Dursban TC	48	1-gal bottles
Ficam W	17	1-lb jars
Flytek	3	1-lb cans
Fusilade 2000	20	1-gal containers
Hyte Tacky Glue	4	1-gal cans
Logic	37	25-lb boxes
Maxforce	72	Packs
Olin Turfside	8	1-gal bottles
Phostoxin	10	500-tablet bottles
Powder Puff	26	14-oz cans
Pramitol 25E	13	5-gal cans
PT 240	20	16-oz cans
Rodent Sticky Traps	4	2-trap packs
Ronstar G Herbicide	1	bag
Roost No More	17	14-oz cans
Roundup	20	2.5-gal units
Scourge	6	5-gal cans
Sevin 4F	13	2.5-gal bottles
Share Mosquito Spray	10	5-gal cans
Sling Shot	1	14-oz can
St. Augustine Weed Control Plus Fertilizer	7	bags
Talon G	3	10-lb buckets
Tersan 75	3	3-lb bags
Trapper Pre-baited Glue Traps	3	75-trap boxes
ULD-BP 300	8	34-oz bottles
Weather Block	1	11-lb box

Note: Inventory as of May 28, 1992.
Source: U.S. Air Force 1992d.

3.3.7 Polychlorinated Biphenyls

Commercial PCBs are industrial compounds produced by chlorination of biphenyls. PCBs persist in the environment, accumulate in organisms, and concentrate in the food chain. PCBs are used in electrical equipment, primarily in capacitors and transformers, because they are electrically nonconductive and stable at high temperatures.

The disposal of these compounds is regulated under TSCA, which banned the manufacture and distribution of PCBs except for PCBs used in enclosed systems. By definition, PCB equipment contains PCB concentrations of 500 parts per million (ppm) or more, whereas PCB-contaminated equipment contains PCB concentrations of 50 ppm or greater, but less than 500 ppm. The EPA, under TSCA, regulates the removal and disposal of all sources of PCBs containing 50 ppm or more; the regulations are more stringent for PCB equipment than for PCB-contaminated equipment.

Preclosure Reference. In 1984, a basewide remedial program was initiated to remove and replace or retrofill PCB transformers (over 500 ppm PCBs), PCB-contaminated transformers (50 to 500 ppm PCB), and PCB capacitors. All PCB transformers and all PCB-contaminated transformers, except for 1 transformer and 15 capacitors, were removed and properly disposed of, or in some cases, had their dielectric fluid changed and flushed so that the equipment contained less than 50-ppm PCBs (the level considered PCB-contaminated).

The transformer is located in the base hospital (Building 2700), while the 15 capacitors are located in a utility vault (Building 210) that is part of the airfield lighting system. The hospital transformer is regularly retrofilled to reduce PCB contamination to below 50 ppm. This procedure is expected to be completed by December 1993 and should be certified as non-PCB by March 1994. The 15 capacitors are completely (hermetically) sealed. All new contract specifications bar equipment that contains PCBs.

Closure Baseline. With the exception of equipment in the two buildings mentioned above, no federally regulated PCB or PCB-contaminated equipment under control of the Air Force will be left on the base at the time of closure. PCB-contaminated equipment (containing less than 500 ppm) under control of the Air Force will be identified to recipients of the property.

3.3.8 Radon

Radon is a naturally occurring, colorless, and odorless radioactive gas that is produced by radioactive decay of naturally occurring uranium. Uranium decays to radium, with radon gas as a byproduct. Radon is found in high concentrations in rocks containing uranium, such as granite, shale, phosphate, and pitchblende. Atmospheric radon is diluted to insignificant concentrations. Radon that is present in soil, however, can enter a building through small spaces and openings, accumulating in enclosed areas, such as basements. The cancer risk caused by exposure, through the inhalation of radon, is a topic of concern.

Currently, there are no federal or state standards regulating radon exposure; however, the EPA has published a pamphlet, *A Citizen's Guide to Radon-What It Is and What to Do About It* (1992). Air Force policy requires implementation of the Radon Assessment and Mitigation Program (RAMP) to determine levels of radon exposure of military personnel and their dependents. RAMP is divided into three phases: initial assessment, detailed assessment, and mitigation. Air Force bases are classified as either high, medium, or low risk, based on the initial assessment and comparison of assessed levels with the EPA-established radon concentration limit of 4 picoCuries per liter (pCi/l) of air. High-risk bases are those with an initial assessment greater than 20 pCi/l and medium-risk bases are those with readings between 4 to 20 pCi/l. Low-risk bases are those with readings of less than 4 pCi/l. Air Force policy requires a detailed radon assessment program for levels of 4 pCi/l or greater.

The EPA has made testing recommendations for both residential structures and schools. For residential structures, a 2- to 7-day charcoal canister test should be used. If levels between 4 and 20 pCi/l are detected, additional screening should be performed within a few years. For levels of 20 to 200 pCi/l, additional confirmation sampling should be accomplished within a few months. For levels in excess of 200 pCi/l, the structure should be evacuated immediately. A 2-day charcoal canister test is used for schools; if readings are 4 to 20 pCi/l, a 9-month school year survey is required. The recommended radon surveys and action levels are summarized in Table 3.3-11.

Table 3.3-11

Recommended Radon Surveys and Mitigations

Structure	EPA Action Level	Recommendations
Residential	4 to 20 pCi/l	Additional screening. Expose detectors for 1 year. Reduce radon levels within 3 years if confirmed high readings exist.
Residential	20 to 200 pCi/l	Perform follow-up measurements. Expose detectors for no more than 6 months.
Residential	Above 200 pCi/l	Follow-up measurements. Expose detectors for no more than 1 week. Immediately reduce radon levels.
	Two-Day Weekend Measurement	
School	4 to 20 pCi/l	Confirmatory 9-month survey. Alpha track or ion chamber survey.
School	Greater than 20 pCi/l	Diagnostic survey or mitigation.

Note: Congress has set a national goal for indoor radon concentrations of less than 0.7 pCi/l.
Source: Environmental Protection Agency 1992.

Preclosure Reference. The Bergstrom AFB Bioenvironmental Engineering Office conducted an initial assessment survey for radon contamination between

November 1987 and March 1988. Of the 35 monitors deployed, radon levels greater than 4 pCi/l but less than 20 pCi/l of air were recorded at 8 sites in the housing area. The EPA has established 4 pCi/l of air as the lower value for potential risks and 20 pCi/l of air as the radon level requiring immediate mitigation if the exposure equals or exceeds 7 years. The average residency time in those buildings is less than 2 years.

Identification of Bergstrom AFB as a medium-risk base required completion of a year-long detailed assessment phase with placement of radon monitors in every military family housing unit, all temporary living facilities, the first floors of the dormitories and Visiting Officers' Quarters, in-patient hospital rooms, and the child-care center. In December 1989, over 1,000 monitors were placed and monitored for 1 year. Fifty detectors placed in buildings for the Phase Two detailed assessment recorded radon concentrations equivalent to 4 pCi/l or greater (Table 3.3-12). The highest recorded reading was 11 pCi/l.

Closure Baseline. Structures with radon concentrations greater than or equal to 4 pCi/l should be mitigated within 1 to 5 years. Structures with radon concentrations of less than 4 pCi/l require no mitigation action. With closure of the base, ventilation is being used for correction where required. This action is consistent with measured radon posing risks over long-term exposures and the probability that the residents will not remain in the structure beyond September 1993.

3.3.9 Medical/Biohazardous Waste

Preclosure Reference. The Bergstrom AFB hospital provides medical services to active military personnel and their dependents, as well as retirees and their dependents. The hospital produces approximately 2,500 pounds of medical/biohazardous waste per month. The base hospital operated a pathological waste incinerator until August 1989, when it was placed out-of-service. The hospital now contracts for offbase incineration and disposal of its medical waste with Medical Environmental Disposal Inc. of San Antonio, Texas. The hospital stores its medical wastes under refrigeration in containers provided by the contractor pending collection, which occurs twice weekly (U.S. Air Force 1991g).

Closure Baseline. The base hospital will be inactivated by September 1993 and no medical/biohazardous waste will be generated at the time of base closure. Existing medical/biohazardous waste will be processed and removed prior to closure according to applicable regulations.

3.3.10 Ordnance

Preclosure Reference. Bergstrom AFB has a number of ranges in which ordnance is used or disposed. The Small Arms Range, constructed in 1956, is a baffled indoor range located in Building 1810 in the east-central portion of the base. A rifle range, leased to the Travis County Sheriff's Department, is located in the southwestern part of the base near Building 4505. A skeet and

Table 3.3-12

Detailed Radon Assessment Results

Building	Address	Structure Concentration (pCi/l)*
324B	324 Tibbetts	11.1
230A	230 Anderson	10.8
5525B	242 Rawlings	9.8
453	453 McWhirk	8.2
426B	426 Simpson	7.7
732B	732-B Falcon	7.5
502	502 Pearson	7.0
224A	224 Anderson	6.2
5322B	347 Tibbetts	6.0
410B	410 Simpson	5.7
437B	437 Simpson	5.6
5203	440 Simpson	5.6
5313A	309 Tibbetts	5.6
330	330 Tibbetts	5.5
5122	439 Simpson	5.5
761A	761-A Bird Dog	5.5
435	435 Simpson	5.5
5340	328 Tibbetts	5.4
408D	408 Simpson	5.3
5637	122 Blessing	5.2
5313B	311 Tibbetts	5.1
5406C	232 Anderson	5.1
1A	1 Sycamore	4.8
5521	252 Rawlings	4.8
5309B	308 McWhirk	4.7
434	434 Simpson	4.6
427	427 Sawyer	4.5
340	340 Tibbetts	4.4
5244B	418 Kornegy	4.4
736A	736-A Falcon	4.4
5123	441 Simpson	4.4
302	302 McWhirk	4.3
3708B	TLF, Room 323	4.3
430	430 Simpson	4.2
5312	303 Tibbetts	4.2
254	254 Rawlings	4.1
517	517 Pearson	4.1
5401A	200 Avenue B	4.0
238A	238 Anderson	3.9
5206	428 Simpson	3.9
5301	367 Tibbetts	3.9
507	507 Pearson	3.9
5307B	316 McWhirk	3.9
5019B	424 McWhirk	3.8
5225	435 McWhirk	3.8
518	518 Pearson	3.8
5448	223 Goodwin	3.7
770B	770-B Bird Dog	3.7
754B	754B Robin	3.7
2	2 Sycamore Street	3.6

Note: *A reading of 3.6 pCi/l was determined to be the lower 95 percent confidence level for a target exposure of 4 pCi/l and is considered to be equivalent to 4 pCi/l for mitigation purposes.

Source: U.S. Air Force 1991h.

trap range was located northwest of the rifle range north of Burleson Road and west of the south end of the main runway. An Explosive Ordnance Disposal (EOD) burn area is located north of the former skeet and trap range.

Closure Baseline. The Air Force will conduct investigations of the Small Arms Range, rifle range, skeet and trap range, and EOD burn area to assess potential surface and subsurface trace metal contamination, particularly lead contamination, as part of the base disposal process. Such investigations may include the installation of monitoring wells and the drilling of boreholes for the collection of groundwater and soil samples.

3.3.11 Solid Waste Management Units

The 1984 Hazardous and Solid Waste Amendments to RCRA provided new authority for EPA to require comprehensive corrective actions for releases of hazardous waste and hazardous constituents from solid waste management units (SWMUs) at facilities subject to the permitting requirements of RCRA Section 3005(e) and at facilities applying for RCRA permits. This authority requires EPA to address the need for corrective action for previously unregulated releases to air, surface water, soil, and groundwater, and to address the generation of subsurface gas. To determine the necessary permit conditions, EPA regions conduct a RCRA Facility Assessment (RFA) to identify releases, potential releases, or potential releases requiring further investigation. The RFA consists of a Preliminary Review (PR), a Visual Site Inspection (VSI), and if appropriate, a Sampling Visit (SV), to provide the basis for further investigations to be conducted after permit issuance.

An RFA (PR and VSI) of Bergstrom AFB conducted in 1989 (A.T. Kearney, Inc. and The Earth Technology Corporation 1989) identified 96 SWMUs and 13 areas of concerns (AOCs) (Table 3.3-13). Additional SWMUs have subsequently been identified by the base and the Texas Water Commission. Many of the SWMUs listed in Table 3.3-13 have been discussed previously in this section (e.g., IRP sites). The RFA will assist EPA and the Texas Water Commission in developing requirements for a RCRA Facility Investigation (RFI) to be conducted pursuant to applicable federal and state solid waste regulations.

3.4 NATURAL ENVIRONMENT

This section describes the affected environment for the following natural resources: soils and geology, water resources, air quality, noise, biological resources, and cultural and paleontological resources.

3.4.1 Soils and Geology

The ROI for soils includes Bergstrom AFB and an area extending approximately 0.5 mile beyond the base boundary. The ROI for geologic resources includes the base and the surrounding area, extending approximately 5 miles beyond the base boundary.

Table 3.3-13

Solid Waste Management Units Identified at Bergstrom AFB

SWMU #[1]	SWMU Name	Item[2]	Description
1-2	Inactive Landfills No. 1 and 2	3	IRP Sites LF-1 and LF-2, respectively. See Section 3.3.3 and Table 3.3-4.
3-7	Inactive Landfills No. 3 to 7	1	IRP Sites LF-3 to LF-7, respectively. See Section 3.3.3 and Table 3.3-4.
8	Former Radioactive Waste Disposal Area	5	IRP Site RW-24. See Section 3.3.3 and Table 3.3-4.
9	Fire Department Training Area	1	IRP Site FT-23. See Section 3.3.3 and Table 3.3-4.
10	Inactive Sludge Drying Bed	3	IRP Site WP-22. See Section 3.3.3 and Table 3.3-4.
11	Building 722 Pesticide Sink	5	SWMU #11 is a sink in Building 722, the Entomology Shop, used to triple rinse pesticide containers prior to disposal. Prior to 1988, the pesticide rinse water drained into SWMU #12, the Entomology Pesticide Evaporation Pond. This practice was terminated in 1988. Since 1988, the rinsate has been collected in a 5-gallon carboy container placed beneath the sink. The rinsate is reused with the product pesticide rather than disposed of.
12	Entomology Pesticide Evaporation Pit	1	IRP Site WP-21. See Section 3.3.3 and Table 3.3-4.
13	Former Pesticide Rinse Disposal Area	3	SWMU #13 is located at Building 724, the former Entomology Shop (1951 to 1973). Pesticide application equipment and empty containers were rinsed prior to disposal and the rinsewater was drained to the ground somewhere outside of the building. The area surrounding the building is currently paved with asphalt.
14	Hazardous Waste Drum Storage Area	1	SWMU #14 is a RCRA-regulated container storage area located at Facility 1638. This unit receives waste from various satellite waste accumulation areas (SWMUs #15 to 22) for pickup by a contractor for offsite disposal.
15-22	Satellite Waste Accumulation Areas (8)	3	These SWMUs are designated container storage areas for temporary storage of waste at Buildings 320, 635, 713, 1612, 1801, 1806, 4577, and 4588, respectively (see Section 3.3.2 and Table 3.3-2). SWMUs located at Buildings 320, 635, and 4577 are no longer used as satellite waste accumulation areas.
23-26	Building 590 Underground Waste Storage Tank No. 5 Building 590 Underground Waste Storage Tank No. 7 Building 590 Underground Waste Storage Tank No. 9 Building 590 Underground Waste Storage Tank No. 11	7 1 7 7	These SWMUs consist of four 25,000-gallon USTs used for storage of waste materials. Tank No. 5 is used for waste synthetic oil, Tank No. 7 for oil/water separator waste, Tank No. 9 for waste oil and solvent, and Tank No. 11 for waste fuels (see Section 3.3.4 and Table 3.3-6).
27	DRMO Storage Area	5	SWMU #27 is the current DRMO storage area, paved with asphalt and surrounded by a metal fence. The site is utilized to store salvageable material prior to transfer, donation, or sale.
28	Former DRMO Storage Area Near Building 530	3	SWMU #28, the DRMO storage area prior to 1971, was located adjacent to Building 530 and served the same purpose as the current facility.

Table 3.3-13, Page 2 of 5

SWMU #[1]	SWMU Name	Item[2]	Description
29	Hospital Incinerator	5	SWMU #29 is a gas-fired, multiple-chamber incinerator with a 20-foot exhaust stack at the base hospital. It was formerly used to burn pathological waste generated by routine hospital operations (see Section 3.3.9).
30	Classified Waste Incinerator	5	SWMU #30 is an incinerator with a 20-foot high stack located at Facility 720. The unit is used to destroy classified documents, paper, and photographic material.
31-36	Silver Recovery Units (6)	5	These SWMUs are silver recovery units in Buildings 2700 (Hospital and Dental Clinic), 2003, 1615, 1400, and 320, respectively (see Section 3.3.2).
37-68	Oil/Water Separators (32)	4	These SWMUs include various oil/water separators located throughout the base (see Section 3.3.4 and Table 3.3-9). SWMU #57, Building 4576 Jet Engine Test Stand Oil/Water Separator and Overflow Drainage Ditch, includes IRP Site SD-27 (see Section 3.3.3 and Table 3.3-4).
69	Building 1618 Washrack	6	SWMU #69 is a concrete pad (10 feet by 12 feet) adjacent to Building 1618 formerly used for washing base vehicles. Soapy wastewater containing oily waste was routed through an oil/water separator prior to discharge. The oil/water separator was originally connected to the sanitary sewer system, but was later disconnected and rerouted to the storm drain system.
70-71	Building 1801 Washracks (2)	6	SWMUs #70 and 71 are vehicle washracks at Building 1801. SWMU #70, which is partially indoors, is used to wash base vehicles. Rinsewater contaminated with oil and grease drains to a sump and then to the sanitary sewer system. SWMU #71, an outdoor washrack adjacent to SWMU #70, is used to rinse dust from vehicles which have been sanded in preparation for painting. The wastewater is routed through an oil/water separator prior to discharge into the sanitary sewer system.
72	Building 4586 Washrack Area	4	SWMU #72 is a covered pad (40 feet by 12 feet) used for washing base vehicles. Rinsewater contaminated with oil is drained through an oil/water separator.
73-75	Building 4540 Aircraft Washrack, Oil Separation Tank, and Waste Oil Hold Tank	4	SWMU #73 is a curbed concrete pad (100 feet by 80 feet) used for the washing aircraft. Oily wastewater drains to a below-grade oil/water separator and is then pumped to an open top oil separation tank (SWMU #74) adjacent to the washrack. In the separation tank, oily waste material is skimmed off and discharged into a waste oil holding tank (SWMU #75). Wastewater from the bottom of the holding tank is discharged to the sanitary sewer system.
76	Sanitary Sewer System	8	SWMU #76 is the network of underground pipes throughout the developed portion of the base that collect sanitary and some industrial wastewater. The wastewater is pumped to the Bergstrom Wastewater Treatment Plant at the Hornsby Bend Complex for processing.

Table 3.3-13, Page 3 of 5

SWMU #[1]	SWMU Name	Item[2]	Description
77	Storm Drainage System (includes AOC #10 and IRP Site SD-17)	3	SWMU #77 is the network of drainage ditches, mostly earthen, that receive stormwater runoff from areas throughout the base. The system includes three oil/water separators which were added in 1981. Wastewater was likely discharged into this system in the past.
78-80	RCCF Floor Trough, Hold Tank, and Backup Tank	5	SWMU #78 is a U-shaped floor drain (1 foot wide and 1 foot deep) extending the length of the building used to collect wastewater generated by the stripping and painting of aircraft. Wastewater in the trough flows by gravity through a screen to collect larger paint chips prior to it reaching a 6,000-gallon subsurface steel tank (SWMU #79). The contents of the tank are pumped out for offsite disposal. SWMU #80 is a 3,000-gallon aboveground backup tank for SWMU #79 in a room adjacent to Building 1608. Contents of SWMU #80 are also pumped out for offsite disposal.
81	RCCF Drum Storage Area	5	SWMU #81 is a temporary hazardous waste drum storage area at the RCCF. Drums are stored for less than 90 days prior to shipment for offsite disposal.
82	RCCF Air Filter System	5	SWMU #82 is the air filter system in Building 1608. Contaminated air is exhausted through wall filters which trap airborne paint particles. The filters are routinely changed; the contaminated filters are placed in plastic bags and then into 85-gallon overpack drums for offsite disposal as a hazardous waste.
83	Building 1640 Paint Spray Booth Filters	5	SWMU #83 is an aircraft paint spray booth in Building 1640. Contaminated air is exhausted through wall filters which trap airborne paint particles. The filters are routinely changed and bagged for offsite disposal.
84-88	Battery Neutralization Sinks (5)	5	These SWMUs are battery neutralization sinks located in Buildings 1610, 1801, 723, 4535, and 4562, respectively. In the sinks, battery acid is drained from batteries and neutralized. Following neutralization, the batteries are taken to the DRMO storage area for offsite shipment.
89	Facility Dumpsters	5	SWMU #89 consists of various dumpsters situated throughout the base. The units are typically rectangular steel dumpsters approximately 6 feet long, 5 feet wide, and 6 to 7 feet high. The nonhazardous contents are disposed of at a municipal landfill.
90	Oversize Dumpsters at Inactive Landfill No. 5	5	SWMU #90 consists of four oversized dumpsters at inactive Landfill No. 5. These steel units are approximately 10 feet wide, 30 feet long, and 8 feet high. The nonhazardous waste material is disposed of at a municipal landfill.
91	Construction Rubble Debris Pile	3	SWMU #91 is a construction rubble debris pile on top of inactive Landfill No. 6. This site is an unpaved open area designated for disposal of construction debris. The material is bulldozed periodically and a soil cover is added.
92	Portable Waste Oil Tanks (e.g., vacuum trucks and bowser units)	5	SWMU #92 consists of various portable waste oil tanks, including a number of 55-gallon drums welded together on a flatbed truck, a 300-gallon horizontal tank welded to a flatbed truck, and a 500-gallon bowser.

Table 3.3-13, Page 4 of 5

SWMU #[1]	SWMU Name	Item[2]	Description
93	Explosive Ordnance Disposal Area	3	SWMU #93 was the site used for training exercises by the base EOD team with a maximum 5-pound explosive limit (see Section 3.3.10).
94	Mogas Spill at Motor Pool Area	7	IRP Site SS-13. See Section 3.3.3 and Table 3.3-4.
95	Road Oiling Area: Southern End of Third Street	3	IRP Site SS-14. See Section 3.3.3 and Table 3.3-4.
96	JP-4 Spill on Aircraft Parking Apron	7	IRP Site SS-15. See Section 3.3.3 and Table 3.3-4.
AOC #1	JP-4 Spill at Facility 513 Aboveground Storage Tank	7	IRP Site SS-8. See Section 3.3.3 and Table 3.3-4.
AOC #2	JP-4 Spill Near Pumping Stations 506 and 507	7	IRP Site SS-8. See Section 3.3.3 and Table 3.3-4.
AOC #3	JP-4 Spill - POL Tank Storage Area	7	IRP Site SS-10. See Section 3.3.3 and Table 3.3-4.
AOC #4	Dibrom/Diesel Spill/Presidential Boulevard (Front Gate)	6	IRP Site SS-11. See Section 3.3.3 and Table 3.3-4.
AOC #5	Dibrom/Diesel Spill/Golf Course Area	6	IRP Site SS-12. See Section 3.3.3 and Table 3.3-4.
AOC #6	Asphalt Primer Spill Area/Avenue F	6	IRP Site SS-25. See Section 3.3.3 and Table 3.3-4.
AOC #7	Asphalt Primer Spill - Drainage Ditch/Star Drive	6	IRP Site SS-26. See Section 3.3.3 and Table 3.3-4.
AOC #8	Fuel Storage Areas and Underground Tanks	7	AOC #8 includes aboveground and underground fuel storage tanks and associated pipelines, pumps, and fuel separators (see Section 3.3.4 and Table 3.3-6).
AOC #9	Fuel Truck JP-4 Spill - Taxiways 12 and 14 Intersection	6	IRP Site SS-16. See Section 3.3.3 and Table 3.3-4.
AOC #10	South Fork Drainage Area	3	IRP Site SD-17. See Section 3.3.3 and Table 3.3-4.
AOC #11	JP-4 Spill at Fuel Systems Repair Shop (Building 4533)	7	IRP Site SS-18. See Section 3.3.3 and Table 3.3-4.
AOC #12	Spill From JP-4 Aircraft Fuel Tank	6	IRP Site SS-19. See Section 3.3.3 and Table 3.3-4.
AOC #13	Aircraft Fuel Tank Jettison Area	6	IRP Site SS-20. See Section 3.3.3 and Table 3.3-4.
-	Building 4518 Asphalt Storage Tank Building 4523 Asphalt Storage Tank	3	These SWMUs are aboveground tanks used to store hot asphalt mix used for minor pavement repairs.
-	Waste Oil Storage at Rear of Motor Pool	3	This SWMU is the location of a former oil storage area at the rear of Building 1801 at the base motor pool. Some oil spills occurred.
-	Waste Oil Storage at Rear of Auto Hobby Shop	3	This SWMU is a waste oil storage area at the rear of Building 600, the Auto Hobby Shop.
-	Building 602 Fuel Bladder Rinse Pit	3	This SWMU is a pit near Building 602 where fuel bladders were rinsed.

Table 3.3-13, Page 5 of 5

SWMU #[1]	SWMU Name	Item[2]	Description
-	Inactive Waste Oil Storage Tank (Green Tank)	2	This SWMU, a 6,000-gallon aboveground tank with secondary containment, was formerly used to store waste material removed from oil/water separators.
-	Materials Accumulation Area Near Building 525	3	This SWMU is an open storage area located near Building 525.
-	Building 4537 PCB Spill	3	This SWMU is a possible PCB spill near Building 4537. Tests are being conducted to determine the nature of contamination, if any.
-	Active Waste Oil Storage Tank (Tan Tank)	4	This SWMU, a 6,000-gallon aboveground tank with secondary containment, is used to store waste material removed from oil/water separators.
-	Small Arms Range (Lead-Contaminated Materials)	5	This SWMU is an indoor firing range with 21 firing points (see Section 3.3.10).
-	Middle Marker Navigational Site (IRP Site)	7	IRP Site OT-28. See Section 3.3.3 and Table 3.3-4.
-	Communications Transmitter Site (IRP Site)	6	IRP Site OT-29. See Section 3.3.3 and Table 3.3-4.
-	Lake Travis Recreation Site (IRP Site)	6	IRP Site OT-30. See Section 3.3.3 and Table 3.3-4.

Notes: [1]SWMUs 1 through 96 and AOCs 1 through 13 were identified in the 1989 RFA. SWMUs not numbered were subsequently identified by the base and the Texas Water Commission.
[2]Item refers to the proposed regulatory action to be required per Texas Water Commission letter dated November 6, 1992.
1 = SWMU currently being investigated per requirements of the IRP and is recommended for a full RFI.
2 = SWMU to be closed in accordance with 40 CFR 265, Subpart G and Texas Administrative Code Part 31, §§ 335.112 and 335.118.
3 = SWMU will be inspected and have soil boring/groundwater samples collected as part of an RFA and may require an RFI.
4 = SWMU will be inspected as part of an RFA and may require an RFI.
5 = SWMU is not required to be included in an RFI and will either be decontaminated and left in place and documented, or properly disposed of and documented.
6 = SWMU is not subject to an RFI and requires no further action.
7 = SWMU is subject to the Petroleum Storage Tank Program requirements of Texas Administrative Code Part 31, § 334 and would not requrie an RFI.
8 = SWMU may require an RFI after review and evaluation of historic operational data.

Sources: A.T. Kearney, Inc. and The Earth Technology Corporation 1989; Lewis 1992.

3.4.1.1 Soils

Most of the soils on Bergstrom AFB belong to the Lewisville and Houston Black series. Small areas of the Altoga silty clay series are found in the southeast and northwest corners of the base, with isolated areas of Patrick soils along the western boundary of the base (Figure 3.4-1). These soils are mapped as predominantly clay to silty clay, which is consistent with boring records (Murfee Engineering Company et al. 1990b). The soil is basically clay from the surface to depths of 10 to 35 feet. In most cases, a mixture of sand and silt or sand and gravel lies 5 to 15 feet below the surface. Shale is generally found at depths over 45 feet but occurs in some areas at less than 10 feet.

The soils of the Lewisville Series consist of deep, nearly level to gently sloping (up to 2%), well-drained silty clays that occupy terraces along major streams. Areas range in shape from broad to long and narrow. These soils are moderately permeable and easily tilled. The available water capacity is high.

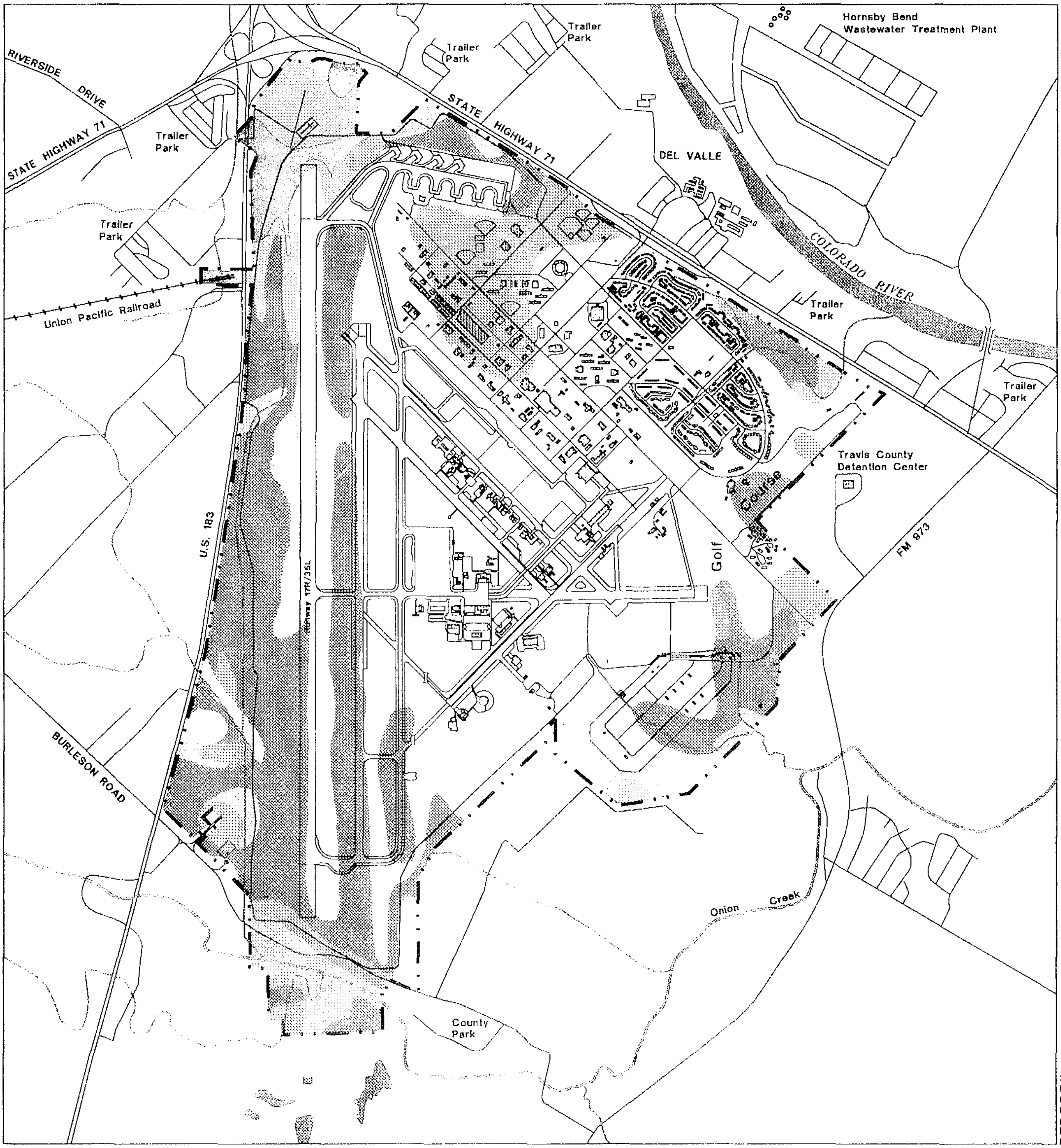
The Lewisville silty clay is an alluvial soil that covers approximately 85 percent of the base. These soils consist of deep, nearly level to gently sloping, well-drained silty clays that are moderately permeable, have a high water capacity, and are susceptible to piping and severe cracking.

The Houston Black Series consists of deep, moderately well-drained clay soils. These soils have developed in calcareous marls, alluvial clays, and chalk. Slopes range from zero to 8 percent and are smooth and single or complex. These soils crack when dry and are very slowly permeable when wet and have a high water capacity. The surface of these soils is typically covered with gravel. These soils have a very slow permeability and a high shrink-swell potential.

The Altoga Series consists of deep, well-drained, silty clay soils that occur high on the landscape, mostly on long, narrow side slopes, but also on ridges paralleling the major streams. The slope ranges from about 1.5 to 2.5 percent on ridges and from 3 to 8 percent on side slopes. Altoga soils developed in friable, calcareous alluvium.

Altoga soils are easy to cultivate. Tilth is generally good, but the erosion hazard is moderately severe. Bare surfaces are compacted during heavy rain. Most areas have gullies several hundred feet apart, and in some cultivated areas, rills occur in each plowed furrow. These soils are droughty during the summer months. Altoga soils have high shrink-swell potential, poor bearing capacity, and moderate permeability. Calcium carbonate makes up approximately 50 percent of the material.

The Patrick Series consists of shallow to moderately deep, well-drained soils underlain by gravel. These soils have developed on high stream terraces. Most areas occur immediately below slope crests in long, narrow areas, but small areas also exist on ridges. Slopes are predominantly 2 to 6 percent, but range from 1 to 10 percent. Patrick soils are moderately permeable, and the available



LEGEND

- Altoga silty clay, 1-3% slopes
- Altoga silty clay, 3-6% slopes, eroded
- Ferris-Heiden Complex, 8-20% slopes, severely eroded
- Frio silty clay loam, frequently flooded
- Heiden clay, 5-8% slopes, eroded
- Houston Black clay, 0-1% slopes
- Houston Black clay, 1-3% slopes
- Houston Black clay, 3-5% slopes, eroded
- Lewisville silty clay, 0-1% slopes
- Lewisville silty clay, 1-2% slopes
- Patrick soils, 2-5% slopes
- Base Boundary

0 750 1500 3000 Feet

Source: USDA, SCS 1974.

Bergstrom AFB Soils Map

Figure 3.4-1

water capacity is moderate. These soils have moderate shrink-swell potential and excessive seepage properties. The soil is mainly used as a source of gravel.

In general, the soils at Bergstrom AFB are well suited to agriculture. Lewisville soils are well suited for crops, improved pasture, hay, or range grasses. Most Houston Black soils are suitable for cultivation, native range grasses, hay, or improved pasture. Altoga soils are suited to crops, improved pasture, and native range grasses. Patrick soils are marginally suitable for crops, but are better suited to improved pasture or range. A determination made by the U.S. Department of Agriculture (USDA), Soil Conservation Service (SCS), in a letter dated February 11, 1992, indicated some prime farmland soils may be present in the Bergstrom AFB area. The USDA SCS also determined that no unique farmland, important rangeland, or protected forestland occurs on Bergstrom AFB (Oneth 1992).

The soil characteristics at Bergstrom AFB are not unlike those encountered at most airports throughout Texas, including Houston Intercontinental and Dallas-Fort Worth. The soils mainly have a high shrink-swell potential. Potential constraints and soil stabilization considerations for construction of airport pavements and building foundations are expected to be similar to those identified in other areas. Various soil properties and engineering and other use limitations for the three primary soil types on the base are summarized in Table 3.4-1.

3.4.1.2 Physiography and Geology

Physiography. Bergstrom AFB is located in the Colorado River Terraces physiographic province adjacent to portions of the Rolling Prairie and Blackland Prairie provinces on the south and the Rolling Prairie province to the west. These areas are part of the Inner Texas Gulf Coastal Plain. The Edwards Plateau lies west of the Rolling Prairie province. An escarpment separates the Edwards Plateau from the other provinces and forms the western boundary of the Balcones Fault Zone. Bergstrom AFB is approximately 8 to 10 miles east of the escarpment and within the eastern portion of the Balcones Fault Zone (U.S. Air Force 1990c).

The Edwards Plateau and Balcones Fault Zone are dissected by the meandering, southeast-flowing Colorado River and its tributaries. The Rolling Prairie province is a slightly to moderately dissected area located within the eastern portion of the Balcones Fault Zone. The Colorado River Terraces in the vicinity of the base form a subsection of the Rolling Prairie province consisting of flat lowlands modified by river erosional processes.

The land surface of Bergstrom AFB drains primarily to the south and southeast to Onion Creek, a tributary of the Colorado River (Murfee Engineering Company et al. 1990b). A small portion in the northwest corner of the site drains northward directly to the Colorado River. The topography of the base is fairly level, sloping at 0.5 percent or less from approximately 540 feet above mean

Table 3.4-1

Soil Properties and Interpretations for Engineering and Other Selected Uses

	Lewisville Silty Clay	Houston Black Clay	Patrick Clay
Soil Properties:			
Permeability (inches per hour)	0.63 - 2.00	<0.06	0.63 - 2.00
Available Water Capacity (inches per inch of soil)	0.18 - 0.22	0.15 - 0.20	0.13 - 0.15
pH	7.9 - 8.4	7.9 - 8.4	7.9 - 8.4
Corrosivity to Uncoated Steel and Concrete	Steel high; concrete low	Steel high; concrete low	Steel high; concrete low
Shrink-Swell Potential	High	High	High
Flooding Hazard	None	Slight	None
Engineering Limitations (Degree and Kind)[1]:			
Dwellings Without Basements/Foundations	Severe: high shrink-swell potential	Severe: high shrink-swell potential	Moderate: moderate shrink-swell potential, fair bearing capacity
Septic Tank Absorption Fields	Moderate: moderate permeability	Severe: very slow permeability	Severe: excessive seepage
Sewage Lagoons	Severe: excessive seepage	Slope 0.2%, none to slight; 2-7%, moderate	Severe: excessive seepage
Sanitary Landfill (Trench Type)	Severe	Moderate	Severe
Picnic and Camp Areas	Severe: silty clay texture	Severe: clay texture	Severe: clay texture
Playgrounds	Severe: silty clay texture	Severe: clay texture, slow permeability	Severe: clay texture, slopes 6-10%
Local Roads and Streets	Severe: high shrink-swell, poor supporting capacity	Severe: high shrink-swell, poor supporting capacity	Moderate: moderate shrink-swell, fair supporting capacity
Small Commercial Buildings	Severe: high shrink-swell	Severe: high shrink-swell	Moderate: moderate shrink-swell, fair bearing capacity
Pond Reservoir Areas	Severe: excessive seepage	None to slight	Severe: excessive seepage
Embankments, Dikes, and Levees	Moderate: fair slope stability	Moderate: fair slope stability	Moderate: medium compressibility
Shallow Excavations	Severe	Moderate	Moderate
Suitability as a Source of:			
Topsoil	Poor: silty clay texture	Poor: clay texture	Poor: clay texture
Roadfill	Poor: high shrink-swell, poor supporting capacity	Poor: high shrink-swell, poor supporting capacity	Fair: moderate shrink-swell, fair supporting capacity
Highway Base	Severe: high shrink-swell, poor supporting capacity	Severe: high shrink-swell, poor supporting capacity	Fair: moderate shrink-swell, fair supporting capacity
Soil Cement Base	(no information)	(no information)	(no information)
Predicted Average Acre Yields of Principal Crops[2]:			
Cotton (pounds of lint)	375 - 400	400	200
Corn (bushels)	40-55	45-50	25
Grain Sorghum (pounds)	4,000 - 4,500	3,500 - 4,000	2,000
Oats (bushels)	60 - 75	50 - 60	35

Notes: [1]Slight refers to soil properties generally favorable to rated use (i.e., limitations that are minor and easily overcome). Moderate means that soil properties are unfavorable but can be overcome or modified by special planning and design. Severe refers to soil properties so unfavorable and so difficult to correct or overcome that they require major soil reclamation, special designs, or intensive maintenance.
[2]Predicted average acre yields under high-level management.

Source: U.S. Department of Agriculture, Soil Conservation Service 1974.

sea level (MSL) near the north end of the primary runway to about 420 feet MSL on the southeast corner over a distance of approximately 13,000 linear feet (CH2M Hill 1983). A small hill rises to an elevation of 505 feet MSL near the southeast property line.

Geology. Bergstrom AFB is underlain by several thousand feet of sedimentary rock. Bedrock exposures in the vicinity of Austin and Bergstrom AFB include Upper Cretaceous marine limestones, dolomites, and clays; Tertiary sandy clays; and Quaternary gravels, sands, silts, and clays. The total thickness of the Cretaceous units under the base is approximately 2,500 feet. The bedrock geology and the general structure of this area are shown in Figure 3.4-2.

Most of the base is immediately underlain by up to 60 feet of Colorado River Terrace deposits composed of yellow to orange sand, silty clay, and gravel (CH2M Hill 1983). The Taylor Group underlies the Terrace deposits. This unit consists of approximately 700 feet of greenish-gray to brown, calcareous, montmorillonitic clay and marly clay.

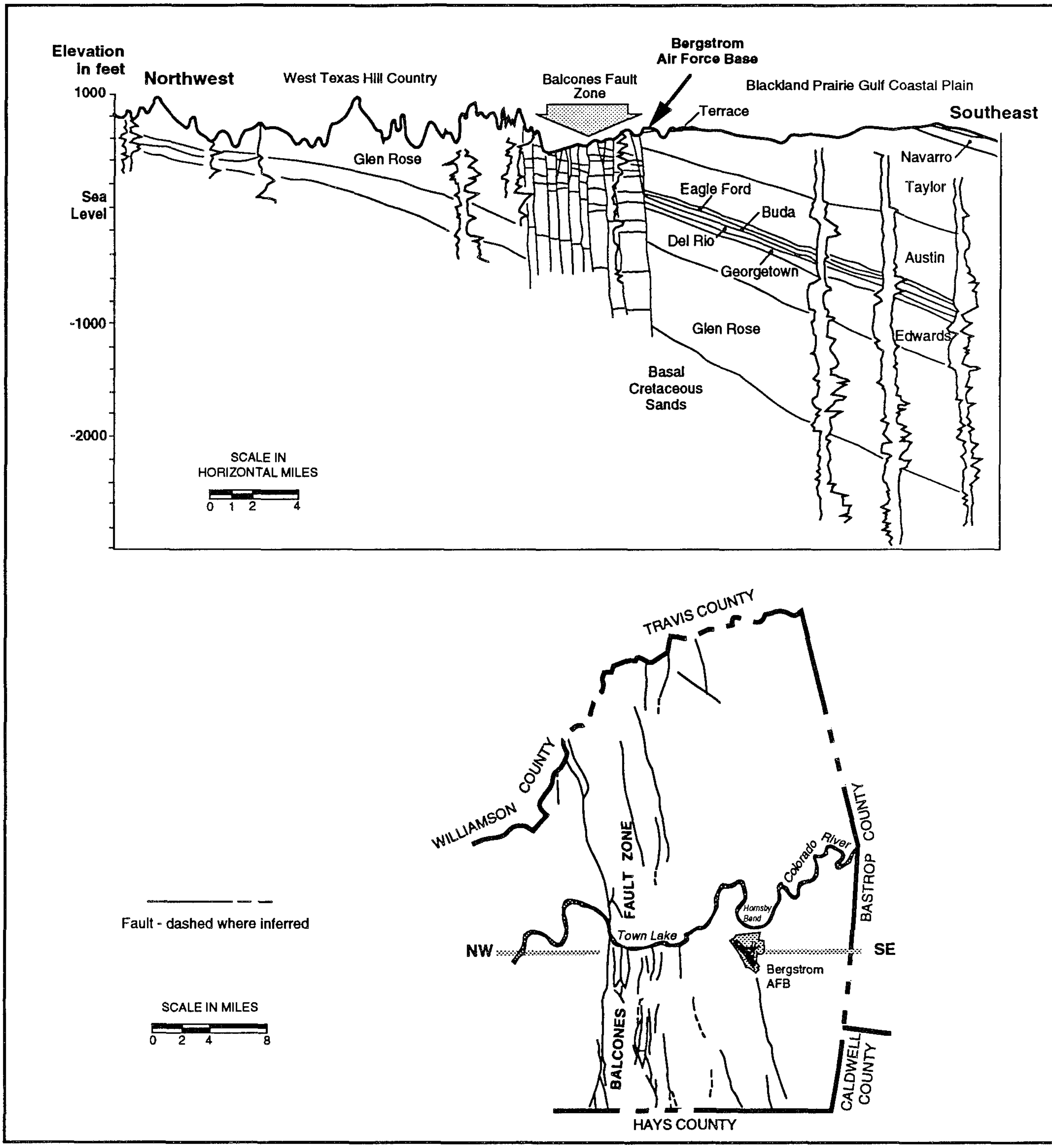
The Austin Group underlies the Taylor Group and consists of several formations with a total thickness of approximately 350 feet. This group includes a small, local igneous intrusion and a number of predominantly limestone, marly limestone, fossiliferous limestone, and chalk formations (CH2M Hill 1983).

Underlying the Austin Group is the Eagle Ford Formation, consisting of approximately 25 feet of dark gray calcareous clay with thin beds of limestone. Below this is the Washita Group, which includes the Buda Formation, consisting of approximately 35 feet of glauconitic limestone; the Del Rio Formation, consisting of 25 to 35 feet of clay; and the Georgetown Formation, consisting of approximately 40 to 60 feet of limestone and capping the underlying Edwards Formation (CH2M Hill 1983). The Edwards Formation consists of approximately 300 feet of limestone, dolomitic limestone, and chert nodules, and includes a regionally significant aquifer, but is not a potable aquifer beneath Bergstrom AFB.

Approximately 20 feet of Comanche Peak Limestone separate the Edwards Formation from the underlying Walnut Formation, which also consists primarily of limestone. The Travis Peak Formation comprises the regionally significant Trinity Sands aquifer system.

The overall dip of the strata is to the southeast at approximately 100 feet per mile, except in the Balcones Fault Zone, where both magnitude and direction of dips are irregular. The general structure of the area is shown in Figure 3.4-2.

The Balcones Fault Zone developed during the Miocene Epoch, between 22.5 and 6 million years before present. It is approximately 6 to 8 miles wide and consists of a series of high-angle dip-slip normal faults; the major faults in the zone are downthrown to the east. The overall trend is northeast-southwest. In the ROI, the fault zone south of the Town Lake impoundment on the



Geologic Cross-Section in the Vicinity of Bergstrom AFB

Source: CH2M Hill 1983.

Figure 3.4-2

Colorado River has a concentration of smaller high-angle faults that are bounded by the two major faults defining the zone. This same series of concentrated faults does not extend north of the river (U.S. Air Force 1990c).

No appreciable movement has occurred on the faults along the Balcones Fault Zone since the Miocene Epoch. The entire region lies in Seismic Zone 0, defined as an area where earthquake hazards are minimal and no seismic activity is expected (International Conference of Building Officials 1991). Bergstrom AFB does not lie in a potential liquefaction area. Sinkholes have developed in the limestones of the Edwards Plateau; however, these units lie at considerable depth in the vicinity of Bergstrom AFB. Therefore, no hazard is present (U.S. Air Force 1990c).

Although the presence of terrace deposits indicates sand and gravel resources are present, no mining operations currently exist at Bergstrom AFB. A possible low-grade geothermal resource occurs at a depth of about 2,000 feet beneath the base; however, it is unlikely to be an economically viable resource. No federally designated strategic minerals have been found at the base (U.S. Air Force 1990c).

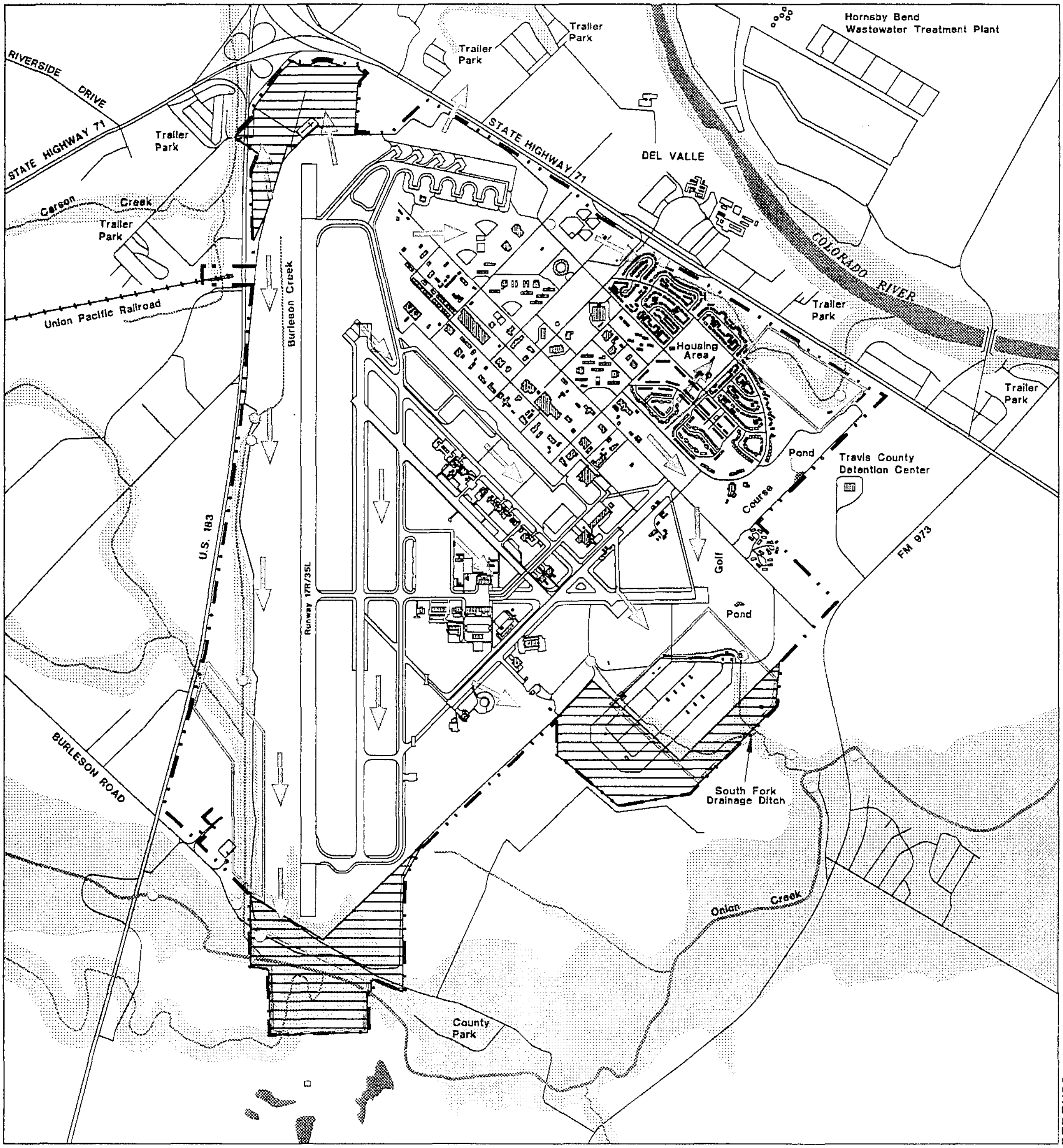
3.4.2 Water Resources

The ROI for water resources includes Bergstrom AFB and the surrounding area, extending approximately 5 miles beyond the base boundary. Surface waters in the ROI include the Hornsby Bend segment of the Colorado River, a small unnamed tributary to the Colorado River, Onion Creek, Burleson Creek, the South Fork Drainage Ditch, Carson Creek, and small ponds in the Bergstrom AFB golf course area (Figure 3.4-3). There are no coastal areas in the vicinity of Bergstrom AFB, nor are there any wild and scenic rivers.

Development/redevelopment at Bergstrom AFB would be subject to provisions of the 1986 Suburban Watersheds Ordinance, which is a portion of the Land Development Code of the City of Austin. These provisions restrict the percentage of land to be developed at a site (i.e., land with impervious cover) and may require construction of water quality ponds. A Project Assessment can be made by the City of Austin for the selected alternative. There may be expense incurred in achieving compliance, depending on the kind of compliance required. The city's Urban Watershed Ordinance and Edwards Aquifer Ordinance do not apply to the Bergstrom AFB area.

3.4.2.1 Surface Water

The Colorado River is the major surface hydrologic feature in the vicinity of Bergstrom AFB. The Hornsby Bend segment of the Colorado River lies within 1,400 feet of the northeastern boundary of the base. The Colorado River is impounded upstream of the base in three locations, creating Lake Travis, Lake Austin, and Town Lake. Lake Austin is the primary source of drinking water for the City of Austin and also provides recreational opportunities. Town Lake



LEGEND

100-Year Floodplain

Surface Water

Government Fee-Purchased Land

Waters of the United States

Surface Water Flow Direction

Monitoring Point

Base Boundary

0 750 1500 3000 Feet

Source: CH2M Hill 1983, FEMA 1986.

Surface Water Hydrology at Bergstrom AFB

Figure 3.4-3

is the secondary drinking water source for Austin. Bergstrom AFB receives its water supply from the Colorado River by purchasing it from the City of Austin.

The portion of the base south of the main runway is within the 100-year floodplain of Onion Creek as delineated by the Federal Emergency Management Agency (FEMA) and the U.S. Army Corps of Engineers (COE) (Figure 3.4-3). Two other areas of the base are located within the 100-year floodplains of smaller tributaries that drain the base. Approximately 4 percent of the Bergstrom AFB land lies within a 100-year floodplain.

Surface Water Quality. Surface water quality could be potentially affected by base activities through the introduction of chemical contaminants into the stormwater runoff, particularly engine fuels, lubricants, and antifreeze. Relatively small amounts of these compounds may leak or spill during routine operations and maintenance onto pavements and hangar floors. These substances can enter the stormwater by two main routes: through precipitation and via floor drains. Precipitation may wash contaminants from impervious surfaces (e.g., runways, taxiways, aprons, and roadways) and carry them to streams.

Twelve industrial buildings on the base are equipped with floor drains that discharge into the stormwater drainage system. Each drain is equipped with an oil/water separator to trap oil washed into the drains. However, detergents and other chemicals may also be introduced into the drainage water. These substances constitute a hazard themselves, but they also may emulsify the water-insoluble oils, allowing them to mix with the water and be discharged despite the oil/water separators (U.S. Air Force 1990c).

Water quality sampling in streams indicates the extent to which contaminants are introduced into the stormwater and ultimately enter the streams (Onion Creek and the Colorado River). Much of the base's stormwater is discharged into Onion Creek, which ultimately flows into the Colorado River.

Water quality is monitored quarterly by the base at each of the stormwater outfalls and along Onion Creek upstream and downstream of the base. Wastewater effluent discharged by the base to the Bergstrom Wastewater Treatment Plant at the Hornsby Bend Complex is also monitored quarterly. Samples have occasionally shown elevated levels of total dissolved solids (TDS) and chemical oxygen demand (COD) occurring at some outfalls. Elevated concentrations of these constituents are likely to reflect the intermittent sampling schedule (i.e., some samples may be taken from the first flow after a dry period). Stormwater that is sampled after a dry period is expected to carry numerous solids which collect on impermeable surfaces during dry periods. Such solids may not be present during wet sampling periods.

On rare occasions, elevated levels of manganese (1984 and 1988) and lead (1989) have occurred at random outfalls. The cause of these levels remains unexplained; however, followup sampling at those sites met standards.

3.4.2.2 Surface Drainage

The entire base is within the Colorado River drainage basin. Stormwater runoff is collected in storm sewers and drainage swales, and is directed to the river, mostly by way of tributaries, including Onion Creek, Burleson Creek, the South Fork Drainage Ditch, and a small, unnamed intermittent tributary which exits the base beneath State Highway 71. The largest of the tributaries is Onion Creek, which flows south and east of the base, with a 2,200-foot section of the creek crossing the southernmost portion of the base. Onion Creek drains a large area west and south of the base, including developed and agricultural lands and McKinney Falls State Park.

Approximately 70 percent of the base drains to Onion Creek. The area south and west of the main runway drains to Burleson Creek, which extends north along the west side of the west perimeter road and discharges into Onion Creek where it passes through the base. Drainage from much of the central and eastern sections of the base, including most of the airfield and industrial support facilities, is directed toward the South Fork Drainage Ditch. The South Fork Drainage Ditch flows across the Munitions Storage Area and adjacent landfill areas, crosses the eastern boundary of Bergstrom AFB, and enters Onion Creek approximately 1,400 feet southeast of the base boundary. Both of these smaller streams are intermittent and their flow is highly dependent on stormwater runoff. The northeastern portion of the base, including the military family housing area, drains to the small, unnamed tributary and enters the Colorado River approximately 1,300 feet to the north.

Carson Creek originates west of the base and U.S. 183 and flows north and east to the Colorado River. It does not cross base property and little or no runoff from the base enters this creek. The vast majority of the Carson Creek watershed consists of the agricultural and developed lands north and west of the base. Only drainage from the northernmost portion of the base, which is largely open fields and grazing areas, is directed beneath State Highway 71 to tributaries of Carson Creek. Runoff from a small portion along the northern boundary (including administrative, fueling, and other industrial areas) is collected and discharged to the Colorado River via a 2,700-foot-long, man-made drainage ditch.

Bergstrom AFB does not have its own sanitary wastewater treatment facility. All of the base's sanitary and industrial wastewater is pumped to the Bergstrom Wastewater Treatment Plant. Although no National Pollutant Discharge Elimination System (NPDES) permit is required, the base has an industrial wastewater permit from the City of Austin for the effluent that goes to the Bergstrom Wastewater Treatment Plant. The base effluent is monitored by base personnel for compliance and by the city to determine the surcharge for industrial wastewater treatment. Monitored parameters include hydrogen ion concentration (pH), dissolved oxygen (DO), COD, and suspended solids.

3.4.2.3 Groundwater

One shallow and several deep aquifers exist beneath Bergstrom AFB. The shallow aquifer is composed of alluvial and Colorado River Terrace deposits and is hydrologically isolated from the deep aquifers by an impermeable stratum known as the Taylor Marl. Although several small faults occur in the vicinity, they have little displacement and occur in thick layers of shale, which essentially seal the faults and prevent them from conducting any water vertically between aquifers (U.S. Air Force 1990c).

The deep aquifers occupy different rock strata. The primary regional aquifer is the deep Edwards aquifer, the top of which varies from 500 to 1,000 feet below the land surface (Brune and Duffin 1983). It occurs in the limestone, dolomitic limestone, and chert modules of the Edwards Formation and is underlain by the impermeable Walnut Formation, which separates it from the still deeper aquifers of the Trinity Formation.

The Balcones Fault Zone generally defines a water quality boundary in the Edwards aquifer. North and west of the fault zone, water quality is good, and the aquifer is used as a potable water source. South and east of the fault zone, the water quality is generally poor due to high levels of dissolved solids; it is therefore not utilized in this area (Brune and Duffin 1983). Bergstrom AFB is isolated geohydrologically from the aquifer and draws no water from it because it is located east of the potable-nonpotable boundary.

The aquifer most likely to be affected by activities on the base property is a shallow aquifer in the vicinity of the base. This aquifer is in the localized, surficial alluvial and terrace deposits of Quaternary age, which consist of gravel and sand overlain by sand, silt, and clay (Murfee Engineering Company et al. 1990b). The terrace deposits are up to 60 feet thick, and the water table is at 20 to 40 feet below the surface (U.S. Air Force 1990c).

Flow in the shallow aquifer is primarily northeast, but is locally variable depending on the surface of the underlying, impermeable Taylor Marl. Recharge to the shallow aquifer occurs locally across the base by percolation of rainwater through the shallow sediments to the saturated zone above the Taylor Marl. Nearly all of Bergstrom AFB overlies the upland recharge area for the shallow aquifer. Discharge from the aquifer occurs as seeps and springs to the South Fork Drainage Ditch, Onion Creek, and Colorado River.

Nine water wells are known to be completed into the alluvial sediments downgradient of the base, and seven wells have been reported but have not been verified (Murfee Engineering Company et al. 1990b). At least two of these wells are no longer in use. One well, located on the base, was used to irrigate the golf course but has been taken out of service due to the availability of the reclaimed wastewater irrigation system. Three active, verified wells, and possibly two unverified wells, are located northeast of the base. Three active, verified wells, and five unverified wells, are located south and southeast between the base and Onion Creek.

Irrigation and local/rural consumption are the primary uses of the water obtained from the shallow aquifer. The water produced from the alluvium and terrace deposits in Travis County contains calcium carbonate and is usually fresh. Chemical analysis data from wells in the Bergstrom AFB area generally show a TDS concentration of 400 to 500 milligrams per liter, which could be considered fresh water.

3.4.3 Air Quality

Air quality in a given location is described as the concentration of various pollutants in the atmosphere, generally expressed in units of parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. The significance of a pollutant concentration is determined by comparing it to federal and/or state ambient air quality standards. These standards represent the maximum allowable atmospheric concentrations that may occur and still protect public health and welfare, with a reasonable margin of safety.

The National Ambient Air Quality Standards (NAAQS) were established by the EPA. The NAAQS and the Texas standards, which are the same as NAAQS, are presented in Table 3.4-2. The main pollutants considered in this EIS are ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter less than or equal to 10 micrometers in diameter (PM_{10}). The previous NAAQS for particulate matter was based on total suspended particulate (TSP) levels; it was replaced in 1987 by an ambient standard based only on the PM_{10} fraction of TSP. Primary standards are oriented toward the protection of public health; secondary standards are geared to the protection of public welfare.

Existing air quality in the region is defined by air quality data and emissions information. Air quality data were obtained for air quality monitoring stations maintained by the Texas Air Control Board. Information on pollutant concentrations measured for short-term (24 hours or less) and long-term (annual) averaging periods was extracted from the monitoring station data to characterize the existing air quality background of the area. Emission inventory information for the region was obtained from the EPA and Bergstrom AFB. Inventory data are separated by pollutant and reported in tons per day to describe the baseline conditions of pollutant emissions in the area.

Identifying the ROI for an air quality assessment requires knowledge of the pollutant types, source emission rates and release parameters, the proximity relationships of project emission sources to other emission sources, and local and regional meteorological conditions. For inert pollutants (all pollutants other than O_3 and its precursors), the ROI is generally limited to an area extending a few miles downwind from the source. The ROI for O_3 may extend much farther downwind than the ROI for inert pollutants. For the purpose of this air quality analysis, the ROI is defined as Travis County.

Table 3.4-2

National and Texas Ambient Air Quality Standards

Pollutants	Averaging Time	National and Texas Standards[1] Primary[2,3]	Secondary[2,4]
Ozone	1-hour	0.12 ppm (235 $\mu g/m^3$)	Same as Primary Standard
Carbon monoxide	8-hour	9 ppm (10 mg/m^3)	--
	1-hour	35 ppm (40 mg/m^3)	--
Nitrogen dioxide	Annual average	0.053 ppm (100 $\mu g/m^3$)	Same as Primary Standard
Sulfur dioxide	Annual average	80 $\mu g/m^3$) (0.03 ppm)	--
	24-hour	365 $\mu g/m^3$ (0.14 ppm)	--
	3-hour		1,300 $\mu g/m^3$ (0.5 ppm)
PM_{10}	Annual	50 $\mu g/m^3$[5]	Same as Primary Standard
	24-hour	150 $\mu g/m^3$	Same as Primary Standard
Lead	Quarterly	1.5 $\mu g/m^3$	Same as Primary Standard

Notes: [1]National and Texas standards, other than O_3 and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The O_3 standard is attained when the expected number of days per calendar year, with maximum hourly average concentrations above the standard, is equal to or less than 1.
[2]Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 mm of mercury. All measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
[3]National and Texas Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health. Each state must attain the primary standards no later than 3 years after that state's implementation plan is approved by the EPA.
[4]National and Texas Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the implementation plan is approved by the EPA.
[5]Calculated as arithmetic mean.

O_3 is a secondary pollutant formed in the atmosphere by photochemical reactions of previously emitted pollutants or precursors. O_3 precursors are mainly reactive organic gases (ROGs) in the form of hydrocarbons and nitrogen oxides (NO_x). ROGs are a subset of the groups of volatile organic compounds (VOCs), which are compounds containing carbon, excluding CO, carbonic acid, metallic carbides, metallic carbonates, and ammonium carbonate. ROGs are gaseous forms of VOCs and do not include methane or other nonreactive methane and ethane derivatives. NO_x is the designation given to the groups of all oxygenated nitrogen species, including nitric oxide (NO), NO_2, nitrous oxide (N_2O), nitric anhydride (N_2O_5), and nitrous anhydride (N_2O_3).

The ROI for O_3 extends farther downwind than the ROI for inert pollutants because, in the presence of solar radiation, the maximum effect of precursor emissions on O_3 levels usually occurs several hours after they are emitted and, therefore, many miles from the source. O_3 and its precursors transported from other regions can also combine with local emissions to produce high local O_3 concentrations. O_3 concentrations are generally highest during the summer months and coincide with periods of maximum solar insolation. Maximum O_3 concentrations tend to be regionally distributed, because precursor emissions are homogeneously dispersed in the atmosphere.

The Federal Clean Air Act, as amended in August 1977 and November 1990, dictates that project emission sources must comply with the air quality standards and regulations that have been established by federal, state, and county regulatory agencies. These standards and regulations focus on (1) the maximum allowable ambient pollutant concentrations resulting from project emissions, both separately and combined with other surrounding sources, and (2) the maximum allowable emissions from the project.

According to EPA guidelines, an area with air quality better than the NAAQS is designated as being in attainment; an area with worse air quality is classified as nonattainment. A nonattainment designation is given to a region if the primary NAAQS for any criteria pollutant is exceeded at any point in the region for more than 3 days during a 3-year period. An area may be designated as unclassifiable by the EPA when there are insufficient data for a specific pollutant on which to base a determination of attainment status. An area designated as unclassifiable for a specific pollutant is considered to be in attainment by the EPA.

The EPA has granted the Texas Air Control Board the authority to implement regulations to prevent the significant deterioration of air quality in areas that are classified as attainment or unclassifiable. The Prevention of Significant Deterioration (PSD) program is implemented in large part through the use of "increments" and area classifications that effectively define "significant deterioration" for individual pollutants. The Clean Air Act's area classification scheme for PSD establishes three classes of geographic areas and applies increments of different stringency to each class. Air quality impacts, in combination with other PSD sources in the area, must not exceed the maximum allowable incremental increases presented in Table 3.4-3.

Class I areas are those of special national concern where any appreciable deterioration in air quality is considered significant. Consequently, the most restrictive increments apply in Class I areas. Class I areas include all international and national parks, wilderness areas, and memorial parks that exceed certain sizes. Less restrictive increments apply in areas designated as Class II or Class III. Class II areas are all PSD areas that are designated as attainment or unclassifiable with respect to the NAAQS and are not classified in the Clean Air Act as Class I areas. Individual states have the authority to redesignate Class II areas to Class III areas, to allow for higher levels of industrial development and emissions growth. There are as yet no designated Class III areas.

Table 3.4-3
Maximum Allowable Pollutant Concentration Increases Under Prevention of Significant Deterioration Regulations

Pollutant	Averaging Time	Maximum Allowable Increment ($\mu g/m^3$) Class I	Class II	Class III
TSP	Annual	5	19	37
	24-Hour	10	37	75
SO_2	Annual	2	20	40
	24-Hour	5	91	182
	3-Hour	25	512	700

Source: 40 CFR 52.21.

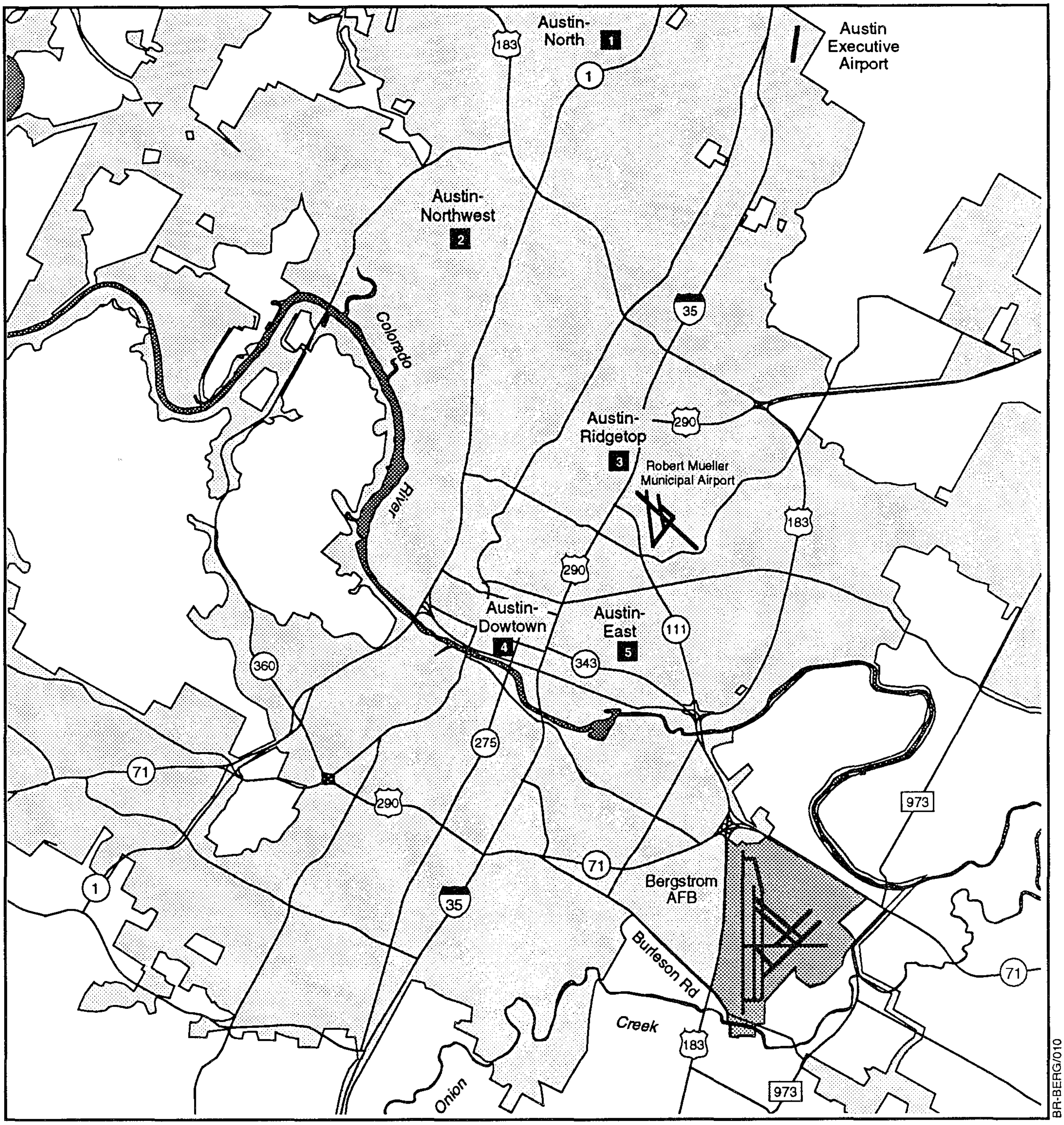
No PSD Class I areas are located within 50 miles of Bergstrom AFB. Travis County is designated by the EPA as a Class II area. Major new or modified stationary sources in the region are subject to PSD review to ensure that these sources are constructed without significant adverse deterioration of the clean air in the area. Emissions from any major new or modified source must be controlled using Best Available Control Technology.

3.4.3.1 Regional Air Quality

The air quality in Travis County is relatively good for all pollutants except O_3. Peak O_3 concentrations in the Austin metropolitan area are at or slightly below the O_3 standard. Meteorological conditions that tend to create high O_3 levels in the area are light winds, weak dispersion, and photochemical reactions. High pressure systems, which move slowly over Travis County from May through September, can produce the conditions that are favorable for increasing O_3 concentrations. However, major air pollution episodes rarely occur, because the high pressure systems do not stagnate for any length of time. Additionally, frequent changes in air mass and numerous local- and regional-scale weather disturbances (e.g., fronts, thunderstorms, and rain showers) tend to prevent high concentrations of air pollutants from occurring.

Preclosure References. Travis County and Bergstrom AFB are located in the Austin-Waco Intrastate Air Quality Control Region (AQCR No. 212) (40 CFR 81.134). Travis County is classified by the EPA as "better than national standards" for O_3, NO_2, CO, and SO_2, while for PM_{10}, the county is "unclassifiable" (*Federal Register* 1991).

The Texas Air Control Board operates five air quality monitoring stations in the Austin area (Figure 3.4-4). O_3 is monitored at two stations, SO_2 at one station, CO and NO_2 at one station, and PM_{10} at two stations. A summary of the particulate and gaseous pollutant concentrations recorded at these monitoring stations between 1988 and 1991 is presented in Table 3.4-4.



LEGEND

35	Interstate Highway		County Boundary
183	U. S. Highway		Austin City Limits
71	State Highway	4	Monitoring Station
973	Farm-to-Market Road		

0 1 2 4 MILES

Air Quality Monitoring Stations Near Bergstrom AFB

Figure 3.4-4

Table 3.4-4

Summary of Air Quality Monitoring Data for Bergstrom AFB Area

Station (location)	1988	1989	1990	1991
	Year			
Austin-Northwest (3724 N. Hills Drive, Murchison Jr. High School)				
SO_2 (ppm)				
3-hour	0.02	0.03	0.02	--
24-hour	0.01	0.00	0.00	--
Annual	0.00	0.00	0.00	--
O_3 (ppm)				
1-hour	0.12	0.12	0.11	0.12
Austin-North (Duval Road and Waters Park Road)				
O_3 (ppm)				
1-hour	0.11	0.11	0.11	0.11
Austin-Downtown (1st and Colorado City Hall Annex)				
CO (ppm)				
1-hour	5.8	7.6	9.7	7.0
8-hour	3.3	4.3	7.3	3.2
NO_2 (ppm)				
Annual	--	0.017	0.016	0.016
Austin-Ridgetop (Caswell Avenue, Ridgetop School)				
PM_{10} ($\mu g/m^3$)				
24-hour	76	78	44	88
Annual	25	23	20	23
Austin-East (Webberville and Pleasant Valley Roads)				
PM_{10} ($\mu g/m^3$)				
24-hour	--	85	44	81
Annual	--	28	22	25

Note: -- indicates that the pollutant is not measured.
Sources: Texas Air Control Board 1989, 1990, 1991, and 1992.

All maximum pollutant concentrations for the various averaging times, except O_3, are well below the ambient air quality standards (Table 3.4-2). The O_3 concentrations are at or slightly below the standard (0.12 ppm). Future increases in population, with corresponding increases in vehicular traffic and O_3 precursor emissions (oxides of nitrogen and hydrocarbons), could result in higher O_3 concentrations that would exceed the O_3 standard.

Based on 1988 to 1990 PM_{10} measurements (Table 3.4-4), it is highly probable that Travis County will be classified as attainment for PM_{10} in the future.

Three major stationary sources of pollution in the ROI include two City of Austin power plants and a University of Texas power plant. A smaller stationary source, located in Roundrock, is the Austin White Lime Company. The three major power plants emit CO, NO_2, VOCs, and particulates, while the Austin White Lime plant emits CO, NO_2, SO_2, and particulates.

Closure Baseline. It can be reasonably assumed that pollutant concentrations at base closure would be similar to, or somewhat less than, concentrations experienced under preclosure conditions because numerous emission sources would be eliminated (e.g., aircraft operations and AGE). Closure would also reduce the number of motor vehicles operating in the surrounding area. Emissions associated with vehicles assigned to the base, military and commuting civilian employees, retirees visiting the base, and truck traffic associated with base operations would be eliminated, except for activities associated with caretaker personnel.

3.4.3.2 Air Pollutant Emission Sources

Preclosure Reference. The 1990 emissions inventory for Bergstrom AFB and the most recent emissions inventory (1988) for Travis County are presented in Table 3.4-5. The emissions inventory for Bergstrom AFB is representative of preclosure conditions. The primary emission sources at the base include aircraft, motor vehicles, and AGE. Fuel evaporation, fire training, and surface coating operations contribute a substantial amount of total hydrocarbon emissions. In addition, aircraft ground operations and heating and power production add a small portion to the total inventory.

Table 3.4-5

Preclosure Inventory for Bergstrom AFB and Travis County (tons per day)

Source	Particulates	SO_x	CO	VOC	NO_x
Bergstrom AFB (1990)					
Aircraft Flying Operations	0.03	0.05	1.27	0.33	0.21
Aircraft Ground Operations	0.01	0.01	0.09	0.01	0.06
Aerospace Ground Equipment	0.02	0.00	0.14	0.02	0.25
Heating and Power Production	0.00	0.00	0.01	0.00	0.03
Motor Vehicles (Military and Civilian)	0.02	0.01	0.77	0.13	0.12
Fire-Fighting/Training	0.01	0.00	0.02	0.02	0.00
Surface Coating	--	--	--	0.16	--
Fuel Evaporation Losses	--	--	--	0.29	--
Total:	**0.09**	**0.07**	**2.30**	**0.96**	**0.67**
Travis County (1988)	269.13	13.87	314.49	91.00	96.24

Sources: Dietz 1991; Environmental Protection Agency 1990.

Closure Baseline. The emissions inventory for Bergstrom AFB at base closure was estimated by assuming that all emissions, other than those associated with heating and power production, motor vehicles, and surface coating, would be eliminated. Heating and power production plants are assumed to operate at 20 percent of preclosure capacity to fulfill minimum building heating and power requirements. Emissions from motor vehicles and surface coating were assumed to be negligible compared to preclosure levels. Closure baseline emissions are presented in Table 3.4-6.

Table 3.4-6

Closure Emissions Inventory for Bergstrom AFB (tons per day)

Source	Particulates	SO_x	CO	VOC	NO_x
Aircraft Flying Operations	--	--	--	--	--
Aircraft Ground Operations	--	--	--	--	--
Aerospace Ground Equipment	--	--	--	--	--
Heating and Power Production	0.000	0.000	0.002	0.000	0.006
Motor Vehicles (Military and Civilian)	0.000	0.000	0.007	0.000	0.001
Fire-Fighting/Training	--	--	--	--	--
Surface Coating	--	--	--	0.001	--
Fuel Evaporation Losses	--	--	--	0.002	--
Total:	**0.000**	**0.000**	**0.009**	**0.003**	**0.007**

Note: Emissions are based on data from Table 3.4-5 multiplied by the ratio of the 1993 base closure population to the 1990 base population. The value 0.000 indicates the pollutant would be present, but emissions would be less than 2 pounds per day; -- indicates that the pollutant is not present.

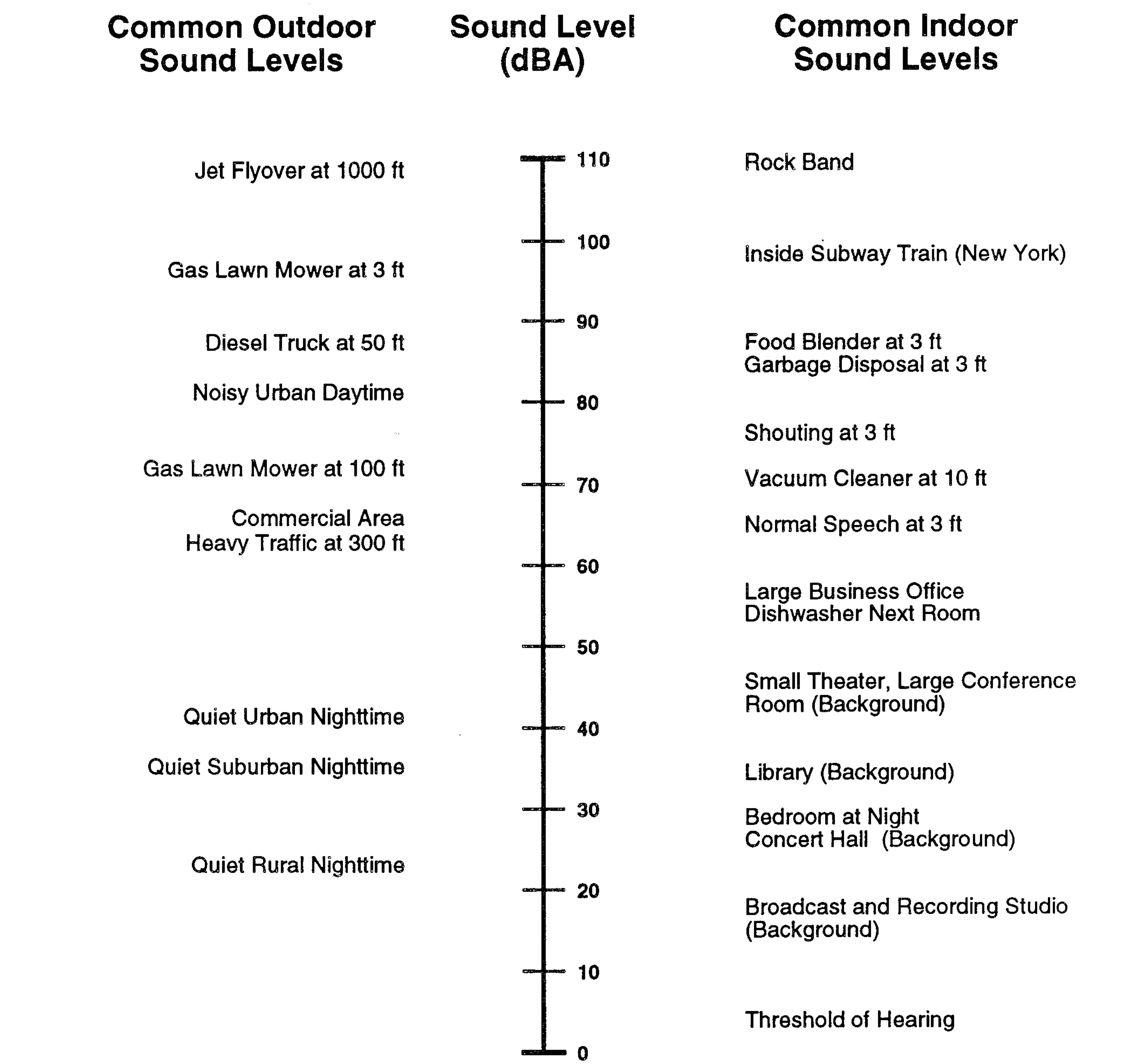
3.4.4 Noise

The ROI for noise sources at Bergstrom AFB was defined using FAA-developed land use compatibility guidelines. The area most affected by base closure and reuse is the base itself, the southeast portion of Austin, City of Austin, the community of Del Valle, and adjacent unincorporated lands.

The characteristics of sound include parameters such as amplitude, frequency, and duration. The decibel (dB), a logarithmic unit that accounts for the large variations in amplitude, is the accepted standard-unit measurement of sound. Different sounds may have different frequency content.

When measuring sound to determine its effects on the human population, A-weighted sound levels (dBA) are typically used to account for the response of the human ear. A-weighted sound levels represent adjusted sound levels. The adjustments, established by the American National Standards Institute (1983), are made according to the frequency content of the sound. Examples of typical sound levels are shown in Figure 3.4-5.

Noise is usually defined as sound that is undesirable because it interferes with communication and hearing, is intense enough to damage hearing, or is otherwise annoying. Noise levels often change with time; therefore, to



Source: Modified from Harris and Miller 1977.

BR-BERG/021

Comparative A-Weighted Sound Levels

Figure 3.4-5

compare levels over different time periods, several descriptors were developed that take into account this time-varying nature. These descriptors are used to assess and correlate the various effects of noise on humans, including land use compatibility, sleep and speech interference, annoyance, hearing loss, and startle effects.

The day-night average sound level (DNL) was developed to evaluate the total community noise environment. The DNL is the average A-weighted sound level during a 24-hour period with 10 dB added to nighttime levels (between 10:00 p.m. and 7:00 a.m.). This adjustment is added to account for the increased sensitivity to nighttime noise. The DNL was endorsed by the EPA and is mandated by the U.S. Department of Housing and Urban Development, the FAA, and the DOD for land use assessments.

The DNL is an accepted unit for quantifying human annoyance to general environmental noise, which includes aircraft noise. The Federal Interagency Committee on Urban Noise developed land use compatibility guidelines for noise in terms of DNL (14 CFR 150). FAA-recommended DNL ranges for various land use categories based on the committee's guidelines are presented in Table 3.4-7. The FAA guidelines were used in this study to determine noise impacts.

The DNL is used in this report because it is the noise descriptor recognized by the FAA and Air Force for airfield environments. The DNL is sometimes supplemented with other metrics, primarily the equivalent sound level (L_{eq}). The L_{eq} is the equivalent, steady-state level that would contain the same acoustical energy as the time-varying level during the same time interval.

Another descriptor used to describe time-varying sound is the Sound Exposure Level (SEL). The SEL value represents the A-weighted sound level integrated over the entire duration of the noise event and referenced to a duration of 1 second. When an event lasts longer than 1 second, the SEL value will be higher than the highest sound level during the event.

The Texas Municipal Airport Act provides authority for political subdivisions of the state to regulate the use of land to prevent airport hazards and land uses incompatible with an airport. This Act grants the City of Austin the authority to implement land use zoning within the DNL 65 dB noise contour or within certain geographical boundaries of an airport.

Appendix H provides additional information about the measurement and prediction of noise. Appendix H also provides more information on the units used in describing noise, as well as information about the effects of noise such as annoyance, sleep and speech interference, health effects, and effects on animals.

Table 3.4-7

Land Use Compatibility With Yearly Day-Night Average Sound Levels[1] (in dB)

Land Use	Yearly Day-Night Average Sound Level (DNL) Below 65	65-70	70-75	75-80	80-85	Over 85
Residential						
Residential -- other than mobile homes and transient lodgings	Y[2]	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices -- business and professional	Y	Y	25	30	N	N
Wholesale and retail--building materials, hardware, and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade--general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(5)	Y(6)	Y(7)	Y(7)	Y(7)
Livestock farming and breeding	Y	Y(5)	Y(6)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y(8)	Y(8)	N	N	N
Outdoor music halls and amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusement parks, resorts, and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

Notes: [1]The designations contained in this table do not constitute a federal determination that any use of land covered by the program is acceptable or unacceptable under federal, state, or local laws. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise-compatible land uses.

[2]Key: Y (Yes) Land use and related structures compatible without restrictions.

N (No) Land use and related structures are not compatible and should be prohibited.

25, 30, or 35 Land use and related structures generally compatible; measures to achieve Noise Level Reduction (NLR) of 25, 30, or 35 dB must be incorporated into design and construction of structure.

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor-to-indoor NLR of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide an NLR of 20 dB; thus, the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year-round. However, the use of NLR criteria will not eliminate outdoor noise problems.

Table 3.4-7, Continued

Notes, Continued	
(2)	Measures to achieve an NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.
(3)	Measures to achieve an NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.
(4)	Measures to achieve an NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.
(5)	Residential buildings require an NLR of 25.
(6)	Residential buildings require an NLR of 30.
(7)	Residential buildings not permitted.
(8)	Land use compatible, provided special sound reinforcement systems are installed.

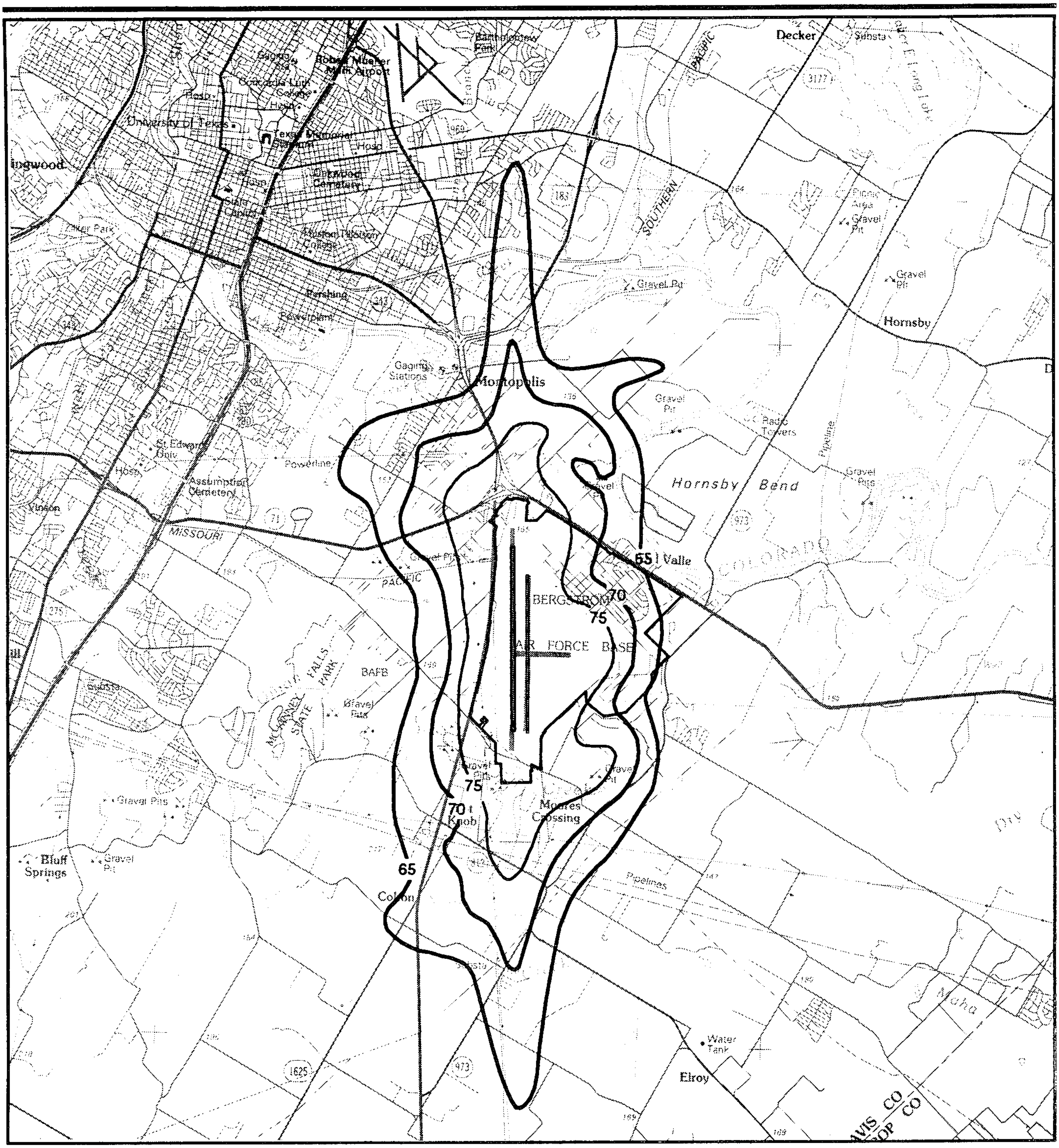
Source: 14 CFR 150.

3.4.4.1 Existing Noise Levels

Typical noise sources in and around airfields include aircraft, surface traffic, and other human activities. Military aircraft operations and surface traffic on local streets and highways are the existing primary sources of noise in the vicinity of Bergstrom AFB. Noise from railroads in the vicinity of the base would be negligible and is not included in the analysis. In airport analyses, areas with DNLs above 65 dB are often considered in land use compatibility planning and impact assessment; therefore, the DNL contours equal to or greater than 65 dB are of particular interest. Contours equal to and above DNL 65 dB are estimated and presented in 5-dB intervals.

Preclosure Reference. Aircraft noise at Bergstrom AFB occurs during aircraft engine warmup, maintenance and testing, taxiings, takeoffs, approaches, and landings. Noise contours for preclosure aircraft operations (Figure 3.4-6) were modeled for the 1987 AICUZ study using information on aircraft types; runway use; runup locations; arrival and departure flight tracks; aircraft altitude, speeds, and engine power settings; and number of daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) operations. These preclosure contours represent aircraft noise impacts when the base was fully operational and are based on an aircraft mix of RF-4C, F-4D, and transient military aircraft. Only those contours equal to or above DNL 65 dB are shown. The contours are shown to serve as a reference for comparing noise impacts resulting from the Proposed Action and General Aviation/Air Cargo Airport Alternative (see Section 4.4).

The preclosure DNL contours form a distorted elliptical pattern with the major areas oriented along the primary north-south runway (Runway 17R/35L). Bulges in the DNL contour pattern are the result of arrival and departure flight tracks used at Bergstrom AFB to minimize aircraft noise intrusion into adjacent communities and to avoid airspace conflicts with operations at RMMA (Figure 3.2-12).



LEGEND

Base Boundary

—65— DNL Noise Contours (in 5 dB Intervals)

0 1 2 MILES

Source: U.S. Air Force 1987a.

Bergstrom AFB Preclosure Noise Contours

Figure 3.4-6

Surface vehicle traffic noise levels for roadways in the vicinity of the base were analyzed using the Federal Highway Administration Highway Noise Model STAMINA 2.0 (1982). This model incorporates vehicle mix, traffic volume projections, and speed to generate DNL values. The results of the modeling for surface traffic are presented in Table 3.4-8. The data used in the surface traffic analysis are presented in Appendix H. The noise levels are presented as a function of distance from the centerline of the nearest road. The actual distances to the DNLs may be less than those presented because the model does not account for the screening effects of intervening buildings, terrain, and walls.

Table 3.4-8

Distance to DNL From Roadway Centerline for the Preclosure Reference and Closure Baseline

	Distance (feet)		
Roadway	**DNL 65 dB**	**DNL 70 dB**	**DNL 75 dB**
Preclosure			
U.S. 183, South of State Highway 71	136	63	*
U.S. 183, North of State Highway 71	240	112	52
U.S. 183, South of Thompson Street	185	86	40
U.S. 183, East of Airport Boulevard	122	57	*
U.S. 183, Montopolis Bridge	280	130	60
State Highway 71, East of U.S. 183	330	153	71
State Highway 71, East of Interstate 35	341	158	73
State Highway 71, West of Interstate 35	397	184	86
State Highway 71, East of Presidential Boulevard	239	111	52
State Highway 71, West of FM 973	199	92	43
Closure			
U.S. 183, South of State Highway 71	132	61	*
U.S. 183, North of State Highway 71	212	99	46
State Highway 71, East of U.S. 183	236	109	51
State Highway 71, East of Presidential Boulevard	229	106	49
State Highway 71, West of FM 973	184	86	*

Note: *Contained within the highway.

Closure Baseline. The projected noise levels for the closure baseline were calculated using the traffic projections at base closure (Appendix H). These data include AADT, traffic mix, and speed. The results of the modeling for the roadways analyzed are presented in Table 3.4-8. Because of the relatively small decrease in traffic as a result of base closure, the decrease in noise levels along the roadways in the vicinity of Bergstrom AFB would be 2 dB or less. This small reduction in highway noise levels would not be discernible.

At the time of base closure, the 924th FG will still be operating at Bergstrom AFB, as will the RCCF and Headquarters 10th Air Force. Noise associated with the flying activities related to these organizations (i.e., 924th FG F-16s and various transient aircraft) will still affect surrounding land uses, although at levels much lower than when the base was fully operational. Noise contours resulting from military operations and resulting noise effects at the time of base closure would be very similar to those presented for the Proposed Action in 1994 in Section 4.4. As described in Section 2.1, if an operational airfield is not maintained beyond the closure date (i.e., implementation of either the Proposed Action or General Aviation/Air Cargo Airport Alternative), the three Air Force units will relocate from the base within a 1- to 3-year time frame and all flying activities will cease.

3.4.4.2 Noise-Sensitive Areas

The ROI for Bergstrom AFB includes the following noise-sensitive receptors that are within the preclosure DNL 65 dB contour: 12 schools (8 public and 4 private), 8 parks and recreation/community facilities, and 17 churches (Murfee Engineering Company et al. 1990b). The modeled contours (Figure 3.4-6) indicate that there are 14,720 acres exposed to DNL 65 dB or greater in and around Bergstrom AFB. Within this area, approximately 13,405 persons (excluding the population on the base) in approximately 3,755 dwelling units are exposed to DNL noise levels of 65 dB or greater (Murfee Engineering Company et al. 1990b).

3.4.5 Biological Resources

Biological resources include native and introduced plants and animals in the project area. For discussion purposes, these are divided into vegetation, wildlife (including aquatic biota), threatened and endangered species, and sensitive habitats.

The ROI for the biological resources analysis is Bergstrom AFB and natural areas adjacent to the base. This includes the area in which potential impacts could occur and provides a basis for evaluating impacts on these resources.

Field surveys of Bergstrom AFB were conducted in April, June, and July 1992 for general vegetation and wildlife, as well as for sensitive species. The study area was concentrated on the base itself, but less-intensive surveys were extended, where feasible, to natural areas adjacent to the base that could potentially be affected by reuse activities. These areas included wooded tracts south of the base, especially those bordering Onion Creek; areas along drainages bordering the base to the west and east; and areas along a portion of a small tributary to the Colorado River. Most remaining land surrounding the base is used for agricultural, commercial, or residential purposes. These areas were not surveyed.

The base lies within the Blackland Prairie Vegetational Area, characterized as gently rolling to nearly level with fairly uniform dark calcareous clay soils. Historically, the area was dominated by grasslands of bluestem and grama grass with occasional oak woodlands (City of Austin 1987a).

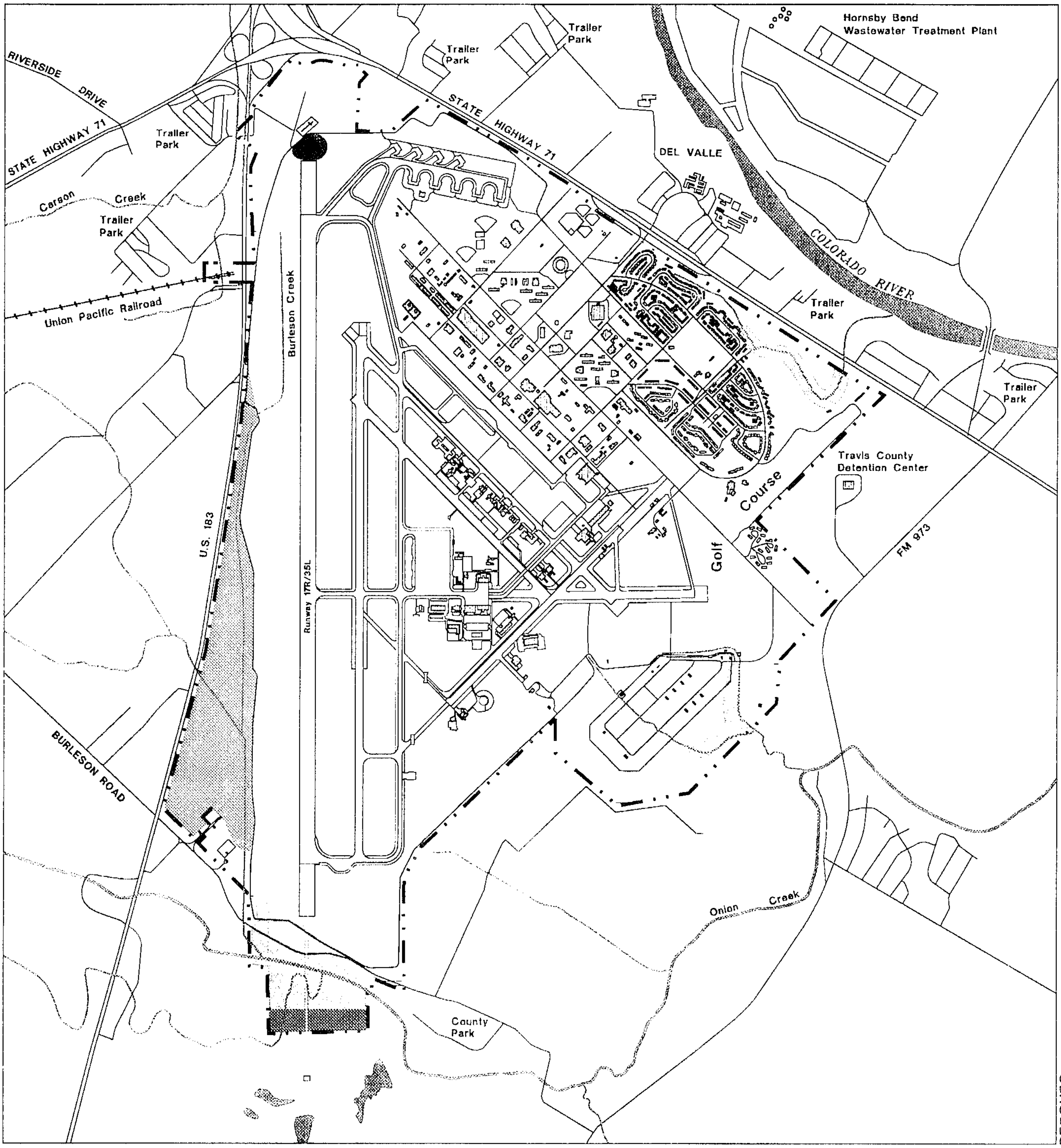
3.4.5.1 Vegetation

The majority of the base is maintained in short vegetation consisting of grasses, sedges, legumes, and various weedy forbs. Areas near the runways, taxiways, and aircraft parking aprons are periodically mowed; those very near the runways are mowed more frequently. Commercial, operational, industrial, recreational, and residential areas are similarly maintained in short vegetation, except for various trees and shrubs used in landscaping. The remainder of the base consists of weedy or ruderal vegetation in disturbed areas in various stages of succession. Exceptions include vegetation in and along the various sloughs and in the forested areas located on and adjacent to the base. Vegetation types on and in the vicinity of Bergstrom AFB are shown on Figure 3.4-7.

Most of Bergstrom AFB consists of improved and semi-improved areas, including areas near or surrounding the runways, taxiways, aircraft parking aprons, Munitions Storage Area, pasture areas, landfills, and recreational areas. These areas are mowed regularly and vegetation is kept low in accordance with Air Force safety and security policies. These areas have the highest species diversity and also include most of the land area of the base. Characteristic vegetation includes Texas bluebonnet (*Lupinus texensis*), Indian paintbrush (*Castilleja indivisa*), vervain (*Verbena bipinnatifida*), windmill flower (*Anemone decapetala*), wild onion (*Allium canadense*), pink evening-primrose (*Oenothera speciosa*), blue-flag (*Sisyrinchium angustifolium*), sweet clovers (*Melilotus* spp.), buffalo gourd (*Cucurbita foetidissima*), bur-clovers (*Medicago* spp.), Engelmann daisy (*Engelmannia bipinnatifida*), wild honeysuckles (*Gaura* spp.), mouse-eared chickweeds (*Cerastium* spp.), stork's-bills (*Erodium* spp.), and plantains (*Plantago* spp.). Typical grasses include bluestem (*Bothriochloa ischaemum*), three-awned grass (*Aristida longiseta*), grama grass (*Bouteloua rigidiseta*), needle grass (*Stipa leucotricha*), dallis grass (*Paspalum dilatatum*), brome grasses (*Bromus* spp.), Johnson grass (*Sorghum halepense*), and Bermuda grass (*Cynodon dactylon*).

The cemetery just north of the primary runway is included as an improved area because it is periodically mowed. It does, however, contain a moderate amount of woody ornamental species.

The inactive landfill area located just east of the Munitions Storage Area is also periodically mowed and graded, but not as regularly as the areas adjoining the runways and taxiways. Typical vegetation includes annual sunflower (*Helianthus annuus*), giant ragweed (*Ambrosia trifida*), yellow evening-primrose (*Oenothera laciniata*), common ragweed (*Ambrosia artemisiifolia*), wild lettuce (*Lactuca* spp.), and various weedy umbels (*Torilis arvensis* and *Chaerophyllum tainturieri*). Border areas tend to support woody species such as hackberry (*Celtis reticulata*), Chinaberry (*Melia azederach*), privet (*Ligustrum quihouni*), cedar elm (*Ulmus crassifolia*), and redbud (*Cercis canadensis*). The railroad spur area west of the base and U.S. 183 is dominated by honey mesquite (*Prosopis glandulosa*), goldenrod (*Solidago canadensis*), and greenbriers (*Smilax* spp.).



LEGEND

	Deciduous Forest/Woodland		Seep
	Mesquite/Grassland		Developed/Landscaped Within Base Boundary
	Grassland/ Deciduous Trees		Base Boundary
	Mesquite Thicket		

Bergstrom AFB Vegetation Map

0 750 1500 3000 Feet

Figure 3.4-7

In south-central Texas, deciduous forest/woodland vegetation is best developed along major rivers. Important dominant species include hackberry, cedar elm, American elm (*Ulmus americana*), ashes (*Fraxinus* spp.), pecan (*Carya illinoensis*), and box elder (*Acer negundo*). Along water courses, black willow (*Salix nigra*), eastern cottonwood (*Populus deltoides*), white mulberry (*Morus alba*), sycamore (*Plantanus occidentalis*), and bald cypress (*Taxodium distichum*) are typical. Common understory vegetation (shrubs and vines) includes immature specimens of the dominant trees, elderberry (*Sambucus canadensis*), poison ivy (*Toxicodendron radicans*), gum bumelia (*Bumelia lanuginosa*), and greenbriers. Commonly occurring herbs are baby blue-eyes (*Nemophila phacelioides*), violet (*Viola missouriensis*), river oats (*Chasmanthium latifolium*), wingstem (*Verbesina virginica*), white avens (*Geum canadense*), and spiderwort (*Tradescantia hirsutiflora*).

Three deciduous forest/woodland areas occur on and in the vicinity of Bergstrom AFB (Figure 3.4-7). The most well-developed is along Onion Creek, just south of the primary runway. It has the largest trees and best-developed ground vegetation. It is also the only woodland in the study area containing bald cypress. The other two wooded areas are less well-developed: the drainage area near the Munitions Storage Area, and a wooded area in the ravine of the golf course near State Highway 71. The ravine wooded area is also characterized by the presence of live oak (*Quercus virginiana*). All three wooded areas are noticeably disturbed as a result of flooding that occurred in December 1991. Disturbed area plants include giant ragweed, honey mesquite, wild lettuce, and torilis umbels.

Several small ponds exist near the north end of the shrubby area along the western perimeter of the base (see Section 3.4.5.4), probably a result of runoff from the airfield. The area is characterized by black willow and eastern cottonwood. Marginal vegetation associated with the ponds include cattail (*Typha latifolia*) and spikerushes (*Eleocharis* spp.). Common groundcover typically consists of three-seeded mercury (*Acalypha gracilens*). From north to south, the area gradually changes into a shrubby thicket dominated by honey mesquite, which indicates massive disturbance in previous years. Along with honey mesquite, other prominent vegetation includes Roosevelt weed (*Baccharis neglecta*), prickly pear (*Opuntia lindheimeri*) and pencil cacti (*O. leptocarpis*), barberry (*Mahonia trifoliolata*), hackberry, and a limited amount of white mulberry, Chinaberry, and Jerusalem-thorn (*Parkinsonia aculeata*). More open areas have broomweed (*Gutierrezia microcephala*), fox-glove (*Penstemon cobaea*), and greenbriers.

A large seep is located at the north end of the primary runway. Drainages at various places on the site appear to remain wet throughout the year, but are periodically cleared to prevent invasion by woody species. Common plants include cattail, softrushes (*Juncus* spp.), spikerushes, curley dock (*Rumex crispus*), butterwort (*Senecio tampicanus*), and bishop weed (*Ptilimnium capillaceum*). One drainage, between the north end of the mesquite-shrub thicket and the runway, is characterized by woody vegetation. It includes black willow, hackberry, white mulberry, and Chinese tallow-tree (*Sapium sebiferum*).

Residential, industrial, commercial, recreational, and operational areas are largely kept in low grassy vegetation (e.g., lawn). Common cultivated plants on the base include many previously mentioned tree and shrub species, and also species such as Arbor vitae (*Thuja occidentalis*), eastern red cedar (*Juniperus virginiana*), flowering magnolia (*Magnolia virginiana*), lilac (*Syringa vulgaris*), and oleander (*Nerium oleander*).

The four government fee-purchased land parcels on the base were surveyed for vegetation and plant community types. No sensitive species were found in these areas. Fee-purchased land bordering the landfill and Munitions Storage Area contains vegetation similar to that discussed for improved and semi-improved areas. Common species include giant and common ragweeds, goldenrod, Roosevelt weed, and broomweed. Other species observed were Mexican-hat (*Ratibida columnifera*), Indian-blanket (*Gaillardia pulchella*), prionopsis (*Prionopsis ciliata*), and Santa Maria feverfew (*Parthenium hysterophorus*). The area between the landfill and Munitions Storage Area is separated by a fenceline overgrown with tree and shrub species such as hackberry, honey mesquite, Chinaberry, greenbrier, wild grape, and Virginia creeper (*Parthenocissus quinquefolia*).

The runway approach area at the south end of the main runway consists of riparian forest/woodland. This parcel of fee-purchased land extends across Burleson Road and Onion Creek. The riparian woodland gradually transitions into a more upland and dense woodland community dominated by hackberries, cedar elm, Texas persimmon (*Diospyros texana*), red mulberry (*Morus rubra*), and eastern red cedar. Understory vegetation dominants include annual sunflower, wingstem, poison ivy, and lantana (*Lantana camara*). The southernmost part of this area consists of dense to open thickets populated with honey mesquite, eastern red cedar, Roosevelt weed, Johnson grass, annual sunflower, ragweeds, prionopsis, and silver bluestem (*Bothriochloa saccharoides*). A 60-foot-wide strip of periodically mowed vegetation similar to that described for improved and semi-improved areas is located around the runway approach lighting system.

The fee-purchased land at the north end of the primary runway includes species common to the improved and semi-improved areas, and seeps and drainages. Areas just north and east of the north end of the runway also contain what could be described as open savannahs of low vegetation punctuated occasionally with large shrubs and trees. Common tree species are cedar elm, hackberry, red mulberry, sycamore, box elder, honey mesquite, Chinaberry, gum bumelia, and live oak. Shrubs and vines include barberry, Roosevelt weed, prickly pear and pencil cacti, Japanese honeysuckle, greenbrier, and wild grapes (*Vitis* spp.). Dominant herbaceous and grass species include ragweeds, annual sunflower, goldenrod, broomweed, wingstem, Johnson grass, Bermuda grass, bluestem grasses, and giant reed (*Arundo donax*).

3.4.5.2 Wildlife

Although the vast majority of Bergstrom AFB does not contain high-quality wildlife habitat, the base does support a variety of fauna in the few natural areas and in mowed and landscaped areas.

During the 1992 surveys, several species were detected in virtually all habitats on the base. The only mammal detected nearly basewide was the black-tailed jackrabbit (*Lepus californicus*). This species was observed in the southeastern part of the base and detected by scat in many of the mowed areas of the base. In addition, eastern cottontails (*Sylvilagus floridanus*), which were observed in the mesquite thicket on the western perimeter of the base, are also likely to be common basewide. The hispid cotton rat (*Sigmodon hispidus*) was observed along the perimeter fence near the cemetery in the northwest corner of the base. This species is likely to occur in many areas of the base.

A number of mammals known or expected to occur nearly basewide were not directly observed during the brief surveys. These include Mexican ground squirrel (*Spermophilus mexicanus*), eastern mole (*Scalopus aquaticus*), plains pocket gopher (*Geomys bursarius*), harvest mice (*Reithrodontomys* spp.), deer mice (*Peromyscus maniculatus*), and other field mice (*Peromyscus* spp.). Several bats are likely to occur, at least periodically, on the base. Most common among these are probably red bats (*Lasiurus borealis*), Mexican free tailed bats (*Tadarida brasiliensis*), and evening bats (*Nycticeius humeralis*).

A variety of avian species were observed throughout the base, including pigeon (*Columbia livia*), mourning dove (*Zenaida macroura*), scissor-tailed flycatcher (*Muscivora forficata*), common crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottos*), starling (*Sturnus vulgaris*), eastern meadowlark (*Sturnella magna*), common grackle (*Quiscalus quiscula*), great-tailed grackle (*Q. mexicana*), and house sparrow (*Passer domesticus*). Black-throated sparrows (*Amphispiza bilineata*) are relatively common on the base, and killdeer (*Charadrius vociferus*) and greater yellowlegs (*Totanus melanoleucus*) were observed around wet depressions in mowed areas in several parts of the base. Cedar waxwings (*Bombycilla cedorum*) were observed in ornamental trees near the athletic fields in the northern part of the base and are expected basewide.

A number of reptiles are expected to occur throughout the base. Most common among these are probably several species of lizards (e.g., *Sceloporus* spp., *Hemidactylus* spp., and *Anolis* spp.) and rat snakes (*Elaphe* spp.).

Invertebrates frequently observed in the mowed areas during the surveys include a number of butterflies such as the common sulphur (*Colias philodice*), mourning cloak (*Nymphalis antiopa*), monarch (*Danaus plexippus*), and viceroy (*Limenitis archippus*).

The mesquite thicket along the western base boundary and the area north of the fenceline east of the cemetery are not regularly mowed and, therefore, support wildlife species that require a greater diversity of vegetative structure. Mammals detected in these areas include the eastern cottontail, hispid cotton rat, and coyote (*Canis latrans*). In addition to the avian species seen nearly basewide, blue jays (*Cyanocitta cristata*), loggerhead shrikes (*Lanius ludovicianus*), and kestrels (*Falco sparverius*) were observed in these areas. Bobwhites (*Colinus virginianus*) and thrushes (*Catharus* spp.) are expected to be common in this area. A pair of mallards (*Anas platyrhynchos*) was flushed from the drainage along the western perimeter. Bullfrogs (*Rana catesbeiana*) were detected along this drainage. Other herpetofauna likely in the thicket include prairie kingsnakes (*Lampropeltis calligaster*) and western diamondback rattlesnakes (*Crotalus atrox*). Invertebrates observed around the pond in the north part of the thicket include red skimmers (*Libellula saturata*) and streak-winged red skimmers (*Sympetrum illotum*).

A variety of wildlife species were observed in and around the drainage which crosses Perimeter Road near the fourth hole tee of the golf course. These include greater yellowlegs, robin (*Turdus migratorius*), and American woodcock (*Philohela minor*). In addition, a colony of barn swallows (*Hirundo rustica*) was nesting in a culvert under the road and a red-tailed hawk (*Buteo jamaicensis*) was observed foraging over this area and the adjacent Munitions Storage Area.

Most species common elsewhere on the base can also be found in the inactive landfill area near the Munitions Storage Area and the drainages surrounding it. Scavenger species detected in the landfill area include the opossum (*Didelphis marsupialis*) and northern raccoon (*Procyon lotor*). House mice (*Mus musculus*), roof rats (*Rattus rattus*), and Norway rats (*R. norvegicus*) are probably also common in this area. The thick vegetation at the edges of the landfill provide opportunities for thicket-loving species such as the northern cardinal (*Cardinalis cardinalis*). Additional species detected in the drainages include bullfrog and white-tailed dragonfly (*Plathemis lydia*).

The structural diversity of the vegetation surrounding Onion Creek at the southern base boundary provides habitat for a variety of wildlife species. Mammals detected during the 1992 surveys include fox squirrels (*Sciurus niger*), gray squirrels (*S. carolinensis*), and northern raccoon. Other mammals expected in this area include striped skunk (*Mephitis mephitis*), white-tailed deer (*Odocoileus virginianus*), gray fox (*Urocyon cinereoargenteus*), nine-banded armadillo (*Dasypus novemcinctus*), and bobcat (*Lynx rufus*). The trees surrounding Onion Creek provide the best quality nesting/roosting habitat for raptors on the base; red-tailed hawks, red-shouldered hawks (*Buteo lineatus*), turkey vultures (*Cathartes aura*), and black vultures (*Coragyps atratus*) were all detected in and over this area. Eastern screech owls (*Otus asio*), great horned owls (*Bubo virginianus*), and barn owls (*Tyto alba*) are also likely to be present. In addition to these and many avian species common elsewhere on the base, northern cardinals and eastern bluebirds (*Sialia sialis*) were observed in the woodland around Onion Creek, and red-winged blackbirds (*Agelaius phoeniceus*), vireos (*Vireo* spp.), warblers (*Dendroica* spp.), and a variety of waterfowl (principally *Anas* spp.) are likely to be common in this area.

During the 1992 surveys, bullfrogs, Texas sliders (*Chrysemys concinna texana*), stinkpots (*Sternotherus odoratus*), spiny softshells (*Trionyx spiniferus*), and ground skinks (*Leiolopisma laterale*) were the only herpetofauna species detected in the Onion Creek area. However, this area undoubtedly supports a diverse assemblage of reptiles and amphibians. Snakes likely to be common in this area include milk snakes (*Lampropeltis triangulum*), water snakes (*Nerodia* spp.), copperheads (*Agkistrodon contortrix*), western cottonmouths (*A. piscivorus*), western diamondback rattlesnakes, and garter snakes (*Thamnophis* spp.). The creek likely supports map turtles (*Graptemys* spp.) and box turtles (*Terrapene* spp.). Amphibians expected in this and other riparian areas in the vicinity include a variety of toads (*Scaphiopus, Gastrophryne,* and *Bufo* spp.), cricket frogs (*Acris crepitans*), tree frogs (*Hyla* spp.), chorus frogs (*Pseudacris* spp.), and true frogs (*Rana* spp.).

Onion Creek supports a variety of fish species. During the 1992 surveys, small bluegill (*Lepomis macrochirus*), black bass (*Micropterus* spp.), gar (*Lepisosteus* spp.), and a variety of minnows were seen in the shallows of the creek. Other species likely to be common include carp (*Cyprinus carpio*), shiners (*Notropis* spp.), catfishes (*Ictalurus* spp.), tadpole madtom (*Notorus gyrinus*), mosquitofish (*Gambusia affinis*), sunfishes (*Lepomis* spp.), crappie (*Pomoxis* spp.), and darters (*Percina* and *Etheostoma* spp.). Invertebrates observed in the Onion Creek area include the butterfly and dragonfly species seen elsewhere on the base, as well as the giant swallowtail (*Heraclides cresphontes*).

One important aspect of the base's wildlife habitat is its proximity to other wildlife habitats and to the Central Flyway for migratory birds, particularly waterfowl. Of primary concern are flyovers by birds traveling between ponds at the Hornsby Bend Wastewater Treatment Plant (referred to as Platt's Ponds) north of the base, a City of Austin landfill to the south, and Walter Long Lake to the northeast. This avian activity has resulted in Bird Aircraft Strike Hazard (BASH) problems at the base in the past. Species that pose particular BASH concerns are those that are large or exhibit flocking behavior, such as turkey vultures, black vultures, gulls (*Larus* spp.), grackles, and starlings, all of which have been observed at the city landfill. Disposal of putrescible waste at the landfill attracts birds. However, since such disposal will cease in the near future, the landfill's attractiveness to birds will be substantially reduced.

Of additional concern are the large number of waterfowl (largely *Anas* spp. and geese, including Canada geese [*Branta canadensis*] and snow geese [*Chen caerulescens*]) that are winter residents or use Platt's Ponds as an important stopover point in migration. During the April 1992 survey, a flock of approximately 25 snow geese were observed flying north over the base. Great egrets (*Casmerodius albus*) and several small flocks of cattle egrets were also seen wandering over the base in June.

Four to eight pairs of monk parakeets (*Myiopsitta monachus*) nest in a Texas palm tree in the parking lot of the Officers' Club. Monk parakeets are native to South America but are now well established in the eastern United States as a result of accidental introductions. The species may out-compete native species and is known to be highly destructive to crops. Some areas of the country have instituted eradication programs to control these populations (Lowery 1974). Some biologists believe monk parakeets may be filling the niche left vacant by the extirpation of the Carolina parakeet (*Conuropis carolinensis*) (J. Lyons, personal communication, 1992).

3.4.5.3 Threatened, Endangered, and Candidate Species

No threatened or endangered plant or wildlife species have been identified on Bergstrom AFB by the U.S. Fish and Wildlife Service (USFWS). However, federal- and state-listed threatened, endangered, candidate, or sensitive species are known to be present in the vicinity of the base. The status and distribution of these species were determined through contacts with federal and state agencies and a literature review. The Air Force requested a list of sensitive species in the project area from the USFWS, as required for initiation of informal consultation under Section 7 of the Endangered Species Act (as amended). This list is included in Table 3.4-9. A number of species could occur in the vicinity of Bergstrom AFB. Threatened, endangered, and other sensitive species that are or may be present on and near Bergstrom AFB are listed in Table 3.4-9.

Although none of these species are known to breed on the base, several species, mainly the birds, may occur as transients, particularly in the area of Platt's Ponds, because of the proximity of the base to the Central Flyway. Notable bird species sighted at Platt's Ponds include the endangered bald eagle (*Haliaeetus leucocephalus*) and the threatened piping plover (*Charadrius melodus*).

Two sensitive species were identified on the base during the April and June 1992 surveys: the Texas palm (*Sabal mexicana*) and the loggerhead shrike (*Lanius ludovicianus*). The Texas palm was listed on the 1989 Texas Special Plant List but was not included in the 1991 edition. There are two specimens of the palm located on the base; both were apparently planted as ornamentals. One is in the residential area and the other borders the parking lot in front of the Officers' Club. Loggerhead shrikes are listed by the USFWS as a Category 2 candidate (C2) species and were observed in June 1992 on several areas of the base. The Guadalupe bass (*Micropterus treculi*), another C2 species, is known to occur in Onion Creek south of the base.

3.4.5.4 Sensitive Habitats

Sensitive habitats include wetlands, plant communities that are unusual or of limited distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, or critical summer/winter habitat).

According to the *Wetlands Delineation Manual* (U.S. Army Corps of Engineers 1987), most areas that meet hydric soils and hydrophytic vegetation criteria for wetlands determination and are inundated for 12.5 percent of the growing

Table 3.4-9

Federal- and State-Listed
and Candidate Species, Bergstrom AFB and Vicinity

Scientific Name	Common Name	Status[1] Federal	State	Occurrence[2]
Birds				
Grus americana	Whooping crane	E	E	C
Haliaeetus leucocephalus	Southern bald eagle	E	none	C
Falco peregrinus tundrius	Arctic peregrine falcon	T	T	P
Falco peregrinus anatum	American peregrine falcon	E	E	P
Charadrius melodus	Piping plover	T	T	C
Vireo atricapillus[3]	Black-capped vireo	E	E	C
Sterna antillarum	Least tern	E	none	P
Buteo albicaudatus	White-tailed hawk	none	T	P
Buteo albonotatus	Zone-tailed hawk	none	T	P
Plegadis chihi	White-faced ibis	none	T	C
Elanoides forficatus forficatus	American swallow-tailed kite	2	T	P
Lanius ludovicianus	Loggerhead shrike	2	none	C
Pandion haliaetus	Osprey	none	T	C
Mycteria americana	Wood stork	none	T	P
Dendroica chrysoparia[3]	Golden-cheeked warbler	E	E	C
Herpetofauna				
Typhlomolge rathbuni[3]	Texas blind salamander	E	none	C
Bufo houstonensis	Houston toad	E	none	C
Alligator mississippiensis	American alligator	T(S/A)	none	C
Phrynosoma cornutum	Texas horned lizard	2	T	C
Lampropeltis triangulum annuluata	Mexican milk snake	none	T	C
Macroclemys temmincki	Alligator snapping turtle	none	T	P
Fishes				
Etheostoma fonticola[3]	Fountain darter	E	none	C
Cycleptus elongatus	Blue sucker	2	T	P
Micropterus treculi	Guadalupe bass	2	none	C
Invertebrates				
Texella reddelli[3]	Bee Creek cave harvestman	E	none	C
Microcreagris texana[3]	Tooth Cave pseudoscorpion	E	none	C
Neoleptoneta myopica[3]	Tooth Cave spider	E	none	C
Texamaurops reddelli[3]	Kretschmarr cave mold beetle	E	none	C
Rhadine persephone[3]	Tooth Cave ground beetle	E	none	C
Cylindropsis sp. 1[3]	Tooth Cave blind cove beetle	E	none	P
Plants				
Streptanthus braeteatus	Bracted twistflower	2	none	P
Philadelphus ernestii	Canyon mock-orange	2	none	P
Physostegia correllii	Correll's false dragon-head	2	none	P

Notes: [1]Status: E = endangered; T = threatened; T(S/A) = threatened by similarity of appearance; 2 = federal candidate Category 2; 3 = federal candidate Category 3.
[2]Occurrence: C = confirmed within a 50-mile radius of Bergstrom AFB; P = possible, based on habitat available, species range, and historical sightings.
[3]Primarily known from Edwards Plateau; unlikely to occur on the base.

Sources: Whitehead 1986; Murfee Engineering Company et al. 1990b; Spain 1992; Hamilton 1992.

season or longer are considered wetlands. Areas that are inundated between 5 and 12.5 percent of the growing season may also be considered wetlands depending on soils and vegetation characteristics.

Information on the size and type of wetlands present at Bergstrom AFB was obtained through a review of U.S. Geological Survey (USGS) topographic maps, base planning maps, National Wetlands Inventory (NWI) maps, and information from the *Draft Environmental Impact Statement, Proposed Closure of Bergstrom AFB, Texas* (U.S. Air Force 1990c). Field surveys were conducted from July 21 through 23, 1992. Wetland delineation was performed according to the procedures outlined in the *Wetland Delineation Manual* (U.S. Army Corps of Engineers 1987). These surveys identified a number of small wetland-type areas on the base. A determination made by the COE (letter dated October 26, 1992) indicates that there are several areas of Bergstrom AFB that are subject to the jurisdiction of the COE as Waters of the United States. These areas are shown in Figure 3.4-3 (Section 3.4.2), and include the portion of Onion Creek that crosses the base, a portion of the creek in the southwest corner of the base which is a tributary to Onion Creek, South Fork Drainage Ditch and the northern drainage ditch, and the tributary of the Colorado River that lies in the northeastern portion of the base.

Several areas on and adjacent to Bergstrom AFB are sensitive due to their riparian qualities. These areas surround and include Onion Creek, South Fork Drainage Ditch, and the unnamed tributary to Onion Creek which lies between the southern boundary of the base and Onion Creek. This tributary was not surveyed because it is located off the base and access is limited. Information regarding this area was obtained through a review of USGS maps and aerial photographs of the area. These riparian habitats support a larger and more diverse vegetation structure and also more wildlife species than other areas on or adjacent to the base and, as such, should be considered sensitive habitats.

Other concerns regarding wildlife relate to the base's proximity to the Central Flyway and the use of Platt's Ponds, Onion Creek, and Walter Long Lake as seasonal stopover areas for migratory birds.

3.4.6 Cultural and Paleontological Resources

Cultural resources include prehistoric and historic sites, structures, districts, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or any other reason. Paleontological resources are the fossil evidence of past plant and animal life. Cultural resources have been divided for the purpose of discussion into three main categories: prehistoric resources, historic resources, and Native American resources. These types of resources are defined in Appendix E.

The ROI for the cultural and paleontological resources analysis includes, at a minimum, all areas within the base boundaries, whether or not certain parcels would be subject to ground disturbance. For this analysis, the ROI is synonymous with the Area of Potential Effect as defined by the National Historic Preservation Act (NHPA). The potential conveyance of federal property to a private party or nonfederal agency constitutes an undertaking, or a project that falls under the requirements of cultural resource legislative mandates, because any historic properties located on that property would cease to be protected by federal law. However, impacts resulting from conveyance could be reduced to nonadverse levels by placing preservation covenants on the lease or disposal document. Development within designated parcels would, therefore, fall under the requirements of Section 106 of the NHPA. The ROI also includes those areas designated for potential acquisition by the City of Austin with the Proposed Action that might be disturbed as a direct or indirect result of base reuse. These offsite areas could include an additional 917 acres in fee simple and 640 acres of avigation easements.

Numerous laws and regulations require federal agencies to consider the effects of a proposed project on cultural resources. These laws and regulations stipulate a process for compliance, define the responsibilities of the federal agency proposing the action, and prescribe the relationship among other involved agencies (e.g., State Historic Preservation Office [SHPO], the Advisory Council on Historic Preservation). Methods used to achieve compliance with these requirements are presented in Appendix E.

Only those potential historic properties determined to be significant under cultural resource legislation are subject to protection or consideration by a federal agency. The quality of significance, in terms of applicability to National Register of Historic Places (NRHP) criteria, and of integrity, is discussed in Appendix E. Significant cultural resources, either prehistoric or historic in age, are referred to as "historic properties."

In compliance with the NHPA, the Air Force has initiated the Section 106 review process with the Texas SHPO.

3.4.6.1 Prehistoric Resources

The prehistory of central Texas extends from about 10,000 B.C. to A.D. 1709 and is divided into three broad time periods: Paleo-Indian (10,000-6000 B.C.), Archaic (6000 B.C.-A.D. 700), and Neoarchaic or Late Prehistoric (A.D. 700-1709) (Prewitt 1981; Whitsett and Fox 1979). The Paleo-Indian period is represented by a highly mobile hunting and foraging strategy which included the exploitation of late Pleistocene megafauna. The Archaic period is characterized by semisedentary hunter-gatherer groups exploiting upland and riverine resources. Large burned rock middens are typical of the Middle Archaic manifestations (2600-300 B.C.) (Prewitt 1981).

The Neoarchaic or Late Prehistoric period represents a continuation of the previous hunting and gathering subsistence strategy; however, during this period, bison hunting increased and the collection of freshwater mussels decreased (Prewitt 1981; Whitsett and Fox 1979). This period is also characterized by use of the bow and arrow. The presence of corn may indicate horticulture or regional trade (Prewitt 1981).

Prehistoric sites identified on and in the vicinity of Bergstrom AFB include occupation sites, quarry sites, and lithic scatters. Eight cultural resource surveys have been conducted in areas adjacent to the base in conjunction with the Onion Creek Wastewater Interceptor (1979-1986), and two surveys have been conducted on portions of Bergstrom AFB (Bement 1991; Hoffman 1987). Fourteen sites were identified within 1 mile of the base. Nine of these sites are considered eligible or potentially eligible for the NRHP.

Two concentrations of prehistoric sites have been recorded adjacent to Bergstrom AFB: the Navarro cluster and the Bergstrom cluster (Whitsett and Fox 1979). The Navarro cluster consists of seven occupation and quarry sites along lower Onion Creek just south of the runway. These sites contain the Navarro Formation flint cobbles, lithics, burned rock, and bone. Charred musselshell was recovered from one buried site (41TV434). The Bergstrom cluster consists of 17 sites, 7 of which are adjacent to the Munitions Storage Area on the north side of Onion Creek. The seven sites near the Munitions Storage Area include four occupation sites, a quarry site, and two smaller lithic scatters (Whitsett and Fox 1979). The occupation sites contain hearths, lithics, burned rock, bone, and musselshell.

A cultural resources survey was recently conducted on undeveloped portions of the base (Bement 1991). No additional sites were found. However, four previously recorded prehistoric sites exist on the base. One site, 41TV434, is in the Navarro cluster, while the other three sites are associated with the Bergstrom cluster. Sites 41TV434 and 41TV437 have been intensively disturbed; consequently, the deposits no longer contribute to the sites' potential NRHP eligibility (Bement 1991; Turpin 1992). Sites 41TV435 and 41TV436 are both large occupation sites containing buried hearths and lithics; both had been recommended as potentially eligible for the NRHP.

The Texas SHPO requested that archaeological testing and evaluation for sites 41TV435 and 41TV436 be conducted to determine their NRHP eligibility status (Bruseth and Perttula 1992). Testing indicated that intact deposits are minimal and neither site is considered NRHP-eligible (Maslyk et al. 1993). The Texas SHPO has concurred with these findings (Bruseth and Perttula 1993).

Less than 25 percent of the 917 acres south of the base have been inventoried for cultural resources; additional prehistoric sites may occur. Prehistoric sites 41TV285, 41TV412, 41TV414, and 41TV422 have been previously recorded in this area (Whitsett and Fox 1979). Site 41TV285 is a large multicomponent campsite with intact buried deposits, and is considered eligible for the NRHP (Whitsett and Fox 1979). Site 41TV412 is a campsite and quarry location which is considered potentially NRHP-eligible pending additional testing (Whitsett and Fox 1979). Sites 41TV414 and 41TV422 are both campsites consisting of sparse scatters of lithics and burned rock; these two sites are not considered NRHP-eligible (Whitsett and Fox 1979).

3.4.6.2 Historic Resources

The history of the study area begins in 1709 with Spanish exploration (Whitsett and Fox 1979). Numerous Spanish expeditions or entradas traversed the immediate vicinity of Bergstrom AFB, and several Spanish journals mention crossings of lower Onion Creek, which at that time was called Garrapatas River (Whitsett and Fox 1979). Spanish settlements consisted of a mission and adjacent presidio; major settlements were located north of the study area on the San Gabriel River and south on the San Antonio River (Richardson et al. 1988). Permanent settlement did not occur on the middle Colorado River until the eighteenth century.

Stephen F. Austin received several land grants from Mexico for large areas along the Colorado River (Martin and Martin 1984). The land grant north of the Colorado River in the study area, originally known as the Robertson Colony, was transferred to Austin and Samuel M. Williams in 1831 (Richardson et al. 1988). The land now containing Bergstrom AFB was originally deeded to Don Santiago del Valle in 1832 by the Republic of Mexico (Webb 1952). In 1839, the townsite of Waterloo on the Colorado River was selected for the new capital of the Republic of Texas and renamed Austin (Richardson et al. 1988).

Settlement along Onion Creek by Anglo-Americans occurred in the late 1830s, and by the 1840s, farms and plantations had been established in the area. The ford at Moore's Crossing, on Onion Creek south of Bergstrom AFB, contained several residences, a store, and a race track by the 1850s. German families immigrated into the Austin area by the end of the nineteenth century. Sharecroppers and tenant farmers worked the area in the late nineteenth and early twentieth century (Whitsett and Fox 1979).

Del Valle Army Air Base was established in 1942 and was renamed Bergstrom Army Air Field in 1943 after Captain John Bergstrom, who was killed in the Philippines at the beginning of World War II.

Historic resources on and in the vicinity of Bergstrom AFB include homesteads, historic trails, a bridge, and various types of standing structures. A cluster of eight historic sites has been identified south of the base and is designated the Moore's Crossing/Fincher Road area (Whitsett and Fox 1979). The eight sites include the old Moore's Crossing Bridge, an historic ford with old roads on the opposing banks, nineteenth- and twentieth-century household scatters, and a cemetery. Four of these historic sites have been recommended as potentially eligible for the NRHP. The Greenwood Cemetery in the northern portion of the base contains headstones with both Anglo-Saxon and Spanish surnames. Some additional headstones are also located on base property outside of the Greenwood Cemetery. However, cemeteries are among those types of sites that ordinarily do not qualify for the NRHP (36 CFR 60.4).

The base has prepared site forms on pre-1950 structures and they were evaluated for their NRHP eligibility. In 1986, the base recommended, and the SHPO concurred, that none of the structures were architecturally or historically important to warrant NRHP nomination. However, at that time, the SHPO indicated that two facilities, Buildings 1805 and 3920, may require additional evaluation (Herrington 1986). The SHPO has recently reevaluated all pre-1950 structures at Bergstrom AFB, including Buildings 1805 and 3920 (Figure 2.1-1). Only Building 3920 is considered potentially eligible for the NRHP (Steely and Graves 1992). Additional information and documentation for Building 3920 have been provided to the Texas SHPO and a finding of no effect has been issued (Graves 1993). The other structures, including Building 1805, are not considered eligible (Steely and Graves 1992).

A field survey was conducted to identify and evaluate an historic site that occurs within the boundaries of site 41TV436. This site is a twentieth-century farmstead with no standing structures. It is not considered NRHP-eligible (Maslyk et al. 1993).

Because less than 25 percent of the area immediately south of the base has been inventoried for cultural resources, additional historic sites are likely to occur. Historic sites 41TV413, 41TV430, 41TV432, and 41TV433 have been previously recorded in this area (Whitsett and Fox 1979). Site 41TV413 is a small cemetery dating from 1891 to 1922 and contains at least 45 headstones with Anglo-Saxon and Hispanic surnames (Whitsett and Fox 1979). However, cemeteries are among those site types that do not qualify for the NRHP (36 CFR 60.4).

Site 41TV430 is the Old Moore's Crossing suspension bridge built in 1915. The bridge is considered eligible for the NRHP. Site 41TV432 is the remains of the F.E. Smith homestead or plantation residence occupied from the 1850s to the 1920s; site 41TV433 is the remains of a possible tenant or sharecropper cabin associated with the F.E. Smith occupation. Because of the disturbed nature of the site deposits, sites 41TV432 and 41TV433 are not considered NRHP-eligible (Whitsett and Fox 1979).

3.4.6.3 Native American Resources

Native American groups associated with central Texas include the Tonkawa, Comanche, and Lipan Apache (Berlandier 1969; Newcomb 1961; Whitsett and Fox 1979). The Tonkawa were seminomadic hunter-gatherers occupying central Texas in the sixteenth century (Hasskarl 1962; Newcomb 1961; Sjoberg 1991). Some Tonkawa were forced southward in the early 1700s by the Comanche (Berlandier 1969); other Tonkawa bands joined Lipan Apache groups in the area. Many Tonkawa died as a result of the 1843 epidemic and others were killed during tribal wars. Descendants of the Tonkawa live near Tonkawa, Oklahoma (Hasskarl 1962; Sjoberg 1991). Both the Lipan Apache and the Comanche were highly mobile hunter-gatherer groups that hunted large areas of central Texas. The Lipan Apache moved into the area from northwest Texas in the 1750s, pushed south by the advance of the Comanche (Berlandier 1969; Opler 1983a).

Two reservations, on the Brazos River and Clear Fork, were established in 1855, but most groups were removed to Oklahoma by 1859 (Newcomb 1961; Opler 1983b). A small number of Lipan Apache were moved to the Mescalero Apache reservation in 1903 (Opler 1983b). Descendants of the Lipan Apache currently reside on the Mescalero Apache reservation in New Mexico. The Comanche occupied central Texas by the 1750s. The Comanche were settled on the Clear Fork reservation set aside in 1855; however, by 1859, they were moved to the Indian territory in Oklahoma (Newcomb 1961).

Native American resources that may occur in the area include vision quest sites, ceremonial lodges, sweatlodges, and burials (Newcomb 1961). Consultation with the Tonkawa, Comanche, and Lipan Apache has been initiated; however, sensitive Native American resources have not been identified.

3.4.6.4 Paleontological Resources

Geologic formations that have surface exposures on Bergstrom AFB include the Colorado River deposits (Quaternary-age alluvium), the Navarro Group, and the Taylor Group (Sellards et al. 1932). The basal portions of the Navarro Group do not occur in central Texas; only the upper Navarro Group, a nonchalky marl containing pelecypods and Foraminifera, has been identified (Sellards et al. 1932; Matthews 1960). Because no basal formations of the Navarro Group occur in this area, the upper Navarro materials lie unconformably on the upper Taylor Group. The Taylor Group consists of blue marls, clayey chalks, clays, sands, and limestone nodules, and includes the Ozan and Marlbrook marls. Most units in the Taylor Group contain pelecypods, baculites, and cephalopods (Sellards et al. 1932; Matthews 1960).

The majority of the base is on the Colorado River deposits. The Ozan Formation occurs in the northwest portion of the base and the Navarro Group and Marlbrook Marl are exposed along Onion Creek on the south side of the base. Most marls contain abundant fragments of paleontological remains. Because these marls contain invertebrate remains, the research potential is relatively low for these assemblages. No known paleontological localities have been identified adjacent to the base.

3.5 ROBERT MUELLER MUNICIPAL AIRPORT

The City of Austin is considering the relocation of all airport activities at Robert Mueller Municipal Airport (RMMA) to Bergstrom AFB. This section summarizes the affected environment at the RMMA site. The environmental consequences of the potential redevelopment of the RMMA site are summarized in Section 4.5. The description of the affected environment below is provided for each of the 11 resource categories discussed in this chapter (Sections 3.2 through 3.4.6).

Community Setting. The RMMA site contains a total of 896 acres in two parcels: (1) the 711-acre airport proper site and (2) the 185-acre Morris

Williams Golf Course site. Major improvements have been made to the airport over the past 10 years, including construction of approximately 30 acres of new aprons, runways, and taxiways; and 52 acres of new roads and parking lots. The total pavement area at the airport site currently amounts to 321 acres. The site also contains approximately 734,000 square feet of buildings. Activities associated with the airport currently employ 1,710 workers, including 500 part-time personnel of the Texas ANG.

Land Use and Aesthetics. RMMA is occupied by airfield and aviation support activities of the passenger airlines, air freight carriers, general aviation, Texas ANG, and the Texas State Aircraft Pooling Board. Other major land uses on the site include City of Austin and FAA office buildings, auto rental operations, public parking lots, and U.S. Postal Service operations.

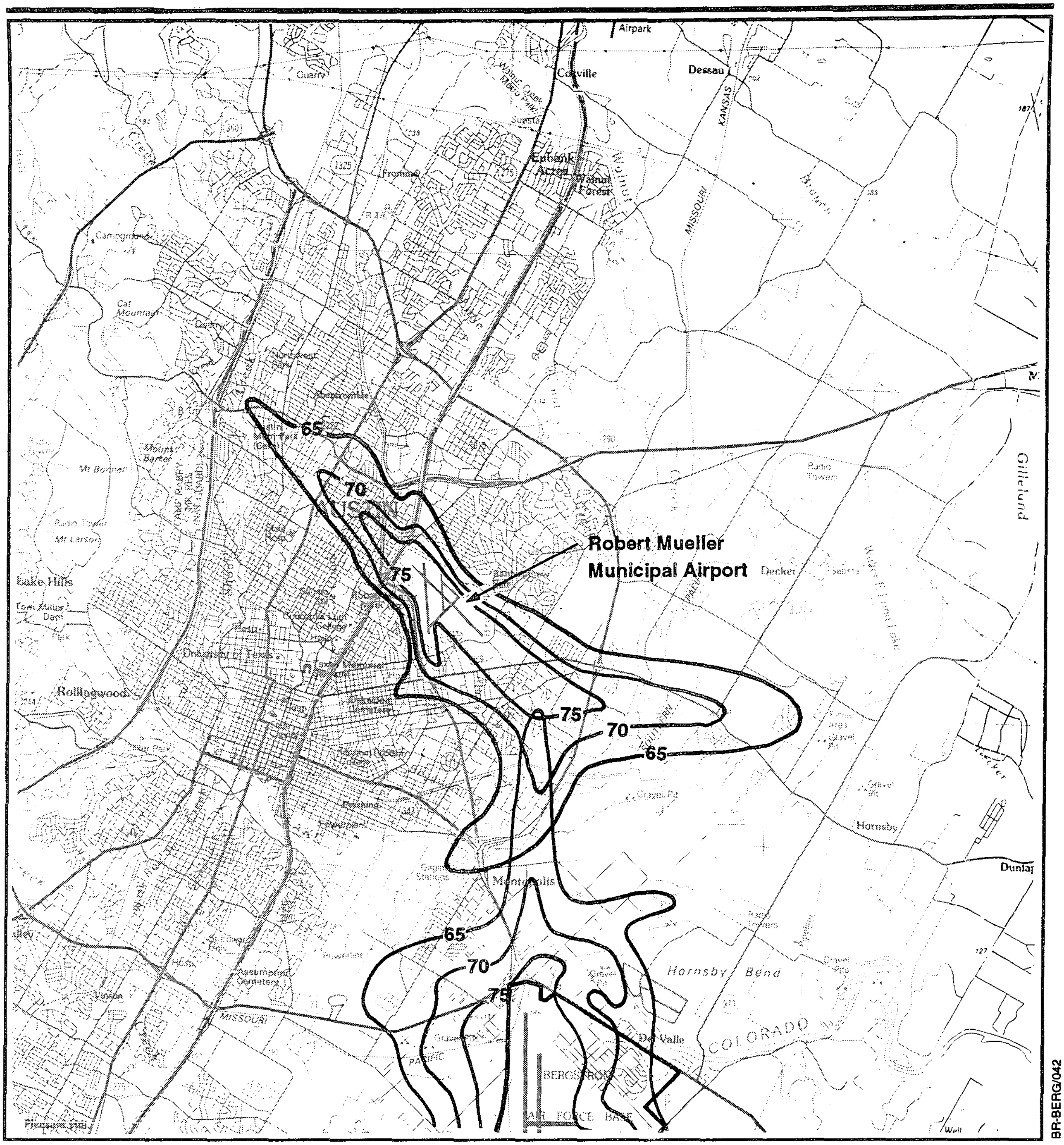
Land uses surrounding the airport generally consist of residential, industrial, commercial, institutional, and recreation. In 1986, residential land uses comprised approximately 36 percent of the approximately 6,300 acres within the DNL 65 dB noise contour for the airfield (Figure 3.5-1); these areas abut the airport property on the west and southwest. Industrial, commercial, institutional, and recreation uses accounted for an additional 1,500 acres, and undeveloped land for 1,400 acres. The Morris Williams Golf Course to the southeast, Bartholomew District Park to the northeast, and Patterson Park on the west provide buffers between the residential areas and the airport property.

Transportation. The RMMA passenger terminals are accessed from Manor Road, which runs along the southern boundary of the airport. Access to air freight services is along Airport Boulevard on the west side of the property. Interstate 35, skirting the northwestern boundary of the site, provides the main link to the central Austin area. Manor Road experiences traffic congestion during peak hours; all other roads in the vicinity of the airport property operate at levels generally below their capacities.

Utilities. The City of Austin Water and Wastewater Utility Department supplies water to the site and provides wastewater treatment services. The City of Austin Solid Waste Services Department collects and disposes of solid waste generated at the RMMA site. Electricity is provided by the City of Austin Electric Utility Department. Services provided by these utility providers are adequate to meet the demands at the airport.

Hazardous Materials and Hazardous Waste Management. A number of underground fuel storage facilities are present at the site. ACM may be encountered in some older structures on the property. Various other hazardous materials, such as heating oils, solvents, paints, POL, degreasers, corrosives, thinners, glycols, plating chemicals, and pesticides, are used in the normal maintenance of aircraft and aviation-related facilities and equipment.

Soils and Geology. The RMMA site is part of the Rolling Prairie physiographic region. The alluvium and terrace deposits in the area are characterized by water-stratified deposits of unconsolidated calcareous gravel, sand, silt, and



LEGEND

Base Boundary

65 DNL Noise Contours (in 5 dB Intervals)

0 1 2 MILES

Source: City of Austin 1987b.

Robert Mueller Municipal Airport and Bergstrom AFB Existing Noise Contours

Figure 3.5-1

clay underlain by coarser materials. Soils in the area are predominantly clay and silty clay, with moderate to high shrink-swell potential, poor bearing capacity, and moderate permeability. Most of the soils on the site have been altered due to airport and golf course development.

Water Resources. Surface water bodies in the vicinity of the RMMA site include two tributaries to Boggy Creek: Tannehill Branch, which flows north and east of the airport site and through the Morris Williams Golf Course, and the Givens Park Branch, starting in the southern part of the airport site and flowing south to Boggy Creek and eventually to the Colorado River. The RMMA site is located within the "bad-water" zone of the Edwards Aquifer. The shallow aquifer lying below the RMMA site consists of alluvial and Colorado River terrace deposits and is hydrologically isolated from the deep aquifers by an impermeable stratum known as the Taylor Marl. The Texas Department of Water Resources has classified this area as unsuitable for potential groundwater development.

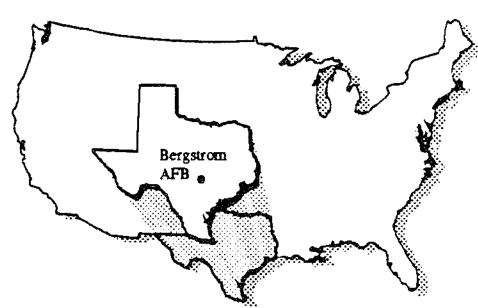
Air Quality. The air quality in Travis County is relatively good for all pollutants except O_3. Travis County is classified by the EPA as "better than national standards" for major pollutants. All maximum pollutant concentrations measured at five monitoring stations in the Austin area for the various averaging times, except O_3, are well below the ambient air quality standards. No monitoring station is located at the airport site. However, an emission inventory taken in 1986 showed that, overall, emissions of CO were predominant and the primary source of CO was airport-related motor vehicles. Over 60 percent of airport-related NO_x emissions were attributable to aircraft sources.

Noise. Key sources of noise in the vicinity of the RMMA site are aircraft using the airport facilities and ground traffic associated with the airport. The residential neighborhoods most affected by the aircraft noise higher than DNL 65 dB are located northwest, southeast, and east of the airport site (Figure 3.5-1). Approximately 6,300 acres fall within the DNL 65 dB and greater contour, and about 1,100 acres fall within DNL 75 dB contour. In 1985, approximately 27,500 persons were estimated to live within the DNL 65 dB contour and about 3,100 persons within the DNL 75 dB contour (City of Austin 1987b). Noise impacts are one of the primary reasons for the effort to relocate the airport from its existing site.

Biological Resources. The RMMA site lies within the ecological region termed the Blackland Prairie vegetational area. Most of the RMMA site, including the golf course, is maintained in short vegetation consisting of grasses, sedges, legumes, and various weedy forbs. Trees have been planted in the golf course area and in the parks surrounding the airport property. Wildlife habitats on the site support or periodically support various avian and mammalian species and possibly limited fish and herpetofauna populations. Although no threatened or endangered species are located at the RMMA site, the golden-cheeked warbler, the black-capped vireo, and numerous threatened and endangered invertebrates exist in the western parts of the Austin metropolitan area.

About 2 acres of hydric- and aquatic-type vegetation are associated with Tannehill Branch, which flows through the golf course. These areas may be considered jurisdictional wetlands under Section 404 of the Clean Water Act and subject to federal permitting for placement of any fill or dredged materials.

Cultural and Paleontological Resources. No surveys for the identification of cultural and paleontological resources have been reported for the RMMA site. Recognizing the history of occupation in Travis County, it is possible that some prehistoric and historic sites may be identified if a systematic survey of the site was conducted (see Section 3.4.6). However, a review of the records of the Texas Historical Commission conducted by the SHPO revealed no recorded sites on the RMMA site or on the golf course (City of Austin 1987b).



CHAPTER 4.0
ENVIRONMENTAL CONSEQUENCES

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter presents a discussion of the potential environmental consequences associated with the Proposed Action and alternatives. To provide the context in which potential environmental impacts may occur, discussions of potential changes to the local communities (i.e., population, land use and aesthetics, transportation, and community and public utility services) are included in this Environmental Impact Statement (EIS). In addition, issues related to current and future management of hazardous materials and hazardous waste are discussed. Impacts to the physical and natural environment are evaluated for soils and geology, water resources, air quality, noise, biological resources, and cultural and paleontological resources. These impacts may occur as a direct result of disposal and reuse activities or as an indirect result caused by changes within the local communities. Possible mitigation measures to minimize or eliminate adverse environmental impacts are also presented.

Cumulative impacts result from "the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (Council on Environmental Quality [CEQ] regulations 40 CFR 1508.7). Cumulative impacts are discussed by resource in this chapter, where applicable. One known major action that will occur in the Austin metropolitan area is the closure of Robert Mueller Municipal Airport (RMMA) if the Proposed Action is implemented. Impacts of closure of RMMA and the operation of a civil airport at Bergstrom Air Force Base (AFB) are discussed in the Proposed Action analysis for each resource.

Means of mitigating adverse environmental impacts that may result from implementation of the Proposed Action or alternatives by property recipients are discussed as required by the National Environmental Policy Act (NEPA). Mitigation measures are suggested for those components likely to experience substantial and adverse changes with any or all of the alternatives. Potential mitigation measures depend on the particular resource affected. In general, however, mitigation measures are defined in the CEQ regulations as actions that include:

(a) Avoiding the impact altogether by not taking an action or certain aspect of the action

(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation

(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment

(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action

(e) Compensating for the impact by replacing or providing substitute resources or environments.

A discussion of the effectiveness of mitigation measures is included for applicable resource areas. Where appropriate, a discussion regarding the probability of success associated with a particular mitigation is included.

Although reuse or development of most of the base property will be decided by the property recipients (the City of Austin), probable reuse scenarios were evaluated to analyze environmental impacts on both the transferred property and four parcels of government fee-purchased land, the disposal of which is still to be determined by the Air Force. Impacts on relevant resources have been separately discussed for the four parcels in addition to the overall impacts of each reuse alternative. Alternatives were defined for this analysis on the basis of (1) plans of local communities and interested individuals, (2) general land use planning considerations, and (3) Air Force-generated plans, to provide a broad range of reuse options.

Reuse scenarios considered in this EIS have been sufficiently detailed to permit environmental analysis. Initial concepts and plans were taken as starting points for the scenarios that were analyzed. Available information on any reuse alternative was supplemented with economic, demographic, transportation, and other planning data to provide a reuse scenario for analysis. In general, the results of the environmental analyses are presented for each reuse alternative for 1994, 1997, 2002, and 2012, reflecting the first full year after base closure in September 1993, the current City of Austin planning schedule for the opening of the new commercial airport (1997), and subsequent 5- and 10-year intervals.

4.2 LOCAL COMMUNITY

This section discusses potential effects on local communities as a result of disposal and reuse of Bergstrom AFB.

4.2.1 Community Setting

Socioeconomic effects are addressed only to the extent that they are interrelated with the biophysical environment. A complete assessment of socioeconomic effects, and the assumptions and multipliers used in that analysis, are presented in the *Socioeconomic Impact Analysis Study, Disposal and Reuse of Bergstrom Air Force Base, Texas* (U.S. Air Force 1993). Employment and population generated by implementation of the Proposed Action and each alternative are discussed in this section. The closure baseline projects employment levels of 50 direct and 20 secondary jobs for 1994 to remain constant through 2012 for the No-Action Alternative.

The Region of Influence (ROI) for the population analysis is defined as Travis County, including the City of Austin and the community of Del Valle. Population effects on other communities are expected to be too small to warrant further analysis.

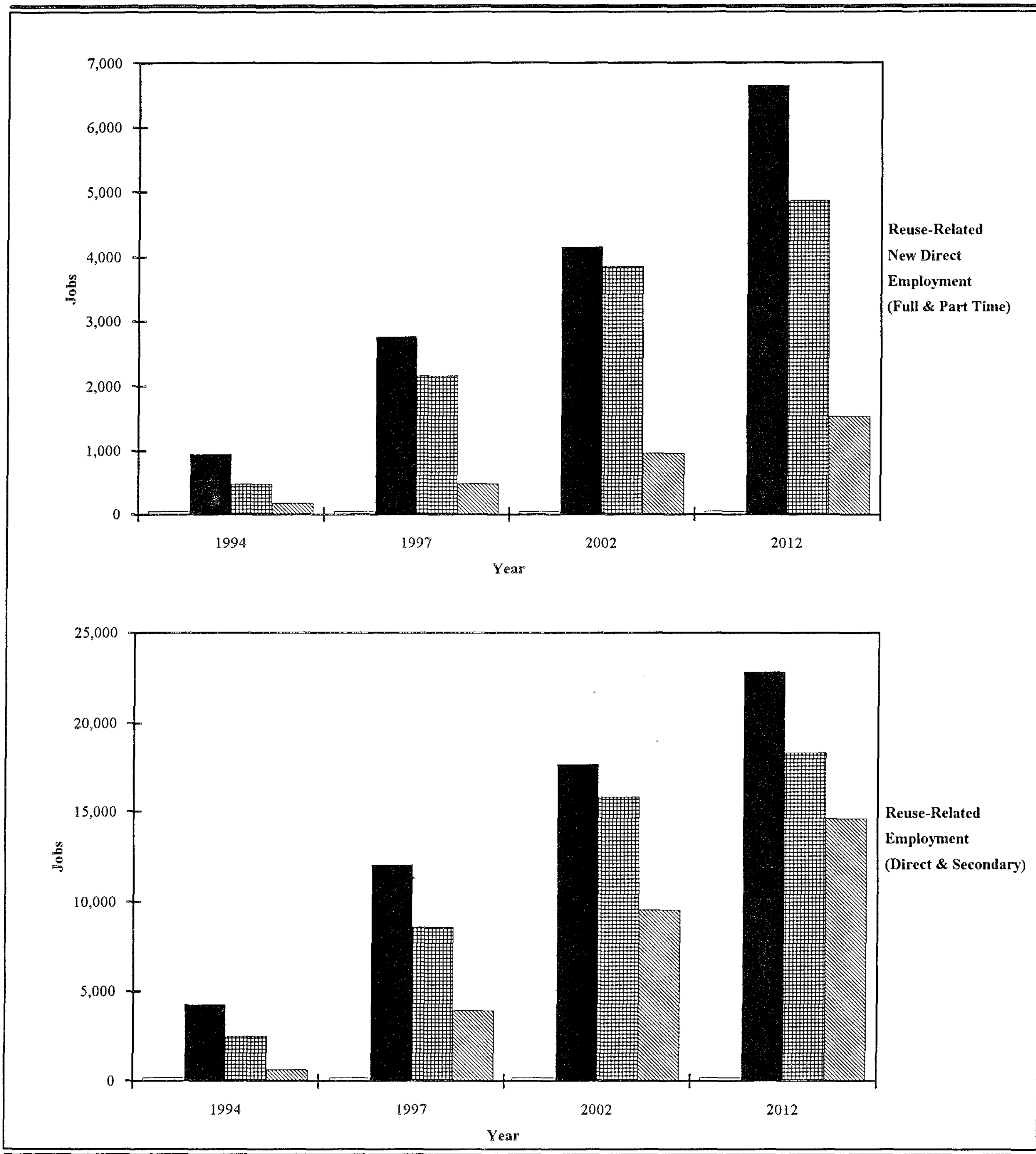
With closure of Bergstrom AFB in September 1993, a total of 12,585 military and civilian personnel, retirees, and dependents are projected to relocate out of the area. Of this total decrease in population, 10,273 would be from Travis County, including 5,814 from the City of Austin and 647 from Del Valle.

This analysis recognizes the potential for community impacts arising from announcement effects stemming from information regarding the base's closure or reuse. Such announcements may affect community perceptions and, in turn, could result in local economic effects. An example would be the inmigration of people anticipating employment with one of the reuse options. If it were later announced that the No-Action Alternative had been selected, many newcomers would leave the area to seek employment elsewhere. Such an effect could, therefore, result in an initial, temporary increase in population followed by a decline in population as people leave the area.

4.2.1.1 Proposed Action

Employment resulting from implementation of the Proposed Action would include both new jobs and jobs relocated from RMMA and other businesses and government agencies in Travis County. Because changes to the local economy would result solely from new economic activity, only additional jobs created by the Proposed Action were considered in the analysis of income and population. The effects of closing and reuse of the RMMA site are discussed in Section 4.5.

Employment for the Proposed Action would begin in 1994 and increase through the year 2012 (Figure 4.2-1). In 1994, the Proposed Action would create a total of 4,287 jobs, including 949 new direct jobs, 1,426 local transfers, and 1,912 secondary jobs (Table 4.2-1). The majority of the direct jobs would involve the construction of new airport facilities which would require approximately 600 jobs per year for completion over a 4-year period. In 1997, employment in Travis County would increase by 12,066 jobs (2,762 new direct, 5,852 local transfers, and 3,452 secondary), and by the end of 2012, new employment related to the Proposed Action would total 22,855 (6,656 new direct, 10,915 local transfers, and 5,284 secondary). In 2012, total employment in Travis County would reach 433,353, an increase of 2.8 percent over the closure baseline employment level of 421,630. The labor force in Travis County would provide approximately 75 percent of the employees necessary for the proposed reuse.



LEGEND

No-Action Alternative

Proposed Action

General Aviation/Air Cargo Airport Alternative

Mixed-Use Development Alternative

Travis County Reuse-Related Employment Effects

Figure 4.2-1

Table 4.2-1

Total Onsite and New Employment Generation in Travis County
Proposed Action

	1994	1997	2002	2012
New Direct Employment (Full- and Part-Time)[1]	949	2,762	4,161	6,656
Local Transfers[2]	1,426	5,852	10,145	10,915
Total Direct Onsite Employment	2,375	8,614	14,306	17,571
Secondary Employment	1,912	3,452	3,397	5,284
Total Employment (Direct and Secondary)[3]:	**4,287**	**12,066**	**17,703**	**22,855**

Notes: [1]Includes 603 construction-related jobs in 1994 and 1997 and 217 part-time jobs in 1997, 2002, and 2012.
[2]Includes 1,710 jobs transferred from RMMA and 1,350 full- and part-time jobs in 1994, and 1,862 jobs in 1997, 2002, and 2012 associated with the 924th Fighter Group, Headquarters 10th Air Force, the Air Combat Command Regional Corrosion Control Facility, and the Air Force Reserve Ground Combat Readiness Center.
[3]Includes 1,000 part-time jobs in 1994 and 1,717 part-time jobs in 1997, 2002, and 2012.

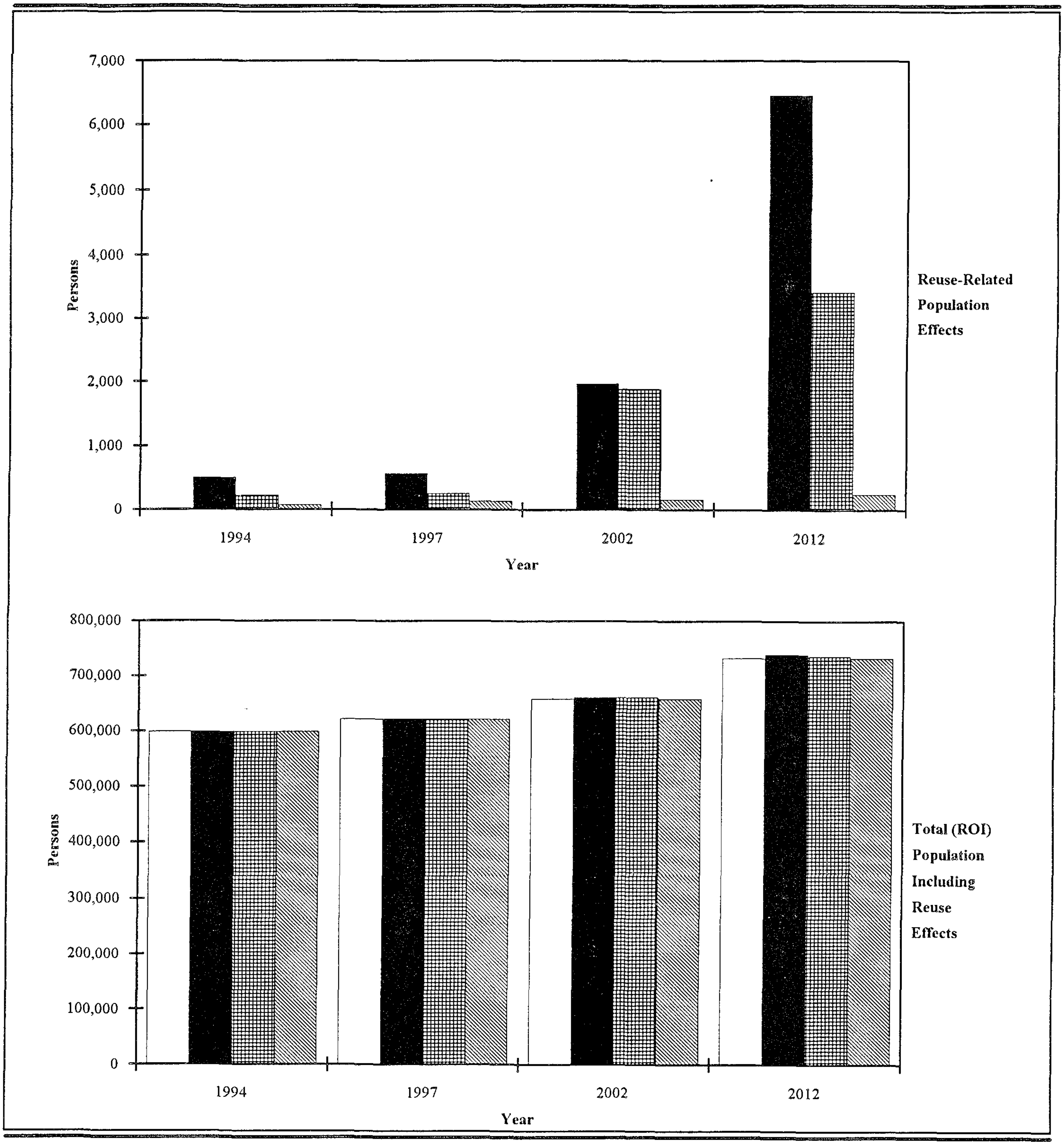
With the Proposed Action, the population in Travis County would increase by 496 in 1994, 568 in 1997, and 1,964 in 2002. By 2012, the county population is projected to increase by 6,460, reaching a total of 739,705, or 0.9 percent above the baseline for the same year. The Proposed Action would increase annual population growth in Travis County from 1.10 to 1.14 percent (Figure 4.2-2).

The City of Austin would experience most of the population growth occurring in Travis County as a result of the Proposed Action. The population of the city would increase by 408 in 1994, 473 in 1997, and 1,661 by 2002. In 2012, Austin's population would be 646,374, an increase of 5,645 or 0.9 percent over the projected baseline for the same year. The population in the community of Del Valle would increase slightly as a result of the Proposed Action, by 32 in 1994 and 423 by 2012. Potential population growth in Del Valle is primarily dependent on the type of development that occurs in the vicinity of the airport.

4.2.1.2 General Aviation/Air Cargo Airport Alternative

Employment resulting from implementation of the General Aviation/Air Cargo Airport Alternative would include both new jobs and jobs relocated from RMMA and other businesses and government agencies in Travis County. Because changes to the local economy would result solely from new economic activity, only additional jobs created by the General Aviation/Air Cargo Airport Alternative were considered in the analysis of income and population.

Employment with the General Aviation/Air Cargo Airport Alternative would begin in 1994 and increase through 2012 (Figure 4.2-1). In 1994, this alternative would create a total of 2,525 jobs, including 477 new direct,



LEGEND

No-Action Alternative

Proposed Action

General Aviation/Air Cargo Airport Alternative

Mixed-Use Development Alternative

Travis County Reuse-Related Population Effects

Figure 4.2-2

1,426 local transfers, and 622 secondary positions (Table 4.2-2). A large portion of the new direct jobs would involve the construction of new facilities which would require about 130 construction jobs per year over a 4-year period. In 1997, project-related employment in Travis County would total 8,618 (2,161 new direct, 4,391 local transfers, and 2,066 secondary), and by the end of 2012, employment related to the General Aviation/Air Cargo Airport Alternative would total 18,365 (4,870 new direct, 9,581 local transfers, and 3,914 secondary). In 2012, total employment in Travis County would reach 430,197, an increase of 2.0 percent over the closure baseline employment level of 421,630. The labor force in Travis County would provide approximately 85 percent of the employees necessary for this alternative.

Table 4.2-2

Total Onsite and New Employment Generation in Travis County
General Aviation/Air Cargo Airport Alternative

	1994	1997	2002	2012
New Direct Employment (Full- and Part-Time)[1]	477	2,161	3,860	4,870
Local Transfers[2]	1,426	4,391	8,791	9,581
Total Direct Onsite Employment	1,903	6,552	12,651	14,451
Secondary Employment	622	2,066	3,172	3,914
Total Employment (Direct and Secondary)[3]:	**2,525**	**8,618**	**15,823**	**18,365**

Notes: [1]Includes 131 construction-related jobs in 1994 and 1997 and 217 part-time jobs in 1997, 2002, and 2012.
[2]Includes 705 jobs transferred from RMMA and 1,350 full- and part-time jobs in 1994, and 1,862 jobs in 1997, 2002, and 2012 associated with the 924th Fighter Group, Headquarters 10th Air Force, the Air Combat Command Regional Corrosion Control Facility, and the Air Force Reserve Ground Combat Readiness Center.
[3]Includes 1,000 part-time jobs in 1994 and 1,717 part-time jobs in 1997, 2002, and 2012.

With the General Aviation/Air Cargo Airport Alternative, the population in Travis County would increase by 223 in 1994, 255 in 1997, and 1,882 in 2002. By 2012, the county population is projected to increase by 3,423, for a total of 736,668, or 0.5 percent above the baseline for the same year. With the General Aviation/Air Cargo Airport Alternative, annual population growth in Travis County would increase from 1.10 to 1.12 percent (Figure 4.2-2).

The City of Austin would experience most of the population growth occurring in Travis County as a result of this alternative. The population of the city would increase by 184 in 1994, 212 in 1997, and 1,591 by 2002. In 2012, Austin's population would be 643,720, an increase of 2,991 over the projected baseline for the same year.

The population of Del Valle would increase slightly with the General Aviation/Air Cargo Airport Alternative: 15 in 1994 and 224 by 2012. Potential population growth in Del Valle is primarily dependent on the type of development that occurs in the vicinity of the airport.

4.2.1.3 Mixed-Use Development Alternative

Employment resulting from implementation of the Mixed-Use Development Alternative would include both new jobs and jobs relocated from businesses and government agencies in Travis County. Because changes to the local economy would result solely from new economic activity, only additional jobs created by the Mixed-Use Development Alternative were considered in the analysis of income and population.

Employment for the Mixed-Use Development Alternative would begin in 1994 and increase through 2012 (Figure 4.2-1). In 1994, this nonaviation alternative would create a total of 654 jobs, including 178 new direct, 95 local transfers, and 381 secondary positions (Table 4.2-3). A large portion of the new direct jobs would involve the construction of new facilities which would require about 126 construction jobs per year over a 4-year period. In 1997, project-related employment in Travis County would total 3,935 (482 new direct, 2,847 local transfers, and 606 secondary), and by the end of 2012, employment related to the Mixed-Use Development Alternative would total 14,618 (1,542 new direct, 11,993 local transfers, and 1,083 secondary). In 2012, total employment in Travis County would reach 424,255, an increase of 0.6 percent over the closure baseline employment level of 421,630. The labor force in Travis County would provide approximately 95 percent of the employees necessary for this alternative.

Table 4.2-3

Total Onsite and New Employment Generation in Travis County
Mixed-Use Development Alternative

	1994	1997	2002	2012
New Direct Employment*	178	482	959	1,542
Local Transfers	95	2,847	7,902	11,993
Total Direct Onsite Employment	273	3,329	8,861	13,535
Secondary Employment	381	606	694	1,083
Total Employment (Direct and Secondary):	**654**	**3,935**	**9,555**	**14,618**

Note: *Includes 126 construction-related jobs in 1994 and 1997.

With the Mixed-Use Development Alternative, the population of Travis County would increase by 76 in 1994, 132 in 1997, and 160 by 2002. By 2012, the county population is projected to increase by 244, for a total of 733,489, or 0.03 percent above the baseline for the same year. Annual population growth in Travis County would not change as a result of the Mixed-Use Development Alternative (Figure 4.2-2).

The City of Austin would experience minimal population growth as a result of this alternative. The population would increase by 63 in 1994, 110 in 1997, and 135 by 2002. In 2012, Austin's population would be 640,942, an increase of 213 above the projected baseline for the same year. The population of Del Valle would increase negligibly with this alternative.

4.2.1.4 No-Action Alternative

With the No-Action Alternative, only caretaker activities would occur at the base. It is estimated that the caretaker activities at Bergstrom AFB would require approximately 50 direct and 20 secondary jobs in Travis County through 2012. There would be no net increase in population with the No-Action Alternative. Total employment in the ROI is projected to reach 421,630 by 2012. Total population in the ROI is expected to be 733,245 by 2012.

4.2.2 Land Use and Aesthetics

This section discusses the Proposed Action and alternatives relative to land use to determine potential impacts in terms of land use, zoning, general plans, and aesthetics. Land use compatibility with aircraft noise is discussed in Section 4.4.4.

4.2.2.1 Proposed Action

Land Use. The Proposed Action would result in substantial changes in the overall pattern of land use on the base. Specific land use changes associated with the Proposed Action include the following:

- A new 9,000-foot runway to be located 6,500 feet east of the existing 12,250-foot primary runway would be built. Construction of this new runway would require demolition of the Munitions Storage Area, a portion of the military family housing area, and various administrative, medical, recreation, and dormitory facilities. The southern end of the new runway would be located on land outside the base boundary.

- The area between the new and existing runways would be used for aviation support facilities, including aircraft parking aprons, hangars and flightline facilities, a new passenger terminal, various other airport facilities, and facilities for the 924th Fighter Group (FG). The Texas Army National Guard (ANG) unit would relocate from RMMA to this area. An area south of the proposed cross-taxiways containing the existing 924th FG facilities and the Air Combat Command Regional Corrosion Control Facility (RCCF) would be retained by the Air Force to provide a cantonment area for the 924th FG and three other units.

- The area containing the base hospital, base chapel, several dormitories, and administrative buildings would be converted to an industrial area. The hospital and several dormitories may require demolition because of their proximity to the airfield.

- The existing commercial area containing the base exchange would be converted to an industrial area. The base exchange and commissary could be reused for warehousing or light industrial activities.

- The area adjacent to Texas State Highway 71 is proposed for commercial development. Demolition or relocation off the base of the military family housing would be required.

- The existing residential area in the eastern portion of the base would be converted to institutional (government/education) uses. Demolition or relocation off the base of most of the military family housing would be required.

- The existing area south of the golf course, including the eastern portion of the Munitions Storage Area, would be developed as parkland or as additional recreation facilities.

Government Fee-Purchased Land. With the Proposed Action, the government fee-purchased land parcels would be conveyed to the City of Austin under public benefit transfer for airport purposes. Parcels 1, 3, and 4 (Figure 2.1-1) would continue to remain in airfield use. A large part of Parcel 2 in the southeastern portion of the base would be utilized for construction of the new runway and aviation support facilities; the eastern part would remain as an airport buffer zone or converted to public/recreation use.

Zoning. There would be no conflicts between the Proposed Action and the existing regulations on the land east, south, and west of the base because there is no zoning in Travis County and the City of Austin's Development Reserve designation prevents development where infrastructure does not exist. The City of Austin's commercial and business zoning north of the base would also not conflict with the Proposed Action. A potential conflict may exist between the residential zoning north of the base and the noise associated with the aircraft operations of the Proposed Action. The Texas Municipal Airport Act allows the city to adopt land use ordinances that would provide compatibility in specific areas.

With the Proposed Action, Air Force Air Installation Compatible Use Zone (AICUZ) guidelines would be replaced by Federal Aviation Administration (FAA) land use compatibility criteria outlined in FAA Advisory Circulars, including *Noise Control and Compatibility Planning for Airports, Airport Master Plans*, and *Airport Design* (U.S. Department of Transportation, Federal Aviation Administration 1983, 1985b, 1989). Federal Aviation Regulation (FAR) Part 150 prescribes the procedures, standards, and methodologies governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs.

Changing from solely military to civilian and military aircraft operations may result in a modification of the current AICUZ Accident Potential Zones (APZs) for the existing main runway. A civilian airport would require the application of FAA zoning criteria. FAA safety criteria differ from AICUZ guidelines. The FAA Runway Protection Zone (RPZ) at each end of the runway would be a fan-shaped area beginning 200 feet from the runway threshold. The dimensions of the RPZ are functions of the aircraft that would use the runway, the type of operations, and visibility minimums. For precision instrument approach runways, the RPZ would extend 2,500 feet, with an inner width (near the runway) of 1,000 feet and an outer width of 1,750 feet. This RPZ would be approximately 60 acres smaller than the current AICUZ clear zone and APZs (Figure 2.2-1).

General Plans. The Proposed Action would be compatible with the *Austinplan* (City of Austin 1988). *Austinplan* contains the Aviation and Railway Mobility Plan (Program TR9), which calls for safe movement of people and freight via air carriers and railroads. One of the main goals of the plan is to achieve quality aviation services and facilities for the Austin region while implementing land use controls and minimizing environmental impacts on surrounding neighborhoods.

Aesthetics. The Proposed Action would not adversely alter the visual character of onbase and offbase areas. Proposed airfield and aviation support uses that would change existing land uses would not adversely affect existing views. Airfield reuses would involve the construction of a parallel runway east of the main runway. Aviation support reuses would involve construction of a new terminal building. The increase in these two land use categories would cause a decrease in the green space on the base. These changes would not adversely affect the visual character of the base.

Mitigation Measures. Mitigation measures include adopting zoning and building standards so that new development in the vicinity of the airport is compatible with aviation operations. Local airport zoning regulations for the City of Austin and Travis County, City of Austin Aviation and Planning Department regulations, and the Texas Municipal Airport Act address the issue of establishing land use compatibility with an aviation-related land use. If necessary, the regulations can be amended to specifically address the zoning and/or land use scenario that may develop on or around Bergstrom AFB with implementation of the Proposed Action.

4.2.2.2 General Aviation/Air Cargo Airport Alternative

Land Use. The General Aviation/Air Cargo Airport Alternative would not result in any substantial change in the overall pattern of land use on the base. Specific land use changes associated with this alternative include the following:

- Within the existing aviation support area, construction of various general aviation hangars and terminals would occur. The existing apron parking area, hangars, and other facilities east of this area would be converted to air cargo use.

- The existing warehouse and commercial facilities in the north-central portion of the base would be converted to industrial uses.

- A portion of the existing military family housing area, the base hospital, chapel, two dormitory complexes, and various mission support buildings would be converted to a government office complex and aviation-related training and vocational education facilities. Demolition or relocation of some facilities would be required.

- An area containing several recreation facilities near the existing entrance gates in the northern portion of the base would be converted to aviation-compatible commercial uses.

- The area that currently includes facilities used by the 924th FG, the RCCF, the Munitions Storage Area, Visiting Officers' Quarters, the Officers' Club, the Small Arms Range, and various other mission support and industrial areas would be retained by the Air Force to provide a cantonment area for the Air Force Reserves.

Government Fee-Purchased Land. With this alternative, Parcels 1, 3, and 4 would be conveyed to the City of Austin under public benefit transfer for airport purposes; Parcel 2 in the southeastern portion of the base could be retained by the Air Force as part of the cantonment area for the 924th FG.

Zoning. There would be no conflicts between the General Aviation/Air Cargo Airport Alternative and the existing regulations on the land east, south, and west of the base because there is no zoning in Travis County and the City of Austin's Development Reserve designation prevents development where infrastructure does not exist. The City of Austin's commercial and business zoning north of the base would also not conflict with the General Aviation/Air Cargo Airport Alternative. A potential conflict may exist between the residential zoning north of the base and the noise associated with the aircraft operations of the General Aviation/Air Cargo Airport Alternative. The Texas Municipal Airport Act allows the city to adopt land use ordinances that would provide compatibility in specific areas.

With the General Aviation/Air Cargo Airport Alternative, AICUZ guidelines would be replaced by FAA land use compatibility criteria outlined in FAA Advisory Circulars, including *Noise Control and Compatibility Planning for Airports, Airport Master Plans*, and *Airport Design* (U.S. Department of Transportation, Federal Aviation Administration 1983, 1985b, 1989). FAR Part 150 prescribes the procedures, standards, and methodologies governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs.

With the continuation of the 924th FG operations, the current AICUZ APZs for the base would be kept and supplemented by the FAA zoning criteria described for the Proposed Action.

General Plans. The General Aviation/Air Cargo Airport Alternative would be compatible with the *Austinplan*. *Austinplan* contains the Aviation and Railway Mobility Plan (Program TR9). The purpose of Program TR9 is to provide safe movement of people and freight via air carriers and railroads. One of the main goals of the plan is to achieve quality aviation services and facilities for the Austin region while implementing land use controls and minimizing environmental impacts on surrounding neighborhoods.

Aesthetics. The General Aviation/Air Cargo Airport Alternative would not adversely alter the visual character of onbase or offbase areas. Potential modification or expansion of the 18-hole golf course could alter the onbase green space.

Mitigation Measures. Mitigation measures for this alternative would be similar to those described for the Proposed Action.

4.2.2.3 Mixed-Use Development Alternative

Land Use. The Mixed-Use Development Alternative would result in a substantial change in overall land use patterns on the base. Specific land use changes associated with this alternative would include the following:

- Portions of the existing airfield and aviation support areas located in the central portion of the base would be converted to industrial uses.

- The existing base hospital, chapel, commercial area, various dormitories, and other buildings would be converted to institutional uses including vocational education facilities and a government office complex. Demolition of some existing facilities would be required.

- The existing airfield and aviation support areas adjacent to the northern base boundary and State Highway 71 would be converted to commercial uses.

- The western portion of the existing airfield would be converted to agricultural uses such as hay cropping or the farming of regional crops.

Land uses associated with the Mixed-Use Development Alternative would be internally compatible and compatible with adjacent land uses in the City of Austin and unincorporated Travis County.

Government Fee-Purchased Land. With this alternative, the Air Force has the option of disposing of the government fee-purchased land parcels by transfer to another federal agency, public benefit conveyance, negotiated sale to state or local government, or public sale by auction or sealed bid. Proposed uses include commercial development for Parcel 1 north of the existing runways; agricultural and/or public/recreation uses for Parcels 3 and 4 south of the runways; and agricultural and public/recreation uses for Parcel 2 in the southeastern portion of the base.

Zoning. There would be no conflicts between the Mixed-Use Development Alternative and zoning adjacent to and in the vicinity of the base in the City of Austin; the designation west, south, and east of the base is Development Reserve, while zoning north of the base is commercial, residential, and business. As discussed earlier, there is no zoning in unincorporated Travis County. Because there are no established zoning regulations in these areas, no zoning conflicts would exist. The City of Austin would have zoning and regulation powers for all base property.

General Plans. The Mixed-Use Development Alternative would be compatible with the *Austinplan*. *Austinplan* contains the Aviation and Railway Mobility Plan (Program TR9). This plan's purpose is to provide safe, efficient, and convenient movement of people and freight via air carriers and railroads. Grade crossing safety, intercity passenger service, rail rationalization, and the organizational structure of the Austin & Northwestern Railroad are the four major components of the railway program. With this alternative, the rail spur, located immediately west of the base and U.S. 183, could be extended into the base to provide rail access to the centrally located proposed industrial area.

Aesthetics. The Mixed-Use Development Alternative would not adversely alter the visual character of the base, and offbase areas with views of the base would not be adversely affected by the proposed reuses. Onbase green space would substantially increase. Public/recreation and agricultural land would total approximately 1,575 acres.

Mitigation Measures. No mitigation measures would be required with the Mixed-Use Development Alternative.

4.2.2.4 No-Action Alternative

Land Use. The No-Action Alternative would result in the U.S. Government retaining ownership of the four government fee-purchased land parcels after closure. The property in which the City of Austin has claimed an equitable interest would be surrendered to the city.

Aesthetics. The No-Action Alternative would not affect the visual and aesthetic quality of the base or the surrounding area. Some landscaped portions of the base would receive less maintenance. The absence of human activity would enhance and accelerate the return to natural conditions in some areas of the base.

4.2.3 Transportation

The effects of the Proposed Action and alternatives on each component of the transportation system, including roadways, airspace and air traffic, and railroads, are presented in this section. Possible mitigation measures are discussed for those components likely to experience substantial adverse impacts with the Proposed Action or any alternative.

Roadways. Reuse-related effects on roadway traffic were assessed by estimating the number of trips generated by each land use considering employees, visitors, residents, and service vehicles associated with construction and all other onsite activities for the Proposed Action and each alternative. Principal trip-generating land uses included industrial, office, commercial, residential, and airport uses. These trips were distributed to the roadway system based on proposed land uses and existing travel patterns. This analysis is based on daily trips as distributed, existing data on roadway capacities, traffic volumes, and standards established by state and local transportation agencies.

The analysis was derived using information from state and local government agencies, including the Texas Department of Transportation-District 14, Travis County, City of Austin, Austin Airport Authority, and railroad companies.

The number of vehicle trips expected as a result of specific land uses on the site were estimated for 1994, 1997, 2002, and 2012 on the basis of direct onsite jobs and other attributes of onsite land uses, such as projected airport passenger volumes, proposed commercial and industrial development, and the number of dwelling units.

Standard analysis techniques of trip generation, trip distribution, and traffic assignment were used in the transportation analysis. Trip generation was based on applying the trip rates from the Institute of Transportation Engineers *Trip Generation* manual, 5th Edition (1991) to the existing and proposed land uses to get total daily trips. For peak hour analyses, it was assumed that 10 percent of daily trips would occur during the peak hour.

Airspace/Air Traffic. The airspace analysis examined the type and level of aircraft operations projected for the Proposed Action and alternatives and compared them to how the airspace was configured and used under the preclosure reference. The relationship of the projected aircraft operations to the operational capacity of the airport, using criteria established by the FAA for determining airport service volumes, was considered in the analysis. Potential effects on airspace use were assessed based on the extent to which the Proposed Action or alternatives could (1) require modifications to the airspace structure or air traffic control systems and/or facilities; (2) restrict, limit, or otherwise delay other air traffic in the region; or (3) encroach on other airspace areas and uses.

The FAA is ultimately responsible for evaluating the specific effects that the reuse of an airport will have on the safe and efficient use of navigable airspace by aircraft. Such a study is based on details from the airport proponent's Airport Plan and consists of an airspace analysis, a flight safety review, and a review of the potential effect of the proposal on air traffic control and air navigational facilities. Once this study is completed, the FAA can then determine the actual requirements for facilities, terminal and enroute airspace, and instrument flight procedures.

Railroads. AMTRAK provides passenger service to the Austin area. Two rail freight companies provide service to the Austin area: the Union Pacific and Austin & Northwestern railroads. The Proposed Action and alternatives are expected to have a negligible effect on local freight service in the Austin area; therefore, railroads are not discussed further in this section.

4.2.3.1 Proposed Action

Roadways. Based on proposed land uses and employment projections, the Proposed Action would generate approximately 56,823 one-way trips per day by 2012 (Table 4.2-4). The major land uses generating traffic would include aviation support, industrial, commercial, institutional, and recreational uses.

Table 4.2-4

Summary of Traffic Generated by Various Reuse Alternatives

Reuse Alternative	1994	1997	2002	2012
Proposed Action				
Total Trips/Day[1]	3,617	25,945	44,660	56,823
Total Peak Hour Trips[2]	362	2,594	4,466	5,682
External Peak Hour Trips[3]	289	2,076	3,573	4,546
General Aviation/Air Cargo Airport				
Total Trips/Day	3,770	15,257	33,059	37,179
Total Peak Hour Trips	377	1,526	3,306	3,718
External Peak Hour Trips	302	1,221	2,645	2,974
Mixed-Use Development				
Total Trips/Day	2,358	11,344	27,891	42,182
Total Peak Hour Trips	236	1,134	2,789	4,218
External Peak Hour Trips	189	908	2,231	3,375

Notes: [1]Trips/day are defined as one-way trips.
[2]Peak Hour Trips are estimated at 10% of the Total Trips/Day.
[3]External Peak Hour Trips are estimated at 80% of the Total Peak Hour Trips.

With the Proposed Action, it was assumed that Presidential Boulevard (the main entrance road to the base) would be improved to a four-lane, divided access road to provide direct access to the new passenger terminal area, and that Avenue F would be used to provide access to other users of the base property. It was also assumed that a new two-lane access road would be constructed from Burleson Road into the southern portion of the base to provide access to the 924th FG facilities. Additional onbase road improvements may be required depending on the location and level of development for other land uses proposed for the Proposed Action.

The percentage of traffic generated by the Proposed Action on the roadways in the immediate vicinity of the base was based on the assumption that almost all traffic generated on the base property, except for traffic generated by the 924th FG, would use State Highway 71 as the principal access route. It was further assumed that 95 percent of the traffic using State Highway 71 would utilize sections of State Highway 71 west of Presidential Boulevard and 5 percent of the vehicles would travel east of Presidential Boulevard. At the intersection of State Highway 71 and U.S. 183, the west-bound traffic on State Highway 71 would split three ways: 35 percent continuing on State Highway 71 west of U.S. 183, 60 percent going north on U.S. 183, and 5 percent going south on U.S. 183.

Traffic generated by the 924th FG would use the new access road into the base from Burleson Road. At the intersection of the new access road and Burleson Road, the traffic was assumed to split two ways: 90 percent going west and 10 percent going east on Burleson Road. The west-bound traffic would further split three ways at the intersection of Burleson Road and U.S. 183: 40 percent continuing west on Burleson Road, 50 percent going north on U.S. 183, and 10 percent going south on U.S. 183.

The number of daily trips generated by each type of proposed land use was estimated based on projections of the number of passenger enplanements/ deplanements, general aviation flights, air cargo operations, military operations, and number of employees and visitors associated with other proposed land uses.

Of the total 56,823 trips generated to and from the Bergstrom AFB site by the Proposed Action in 2012, 45,458 would be on State Highway 71 (43,185 west of Presidential Boulevard and 2,273 east of Presidential Boulevard). Of the outgoing trips on State Highway 71 west of Presidential Boulevard, 15,115 (35%) would continue on State Highway 71 west of U.S. 183, 25,911 would occur on U.S. 183 north of State Highway 71, and 2,159 on U.S. 183 south of State Highway 71.

The Proposed Action would generate about 1,634 one-way trips per day by 2012 on the new two-lane access road. Of the 1,634 one-way trips, approximately 1,470 (90%) would occur on Burleson Road between the access road and U.S. 183, and 164 (10%) would occur on Burleson Road between the access road and Farm-to-Market Road (FM) 973. Of the 1,470 trips, about

588 (40%) would occur on Burleson Road west of U.S. 183; the remaining 882 trips (60%) would occur on U.S. 183 north of Burleson Road (735 vehicles or 50%) or U.S. 183 south of Burleson Road (147 vehicles or 10%).

The projected peak hour traffic and level of service (LOS) for the road segments primarily affected by traffic generated by the Proposed Action are summarized in Table 4.2-5.

Based on the distribution of trips generated by the Proposed Action over these roadways, the projected peak hour traffic would change the LOS on the segments of State Highway 71 and U.S. 183 in 2002 and beyond. However, with improvements planned by the Texas Department of Transportation for converting State Highway 71 and U.S. 183 to six- to eight-lane freeways with frontage roads, the LOS on all segments in the base vicinity would remain C or better. In 1997, prior to the planned improvements, State Highway 71 east of U.S. 183 would experience LOS F, and west of U.S. 183, LOS E. Similarly, in 1997, U.S. 183 north of State Highway 71 would experience LOS E in the absence of planned improvements.

Airspace. Aviation activities associated with the Proposed Action include air passenger, general aviation, air cargo, and military operations associated with the Texas ANG, the 924th FG, and military transient aircraft. With the Proposed Action, commercial air passenger, air cargo, general aviation, and military (Texas ANG) operations would be relocated to the base from Robert Mueller Municipal Airport (RMMA). The projected number of operations and the fleet mix associated with the Proposed Action are presented in Table 2.2-4. It is projected that 19,862 air operations would occur in 1994, increasing to 206,624 in 1997, 219,764 in 2002, and 254,804 in 2012. No airport constraints are expected with conversion of the airfield to the uses defined for the Proposed Action because construction of the new runway would increase the capability of existing runways to handle the projected number of operations.

It was assumed that a similar type of radar coverage and navigation aids would be provided for the airport that exists at RMMA to maintain air traffic control services for the aviation activities at the base. Airspace requirements for the Proposed Action would be the same as those in effect prior to base closure, with Austin Approach Control retaining control of the airspace in the Austin area (Section 3.2.3.2).

With the implementation of the Proposed Action, RMMA would close. The impacts of its closure and reuse are discussed in Section 4.5.

Table 4.2-5

Peak Hour Traffic and Level of Service for the Proposed Action

	1994				1997				2002				2012			
	Baseline Traffic		With-Project Traffic		Baseline Traffic		With-Project Traffic		Baseline Traffic		With-Project Traffic		Baseline Traffic		With-Project Traffic	
Road Segments	Estimated Peak Hour[1] (vph)[2]	Level of Service	Peak Hour Total Traffic (vph)	Level of Service	Estimated Peak Hour (vph)	Level of Service	Peak Hour Total Traffic (vph)	Level of Service	Estimated Peak Hour (vph)	Level of Service	Peak Hour Total Traffic (vph)	Level of Service	Estimated Peak Hour (vph)	Level of Service	Peak Hour Total Traffic (vph)	Level of Service
U.S. 183																
South of State Highway 71	678	B	691	B	704	B	797	C	746	A	910	A	830	A	1,040	A
North of State Highway 71	1,234	C	1,399	C	1,283	C	2,391	E	1,359	A	3,321	A	1,512	A	4,028	B
South of Burleson Road	837	C	837	C	869	C	881	C	921	A	933	A	1,025	A	1,036	A
North of Burleson Road	722	B	722	B	750	B	809	C	794	A	853	A	884	A	943	A
State Highway 71																
East of U.S. 183	1,253	C	1,528	D	1,302	C	3,150	F	1,380	A	4,650	C	1,535	A	5,729	C
West of U.S. 183	1,511	D	1,608	D	1,571	D	2,217	E	1,664	A	2,808	B	1,851	A	3,319	B
East of Presidential Boulevard	1,088	B	1,103	B	1,131	C	1,228	C	1,198	A	1,370	A	1,333	A	1,554	A
East of FM 973	914	C	918	C	950	C	975	C	1,007	A	1,050	A	1,120	A	1,175	A
Burleson Road																
East of Access Road	65	A	65	A	67	A	81	A	72	A	85	A	80	A	93	A
West of Access Road	65	A	65	A	67	A	185	A	72	A	189	A	80	A	197	A
West of U.S. 183	310	A	310	A	322	A	369	A	341	A	388	A	379	A	426	B

Notes: [1]The peak hour traffic shown is for one direction.
[2]vph = vehicles per hour.

Air Transportation. The Proposed Action is not expected to affect air transportation in the region. Based on historic and projected passenger enplanements at RMMA, enplanements generated as a result of the Proposed Action would not affect the existing commercial airline service structure. With closure of the base, there will be a slight reduction in the number of enplanements with the temporary decrease in population, but with baseline population growth and population growth associated with the Proposed Action, enplanements would increase over the study period. Enplanements generated by reuse of the base and associated population growth would total less than 1 percent of the total enplanements projected for the Austin area by 2012.

Existing private airports in the ROI would probably experience no loss of patronage with the conversion of Bergstrom AFB to an airport with general aviation facilities. Unless accommodations were better and/or fees were less, private aircraft owners would not likely be inclined to leave the airport they are currently using.

Mitigation Measures. The Texas Department of Transportation and county and city agencies would monitor traffic conditions on roads leading to the Bergstrom AFB site and would schedule planned improvements as needed.

4.2.3.2 General Aviation/Air Cargo Airport Alternative

Roadways. Based on proposed land uses and employment projections for the General Aviation/Air Cargo Airport Alternative, approximately 37,179 one-way trips per day would be generated by 2012 (Table 4.2-4). The major traffic generators would be general aviation flights; institutional, commercial, and industrial employees; and full-time and part-time Air Force Reserve personnel.

The number of daily trips generated by each type of proposed land use was estimated based on projections of the number of general aviation flights and aviation support, industrial, commercial, residential, and public/recreation land uses. The projected peak hour traffic and LOS for the road segments primarily affected by traffic generated with the General Aviation/Air Cargo Airport Alternative are summarized in Table 4.2-6.

Based on a projected distribution of these trips over these roadways, the projected peak hour traffic in 1997 would result in LOS E on U.S. 183 north of State Highway 71 and State Highway 71 east and west of U.S. 183. With the planned conversion of both U.S. 183 and State Highway 71 to freeway status, the LOS on these segments would improve to C or better.

Access to the base for this alternative would be provided by State Highway 71 and the two entrance gates currently used by Bergstrom AFB employees. Depending on the final layout of facilities, some improvements to the existing Bergstrom AFB road system may be required to improve circulation.

Airspace. Aviation activities identified for this alternative include general aviation, air cargo, and military operations associated with 924th FG,

Table 4.2-6

Peak Hour Traffic and Level of Service for the General Aviation/Air Cargo Airport Alternative

Road Segments	1994				1997				2002				2012			
	Baseline Traffic		With-Project Traffic		Baseline Traffic		With-Project Traffic		Baseline Traffic		With-Project Traffic		Baseline Traffic		With-Project Traffic	
	Estimated Peak Hour[1] (vph)[2]	Level of Service	Peak Hour Total Traffic (vph)	Level of Service	Estimated Peak Hour (vph)	Level of Service	Peak Hour Total Traffic (vph)	Level of Service	Estimated Peak Hour (vph)	Level of Service	Peak Hour Total Traffic (vph)	Level of Service	Estimated Peak Hour (vph)	Level of Service	Peak Hour Total Traffic (vph)	Level of Service
U.S. 183																
South of State Highway 71	678	B	692	B	704	B	762	C	746	A	872	A	830	A	971	A
North of State Highway 71	1,234	C	1,406	C	1,283	C	1,978	E	1,359	A	2,866	A	1,512	A	3,207	A
State Highway 71																
East of U.S. 183	1,253	C	1,540	D	1,302	C	2,462	E	1,380	A	3,892	B	1,535	A	4,361	C
West of U.S. 183	1,511	D	1,612	D	1,571	D	1,977	E	1,664	A	2,543	A	1,851	A	2,840	B
East of Presidential Boulevard	1,088	B	1,103	B	1,131	C	1,192	C	1,198	A	1,330	A	1,333	A	1,482	A
East of FM 973	914	C	918	C	950	C	966	C	1,007	A	1,040	A	1,120	A	1,157	A

Notes: [1]The peak hour traffic shown is for one direction.
[2]vph = vehicles per hour.

Texas ANG, and military transient aircraft. The projected number of operations and the fleet mix associated with this alternative are presented in Table 2.3-4. It is projected that 19,862 operations would occur in 1994, increasing to 121,123 operations by 2012. No airport constraints are expected with conversion of the airfield to the uses defined for this alternative. It was assumed that a similar type of radar coverage and navigation aids would be provided for the airport as existed prior to base closure to maintain an equivalent level of air traffic control services for the reuse aviation activities. Airspace requirements for the General Aviation/Air Cargo Airport Alternative would be the same as those in effect prior to base closure, with Austin Approach Control retaining control of the airspace in the Austin area (Section 3.2.3.2).

Air Transportation. With this alternative, general aviation, air cargo, and Texas ANG operations would be relocated from RMMA to Bergstrom AFB. Commercial air passenger service would still be provided at RMMA. Effects of air transportation demand in the region, however, would be similar to those described for the Proposed Action.

Mitigation Measures. The Texas Department of Transportation and county and city agencies would monitor traffic conditions on roads leading to the Bergstrom AFB site and would schedule planned improvements as needed.

4.2.3.3 Mixed-Use Development Alternative

Roadways. Based on proposed land uses and employment projections, the Mixed-Use Development Alternative would generate approximately 42,182 one-way trips per day by 2012 (Table 4.2-4). The major land uses generating traffic would include industrial, commercial, institutional, residential, and recreational. The existing airfield would be converted to agricultural, industrial, and commercial uses.

Access to the base for this alternative would be provided by State Highway 71 and the two entrance gates currently used by Bergstrom AFB employees. Some improvements to the existing Bergstrom AFB road system may be required with proposed land uses.

The projected peak hour traffic and LOS for the road segments primarily affected by traffic generated with the Mixed-Use Development Alternative are summarized in Table 4.2-7. In 1997, based on a projected distribution of trips over these roadways, the peak hour traffic associated with this alternative would change the LOS rankings on State Highway 71 east of U.S. 183 to E. On State Highway 71 west of U.S. 183 and on U.S. 183 north of State Highway 71, the LOS would change to D. However, LOS on all segments of State Highway 71 and U.S. 183 would improve to C or better with the planned conversion of these arterial highways to freeways with frontage roads by the turn of the century.

Table 4.2-7

Peak Hour Traffic and Level of Service for the Mixed-Use Development Alternative

Road Segments	1994				1997				2002				2012			
	Baseline Traffic		With-Project Traffic		Baseline Traffic		With-Project Traffic		Baseline Traffic		With-Project Traffic		Baseline Traffic		With-Project Traffic	
	Estimated Peak Hour[1] (vph)[2]	Level of Service	Peak Hour Total Traffic (vph)	Level of Service	Estimated Peak Hour (vph)	Level of Service	Peak Hour Total Traffic (vph)	Level of Service	Estimated Peak Hour (vph)	Level of Service	Peak Hour Total Traffic (vph)	Level of Service	Estimated Peak Hour (vph)	Level of Service	Peak Hour Total Traffic (vph)	Level of Service
U.S. 183																
South of State Highway 71	678	B	687	B	704	B	747	B	746	A	852	A	830	A	990	A
North of State Highway 71	1,234	C	1,342	C	1,283	C	1,800	D	1,359	A	2,631	A	1,512	A	3,435	A
State Highway 71																
East of U.S. 183	1,253	C	1,432	C	1,302	C	2,165	E	1,380	A	3,499	B	1,535	A	4,741	C
West of U.S. 183	1,511	D	1,574	D	1,571	D	1,872	D	1,664	A	2,406	A	1,851	A	2,973	B
East of Presidential Boulevard	1,088	B	1,098	B	1,131	C	1,176	C	1,198	A	1,310	A	1,333	A	1,502	A
East of FM 973	914	C	917	C	950	C	962	C	1,007	A	1,035	A	1,120	A	1,162	A

Notes: [1]The peak hour traffic shown is for one direction.
[2]vph = vehicles per hour.

Airspace. The use of Bergstrom AFB for nonaviation uses would eliminate air traffic and improve airspace use in the Bergstrom AFB area.

Air Transportation. With this alternative, the commercial operations at RMMA would not be relocated to the base. Effects of air transportation demand, however, would be similar to those described for the Proposed Action.

Mitigation Measures. The Texas Department of Transportation and county and city agencies would monitor traffic conditions on roads leading to the Bergstrom AFB site and would schedule planned improvements as needed.

4.2.3.4 No-Action Alternative

With the No-Action Alternative, onbase roads would no longer be used except by caretaker personnel, and many of the impacts associated with the Proposed Action and other alternatives would not occur. It is projected that the caretaker team would contribute less than 150 trips per day to the local road system. All offbase roads would operate at acceptable levels of service.

4.2.4 Utilities

Direct and indirect changes in future utility demand for each alternative were estimated based on per capita average daily use for each proposed land use. These factors were applied to projections of new employees associated with each alternative and the inmigrant population. The projected changes in utility demand for the three benchmark years after closure are presented in Table 4.2-8. The forecasted ROI demand values represent the No-Action Alternative, and generally reflect the change expected in utility use in the area without redevelopment of the base.

Per capita demand values were based on population data for the City of Austin and unincorporated Travis County. Per capita demand values were derived by dividing total utility demand data by the population in each jurisdiction for each year addressed to determine forecasted ROI demand values. The other alternatives reflect the growth anticipated as a result of the reuse alternatives.

For each of the reuse alternatives analyzed in this section, the following assumptions were made:

- The site would be serviced by the same local utility purveyors.
- If necessary, any specific infrastructure improvements required, and the associated costs of those improvements, would be borne directly or indirectly by future site developers.

Table 4.2-8

Total Projected Utility Demand in the Region of Influence

	1997	Percent Increase	2002	Percent Increase	2012	Percent Increase
Water Demand (MGD)						
Projected ROI Demand[1,2]	115.61		128.49		166.23	
Proposed Action	0.09	0.1	0.27	0.2	0.76	0.5
General Aviation/Air Cargo Airport Alternative	0.06	0.1	0.25	0.2	0.42	0.3
Mixed-Use Development Alternative	0.02	<0.1	0.04	<0.1	0.06	<0.1
Wastewater (MGD)						
Projected ROI Generation[1,2]	90.53		105.19		134.53	
Proposed Action	0.07	0.1	0.20	0.2	0.56	0.4
General Aviation/Air Cargo Airport Alternative	0.04	<0.1	0.19	0.2	0.31	0.2
Mixed-Use Development Alternative	0.02	<0.1	0.03	<0.1	0.04	<0.1
Solid Waste (tons/day)						
Projected ROI Generation[1]	2,532.2		2,682.6		2,984.7	
Proposed Action	3.78	0.2	9.60	0.4	24.14	0.8
General Aviation/Air Cargo Airport Alternative	2.81	0.1	8.94	0.3	14.31	0.5
Mixed-Use Development Alternative	0.89	<0.1	1.95	<0.1	3.27	0.1
Electricity (million kWh/day)						
Projected ROI Demand[1,2]	22.3		28.0		42.8	
Proposed Action	0.07	0.3	0.16	0.6	0.29	0.7
General Aviation/Air Cargo Airport Alternative	0.07	0.3	0.15	0.5	0.19	0.5
Mixed-Use Development Alternative	0.01	<0.10	0.03	0.10	0.05	0.1
Natural Gas (MMcf/day)						
Projected ROI Demand[1]	32.55		34.48		38.37	
Proposed Action	0.29	0.90	0.65	1.9	1.20	3.1
General Aviation/Air Cargo Airport Alternative	0.26	0.80	0.62	1.8	0.79	2.1
Mixed-Use Development Alternative	0.05	0.20	0.12	0.3	0.17	0.4

Notes: [1]Represents total demand projected or generation for the ROI for the years indicated, based on projected population.
[2]Projected ROI demand provided by the City of Austin.

- Future site developers would undertake any corrective actions necessary to comply with City of Austin requirements, including modifications to the existing onbase wastewater collection system and construction of pretreatment facilities; wastewater flows from the site would remain connected to the City of Austin treatment system.

- Onsite demand effects are expected to be relatively small; therefore, the project-related usage is included in the total demand and not further differentiated by individual locations.

4.2.4.1 Proposed Action

Water Demand. With the Proposed Action, water demand from the ROI would increase by 0.09 million gallons per day (MGD) in 1997 and 0.76 MGD in 2012. Water demand in the City of Austin would increase over the projected ROI demand by less than 1 percent in 2012. By 1997, the increase in demand associated with the Proposed Action would average approximately 0.06 MGD in Austin and 0.03 MGD on the base. By 2012, the increase in demand would average approximately 0.65 MGD in Austin and 0.11 MGD on the base.

No major infrastructure changes would be required in the ROI because the Austin/Travis County area would not experience any substantial changes in population with the Proposed Action. Alterations to the water supply system would depend on specific reuse requirements and any plans the purveyor may have to change the existing onbase supply infrastructure. Some onbase water supply infrastructure may need to be replaced as part of the Proposed Action to meet code requirements of the City of Austin.

Wastewater. The Proposed Action would increase the generation of wastewater by approximately 0.07 MGD in 1997 and 0.56 MGD in 2012. Wastewater treatment levels in the Austin service area would increase over the projected ROI generation rates by less than 1 percent by 2012. By 1997, the Proposed Action would result in the generation of 0.05 MGD in Austin and 0.02 MGD on the base. By 2012, the increase in wastewater generation would average 0.48 MGD in the Austin service area and 0.08 MGD on the base.

No additional infrastructure would be required in the ROI because the Austin/Travis County area would not experience any substantial population changes. However, the baseline wastewater treatment demand in Austin will increase by 2012. Depending on the specific reuses that would occur with the Proposed Action, industrial pretreatment permits may be required by the City of Austin. Some onbase wastewater infrastructure may need to be replaced as part of the Proposed Action to meet code requirements of the City of Austin.

Solid Waste. With the Proposed Action, the generation of solid waste in the ROI would increase by approximately 3.78 tons per day in 1997 and 24.14 tons per day in 2012. Solid waste disposal requirements would increase over the projected ROI generation rates by less than 1 percent by 2012. By 1997, solid waste generation would increase by an average of 1.42 tons per day in Austin and 2.36 tons per day on the base. By 2012, the average increase would be 16.15 tons per day in Austin and 7.99 tons per day on the base. Based on per capita solid waste generation rates and future population growth, there would be no need for additional landfill capacity in Travis County. With closure of the City of Austin landfill, the city will likely use one or more of the three private landfills in Travis County. These three private landfills have a volume capacity in excess of 50 years.

Energy.

Electricity. The projected increased electricity requirements in the ROI for the Proposed Action would be approximately 0.07 million kilowatt-hours (kWh) per day in 1997 and 0.29 million kWh per day in 2012. Electricity consumption over projected ROI demand within the Austin service area would increase by less than 1 percent by 2012. By 1997, the electricity demand would increase by an average of 0.01 million kWh per day in Austin and 0.06 million kWh per day on the base. By 2012, the increase in electricity demand from the Proposed Action would average 0.07 million kWh per day in Austin and 0.22 million kWh per day on the base.

Additional electricity production capacity would not be required with this alternative because the Austin/Travis County area would not experience any substantial population changes.

Natural Gas. With the Proposed Action, the demand for natural gas in the ROI would increase by approximately 0.29 million cubic feet (MMcf) per day by 1997 and 1.20 MMcf per day by 2012. Natural gas consumption above projected ROI demand within the Austin/Travis County area would increase by about 3 percent in the year 2012. By 1997, natural gas demand would increase by an average of 0.04 MMcf per day in Austin and 0.25 MMcf per day on the base. By 2012, the increase resulting from the Proposed Action would average 0.37 MMcf per day in Austin and 0.83 MMcf per day on the base.

Additional natural gas production capacity would not be needed with this alternative because the Austin/Travis County area would not experience any substantial population changes.

Mitigation Measures. No mitigation measures would be required for the Proposed Action.

4.2.4.2 General Aviation/Air Cargo Airport Alternative

Water Demand. With the General Aviation/Air Cargo Airport Alternative, water demand from the ROI would increase by 0.06 MGD in 1997 and 0.42 MGD in 2012. Water demand in the City of Austin service area would increase over the projected ROI demand by less than 1 percent in 2012. By 1997, the increase in demand associated with this alternative would average 0.03 MGD in Austin and 0.03 MGD on the base. By 2012, the increase in demand would average approximately 0.34 MGD in the Austin service area and 0.08 MGD on the base.

No major infrastructure changes would be required because the Austin/Travis County area would not experience any substantial population changes with this alternative. Alterations to the water supply system would depend on specific reuse requirements and any plans the purveyor may have to change the existing onbase supply infrastructure. Some onbase infrastructure may need to be replaced to meet code requirements of the City of Austin.

Wastewater. This alternative would increase the generation of wastewater by approximately 0.04 MGD in 1997 and 0.31 MGD in 2012 in the ROI. Wastewater treatment levels within the Austin service area would increase over the projected ROI generation rates by less than 1 percent in 2012. By 1997, this alternative would result in the generation of 0.04 MGD of wastewater in Austin and 0.2 MGD on the base. By 2012, the increase in wastewater generation due to this alternative would average 0.26 MGD in the Austin service area and 0.05 MGD on the base.

No additional infrastructure would be required because the Austin/Travis County area would not experience any substantial population changes with this alternative. Depending on the specific reuses that would occur with this alternative, industrial pretreatment permits may be required by the City of Austin. Some onbase infrastructure may need to be replaced to meet code requirements of the City of Austin.

Solid Waste. With this alternative, the generation of solid waste in the ROI would increase by approximately 2.81 tons per day in 1997 and 14.31 tons per day in 2012. Solid waste disposal requirements would increase over the projected ROI generation rates by less than 1 percent by 2012. By 1997, solid waste generation would increase by an average of 0.64 ton per day in Austin and 2.17 tons per day on the base. By 2012, the average increase would be 8.56 tons per day in Austin and 5.75 tons per day on the base. Based on per capita solid waste generation rates and future population growth, there would be no need for additional landfill capacity in Travis County. With closure of the City of Austin landfill, the city will likely use one or more of the three private landfills in Travis County. These three private landfills have a volume capacity in excess of 50 years.

Energy.

Electricity. The projected increased electricity requirements in the ROI for this alternative would be approximately 0.07 million kWh per day by 1997 and 0.19 million kWh per day by 2012. Electricity consumption over projected ROI demand within the Austin service area would increase by less than 1 percent in 2012. By 1997, the electricity demand would increase by an average of less than 0.01 million kWh per day in Austin and 0.07 million kWh per day on the base. By 2012, the increase in electricity demand from this alternative would average 0.04 million kWh per day in Austin and 0.15 million kWh per day on the base.

Additional electricity production capacity would not be required with this alternative because the Austin/Travis County area would not experience any substantial population changes.

Natural Gas. The increased demand for natural gas in the ROI with the General Aviation/Air Cargo Airport Alternative would be approximately 0.26 MMcf per day in 1997 and 0.79 MMcf per day in 2012. Natural gas consumption in the Austin/Travis County area would increase by about 2 percent by the year 2012 above projected baseline levels. By 1997, natural gas demand would increase by an average of 0.02 MMcf per day in Austin and 0.24 MMcf per day on the base. By 2012, the increase resulting from this alternative would average 0.19 MMcf per day in Austin and 0.60 MMcf per day on the base.

Additional natural gas production capacity would not be needed with this alternative because the Austin/Travis County area would not experience any substantial population changes.

Mitigation Measures. No mitigation measures would be required for this alternative.

4.2.4.3 Mixed-Use Development Alternative

Water Demand. With this alternative, water demand in the ROI would increase by 0.02 MGD in 1997 and 0.06 MGD in 2012. Water demand in the City of Austin service area would increase over the projected ROI demand by less than 1 percent in 2012. By 1997, the increase in water demand associated with this alternative would average 0.01 MGD in Austin and 0.01 MGD on the base. By 2012, the increase in demand would average 0.02 MGD in the Austin service area and 0.04 MGD on the base.

No major infrastructure changes would be required because the Austin/Travis County area would not experience any substantial changes in employment with this alternative. Alterations to the water supply system would depend on specific reuse requirements and any plans the purveyor may have to change the existing onbase supply infrastructure. Some onbase infrastructure may need to be replaced to meet code requirements of the City of Austin.

Wastewater. This alternative would generate approximately 0.02 MGD of wastewater in 1997 and 0.04 MGD in 2012 in the ROI. Wastewater treatment levels within the Austin service area would increase over the projected ROI generation rates by less than 1 percent in 2012. By 1997, this alternative would result in the generation of 0.01 MGD of wastewater in Austin and 0.01 MGD on the base. By 2012, the increase in wastewater generation would average 0.02 in Austin and 0.02 MGD on the base.

No additional infrastructure would be required because the Austin/Travis County area would not experience any substantial changes with this alternative. Depending on the specific reuses that would occur with this alternative, industrial pretreatment permits may be required by the City of Austin. Some onbase infrastructure may need to be replaced to meet code requirements of the City of Austin.

Solid Waste. With this alternative, the generation of solid waste in the ROI would increase by approximately 0.89 ton per day by 1997 and 3.27 tons per day in 2012. Solid waste disposal requirements would increase over the projected ROI generation rates by less than 1 percent in 2012. By 1997, solid waste generation would increase by an average of 0.26 ton per day in Austin and 0.63 ton per day on the base. By 2012, the average increase would be 0.61 ton per day in Austin and 2.66 tons per day on the base. Based on per capita solid waste generation rates and future population growth, there would be no need for additional landfill capacity in Travis County. With this alternative, the City of Austin landfill would not close.

Energy.

Electricity. The projected increased electricity requirements in the ROI for this alternative would be approximately less than 0.01 million kWh per day in 1997 and 0.05 million kWh per day in 2012. Electricity consumption over projected ROI demand within the Austin service area would increase by less than 1 percent in 2012. By 1997, the electricity demand would increase by an average of less than 0.01 million kWh per day both in Austin and on the base. By 2012, the increase would average less than 0.01 million kWh per day in Austin and 0.05 million kWh per day on the base.

Additional electricity production would not be required with this alternative because the Austin/Travis County area would not experience any substantial population changes.

Natural Gas. With this alternative, the increased demand for natural gas in the ROI would be approximately less than 0.05 MMcf per day in 1997 and 0.17 MMcf per day in 2012. Natural gas consumption rates would increase by less than 1 percent by 2012 in the Austin/Travis County area above projected baseline levels. By 1997, this alternative would increase natural gas demand by an average of 0.01 MMcf per day in Austin and 0.04 MMcf per day on the base. By 2012, the increase would average 0.01 MMcf per day in Austin and 0.16 MMcf per day on the base.

Additional natural gas production capacity would not be needed with this alternative because the Austin/Travis County area would not experience any substantial population changes.

Mitigation Measures. No mitigation measures would be required for this alternative.

4.2.4.4 No-Action Alternative

With the No-Action Alternative, the U.S. Government would retain ownership of the four parcels of government fee-purchased land. The property in which the City of Austin has claimed an equitable interest would be surrendered to the city. A caretaker force of approximately 50 personnel including contractors would be required to maintain the facilities and grounds. Utility use on the site would be minimal compared to the Proposed Action and alternatives. However, minimal use of the utility systems could result in their degradation over the long term.

In the absence of any reuse actions at Bergstrom AFB, postclosure utility demand in the study area is projected to increase with the increase in population. The following utility use was forecast based on per capita demand factors for the study area:

- Water consumption in the Austin/Travis County service area is projected to increase from 115.61 MGD in 1997 to 166.23 MGD by 2012;

- Wastewater generated in the Austin/Travis County service area is projected to increase from 90.53 MGD in 1997 to 134.53 MGD by 2012;

- Solid waste generated in the Austin/Travis County service area is projected to increase from approximately 2,532.2 tons per day in 1997 to 2,984.7 tons per day by 2012;

- Electricity consumption in the Austin/Travis County service area is projected to increase from 22.3 million kWh per day in 1997 to 42.8 million kWh per day by 2012; and

- Natural gas consumption in the Austin/Travis County service area is projected to increase from 32.55 MMcf per day in 1997 to 38.37 MMcf per day by 2012.

Mitigation Measures. No mitigation measures would be required with the No-Action Alternative.

4.3 HAZARDOUS MATERIALS AND HAZARDOUS WASTE MANAGEMENT

This section addresses the potential impacts of existing contaminated sites on the various reuse options, and the potential for environmental impacts caused by hazardous materials and hazardous waste management practices associated with the reuse options. Hazardous materials and wastes, Installation Restoration Program (IRP) sites, storage tanks, asbestos, pesticides, polychlorinated biphenyls (PCBs), radon, medical/biohazardous wastes, ordnance, and solid waste management units (SWMUs) are discussed in this section.

The Air Force is committed to the remediation of all contamination at Bergstrom AFB resulting from past and future Air Force activities, including actions that will be taken after base closure. Delays or restrictions in disposal and reuse of property may occur due to the extent of contamination and the results of both the risk assessment and remedial designs determined for contaminated sites. Examples of conditions resulting in possible land use restrictions would be the capping of landfills, constraints from methane generation and cap integrity, and long-term monitoring wells. These conditions would have to be considered in the layout of future development. Options to recipients include creation of parks, greenbelts, or open spaces.

Regulatory standards and guidelines have been applied to determine the impacts caused by hazardous materials and waste. The following criteria were used to identify potential impacts:

- Accidental release of friable asbestos during the demolition or modification of a structure;
- Generation of 100 kilograms (or more) of hazardous waste in a calendar month, resulting in increased regulatory requirements;
- New operational requirements or service for all underground storage tanks (USTs) and tank systems;
- Any spill or release of a reportable quantity of a hazardous material;
- Manufacturing of any compound that requires notifying the pertinent regulatory agency; and
- Exposure of the public or the environment to any hazardous material through release or disposal practices.

4.3.1 Proposed Action

4.3.1.1 Hazardous Materials Management

Hazardous materials likely to be used for activities in the proposed land use areas are identified in Table 4.3-1. The types of hazardous materials used would be similar to those used by the base prior to closure. The quantity of hazardous materials used with the Proposed Action would increase over the baseline conditions at closure. The specific chemical compositions and exact use rates are not known.

With implementation of the Proposed Action, separate organizations would be responsible for the management of hazardous materials according to applicable regulations. Each organization would have to comply with the Superfund Amendments and Reauthorization Act (SARA), Section 311, Title III, which requires that local communities be informed of the use of hazardous materials. Mutual aid agreement with surrounding jurisdictions may require additional scrutiny and training of emergency staff.

4.3.1.2 Hazardous Waste Management

With disposal of the base, hazardous waste would be controlled by the property recipients. Once the responsibilities of hazardous waste management are allocated to individual organizations, proficiency with those materials and spill response plans are required by Resource Conservation and Recovery Act (RCRA) regulations.

Table 4.3-1

Hazardous Material Usage By Land Use Category

Land Use*	Operation Process	Hazardous Materials
Airfield	Aircraft refueling; anti-/de-icing; utilization of clear zones, runways, taxiways, airport terminal parking, administration offices, corporate and private aviation facilities, aircraft parking	Aviation fuels, propylene glycol, ethylene glycol, heating oils
Aviation Support	Operations associated with aircraft maintenance and manufacturing, aeronautics research and development, air transportation-related industry and warehousing, law enforcement, airline maintenance, other governmental administrative services	Fuels, solvents, paints, POL, hydraulic fluids, degreasers, corrosives, heavy metals, reactives, thinners, paints, glycols, ignitables, heating oils, plating chemicals, cyanides, laboratory chemicals
Industrial	Activities associated with light industry, research and development, warehousing, and manufacturing	Solvents, heavy metals, POL, corrosives, catalysts, aerosols, fuels, heating oils, ignitables, pesticides
Institutional (Medical)	Hospital/clinic, rehabilitation facilities, X-ray unit	Pharmaceuticals, medical biohazardous materials, chemotherapeutic drugs, radiological sources, heavy metals
Institutional (Education)	Public education, higher education, research labs, training facilities, vocational schools	Laboratory chemicals, corrosives, ignitables, solvents, heating oils, solvents, lubricants, cleaners, pesticides, paints, thinners
Commercial (Office/ Business Park)	Activities associated with offices, light industry, research and development, and higher value warehousing, retail, service industries, restaurants	Fuels, solvents, corrosives, POL, ignitables, heating oils, pesticides, dry cleaning chemicals
Residential	Utilization/maintenance of single-family and multifamily units, swimming pools, landscaping	Pesticides, fertilizers, fuels, oils, chlorine, and household chemicals
Public/Recreation	Maintenance of existing recreational facilities including golf course, sports complex, swimming pools, and other recreational facilities	Pesticides, fertilizers, chlorine, heating oils, paints, thinners, cleaners, solvents, aerosols, POL
Agricultural	Equipment maintenance, weed and pest control	Pesticides, fuels, oils, solvents, paints, thinners

Note: *The types of hazardous materials used within the government-retained land will be similar to those listed for the airfield, aviation support, industrial, and commercial land use categories.

The presence of numerous independent operators on the base would change the regulatory requirements and probably increase the regulatory burden relative to hazardous waste management. Activities associated with the Proposed Action would increase the amount of hazardous waste generated compared to the closure baseline.

It is expected that after September 1993, the 924th FG will maintain several hazardous waste accumulation points and satellite accumulation points within the government-retained area of the base. The RCCF is expected to maintain three hazardous waste accumulation points and five satellite accumulation points. The three accumulation points include a 6,000-gallon steel subsurface tank in a concrete vault at Building 1608, a 3,000-gallon steel aboveground tank located in the mechanical room in Building 1608, and Building 1639, which will be used exclusively for the containerized storage of hazardous materials and waste.

4.3.1.3 Installation Restoration Program Sites

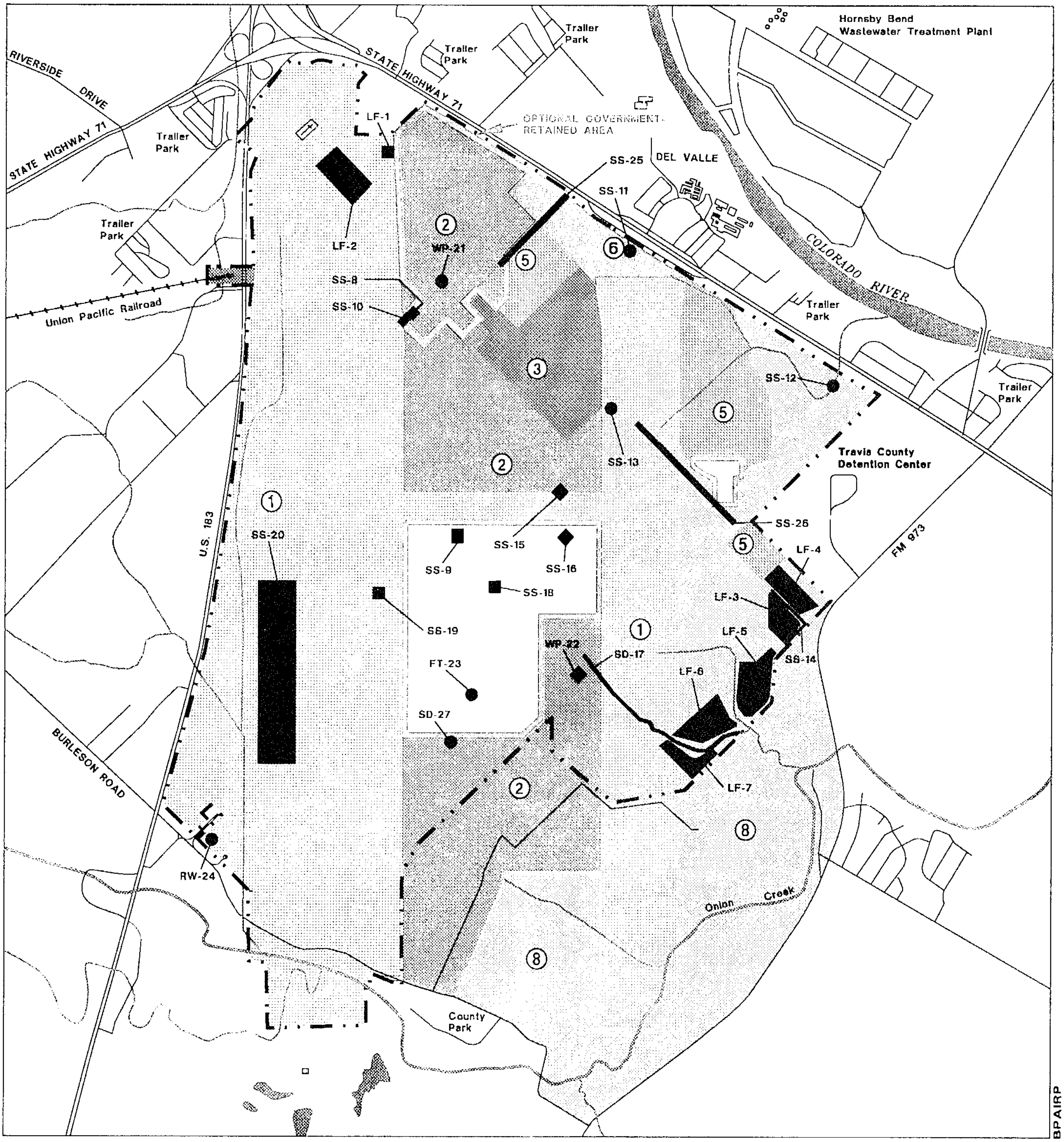
The Air Force is committed to continue IRP activities under the Defense Environmental Restoration Program (DERP) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). IRP activities will be coordinated by the Air Force, the Environmental Protection Agency (EPA), and the Texas Water Commission.

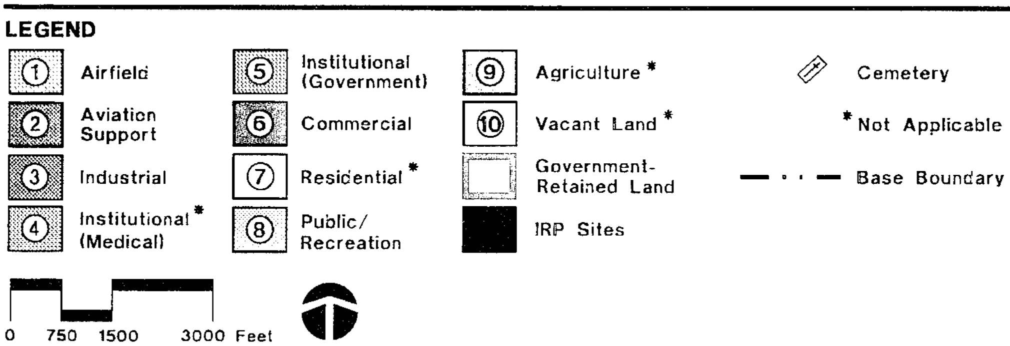
The type of development that is appropriate for property adjacent to or over an IRP site may be limited by the risk to human health and the environment posed by contaminants at the site. For example, residential development over an IRP landfill is generally not appropriate. The risk posed by IRP sites is measured by a risk assessment that analyzes the types of substances present at a site and the potential means by which the public and the environment may be exposed to them. The Remedial Design, or blueprint for remediating the IRP site, is based on the results of the risk assessment and the geographical extent of the contamination.

Disposal and reuse of some Bergstrom AFB properties may be delayed or limited by the extent and type of contamination at IRP sites and by current and future IRP remediation activities (Figure 4.3-1). Based on the results of IRP investigations, the Air Force may, when appropriate, place limits on land reuse through deed restrictions on conveyances and use restrictions on leases. The Air Force may also retain right-of-access to other properties to inspect monitoring wells or conduct other remedial activities.

The IRP sites within each land use area for the Proposed Action are discussed below and summarized in Table 4.3-2. Figure 4.3-1 shows the location of the IRP sites for each land use area. Several IRP sites are located in more than one proposed land use area.

- **Airfield.** Ten IRP sites are located in the proposed airfield area: three landfills (Sites LF-1, LF-2, and LF-7), the Mogas Spill in the Motor Pool Area (Site SS-13), the South Fork Drainage Ditch (Site SD-17), two JP-4 spills (Sites SS-15 and SS-19), the Jet Fuel Tank Jettison Area (SS-20), a Radioactive Waste Disposal Site (Site RW-24), and the Asphalt Primer Spill on Star Drive (SS-26). Landfill No. 7 (Site LF-7) is within the government fee-purchased Parcel 2 in the southeastern portion of the base.





Proposed Action with IRP Sites

Figure 4.3-1

Table 4.3-2

Installation Restoration Program Sites Within Land Use Areas - Proposed Action

Proposed Land Use	IRP Sites
Airfield	Landfill No. 1 (LF-1), Landfill No. 2 (LF-2), Landfill No. 7 (LF-7)*, Mogas Spill at the Motor Pool Area (SS-13), JP-4 Spill/Apron Excavation (SS-15), South Fork Drainage Ditch (SD-17)*, JP-4 Spill From A/C Fuel Tank (SS-19), Jet Fuel Tank Jettison Area (SS-20), Radioactive Waste Disposal Site (RW-24), Asphalt Primer Spill/Star Drive (SS-26)
Aviation Support	JP-4 Spill/Overtopped Tank (SS-8), JP-4 Spill/Faulty Valve (SS-10), JP-4 Spill/Apron Excavation (SS-15), South Fork Drainage Ditch (SD-17)*, Pesticide Evaporation Pit (Old Entomology Rinse Area) (WP-21), Sludge Weathering Pit (WP-22), Asphalt Primer Spill/Avenue F (SS-25), Jet Engine Test Facility (SD-27)
Industrial	No IRP Sites
Institutional (Government/Education)	Asphalt Spill/Avenue F (SS-25)
Commercial	Dibrom/Diesel Fuel Spill at the Entrance Gate (SS-11), Asphalt Primer Spill/Avenue F (SS-25)
Public/Recreation	Landfill No. 3 (LF-3), Landfill No. 4 (LF-4), Landfill No. 5 (LF-5)*, Landfill No. 6 (LF-6)*, Landfill No. 7 (LF-7)*, Dibrom/Diesel Fuel Spill at the Golf Course (SS-12), Road Oiling Area (SS-14), South Fork Drainage Ditch (SD-17)*, Asphalt Primer Spill/Star Drive (SS-26)
Government-Retained Land	JP-4 Spill/Pipeline Leak (SS-9), JP-4 Spill/Refueling Truck (SS-16), JP-4 Spill at Fuel System Repair Shop (SS-18), Fire Department Training Area (FT-23)

Note: *Site located within government fee-purchased land parcel.

- **Aviation Support.** Eight IRP sites are located in the proposed aviation support area: three JP-4 spills (Sites SS-8, SS-10, and SS-15), the South Fork Drainage Ditch (Site SD-17), the Pesticide Evaporation Pit (Old Entomology Rinse Area) (Site WP-21), the Sludge Weathering Pit (Site WP-22), the Asphalt Primer Spill on Avenue F (SS-25), and the Jet Engine Test Facility (SD-27).

- **Industrial.** No IRP sites are located in the proposed industrial area.

- **Institutional (Education/Government).** The only IRP site located in the proposed institutional area is the Asphalt Primer Spill on Avenue F (Site SS-25).

- **Commercial.** Two IRP sites are located in the proposed commercial area: the Dibrom/Diesel Fuel Spill at the Entrance Gate (Site SS-11) and the Asphalt Primer Spill on Avenue F (SS-25).

- **Public/Recreation.** Nine IRP sites are located in the proposed public/recreation area: five landfills (Sites LF-3, LF-4, LF-5, LF-6, and LF-7), the Dibrom/Diesel Fuel Spill at the Golf Course (Site SS-12), a Road Oiling Area (Site SS-14), the South Fork Drainage Ditch (Site SD-17), and the Asphalt Primer Spill on Star Drive (Site SS-26). Sites LF-5, LF-6, LF-7, and SD-17 are within the government fee-purchased Parcel 2 in the southeastern portion of the base.

- **Government-Retained Land.** Four IRP sites are located in the proposed government-retained land area: three JP-4 spill sites (SS-9, SS-16, and SS-18), and the Fire Department Training Area (Site FT-23).

The extent of contamination, if any, for all IRP sites will be determined. Remedial activities associated with these sites could cause delays in property surrender. Installation and use of long-term monitoring devices may delay or restrict reuse in some areas.

The location of IRP Site LF-7 has been considered in the siting of the proposed runway. With a centerline-to-centerline runway separation of approximately 6,500 feet from existing Runway 17R/35L, construction of the new runway and associated taxiway system would not be expected to affect this IRP site.

Determination of future base land uses will, to a certain extent, depend on regulatory review of the remedial design of the IRP sites. This review will identify current monitoring well locations and future land use limitations as a result of their presence. The regulatory review process would include notifying the FAA and the City of Austin concerning the construction and locations of any monitoring wells.

4.3.1.4 Storage Tanks and Oil/Water Separators

Airport and other maintenance operations associated with the Proposed Action would require both aboveground tanks and USTs. Reused and new USTs and aboveground storage tanks required by the property recipients and the remaining Air Force units would be subject to all applicable federal, state, and local regulations. These regulations include acceptable leak detection methods, spill and overfill protection, cathodic protection, secondary containment for hazardous waste tank systems including the piping, and liability insurance (for other than Air Force-owned tanks).

USTs and associated piping that would not support reuse activities will be removed in accordance with Air Force policy. Aboveground fuel storage tanks not used to support reuse activities would be purged of fumes to preclude fire hazards. The Texas Water Commission has the discretion to order the removal of tanks that are out of service. All oil/water separators will be steam-cleaned and those not needed for reuse with the Proposed Action will be removed.

4.3.1.5 Asbestos

With the Proposed Action, a number of buildings and residential structures with asbestos-containing materials (ACM) would be demolished for construction of the new runway and various aviation support facilities. Renovation and demolition of other existing structures with ACM for other land uses may also occur. Such activities would be subject to all applicable federal, state, and local regulations. It is Air Force policy to identify structures with ACM but not remediate unless there is a health hazard. The Air Force policy concerning the management of asbestos at closing bases is presented in Appendix G.

4.3.1.6 Pesticides

Pesticide use associated with the Proposed Action would increase from amounts used under baseline conditions (caretaker status) as a result of the increase in aviation support, industrial, institutional, commercial, and public/recreation land uses. Management practices would be subject to applicable federal and state pesticide regulations.

4.3.1.7 Polychlorinated Biphenyls

The base will be free of all federally regulated PCB and PCB-contaminated equipment prior to base closure except in two facilities: an aircraft lighting vault (Building 210) containing 15 capacitors and the base hospital (Building 2700), which has a large PCB transformer. The airfield lighting vault capacitors are hermetically sealed and will be transferred with the building to the City of Austin. The large transformer in the hospital is being regularly retrofilled with non-PCB dielectric fluid to reduce the PCB contamination to below 50 parts per million (ppm). This process is expected to be completed by December 1993 and the transformer should be certified as non-PCB by March 1994. With the Proposed Action, the base hospital would likely be demolished with construction of the new runway; the transformer would be properly disposed of prior to demolition. PCB items remaining after base disposal would be subject to compliance with applicable federal and state regulations.

4.3.1.8 Radon

The findings of the initial Radon Assessment and Mitigation Program (RAMP) ranked Bergstrom AFB as having a medium radon hazard (see Section 3.3.8). This ranking warranted extensive monitoring to determine the extent of radon contamination. A year-long radon monitoring program was conducted between December 1989 and December 1990. Radon detectors were placed in every military family housing unit, the child care center, the ground floors of the dormitories and Visiting Officers' Quarters, all temporary living facilities, and in-patient hospital rooms. A total of 902 detectors were recovered after 1 year (130 detectors [12.6%] were lost or otherwise not recovered).

Analysis of the results indicated that 50 structures had radon levels greater than or equal to 3.6 picoCuries per liter (pCi/l) (the lower 95% confidence limit of the test), but less than the threshold level of 20 pCi/l. These radon levels would normally require mitigation within 5 years. However, because the base is closing, no mitigation has or will be undertaken by the Air Force. Reuse of structures with the Proposed Action may require mitigation for radon levels greater than 4 pCi/l of air. Currently, no radon exposure guidelines or action levels have been established by federal or state regulatory agencies for buildings other than schools or residences.

4.3.1.9 Medical/Biohazardous Waste

All medical/biohazardous waste will be removed prior to base closure. With this alternative, the hospital would not be reused, so no medical/biohazardous waste would be generated.

4.3.1.10 Ordnance

The Small Arms Range will be cleared of ordnance and debris by the Air Force prior to disposal of the property. The Air Force will conduct investigations of the Small Arms Range, rifle range, skeet and trap range, and Explosive Ordnance Disposal (EOD) burn area to assess potential surface and subsurface trace metal contamination, particularly lead contamination, as part of the base disposal process. Disposal and reuse of these areas may be delayed or limited, based on the Air Force investigation, and if necessary, by the remediation of these facilities.

4.3.1.11 Solid Waste Management Units

Measures required to close out all SWMUs requiring regulatory action, including conducting a RCRA Facility Investigation, will be coordinated with the EPA and the Texas Water Commission.

4.3.1.12 Mitigation Measures

A cooperative planning body for hazardous materials and waste management could be established with the support of the new individual operators on the base. Establishment of such a body could reduce the costs of environmental compliance training, health and safety training, and waste management; and could increase recycling, minimize waste, and assist in mutual spill responses.

IRP sites that do not pose a threat to human health and/or the environment may not need to be remediated; however, they must be addressed and properly closed out. Active coordination between the Air Force and the property recipients could mitigate potential problems. The presence of IRP sites may limit certain land uses within overlying areas; options could include reuse as open space, greenbelts, or parks.

Coordination of asbestos removal or management in conjunction with renovation activities could mitigate potential impacts. Compliance with National Emission Standards for Hazardous Air Pollutants (NESHAP) and the

Occupational Safety and Health Administration (OSHA) regulations would mitigate and preclude asbestos exposures. Potential impacts from PCBs could be mitigated with routine inspections of equipment, by retrofilling PCB-containing oils, confirmatory testing, or removal.

4.3.2 General Aviation/Air Cargo Airport Alternative

4.3.2.1 Hazardous Materials Management

The General Aviation/Air Cargo Airport Alternative differs from the Proposed Action in the number and type of airfield operations. Compared with the Proposed Action, smaller quantities of hazardous materials would be used with this alternative because of reduced aircraft operations and the limited nature of proposed industrial reuses. Hazardous materials likely to be used for activities in the proposed land use areas for this alternative would be similar to those listed in Table 4.3-1. The SARA reporting requirements would be the same as described for the Proposed Action. Mutual aid agreements with surrounding jurisdictions may require additional scrutiny and training of emergency staff.

4.3.2.2 Hazardous Waste Management

With disposal of the base property, hazardous waste would be controlled by the property recipients. The proposed land use areas identified for the General Aviation/Air Cargo Airport Alternative (Figure 2.3-1) would be used for many operations that have yet to be defined. Once the responsibilities of hazardous waste management are allocated to individual organizations, proficiency with those materials and spill responses is required by RCRA regulations.

The presence of numerous independent operators on the base would change the regulatory requirements and probably increase the regulatory burden relative to hazardous waste management. Activities associated with the General Aviation/Air Cargo Airport Alternative would probably result in an increase in the amount of hazardous waste generated compared to the closure baseline but less than the amount generated with the Proposed Action.

It is expected that after September 1993, the 924th FG will maintain several hazardous waste accumulation points and satellite accumulation points within the government-retained area of the base. The RCCF is expected to maintain three hazardous waste accumulation points and five satellite accumulation points. The three accumulation points include a 6,000-gallon steel subsurface tank in a concrete vault at Building 1608, a 3,000-gallon steel aboveground tank located in the mechanical room in Building 1608, and Building 1639, which will be used exclusively for the containerized storage of hazardous materials and wastes.

4.3.2.3 Installation Restoration Program Sites

IRP remediation requirements may constrain the land uses proposed for this alternative. The location of IRP sites relative to the proposed land use areas for the General Aviation/Air Cargo Airport Alternative is shown in Figure 4.3-2 and summarized in Table 4.3-3. Several IRP sites are located in more than one proposed land use area.

Table 4.3-3

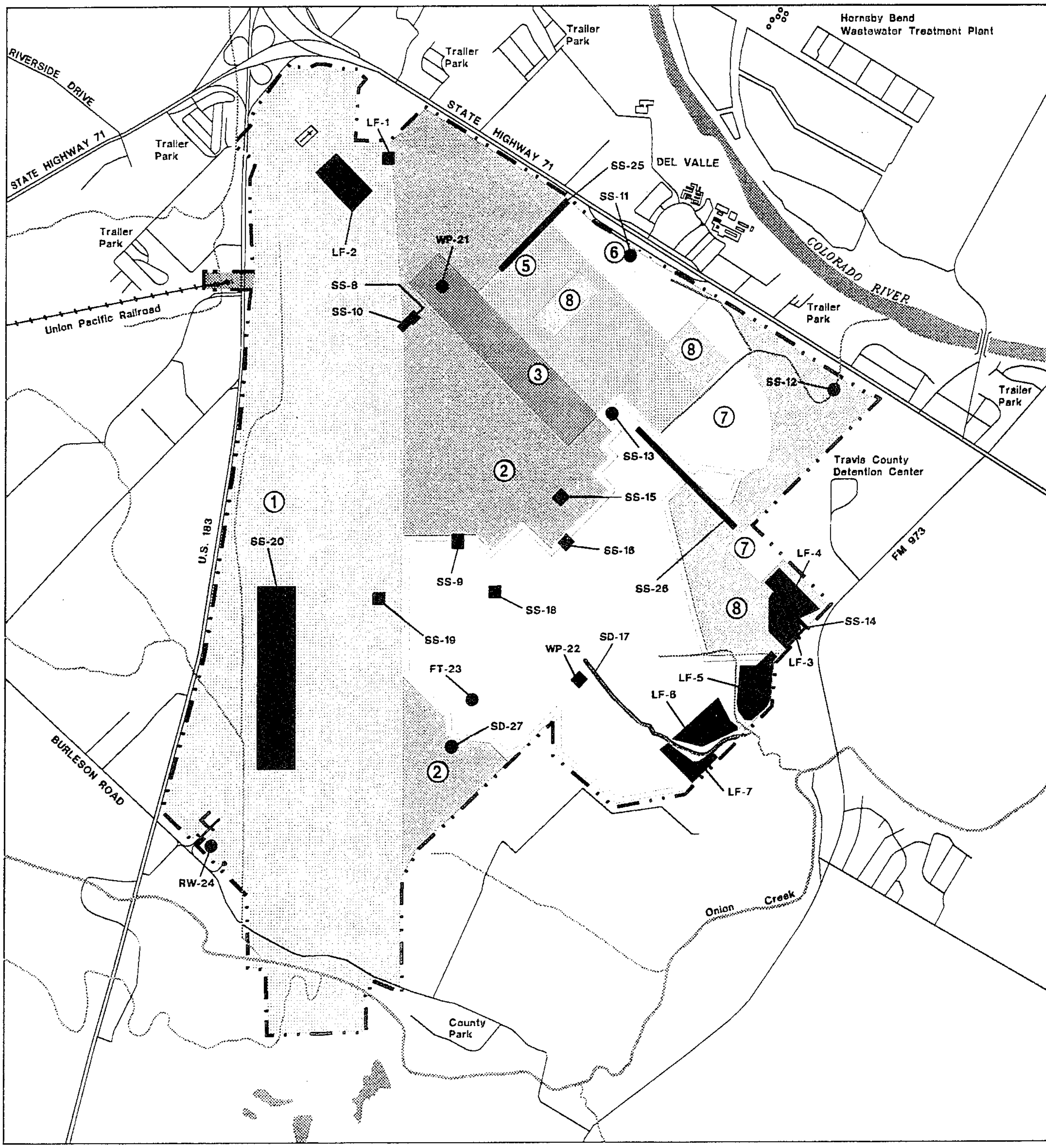
Installation Restoration Program Sites Within Land Use Areas General Aviation/Air Cargo Airport Alternative

Proposed Land Use	IRP Sites
Airfield	Landfill No. 1 (LF-1), Landfill No. 2 (LF-2), JP-4 Spill From A/C Fuel Tank (SS-19), Jet Fuel Tank Jettison Area (SS-20), Radioactive Waste Disposal Site (RW-24)
Aviation Support	JP-4 Spill/Overtopped Tank (SS-8), JP-4 Spill/Faulty Valve (SS-10), JP-4 Spill/Apron Excavation (SS-15), Asphalt Primer Spill/Avenue F (SS-25), Jet Engine Test Facility (Site SD-27)
Industrial	Pesticide Evaporation Pit (Old Entomology Rinse Area) (WP-21)
Institutional (Government/Education)	Asphalt Primer Spill/Avenue F (SS-25)
Commercial	Dibrom/Diesel Fuel Spill at the Entrance Gate (SS-11), Asphalt Primer Spill/Avenue F (SS-25)
Residential	No IRP Sites
Public/Recreation	Landfill No. 3 (LF-3), Landfill No. 4 (LF-4), Dibrom/Diesel Fuel Spill at the Golf Course (SS-12), Road Oiling Area (SS-14), Asphalt Primer Spill/Star Drive (SS-26)
Government-Retained Land	Landfill No. 5 (LF-5)*, Landfill No. 6 (LF-6)*, Landfill No. 7 (LF-7)*, JP-4 Spill/Pipeline Leak (SS-9), Mogas Spill at the Motor Pool Area (SS-13), JP-4 Spill/Refueling Truck (SS-16), South Fork Drainage Ditch (SD-17)*, JP-4 Spill at the Fuel System Repair Shop (SS-18), Sludge Weathering Pit (WP-22), Fire Department Training Area (FT-23), Asphalt Primer Spill/Star Drive (SS-26)

Note: *Site located within government fee-purchased land parcel.

- **Airfield.** Five IRP sites are located in the proposed airfield area: two landfills (Sites LF-1 and LF-2), a JP-4 spill (Site SS-19), the Jet Fuel Tank Jettison Area (Site SS-20), and the Radioactive Waste Disposal Site (Site RW-24).

- **Aviation Support.** Five IRP sites are located in the proposed aviation support area: three JP-4 spills (Sites SS-8, SS-10, and SS-15), the Asphalt Primer Spill on Avenue F (Site SS-25), and the Jet Engine Test Facility (Site SD-27).



LEGEND

① Airfield	⑥ Commercial
② Aviation Support	⑦ Residential
③ Industrial	⑧ Public/ Recreation
④ Institutional * (Medical)	⑨ Agriculture *
⑤ Institutional (Government)	⑩ Vacant Land *
Government-Retained Land	IRP Sites
Cemetery	Base Boundary

* Not Applicable

0 750 1500 3000 Feet

General Aviation/ Air Cargo Airport Alternative with IRP Sites

Figure 4.3-2

- **Industrial.** The only IRP site located in the proposed industrial area is the Pesticide Evaporation Pit (Old Entomology Rinse Area) (Site WP-21).

- **Institutional (Government/Education).** The only IRP site located in the proposed institutional area is the Asphalt Primer Spill on Avenue F (Site SS-25).

- **Commercial.** Two IRP sites are located in the proposed commercial area: the Dibrom/Diesel Fuel Spill at the Entrance Gate (Site SS-11) and the Asphalt Primer Spill on Avenue F (Site SS-25).

- **Residential.** No IRP sites are located in the proposed residential area.

- **Public/Recreation.** Five IRP sites are located in the proposed public/recreation area: two landfills (Sites LF-3 and LF-4), the Dibrom/Diesel Fuel Spill at the Golf Course (SS-12), a Road Oiling Area (Site SS-14), and the Asphalt Primer Spill on Star Drive (SS-26).

- **Government-Retained Land.** Eleven IRP sites are located in the area proposed to be retained by the Air Force: three landfills (Sites LF-5, LF-6, and LF-7), the Mogas Spill at the Motor Pool Area (Site SS-13), three JP-4 spills (Sites SS-9, SS-16, and SS-18), the South Fork Drainage Ditch (Site SD-17), the Sludge Weathering Pit (Site WP-22), the Fire Department Training Area (Site FT-23), and the Asphalt Primer Spill on Star Drive (Site SS-26). Sites LF-5, LF-6, LF-7, and SD-17 are within the government fee-purchased Parcel 2 in the southeastern portion of the base.

The extent of contamination, if any, for these sites will be determined. Remedial activities associated with these sites could cause delays in property surrender and possibly affect proposed land uses. Installation and use of long-term monitoring devices may delay or restrict reuse in some areas.

Determination of future base land uses will, to a certain extent, depend on regulatory review of the remedial design of the IRP sites. This review will identify current monitoring well locations and future land use limitations as a result of their presence. The regulatory review process would include notifying the FAA and the City of Austin concerning the construction and locations of any monitoring wells.

4.3.2.4 Storage Tanks and Oil/Water Separators

Proposed reuses, particularly airfield and aviation support uses, associated with the General Aviation/Air Cargo Airport Alternative would require the use of some aboveground storage tanks and USTs. These tanks must be maintained in compliance with applicable federal, state, and local regulations regarding leak detection, spill and overfill protection, secondary containment, and liability insurance (for other than Air Force-owned tanks). USTs not used for reuse activities will be removed in accordance with Air Force policy.

Aboveground fuel storage tanks not used to support reuse activities would be purged of fumes to preclude fire hazards. The Texas Water Commission has the discretion to order the removal of tanks that are out of service. All oil/water separators will be steam-cleaned and those not needed for reuse activities with the General Aviation/Air Cargo Airport Alternative will be removed.

4.3.2.5 Asbestos

With the General Aviation/Air Cargo Airport Alternative, some renovation and demolition of existing structures with ACM may occur. Such activities must comply with all applicable federal, state, and local regulations. It is Air Force policy to identify structures with ACM, but not remediate unless there is a health hazard. The Air Force policy concerning the management of asbestos at closing bases is presented in Appendix G.

4.3.2.6 Pesticides

Pesticide use associated with the General Aviation/Air Cargo Airport Alternative would increase over the amount associated with baseline conditions (caretaker status) as a result of the increase in aviation support, institutional, commercial, and public/recreation land uses. Uses would be required to conform with applicable federal and state regulations. Pesticide use is expected to be less than that used with the Proposed Action.

4.3.2.7 Polychlorinated Biphenyls

The base will be free of all federally regulated PCB and PCB-contaminated equipment at the time of base closure except in two facilities: an aircraft lighting system vault (Building 210) with 15 capacitors and the base hospital (Building 2700), which has a large PCB transformer. The aircraft lighting vault capacitors are hermetically sealed and will be transferred with the building to the City of Austin. The large transformer in the hospital is being regularly retrofilled with non-PCB dielectric fluid to reduce the PCB contamination to below 50 ppm. This process is expected to be completed by December 1993 and the transformer should be certified as non-PCB by March 1994. With the General Aviation/Air Cargo Airport Alternative, the hospital is not proposed to be reused in the same capacity. The PCB-contaminated transformer in the hospital may be removed depending on the proposed reuse. PCB items remaining after base disposal would be subject to compliance with applicable federal and state regulations.

4.3.2.8 Radon

The findings of the initial RAMP assessment ranked Bergstrom AFB as having a medium radon hazard. This ranking warranted extensive monitoring to determine the extent of radon contamination as described for the Proposed Action. No mitigation has been undertaken because of the closure of the base. Reuse of structures with the General Aviation/Air Cargo Airport Alternative, particularly proposed residential reuses, may require mitigation for radon levels greater than 4 pCi/l of air.

4.3.2.9 Medical/Biohazardous Waste

All medical/biohazardous waste will be removed prior to base closure. With this alternative, there would be no hospital use, so no medical/biohazardous waste would be generated.

4.3.2.10 Ordnance

The Small Arms Range will be cleared of ordnance and debris by the Air Force prior to disposal of the property. The Air Force will conduct investigations of the Small Arms Range, rifle range, skeet and trap range, and EOD burn area to assess potential surface and subsurface trace metal contamination, particularly lead contamination, as part of the base disposal process. Disposal and reuse of these areas may be delayed or limited, based on the Air Force investigation, and if necessary, by the remediation of these facilities.

4.3.2.11 Solid Waste Management Units

Measures required to close out all SWMUs requiring regulatory action, including conducting a RCRA Facility Investigation, will be coordinated with the EPA and the Texas Water Commission.

4.3.2.12 Mitigation Measures

The same mitigation measures described for the Proposed Action would be appropriate for activities associated with the General Aviation/Air Cargo Airport Alternative.

4.3.3 Mixed-Use Development Alternative

4.3.3.1 Hazardous Materials Management

Hazardous materials that would likely be used for the Mixed-Use Development Alternative would be different from those used for the Proposed Action because there would be no aviation or associated maintenance activities. The amount of hazardous materials used would therefore likely be less than with the Proposed Action. Hazardous materials that would likely be used with the Mixed-Use Development Alternative would be similar to those listed in Table 4.3-1, except for the airfield and aviation support categories. The SARA reporting requirements would be the same as described for the Proposed Action.

4.3.3.2 Hazardous Waste Management

With disposal of the base property, hazardous waste would be controlled by the property recipients. The proposed land use areas identified for this alternative (Figure 2.3-2) would be used for many operations that are yet to be defined. Once the responsibilities for hazardous waste management are allocated to the individual organizations, proficiency with those materials and spill responses is required by RCRA regulations.

The presence of numerous independent operators on the base would change the regulatory requirements and probably increase the overall regulatory burden relative to hazardous waste management. Overall, activities associated with the Mixed-Use Development Alternative would result in an increase in the amount of hazardous waste generated compared to the closure baseline, but less than the amount generated with the Proposed Action.

4.3.3.3 Installation Restoration Program Sites

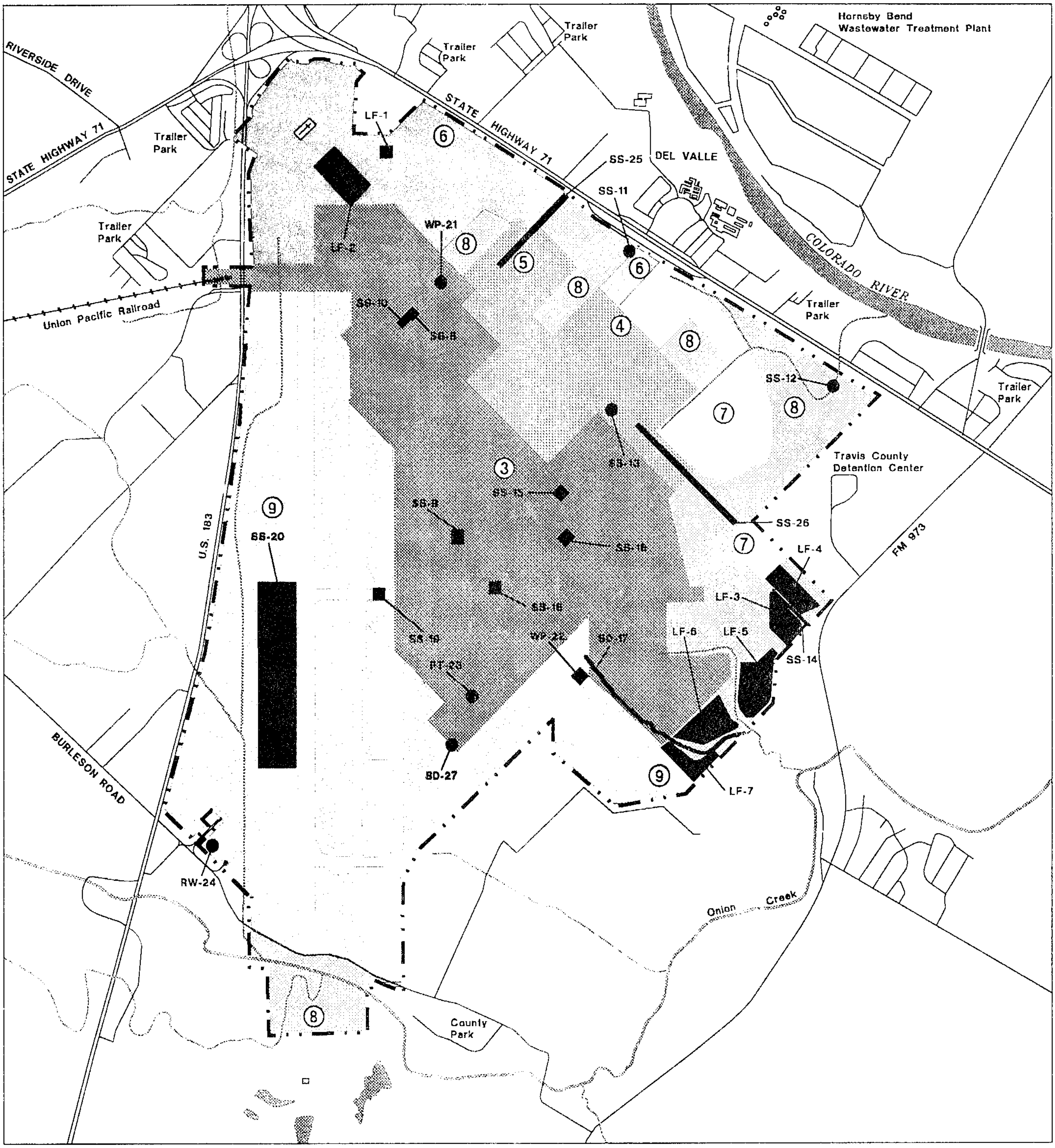
IRP remediation requirements may constrain the land uses proposed for the Mixed-Use Development Alternative. The location of IRP sites within each land use area for this alternative is shown in Figure 4.3-3 and summarized in Table 4.3-4. Several IRP sites are located in more than one proposed land use area.

- **Industrial.** Ten IRP sites are located in the proposed industrial area: six JP-4 spills (Sites SS-8, SS-9, SS-10, SS-15, SS-16, and SS-18), the South Fork Drainage Ditch (SD-17), the Pesticide Evaporation Pit (Old Entomology Rinse Area) (WP-21), the Fire Department Training Area (Site FT-23), and the Jet Engine Test Facility (SD-27).

- **Institutional (Medical).** No IRP sites are located in the proposed institutional (medical) land use area.

- **Institutional (Government/Education).** Three IRP sites are located in the proposed institutional area: the Mogas Spill at the Motor Pool Area (SS-13), the Asphalt Primer Spill on Avenue F (Site SS-25), and the Asphalt Primer Spill on Star Drive (Site SS-26).

- **Commercial.** Four IRP sites are located in the proposed commercial area: two landfills (Sites LF-1 and LF-2), a Dibrom/Diesel Fuel Spill at the Entrance Gate (Site SS-11), and the Asphalt Primer Spill on Avenue F (Site SS-25).



LEGEND

① Airfield *	⑤ Institutional (Government)	⑨ Agriculture
② Aviation Support *	⑥ Commercial	⑩ Vacant Land *
③ Industrial	⑦ Residential	IRP Sites
④ Institutional (Medical)	⑧ Public/ Recreation	Base Boundary
		Cemetery
		* Not Applicable

0 750 1500 3000 Feet

Mixed-Use Development Alternative with IRP Sites

Figure 4.3-3

Table 4.3-4

Installation Restoration Program Sites Within Land Use Areas
Mixed-Use Development Alternative

Proposed Land Use	IRP Sites
Industrial	JP-4 Spill/Overtopped Tank (SS-8), JP-4 Spill/Pipeline Leak (SS-9), JP-4 Spill/Faulty Valve (SS-10), JP-4 Spill/Apron Excavation (SS-15), JP-4 Spill/Refueling Truck (SS-16), South Fork Drainage Ditch (SD-17)*, JP-4 Spill at the Fuel System Repair Shop (SS-18), Pesticide Evaporation Pit (Old Entomology Rinse Area) (WP-21), Fire Department Training Area (FT-23), Jet Engine Test Facility (SD-27)
Institutional (Medical)	No IRP Sites
Institutional (Government/Education)	Mogas Spill at the Motor Pool Area (SS-13), Asphalt Primer Spill/ Avenue F (SS-25), Asphalt Primer Spill/Star Drive (SS-26)
Commercial	Landfill No. 1 (LF-1), Landfill No. 2 (LF-2), Dibrom/Diesel Fuel Spill at the Entrance Gate (SS-11), Asphalt Primer Spill/Avenue F (SS-25)
Residential	No IRP Sites
Public/Recreation	Landfill No. 3 (LF-3), Landfill No. 4 (LF-4), Landfill No. 5 (LF-5)*, Landfill No. 6 (LF-6)*, Landfill No. 7 (LF-7)*, Dibrom/Diesel Fuel Spill at Entrance Gate (SS-11), Dibrom/Diesel Fuel Spill at the Golf Course (SS-12), Road Oiling Area (SS-14), South Fork Drainage Ditch (SD-17)*, Asphalt Primer Spill/Avenue F (SS-25), Asphalt Primer Spill/Star Drive (SS-26)
Agricultural	South Fork Drainage Ditch (SD-17)*, JP-4 Spill From A/C Fuel Tank (SS-19), Jet Fuel Tank Jettison Area (SS-20), Sludge Weathering Pit (WP-22), Radioactive Waste Disposal Site (RW-24)

Note: *Site located within government fee-purchased land parcel.

- **Residential.** No IRP sites are located in the proposed residential land use area.

- **Public/Recreation.** Eleven IRP sites are located in the proposed public/recreation area: five landfills (Sites LF-3, LF-4, LF-5, LF-6, and LF-7), the Dibrom/Diesel Fuel Spill at the Entrance Gate (SS-11), the Dibrom/Diesel Fuel Spill at the Golf Course (Site SS-12), a Road Oiling Area (Site SS-14), the South Fork Drainage Ditch (Site SD-17), and two asphalt primer spill sites (Sites SS-25 and SS-26). Sites LF-5, LF-6, LF-7, and SD-17 are located in government fee-purchased Parcel 2 in the southeastern portion of the base.

- **Agriculture.** Five IRP sites are located in the proposed agricultural area: the South Fork Drainage Ditch (SD-17), the JP-4 Spill from A/C Fuel Tank (Site SS-19), the Jet Fuel Tank Jettison Area (Site SS-20), the Sludge Weathering Pit (Site WP-22), and the Radioactive Waste Disposal Area (Site RW-24). Site SD-17 is located in government fee-purchased Parcel 2.

The extent of contamination, if any, for these sites will be determined. Remedial activities associated with these sites could cause delays in property surrender. Installation and use of long-term monitoring devices may delay or restrict reuse in some areas.

Determination of future base land uses will, to a certain extent, depend on regulatory review of the remedial design of the IRP sites. This review will identify current monitoring well locations and future land use limitations as a result of their presence. The regulatory review process would include notifying the FAA and the City of Austin concerning the construction and locations of any monitoring wells.

4.3.3.4 Storage Tanks and Oil/Water Separators

Proposed reuses associated with the Mixed-Use Development Alternative may require the use of some USTs and/or aboveground storage tanks. All USTs must be maintained in compliance with applicable federal, state, and local regulations regarding leaks, spill and overfill protection, secondary containment, and liability insurance. USTs not used to support reuse activities will be removed in accordance with Air Force policy.

Aboveground fuel storage tanks not used to support reuse activities would be purged of fumes to preclude fire hazards. The Texas Water Commission has the discretion to order the removal of tanks that are out of service. All oil/water separators will be steam-cleaned and those not needed for reuse activities for the Mixed-Use Development Alternative will be removed.

4.3.3.5 Asbestos

With the Mixed-Use Development Alternative, some renovation and demolition of existing structures with ACM may occur. Effective asbestos management should preclude impacts due to the presence of friable asbestos in existing structures and units scheduled for renovation or demolition. Such activities must comply with all applicable federal, state, and local regulations. It is Air Force policy to identify structures with ACM, but not remediate unless there is a health hazard. The Air Force policy concerning the management of asbestos at closing bases is presented in Appendix G.

4.3.3.6 Pesticides

Pesticide use associated with the Mixed-Use Development Alternative would increase from the amount used under baseline conditions (caretaker status) as a result of the increase in industrial, institutional, commercial, residential, public/recreation, and agricultural land uses. Uses would be required to conform with applicable federal and state regulations. Pesticide use is expected to be less than that used with the Proposed Action.

4.3.3.7 Polychlorinated Biphenyls

The base will be free of all federally regulated PCB and PCB-contaminated equipment prior to base closure except in two facilities: an aircraft lighting system vault (Building 210) containing 15 capacitors and the base hospital system (Building 2700), which has a large PCB transformer. The aircraft lighting vault capacitors are hermetically sealed and will be transferred with the building to the City of Austin. The large transformer in the hospital is being retrofilled with non-PCB dielectric fluid to reduce the PCB contamination below 50 ppm. This process is expected to be completed by December 1993 and the transformer should be certified as non-PCB by March 1994. With the Mixed-Use Development Alternative, the hospital is proposed to be reused as a medical facility. The transformer will be transferred with the building.

4.3.3.8 Radon

The findings of the initial RAMP assessment ranked Bergstrom AFB as having a medium radon hazard as described for the Proposed Action. No mitigation has been undertaken because the base is closing. Reuse of structures with the Mixed-Use Development Alternative, particularly for residential uses, may require mitigation for radon levels greater than 4 pCi/l of air.

4.3.3.9 Medical/Biohazardous Waste

Reuse of the base hospital in a similar capacity for this alternative would result in the generation of medical/biohazardous wastes, but the amount would not appreciably change from preclosure conditions. This waste would need to be managed in accordance with applicable state regulations.

4.3.3.10 Ordnance

The Small Arms Range will be cleared of ordnance and debris by the Air Force prior to disposal of the property. The Air Force will conduct investigations of the Small Arms Range, rifle range, skeet and trap range, and EOD burn area to assess potential surface and subsurface trace metal contamination, particularly lead contamination, as part of the base disposal process. Disposal and reuse of these areas may be delayed or limited, based on the Air Force investigation, and if necessary, by the remediation of these facilities.

4.3.3.11 Solid Waste Management Units

Measures required to close out all SWMUs requiring regulatory action, including conducting a RCRA Facility Investigation, will be coordinated with the EPA and the Texas Water Commission.

4.3.3.12 Mitigation Measures

The same mitigation measures described for the Proposed Action would be appropriate for activities associated with the Mixed-Use Development Alternative.

4.3.4 No-Action Alternative

4.3.4.1 Hazardous Materials Management

Hazardous materials would be used in facility and grounds maintenance activities. Materials used for these activities would include pesticides, fuels, paints, and corrosives. The Air Force and the City of Austin would be responsible for management of hazardous materials in accordance with applicable federal and state regulations.

4.3.4.2 Hazardous Waste Management

Except for facilities utilized by the Air Force, all hazardous waste accumulation and satellite accumulation points would be closed and the waste disposed of through the Defense Reutilization and Marketing Office (DRMO) prior to base closure. The small amount of hazardous waste that would be generated with the No-Action Alternative may enable the Air Force to become an exempt, small-quantity generator. The Air Force and City of Austin caretaker personnel will comply with all applicable federal and state regulations.

4.3.4.3 Installation Restoration Program Sites

Ongoing sampling and remedial design activities would be continued by individual IRP contractors. The Air Force would support the utility requirements for these contractors and provide security for the areas.

4.3.4.4 Storage Tanks and Oil/Water Separators

All USTs will be removed in accordance with Air Force policy, except those, if any, required for caretaker activities. The aboveground storage tanks would be purged of fuel fumes to preclude fire hazards. The Texas Water Commission has the discretion to order the removal of tanks that are out of service. All oil/water separators will be steam-cleaned and those not needed for caretaker activities will be removed.

4.3.4.5 Asbestos

Impacts resulting from the No-Action Alternative would be minimal. Vacated buildings would be secured to prevent contact with ACM. ACM would continue to be managed in a manner to ensure a safe site condition.

4.3.4.6 Pesticides

With the No-Action Alternative, the grounds would be maintained in such a manner as to facilitate economic resumption of use. There should not be an appreciable increase in the use of pesticides. Pesticide use would be in accordance with federal and state regulations to assure the proper and safe handling and application of all chemicals.

4.3.4.7 Polychlorinated Biphenyls

With the exception of the two facilities described for the Proposed Action, the base will be free of all federally regulated PCB and PCB-contaminated equipment prior to base closure. It is anticipated that by December 1993, the PCB transformer in the base hospital will have a PCB concentration of less than 50 ppm. The transformer should be certified as non-PCB by March 1994.

4.3.4.8 Radon

The findings of the initial RAMP assessment ranked Bergstrom AFB as having a medium radon hazard as described for the Proposed Action. No mitigation has been undertaken because the base is closing.

4.3.4.9 Medical/Biohazardous Waste

All medical/biohazardous waste will be removed prior to closure; no impact is associated with the No-Action Alternative.

4.3.4.10 Ordnance

The Air Force will conduct investigations of the Small Arms Range, rifle range, skeet and trap range, and EOD burn area to assess potential surface and subsurface trace metal contamination, particularly lead contamination, as part of the base closure process.

4.3.4.11 Solid Waste Management Units

Measures required to close out all SWMUs requiring regulatory action, including conducting a RCRA Facility Investigation, will be coordinated with the EPA and the Texas Water Commission.

4.3.4.12 Mitigation Measures

With the No-Action Alternative, the Air Force and City of Austin would be responsible for the basewide management of hazardous materials and waste. Contingency plans developed to address spill response would be less extensive than those required for the Proposed Action or other reuse alternatives. Implementation of such procedures could effectively mitigate any potential impacts associated with the No-Action Alternative.

4.4 NATURAL ENVIRONMENT

This section describes the potential impacts of the Proposed Action and alternatives on the natural resources of Bergstrom AFB and in the surrounding area, including soils and geology, water resources, air quality, noise, biological resources, and cultural and paleontological resources.

4.4.1 Soils and Geology

The potential impacts of the Proposed Action and reuse alternatives on local soils and geology have been analyzed based on a review of published literature and information obtained during field investigations.

4.4.1.1 Proposed Action

Effects of the Proposed Action on regional soils and geology would be minimal. Impacts on local soils and geology would result from construction activities, primarily the construction of the 9,000-foot runway in the eastern portion of the base and aviation support facilities in the north-central portion of the base. The construction impacts would consist of excavating, grading, and recontouring the land surface. This would alter the soil profile, which has already been altered by prior construction to various extents over most of the base. There would be little impact on topography, with certain exceptions.

A hill approximately 23 feet high is next to the proposed location of the new runway at the south end. It is estimated that earth would have to be removed over a 10-acre area to bring this hill to a suitable grade for the runway. Another exception is where the proposed runway would cross the South Fork Drainage Ditch. Approximately 2,000 feet of this watercourse would be filled in or have a culvert installed to maintain drainage under the runway. A total of 1,815 acres of land would be disturbed by the year 2012, including about 300 acres of the 917 acres of land proposed to be acquired south of the base. The remaining 617 acres would likely remain in a natural state as a buffer area around the runway.

Use of sand and gravel resources (i.e., for construction materials and concrete) for new buildings and roadways is not expected to reduce the availability of these materials from local suppliers.

The Lewisville silty clay and Houston Black soils both have a high shrink-swell potential and therefore are rated as "poor" as a road subgrade. They have severe limitations for highway and runway locations because of poor traffic-supporting capacity and for small building foundations because of poor bearing capacity. The high resistivities of these soils make them unsuitable for being in contact with uncoated steel. Concrete structures, however, should not be greatly affected.

Altoga soils are present on the previously mentioned hill and underlie much of the area to be occupied by the south end of the proposed 9,000-foot runway.

Their engineering characteristics are similar to those of the Lewisville and Houston Black soils, including a high shrink-swell potential and poor bearing capacity. Design and construction in areas of Lewisville, Houston Black, and Altoga soils would have to consider the limitations of these soils.

Patrick soils are rated fair in terms of engineering properties such as bearing capacity. These soils lie in scattered patches west of the existing main runway in an area slated for commercial development with the Proposed Action.

Excessive sedimentation could occur, mostly into Onion Creek and the small tributaries that feed it, if a large storm occurred when areas of soil were exposed during construction. The land surface at Bergstrom AFB is nearly flat; therefore, the Proposed Action would not affect slope stability. In addition, no subsidence problems and no seismic hazard impacts are expected to occur with the Proposed Action.

Government Fee-Purchased Land. Government fee-purchased Parcel 2 would be affected by construction of the new runway. Impacts on this parcel would consist of grading and recontouring at the south end of the proposed runway. Construction of the runway would permanently alter the soil profile at that location and require removal of an estimated 15 acres of soil. No impacts are anticipated on the other three government fee-purchased land parcels.

Mitigation Measures. Mitigation measures are available to minimize erosion problems associated with wind and water, especially during the construction phase when trenches, cut slopes, and bare soil are exposed. During construction, the length of time vegetation and other cover are absent should be minimized. Topsoil, where removed, should be stockpiled for use elsewhere. When cut slopes are exposed, any of the following measures may be useful in limiting erosion:

- Add protective covering such as mulch, straw, or other material (tacking will be required);
- Limit the amount of area disturbed and the length of time slopes and barren ground are left exposed;
- Construct diversion dikes and interceptor ditches to divert water away from construction areas; and
- Install slope drains (conduits) and/or water velocity-control devices to reduce the development of concentrated high-velocity streams.

Although mitigation measures would help reduce the amount of erosion that could occur as a result of construction-related activities, wind and water erosion cannot be completely eliminated. Application of mulch, straw, or synthetic material is very effective in the short term for controlling erosion. After construction, long-term erosion can be controlled by keeping soils under vegetative cover and planting windbreaks. The type of vegetation used as windbreaks must comply with FAA standards in areas intended for aircraft runways. After construction, soils underlying facilities and pavements would not be subject to erosion.

Mitigation measures are available to minimize the problems associated with soil properties. The use of appropriate engineering practices, such as stronger foundations and deeper pilings, would reduce the effect of the shrinking and swelling of soils.

The erosion potential of soils on the base is generally low, with small areas of moderate potential on the few steeper slopes. Any losses during the construction phase would be limited in areal extent and occur over short periods of time. Mitigation measures would keep soil losses within the soil loss tolerance levels established by the Soil Conservation Service.

4.4.1.2 General Aviation/Air Cargo Airport Alternative

Effects of the General Aviation/Air Cargo Airport Alternative on regional soils and geology would be minimal. Minor impacts on local soils would result from construction activities, primarily new facilities in the government-retained area and various industrial and commercial buildings on the base, as well as expanded recreation facilities. Construction activities would include excavating and grading the land surface. These activities would alter the soil profile, which has already been altered to various degrees over most of the base by prior construction. There would be a negligible impact on topography. Approximately 10 acres would be disturbed by 1997 and an additional 200 acres by the year 2012.

Use of sand and gravel resources (i.e., for construction materials and concrete) for new buildings and roadways is not expected to reduce the availability of these materials from local suppliers.

The Lewisville silty clay and the Houston Black soils both have a high shrink-swell potential and therefore are rated as "poor" as road subgrade. They have severe limitations for highway locations because of poor traffic-supporting capacity and for small building foundations because of poor bearing capacity. The high resistivities of these soils make them unsuitable for being in contact with uncoated steel. Concrete structures, however, should not be greatly affected by corrosion. Design and construction in areas of Lewisville and Houston Black soils would have to consider the limitations of these soils.

Some sedimentation could occur into the small watercourses if a large storm occurred when areas of soil were exposed during construction. The land surface is virtually flat in the areas where construction would take place; therefore, the General Aviation/Air Cargo Airport Alternative would not affect slope stability. No other impacts on soils and geology are expected with this alternative.

Government Fee-Purchased Land. None of the four parcels of government fee-purchased land would be affected with this alternative.

Mitigation Measures. Mitigation measures would be the same as those described for the Proposed Action.

4.4.1.3 Mixed-Use Development Alternative

Effects of the Mixed-Use Development Alternative on regional soils and geology would be minimal. Minor impacts on local soils would result from construction activities and agricultural practices. Construction activities would include excavating and grading the land surface. These activities would alter the soil profile, which has already been altered to varying degrees over most of the base by prior construction. There would be a negligible impact on topography. Approximately 810 acres would be disturbed by 1997 and an additional 615 acres by 2012. Approximately 1,110 acres would be used for agricultural uses. Depending on farming practices and the type of crops planted, there could be erosion in these areas.

Use of sand and gravel resources (e.g., for construction materials and concrete) for new buildings and roadways is not expected to reduce the availability of these materials from local suppliers.

Construction of new buildings or roads would be on the Lewisville silty clay and the Houston Black soils, and as in the case of the other alternatives, the same limitations of high shrink-swell potential, poor bearing capacity, and high corrosiveness would apply.

New facilities would likely be constructed either on the same sites as previous buildings or in areas where the soil has been at least partially disturbed. Large expanses of soil would not be laid bare, but some sedimentation could flow into small watercourses if a large storm occurred when areas of soil are exposed during construction. The land surface is virtually flat in the areas where construction would take place; therefore, the Mixed-Use Development Alternative would not affect slope stability. No other impacts on soils and geology are expected for this alternative.

Government Fee-Purchased Land. Impacts on the four government fee-purchased land parcels would depend on the potential reuse of these parcels. Grading and recontouring of land would occur if development includes commercial and industrial uses.

Mitigation Measures. Mitigation measures would be the same as those described for the Proposed Action.

4.4.1.4 No-Action Alternative

No major impacts to soils and geology of the base and surrounding region would occur as a result of the No-Action Alternative. The construction associated with this alternative would be minimal or nonexistent and restricted to maintenance-type activities. No mitigation measures would be required.

4.4.2 Water Resources

Potential impacts on water resources resulting from the Proposed Action and reuse alternatives are described in this section. Construction activities could alter soil profiles and natural drainages, which, in turn, may temporarily alter water flow patterns.

Bergstrom AFB is subject to provisions of the 1986 Suburban Watersheds Ordinance of the Land Development Code of the City of Austin. These provisions allow up to 80 percent of the land to be developed with impervious cover, and depending on the degree of development, construction of water quality ponds may be required. The amount of impervious cover for any alternative would be under 80 percent.

4.4.2.1 Proposed Action

Surface Water. With the Proposed Action, soils would be compacted during new construction and overlain by asphalt, concrete, or buildings, creating impervious surfaces that would result in increased stormwater runoff to stormwater drainage systems. Drainage patterns could be altered to divert water away from facilities and airfield pavements, including the new 9,000-foot runway. Stormwater discharge (nonpoint source) from the airfield, aviation support, and industrial areas may contain fuels, oils, and other residues that could degrade surface water resources, particularly Onion Creek. In addition, nonpoint source runoff could cause high sediment loads in the drainage systems.

The amount of available surface water would not change with the Proposed Action because no surface water would be used for domestic, industrial, or recreational purposes. Currently, water is supplied by the City of Austin from surface water sources off the base. The projected increase in water use with the Proposed Action would be within the capacity of the city's water supply system.

No areas would be inundated, and the potential for flooding would not increase as a result of the Proposed Action. However, approximately 2,000 feet of the South Fork Drainage Ditch would be filled or drained with construction of the new runway. If the drainage is realigned so that it does not cross the runway but instead goes southward toward the watercourse that crosses the RPZ at the south end of the runway, the South Fork Drainage Ditch would be greatly reduced in length and water supply. If, however, the drainage is maintained in its present alignment by constructing a culvert under the runway, runoff to the downstream portion of the South Fork Drainage Ditch would remain about the same. The dredging or filling of this drainage course, considered a Water of the United States, would require a Section 404 permit from the U.S. Army Corps of Engineers (see Figure 3.4-3 and Section 3.4.5.4).

In 1992, the Air Force conducted a study to determine the quality of water that may be leaching from the adjacent landfills into the South Fork Drainage Ditch. No contaminants were found to be leaching into the ditch.

Some proposed reuses will also be subject to National Pollutant Discharge Elimination System (NPDES) permit requirements for stormwater discharges during the construction period and for the duration of airport operations. This provision is contained in the NPDES Permit Application Regulations for Stormwater Discharges issued by the EPA as a final rule on November 16, 1990 (40 CFR 122).

A short headwaters segment of the northern tributary to the South Fork Drainage Ditch may also have to be filled or partially filled. The proposed runway would not cross a discrete channel but may cross a topographically low area that collects drainage water for the channel. Runoff to the tributary may be reduced by a small amount. This drainage is also considered to be a Water of the United States.

It is not likely, given the nearly flat topography of the base, that stream or rill erosion would increase with the Proposed Action. However, there is a possibility for increased sedimentation as a result of storms. This would be most likely during the time of construction and could occur anywhere on the base, particularly at the site of the proposed runway. The effect would be temporary but could cause sediment to enter watercourses.

Groundwater. With the Proposed Action, there is a potential for impacts to groundwater resources. No groundwater is withdrawn at the base, and no development of groundwater resources would occur with the Proposed Action. However, accidental releases of contaminants from facilities, including storage tanks, where hazardous substances are stored and/or used, could reach the shallow aquifer over time. This could have a significant impact on groundwater uses in the area. Cleanup of existing or potentially contaminated areas will proceed promptly under the supervision of the Texas Water Commission.

Government Fee-Purchased Land. Water resources on Parcel 2 would not be significantly affected by the Proposed Action. The drainage would be altered on the western two-thirds of the parcel as a result of regrading for the proposed runway and facilities built in the aviation support area west of the runway. The drainage now consists of slope wash into the South Fork Drainage Ditch, and there would be a minor redirection of this drainage away from the runway and aviation support facilities. There would be no impacts on water resources at any of the other three government fee-purchased parcels.

Mitigation Measures. To minimize ponding and potential impacts to surface water runoff, construction designs should incorporate provisions to control stormwater runoff. The following practices could be implemented to reduce impacts to surface water quality during construction:

- Create landscaped areas that are pervious to surface water;
- Minimize areas of surface disturbance;
- Control site runoff through ditching, sediment traps, and other devices, especially during the construction phase;
- Minimize time that disturbed areas are exposed to erosion and provide timely revegetation;
- Schedule surface-disturbing activities during dry seasons;
- Provide regular street sweeping and cleanup of construction zones;
- Place drainage ditches strategically to direct runoff away from critical areas;
- Pretreat water prior to discharge to the city water treatment system;
- Establish spill control and countermeasures plans and other safety regulations designed to reduce the threat of a spill; and
- Consider the installation of permanent detention/filtration ponds to clean runoff prior to discharge.

In addition, the following practices could be implemented to reduce the threat of impacts to groundwater:

- Use concrete or lined drainage ditches instead of ditches with dirt-grass substrate;
- Use aboveground storage tanks or corrosion-resistant underground tanks with the most effective containment and leak monitoring available;
- Follow established regulations and implement a special hazardous materials management plan and procedures;
- Avoid washing or flushing washwater or other wastewater into ditches or swales; and
- Avoid discharging or injecting any water or waste to groundwater.

Oil-water separators could be installed to improve water quality prior to discharge to stormwater drainage systems.

4.4.2.2 General Aviation/Air Cargo Airport Alternative

Surface Water. With the General Aviation/Air Cargo Airport Alternative, soils would be compacted during new construction and overlain by asphalt, concrete, or buildings, creating impervious surfaces that would result in increased stormwater runoff to local stormwater drainage systems. Drainage patterns could be changed to divert water away from new facilities. Stormwater discharge (nonpoint source) from the airfield, aviation support, and industrial areas may contain fuels, oils, and other residues that could degrade surface water resources, including small tributaries that flow directly to the Colorado River from the north side of the base and to Onion Creek.

The amount of available surface water would not change with the General Aviation/Air Cargo Airport Alternative because no surface water would be used for domestic, industrial, or recreational purposes. Currently, water is supplied by the City of Austin from surface water sources off the base. The projected increase in water use with this alternative would be within the capacity of the city's water supply system.

No areas would be inundated, and the potential for flooding would not increase as a result of this alternative. It is not likely, given the nearly flat topography of the base, that stream or rill erosion would be significant. However, there is a possibility for increased sedimentation as a result of storms. This would be most likely during the time of construction and could occur anywhere on the base. The effect would be temporary but could cause sediment to enter watercourses.

Groundwater. With the General Aviation/Air Cargo Airport Alternative, there is a potential for impacts to groundwater resources. No groundwater is withdrawn at the base, and no development of groundwater resources would occur with this alternative. Groundwater is of poor quality in most aquifers underlying the base and is not an important source of water supply downgradient of the base. However, aviation and nonaviation activities associated with this alternative have the potential to degrade water quality through accidental releases of contaminants from facilities where hazardous substances are stored and/or used. Some activities associated with this alternative may also be subject to NPDES permit requirements for stormwater discharge.

Government Fee-Purchased Land. There would be no impacts on water resources in any of the four government fee-purchased land parcels with the General Aviation/Air Cargo Airport Alternative because no new disturbance is anticipated.

Mitigation Measures. Mitigation measures would be the same as those described for the Proposed Action.

4.4.2.3 Mixed-Use Development Alternative

Surface Water. With the Mixed-Use Development Alternative, soils would be compacted during new construction and overlain by asphalt, concrete, or buildings, creating impervious surfaces that would result in increased stormwater runoff to local stormwater drainage systems. Drainage patterns could be changed to divert water away from new facilities. Stormwater discharge (nonpoint source) from industrial areas may contain fuels, oils, and other residues that could degrade surface water resources, including small tributaries that flow directly to the Colorado River from the north side of the base and to Onion Creek. In addition, there is a potential for nonpoint discharge of nitrates, pesticides, and herbicides into the watercourse west of the main runway from the area proposed for agriculture.

The amount of available surface water would not change with the Mixed-Use Development Alternative because no surface water would be used for domestic, industrial, or recreational purposes. Currently, water is supplied by the City of Austin from surface water sources off the base. The projected increase in water use with this alternative would be within the capacity of the city's water supply system.

No areas would be inundated, and the potential for flooding would not increase as a result of this alternative. It is not likely, given the nearly flat topography of the base, that stream or rill erosion would be significant. However, there is a possibility for increased sedimentation as a result of storms. This would be most likely during construction and could occur anywhere on the base. The effect would be temporary but could cause sediment to enter watercourses.

Erosion and sedimentation into the watercourse west of the main runway and into Onion Creek could occur from the agricultural uses in the southwest portion of the base. Agricultural uses may include grazing, hay cropping, or row cropping. Of these, erosion would be most likely to occur with row cropping. Nitrate runoff could occur with grazing, and herbicide and pesticide runoff could occur with row cropping. Sediments and contaminants would enter Onion Creek west of the county park and also down a tributary to Onion Creek southeast of the existing taxiway and north of the county park.

Groundwater. With the Mixed-Use Development Alternative, impacts could occur to groundwater resources from accidental releases of contaminants from facilities where hazardous substances are stored and/or used. No groundwater is withdrawn at the base, and no development of groundwater resources would occur with this alternative. Groundwater is of poor quality in most aquifers underlying the base and is not an important source of water supply downgradient of the base.

Government Fee-Purchased Land. Minor redirection of slope wash drainage into small drainage ditches would occur in Parcel 1, north of the runways, where commercial development may occur, but would not be significant. Potential impacts resulting from agricultural and public/recreation use of

Parcels 2 and 3 would include erosion and sedimentation as described previously.

Mitigation Measures. Mitigation measures would be the same as those described for the Proposed Action.

4.4.2.4 No-Action Alternative

The No-Action Alternative would have positive effects on surface and groundwater quality. With very limited operations, water demands from caretaker personnel would be minimal and could be accommodated from existing water supply systems. No cumulative impacts would result, and no mitigation measures would be required.

4.4.3 Air Quality

Air quality impacts could occur during construction and operations associated with the Proposed Action and alternatives for the reuse of Bergstrom AFB. Intermittent construction-related impacts could result from fugitive dust (particulate matter) and construction equipment emissions. Operational impacts could occur from (1) mobile sources such as aircraft, aircraft operational support equipment, commercial transport vehicles, and personal vehicles; (2) point sources such as heating/power plants, generators, incinerators, and storage tanks; and (3) secondary emission sources associated with a general population increase, such as residential heating.

The ambient effects of aircraft and vehicular emissions were analyzed by modeling. The Emissions and Dispersion Modeling System (EDMS) was used to simulate the dispersion of emissions from airport operations (Segal 1991). EDMS was developed jointly by the FAA and the Air Force specifically to generate airport and airbase emission inventories and to calculate the concentrations caused by these emissions as they disperse downwind. The model is run in a screening mode utilizing an array of 1-hour worst-case meteorological conditions. However, when the results of the screening analyses demonstrate a possible violation of the National Ambient Air Quality Standards (NAAQS) or the controlling Prevention of Significant Deterioration (PSD) increments, a more refined analysis may need to be conducted. The EDMS model can be run in the refined mode. In this mode, the model uses 1 year of hourly meteorological data. Temporal factors (month, day, hour) may be used to vary the source emission rates throughout the year. Thus, operational scenarios may be created and analyzed for the prediction of realistic air quality impacts resulting from source emissions.

Air quality modeling is presented for the Proposed Action and alternatives through the year 2002 (8 years of analyses after closure). The effects of the 1990 Clean Air Act Amendments, such as electric and other low emission vehicle ownership percentages, cannot accurately be predicted very far into the 21st century. The uncertainties of long-range population and traffic projections, future Clean Air Act changes, and the complex interaction of meteorology with emission inventories makes a 20-year pollution concentration too speculative.

The process by which a regulatory agency permits major new sources or modifications of existing sources depends on the attainment status of the source location. In an area meeting the NAAQS, or attainment area, the process is called PSD. The PSD process requires that Best Available Control Technology be installed, and it limits the allowable ambient impact of emissions to specific increments as previously shown in Table 3.4-3. The increments are designed to prevent significant degradation of the area's acceptable air quality.

4.4.3.1 Proposed Action

Total estimated emissions with the Proposed Action for modeled years 1994, 1997, and 2002 are presented in Table 4.4-1. Emissions at closure are shown in Table 3.4-6. The EDMS model uses EPA aircraft emission factors and information on peak and annual landing/takeoff cycles to produce an emissions inventory report for aircraft operations. Emissions for all other categories of emissions were calculated as described in Appendix I.

Construction. Fugitive dust and combustive emissions would be generated during construction activities associated with airfield, aviation support, industrial, institutional, and commercial land uses. These emissions would be greatest during demolition, site clearing, and grading activities.

Construction at Bergstrom AFB for the Proposed Action would disturb approximately 1,290 acres between 1994 and 1997. Assuming that during a single month of this period a maximum of 200 acres would be disturbed, unmitigated particulate matter emissions would be emitted at a maximum rate of 240 tons per month (120 tons per month of particulate matter less than or equal to 10 micrometers in diameter [PM_{10}]). These emissions would elevate short-term particulate concentrations at receptors close to the construction areas. However, the elevated concentrations would be a temporary effect that would fall off rapidly with distance.

Operations. Total estimated emissions associated with operations for the Proposed Action are shown in Table 4.4-1 for 1994, 1997, and 2002.

Potential impacts to air quality as a result of emissions from Proposed Action operations were evaluated in terms of two spatial scales: regional and local. The regional-scale analysis considered the potential for project emissions to cause or contribute to a nonattainment condition in Travis County. The local-scale analysis evaluated the potential impact to ambient air quality concentrations in the immediate vicinity of the base.

Regional Scale. Emissions resulting from the Proposed Action would increase the pollution burden in Travis County. It was assumed that reduced operations in 1994 and the closure of RMMA in 1997 would result in a reduction in emissions that would be approximately equivalent to the emissions resulting

Table 4.4-1

Pollutant Emissions Associated With the Proposed Action
(tons per day)

Pollutant[1]	Travis County Emission Inventory[2]	Proposed Action Emissions[3]			Robert Mueller Airport Emissions Reduction[4]		Net Increase in Emissions			Percent Increase in County Emissions		
		1994	1997	2002	1994	1997	1994	1997	2002	1994	1997	2002
NO_x	96.24	0.49	3.74	5.12	0.49	3.74	0.00	0.00	1.38	0.00	0.00	1.43
VOC	91.00	0.62	3.27	3.43	0.62	3.27	0.00	0.00	0.16	0.00	0.00	0.18
PM_{10}	269.13	0.24	1.62	2.51	0.24	1.62	0.00	0.00	0.89	0.00	0.00	0.33
SO_2	. 13.87	0.06	0.41	0.57	0.06	0.41	0.00	0.00	0.16	0.00	0.00	1.15
CO	314.49	2.20	17.71	23.61	2.20	17.71	0.00	0.00	5.90	0.00	0.00	1.88

Notes: [1]ROI currently attaining standards for all pollutants.
[2]Refer to Table 3.4-4.
[3]See Appendix I for emission information by source category.
[4]Assumes RMMA emissions with reduced operations and at closure would be approximately the same as those resulting with the Proposed Action in 1994 and 1997, respectively.

from the Proposed Action in 1994 and 1997. The net increase in the emissions of each pollutant in 2002 is presented in Table 4.4-1. In addition, the increase in the Travis County pollution burden is presented in the table as a percentage increase in the 1988 county emissions. Carbon monoxide (CO) would increase 2 percent while nitrogen oxide (NO_x) and sulfur dioxide (SO_2) would increase about 1 percent. Increases in the other pollutants would be less than 1 percent.

If it is assumed that regional ambient pollution concentrations are directly proportional emissions (so-called proportional model), a 2-percent increase in CO emissions would cause ambient concentrations of about 8,760 micrograms per cubic meter ($\mu g/m^3$) for the 1-hour average peak concentration and 5,280 $\mu g/m^3$ for the 8-hour average peak concentration. These values are well below the CO ambient standards (Table 4.4-2). The small increases in PM_{10} and SO_2 concentrations would not cause violations of ambient air quality standards. In addition, the small increase of 1 percent in ozone precursor (NO_x and volatile organic compound [VOC]) concentrations would not produce ozone concentrations that would exceed the ambient standard (0.12 ppm).

Local Scale. The local-scale analysis was performed with EDMS. Peak-hour scenarios for emissions from both aircraft operations and vehicle traffic serving the airport were modeled. A variety of worst-case meteorological conditions, which combined 1-meter-per-second wind speed with B or E stability class, were used as input in conjunction with 36 wind directions. Monthly average temperatures and Mobile 4 emission factors were used for emission calculations. EPA conversion factors were used to convert the model-predicted 1-hour impact results to conservative screening-level estimates of longer averaging period concentrations (Environmental Protection Agency 1977). The actual long-term coverages would be less than the values produced by use of the conversion factors.

For this worst-case analysis, it was assumed that five commercial aircraft were in queue. The modeling results indicated that in 1997 and 2002, a potential exists for the violation of the CO and NO_2 standards under meteorological conditions that would produce a minimum dispersion of pollutants (1-meter-per-second wind speed and E stability). Therefore, the EDMS model was used in the refined mode to obtain an estimate of short- and long-term average concentrations which would be typical of Proposed Action operations in 1997 and 2002. Hourly meteorological data from Austin, Texas, for 1991 were used in the EDMS. Temporal scenarios, which varied source emissions by hour and day, were developed and used in the refined EDMS.

It should be noted that a comparison of the screening and refined modeling results indicated that the refined model concentrations ranged from 70 to 90 percent lower than the screening model concentrations. In addition, the ratio of the 8-hour average CO concentration to the 1-hour concentration was somewhat less than the EPA ratio used to convert screening model 1-hour average concentrations to 8-hour average concentrations and was less than the ratio of the background 8-hour and 1-hour CO concentrations. However, these

Table 4.4-2

Air Quality Modeling Analyses of the Airport and Vicinity
Proposed Action
($\mu g/m^3$)

Pollutant	Averaging Time	Project Impact 1994[1]	1997[2]	2002[2]	Background Concentration[3]	NAAQS/ TAAQS
CO	8-hour	1,050	745	800	5,180	10,000
	1-hour	1,500	4,360	4,570	8,586	40,000
SO_2	Annual	4	1	1	--	80
	24-hour	16	9	10	--	365
	3-hour	28	49	55	52	1,300
PM_{10}	Annual (Arithmetic)	1	1	1	23	50
	24-hour	4	3	3	72	150

Notes: [1]Screening model results.
[2]Refined model results.
[3]Background concentrations were assumed to be equal to the mean of the first-high values measured at Austin monitoring stations from 1988 through 1991.

results verify the fact that the ratio between a longer-term maximum concentration and a 1-hour maximum depends greatly on source characteristics, local climatology and topography, and the meteorological conditions associated with the 1-hour maximum. A summary of the EDMS analyses is presented in Table 4.4-2. The results indicate that none of the predicted project pollutant concentrations, when added to the background concentrations, would exceed the NAAQS or Texas Ambient Air Quality Standards (TAAQS).

Cumulative Impacts. There are no other major actions in the region that would produce a cumulative increase in air pollutants. The effects of closure of RMMA have been incorporated in the analysis.

Mitigation Measures. Air quality impacts during construction would occur from (1) fugitive dust emissions from ground-disturbing activities and (2) combustive emissions from construction equipment. The City of Austin would be responsible for mitigating these impacts. Twice-a-day water application during ground-disturbing activities would mitigate fugitive dust emissions by at least 50 percent (Environmental Protection Agency 1985a). Decreasing the time period during which newly graded sites are exposed to the elements would further mitigate fugitive dust emissions.

Combustive emission impacts could be mitigated by efficient scheduling of equipment use, implementing a phased construction schedule to reduce the number of units operating simultaneously, and performing regular vehicle engine maintenance. Implementation of these measures would substantially reduce air quality effects from construction activities associated with the Proposed Action. In addition, all aviation development during the construction phase would comply with measures contained in the FAA *Standards for Specifying Construction of Airports* (U.S. Department of Transportation, Federal Aviation Administration 1990b).

The air quality analyses for the operational phases of the project indicated that the NAAQS/TAAQS would not be exceeded. Therefore, operational mitigation measures would not be required for air quality impacts.

4.4.3.2 General Aviation/Air Cargo Airport Alternative

The primary difference between this alternative and the Proposed Action is that only general aviation, air cargo, and military operations are proposed. Nonaviation land uses would include industrial, institutional (government/education), commercial, residential, and recreation.

Construction. Construction impacts with this alternative would be less than those described for the Proposed Action. Approximately 300 acres would be disturbed by construction in 1997. It was assumed that a maximum of 50 acres would be disturbed during a 1-month period, resulting in unmitigated particulate matter emissions of 60 tons per month (30 tons per month PM_{10}). These emissions would elevate particulate concentrations in areas close to construction locations; however, the concentrations would fall off rapidly with distance from the construction areas.

Operations. The results of the emission calculations for operations associated with the General Aviation/Air Cargo Airport Alternative for modeled years 1994, 1997, and 2002 are summarized in Table 4.4-3. It was assumed that the transfer of general aviation, air cargo, and military (Texas ANG) operations from RMMA would reduce pollutant emissions by about the same amount as would be produced with this alternative in 1994 and 1997. The net increase in the emissions of each pollutant in 2002 is presented in Table 4.4-3.

Emission increases for the General Aviation/Air Cargo Airport Alternative would be about the same or less than those described for the Proposed Action. CO concentrations, as is the case with the Proposed Action, would have the largest increase (2% in 2002). The increase in PM_{10} and SO_2 emissions would be 1 percent or less. The relatively small increase of 1 percent in ozone precursor (NO_x and VOCs) concentrations would not produce ozone concentrations that would exceed the ambient standard (0.12 ppm).

A summary of the EDMS analyses of impacts from emissions associated with airport operations for this alternative is presented in Table 4.4-4. The EDMS model was used only in the screening mode because the results of the worst-case analysis indicated the NAAQS/TAAQS would not be exceeded. Therefore, the local area would remain in attainment for all criteria pollutants. The maximum 1-hour pollutant concentration would occur at the same location as the Proposed Action. The NAAQS/TAAQS would probably not be exceeded, and the local area would remain in attainment for all criteria pollutants.

Cumulative Impacts. Cumulative impacts would be the same as those described for the Proposed Action.

Mitigation Measures. Mitigation measures would be the same as those recommended for the Proposed Action.

4.4.3.3 Mixed-Use Development Alternative

This alternative consists of converting the base to an entirely nonaviation reuse. With this alternative, land uses proposed for the developed portion of the base include industrial, institutional, commercial, residential, and recreation. Most of the existing airfield would be converted to various agricultural uses.

Construction/Agriculture. Fugitive dust impacts with this alternative would be less than with the Proposed Action, but greater than the General Aviation/Air Cargo Airport Alternative. Approximately 800 acres would be disturbed by 1997. It was assumed that a maximum of 100 acres would be disturbed during a 1-month period, resulting in unmitigated particulate matter emissions of 120 tons per month (60 tons of PM_{10} per month). The impact of these

Table 4.4-3

Pollutant Emissions Associated With the General Aviation/Air Cargo Airport Alternative (tons per day)

Pollutant[1]	Travis County Emission Inventory[2]	General Aviation/Air Cargo Airport Alternative Emissions[3]			Robert Mueller Airport Emissions Reduction[4]		Net Increase in Emissions			Percent Increase in County Emissions		
		1994	1997	2002	1994	1997	1994	1997	2002	1994	1997	2002
NO_x	96.24	0.55	1.52	2.91	0.55	1.52	0.00	0.00	1.39	0.00	0.00	1.44
VOC	91.00	0.67	1.37	2.20	0.67	1.37	0.00	0.00	0.83	0.00	0.00	0.91
PM_{10}	269.13	0.15	1.26	1.90	0.15	1.26	0.00	0.00	0.64	0.00	0.00	0.23
SO_2	13.87	0.07	0.21	0.36	0.07	0.21	0.00	0.00	0.15	0.00	10.00	1.08
CO	314.49	2.76	9.62	16.44	2.76	9.62	0.00	0.00	6.82	0.00	0.00	2.17

Notes: [1]ROI currently attaining standards for all pollutants.
[2]Refer to Table 3.4-4.
[3]See Appendix I for emission information by source category.
[4]Assumes RMMA emissions from general aviation, air cargo, and military operations would be approximately the same as those resulting with this alternative in 1997.

Table 4.4-4

Air Quality Modeling Analyses of the Airport and Vicinity General Aviation/Air Cargo Airport Alternative ($\mu g/m^3$)

Pollutant	Averaging Time	Project Impact[1] 1994	Project Impact[1] 1997	Project Impact[1] 2002	Background Concentration[2]	NAAQS/ TAAQS
CO	8-hour	1,043	1,932	3,444	5,180	10,000
	1-hour	1,490	3,220	5,740	8,586	40,000
SO_2	Annual	4	8	13	0	80
	24-hour	16	30	50	0	365
	3-hour	28	69	113	52	1,300
PM_{10}	Annual (Arithmetic)	1	2	2	23	50
	24-hour	4	7	7	72	150

Notes: [1]Maximum impact in all cases occurred at a receptor located near the property line approximately 2,500 feet northwest of the north end of Runway 17R/35L.

[2]Background concentrations were assumed to be equal to the mean of the first-high values measured at Austin monitoring stations from 1988 through 1991.

emissions would elevate particulate concentrations in areas close to ground disturbance. However, the elevated concentrations would be temporary and would rapidly decrease with distance from the disturbed area.

Operations. The results of the emission calculations for operations associated with the Mixed-Use Development Alternative for modeled years 1994, 1997, and 2002 are summarized in Table 4.4-5. This table also provides the percent increase in the 1988 Travis County emissions that would occur in 1994, 1997, and 2002. Emission increases for this alternative are greater than either the Proposed Action or the General Aviation/Air Cargo Airport Alternative. These larger increases would occur because it was assumed that RMMA would continue to operate and emission offsets would not be available.

CO emissions would increase the county CO burden by about 3 percent. PM_{10} and SO_2 emission increases would be about 1 to 2 percent. These emission increases, although larger, would not cause violations of the CO, SO_2, and PM_{10} ambient standards. Although the increases in the ozone precursor emissions (VOCs and NO_x) would range from about 1 to 2 percent, these small increases would not produce ozone concentrations which would violate the ozone standard.

Cumulative Impacts. Cumulative impacts would be the same as those described for the Proposed Action.

Mitigation Measures. Construction and operational mitigation measures would be the same as those recommended for the Proposed Action.

4.4.3.4 No-Action Alternative

The No-Action Alternative would not adversely affect air quality. Pollutant emissions associated with maintenance activities following closure, including use of the existing power and space-heating systems, would be substantially reduced. The closure emission inventory for Bergstrom AFB is presented in Table 3.4-6. There may be some level of air quality benefit associated with maintaining the base at a reduced level of activity compared to the levels of activity associated with the Proposed Action or alternatives.

Cumulative Impacts. Because the impact on air quality resulting from the No-Action Alternative would be negligible, there would be no adverse cumulative impacts.

4.4.4 Noise

The impact analysis for noise considers the extent and magnitude of noise levels generated by the Proposed Action and alternatives on local human and animal populations using the predictive models discussed below. The baseline noise conditions and predicted noise levels were assessed with respect to potential annoyance, speech interference, sleep disturbance, hearing loss, land use compatibility, and effects on human health and animals. The metrics used

Table 4.4-5

Pollutant Emissions Associated With the Mixed-Use Development Alternative (tons per day)

Pollutant[1]	Travis County Emission Inventory[2]	Mixed-Use Development Alternative Emissions[3]			Percent Increase in County Emissions		
		1994	1997	2002	1994	1997	2002
NO_x	96.24	0.16	0.70	1.56	0.17	0.72	1.62
VOC	91.00	0.13	0.54	1.19	0.14	0.59	1.31
PM_{10}	269.13	0.16	1.28	1.98	0.06	0.48	0.74
SO_2	13.87	0.02	0.10	0.23	0.14	0.72	1.66
CO	314.49	1.03	5.19	10.58	0.46	1.65	3.36

Notes: [1]ROI currently attaining standards for all pollutants.
[2]Refer to Table 3.4-4.
[3]See Appendix I for emission information by source category.

to evaluate noise are the day-night average noise level (DNL) and the energy-equivalent continuous noise level (L_{eq}), which are supplemented occasionally by the Sound Exposure Level (SEL) and maximum instantaneous sound level (L_{max}) (see Appendix H for a discussion of these metrics).

Methods used to quantify the effects of noise, such as annoyance, speech interference, sleep disturbance, health effects, and hearing loss, have undergone extensive scientific development during the past several decades. Currently, the most reliable measures are noise-induced hearing loss and annoyance. Extra-auditory effects (those not directly related to hearing capability) are also important, although they are not as well understood. The current scientific consensus is that "evidence from available research reports is suggestive, but it does not provide definitive answers to the question of health effects, other than to the auditory system, of long-term exposure to noise" (National Academy of Sciences 1981). The effects of noise are summarized in this section and a detailed description is provided in Appendix H.

Annoyance. Noise annoyance is defined by the EPA as any negative subjective reaction to noise on the part of an individual or group. Table 4.4-6 presents the results of over a dozen studies of transportation modes, including airports, investigating the relationship between noise and annoyance levels. This relationship has been suggested by the National Academy of Sciences (1977) and recently reevaluated (Fidell et al. 1988) for use in describing human reaction to semi-continuous (transportation) noise. These data provide a perspective on the level of annoyance that might be anticipated. For example, 15 to 25 percent of persons exposed to DNLs of 65 to 70 decibels (dB) are expected to be highly annoyed by the noise levels.

Table 4.4-6

Percentage of Population Disturbed by Exposure to Noise

DNL Interval in dB	Percentage of Persons Disturbed
<65	<15
65-70	15-25
70-75	25-37
75-80	37-52

Source: Adapted from National Academy of Sciences 1977.

Speech Interference. Noise affects daily life by prevention or impairment of speech communication. In a noisy environment, understanding speech is diminished when speech signals are masked by intruding noises. Reduced intelligibility of speech may also have other effects; for example, if the understanding of speech is interrupted, performance may be reduced, annoyance may increase, and learning may be impaired. Research suggests that aircraft flyover noise that exceeds approximately 60 dB L_{max} interferes with speech communication (Pearsons and Bennett 1974; Crook and Langdon

1974). Increasing the level of the flyover noise maximum to 80 dB will reduce the intelligibility to zero, even if the person speaks in a loud voice. This interference lasts as long as the event, which is momentary for a flyover.

Sleep Interference. The effects of noise on sleep are of concern, primarily in assuring suitable residential environments. DNL incorporates consideration of sleep disturbance by assigning a 10-dB penalty to nighttime noise events (10:00 p.m. to 7:00 a.m.). SEL may be used to supplement DNL in evaluating sleep disturbance. When evaluating sleep disturbance, studies have correlated SEL values with the percent of people awakened. The relationships between percent awakened and SEL are presented in Appendix H. Most of these relationships, however, do not reflect habituation, and therefore, would not address long-term sleep disturbance effects. SEL takes into account an event's sound intensity, frequency, content, and time duration, by measuring the total A-weighted sound energy of the event and incorporating it into a single number. Unlike DNL, which describes the daily average noise exposure, SEL describes the normalized noise from a single flyover, called an event.

Studies (Lukas 1975; Goldstein and Lukas 1980) show great variability in the percentage of people awakened by exposure to noise. A recent review (Pearsons et al. 1989) of the literature related to sleep disturbance, including field and laboratory studies, suggests that habituation may reduce the effect of noise on sleep. The authors point out that the relationship between noise exposure and sleep disturbance is complex and affected by the interaction of many variables. The large differences between the findings of the laboratory and field studies make it difficult to determine the best relationship to use. The method developed by Lukas would estimate seven times more awakening than the field results reported by Pearsons et al.

Learning. One environment where speech intelligibility plays a critical role is in the classroom. In classrooms of schools exposed to aircraft flyover noise, speech becomes masked or the teacher stops talking altogether during an aircraft flyover (Crook and Langdon 1974). Pauses begin to occur when instantaneous flyover levels exceed 60 dB (A-weighted). Masking of the speech of teachers who do not pause starts at about the same level.

At levels of 75 dB, some masking occurs for 15 percent of the flyovers and increases to nearly 100 percent at 82 dB. Pauses occur for about 80 percent of the flyovers at this noise level. Because a marked increase in pauses and masking occurs when levels exceed 75 dB, this level is sometimes considered as one above which teaching is impaired due to disruption of speech communication. The effect that this may have on learning is unclear at this time. However, one study (Arnoult et al. 1986) could find no effect of noise on cognitive tasks from jet or helicopter noise over a range of 60 to 80 dB (A-level), even though intelligibility scores indicated a continuous decline starting at the 60 dB level. In a Japanese study (Ando et al. 1975), researchers failed to find differences in mental task performance among children from communities with different aircraft noise exposures.

Although there seems to be no proof that noise from aircraft flyovers affects learning, it is reported by Mills (1975) that children are not as able to understand speech in the presence of noise as are adults. It is hypothesized that part of the reason is due to the increased vocabulary which the adult can draw on as compared to the more limited vocabulary available to the young student. In addition, when one is learning a language, it is more critical that all words be heard, rather than only enough to attain 95-percent sentence intelligibility, which may be sufficient for general conversations. It was mentioned above that when the maximum A-level for aircraft flyovers heard in a classroom exceeds 75 dB, masking of speech increases rapidly. However, it was also noted that pausing during flyovers and masking of speech for those teachers who continue to lecture during a flyover start at levels around 60 dB (Pearsons and Bennett 1974).

Animals. Literature concerning the effects of noise on animals is minimal, and most studies have focused on the relation between dosages of continuous noise and their effects (Belanovskii and Omel'yanenko 1982; Ames 1974). A literature survey (Kull and Fisher 1986) found that the literature is inadequate to document long-term or subtle effects of noise on animals. No controlled study has documented any serious accident or mortality in livestock despite extreme exposure to noise.

Land Use Compatibility. Estimates of total noise exposure resulting from aircraft operations, as expressed using DNL, can be interpreted in terms of the compatibility with designated land uses. The Federal Interagency Committee on Urban Noise developed land use compatibility guidelines for noise (U.S. Department of Transportation, Federal Aviation Administration 1980). Based on these guidelines, suggested compatibility guidelines for evaluating land uses in aircraft noise exposure areas were developed by the FAA and are presented in Section 3.4.4. The land use compatibility guidelines are based on annoyance and hearing loss considerations previously described.

Part 150 of the FAA regulations describes the procedures, standards, and methods governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs. It prescribes use of yearly DNL in the evaluation of airport noise environments. It also identifies those land use types that are normally compatible with various levels of exposure. Compatible or incompatible land use is determined by comparing the predicted DNL level at a site with the recommended land uses.

Noise Modeling. To define noise impacts from aircraft operations at Bergstrom AFB, the Department of Defense (DOD)- and FAA-approved Noise Exposure Model (NOISEMAP) version 6.0 (Moulton 1990) was used to predict DNL 65, 70, and 75 dB noise contours and SEL values for noise-sensitive receptors. Noise contours were generated for the Proposed Action and General Aviation/Air Cargo Airport Alternative for the baseline year (1994) and three future year projections (1997, 2002, and 2012). Aircraft operations were considered for five aircraft categories: air carrier, air cargo, air taxi, general aviation, and military, both fixed-wing and helicopter. For the Proposed Action and General Aviation/Air Cargo Airport Alternative in 1994, only military jet and air cargo operations would occur. In 1997, 2002, and 2012, the Proposed Action includes all five categories and the General Aviation/Air Cargo Alternative includes all categories except for air carrier and air taxi.

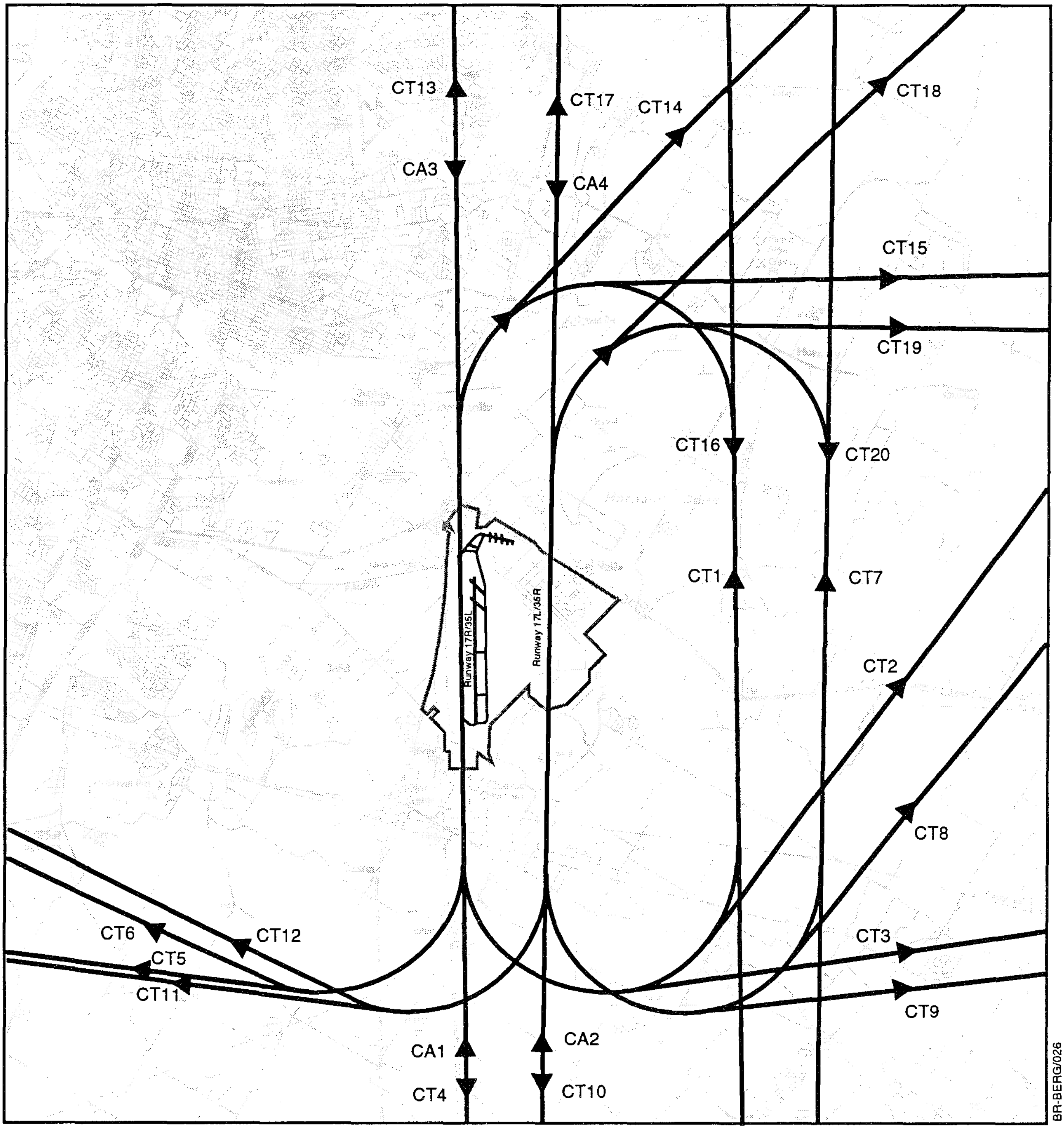
Input data to NOISEMAP version 6.0 include information on aircraft types; runway use; takeoff and landing flight tracks; aircraft altitude, speeds, and engine power settings; and number of daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) operations. Aircraft operations used in the modeling, except for 924th FG and Air Force transient aircraft operations, were derived from aviation demand forecasts (KPMG Peat Marwick 1992) developed for the City of Austin Aviation Department for 1991, 1997, 2002, and 2012. The 924th FG and transient aircraft operations numbers were obtained from the Air Force. Additional information on aircraft operations used in the modeling is presented in Appendix H.

Surface vehicle traffic noise levels for roadways in the vicinity of Bergstrom AFB were analyzed using the Federal Highway Administration (FHWA) Highway Noise Model (1978). This model incorporates vehicle mix, traffic volume projections, and speed, to generate DNL values.

Major Assumptions. Aircraft operations, fleet mix, and other detailed assumptions are provided in Appendix H. Flight tracks were developed for both military operations and civilian operations (Figures 4.4-1 through 4.4-6). The military flight tracks include arrival, departure, and closed pattern tracks. All operations were assumed to follow standard takeoff and approach profiles provided by the FAA Integrated Noise Model (INM) data base version 3.9 (U.S. Department of Transportation, Federal Aviation Administration 1982) and the NOISEMAP data base version 6.0. The phasing out of Stage 2 aircraft, and their subsequent replacement with quieter Stage 3 aircraft by the year 2000, in accordance with FAA regulations, is reflected in the aircraft operations mix.

The criteria that define Stage 2 and Stage 3 aircraft are described in FAR Part 36 (U.S. Department of Transportation, Federal Aviation Administration 1988c). Noise level limits are defined for takeoff, approach, and sideline measurements. Based on the aviation demand forecasts, modeled aircraft operations reflect this phaseout by replacing the B-727-100/200, B-737-200/DC-9-10/30, and DC-8-70 aircraft (Stage 2) with B-757, MD-80/DC-9-80, and B-767 aircraft (Stage 3), respectively.

Based on wind patterns in the Bergstrom AFB area and existing flight operations at the base, it was assumed that 70 percent of the annual average daily operations would depart to the south (or arrive from the north) and 30 percent would depart to the north (or arrive from the south). For the Proposed Action, it was assumed that 65 percent of air carrier and air cargo and 5 percent of general aviation operations would use existing Runway 17R/35L and 35 percent and 95 percent, respectively, would use new Runway 17L/35R. For both the Proposed Action and the General Aviation/Air Cargo Airport Alternative, all military operations would use only existing Runway



LEGEND

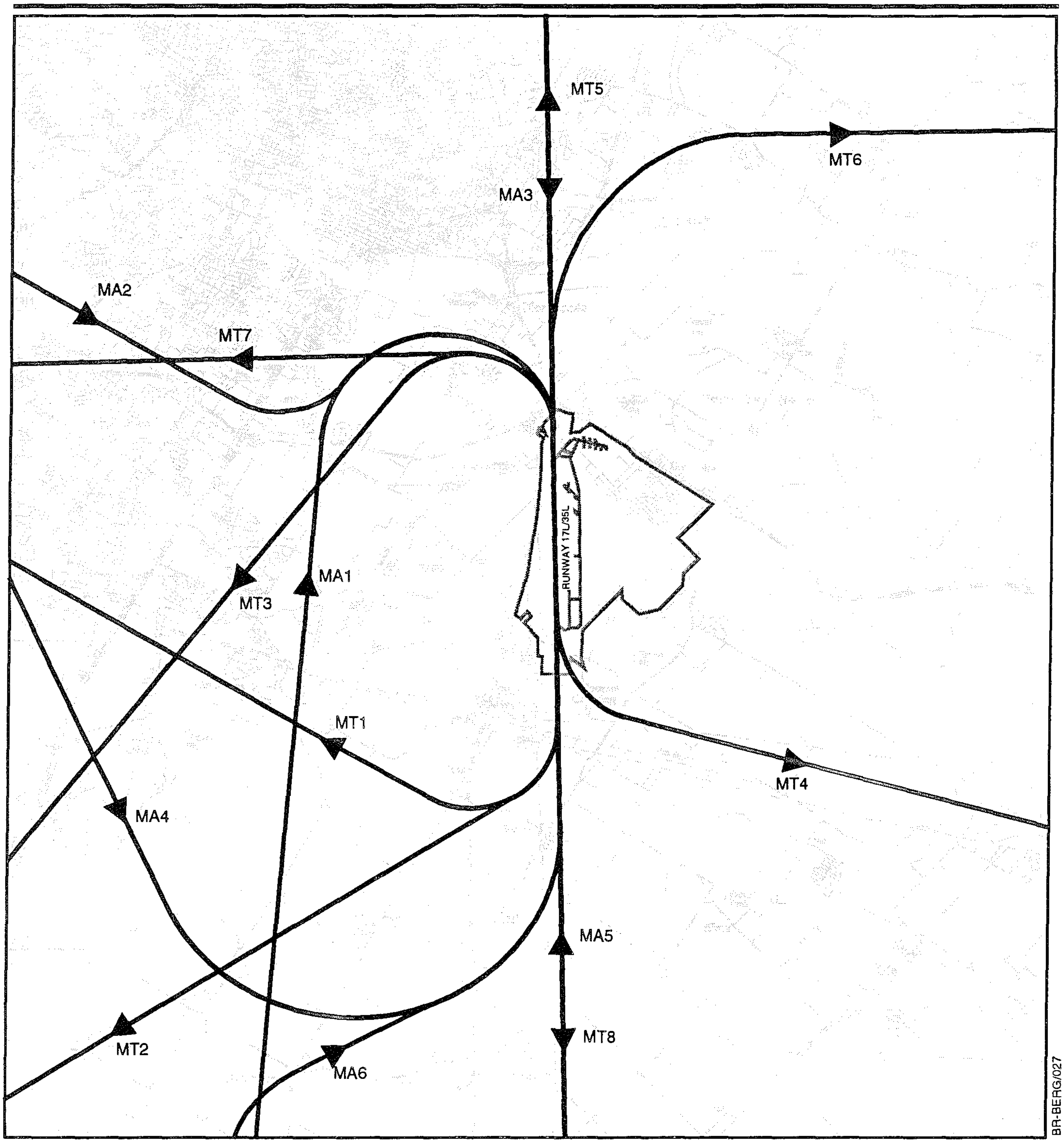
Direction of Travel
on Flight Track

CA Arrival
CT Departure

0 1 2 MILES

Proposed Action - Civilian Flight Tracks

Figure 4.4-1



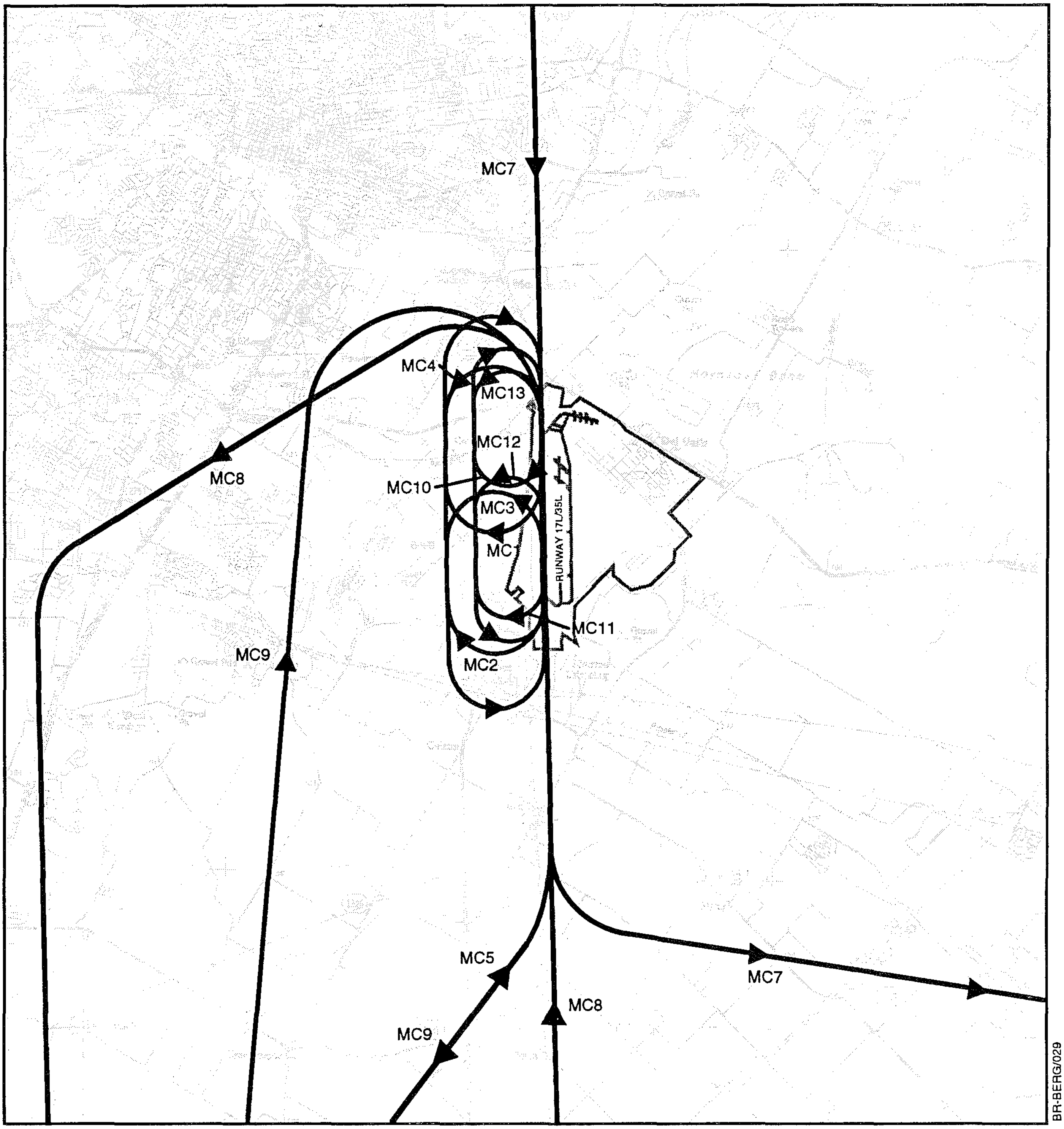
LEGEND
Direction of Travel on Flight Track

MA Arrival
MT Departure

0 1 2 MILES

Proposed Action - Military Arrival and Departure Flight Tracks

Figure 4.4-2



LEGEND

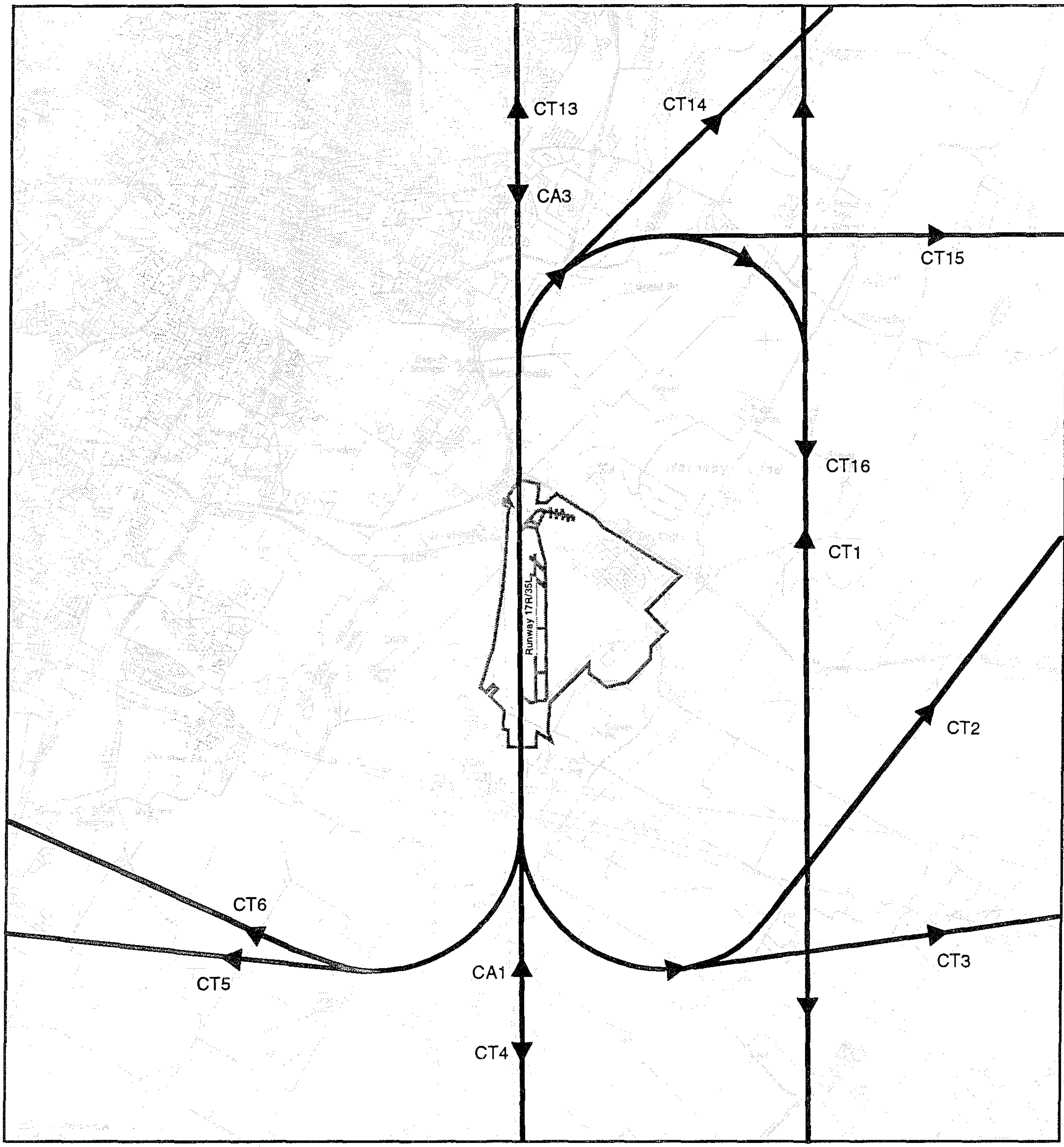
Direction of Travel
on Flight Track

MC Closed-Pattern

0 1 2 MILES

Proposed Action - Military Closed-Pattern Flight Tracks

Figure 4.4-3



LEGEND

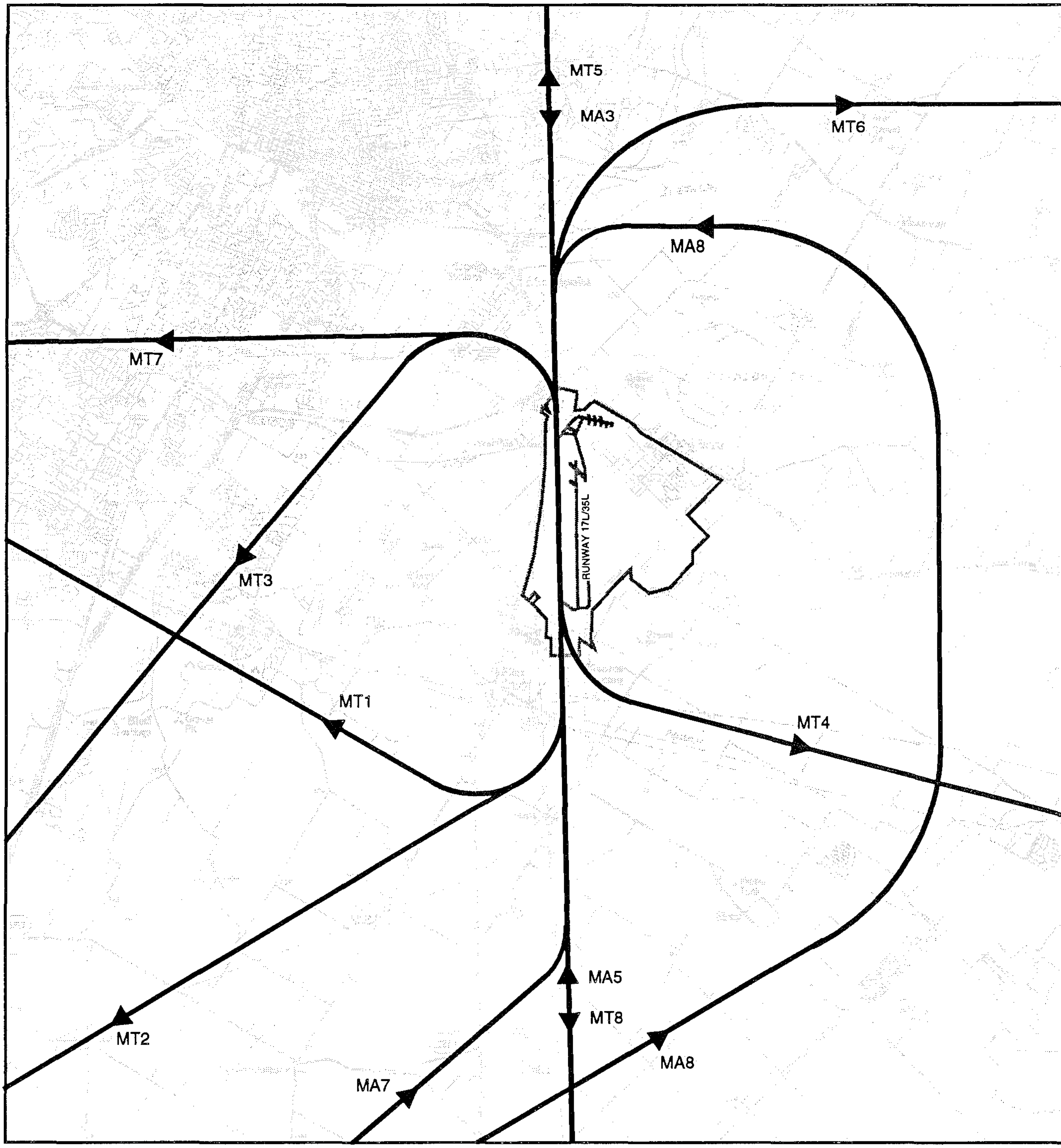
Direction of Travel on Flight Track

CA Arrival
CT Departure

0 1 2 MILES

General Aviation/Air Cargo Airport Alternative - Civilian Flight Tracks

Figure 4.4-4



BR-BERG/039

LEGEND

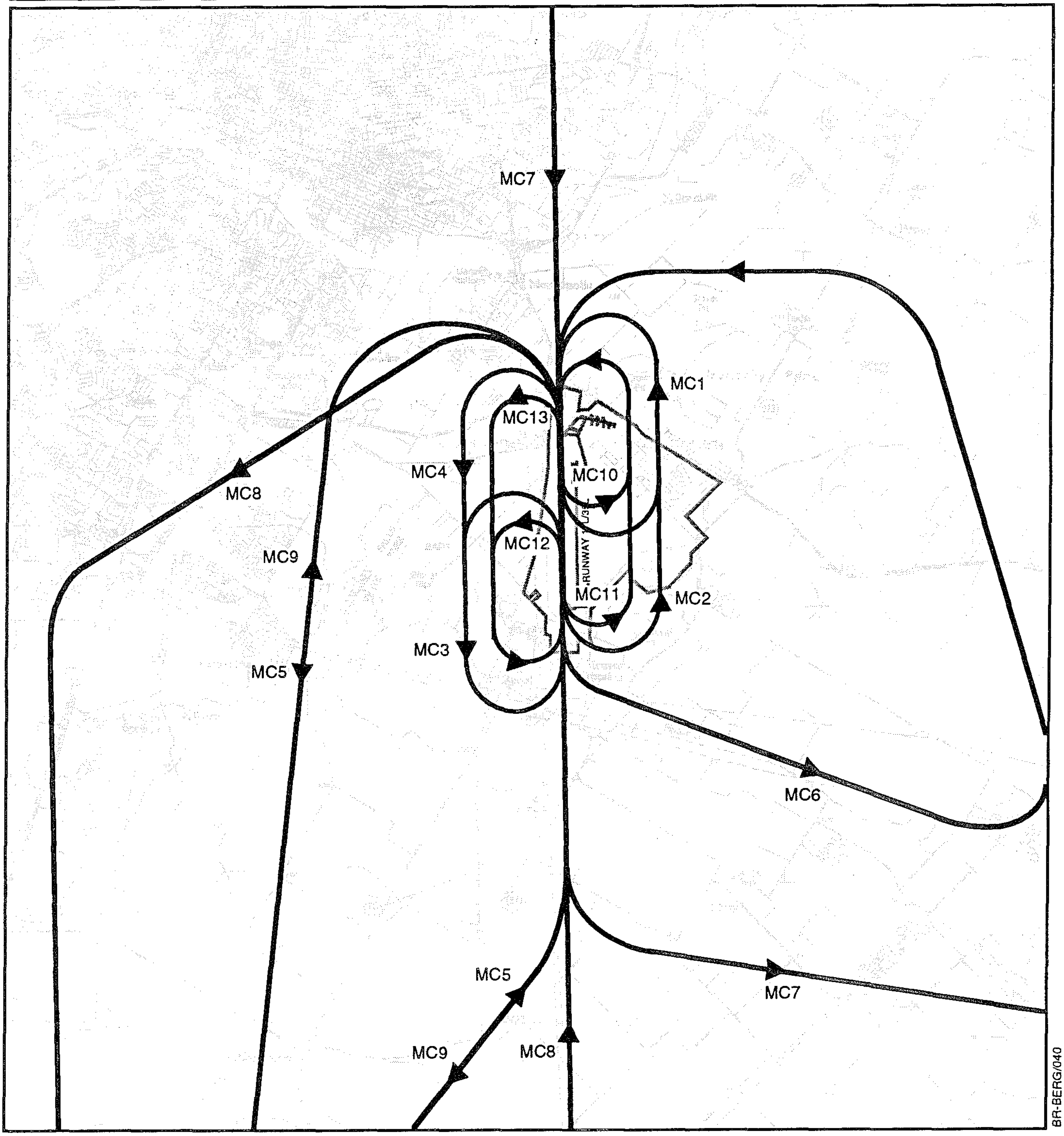
Direction of Travel
on Flight Track

MA Arrival
MT Departure

0 1 2 MILES

General Aviation/Air Cargo Airport Alternative - Military Arrival and Departure Flight Tracks

Figure 4.4-5



LEGEND

Direction of Travel
on Flight Track

MC Closed-Pattern

0 1 2 MILES

General Aviation/Air Cargo Airport Alternative - Military Closed Pattern Flight Tracks

Figure 4.4-6

17R/35L because of the location of 924th FG facilities and existing runway barriers. It was also assumed that runway utilization would not vary for nighttime operations.

Although the Proposed Action and General Aviation/Air Cargo Airport Alternative would involve 3,120 average annual military helicopter operations of various types (about 1% of total operations), the total contribution of these helicopters in terms of DNL was considered negligible. If all helicopters were assumed to operate on the same flight track at an altitude of 500 feet, the total DNL directly below the flight track would be about 56 dB (Appendix H).

Noise levels on major roads in the vicinity of the base were also analyzed. Traffic data used to project future noise levels were derived from information presented in the traffic analysis in Section 4.2.3. Traffic data used in this analysis are presented in Appendix H.

4.4.4.1 Proposed Action

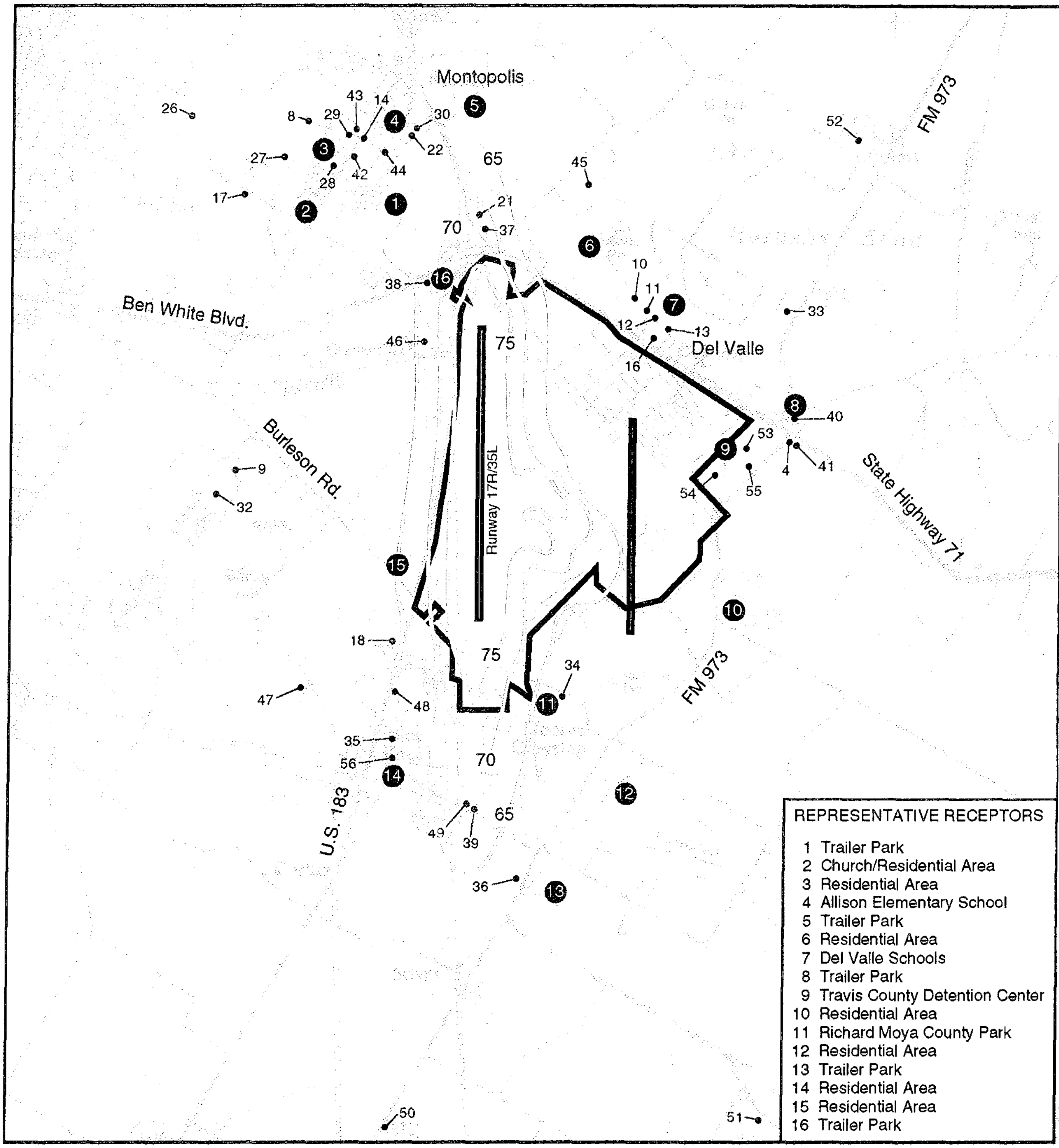
The results of the aircraft noise modeling for the Proposed Action are presented as noise contours in Figures 4.4-7 through 4.4-10. The approximate number of acres and estimated population within each DNL range for each of the modeled years are presented in Table 4.4-7. Compared to the preclosure reference (14,720 acres), this represents a decrease of 10,392 acres within DNL 65 dB in 1994, 6,891 acres in 1997, 9,651 acres in 2002, and 9,720 acres in 2012. The maximum exposure is projected for 1997, after which the FAA-required conversion from Stage 2 to quieter Stage 3 aircraft by the year 2000 would result in reduced noise exposure even though the number of aircraft operations by Stage 3 aircraft would continue to increase.

Table 4.4-7

DNL Exposure for the Alternative Reuse Plans (in dB)

		65-70		70-75		>75	
Year	Alternative	Acres	Population	Acres	Population	Acres	Population
1994	Proposed Action	2,284	2,160	1,012	490	1,032	5
	General Aviation/ Air Cargo Airport	2,130	1,830	1,002	480	1,047	5
1997	Proposed Action	4,492	3,353	1,823	708	1,514	5
	General Aviation/ Air Cargo Airport	2,184	1,910	1,006	500	1,084	5
2002	Proposed Action	2,680	2,350	1,307	600	1,082	5
	General Aviation/ Air Cargo Airport	2,142	1,850	973	480	1,069	5
2012	Proposed Action	2,694	2,370	1,220	590	1,086	5
	General Aviation/ Air Cargo Airport	2,115	1,820	964	480	1,060	5

Note: Airport acreage is included in the acreage totals.



LEGEND

Base Boundary

65 DNL Noise Contours (in 5 dB Intervals)

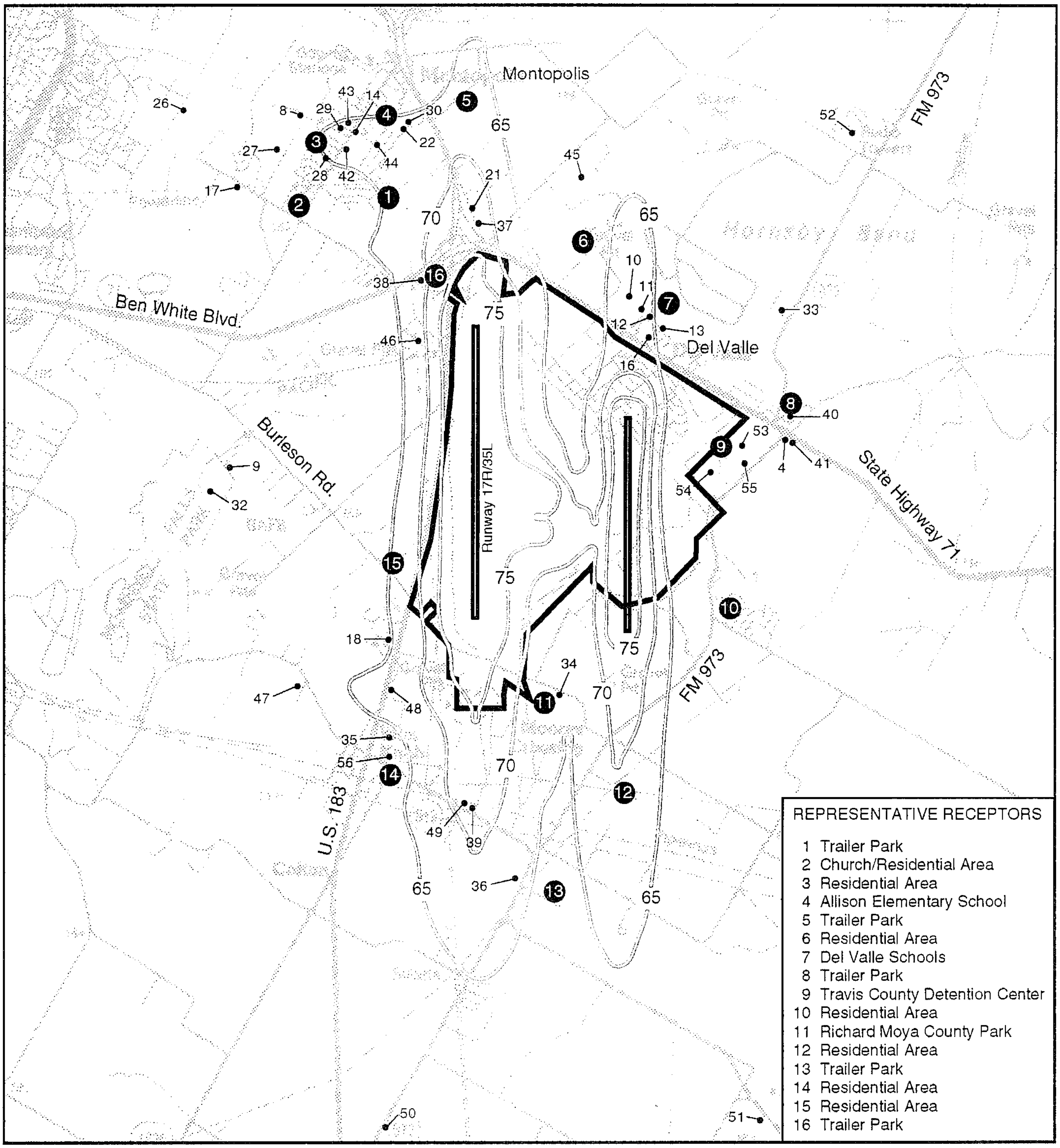
15 Representative Receptor Location

35 For List of Sensitive Receptors See Table 4.4-8a

0 0.5 1 MILES

DNL Noise Contours-Proposed Action (1994)

Figure 4.4-7



LEGEND

Base Boundary

65 DNL Noise Contours (in 5 dB Intervals)

15 Representative Receptor Location

• 35 For List of Sensitive Receptors See Table 4.4-8a

0 0.5 1 MILES

DNL Noise Contours-Proposed Action (1997)

Figure 4.4-8

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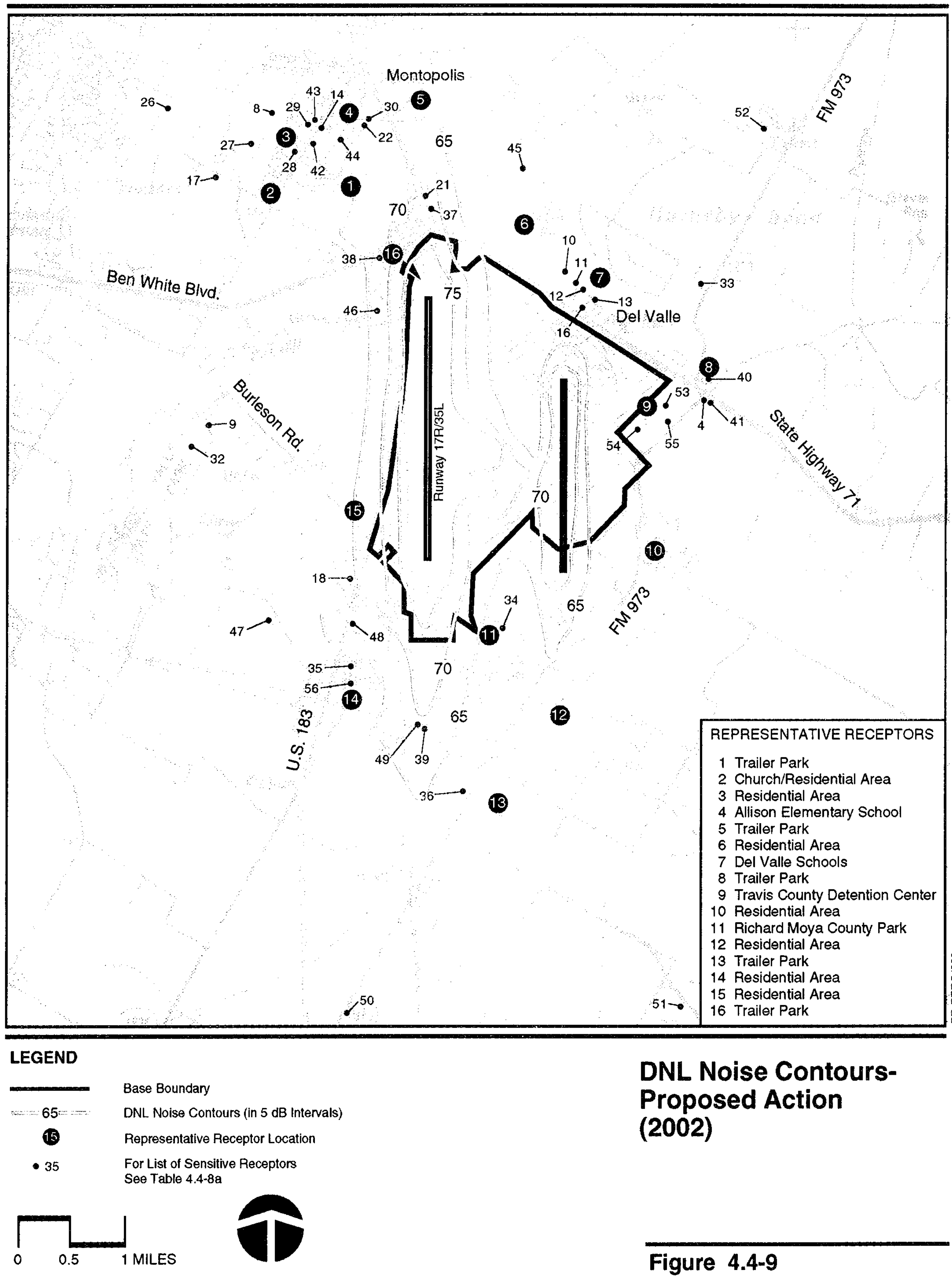

DNL Noise Contours-Proposed Action (2002)

Figure 4.4-9

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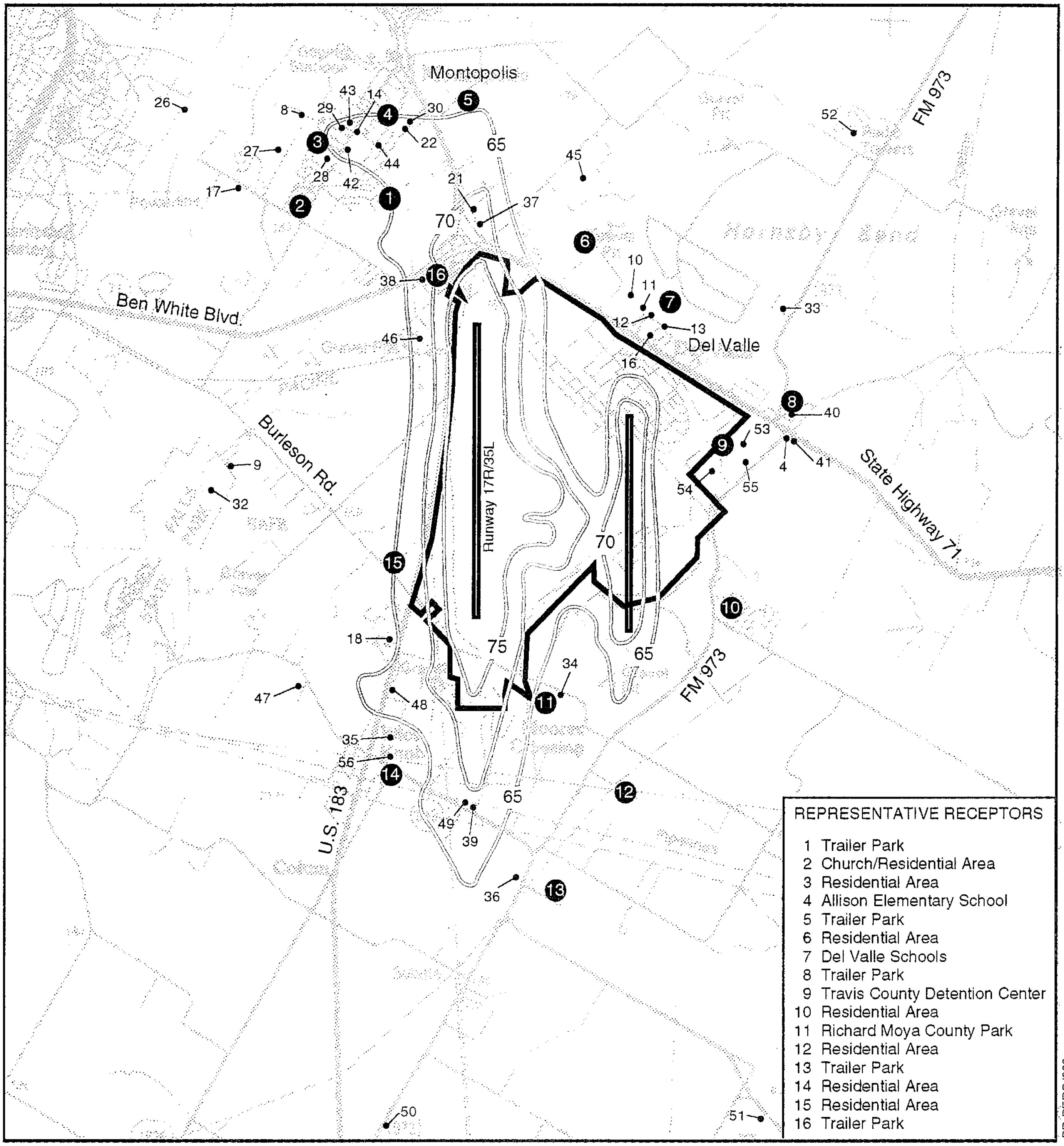


LEGEND

———	Base Boundary
═65═	DNL Noise Contours (in 5 dB Intervals)
15	Representative Receptor Location
• 35	For List of Sensitive Receptors See Table 4.4-8a

0 0.5 1 MILES

DNL Noise Contours-Proposed Action (2012)

Figure 4.4-10

DNL and SEL values were calculated for 16 representative locations in the vicinity of the airfield for the noisiest and most common jet aircraft. A comparison of total DNL (dB) values at each of these receptors is presented in Table 4.4-8. In terms of predicted DNL values for the representative receptor locations, for modeled year 1997, nine of the receptors would experience DNLs between 65 and 70 dB; the other locations would experience DNLs less than 65 dB. In 2002 and 2012, only six representative receptor locations (Receptors 1, 3, 4, 11, 15, and 16) would experience DNLs between 65 and 70 dB; the other locations would experience DNLs less than 65 dB.

A list of sensitive receptors that will be considered in the Supplemental EIS to be prepared by the FAA and City of Austin is provided in Table 4.4-8a. These sensitive receptors include schools, churches, park and recreation areas, and various other community facilities. This table provides a comparison of these identified sensitive receptors and the representative noise receptors for which DNL and SEL values were calculated. Sensitive receptors within the 1997 DNL 65 dB noise contour, which represents the maximum impact area, include 21 facilities (3 churches, 4 schools, 6 cemeteries, 4 parks, and 4 other community facilities) (Figure 4.4-8). Sensitive receptors within DNL 65 dB contour for 1994, 2002, and 2012 include 14 facilities (3 churches, 1 school, 6 cemeteries, 2 parks, and 2 other community facilities)(Figures 4.4-7, 4.4-9, and 4.4-10).

The analysis suggests that, for the Proposed Action, some aircraft overflights could affect the sleep of some residents in the area. The identified land uses associated with potential sleep disturbance include all of the representative receptor locations, except those where sleeping activity would not be expected to occur (Receptors 2, 4, 7, and 11).

Based on Lukas' (1975) worst-case sleep disturbance curve (Figure H-3 in Appendix H) and the SELs by night-flying aircraft in Table 4.4-9, it is estimated that 5 to 50 percent of the population of these areas might be disturbed during nighttime sleep by a single aircraft event in 1997. In 2002 and 2012, it is estimated that 5 to 30 percent of the population of these areas might be disturbed during nighttime sleep by a single aircraft event. The average reduction in noise level, in terms of SEL at the receptors, between a typical Stage 2 aircraft (e.g., B-727-200) and Stage 3 aircraft (e.g., MD-80) would be about 16 dB.

The noisiest civilian aircraft were determined from estimates of A-weighted maximum sound levels (L_{max}) as presented in FAA Advisory Circular 36-3F (U.S. Department of Transportation, Federal Aviation Administration 1990a) (Table 4.4-10). These estimates are based on a reference receptor being 4 miles from the start of an aircraft's takeoff roll and approximately 1.25 miles from the runway threshold on approach.

The most common jets proposed for 1997 are the B-737-300/400, B-737-200/DC-9-10/30, and MD-80/DC-9-80, with approximately 58, 44, and 30 average daily operations, respectively. The B-737-300, B-737-200, and MD-80 have

Table 4.4-8

Comparison of Total DNL (dB) at Representative Noise Receptors

No.	Receptor	1997		2002		2012	
		Proposed Action	General Aviation/ Air Cargo Airport Alternative	Proposed Action	General Aviation/ Air Cargo Airport Alternative	Proposed Action	General Aviation/ Air Cargo Airport Alternative
1	Trailer Park northwest of State Highway 71/ U.S. 183 interchange	66	66	66	66	66	66
2	Church near Riverside Drive/Montopolis Road	61	60	61	60	61	60
3	Residential area along Montopolis Drive	66	64	66	64	66	64
4	Allison Elementary School	67	63	66	63	66	63
5	Trailer park along State Highway 71 near Montopolis	66	60	63	*	63	*
6	Residential area east of State Highway 71/ U.S. 183 interchange	62	60	60	*	*	*
7	Del Valle Schools	66	*	61	*	61	*
8	Trailer park near FM 973	*	*	*	*	*	*
9	Travis County Detention Center	*	*	*	*	*	*
10	Residential area near Pearce Lane	*	*	*	*	*	*
11	Richard Moya County Park	68	70	65	70	65	70
12	Residential area south of Burleson Road/ FM 973	69	*	63	*	62	*
13	Trailer park east of FM 973	64	*	*	*	*	*
14	Residential area near Pilot Knob	64	61	62	61	62	61
15	Residential area near U.S. 183/Burleson Road	67	66	66	66	66	66
16	Trailer park near State Highway 71/ U.S. 183 interchange	70	69	69	69	69	69

Note: *Predicted DNL is below 60 dB; model accuracy is uncertain below 60 dB.

Table 4.4-8a

Noise-Sensitive Receptors[1] and Representative Noise Receptors[2]

Number Shown on Figure 4.4-8	Sensitive Receptors	Representative Receptors Listed in Table 4.4-8
1	Ortega Elementary School	Outside map boundary
2	Govalle Elementary School	Outside map boundary
3	Austin Community College, Ridgeview Campus	Outside map boundary
4	Del Valle Independent School District Opportunity Center and Child Development Center	8 and 9
5	Brooke Elementary School	Outside map boundary
6	Allan Elementary School	Outside map boundary
7	Texas State School for the Deaf	Outside map boundary
8	Austin Community College, Riverside Campus	3
9	Smith Elementary School	Not impacted
10	Beatty Elementary School	7
11	Popham Elementary School	7
12	Del Valle Middle School	7
13	Del Valle Senior High School	7
14	Library - Montopolis Drive and Thrasher Lane (on Richardson Lane)	3 and 4
15	Library - 7th Street and Pleasant Valley Road	Outside map boundary
16	Volunteer Fire Station - Shapard Lane	7
17	Volunteer Fire Station - Riverside Drive	2
18	Volunteer Fire Station - U.S. 183	14 and 15
19	Volunteer Fire Station - Elroy Road	Outside map boundary
20	Anderson Creative Learning Center	Outside map boundary
21	We Care Learning Center	5
22	Allison Elementary School	4
23	Boggy Creek Park	Outside map boundary
24	Zaragosa Park	Outside map boundary
25	Pleasant Valley District Park	Outside map boundary
26	Pleasant Valley Sportsplex	Not affected
27	Riverside Golf Course	3
28	Montopolis Park	1 and 4
29	Yates Park	4

Table 4.4-8a, Page 2 of 2

Number Shown on Figure 4.4-8	Sensitive Receptors	Representative Receptors Listed in Table 4.4-8
30	Civitan Park	4
31	Govalle Park	Outside map boundary
32	McKinney Falls	Not affected
33	Del Valle Softball Complex	9
34	Richard Moya Park	11
35	Longhorn Speedway	14
36	Lienzo Charro - El Caporal Rodeo Grounds	13
37	United Pentecostal Church	5 and 16
38	Onion Creek Baptist Church	16
39	Salem Lutheran Church	13 and 14
40	Cottonwood Baptist Church	8
41	Del Valle Baptist Church	8
42	Cemetery	3
43	Cemetery	3
44	Burdett Prairie Cemetery	4
45	Cemetery	6
46	Cemetery	16
47	Collins Cemetery	14
48	Cemetery	14
49	Salem Lutheran Cemetery	13
50	Birch Cemetery	Not affected
51	Cemetery	Not affected
52	Wildflower Research Center	Not affected
53	COA Center for Environmental Research	8
54	Travis County Correction Complex	9
55	Travis County Human Services	9
56	VFW Post 8925	14

Notes: [1]List provided by the City of Austin Department of Aviation, March 9, 1993
[2]Receptors listed in Tables 4.4-8 and 4.4-9.

Table 4.4-9

Predicted Sound Exposure Levels at Representative Noise Receptors

		Highest SEL (dB) for Modeled Aircraft Types[1]												
No.	**Receptor**	**727Q15**	**737QN**	**737300**	**757RR**	**DC1030**	**MD81**	**F16**	**T38**	**CNA500**	**GIIB**	**DHC6**	**BEC58P**	**COMSEP**
1	Trailer park northwest of State Highway 71/U.S. 183 interchange	96	92	76	76	81	79	111	97	72	93	75	75	68
2	Church near Riverside Drive/ Montopolis Road	86	83	66	67	72	69	102	94	61	84	69	66	58
3	Residential area along Montopolis Drive	89	86	69	70	75	72	111	92	65	86	71	70	61
4	Allison Elementary School	96	91	74	75	80	78	111	94	72	92	74	75	68
5	Trailer park along State Highway 71 near Montopolis	105	99	86	85	87	87	105	87	81	101	84	83	80
6	Residential area east of State Highway 71/U.S. 183 interchange	99	95	79	Note 2	84	82	98	92	75	97	77	78	71
7	Del Valle Schools	109	103	89	89	91	92	101	87	84	106	85	86	82
8	Trailer park near FM 973	84	82	67	66	74	70	84	74	60	83	69	68	63
9	Travis County Detention Center	90	89	76	79	84	79	92	80	69	90	75	72	63
10	Residential area near Pearce Lane	87	87	73	65	81	76	94	86	Note 2	87	72	69	60
11	Richard Moya County Park	100	96	81	80	85	84	115	110	76	98	78	79	72
12	Residential area south of Burleson Road/FM 973	108	101	89	89	91	89	104	87	83	106	87	85	82
13	Trailer park east of FM 973	101	96	79	75	Note 2	83	98	79	77	98	77	80	74
14	Residential area near Pilot Knob	96	92	75	76	81	79	100	93	72	93	75	75	68
15	Residential area near U.S. 183/Burleson Road	94	91	77	78	84	81	102	99	Note 2	93	75	74	Note 2
16	Trailer park near State Highway 71/ U.S. 183 interchange	102	97	83	83	87	86	112	106	78	100	79	81	74

Notes: [1]Modeled aircraft types are defined in Appendix H, Table H-4.
[2]Insignificant contribution compared to other aircraft types.

maximum noise levels at the two reference locations of about 90 dBA, 92 dBA, and 84 dBA, respectively (Table 4.4-10). In the year 2012, the B-737-300/400, B-737-500, and MD-80/DC-9-80 would be the most common jets, with 116, 86, and 60 average daily operations, respectively. General aviation and air taxi aircraft would comprise approximately 52 percent of the average daily operations in 1997 and 42 percent in 2012. Their combined total average daily operations would be approximately 290 in both 1997 and 2012. Maximum noise levels for these aircraft range from 63 dBA to approximately 83 dBA at the referenced distances.

Table 4.4-10

Maximum Noise Levels (L_{max}, dBA) Along Flight Path of Proposed Civilian Aircraft Types

Aircraft Type/Engine	Takeoff[1]	Approach[2]
Boeing 727-200/JT8D-15QN	88.9	89.0
Boeing 737-200/JT8D-9QN	88.0	92.0
Boeing 737-300/CFM56-3B1	78.2	89.9
Boeing 757-200/RB211-535E4	71.4	85.2
Boeing 767-200/CF6-80A	75.8	88.6
Douglas DC-8-71/CFM56-2-C1	84.1	88.8
Douglas DC-10-30/CF6-50C2	87.2	95.1
McDonnell Douglas MD-80/JT8D-209	83.2	83.9
Gulfstream GIIB/Spey MK511-8	83.0	82.5
Cessna Citation I/JT15D-1A	67.3	77.7
deHavilland DH-6C/PT6A-27	67.0	78.0
Beech Baron 58P/TSIO-520WB	66.0	77.0
Cessna Conquest II/TPE-331-9	63.0	76.5

Notes: [1]Distance of 4 miles from start of takeoff roll.
[2]Distance of 1.25 miles from the runway threshold.
Source: U.S. Department of Transportation, Federal Aviation Administration 1990a.

Surface traffic sound levels for several road segments are presented in Table 4.4-11. These levels are presented in terms of DNL as a function of distance from the centerline of the roadways analyzed. The highest noise levels, related to surface traffic, would occur along U.S. 183 and State Highway 71. Residences in these areas, located less than 300 feet from U.S. 183 and State Highway 71, would experience surface traffic DNL noise levels of 65 dB or greater by the year 2012.

Mitigation Measures. Potential mitigation measures to be considered to reduce the effects of aircraft noise would include:

- **Operational Measures** - Change takeoff, climb-out, or landing procedures; change flight track limit or rotate primary runway usage; enforce prescribed flight track use; and fan-out departure flight tracks. Prohibit or limit Stage 2 aircraft operations.

Table 4.4-11

Distance to DNL From Roadway Centerline - Proposed Action

Year	Roadway	Distance (ft) DNL 65 dB	Distance (ft) DNL 70 dB	Distance (ft) DNL 75 dB
1997	U.S. 183 South of State Highway 71	169	78	36
	U.S. 183 North of State Highway 71	317	147	68
	U.S. 183 North of Burleson Road	191	89	41
	U.S. 183 South of Burleson Road	185	86	40
	State Highway 71 East of U.S. 183	362	168	78
	State Highway 71 West of U.S. 183	316	146	68
	State Highway 71 East of Presidential Boulevard	229	106	49
	State Highway 71 East of FM 973	199	92	43
	FM 973 North of State Highway 71	61	28	13
	FM 973 South of State Highway 71	79	37	17
	Burleson Road West of New Road	46	*	*
	Burleson Road East of New Road	31	*	*
	Burleson Road West of U.S. 183	86	40	*
2002	U.S. 183 South of State Highway 71	182	85	39
	U.S. 183 North of State Highway 71	381	177	82
	U.S. 183 North of Burleson Road	197	91	42
	U.S. 183 South of Burleson Road	194	90	42
	State Highway 71 East of U.S. 183	456	212	98
	State Highway 71 West of U.S. 183	362	168	78
	State Highway 71 East of Presidential Boulevard	243	112	52
	State Highway 71 East of FM 973	205	95	44
	FM 973 North of State Highway 71	69	32	15
	FM 973 South of State Highway 71	82	38	18
	Burleson Road West of New Road	47	*	*
	Burleson Road East of New Road	32	*	*
	Burleson Road West of U.S. 183	89	41	*
2012	U.S. 183 South of State Highway 71	197	91	42
	U.S. 183 North of State Highway 71	430	200	93
	U.S. 183 North of Burleson Road	212	99	46
	U.S. 183 South of Burleson Road	206	96	44
	State Highway 71 East of U.S. 183	524	243	112
	State Highway 71 West of U.S. 183	397	184	86
	State Highway 71 East of Presidential Boulevard	262	122	57
	State Highway 71 East of FM 973	222	103	48
	FM 973 North of State Highway 71	75	35	16
	FM 973 South of State Highway 71	89	41	19
	Burleson Road West of New Road	49	*	*
	Burleson Road East of New Road	34	*	*
	Burleson Road West of U.S. 183	94	44	*

Note: *Contained within the roadway.

- **Preventive Measures** - Acquire undeveloped land adjacent to the runways that is exposed to aircraft noise of DNL 65 dB or greater. Restrict residential and hospital development to areas outside the DNL 65 dB contour.

- **Remedial Measures** - Acquire mobile home sites and single-family housing areas exposed to aircraft noise of DNL 70 dB or greater. Redevelop mobile home sites to other compatible uses. Establish and conduct a sound attenuation program for single-family residences, schools, hospitals, and churches in areas exposed to aircraft noise of DNL 65 dB or greater.

- **Management Measures** - Impose curfews and noise-related landing fees, develop a noise monitoring system, and establish a community relations office.

No mitigation measures would be required for surface traffic noise, based on the results of the noise analysis.

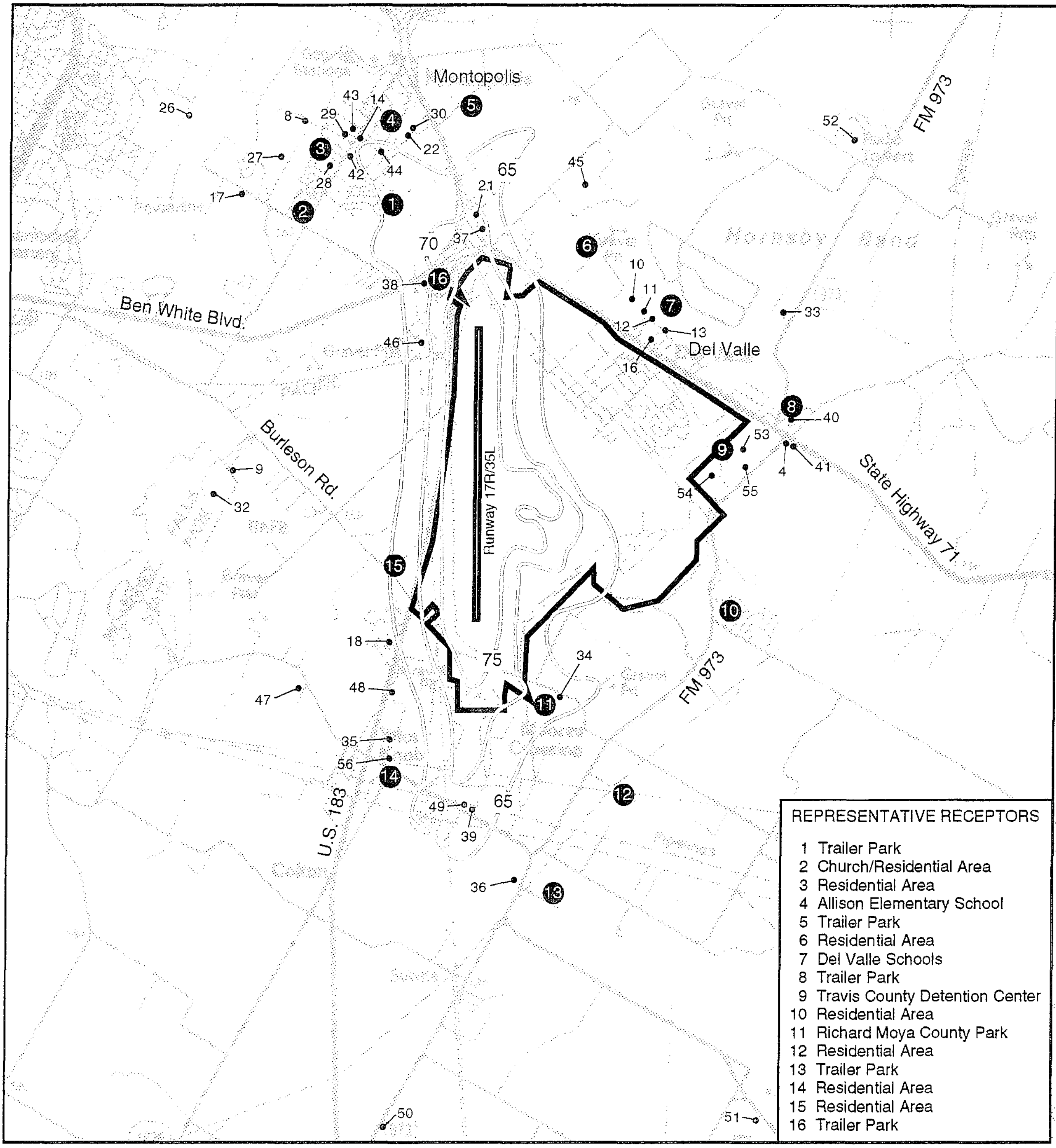
4.4.4.2 General Aviation/Air Cargo Airport Alternative

The results of the aircraft noise modeling for the General Aviation/Air Cargo Airport Alternative for 1994, 1997, 2002, and 2012 are presented as noise contours in Figures 4.4-11 through 4.4-14.

The approximate number of acres and estimated population within each DNL range for each of the study years are presented in Table 4.4-7. Compared with the preclosure reference (14,720 acres), this alternative represents a decrease of 10,541 acres within DNL 65 dB in 1994, 10,446 acres in 1997, 10,536 acres in 2002, and 10,581 acres in 2012. Compared with the Proposed Action, this represents a decrease of 149 acres within DNL 65 dB in 1994, 3,555 acres in 1997, 885 acres in 2002, and 861 acres in 2012. The maximum exposure is projected for 1997, after which the FAA-required transition from Stage 2 to quieter Stage 3 aircraft would result in reduced noise exposure even though the number of aircraft operations by Stage 3 aircraft would continue to increase. The DNL exposure, in terms of acreage, would slightly decrease in 2012 because of a predicted decrease in business jet aircraft operations, even though operations by B-767 are predicted to double between 2002 and 2012.

Sensitive receptors within DNL 65 dB noise contours for all modeled years includes three churches, one school, four cemeteries, three parks, and one learning center.

Calculated DNL values at representative locations in the vicinity of the airfield are presented in Table 4.4-8. For this alternative, DNL values resulting from aircraft operations are predicted to be between 65 and 70 dB at receptor locations 1, 11, 15, and 16 for all modeled years. None of the representative



LEGEND

Base Boundary

65 DNL Noise Contours (in 5 dB Intervals)

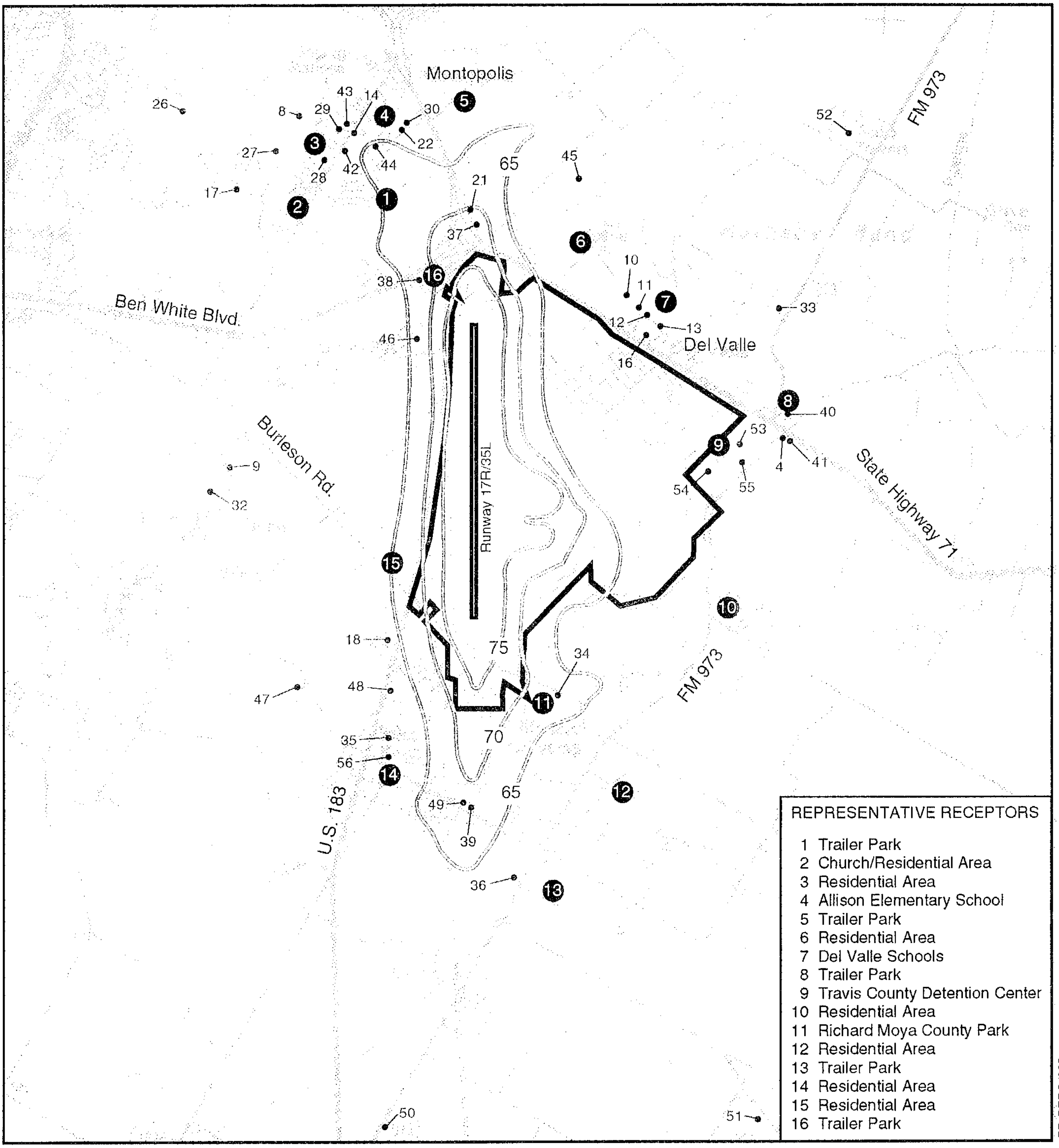
15 Representative Receptor Location

35 For List of Sensitive Receptors See Table 4.4-8a

0 0.5 1 MILES

DNL Noise Contours-General Aviation/ Air Cargo Airport Alternative (1994)

Figure 4.4-11



LEGEND

Base Boundary

65 DNL Noise Contours (in 5 dB Intervals)

15 Representative Receptor Location

• 35 For List of Sensitive Receptors See Table 4.4-8a

0 0.5 1 MILES

DNL Noise Contours-General Aviation/ Air Cargo Airport Alternative (1997)

Figure 4.4-12

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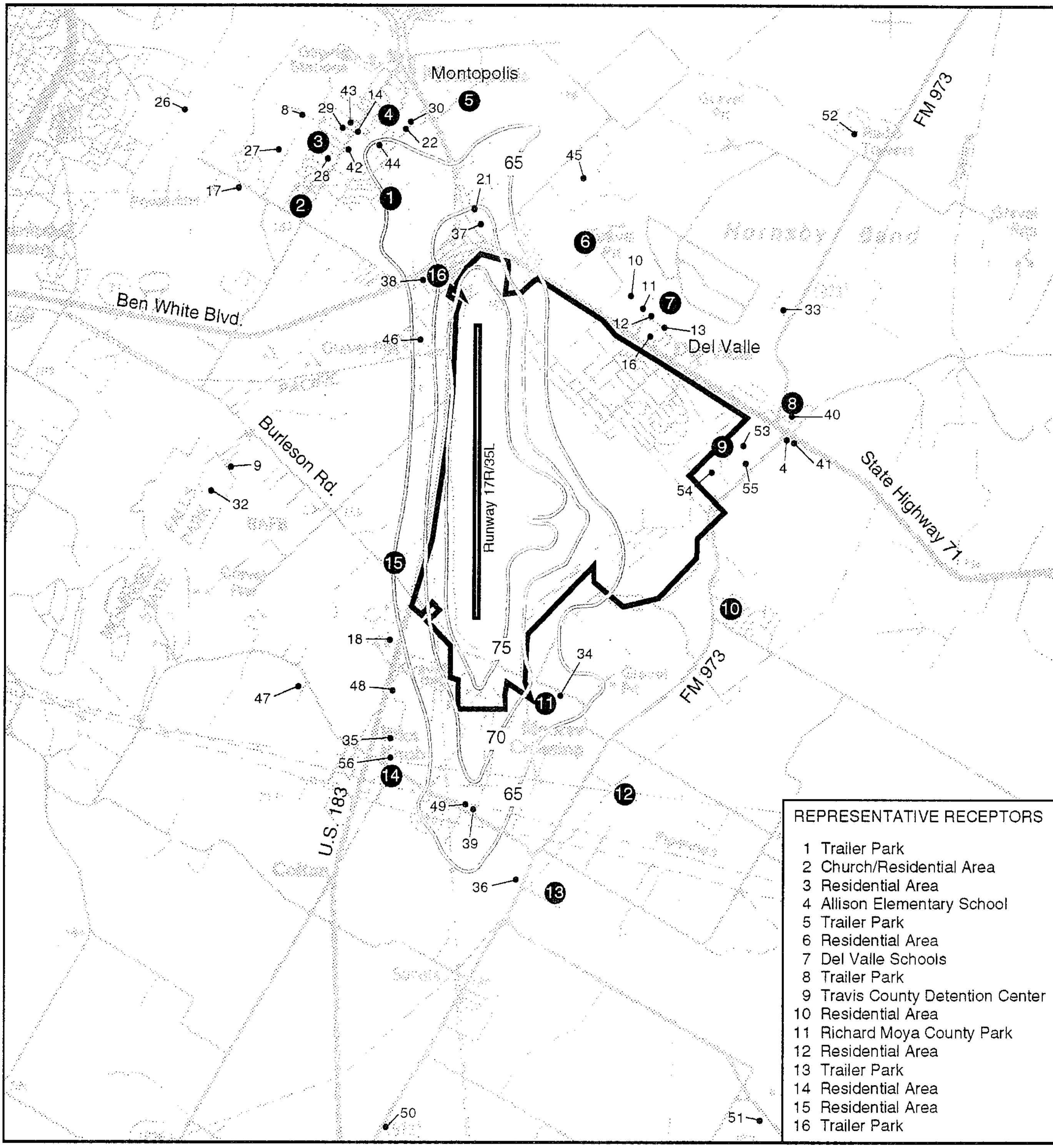

LEGEND

Base Boundary

65 DNL Noise Contours (in 5 dB Intervals)

15 Representative Receptor Location

• 35 For List of Sensitive Receptors See Table 4.4-8a

0 0.5 1 MILES

DNL Noise Contours-General Aviation/Air Cargo Airport Alternative (2002)

Figure 4.4-13

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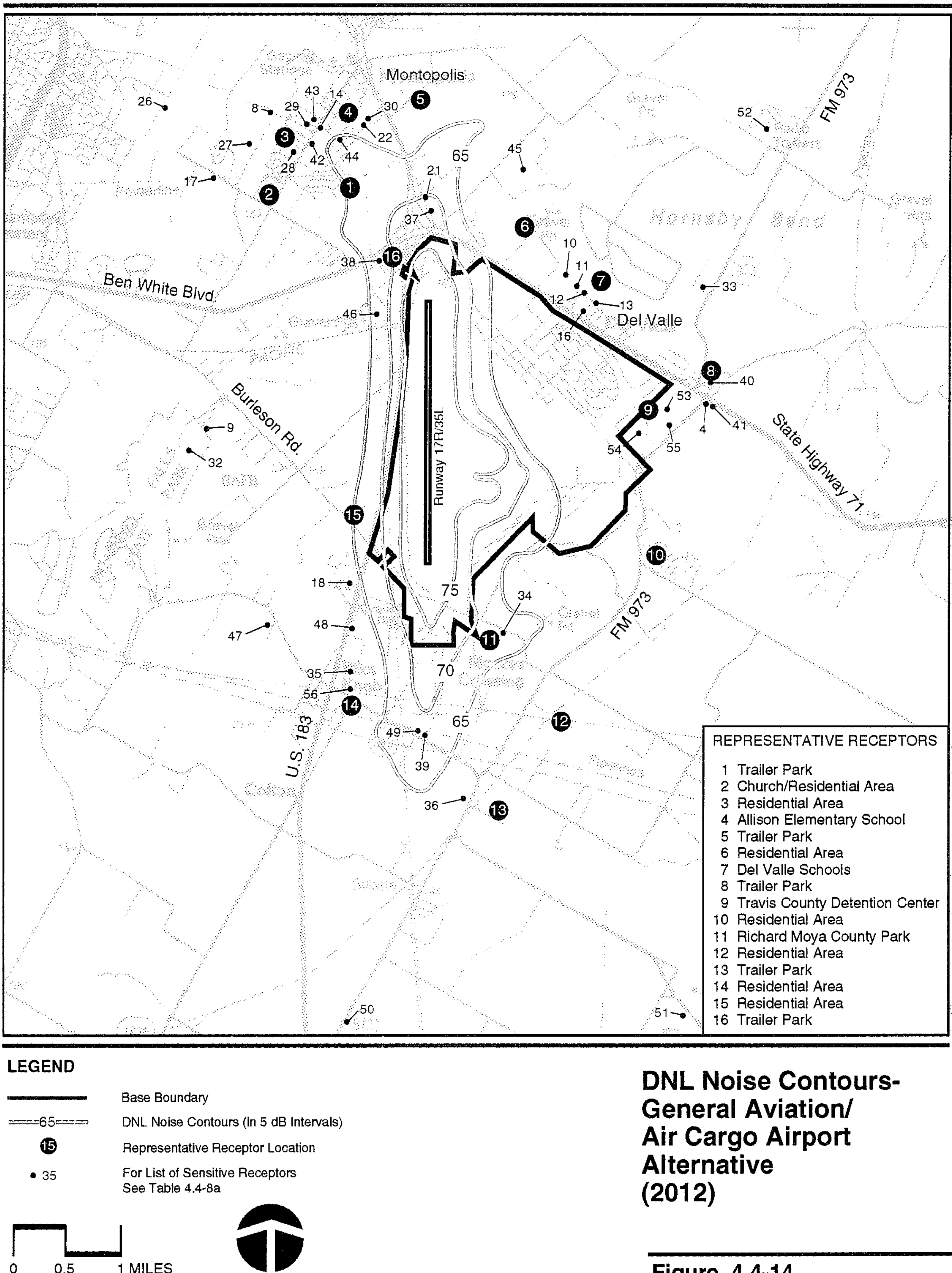


DNL Noise Contours-General Aviation/ Air Cargo Airport Alternative (2012)

Figure 4.4-14

receptor locations were predicted to experience DNLs greater than 70 dB for this alternative. Compared to the Proposed Action, DNL values at the representative locations were lower, on average, by 4 dB in 1997 and by 1 dB in 2012.

Predicted SELs at the representative noise receptors for the aircraft considered in this analysis are presented in Table 4.4-9. The analysis suggests that, for this alternative, some aircraft overflights could affect the sleep of some residents in the area. The identified land uses associated with potential sleep disturbance would be the same as described for the Proposed Action.

The estimated percentage of people who might be disturbed during nighttime sleep due to this alternative in any of the modeled years would be the same as for the Proposed Action, because the range of SEL by the contributing aircraft at the applicable receptors is approximately the same as for the Proposed Action. The discussion of maximum aircraft noise levels in Section 4.4.4.1 would also apply for this alternative.

Surface traffic sound levels for several road segments are presented in Table 4.4-12. These levels are presented in terms of DNL as a function of distance from the centerline of the roadways analyzed. As with the Proposed Action, the highest noise levels would occur along U.S. 183 and State Highway 71. However, noise levels would be slightly less than those associated with the Proposed Action. Residences located less than 200 feet from U.S. 183 or State Highway 71 would experience surface traffic DNL noise levels of 65 dB or greater by the year 2012.

Mitigation Measures. Potential mitigation measures would be the same as described for the Proposed Action.

4.4.4.3 Mixed-Use Development Alternative

No aircraft operations would occur with the Mixed-Use Development Alternative. Surface traffic sound levels for several road segments are presented in Table 4.4-13. These levels are presented in terms of DNL as a function of distance from the centerline of the roadways analyzed. Noise level effects on residences along U.S. 183 and State Highway 71 would be similar to those described in the Proposed Action for the year 2012.

Table 4.4-12

Distance to DNL From Roadway Centerline - General Aviation/Air Cargo Airport Alternative

Year	Roadway	Distance (ft) DNL 65 dB	Distance (ft) DNL 70 dB	Distance (ft) DNL 75 dB
1997	U.S. 183 South of State Highway 71	166	77	36
	U.S. 183 North of State Highway 71	289	134	62
	State Highway 71 East of U.S. 183	320	149	69
	State Highway 71 West of U.S. 183	301	140	65
	State Highway 71 East of Presidential Boulevard	225	105	49
	State Highway 71 East of FM 973	196	91	42
	FM 973 North of State Highway 71	58	27	13
	FM 973 South of State Highway 71	79	37	17
2002	U.S. 183 South of State Highway 71	179	83	39
	U.S. 183 North of State Highway 71	353	164	76
	State Highway 71 East of U.S. 183	416	193	90
	State Highway 71 West of U.S. 183	346	161	75
	State Highway 71 East of Presidential Boulevard	239	111	52
	State Highway 71 East of FM 973	205	95	44
	FM 973 North of State Highway 71	65	30	14
	FM 973 South of State Highway 71	82	38	18
2012	U.S. 183 South of State Highway 71	191	89	41
	U.S. 183 North of State Highway 71	381	177	82
	State Highway 71 East of U.S. 183	449	208	97
	State Highway 71 West of U.S. 183	368	171	79
	State Highway 71 East of Presidential Boulevard	255	118	55
	State Highway 71 East of FM 973	222	103	48
	FM 973 North of State Highway 71	71	33	15
	FM 973 South of State Highway 71	89	41	19

Mitigation Measures. Noise mitigation measures would not be required with the Mixed-Use Development Alternative, based on the results of the noise analysis.

4.4.4.4 No-Action Alternative

There would be no airport activity and minimal surface traffic with the No-Action Alternative; therefore, there would be fewer noise impacts than anticipated for the Proposed Action or the General Aviation/Air Cargo Airport Alternative.

Table 4.4-13

Distance to DNL From Roadway Centerline
Mixed-Use Development Alternative

Year	Roadway	Distance (ft) DNL 65 dB	Distance (ft) DNL 70 dB	Distance (ft) DNL 75 dB
1997	U.S. 183 South of State Highway 71	147	68	32
	U.S. 183 North of State Highway 71	272	126	59
	State Highway 71 East of U.S. 183	292	136	63
	State Highway 71 West of U.S. 183	292	136	63
	State Highway 71 East of Presidential Boulevard	222	103	48
	State Highway 71 East of FM 973	196	91	42
	FM 973 North of State Highway 71	56	26	12
	FM 973 South of State Highway 71	79	37	17
2002	U.S. 183 South of State Highway 71	177	82	38
	U.S. 183 North of State Highway 71	332	154	71
	State Highway 71 East of U.S. 183	385	179	83
	State Highway 71 West of U.S. 183	330	153	71
	State Highway 71 East of Presidential Boulevard	236	109	51
	State Highway 71 East of FM 973	205	95	44
	FM 973 North of State Highway 71	64	30	14
	FM 973 South of State Highway 71	82	38	18
2012	U.S. 183 South of State Highway 71	194	90	42
	U.S. 183 North of State Highway 71	393	182	85
	State Highway 71 East of U.S. 183	485	225	105
	State Highway 71 West of U.S. 183	374	173	81
	State Highway 71 East of Presidential Boulevard	258	120	56
	State Highway 71 East of FM 973	222	103	48
	FM 973 North of State Highway 71	72	33	16
	FM 973 South of State Highway 71	89	41	19

4.4.5 Biological Resources

The Proposed Action and alternatives (except the No-Action Alternative) could potentially affect biological resources through alteration or loss of vegetation and wildlife habitat. These impacts are described below for each alternative.

Assumptions used in analyzing the effects of the Proposed Action and alternatives include:

- Staging and other areas temporarily disturbed by construction would be placed in previously disturbed areas (e.g., paved or cleared areas), to the maximum extent possible.

- The proportion of disturbance associated with each land use category was determined based on accepted land use planning concepts. Development in each parcel could occur at one or more locations, unless designated as vacant land.

4.4.5.1 Proposed Action

Construction and operations activities associated with the Proposed Action would adversely affect biological resources primarily through permanent loss of vegetation and its associated wildlife. Additional adverse effects are associated with the conversion of habitats (e.g., conversion of shrubland or hay cropping land to frequently mowed weedy areas or planted cropland). Of particular concern is the potential for the loss of any threatened or endangered species.

Vegetation. Overall, the Proposed Action would result in a maximum loss of approximately 460 acres of mowed weedy vegetation and 90 acres of mesquite thicket. The remainder of the construction disturbance would occur in previously disturbed areas that have low biological value. These losses would result from new construction and renovation of airfield and aviation support facilities. About 80 acres of the total 460 acres would be disturbed within government fee-purchased Parcel 2, a portion of which is proposed to be utilized for airfield purposes. During operations, vegetation maintenance around the airfield for safety could keep the weedy vegetation under control through mowing and the use of oil palliatives for dust control.

Construction of the new parallel runway would directly affect the mowed vegetation characteristic of improved and semi-improved areas in the Munitions Storage Area of the base. Improved and semi-improved areas are dominantly vegetated by weedy introduced species of grasses and forbs but also contain a number of native grass and forb species. Such areas, even though they are regularly mowed, have a high plant species diversity and are abundant throughout the base. Approximately 230 acres of frequently mowed vegetation may be lost by the construction of the proposed runway.

Aviation support construction south of the cross-taxiways would affect approximately 160 acres (including 80 acres within the government-retained area) of improved and semi-improved type vegetation within the base boundary. Other proposed land uses would not affect any significant amount of vegetation.

Government-Retained Land. Construction of facilities within the government-retained land area in the center of the base would result in the loss of up to 80 acres of mowed weedy vegetation.

Government Fee-Purchased Land. With the Proposed Action, about 80 acres of mowed vegetation would be affected in Parcel 2 with construction of the new runway, associated taxiway system, and aviation support facilities. Vegetation on the other three government fee-purchased land parcels would not be affected.

Offbase Impacts. South of the base boundary, in line with the proposed runway, are mesquite thicket vegetation, some agricultural land, and riparian vegetation bordering a small drainage which flows east into Onion Creek and

Onion Creek itself. The two creeks, and associated vegetation, would not likely be significantly affected by construction of the new runway, except for a 50- to 60-foot narrow strip which would be cleared of shrubs and trees and mowed for the placement of the runway approach lighting system. The southern RPZ would remain largely undisturbed, except for areas with very tall trees and shrubs that may be removed because they are safety hazards for landing aircraft.

Offbase impacts in the public/recreation area may include loss of mesquite thicket, possibly some agricultural land, and riparian vegetation along a tributary to Onion Creek south of the base boundary. However, impacts are expected to be minimal because most of this area will be maintained in a natural state.

Wildlife.

Habitat Alteration and Loss. The majority of impacts to wildlife are expected to be long term and include loss and/or fragmentation of habitat, displacement, increased stress, disruption of daily/seasonal behavior, and mortality for less mobile species. The ability of more mobile species to displace and survive in adjacent habitats would primarily depend on the presence or absence of suitable habitat and, if present, whether adjacent suitable habitat is at carrying capacity. If adjacent habitats are at carrying capacity at the time of construction or when operations begin, the forced introduction of individuals into these areas would cause an increase in competition for resources (e.g., food, nesting areas). This, in turn, would cause a temporary increase in mortality for some species until equilibrium is reestablished. The loss and alteration of habitats with the Proposed Action — while detrimental to wildlife species — is not expected to have a significant impact on regional wildlife populations because of the generally poor condition of most of the affected habitats and the presence of suitable adjacent habitats.

Impacts to wildlife in the proposed airfield area include the loss of improved and semi-improved areas. Although these areas are generally considered poor wildlife habitat, they support a number of species including black-tailed jackrabbit (*Lepus californicus*), Mexican ground squirrel (*Spermophilus mexicanus*), mourning dove (*Zenaida macroura*), scissor-tailed flycatcher (*Muscivora forficata*), northern mockingbird (*Mimus polyglottos*), eastern meadowlark (*Sturnella magna*), common grackle (*Quiscalus quiscula*), and black-throated sparrows (*Amphispiza bilineata*). Of particular concern is the potential loss of a small amount of riparian habitat adjacent to the landfills and the Munitions Storage Area in the area to be traversed by the new runway.

Wildlife species potentially affected by the loss of this habitat include northern raccoon (*Procyon lotor*), opossum (*Didelphis marsupialis*), northern cardinal (*Cardinalis cardinalis*), greater yellowlegs (*Totanus melanoleucus*), American woodcock (*Philohela minor*), green-backed heron (*Butorides striatus*), barn swallows (*Hirundo rustica*), and red-tailed hawks (*Buteo jamaicensis*). A large variety of herpetofauna species could also be affected by this loss of habitat.

These may include frogs and toads (*Rana, Hyla, Acris, Pseudacris, Scaphiopus, Gastrophryne,* and *Bufo* spp.), turtles (*Chrysemys, Sternotherus, Trionyx, Graptemys,* and *Terrapene* spp.), and snakes (*Agkistrodon, Lampropeltis, Nerodia,* and *Thamnophis* spp.).

Most of the proposed aviation support areas within the base boundary consist of frequently mowed weedy areas. Wildlife species affected by development in these areas are expected to be similar to those discussed for the improved areas in the proposed airfield area.

Government Fee-Purchased Land. With the Proposed Action, impacts to wildlife in the four government fee-purchased land parcels would be similar to impacts in adjacent areas. Parcels 1 and 3 are unlikely to be greatly disturbed because it was assumed that they would remain in their present state. Parcel 2 contains a riparian area that may be utilized by many onbase species and migratory species for shelter and forage. It was assumed that riparian areas in the proposed public/recreation and aviation support areas would be avoided to the extent possible.

Offbase Impacts. Much of the proposed public/recreation area south of the base boundary was not surveyed due to restricted access. Wildlife species potentially affected in this area are expected to be similar to those described above for the mesquite thicket and riparian areas (a drainage crosses the parcel). This area, as well as the area along Onion Creek, is expected to be largely maintained in a natural state. This area should continue to mature, providing habitat for different/additional wildlife species.

Noise/Activity. Although the civilian aircraft that would use the proposed airport are somewhat quieter than some military aircraft currently using the base, the number of flights per day is expected to increase, and this may result in increased disruption to wildlife activity in the area, as well as a potential increase in Bird Aircraft Strike Hazard (BASH) problems. In addition, the military aircraft currently using the airfield (F-16s) will continue to use it with the Proposed Action. The Proposed Action would result in much more human activity on the base. These factors are likely to combine to substantially decrease the attractiveness of much of the base to many wildlife species. If the offbase area around Onion Creek, which is proposed for public/recreation use, is subjected to additional human activity, the use of this area by wildlife is likely to decrease to some extent.

Threatened and Endangered Species. The Air Force has conducted informal Section 7 consultations with the U.S. Fish and Wildlife Service (USFWS) and the Texas Parks and Wildlife Department, as suggested by the USFWS, for potential land surrender to private parties. The Texas Parks and Wildlife Department (Spain 1992) has indicated that there have been no recent confirmed occurrences of federal- or state-listed threatened or endangered species on Bergstrom AFB.

The USFWS and Texas Parks and Wildlife Department have indicated that there are several listed species that reside in or are seasonal visitors in Travis County, many within a 50-mile radius of Bergstrom AFB (Table 3.4-8). The endangered bald eagle (*Haliaeetus leucocephalus*) and the threatened piping plover (*Caradrius melodus*) have been sighted at Platt's Ponds (at the Hornsby Bend Wastewater Treatment Facility) northwest of Bergstrom AFB, and the Guadalupe bass (*Micropterus treculi*), a federal Category 2 (C2) candidate species, is known to occur in Onion Creek southwest of the base. Loggerhead shrikes (*Lanius ludovicianus*), another C2 species, were sighted in the south and southeast areas of the base in many of the more open or shrubby areas. Other threatened and endangered species, particularly migratory birds, may occur occasionally on or near Bergstrom AFB. No plant or animal species currently listed as threatened or endangered by the USFWS were detected on Bergstrom AFB during the April or June 1992 surveys.

With the Proposed Action, activities that could affect sensitive species would include the construction of a new parallel runway and aviation support facilities.

Concerns associated with the development of the proposed airfield include construction of the new parallel runway in proximity to the South Fork Drainage Ditch and Onion Creek, and the adverse effects that this action may have on the Guadalupe bass, a Category 2 candidate (C2) species known to occur in Onion Creek. The onbase concern is over the loss of the riparian habitat surrounding the South Fork Drainage Ditch. The loss of riparian areas may have adverse effects on migratory sensitive species such as the bald eagle and piping plover.

The area south of the base boundary that is proposed for aviation support facilities is dominated by mesquite thicket and a tributary to Onion Creek surrounded by riparian habitat. This area could help support many of the avian migratory species as well as loggerhead shrikes that were seen in adjacent onbase areas. If this vegetation were removed, species such as the bald eagle, piping plover, and loggerhead shrike may be adversely affected.

Government Fee-Purchased Land. With the Proposed Action, construction of the new runway and aviation support facilities in Parcel 2 may affect sensitive species. Because this area is currently abandoned agricultural land, impacts resulting from construction of the new runway and aviation support facilities would be minimal. However, there is an area of riparian habitat in the eastern portion of this parcel that may be used by migratory avian species as shelter and foraging habitat. This area is proposed for public/recreation uses and is not likely to be severely affected. It was assumed that Parcel 3 would not be further disturbed. Any disturbance in this area that would affect the integrity of Onion Creek may negatively affect the Guadalupe bass.

If portions of the government fee-purchased land (324 acres) on Bergstrom AFB are subsequently determined to contain any threatened or endangered species and are to be transferred to another federal agency, that agency may be required to conduct additional consultation under Section 7 of the Endangered Species Act prior to irreversible or irretrievable commitment of resources to any project that could adversely affect those species. Similarly, consultation may be required if the government-retained lands are determined to contain threatened and endangered species which could be adversely affected. Formal consultation under Section 7 of the Endangered Species Act is required if the federal agency determines that its action may affect listed species or critical habitat, or if formal consultation is requested by the Director of the USFWS. Formal consultation is a process between the USFWS and the federal agency that concludes with the USFWS's issuance of a biological opinion that states whether the federal action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.

A no-jeopardy opinion may include restrictions on the amount of incidental adverse effects to listed species and critical habitat. A jeopardy opinion (i.e., the project could jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat) would also include reasonable and prudent alternatives, if any, that the federal agency could implement to avoid jeopardizing the listed species or critical habitat. If a jeopardy opinion is issued, the federal agency will either alter or cease its action to comply with the no-jeopardy mandate in Section 7(a)(2) of the Endangered Species Act or seek an exemption from this mandate under Section 7(h) of the Act.

For properties surrendered to nonfederal and private parties, those parties would be subject to the prohibitions listed in Section 9 of the Endangered Species Act (16 USC 1538) and 50 CFR 17, Subparts C, D, F, and G. For certain activities involving the export, possession, taking, sale, or transport of threatened or endangered animal species, nonfederal and private parties would be required to obtain a permit under Section 10 of the Endangered Species Act (16 USC 1539) and 50 CFR 17, Subparts C and D.

Offbase Impacts. It was assumed that the south RPZ area for the new runway, which crosses Onion Creek, would be left relatively undisturbed. If construction of the new runway affects areas directly surrounding Onion Creek or the flow or integrity of Onion Creek, it is likely that the Guadalupe bass will be adversely affected.

Sensitive Habitats. A survey to identify potential wetlands on Bergstrom AFB was conducted in July 1992, and subsequently, a report was submitted to the U.S. Army Corps of Engineers (COE), Fort Worth District. The COE has determined that there are several Waters of the United States on the base subject to protection under the permitting requirements of Section 404 of the Clean Water Act. There are also offbase areas that would be affected by the Proposed Action that are riparian corridors and should be considered sensitive habitats.

With the Proposed Action, the creek in the southwestern part of the base that feeds into Onion Creek, and Onion Creek itself, could be affected by airfield activities, although it is unlikely that there would be any major change in the use of these areas.

Construction of the new runway would adversely affect South Fork Drainage Ditch and surrounding riparian habitats because the runway would traverse the drainage. By removing the main source of water from the remainder of South Fork Drainage Ditch, the entire riparian system surrounding the drainage ditch would likely be adversely affected. The northern fork of the drainage ditch may also be adversely affected by airfield activities. Most of this drainage lies within the proposed public/recreation areas, but the headwaters of the drainage may be cut off by the construction of the runway. Construction of the new runway and institutional facilities is not expected to result in any long-term impacts to the tributary of the Colorado River in the northeastern portion of the base, near the base housing area. Short-term impacts resulting from increased sedimentation in the drainage during construction may occur.

The COE must be notified and authorize any discharge of dredged or fill material into any of these areas.

With the Proposed Action, Onion Creek and the unnamed tributary that lies between Onion Creek and the southern base boundary may be affected by airfield construction activities, but it was assumed that most impacts would be minimal and restricted to small-scale construction, such as the runway approach lighting system.

Government Fee-Purchased Land. With the Proposed Action, portions of Onion Creek and South Fork Drainage Ditch in two of the government fee-purchased land parcels may be affected by airfield construction activities. Parcel 3 includes Onion Creek and it was assumed that there would be no changes or further disturbance to this area where approach lighting has already been constructed. South Fork Drainage Ditch passes through Parcel 2. It was assumed that this riparian area would not be disturbed by proposed public/recreation uses.

Offbase Impacts. Portions of Onion Creek and the unnamed tributary could be adversely affected with the Proposed Action, particularly by airfield construction activities. However, because these drainages would be within the RPZ area, it is expected that only minimal construction activities would occur, such as for the approach lighting system.

Mitigation Measures. The following procedures and guidelines have been identified as potential mitigation measures that project proponents should use to protect and restore biological resources disturbed by project activity:

- Avoid known sensitive or unique biological habitats to the extent possible. For the Proposed Action, this would include avoiding or mitigating impacts to the riparian areas affected by construction of the parallel runway.

- Revegetate temporarily disturbed sites with native species and use native species in landscaping to the greatest extent possible.

- Implement measures to promote soil stabilization.

- Implement measures to control noxious weed invasion on disturbed sites.

- Operate construction equipment only on roads or within designated disturbance areas.

- Where practical, decrease mowing frequency and the clearing of vegetation from some drainage channels. This will increase biodiversity, improve wildlife habitat, and aid the establishment of aquatic vegetation which will substantially improve water quality in drainage channels.

- Maintain pesticide and fertilizer management plans. This is important to the prevention of contamination of surface and groundwater. In addition, uncontrolled pesticide use (especially rodent poisons and other pest control measures common at golf courses) often have direct impacts on native rodents in the vicinity and indirect impacts on raptors and carnivorous mammals, which may feed on poisoned rodents.

- Avoidance of disturbance to Waters of the United States, drainages, and riparian areas could include, but not be limited to, controlling runoff from construction sites into drainages through the use of berms, silt curtains, straw bales, and other appropriate techniques. Equipment could be washed in areas where washwater could be contained and treated or could evaporate. Consultation with the COE must be undertaken for actions which could result in the deposition of dredged or fill material into Waters of the United States.

4.4.5.2 General Aviation/Air Cargo Airport Alternative

Construction activities associated with the General Aviation/Air Cargo Airport Alternative would disturb about 160 acres of land with relatively low biological value. The area to be retained by the Air Force with this alternative is not expected to be extensively disturbed and any ground disturbance in this area could avoid sensitive habitats. Specific impacts potentially resulting from the implementation of this alternative are described below.

Vegetation. Construction of new facilities within the government-retained area would most likely affect improved and semi-improved area vegetation. Development would be accomplished to avoid impacts on the riparian vegetation and drainage systems into the South Fork Drainage Ditch on the eastern side of the base in and adjacent to the Munitions Storage Area.

Ground disturbance in the aviation support area would potentially be limited to improved and semi-improved area vegetation including a small triangle of land south of the government-retained land and adjacent to the existing taxiway. The vegetation in these areas is regularly mowed and contains a grass/forb mixture of native and introduced species commonly found throughout much of the base. Approximately 160 acres of such vegetation may eventually be disturbed.

Government Fee-Purchased Land. None of the four government fee-purchased land parcels would likely be disturbed with this alternative; therefore, no impacts to vegetation would occur.

Wildlife.

Habitat Alteration/Loss. Impacts to wildlife with the General Aviation/Air Cargo Airport Alternative are expected to be minimal. This alternative would result in the disturbance of only small areas of relatively poor quality habitat. The aviation support area proposed for the area just east of the southern portion of the main taxiway contains frequently mowed weedy areas that support relatively few wildlife species. Species potentially affected by the loss of this area include black-tailed jackrabbits, Mexican ground squirrels, scissor-tailed flycatchers, common grackles, and mourning doves. The loss of this small amount of habitat is not expected to have a significant effect on these species because of the presence of suitable adjacent habitat.

Government Fee-Purchased Land. None of the four government fee-purchased land parcels would likely be disturbed with this alternative; therefore, no impacts to wildlife would occur.

Noise/Activity. Aircraft operations with this alternative would be similar to the Proposed Action; however, the number of operations would be substantially lower. The increase in human activity on the base is likely to result in a decrease in use of the base by most wildlife species.

Threatened and Endangered Species. With the General Aviation/Air Cargo Airport Alternative, the areas that could potentially affect sensitive species would include the airfield and government-retained land areas.

It was assumed that the airfield would be maintained as it is currently, with periodic mowing, and that the area of mesquite thicket in the southwest portion of the base would be relatively undisturbed. Assuming that construction of new facilities in the government-retained area would avoid the riparian areas surrounding the South Fork Drainage Ditch to the extent possible, local sensitive species would not be affected by this alternative.

Government Fee-Purchased Land. None of the four government fee-purchased land parcels would likely be disturbed with this alternative; therefore, no impacts to sensitive species would occur.

Sensitive Habitats. With the General Aviation/Air Cargo Airport Alternative, no Waters of the United States would likely be severely affected. Existing land uses surrounding areas of COE jurisdiction (Figure 3.4-3) are not expected to change. If it is anticipated that any dredge or fill material will be discharged into these areas, the COE must be consulted.

Mitigation Measures. With this alternative, only a small amount of land of relatively low biological value would be disturbed. Biological resource impacts could be reduced further through the implementation of mitigation measures described in Section 4.4.5.1.

4.4.5.3 Mixed-Use Development Alternative

Construction and operations activities associated with the Mixed-Use Development Alternative would adversely affect 1,640 acres, primarily through the conversion of weedy fields to cropland and through the potential development of commercial and industrial land uses on the base. Specific impacts are discussed below.

Vegetation. Potential impacts associated with new ground disturbance for industrial and agricultural land uses could possibly affect small drainage systems near the existing Munitions Storage Area. This area includes mostly mowed weedy vegetation of commonly occurring native and introduced grasses and forbs. Up to 400 acres of mowed weedy vegetation and approximately 10 acres of riparian vegetation may eventually be disturbed in this area. However, sufficient land is present to allow siting of facilities to avoid impacts to riparian areas.

Two relatively small, but somewhat unique, vegetation types may be disturbed in the proposed commercial areas. At the north end of existing Runway 17R/35L, near the cemetery, are vegetation types identified as grassland/deciduous trees and a seep area, which together comprise approximately 50 acres. Both vegetation types are not found anywhere else on the base. Commercial use of the land northeast of the existing airfield would affect up to approximately 180 acres of mowed weedy vegetation.

Use of portions of the base for agricultural purposes would directly affect up to approximately 850 acres of the mowed, but abundant, vegetation in the existing airfield area and severely disturb up to approximately 150 acres of mesquite thicket vegetation along the western boundary of the base.

Government Fee-Purchased Land. The Mixed-Use Development Alternative would affect certain vegetation types on three of the government fee-purchased land parcels in areas proposed for the following land uses: industrial and agricultural uses in Parcel 2 (mowed vegetation), commercial use in Parcel 1 (mowed vegetation and grassland/deciduous trees), and agricultural use at the south end of the existing airfield area in Parcel 3 (mowed vegetation and deciduous forest/woodland).

Wildlife.

Habitat Alteration/Loss. Development of land within the area proposed for industrial uses could result in the loss or conversion of frequently mowed weedy areas. These areas typically support relatively few wildlife species. The riparian areas within the proposed industrial area (see Sensitive Habitats below) support a much greater diversity of wildlife species, including a large variety of mammals, birds, and herpetofauna. However, it is anticipated that development in the industrial area would be limited, at least initially, to areas of previous disturbance/development and that if new ground disturbance is eventually required, sufficient land exists in this area to allow the siting of facilities to avoid riparian habitat.

Development of the proposed commercial area to the north and northeast of Runway 17R/35L could result in the loss of additional mowed areas of relatively low value to wildlife. In addition, the seep in this area and the associated areas of increased vegetation structure provide habitat for a number of wildlife species which would be lost or displaced with development. Species potentially affected include eastern cottontail, a variety of rodent species, blue jay, loggerhead shrike, kestrel, bobwhite, thrushes, bullfrogs (*Rana catesbeiana*), and prairie kingsnakes.

The conversion of the mesquite thicket along the western boundary of the base and the frequently mowed and hay cropping areas in the airfield to agricultural land would result in a substantial decrease in the value of these areas to wildlife species. Currently, the additional structure in the mesquite thicket provides habitat for a greater diversity of wildlife than the improved areas in the airfield. However, both of these habitats support a larger variety of wildlife species than would monotypic croplands which typically support relatively few species that feed on or nest in croplands. In addition, these species are generally considered pests and are subjected to control measures. The planting of crops would also substantially reduce the value of these areas to foraging raptors.

Government Fee-Purchased Land. With the Mixed-Use Development Alternative, there may be some effects to the government fee-purchased land Parcels 1 and 3 if the proposed uses are implemented. Impacts on wildlife in Parcel 1 would be similar to those described previously for the other land designated for commercial use. A portion of Parcel 3 is proposed for agricultural uses and the planting of cropland could affect some of the local wildlife through habitat loss. However, as discussed above, there would be overall positive effects for wildlife with this alternative due to a reduction in human activity and noise on the base compared to the Proposed Action.

Parcel 2 contains mowed weedy areas and a small amount of riparian vegetation that support wildlife species similar to those described above for similar areas. Sufficient land exists in this area to avoid the riparian areas. With this alternative, the vegetation in Parcel 3 south of Burleson Road is expected to continue to mature. In addition, the approach lighting easement may be allowed to undergo natural succession, providing additional wildlife habitat.

With this alternative, the other existing natural areas on the base (most notably the area along Onion Creek) are expected to continue to mature, thereby providing habitat for different/additional wildlife species over time.

Noise/Activity. Many of the detrimental habitat loss impacts described for the Proposed Action would likely be reduced with this alternative because of the general decrease in human activity on the base. The cessation of aircraft activities may benefit wildlife species, and wildlife species diversity is expected to increase somewhat in areas not subject to development or habitat conversion. This beneficial impact is expected to extend into natural areas outside the existing base boundaries.

Threatened and Endangered Species. With this alternative, the proposed land uses that could affect sensitive species would include public/recreation, commercial, and agricultural uses.

Industrial development should be small enough to avoid the area surrounding the South Fork Drainage Ditch. The conversion of the area north of the existing runways to commercial development may affect the local population of loggerhead shrikes, a federal Category 2 candidate species, but it is unlikely to affect the regional population.

The conversion of the western portion of the base from airfield uses to agricultural uses should have overall positive effects on local and regional populations of loggerhead shrikes and on migratory avian species. The reduction in noise and air traffic should bring about an overall positive effect.

There could be adverse impacts to the population of Guadalupe bass, a federal Category 2 candidate species, in Onion Creek due to agricultural runoff such as pesticides, herbicides, and nitrates resulting from the conversion of the current airfield to agricultural uses. The type of runoff and extent of impacts would vary depending on the type of agricultural uses (row cropping would probably cause the greatest detrimental effects while hay cropping is similar to much of the current use of the area and would probably cause the least impacts).

Government Fee-Purchased Land. Impacts to threatened and endangered species may occur in three of the government fee-purchased land parcels.

Parcel 1 is designated for commercial development with this alternative. The resulting destruction of vegetation could be detrimental to the local population of loggerhead shrikes which may nest and/or forage in this area.

Parcel 3 is proposed for two different uses with this alternative. The area north of Burleson Road is designated for agricultural uses, while the area south is designated for public/recreation uses, which would not alter the present use of the area. Agricultural uses may disturb loggerhead shrikes if mesquite thicket and small trees are removed, but the overall effect should be positive due to the removal of airfield-related noise and activity. The Guadalupe bass could be adversely affected by agricultural runoff (pesticides, herbicides, or nitrates) in Onion Creek depending on the type of agricultural use.

Parcel 2 is designated for agricultural and recreational uses. Neither of these uses should negatively affect the populations of threatened and endangered species in the area because it was assumed that these uses would avoid the area surrounding the South Fork Drainage Ditch as much as possible, and the riparian habitat to the east of the Munitions Storage Area could be retained as open space.

Sensitive Habitats. With the Mixed-Use Development Alternative, the primary concern is the impact that agricultural uses may have on the integrity of Onion Creek and its tributary in the southwestern portion of the base due to possible agricultural runoff containing pesticides, herbicides, and nitrates. It was assumed that the industrial uses in the South Fork Drainage Ditch area would avoid the drainage and surrounding riparian vegetation to the greatest extent possible. Public/recreation uses in the northern drainage ditch and in the tributary to the Colorado River should not adversely affect those Waters of the United States.

COE authorization would be required for the discharge of dredged or fill material into any of these areas.

Mitigation Measures. The grassland/deciduous tree area north of Runway 17R/35L should be avoided to the extent possible. Other mitigation measures are described in Section 4.4.5.1.

4.4.5.4 No-Action Alternative

Caretaker maintenance of the base would have beneficial effects on biological resources. A reduction in human activity and a cessation of aircraft flights would reduce disturbance (particularly by noise and continued alteration of habitat) to wildlife on and in the vicinity of the base. Habitat quality for wildlife could improve if mowing of nonlandscaped areas were terminated or reduced. This would allow wildlife species richness and diversity to increase, and would have an overall positive effect on biological resources at Bergstrom AFB. This would be most notable in the areas around drainages. With the No-Action Alternative, these areas would continue to mature and provide additional habitat for wildlife species.

4.4.6 Cultural and Paleontological Resources

Potential impacts were assessed by (1) identifying types and possible locations of reuse activities that could directly or indirectly affect cultural resources and (2) identifying the nature and potential significance of cultural resources in potentially affected areas.

Pursuant to the National Historic Preservation Act (NHPA), consultation, as directed by the Section 106 review process, has been completed with the Texas State Historic Preservation Officer (SHPO). The SHPO requested that prehistoric sites 41TV435 and 41TV436 be evaluated through testing to determine their National Register of Historic Places (NRHP) eligibility and that a survey to locate and assess historic remains on the surface of site 41TV436 be conducted. Survey and testing of the sites were conducted and the sites were found not eligible for the NRHP. The SHPO has concurred with the findings. Reuse activities could affect cultural resources that may occur in offbase land to be acquired with the Proposed Action.

Historic properties, under 36 CFR 800, are defined as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the NRHP. This term includes, for the purposes of these regulations, artifacts, records, and remains that are related to and located within such properties. The term 'eligible for inclusion in the National Register' includes both properties formally determined as such by the Secretary of the Interior and all other properties that meet National Register listing criteria." Therefore, sites not yet evaluated are considered potentially eligible to the NRHP and, as such, are afforded the same regulatory consideration as nominated historic properties.

As a federal agency, the Air Force is responsible for identifying any historic properties at Bergstrom AFB. This identification process includes not only field surveys and recording of cultural resources, but also evaluations to develop determinations of significance in terms of NRHP criteria (NRHP criteria and related qualities of significance are discussed in Appendix E). Completion of this process results in a listing of historic properties subject to federal regulations regarding the treatment of cultural resources.

4.4.6.1 Proposed Action

With the Proposed Action, no known prehistoric sites would be affected on the base. The Texas SHPO has indicated that there will be no effect on Building 3920 (Graves 1993). Native American consultation has been initiated, but no sensitive Native American resources have been identified. Paleontological materials may be associated with the Marlbrook Marl; however, these fossils represent a marine invertebrate assemblage and have relatively low research potential.

Government Fee-Purchased Land. No NRHP-eligible prehistoric or historic sites are known to occur on any of the four government fee-purchased land parcels.

Potential Offbase Acquisition Land. Three known NRHP-eligible prehistoric and historic sites are located in the 917 acres south of the base which may be acquired by the City of Austin. Additional NRHP-eligible sites may also be identified through cultural resources surveys. These NRHP-eligible sites may be adversely affected by construction of aviation support facilities or through vandalism as a result of public/recreation use activities. However, it may be possible to site aviation support facilities in such a way as to avoid some NRHP-eligible sites. Impacts to cultural and paleontological resources with the Proposed Action would be significant if the NRHP-eligible sites are adversely affected.

Mitigation Measures. If ground-disturbing activities occur in areas with gravesites, compliance with applicable state and local laws and regulations for cemeteries would be required. Guidelines for the documentation, preservation, and protection of cemeteries have been published by the Texas Historical Commission (Texas Historical Commission 1991). In addition, if NRHP-eligible sites are affected offbase, discussions with the Texas SHPO on appropriate mitigation measures would be required.

4.4.6.2 General Aviation/Air Cargo Airport Alternative

With the General Aviation/Air Cargo Airport Alternative, no impacts would occur to prehistoric or historic sites on the base. Native American consultation has been initiated, but no sensitive Native American resources have been identified. Paleontological materials may be associated with the Marlbrook Marl; however, these fossils represent a marine invertebrate assemblage and have relatively low research potential.

Government Fee-Purchased Land. No NRHP-eligible prehistoric or historic sites occur on any of the four government fee-purchased land parcels. Impacts to cultural and paleontological resources would not be significant because no NRHP-eligible sites would be affected.

Mitigation Measures. If ground-disturbing activities occur in areas with gravesites, compliance with applicable state and local laws and regulations for cemeteries would be required. Guidelines for the documentation, preservation, and protection of cemeteries have been published by the Texas Historical Commission (Texas Historical Commission 1991).

4.4.6.3 Mixed-Use Development Alternative

With the Mixed-Use Development Alternative, no impacts would occur to prehistoric or historic sites on the base. Native American consultation has been initiated, but no sensitive Native American resources have been identified. Paleontological materials may be associated with the Marlbrook Marl; however, these fossils represent a marine invertebrate assemblage and have relatively low research potential.

Government Fee-Purchased Land. No NRHP-eligible prehistoric or historic sites are known to occur on any of the four government fee-purchased land parcels. Impacts to cultural and paleontological resources would not be significant because no NRHP-eligible sites would be affected.

Mitigation Measures. Potential mitigation measures would be the same as described for the General Aviation/Air Cargo Airport Alternative.

4.4.6.4 No-Action Alternative

With the No-Action Alternative, there would be no adverse impact on cultural or paleontological resources.

4.5 SUMMARY OF ENVIRONMENTAL CONSEQUENCES OF CLOSURE AND REDEVELOPMENT OF ROBERT MUELLER MUNICIPAL AIRPORT

The Proposed Action calls for the relocation of all airport activities at Robert Mueller Municipal Airport (RMMA) to Bergstrom AFB. RMMA will be closed eventually with this action, and a total of 896 acres of land (711 acres airport proper site and 185 acres Morris Williams Golf Course site) would become available for redevelopment. In 1984, the Airport Redevelopment Planning Committee of Citizens for Airport Relocation (CARE) explored the beneficial uses of the RMMA site if the airport were to be relocated.

In 1991, the Austin City Council appointed a Citizens Task Force to review the 1984 report on the redevelopment of RMMA. No definite plans for the redevelopment of RMMA have evolved from either of these reports. In fact, the 1991 Citizens Task Force concluded that projections used in the 1984 report did not materialize and the conclusions based on these projections were not valid. The Task Force did not prepare a redevelopment plan and left the task to a future task force or advisor. In the absence of a city-sponsored reuse plan for RMMA, the Air Force has made the following assumptions:

- The 185-acre Morris Williams Golf Course site will remain in its present use as a golf course; redevelopment would occur only on the 711-acre airport proper site.

- The existing buildings, covering 733,683 square feet, would be reused to the extent possible and no major demolition would occur.

- The use of existing aprons, runways, taxiways, roads, and parking lots would be maximized to reduce overall redevelopment cost and rubble disposal problems.

- The development of the site would include a combination of residential, public/recreation, and institutional (education and government) uses, although no firm suggestions or recommendations have been made in terms of acreage involved.

- Good land use planning would minimize impacts on traffic, noise, and air quality.

Because no definite plans for the redevelopment of RMMA exist, the impacts of potential redevelopment are presented in general terms in this section. Impacts are described for the same resource categories as discussed for the Proposed Action and alternatives.

Community Setting. The loss of approximately 1,700 jobs resulting from the closure of RMMA would be compensated by the corresponding gain in jobs at Bergstrom AFB, both located within Travis County. Redevelopment of RMMA would create additional jobs and possible inmigration of population. The number of jobs created would depend on the specific development scenario chosen. Travis County employment is projected to increase at a rate of 1.4 percent per year from 1994 to 2012. Jobs created by the redevelopment of the RMMA site would be part of this projected growth; only their physical location within the county would change.

Land Use. With the closure of RMMA, approximately 711 acres of the airport site would become available for redevelopment. Proposed land uses for this site would be in conformity with the city's short-term as well as long-term goals and would be compatible with surrounding land uses. The 185-acre golf course site is expected to remain in its present use.

Transportation. With the closure of RMMA, traffic on roads leading to the airport, particularly on Airport Boulevard and Manor Road, would be reduced substantially. This traffic would be shifted to roads leading to Bergstrom AFB. It is expected that the redevelopment plan for RMMA would include development of a street system that would discourage traffic through residential areas and improve traffic circulation and safety in general.

Utilities. Utility demands for water, wastewater, solid waste, electricity, and natural gas at RMMA would be shifted to Bergstrom AFB. Because the same utility purveyors provide service to the two sites, there would be no net impact on the capacity of the purveyors to provide needed services. The capacity left unused with the closure of Bergstrom AFB would be available during the redevelopment of the RMMA site.

Hazardous Materials and Hazardous Waste Management. Hazardous materials that may present problems for the redevelopment of the RMMA site include USTs for fuel and the presence of ACM that may be encountered in some of the older structures on the property. The demolition of runways, taxiways, and aprons, which are mostly asphalt, may present serious disposal problems. The 1991 Task Force recommended that a comprehensive environmental assessment be completed prior to undertaking any further land use studies.

Soils and Geology. Closure of RMMA would not affect the soils and geology of the site. Soil disturbance would, however, occur as a result of redevelopment activities. Proper construction management practices would limit soil erosion and dust generation during ground disturbance.

Water Resources. With the closure of RMMA, the potential for contamination of surface or groundwater from airport-related activities or accidental spills would be eliminated. During the redevelopment phase, water quality issues, such as those related to the Urban Watersheds Ordinance, the Barton Creek Ordinance, and the Edwards Aquifer District, may be expected to limit or increase the cost of development in many parts of the Austin area. The proposed Urban Watersheds Ordinance would not limit impervious cover or cut-and-fill depths within the urban watersheds. However, the ordinance would require construction of water quality controls within all residential, multi-family, commercial, industrial, and civic development, including roadways that require site plan approval, and would establish critical water quality zones along waterways with a drainage area greater than 64 acres.

Air Quality. Pollutant emissions from aviation activities and ground traffic to and from RMMA would be eliminated with the closure of the airport. However, corresponding increases within the same air basin would occur as a result of the relocation of operations from RMMA to Bergstrom AFB. The redevelopment of the RMMA site would result in new pollutant emission sources, many of which would be subject to regulation by the state air quality board. Mitigation measures to minimize the air quality impacts during construction as well as the operations phase may be required by the regulatory agencies.

Noise. The closure of RMMA would result in a substantial reduction in noise impacts to sensitive receptors, including residential neighborhoods in the vicinity of the airport. Noise levels generated by ground traffic associated with the redevelopment of the site would not be as severe as from the airport activities. Proper land use planning can further reduce the noise levels to acceptable levels.

Biological Resources. Closure of RMMA would not adversely affect biological resources on or in the vicinity of the site. Reduced noise levels may benefit some wildlife species. No threatened or endangered species were reported at the RMMA site. However, the presence of endangered or threatened species, such as the golden-cheeked warbler, the black-capped vireo, numerous invertebrates, and some types of vegetation in the western parts of the Austin metropolitan area, may decrease demand for western properties and encourage development in the east.

Cultural and Paleontological Resources. Closure of RMMA would not adversely affect cultural and paleontological resources on or in the vicinity of the site. Redevelopment activities, however, may affect some buried deposits if they are found during the ground disturbance phase of development.

4.6 SUMMARY OF ENVIRONMENTAL CONSEQUENCES FOR PROPOSED ACTION AND GENERAL AVIATION/AIR CARGO AIRPORT ALTERNATIVE WITHOUT AIR FORCE PRESENCE

As described in Section 2.3.3, on March 12, 1993, the Secretary of Defense submitted a list of military installations recommended for closure and/or realignment to the Defense Base Closure and Realignment Commission. This list included the realignment of all remaining military units at Bergstrom AFB (i.e., the 924th Fighter Group [FG], Headquarters 10th Air Force, and the Ground Combat Readiness Center) to another installation. The Air Combat Command Regional Corrosion Control Facility (RCCF) was also recommended for closure. On July 1, 1993, the Commission recommended to the President that the AFRES units remain at Bergstrom AFB until at least the end of 1996. Because these recommendations may still be reviewed in 1996, the potential environmental impacts that could result from the realignment action are discussed in this section. Changes to the Proposed Action and General Aviation/Air Cargo Airport Alternative that would occur with realignment of these Air Force units are described in Sections 2.3.3.1 and 2.3.3.2, respectively.

Environmental resources that would experience measurable changes in potential impacts with the implementation of the proposed realignment action would include transportation (surface traffic), air quality, and noise. In addition, realignment of the Air Force units would also result in changes to hazardous material and waste management practices on the base property. The relocation of 400 additional persons from Travis County would not substantially change employment, population, utility demand, or land use and aesthetics effects described for the Proposed Action and General Aviation/Air Cargo Airport Alternative in Section 4.2. Potential impacts on soils and geology, water resources, biological resources, and cultural and paleontological resources would not be measurably different than those described for the Proposed Action and General Aviation/Air Cargo Airport Alternative in Section 4.4. Changes in impacts on transportation, hazardous material and hazardous waste management, air quality, and noise are described below.

4.6.1 Proposed Action Without Air Force Presence

Transportation. With the realignment of all Air Force units from Bergstrom AFB, approximately 2,000 fewer average daily trips would be generated on and in the vicinity of the base. Although this reduction would slightly improve the traffic flow on roads and highways providing access to the base, the level of service described in Section 4.2.3.1 for the Proposed Action would not change.

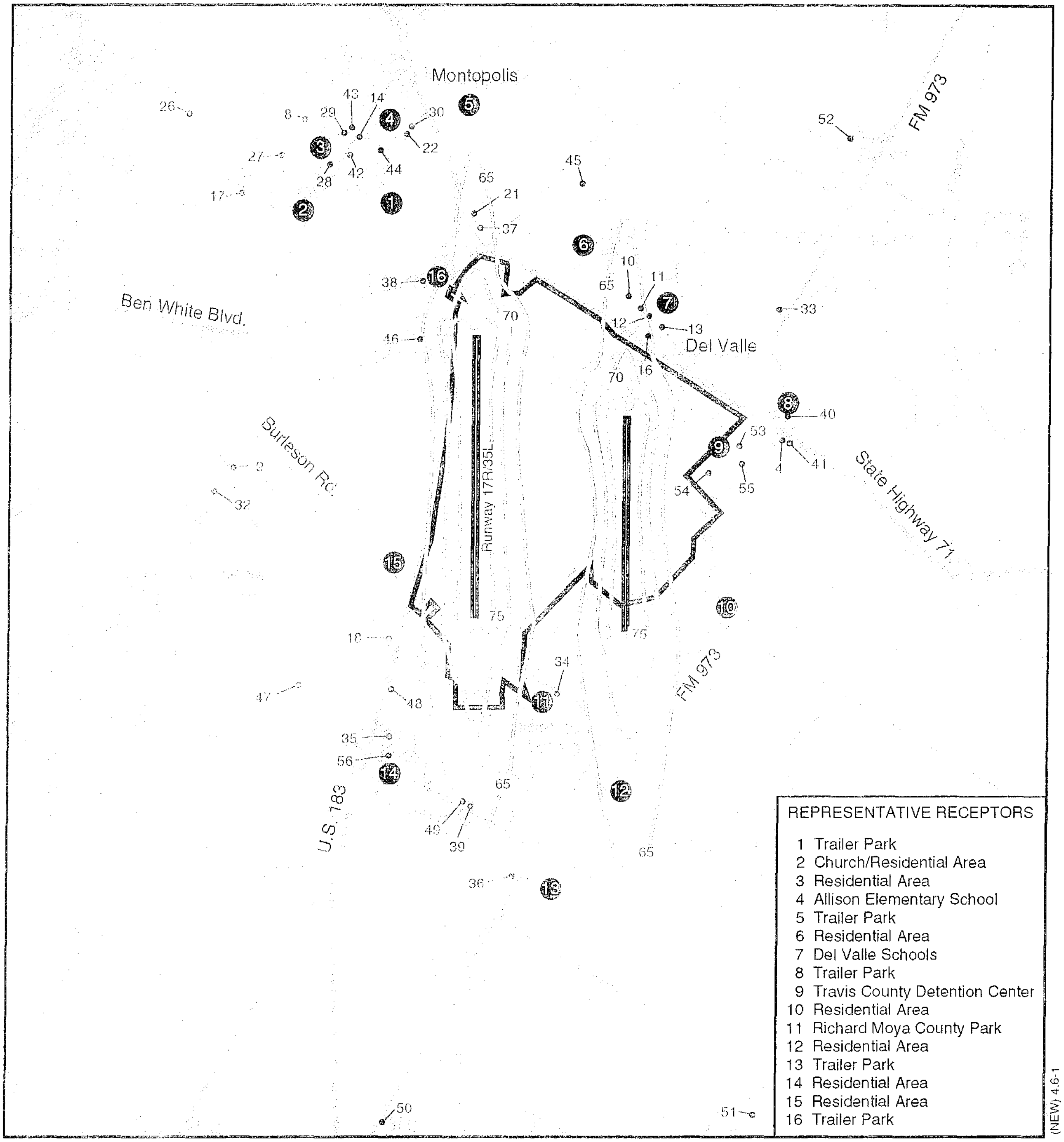
Hazardous Materials and Hazardous Waste Management. With realignment of Air Force units, certain types of hazardous materials associated with the operation and maintenance of military aircraft and other equipment would not be used (e.g., JP-4 jet fuel which is not used in commercial aircraft). In addition, with a reduction in maintenance activities, the amount of solvents, oil, paints, hydraulic fluids, and other hazardous materials used on the base property would be less. With the relocation of the 924th FG and the closure of the RCCF, the amount of hazardous waste generated on the base property would be significantly reduced compared to the closure baseline. Installation Restoration Program (IRP) activities would continue following base closure as described in Section 4.3.

Air Quality. If all military operations were eliminated from Bergstrom AFB, air pollution emissions and resulting air quality impacts would be less than those resulting from a combined civilian-military airport. The greatest reduction in emissions would occur in 1994. The reduction in nitrogen oxides (NO_x), volatile organic compounds (VOCs), sulfur dioxide (SO_2), and carbon monoxide (CO) would range from 55 to 65 percent compared to the Proposed Action, which includes military operations as the major contributor to pollutant emissions. Particulate matter less than or equal to 10 micrometers in diameter (PM_{10}) emissions would be reduced by about 8 percent. In 1997 and 2002, the reduction in pollutant emissions would range from 1 to 8 percent.

Noise. With the elimination of flying operations associated with the 924th FG, Headquarters 10th Air Force, and the RCCF, and a 50 percent reduction in the training flights by the Air Training Command (ATC), the number of annual aircraft operations that would occur at the proposed airport would decrease by 11,342. Compared to the Proposed Action (Table 2.2-4), the number of aircraft operations would be 8,520 in 1994, 195,282 in 1997, 208,422 in 2002, and 243,462 in 2012.

Because of the elimination of most of the military flying operations considered for the Proposed Action, to define noise impacts from aircraft operations at Bergstrom AFB without an Air Force presence, the FAA Integrated Noise Model (INM) version 3.10 was used to predict day/night average sound level (DNL) 65, 70, and 75 decibel (dB) noise contours and SEL values for noise-sensitive receptors. Assumptions (e.g., aircraft types and operations, runway use, takeoff and landing flight tracks, aircraft altitude, speeds, and engine power settings) used in the noise modeling for these years were the same as defined for the Proposed Action in Appendix H, except for the elimination or reduction in military flying operations as described above. Noise modeling for the Proposed Action without aircraft operations associated with the 924th FG, Headquarters 10th Air Force, and RCCF, and a 50 percent reduction in ATC training flights, was performed for 1997, the year representing the maximum impacts, and 2012. Results of the noise modeling are presented as noise contours in Figures 4.6-1 and 4.6-2.

Compared to the Proposed Action, the number of acres within the DNL 65 dB contour represents a decrease of 3,509 acres in 1997 and 3,483 acres in 2012. The large reduction in area within the DNL 65 dB contours is primarily attributed to the elimination of F-16 operations. After 1997, the Federal Aviation Administration (FAA)-required conversion from Stage 2 to quieter Stage 3 aircraft by the year 2000 would result in reduced noise exposure even though the number of aircraft operations by Stage 3 aircraft would continue to increase.



LEGEND

Base Boundary

65 DNL Noise Contours (in 5 dB Intervals)

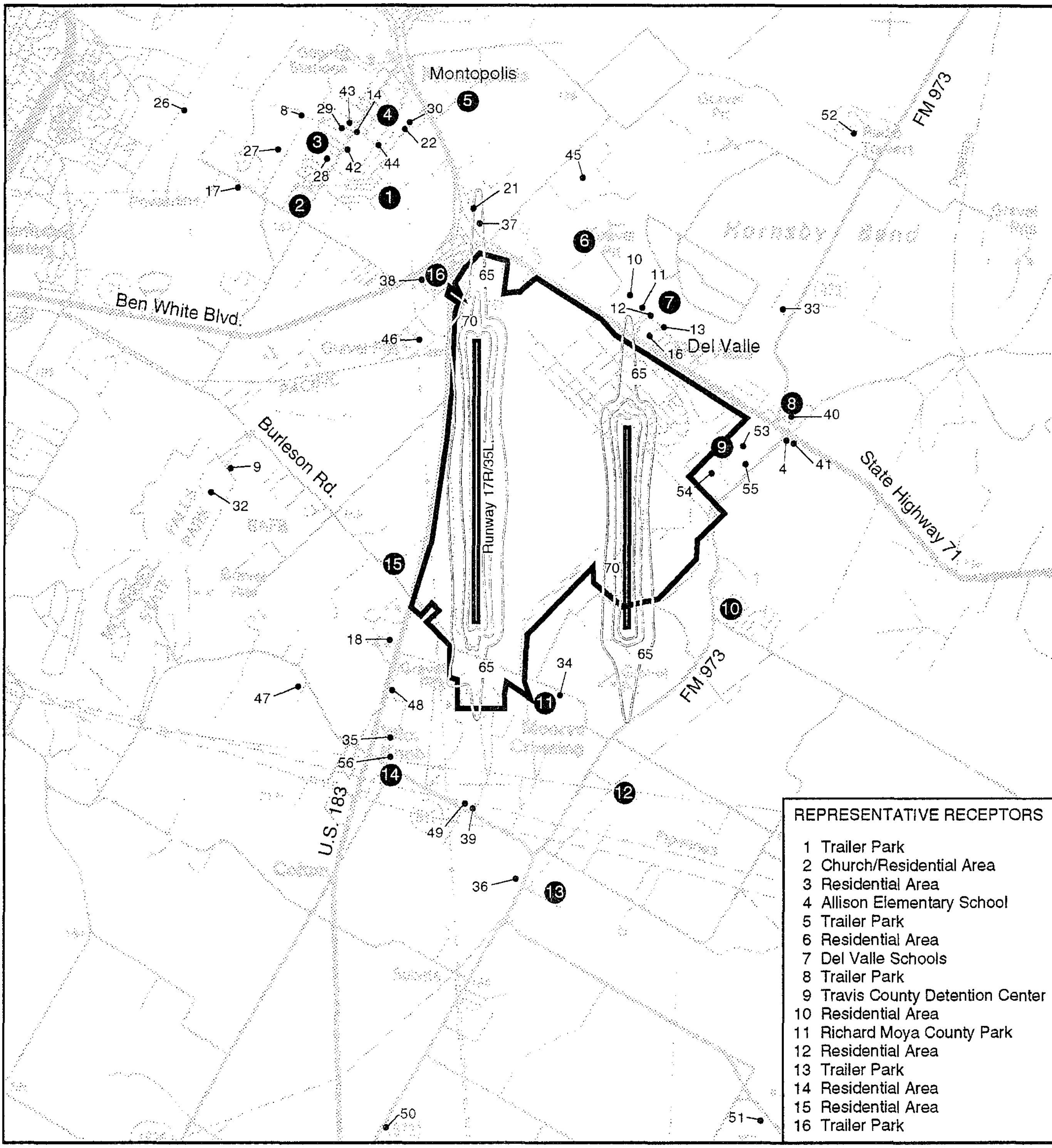
15 Representative Receptor Location

35 For List of Sensitive Receptors See Table 4.4-8a

0 0.5 1 MILES

DNL Noise Contours-Proposed Action Without Air Force Presence (1997)

Figure 4.6-1



LEGEND

	Base Boundary
65	DNL Noise Contours (In 5 dB Intervals)
15	Representative Receptor Location
• 35	For List of Sensitive Receptors See Table 4.4-8a

0 0.5 1 MILES

DNL Noise Contours-Proposed Action Without Air Force Presence (2012)

Figure 4.6-2

Sensitive receptors within the 1997 DNL 65 dB noise contour include eight facilities (two churches, three schools, one cemetery, and two other community facilities) (Figure 4.6-1). This represents a reduction of 13 facilities from the 21 facilities affected by the Proposed Action in 1997. Sensitive receptors within the 2012 DNL 65 dB noise contours include one learning center and a church (Figure 4.6-2). This represents a reduction of facilities from the 12 facilities affected by the Proposed Action in 2012.

DNL and Sound Exposure Level (SEL) values were calculated for 16 representative locations in the vicinity of the airfield for the noisiest and most common jet aircraft. For modeled year 1997, in terms of predicted DNL values for the representative receptor locations, two receptors (Del Valle Schools and the residential area south of Burleson Road and Farm-to-Market Road 973) would experience DNLs between 65 and 70 dB. All other receptors would experience DNLs less than 65 dB. For modeled year 2012, no representative receptors would experience DNLs between 65 and 70 dB.

4.6.2 General Aviation/Air Cargo Airport Alternative Without Air Force Presence

Transportation. With the realignment of all Air Force units from Bergstrom AFB, approximately 2,000 fewer average daily trips would be generated with the General Aviation/Air Cargo Airport Alternative on and in the vicinity of the base. Although this reduction would improve the traffic flow on roads and highways providing access to the base, the level of service described in Section 4.2.3.2 for this alternative would not change.

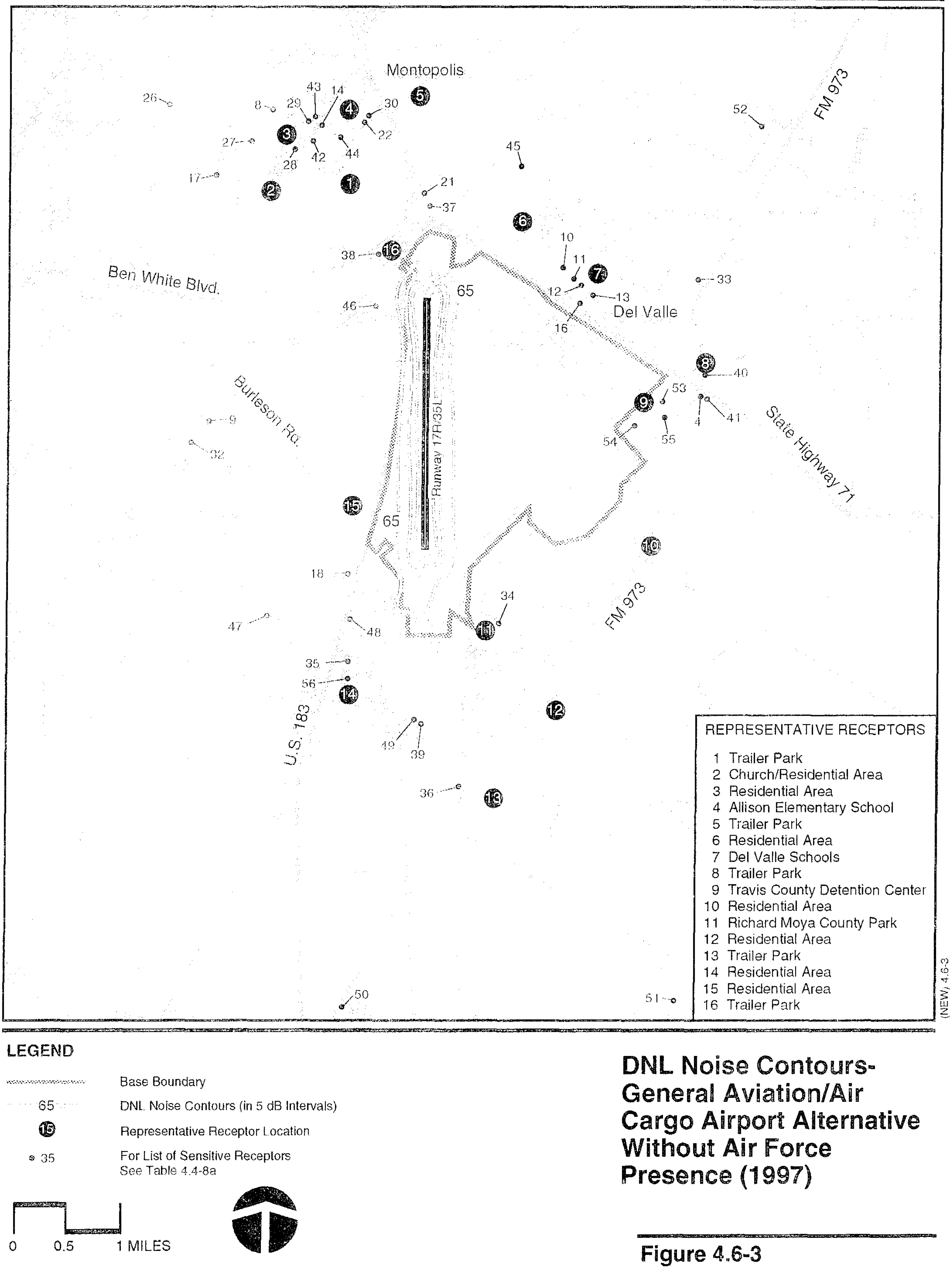
Hazardous Materials and Hazardous Waste Management. With the realignment of the Air Force units, certain types of hazardous materials associated with the operation and maintenance of military aircraft and other equipment would not be used (e.g., JP-4 jet fuel which is not used in commercial aircraft). In addition, with a reduction in maintenance activities, the amount of solvents, oil, paints, hydraulic fluids, and other hazardous materials used on the base property would be less. With the relocation of the 924th FG and the closure of the RCCF, the amount of hazardous waste generated on the base property would be significantly reduced. IRP activities would continue following base closure as described in Section 4.3.

Air Quality. The realignment of all military operations with this alternative would result in the largest reduction in pollutant emissions in 1994. The reduction in NO_x, VOCs, SO_2, and CO emissions would range from 45 to 55 percent compared to the General Aviation/Air Cargo Airport Alternative, while PM_{10} emissions would be reduced by about 13 percent. In 1997 and 2002, the reduction in pollutant emissions would range from 1 to 10 percent.

Noise. With the elimination of flying operations associated with the 924th FG, Headquarters 10th Air Force, and the RCCF, and a 50 percent reduction in the training flights by the ATC, the number of annual aircraft operations that would occur at the proposed airport would decrease by 11,342. Compared to the General Aviation/Air Cargo Airport Alternative (Table 2.3-4), the number of aircraft operations would be 8,520 in 1994, 109,905 in 1997, 108,839 in 2002, and 109,781 in 2012.

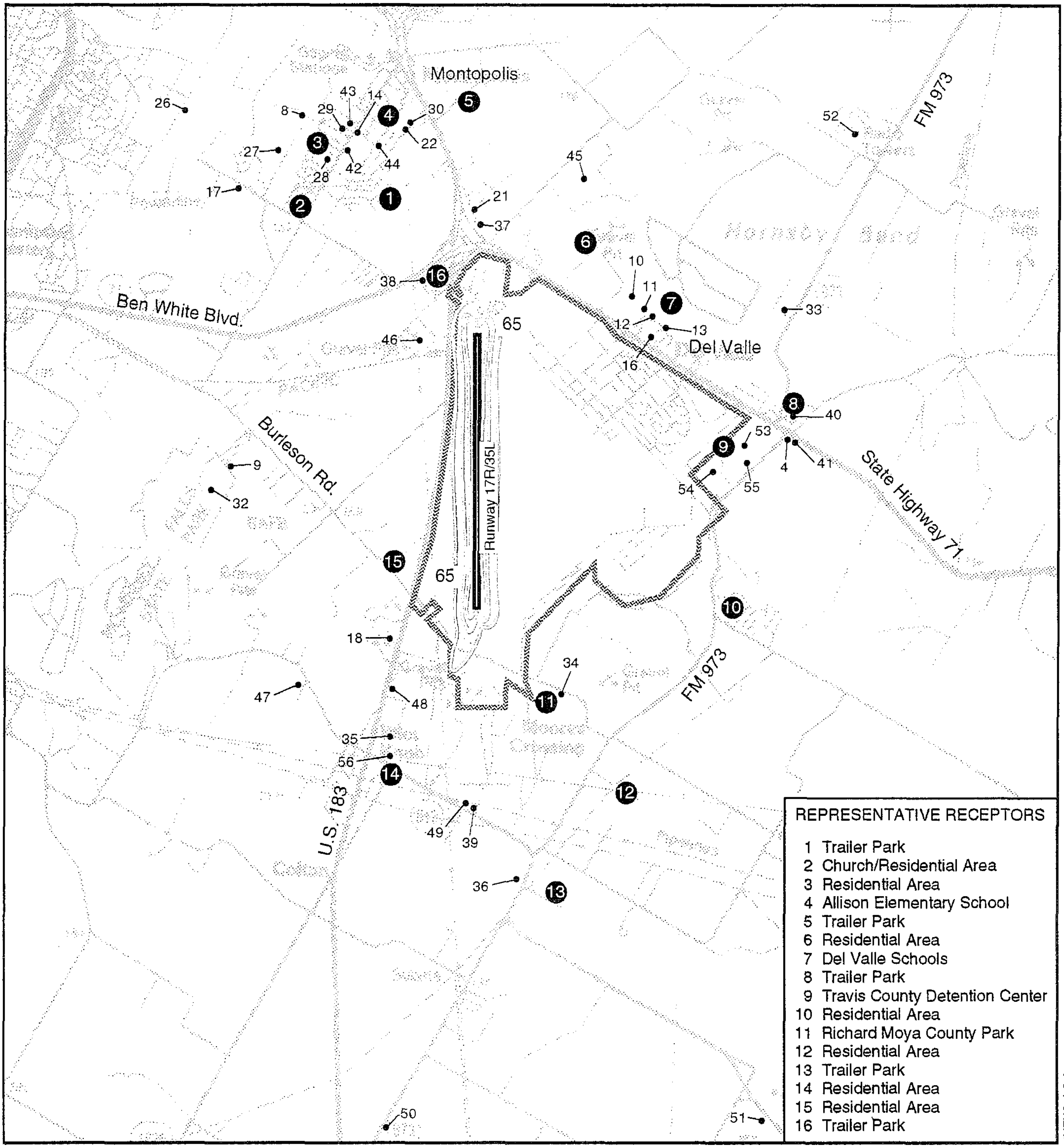
Aircraft noise modeling for the General Aviation/Air Cargo Airport Alternative without aircraft operations associated with the 924th FG, Headquarters 10th Air Force, and RCCF, and a 50 percent reduction in ATC training flights, was performed for 1997, the year representing the maximum impacts, and 2012. As described in Section 4.6.1 for the Proposed Action, noise modeling was performed using INM version 3.10 and results are presented as noise contours in Figures 4.6-3 and 4.6-4. Compared to the General Aviation/Air Cargo Airport Alternative, the number of acres within the DNL 65 dB contour represent a decrease of 3,282 acres in 1997 and 3,505 acres in 2012.

No sensitive receptors would be located within the 1997 and 2012 DNL 65 dB noise contours (Figures 4.6-3 and 4.6-4). DNL and SEL values were calculated for 16 representative locations in the vicinity of the airfield for the noisiest and most common jet aircraft. For modeled years 1997 and 2012, in terms of predicted DNL values for the representative receptor locations, none of the receptors would experience DNLs above 65 dB.



DNL Noise Contours-General Aviation/Air Cargo Airport Alternative Without Air Force Presence (1997)

Figure 4.6-3



LEGEND

Base Boundary

65 DNL Noise Contours (In 5 dB Intervals)

15 Representative Receptor Location

• 35 For List of Sensitive Receptors See Table 4.4-8a

0 0.5 1 MILES

DNL Noise Contours-General Aviation/Air Cargo Airport Alternative Without Air Force Presence (2012)

Figure 4.6-4

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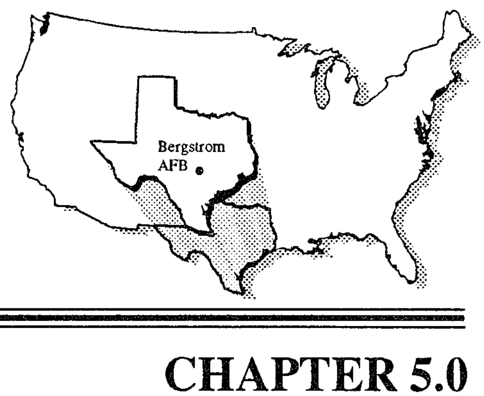

CHAPTER 5.0
CONSULTATION AND COORDINATION

5.0 CONSULTATION AND COORDINATION

The federal, state, and local agencies and private agencies/organizations that were contacted during the course of preparing this Environmental Impact Statement are listed below.

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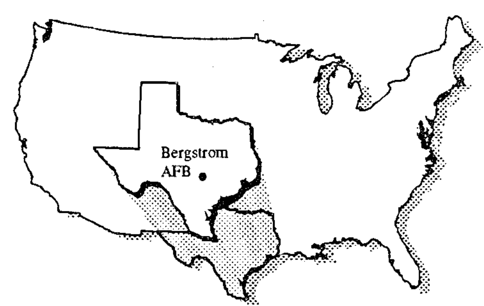

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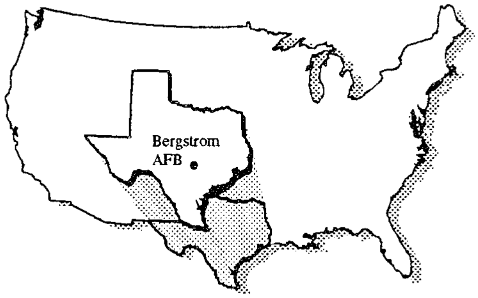

CHAPTER 7.0
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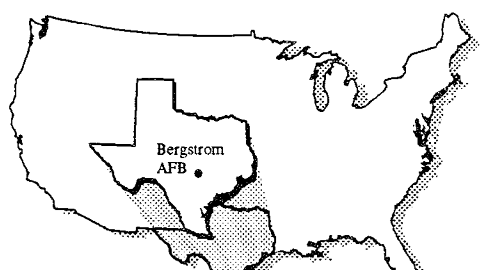

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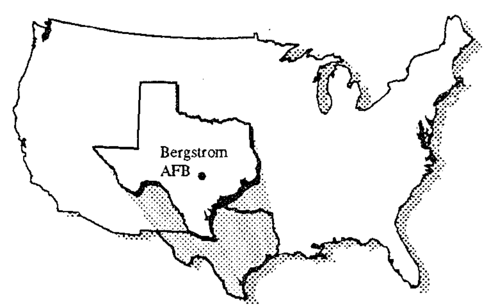

CHAPTER 9.0
PUBLIC COMMENTS AND RESPONSES

9.0 PUBLIC COMMENTS AND RESPONSES

9.1 INTRODUCTION

The Air Force has complied with the National Environmental Policy Act (NEPA) mandate of public participation in the Environmental Impact Analysis Process primarily in two ways:

- The Draft Environmental Impact Statement (DEIS) was made available for public review and comment in January 1993.
- A public hearing was held in Austin, Texas, on February 9, 1993. The Air Force presented the findings of the DEIS for disposal and reuse of Bergstrom Air Force Base (AFB), Texas, and invited public comments.

Public comments received both verbally at the public meeting and in writing during the public comment period have been reviewed and are responded to in this chapter.

9.2 ORGANIZATION

This chapter is organized into the following sections:

- Introduction;
- An index of commentors;
- Responses to individual comments;
- A transcript of the public hearing; and
- Photocopies of all written comments received at the public hearing or through the mail.

During the public comment and review period, comments on the DEIS were received from government agencies and officials, as well as the general public. The comments included verbal and written statements submitted at the public hearing and letters and statements received through the mail. A total of 23 documents (comment letters and statements, including the public hearing transcript) were received by the close of the public comment period. Because of the small number of comments received, responses have been provided for each comment.

Within each of the 23 documents, each comment and response is numbered sequentially. For example, comment number 1.3 refers to comment 3 in document 1. A reader who wishes to read the specific comment(s) received may turn to the photocopies of the documents included in this chapter.

Effects on the physical or natural environmental that may result from projected changes in certain socioeconomic factors that are associated with or caused by the disposal or reuse of the base are addressed in this EIS. Other socioeconomic issues, such as the region's employment base, school budgets, municipal/state tax revenues, municipal land planning, medical care for military retirees and dependents, local governments and services, real estate, and economic effects on utility systems and specific businesses, are beyond the scope of NEPA and Council on Environmental Quality (CEQ) requirements. Analysis of impacts associated with these issues is provided in the Socioeconomic Impact Analysis Study (SIAS). That public document also supports the base reuse decision-making process.

The environmental impact analyses presented in this EIS are based on the results of the socioeconomic analyses described in detail in the SIAS. All comments pertaining solely to issues addressed in the SIAS were considered beyond the scope of this EIS, and are not addressed in this comment and response chapter. However, those comments have been reviewed and responses have been provided to the commentors. Comments related to socioeconomic factors that are addressed in this EIS (e.g., population and employment) have been included in this comment and response chapter.

Finally, it should be emphasized that not only have responses to EIS comments been addressed in this chapter, but the text of the EIS itself has also been revised, as appropriate, to reflect the concerns expressed in the public comments.

Table 9.2-1 includes the names of the commentors, the document numbers that have been assigned to each document, and the page number on which the photocopy of the document is presented.

Table 9.2-1

Index of Commentors

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Document No.	Author	Page No.
10	Ms. Rose Dodd	9-160
11	Mr. Dennis R. Worsham	9-161
12	Ms. Shyra Darr, Travis County Public Improvements and Transportation Department	9-162
13	Mr. Kenneth W. Holt, U.S. Department of Health and Human Services, Centers for Disease Control, National Center for Environmental Health (Atlanta, Georgia)	9-164
14	Mr. Glenn B. Sekavec, U.S. Department of the Interior, Office of Environmental Affairs	9-165
15	Mr. David V. Pimentel, Travis County Environmental Officer	9-168
16	Mr. Holland A. Young, City of Austin Department of Aviation	9-173
17	Mr. Kenneth C. Bohuslav, Texas Department of Transportation	9-175
18	Mr. Joe D. Winkle, U.S. Environmental Protection Agency, Region 6 (Dallas, Texas)	9-176
19	Mr. T. C. Adams, State Single Point of Contact, Office of the Governor, State of Texas	9-179
20	Mr. Jesus Garza, Texas Water Commission	9-181
21	Mr. E. G. Wermund, University of Texas at Austin, Bureau of Economic Geology	9-183
22	Mr. Robert W. (Bob) Spain, Texas Parks and Wildlife Department	9-184
23	Mr. James M. Moore, Texas State Soil and Water Conservation Board	9-186

9.3 RESPONSES TO INDIVIDUAL COMMENTS

Document #1 : *Public Hearing Transcript*
Speaker #1 : *Mr. Bruce Todd, Mayor, City of Austin*

(See comments and responses provided for Document No. 5)

Speaker #2 : *Judge Bill Aleshire (statement read by Mr. Shawn Malone)*

1.1 **Comment.** The EIS should explain the difference in the frequency and time of day or night when flight operations would occur, whether the proposed airport would have more night flights than Bergstrom AFB did, and whether the City of Austin will observe a curfew on flights late at night.

Response. Appendix H (Tables H-2a to H-2d) provides a breakdown of the number of flights for each type of aircraft projected to use the airport and the time of day (i.e., between 7:00 a.m. and 10:00 p.m.) or night (10:00 p.m. and 7:00 a.m.) in which these flights would occur. Table H-3 provides a percentage breakdown of day and night operations by general aircraft category. Because of the nature of proposed activities at the airport, particularly with regard to air cargo and some commercial passenger operations, the proposed airport would have a higher number of night operations than Bergstrom AFB did when the base was fully operational. Decisions on late hour curfews are beyond the control of the Air Force and will need to be made by the City of Austin and the Federal Aviation Administration (FAA).

Speaker #3 : Mr. Bob Yancy, Del Valle Independent School District

1.2 **Comment.** The Del Valle Independent School District does not expect any detrimental environment impact from the reuse of the facility for a municipal airport.

Response. Comment noted.

1.3 **Comment.** In disposing of the property acquired in fee simple, the Air Force should consider the safety and welfare of the students at Del Valle.

Response. Comment noted.

Speaker #4 : Mr. Bill Basinger

1.4 **Comment.** Of the 31 contaminated sites on the base, how many have been cleaned up? Will the Air Force clean up possible contaminated sites outside the Air Force base, if any?

Response. Although cleanup actions have been undertaken on the base over a number of years, the Air Force is again looking at all 30 sites identified under the Installation Restoration Program and other sites that have been identified based on a Phase I Environmental Baseline Survey of the base. In consultation with the City of Austin, the Air Force Base Disposal Agency would prioritize cleanup activities to expedite the disposal and reuse process. The Air Force will be responsible for cleanup of sites outside the base only if it is determined that contamination of those sites resulted from onbase activities.

Speaker #5 : Mr. Hank Erb

1.5 **Comment.** The Air Force cannot clean up the toxic sites by September 1993. The Air Force should retain the liability even after transfer of property. Austin should not take liability for these sites.

Response. Under Section 120(h) of the Comprehensive Environmental Response, Compensation and Liability Act that governs remediation for past releases of contamination, the Air Force must include a covenant in any deed for transfer of federal property warranting that all remedial action necessary to protect human health and the environment with respect to any hazardous substance remaining on the property has been taken before the date of such transfer. Additionally, Section 120(h) requires that the Air Force provide in the covenant that any additional remedial action found to be necessary after the date of such transfer shall be conducted by the Untied States. This is explained in the EIS in Section 3.3.3.

1.6 **Comment.** The public should be involved in the Environmental Coordination Committee activities where most of the decisions are being made.

Response. The Environmental Coordination Committee is comprised of representatives of the Air Force, U.S. EPA, Texas Water Commission, Texas Attorney General's office, and City of Austin. The City of Austin's representatives are approved by the Office of the Mayor. These representatives are from the general public and are not employees of the city. In addition, minutes of the Environmental Coordination Committee meetings are incorporated into the administrative record and are available for review by the public at the Austin History Center Library.

Speaker #6 : Mr. Charles Thompson

1.7 **Comment.** More roads will be affected than State Highways 183 and 71. The effects of the congestion on Riverside Drive, Oltorf (Airport Blvd?), 1st and 5th streets, and Interstate 35 should be considered.

Response. The quantification of traffic impacts becomes more and more speculative as one moves away from the base. Impacts are, therefore, shown only on roads that converge on the base. The City of Austin is responsible for mitigating impacts (e.g., reducing congestion) on all streets that experience heavy traffic and degradation of service and is expected to continue such mitigations in the future.

1.8 **Comment.** If the population growth of Austin and Travis County is to the north and to the west, why is the airport being located to the southeast, away from the population growth?

Response. The City of Austin and the FAA have conducted analyses of suitable sites in the past and would be the final decision makers on the Bergstrom AFB site. The FAA, in its Supplemental EIS, would provide rationale for selecting the final site.

1.9 **Comment.** What are the flight patterns that will be used?

Response. Assumptions regarding number of operations, the type of aircraft, and the flight patterns are discussed in Chapter 2.0, Section 4.4.4, and Appendix H of the EIS. Actual flight tracks will be established by the FAA following an analysis of the airspace in the Austin area.

1.10 **Comment.** "Do nothing" is very negative as compared to, say, other use of the airport. Do nothing use was excluded, especially in the noise and air quality surveys.

Response. The proper term used throughout the EIS is "No-Action Alternative." The CEQ regulations implementing NEPA require that the "No-Action Alternative" must be analyzed along with the Proposed Action and other reasonable alternatives. The No-Action Alternative, as defined on page 2-35 of the Draft EIS, will not result in any adverse noise or air quality impacts from the Bergstrom AFB site. Therefore, no noise contours or pollutant emissions were presented in the subject graphs.

1.11 **Comment.** Why is the Air Force comparing the effects of Mueller? Why not include Manor along with Mueller and Bergstrom?

Response. The Proposed Action, as defined in the EIS, assumes closure of Robert Mueller Municipal Airport (RMMA) if air carrier operations are shifted to Bergstrom AFB. This direct relationship makes it necessary to look at the cumulative impacts of opening the Bergstrom Airport and closing RMMA as required by NEPA. There is no existing airport at Manor and no cumulative impacts would be expected.

1.12 **Comment.** Wouldn't the jobs expand at Mueller or at Manor if those sites get up to the same level of activity as Bergstrom did?

Response. The number of aviation-related jobs created and the socioeconomic impacts could be comparable to those identified for Bergstrom AFB, if development proposed at Bergstrom AFB occurred at the Mueller or Manor sites. The effects on biophysical environmental resources would, however, be considerably different. However, overall socioeconomic effects at the Mueller and Bergstrom AFB sites would not be comparable because of the difference in the availability of developable land at each site (i.e., 750 versus 4,000 acres, respectively).

1.13 **Comment.** It is my understanding that the FAA will not allow a dump south of the runway. How would that affect the environment if Austin has to develop a whole new dump?

Response. The FAA will require the City of Austin to close the subject landfill. As stated in Section 4.2.4.1, with the closure of the city landfill, the city will likely use one or more of the three private landfills in Travis County, which have a total volume capacity in excess of 50 years. If the city decides to site a new landfill, its selection of a new site would need to comply with applicable environmental regulations.

Speaker #7 : Mr. David Samuels, United Pentecostal Church

1.14 **Comment.** The United Pentecostal Church (12030 Bastrop Highway) sits in the direct flight pattern of the north end of the runway less than 1 mile.

Response. This church has been included in the list of sensitive receptors (see Table 4.4-9a in this EIS).

Speaker #8 : Mr. Jim Carpenter

1.15 **Comment.** All noise models are done on the basis of certain assumptions that must be loaded into a computer model to generate projected noise patterns. If you start using projected reuses of the site and you start using other people's noise assumptions that are loaded into a computer model you may not be presenting a correct prediction of what will happen.

Response. It is true that the results of the computer model will be as good as the inputs to the model. A discussion of the principal assumptions and inputs to the model is provided in Chapter 2.0, Section 4.4.4, and Appendix H of this EIS. To predict the impacts of a mix of military and civilian aircraft as proposed, the Air Force has used the NOISEMAP model (version 6.0) instead of the Integrated Noise Model (INM) commonly used by the FAA. FAA's tiered Supplemental EIS will also address noise impacts based on the most current flight and engine maintenance runup assumptions.

1.16 **Comment.** Hours of operations should be considered in calculating noise impacts.

Response. The assumptions made by the Air Force are discussed in Chapter 2.0, Section 4.4, and Appendix H and include day/night hours of operation. See also response to comment number 1.1.

1.17 **Comment.** Surface traffic noise associated with the air traffic should also be addressed.

Response. Noise impacts generated by surface traffic, including traffic associated with air traffic, are presented in Section 4.4.4. See Tables 4.4-11, 4.4-12, and 4.4-13 for the Proposed Action and alternatives.

1.18 **Comment.** The north entrance to the Bergstrom site is incompatible because of impacts on traffic and noise if air cargo is included in the airport development plan.

Response. Sections 4.2.3 and 4.4.4 provide sufficient details regarding potential traffic and noise impacts resulting from the Proposed Action and alternatives.

1.19 **Comment.** Austin cannot afford to build an airport without FAA funds and FAA funding is contingent upon several factors including: (1) a requirement to look at all alternative sites for an airport, (2) a requirement to consider environmental consequences of locating the airport at all alternative sites, (3) cost of development at alternative sites, and (4) contribution of the proposed facility for the enhancement of National Air Transportation System.

Response. The FAA is in the process of preparing a Supplemental EIS that will be used as a decision-making document prior to granting any funds for development.

1.20 **Comment.** The Air Force has to fine-tune this document if a civilian municipal airport is the Proposed Action or it needs to divorce itself entirely from Austin's reuse alternatives and look at this document solely as closure of that facility.

Response. The Air Force has prepared this document with the best information available (e.g., conceptual plans for the development of a civilian airport) at the time of its preparation. The FAA will supplement this EIS as a more definite Airport Layout Plan is developed and approved by the FAA. The Base Realignment and Closure legislation exempted the Air Force and other services from compliance with NEPA and its implementing regulations for closure actions, but did require compliance for disposal and reuse decisions, working in coordination with local community reuse authorities.

1.21 **Comment.** I see a lot of discussion about the near term and future-type toxic facilities but details are missing about the historical sites that were listed.

Response. The Air Force is committed to the remediation of all contamination at Bergstrom AFB resulting from past and future Air Force activities, including actions that will be taken after base closure. All Installation Restoration Program (IRP) activities will be coordinated with the U.S. Environmental Protection Agency (EPA) and the Texas Water Commission. See also response to comment numbers 1.4 and 18.1 in this section.

Speaker #9 : Mr. Willie Lewis

1.22 **Comment.** To what standards will the base be cleaned? The Air Force, the FAA, and the Texas Water Commission standards are somewhat different.

Response. The Air Force is responsible for cleaning up the base as required by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Resource Conservation and Recovery Act (RCRA). The EPA and the Texas Water Commission will regulate remediation activities under these acts (see Section 3.3 of the EIS for details).

1.23 **Comment.** The people in Austin would like to know if the cost of cleanup of Bergstrom AFB has been budgeted and what the approximate cost of cleanup will be.

Response. It is expected that Congress will appropriate needed funding through its annual budgeting process. Although no estimates of final cost of cleanup are available, Air Force will continue to be responsible for cleanup even after the base closes.

1.24 **Comment.** Why is the Air Force considering noise impacts when they would no longer occupy Bergstrom AFB?

Response. The Proposed Action and one of the alternatives assume that military aircraft belonging to the 924th Fighter Group (FG) (Air Force Reserves), and transient military aircraft associated with Headquarters 10th Air Force, the Regional Corrosion Control Facility (RCCF), and the Air Training Command (ATC), will continue operations at Bergstrom AFB. In addition, the Air Force, under the Defense Base Closure and Realignment Act (DBCRA) and NEPA, is obligated to analyze reasonably foreseeable environmental impacts of potential reuses of the bases that are closing.

Speaker #10 : Mr. Felix Rosales

1.25 **Comment.** East Austin does not want an airport at Bergstrom AFB. The community is not kept informed of the activities of the Austin Airport Task Force and no one from East Austin is a member of this task force.

Response. Comment noted.

1.26 **Comment.** The East Austin community does not want any more noise (resulting from the development of a new civilian airport at the Bergstrom AFB site).

Response. Comment noted. The FAA will be responsible for implementing measures necessary to mitigate noise impacts if a civilian airport is developed at Bergstrom AFB.

1.27 **Comment.** The toxic problems created over 40 years cannot be cleaned up in 5 months.

Response. The Air Force will continue all hazardous materials and waste cleanup activities even after the base closes. See also response to comment numbers 1.5 and 1.22 in this section.

1.28 **Comment.** There are nonprofit organizations in East Austin and Montopolis that could use base property. Alternative uses of the base other than for aviation should be looked at.

Response. This EIS includes analysis of a nonaviation alternative (see Section 2.3.2). Nonprofit organizations can approach the City of Austin for use of available facilities once the base property, in which the city has claimed equitable interest, is surrendered to the city.

Speaker #11: : Mr. John Anderson

1.29 **Comment.** The noise contours appear to be suspect and should be restudied. What were the assumptions used?

Response. The noise contours shown in the Draft EIS were based on assumptions discussed in Chapter 2.0, Section 4.4.4, and Appendix H. As described in Section 1.5, some minor revisions to the assumptions used in the noise analysis have been made based on further discussions with the 924th FG and ATC. However, these changes have only resulted in minor changes to the noise contours presented in Section 4.4.4, Figures 4.4-7 through 4.4-14. The Air Force feels the analysis presented in this EIS is accurate based on the assumptions presented in Appendix H.

Speaker #12 : Ms. Karen Hadden

1.30 **Comment.** As a member of the Bergstrom Conversion Task Force, I would like to see that group expanded to include representatives of environmental organizations.

Response. Comment noted. Also see response to comment number 1.6.

1.31 **Comment.** The IRP studies available at the Texas Water Commission and at the Bergstrom AFB Library should also be made available in public libraries.

Response. Copies of documents prepared under the Bergstrom AFB IRP are available for public review at the Austin History Center Library.

Speaker #13 : Ms. Lori Renteria

1.32 **Comment.** I support the Mixed-Use Development Alternative. I do not like the way the Bergstrom Conversion Task Force is operating since it is not allowed to seriously consider any reuse unless it is compatible with an airport. The Air Force should stop the process and not transfer the land.

Response. Comment noted. The Air Force is required to close Bergstrom AFB and analyze the impacts of disposal and reuse of the base. The analysis included in the EIS is based, in part, on plans received by the Air Force from the community reuse authority.

Speaker #14 : Mr. Michael McNerney

1.33 **Comment.** For an air carrier airport, there should be no night curfews. We want the airport to operate 24 hours.

Response. Comment noted. Also see response to comment number 1.1.

1.34 **Comment.** If Bergstrom AFB is converted to a general aviation/air cargo airport, another alternative of closing Robert Mueller Municipal Airport and building another air carrier airport at another location should be studied.

Response. The Air Force is responsible for decisions regarding the disposal and reuse of Bergstrom AFB and has conducted the required environmental documentation to support that action. The FAA, in its Supplemental EIS, may analyze additional sites and alternatives, if necessary.

1.35 **Comment.** The possibility of moving general aviation/air cargo operations to Bergstrom AFB immediately after its closure should be analyzed in the EIS.

Response. The scheduling of the move from RMMA to Bergstrom AFB will be determined by the City of Austin. However, the environmental impacts of an earlier schedule would not be different from those described for the Proposed Action. No new analysis is, therefore, considered necessary for this option.

1.36 **Comment.** The (City of Austin) referendum (on May 1, 1993) is not meant to select one of three or four alternatives. It will only recommend whether Bergstrom AFB should be accepted as an air carrier airport or not.

Response. Comment noted.

1.37 **Comment.** Even at the 65 L_{dn} contour, there will be a certain percentage of the population that is going to remain annoyed. There should be more information to explain this fact.

Response. Information regarding the percentage of persons disturbed by exposure to various noise levels is presented in Section 4.4.4 (see Table 4.4-6).

1.38 **Comment.** There are other ways to keep the Air Force Reserve units at Bergstrom AFB even if an air carrier airport is not built.

Response. Comment noted.

Speaker #15 : Mr. Charles Thompson (also see Speaker #6)

1.39 **Comment.** Is there a possibility that the Air Force Reserve units will move to Carswell AFB?

Response. Proposed Air Force realignment actions related to Bergstrom AFB are described in Section 2.3.3 of this EIS and a summary of potential impacts is provided in Section 4.6.

Speaker #16 : Ms. Lori Renteria (also see Speaker #13)

1.40 **Comment.** Can we have interim use of the base property until the first (civilian) airplane takes off from the base?

Response. Interim reuse of base property is possible, but would have to be compatible with the reuse authority's ultimate use for the facilities. The Air Force Base Disposal Agency would consider such requests after coordination with the reuse authority.

Document #2 : Mr. Bob C. Yancy, Del Valle Independent School District

2.1 **Comment.** The Del Valle Independent School District does not expect any detrimental environmental impact from the reuse of the facility for a municipal airport.

Response. Comment noted.

Document #3 : Mr. Bob C. Yancy, Del Valley Independent School District

3.1 **Comment.** The Del Valle Independent School District does not expect any detrimental environmental impact from the reuse of the facility for a municipal airport.

Response. Comment noted.

3.2 **Comment.** Despite claims made at the public hearing, public meetings on the proposed airport have been held in the Montopolis area.

Response. Comment noted.

3.3 **Comment.** The Board of Trustees of the Del Valle Independent School District unanimously support the reuse of Bergstrom AFB facilities for the City of Austin's municipal airport.

Response. Comment noted.

Document #4 : Mr. I.J. Ramsbottom, U.S. Department of Housing and Urban Development, Region VI

4.1 **Comment.** The increase in impervious areas on the base will increase the amount of stormwater runoff during rainstorms. Further hydrological studies should be accomplished to determine if the 100-year floodplain would increase with the Proposed Action.

Response. Impacts on surface water are described in Section 4.4.2.1 of this EIS. The need for a Section 404 permit from the U.S. Army Corps of Engineers and for a National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges has been identified in that section. Supporting documents accompanying the permit documents would provide more details regarding a potential increase in the 100-year floodplain, if any. This EIS is prepared based on conceptual plans for an airport. Once the final Airport Layout Plan is approved, the FAA will supplement this document to meet its NEPA requirements. That document will provide additional information on areas outside the base, particularly areas south of the base.

4.2 **Comment.** The EIS should discuss if any land acquisition by the City of Austin for the proposed Manor site took place and, if so, what plans the city has for the Manor site.

Response. The information requested is beyond the scope of this EIS and is not required by NEPA for the decisions to be made by the Air Force. This EIS discusses the potential environmental impacts associated with the disposal and reuse of Bergstrom AFB. The FAA may provide that information in its Supplemental EIS.

Document #5 : Mayor Bruce Todd, City of Austin

5.1 **Comment.** The city, with the FAA, is preparing an independent EIS which will evaluate potential impacts of a city airport at Bergstrom AFB.

Response. Comment noted.

5.2 **Comment.** The city is including in the New Airport Cost Estimates funds for noise mitigation around the Bergstrom new airport site.

Response. Comment noted.

5.3 **Comment.** The Air Force should more specifically consider the consequences of the "Do Nothing Option" for Bergstrom AFB with regard to the air operations and the environment at Robert Mueller Municipal Airport. The Do Nothing Option for Bergstrom AFB will result in the continuation of problems relating to noise and space constraints at Robert Mueller Municipal Airport.

Response. As required by NEPA, the No-Action Alternative ("Do-Nothing Option") would result in the Air Force retaining control of the four government-owned parcels after closure and surrendering title to the remainder of the base to the City of Austin. To establish a baseline, it was assumed that the city would not use the base land it acquires and the property would be secured and maintained in a condition to prevent deterioration. Impacts of the No-Action Alternative on individual environmental resources are discussed under each resource in Chapter 4.0 of this EIS. If the No-Action Alternative were to be implemented, the municipal airport could remain at its current location or be relocated to another site. If the airport were to remain at its current location, environmental impacts of operations would be similar to those described in Section 3.5. Additional information on environmental impacts at RMMA will be discussed in the Supplemental EIS being prepared by the FAA.

5.4 **Comment.** Projected airport noise contours at Bergstrom AFB affect 3,500 fewer people than when active military units were flying.

Response. Comment noted. The projected population subjected to average day-night sound levels (DNL) greater than 65 dB is discussed in Section 4.4.4 of this EIS.

Document #6 : Mr. Bill Aleshire, Travis County Judge

6.1 **Comment.** The EIS should explain the difference in the frequency and time of day or night when flight operations would occur, whether the proposed airport would have more night flights than Bergstrom AFB did, and whether the City of Austin will observe a curfew on flights late at night.

Response. See response to comment number 1.1.

Document #7 : Dr. Timothy K. Perttula, Texas Historical Commission

7.1 **Comment.** It is the Texas Historical Commission's understanding that archaeological testing of sites 41TV435 and 41TV436 has been conducted and the results are pending. The Commission is looking forward to reviewing the report for these investigations.

Response. A report on the subject investigations was submitted to the Texas Historical Commission on March 3, 1993 and concurrence from your agency regarding this report was received by the Air Force on April 7, 1993.

7.2 **Comment.** The Texas Historical Commission would also like to review the tiered Supplemental EIS being prepared by the FAA and the City of Austin.

Response. Comment noted. Your office is on FAA's mailing list for distribution of the Draft Supplemental EIS.

Document #8 : Mr. John Schlotzhauer, University Hills Neighborhood Association

8.1 **Comment.** Concerned that the significant increase in instrument approaches by commercial jets would expand the DNL 65 dB contour rather than reduce it, particularly prior to the conversion to Stage 3 engines.

Response. The noise contours shown in Figure 4.4-8 are based on computer modeling as described in Section 4.4.4 and Appendix H, which considers a number of factors, including the fleet mix of aircraft, the flight tracks used by those aircraft, and the time of day in which the flying occurs. The preclosure noise contours shown in Figure 3.4-6 for Bergstrom AFB were based on a fleet mix that primarily included Air Force RF-4D aircraft. Although the overall number of operations in 1997 would be higher than the number of preclosure Air Force operations, the commercial aircraft that would make up a large portion of the overall operations are quieter, even with Stage 2 engines, than the military aircraft used in the Air Installation Compatible Use Zone (AICUZ) study noise modeling.

8.2 **Comment.** The DNL noise contours shown in Figures 4.4-9 and 4.4-10 show no change even though there would be an approximate 15 percent increase in arrivals/departures and a 10 percent increase in night operations.

Response. The major contributing factor to the size and shape of the noise contours for 1997, 2002, and 2012 is the military aircraft that would be operating from the proposed airport. Although the number of operations by civilian aircraft does increase between 2002 and 2012 (the number of military operations is projected to remain constant between 1994 and 2012), the overall contribution of these aircraft to the resulting noise levels is small compared to the contribution of military aircraft. The small change can be seen by comparing the noise contours surrounding the proposed new runway which would be used by only civilian aircraft. For 2002, the noise contours for this runway cover a smaller area than in 1997, resulting from the conversion of commercial airliners to Stage 3 engines. In 2012, the noise contours are almost identical to the 2002 contours, even with the increase in the number of operations, because the contribution of the commercial aircraft to the overall noise generation is small. In addition, between 2002 and 2012, there would be a 67 percent decrease in annual business jet operations, which would partially offset the increase in annual air carrier, air cargo, and general aviation operations.

8.3 **Comment.** The noise modeling did not include the air cargo version of the Boeing 747.

Response. The fleet mix of civilian aircraft projected for the new airport used in the noise modeling is based on aviation demand forecasts prepared by the City of Austin and approved by the FAA. This estimate is based on the projected fleet mix to be used by commercial airline and air cargo companies that would use the airport. It was estimated in the demand forecasts that air cargo companies would primarily use B-757, MD-80, DC-9, and B-767 aircraft in 2002 and 2012.

8.4 **Comment.** Noise levels at approximately 7 miles from the end of the runway are greater than 65 dB, although the noise contours presented in the EIS show the DNL 65 dB contour to be far away from our area.

Response. The noise contours shown in Figures 3.4-6 and 4.4-7 through 4.4-14 are based on the DNL that would occur in a particular location. DNL is the average weighted sound level during a 24-hour period with 10 decibels (dB) added to nighttime levels. The noise level generated by an aircraft flying overhead at any time (i.e., a single noise event) would be greater than the DNL based on a 24-hour period at this same location. To measure a single-event noise level, a Sound Exposure Level, or SEL, is used as a descriptor. The SEL value represents the weighted sound level integrated over the entire duration of the noise event and referenced to a duration of 1 second. SEL values for representative noise receptors in the Bergstrom AFB area were calculated for the most common aircraft types and are presented in Table 4.4-9. For example, the SEL for a trailer park approximately 2 miles north of the main runway with a Boeing 737-300 aircraft flying overhead would be 86 dB, while the DNL value for this same location would 66 dB. Land use compatibility issues are generally evaluated by the FAA and other governmental agencies based on DNL rather than single-event noise levels.

The reference single-event noise levels for each aircraft employed in the noise analysis are from official and carefully compiled data bases developed by the FAA (i.e., the Integrated Noise Model data base) and Air Force (i.e., the NOISEMAP data base NOISEFILE) for civilian and military aircraft, respectively.

8.5 **Comment.** Noise monitoring equipment should be placed at the 5- to 7-mile range from the Robert Mueller Municipal Airport instrument runway to record noise levels. Noise levels of aircraft forecast to use the proposed airport should be made public.

Response. The noise modeling performed for this EIS has been conducted in accordance with modeling procedures approved by the FAA and Department of Defense (DOD). The data bases used for the noise analysis are based on an extensive program of noise modeling conducted by the FAA and Air Force, as discussed in the response to comment number 8.4.

8.6 **Comment.** The EIS should describe a single event decibel reading of each type of aircraft flying over the University Hills neighborhood at 2,000 feet.

Response. SEL values for the most common aircraft projected to be used at the new airport at representative receptors in the Bergstrom AFB area are presented in Table 4.4-9. The information presented in Table 4.4-9 is considered to be more meaningful because it shows comparative SEL values for the various aircraft at a range of representative receptor sites, rather than for a single altitude.

8.7 **Comment.** The EIS should describe any noise abatement plans, such as arrival/departure routes designed to avoid populated areas and designation of the proposed easternmost runway as the primary instrument approach runway.

Response. The noise analysis presented in this EIS is based on the modeling assumptions described in Section 4.4.4 and Appendix H. While specific noise mitigation measures, such as changes to arrival/departure routes and the percentage use of each runway, are feasible mitigations to reduce noise levels in certain areas surrounding the airport, implementation of such measures is beyond the control of the Air Force. Potential mitigation measures are listed in Section 4.4.4. The City of Austin and the FAA would have the responsibility for implementing such noise abatement measures.

8.8 **Comment.** The EIS should discuss residential real estate values of neighborhoods overflown at other airfields that have recently been reconfigured with new runways or traffic patterns.

Response. This issue is beyond the scope of the EIS because it does not relate to impacts on the biophysical environment.

8.9 **Comment.** Will classes at schools north of the base be interrupted by Stage 2 and 3 engined aircraft.

Response. Noise levels at locations surrounding the proposed airport would be dependent on the specific arrival/departure routes used and the time of day in which the flights occurred. SEL values for representative schools in the vicinity of the base are presented in Table 4.4-9. However, the SEL values presented in this EIS are based on assumptions described in Section 4.4.4 and Appendix H, including the proposed flight tracks. Single-event noise levels may cause occasional interruption within buildings that are outside of the DNL 65 dB contour. The determination of specific flight tracks to be used when the airport is fully operational will be made by the FAA based on a study of the airspace surrounding the Austin area.

Schools at which noise impacts result from aircraft operations may be eligible for sound insulation grants under the Federal Aviation Regulation Part 150 process if a significant noise impact can be proven.

8.10 **Comment.** Is the U.S. Environmental Protection Agency still proposing to replace the DNL 65 dB contour with a DNL 55 dB contour as the threshold for reasonable noise tolerance?

Response. At this time, the EPA has not promulgated any regulations regarding the use of DNL 55 dB contours as the threshold for reasonable noise tolerance. The DNL 65 dB contour is still used in land use compatibility planning. A recently published Federal Interagency Committee on Noise report, which includes a review of selected airport noise analysis issues, and which involved FAA, EPA, and Air Force participation, provides the following recommendations on DNL contour analysis:

- DNL predictions below 65 dB are frequently less accurate and should be interpreted with caution; and
- If screening analysis shows that noise-sensitive areas will be at or above DNL 65 dB and will have an increase of 1.5 dB or more, further analysis should be conducted of noise-sensitive areas between DNL 60 to 65 dB having an increase of 3 dB (DNL).

These recommendations have not yet been adopted by government agencies for implementation in EIS analysis.

Document #9 : Mr. Carlton R. Watts, Federal Emergency Management Agency, Region VI

9.1 **Comment.** Before any development would be allowed to take place at the Bergstrom AFB site, the applicable Floodplain Administrators (i.e., city and county) having jurisdiction over the Bergstrom AFB area must review any development plans to ensure compliance with their respective floodplain ordinances.

Response. Comment noted. The City of Austin is requested to take note.

9.2 **Comment.** Any development that requires the use of federal funds may be affected by Executive Order 12699, *Seismic Safety of Federal and Federally Assisted or Regulated Construction.*

Response. Comment noted. The FAA will be responsible for complying with Executive Order 12699, if the FAA funds any new construction for the site.

Document #10: Ms. Rose Dodd

10.1 **Comment.** The City of Austin has been very insensitive to the concerns of the 27,534 residents near Robert Mueller Municipal Airport and would continue to remain insensitive to those who live near Bergstrom AFB.

Response. Comment noted.

Document #11: Mr. Dennis R. Worsham

11.1 **Comment.** Will aviation easements over property adjoining Bergstrom be conveyed to the City of Austin?

Response. The Air Force currently has avigation easements over property at each end of the main runway. The Base Disposal Agency will review existing easements, both explosive safety and avigation, and determine their disposition based on reuse plans and terms outlined in the easements.

11.2 **Comment.** Will the city need any additional airspace easement?

Response. The Supplemental EIS being prepared by the FAA and the City of Austin will identify if any additional airspace easements are needed.

11.3 **Comment.** The Proposed Action would disturb 300 acres of offbase land. Where is this land located?

Response. Construction of the new runway and associated aviation support facilities may require acquisition by the City of Austin of approximately

917 acres of private land adjacent to the southern boundary of the base. About 300 acres of these 917 acres are assumed to be directly disturbed by construction (see Figure 2.2-1 in Chapter 2.0).

11.4 **Comment.** Can residential homes be located in clear zones?

Response. No residences are allowed by the FAA in the clear zones or Runway Protection Zones.

11.5 **Comment.** Will existing homes in the DNL 75-80 dB zones need to be moved?

Response. Residences within the DNL 70 dB or greater noise contours would need to be either sound attenuated or moved. The Supplemental EIS will address specific requirements for such residences.

11.6 **Comment.** What is the FAA policy concerning homes in high noise areas and clear zones? Are they permitted?

Response. See responses to comment numbers 11.4 and 11.5.

Document #12: Ms. Shyra Darr, Travis County Public Improvements and Transportation Department

12.1 **Comment.** The major concern of the Travis County Public Improvements and Transportation Department is the negative impact of unacceptable noise contours in Richard Moya Park.

Response. Operation of a municipal airport at Bergstrom AFB would result in adverse impacts on Richard Moya Park as described in Section 4.4.4. The FAA will be responsible for determining what specific mitigation measures would be necessary to eliminate or reduce those impacts and will require the City of Austin to implement those mitigation measures.

12.2 **Comment.** Nonpoint source pollution resulting from stormwater discharge from the proposed municipal airport into Onion Creek may contain fuels, oils, residues, and sediment that could degrade the water quality of Onion Creek.

Response. Potential impacts on surface water, including Onion Creek, are discussed in Section 4.4.2.1 of this EIS. The proposed municipal airport would be subject to stormwater discharge permit requirements under the Clean Water Act and the city would be required to comply with these permit requirements to eliminate or reduce pollution to acceptable levels.

12.3 **Comment.** There should be prompt cleanup of identified contaminated areas, along with notification of any groundwater contamination to potentially affected adjacent landowners.

Response. See response to comment numbers 1.4 and 1.5. Cleanup of existing contaminated areas will proceed in accordance with applicable federal and state regulations.

12.4 **Comment.** Please make suggested changes (see Document #12) to the groundwater and mitigation measures sections in Section 4.4.2.1 of the EIS.

Response. The text in Section 4.4.2.1 has been revised as appropriate. Also see response to comment number 15.28.

12.5 **Comment.** The mitigation measure in Section 4.4.4.1 referring to the acquisition of mobile home sites and single-family housing within DNL 70 dB or greater noise contours should be revised to also include parkland (e.g., Richard Moya Park).

Response. As shown in Section 4.4.4 (Figures 4.4-7 through 4.4-10), Richard Moya Park would fall between the DNL 65 and 70 dB contours, depending on the modeled year.. Outdoor sports arenas form compatible land uses under FAA Part 150 regulations. However, the responsibility for determining the acceptable and permissible land use remains with the local authorities. Also see response to comment number 12.1.

Document #13: Mr. Kenneth W. Holt, U.S. Department of Health and Human Services

13.1 **Comment.** Future project monitoring of air quality and noise levels will be necessary to determine if previous modeling efforts were accurate, and if the noise attenuation program is effective.

Response. The Texas Air Control Board will be responsible for monitoring air pollutants generated with implementation of the Proposed Action. The City of Austin and other future users of Bergstrom AFB will be individually responsible for complying with the federal Clean Air Act and Texas air quality regulations. The City of Austin will be responsible for implementing the necessary mitigation measures to meet FAA's noise regulations if the base is converted to an airport facility.

13.2 **Comment.** If the preferred alternative is approved, plans would continue for the closure and redevelopment of Robert Mueller Municipal Airport. An environmental assessment should be completed for land use alternatives at this site as recommended by the 1991 Task Force.

Response. If RMMA is closed and redeveloped, the City of Austin would be responsible for ensuring compliance with applicable federal, state, and/or local environmental regulations, including the preparation of appropriate environmental impact assessment documentation.

Document #14: Mr. Glenn B. Sekavac, U.S. Department of the Interior

14.1 **Comment.** The presence of terrace deposits indicates mineral resources are present at Bergstrom AFB. The Final EIS should identify mineral resources that occur but are not available for development and should indicate if no impacts on mineral resources would occur.

Response. The statement in Section 3.4.1.2 has been revised to read: "Although the presence of terrace deposits indicates sand and gravel resources are present, no mining operations currently exist at Bergstrom AFB." Sufficient sand and gravel resources for construction are available in the base vicinity from commercial sources and these minerals on the base would not have to be mined specifically for activities described for the Proposed Action or alternatives (see Section 4.4.1).

14.2 **Comment.** The Supplemental EIS being prepared by the FAA and the City of Austin should thoroughly analyze impacts on Richard Moya County Park. The FAA should also address Section 4(f) involvement that could occur due to noise impacts.

Response. Comment noted. FAA analyzes these impacts in its environmental documents and will do so for this project as well.

Document #15: Mr. David V. Pimental, Travis County Environmental Officer

15.1 **Comment.** The alternative of using Bergstrom AFB as the commercial (airline) airport for Austin and continuing to use Robert Mueller Municipal Airport as a general aviation/air cargo airport was not discussed in the EIS.

Response. The alternatives discussed in this EIS include potential reuses which would generate a range of environmental impacts. For example, the Proposed Action evaluates an airport which includes air carrier, general aviation, cargo, and military flights. This represents maximum impacts on such environmental resources as noise, air quality, and surface traffic. On the other hand, the evaluation of a Mixed-Use Development alternative shows minimum impacts on the same resources. The alternative suggested by you would not result in substantially lower noise impacts in the vicinity of Bergstrom AFB because most of the noise is generated by the military aircraft and large air carrier aircraft. Furthermore, the RMMA land considered valuable for other urban uses would not be available for such uses. Nevertheless, if the FAA and the City of Austin conclude that it would still be a viable option, they may analyze it in the Supplemental EIS they are preparing.

15.2 **Comment.** The use of a single diagonal runway for primarily general aviation needs to be more thoroughly discussed. If it was discussed (and eliminated) in another document, that document should be cited.

Response. The City of Austin Department of Aviation, and its contractor, KPMG Peat Marwick, thoroughly analyzed this option and presented it to the Austin City Council Aviation Subcommittee on September 28, 1992. The option was considered, but eliminated from further discussion, as a result of the city's recommendation to the Council Aviation Subcommittee.

15.3 **Comment.** While NEPA and the CEQ guidelines have been generally followed, it is difficult to ascertain direct, indirect, and cumulative impacts. The following reformatting is suggested:

- Direct Impacts: Natural Environment, Hazardous Materials
- Indirect Impacts: Local Community
- Cumulative Impacts: Mueller Airport relocation

Response. All environmental resources have some direct, indirect, and cumulative impacts as a result of Proposed Action or alternatives and these are presented under each resource, as applicable. The impacts as presented are sufficiently clear to inform the public and support Air Force decisions covered in this EIS.

15.4 **Comment.** The use of surplus housing on Bergstrom AFB for the homeless, especially for families and women with children, merits greater attention.

Response. Under the provisions of the Federal Property Management Regulations implementing the Stewart B. McKinney Homeless Assistance Act, the Air Force has notified the U.S. Department of Housing and Urban Development (see EIS Section 2.1) about the availability of the government fee-purchased parcels for use by homeless providers. The remainder of the base property, including the family housing areas, will become the property of the City of Austin following closure and is not subject to notification under the McKinney Homeless Assistance Act.

15.5 **Comment.** The EIS should discuss how many flights are expected to take off over the north and south daily, what the typical frequency of takeoffs and landings by day and night would be, and what percent of landings by runway will be from the north and south. It would be more useful if the frequency of exposure (to noise) was discussed.

Response. The assumptions used in modeling the noise impacts of the Proposed Action, including all of the factors mentioned, are discussed in Chapter 2.0, Section 4.4.4, and Appendix H of this EIS. The noise analysis has been conducted in a standard format required by and acceptable to the FAA.

15.6 **Comment.** Additional mitigation measures for noise impacts should be discussed.

Response. This EIS includes a discussion of general mitigation measures which could be implemented based on analysis of the conceptual plan for an air carrier airport at Bergstrom AFB. The FAA and the City of Austin will prepare a Supplemental EIS based on an approved Airport Layout Plan. In that EIS, more specific mitigation measures, including relocation of residents from high noise areas, to be undertaken by the City of Austin before any construction can start, will be described.

15.7 **Comment.** Because of the potential noise impacts on Richard Moya Park, the city should purchase the land, thus allowing the county to relocate the facilities to a more suitable location.

Response. Based on the noise analysis conducted for this EIS, Richard Moya County Park would fall between the DNL 65 to 70 dB noise contours, depending on the alternative and modeled year. Based on an approved Airport Layout Plan, the FAA and the City of Austin will prepare a Supplemental EIS which will provide a more detailed analysis of noise impacts at this park. If the noise impacts require relocation, the county can negotiate the terms with the FAA and the city to mitigate noise impacts. Also see response to comment number 14.2 in this section.

15.8 **Comment.** Water quality monitoring of the South Fork tributary should continue as long as the adjacent solid waste sites (i.e., landfills) remain where they are.

Response. The monitoring of the sites and the required cleanup, if any, will continue under the IRP until the EPA and the Texas Water Commission determine that further action is not needed.

15.9 **Comment.** In terms of future compliance with nonpoint source pollution ordinances, the current and proposed percent of impervious cover at Bergstrom AFB should be determined. The EIS should also include a discussion of hazardous materials traps as a mitigation measure for accidental spills.

Response. Based on the conceptual plans for potential development with the Proposed Action or alternatives, the need for obtaining NPDES stormwater discharge permits by the users of the property has been identified in Section 4.4.1. Each individual user of the base property will need to comply with applicable stormwater discharge permit requirements, which would include calculation of areas under impervious cover. Because the proposed reuse plans analyzed in this EIS are conceptual in nature, no specific calculations of the amount of impervious surface have been made. With the two proposed reuse alternatives, the amount of impervious surface is not expected to increase greatly as most new construction would occur in previously disturbed areas, primarily in areas currently under pavement or containing buildings. With the Proposed Action, as described in Section 2.2, the amount of area under airfield pavement (i.e., runways, taxiways, and parking aprons) is expected to increase from 1.25 to 1.65 million square yards, an increase of about 30 percent. Approximately 50 percent of this new airfield pavement construction would occur in areas that have not been previously disturbed, which will increase the amount of impervious surface on the base property. The discussion of mitigation measures to eliminate or reduce water contamination has been revised in response to comment number 12.4 in this section.

15.10 **Comment.** Even though the feasibility and analysis of using the railroad tracks in the northwest section of the base as a possible linkage to light rail transit belongs more appropriately in the Supplemental EIS, it should at least be mentioned in the Air Force EIS.

Response. This EIS has not considered the use of these tracks for light rail transit as a viable option with the Proposed Action because extending the tracks to the terminal area would require going under the main runway. Extension of the rail spur is included in the evaluation of the Mixed-Use Development Alternative (see EIS Section 2.3.2). If additional studies by the city determine the feasibility of using these tracks for light rail transit, the city could discuss the impacts in the Supplemental EIS.

15.11 **Comment.** Winds are predominantly from the south-southeast, not the southwest.

Response. Comment noted. The text in Section 2.4.1.5 has been revised.

15.12 **Comment.** The Austin area is not truly subtropical. A more accurate term might be subhumid.

Response. The sentence in Section 3.2 reads: "The Bergstrom AFB area has a <u>modified</u> subtropical climate characterized as continental during the winter and marine during the summer." Based on a review of the local climatological data summary for Austin, published by the National Oceanic and Atmospheric Administration, the sentence has been revised to read: "The climate of Bergstrom AFB area is humid subtropical with hot summers and mild winters."

15.13 **Comment.** Most rainfall in the area is not the result of tropical storms, but seasonal (spring and fall) storms triggered by frontal passages.

Response. The sentence has been replaced with the following: "Precipitation is fairly evenly distributed throughout the year, with heaviest amounts occurring in late spring" (see Section 3.2).

15.14 **Comment.** Prevailing winds in the area are southeasterly. In the winter, periodic frontal passages cause winds to come from the north.

Response. The sentence has been replaced with the following: "Prevailing winds are southerly throughout the year. Northerly winds accompanying the colder air masses in winter soon shift to southerly as these air masses move out over the Gulf of Mexico" (see Section 3.2).

15.15 **Comment.** The population increase of Travis County from 295,516 to 576,407 (95%) in 20 years is substantially more than "moderate." It exceeds the growth rate of most Third World countries.

Response. The text in Section 3.2.1 has been revised.

15.16 **Comment.** "Avigation" is presumably "navigation."

Response. Avigation is the correct word, meaning navigation of airplanes.

15.17 **Comment.** Travis County does not have any local land use controls beyond floodplain management and septic system regulations.

Response. The text in Section 3.2.2.1 acknowledges the fact that the City of Austin is the only jurisdiction in the vicinity of the base that has zoning ordinances. The majority of the land (85%) under Travis County control around the base has no land use regulations.

15.18 **Comment.** Richard Moya Park should be classed as having a medium level of visual sensitivity.

Response. The text in Section 3.2.2.2 has been revised by deleting the words "low to..." in response to your comment.

15.19 **Comment.** The South Austin Regional Wastewater Treatment Plant is on Onion Creek, not Williamson Creek as stated. It is also located a substantial distance east of McKinney Falls State Park.

Response. The text in Section 3.2.4.1 has been revised accordingly.

15.20 **Comment.** Care should be taken to mitigate sites with high radon levels, should any of these sites be used for habitation and/or long-term exposure.

Response. Comment noted.

15.21 **Comment.** Impervious cover calculations should be given in Section 3.4.2. Water quality basins will undoubtedly be required. It also might be wise to strategically place hazardous material traps to capture possible major spills.

Response. Section 3.4.2 is meant to provide baseline (affected environment) information. Impacts to water resources are discussed in Section 4.4.2. See also response to comment numbers 15.8 and 15.9 in this section.

15.22 **Comment.** NPDES permitting and monitoring will undoubtedly be required.

Response. Please see response to comment number 15.9.

15.23 **Comment.** Another stationary source of pollution in the airshed is the cement plant in Buda.

Response. The Region of Influence (ROI) for the air quality analysis was defined as Travis County (see Section 3.4.3). Because Buda is located in Hays County, it was not included among the stationary sources identified by the EPA for Travis County.

15.24 **Comment.** The noise sections do not discuss the fivefold increase (or greater) of aircraft operations and frequency of operations throughout the day and night.

Response. The noise analysis does include all operations. Please see details in Appendix H. Also see response to comment numbers 1.1 and 15.5.

15.25 **Comment.** The EIS should highlight direct, indirect, and cumulative impacts.

Response. Please see response to comment number 15.3.

15.26 **Comment.** Water quality basins should be constructed where there is an excess of 20 percent impervious cover.

Response. Comment noted. Also see response to comment number 12.4.

15.27 **Comment.** In addition to spill control and countermeasures, hazardous material traps should be constructed.

Response. Comment noted. See also response to comment number 12.4.

15.28 **Comment.** Delete the use of concrete-lined ditches.

Response. This mitigation is only listed as a suggested practice that could be implemented to reduce the threat of impacts to groundwater. Implementation of this mitigation would only be undertaken following consultation with appropriate federal, state, and local agencies.

15.29 **Comment.** The proposed project could not possibly be exempt from NPDES review and/or permitting.

Response. The text in Section 4.4.2.1 regarding NPDES permits has been revised by replacing the word "may" with "will." Also see response to comment numbers 4.1, 12.2, and 15.9.

15.30 **Comment.** Speech interference will occur at Richard Moya Park.

Response. See response to comment numbers 12.1, 12.5, 14.2, and 15.7.

15.31 **Comment.** Is the phaseout of noisy aircraft mandatory or recommended, and how will this be enforced? What happens if airlines are in bankruptcy or marginally solvent, will there be fleet replacement?

Response. The phaseout of noisy aircraft is mandatory and the FAA will enforce this requirement just as it would any other regulation.

15.32 **Comment.** Richard Moya Park was built with local park funds, and therefore, replacement is required.

Response. See response to comment numbers 12.2 and 12.5.

Document #16: Mr. Holland A. Young, City of Austin Department of Aviation

16.1 **Comment.** In many environmental categories, the Region of Influence (ROI) is limited to the Bergstrom AFB property. Offsite impacts should be examined in all areas.

Response. Offsite impacts have been included in all resource categories, where applicable. For example, the ROI for community setting, land use, transportation, utilities, air quality, and noise includes offbase areas. Offsite impacts have also been discussed for biological resources, cultural resources, soils and geology, and water resources. However, for these resources, particularly for biological and cultural resources, offsite impacts are analyzed based on literature search only. Offsite field surveys were not conducted because it was determined that such surveys would be conducted as part of the preparation of the Supplemental EIS once the city has finalized its offsite land acquisition plans. The FAA, as a cooperating agency to this EIS, had agreed to this tiered arrangement.

16.2 **Comment.** The City of Austin Airport Master Plan for relocation of the city's municipal airport to the site calls for 6,700 feet (centerline-to-centerline) between the parallel runways. The Proposed Action incorrectly refers to a 6,500-foot runway spacing.

Response. In Section 2.2 of the Draft EIS, the city's preference for a 6,700-foot separation is recognized along with the rationale for analyzing the 6,500-foot separation between the runways. Changes, if any, would be further described in the Supplemental EIS to be prepared by the FAA and the City of Austin. A 200-foot shift of the proposed runway to the east would not substantially alter the impacts as described in this EIS, where impacts are discussed at the land use category level (e.g., airfield or aviation support category). Impacts of retention or demolition of individual buildings (e.g., the RCCF or aircraft hangars) are not specifically discussed, although consideration was given to minimizing demolition and hazardous waste cleanup actions, particularly for the landfills located immediately east of the proposed runway.

Environmental impacts of constructing a runway at 6,700 feet from the centerline of the existing Runway 17R/35L would remain the same as described for all resources except noise. With the eastward shift of the proposed runway by 200 feet, the DNL 65 dB contour would shift only slightly to the east (Figure 9-1). Only one additional sensitive receptor (Del Valle Senior High School) would fall within the new DNL 65 dB noise contour and a negligible change in the total population affected would occur from that discussed for the Proposed Action.

16.3 **Comment.** Amtrak has provided continuous service to the City of Austin since the 1970s. Section 3.2.3.4 incorrectly notes that AMTRAK stopped providing service in 1989.

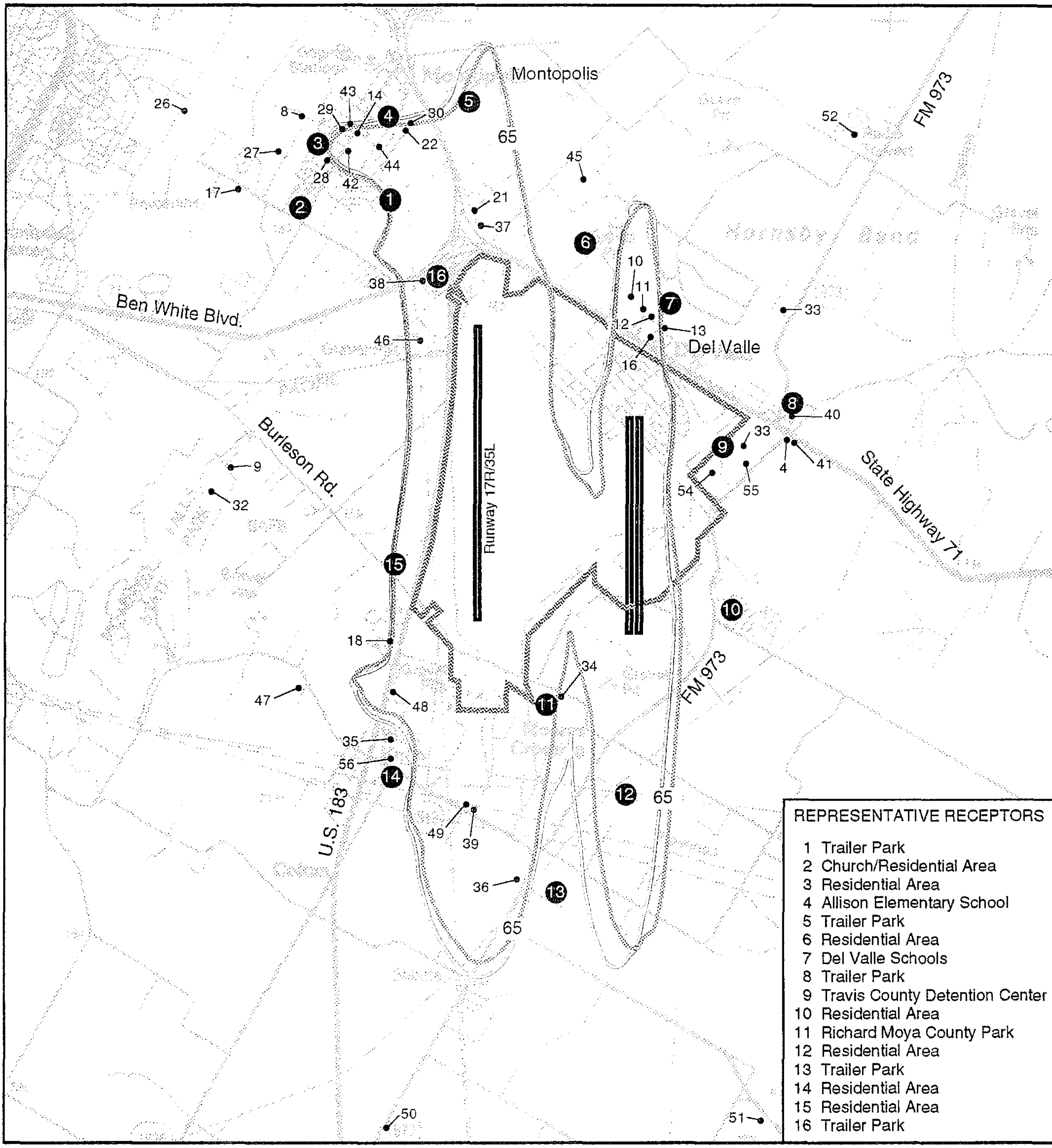
Response. The text in Section 3.2.3.4 has been revised.

16.4 **Comment.** The capacity of the City of Austin water system is 225 million gallons per day.

Response. The text in Section 3.2.4.1 has been revised.

16.5 **Comment.** The location of the South Austin Regional Wastewater Treatment Plant incorrectly refers to an abandoned temporary site.

Response. The text in Section 3.2.4.1 has been revised.



LEGEND

	Base Boundary
65	DNL Noise Contours (in 5 dB Intervals) with 6500' runway separation
65	DNL Noise Contours (in 5 dB Intervals) with 6700' runway separation

0 0.5 1 MILES

DNL Noise Contours-Proposed Action (1997)

Figure 9-1

16.6 **Comment.** The Green Water Treatment Plant has a capacity of 45 MGD.

Response. The text in Section 3.2.4.2 has been revised.

16.7 **Comment.** A list of the buildings which have asbestos-containing materials should be included in the EIS.

Response. Information on specific buildings which have or may have asbestos-containing materials can be obtained from the Air Force Base Disposal Agency, Operating Location G, at Bergstrom AFB.

16.8 **Comment.** It is recommended that the Air Force verify the flight track and profile data for the Proposed Action. The City of Austin will provide the Air Force a copy of the data which will be used to prepare the noise analysis for the FAA EIS.

Response. As described in Section 1.5, some minor changes have been made to assumptions used modeling the military aircraft considered in the noise analysis. These changes resulted from verification of the assumptions used in the modeling analysis with 924th FG and Air Training Command (ATC) (at Randolph AFB, Texas) personnel. Changes to the assumptions suggested by the 924th FG and ATC involved slight revisions to the altitude, power setting, and airspeed profiles for the respective aircraft (i.e., 924th FG F-16s and ATC T-38s) for three flight tracks. The 924th FG and ATC personnel verified that all other aircraft profile and flight tracks assumptions used in the noise modeling were representative of the manner in which air operations are and would be conducted in the Bergstrom AFB airspace. In addition, a revision was also made to the number of nighttime 727Q15 and 737QN aircraft operations allocated to the new runway (Runway 17L/35R) for 1997 (Appendix H, Table H-5a) to correct an error which resulted in an overprediction of the noise impact to the south of this runway in the DEIS analysis. Overall, these revisions resulted in minor changes to the number of acres exposed to noise DNL noise levels greater than 65 decibels (Table 4.4-7) and the DNL at five representative noise receptors listed in Table 4.4-8.

The Air Force has reviewed the data used by the City of Austin to prepare a preliminary noise analysis for the Supplemental EIS and compared this data to the assumptions (specifically those for military aircraft operations as described above) and projected aircraft operations data used in the noise analysis presented in this EIS. Although some differences in the noise contours projected can be attributed to the use of two different models (NOISEMAP by the Air Force and INM by the City of Austin), the Air Force feels that the analysis presented in this EIS is accurate based on the assumptions presented in Appendix H.

16.9 **Comment.** All noise-sensitive receptors in the vicinity of Bergstrom AFB should be listed by name and location. A copy of the sensitive receptor information developed for the FAA EIS is attached.

Response. Information pertaining to sensitive receptors has been revised to incorporate new information provided by the City of Austin Aviation Department (see Section 4.4.4 and Table 4.4-9a). SEL values for these receptors can be included in the Supplemental EIS to assist with decision making by the FAA and City of Austin regarding potential noise impacts.

Document #17. Mr. Kenneth C. Bohuslav, Texas Department of Transportation

17.1 **Comment.** Interstate 35 is eight lanes wide north of the central business district and six lanes through downtown and South Austin.

Response. The text in Section 3.2.3.1 has been revised.

17.2 **Comment.** U.S. 290 is a controlled access facility between Interstate 35 and U.S. 183.

Response. The text in Section 3.2.3.1 has been revised.

17.3 **Comment.** East 7th Street is no longer part of the State Highway System (Loop 343).

Response. The text in Section 3.2.3.1 has been revised.

17.4 **Comment.** Amtrak <u>does</u> provide passenger service to the Austin area.

Response. The text in Sections 3.2.3.4 and 4.2.3 has been revised.

Document #18: Mr. Joe D. Winkle, U.S. Environmental Protection Agency, Region 6

18.1 **Comment.** The Air Force initiated the IRP process at Bergstrom AFB in 1982. The EPA is concerned that the progress made to date in addressing IRP sites is not adequately reflected in the EIS. Although the timing of this particular NEPA action may not accommodate a full assessment of the extent of contamination on the base, the Air Force should consider assessing each reuse scenario in light of the IRP data known, and the future land use implications.

Response. The most recent information available on the ongoing IRP process on the base has been incorporated into this EIS. The Air Force is also preparing an Environmental Baseline Survey which will be available to the Base Disposal Agency and the reuse recipients for planning future land uses and entering into interim or long-term leases.

18.2 **Comment.** The Department of Defense's accelerated IRP cleanup effort and the requirements of the Community Environmental Response Facilitation Act (CERFA) affect a broad range of federal real property transfers. These changes and their related impacts need to be addressed in the Final EIS.

Response. As discussed in Section 4.3, the IRP will continue in accordance with EPA, Air Force, state, and local regulations. The Environmental Baseline Survey, being prepared by the Air Force, will provide information required by CERFA to expedite the disposal and reuse process.

18.3 **Comment.** Some type of covenant should be included in the property transfer documents to ensure that all mitigation measures and subsequent monitoring identified in the Draft EIS are implemented.

Response. It is important to emphasize that the actual Air Force action is disposal of base property, not civilian reuse. Impacts and potential mitigation measures associated with the reuse alternatives have been identified as a foreseeable consequence of that action. The actual implementation, including defining project details, scheduling, and funding of appropriate mitigation measures, will be the responsibility of the reuse proponent and is beyond the Air Force's control. Until such details are developed and a specific proposal is made, it is not possible to define more specific mitigation measures.

Various regulatory agencies have the responsibility of enforcing certain mitigation measures (e.g., hazardous waste practices, air quality controls) for future civilian redevelopment. Adequate regulatory authorities are in place to ensure enforcement.

18.4 **Comment.** Changes should be made in the format of the Final EIS to simplify the identification of different resource categories and topics. In addition, a chart summarizing the different alternatives and their effects on different resources would facilitate the evaluation of impacts.

Response. The Draft EIS follows the standard outline recommended in the CEQ regulations. The Affected Environment section (Chapter 3.0) provides baseline information for each potentially affected resource and the Environmental Consequences section (Chapter 4.0) identifies the impacts of the Proposed Action and its alternatives for each resource category. Summary charts, as suggested, are provided in the Summary section (Table S-2) and in Chapter 2.0 (Table 2.8-1).

18.5 **Comment.** Based on the information provided in the Draft EIS, the Proposed Action should not result in any significant adverse environmental impacts to either physical, biological, or socioeconomic resources.

Response. Comment noted.

18.6 **Comment.** Additional information should be provided in the Final EIS on the implementation of mitigation measures by the installation recipients, and potential scheduling delays due to higher costs attributed to accelerated IRP cleanup efforts.

Response. Comment noted. See responses to comment numbers 18.2 and 18.3 above.

Document #19: Mr. T. C. Adams, Texas Office of the Governor

19.1 **Comment.** The Draft EIS has been reviewed by various state agencies. Comments received from several agencies are attached for your information.

Response. Comment noted. Documents from individual agencies have been numbered 7, 20, and 22. Responses to their comments are provided under respective document numbers.

Document #20: Mr. Jesus Garza, Texas Water Commission

20.1 **Comment.** References in Section 3.3.4 regarding "Texas Administrative Code Title 31, Part IX, Chapter 335" are incorrect. The Texas Water Commission's underground storage tank (UST) regulations are found in Chapter 334, not Chapter 335.

Response. The text in Section 3.3.4 has been revised.

20.2 **Comment.** The text in Section 3.4.2.3 states that "additional private wells may be present but have not been reported to the Texas Water Commission because only wells dug or drilled by certified drillers must be reported." This statement is inaccurate. Under the Texas Water Well Drillers Act, and Texas Administrative Code, Title 31, Chapter 287, all water well drillers who operate in the state are required to be licensed.

Response. The referenced sentence has been deleted from the Final EIS text.

20.3 **Comment.** In the discussion of groundwater, the DEIS states that "groundwater is of poor quality in most aquifers underlying the base and is not an important source of water supply downgradient of the base." This statement is in direct contradiction with the facts and another section of the DEIS (Section 3.3.2.3). Should the Colorado River (terrace and alluvium) aquifer at Bergstrom be adversely impacted by reuse activities, this could have a significant impact on groundwater users in the area.

Response. The text in Sections 3.4.2.3 and 4.4.2 has been revised accordingly.

Document #21: Mr. E. G. Wermund, University of Texas at Austin, Bureau of Economic Geology

21.1 **Comment.** No groundwater monitoring plan is proposed even though there is a large amount of hazardous materials (Tables 3.3-1 through 3.3-3) on the base.

Response. Tables 3.3-1 through 3.3-3 identify the amount of hazardous waste generated at the base. Section 3.3.3 describes the IRP which is designed to identify, characterize, and remediate environmental contamination on Air Force installations. Groundwater monitoring is routinely done under this program to establish the extent of groundwater contamination prior to any remediation measures for cleanup being undertaken. The Air Force will continue the remediation work even after the closure of the base.

Document #22: Mr. Robert W. Spain, Texas Parks and Wildlife Department

22.1 **Comment.** The Texas Parks and Wildlife Department does not have any comments regarding the Draft EIS at this time.

Response. Comment noted.

Document #23: James W. Moore, Texas State Soil and Water Conservation Board

23.1 **Comment.** The Texas State Soil and Water Conservation Board does not have any comments regarding the Draft EIS at this time.

Response. Comment noted.

COPY

DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR DISPOSAL AND REUSE OF BERGSTROM AIR FORCE BASE

LBJ LIBRARY

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February 9, 1993

7:00 p.m.

REPORTED BY LISA M. ANDERSON
Notary Public and Court Reporter

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I N D E X

S L I D E S

Slides (Continued)

Slides (Continued)

Slides (Continued)

APPEARANCES:

LIEUTENANT COLONEL EDWARD STARR,
Military Judge;

LIEUTENANT COLONEL GARY BAUMGARTEL,
Chief of the Environmental Planning Division at the Air Force Center for Environmental Excellence, Brooks Air Force Base, San Antonio;

AIR FORCE BASE DISPOSAL AGENCY
BY: RAY HATCH;

FEDERAL AVIATION ADMINISTRATION
BY: BEN GUTTERY;

PAUL HOLLAND,
Videotape Operator; and

* * * * * * *

REPORTED BY LISA M. ANDERSON
Notary Public and Court Reporter

* * * * * * *

BE IT REMEMBERED that the above-entitled matter came on for Public Hearing on the 9th day of February, 1993, at the LBJ LIBRARY, LBJ Auditorium, 2313 Red River, Austin, Travis County, Texas, at 7:20 p.m., and the following proceedings were reported by LISA M. ANDERSON, a Notary Public and Court Reporter in and for the State of Texas.

* * * * * * *

(Whereupon Slide Number 1
was shown on the screen.)

LIEUTENANT COLONEL STARR: Good evening, ladies and gentlemen, and thank you for coming tonight. First, can everyone hear me all right? Apparently so. This is the Public Hearing on the Draft Environmental Impact Statement for the Disposal and Reuse of Bergstrom Air Force Base. I'm Lieutenant Colonel Starr and I will be presiding over tonight's meeting.

This hearing is held under provisions of the National Environmental Policy Act and implementing regulations. The Act requires federal agencies to analyze potential environmental impacts of certain proposed actions and alternatives, and to consider the findings of those analyses in deciding how to proceed.

On November 4th, 1991, a scoping meeting was held here in Austin to hear your suggestions concerning what should be covered in the Environmental Impact Statement or the EIS. Since that meeting, the Air Force has examined the environmental concerns that you raised, as well as others, and prepared a draft EIS that is the subject of tonight's hearing.

The purpose of tonight's hearing is to receive your comments, suggestions, and criticisms of the draft EIS. For those of you who haven't had a chance to review the draft EIS, you may want to read the summary of the major findings of the EIS in the handout available at the door. Those findings will also be addressed by the panel members in their presentations tonight.

Now before introducing the panel members, I'll explain to you my role at this hearing. I'm a Military Judge and I primarily serve as a Circuit Judge in Air Force Courts Martial. I'm not here as an advocate or an expert on the draft EIS and I had no connection with its development. I am not here as a legal advisor to the panel members who will discuss these proposals. My purpose is to see that we have a fair, orderly hearing, and that all who wish to be heard have a fair chance to speak.

And now I'll introduce the members of the Public Hearing panel. On my immediate right is Mr. Ray Hatch of the Air Force Base Disposal Agency. He will describe the Air Force Base Disposal Process.

To his right is Lieutenant Colonel Gary Baumgartel. Lieutenant Colonel Baumgartel is the Chief of the Environmental Planning Division at the Air Force Center for Environmental Excellence at Brooks Air Force Base in San Antonio. He will discuss the Environmental Impact Analysis Process and summarize the results reported in the draft EIS.

To Lieutenant Colonel Baumgartel's right is Mr. Ben Guttery of the Federal Aviation Administration or FAA. Mr. Guttery is from the FAA's Southwest Regional Office in Fort Worth.

Because two of the reuse proposals analyzed in the EIS involve some form of airport operations, the FAA will be directly involved in the decision-making process if an airport alternative should be selected. Additionally, the FAA has special expertise to help the Air Force in analyzing environmental impacts associated with airport operations. For these reasons, the FAA is a cooperating agency with the Air Force for the preparation of the EIS.

Mr. Guttery will try to answer any questions you may have regarding issues specific to the airport operations.

This meeting is intended to provide a continuing public forum for two-way communication about the draft EIS, with a view toward improving the overall decision-making process.

You will notice that I said two-way communication. In the first part of the meeting, our speakers will discuss the details of the actions and the anticipated environmental impacts.

The second part of the meeting will give you an opportunity to provide information and make statements for the record. This input ensures the decision-makers have benefit of your knowledge of the local area and any adverse environmental effects you think may result from the Proposed Action or alternatives.

Also, if you have any questions regarding the Environmental Impact Analysis Process or the environmental impacts presented in the draft EIS, please ask the panel members and they will answer to the extent they can. If you have a technical question that requires further research that cannot be answered tonight, the Air Force will ensure your question will be answered either in the final EIS, itself, or in a separate comment response section.

Tonight's hearing is designed to give you an opportunity to comment on the adequacy of the EIS. Keep in mind that the EIS is simply intended to ensure that future decision-makers will be fully aware of the environmental impacts associated with the various reuse alternatives before they decide on a course of action. Consequently, any comments made on issues unrelated to the Environmental Impact Statement, or beyond the scope of this hearing, will not be addressed.

When you came in tonight you were given an attendance card and you were asked to indicate on it if you wish to speak tonight. After Mr. Hatch and Lieutenant Colonel Baumgartel finish their presentations, we will take a fifteen-minute recess which will give us a chance to collect all the cards. Following the recess I will recognize officials first, and then I'll call members of the public in random order from the cards that have been turned in.

For those of you who haven't indicated on the card that you want to speak but wish to speak later, please fill out another card during the recess.

(Whereupon Slide Number 2 was shown on the screen.)

LIEUTENANT COLONEL STARR: If you don't feel like standing up tonight and making a statement, you have until March 8th of this year to submit your comments for the Air Force's consideration prior to publication of the final EIS. The Air Force will continue to accept comments after March 8th, but cannot guarantee that late comments will be included in the final EIS.

Special sheets are provided in the registration area for your use in providing these comments. The address shown on the slide is also provided in the booklets and comment sheets you received as you entered the auditorium.

Even if you make comments tonight, you have until March 8th to submit additional written comments to the address shown on the slide and on the bottom of the comment sheets.

Whether a statement is made verbally, or submitted in writing either tonight or later, the statement will be considered to the same extent.

Don't be hesitant to make a statement tonight. I want to ensure that all who wish to speak have a fair chance to be heard. We have a Court Reporter here, Ms. Lisa Anderson, who will take down word for word everything that is said tonight. This record will become part of the final EIS. The Reporter will be able to make a complete record only if she can hear and understand what you say. With that in mind, please help me enforce the following ground rules:

First, don't begin speaking until after I recognize you, and please address your remarks to the panel members. If you have a written statement, place it in the box at the front of the stage. You may also read it if you wish to read it.

Second, please speak clearly, and slowly, and into the microphone at the podium, starting with your name, address, and the capacity in which you appear; that is, public official, designated spokesperson for a group, or a concerned citizen. This will help the Court Reporter prepare a professional transcript.

Third, please limit your remarks to approximately five minutes and please honor any request that I make that you stop speaking. I won't make such a request unless it appears that the length of your comments unreasonably interfere with the fair chance of another person to speak.

And, Fourth, please do not speak while another person is speaking. Only one person can be recognized at a time.

And finally, please do not smoke in this room.

One thing is extremely important here. You may have information about environmental concerns unknown to the Air Force. We're interested in knowing and assessing all potential environmental impacts of the Proposed Action and alternatives. You have experience that comes from living in the area, so the second part of tonight's communication, the part that flows from you to us, is critical here. Please don't hesitate to participate in the proceedings.

Now Mayor Todd is with us tonight and I believe he wishes to say a few words. Because of his schedule, I'm going to alter our course slightly and you'll hear from him prior to our panel's presentations. Sir, would you like to make a statement?

MAYOR BRUCE TODD: Thank you very much, Lieutenant Colonel Starr. My name is Bruce Todd and I'm here in my capacity as Mayor of the citizens - Mayor of the City of Austin.

Let me say, before making the formal comments, that - and I always have to say this as a way of preface - back a few years ago when the announcement of the possible closure of Bergstrom was made, it was not received well in this community. Certainly the economic impact, as well as the loss of the full-time military presence in Austin was something I believe the vast majority of Austinites were not understanding of at the time and perhaps not even appreciative of.

However, the final announcement was made, of course, almost two years ago, one week after I was sworn into office. We have attempted to work and have established a very good working relationship, not only with the FAA, but also with the military to resolve the various issues involving the closure of Bergstrom, so it is a hesitant task we started on, but we have done so with the City's cooperation.

We thought it was appropriate to address the national issues that necessitate the closure of the Base, and we have continued that and are delighted to have a working relationship, both with the military and the FAA through this entire process, and that spirit of cooperation will continue.

The City will provide, by the March 8th deadline, a comprehensive response following our view of all the environmental categories addressed in the Air Force Environmental Impact Statement. The City, along with the Federal Aviation Administration, is preparing an independent Environmental Impact Statement which will evaluate the potential impacts and find mitigation measures for a City airport at the Bergstrom Air Force Base as we head toward a May 1st vote to determine if the voters want to move our airport to the Bergstrom site.

Let me say that the military government has assured us, without qualification, that all of the environmental damage that may have occurred over the forty year - the forty plus years of use of that Base, as an airport, will be resolved before being returned to the citizens who are the rightful owners of the land that Bergstrom is located on, or at least the vast majority of it.

The City is including in the new airport cost estimate funds for noise abatement - or for noise mitigation around the new Bergstrom site, meaning that we are going to include in our proposal to the citizens on May 1 sufficient funds to handle all of the noise mitigation around that site.

The City Council is sitting down tomorrow at 1:30 for a complete briefing that will, for the first time, outline the cost of the move - to move an airport to the Bergstrom site, and we hope that those of you who can will have the opportunity to attend to hear some of those comments.

But my comments tonight will focus mostly on the effects of what I call the Do Nothing Option, or if you will recall, the Do Nothing Option for the Bergstrom Air Force Base.

The implications of leaving the airport at Robert Mueller, in my opinion, have not been adequately discussed. Some twenty-seven thousand people, many of those living east of I-35, are affected by noise at Mueller, compared with a projected fifty-seven hundred people who will be affected by the airport noise should the airport move to Bergstrom.

Airport operations will continue to negatively impact your neighborhoods in the Do Nothing Option. The seventy-five LDN (sic.) contour at Bergstrom affects eight people compared to the presently being affected thirty-one hundred nine people at the Mueller site.

Space and constraints at Robert Mueller will bottleneck Austin economic growth. We are already experiencing the effects of the inadequate air cargo facilities of our community. Air cargo, as you know, is the second to many of Austin's growing primary employers.

Projected airport noise impacts at Bergstrom affects thirty-five hundred fewer people than when the active military units were flying just a few months ago.

In light of these comments and in light of the effect we would - positive effects of being able to relieve the intercity airport at Mueller with a location move to Bergstrom, I would respectfully ask the airport provide a thorough review of the effects on the community of the Do Nothing Option at Bergstrom.

Thank you very much.

LIEUTENANT COLONEL STARR: Thank you, sir. And now it's my pleasure to introduce Mr. Ray Hatch who will describe the Air Force Base Disposal Process. Mr. Hatch?

(Whereupon Slide Number 3
was shown on the screen.)

MR. HATCH: Thank you, Colonel. Can everyone hear me?

My name is Ray Hatch and I work for the Air Force Base Disposal Agency, which is an office created to manage the cleanup and disposals of Air Force Bases closed under the authorities of the two Base closures and realignment laws.

In discussing the Air Force's proposed action of its closing of Bergstrom Air Force Base, I'd like to cover four general topics.

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was shown on the screen.)

MR. HATCH: First, the disposal planning; Second is the objective used by the Air Force to guide its planning; Third is disposal considerations we will use to arrive at a decision; and lastly is the Air Force decision, itself. That is, what action the Air Force will take, based upon the findings, and the EIS, and other considerations.

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was shown on the screen.)

MR. HATCH: The Secretary of the Air Force has been delegated the authority to act as the Federal Disposal Agency under the 1988 Base Closure and Realignment Act, and the Defense Base Closure and Realignment Act of 1990 to utilize or dispose of the federal property which makes up the Air Force's closing Bases. Usually this responsibility rests with the General Services Administration. Despite this change, the traditional statutes for disposal of federal property is still in effect.

Bergstrom Air Force Base is somewhat unique among the closure Bases, in that the majority of the property must be surrendered to the City of Austin to use as it sees fit. This is based on considerations included in the original land transfer documents completed when the Base was established in the 1940s, whereby the City of Austin has claimed equitable interest in approximately two thousand eight hundred and ninety-two acres of the three thousand two hundred and sixteen acres comprising the Base. It's been determined that the United States, acting through the Air Force, must surrender title to the land in question to the City of Austin when the Base is closed.

This surrender of property is subject to certain rights of the United States, such as retaining a cantonment area for the Air Force Reserve 924th Fighter Group.

Air Force decisions will be made regarding disposal of four government fee-purchased land parcels totaling approximately three hundred and twenty-four acres and the size and location of the reserve cantonment area.

The Air Force must adhere to those laws and General Service Administration regulations that are in place at the time of the passage of the Closure Acts. The Air Force has also issued additional policies and procedures required to implement our delegated authority.

Another provision in the 1988 and 1990 Acts requires us to consult with the government - with the governor and heads of local governments to consider any plans for the use of such property by the local community concerned. We are meeting this consultation requirement by working with the Bergstrom reuse authorities.

Finally, our planning recognizes that the Secretary of the Air Force has full discretion in deciding how the Air Force will dispose of the property not being surrendered to the City of Austin.

(Whereupon Slide Number 6 was shown on the screen.)

MR. HATCH: The Air Force recognizes the - the significant economic impact closure will have on the local communities and it's the Air Force's goal to complete closures as quickly and as efficiently as possible. The federal government and the Air Force are committed to assisting communities in their efforts to replace the departing military activities with viable public and private enterprise.

We are in the process of developing a comprehensive disposal plan which attempts to balance the needs of the community and the environmental consequences of our disposal decision and the needs of the Air Force.

(Whereupon Slide Number 7

was shown on the screen.)

MR. HATCH: The disposal of government-owned parcels is accomplished in a three-part planning process.

First, the Air Force's preparation of an Environmental Impact Statement. This statement analyzes the various reasonable disposal and reuse alternatives for the Base.

Second, the community's plan for the future property.

And, Third, the Air Force's Disposal Plan which analyzes the various disposal options. The Disposal Plan is based on a thorough real estate analysis of the Base and region, results from the EIS, interest shown by other federal agencies, and input from the community reuse organization.

The EIS process culminates with the issuance of a Record of Decision, which documents the decisions for the disposal of the real property and specifies what environmental mitigations may be needed on the government-owned parcels to protect human health and the environment as a result of the disposal and reuse decisions selected.

(Whereupon Slide Number 8 was shown on the screen.)

MR. HATCH: Under current law, other federal agencies and homeless assistance providers must be given priority consideration in the use and acquisition of excess real property not being surrendered to the City. It is the Air Force policy to inform the local community representatives of any expressed interest from federal agencies or homeless assistance providers. We encourage all parties to communicate openly with each other during the disposal planning process.

It should be noted that federal agencies generally work with the community to solicit support for their proposal to acquire property. Moreover, it has been the Air Force experience that such uses for a portion of the property and facilities can be accommodated within the overall community's planned future uses for the entire Base.

In general, the disposal options for the four parcels of government-owned land are: federal and agency transfer; public benefit conveyance to states or their political subdivisions and eligible non-profit institutions; negotiated sales to public agencies; and competitive sales to the general public.

The laws and regulations governing disposal do not establish a rigid priority for disposal, but provide the Secretary of the Air Force with the broad discretion necessary to ensure that all federal real property interests are disposed of in an efficient and effective manner. Therefore, the Secretary of the Air Force will decide on the actual Disposal Plan. Final disposal decisions will be documented in the Record of Decision.

The last subject I'd like to address is that of the environmental cleanup. The Air Force is committed to cleaning up all areas contaminated by past Air Force activities and protecting the health and safety of the public and any future owners of Bergstrom Air Force Base. Cleanup activities are continuing and additional studies are under way which will fully characterize contamination of all other sites to determine best who needs to clean them up.

It should be clear that if contaminated areas are not ready for surrender or disposal at the time of closure, the Air Force will retain ownership until the property is cleaned up. With others, we may require easements and rights of entry to permit long-term groundwater monitoring and treatment.

Nevertheless, despite the Air Force's commitment to cleaning up all past contaminated areas and protecting the public, we do not expect any cleanup activities to delay the reuse of uncontaminated property at Bergstrom Air Force Base.

Thank you for the opportunity to meet with you this evening and I'd like to turn the meeting back over to Lieutenant Colonel Starr.

LIEUTENANT COLONEL STARR: Thank you, Mr. Hatch. Now I present Lieutenant Colonel Gary Baumgartel who will brief us on the environmental process. Colonel Baumgartel?

(Whereupon Slide Number 9 was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: Thank you, Lieutenant Colonel Starr. Good evening. I'm Lieutenant Colonel Gary Baumgartel from the Air Force Center for Environmental Excellence at Brooks Air Force Base in San Antonio. Our organization is conducting the Environmental Impact Analysis Process for the Disposal and Reuse of Bergstrom Air Force Base as well as other major installations mandated for closure during a Round Two under the Base Closure and Realignment Act.

Tonight I will present the schedule for this Environmental Impact Analysis Process and show how the public comment period fits into the schedule.

I'll also discuss the scope of the study, and the relationship between the Environmental Impact

Statement and a separate socioeconomic study.

Last, I'll present the results of our analysis by resource category.

This environmental effort was initiated in October, 1991, with a Notice of Intent to Prepare an Environmental Impact Statement, or what I'll refer to as an EIS, for the Disposal and Reuse.

A scoping meeting was held in this facility on November 4th, 1991 to receive public input on the scope of issues to be addressed in the EIS and identify reuse alternatives and issues related to the property disposal.

During the scoping process our office received input from the public as well as a reuse proposal from the Bergstrom reuse authority. This proposal, as well as one of the alternatives developed for the study by the Air Force, included an aviation component.

Because of the potential for an aviation reuse of the Base, the Federal Aviation Administration, Southwest Region, was invited, and subsequently agreed to become a cooperating agency in the preparation of the EIS. The Air Force has worked with the FAA to include their environmental requirements in our EIS.

After scoping, we collected the necessary data and conducted the environmental analysis. The draft EIS was filed with the U.S. Environmental Protection Agency on January 15th, 1993.

(Whereupon Slide Number 10 was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: In addition to tonight's hearing, written comments on the draft EIS will continue to be accepted at this address until the 8th of March, 1993. After the comment period is over, we will evaluate all comments, both written and verbal, and perform additional analysis or change the EIS where necessary. Again, as in - in the scoping process, equal consideration will be given to all comments, whether they're presented here tonight or mailed prior to that March 8th, 1993 date.

Once the review process is complete, we will produce a final EIS, scheduled for completion in June of this year, and mail it to all those on the original draft EIS distribution list. If you are not on our mailing list, then you can request a copy by writing to this address, also. The final EIS will include comments received during the public review period and our response to those comments.

If appropriate, we will group comments into categories and respond accordingly. Depending on the number and diversity of comments, or the need to conduct additional analysis, the final draft - the final EIS may consist of a separate volume as a companion to the draft EIS, or be distributed - distributed as a cover letter with Errata Sheets. The document will serve as input for the Record of Decision, which will document the decision by the Air Force.

As you just heard from Mr. Hatch, other studies and consideration of other issues besides those addressed in the EIS will enter into the final disposal decision. We expect to accomplish the Record of Decision in September of this year.

The draft EIS was prepared to comply with the National Environmental Policy Act and the Council on Environmental Quality Regulations. Efforts were made to reduce needless bulk, write in plain language, focus only on those issues that were clearly related to the environment, and to integrate with other documents required as part of the decision-making process. Reuse alternatives that were developed during the scoping process were individually analyzed to provide an environmental comparison.

Our analysis focused on the impacts to the national environment that may occur as a direct result of the Base disposal and reuse, or indirectly through the changes in the community. Resources evaluated are geology and soil; water, both surface and groundwater; air quality; noise; biological resources; and cultural resources.

The indirect changes to the community that provide measures against which environmental impacts could be analyzed include changes to the local population, land use and aesthetics, transportation, and community utility services.

In addition, the following issues, related to current and future management of hazardous materials of waste, are discussed in the document: hazardous material management, hazardous waste management, the Air Force's Installation Restoration Program or IRP, storage tanks, asbestos, pesticides, polychlorinated biphenyls or PCBs, radon, medical or biohazardous waste management, and ordnance.

The reuse alternatives analyzed in the EIS, while conceptual in nature, are of sufficient detail to assist the Air Force in making disposal decisions on the four parcels of land out at Bergstrom Air Force Base. The FAA will tier off this EIS with an analysis of their own when a more precise airport layout plan for the Base is finalized.

If, as a result of our analysis, it was

determined that substantial adverse environmental impacts would occur through implementation of a reuse alternative, potential mitigation measures were identified and included in the document.

As I mentioned -- as I mentioned earlier, the draft EIS focused on the impacts to the natural environment that would occur, either directly or indirectly, from the disposal and reuse of the base. The document addresses socioeconomic factors where there is a relationship in the Base disposal and changes to the socioeconomic conditions that would result in impact on the natural environment.

Our organization has recently produced a separate socioeconomic study that is not required under the National Environmental Policy Act. It describes in greater detail how disposal and reuse of Bergstrom Air Force Base may economically affect these surrounding areas.

Specifically the socioeconomic study addresses the following factors for each of the reuse alternatives: economic activity; employment; population; housing; public services, including government, education, police and fire, and medical services; public finance; transportation; and utilities. Copies of this document will be provided to key federal, state, and local officials, and will be available for review in libraries in the area. This document will be forwarded to the decision-maker for input into this disposal process, and we think that we can mail that out in about one week or thereabouts.

(Whereupon Slide Number 11 was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: Before I present an overview of the proposed action and alternatives, I want to point out the four government-owned parcels that will not automatically be surrendered to the City upon closure.

Parcels 1 and 3 are located at the ends of the main runway. Parcel 2 is located on the eastern boundary, and Parcel 4 is a small navigation aid site just south of the main runway.

Now I'd like to cover the proposed action and alternatives that have been analyzed. Afterwards, I will present synopsis of the results of our analysis by resource category.

Note that the title of each alternative is presented to give only a general idea of the action. Each of the alternatives contains numerous activities which may not be included in the title. Major elements of the proposed action were provided by the Bergstrom reuse authorities. The alternatives were developed by the Air Force to ensure that the range of potential environmental consequences are available to assist in the disposal decision.

(Whereupon Slide Number 12
was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: This figure shows the land uses for the proposed action. The focus of the proposed action is the reuse of the Bergstrom Air Force Base as an air carrier airport with compatible nonaviation uses. The airport would serve a variety of aviation needs, including scheduled airline passenger service, private general aviation, air cargo, and military operations associated with the U.S. Air Force Reserves and the Texas Army National Guard.

Aviation-related land uses are indicated in blue on this map. With the Proposed Action, a new nine thousand foot parallel runway will be constructed approximately six thousand five hundred feet east of the existing main runway. It will be to the right of the map in light blue. A passenger terminal complex and associated airport facility would be constructed between the runways.

Industrial land uses are shown in brown and commercial land uses, including office and retail uses, are shown in red. Associated nonaviation land use proposed for other portions of the Base property include recreation areas shown in green and institutional areas shown in pink. The general location for the Air Force Reserve cantonment area is shown in white with a pink outline in the center of the map - of the map.

(Whereupon Slide Number 13 was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: Here is a summary of the key components of the Proposed Action.

(Whereupon Slide Number 14 was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: The focus of this alternative is also on aviation-related reuse of the Base property; however, with this alternative, only general aviation, air cargo, Texas Army National Guard, Air Force Reserve operations are considered.

Once again, the aviation-related land use is shown in blue. Industrial and commercial land uses are brown and red, respectively. The industrial areas - or commercial areas - or the industrial areas in the brown areas include both manufacturing and warehouse producers. The reserve cantonment area in the center of the base is shown in white, and institutional areas, as shown in pink, would support administrative and educational reuses.

Other associated land uses include recreation areas shown in green and the residential areas shown in yellow on this map.

(Whereupon Slide Number 15 was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: Again, this is the summary of the key components of the General Aviation/Air Cargo Airport Alternative.

(Whereupon Slide Number 16 was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: This figure shows the land uses for the Mixed-Use Development Alternative. This alternative emphasizes conversion of the Base to entirely nonaviation reuses developed around an expanded industrial and commercial concept. The airfield portion of the Base would be used for low-intensity agricultural uses. This would be an interim land use until there is sufficient demand for industrial or commercial land in this part of Travis County. No aviation reuses are proposed.

Industrial and commercial land use is again shown in the brown and red, respectively. And the residential areas are shown in yellow, again. Medical uses in orange. And administrative and educational uses are shown in pink. The proposed industrial reuses, the brown areas, include manufacturing warehouses. Recreation areas are shown in light green and the agricultural areas are shown in dark green.

(Whereupon Slide Number 17 was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: And here's a summary of the key components of the Mixed-Use Development Alternative.

(Whereupon Slide Number 18 was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: As required by the National Army Policy Act, the No-Action Alternative was also evaluated.

The No-Action Alternative would result in the Air Force retaining control of the four government-owned parcels after closure and surrendering title to the remainder of the base to the City of Austin. To establish a baseline, it was assumed that the property would not be used but would be secured and maintained in a condition to prevent deterioration.

I would now like to present the results of our analysis that are detailed in the draft EIS. The Proposed Action and all alternatives were analyzed at the same level of detail. The baseline used at

Bergstrom Air Force Base at closure I mentioned before. The following slides show comparative impacts among the reuse alternatives, excluding the No-Action Alternative.

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LIEUTENANT COLONEL BAUMGARTEL: This bar graph shows the increase in employment in the area due solely to reuse activities at the Base projected through the year 2012. In addition to the direct jobs generated on site, a number of indirect or secondary jobs would be created throughout the region. These additional jobs would increase regional earnings, income, and spending. The employment would be phased over the eighteen-year development period.

Depending on the alternative followed, reuse activities at the Base could result in an additional fourteen thousand five hundred twenty-two thousand nine hundred direct and secondary jobs in the area by the year 2012; however, many of the direct jobs, particularly for aviation support, would result from the relocation of existing jobs within the Austin area. For example, most of the aviation-related jobs would be filled by people who transfer from existing jobs at Robert Mueller Municipal Airport.

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was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: Redevelopment activities and job growth in the area are also expected to result in some population migration into the region.

This bar graph shows the increase in population resulting from the reuse activities at the Base projected, again, through 2012. Depending on the alternative selected, the population growth from reuse activities would result in an additional two hundred and fifty to six thousand four hundred and fifty people in the Austin area by the year 2012.

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was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: Land uses proposed with the various redevelopment alternatives are generally consistent with local land use plans and policies. Local zoning may need to be changed north of the Base to reflect the existence of an airport. The Texas Municipal Airport Act allows the City to adopt the land use ordinances that would provide compatibility in specific areas. Reuses proposed for the existing airfield for nonaviation alternative would be compatible with existing off-base land uses.

Aesthetically, new buildings on the Base would need to be constructed in conformance with the requirements of the City of Austin. Many existing facilities would be retained for reuse.

(Whereupon Slide Number 22
was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: The redevelopment of Bergstrom Air Force Base will affect local and regional transportation networks. Reuse of the Base will increase traffic on arterial roads near the Base, particularly, State Highway 71, U.S. 183, and Burleson Road.

This bar graph shows the estimated number of average daily trips projected to be generated by the year 2012 for each of the reuse alternatives.

For comparison purposes, the average number of daily trips generated by Bergstrom Air Force Base prior to closure was estimated at about twenty-one thousand. The number of daily trips to and from the site due to reuse would range from thirty-seven thousand one hundred and eighty, with the General Aviation/Air Cargo Airport Alternative, to fifty-six thousand eight hundred and twenty-five with the Proposed Action, again by the year 2012.

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was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: The Proposed Action, we've assumed the relocation of all aviation-related activities from Robert Mueller Municipal Airport to Bergstrom Air Force Base. The General Aviation/Air Cargo Airport Alternative assumes that only general aviation, air cargo, and the Texas Army National Guard operations would move to the Base.

This graph shows the level of annual air operations projected through the year 2012 with each aviation alternative. For reference, approximately forty-three thousand five hundred air operations occurred at the Bergstrom Air Force Base in 1990.

By 2012, the number of annual air operations would increase to about two hundred and fifty-five thousand with the Proposed Action and to about one hundred and twenty-one thousand with the General Aviation/Air Cargo Airport Alternative.

Operations for the Proposed Action would include a mix of air carrier, air cargo, general aviation, and military operations associated with the Air Force Reserves and the Texas Army National Guard.

The General Aviation/Air Cargo Airport Alternative would include all activities except the air carrier operations. The number of operations would not exceed the airspace capacity for the region.

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was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL:
Redevelopment of Bergstrom Air Force Base would demand and it will increase demands on local utility systems, including water, wastewater, solid waste disposal, electricity, and natural gas.

This table shows the projected utility demand increases to purveyors in the area for each of the reuse alternatives. As a reference, the first column shows the projected utility demand in the year 2012 without reuse of the Base. For instance, total demand on water purveyors in the area is projected to be about a hundred and sixty-six million gallons per day by 2012.

The other four columns show increases to the utility demand associated with each alternative in the year 2012. For example, with the Proposed Action, total water demand from area suppliers is projected to be more than three-quarters of a million gallons per day higher than the demand without reuse of the Base.

For all utilities with all of the alternatives, increases in demand amount to less than one percent, except for natural gas, which increases about three percent for the proposed Act. The projected utility demands would not require additional capacities for any of the purveyors.

(Whereupon Slide Number 25 was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: The Air Force is conducting investigations to identify, and characterize, and remediate environmental contamination on the Air Force Base that has resulted from past actions. This comprehensive effort is called the Installation Restoration Program or IRP.

Cleanup activities will be accomplished in accordance with the applicable federal and state laws and regulations. Some initial remedial actions will be under way this year with further work and monitoring to continue after the Base closure. Cleanup and monitoring of certain sites of the Base may require long-term access to the site to ensure the success of the remediation efforts.

The Air Force will take all necessary actions for environmental cleanup of the Base to protect public health and the environment. Deeds of property transfer will contain this assurance and all property transfers will be conducted in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act, otherwise known as CERCLA.

Underground storage tanks at the Base which are not required for reuse activities will be removed prior to disposal - of the Base disposal.

An asbestos survey has been completed for the Base. Asbestos-containing materials which may pose a threat of release will be removed or managed in accordance with Air Force policy. Renovation or demolition of asbestos-containing structures during Base reuse will require compliance with applicable federal, state, and local regulations concerning asbestos-containing materials.

All PCB-containing equipment has been removed from the Base except from two facilities: the airfield lighting system vault has fifteen PCB-containing capacitors and the Base hospital has one PCB transformer. The airfield lighting system will be transferred to the City of Austin; the transformer at the hospital will be retrofilled to reduce the PCB concentration.

A base radon survey was conducted as part of the Air Force-wide Radon Assessment Mitigation Program. Some structures on the Base were found to have radon levels greater than EPA-recommended levels for residential structures. Reuse of some structures on the Base may require mitigation to reduce the radon levels.

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was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: The potential impact of soils and geology at the Bergstrom Air Force Base with all of the alternatives will be short-term and result primarily from ground disturbance associated with construction activities or with agricultural reuses.

Ground disturbance would range from about five hundred and ten acres with the General Aviation/Air Cargo Airport Alternative to one thousand eight hundred and fifteen acres with the Proposed Action. Once construction is complete, most of the area would have been covered or landscaped, reducing the erosion potential.

Agricultural reuses would need to use the best management techniques defined by the Soil Conservation Service to reduce erosion potential.

Construction and agricultural uses would minimally alter the soil profiles, would have little effect on the local topography.

(Whereupon Slide Number 27
was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: Water is supplied to the Base by the City of Austin. The total water demand in the regions is expected to increase with the reuse alternatives. Water demand by the year 2012 is expected to increase by less than one million gallons per day over the baseline regional demand of a hundred and sixty-six million gallons per day.

Surface water and surface drainage on the Base will be effected by the reuse activity. Construction of new facilities and infrastructure and agricultural uses may change the existing flow of the surface runoff. Stormwater discharges during construction and during airport operations may require National Pollutant Discharge Elimination System Permits. Reuse activities are expected to comply with other applicable federal and state regulations to reduce the potential to affect the quality of the ground and surface water.

Installation Restoration Program activities will be conducted to ensure that contamination by a contamous (sic.) or hazardous material location is cleaned up and cannot affect the water quality or the supply.

(Whereupon Slide Number 28
was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: Airport emissions resulting from or related to the reuse of the

Base include carbon monoxide; nitrous oxide; sulfur dioxide; particulate matter of less than ten micrometers in diameter, also referred to as PM-10; and volatile organic compounds or VOCs.

Travis County has relatively good air quality and is considered by the Environmental Protection Agency to be in attainment with the national ambient air quality standards for all of these pollutants.

A regional scale with the redevelopment of the Base and the increase in pollutant emissions would be about two percent or less above baseline levels for all levels except carbon monoxide, which may increase by as much as 3.4 percent with the Mixed-Use Development Alternative in 2002. The increase in emissions for all pollutants would not cause exceedances (sic.) of the national or state ambient air quality standards.

(Whereupon Slide Number 29 was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: This graph presents a preclosure and future DNL noise contour associated with aviation activities at the Base. DNL is the day-night average sound level expressed in decibels, with a penalty added to account for increased annoyance from noise during the night. Sixty-five decibels is equivalent to normal speech at three feet and is the accepted threshold for restrictions on land uses.

On this graph, the preclosure at sixty-five decibel DNL noise contour, associated with military operations, is shown in red. The future noise contours associated with the Proposed Action are shown from 1997 to 2012 in the yellow and green, respectively, and in white for the General Aviation/Air Cargo Airport Alternative in the year 2012.

As you can see, preclosure military operations at the Base expose a much larger area - over fourteen thousand seven hundred acres - to sixty-five DNL or greater noise level. By contrast, the land and area exposed to sixty-five DNL or greater noise levels with the Proposed Action ranges from eight thousand eight hundred and forty-five acres in 1997 and decreasing to five thousand forty-five acres in 2012. The reduction in acres affected by noise between 1997 and 2012 is the result of federally mandated conversion to quieter jet aircraft by the year 2000.

The sixty-five DNL or greater noise contours for the General Aviation/Air Cargo Airport Alternative would expose about four thousand two hundred and seventy-five acres to sixty-five DNL or greater in

1997 and four thousand a hundred and thirty acres in 2012.

(Whereupon Slide Number 30 was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: This chart illustrates the approximate number of people that would be exposed to DNL noise levels of sixty-five decibels or more from the aircraft activity with the two aviation alternatives. These estimates are based on present locations of residences and the maximum projected noise. The aircraft activity from the Proposed Action would expose approximately five thousand seven hundred and fifty persons in 1997, decreasing to two thousand nine hundred and sixty-five persons in the year 2012.

The aircraft noise associated with the General Aviation/Air Cargo Airport Alternative would expose two thousand four hundred and fifteen persons to DNL noise levels of sixty-five decibels or greater in 1997 and two thousand three hundred and five persons in the year 2012, if no mitigations were implemented.

For comparison, approximately thirteen thousand four hundred persons were exposed to DNL noise levels of sixty-five decibels or greater under the preclosure conditions on the Base.

There will also be a slight increase in surface traffic noise levels along the State Highway 71 and U.S. Highway 183 with the Proposed Action and the alternative.

(Whereupon Slide Number 31 was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: Biological resources considered at Bergstrom Air Force Base included native and naturalized plants and animals, threatened endangered species, and sensitve or critical habitats. Construction or development associated with reuse would occur mostly in previously-disturbed areas with low sensitivity.

Up to ninety acres of native vegetation (mesquite thicket) and four hundred and sixty acres of weedy vegetation could be disturbed through a Proposed Action, depending on the siting of the facility. The potential agricultural land use under the Mixed-Use Development Alternative, as much as two hundred and ten acres of native vegetation, and fourteen hundred and thirty acres of recently-disturbed vegetation could be affected.

No threatened or endangered species would likely be affected on any of the alternatives.

Construction of the new runway would

potentially disturb wetlands, for which a section for permit under the Clean Water Act may be required. These areas total approximately six acres.

(Whereupon Slide Number 32 was shown on the screen.)

LIEUTENANT COLONEL BAUMGARTEL: Consultation has been under way with the Texas State Historical Preservation Office concerning cultural resources at Bergstrom Air Force Base. No National Register of Historic Places or list of prehistoric sites have been identified on that Base. Consultation is ongoing for one potentially NRHP-eligible historic structure on the Base.

In closing, I want to remind you the study is in draft stage. Our goal is to provide Air Force decision-makers with accurate information on the environmental consequences of this proposal. To do this, we are soliciting your comments on the draft tonight. This information will support informed Air Force decision-making.

At this point, I'll turn the meeting back over to Lieutenant Colonel Starr.

LIEUTENANT COLONEL STARR: Thank you, Colonel Baumgartel. We will now take a fifteen-minute recess, after which we'll move to the main portion of the meeting which is the public comment period. We're now in recess.

(Whereupon a brief recess was taken.)

LIEUTENANT COLONEL STARR: All right. If everyone will resume your seat, please, we'll begin.

Before we proceed, let me just remind you of a couple of points, please. Please limit your comments to approximately five minutes so that everyone who wishes to speak can be heard. Also, please state your name clearly before you make a statement for the record.

The panel members are not the decision-makers regarding the Proposed Action or alternatives. If a speaker, during the public comment period, requires any clarification or information prior to providing comments, the panel members will try and answer your questions.

To ensure everyone has an opportunity to speak, I also would ask that repetitive statements be avoided. If you agree with the comments of an earlier speaker, please simply indicate your concurrence.

And we will now begin with the public comment period, and, first, I would like to call upon Judge Bill Aleshire.

JUDGE BILL ALESHIRE (BY MR. SHAWN

MALONE): My name is Shawn Malone. I work for Judge Aleshire and he had a schedule conflict. He hoped to be here to read this letter, but he asked me to read it for him if he did not make it in time.

"I question whether anyone, the Air Force, the City of Austin, or the FAA is providing a complete identification of the detrimental impacts which may occur to residents of East Austin and the Del Valle area by locating Austin's Municipal Airport at Bergstrom.

I do not question whether the City of Austin or the FAA will provide complete environmental impact analyses of this move before the May 1st election on this issue. They won't. I do not question whether the City of Austin will provide the voters, before the election, with a fair and complete comparison of the alternatives to Bergstrom, which might be financially, economically, or environmentally better alternatives, because the City won't do that, either.

The City of Austin is establishing a clear and distinct record of having a substantially lower standard for environmental protection east of IH-35 than they have for the areas to the west. The airport issue is just another example of the careless - I repeat, care less attitude about development in

Eastern Travis County.

The published news report of the Air Force EIS suggests that people in the Bergstrom area will be better off because the noise contour boundaries of the commercial airport will be smaller than the current military aircraft produced and only fifty-seven hundred people will continue to be adversely affected by the airport noise instead of the current ninety-five hundred people.

The news reports do not describe whether the Air Force EIS explains the difference in the frequency and time of day or night when these disturbances of peoples' homes and schools will occur. Will Austin's commercial airport have more flights than Bergstrom did? The Air Force generally observed a curfew on flights late at night. Will Austin show the same courtesy?

I was told by Austin aviation officials that even though they are on a late-hours curfew on flights at Mueller now, they will not have a curfew at Bergstrom, in order to maximize the air cargo flights. 1-1

The point is, as you analyze the environmental impact on the people in the area of Bergstrom, you should explain not only how loud one airplane is, but how often and at what time of night the people of this area are expected to tolerate these noise levels. It's important to document this now so that when the City of Austin is sued again under inverse condemnation laws for operating an airport where people already live, that the Plaintiffs can prove the City was on advance notice this time and did it anyway.

I have this vision of a young child at home in East Austin who's been encouraged by our taxpayers' support in community programs to stay in school, study hard, and succeed. The child tries, but fails to concentrate on his or her studies as one airplane after another flies overhead. The child won't get a lot of sleep, either.

Someone in City Hall has decided that the child should be expected to be able to study with persistent noise at the sixty-five to seventy decibel level. After all, that's only like having someone speaking to you persistently from three feet away or a vacuum cleaner noise from ten feet away. But who can concentrate with such persistent noise? 1-1

The sad part about this child's situation is that there may have been options to locate an efficient airport somewhere where it would have shown respect to this child and this child's neighborhood, but no one will even look honestly at the options."

Should I leave this in this box? (Indicating)

LIEUTENANT COLONEL STARR: Yes, sir. Please. Thank you very much. I would now like to call on Mr. Bob Yancy.

MR. BOB YANCY: My name is Bob Yancy. I'm here tonight representing the Superintendent and the Board of Trustees at the Del Valle Independent School District.

Beginning in 1952, the Del Valle 1-2
Independent School District began to build its main campus directly across the Highway 71 from Bergstrom. During that period of over forty years - since that time, we've experienced no environmental problems of any consequence and would recommend that the City move the Base - move the Municipal Airport to the Base.

Regarding that part of the property that the Air Force is required by fee simple process, we would only ask that the Air Force consider the safety and welfare of the students at Del Valle. About three thousand students will remain on the main campus. In 1-3
determining the use of that facility, while some projects might be worthy, they might possibly be a source of a problem for the students.

Thank you.

LIEUTENANT COLONEL STARR: Thank you, sir. I would now like to call on Ms. Rose Dodd.

MS. ROSE DODD: Drop that.

LIEUTENANT COLONEL STARR: Ma'am, do you not wish to speak?

MS. DODD: No.

LIEUTENANT COLONEL STARR: Very well. Mr. Bill Basinger.

MR. BILL BASINGER: Well, tonight I just have two quick questions. But now my name is Bill Basinger. I'm a private citizen here in Austin.

Of the thirty-one sites that I know about that have been published - the EPA and such - about, you know, the toxic sites at Bergstrom, how many have been cleaned, A; and, B, would the Air Force be cleaning up possibly contaminated sites outside the Air Force Base, if any? 1-4

LIEUTENANT COLONEL BAUMGARTEL: Go ahead, Mr. Basinger. We'll address that in the document again. If we cause - the second part of the question. If we cause some contaminate outside the Base boundaries, would we clean it up? Is that what you're --

MR. BILL BASINGER: Yes. Yes.

LIEUTENANT COLONEL BAUMGARTEL: True. If we're responsible for this. Yes.

MR. BILL BASINGER: Okay. Thank you.

LIEUTENANT COLONEL BAUMGARTEL: I just don't have the number, is what I'm telling you. What we do have are requirements to clean up all of the sites.

MR. BILL BASINGER: All right.

LIEUTENANT COLONEL BAUMGARTNER: And then the facilitated document you want a copy of, you could just send us a little note to that address I gave you that's on your sheet. (Indicating)

MR. BILL BASINGER: Yes. Thank you.

LIEUTENANT COLONEL STARR: Thank you, Mr. Basinger. I'd like to call on Mr. Hank Erb.

MR. HANK ERB: Well, this presentation seems a little light considering the extensive nature of the contamination at the Base. I have heard all about the traffic noise, and the sound levels, and the six acre wetlands, and all this, but still, the Air Force has dumped its toxic straight into the ground or burned them for fifty years out there. 1-5

There's flumes out there. There's migration off Base. There's landfills that have yet to be extensively tested. The Air Force says it doesn't have the funding to do any more tests or cleanup. Cleanup hasn't been done yet, either.

The Air Force is going to leave in

September. You cannot clean up the toxic mess out there by September. Somehow you're going to have to retain the liability before you transfer the property. Austin should not take liability for these sites. But you've come up with a lot of schemes.

I think this EIS is just for the public and the real work is being done by the Environmental Coordinating Committee set up, funded, and run by the Air Force, with no public involvement, at all, at your Base. That's where the decisions are being made. The public is basically cut out of this project, even though they will be the ones that have to pay the bills when you leave all the toxics behind.

And you've come up with a lot of schemes, like dividing the property and the risk-reduction rules by the Water Commission, which gives you reuse levels of cleanup instead of cleaning up. You know, if there's going to be an airport there, then you don't think you have to clean up because it's the same reuse. So if there's any migration from the contamination you leave out there, then Austin is going to have to pay for it. And if reuse later down the road is not aviation, if it's residential, Austin gets stuck for the further cleanup to residential levels. 1-6

I'd like to see a lot more public

involvement in this process. I would like to see the situation out there released to the public because the public has to vote on this issue in May, and so far they are not being informed of the situation out there and 1-6 the risks that they are taking by moving the airport there.

I would like to see the public involved in the Environmental Coordinating Committee activities.

Thank you.

LIEUTENANT COLONEL STARR: Thank you, sir. I will now call on Mr. Charles Thompson.

MR. CHARLES THOMPSON: Thank you for the opportunity to speak tonight.

I believe more roads will be affected than Highway 183 and Highway 71. Probably the great majority of users of the airport in Austin come from west of I-35. The effects of the congestion on 1-7 Riverside, Oltorf, 1st, and 5th Street, and on I-35, itself, should be considered.

People have got to get to those places and they'll come across town coming from West Austin and Northwest Austin.

And related to this question, if the population growth of Austin and Travis County is to the 1-8 north and to the west, why are we putting the airport to the south and the east away from the population growth?

A look at extrapolation of one of your graphs shows about seventy flights a day now flying or coming out of Bergstrom. And in 1997 it's about five hundred and seventy-five a day. There's a great deal of 1-9
difference there. It's like the bunny commercial. At first it was kind of funny, but when you keep seeing it all the time, it's not real funny. It's annoying.

What are the flight patterns that will be used? Currently you have Air Force jets that fly between Riverside and Ben White. Will that continue with 747s and 727s?

And I have some trouble with vocabulary in the way you presented some info.

Do nothing is very negative as compared 1-10
to say other use of the airport. An alternate - in the last series of - of graphs, the do nothing use was excluded, especially in the noise and air quality surveys, and it leads to the question, why is the Air Force comparing the effects of Mueller? And if you're 1-11
going to make comparisons, why not include Manor along with Mueller, and Bergstrom, and see what the comparison will be among the three?

The extra jobsite and socioeconomic survey, wouldn't they also have an expansion at Mueller 1-12 or at Manor if those uses get up to the same level of activity as Bergstrom did?

And what if no consideration was given to the closing of the dump south of the runway? It's my understanding that you can't have a dump in an FAA situation. And how would that affect the environment if Austin has to develop a whole new dump? 1-13

Thank you very much.

LIEUTENANT COLONEL STARR: Thank you for your comments, sir. Mr. David Samuels or Samuel. Did I pronounce it correctly, sir?

MR. DAVID SAMUELS: Samuels.

LIEUTENANT COLONEL STARR: Yes, sir.

MR. DAVID SAMUELS: I'm David Samuels. I'm here representing my church, the United Pentecostal Church, 12030 Bastrop Highway. My pastor is out of town and he asked me to attend tonight. I had not intended to address the panel or anyone tonight, but when I came in and saw the analysis of the environmental noise impacts, I felt it necessary that we do address something on this impact that I see here.

The comparison says that there's no churches involved, and I do want it to be known that our church sits in the direct flight pattern of the north end of the runway less than one mile. 1-14

Presently, as the flights are going with the military, they are less frequent than they will be when the airport comes in, so there will be an adverse effect upon us and our services in the evening and in our Sunday morning worships. This is what I want to provide to you.

I'm not here to talk about where you should go or what should be done, but I did want that listed because there is a impact upon our church. And in every area on the Noise Contour Comparison slide that you showed, we are affected each and every time. Not just one further out, but every time, because we are right there. As 71 feeds into 183, we are parallel with that road right there. 1-14

And we would just like that to be known, and, of course, we would like, in any way, to be kept apprised of any studies, findings of studies, or completed or in-progress studies that the Air Force has going, and we requested the same thing of the task force here in Austin because it will affect us no matter what goes on there.

Thank you.

LIEUTENANT COLONEL STARR: Thank you, sir. Mr. Jim Carpenter.

MR. JIM CARPENTER: My name is Jim

Carpenter and I had a chance to go through the EIS here and would like to comment on the Air Force's effort.

I would like to point out that one of the things I do notice in here is that the scope of the Air Force's work is quite different than what many people perceive as the City of Austin's scope of intended reuse of the facility.

Obviously additional studies by the City are going to be necessary so that this document won't have any chance of complying with all of the requirements of the FAA regulations for reuse as a civilian airport.

And that's primarily what I want to point out tonight is that there are different requirements and that those requirements are not a criticism as to this work, but they need to be addressed before they go forward. And I think it's important that the citizens of Austin, and Travis County residents, and residents of other counties understand the full scope of requirements and work necessary for whatever was perceived that this is all about, and that is that some intended Municipal Airport will exist at some time in the future at Bergstrom Air Force Base.

The first thing that I think should be pointed out about this study is that there is a serious flaw - there are several serious flaws of the study as it is presented. The first one has to do with the noise issues.

Every study that the City of Austin has been involved in - well, virtually I guess any other city in the U.S. has been involved in - have several fatal flaws in them, as well. It has to do with how the noise calculations and projections are presented.

You can read all the materials and everything in here, but there is a couple of points dealing with noise that most people overlook. The primary point is, is that all noise models are done on the basis of certain assumptions that must be loaded into a computer model, and run through, and they come out in a nice little formulated printout, if you will, of a projected noise pattern, how it will impact people on the ground. 1-15

The FAA, of course, has been in conflict with the Environmental Protection Agency for a number of years, beginning in Toledo, Ohio at the airport that they had there dealing with the complications of these loaded assumptions.

Typically they're called an ECCO report. In the ECCO report, you assume certain things, such as a complete mix of aircraft, what types of aircraft will be used in the facility. They have certain calculations projected of what type of noise that aircraft generates. Obviously, military aircraft and civilian aircraft do have different standards and different type of noise ratings and I've noted that in the report.

However, if you started using projected reuses of the sites and you start using other people's noise assumptions that are loaded into a computer model, you put yourself in great jeopardy of accepting that what's being presented would be a correct prediction of what will happen. 1-15

In addition to the fleet mix assumptions, you also have to consider hours of operation. The FAA model, which I am most familiar with, calls for a hundred and fifty percent noise contribution for aircraft flights and operations that occur from ten o'clock at night until six a.m. in the morning.

The City of Austin went to great expense to doing a report called Greiner Austin Study, which was the environmental assessment of the Mueller Airport. They also went through the exercise of doing a noise model and calculations for a proposed Manor airport. 1-16

Both of those studies had inherent flaws in them in that they projected the fleet mix and the hours of operation to coincide with what exist at

Mueller and that is - the assumption was that there would be no noise contribution after midnight.

You've already heard mentioned earlier that that is not the assumption of this facility because they want to emphasize air cargo flights. Air cargo happens to specifically operate between the hours of two a.m. in the morning and about eight a.m. in the morning. So the largest, and noisiest, and the oldest type of aircraft that fly are utilized for air cargo. 1-16

That noise contribution should be calculated and should definitely be included in projections, but that flaw is consistent with the City of Austin's portrayal of what future use would be, so I caution the Air Force in their presentation of utilizing Austin's information, to use independent sources of input for that particular area.

In addition to the hours of operation, you also have to consider that - certain noise-contributing factors, such as traffic and the volume of traffic necessary.

If you're going to contribute an air cargo type scenario, then you need to address the fact that most air cargo is moved during the nighttime hours. You can drive by cargo facilities all over this country and they seem to be dead during the daytime, but go out 1-17 there at four o'clock in the afternoon and stay until about four o'clock, six o'clock in the morning, and you'll find out they're very active places. The reason is, you have got all those eighteen-wheelers moving at night. Most anyone driving down the highway has seen this occur.

My point there is that if you're focusing your intent as air cargo type activities at Bergstrom, then Bergstrom has several other flaws.

First of all, the north entrance makes it absolutely incompatible with Bergstrom as a site for air cargo. The volume of truck traffic, as well as the noise contributions, will be significant in the area. 1-18

The other thing I think that is a major consideration that most people overlook is FAA funding. Any assumptions as to Austin's reuse of the property as a Municipal Airport has got to look at the one primary fundamental factor that everyone does accept and that is Austin cannot afford to build an airport without FAA funds. In order to obtain those funds, they must meet certain regulations and requirements. 1-19

I noted in the report that the FAA is a contributing agency - in this document. (Indicating) However, the scope of FAA's authority, as I've learned throughout the years, is limited to what they're asked to do or asked - asked to do, or what they're not asked to do, or what they're not asked to consider.

So this is my criticism of this airport document, I would like to point out for the benefit of the citizens that maybe aren't familiar with how this project works and how the Air Force's fabric here is supposed to weave in with the civilian reuse fabric, as far as the FAA funding issues. (Indicating)

But the FAA has three primary points that will have to be addressed that are not addressed in this report nor are they addressed in other City documents other than the Manor studies, which funding was made a primary consideration and was, you know, danced in front of the voters as paying the original (sic.) cost. 1-19

The FAA requirement considers that you must look at all alternatives for airports. This particularly has to do with a site location. For instance, a Bergstrom location is an acceptable site from an FAA regulatory position, would require that all alternatives, including Mueller Airport - which clearly is mentioned in here - but it must consider all alternatives, which clearly this Manor option is not mentioned anywhere in here. I don't understand why that's the case, but other than that's a comparison that no one wants to look at.

The other items that the FAA requires is the environmental issues. The two primary points there, once you consider the siting issue and all alternatives considered, is each of those alternatives must be weighed from the standpoint of what are the environmental consequences of locating a Municipal Airport facility at this location versus any other of the alternative locations that are defined. Obviously, if you don't define one, then you have a severe problem.

The second item that we have down on this list is cost. How would a reuse of an airport at the Bergstrom site comparatively stand up against the cost factors at all alternative sites. 1-19

And then, of course, the last issue, which is really the most critical issue, is how does the proposed facility, that you would go for FAA funding for, how would it provide for a enhancement to the National Air Transportation System? Well, clearly the Bergstrom site is flawed in this particular area because of the constraints that have been demonstrated on the map. (Indicating)

So that - that funding issue is one that I think that - that specifically should be addressed.

So we have funding and we also have the assumptions on the noise laws. So I think that additional work should be done by the Air Force being that this report is presented as a comparison for its use, what the closure impact will be on the City of Austin. 1-19

As a no use of the Bergstrom facility, the impact could be easily calculated, but if you're going to make the presumption that a potential reuse, the primary reuse, the one that everyone is out saying the reason why the government should give this land free to the City, and all of these other issues, if the primary driving force of all that is that it will be used as a civilian Municipal Airport facility that will require FAA funding and must meet all the environmental restraints, then I would suggest that the Air Force is going to have to fine-tune this document in that specific arena or it needs to divorce itself entirely from Austin's reuse alternatives and look at this document solely as a closure of that facility, and the impact it will have on the community, and leave it at that, and not get involved in Austin's mess. 1-20

One specific comment is, is that - that I didn't see it mentioned in here, I think is very important - is that if the City of Austin is going to undertake in trying to receive the acquisition of an airport facility, a previously-operated military airport facility, the military is allowed certain restraints.

Obviously, providing service to the nation badly requires - the government's structure allows military entities to operate with greater flexibility than civilian or even private development entities are allowed to operate, and I think that's probably acceptable, and I think that that's - that judgment is always understood in this country.

But once we consider jumping off of the military use and we no longer are dealing with something of the national interest here, we're now dealing with something of civilian domain and the civilian interest.

Now all of a sudden all of the same environmental constraints and development constraints and citing of economic generators and how you enhance growth, traffic, and all of the bad things that we constantly hear about in Austin that come along with development, I think that consideration needs to be a primary focus.

Those environmental considerations I missed in looking at the status of the landfills, and so forth. I see a lot of discussion about, you know, the near term and future-type toxic facilities, hazardous storage sites, and so forth, but one glaring thing that I see missing here is there was a lot of detail about 1-21 the historical sites that were listed.

I happened to find - after over a year and a half - obtain a copy of a as-built survey of Bergstrom Air Force Base dated February 12th, 1945. That particular survey was entitled CO - actually, COLO.622-R.D.O. It was prepared by the U.S. Engineering Division there in Galveston, Texas, Colonel Howard M. Joseph, the District Engineer that signed that particular document.

On there it lists the ten specific sites, nine of which were twenty-five point five feet by fifty feet. Those particular - one of which was eighteen feet by thirty-six feet. And they have particular numbers listed on the survey of the various different sites. 1-21

These were open pits that were used to deposit materials. These materials ranged from items that I didn't see listed. I see several of them. Paint, empty containers - it's constantly referring to empty containers. Of course I would presume someone certified that they were empty and that there was military documentation as to the fact that these were nothing but empty drums, perhaps a - a - a faint aroma. But carbon tetrachloride was the standard material that was dumped in most all of these pits.

These pits were not used in a segregated manner. These materials were found in medical waste loss and included that - and that seems to be a topic that people are concerned about today. Engine oil and cleansing agents were included.

Now these are items that I have talked to people who actually were personally involved in the depositing of those items. They drove tanker trucks that backed up to these, opened them, and they were instructed to walk to the front of these trucks some distance to avoid the vapors and aroma that - that came from them as they were deposited. These ultimately were covered over and there is actually structures 1-21 constructed over these sites.

Now granted, there is, you know, some three thousand acres out there, so there's a large area and I know that soil tests and those type tests can be very expensive. I understand that there's limited budgets available to deal with those.

But prior to any transfer from a military use that doesn't have those type of grandfather type provisions to a civilian use that would put a burden of cleanup or would put a facility in jeopardy that is partially under construction when something is uncovered as they excavate eight or ten feet down to prepare the base materials for a runway abatement area, that will be necessary - particularly if we're dealing with air cargo aircraft where - and the 737s that we have a particular airline that have a fondness for - that certain type of density requirements that Bergstrom has full division (sic.) that would be difficult to deal with exactly like the Manor site supposedly had.

And I'm suggesting that these things must be intimately discovered and that all federal documentations, whether they're classified or unclassified, in lists or records of all documents, whether they still exist or they've been destroyed during the process of years as excess material, they now 1-21
are an important feature, because the taxpayers in this community and the taxpayers in Texas are all being looked at.

We have methods of dealing with toxic waste if it's an old gas station tank, but we're talking about military materials that have been sitting there since 1943, '44, '45 through the future and those that are defined here later on.

I would suggest that it is a absolute essential that all of this information be released, that every government file, that every private contractor that's ever done work on that site, their files should be released.

For instance, the Radian Corporation did core tests. The cores were sent off to an out-of-state facility and no one seems to have a record of them ever existing, but we know from personal experience that there are people that were involved in those core tests that said, "Yeah. We did them. We shipped them off, they took them, and they went somewhere." They no longer exist. Where are they? No one has a record of it.

These are the type things that must be done.

And I would suggest that all of these issues, asbestos and various different ones that exist, that someone should look into these things. I don't know that that full burden of responsibility really falls on the Air Force. I think you all have other things to do. You have a piece of excess property. Now you need to dispose of it. 1-21

But I think before that transfer occurs to the City of Austin, before it becomes an obligation to the taxpayers in this community, and the State of Texas, and potentially the federal taxpayers, as well, that all of these issues, if you discover - we shouldn't be in such a big rush that all of a sudden we try and do a quick transfer here, get something off, maybe rub your shoulders, and put it on the burden of a much smaller population that we can divide that number by.

So that's the close of my comments, other than just a few points. Thank you for your time.

LIEUTENANT COLONEL STARR: Thank you, Mr. Carpenter. I'd now like to call upon Mr. Willie Lewis.

MR. WILLIE LEWIS: Good evening. My name is Willie Lewis. I just have a couple of statements I'd like to make.

One is the standard that the Base will be cleaned to. I think it's imperative that we realize that the Air Force, FAA, and the Texas Water Commission standards are somewhat different. 1-22

And the second one is the funding. I realize that the Air Force has agreed and committed to the cleaning up, but I do know, from personal experience, that it's always a matter of public funding if it's allowed.

And I think that the people in Austin would like to know if it's budgeted to make a cleanup. 1-23

And Two, if we have cleaned up other Bases, what is the approximate cost it's going to be of the cleanup. Because with that other Base, with the same activities that Bergstrom has had for a number of

years, such as these and other Bases, so somewhere somebody has made payments (sic.) as to what it would cost to make cleanup to the nature that's been discovered, and I think that the people in Austin should 1-23
have some idea of what we're talking about, even after the Air Force closes in October, as to what the cost would be if the Air Force funding wasn't available. So --.

My other comment is that the - I notice from the slides in the presentation that there was a number on the sound - noise contour. It's a little ironic that the Air Force would be considering such an impact of noise when they - they no longer occupy Bergstrom. 1-24

It seems to me that they - the noise contours that the Air Force had wasn't - I mean, a thing of importance. While they were there, we made such a comment about the noise and the decreasing noise over East Austin and - and the surrounding areas now that the Air Force is going to be gone and civilian aircraft will be there.

So with those statements out, I would like to make sure that it's in the record that we would like to know, because I'm sure someplace someone has the information as to approximate cost. I mean, we don't know the exact dollar because all of those contractors, but someplace we have the highs and we have the low number that the Air Force has paid. I'm sure that they're not - they don't have a - a blank check to issue on Bergstrom.

So with that, thank you.

LIEUTENANT COLONEL STARR: Thank you for your comments, sir. Mr. Felix Rosales, Junior.

MR. FELIX ROSALES, JUNIOR: (In Spanish) You know, frustration. You know, we're fed up folks. We had an Air Force Base for fifty years. We don't want an airport.

AUDIENCE MEMBER: Amen.

MR. FELIX ROSALES, JUNIOR: Thank you. Thank you. And I know who that is back there. 1-25

We, the people of East Austin - and some folks may say, "Well, that's not all of us." (In Spanish) to East Austin. We're fed up. (In Spanish) is a small community in East Austin, (In Spanish).

We have not been asked to participate in this process. We have not been included to participate in this process. I've seen more notice coming into this building of this meeting than what was projected in this city, in this capitol of Texas. There's two signs out there. (Indicating) That's more notice than I've seen about this meeting.

I congratulate my County Commissioner for calling me to tell me of this meeting and one other fine outstanding citizen of the City of Austin, whose name eludes me at this time.

But I don't - I know nothing of this Base reuse authority. Where in the hell did that come from? We know nothing of that.

This Austin airport task search - task force, that's a dog and pony show. They have no one on that task force that lives in the barrio of East Austin, that lives - that is impacted and affected by all this impact, negative impact, noise impact, traffic impact, toxic waste. All this environment that exists in the City of Austin, and West Austin, and in D.C., and everything.

What about our environment? What about our quality of life? We don't want any more noise.

We have children that go to those schools in Del Valle - and this guy sits over here and tells me they have not been impacted. (Indicating) I went to one of those schools. I know what it was to have to listen to that noise. I have seven children that go to those schools. I know what they're going through. And if you look at those grades out there, gentlemen, 1-26 they're terrible and they have been for twenty years or fifty years now.

But where's the Clean Air Act here? Because we talk about water. Well, what about our clean air? Those toxics (sic.) waste over there, we haven't begun to talk about. It took forty years to make that mess. We're going to clean it up in five months? I don't think so. 1-27

This relationship that our fine Mayor got up here and talked about, I don't see it. He may have a relationship with somebody at Bergstrom or somebody on the task force, but it's not with the East Austin or the Montopolis community. Montopolis has not been included in this process.

They have their dog and pony shows and they keep on coming out with these numbers that do not - are not adequate or do not reflect the true and correct facts that exist out there.

You know, there's a number of things. I mean, this has gone on for fifty years and then for us to come up here and in five minutes tell you what has gone on in fifty years and how it will feel, gentlemen, is very difficult, and I've been to these meetings over here at the grand LBJ Library, which is far away from my house, and we have yet to meet in the East Austin community. The City of Austin has yet to meet in the East Austin community.

They keep wanting to ram this airport down our throats. We have not begun to talk about the facts. They have a task force, but that, gentlemen, is already committed to put an airport at Bergstrom.

The only good thing I've heard tonight is that, well, there is some property that maybe the community can have.

We have nonprofit organizations in East Austin and in Montopolis that could use property. We have other public entities in the City of Austin that could use those facilities at Bergstrom - educational facilities, recreational facilities, housing. There's a number of things that that Base can be reused for, and I think that's something that really needs to be looked at, and that is the alternative uses other than aviation uses -- 1-28

AUDIENCE MEMBER: Yeah.

MR. FELIX ROSALES, JUNIOR: -- and that's the reuse --

AUDIENCE MEMBER: Yeah.

MR. FELIX ROSALES, JUNIOR: -- of those facilities for housing, for the homeless, for our people.

We pay these taxes for over fifty years. It's not the City of Austin, the seven people on that dais over there that can tell us what we want. What we don't want is an airport. What we do want is services to our people. And we paid those taxes. And we would like us to be able to use those facilities that they built a fence around for fifty years and we've not been able to use. There's a swimming pool, golf course, the - you know, all the recreational ball fields, the educational facilities, on, and on, and on, but there's been a fence built around that and our people have not been able to use it. It's high time that we get to use something we paid for. 1-28

And I applaud all the people that came up here that speak more eloquently than I can because there's an emotional factor here that, you know, whenever I get up to speak on this issue, I don't think I'm being listened to, because I know I'm not listened to here in the City of Austin.

I applaud our Judge Aleshire, our County Judge, for his comments. It took a lot of guts for him to put what he put in this letter to the City of Austin, because we have people in the County, Travis County, that are not going to be able to vote on this issue. The City of Austin has not given them the authority to vote. They can't vote. So that right's been taken away from them, and a number of rights have been taken away from us.

And one of those is to be able to participate, because they have excluded us to the point where they would not give us a seat on the task force that is looking at this Bergstrom - it's supposed to be reuse plan, but it's an airport at Bergstrom plan. And they were given a directive that that's what you do, you put an airport at Bergstrom and we have not yet looked at the reuse of Bergstrom Air Force Base.

And then, you know, they spent millions of dollars on studies. The Greiner report, the Manor study, and on, and on over the years, and yet we still want to put an airport in the minority community. They want to move it from one end of the minority community to the other end of the minority community, and, well, it's going to affect thousands of people less. I don't think so. I don't think so.

But, you know, I don't see them paying for my health insurance or my life insurance if something is going to happen to one of those aircraft. I don't see them paying for my children's education when those aircraft are flying overhead, you know, ten or fifteen minutes over, and over, and over again, and all day long, all night long, twenty-four hour operation?

I'll try to stop here. But we don't want an airport in our backyards, in our front yards. We don't want to relocate an airport from our front yard to our backyard. It's just that we have seven - less than seven people on a dais, the City of Austin, City Council, that believes that the City will be better off with an airport at Bergstrom when we have yet to look at all the factors, all the costs, and where is the human impact here?

Where is - you know, we talk about endangered species and all this other stuff, but what about my children? What about my, you know, my mother, my father, my grandmother? How about those people that have been here and endured all of that?

The safety, you know, it's the primary concern, all the negative impacts, we haven't looked at alternative uses. This do nothing sounds negative, but we haven't looked at it. I like the Mixed-Use Alternative, myself, but I don't think - I know the City of Austin hasn't looked at it.

But there was one other thing here that I wanted to say and it's - it's just very difficult when you've fought and fought an issue since '79 to keep an airport from our community, and yet to have one shoved down your throats again.

The other thing was the zoning, the reuse of all of this property. I know that we're not going to be included, so we need to figure out how the people in this barrio, in the community, in Montopolis are going to be able to sit at the top or sit at a dais and not have to be in the back of the room and be given three minutes, or five minutes - or maybe I've taken ten - after we've spent fifty years with a negative impact.

But I think we really need to give the people an opportunity to speak, and have input, and the City of Austin is not doing it.

But I hope you also will include the minority community in possibly some of this land, excess land, but it doesn't mean that the Air Force has to give this land back to the City of Austin.

AUDIENCE MEMBER: Don't give it.

MR. FELIX ROSALES, JUNIOR: There's a lot of other reuses that this land can be used for. We're going to get ready to contact HUD, Henry Cisneros, to see if that housing can be reused for the City - here, the City of Austin, the people here in the City.

Thank you very much.

I mean, it's very difficult, gentlemen, to accept something like this when the community has not been involved or asked - you know, they've - they've not given us a chance. For two years they have been saying, "You're going to have an airport. You're going to have an airport," and we have not been given a chance.

There's a task force. There's people here from the task force. Some of them I applaud, others I could throw away in the garbage because they do not have our interests in mind.

Thank you.

LIEUTENANT COLONEL STARR: Thank you for your comments, sir. I have no more cards. I see a hand up right there. (Indicating)

MR. JOHN ANDERSON: I somehow missed the card box.

LIEUTENANT COLONEL STARR: All right, sir. If you will just go to the microphone and identify yourself?

MR. JOHN ANDERSON: Good afternoon. My name is John Anderson. I'm the President of the University Hills Neighborhood Association which happens to be between six and seven miles on the side of the approach to the Bergstrom Airport.

The only problem I have is that your noise contours are suspect. I have - do not personally have enough expertise to do them, myself, but I can 1-29 almost assure you that when you tell me you're going to have an airplane take off or land - land, if you do that every four minutes and that's going to have about ten percent of the effect that F-4s that are out there - less than that - a tenth of that rate has over my house, that you have affected me less.

I don't know how to do it, but I sure encourage you to relook, restudy that noise contour problem, and I would sure like to see something more of the methodology in which you use to make that determination. Your slide tonight showed that the sixty-five LDN line did not even get up to the Colorado River, and that's the - the F-4s are much noiser, but they fly at a much less reduced rate. 1-29

The map that says the current takeoffs or the landings at the Robert Mueller today, if you were to put them at - at - at Bergstrom that's a - that's a landing every four minutes or slightly less, and it just is amazing to me that that has - that so much is less of an impact on the LDN contours that you depict in that slide.

I had copies of earlier the Environmental Impact Statements when the Air Force proposed to put forty-eight additional aircraft at Bergstrom and that took the sixty-five LDN line and it doubled the size, just the forty-eight aircraft which fly about - at the most I would guess forty-eight more soarings (sic.) a day - and we're talking now - we're talking hundreds more a day and that would much, much - should lessen the impact.

So I don't know if it's right or wrong, but I know that it's suspect. You've heard a number of other people who want to question that. I think that slide shows that the sixty-five LDN line doesn't get above the Colorado River is flawed, at best, and I'd sure like to see the methodology if you have - able to provide that. 1-29

Thank you very much.

LIEUTENANT COLONEL STARR: Thank you, sir. All right. I see another person at the podium here. Would you identify yourself, please, Ma'am?

MS. KAREN HADDEN: Yes. Hello. I'm Karen Hadden, and thank you for this opportunity to speak.

I am a member of the Bergstrom Conversion Task Force, but I am speaking tonight as an individual.

As a member of that task force, I'm one of three people that can attend the Environmental Coordinating Committee meetings that are held at the Base. 1-30

One of the concerns I have - I'm going to limit my comments tonight to environmental issues - is that I would like to see that group expanded. I'm very unhappy with the fact that there are no representatives there who represent environmental organizations.

I recently attended a conference and for a day and a half I listened to speeches - this was a Military Base Closure conference. It was discussed over and over again by all the different representatives that it was very important to have teamwork, it was very important to work together, and to include all the interested parties. I can't think who would be more interested than the environmental organizations of Austin in attending these meetings. 1-30

The City is going to have a liability issue. Now - the City now has a representative in that group. That wasn't the case originally.

There needs to be, in my own opinion, at least six people appointed. I know of six individuals who have talked to me about the fact that they would like to be present out there.

I have made efforts down this line previously to no avail and I'm unhappy about it.

I originally requested that one woman, Karen Hagelow (sic.), be appointed to attend this meeting. She's part of the National Military Toxics Project. The answer to that request was no, that it would be disruptive, that it would slow things down to have an additional person in the room.

The meetings are held in a room that - about forty people attend, and I have looked around the room, and said that, "There is plenty of room for additional chairs." Due to the fact that I was told that this would slow down the process, I said, "Okay. Let's talk about the possibility that this person be allowed to attend the meetings and not be allowed to comment but rather just listen because of their interest." The answer was, "No. Absolutely not." 1-30

I'm very unhappy with this and it's got to change. The words of all the people who talk about teamwork ring very hollow, when the very people who are most interested in this issue are cut out. Legally those people should be involved.

As technical assistance committees are formed - which is mandated, or being mandated nationally - those are supposed to include environmental groups, and there's funding for that, and I cannot understand why that's not happening now with this group.

I would also like to encourage the Air Force, and the Water Commission, and various organizations - who I'm sure are working very hard toward the cleanup - but I would like to see them do more public work about explaining to the public about where things are, what are the concerns.

In Austin, with such a strong 1-30 environmental community, there is interest in this, and there is concern, and it's legitimate concern, and I think there could be a lot of bridging of gaps for people to be talking to each other. A lot of suspicions arise when the door is slammed shut.

I personally have had to spend a great deal of money to get ahold of studies that I wanted to read, that are not readily available - although they are available now at the Water Commission and at the Air Force Library. They need to also be available in public 1-31 libraries, they need to be able to be checked out for twenty-four hours so people do not have to spend excessive money to photocopy every single thing if they would like to go through these documents. I think they're important and I think the public has a right to access that information.

That's about all I have to say for now, but I hope that you will seriously consider the expansion of active involvement of the environmental community in this process. Thank you.

LIEUTENANT COLONEL STARR: Thank you, Ma'am. Does anyone else wish to speak tonight?

MS. LORI RENTERIA: Yes, sir. My name is Lori Renteria and I left my card at the table in the back along with about sixty other cards.

I have not had a chance to review the report. I just had a chance to skim the summary and I do fully support the Mixed-Use Development - nonaviation use development and I will focus my comments tonight, like the previous two speakers, on the process that has been used here in Austin, Texas.

Our due process of inclusion and the true spirit of what the Congress meant by creating local conversion task forces is a joke here in Austin, Texas. Unlike Felix Rosales, who I work very closely with - 1-32 Felix is a member of a large minority coalition called El Concilio, and I'm a member, and was volunteer coordinator for the United East Austin Coalition's campaign to move the airport out of the minority community and into the farmland to - so --.

And Felix also fought the airport. He gets real emotional. He's been involved in this issue fifteen years. I mean, I remember fifteen years ago the Montopolis group, my first experience with them was their effort to get the airport to leave early. This was before they had a Cold War that Felix has been involved in trying to close Bergstrom.

But we - unlike their group that was not invited to join the conversion task force, our coalition made a conscious decision not to join the Bergstrom Conversion Task Force because the City Council of Austin, Texas in the Resolution that created that task force disallowed the task force from considering any reuse of the Base that was not compatible with an airport. So that eliminated, under the laws of OSHA - you know, worker, health, and safety, you can't create jobs or have commercial industry in an - in a flight path, nor could we use any of the residences. 1-32

And it is just a sin what's going on. I'm sure that now that the hospital has ceased operations Peter Rieck is the only person in the City who has ever, after repeated requests for intervention and to allow the citizens and community-based groups to access the surplus property out there, we have been denied our rights, under the Base Conversion Act, to see what is surplus and what isn't and what the reuse options are.

It is just a sham, and I feel sorry for Jim Steed, the Chair of that committee, you know, because his hands are tied. He's trying to do his job as the City Council appointed him to do. But his marching orders are, "You cannot seriously consider any reuse unless it is compatible with an airport," and our zoning laws don't allow the task force to do that.

So I would urge you to please stop the process. Do not transfer the land. I don't want the Air Force to spend any money, either, because the process is just - there's a small group - what it really boils down to in Austin, Texas is a land speculation 1-32 fight between the S & L scammers, and it was the Northeast Austin speculators who invested in a Manor airport who lost power and now the southwest developers are trying to get the airport in their speculative territory.

And I'm urging - I'm begging - and I will be asking Henry Cisneros, too, in a personal letter, to come and intervene in our behalf because the citizens of Austin have not had a chance to consider any other reuse options of the Base.

Thank you very much.

LIEUTENANT COLONEL STARR: Thank you, Ma'am. Back on this side of the room. (Indicating)

MR. MICHAEL MCNERNEY: My name is Mike McNerney, and I'm a former Air Force pilot at Bergstrom, and I'm also a research civil engineer with the

University of Texas Center for Transportation Research, and I'm here as a private citizen, myself, a citizen of Austin, and I wanted to make a few comments and a few questions relating to the draft EIS.

As a private citizen, I was very - and as an Air Force member at the time until around December of '89 - I was very sad to see the Base close and I agree with the comments that the Mayor made in that respect.

But economically, the community, we want to do everything we could to keep the Base open. That having failed, we want to do the next best thing. We want to be able to keep the Reserves there at the Base. We want them to keep their annual pay of over about thirty-six million dollars input into this community. However, the way the EIS was written and the way the Air Force has stated it is that we had to keep this airport open in order to keep the Reserves flight (sic.) there, and I support that.

But as a matter of what the EIS, itself, the way it is written, it's rather - this is rather a unique situation or fairly unusual, at least for the Air Force, according to the EIS, for the option of building a new air carrier airport should only be under the FAA's EIS.

And I understand what this is, Air Force draft EIS, and there are some restrictions in your application of the EIS, but the FAA will also have to either endorse this EIS, or prepare their own, or make amendments to this. And it is to those specific comments that I want to make to the FAA and make sure that they include in their EIS, before all the alternatives are chosen, that they review some of these.

I have some specific questions about how the noise contours were made and I'm familiar with both the integrated noise monopoly (sic.) which was partially used in the noise map program like I produced tonight that I'm familiar with it. (sic.)

There are some - some question about the original - when you look at the noise map contours based on the use of the Bergstrom Air Force Base. That contour I'm not sure exactly, because I haven't seen that one, yet, but I'm not sure how many squadrons of F-4s you use in that particular noise map contour, but the fact that the Base is closing is really irrespective of the fact that we're no longer flying the RF-4 aircraft. 1-33

I was flying the RF-4 Bear (sic.) and we had four squadrons of RF-4s and one squadron of Reserve F-4E models. The Reserve squadron is now converted to the F-16 model and the RF-4 is no longer in the Air

Force inventory. I'm sorry to see it go. It was a good airplane and I think it should have been replaced by another reconnaissance airplane, but the Air Force did not do that and you slowly closed, one at a time, all four squadrons.

The EIS really, right now, should reflect the Air Force's continued use, either if they're bringing in another Base activity such as the - I think it was the - it was the - one of the programs that they used 727 type airplane, or whatever. J Star I think it was. It really should reflect either current use or some sort of use that the Air Force would use if they weren't going to close the - really we're not flying flight squadrons, RF-4 or F-4s, out there anymore. We're not - maybe not, but --. 1-33

The citizens of Montopolis - I flew over Montopolis a lot and looked down there and felt sorry for all the noise that F-4s were causing over that area.

One of the things that we did do is basically we used highly noise-abated procedures. We had to restrict our afterburner use, immediately put it on afterburner a shorter time, and reduce the power setting less than a hundred percent power until we got above five thousand feet, and I'm not sure whether you can put that into your noise abatement procedures into your model, so --.

There were some other things that I would like to look at.

And the summaries that you used when you calculated the noise contours can make a big difference in the actual plotting of the noise contour. And as the Air Force, your responsibility is only to get fairly close for the comparison purposes, but for the FAA, when they do prepare their final noise analysis later, there are some things that I would like to see included.

One is in the alternative of using it as an air carrier airport base - or we - at Bergstrom - or at Robert Mueller - I forget who was mentioned - we had a night - a voluntary night curfew at Bergstrom. 1-33

If the City builds an air carrier airport, we don't want to have any curfew violations (sic.). We want to be able to operate it twenty-four hours. We don't want to limit ourselves because we want an airport that's going to last thirty or forty years. Robert Mueller Airport has been there over forty years - probably a lot longer than that - and if we're going to build a new airport, let's build it to last forty years or more.

Now the assumptions of traffic growth can be very different, whether there's a very aggressive growth or whether it's a very small growth, and that can make a big difference. It might be possible to even make a different projection based on that.

I don't - I haven't had an opportunity to get through one, the noise model or the contours that you've got there, but I would want to do that, myself.

Let's see. In the one - in the effort about - the slide that you showed about the number of jobs. The preferred alternative in the Air Force EIS assumes that the Base will close and Robert - airport to Robert Mueller will close, but if the air carrier and - correction - in the air cargo, general aviation use of the Base, you do not assume that Robert Mueller Airport will close.

Actually the City had had plans to build a new airport at Manor, and the number of jobs to the community - at least under the FAA announcement - should also include an alternative. If you're going to - going to make this a general aviation/air cargo and retain Reserves, we should also look at the possibility if Robert Mueller will close and we will build another air carrier airport at another location. 1-34

Also there's the possibility that you could immediately - upon Base closure you could immediately close Robert Mueller to general aviation/air 1-35 cargo and force those to come to Bergstrom and operate the Base until you can build the air carrier runways.

Looking at the City's plans under the Master Plan covered by Pete Marwick - basically adding a new runway and keeping a Reserve cantonment area in the second part of - almost the entire half of the Base - southern half of the Base, has very little of the Base infrastructure that is kept or is usable to the community. 1-36

You can look at those costs - and I don't think the City is currently allowing citizens to know exactly the costs of these two different alternatives. They're trying - the referendum that is planned, which is a requirement in order to keep the Reserve squadron, is not going to be a pick of three or four alternatives. It's either yes, we're going to accept Bergstrom as an air carrier airport or not.

And I don't think that's a - any kind of a vote, because I don't think there's enough information for the citizens of Austin to understand the impact of the noise contours. I understand it because I'm an engineer and I've studied them, but most of the citizens here do not understand the impact of those noise contours. 1-37

They don't understand that just because

outside, you're on the sixty-five LDN contour, there's still a certain percentage of the population that is going to remain annoyed, and it's not a hundred percent. Just because you run sixty-five LDNs on it doesn't mean they're not going to be annoyed. It's what percentage of the population will be annoyed. And the citizens don't understand this, and I think there should be more information.

And I don't know that it's the Air Force's responsibility, but I think the FAA should have some responsibility, too, particularly if the - if the referendum is contingent, or a peak in the Reserves is contingent upon building an air carrier airport at Bergstrom, and it's not fair or friendly (sic.) because there are other ways to keep that Reserve contingent here. 1-38

I hope the FAA will do a good study, and unfortunately, the FAA study will not be available probably before the May referendum.

I thank the Air Force for doing their study. I think everybody that I've talked to has succeeded (sic.) in good faith, and I thank them for their help, and I thank you for the opportunity to discuss this with you.

LIEUTENANT COLONEL STARR: Thank you,

sir. Anyone else? Apparently not. Very well. I want to thank all of you for your comments.

MR. CHARLES THOMPSON: May I ask you --

LIEUTENANT COLONEL STARR: We have one more. Yes. And your name again, sir?

MR. CHARLES THOMPSON: Charles Thompson.

LIEUTENANT COLONEL STARR: Yes.

MR. CHARLES THOMPSON: I've heard some substantial rumors that the Air Force Reserve Unit may be moved to Carswell in Fort Worth. Is that a possibility or do you all deal with that in your study?

LIEUTENANT COLONEL BAUMGARTEL: Do you have a copy of the Reserve Unit? (Indicating)

MR. CHARLES THOMPSON: Is that not the case? That Carswell is going to stay open as a Reserve Unit? 1-39

LIEUTENANT COLONEL BAUMGARTEL: I couldn't hear you. What?

MR. CHARLES THOMPSON: Is Carswell Air Force Base in Fort Worth going to stay open as a Reserve Unit? And is there a good possibility the Bergstrom Reserve Unit will be moved to Carswell?

LIEUTENANT COLONEL BAUMGARTEL: Your --

MR. CHARLES THOMPSON: What is the probability of that?

LIEUTENANT COLONEL BAUMGARTEL: That's a - that's another - a whole other process in another city. We may not keep them on the Bases like that.

MR. CHARLES THOMPSON: But there is a possibility that will happen.

LIEUTENANT COLONEL BAUMGARTEL: We just don't have the facts in dealing with this.

MR. CHARLES THOMPSON: But there is a possibility.

LIEUTENANT COLONEL BAUMGARTEL: Well, I don't remember what the Closure Bill says specifically on those two Bases. We're working with national installation and each one is a little bit different, personally (sic.). 1-39

Some of their Reserve Units, as you say, they are in a - a civil airport, still in a meeting. If it didn't happen to go away, other Reserves would be keeping the airfield open, and it didn't matter if you had a civil aviation or not. (sic.) Each one was different. Their detail was very specific.

I just don't know off the top of my head. We'll address your comment. Fine.

MR. CHARLES THOMPSON: But generally all of your projections were based on Reserves staying at Bergstrom and keeping contaminants - contaminants - you know, however you said it. It seems like all your projections were based on that. You didn't factor into the fact that they may leave completely.

LIEUTENANT COLONEL BAUMGARTEL: Well, naturally the scenario is specific as to the Base, the national requirements of the Base Closure Act for for Bergstrom.

MR. CHARLES THOMPSON: But that's a possibility that it would happen. You didn't figure that in? 1-39

LIEUTENANT COLONEL BAUMGARTEL: I do not understand your question. We'll read it and figure it out. I don't have the - the Bill in front of me for the Act.

MR. CHARLES THOMPSON: Well, sort of what I'm asking is that most of your projections were made on the assumption that the Reserve Units would be staying at Bergstrom. I'm saying isn't there a good possibility that the Reserves will be moved, and won't that change your projection?

LIEUTENANT COLONEL BAUMGARTEL: In the Closure Act, if there was a civil aviation reuse alternative, Reserves will stay. That's what the Act says out of Congress. If the civil aviation is not coming in the Base, then the Reserves will go. Is that clear to you? For this Base, for Bergstrom.

So when we look at a civil aviation alternative just to see what the impacts will be, we included the Reserves because it's tied to it, by law. Now we looked at a nonaviation alternative also, just to look at the impacts of that option. There's no decision.

We're looking - we are looking at this document. What are the environmental impacts of various reuse options? This is not a decision document. These are facts.

So we put that on the table to see, "Well, what are we going to do with the ball?" What will happen to reuse of the base if you did certain things? That's all we need. We need that information so when the decision-maker looks at how we dispose of small areas of property that we own at that Base - this - this decision was affected by environmental impacts that were projected with various reuses, of that factual decision and these informational requirements, just consider that when he makes his decision. We're talking about the Secretary of Aviation.

But this case is the tie between the civil aviation option and the Reserve standing. That's why we call it that. But we do have a nonaviation alternative when the Reserves are gone, but where they go, that's, you know, another study.

MR. CHARLES THOMPSON: Thank you.

LIEUTENANT COLONEL BAUMGARTEL: Well, I don't know if I answered your question or not.

MS. LORI RENTERIA: Excuse me.

MR. CHARLES THOMPSON: You're close.

LIEUTENANT COLONEL BAUMGARTEL: Well --.

MS. LORI RENTERIA: Excuse me. I didn't know I could ask a question. We have been asking a question of the task force for a year about interim use of the facilities. If we lose the referendum, why can't we have interim use of the community in the supplemental property until the first airplane takes off and then it's too hazardous for anyone to be there?

And they told us that it was going to be - their excuse is that the second runway must be built at the same time as the first runway, but I'd like to know if interim use is possible and would the Air Force - once you leave September 1st, could we - would the Air Force be willing to allow us to use those facilities and can you help us with the - or did the report, the EIS, talk about, you know, doing a phase runway system, or a main runway, and then the second runway with total (unclear) air capacity require it? 1.40

LIEUTENANT COLONEL BAUMGARTEL: Hmmm?

MR. HATCH: Let me address that just briefly. Interim leasing, basically stated, this is a possibility, but it has to be compatible with the reuse authority's ultimate use for the facilities. It has to be something that they will respond to, that they come forth to the Air Force Base Disposal Agency and request another use for them.

We are looking at a couple of possibilities now for interim use of the Base.

MS. LORI RENTERIA: So we're back to my main problem in that they won't consider any nonaviation use, even on an interim basis. Thank you.

It's a political problem we have to deal with here.

LIEUTENANT COLONEL STARR: Apparently there are no other comments. Again, I want to thank you for your courtesy and your comments. The public comment period is now closed.

MR. FELIX ROSALES, JUNIOR: Can I ask you one question, sir?

LIEUTENANT COLONEL STARR: Sure. We'll reopen for your question. Your name again, sir?

MR. FELIX ROSALES, JUNIOR: Felix Rosales. Who is this reuse authority? Who makes up this reuse authority? Can we have a listing of that? Can we get documentation of that?

LIEUTENANT COLONEL BAUMGARTEL: It's the Reuse Task Force. It's a political appointed Commission. I don't know if it's specifically here, but that's the public information.

MR. FELIX ROSALES, JUNIOR: Okay. But was it your opinion, or your idea, or whose idea was it? Does the Air Force not have input as to what this reuse is or are we just taking this reuse authority's direction as to put an airport at Bergstrom?

MR. HATCH: Let me try to address that. We are required by the Base Realignment Closure Act to work with the state's ordered reuse organizations. In the case of - of Bergstrom, we're working with the City of Austin because they have an equitable interest in all - in the bulk of the land that's at Bergstrom, so they're the authority that we're working through.

MR. FELIX ROSALES, JUNIOR: Well, it's just very hard to believe that then if it's the City of Austin, why it's not the City Council and it's this task force that is not comprised of the community that is going to be adversely and negatively impacted. Thank you.

LIEUTENANT COLONEL STARR: Thank you.

The public comment period is now closed.

* * * * * * *

STATE OF TEXAS)

COUNTY OF TRAVIS)

I, LISA M. ANDERSON, a Court Reporter and Notary Public in and for the State of Texas, do hereby certify that the foregoing of this record is a true and complete transcript of the proceedings of the DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR DISPOSAL AND REUSE OF BERGSTROM AIR FORCE BASE, which transcript of proceedings and of the evidence was had at the LBJ LIBRARY, LBJ Auditorium, 2313 Red River, Austin, Travis County, Texas, on the 9th day of February, A. D., 1993.

I FURTHER CERTIFY that this transcript has been prepared under my supervision.

WITNESS MY OFFICIAL SIGNATURE in the City of Austin, Texas, this 25th day of February, A. D., 1993.

Lisa M. Anderson

LISA M. ANDERSON
Certified Shorthand Reporter
CSR File Number 4778

My Notary Commission expires February 6, 1996.

My CSR Certificate expires December 31, 1993.

Del Valle Independent School District
Del Valle, Texas 78617

February 8, 1993

Lt. Col. Gary Baumgartel
AFCEE/ESE
8106 Chennault Road
Brooks AFB, TX 78235-5318

RE: DEIS for the Disposal and Reuse of BAFB

Dear Lt.Col. Baumgartel:

Since 1952, The Del Valle Independent School District (DVISD) has had buildings located on property adjacent from Bergstrom AFB, separated only by State Highway 71. During this period we have experienced no environmental problems of any consequence.

2-1

Considering our historical experience as outlined above, the DVISD does not expect any detrimental environmental impact from the reuse of the facility for a municipal airport serving the City of Austin. We continue to recommend that the City of Austin's municipal airport be moved to the Bergstrom location.

Sincerely,

Bob C. Yancy

Bob C. Yancy,
Administrative Coordinator
for the Superintendent

An Equal Opportunity Employer and Educational Organization.

Del Valle Independent School District
Del Valle, Texas 78617

February 8, 1993

Lt. Col. Gary Baumgartel
AFCEE/ESE
8106 Chennault Road
Brooks AFB, TX 78235-5318

RE: DEIS for the Disposal and Reuse of BAFB

Dear Lt.Col. Baumgartel:

Since 1952, The Del Valle Independent School District (DVISD) has had buildings located on property adjacent to. Bergstrom AFB, separated only by State Highway 71. During this period we have experienced no environmental problems of any consequence. Considering our historical experience as outlined above, the DVISD does not expect any detrimental environmental impact from the reuse of the facility for a municipal airport serving the City of Austin. 3-1

Regarding the statements by Felix Rosales, Jr. at the hearing, we would like to refute the contention of Mr.Rosales that he represents the people of what he referred to as a barrio. Mr. Rosales has been a candidate for a position on the Del Valle school board on several occasions, running under both the at-large system and last year under a single member district plan. Rosales was never elected under the at-large system. Last year under the single member district plan, he again failed to be elected by voters located in the Montopolis area he claims to represent.

Further, regarding Mr. Rosales' claim that the City of Austin had not involved the Montopolis area in the airport issue and has not held any meetings there; the record will show that at least one City of Austin airport hearing was held in the Montopolis Neighborhood Center. I was personally present at that meeting, as was Rosales. 3-2

The great majority of those few who spoke at the hearing in a negative manner towards the reuse of the base facilities for a municipal airport have a personal and/or financial interest in the municipal airport being moved to a Manor site which had previously been considered by the City of Austin.

The duly elected Board of Trustees of the DVISD, who are the principal representatives of the community which surrounds Bergstrom AFB, unanimously support the reuse of the Bergstrom AFB facilites for the City of Austin's Municipal Airport. 3-3

Respectfully,

Bob C. Yancy

Bob C. Yancy,
Administrative Coordinator
for the Superintendent

An Equal Opportunity Employer and Educational Organization.

U.S. Department of Housing and Urban Development

Fort Worth Regional Office, Region VI
1600 Throckmorton
P. O. Box 2905
Fort Worth, Texas 76113-2905

February 8, 1993

Lt. Col. Gary Baumgartel
AFCEE/ESE
8106 Chennault Road
Brooks AFB, TX 78235-5318

Dear Colonel Baumgartel:

SUBJECT: Draft Environmental Impact Statement
Disposal and Reuse of Bergstrom AFB - Texas

The subject Draft Environmental Impact Statement (EIS) has been reviewed by the Environmental Office of this Regional Office.

The portion of the DEIS pertaining to Water Resources, and Surface Water is confusing. We are told that large portions of the site will be covered by impervious surfaces. The proposed new runway would be 9000 feet in length and 150 feet in width. Additional aprons and new structures, and parking areas would add more impervious areas.

Figure 3.4-3 shows the Surface Water Hydrology at Bergstrom AFB. The increase in impervious areas will increase the amount of storm water run-off during rainstorms. The stormwater must go somewhere and with the surface water flow direction, it appears it will flow to Onion Creek. We believe further hydrological studies should be accomplished to determine if the 100-year floodplain would not increase with the proposed action. 4-1

In 1988, an Environmental Assessment was prepared for a proposed new City of Austin airport which was to be located on the north side of Highway 290 and east of Manor. As a matter of interest to the reader, it seems the subject EIS should discuss if any land acquisition for the Manor site took place. If so, what plans does the City of Austin have for the proposed Manor site. 4-2

This Office appreciates the opportunity of reviewing the subject Draft Environmental Impact Statement.

Sincerely,

L. J. Ramsbottom
Environmental Clearance Officer

City of Austin

Founded by Congress, Republic of Texas, 1839
Municipal Building, Eighth at Colorado, P.O. Box 1088, Austin, Texas 78767 Telephone 512 499-2000

February 9, 1993

The United States Air Force

SUBJECT: Bergstrom Air Force Base Draft Environmental Impact Statement (EIS)

Panelists:

Attached is the City of Austin's initial response to the Air Force's Draft EIS for Bergstrom for the closure and reuse of Bergstrom Air Force Base. The City encourages the Air Force to more specifically consider the consequence of the "Do Nothing Option" for Bergstrom in regards to the Air Operations and the Environment at Robert Mueller Municipal Airport.

Following our review of all environmental categories addressed in the Air Force EIS, the City of Austin will provide a comprehensive response by the March 8 deadline.

Sincerely,

Bruce Todd
Mayor

Attachment

AIR FORCE EIS
LBJ LIBRARY
FEBRUARY 9, 1993
7:00 P.M.

CITY OF AUSTIN
SUMMARY COMMENTS
BERGSTROM

1. The City will provide by the March 8 deadline a comprehensive response following our review of all environmental categories addressed in the Air Force Environmental Impact Statement.

2. The City, with the Federal Aviation Administration (FAA), is preparing an independent Environmental Impact Statement which will evaluate potential impacts, and define mitigation measures for a City airport at Bergstrom Air Force Base. 5-1

3. The City is including in the New Airport Cost Estimates funds for noise mitigation around the Bergstrom new airport site. 5-2

4. My comments tonight focus on the effects of the Do Nothing Option for Bergstrom Air Force Base. The implications of leaving the City airport at Robert Mueller are not discussed.

   - 27,500 people are affected by noise at Mueller (compares with projected 5,748 people affected by airport noise at Bergstrom). Airport operations will continue to negatively effect Mueller neighborhoods in the Do Nothing Option. 5-3

   - The 75 LDN contour at Bergstrom affects eight people compared to 3,109 at Mueller.

   - Space constraints at Robert Mueller will bottleneck Austin's economic growth. We are already experiencing the effects of inadequate air cargo facilities at Robert Mueller. Air cargo, as you know, is essential to many of Austin's primary employers.

5. Projected airport noise impacts at Bergstrom affects 3,500 fewer people than when active military units were flying. 5-4

6. I request the Air Force provide a thorough review of the effects on the community of the Do Nothing Option for Bergstrom.

ANALYSIS OF AIRPORT ENVIRONMENTAL NOISE IMPACTS

The U.S. Air Force Draft Environmental Impact Statement (EIS) has evaluated environmental noise impacts associated with the development of a municipal airport at Bergstrom Air Force Base. The Air Force EIS considers only the impacts associated with Bergstrom — impacts associated with Robert Mueller Municipal Airport are not discussed and the Air Force should consider the consequences of a do nothing option. If Austin does not relocate the municipal airport to Bergstrom (do nothing option) the existing noise impacts would remain as shown in the following table.

Noise Impact Comparison

	Bergstrom Airport	Robert Mueller (Existing)
Population	5,748	27,534
Houses	not available	10,616
Churches	0	39
Schools	4	7
Other*	1	14

*Other includes day care, nursing homes, parks and recreation facilities, and other noise-sensitive land uses.

The Air Force EIS projects that 5,748 people will be exposed to sound levels above the day-night average sound level (Ldn) 65 by the year 1997. Ldn is a yearly average based on time of noise exposure (see information on next page). The Bergstrom impacts are significantly lower than those currently around Robert Mueller Airport.

Projected 1997 Bergstrom Noise Impacts (source: U.S. Air Force)

	65Ldn	70Ldn	75Ldn	Total
Population	4,770	970	8	5,748
Houses	not available	N/A	N/A	N/A
Churches	0	0	0	0
Schools	4	0	0	4
Other*	1	0	0	1

*Other includes day care, nursing homes, parks and recreation facilities, and other noise-sensitive land uses.

ROBERT MUELLER AIRPORT NOISE ENVIRONMENT

In 1987, the Federal Aviation Administration and the City evaluated environmental noise impacts in the vicinity of Robert Mueller Municipal Airport. The following summarizes the current noise impacts around Robert Mueller.

Robert Mueller Existing Noise Impacts

	65Ldn	70Ldn	75Ldn	Total
Population	16,130	8,296	3,109	27,534
Houses	6,287	3,147	1,182	10,616
Churches	22	9	8	39
Schools	4	2	1	7
Other*	8	4	2	14

*Other includes day care, nursing homes, parks and recreation facilities, and other noise-sensitive land uses.

BERGSTROM AIRPORT NOISE MITIGATION

The City of Austin and the FAA are currently preparing an EIS to evaluate the anticipated impacts resulting from relocation of the municipal airport to Bergstrom. This study should be completed in late 1993 and will establish the exact mitigation requirements for noise and other impacts.

In establishing the cost for the new airport project preliminary noise analyses were conducted to determine the magnitude of potential impacts and the approximate cost of mitigation. The preliminary noise evaluation indicated that approximately 500 houses and three schools would be in the noise impact area and the cost for mitigation would be $11,023,500.

NOISE ANALYSIS METHODOLOGY

Sound levels are expressed in A-weighted decibels (dBA) which correspond to human hearing characteristics. Environmental noise is described in terms of a 24-hour average of dBA levels, called the day-night average sound level (Ldn). The Ldn descriptor is used by the FAA and other federal agencies to evaluate exposure to environmental sound levels. Typically, Ldn 65 dBA is the threshold level above which noise mitigation is recommended.

To describe sound levels around airports, noise contours are drawn which represent areas of equal sound level. For example the sound level inside an Ldn 65 contour would be higher than Ldn 65 while the area outside the contour would be lower than Ldn 65.

U.S. Air Force Noise Analysis

The Air Force uses a computer model called NOISEMAP to predict sound levels resulting from aircraft operations at an airport. This model was developed for the Department of Defense for use in analyzing noise impacts around military airports. Consequently, the focus of the model is on military aircraft, although some civilian aircraft types are included.

The Air Force has used Ldn contours to determine the number of people which would be exposed to sound levels above Ldn 65 in the year 1997. The Air Force has also determined the single event levels (SEL) which would be experienced as a result of aircraft operations.

FAA and City of Austin Noise Analysis

The FAA uses a computer model called the Integrated Noise Model (INM) to assess noise impacts around airports. This model focuses on civilian aircraft although some military aircraft are included in the database. The INM is more appropriate than NOISEMAP for use in determining the noise impacts around civilian airports.

The FAA will also use noise contours to determine the overall noise impacts at Bergstrom. The FAA will also use an additional measure called time above threshold (TA) to describe the length of time a certain sound level would be exceeded at a given location. This will allow the FAA and the City to better gauge the overall impact because locations which have a significant length of time above a given threshold have a more significant impact.

The FAA has developed land use compatibility guidelines which describe the types of land uses which are compatible with certain levels of noise. The guidelines also include appropriate measures for mitigation of noise through easements, building insulation and other techniques. These guidelines will form the basis for the mitigation of noise impacts at Bergstrom.

Bill Aleshire
COUNTY JUDGE, TRAVIS COUNTY

Travis County Courthouse Annex
P.O. Box 1748 Room 206
Austin, Texas 78767
512 473-9555

COMMENTS TO THE AIR FORCE HEARING ON THE EIS FOR BERGSTROM AFB CONVERSION

BILL ALESHIRE
TRAVIS COUNTY JUDGE

FEBRUARY 9, 1993

I question whether anyone, the Air Force, the City of Austin, or the FAA is providing a complete identification of the detrimental impacts which may occur to residents of East Austin and the Del Valle area by locating Austin's municipal airport at Bergstrom.

I do not question whether the City of Austin or the FAA will provide complete environmental impact analyses of this move before the May 1st election on this issue...they won't. I do not question whether the City of Austin will provide the voters, before the election, with a fair and complete comparison of the alternatives to Bergstrom which might be financially, economically, or environmentally better alternatives...because the City won't do that either. The City of Austin is establishing a clear and distinct record of having a substantially lower standard for environmental protection EAST of IH 35 than they have for the areas to the West. The airport issue is just another example of the careless, I repeat "care less" attitude about development in Eastern Travis County.

The published news report of the Air Force E.I.S. suggests that people in the Bergstrom area will be better off because the noise contour boundaries of the commercial airport will be smaller than the current military aircraft produces and only 5,700 people will continue to be adversely affected by the airport noise instead of the current 9,500 people.

The news reports do not describe whether the Air Force E.I.S. explains the difference in the FREQUENCY and TIME OF DAY OR NIGHT when these disturbances of people's homes and schools will occur. Will Austin's commercial airport have more flights than Bergstrom did? The Air Force generally observed a curfew on flights late at night. Will Austin show the same courtesy? I was told by Austin Aviation Officials, that even though they honor a late hours curfew on flights at Mueller now, they will not have a curfew at Bergstrom in order the maximize the Air Cargo flights. 6-1

The point is, as you analyze the environmental impact on the people in the area of Bergstrom, you should explain not only how loud one airplane is, but how often and at what time of night the people of this area are expected to tolerate these noise levels. It is important to document this now, so when the City of Austin is sued again under inverse condemnation laws for operating an airport where people already live, that the plaintiffs can prove the City was on advance notice this time and did it anyway.

I have this vision of a young child at home in East Austin who has been encouraged by our taxpayer-supported community programs to stay in school, study hard, and succeed. The child tries, but fails to concentrate on his/her studies as one airplane after another flies overhead. The child won't get a lot of sleep either. Someone at City 6-1
Hall has decided that that child should be expected to be able to study with persistent noise at the 65-70 decibel level...after all that's only like having someone speaking to you persistently from 3 feet away or a vacuum cleaner noise from 10 feet away. But who can concentrate with such persistent noise?

The sad part about this child's situation, is that there may have been options to locate an efficient airport somewhere where it would have shown respect to this child and this child's neighborhood, but no one will even look honestly at the options.

CURTIS TUNNELL
EXECUTIVE DIRECTOR

MAR 1993

TEXAS HISTORICAL COMMISSION

P.O. BOX 12276 AUSTIN, TEXAS 78711 (512)463-6100

DEPARTMENT OF ANTIQUITIES PROTECTION

February 22, 1993

Lt. Col. Gary Baumgartel
AFCEE/ESE
8106 Chennault road
Brooks AFB, Texas 78235-5318

Re: Comments on Draft Environmental Impact Statement (DEIS)for the Disposal and Reuse of Bergstrom Air Force Base, Texas (AF, F2, F14, F20)

Dear Lt. Col. Baumgartel:

Thank you for the opportunity to comment on the DEIS referenced above. The document is well written and concise. Our office concurs with the statement that archeological sites 41TV434 and 41TV437 have been disturbed and are no longer eligible for inclusion in the National Register of Historic Places (NRHP). It is also our understanding that archeological testing of sites 41TV435 and 41TV436 has been conducted and the results are pending. We look forward to reviewing the report for these investigations. 7.1

It is our understanding that a tiered supplemental environmental impact statement (EIS) is currently being written by Mr. Ben Guttery, of the Federal Aviation Administration, and Mr. Holland Young, an airport development planner for the City of Austin, that will address the potential offbase land acquisition by the City of Austin, which may have an effect on three known NRHP eligible sites, and additional sites that may be identified through a cultural resource survey. We also look forward to reviewing this tiered supplemental EIS. 7.2

We will continue review of this project upon receipt of the archeological testing report. If you have any questions, please contact the reviewer of this project, Sergio Iruegas of our staff, at 512/463-5419.

Sincerely,

James E. Bruseth, Ph.D.
Deputy State Historic Preservation Officer

Tim Perttula
Timothy K. Perttula, Ph.D.
Assistant Director for Antiquities Review

JEB/TKP/SI

cc: Mr. Ben Guttery, FAA
Mr. Holland Young, Austin Municipal Airport

The State Agency for Historic Preservation

Written Comment Sheet

Draft Environmental Impact Statement
Disposal and Reuse of Bergstrom AFB, Texas

Thank you for attending this hearing. Our purpose for hosting this hearing is to summarize for you the environmental consequences of the disposal and reuse of Bergstrom AFB, and afford you an opportunity to bring to our attention environmental issues that you feel have not been adequately analyzed in the Draft Environmental Impact Statement. Your written comments need to be received by March 8, 1993 to ensure they will be considered in the Final EIS.

Date: 26 Feb. 93

Attached are several items of concern to the University Hills Neighborhood Association.

~~Please address any responses to:~~

John Schlotzhauer

University Hills Neighborhood Association

3211 Lehigh

Austin, Tx. 78723

Phone 512-928-1630.

Name:

Address:

Street Address *City/State Zip Code*

Please hand this form in or mail to:

AFCEE/ESE
Attn: Lt. Col. Gary Baumgartel
8106 Chennault Road
Brooks AFB, Texas 78235-5318

COMMENTS/CONCERNS FOR FINAL BERGSTROM ENVIRONMENTAL IMPACT STATEMENT
FROM THE UNIVERSITY HILLS NEIGHBORHOOD ASSOCIATION.

OUR NEIGHBORHOOD IS LOCATED ABOUT SIX MILES NORTH OF BERGSTROM DIRECTLY ON THE CENTER LINE FOR THE CURRENT PRIMARY RUNWAY. WE ARE CONCERNED WITH THE ACCURACY OF THE 65 DNL CONTOUR LINE DEPICTED IN THE DRAFT EIS.

WHILE ACKNOWLEDGING THAT STAGE THREE ENGINES ON COMMERCIAL AIRCRAFT WILL BE QUIETER THAN THE MILITARY AIRCRAFT RECENTLY BASED AT BERGSTROM, WE ARE CONCERNED THAT THE SIGNIFIGANT INCREASE IN INSTRUMENT APPROACHES BY COMMERCIAL JETS WILL EXPAND THE 65 DNL CONTOUR RATHER THAN REDUCE IT. TO SUGGEST THAT THE 65 DNL CONTOUR WOULD NOT EXTEND PAST THE COLORADO RIVER, FIG. 4.4-8, EVEN BEFORE THE FULL IMPLEMENTATION OF THE STAGE 3 ENGINE CONVERSION MAKES NO SENSE. 8-1

ALSO THE DNL NOISE CONTOURS SHOWN IN FIGS. 4.4-9 AND 4.4-10 SHOW NO CHANGE EVEN THOUGH TABLES H-2c AND H-2d SHOW AN APPROXIMATE 15 PERCENT INCREASE IN ARRIVALS/DEPARTURES AND AN INCREASE IN NIGHT EVENTS BY 10%. 8-2

FURTHERMORE, THE TYPES OF AIRCRAFT MODELED DID NOT INCLUDE THE CARGO VERSION OF THE B-747. NOT LONG AGO, WHEN JOINT USE OF BERGSTROM WAS BEING DEBATED, THE USE OF THIS TYPE AIRCRAFT TO MOVE HI-TECH MANUFACTURED ITEMS FROM AUSTIN TO DESTINATIONS IN CALIFORNIA AND THE FAR-EAST WAS DESCRIBED AS VERY IMPORTANT TO LOCAL ECONOMIC GROWTH. THIS AIRCRAFT COULD NOT BE USED WITHOUT THE LONG BERGSTROM RUNWAY TO ACCOMODATE THE HEAVY WEIGHT TAKE OFFS REQUIRED BY THE INCREASED FUEL LOADS TO COMPLETE THE PROPOSED TRIP LENGTHS. (SEE PARAGRAPH 3, PG H-4 DRAFT EIS). WHY IS THIS AIRCRAFT NOT INCLUDED UNDER THE PROPOSED OPTION IN THE DRAFT EIS NOW THAT THE BERGSTROM LONG RUNWAY IS AVAILABLE ? 8-3

EVEN THE EFFECT OF NOISE WITHIN THE 65 DNL IS SUSPECT. EARLIER EIS STUDIES SHOWED THAT THE 65 DNL CONTOUR WOULD BE WELL AWAY, OVER 3 MILES, FROM OUR AREA .(FIG. 3.4-6 DRAFT EIS) HOWEVER, OUR EXPERIENCE WAS THAT AT REAGAN HIGH SCHOOL, 7 MILES FROM THE RUNWAY, TEACHERS HAD TO STOP TALKING WHEN F-4s WERE OVERHEAD DURING THEIR LANDING APPROACH. TELEPHONE CONVERSATIONS IN CLOSED HOUSES IN THIS NEIGHBORHOOD ALSO HAD TO STOP FOR SEVERAL SECONDS DURING THESE APPROACHES. THE TABLE AT FIG. 3.4-5 IN THE DRAFT EIS SHOWS THAT 65 DBa EQUATES TO NORMAL SPEECH AT 3 FEET. OUR EXPERIENCE IS THAT THE AIRCRAFT NOISE WAS WELL IN EXCESS OF THIS, PROBABLY CLOSER TO THE 75-85 DBa . THIS, OF COURSE, MAKES SCHOOLS AND RESIDENTIAL CONSTRUCTION INCOMPATIBLE IN THIS AREA. (TABLE 3.4-7 DRAFT EIS) 8-4

WE ARE NOT SATISFIED THAT THE ASSUMPTIONS AND THE NOISE LEVELS USED IN THESE COMPUTATIONS ARE ACCRUATE. WE FEEL THAT THE FINAL EIS WOULD BE MORE ACCURATE, MORE UNDERSTANDABLE, AND BETTER RECEIVED IF THE FOLLOWING ITEMS WERE CONSIDERED :

1. PLACE NOISE MONITORING EQUIPMENT AT THE 5 TO 7 MILE RANGE FROM THE ROBERT MUELLER INSTRUMENT RUNWAY AND RECORD AND MAKE PUBLIC NOISE LEVELS OF AIRCRAFT FORECAST TO USE BERGSTROM WHEN THE MOVE FROM THE CURRENT AIRFIELD IS PLANNED. 8-5

2. DESCRIBE A SINGLE EVENT DECIBEL READING OF EACH TYPE AIRCRAFT FLYING OVER OUR NEIGHBORHOOD AT 2000 FEET . THIS WOULD BE MUCH EASIER FOR US TO UNDERSTAND. DNL DEPICTIONS WHICH ARE THE RESULT OF MATHEMATICAL FORMULAS ARE DIFFICULT TO RELATE TO NOISES WITH WHICH WE ARE FAMILIAR. 8-6

3. SHOW ANY NOISE ABATEMENT PLANS SUCH AS ARRIVAL/DEPARTURE ROUTES DESIGNED TO AVOID POPULATED AREAS, DESIGNATION OF THE EASTERNMOST RUNWAY (NOT YET BUILT) AS THE PRIMARY INSTRUMENT APPROACH RUNWAY, ETC. 8-7

4. SHOW EXPERIENCE OF RESIDENTIAL REAL ESTATE VALUES OF NEIGHBORHOODS NEWLY OVERFLOWN AT OTHER AIRFIELDS THAT HAVE RECENTLY BEEN RECONFIGURED WITH NEW RUNWAYS OR TRAFFIC PATTERNS. 8-8

5. WILL CLASSES IN OUR NEIGHBORHOOD SCHOOLS, REAGAN HIGH, LBJ HIGH, PEARCE MIDDLE SCHOOL, BLANTON MIDDLE SCHOOL, ANDREWS ELEMTARY, HARRIS ELEMENTARY SCHOOL, PECAN SPRINGS ELEMENTARY, AND WINN ELEMENTARY BE INTERRUPTED BY STAGE TWO OR STAGE THREE ENGINED AIRCRAFT? 8-9

6. IN PAST YEARS WE WERE TOLD THAT IT WAS PROBABLE THAT THE ENVIRONMENTAL PROTECTION AGENCY WOULD DIRECT THAT A 55 DNL CONTOUR WOULD REPLACE THE 65 DNL CONTOUR AS THE THRESHOLD FOR REASONABLE NOISE TOLERANCE. WHERE DOES THIS IDEA STAND WTH THE EPA NOW ?. PLEASE SHOW THIS CONTOUR. 8-10

WE WOULD APPRECIATE YOUR RESPONSE TO THE ITEMS ABOVE.

THANKS FOR YOUR HELP.

JOHN P. ANDERSON

PRESIDENT,
UNIVERSITY HILLS NEIGHBORHOOD ASSOCIATION

CYS. TO:
BEN GUTTERY
HOLLAND YOUNG

Federal Emergency Management Agency

Region VI
Federal Regional Center
800 North Loop 288
Denton, TX 76201-3698

NTH

February 26, 1993

Lt. Col. Gary Baumgartel
AFCEE/ESE
8106 Chennault Road
Brooks AFB, Texas 78235-5318

Dear Lt. Col. Baumgartel:

This will respond to your request for review and comment on the Draft Environmental Impact Statement, January 1993, for Disposal and Reuse of Bergstrom Air Force Base, Texas.

The concerns of this agency are the regulations contained in the National Flood Insurance Program (NFIP) and the enforcement of local floodplain ordinances. As you are aware, both the City of Austin and Travis County participate in the NFIP. Therefore, before any development would be allowed to take place, the Floodplain Administrator having jurisdiction over this area must review any development plans to ensure compliance their Floodplain Ordinance.

The Floodplain Administrators are:

City of Austin:	Mr. Ray Windsor Floodplain Administrator 505 Barton Springs Road Austin, Texas 78701	512-499-7290	9-1
Travis County:	Mr. John Rickard, P.E. Div. Dir. Engr. Services PITD P.O. Box 1748 Austin, Texas 78767	512-472-7483	

Additionally, any development that requires the use of Federal funds may be impacted by Executive Order 12699. This regulation, which applies to new construction, requires:

> All buildings owned, leased constructed, assisted (through such methods as loans, grants or guarantees of loans), or regulated by the Federal Government must conform to the requirements of the Order. Each Federal agency is independently responsible for ensuring appropriate seismic design and construction standards are applied to new construction under its purview. 9-2

For further information contact the Federal Agency that would provide the funding.

If we can be of further assistance, please feel free to contact this office by writing to the above address, or calling 817-898-5127.

Sincerely,

Carlton R. Watts
Natural Hazards
Program Specialist

Written Comment Sheet

Draft Environmental Impact Statement
Disposal and Reuse of Bergstrom AFB, Texas

Thank you for attending this hearing. Our purpose for hosting this hearing is to summarize for you the environmental consequences of the disposal and reuse of Bergstrom AFB, and afford you an opportunity to bring to our attention environmental issues that you feel have not been adequately analyzed in the Draft Environmental Impact Statement. Your written comments need to be received by March 8, 1993 to ensure they will be considered in the Final EIS.

Date: 0-27-92

I HAVE LIVED NEAR THE AIRPORT FOR SEVERAL YEARS AND THE CITY OF AUSTIN HAS BEEN VERY INSENSTIVE TO THE PLIGHT OF ENVIRONMENTAL CONCERNS OF THE 27,534 RESIDENTS AFFECTED IN THIS AREA. I FEEL THEY WILL DO THE SAME FOR THE RESIDENTS IN THE BERGSTROM AREA IF THE AIRPORT IS LOCATED THERE. THE ELECTION TO MOVE THE AIRPORT TO BERGSTROM WILL BE MAY 1, 1992 SO TO DATE THEY DO NOT KNOW WHAT THE OUTCOME WILL BE. IT IS A NON BINDING REFERENDUM SO THE MAJORITY OF THE COUNCIL CAN DECIDE TO LEAVE IT WHERE IT IS AS THEY DID ON THE 1987 VOTE WHEN THE CITIZENS VOTED TO MOVE IT. 10-1

Name: Rose Dodd

Address: 918 East 49½ ST. (Street Address) AUSTIN, TX 78751-2723 (City/State Zip Code)

Please hand this form in or mail to:

AFCEE/ESE
Attn: Lt. Col. Gary Baumgartel
8106 Chennault Road
Brooks AFB, Texas 78235-5318

Written Comment Sheet

Draft Environmental Impact Statement
Disposal and Reuse of Bergstrom AFB, Texas

Thank you for attending this hearing. Our purpose for hosting this hearing is to summarize for you the environmental consequences of the disposal and reuse of Bergstrom AFB, and afford you an opportunity to bring to our attention environmental issues that you feel have not been adequately analyzed in the Draft Environmental Impact Statement. Your written comments need to be received by March 8, 1993 to ensure they will be considered in the Final EIS.

Date: 3-1-93

(1) Will aviation easements on property adjoining Bergstrom be conveyed to the city of Austin? 11-1

(2) Will the city need additional airspace easements? 11-2

(3) Page 5-19 states that 300 off-base acres would be disturbed by the proposed action. Where is this 300 acres? 11-3

(4) Can residential homes be located in clear zones? 11-4

(5) Will existing homes in the 75-80 DBL zones need to be moved? 11-5

(6) What is FAA policy concerning homes in high DBL zones and clear zones? Are they permitted? 11-6

Name: Dennis R. Worsham

Address: 1600 The High Road — Austin Texas 78746

Street Address — *City/State Zip Code*

Please hand this form in or mail to:

AFCEE/ESE
Attn: Lt. Col. Gary Baumgartel
8106 Chennault Road
Brooks AFB, Texas 78235-5318

PUBLIC IMPROVEMENTS AND TRANSPORTATION DEPARTMENT
SHYRA DARR, DIRECTOR

811 Barton Springs Road
Suite 700
P.O. Box 1748
Austin, Texas 78767
(512) 472-7483

March 3, 1993

Lt. Col. Gary Baumgartel
AFCEE/ESE
8106 Chennault Road
Brooks AFB, Texas 78235-5318

Dear Colonel Baumgartel:

This letter is in response to your call for comments on the Draft Environmental Impact Statement (DEIS) for the Disposal and Reuse of Bergstrom Air Force Base (AFB), Texas.

GENERAL COMMENTS

The major concern of the Travis County Public Improvements and Transportation Department is the negative impact of unacceptable noise contours in Richard Moya Park based on the Proposed Action of the City of Austin's relocation of its municipal airport to Bergstrom AFB. 12-1

Another area of concern is the negative impact of stormwater discharge from the proposed municipal airport into Onion Creek, which borders Richard Moya Park. This nonpoint source pollution may contain fuels, oils, residues, and sediment that could degrade the water quality of Onion Creek. 12-2

A third area of concern is the prompt clean-up of identified contaminated areas, along with notification of any groundwater contamination to potentially affected adjacent landowners. 12-3

SPECIFIC COMMENTS

Please note all additions are bolded.

P.4-58 Groundwater

Add the following: "**Clean-up of existing contaminated areas will proceed promptly under the supervision of the Texas Water Commission.**" 12-4

United States Department of the Interior

OFFICE OF THE SECRETARY
OFFICE OF ENVIRONMENTAL AFFAIRS
POST OFFICE BOX 649
ALBUQUERQUE, NEW MEXICO 87103

TAKE PRIDE IN AMERICA

M... 1993

ER-93/51

Lt. Col. Gary Baumgartel
Chief, Environmental Planning Division
AFCEE-ESE
8106 Chennault Road
Brooks Air Force Base, Texas 78235-5318

Dear Colonel Baumgartel:

This responds to your request for the Department of the Interior's review of the draft environmental impact statement (EIS) for the disposal and reuse of Bergstrom Air Force Base (AFB), Travis County, Texas.

The document states (page 3-88) that no known mineral resources exist at Bergstrom AFB, that a possible low-grade geothermal resource may exist at depth, and that no federally designated strategic minerals have been found. Also included (pages 4-53, 4-55, 4-56) are statements concerning the impacts of project construction on the available supply of construction materials in the surrounding region. In the section on geology (page 3-86), sand, gravel, limestone and clays are among the bedrock exposures mentioned. As also stated, most of Bergstrom AFB is underlain by Colorado River Terrace deposits, known and mined for the extensive sand and gravel deposits they contain. The presence of terrace deposits indicates mineral resources are present at Bergstrom AFB. Available maps and literature indicate that sand and gravel have been and continue to be mined extensively adjacent to the AFB and in the surrounding region. The final statement should indicate if all on-base sand and gravel resources have been depleted. If sand and gravel resources are present, the final statement should address mining operations and mineral resources present, their locations, how they would be impacted by project implementation, and mitigation measures considered. The final statement should also identify mineral resources that occur but are not available for development and should indicate if no impacts on mineral resources would occur. 14-1

Richard Moya County Park, which is adjacent to Bergstrom AFB on the south and is referenced in the EIS, has received funding from the Land and Water Conservation Fund (L&WCF). The L&WCF was established in 1965 to assist public entities by providing matching grants for acquiring and developing public outdoor recreation lands and waters. The L&WCF is administered in each state by a Governor-appointed State Liaison Officer (SLO). The Texas SLO is Mr. Andrew Sansom, Executive Director, Texas Parks and Wildlife Department, 4200 Smith School Road, Austin, Texas 78744. The SLO and local park administrators should be contacted to determine effects on recreation resources in the potential area of environmental impact and to devise mitigation strategies, if needed.

In order to protect this public investment in recreation, the L&WCF Act, Section 6(f)(3), stipulates that no property acquired or developed with assistance from the L&WCF shall be converted to other than public outdoor recreation uses without the approval of the Secretary of the Interior. If a conversion of use cannot be avoided, the SLO should be contacted to initiate the process for meeting Section 6(f)(3) stipulations, which includes providing replacement lands of at least equal fair market value and of reasonably equivalent usefulness and location.

We are concerned that noise impacts on Richard Moya County Park **may** substantially impair existing uses at the park and result in a "constructive use" of park lands. The noise analysis in the draft statement indicates that the park currently falls within the 75-80 DNL noise contours (Figure 3.4-6); it is likely that some impairment is occurring at the present time. The statement also indicates that the proposed action will generally reduce noise impacts on Richard Moya County Park over time. 14-2

However, the Airport Layout Plan (APL) has not been finalized (page 2-7), and changes made to the APL could modify the proposed action and/or the noise contours (size, area covered, etc.). If that is the case, reduction of noise impacts on Richard Moya County Park may not occur to the extent indicated in the Air Force EIS and the park would continue to experience substantial noise impacts and a potential constructive use.

We therefore recommend that the forthcoming EIS, which will be tiered off the current EIS by the Federal Aviation Administration (FAA), thoroughly analyze any changes to the current noise analysis and the consequent impacts on Richard Moya County Park. Since FAA is subject to the requirements of Section 4(f) of the Department of Transportation Act, the FAA EIS should also address Section 4(f) involvement that could occur due to noise impacts.

We appreciate the opportunity to review this statement.

Sincerely,

Glenn Sekavec

Glenn B. Sekavec
Acting Regional Environmental Officer

cc:
Mr. Andrew Sansom
Executive Director
Attention: Jerry Geissen
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78744

Mr. Don Harris
Supervisor, Airports Master Planning Section
Southwest Region
Federal Aviation Administration
Fort Worth, Texas 76193-0612

ENVIRONMENTAL OFFICER
David V. Pimentel

Travis County
811 Barton Springs Rd.
Suite 700
P.O. Box 1748
Austin, Texas 78767
(512) 472-7483

March 4, 1993

Lt. Col. Gary Baumgartel
AFCEE/ESE
8106 Chennault Road
Brooks AFB, Texas 78235-5318

Dear Col. Baumgartel:

I have reviewed the Draft Environmental Impact Statement for Disposal and Reuse of Bergstrom Air Force Base (AFB). The document includes a thorough discussion of most of the key issues regarding the ultimate disposal of Bergstrom AFB. However, there are a number of key areas in which it needs to be strengthened. I have offered the following comments, both general and specific, regarding the draft EIS.

General

Quite correctly, this EIS did not deal with the Manor Airport alternative. That discussion is more appropriately left to the City of Austin's EIS for an airport location. Nevertheless, a viable alternative was not discussed that should have been. That alternative was to use Bergstrom as the commercial (airline) airport for Austin and continue to use Mueller as a general aviation/cargo airport. This alternative has the advantage of precluding the necessity to build a parallel runway at some future date to handle general aviation and cargo, and lowers overall costs substantially. I am not suggesting that this be the preferred alternative, because it also maximizes the impacts on the local community by affecting two areas. Nevertheless, it is a possible alternative and should be evaluated in that light. 15-1

Within the context of runway design (Sec. 2.4), the use of a single diagonal runway for general aviation primarily, needs to be more thoroughly discussed (p. 2-36). If it was discussed (and eliminated) in another document, that document should be cited. 15-2

March 4, 1993
Page Two

While NEPA and CEQ guidelines have been followed generally quite
well, it is difficult to ascertain direct, indirect, and cumulative
impacts. It would help if "Direct Impacts", "Indirect Impacts" and
"Cumulative Impacts" were highlighted as major topics in the
Affected Environment (3.0) and Environmental Consequences (4.0)
sections. The following reformatting is suggested: 15-3

Direct Impacts: Natural Environment, Hazardous Materials
Indirect Impacts: Local Community
Cumulative Impacts: Mueller Airport relocation

The discussion of surplus housing as possible homes for the
homeless - esp. for families and women with children, merits
greater attention. This possibly could be expanded more fully
under local community impacts. Also, are there efforts being made 15-4
to more directly notify organizations dealing with the homeless,
other than the standard Federal Register route?

Some clarifications to the sections on noise are in order. It
would be useful to know how many flights are expected to take off
over the North and the South daily. What is the typical frequency
of takeoffs and landings, by day and night? Also, what percent of
landings by runway will be from North or South? I believe the
comparison of decibel levels from Bergstrom AFB and Mueller is 15-5
interesting, but it would be more useful if the frequency of
exposure (to noise) was discussed, esp. in the context of a
projected fivefold increase in operations from 43,000
operations/yr. (1990) to 200,000+ operations/yr. (1997). To allay
fears that people in Del Valle will be virtual "prisoners" of their 15-6
soundproofed homes, perhaps additional mitigation measures should
be discussed.

There is no doubt that potentially negative noise impacts will
occur at the County's Moya Park. Particularly affected will be the
uses of softball and picnicking. As many of the amenities of this
park will be impaired, perhaps it would be a more realistic 15-7
"mitigation" to have the City purchase the land, thus allowing the
County relocate the facilities to a more suitable location.

With regards to water quality, it would be advisable to continue to
monitor the South Fork tributary and the adjacent solid waste sites
(landfills). The potential for leachate formation and migration is 15-8
quite high, simply by the location of some so close to the 100 year
flood plain. I recommend ongoing monitoring as long as the sites
remain where they are. In terms of future compliance with nonpoint
source pollution ordinances, it would be useful to compute the
current and proposed percent of impervious cover at Bergstrom.
Also, a discussion of hazardous material traps as a mitigation for 15-9
accidental spills may be appropriate, in addition to the use of
water quality basins (sedimentation/filtration).

March 4, 1993
Page Three

Lastly, even though the feasibility and analysis of using the railroad tracks in the northwest section of the base as a possible linkage to light rail transit belongs more appropriately in the City's EIS, it bears at least mention in this one. 15-10

Specific Comments

p. 2-37: Winds are predominantly from the S-SE, not the southwest. 15-11

p. 3-2: 1. I do not think the Austin area is truly "subtropical". That would be more accurate for the Rio Grande Valley. A more accurate term might be "subhumid". 15-12

2. Most rainfall in the area is not the result of tropical storms, but seasonal (spring and fall) storms triggered by frontal passages. 15-13

3. Prevailing winds in the area are southeasterly. In the winter, periodic frontal passages cause winds to come from the north. 15-14

p. 3-5: The population increase of Travis County from 295,516 to 576,407 (95%) in 20 years is substantially more than "moderate". It exceeds the growth rate of most Third World countries. 15-15

p.3-7: "avigation" is presumably "navigation". 15-16

p. 3-13: I am unaware that Travis County or any other county in Texas has local land use controls beyond flood plain management and septic system regulations. 15-17

p. 3-15: It is in the eye of the beholder, but Moya Park should be classed as having a medium level of visual sensitivity. The City of Austin landfill adjacent to it would have low visual sensitivity. 15-18

p. 3-36: The South Austin Regional WWTP is on Onion Creek, not Williamson as stated. It is also located a substantial distance <u>east</u> of McKinney Falls State Park. 15-19

p. 3-73 & 75: Apparently the detection of sites with high radon levels has expanded from an initial 8 sites detected (87/88) to 50 sites currently. Care should be taken to mitigate, should any of these sites be used for habitation and/or long term exposure. 15-20

March 4, 1993
Page Four

p. 3-88
& 90: 1. Water Resources. This is the section where current impervious cover calculations should be given. Water quality basins will undoubtedly be required, esp. for S. Fork drainage ditch and Burleson Creek. It also might be wise to strategically place hazardous material traps to capture possible major spills. 15-21

2. NPDES permitting and monitoring will undoubtedly be required. 15-22

p. 3-97: Another stationary source of pollution in the airshed is a cement plant in Buda. 15-23

p. 3-100
& 4-72: The "Noise" sections do not discuss the fivefold increase (or greater) of aircraft operations and frequency of operations throughout the day and night. 15-24

p. 4-1: I recommend that the EIS highlight Direct, Indirect, and Cumulative Impacts 15-25

Direct - Natural Environment & Hazardous Materials
Indirect - Local Community
Cumulative - Closure of RMMA

p. 4-57: Water quality basins should be constructed where there is an excess of 20% impervious cover. 15-26

p. 4-59: 1. In addition to spill control and counter measures, it would be prudent to construct hazardous material traps. 15-27

2. Delete the use of concrete lined ditches. It can increase stormwater discharges and provide absolutely no WQ attenuation. 15-28

p. 4-60: I do not see how this project could possibly be exempt from NPDES review and/or permitting, since greater than 5 acres will be disturbed. 15-29

p. 4-73: It appears that speech interference will occur at Moya Park. 15-30

p. 4-76: Is phaseout of noisy aircraft mandatory or recommended? How will this be enforced? What happens if airlines are in bankruptcy or marginally solvent, will there be fleet replacement? 15-31

p. 4-91: "Acquire undeveloped land adjacent to runways" should be expanded to include semi-developed land like Moya Park. Since I believe this was built with Local Park Funds, replacement is required. 15-32

Sincerely,

David V. Pimentel
Environmental Officer

DVP:cd

cc Bill Aleshire, Travis County Judge
Commissioner Samuel T. Biscoe, Precinct One
Commissioner Barbara Carlson, Precinct Two
Commissioner Valarie Bristol, Precinct Three
Commissioner Marcos de Leon, Precinct Four

DVP30301.LTR\OTHER

City of Austin

FOUNDED BY CONGRESS, REPUBLIC OF TEXAS, 1839
DEPARTMENT OF AVIATION, 3600 MANOR ROAD, AUSTIN, TEXAS 78723, TELEPHONE (512) 472-5439

March 8, 1993

Lt Col Gary Baumgartel
AFCEE/ESE
8106 Chenault Road
Brooks AFB, Texas 78235-5318

Subject: **Draft Environmental Impact Statement (DEIS) for the Disposal and Reuse of Bergstrom Air Force Base (AFB)**
City of Austin Department of Aviation Comments
City of Austin Water and Wastewater Department Comments

Dear Lt Col Baumgartel:

The following comments are provided on the subject DEIS.

General Comments

- In general, the Region of Influence (ROI) used in the DEIS to determine the environmental effects of the project does not allow complete analysis and determination of the potential impacts. In many environmental categories, the DEIS ROI is limited to the Bergstrom AFB property. Off-site impacts should be examined in all areas of the DEIS. 16-1

- The City of Austin Airport Master Plan for relocation of the City's municipal airport to the site calls for 6,700 feet (centerline-to-centerline) between the parallel runways. The proposed action in the DEIS incorrectly refers to a 6,500 foot runway spacing. 16-2

Specific Comments

Section 3.2.3.4 Railroads
- Page 3-34 - AMTRAK has provided continuous service to the City of Austin since the 1970s. This section incorrectly notes that AMTRAK stopped providing service in 1989. 16-3

Section 3.2.4.1 Offbase Systems
- Page 3-35 - The capacity of the City of Austin water system is 225 MGD. 16-4

- Page 3-36, second paragraph - The location of the South Austin Regional Wastewater Treatment Plant incorrectly refers to an abandoned temporary site. 16-5

March 8, 1993
Lt Col Gary Baumgartel
page two

The Plant is located on the west side of Onion Creek near its confluence with the Colorado River east of Bergstrom AFB.

- Page 3-38 - The Green Water Treatment Plan has a capacity of 45 MGD. 16-6

Section 3.3.5 Asbestos

- A list of the buildings which have asbestos-containing materials should be included in the DEIS. 16-7

Section 4.4.4 Noise

- Based on a review of the computer files used to produce the noise contours, it is recommended that the Air Force verify the flight track and profile data for agreement with the specific aircraft operating characteristics for the proposed action. The City of Austin will provide to the Air Force a copy of the data which will be used to prepare the noise analysis for the Federal Aviation Administration (FAA) EIS. 16-8

- All noise sensitive receptors in the vicinity of Bergstrom AFB should be listed by name and location. A copy of the sensitive receptor information developed for the FAA EIS is attached. 16-9

Thank you for the opportunity to comment on the Air Force DEIS.

Sincerely,

Holland A. Young
Senior Airport Planner

enc.

cc: Charles W. Gates
John M. Almond, P.E.
Mel Hinson
Randall W. Alexis
Ben R. Guttery, A.I.C.P.
Don Weaver, E.P.

Texas Department of Transportation

DEWITT C. GREER STATE HIGHWAY BLDG. • 125 E. 11TH STREET • AUSTIN, TEXAS 78701-2483 • (512) 463-8585

March 8, 1993

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854

Disposal and Reuse of Bergstrom Air Force Base
Draft Environmental Impact Statement
Travis County

Lieutenant Colonel Gary Baumgartel
Department of the Air Force
AFCEE/ESE
8106 Chennault Road
Brooks AFB, Texas 78235-5318

Dear Lieutenant Colonel Baumgartel:

We have reviewed the Draft Environmental Impact Statement (DEIS) transmitted by your letter dated January 14, 1993, regarding the disposal and reuse of Bergstrom Air Force Base and have the following comments to offer:

- Page 3-19 - The text refers to I.H. 35 as being eight lanes wide. It is eight lanes only north of the CBD and six lanes through downtown and South Austin. 17-1

  - U. S. 290 is a controlled access facility between I. H 35 and U. S. 183. 17-2

  - East 7th Street is no longer part of the State Highway System (Loop 343). 17-3

- Page 4-16 - AMTRAK does provide passenger service to the Austin area. 17-4

We have no other comments to offer at this time. Thank you for the opportunity to review the DEIS.

Sincerely,

Kenneth C. Bohuslav, P. E.
TRACS Coordinator

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

MAR 11 1993

Lt. Colonel Gary Baumgartel
Chief, Environmental Planning Division
AFCEE/ESE
8106 Chennault Road
Brooks AFB, Texas 78235-5318

Dear Lt. Colonel Baumgartel:

In accordance with our responsibilities under Section 309 of the Clean Air Act, the National Environmental Policy Act (NEPA), and the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA, the Region 6 Office of the U.S. Environmental Protection Agency (EPA) has completed the review of the Draft Environmental Impact Statement (EIS) for the proposed disposal and reuse of Bergstrom Air Force Base (AFB), Travis County, Texas.

The proposed action (preferred alternative) is to modify Bergstrom AFB so it can operate as a commercial air carrier airport, with construction of a new parallel 9,000 foot runway located 6,500 feet east of the existing 12,250 foot primary runway at Bergstrom AFB. Acquisition of up to 917 acres of land south of the Base by the City of Austin may be required. A passenger terminal building complex and other support facilities would be constructed between the two runways. Four Air Force units would remain at the Base. Compatible non-aviation reuses would include industrial, commercial, institutional, and recreational uses.

The proposed action makes the assumption that the Robert Mueller Municipal Airport (RMMA) near downtown Austin, Texas would be closed and converted to industrial, commercial, institutional, and residential uses. As a cooperating agency in the preparation of this Draft EIS, the Federal Aviation Administration (FAA) will assist the Air Force in making any decisions related to commercial aviation affecting the Bergstrom AFB property. The closure and reuse of RMMA and final Airport Layout Plan for an air carrier airport at Bergstrom AFB will be covered in a supplemental Draft EIS to be prepared by the FAA. The FAA will tier off this EIS in accordance with the CEQ Regulations at (40 CFR 1502.20) and FAA Order 5050.4A.

While our review of the Draft EIS has not identified any significant adverse environmental impacts with either disposal or reuse options for the facility, we do note some minor deficiencies in the discussion of certain relevant issues. Therefore, we offer the following comments for your consideration when preparing the Final EIS.

■ IRP Sites

The Draft EIS identifies several Installation Restoration Program (IRP) sites at Bergstrom AFB. However, according to the Draft EIS, the extent of contamination at these sites has yet to be determined. The Air Force initiated the IRP process at Bergstrom AFB in 1982. We are concerned that the progress made to date in addressing IRP sites is not adequately reflected in the Draft EIS. This type of information would assist reuse recipients and the public in evaluating the potential affects on each of the reuse alternatives and the implementation schedule of remediation actions. 18-1

Although the timing of this particular NEPA action may not accommodate a full assessment of the extent of contamination on the Base facility, the Air Force should consider assessing each reuse scenario in light of the IRP data known, and the future landuse implications.

■ IRP Scheduling

The Draft EIS states that the IRP will continue in accordance with EPA, Air Force, State and local regulations.

Through recent EPA discussions with Department of Defense (DOD) personnel, it is apparent that the costs for accelerated IRP cleanup efforts are running higher than originally estimated. Therefore, DOD is considering adjustments to accommodate the need to accelerate IRP cleanup efforts with limited funds. In addition, the Community Environmental Response Facilitation Act (CERFA) was recently enacted to facilitate base closure and reuse. CERFA amends section 102 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) in an effort to facilitate base closure and reuse. However, it also impacts a broad range of Federal real property transfers. These modifications could affect the scheduling of the Bergstrom disposal and reuse process. These changes and their related impacts need to be addressed in the Final EIS. 18-2

■ General Comments

- A number of proposed mitigation measures are identified in the Draft EIS in order to minimize or compensate for unavoidable impacts. However, there are no assurances that these measures will be implemented once a final reuse option is selected. We suggest that some type of covenant be included in the property transfer documents to ensure that all mitigation measures and subsequent monitoring identified in the Draft EIS are implemented. 18-3

- We suggest that changes be made in the format of the Final EIS to simplify the identification of different resource categories, and topics. In the present format, readers must search through the entire document in order to find all information on one subject (e.g., hazardous wastes). In addition, a chart summarizing the different alternatives and their effects on different resources would facilitate the evaluation of impacts. 18-4

Based upon the information provided in the Draft EIS, we conclude that the proposed action should not result in any significant adverse environmental impacts to either physical, biological, or socio-economic resources. According to the Draft EIS, the proposed action would positively benefit the city of Austin and Travis County in terms of economic activity, employment, growth, and income. 18-5

We classify your Draft EIS as Environmental Concerns-Insufficient Information (EC-2). Specifically, the EPA has no objection to selection of the proposed action as the preferred alternative. However, we are requesting that additional information be provided in the Final EIS on the implementation of mitigation measures by the installation recipients, and potential scheduling delays due to higher costs attributed to accelerated IRP cleanup efforts. 18-6

Our classification will be published in the Federal Register according to our responsibilities under Section 309 of the Clean Air Act.

We appreciate the opportunity to review the Draft EIS. Please send our office five (5) copies of the Final EIS at the same time it is sent to the Office of Federal Activities, U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460.

Sincerely yours,

Joe D. Winkle
Acting Regional Administrator

STATE OF TEXAS
OFFICE OF THE GOVERNOR
AUSTIN, TEXAS 78711

ANN W. RICHARDS
GOVERNOR

March 24,1993

Lt. Col. Gary Baumgartel
U.S. Air Force
AFCEE/ESE 8106 Chennault Rd.
Brooks, AFB, TX 78235-5318

RE: TX-R-93-02-03-0002-50-00

Dear Applicant:

Your environmental impact statement for the project referenced above has been reviewed. Comments received are summarized below and attached for your information.

> The Texas Water Commission staff has been working with Bergstrom AFB representatives and have no major comments. However, Texas Water Commission cited several errors in the draft EIS, including an incorrect characterization of groundwater at the base as being of poor quality.
>
> The Texas Historical Commission found the documents to be "well written and concise", and looks forward to receiving the results of current and planned archaeological surveys and testing.
>
> The University of Texas Bureau of Economic Geology expressed surprise that no groundwater monitoring plan is proposed, since monitoring wells are readily available on the base.

19-1

No other comments have been received; however, should we get additional comments, we will forward them to you.

POST OFFICE BOX 12428 AUSTIN, TEXAS 78711 (512) 463-2000

Page 2
Lt. Col. Baumgartel
March 24, 1993

We appreciate the opportunity afforded to review this document. Please let me know if we can be of further assistance.

Sincerely,

T. C. Adams

T. C. Adams
State Single Point of Contract

TCA/be

Encs.

John Hall, Chairman
Pam Reed, Commissioner
Peggy Garner, Commissioner

TEXAS WATER COMMISSION

PROTECTING TEXANS' HEALTH AND SAFETY BY PREVENTING AND REDUCING POLLUTION

March 15, 1993

Mr. T. C. Adams
State Single Point of Contact
Governor's Office of Budget and Planning
P.O. Box 12428
Austin, TX 78711

Re: TX-R-93-02-03-0002-50-00

Dear Mr. Adams:

I am writing in response to your request for comments on the Draft Environmental Impact Statement (DEIS) for the Disposal and Reuse of Bergstrom Air Force Base (AFB), Texas. The Texas Water Commission (TWC) staff has reviewed the document.

The TWC Federal Facilities Team has been actively working with representatives of Bergstrom AFB on remediating soil and ground water contamination at the base. The TWC has identified solid waste management units at Bergstrom AFB that will require some level of remediation or decontamination prior to the base's being transferred to the City of Austin. Federal and state regulations require the Air Force to retain ownership of any property that cannot be remediated.

In general, we do not have any major comments on the DEIS. We would like to make the following comments:

1. The statement on page 3-63 that "the State of Texas has adopted the federal UST regulations under Texas Administrative Code 31, Part IX, Chapter 335" is incorrect. The TWC's underground storage tank (UST) regulations are found in 31 TAC §334. The UST regulations are also incorrectly referenced on page 3-65 (Closure Baseline). 20-1

2. The DEIS states on page 3-93 that "[a]dditional private wells may be present but have not been reported to the Texas Water Commission because only wells dug or drilled by certified drillers must be reported." This statement is inaccurate. Under the Texas Water Well Drillers Act, and the TWC's adoption of 31 TAC §287, all water well drillers who operate in the state of Texas are required to be licensed. 20-2

Mr. T. C. Adams
March 15, 1993
Page Two

3. Section 4.4, Natural Environment, discusses the potential impact that the proposed reuses of Bergstrom AFB may have on the natural environment. In the discussion of ground water, the DEIS suggests that all of the reuse scenarios have the potential to impact ground water, but that "ground water is of poor quality in most aquifers underlying the base and is not an important source of water supply downgradient of the base." This statement is in direct contradiction with the facts and another section of the DEIS (Section 3.3.2.3, Groundwater). The only ground water used in the immediate vicinity of Bergstrom AFB is produced from a shallow aquifer comprised of the alluvium and terrace deposits of the Colorado River. As noted in the Groundwater Section of the DEIS, "the aquifer most likely to be affected by activities on the base property is a shallow aquifer in the vicinity of the base." The DEIS also states that "[n]ine water wells are known to be completed into the alluvial sediments downgradient of the base, and seven wells have been reported but have not been verified." The Texas Water Development Board (Brune and Duffin, June 1983)[1] identified the quality of water produced from the alluvium and terrace deposits in Travis County as being calcium carbonate, very hard, and usually fresh. Chemical analysis data from wells in the Bergstrom area generally show a total dissolved solids concentration of 400-500 milligrams per liter, which would be considered fresh water. Should the Colorado River (terrace and alluvium) aquifer at Bergstrom be adversely impacted by reuse activities, this could have a significant impact on ground water users in the area. 20-3

Thank you for giving us the opportunity to comment on this DEIS. If you have questions about our comments, please contact Mr. Kendall Moss at 512/463-7851 or Mr. Mark Weegar at 512/908-2360.

Sincerely,

Jesús Garza

Jesús Garza
Executive Director

JG/KM

---

[1]. Brune, Gunnar and Gail Duffin, 1983 Occurrence, Availability, and Quality of Ground Water in Travis County, Texas. Texas Water Development Board Report No. 276, p. 217

BUREAU OF ECONOMIC GEOLOGY
THE UNIVERSITY OF TEXAS AT AUSTIN

University Station, Box X · Austin, Texas 78713-7508 · (512) 471-1534 or 471-7721 · FAX 471-0140
10100 Burnet Road · Austin, Texas 78758-4497

February 16, 1993

Mr. Thomas C. Adams
Governor's Office of
Budget and Planning
P.O. Box 12428
Austin, TX 78711
INTERAGENCY MAIL

RE: SAI/EIS#: TX-R-93-02-03-0002-50-00

Dear Tom:

The Bureau of Economic Geology has reviewed the well-prepared Draft EIS for Disposal and Reuse of Bergstrom Air Force Base, Texas. We reviewed principally the sections concerning Soils, Geology, and Hydrology.

In view of the large number of hazardous materials (Tables 3.3.1 through 3.3.3) that have occupied the Bergstrom Air Force Base throughout its history, we were surprised that no ground-water monitoring plan is proposed. There are readily available monitoring wells, identified in section 3.4.2.3. If there are residual hazardous substances remaining to become additions to the unconfined terrace aquifer, they may eventually recharge to surface drainage, identified in section 3.4.2.2, during high-water stages. Austin might be protected from future water-quality suits after they accept responsibility for an active airport. 21-1

Sincerely yours,

E. G. Wermund
Research Scientist

EGW/jl

DOCUMENT 22

TEXAS
PARKS AND WILDLIFE DEPARTMENT
4200 Smith School Road • Austin, Texas 78744 • 512-389-4800

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ANDREW SANSOM
Executive Director

February 17, 1993

Mr. T. C. Adams
State Single Point of Contact
Governor's Office of Budget and Planning
Post Office Box 12428
Austin, Texas 78711

Re: Bergstrom Air Force Base Closing
Draft Environmental Impact Statement
TX-R-93-02-03-0002-50-00

Dear Mr. Adams:

Attached please find a copy of the above referenced review notification. We do not have any comments regarding this document at this time. 22-1

If you need further assistance feel free to call me (512/389-4725).

Sincerely,

Robert W. (Bob) Spain, Chief
Habitat Assessment Branch
Resource Protection Division

RWS:wja

Attachment

TEXAS REVIEW AND COMMENT SYSTEM

REVIEW NOTIFICATION

Applicant/Originating Agency: U.S. Air Force

Project Title: BERGSTROM A.F.B. CLOSING DRAFT EIS

SAI/EIS#: TX-R-93-02-03-0002-50-00

Date Received: February 2, 1993 Date Comments Due BPO: 03/13/93

========================== REVIEW PARTICIPANTS ==========================

Texas Attorney General's Office
Texas Air Control Board
Bureau of Economic Geology
Texas Historical Commission
Texas Department of Transportation
Texas Parks and Wildlife Department
Railroad Commission of Texas
Texas Water Commission
Capital Area Planning Council

Texas Parks & Wildlife Dept.

FEB - 9 1993

Habitat Assessment Branch

Special Notes/Comments: Subject application was provided to reviewers listed above including the Comptroller's Office (Russ Huerta)

X No Comment. ______________________________
Review Agency Signature

Return Comments to: ______________________________
T. C. Adams, State Single Point of Contact
Governor's Office of Budget and Planning
P.O. Box 12428
Austin, Texas 78711
(512) 463-1778

TEXAS STATE SOIL AND WATER CONSERVATION BOARD

311 North 5th
P.O. Box 658
Temple, Texas 76503-0658
(817) 773-2250
Fax (817) 773-3311

January 29, 1993

Lt Col Gary Baumgartel
AFCEE/ESE
8106 Chennault Road
Brooks AFB, TX 78235-5318

Dear Lt. Col. Baumgartel:

We have reviewed a copy of the Draft Environmental Impact Statement for the Disposal and ReUse of Bergstrom Air Force Base, Texas. We offer no comments at this time.

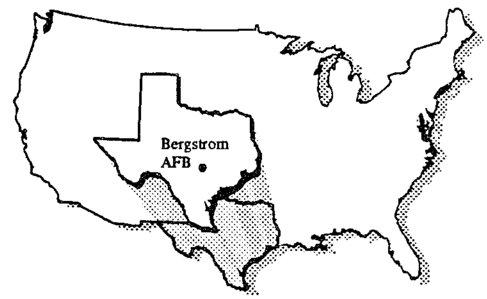
Thank you for the opportunity to review and comment on this document. 23-1

Sincerely,

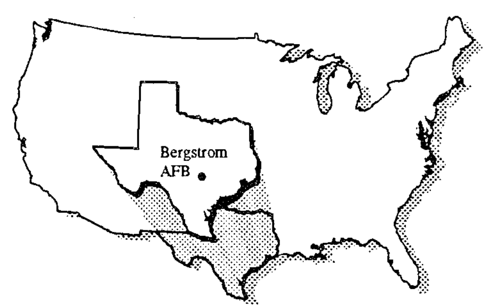
James M. Moore

James M. Moore, P.E.
Engineer

vd



APPENDICES



APPENDIX A

APPENDIX A

GLOSSARY OF TERMS AND ACRONYMS/ABBREVIATIONS

GLOSSARY OF TERMS

A-Weighted Sound Level (dBA). A number representing the sound level which is frequency-weighted according to a prescribed frequency response established by the American National Standards Institute (ANSI S1.4-1971) and accounts for the response of the human ear.

Accident Potential Zones (APZ). Areas immediately beyond the ends of Department of Defense fixed-wing runways that have a higher potential for aircraft accidents than other areas. Specifically, APZs fall into two categories: APZ 1 is the area beyond the runway clear zone that possesses a significant potential for accidents, and APZ 2 is an area beyond APZ 1 that has a measurable potential for accidents.

Acoustics. The science of sound that includes the generation, transmission, and effects of sound waves, both audible and inaudible.

Accumulation Point. A location where a generator accumulates hazardous wastes awaiting movement to a treatment, storage or disposal (TSD) facility. An accumulation point does not require an Environmental Protection Agency TSD permit as long as wastes are stored for less than 90 days.

Active Fault. A fault on which movement has occurred during the past 10,000 years and which may be subject to recurring movement, usually indicated by small, periodic displacement or seismic activity.

Advisory Council on Historic Preservation. A 19-member body appointed, in part, by the President of the United States to advise the President and Congress and to coordinate the actions of federal agencies on matters relating to historic preservation, to comment on the effects of such actions on cultural resources, and to perform other duties as required by law (Public Law 89-655; 16 USC 470).

Aesthetics. Referring to the perception of beauty.

Aggregate. Materials such as sand, gravel, or crushed stone used for mixing with a cementing material to form concrete, or alone, as railroad ballast or graded fill.

Air Installation Compatible Use Zone. A concept developed by the Air Force to promote land use development near its airfields in a manner that protects adjacent communities from noise and safety hazards associated with aircraft operations, and to preserve the operational integrity of the airfields.

Aircraft Operation. A takeoff or landing at an airport.

Airport Layout Plan. The plan of an airport showing the layout of existing and proposed airport facilities.

Airport Radar Service Area (ARSA). Regulatory airspace surrounding designated airports wherein air traffic control provides vectoring and sequencing on a full-time basis for all instrument flight rule and visual flight rule aircraft.

Airport Traffic Area. Airspace within a radius of 5 statute miles of an airport with an operating control tower, encompassing altitudes between the surface and 3,000 feet above ground level, in which an aircraft cannot operate without prior authorization from the control tower.

Alluvial Plain. Plain produced by deposition of alluvium.

Alluvial Fan. Alluvial deposit of a stream where it issues from a gorge upon a plain. Viewed from above, it is the shape of an open fan, with the apex at the mouth.

Alluvium. Clay, silt, sand, gravel, or similar material deposited by running water.

Ambient Air. That portion of the atmosphere, outside of buildings, to which the general public has access.

Ambient Air Quality Standards. Standards established on a state or federal level that define the limits for airborne concentrations of designated "criteria" pollutants (nitrogen dioxide, sulfur dioxide, carbon monoxide, total suspended particulates, ozone, and lead), to protect public health with an adequate margin of safety (primary standards) and to protect public welfare, including plant and animal life, visibility, and materials (secondary standards).

Aquifer. The water-bearing portion of subsurface earth material that yields or is capable of yielding useful quantities of water to wells.

Archaeology. A scientific approach to the study of human ecology, cultural history, and cultural process, emphasizing systematic interpretation of material remains.

Arterial. Signalized street that serves primarily through-traffic and provides access to abutting properties as a secondary function.

Artesian. A term referring to groundwater confined under hydrostatic pressure.

Artifact. Anything that owes its shape, form, or placement to human activity. In archaeological studies, the term is applied to portable objects (e.g., tools and the by-products of their manufacture).

Artificial Recharge. Spreading of water in infiltration ponds or direct injection of water in wells to replenish groundwater.

Asbestos. A carcinogenic substance formerly used widely as an insulation material by the construction industry; often found in older buildings.

Association. Two or more soils occurring together in a characteristic pattern.

Attainment Area. A region that meets the National Ambient Air Quality Standards for a criteria pollutant under the Clean Air Act.

Average Annual Daily Traffic (AADT). For a 1-year period, the total volume passing a point or segment of a highway facility in both directions, divided by the number of days in the year.

Average Travel Speed. The average speed of a traffic stream computed as the length of a highway segment divided by the average travel times of vehicles traversing the segment, in miles per hour.

Avian. Of, relating to, or derived from birds.

Bedrock. Geologic formation or unit which underlies soil or other unconsolidated surficial deposits.

Benzene. Colorless volatile, flammable, toxic liquid aromatic hydrocarbon.

Biochemical Oxygen Demand. The amount of oxygen required for aerobic bacteria to oxidize completely the organic decomposable matter in water within a specified time and at a given temperature -- an index to the degree of organic pollution in the water.

Biophysical. Pertaining to the physical and biological environment, including the environmental conditions crafted by man.

Biota. The plant and animal life of a region.

Calcareous. Containing calcium carbonate.

Capacity (Transportation). The maximum rate of flow at which vehicles can be reasonably expected to traverse a point or uniform segment of a lane or roadway during a specified time period under prevailing roadway, traffic, and control conditions.

Capacity (Utilities). The maximum load a system is capable of carrying under existing service conditions.

Carbon Monoxide (CO). A colorless, odorless, poisonous gas produced by incomplete fossil-fuel combustion. One of the six pollutants for which there is a national ambient standard. See Criteria Pollutants.

Chemical Oxygen Demand (COD). The amount of oxygen required to oxidize completely the inorganic oxidizable compounds present.

Class I, II, and III Areas. Under the Clean Air Act, clean air areas are divided into three classes. Very little pollution increase is allowed in Class I areas, some increase in Class II areas, and more in Class III areas. National parks and wilderness areas receive mandatory Class I protection. All other areas start out as Class II. States can reclassify Class II areas up or down, subject to federal requirements.

Clear Zone. The area surrounding a runway where the aircraft accident risk is high enough that necessary land use restrictions would prohibit reasonable economic use of the land.

Coefficient of Storage (= Storativity). The volume of water an aquifer releases from or takes into storage per unit surface area of the aquifer per unit change in head.

Commercial Aviation. Aircraft activity licensed by state or federal authority to transport passengers and/or cargo for hire on a scheduled or nonscheduled basis.

Comprehensive Plan. A public document, usually consisting of maps, text, and supporting materials, adopted and approved by a local government legislative body, which describes future land uses, goals, and policies.

Contaminants. Undesirable substances rendering something unfit for use.

Contamination. The degradation of naturally occurring water, air, or soil quality either directly or indirectly as a result of human activities.

Control Zone. Controlled airspace with a normal radius of 5 statute miles from a primary airport plus any extensions needed to include instrument arrival and departure paths, encompassing altitudes between the surface and 14,449 feet mean sea level.

Corridor. A strip of land of various widths on both sides of a particular linear facility such as a highway or rail line.

Corrosive. A material that has the ability to cause visible destruction of living tissue and has a destructive effect on other substances. An acid or a base.

Council on Environmental Quality (CEQ). Established by the National Environmental Policy Act (NEPA), the CEQ consists of three members appointed by the President. CEQ regulations (40 CFR Parts 1500-1508, as of July 1, 1986) describe the process for implementing NEPA, including preparation of environmental assessments and environmental impact statements, and the timing and extent of public participation.

Criteria Pollutants. The Clean Air Act required the Environmental Protection Agency to set air quality standards for common and widespread pollutants after preparing "criteria documents" summarizing scientific knowledge on their health effects. Today there are standards in effect for six "criteria pollutants": sulfur dioxide (SO_2), carbon monoxide (CO), particulate matter less than 10 micrometers in diameter (PM_{10}), nitrogen dioxide (NO_2), ozone (O_3), and lead (Pb).

Cultural Resources. Prehistoric and historic districts, sites, buildings, objects, or any other physical evidence of human activity considered important to a culture, subculture, or a community for scientific, traditional, religious, or any other reason.

Cumulative Impacts. The combined impacts resulting from all activities occurring concurrently at a given location.

Day-Night Average Sound Level (DNL). The 24-hour-average energy sound level expressed in decibels, with a 10-decibel penalty added to sound levels between 10:00 P.M. and 7:00 A.M. to account for increased annoyance due to noise during night hours.

Decibel (dB). A unit of measurement on a logarithmic scale which describes the magnitude of a particular quantity of sound pressure or power with respect to a standard reference value.

Developed. Land, a lot, a parcel, or an area that has been built upon, or where public services have been installed prior to residential or commercial construction.

Direct Impact. Effects resulting solely from the proposed program.

Discharge. Release of groundwater in springs or wells, through evapotranspiration, or as outflow.

Disturbed Area. Land that has had its surface altered by grading, digging, or other construction-related activities.

Easement. A right or privilege (agreement) that a person may have on another's property.

Effect. A change in an attribute. Effects can be caused by a variety of events, including those that result from program attributes acting on the resource attribute (direct effect); those that do not result directly from the action or from the attributes of other resources acting on the attribute being studied (indirect effect); those that result from attributes of other programs or other attributes that change because of other programs (cumulative effects); and those that result from natural causes (e.g., seasonal change).

Effluent. Waste material discharged into the environment.

Employment. The total number of persons working (includes all wage and salary workers), both civilian and military, and proprietors.

Endangered Species. A plant or animal species that is threatened with extinction throughout all or a significant portion of its range.

Environmental Impact Analysis Process. The process of conducting environmental studies as outlined in Air Force Regulation 19-2.

Environmental Protection Agency (EPA). The independent federal agency, established in 1970, that regulates environmental matters and oversees the implementation of environmental laws.

Environmental Protection Agency Hazardous Waste Number. The number assigned by the Environmental Protection Agency to each hazardous waste listed in 40 CFR 261, Subpart D, and to each characteristic identified in 40 CFR 261, Subpart C.

Erosion. Wearing away of soil and rock by weathering and the action of streams, wind, and underground water.

Escarpment. A long, more or less continuous cliff or steep slope facing one general direction separating two or more level or gently sloping surfaces produced by erosion or faulting.

Expenditure. A disbursement of funds by a government entity; includes operation and maintenance costs, as well as capital costs.

Fault. A fracture in the earth's crust accompanied by a displacement of one side of the fracture with respect to the other and in a direction parallel to the fracture.

Fault Block. Crustal units bounded by faults.

Federal Candidate Category 1 Species. Taxa for which the U.S. Fish and Wildlife Service has sufficient biological information to support a proposal to list as endangered or threatened.

Federal Candidate Category 2 Species. Taxa for which existing information may warrant listing, but for which substantial biological information to support a proposed rule is lacking.

Federal Candidate Category 3(c) Species. Taxa more common than previously thought; no longer being considered for a listing proposal at this time.

Fiscal Year. In government finance, the 12-month period that corresponds to the jurisdiction's accounting period, typically beginning October 1st and ending September 30th.

Fleet Mix. Combination of aircraft used by a given agency.

Floodplain. The relatively flat land lying adjacent to a river channel that is covered by water when the river overflows its banks.

Fossiliferous. Containing fossils.

Formation. A mappable body of rock having a general homogeneity of composition, structure, texture, and other characteristics.

Freeway. A multilane, divided highway having a minimum of two lanes for exclusive use of traffic in each direction and full control of access and egress.

Frequency. The time rate (number of times per second) that the wave of sound repeats itself, or that a vibrating object repeats itself -- now expressed in Hertz (Hz), formerly in cycles per second (cps).

Friable. Easily crumbled or reduced to powder.

Fugitive Dust. Particulate matter composed of soil that is uncontaminated by pollutants from industrial activity. Fugitive dust may include emissions from haul roads, wind erosion of exposed soil surfaces, and other activities in which soil is either removed or redistributed.

Fugitive Emissions. Emissions released directly into the atmosphere that could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.

Fungicides. Any substance that kills or inhibits the growth of fungi.

General Aviation. All aircraft that are not commercial or military aircraft.

Geomorphic. Pertaining to the form of the earth or its surface features.

Groundwater. Water within the earth that supplies wells and springs.

Groundwater Basin. Subsurface structure having the character of a basin with respect to collection, retention, and outflow of water.

Groundwater Recharge. Absorption and addition of water to the zone of saturation.

Habituate. To become accustomed to frequent repetition or prolonged exposure.

Hazardous Material. Generally, a substance or mixture of substances that has the capability of either causing or significantly contributing to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or posing a substantial present or potential risk to human health or the environment. Use of these materials is regulated by Department of Transportation (DOT), Occupational Safety and Health Administration (OSHA), and Superfund Amendments and Reauthorization Act (SARA).

Hazardous Waste. A waste, or combination of wastes, which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may either cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Hazardous waste is regulated under the Resource Conservation and Recovery Act (RCRA).

Heavy Metals. A metal (e.g., lead, mercury, cadmium, and chromium) of atomic weight greater than sodium (a.w.-22.9 grams/molecule) that forms soaps on reaction with fatty acids.

Herbicides. A pesticide, either organic or inorganic, used to destroy unwanted vegetation, especially various types of weeds, grasses, and woody plants.

Herpetofauna. Reptiles and amphibians.

Historic. A period of time after the advent of written history dating to the time of first Euro-American contact in an area.

Hydraulic Gradient. The change in head with a change in distance in a given direction (head is the pressure on a fluid at a given point).

Hydrocarbons (HC). Any of a vast family of compounds containing hydrogen and carbon. Used loosely to include many organic compounds in various combinations; most fossil fuels are composed predominantly of hydrocarbons. When hydrocarbons mix with nitrogen oxides in the presence of sunlight, ozone is formed; hydrocarbons in the atmosphere contribute to the formation of ozone.

Impact. An assessment of the meaning of changes in all attributes being studied for a given resource; an aggregation of all the adverse effects, usually measured using a qualitative and nominally subjective technique. In this EIS, as well as in the CEQ regulations, the word impact is used synonymously with the word effect.

Indirect Impact. Program-related impact (usually population changes and resulting impacts) not directly attributable to the program itself.

Infrastructure. The basic installations and facilities on which the continuance and growth of a community, state, etc., depend, e.g., roads, schools, power plants, transportation systems, and communication systems, etc.

Intermittent Stream. A stream that flows part of the time, such as during the wet season.

Interstate. The designated National System of Interstate and Defense Highways located in both rural and urban areas; they connect the East and West coasts and extend from points on the Canadian border to various points on the Mexican border.

Kilowatt. A unit of power equivalent to 1,000 watts.

Land Use Plans and Policies. Guidelines adopted by governments to direct future land use within their jurisdictions.

Lead (Pb). A heavy metal used in many industries, which can accumulate in the body and cause a variety of negative effects. One of the six pollutants for which there is a National Ambient Air Quality Standard. See Criteria Pollutants.

L_{eq} Noise Level. The equivalent steady state sound level which, in a stated period of time, would contain the same acoustical energy as a time-varying sound level during the same period.

Level of Service (LOS). In transportation analyses, a qualitative measure describing operational conditions within a traffic stream and how they are perceived by motorists and/or passengers. In public services, a measure describing the amount of public services (e.g., fire protection and law enforcement services) available to community residents, generally expressed as the number of personnel providing the services per 1,000 population.

Loam, Loamy. Rich, permeable soil composed of a mixture of clay, silt, sand, and organic matter.

Marl. An earthy substance composed mostly of lime mud with some clay.

Masking. The action of bringing one sound (audible when heard alone) to inaudibility or to unintelligibility by the introduction of another sound.

Megawatt. One thousand kilowatts or 1,000,000 watts.

Microgram. One-millionth of a gram.

Military Operating Area. Airspace areas of defined vertical and lateral limits established for the purpose of separating certain training activities, such as air combat maneuvers, air intercepts, and acrobatics, from other air traffic operating under instrument flight rules.

Military Training Route. Airspace of defined vertical and lateral dimensions established for the conduct of military flight training at airspeeds in excess of 250 knots.

Mineral. A naturally occurring inorganic element or compound.

Mineral Resources. Mineral deposits that may eventually become available; known deposits that are not recoverable at present or yet undiscovered.

Miocene. An epoch of geological time dating from 24 to 5 million years ago.

Mitigation. A method or action to reduce or eliminate program impacts.

Multiple-Family Housing. Townhouse or apartment units that accommodate more than one family; however, each dwelling unit is occupied by only one household.

National Ambient Air Quality Standards (NAAQS). Section 109 of the Clean Air Act requires EPA to set nationwide standards, the National Ambient Air Quality Standards, for widespread air pollutants. Currently, six pollutants are regulated by primary and secondary NAAQS: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter less than 10 micrometers in diameter (PM_{10}), and sulfur dioxide. See Criteria Pollutants.

National Environmental Policy Act (NEPA). Public Law 91-190, passed by Congress in 1969. The Act established a national policy designed to encourage consideration of the influences of human activities (e.g., population growth, high-density urbanization, and industrial development) on the natural environment. NEPA also established the Council on Environmental Quality. NEPA procedures require that environmental information be made available to the public before decisions are made. Information contained in NEPA documents must focus on the relevant issues in order to facilitate the decision-making process.

National Priority List. A list of sites (federal and state) that contain hazardous materials that may cause an unreasonable risk to the health and safety of individuals, property, or the environment.

National Register of Historic Places. A register of districts, sites, buildings, structures, and objects important in American history, architecture, archaeology, and culture, maintained by the Secretary of the Interior under authority of Section 2(b) of the Historic Sites Act of 1935 and Section 101(a)(1) of the National Historic Preservation Act of 1966, as amended.

Native Americans. Used in a collective sense to refer to individuals, bands, or tribes who trace their ancestry to indigenous populations of North America prior to Euro-American contact.

Native Vegetation. Plant life that occurs naturally in an area without agricultural or cultivational efforts. It does not include species that have been introduced from other geographical areas and become naturalized.

Natural Levee. A ridge along a stream bank formed of sediment deposited in times of bank overflow.

Nitrogen Dioxide (NO_2). Gas formed primarily from atmospheric nitrogen and oxygen when combustion takes place at high temperature. NO_2 emissions contribute to acid deposition and formation of atmosphere ozone. NO_2 is one of the six pollutants for which there is a national ambient standard. See Criteria Pollutants.

Nitrogen Oxides (NO_x). Gases formed primarily by fuel combustion, which contribute to the formation of acid rain. Hydrocarbons and nitrogen oxides combine in the presence of sunlight to form ozone, a major constituent of smog.

Noise. Any sound that is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying (unwanted sound).

Noise Attenuation. The reduction of a noise level from a source by such means as distance, ground effects, or shielding.

Noise Contour. A curve connecting points of equal noise exposure on a map. Noise exposure is often expressed using the average day-night sound level, DNL.

Nonattainment Area. An area that has been designated by the Environmental Protection Agency or the appropriate state air quality agency as exceeding one or more National or State Ambient Air Quality Standards.

Normal Fault. A type of fault in which beds on one side of the fault have slipped down and away from beds on the other side.

Outmigration. The act of leaving one region or community in order to settle in another.

Ozone (ground-level). A major ingredient of smog. Ozone is produced from reactions of hydrocarbons and nitrogen oxides in the presence of sunlight and heat. Some 68 areas, mostly metropolitan areas, did not meet a 31 December 1987 deadline in the Clean Air Act for attaining the ambient air quality standard for ozone.

Paleo-Indian. Prehistoric hunter-gatherer populations characterized by efficient adaptations to terminal Pleistocene environments in which small bands exploited megafauna such as mammoth (app. 10,000 - 6,000 B.C.).

Paleontological Resources. Fossilized organic remains from past geological periods.

Palustrine. The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 percent. It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 8 hectares (20 acres); (2) active wave formation or bedrock shoreline features lacking; (3) water depth in the deepest part of the basin less than 2 meters at low water; and (4) salinity due to ocean-derived salts less than 0.5 percent.

Peak Demand. The highest instantaneous amount of electrical power (in kilowatts) that an electrical system is required to supply over a given time frame, usually 1 year.

Peak Hour. The hour of highest traffic volume on a given section of roadway between 7:00 A.M. and 9:00 A.M. or between 4:00 P.M. and 6:00 P.M.

Peak Year. The year when a particular program-related effect is greatest.

Perennial Stream. A stream that flows all the time.

Permeability. The capacity of a porous rock or sediment to transmit a fluid.

Pesticides. Any substance, organic or inorganic, used to destroy or inhibit the action of plant or animal pests; the term thus includes insecticides, herbicides, fungicides, rodenticides, miticides, fumigants, and repellents. All pesticides are toxic to humans to a greater or lesser degree. Pesticides vary in biodegradability.

pH. A measure of the acidity or alkalinity of a material, expressed as the negative exponent of the hydrogen ion concentration.

Physiographic Province. A region in which all parts are similar in geologic structure and climate.

PicoCurie. One trillionth of a curie; the unit used to measure radioactivity.

Pleistocene. An earlier epoch of the Quaternary period during the "ice age" beginning approximately 3 million years ago and ending 10,000 years ago. Also refers to the rocks and sediments deposited during that time.

Plume. An elongated mass of contaminated fluid moving with the flow of the fluid.

Polychlorinated Biphenyls (PCBs). Any of a family of industrial compounds produced by chlorination of biphenyl. These compounds are noted chiefly as an environmental pollutant that accumulates in organisms and concentrates in the food chain with resultant pathogenic and teratogenic effects. They also decompose very slowly.

Polychlorinated Biphenyl-Contaminated Equipment. Equipment which contains a concentration of PCBs from 50 to 499 ppm and is regulated by the EPA.

Polychlorinated Biphenyl Equipment. Equipment which contains a concentration of PCBs of 500 ppm or greater and is regulated by the EPA.

Potable Water. Water suitable for drinking.

Prehistoric. The period of time before the written record.

Prevention of Significant Deterioration (PSD). In the 1977 Amendments to the Clean Air Act, Congress mandated that areas with air cleaner than required by National Ambient Air Quality Standards must be protected from significant deterioration. The Clean Air Act's PSD program consists of two elements: requirements for best available control technology on major new or modified sources and compliance with an air quality increment system.

Prevention of Significant Deterioration Area. A requirement of the Clean Air Act (160 et seq.) that limits the increases in ambient air pollutant concentrations in clean air areas to certain increments even though ambient air quality standards are met.

Primary Roads. A consolidated system of connected main roads important to regional, statewide, and interstate travel; they consist of rural arterial routes and their extensions into and through urban areas of 5,000 or more population.

Prime Farmland. Environmentally significant agricultural lands protected from irreversible conversion to other uses.

Protohistoric. The period when Native American cultures were affected by Euro-Americans without direct contact. For instance, inland Indian tribes received trade goods and reports of European cultures from coastal tribes before the arrival of European explorers in the interior.

Pumpage. A quantity of water removed by pumping expressed as a rate or total amount.

Rail Rationalization. The analysis of existing rail facilities and the planning of alternatives to the existing land use and transportation structure to solve problems usually caused by urban growth around rail facilities. Typical problems can include traffic delays due to train blockage at railroad grade crossings, delays to local and through train movement caused by speed restrictions, and the intrusion of noise, vibration, air pollution, or visual blight into residential areas.

Raptors. Birds of prey.

Recent. The time period from approximately 10,000 years ago to the present and the rocks and sediments deposited during that time.

Recharge. The process by which water is absorbed and added to the zone of saturation, either directly into a formation or indirectly by way of another formation.

Restricted Area. Designated airspace in which aircraft activity, while not prohibited, is subject to certain restrictions.

Riparian. Of or relating to land lying immediately adjacent to a river or stream, and having specific characteristics of that transitional area (e.g., riparian vegetation).

Riverine. The Riverine System includes all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens; and (2) habitats with water containing ocean-derived salts in excess of 0.5 percent.

Ruderal. Weedy or introduced vegetation growing in disturbed areas.

Runoff. The noninfiltrating water entering a stream or other conveyance channel shortly after a rainfall event.

Runway Protection Zone. An area (formerly the clear zone) used to enhance the safety of aircraft operations. It is at ground level beyond the runway end.

Satellite Accumulation Point. An area where up to 55 gallons of hazardous waste and up to 1 quart of acutely hazardous waste can be accumulated indefinitely. Containers with excess waste must be marked with the date the excess began accumulating and removed from the area within 3 days to a permitted storage area or to an accumulation point.

Secondary Employment. In economics, the additional employment and income generated by the economic activity required to produce the inputs to meet the initial material requirements. The term is often used to include induced effects.

Sediment. Material deposited by wind or water.

Sedimentary. Rock formed by mechanical, chemical, or organic sediments such as rock formed of fragments transported from their source and deposited elsewhere by water (e.g., sandstone or shale).

Seismic. Pertains to the characteristics of an earthquake or earth vibrations including those that are artificially induced.

Seismicity. Relative frequency and distribution of earthquakes.

Shrink/Swell Potential. Volume change possible upon wetting or drying.

Sheetwash. Sheet erosion; the removal of a fairly uniform layer of soil from the land surface by runoff water.

Significance. The importance of a given impact on a specific resource as defined under the Council on Environmental Quality regulations.

Single-Family Housing. A conventionally built house consisting of a single dwelling unit occupied by one household.

Site. As it relates to cultural resources, any location where humans have altered the terrain or discarded artifacts.

Sludge. A heavy, slimy deposit, sediment, or mass resulting from industrial activity; solids removed from wastewater.

Soil Association. A collection of soils found to occur geographically together.

Soil Series. A group of soils having similar parent materials, genetic horizons, and arrangement in the soil profile.

Solvent. A substance that dissolves or can dissolve another substance.

Sound. The auditory sensation evoked by the compression and rarefaction of the air or other transmitting medium.

Special Use Airspace. Airspace restricted from commercial and private use.

Specific Plan. A plan regulating development within a defined area of a city, consistent with the city's General Plan. Specific plans are required prior to development in specified areas that have not been zoned for particular land uses.

State Historic Preservation Officer. The official within each state, authorized by the State at the request of the Secretary of the Interior, to act as liaison for purposes of implementing the National Historic Preservation Act.

State-Sensitive/State-Recognized Species. Plant and animal species in each state that are monitored and listed for purposes of protection.

Sulfur Dioxide (SO_2). A toxic gas that is produced when fossil fuels, such as coal and oil, are burned. SO_2 is the main pollutant involved in the formation of acid rain. SO_2 can irritate the upper respiratory tract and cause lung damage. During 1980, some 27 million tons of sulfur dioxide were emitted in the

United States, according to the Office of Technology Assessment. The major source of SO_2 in the United States is coal-burning electric utilities.

Tectonic. Pertaining to large-scale structural features or movements of large portions of the earth's crust.

Tectonic Framework. Structural elements of a region including the rising, stable, and subsiding areas.

Terrace. A bench-like feature composed of sediment of an old floodplain and formed as a stream renews its downcutting and leaves the old deposits elevated and approximately parallel to the present floodplain.

Terrestrial. Living on or in, or growing from, the land.

Threatened Species. A plant or animal species likely to become endangered in the foreseeable future.

Toluene. A liquid aromatic hydrocarbon used as a solvent.

Total Dissolved Solids. The concentration of solid materials that are dissolved in a sample of water; determined as the weight of the residue of a water sample upon filtration and evaporation divided by the volume of the sample.

Total Suspended Particulates (TSP). The particulate matter in the ambient air. The previous National Ambient Air Quality Standard for particulates was based on TSP levels; it was replaced in 1987 by an ambient standard based on PM_{10} levels.

Total Water Use. The amount of water withdrawn from the natural resource base for a beneficial purpose, excluding water used for hydroelectric power generation and certain nonconsumptive uses such as once-through cooling water for thermoelectric power generation, wildlife habitat, and fish farming.

Traffic Assignment. The allocation of traffic flows among routes available between any two places.

Transmissivity. A quantitative measure of the amount of water that can move through a groundwater reservoir. It depends on permeability, hydraulic gradient, and thickness of the reservoir.

Trichloroethylene (TCE). An organic solvent used in dry cleaning and in the removal of grease from metal.

Trip Distribution. A determination of the interchange of trips among zones in the region.

Trip Generation. A determination of the quantity of trip ends associated with a parcel of land.

Turbid. Cloudy (as applied to water) with sediment or other solids.

Unconfined Aquifer. An aquifer where the water table is exposed to the atmosphere through openings (pores) in the overlying materials.

Understory. An underlying layer of low vegetation.

Unemployment Rate. The number of civilians, as a percentage of the total civilian labor force, without jobs but actively seeking employment.

Unified Soil Classification System. A rapid method for identifying and grouping soils for military construction. Soils are grouped by grain size, gradation, and liquid limit.

Unique and Sensitive Habitats. Areas that are especially important to regional wildlife populations or protected species that have other important biological characteristics (e.g., severe wintering habitats, nesting areas, and wetlands).

Upland. Ground elevated above bottomlands (e.g., rolling hill terrain and terraces).

Volume (Transportation). The total number of vehicles that pass over a given point or section of a roadway during a given time interval. Volumes may be expressed in terms of annual, daily, hourly, or subhourly periods.

Watershed. An area consisting of a surface water drainage basin and the divides that separate it from adjacent basins.

Water Table. The sustainable volume of water discharged from a well per units of time, often expressed in gallons per minute.

Watt. A unit of electrical power equal to 1/756th horsepower.

Wetlands. Areas that are inundated or saturated with surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil. This classification includes swamps, marshes, bogs, and similar areas.

Volume. The number of vehicles passing a point on a lane, roadway, or other trafficway during some time interval.

Zoning. The division of a municipality (or county) into districts for the purpose of regulating land use, types of buildings, required yards, necessary off-street parking, and other prerequisites to development. Zones are generally shown on a map and the text of the zoning ordinance specifies requirements for each zoning category.

ACRONYMS

AADT	Average Annual Daily Traffic
ACC	Air Combat Command
ACHP	Advisory Council on Historic Preservation
ACM	Asbestos-Containing Material
ADT	Average Daily Traffic
AFB	Air Force Base
AFCEE	Air Force Center for Environmental Excellence
AFOSH	Air Force Occupational Safety and Health
AFR	Air Force Regulation
AFRES	Air Force Reserves
AGE	Aerospace Ground Equipment
AGL	Above Ground Level
AHERA	Asbestos Hazard Emergency Response Act
AICUZ	Air Installation Compatible Use Zone
ALP	Airport Layout Plan
AMARP	Austin Metropolitan Area Roadway Plan
ANG	Army National Guard
ANSI	American National Standards Institute
AOC	Area of Concern
APE	Area of Potential Effect
APZ	Accident Potential Zone
AQCR	Air Quality Control Region
ARAR	Applicable or Relevant and Appropriate Requirements
ARSA	Airport Radar Service Area
ARTCC	Air Route Traffic Control Center
ARU	Automatic Silver Recovery Units
ATC	Air Training Command
BASH	Bird Aircraft Strike Hazard
BFI	Browning Ferris Industries
BOD	Biochemical Oxygen Demand
CAPCO	Capital Area Planning Council
CARE	Citizens for Airport Relocation
CBD	Central Business District
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CIP	Capital Improvements Program
COD	Chemical Oxygen Demand
COE	U.S. Army Corps of Engineers
CUD	Compatible Use District
DBCRA	Defense Base Closure and Realignment Act
DEIS	Draft Environmental Impact Statement
DEQPPM	Defense Environmental Quality Program Policy Memorandum
DERP	Defense Environmental Restoration Program
DO	Dissolved Oxygen
DOD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
EDMS	Emissions and Dispersion Modeling System
EIS	Environmental Impact Statement
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
ETJ	Extra-Territorial Jurisdiction

FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FG	Fighter Group
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FM	Farm to Market Road
FPMR	Federal Property Management Regulations
FS	Feasibility Study
FY	Fiscal Year
GCRC	Ground Combat Readiness Center
GSA	General Services Administration
HARM	Hazard Assessment Rating Methodology
HHS	Department of Health and Human Services
HMTA	Hazardous Materials Transportation Act
HSWA	Hazardous and Solid Waste Amendments of 1984
HUD	U.S. Department of Housing and Urban Development
IFR	Instrument Flight Rules
ILS	Instrument Landing System
INM	Integrated Noise Model
IRP	Installation Restoration Program
JP-4	Jet Petroleum (Grade 4)
LOS	Level of Service
LSG	Lone Star Gas
MCL	Maximum Contaminant Level
MOA	Military Operating Area
Mogas	Automotive Gasoline
MSA	Metropolitan Statistical Area
MSDS	Material Safety Data Sheets
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NAS	National Airspace System
NCP	National Contingency Plan
NDI	Nondestructive Inspection
NEPA	National Environmental Policy Act of 1969
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NOISEMAP	Noise Exposure Model
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OSHA	Occupational Safety and Health Administration
PA	Preliminary Assessment
PAR	Precision Approach Radar
PA/SI	Preliminary Assessment/Site Inspection
P.L.	Public Law
POL	Petroleum, Oil, and Lubricants
PPI	Photographic Processing Interpretation
PR	Preliminary Review
PSD	Prevention of Significant Deterioration
RA	Remedial Action

RAMP	Radon Assessment and Mitigation Program
RCCF	Regional Corrosion Control Facility
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RD/RA	Remedial Design/Remedial Action
RFA	Resource Conservation and Recovery Act Facility Assessment
RFI	Resource Conservation and Recovery Act Facility Investigation
RI	Remedial Investigation
RIMS	Regional Interindustry Multiplier System
RI/FS	Remedial Investigation/Feasibility Study
RMMA	Robert Mueller Municipal Airport
ROD	Record of Decision
ROG	Reactive Organic Gases
ROI	Region of Influence
RPZ	Runway Protection Zone
RW	Reconnaissance Wing
SAC	Strategic Air Command
SARA	Superfund Amendments and Reauthorization Act
SATO	Scheduled Airlines Traffic Office
SCS	Soil Conservation Service
SEL	Sound Exposure Level
SHPO	State Historic Preservation Officer
SIAS	Socioeconomic Impact Analysis Study
SUG	Southern Union Gas
SV	Sampling Visit
SWMU	Solid Waste Management Unit
TAAQS	Texas Ambient Air Quality Standards
TAC	Tactical Air Command
TD	Technology Development
TDS	Total Dissolved Solids
TRS	Tactical Reconnaissance Squadron
TRW	Tactical Reconnaissance Wing
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage, and Disposal Facilities
TSP	Total Suspended Particulates
USC	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground Storage Tank
VFR	Visual Flight Rules
VOC	Volatile Organic Compounds
VSI	Visual Site Inspection
VTC	Valero Transmission Company

UNITS OF MEASUREMENT

°C	degrees Celsius
dB	decibel
dBA	decibel measured on the A-weighted scale
DNL	day-night average noise level
kWh	kilowatt-hour
L_{eq}	energy-equivalent continuous noise level
MG	million gallons
MGD	million gallons per day
MMcf	million cubic feet
mph	miles per hour
MVA	megavolt-ampere
MW	megawatt
nm	nautical mile
pCi/l	picoCuries per liter
pH	negative logarithm of hydrogen ion activity
PM_{10}	particulate matter less than or equal to 10 micrometers in diameter
ppm	parts per million
$\mu g/m^3$	micrograms per cubic meter

CHEMICAL ABBREVIATIONS

CO	carbon monoxide
CO_2	carbon dioxide
HC	hydrocarbons
O_3	ozone
NO_x	nitrogen oxides
NO_2	nitrogen dioxide
PCB	polychlorinated biphenyls
SO_x	sulfur oxides
SO_2	sulfur dioxide
TCE	trichloroethylene

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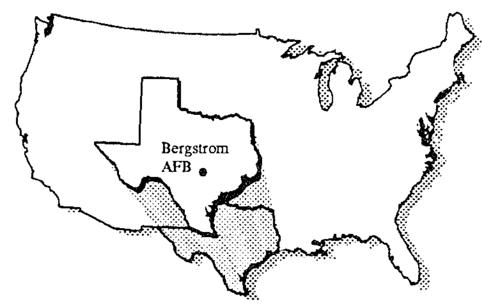

APPENDIX B

APPENDIX B

NOTICE OF INTENT

The following Notice of Intent (NOI), published in the *Federal Register* on October 9, 1991, provided public notice of the Air Force's intent to prepare an Environmental Impact Statement on the disposal and reuse of Bergstrom Air Force Base. The NOI has been retyped for clarity and legibility.

NOTICE OF INTENT
TO PREPARE ENVIRONMENTAL IMPACT STATEMENTS
FOR DISPOSAL AND REUSE OF THIRTEEN AIR FORCE BASES

The United States Air Force will prepare thirteen environmental impact statements (EISs) to assess the potential environmental impacts of disposal and reuse of the following Air Force bases recently directed to be closed under the provisions of the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510, Title XXIX):

Closing Base

Bergstrom AFB, Austin, Texas

Carswell AFB, Fort Worth, Texas

Castle AFB, Merced, California

Eaker AFB, Blytheville, Arkansas

England AFB, Alexandria, Louisiana

Grissom AFB, Peru, Indiana

Loring AFB, Limestone, Maine

Lowry AFB, Denver, Colorado

Myrtle Beach AFB, Myrtle Beach, South Carolina

Richards Gebaur AFS, Kansas City, Missouri

Rickenbacker AFB, Columbus, Ohio

Williams AFB, Chandler, Arizona

Wurtsmith AFB, Oscoda, Michigan

Each EIS will address the disposal of the property to public or private entities and the potential impacts of reuse alternatives. All available property will be disposed of in accordance with provisions of Public Law 101-510 and applicable federal property disposal regulations.

The Air Force plans to conduct a scoping and screening meeting within the local area for each base during October and November 1991. Notice of the time and place of each meeting will be made available to public officials and local news media outlets once it has been finalized. The purpose of each meeting is to determine the environmental issues and concerns to be analyzed for the base disposal and reuse in that area, to solicit comments on the proposed action and to solicit proposed disposal and reuse alternatives that should be addressed in the EIS for that base. In soliciting disposal and reuse inputs, the Air Force intends to consider all reasonable alternatives offered by any federal, state, or local government agency and any federally sponsored or private entity or individual with an interest in acquiring available property at one of the listed closing bases. The resulting environmental impacts will be considered in making disposal decisions to be documented in the Air Force's final disposal plan for each base.

To ensure the Air Force will have sufficient time to consider public inputs on issues to be included in the EISs, and disposal alternatives to be included in the final disposal plans, comments and reuse proposals should be forwarded to the address listed below by December 1, 1991. However, the Air Force will accept comments at the address below at any time during the environmental impact analysis process.

For further information concerning the study of these base disposal and reuse EIS activities, contact:

Lt. Colonel Tom Bartol
AFCEE/ESE
Norton AFB, California 92409-6448

Note: Comment date was extended from December 1, 1991 to January 2, 1992 after processing and publication of this Notice of Intent.

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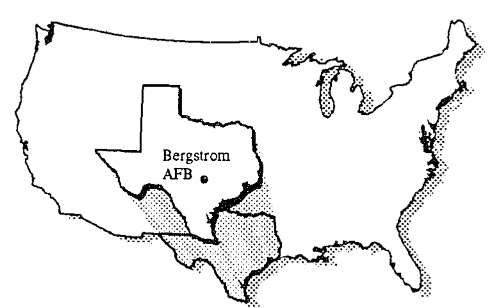

APPENDIX C

APPENDIX C

FINAL ENVIRONMENTAL IMPACT STATEMENT MAILING LIST

This list of recipients includes federal, state, and local agencies and individuals who have expressed an interest in receiving the document. This list also includes the Governor of Texas, as well as United States senators and representatives and state legislators.

ELECTED OFFICIALS

Federal Officials

U.S. Senate

Honorable Phil Gramm
Honorable Kay Bailey Hutchison

U.S. House of Representatives

Honorable J.J. "Jake" Pickle

State of Texas Officials

Governor

Honorable Ann Richards

State Legislature

State Senate

Honorable Gonzalo Barrientos

House of Representatives

Honorable Wilhelmina Delco
Honorable Sherry Greenberg
Honorable Libby Linebarger
Honorable Glen Maxey
Honorable Elliot Naishtat

Local Officials

City of Austin

Bruce Todd, Mayor
Charles E. Urdy, Mayor Pro Tem
Michael (Max) Nofziger, Councilmember
Ronney Reynolds, Councilmember
Jackie Goodman, Councilmember
Brigid Shea, Councilmember
Gus Garcia, Councilmember
Camille Cates Barnett, City Manager

Travis County

Samuel T. Biscoe, Commissioner, Precinct 1
Barbara Carlson, Commissioner, Precinct 2
Valarie Bristol, Commissioner, Precinct 3
Marcos DeLeon, Commissioner, Precinct 4
Bill Aleshire, County Judge
Dana Debeauvoir, County Clerk
John Dickson, District Clerk

GOVERNMENT AGENCIES

Federal Agencies

Advisory Council on Historic Preservation
Washington, DC

Centers for Disease Control
Center for Environmental Health and Injury Control
Special Programs Group (F29)
Atlanta, GA

Council of Economic Advisors
Washington, DC

Department of Agriculture
Forest Service
Environmental Coordination Office
Washington, DC

Department of Commerce
Director, Economic Adjustment Division
Economic Development Administration
Washington, DC

Department of Commerce
Director, Office of Intergovernmental Affairs
Washington, DC

Department of Education
Assistant to the Deputy Under Secretary for
Intergovernmental and Interagency Affairs
Washington, DC

Department of Energy
Division of Intergovernmental Affairs (CP-23)
Washington, DC

Department of Health and Human Services
Office of Human Development Services
Washington, DC

Department of Housing and Urban Development
Director, Community Management Division (CPD)
Washington, DC

Department of the Interior
Director, Office of Environmental Affairs
Washington, DC

Farmers Home Administration
Deputy Administrator for Program Operations
Washington, DC

Small Business Administration
Director, Office of Procurement,
Policy and Liaison
Washington, DC

James Cayce
General Services Administration
Office of Intergovernmental Planning, PBS-PG
Washington, DC

Ellen Dayton
General Services Administration
Office of Facilities Planning, PBS-PL
Washington, DC

Paul Dempsey, Director
Department of Defense
Office of Economic Adjustment (FM&P)
Washington, DC

Thomas Fleming
General Services Administration
Office of Program Initiatives
Washington, DC

Kenneth W. Holt
Department of Health and Human Services
National Center for Environmental Health
Special Programs Group (F29)
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Ronald Keefer, Director
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Administrative Services and Property Management, M-40
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Washington, DC

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Division of Health Facilities Planning
Rockville, MD

Allen Maurer
Department of Veterans Affairs
Washington, DC

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Office of Real Property Policy and Sales (FPR-DR)
Washington, DC

Lynn Pickard
Federal Aviation Administration
Community and Environmental Needs Division
AAP - 600
Washington, DC

John Seyffert
Federal Emergency Management Agency
Office of Disaster Assistance Programs
Washington, DC

Patricia Sledge, Chief
Bureau of Prisons
Facilities Development and Operations
Washington, DC

Federal Agencies - Regional

AFCEE/CMR-D
Dallas, TX

Department of Housing and Urban Development
Forth Worth Regional Office
Regional Environmental Officer
Fort Worth, TX

Environmental Protection Agency
Regional EIS Coordinator (6ES-F)
Dallas, TX

Federal Aviation Administration
Southwest Region
Airports Division
Forth Worth, TX

Federal Aviation Administration
Southwest Region
ASW-900/AF Rep
Forth Worth, TX

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Planning Staff - 7PL
Fort Worth, TX

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Austin, TX

Arver Ferguson, Jr.
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Planning Division
Fort Worth, TX

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Environmental Protection Agency
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Dallas, TX

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U.S. Department of Housing and Urban Development
Region VI Administrator
Fort Worth, TX

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Army Corps of Engineers, Fort Worth District
Real Estate Division, CESWF-RE
Fort Worth, TX

Claudia Nissley, Director
Advisory Council on Historic Preservation
Western Office of Project Review
Golden, CO

Rick Raley
General Services Administration
Regional Offices of Real Estate Sales
Fort Worth, TX

Paulette Standefer, Director
Department of Health and Human Services
Region 6
Environmental Review Office
Dallas, TX

Norm Thomas
Environmental Protection Agency
Region 6
Federal Activities Branch
Dallas, TX

Carl Townsend
Environmental Protection Agency
Region 6 (6E-FF)
Dallas, TX

Henry N. Troell
Regional Director
U.S. Department of Commerce
Economic Development Administration
Austin, TX

Texas State Agencies

Robert Buckley
Executive Director
Soil and Water Conservation Board
Temple, TX

William R. Campbell
Executive Director
Texas Air Control Board
Austin, TX

David Fulton
Director
Texas Department of Transportation
Division of Aviation
Austin, TX

Jesús Garza
Executive Director
Water Commission
Austin, TX

Winsome Jean
Governors' Economic Transition Office
Austin, TX

James J. Kaster
Chairman, Employment Commission
Austin, TX

Susan J. Leigh
Executive Director
Housing and Community Affairs Department
Austin, TX

Garry Mauro
Commissioner, General Land Office
Austin, TX

Arnold W. Oliver
Executive Director
Transportation Department
Austin

Phyllis O'Neill
Governor's Budget and Planning Office
Austin, TX

Craig Pederson
Executive Administrator
Water Development Board
Austin, TX

Alan Posnick
Chief, Federal Facility Compliance Division
Water Commission
Austin, TX

Susan Rieff
Director of Environmental Policy
Office of the Governor
Austin, TX

Andrew Sansom, Executive Director
Parks and Wildlife Department
Austin, TX

Vickie Schubert
Executive Director (Acting)
Public Utility Commission
Austin, TX

Curtis Tunnell
Executive Director
Historical Commission
Austin, TX

Ed L. Wagoner
General Manager
Municipal Power Agency
Bryan

James R. Wilson, Director
Public Safety Department
Austin, TX

Maj. Gen. William C. Wilson
Adjutant General
Austin, TX

Railroad Commission
Office of Information Services

Local Government Agencies/Organizations

Travis County

Joe Gieselman, Director
Public Improvement and
Transportation Department
Administrative Services Division
Austin, TX

Austin Librach, Director
Environmental and Conservation
Department
Austin, TX

Les Paul, Director
Resource Management Department
Austin, TX

City of Austin

Randy Alexis
Water and Wastewater Utility
Department

John M. Almond, P.E.,
Airport Development Manager
Department of Aviation

R. Bruce Hatfield, Manager
Electric Utility Department

Luther Polnau,
Comprehensive Planning Manager
Planning Department

Peter Rieck
Airport Economic Development Manager
Department of Aviation

Mary Rizo
Solid Waste Services

Jim Smith, Director
Planning Department

James Steed
Bergstrom Conversion Task Force

Holland Young
Department of Aviation

Other Organizations/Individuals

Earth First
Austin, TX

Native Plant Society of Texas
Decatur, TX

Sierra Club of Austin
Austin, TX

Sportsmen's Clubs of Texas, Inc.
Austin, TX

Texas Committee on Natural Resources
Dallas, TX

Texas Forestry Association
Lufkin, TX

Tonkawa Tribal Council
Tonkawa, OK

Darla Allcorn
Del Valle Independent School District
Del Valle, TX

Dede Armentrout
Vice President
Southwest, National Audubon Society
Austin, TX

Raymond Carr
Forth Worth, TX

Dan Casey
Austin, TX

Rick Coneway
President, Military Affairs Council
Austin, TX

Bill Davidson
Georgetown Chamber of Commerce
Georgetown, TX

Dr. William J. Dunlay
KPMG Peat Marwick
San Francisco, CA

Stuart Eskenazi
Austin American Statesman
Austin, TX

Susan Ridgeway Garry
Manor Area Neighbors Organization
Coupland, TX

Robert Hammond
President, Bergstrom-Austin Community Council
Austin, TX

Danny Hermosillo
KTBC TV
Austin, TX

Sandra Hicks
Hicks & Company
Austin, TX

Roger Kintzel
Chamber of Commerce Executive Committee
Austin, TX

Janet Marsh
Carpenter & Associates
Austin, TX

Matt O'Brien
Research Triangle Institute
Research Triangle Park, NC

James E. Saxton, Jr.
Chamber of Commerce Executive Committee
Austin, TX

John Schlotzhauer
University Hill Neighborhood Association
Austin, TX

Tom Schnetzer
Ricondo and Associates
Chicago, IL

Glenda Schroeder
Elgin Chamber of Commerce
Elgin, TX

David Sullivan
Sierra Club of Austin, Texas
Austin, TX

Ann Tate
The Environmental Co.
Charlotteville, VA

Carol Thompson
Chamber of Commerce Executive Committee
Austin, TX

Bruce Thompson, President
Wildlife Society, Texas Chapter
Austin, TX

Reginold Todd
San Marcos Chamber of Commerce
San Marcos, TX

Joe Townsend
Bastrop Chamber of Commerce
Bastrop, TX

P. Don Weaver, Jr.
Associate Vice President
Greiner, Inc.
Tampa, FL

Glenn West
President
Greater Austin Chamber of Commerce
Austin, TX

Libraries

State of Texas Library and Archives
Austin, TX

Austin Public Library
Austin, TX

Govalle Public Library
Austin, TX

Riverside Drive Public Library
Austin, TX

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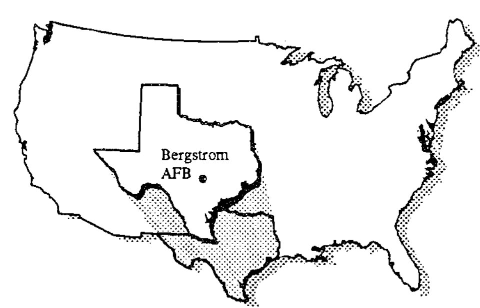


APPENDIX D

APPENDIX D

BERGSTROM AIR FORCE BASE INSTALLATION RESTORATION PROGRAM BIBLIOGRAPHY

CH2M Hill

1983 *Installation Restoration Program Records Search, Bergstrom Air Force Base, Texas*. Gainesville, Florida. Prepared for U.S. Air Force Engineering and Services Center, Directorate of Environmental Planning, Tyndall Air Force Base, Florida; and Tactical Air Command, Directorate of Engineering and Environmental Planning, Langley Air Force Base, Virginia.

Radian Corporation

1987a *Installation Restoration Program, Phase II - Confirmation/Quantification, Stage I - Final Report, Bergstrom Air Force Base, Texas, Volume I*. Austin, Texas. Prepared for Headquarters, Tactical Air Command, Command Surgeon's Office, HQ, TAC/SGPB, Langley Air Force Base, Virginia, and U.S. Air Force, Occupational and Environmental Health Laboratory, Brooks Air Force Base, Texas.

1987b *Installation Restoration Program, Phase II - Confirmation/Quantification - Stage I, Final Report, Bergstrom Air Force Base, Texas, Volume II*. Austin, Texas. Prepared for Headquarters, Tactical Air Command, HQ, TAC/SEPB, Langley Air Force Base, Virginia, and U.S. Air Force, Occupational and Environmental Health Laboratory, Brooks Air Force Base, Texas.

1989 *Draft Installation Restoration Program, RI/FS Stage 2, Bergstrom Air Force Base, Texas, Volume 1: Technical Report*. Austin, Texas. Prepared for Headquarters, Tactical Air Command, HQ, TAC/DEEV, Langley Air Force Base, Virginia.

Walk, Haydel & Associates, Inc.

1991a *Final Installation Restoration Program, Phase IV-A, Remedial Action Plan and Conceptual Documents, Bergstrom Air Force Base, Texas, Volume I, Site FT-23: Fire Department Training Area*. Prepared for U.S. Army Corps of Engineers, Omaha District, Nebraska.

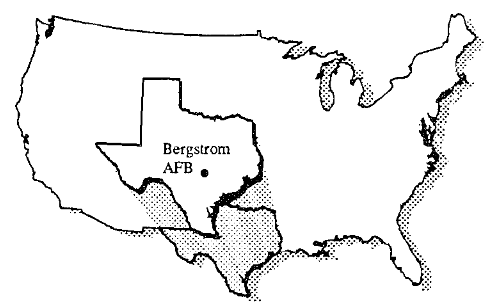
1991b *Final Installation Restoration Program, Phase IV-A, Remedial Action Plan and Conceptual Documents, Bergstrom Air Force Base, Texas, Volume II, Site FT-23: Fire Department Training Area*. Prepared for U.S. Army Corps of Engineers, Omaha District, Nebraska.

1991c *Final Installation Restoration Program, Phase IV-A, Remedial Action Plan and Conceptual Documents, Bergstrom Air Force Base, Texas, Volume III, Site FT-23: Fire Department Training Area*. Prepared for U.S. Army Corps of Engineers, Omaha District, Nebraska.

1991d *Final Installation Restoration Program, Phase IV-A, Environmental Assessment, Bergstrom Air Force Base, Texas, Site FT-23 (Formerly Site 23): Fire Department Training Area.* Prepared for Headquarters, Tactical Air Command, HQ, TAC/DEEV, Langley Air Force Base, Virginia.

1992a *Draft Installation Restoration Program, Remedial Investigation Report, Bergstrom Air Force Base, Volume I (Including Appendix A), Combined Southeast Landfill Area; Sites LF-3, LF-4, LF-5, LF-6, LF-7 and SS-17.* Prepared for Headquarters, Air Combat Command, HQ/ACC/DEVR, Langley Air Force Base, Virginia.

1992b *Draft Installation Restoration Program, Remedial Investigation Report, Bergstrom Air Force Base, Texas, Volume I (Including Appendix A), Site SS-8: JP-4 Spill/Overtopped Tank, Site SS-9: JP-4 Pipeline Leak, and Site SD-27; Jet Engine Test Cell Area.* Prepared for Headquarters, Air Combat Command, HQ/ACC/DEVR, Langley Air Force Base, Virginia.



APPENDIX E

APPENDIX E

METHODS OF ANALYSIS

1.0 INTRODUCTION

This section describes the methods used in preparing this Environmental Impact Statement (EIS). These methods were designed and implemented to evaluate the potential environmental impacts of disposal of Bergstrom Air Force Base (AFB), Texas, and incident reuse. Because future reuse of the site is uncertain in its scope, activities, and timing, several alternative reuse scenarios were considered in the analysis and their associated environmental impacts evaluated. The reuse scenarios analyzed in this EIS were defined for this study to span the anticipated range of reuse activities that are reasonably likely to occur as a result of disposal of the base. The scenarios were developed based on proposals put forth by the local community, interested individuals, and the Air Force, and considered general land use planning objectives.

The various analysis methods used to develop this EIS are summarized here by resource. In some instances, more detail is included in another appendix. These instances are noted for each resource in its respective subsection below.

2.0 LOCAL COMMUNITY

2.1 COMMUNITY SETTING

The community setting section provides the context within which impacts on the biophysical environment were assessed. Community setting effects were based on projected direct and secondary employment and resulting population changes related to the reuse of Bergstrom AFB. These projections were used to quantify and evaluate changes in demands on community services and transportation systems. A complete assessment of socioeconomic effects was conducted through a separate *Socioeconomic Impact Analysis Study (SIAS), Disposal and Reuse of Bergstrom Air Force Base, Texas* (U.S. Air Force 1993), which is the source for baseline and projected statistics used in this EIS.

Information used in the SIAS was obtained from various sources including the U.S. Bureau of Economic Analysis, U.S. Bureau of Labor Statistics, U.S. Council of Economic Advisors, Texas Department of Employment and Training, Austin Area Planning Commission, Travis County, and the City of Austin. The Regional Interindustry Multiplier System (RIMS) model was used to generate demographic and economic projections used to analyze changes that would result from the Proposed Action and alternatives.

2.2 LAND USE AND AESTHETICS

Potential land use impacts were projected based on compatibility of land uses associated with the Proposed Action and alternatives with adjacent land uses and zoning; consistency with general plans and other land use plans, regulations, regional plans, and policies; and effects of aircraft noise and safety restrictions on land uses.

The Region of Influence (ROI) for the majority of direct land use impacts for this study consists of Bergstrom AFB and adjacent land in the City of Austin and unincorporated portions of Travis County. Noise-related land use impacts were determined by the extent of noise contours created by the various reuse alternatives.

Maps and windshield surveys were used to characterize onbase and offbase land uses. Applicable policies, regulations, and land use restrictions were identified from the land use plans and ordinances of municipalities in the ROI. The proposed and alternative reuse plans were compared to existing land uses and zoning to identify areas of conflict, as well as to local planning goals and objectives as set forth in the *Austinplan* (City of Austin 1988).

Alternatives incorporating airfield uses were examined for consistency with Federal Aviation Administration (FAA) regulations and recommended land uses in the vicinity of airfields. Impacts of airfield-generated noise were assessed by comparing the extent of noise-affected areas and receptors under different reuse alternatives against preclosure baseline conditions.

For the aesthetics analysis, the affected environment was described based on the visual sensitivity of areas within and visible from the base. These areas were categorized as of high, medium, or low sensitivity. The Proposed Action and alternatives were then evaluated to identify land uses to be developed, visual modifications that would occur, new areas of visual sensitivity, and whether modification of unique or otherwise irreplaceable visual resources would occur and detract from the visual qualities or setting.

2.3 TRANSPORTATION

The analysis of potential impacts to transportation resulting from the Proposed Action and alternative reuse plans for Bergstrom AFB focused on key roads, local airport use, and passenger rail service in the area, including those segments of the transportation networks in the region that serve as direct or mandatory indirect linkages to the base, and those that are commonly used by Bergstrom AFB personnel. The need for improvements to onbase roads, offbase access, and regional arterials was considered. The analysis was derived using information from state and local government agencies, including the Texas Department of Transportation and Travis County and City of Austin planning commissions; local airport authorities; and railroad companies. Other data sources used for the roadway analysis include the Institute of Transportation Engineers and the Transportation Research Board. The ROI for the transportation analysis includes the existing principal road, air, and rail networks in the Austin Metropolitan Statistical Area (MSA). The commercial airport in the Austin area is Robert Mueller Municipal Airport (RMMA), 9 miles north of the base.

The number of vehicle trips expected as a result of specific land uses on the site was estimated for 1994, 1997, 2002, and 2012 on the basis of direct onsite jobs and other attributes of onsite land uses (such as the number of dwelling units, projected airport passenger volume, commercial and industrial development, and other factors). Trip generation data from the Institute of Transportation Engineers were used to determine vehicle trips. Vehicle trips were then allocated to the local road network using prior patterns and expected destinations and sources of trips. When appropriate, the local road network was adjusted to account for changes over time from currently planned road capacity improvements and improvements required by the proposed reuse scenarios. Changes in work and associated travel patterns were derived by assigning or removing traffic to or from the most direct commuting routes. Changes in traffic volumes arising from reuse alternatives at Bergstrom AFB were estimated and resulting volume changes on key local, regional, and onbase roadway segments were then determined.

The transportation network in the ROI was then examined to identify potential impacts to levels of service (LOS) arising from future baseline conditions and effects of reuse alternatives. Planning computations from the *Highway Capacity Manual* (Transportation Research Board 1985) provided estimates of traffic and anticipated LOS where the amount of detail and accuracy of information were limited. The planning procedures used in this analysis were based on projections of average annual daily traffic and on assumed traffic, roadway, and control conditions. The results provided a basic assessment of whether or not capacity was likely to be exceeded for a given volume. Intersection analysis was then integrated into the planning capacity analysis for each roadway section analyzed and the results provided an estimate of the changes in LOS ratings expected as a result of traffic volume changes on key local, regional, and onbase roadway segments.

Airspace use in the vicinity of an airport is driven primarily by factors such as runway alignment, surrounding obstacles and terrain, air traffic control and navigational aid capabilities, proximity of other airports/airspace uses in the area, and noise considerations. These same factors normally apply regardless of whether the airport is used for military or civil aircraft operations. For this reason, a preclosure reference was used in characterizing these factors related to airspace use at Bergstrom AFB.

Historical data on military aircraft operations used to characterize airspace use at and around Bergstrom AFB were obtained from the base. The City of Austin Department of Aviation was contacted to obtain information on civil airport use. Aviation forecasts were derived from the reuse plans and the City of Austin Department of Aviation studies, and, where necessary, assumptions were made based on other similar airport operational environments.

The airspace ROI for Bergstrom AFB is shown in Chapter 3.0, Figure 3.2-10. Air traffic control for military and civil aircraft operating in the vicinity of Bergstrom AFB is provided by the Austin Approach Control Facility at RMMA, and also by the air traffic control towers at Bergstrom AFB and RMMA. Austin Approach Control is an Air Force-operated facility at Bergstrom AFB that provides radar coverage for all aircraft from the surface to 10,000 feet mean sea level for a radius of 60 miles, excluding certain Special Use Airspace areas.

The types and levels of aircraft operations projected for the Proposed Action and General Aviation/Air Cargo Airport Alternative were evaluated and compared to the way airspace was configured and used under the preclosure reference. The capacity of the airport to accommodate the projected aircraft fleet and operations was assessed by calculating the airport service volume, using the criteria in FAA Advisory Circular 150/5060-5. Potential effects on airspace use were assessed, based on the extent to which projected operations could (1) require modifications to the airspace structure or air traffic control systems and/or facilities; (2) restrict, limit, or otherwise delay other air traffic in the region; or (3) encroach on other airspace areas and uses.

It was recognized throughout the analysis process that a more in-depth study would be conducted by the FAA, once a reuse plan is selected, to identify any impacts of the reuse activities and what actions would be required to support the projected aircraft operations. Therefore, this analysis was used only to consider the level of operations that could likely be accommodated under the existing airspace structure, and to identify potential impacts if operational capacities were exceeded.

Data addressing private, passenger, and air cargo service in the region were acquired from the aviation demand forecasts developed by KPMG Peat Marwick (1992) for the City of Austin Department of Aviation. The effect of base closure on local airports was derived by subtracting current base-related enplanements from current total enplanements. For each reuse alternative, impacts on air transportation were determined by multiplying the ratio of enplanements to population by the projected future populations of the local airport service areas.

Information regarding existing rail transportation was obtained from AMTRAK and railroad companies serving the region. Projected effects of reuse alternatives on railroad transportation were based on the anticipated use of these railroads for freight service. Impacts on passenger service were not specifically addressed because AMTRAK does not provide service to the Austin MSA.

2.4 UTILITIES

Utility demands were determined based on proposed land uses and projected area population increases. The utility systems addressed in this analysis include the facilities and infrastructure used for potable water (pumping, treatment, storage, and distribution), wastewater (collection and treatment), solid waste (collection and disposal), and energy generation and distribution (electricity and natural gas). Historical consumption data, service curtailment data, peak demand characteristics, storage and distribution capacities, and related information for base utilities (including projections of future utility demand for each utility provider's particular service area) were extracted from data provided by various city utility departments, utility companies, and the Bergstrom AFB Civil Engineering Squadron. Information was also obtained from public and private utility purveyors and related county and city agencies.

The ROI for this analysis comprises the service areas of the local purveyors of potable water, wastewater treatment, solid waste, and energy that serve Bergstrom AFB and the surrounding area. It was assumed that these local purveyors would provide services within the area of the existing base after disposal/reuse.

Potential impacts were evaluated based on demand projections obtained from the various utility purveyors within the region (through 2012) for each of their respective service areas. In each case, the most recent projections that were either made prior to the base closure announcement or that did not take into account a change in demand from the base were considered. These projections were then adjusted to reflect the decrease in demand associated with closure of Bergstrom AFB and its subsequent operation under caretaker status. These adjusted forecasts were then considered the future baseline for comparison with potential reuse alternatives.

The potential effects of reuse alternatives were evaluated by estimating and comparing the additional direct and indirect demand associated with each alternative to the existing and projected operating capabilities of each utility system. Estimates of direct utility demands on the site were used to identify the effects of the reuse activities on site-related utility systems. All changes to the utility purveyors' long-term forecasts were based on estimated project-related population changes in the region and the future rates of per capita demand indicated by the projections or derived from those projections. It was assumed that the per capita demand rates were representative of the reuse activities, based on assumed similarities between proposed land uses and existing or projected uses in the region. Utility projections include direct demand associated with activities planned on base property, as well as resulting changes in domestic demand associated with population changes in the region.

3.0 HAZARDOUS MATERIALS AND HAZARDOUS WASTE MANAGEMENT

Two categories of hazardous materials and hazardous waste management issues were addressed in this analysis: (1) impacts of hazardous materials utilized and hazardous waste generated with each reuse proposal and (2) residual impacts associated with past Air Force practices including delays resulting from Installation Restoration Program (IRP) site remediation. IRP sites are identified as part of the affected environment (Chapter 3.0), while remediation impacts associated with these sites are addressed as environmental consequences (Chapter 4.0). Impacts resulting from waste generated by each reuse proposal are also addressed in Chapter 4.0. Primary sources of data included existing published reports such as IRP documents, generator annual hazardous waste reports, various hazardous materials and waste management plans (e.g., spill response, hazardous waste, underground storage tanks, asbestos), recent inventories (e.g., the Entomology Shop pesticide inventory), and survey results (e.g., hazardous wastes, asbestos, and radon). Pertinent federal, state, and local regulations and standards were reviewed for applicability to the Proposed Action and alternatives. Hazardous materials and waste management plans and inventories were obtained from Bergstrom AFB. Interviews with personnel associated with these onbase organizations provided the information necessary to fill any data gaps.

The ROI includes the current base property and all geographical areas that have been affected by an onbase release of a hazardous material or hazardous waste. The IRP sites are located within the base boundary. There is no evidence that groundwater contamination extends beyond the base boundary.

Preclosure baseline conditions (i.e., when the base was fully operational), as defined for this study, include hazardous materials and waste management practices and inventories pertaining to the following areas: hazardous materials, hazardous waste, IRP sites, aboveground and underground storage tanks, oil/water separators, asbestos, pesticides, polychlorinated biphenyls (PCBs), radon, medical/biohazardous waste, and ordnance. The impact analysis considers (1) the amount and type of hazardous materials and waste currently associated with specific facilities and/or areas proposed under each reuse alternative; (2) the regulatory requirements or restrictions associated with property transfer and reuse; (3) delays to development resulting from IRP remediation activities; and (4) remediation schedules of specific hazardous materials and waste (i.e., PCBs, medical/biohazardous waste) currently used by the Air Force.

4.0 NATURAL ENVIRONMENT

4.1 SOILS AND GEOLOGY

The evaluation of impacts to soils addressed erosion potential, construction-related dust generation and other soils problems (low soil strength, expansive soils, etc.), and disturbance of unique soil types. Information was obtained from various federal, state, and local agencies. Assessment of potential impacts to geology from the reuse alternatives included evaluation of resource potential including aggregate, geologic hazards (particularly potential for seismicity, liquefaction, and subsidence), and flooding potential.

The soils analysis was based on information from the *Soil Survey of Travis County, Texas* (U.S. Department of Agriculture, Soil Conservation Service 1974). The soils in the ROI were evaluated for such factors as erosion potential, permeability, evidence of hardpans, and expansive soil characteristics, as these relate to construction problems and erosion potential during construction. Mitigations were evaluated based on local requirements and Soil Conservation Service recommendations. Common engineering practices were reviewed to determine poor soil characteristics and recommend mitigation measures.

The ROI for the geologic analysis includes the region surrounding Bergstrom AFB relative to topography, seismic activity, aggregate resources, and flooding potential. The ROI for the soils analysis is limited to the base and specific areas designated for construction or renovation.

The geologic analysis was based on a review of existing literature for construction problems associated with geologic hazards, availability of construction aggregate, and whether reuse would affect the availability of known mineral resources.

4.2 WATER RESOURCES

Analysis of impacts of the reuse alternatives on water resources considered groundwater quality and quantity, surface water quality (effects from erosion or sedimentation and contamination), surface water drainage diversion, and nonpoint source surface runoff to adjacent streams. Impacts to water quality resources resulting from IRP activities are addressed under Hazardous Materials and Hazardous Waste Management. Information was obtained from various federal, state, and local agencies. The ROI for water resources includes the groundwater basin underlying the base, the surface drainage directly affected by runoff from the base, and the 100-year floodplains of the streams in the vicinity of the base.

Existing surface water conditions were evaluated for flood potential, nonpoint source discharge or transportation of contaminants, and surface water quality. Groundwater quality and the potential of groundwater as a potable water source for each reuse alternative were documented. The existing stormwater drainage system was evaluated based on available literature, and the impacts to this system for each reuse alternative were analyzed.

4.3 AIR QUALITY

Air quality is defined as the condition of the atmosphere, expressed in terms of the concentrations of air pollutants occurring in an area, as a result of emissions from natural and/or man-made sources. Reuse alternatives have the potential to affect air quality depending on net changes in the release of both gaseous and particulate matter emissions. The impact significance of these emission changes was determined by comparing the resulting atmospheric concentrations to state and federal ambient air quality standards. This analysis was based on local climatological data, air quality monitoring data, baseline emissions inventory information, construction scheduling information, project-related source information, and transportation data. Principal sources of these data were the Environmental Protection Agency, Texas Air Control Board, and Bergstrom AFB.

The ROI was determined by emissions from sources associated with construction and operation of the disposal/reuse alternatives. For inert pollutant emissions (all pollutants other than ozone and its precursors), the measurable ROI is limited to a few miles downwind from the source (i.e., the immediate area of Bergstrom AFB). The ROI for ozone impacts from project emissions is Travis County.

Emissions predicted to result from the proposed reuse alternatives were compared to existing baseline emissions to determine the potential for adverse air quality impacts. Impacts were also assessed by modeling, where appropriate, and compared to air quality standards and attainment levels for complying with these standards. Appendix I contains the projected emissions inventory information and methods. Background concentrations were added to the project impacts for comparison with the standards and attainment levels. Impacts were considered significant if project emissions would (1) increase an offsite ambient pollutant concentration from below to above a federal or state standard; (2) contribute a measurable amount to an existing or projected air quality standard exceedance; or (3) expose sensitive receptors (such as schools or hospitals) to substantial pollutant concentrations. All other air quality impacts were considered insignificant.

4.4 NOISE

The noise analysis addresses potential noise impacts from reuse-generated aircraft operations, surface traffic, and other identified noise sources on areas surrounding Bergstrom AFB. Most of the data were obtained from the aircraft operations and traffic data prepared for the reuse alternatives. Day-night levels (DNL) were used to determine noise impacts. A single-event noise analysis using sound exposure levels (SEL) was also performed. Scientific literature on noise effects was also referenced.

The ROI for noise is the area within DNL 65-decibel (dB) contours based on land use compatibility guidelines developed from FAA regulations (U.S. Department of Transportation, Federal Aviation Administration 1989). The ROI for surface traffic noise impacts incorporated key road segments identified in the transportation analysis.

Noise levels from aircraft operations were estimated using the FAA-approved Noise Exposure Model (NOISEMAP), version 6.0 (Moulton 1990). Noise contours for DNL 65 dB and above were depicted. Increased noise levels resulting from surface traffic were estimated using the Federal Highway Administration's highway noise model (1982). Potential noise impacts were identified by overlaying the noise contours with land use and population information to determine the number of residents who would be exposed to DNLs above 65 dB.

SELs related to reuse alternatives were determined for representative noise-sensitive receptors exposed to aircraft noise from the Bergstrom AFB airfield. The SELs are outdoor levels and take into account the location of the receptors relative to the various flight tracks and aircraft profiles used. However, evaluation of sensitive receptors relative to noise reduction levels of specific structures was not performed.

Methods used to analyze noise impacts under each reuse scenario are presented in detail in Appendix H of this EIS.

4.5 BIOLOGICAL RESOURCES

Biological resources analyzed for disposal and reuse of Bergstrom AFB include vegetation, wildlife, threatened and endangered species, and sensitive habitats (e.g., wetlands). Primary data sources for the analysis included published literature and reports, field reconnaissance of the base, and contacts with agencies such as the U.S. Fish and Wildlife Service and the Texas Parks and Wildlife Department. The ROI for the biological resources assessment comprises Bergstrom AFB, adjacent natural areas, and other areas potentially affected by reuse alternatives.

Vegetation, wildlife, and sensitive biological resources (e.g., wetlands and protected species) on the base were mapped using aerial photographs based on field observations during reconnaissance surveys of the base in April and June 1992. Sensitivity of potential wetlands on the base was based on correspondence from the U.S. Army Corps of Engineers and a delineation and wetlands determination study conducted in July 1992. Potential wetlands on the base were mapped using the National Wetland Inventory Map and data collected from the field surveys conducted in July 1992.

The impact analysis was performed by overlaying project land use maps for each alternative onto the biological resource maps to calculate the overlap by land use category. Based on the timing of development in the 20-year study period and the type of development proposed (e.g., new construction or reuse of existing facilities) for each land use, the amount of habitat that could be affected was estimated. The proportion of disturbance associated with each land use category was determined based on accepted land use planning concepts. It was assumed that disturbance could occur at one or more sites within the land use polygon, unless designated as vacant land on the project maps. Disturbance of each habitat type present was considered to be in direct proportion to the development factor.

These impacts were further divided into three development phases by visually comparing maps showing the proposed schedule of development with the resource maps. All other impacts were qualitatively assessed based on literature and scientific expertise on the responses of plants and animals to project-related disturbances such as noise, landscaping, and vegetation maintenance.

4.6 CULTURAL AND PALEONTOLOGICAL RESOURCES

Cultural resources include three main categories: prehistoric resources, historic resources, and Native American (traditional) resources. Paleontological resources are the fossil evidence of past plant and animal life. Prehistoric resources are physical properties resulting from human activities predating written records, identified as either isolated artifacts or sites. Sites contain concentrations of artifacts (e.g., stone tools and ceramic sherds), features (e.g., hearths), and plant and animal remains. Depending on their age, complexity, integrity, and relationship to one another, sites may be important and capable of yielding information about past populations and adaptive strategies.

Historic resources consist of physical properties that postdate the existence of written records and include architectural structures (e.g., log cabins, dams, and bridges) and archaeological features such as foundations, trails, and trash dumps. Such resources may have research potential in the same manner as prehistoric sites, but are more often considered important because of their association with historic persons or events, or as examples of distinctive architectural styles.

Native American (traditional) resources include sites, areas, and materials important to Native Americans for religious or heritage reasons. Sensitive resources may include some types of prehistoric sites, features and artifacts, contemporary sacred areas, traditional use areas (e.g., native plant habitat), and sources for materials used in the production of sacred objects and traditional tools.

Cultural resources of particular concern include properties listed on the National Register of Historic Places (NRHP), properties potentially eligible for the NRHP, and sensitive Native American sites and areas.

Paleontological resources are the physical remains, impressions, or traces of plants or animals from a former geological age. They include casts, molds, and trace fossils such as burrows or tracks. Fossil localities typically include surface outcrops, areas where subsurface deposits are exposed, and special environments favoring preservation, such as caves, peat bogs, and tar pits. Paleontological resources are important mainly for their potential to provide scientific information on the evolutionary history of plants and animals and paleoenvironments.

Data used to compile information on these resources were obtained from existing environmental documents; material on file at Bergstrom AFB; recent cultural resource correspondence pertaining to the base; interviews with individuals familiar with the history, archaeology, or paleontology of the Austin, Texas area; and records of the Texas State Historic Preservation Officer (SHPO). The ROI for cultural resources includes all areas within the boundaries of Bergstrom AFB. No offbase areas were included except where ground-disturbing activities (such as flightline construction or road widening) are part of potential reuse plans.

The EIS contains the most up-to-date information on the importance of cultural resources on Bergstrom AFB, based on recent and ongoing evaluation of eligibility for the NRHP. Cultural resources for which eligibility information was unavailable were assumed to be eligible for the National Register, as is stipulated in the National Historic Preservation Act (NHPA).

According to National Register criteria (36 CFR 60.4), the quality of significance is present in districts, sites, buildings, structures, and objects that:

a) Are associated with events that have made a significant contribution to the broad patterns of history;

b) Are associated with the lives of persons significant in the past;

c) Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic value; or represent a significant and distinguishable entity whose components may lack individual distinction; and

d) Have yielded, or may be likely to yield, information important in prehistory or history.

To be listed or considered eligible for listing on the National Register, a cultural resource must meet at least one of the above criteria and must also possess integrity of location, design, setting, materials, workmanship, feeling, and association. Integrity is defined as the authenticity of a property's historic identity, as evidenced by the survival of physical characteristics that existed during the property's historic or prehistoric occupation or use. If a resource retains the physical characteristics it possessed in the past, it has the capacity to convey information about a culture or people, historical patterns, or architectural or engineering design and technology.

Compliance with requirements of cultural resource laws and regulations ideally involves four basic steps: (1) identification of significant cultural resources that could be affected by the Proposed Action or its alternatives, (2) assessment of the impacts or effects of these actions, (3) determination of significance of potential historic properties within the ROI, and (4) development and implementation of measures to eliminate or reduce adverse impacts. The primary law governing cultural resources in terms of their treatment in an environmental analysis is the NHPA, which addresses the protection of historic and cultural properties. In compliance with the NHPA, the Air Force has completed consultation with the SHPO, as required under Section 106 of the Act.

There are no legally established criteria for assessing the importance of a Native American resource; however, criteria have been established through consultation with Native Americans according to the requirements of the American Indian Religious Freedom Act, the Native American Graves Protection and Repatriation Act, the *Air Force Guidelines for Consultation With Native Americans in the Context of Program Planning and Impact Assessment* (U.S. Air Force 1991f), and the *Guidelines for Evaluating and Documenting Traditional Cultural Properties* (Parker and King 1990).

Adverse effects that may occur as a result of base reuse are those that would have a negative impact on characteristics that make a resource eligible for listing on the NRHP. Actions that can diminish the integrity, research potential, or other important characteristics of an historic property include the following (36 CFR 800.9):

- Physical destruction, damage, or alteration of all or part of the property;
- Isolating the property from its setting or altering the character of the property's setting when that character contributes to the property's qualification for the National Register;
- Introduction of visual or auditory elements that are out of character with the property or that alter its setting;
- Transfer or sale of a federally owned property without adequate conditions or restrictions regarding its preservation, maintenance, or use; and
- Neglect of a property, resulting in its deterioration or destruction.

Regulations for implementing Section 106 of the NHPA indicate that the transfer, conveyance, lease, or sale of an historic property is procedurally considered to be an adverse effect, thereby ensuring full regulatory consideration in federal project planning and execution. However, the effects of a project that would otherwise be found to be adverse may not be considered adverse if one of the following conditions exists:

- When the historic property is of value only for its potential contribution to archaeological, historical, or architectural research, and when such value can be substantially preserved through the conduct of appropriate research, and such research is conducted in accordance with applicable professional standards and guidelines;

- When the undertaking is limited to the rehabilitation of buildings and structures and is conducted in a manner that preserves the historical and architectural value of the affected historic property through conformance with the Secretary's *Standards for Rehabilitation and Guidelines for Rehabilitation of Historic Buildings*; or

- When the undertaking is limited to the transfer, conveyance, lease, or sale of an historic property, and adequate restrictions or conditions are included to ensure preservation of the property's significant historic features.

The treatment of paleontological resources is governed by Public Law 74-292 (the National Natural Landmarks Program, implemented by 36 CFR 62). Only paleontological remains determined to be scientifically important are subject to consideration and protection by a federal agency. Among the criteria used for National Natural Landmark designation are illustrative character, present condition, diversity, rarity, and value for science and education. Additional criteria developed by the National Research Council (1987) indicate that paleontological resources are of high research potential, and therefore, of scientific or educational value, if they are:

- Recovered in poorly studied regions or in unusual concentrations;

- Poorly known fossil forms;

- Assemblages containing a variety of fossil forms, particularly associations of vertebrates, invertebrates, and plants;

- Well-preserved terrestrial vertebrates; and

- In usual depositional contexts.

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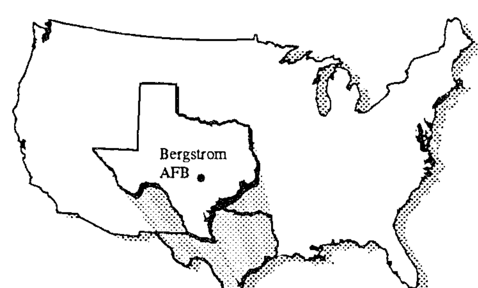


APPENDIX F

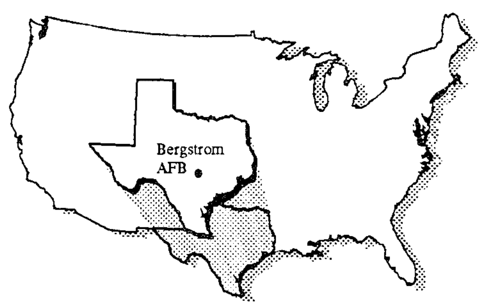
APPENDIX F

CURRENT PERMITS

Table F-1

Bergstrom AFB Permits

Permit No.	Permitted Facility/Equipment	Original Date Issued	Issuing Agency	Date of Expiration	Comments/Conditions
T-9678	Aircraft Painting Facility (Building 1609)	9/3/86	Texas Air Control Board	Not specified	Air pollution control permit for painting and cleanup operations at 67th Tactical Reconnaissance Wing Corrosion Control Facility.
C-16959	Regional Aircraft Paint/Stripping Facility (Building 1608)	6/4/87	Texas Air Control Board	Not specified	Air pollution control permit for painting and stripping operations at Regional Corrosion Control Facility.
49918811	Basewide Industrial Waste Discharge into the Sanitary Sewer System	1/1/92	City of Austin Water and Wastewater Utility, Industrial Waste Control Division	December 31, 1992	Industrial Waste Discharge Permit issued on an annual basis.
	Basewide National Pollutant Discharge Elimination System Permit for Stormwater Discharges	Pending	U.S. Environmental Protection Agency		Bergstrom AFB is included in the Air Combat Command group application. The permit has not yet been issued.
	Treatment, Storage and Disposal (TSD) Facility (Building 1638)	Interim Status	Texas Water Commission		Part A Permit for TSD facility. A Resource Conservation and Recovery Act Part B Permit application was submitted, but authorization to build a conforming storage was rescinded. An application for the withdrawal of the permit application was submitted to the Texas Water Commission in October 1992. The withdrawal has not been approved or finalized as of January 1993.
13455-01	Golf Course Irrigation	10/25/88	Texas Water Commission		Permit for treated effluent from South Austin Wastewater Treatment Plant used to irrigate 132 acres of the golf course.



APPENDIX G

APPENDIX G

AIR FORCE POLICY ON MANAGEMENT OF ASBESTOS AT CLOSING BASES

INTRODUCTION

Asbestos in building facilities is managed because of potential adverse human health effects. Asbestos must be removed or controlled if it is in a location and condition that constitutes a health hazard or a potential health hazard or it is otherwise required by law (e.g., schools). The hazard determination must be made by a health professional (in the case of the Air Force, a Bioenvironmental Engineer) trained to make such determinations. While removal is a remedy, in many cases management alternatives (such as encapsulation within the building) are acceptable and cost-effective methods of dealing with asbestos. The keys to dealing with asbestos are knowing its location and condition and having a management plan to prevent asbestos-containing materials that continue to serve their intended purpose from becoming a health hazard. There is no alternative to such management, because society does not have the resources to remove and dispose of all asbestos in all buildings in the United States. Most asbestos is not now nor will it become a health hazard if it is properly managed.

There are no laws applicable to closure bases that specifically mandate the removal or management of asbestos in buildings other than the law addressing asbestos in schools (P.L. 99-519). Statutory or regulatory requirements that result in removal or management of asbestos are based on human exposure or the potential for human exposure (i.e. National Emission Standards for Hazardous Air Pollutants (NESHAP) = no visible emissions, OSHA = number of airborne fibers per cc). There are no statutory or other mandatory standards, criteria, or procedures for deciding what to do with asbestos. Thus, health professional judgement based on exposure levels or potential exposure levels must be the primary determinant of what should be done with asbestos. Apart from this professional and scientific approach, closing bases presents the additional problem of obtaining an economic return to the Government for its property. Asbestos in closing base properties must also be analyzed to determine the most prudent course in terms of removal or remediation cost and the price that can be obtained as a result.

The following specific policies will apply to bases closed or realigned (so that there are excess facilities to be sold) under the base closure laws, P.L. 100-526 and P.L. 101-510.

1. Asbestos will be removed if:

    (a) The protection of human health as determined by the Bioenvironmental Engineer requires removal (e.g., exposed friable asbestos within a building) in accordance with applicable health laws, regulations, and standards

    (b) A building is unsalable without removal, or removal prior to sale is cost-effective; that is, the removal cost is low enough compared to value that would be received for a "clean" building that removal is a good investment for the Government. Prior to the decision to remove asbestos solely for economic reasons, an economic analysis will be conducted to determine if demolition, removal of some types of asbestos but not others, or asbestos removal and sale would be in the best interests of the Government.

(c) A building is, or is intended to be, used as a school or child care facility.

2. When asbestos is present but none of the above applies, the asbestos will be managed using commonly accepted standards, criteria, and procedures to assure sufficient protection of human health and the environment, in accordance with applicable and developing health standards.

3. A thorough survey for asbestos (including review of facility records, visual inspection, and where appropriate as determined by the Bioenvironmental Engineer and the Base Civil Engineer, intrusive inspection) will be conducted by the Air Force prior to sale.

4. Appraisal instructions, advertisements for sale, and deeds will contain accurate descriptions of the types, quantities, locations, and condition of asbestos in any real property to be sold or otherwise transferred outside the Federal Government. Appraisals will indicate what discount the market would apply if the building were to be sold with the asbestos in place.

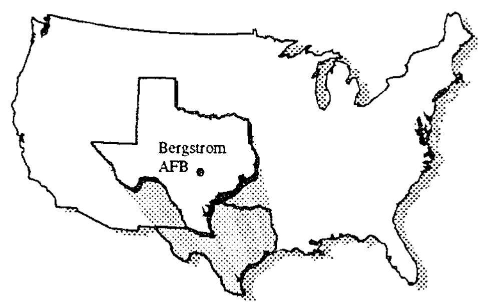
5. Encapsulated asbestos in a building structure, friable or not, is not regarded as hazardous waste by the Air Force, nor does encapsulation within the structure of a building constitute "storing" or "disposing of" hazardous waste. Asbestos incorporated into a building as part of the structure has not been "stored" or "disposed of."

6. Friable asbestos, or asbestos that will probably become friable, that has been stored or disposed of underground or elsewhere on the property to be sold will be properly disposed of, unless the location is a landfill or other disposal facility property permitted for friable asbestos disposal.

7. The final Air Force determination regarding the disposition of asbestos will be dependent on the plan for disposal and any reuse of the building. Decisions will take into account the proposed community reuse plan and the economic analysis of alternatives (see para 4). The course of action to be followed with respect to asbestos at each closing installation will be analyzed in the Disposal and Reuse Environmental Impact Statement, and will be included in the record of decision (ROD). Any buildings or facilities where the proposed asbestos plan is controversial will be addressed in the ROD, whether individually or as a class of closely related facilities.

8. Since other considerations must be taken into account at bases that are continuing to operate, this policy does not apply to them, nor is it necessarily a precedent for asbestos removal policy on them.

This Air Force Policy on the Management of Asbestos at Closing Bases dated November 6, 1990, and updated May 1, 1992, has been retyped for the purposes of clarity and legibility.



APPENDIX H

APPENDIX H

NOISE

1.0 DESCRIPTION OF PROPOSED ALTERNATIVES

1.1 PRECLOSURE

Typical noise sources in and around airfields include aircraft, surface traffic, and other human activities. Military aircraft operations are the primary source of noise in the vicinity of Bergstrom Air Force Base (AFB). Preclosure noise contours for air operations at the base, from the *Air Installation Compatible Use Zone (AICUZ)* study (U.S. Air Force 1987a), are shown in Figure 3.4-5 in Section 3.4.4 of this Environmental Impact Statement (EIS). In airport analyses, areas with a day-night average sound level (DNL) above 65 A-weighted decibels (dBA) are considered in land use compatibility planning and impact assessment; therefore, the areas with DNLs greater than 65 dBA were of particular interest.

Baseline surface traffic noise levels in the vicinity of the base were established in terms of DNL by modeling the arterial roadways in the vicinity of the base using recent traffic and speed characteristics. Annual average daily traffic (AADT) data were developed in the traffic analysis presented in Section 3.2.3, and were used to estimate preclosure noise levels. The traffic data used in the analysis are presented in Table H-1. For the purpose of analysis, the traffic mix was assumed to be 96 percent automobiles, 3 percent medium-duty trucks, and 1 percent heavy-duty trucks. Ten percent of the traffic was assumed to be nighttime (10:00 p.m. to 7:00 a.m.) traffic. The noise levels generated by surface traffic were predicted using the model published by the Federal Highway Administration (1978). The noise levels were estimated as a function of distance from the centerline of the nearest road.

1.2 CLOSURE BASELINE

At closure, it was assumed that there would be no aircraft activity. The noise levels projected for the closure baseline for surface traffic were calculated using the traffic projections at base closure. The AADTs used for the analysis are presented in Table H-1.

1.3 PROPOSED ACTION

The Proposed Action for reuse of Bergstrom AFB would result in development of an air carrier airport supporting air passenger (air carrier and air taxi), air cargo, general aviation, and military operations. Military operations would primarily consist of operations associated with the Air Force Reserve 924th Fighter Group (FG) and the Texas Army National Guard (ANG). Nonaviation land uses would include industrial, commercial, institutional, and recreational.

Table H-1

Preclosure and Closure Surface Traffic Data

Roadway	AADT	Speed Assumed	Road Width Assumed
Preclosure			
U.S. 183 South of State Highway 71	14,400	50	6
U.S. 183 North of State Highway 71	34,000	44	6
U.S. 183 North of Burleson Road	16,100	50	6
U.S. 183 South of Burleson Road	16,100	50	6
State Highway 71 East of U.S. 183	42,000	40	6
State Highway 71 West of U.S. 183	37,000	40	6
State Highway 71 East of Presidential Boulevard	26,000	44	6
State Highway 71 East of FM 973	18,500	48	6
FM 973 North of State Highway 71	5,100	45	2
FM 973 South of State Highway 71	6,000	45	2
Burleson Road East of U.S. 183	1,250	57	2
Burleson Road West of U.S. 183	5,960	54	2
Closure			
U.S. 183 South of State Highway 71	13,553	50	6
U.S. 183 North of State Highway 71	24,685	48	6
U.S. 183 North of Burleson Road	16,730	50	6
U.S. 183 South of Burleson Road	16,730	50	6
State Highway 71 East of U.S. 183	25,064	48	6
State Highway 71 West of U.S. 183	30,226	44	6
State Highway 71 East of Presidential Boulevard	21,766	48	6
State Highway 71 East of FM 973	18,289	48	6
FM 973 North of State Highway 71	3,300	45	2
FM 973 South of State Highway 71	5,894	45	2
Burleson Road East of U.S. 183	1,299	57	2
Burleson Road West of U.S. 183	6,193	54	2

The DNL contours for the proposed flight operations and flight tracks modeled with the Air Force Computer Noise Exposure Model NOISEMAP, version 6.0 (Moulton 1990), are presented in Section 4.4.4, Noise. The information presented in this section provides the assumptions and background data used to predict the DNL contours.

Noise contours were generated for the Proposed Action and General Aviation/Air Cargo Airport Alternative for the baseline year (1994) and three future year projections (1997, 2002, and 2012). Aircraft operations were considered for five aircraft categories: air carrier, air cargo, air taxi, general aviation, and military, both fixed-wing and helicopter. For the Proposed Action and General Aviation/Air Cargo Airport Alternative in 1994, only military (Air Force only) and air cargo operations would occur. In 1997, 2002, and 2012, the Proposed Action includes all five categories, while the General Aviation/Air Cargo Alternative includes all categories except for air carrier and air taxi.

Aircraft operations used in the modeling, except for 924th FG and Air Force transient aircraft operations, were derived from average daily aircraft operations forecasts for the years 1991, 1997, 2002, and 2012 included in *Working Paper 1, Aviation Demand Forecasts, Master Plan for Air Carrier Airport at Bergstrom Air Force Base* (KPMG Peat Marwick 1992), prepared for the City of Austin Aviation Department. Although the operations forecasts included military operations, only forecast operations associated with the Texas ANG were used in this analysis. Operations for the 924th FG and transient aircraft operations associated with the 924th FG, Headquarters 10th Air Force, the Air Combat Command Regional Corrosion Control Facility (RCCF), and the Air Training Command (ATC), were derived separately based on information provided by these organizations.

The City of Austin aviation demand forecasts considered four specific categories: air carrier, air taxi, general aviation, and military. Forecasted air cargo operations were not considered separately, but were included in the operations totals for the air carrier and air taxi categories, based on the type of aircraft used. Air cargo operations used in this analysis were derived from the demand forecasts based on typical cargo aircraft types used currently at Robert Mueller Municipal Airport (RMMA) and average annual estimates of all-cargo aircraft departures included in the master plan forecasts for modeled years 1997, 2002, and 2012. Air cargo operations for 1994 were derived based on 1991 operations included in the forecast. Currently, the primary types of air carrier-type cargo aircraft used include the B-727-200, B-737-200, DC-9-10/30, and DC-8-70. These Stage 2 aircraft were assumed to be replaced by Stage 3 aircraft (B-757, MD-80/DC-9-80, and B-767) in modeled years 2002 and 2012.

The 924th FG F-16 operations for all modeled years were derived based on an annual average of 9,000 sorties and an operating period of 260 days per year. With an average of three operations per sortie (one arrival, one departure, and a closed pattern [i.e., touch-and-go]), the annual average daily operations would include 12 departures, 12 arrivals, and 12 closed patterns. Transient aircraft operations were assumed to primarily consist of jet aircraft going to the RCCF (F-15, F-16, and A-10 aircraft) and aircraft (F-15, F-16, A-10, and KC-135 aircraft) used by people visiting Headquarters 10th Air Force. Total transient aircraft operations were assumed to be 180 per year with a 260-day-per-year operating period.

The ATC transient T-37/T-38 daily operations for all modeled years were derived based on an annual average of 468 and 728 sorties, respectively, with a 360-day-per-year operating period. A typical T-37 sortie would consist of one arrival, one departure, and one closed pattern. A typical T-38 sortie would consist of one arrival, one departure, and two closed patterns.

As stated previously, operations associated with the Texas ANG were obtained from the master plan average daily aircraft operations forecasts, and consisted of 12 helicopter operations (6 arrivals and 6 departures), 6 C-12 operations, and 6 T-34 operations per day based on a 260-day-per-year operating period. The helicopter operations were distributed, on a percentage basis, among the 10 UH-60 Blackhawk, 8 AH-1F Huey Cobra, 12 OH-58 Kiowa, and 3 UH-1A Iroquois rotary wing aircraft used by the Texas ANG.

The fleet mix, annual daily average aircraft operations by time period, and annual operations for each of the modeled years are summarized in Tables H-2a through H-2d. To compute DNL, average daily operations during two time periods, daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.), were considered, with noise from nighttime operations increased by 10 dB. The day-night splits for aircraft operations in each of the modeled years are presented in Table H-3.

Stage (trip) lengths for daytime and nighttime civilian operations are also summarized in Tables H-2a through H-2d. Stage lengths affect civilian takeoff profiles, which contain operational parameters, such as altitudes, engine thrust settings, and aircraft speeds; these parameters, in turn, affect aircraft noise exposure. Stage lengths refer to the distance flown and can vary from 1 to 7. The stage lengths applicable for this noise analysis were stage lengths 1 through 3. Stage length 1 corresponds to trip lengths between 1 and 500 nautical miles (nm); 2 corresponds to trip lengths between 500 and 1,000 nm, and 3 corresponds to trip lengths between 1,000 and 1,500 nm. Stage length does not apply to military aircraft.

All civilian operations were assumed to follow standard takeoff and approach profiles provided by the Federal Aviation Administration (FAA) Integrated Noise Model (INM) data base Version 3.9 (U.S. Department of Transportation, Federal Aviation Administration 1982) for those aircraft types not directly supported by NOISEMAP data base version 6.0. Transient takeoff and arrival profiles from the NOISEMAP data base version 6.0 were used for both 924th FG and transient military aircraft. Profiles for closed pattern operations were provided by the 924th FG and the ATC. Table H-4 includes a list of aircraft types considered in the noise analysis and the types from which the considered aircraft types were modeled.

The phasing out of noisier Stage 2 aircraft, and their subsequent replacement with quieter Stage 3 aircraft by the year 2000 in accordance with FAA regulations, is reflected in the aircraft operations mix. Based on the forecasted air operations, the modeled aircraft operations reflect this phaseout by replacing the B-727-100/200, B-737-200/DC-9-10/30, and DC-8-70 aircraft (Stage 2) with B-757, MD-80/DC-9-80, and B-767 aircraft (Stage 3), respectively, in modeled years 2002 and 2012.

Flight tracks were developed for both military operations and civilian operations (Figures 4.4-1 through 4.4-6 in Section 4.4). Military flight tracks include arrival, departure, and closed-pattern tracks. The difference in flight tracks

Table H-2a

Summary of Daily and Annual Aircraft Operations for the Proposed Action for Modeled Year 1994[1]

		Arrivals			Departures by Stage Length[2]							Touch-and-Go			Total Operations		
					Day			Night									
Category	Aircraft Type	Day	Night	Total	1	2	3	1	2	3	Total	Day	Night	Total	Daily Operations	Annual Operations[3]	% of Total Annual Operations
Air Cargo	B-727-100/200	*	*	*	*	*	-	*	*	-	*	-	-	-	1	354	1.78
	B-737/DC-9-10/30	1	*	1	1	*	-	*	*	*	1	-	-	-	2	858	4.32
	DC-8-70	*	-	*	*	-	-	-	-	-	*	-	-	-	*	37	0.18
	Multi-engine turboprop (BE1900, SW4)	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	Single-engine turboprop (C208)	7	-	7	1	-	-	6	-	-	7	-	-	-	14	5,110	25.73
	B-757	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	MD-80/DC-9-80	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	B-767	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
Military	924th Fighter Group (F-16)	12	*	12	12	-	-	*	-	-	12	12	-	12	35	9,000	45.31
	Transient (F-16, F-15, A-10, and KC-135)[4]	*	*	*	*	-	-	-	-	-	*	-	-	-	1	180	0.91
	Transient (ATC T-37/T-38)	3	-	3	3	-	-	-	-	-	3	5	-	5	12	4,324	21.77
	Multi-engine turboprop (Texas ANG C-12)	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	Single-engine piston prop (Texas ANG T-34)	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	UH-6 (Texas ANG helicopter)	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	AH-1F (Texas ANG helicopter)	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	OH-58 (Texas ANG helicopter)	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	UH-1A (Texas ANG helicopter)	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	Total Air Cargo:	9	*	9	2	*	--	6	*	*	9	--	--	--	17	6,358	32.01
	Total Military:	15	*	15	15	--	--	*	--	--	12	17	--	17	47	13,504	67.99
	TOTAL OPERATIONS:	24	*	24	17	*	--	6	*	*	24	17	--	17	65	19,862	100.00

Notes: [1]Average daily operations have been rounded to the nearest whole number. Total daily and annual operations may not add up due to rounding. * indicates average daily operations are less than 0.5. - indicates no operations for this aricraft type or category.
[2]Stage length: 1 = 0-500 nautical miles; 2 = 501-1,000 nautical miles; and 3 = 1,001-1,500 nautical miles.
[3]Total annual military except for ATC operations operations are based on a 260-day-per-year operating period. ATC T-37/T-38 operations are based on a 365-day-per-year operating period.
[4]Transient aircraft associated with RCCF operations or Headquarters 10th Air Force.

Table H-2b

Summary of Daily and Annual Aircraft Operations for the Proposed Action for Modeled Year 1997[1]

					Departures by Stage Length[2]										Total Operations		
		Arrivals			Day			Night				Touch-and-Go					
Category	Aircraft Type	Day	Night	Total	1	2	3	1	2	3	Total	Day	Night	Total	Daily Operations	Annual Operations[3]	% of Total Annual Operations
Air Carrier	B-727-100/200	6	2	8	5	1	-	1	1	-	8	-	-	-	15	5,509	2.67
	B-737/DC-9-10/30	19	2	21	13	6	-	1	1	-	21	-	-	-	41	15,128	7.32
	B-737-300/400	28	1	29	21	6	1	1	-	-	29	-	-	-	58	21,170	10.25
	B-737-500	10	3	13	10	-	-	3	-	-	13	-	-	-	26	9,490	4.59
	B-757	4	-	4	4	-	-	-	-	-	4	-	-	-	8	2,742	1.33
	B-767	2	-	2	2	-	-	-	-	-	2	-	-	-	4	1,371	0.66
	DC-8-70	1	-	1	1	-	-	-	-	-	1	-	-	-	2	686	0.33
	DC-10	2	-	2	2	-	-	-	-	-	2	-	-	-	4	1,460	0.71
	MD-11	2	-	2	2	-	-	-	-	-	2	-	-	-	4	1,460	0.71
	MD-80/DC-9-80	12	2	14	10	2	-	2	-	-	14	-	-	-	28	10,301	4.99
	MD-88	4	-	4	4	-	-	-	-	-	4	-	-	-	8	2,920	1.41
Air Cargo	B-727-100/200	*	*	*	*	*	-	*	*	-	*	-	-	-	1	331	0.16
	B-737/DC-9-10/30	1	*	1	1	*	-	*	*	-	1	-	-	-	3	932	0.45
	DC-8-70	*	-	*	*	-	-	-	-	-	*	-	-	-	*	44	0.02
	Multi-engine turboprop (BE1900, SW4)	2	-	2	2	-	-	-	-	-	2	-	-	-	4	1,460	0.71
	Single-engine turboprop (C208)	7	-	7	1	-	-	6	-	-	7	-	-	-	14	5,110	2.47
	B-757	*	-	*	*	-	-	-	-	-	*	-	-	-	*	178	0.09
	MD-80/DC-9-80	1	*	1	1	*	-	*	-	-	1	-	-	-	2	649	0.31
	B-767	*	-	*	*	-	-	-	-	-	*	-	-	-	*	89	0.04
Air Taxi	Multi-engine turboprop (BE1900, SW4)	16	-	16	15	-	-	1	-	-	16	-	-	-	32	11,680	5.65
	Single-engine turboprop (C208)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--
	Multi-engine piston prop (BE55, BE58)	1	1	2	1	-	-	1	-	-	2	-	-	-	4	1,460	0.71

Table H-2b, Page 2 of 2

Category	Aircraft Type	Arrivals			Departures by Stage Length[2]							Touch-and-Go			Total Operations		
					Day			Night									
		Day	Night	Total	1	2	3	1	2	3	Total	Day	Night	Total	Daily Operations	Annual Operations[3]	% of Total Annual Operations
General Aviation	Business jet (HS25, LR25, G3)	4	-	4	4	-	-	-	-	-	4	-	-	-	8	2,920	1.41
	Business jet (N265, LR35, MU3, DA02, C550)	12	-	12	12	-	-	-	-	-	12	-	-	-	24	8,760	4.24
	Multi-engine turboprop (BE90, BE20, AC69, C425)	22	-	22	22	-	-	-	-	-	22	-	-	-	44	16,060	7.77
	Single-engine turboprop (C208)	1	-	1	1	-	-	-	-	-	1	-	-	-	2	730	0.35
	Multi-engine piston prop (BE58, PA31, C414)	23	-	23	23	-	-	-	-	-	23	-	-	-	46	16,790	8.13
	Single-engine piston prop (C150, C120, C172)	65	-	65	65	-	-	-	-	-	65	-	-	-	130	47,450	22.96
Military	924th Fighter Group (F-16)	12	*	12	12	-	-	*	-	-	12	12	0	12	35	9,000	4.36
	Transient (F-16, F-15, A-10, and KC-135)[4]	*	-	*	*	-	-	-	-	-	*	-	-	-	*	180	0.09
	Transient (ATC T-37/T-38)	3	-	3	3	-	-	-	-	-	3	5	-	5	12	4,324	2.09
	Multiengine turboprop (Texas ANG C-12)	3	-	3	3	-	-	-	-	-	3	-	-	-	6	1,560	0.75
	Single engine piston prop (Texas ANG T-34)	3	-	3	3	-	-	-	-	-	3	-	-	-	6	1,560	0.75
	UH-60 (Texas ANG helicopter)	2	-	2	2	-	-	-	-	-	2	-	-	-	4	936	0.45
	AH-1F (Texas ANG helicopter)	1	-	1	1	-	-	-	-	-	1	-	-	-	3	749	0.36
	OH-58 (Texas ANG helicopter)	2	-	2	2	-	-	-	-	-	2	-	-	-	4	1,123	0.54
	UH-1A (Texas ANG helicopter)	1	-	1	1	-	-	-	-	-	1	-	-	-	2	312	0.15
	Total Air Carrier:	89	10	99	74	15	1	8	2	--	99	--	--	--	198	72,237	34.96
	Total Air Cargo:	12	--	12	5	*	--	6	*	--	12	--	--	--	24	8,793	4.25
	Total Air Taxi:	17	1	18	16	--	--	2	--	--	18	--	--	--	36	13,140	6.36
	Total General Aviation:	127	--	127	127	--	--	--	--	--	127	--	--	--	254	92,710	44.87
	Total Military:	27	*	27	27	*	--	*	--	--	27	17	--	17	71	19,743	9.56
	TOTAL OPERATIONS:	272	11	283	249	15	1	16	2	--	283	17	--	17	583	206,623	100.00

Notes: [1]Average daily operations have been rounded to the nearest whole number. Total daily and annual operations may not add up due to rounding. * indicates average daily operations are less than 0.5. - indicates no operations for this aircraft type or category.
[2]Stage length: 1 = 0-500 nautical miles; 2 = 501-1,000 nautical miles; and 3 = 1,001-1,500 nautical miles.
[3]Total annual military operations are based on a 260-day-per-year operating period. ATC T-37/T-38 operations are based on a 365-day-per-year operating period.
[4]Transient aircraft associated with RCCF operations or Headquarters 10th Air Force.

Table H-2c

Summary of Daily and Annual Aircraft Operations for the Proposed Action for Modeled Year 2002[1]

Category	Aircraft Type	Arrivals			Departures by Stage Length[2]							Touch-and-Go			Total Operations		
					Day			Night									
		Day	Night	Total	1	2	3	1	2	3	Total	Day	Night	Total	Daily Operations	Annual Operations[3]	% of Total Annual Operations
Air Carrier	B-727-100/200	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	B-737/DC-9-10/30	-	-	-	-	-	-	-	-	-	-	-	-	-	0	--	--
	B-737-300/400	38	2	40	30	7	1	2	-	-	40	-	-	-	80	29,200	13.29
	B-737-500	27	7	34	27	-	-	7	-	-	34	-	-	-	68	24,820	11.29
	B-757	5	-	5	5	-	-	-	-	-	5	-	-	-	11	3,874	1.76
	B-767	2	-	2	2	-	-	-	-	-	2	-	-	-	4	1,291	0.59
	DC-8-70	-	-	-	--	-	-	-	-	-	--	-	-	-	--	--	--
	DC-10	3	-	3	3	-	-	-	-	-	3	-	-	-	6	2,190	1.00
	MD-11	5	-	5	5	-	-	-	-	-	5	-	-	-	10	3,650	1.66
	MD-80/DC-9-80	18	2	19	16	2	-	2	-	-	19	-	-	-	39	14,118	6.42
	MD-88	8	-	8	8	-	-	-	-	-	8	-	-	-	16	5,840	2.66
Air Cargo	B-727-100/200	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	B-737/DC-9-10/30	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	DC-8-70	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	Multi-engine turboprop (BE1900, SW4)	3	-	3	2	-	-	1	-	-	3	-	-	-	6	2,190	1.00
	Single-engine turboprop (C208)	7	-	7	1	-	-	6	-	-	7	-	-	-	14	5,110	2.33
	B-757	1	-	1	1	-	-	-	-	-	1	-	-	-	1	506	0.23
	MD-80/DC-9-80	2	*	2	2	*	-	*	-	-	3	-	-	-	5	1,943	0.88
	B-767	*	-	*	*	-	-	-	-	-	*	-	-	-	*	169	0.08
Air Taxi	Multi-engine turboprop (BE1900, SW4)	18	-	18	17	-	-	1	-	-	18	-	-	-	36	13,140	5.98
	Single-engine turboprop (C208)	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	Multi-engine piston prop (BE55, BE58)	1	1	2	1	-	-	1	-	-	2	-	-	-	4	1,460	0.66

Table H-2c, Page 2 of 2

Category	Aircraft Type	Arrivals			Departures by Stage Length[2]							Touch-and-Go			Total Operations		
					Day			Night									
		Day	Night	Total	1	2	3	1	2	3	Total	Day	Night	Total	Daily Operations	Annual Operations[3]	% of Total Annual Operations
General Aviation	Business jet (HS25, LR25, G3)	3	-	3	3	-	-	-	-	-	3	-	-	-	6	2,190	1.00
	Business jet (N265, LR35, MU3, DA02, C550)	15	-	15	15	-	-	-	-	-	15	-	-	-	30	10,950	4.98
	Multi-engine turboprop (BE90, BE20, AC69, C425)	23	-	23	23	-	-	-	-	-	23	-	-	-	46	16,790	7.64
	Single-engine turboprop (C208)	1	-	1	1	-	-	-	-	-	1	-	-	-	2	730	0.33
	Multi-engine piston prop (BE58, PA31, C414)	22	-	22	22	-	-	-	-	-	22	-	-	-	44	16,060	7.31
	Single-engine piston prop (C150, C120, C172)	60	-	60	60	-	-	-	-	-	60	-	-	-	120	43,800	19.93
Military	924th Fighter Group (F-16)	12	*	12	12	-	-	*	-	-	12	12	-	12	35	9,000	4.10
	Transient (F-16, F-15, A-10, and KC-135)[4]	*	-	*	*	-	-	-	-	-	*	-	-	-	1	180	0.08
	Transient (ATC T-37/T-38)	3	-	3	3	-	-	-	-	-	3	5	-	5	12	4,324	1.97
	Multi-engine turboprop (Texas ANG C-12)	3	-	3	3	-	-	-	-	-	3	-	-	-	6	1,560	0.71
	Single-engine piston prop (Texas ANG T-34)	3	-	3	3	-	-	-	-	-	3	-	-	-	6	1,560	0.71
	UH-60 (Texas ANG helicopter)	2	-	2	2	-	-	-	-	-	2	-	-	-	4	936	0.43
	AH-1F (Texas ANG helicopter)	1	-	1	1	-	-	-	-	-	1	-	-	-	3	749	0.34
	OH-58 (Texas ANG helicopter)	2	-	2	2	-	-	-	-	-	2	-	-	-	4	1,123	0.51
	UH-1A (Texas ANG helicopter)	1	-	1	1	-	-	-	-	-	1	-	-	-	1	312	0.14
	Total Air Carrier:	106	11	116	96	9	1	11	--	--	116	--	--	--	233	84,983	38.68
	Total Air Cargo:	13	*	14	6	*	--	7	--	--	14	--	--	--	27	9,917	4.51
	Total Air Taxi:	19	1	20	18	--	--	2	--	--	20	--	--	--	40	14,600	6.64
	Total General Aviation:	124	--	124	124	--	--	--	--	--	124	--	--	--	248	90,520	41.19
	Total Military:	27	*	27	27	--	--	*	--	--	27	17	--	17	71	19,743	8.98
	TOTAL OPERATIONS:	289	12	301	271	9	1	20	--	--	301	17	--	17	619	219,763	100.00

Notes: [1]Average daily operations have been rounded to the nearest whole number. Total daily and annual operations may not add up due to rounding. * indicates average daily operations are less than 0.5. - indicates no operations for this aircraft type or category.
[2]Stage length: 1 = 0-500 nautical miles; 2 = 501-1,000 nautical miles; and 3 = 1,001-1,500 nautical miles.
[3]Total annual military operations are based on a 260-day-per-year operating period. ATC T-37/T-38 operations are based on a 365-day-per-year operating period.
[4]Transient aircraft associated with RCCF operations or Headquarters 10th Air Force.

Table H-2d

Summary of Daily and Annual Aircraft Operations for the Proposed Action for Modeled Year 2012[1]

		Arrivals			Departures by Stage Length[2]							Touch-and-Go			Total Operations		
					Day			Night									
Category	Aircraft Type	Day	Night	Total	1	2	3	1	2	3	Total	Day	Night	Total	Daily Operations	Annual Operations[3]	% of Total Annual Operations
Air Carrier	B-727-100/200	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	B-737/DC-9-10/30	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	B-737-300/400	57	1	58	49	8	1	0	-	-	58	-	-	-	116	42,340	16.62
	B-737-500	33	10	43	33	-	-	10	-	-	43	-	-	-	86	31,390	12.32
	B-757	7	-	7	7	-	-	-	-	-	7	-	-	-	14	5,170	2.03
	B-767	4	-	4	4	-	-	-	-	-	4	-	-	-	7	2,585	1.01
	DC-8-70	0	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	DC-10	3	-	3	3	-	-	-	-	-	3	-	-	-	6	2,190	0.86
	MD-11	7	-	7	7	-	-	-	-	-	7	-	-	-	14	5,110	2.01
	MD-80/DC-9-80	24	3	26	21	3	-	3	-	-	27	-	-	-	53	19,347	7.72
	MD-88	10	-	10	10	-	-	-	-	-	10	-	-	-	20	7,300	2.86
Air Cargo	B-727-100/200	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	B-737/DC-9-10/30	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	DC-8-70	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	Multi-engine turboprop (BE1900, SW4)	6	-	6	5	-	-	1	-	-	6	-	-	-	12	4,380	1.72
	Single-engine turboprop (C208)	7	-	7	1	-	-	6	-	-	7	-	-	-	14	5,110	2.01
	B-757	1	-	1	1	-	-	-	-	-	1	-	-	-	2	670	0.26
	MD-80/DC-9-80	3	*	4	3	*	-	*	-	-	3	-	-	-	7	2,553	1.00
	B-767	*	-	*	*	-	-	-	-	-	*	-	-	-	1	335	0.13
Air Taxi	Multi-engine turboprop (BE1900, SW4)	23	-	23	21	-	-	2	-	-	23	-	-	-	46	16,790	6.59
	Single-engine turboprop (C208)	-	-	-	-	-	-	-	-	-	-	-	-	-	--	--	--
	Multi-engine piston prop (BE55, BE58)	1	1	2	1	-	-	1	-	-	2	-	-	-	4	1,460	0.57

Table H-2d, Page 2 of 2

Category	Aircraft Type	Arrivals Day	Arrivals Night	Arrivals Total	Departures by Stage Length[2] Day 1	Day 2	Day 3	Night 1	Night 2	Night 3	Total	Touch-and-Go Day	Touch-and-Go Night	Touch-and-Go Total	Total Operations Daily Operations	Annual Operations[3]	% of Total Annual Operations
General Aviation	Business jet (HS25, LR25, G3)	1	-	1	1	-	-	-	-	-	1	-	-	-	2	730	0.29
	Business jet (N265, LR35, MU3, DA02, C550)	18	-	18	18	-	-	-	-	-	18	-	-	-	36	13,140	5.16
	Multi-engine turboprop (BE90, BE20, AC69, C425)	24	-	24	24	-	-	-	-	-	24	-	-	-	48	17,520	6.88
	Single-engine turboprop (C208)	1	-	1	1	-	-	-	-	-	1	-	-	-	2	730	0.29
	Multi-engine piston prop (BE58, PA31, C414)	22	-	22	22	-	-	-	-	-	22	-	-	-	44	16,060	6.30
	Single-engine piston prop (C150, C120, C172)	55	-	55	55	-	-	-	-	-	55	-	-	-	110	40,150	15.76
Military	924th Fighter Group (F-16)	12	*	12	12	-	-	*	-	-	12	12	-	12	35	9,000	3.53
	Transient (F-16, F-15, A-10, and KC-135)[4]	*	-	*	*	-	-	-	-	-	*	-	-	-	1	180	0.07
	Transient (ATC T-37/T-38)	3	-	3	3	-	-	-	-	-	3	5	-	5	12	4,324	1.70
	Multiengine turboprop (Texas ANG C-12)	3	-	3	3	-	-	-	-	-	3	-	-	-	6	1,560	0.61
	Single engine piston prop (Texas ANG T-34)	3	-	3	3	-	-	-	-	-	3	-	-	-	6	1,560	0.61
	UH-60 (Texas ANG helicopter)	2	-	2	2	-	-	-	-	-	2	-	-	-	4	936	0.37
	AH-1F (Texas ANG helicopter)	1	-	1	1	-	-	-	-	-	1	-	-	-	3	749	0.29
	OH-58 (Texas ANG helicopter)	2	-	2	2	-	-	-	-	-	2	-	-	-	4	1,123	0.44
	UH-1A (Texas ANG helicopter)	1	-	1	1	-	-	-	-	-	1	-	-	-	2	312	0.12
	Total Air Carrier:	145	14	158	134	11	1	13	--	--	159	--	--	--	317	115,431	45.30
	Total Air Cargo:	17	*	18	10	--	--	7	--	--	17	--	--	--	36	13,049	5.12
	Total Air Taxi:	24	1	25	22	--	--	3	--	--	25	--	--	--	50	18,250	7.16
	Total General Aviation:	121	--	121	121	--	--	--	--	--	121	--	--	--	242	88,330	34.67
	Total Military:	27	*	27	27	--	--	*	--	--	27	17	--	17	71	19,743	7.75
	TOTAL OPERATIONS:	334	15	349	314	11	1	23	--	--	349	17	--	17	715	254,803	100.00

Notes: [1]Average daily operations have been rounded to nearest whole number. Total daily and annual operations may not add due to rounding. * indicates average daily operations are less than 0.5. - indicates no operations for this aircraft type or category.
[2]Stage Length: 1 = 0-500 nautical miles; 2 = 501-1,000 nautical miles; and 3 = 1,001-1,500 nautical miles.
[3]Total annual military operations are based on a 260 day per year operating period. ATC T-37/T-38 operations are based on a 365-day-per-year operating period.
[4]Transient aircraft associated with RCCF operations or Headquarters 10th Air Force.

between the Proposed Action and General Aviation/Air Cargo Airport Alternative is the result of the continued operation of RMMA for the General Aviation/Air Cargo Airport Alternative.

Table H-3

Percentage Day-Night Split of Aircraft Operations

Category	1994		1997		2002		2012	
	Day	Night	Day	Night	Day	Night	Day	Night
Air Carrier*	-	-	90	10	91	9	92	8
Air Taxi*	-	-	92	8	92	8	92	8
Air Cargo	63	37	82	18	82	18	88	12
General Aviation	-	-	100	0	100	0	100	0
Military (Fixed Wing)	99	1	99	1	99	1	99	1
Military (Helicopters)	99	1	99	1	99	1	99	1

Note: *Not applicable for General Aviation/Air Cargo Airport Alternative.

Average daily operations assigned to each flight track (by percent and time period) for the Proposed Action are provided for each of the modeled years in Tables H-5a through H-5d for civilian aircraft operations and Table H-6 for military aircraft operations. Civilian aircraft operations in Tables H-5a through H-5d are presented only for applicable stage length and time periods.

Based on wind patterns in the Bergstrom AFB area and existing flight operations at the base, it was assumed that 70 percent of the annual average daily operations would depart to the south (or arrive from the north) and 30 percent would depart to the north (or arrive from the south). For the Proposed Action, it was assumed that 65 percent of air carrier/air cargo operations and 5 percent of general aviation operations, would use existing Runway 17R/35L, and 35 and 95 percent, respectively, would use new Runway 17L/35R, because Runway 17R/35L is 3,250 feet longer and closer to the proposed location of the new air carrier passenger terminal. New Runway 17L/35R would be closer to the proposed location of the general aviation facilities. For both the Proposed Action and the General Aviation/Air Cargo Airport Alternative, all military operations would use only existing Runway 17R/35L because of the location of the 924th FG facilities and existing runway barriers. It was also assumed that runway utilization would not vary for nighttime operations.

Because NOISEMAP does not directly support helicopter noise modeling, a separate analysis was performed to determine the contribution of Texas ANG helicopter operations to overall noise levels. Noise calculations were based on level flyover conditions which represent the most typical condition of an aircraft's entire flight envelope. An altitude of 500 feet above ground level (AGL) was selected as the most probable worst-case altitude for flight safety reasons.

Table H-4

Aircraft Used in Noise Analysis Modeling With Modeled Type

Category	Aircraft Type	Source	Modeled Type
Air Carrier	B-727-100/200	INM	727Q15
	B-737/DC-9-10/30	INM	737QN
	B-737-300/400	INM	737300
	B-737-500	INM	737300
	B-757	INM	757RR
	B-767	INM	767CF6
	DC-8-70	INM	DC870
	DC-10	INM	DC1030
	MD-11	INM	DC1030
	MD-80/DC-9-80	INM	MD81
	MD-88	INM	MD81
Air Cargo	B-727-100/200	INM	727Q15
	B-737/DC-9-10/30	INM	737QN
	DC-8-70	INM	DC870
	Multi-engine turboprop (BE1900, SW4)	INM	DHC6
	Single-engine turboprop (C208)	INM	DHC6
	B-757	INM	757RR
	MD-80/DC-9-80	INM	MD81
	B-767	INM	767CF6
Air Taxi	Multi-engine turboprop (BE1900, SW4)	INM	DHC6
	Single-engine turboprop (C208)	INM	DHC6
	Multi-engine piston prop (BE55, BE58)	INM	BEC58P
General Aviation	Business jet (HS25, LR25, G3)	INM	GIIB
	Business jet (N265, LR35, MU3, DA02, C550)	INM	CNA500
	Multi-engine turboprop (BE90, BE20, AC69, C425)	INM	CNA441
	Single-engine turboprop (C208)	INM	DHC6
	Multi-engine piston prop (BE58, PA31, C414)	INM	BEC58P
	Single-engine piston prop (C150, C120, C172)	INM	COMSEP
Military	924th Fighter Group F-16	NOISEMAP	F-16
	Transient Aircraft (F-15, F-16, A-10, and KC-135)	NOISEMAP	F-16
	Transient Aircraft (T-37)	NOISEMAP	T-37
	Transient Aircraft (T-38)	NOISEMAP	T-38
	Multi-engine turboprop (Texas ANG C-12)	NOISEMAP	C-12
	Single-engine piston prop (Texas ANG T-34)	NOISEMAP	T-34

Reference noise data for the UH-1A, AH-1F, and OH-58 helicopters were obtained from the Department of the Army (U.S. Army 1978). Reference noise data for the UH-60 helicopter were obtained from the FAA Heliport Noise Model (U.S. Department of Transportation, Federal Aviation Administration 1988). The analysis is based on the calculated day-night sound level (L_{dn}) of the aircraft under the assumptions presented above. The reference noise data and the calculated L_{dn} values are presented in Table H-7.

Table II-5a: Assignment of Proposed Action Average Annual Daily Civilian Operations - 1994

	Day/Night	Day	Day	Day	Day	Night	Night	Night	Night
	Track	CA1	CA2	CA3	CA4	CA1	CA2	CA3	CA4
	Runway	35L	35R	17R	17L	35L	35R	17R	17L
	Stage Length	Arrival	Arrival	Arrival	Arrival	Arrival	Arrival	Arrival	Arrival
	Aircraft Type								
Air Carrier	B-727-100/200	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0
	B-737-300/400	0	0	0	0	0	0	0	0
	B-737-500	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0
	DC-10	0	0	0	0	0	0	0	0
	MD-11	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0
	MD-88	0	0	0	0	0	0	0	0
Air Cargo	B-727-100/200	0.13	0	0.30	0	0.02	0	0.04	0
	B-737/DC-9-10/30	0.32	0	0.74	0	0.04	0	0.08	0
	DC-8-70	0.01	0	0.03	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	2.10	0	4.90	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0	0	0	0	0	0	0	0
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0

Table H-5a, Page 2 of 5

	Day/Night	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day
	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	CT9	CT10	CT11	CT12	CT13	CT14	CT15	CT16	CT17	CT18	CT19	CT20
	Runway	17R	17R	17R	17R	17R	17R	17L	17L	17L	17L	17L	17L	35L	35L	35L	35L	35R	35R	35R	35R
	Stage Length	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Aircraft Type																				
Air Carrier	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737-300/400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737-500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Cargo	B-727-100/200	0.04	0.01	0.04	0.02	0.03	0.07	0	0	0	0	0	0	0.06	0	0.02	0.01	0	0	0	0
	B-737/DC-9-10/30	0.12	0.03	0.12	0.06	0.09	0.18	0	0	0	0	0	0	0.16	0.01	0.05	0.03	0	0	0	0
	DC-8-70	0.01	0	0.01	0	0.01	0.01	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0.14	0.04	0.04	0.07	0.11	0.21	0	0	0	0	0	0	0.2	0.02	0.06	0.03	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table H-5a. Page 3 of 5

	Day/Night	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day
	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	CT9	CT10	CT11	CT12	CT13	CT14	CT15	CT16	CT17	CT18	CT19	CT20
	Runway	17R	17R	17R	17R	17R	17R	17L	17L	17L	17L	17L	17L	35L	35L	35L	35L	35R	35R	35R	35R
	Stage Length	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Aircraft Type																				
Air Carrier	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737-300/400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737-500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Cargo	B-727-100/200	0.01	0	0.01	0	0	0.01	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0.04	0.01	0.04	0.02	0.03	0.06	0	0	0	0	0	0	0.05	0	0.02	0.01	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General Aviation	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table H-5a, Page 4 of 5

	Day/Night	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day
	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	CT9	CT10	CT11	CT12	CT13	CT14	CT15	CT16	CT17	CT18	CT19	CT20
	Runway	17R	17R	17R	17R	17R	17R	17L	17L	17L	17L	17L	17L	35L	35L	35L	35L	35R	35R	35R	35R
	Stage Length	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Aircraft Type																				
Air Carrier	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737-300/400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737-500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table H-5a, Page 5 of 5

	Day/Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night
	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	CT9	CT10	CT11	CT12	CT13	CT14	CT15	CT16	CT17	CT18	CT19	CT20
	Runway	17R	17R	17R	17R	17R	17R	17L	17L	17L	17L	17L	17L	35L	35L	35L	35L	35R	35R	35R	35R
	Stage Length	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Aircraft Type																				
Air Carrier	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737-300/400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737-500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Cargo	B-727-100/200	0.01	0	0.01	0.01	0.01	0.02	0	0	0	0	0	0	0.02	0	0.01	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0.01	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0.84	0.21	0.84	0.42	0.63	1.26	0	0	0	0	0	0	1.17	0.09	0.36	0.18	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table H-5b: Assignment of Proposed Action Average Annual Daily Civilian Operations - 1997

	Day/Night	Day	Day	Day	Day	Night	Night	Night	Night
	Track	CA1	CA2	CA3	CA4	CA1	CA2	CA3	CA4
	Runway	35L	35R	17R	17L	35L	35R	17R	17L
	Stage Length	Arrival	Arrival	Arrival	Arrival	Arrival	Arrival	Arrival	Arrival
	Aircraft Type								
Air Carrier	B-727-100/200	1.10	0.59	2.57	1.38	0.37	0.20	0.86	0.47
	B-737/DC-9-10/30	3.67	1.97	8.55	4.61	0.37	0.20	0.86	0.47
	B-737-300/400	5.46	2.94	12.74	6.86	0.20	0.11	0.46	0.25
	B-737-500	1.95	1.05	4.55	2.45	0.59	0.32	1.37	0.74
	B-757	0.73	0.39	1.71	0.92	0	0	0	0
	B-767	0.37	0.20	0.86	0.46	0	0	0	0
	DC-8-70	0.18	0.10	0.43	0.23	0	0	0	0
	DC-10	0.39	0.21	0.91	0.49	0	0	0	0
	MD-11	0.39	0.21	0.91	0.49	0	0	0	0
	MD-80/DC-9-80	2.38	1.28	5.56	2.99	0.37	0.20	0.86	0.47
	MD-88	0.78	0.42	1.82	0.98	0	0	0	0
Air Cargo	B-727-100/200	0.07	0.04	0.16	0.09	0.02	0.01	0.05	0.02
	B-737/DC-9-10/30	0.23	0.13	0.55	0.29	0.02	0.01	0.05	0.02
	DC-8-70	0.01	0.01	0.03	0.01	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0.39	0.21	0.91	0.49	0	0	0	0
	Single-engine turboprop (C208)	1.37	0.74	3.19	1.72	0	0	0	0
	B-757	0.05	0.03	0.11	0.06	0	0	0	0
	MD-80/DC-9-80	0.15	0.08	0.35	0.19	0.02	0.01	0.05	0.02
	B-767	0.02	0.01	0.05	0.03	0	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	3.12	1.68	7.28	3.92	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0.20	0.11	0.46	0.25	0.20	0.11	0.46	0.25
General	Business jet (HS25, LR25, G3)	0.06	1.14	0.14	2.66	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0.18	3.42	0.42	7.98	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0.33	6.27	0.77	14.63	0	0	0	0
	Single-engine turboprop (C208)	0.02	0.29	0.04	0.67	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0.35	6.56	0.81	15.30	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0.98	18.53	2.28	43.23	0	0	0	0

Table H-5b, Page 2 of 6

	Day/Night	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day
	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	CT9	CT10	CT11	CT12	CT13	CT14	CT15	CT16	CT17	CT18	CT19	CT20
	Runway	17R	17R	17R	17R	17R	17R	17L	17L	17L	17L	17L	17L	35L	35L	35L	35L	35R	35R	35R	35R
	Stage Length	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Aircraft Type																				
Air Carrier	B-727-100/200	0.43	0.11	0.43	0.21	0.32	0.64	0.23	0.06	0.23	0.11	0.17	0.34	0.59	0.05	0.18	0.09	0.32	0.02	0.1	0.05
	B-737/DC-9-10/30	1.2	0.3	1.2	0.6	0.9	1.79	0.64	0.16	0.64	0.32	0.48	0.97	1.67	0.13	0.51	0.26	0.9	0.07	0.28	0.14
	B-737-300/400	1.91	0.48	1.91	0.96	1.43	2.87	1.03	0.26	1.03	0.51	0.77	1.54	2.66	0.2	0.82	0.41	1.43	0.11	0.44	0.22
	B-737-500	0.91	0.23	0.91	0.46	0.68	1.37	0.49	0.12	0.49	0.25	0.37	0.74	1.27	0.1	0.39	0.2	0.68	0.05	0.21	0.11
	B-757	0.34	0.09	0.34	0.17	0.26	0.51	0.18	0.05	0.18	0.09	0.14	0.28	0.48	0.04	0.15	0.07	0.26	0.02	0.08	0.04
	B-767	0.17	0.04	0.17	0.09	0.13	0.26	0.09	0.02	0.09	0.05	0.07	0.14	0.24	0.02	0.07	0.04	0.13	0.01	0.04	0.02
	DC-8-70	0.09	0.02	0.09	0.04	0.06	0.13	0.05	0.01	0.05	0.02	0.03	0.07	0.12	0.01	0.04	0.02	0.06	0	0.02	0.01
	DC-10	0.18	0.05	0.18	0.09	0.14	0.27	0.1	0.02	0.1	0.05	0.07	0.15	0.25	0.02	0.08	0.04	0.14	0.01	0.04	0.02
	MD-11	0.18	0.05	0.18	0.09	0.14	0.27	0.1	0.02	0.1	0.05	0.07	0.15	0.25	0.02	0.08	0.04	0.14	0.01	0.04	0.02
	MD-80/DC-9-80	0.94	0.23	0.94	0.47	0.7	1.41	0.51	0.13	0.51	0.25	0.38	0.76	1.31	0.1	0.4	0.2	0.7	0.05	0.22	0.11
	MD-88	0.36	0.09	0.36	0.18	0.27	0.55	0.2	0.05	0.2	0.1	0.15	0.29	0.51	0.04	0.16	0.08	0.27	0.02	0.08	0.04
Air Cargo	B-727-100/200	0.03	0.01	0.03	0.01	0.02	0.04	0.02	0	0.02	0.01	0.01	0.02	0.04	0	0.01	0.01	0.02	0	0.01	0
	B-737/DC-9-10/30	0.08	0.02	0.08	0.04	0.06	0.12	0.04	0.01	0.04	0.02	0.03	0.06	0.11	0.01	0.03	0.02	0.06	0	0.02	0.01
	DC-8-70	0.01	0	0.01	0	0	0.01	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0.18	0.05	0.18	0.09	0.14	0.27	0.1	0.02	0.1	0.05	0.07	0.15	0.25	0.02	0.08	0.04	0.14	0.01	0.04	0.02
	Single-engine turboprop (C208)	0.09	0.02	0.09	0.05	0.07	0.14	0.05	0.01	0.05	0.02	0.04	0.07	0.13	0.01	0.04	0.02	0.07	0.01	0.02	0.01
	B-757	0.02	0.01	0.02	0.01	0.02	0.03	0.01	0	0.01	0.01	0.01	0.02	0.03	0	0.01	0	0.02	0	0.01	0
	MD-80/DC-9-80	0.06	0.02	0.06	0.03	0.05	0.09	0.03	0.01	0.03	0.02	0.02	0.05	0.09	0.01	0.03	0.01	0.05	0	0.01	0.01
	B-767	0.01	0	0.01	0.01	0.01	0.02	0.01	0	0.01	0	0	0.01	0.02	0	0	0	0.01	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	1.37	0.34	1.37	0.68	1.02	2.05	0.74	0.18	0.74	0.37	0.55	1.1	1.9	0.15	0.59	0.29	1.02	0.08	0.32	0.16
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0.09	0.02	0.09	0.05	0.07	0.14	0.05	0.01	0.05	0.02	0.04	0.07	0.13	0.01	0.04	0.02	0.07	0.01	0.02	0.01
General	Business jet (HS25, LR25, G3)	0.03	0.01	0.03	0.01	0.02	0.04	0.53	0.13	0.53	0.27	0.4	0.8	0.04	0	0.01	0.01	0.74	0.06	0.23	0.11
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0.08	0.02	0.08	0.04	0.06	0.13	1.6	0.4	1.6	0.8	1.2	2.39	0.12	0.01	0.04	0.02	2.22	0.17	0.68	0.34
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0.15	0.04	0.15	0.08	0.12	0.23	2.93	0.73	2.93	1.46	2.19	4.39	0.21	0.02	0.07	0.03	4.08	0.31	1.25	0.63
	Single-engine turboprop (C208)	0.01	0	0.01	0	0.01	0.01	0.13	0.03	0.13	0.07	0.1	0.2	0.01	0	0	0	0.19	0.01	0.06	0.03
	Multi-engine piston prop (BE58, PA31, C414)	0.16	0.04	0.16	0.08	0.12	0.24	3.06	0.76	3.06	1.53	2.29	4.59	0.22	0.02	0.07	0.03	4.26	0.33	1.31	0.66
	Single-engine piston prop (C150, C120, C172)	0.46	0.11	0.46	0.23	0.34	0.68	8.65	2.16	8.65	4.32	6.48	13	0.63	0.05	0.2	0.1	12	0.93	3.71	1.85

Table H-5b, Page 3 of 6

	Day/Night	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day
	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	CT9	CT10	CT11	CT12	CT13	CT14	CT15	CT16	CT17	CT18	CT19	CT20
	Runway	17R	17R	17R	17R	17R	17R	17L	17L	17L	17L	17L	17L	35L	35L	35L	35L	35R	35R	35R	35R
	Stage Length	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Aircraft Type																				
Air Carrier	B-727-100/200	0.09	0.02	0.09	0.04	0.06	0.13	0.05	0.01	0.05	0.02	0.03	0.07	0.12	0.01	0.04	0.02	0.06	0	0.02	0.01
	B-737/DC-9-10/30	0.52	0.13	0.52	0.26	0.39	0.78	0.29	0.07	0.28	0.14	0.21	0.42	0.72	0.06	0.22	0.11	0.39	0.03	0.12	0.06
	B-737-300/400	0.55	0.14	0.55	0.27	0.41	0.82	0.29	0.07	0.29	0.15	0.22	0.44	0.76	0.06	0.23	0.12	0.41	0.03	0.13	0.06
	B-737-500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0.17	0.04	0.17	0.09	0.13	0.26	0.09	0.02	0.09	0.05	0.07	0.14	0.24	0.02	0.07	0.04	0.13	0.01	0.04	0.02
	MD-88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Cargo	B-727-100/200	0	0	0	0	0	0.01	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0.03	0.01	0.03	0.01	0.02	0.04	0.01	0	0.01	0.01	0.01	0.02	0.04	0	0.01	0.01	0.02	0	0.01	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0.01	0	0.01	0	0.01	0.01	0	0	0	0	0	0.01	0.01	0	0	0	0.01	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table H-5b, Page 4 of 6

	Day/Night	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day
	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	CT9	CT10	CT11	CT12	CT13	CT14	CT15	CT16	CT17	CT18	CT19	CT20
	Runway	17R	17R	17R	17R	17R	17R	17L	17L	17L	17L	17L	17L	35L	35L	35L	35L	35R	35R	35R	35R
	Stage Length	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Aircraft Type																				
Air Carrier	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737-300/400	0.09	0.02	0.09	0.05	0.07	0.14	0.05	0.01	0.05	0.02	0.04	0.07	0.13	0.01	0.04	0.02	0.07	0.01	0.02	0.01
	B-737-500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table H-5b, Page 5 of 6

	Day/Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night
	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	CT9	CT10	CT11	CT12	CT13	CT14	CT15	CT16	CT17	CT18	CT19	CT20
	Runway	17R	17R	17R	17R	17R	17R	17L	17L	17L	17L	17L	17L	35L	35L	35L	35L	35R	35R	35R	35R
	Stage Length	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Aircraft Type																				
Air Carrier	B-727-100/200	0.09	0.02	0.09	0.04	0.06	0.13	0.05	0.01	0.05	0.02	0.03	0.07	0.12	0.01	0.04	0.02	0.06	0	0.02	0.01
	B-737/DC-9-10/30	0.09	0.02	0.09	0.04	0.06	0.13	0.05	0.01	0.05	0.02	0.03	0.07	0.12	0.01	0.04	0.02	0.06	0	0.02	0.01
	B-737-300/400	0.09	0.02	0.09	0.05	0.07	0.14	0.05	0.01	0.05	0.02	0.04	0.07	0.13	0.01	0.04	0.02	0.07	0.02	0.02	0.01
	B-737-500	0.27	0.07	0.27	0.14	0.2	0.41	0.15	0.04	0.15	0.07	0.11	0.22	0.38	0.03	0.12	0.06	0.2	0	0.06	0.03
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0.17	0.04	0.17	0.09	0.13	0.26	0.09	0.02	0.09	0.05	0.07	0.14	0.24	0.02	0.07	0.04	0.13	0.01	0.04	0.02
	MD-88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Cargo	B-727-100/200	0.01	0	0.01	0	0	0.01	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0.01	0	0.01	0	0	0.01	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0.55	0.14	0.55	0.27	0.41	0.82	0.29	0.07	0.29	0.15	0.22	0.44	0.76	0.06	0.23	0.12	0.41	0.03	0.13	0.06
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0.01	0	0.01	0.01	0.01	0.02	0.01	0	0.01	0	0	0.01	0.02	0	0	0	0.01	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	0.09	0.02	0.09	0.05	0.07	0.14	0.05	0.01	0.05	0.02	0.04	0.07	0.13	0.01	0.04	0.02	0.07	0.01	0.02	0.01
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0.09	0.02	0.09	0.05	0.07	0.14	0.05	0.01	0.05	0.02	0.04	0.07	0.13	0.01	0.04	0.02	0.07	0.01	0.02	0.01
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table H-5b, Page 6 of 6

	Day/Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night
	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	CT9	CT10	CT11	CT12	CT13	CT14	CT15	CT16	CT17	CT18	CT19	CT20
	Runway	17R	17R	17R	17R	17R	17R	17L	17L	17L	17L	17L	17L	35L	35L	35L	35L	35R	35R	35R	35R
	Stage Length	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Aircraft Type																				
Air Carrier	B-727-100/200	0.09	0.02	0.09	0.04	0.07	0.13	0.05	0.01	0.05	0.02	0.04	0.07	0.12	0.01	0.04	0.02	0.07	0.01	0.02	0.01
	B-737/DC-9-10/30	0.09	0.02	0.09	0.04	0.07	0.13	0.05	0.01	0.05	0.02	0.04	0.07	0.12	0.01	0.04	0.02	0.07	0.01	0.02	0.01
	B-737-300/400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737-500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table II-5c: Assignment of Proposed Action Average Annual Daily Civilian Operations - 2002

	Day/Night	Day	Day	Day	Day	Night	Night	Night	Night
	Track	CA1	CA2	CA3	CA4	CA1	CA2	CA3	CA4
	Runway	35L	35R	17R	17L	35L	35R	17R	17L
	Stage Length	Arrival	Arrival	Arrival	Arrival	Arrival	Arrival	Arrival	Arrival
	Aircraft Type								
Air Carrier	B-727-100/200	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0
	B-737-300/400	7.41	3.99	17.29	9.31	0.39	0.21	0.91	0.49
	B-737-500	5.27	2.84	12.29	6.62	1.37	0.74	3.19	1.72
	B-757	1.03	0.56	2.41	1.30	0	0	0	0
	B-767	0.34	0.19	0.80	0.43	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0
	DC-10	0.59	0.32	1.37	0.74	0	0	0	0
	MD-11	0.98	0.53	2.28	1.23	0	0	0	0
	MD-80/DC-9-80	3.44	1.85	8.04	4.33	0.33	0.18	0.76	0.41
	MD-88	1.56	0.84	3.64	1.96	0	0	0	0
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0.59	0.32	1.37	0.74	0	0	0	0
	Single-engine turboprop (C208)	1.37	0.74	3.19	1.72	0	0	0	0
	B-757	0.14	0.07	0.32	0.17	0	0	0	0
	MD-80/DC-9-80	0.46	0.25	1.06	0.57	0.06	0.03	0.15	0.08
	B-767	0.05	0.02	0.11	0.06	0	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	3.51	1.89	8.19	4.41	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0.20	0.11	0.46	0.25	0.20	0.11	0.46	0.25
General	Business jet (HS25, LR25, G3)	0.05	0.86	0.11	2.00	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0.23	4.28	0.53	9.98	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0.35	6.56	0.81	15.30	0	0	0	0
	Single-engine turboprop (C208)	0.02	0.29	0.04	0.67	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0.33	6.27	0.77	14.63	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0.90	17.10	2.10	39.90	0	0	0	0

Table H-5c, Page 2 of 5

	Day/Night	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day
	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	CT9	CT10	CT11	CT12	CT13	CT14	CT15	CT16	CT17	CT18	CT19	CT20
	Runway	17R	17R	17R	17R	17R	17R	17L	17L	17L	17L	17L	17L	35L	35L	35L	35L	35R	35R	35R	35R
	Stage Length	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Aircraft Type																				
Air Carrier	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737-300/400	2.73	0.68	2.73	1.37	2.05	4.1	1.47	0.37	1.47	0.74	1.1	2.21	3.8	0.29	1.17	0.59	2.05	0.16	0.63	0.32
	B-737-500	2.46	0.61	2.46	1.23	1.84	3.69	1.32	0.33	1.32	0.66	0.99	1.98	3.42	0.26	1.05	0.53	1.84	0.14	0.57	0.28
	B-757	0.48	0.12	0.48	0.24	0.36	0.73	0.26	0.07	0.26	0.13	0.2	0.39	0.67	0.05	0.21	0.1	0.36	0.03	0.11	0.06
	B-767	0.16	0.04	0.16	0.08	0.12	0.24	0.09	0.02	0.09	0.04	0.07	0.13	0.22	0.02	0.07	0.03	0.12	0.01	0.04	0.02
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-10	0.27	0.07	0.27	0.14	0.2	0.41	0.15	0.04	0.15	0.07	0.11	0.22	0.38	0.03	0.12	0.06	0.2	0.02	0.06	0.03
	MD-11	0.46	0.11	0.46	0.23	0.34	0.68	0.25	0.06	0.25	0.12	0.18	0.37	0.63	0.05	0.2	0.1	0.34	0.03	0.11	0.05
	MD-80/DC-9-80	1.45	0.36	1.45	0.73	1.09	2.18	0.78	0.2	0.78	0.39	0.59	1.17	2.02	0.16	0.62	0.31	1.09	0.08	0.33	0.17
	MD-88	0.73	0.18	0.73	0.36	0.55	1.09	0.39	0.1	0.39	0.2	0.29	0.59	1.01	0.08	0.31	0.16	0.55	0.04	0.17	0.08
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0.18	0.05	0.18	0.09	0.14	0.27	0.1	0.02	0.1	0.05	0.07	0.15	0.25	0.02	0.08	0.04	0.14	0.01	0.04	0.02
	Single-engine turboprop (C208)	0.09	0.02	0.09	0.05	0.07	0.14	0.05	0.01	0.05	0.02	0.04	0.07	0.13	0.01	0.04	0.02	0.07	0.01	0.02	0.01
	B-757	0.06	0.02	0.06	0.03	0.05	0.09	0.03	0.01	0.03	0.02	0.03	0.05	0.09	0.01	0.03	0.01	0.05	0	0.01	0.01
	MD-80/DC-9-80	0.19	0.05	0.19	0.09	0.14	0.28	0.1	0.03	0.1	0.05	0.08	0.15	0.26	0.02	0.08	0.04	0.14	0.01	0.04	0.02
	B-767	0.02	0.01	0.02	0.01	0.02	0.03	0.01	0	0.01	0.01	0.01	0.02	0.03	0	0.01	0	0.02	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	1.55	0.39	1.55	0.77	1.16	2.32	0.83	0.21	0.83	0.42	0.62	1.25	2.15	0.17	0.66	0.33	1.16	0.09	0.36	0.18
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0.09	0.02	0.09	0.05	0.07	0.14	0.05	0.01	0.05	0.02	0.04	0.07	0.13	0.01	0.04	0.02	0.07	0.01	0.02	0.01
General	Business jet (HS25, LR25, G3)	0.02	0.01	0.02	0.01	0.02	0.03	0.4	0.1	0.4	0.2	0.3	0.6	0.03	0	0.01	0	0.56	0.04	0.17	0.09
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0.11	0.03	0.11	0.05	0.08	0.16	2	0.5	2	1	1.5	2.99	0.15	0.01	0.05	0.02	2.78	0.21	0.86	0.43
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0.16	0.04	0.16	0.08	0.12	0.24	3.06	0.76	3.06	1.53	2.29	4.59	0.22	0.02	0.07	0.03	4.26	0.33	1.31	0.66
	Single-engine turboprop (C208)	0.01	0	0.01	0	0.01	0.01	0.13	0.03	0.13	0.07	0.1	0.2	0.01	0	0	0	0.19	0.01	0.06	0.03
	Multi-engine piston prop (BE58, PA31, C414)	0.15	0.04	0.15	0.08	0.12	0.23	2.93	0.73	2.93	1.46	2.19	4.39	0.21	0.02	0.07	0.03	4.08	0.31	1.25	0.63
	Single-engine piston prop (C150, C120, C172)	0.42	0.11	0.42	0.21	0.32	0.63	7.98	2	7.98	3.99	5.99	12	0.59	0.05	0.18	0.09	11.1	0.86	3.42	1.71

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	Day/Night	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day
	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	CT9	CT10	CT11	CT12	CT13	CT14	CT15	CT16	CT17	CT18	CT19	CT20
	Runway	17R	17R	17R	17R	17R	17R	17L	17L	17L	17L	17L	17L	35L	35L	35L	35L	35R	35R	35R	35R
	Stage Length	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Aircraft Type																				
Air Carrier	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737-300/400	0.64	0.16	0.64	0.32	0.48	0.96	0.34	0.09	0.34	0.17	0.26	0.51	0.89	0.07	0.27	0.14	0.48	0.04	0.15	0.07
	B-737-500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0.16	0.04	0.16	0.08	0.12	0.24	0.08	0.02	0.08	0.04	0.06	0.13	0.22	0.02	0.07	0.03	0.12	0.01	0.04	0.02
	MD-88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0.02	0.01	0.02	0.01	0.02	0.04	0.01	0	0.01	0.01	0.01	0.02	0.03	0	0.01	0.01	0.02	0	0.01	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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	Day/Night	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day
	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	CT9	CT10	CT11	CT12	CT13	CT14	CT15	CT16	CT17	CT18	CT19	CT20
	Runway	17R	17R	17R	17R	17R	17R	17L	17L	17L	17L	17L	17L	35L	35L	35L	35L	35R	35R	35R	35R
	Stage Length	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Aircraft Type																				
Air Carrier	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737-300/400	0.09	0.02	0.09	0.05	0.07	0.14	0.05	0.01	0.05	0.02	0.04	0.07	0.13	0.01	0.04	0.02	0.07	0.01	0.02	0.01
	B-737-500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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	Day/Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night
	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	CT9	CT10	CT11	CT12	CT13	CT14	CT15	CT16	CT17	CT18	CT19	CT20
	Runway	17R	17R	17R	17R	17R	17R	17L	17L	17L	17L	17L	17L	35L	35L	35L	35L	35R	35R	35R	35R
	Stage Length	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Aircraft Type																				
Air Carrier	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737-300/400	0.18	0.05	0.18	0.09	0.14	0.27	0.1	0.02	0.1	0.05	0.07	0.15	0.25	0.02	0.08	0.04	0.14	0.01	0.04	0.02
	B-737-500	0.64	0.16	0.64	0.32	0.48	0.96	0.34	0.09	0.34	0.17	0.26	0.51	0.89	0.07	0.27	0.14	0.48	0.04	0.15	0.07
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0.15	0.04	0.15	0.08	0.11	0.23	0.08	0.02	0.08	0.04	0.06	0.12	0.21	0.02	0.07	0.03	0.11	0.01	0.04	0.02
	MD-88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0.09	0.02	0.09	0.05	0.07	0.14	0.05	0.01	0.05	0.02	0.04	0.07	0.13	0.01	0.04	0.02	0.07	0.01	0.02	0.01
	Single-engine turboprop (C208)	0.55	0.14	0.55	0.27	0.41	0.82	0.29	0.07	0.29	0.15	0.22	0.44	0.76	0.06	0.23	0.12	0.41	0.03	0.13	0.06
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0.03	0.01	0.03	0.02	0.02	0.05	0.02	0	0.02	0.01	0.01	0.02	0.04	0	0.01	0.01	0.02	0	0.01	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	0.09	0.02	0.09	0.05	0.07	0.14	0.05	0.01	0.05	0.02	0.04	0.07	0.13	0.01	0.04	0.02	0.07	0.01	0.02	0.01
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0.09	0.02	0.09	0.05	0.07	0.14	0.05	0.01	0.05	0.02	0.04	0.07	0.13	0.01	0.04	0.02	0.07	0.01	0.02	0.01
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table H-5d: Assignment of Proposed Action Annual Average Daily Civilian Operations - 2012

	Day/Night	Day	Day	Day	Day	Night	Night	Night	Night
	Track	CA1	CA2	CA3	CA4	CA1	CA2	CA3	CA4
	Runway	35L	35R	17R	17L	35L	35R	17R	17L
	Stage Length	Arrival	Arrival	Arrival	Arrival	Arrival	Arrival	Arrival	Arrival
	Aircraft Type								
Air Carrier	B-727-100/200	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0
	B-737-300/400	11.12	5.99	25.94	13.97	0.20	0.11	0.46	0.25
	B-737-500	6.44	3.47	15.02	8.09	1.95	1.05	4.55	2.45
	B-757	1.38	0.74	3.22	1.74	0	0	0	0
	B-767	0.69	0.37	1.61	0.87	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0
	DC-10	0.59	0.32	1.37	0.74	0	0	0	0
	MD-11	1.37	0.74	3.19	1.72	0	0	0	0
	MD-80/DC-9-80	4.66	2.51	10.88	5.86	0.50	0.27	1.17	0.63
	MD-88	1.95	1.05	4.55	2.45	0	0	0	0
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	1.17	0.63	2.73	1.47	0	0	0	0
	Single-engine turboprop (C208)	1.37	0.74	3.19	1.72	0	0	0	0
	B-757	0.18	0.10	0.42	0.22	0	0	0	0
	MD-80/DC-9-80	0.60	0.32	1.41	0.76	0.08	0.04	0.19	0.10
	B-767	0.09	0.05	0.21	0.11	0	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	4.49	2.42	10.47	5.64	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0.20	0.11	0.46	0.25	0.20	0.11	0.46	0.25
General	Business jet (HS25, LR25, G3)	0.02	0.29	0.04	0.67	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0.27	5.13	0.63	11.97	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0.36	6.84	0.84	15.96	0	0	0	0
	Single-engine turboprop (C208)	0.02	0.29	0.04	0.67	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0.33	6.27	0.77	14.63	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0.83	15.68	1.93	36.58	0	0	0	0

Table II-5d, Page 2 of 5

	Day/Night	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day
	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	CT9	CT10	CT11	CT12	CT13	CT14	CT15	CT16	CT17	CT18	CT19	CT20
	Runway	17R	17R	17R	17R	17R	17R	17L	17L	17L	17L	17L	17L	35L	35L	35L	35L	35R	35R	35R	35R
	Stage Length	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Aircraft Type																				
Air Carrier	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737-300/400	4.459	1.115	4.459	2.23	3.344	6.689	2.401	0.6	2.401	1.201	1.801	3.602	6.211	0.478	1.911	0.956	3.344	0.257	1.029	0.515
	B-737-500	3.003	0.751	3.003	1.502	2.252	4.505	1.617	0.404	1.617	0.809	1.213	2.426	4.183	0.322	1.287	0.644	2.252	0.173	0.693	0.347
	B-757	0.644	0.161	0.644	0.322	0.483	0.966	0.347	0.087	0.347	0.173	0.26	0.52	0.897	0.069	0.276	0.138	0.483	0.037	0.149	0.074
	B-767	0.322	0.081	0.322	0.161	0.242	0.483	0.173	0.043	0.173	0.087	0.13	0.26	0.449	0.035	0.138	0.069	0.242	0.019	0.074	0.037
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-10	0.273	0.068	0.273	0.137	0.205	0.41	0.147	0.037	0.147	0.074	0.11	0.221	0.38	0.029	0.117	0.059	0.205	0.016	0.063	0.032
	MD-11	0.637	0.159	0.637	0.319	0.478	0.956	0.343	0.086	0.343	0.172	0.257	0.515	0.887	0.068	0.273	0.137	0.478	0.037	0.147	0.074
	MD-80/DC-9-80	1.933	0.483	1.933	0.966	1.45	2.899	1.041	0.26	1.041	0.52	0.781	1.561	2.692	0.207	0.828	0.414	1.45	0.112	0.446	0.223
	MD-88	0.91	0.228	0.91	0.455	0.683	1.365	0.49	0.123	0.49	0.245	0.368	0.735	1.268	0.098	0.39	0.195	0.683	0.053	0.21	0.105
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0.455	0.114	0.455	0.228	0.341	0.683	0.245	0.061	0.245	0.123	0.184	0.368	0.634	0.049	0.195	0.098	0.341	0.026	0.105	0.053
	Single-engine turboprop (C208)	0.091	0.023	0.091	0.046	0.068	0.137	0.049	0.012	0.049	0.025	0.037	0.074	0.127	0.01	0.039	0.02	0.068	0.005	0.021	0.011
	B-757	0.084	0.021	0.084	0.042	0.063	0.126	0.045	0.011	0.045	0.023	0.034	0.068	0.117	0.009	0.036	0.018	0.063	0.005	0.019	0.01
	MD-80/DC-9-80	0.251	0.063	0.251	0.126	0.188	0.377	0.135	0.034	0.135	0.068	0.101	0.203	0.35	0.027	0.108	0.054	0.188	0.014	0.058	0.029
	B-767	0.042	0.01	0.042	0.021	0.031	0.063	0.023	0.006	0.023	0.011	0.017	0.034	0.058	0.004	0.018	0.009	0.031	0.002	0.01	0.005
Air Taxi	Multi-engine turboprop (BE1900, SW4)	1.911	0.478	1.911	0.956	1.433	2.867	1.029	0.257	1.029	0.515	0.772	1.544	2.662	0.205	0.819	0.41	1.433	0.11	0.441	0.221
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0.091	0.023	0.091	0.046	0.068	0.137	0.049	0.012	0.049	0.025	0.037	0.074	0.127	0.01	0.039	0.02	0.068	0.005	0.021	0.011
General	Business jet (HS25, LR25, G3)	0.007	0.002	0.007	0.004	0.005	0.011	0.133	0.033	0.133	0.067	0.1	0.2	0.01	8E-04	0.003	0.002	0.185	0.014	0.057	0.029
Aviation	*Business jet (N265, LR35, MU3, DA02, C550)*	0.126	0.032	0.126	0.063	0.095	0.189	2.394	0.599	2.394	1.197	1.796	3.591	0.176	0.014	0.054	0.027	3.335	0.257	1.026	0.513
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0.168	0.042	0.168	0.084	0.126	0.252	3.192	0.798	3.192	1.596	2.394	4.788	0.234	0.018	0.072	0.036	4.446	0.342	1.368	0.684
	Single-engine turboprop (C208)	0.007	0.002	0.007	0.004	0.005	0.011	0.133	0.033	0.133	0.067	0.1	0.2	0.01	8E-04	0.003	0.002	0.185	0.014	0.057	0.029
	Multi-engine piston prop (BE58, PA31, C414)	0.154	0.039	0.154	0.077	0.116	0.231	2.926	0.732	2.926	1.463	2.195	4.389	0.215	0.017	0.066	0.033	4.076	0.314	1.254	0.627
	Single-engine piston prop (C150, C120, C172)	0.385	0.096	0.385	0.193	0.289	0.578	7.315	1.829	7.315	3.658	5.486	10.97	0.536	0.041	0.165	0.083	10.19	0.784	3.135	1.568

Table II-5d, Page 3 of 5

	Day/Night	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day
	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	CT9	CT10	CT11	CT12	CT13	CT14	CT15	CT16	CT17	CT18	CT19	CT20
	Runway	17R	17R	17R	17R	17R	17R	17L	17L	17L	17L	17L	17L	35L	35L	35L	35L	35R	35R	35R	35R
	Stage Length	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Aircraft Type																				
Air Carrier	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737-300/400	0.728	0.182	0.728	0.364	0.546	1.092	0.392	0.098	0.392	0.196	0.294	0.588	1.014	0.078	0.312	0.156	0.546	0.042	0.168	0.084
	B-737-500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0.243	0.061	0.243	0.121	0.182	0.364	0.131	0.033	0.131	0.065	0.098	0.196	0.338	0.026	0.104	0.052	0.182	0.014	0.056	0.028
	MD-88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0.03	0.008	0.03	0.015	0.023	0.045	0.016	0.004	0.016	0.008	0.012	0.024	0.042	0.003	0.013	0.006	0.023	0.002	0.007	0.003
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table H-5d, Page 4 of 5

	Day/Night	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day
	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	CT9	CT10	CT11	CT12	CT13	CT14	CT15	CT16	CT17	CT18	CT19	CT20
	Runway	17R	17R	17R	17R	17R	17R	17L	17L	17L	17L	17L	17L	35L	35L	35L	35L	35R	35R	35R	35R
	Stage Length	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Aircraft Type																				
Air Carrier	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737-300/400	0.091	0.023	0.091	0.046	0.068	0.137	0.049	0.012	0.049	0.025	0.037	0.074	0.127	0.01	0.039	0.02	0.068	0.005	0.021	0.011
	B-737-500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table H-5d, Page 5 of 5

	Day/Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night	Night
	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	CT9	CT10	CT11	CT12	CT13	CT14	CT15	CT16	CT17	CT18	CT19	CT20
	Runway	17R	17R	17R	17R	17R	17R	17L	17L	17L	17L	17L	17L	35L	35L	35L	35L	35R	35R	35R	35R
	Stage Length	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Aircraft Type																				
Air Carrier	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737-300/400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737-500	0.91	0.228	0.91	0.455	0.683	1.365	0.49	0.123	0.49	0.245	0.368	0.735	1.268	0.098	0.39	0.195	0.683	0.053	0.21	0.105
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0.238	0.059	0.238	0.119	0.178	0.356	0.128	0.032	0.128	0.064	0.096	0.192	0.331	0.025	0.102	0.051	0.178	0.014	0.055	0.027
	MD-88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0.091	0.023	0.091	0.046	0.068	0.137	0.049	0.012	0.049	0.025	0.037	0.074	0.127	0.01	0.039	0.02	0.068	0.005	0.021	0.011
	Single-engine turboprop (C208)	0.546	0.137	0.546	0.273	0.41	0.819	0.294	0.074	0.294	0.147	0.221	0.441	0.761	0.059	0.234	0.117	0.41	0.032	0.126	0.063
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0.035	0.009	0.035	0.018	0.027	0.053	0.019	0.005	0.019	0.01	0.014	0.029	0.049	0.004	0.015	0.008	0.027	0.002	0.008	0.004
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Taxi	Multi-engine turboprop (BE1900, SW4)	0.182	0.046	0.182	0.091	0.137	0.273	0.098	0.025	0.098	0.049	0.074	0.147	0.254	0.02	0.078	0.039	0.137	0.011	0.042	0.021
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE55, BE58)	0.091	0.023	0.091	0.046	0.068	0.137	0.049	0.012	0.049	0.025	0.037	0.074	0.127	0.01	0.039	0.02	0.068	0.005	0.021	0.011
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table H-6: Assignment of Proposed Action Annual Average Daily Military Operations

Track	MA1	MA2	MA3	MA4	MA5	MA6	MA7	MA8	MT1	MT2	MT3	MT4	MT5	MT6	MT7	MT8	MC1	MC2	MC3	MC4	MC5	MC6	MC7	MC8	MC9	MC10	MC11	MC12	MC13
Track Type	Arr	Arr	Arr	Arr	Arr	Arr	Arr	Arr	Dep	Dep	Dep	Dep	Dep	Dep	Dep	Dep	CP	CP	CP	CP	CP	CP	CP	CP	CP	CP	CP	CP	CP
Runway	17R	17R	17R	35L	35L	35L	35L	17R	17R	17R	35L	17R	35L	35L	35L	17R	17R	17R	35L	35L	35L	17R	17R	35L	17R	17R	17R	35L	35L
Year: 1994																													
Percent of Operations (%)																													
924th FG F-16	30	30	10	7	7	16			35	30	14	5	12	1	3		50	8	15	5	8		8	2	4				
Texas ANG C-12																													
Texas ANG T-34																													
Transient (ATC T-37)			70		30								30			70										14	56	6	24
Transient (ATC T-38)			70		30								30			70	14	56	6	24									
Transient (Other Air Force)			70		30								30			70													
Number of Operations																													
924th FG F-16	3.461	3.461	1.154	0.808	0.808	1.846	0	0	4.038	3.461	1.615	0.577	1.385	0.115	0.346	0	5.769	0.923	1.731	0.577	0.923	0	0.923	0.231	0.462	0	0	0	0
Texas ANG C-12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Texas ANG T-34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transient (ATC T-37)	0	0	0.9	0	0.39	0	0	0	0	0	0	0	0.39	0	0	0.9	0	0	0	0	0	0	0	0	0	0.18	0.72	0.08	0.31
Transient (ATC T-38)	0	0	1.4	0	0.6	0	0	0	0	0	0	0	0.6	0	0	1.4	0.56	2.24	0.24	0.96	0	0	0	0	0	0	0	0	0
Transient (Other Air Force)	0	0	0.242	0	0.104	0	0	0	0	0	0	0	0.104	0	0	0.242	0	0	0	0	0	0	0	0	0	0	0	0	0
Year: 1997, 2002, and 2012																													
Percent of Operations (%)																													
924th FG F-16	30	30	10	7	7	16			35	30	14	5	12	1	3		50	8	15	5	8		8	2	4				
Texas ANG C-12			70		30								30			70													
Texas ANG T-34			70		30								30			70													
Transient (ATC T-37)			70		30								30			70										14	56	6	24
Transient (ATC T-38)			70		30								30			70	14	56	6	24									
Transient (Other Air Force)			70		30								30			70													
Number of Operations																													
924th FG F-16	3.461	3.461	1.154	0.808	0.808	1.846	0	0	4.038	3.461	1.615	0.577	1.385	0.115	0.346	0	5.769	0.923	1.731	0.577	0.923	0	0.923	0.231	0.462	0	0	0	0
Texas ANG C-12	0	0	2.1	0	0.9	0	0	0	0	0	0	0	0.9	0	0	2.1	0	0	0	0	0	0	0	0	0	0	0	0	0
Texas ANG T-34	0	0	2.1	0	0.9	0	0	0	0	0	0	0	0.9	0	0	2.1	0	0	0	0	0	0	0	0	0	0	0	0	0
Transient (ATC T-37)	0	0	0.9	0	0.39	0	0	0	0	0	0	0	0.39	0	0	0.9	0	0	0	0	0	0	0	0	0	0.18	0.72	0.08	0.31
Transient (ATC T-38)	0	0	1.4	0	0.6	0	0	0	0	0	0	0	0.6	0	0	1.4	0.56	2.24	0.24	0.96	0	0	0	0	0	0	0	0	0
Transient (Other Air Force)	0	0	0.242	0	0.104	0	0	0	0	0	0	0	0.104	0	0	0.242	0	0	0	0	0	0	0	0	0	0	0	0	0

Table H-7

Helicopter Noise Contributions

Helicopter	Reference SEL at 500 feet AGL (dB)	Number of Daily Operations	L_{dn} (dB)
UH-60 Blackhawk	96	3.6	54
UH-1A Iroquois	97	2.88	56
OH-58 Kiowa	89	4.32	43
AH-1F Huey Cobra	96	1.2	51
Total Helicopter Contribution:		**12.0**	**56**

Based on this analysis, it was concluded that the total helicopter noise contribution would not add significantly to the other aircraft contributions.

F-16 run-up operations were also considered. It was estimated by the 924th FG that F-16 run-up operations would occur once every two weeks (1 hour in duration) at Facility 4590 and once every day (20 minutes in duration) at Facility 8070. Facility 4590 is a blast deflector southwest of the existing 924th FG facilities and east of existing Runway 17L/35R (30° 11' 24.5"N / 97° 40' 17.4"W, 358° magnetic heading). Facility 8070 is the large ramp (Apron D) located northwest of the 924th FG facilities (30° 11' 44"N / 97° 40' 16"W, 358° magnetic heading). Aircraft using Facilities 4590 or 8070 would be oriented in a north-south direction with the aircraft exhaust toward the south.

The 924th FG also estimated that two aircraft engine noise suppression facilities (i.e., hush houses) would be used once every week (1 hour in duration) at Facilities 4910 (30° 11' 42.8"N / 97° 39' 50"W, 312° magnetic heading) and 4911 (30° 11' 41.65"N / 97° 39' 51.3"W, 312° magnetic heading). These buildings are located east of the 924th FG facilities and southeast of the RCCF (Building 1608) and are oriented in a northwesterly direction with exhaust directed towards the southeast. All run-up and hush house operations would occur during the daytime period. It was also assumed that typical F-16 run-up and hush house operations would be conducted at about 90 percent with no afterburner.

Coordinates (latitude/longitude) of the existing and proposed runways are as follows:

Existing Runway 17R/35L

Beginning point:	30° 12' 48.5"N / 97° 40' 44.7"W
Ending point:	30° 10' 46.8"N / 97° 40' 42"W

Existing Runway 17L/35R

Beginning point:	30° 12' 26.5"N / 97° 40' 32.7"W
Ending point:	30° 11' 6"N / 97° 40' 30.7"W

New Runway 17L/35R

Beginning point:	30° 12' 12.2"N / 97° 39' 28.6"W
Ending point:	30° 10' 43.5"N / 97° 39' 29.5"W

For modeling, the following parameters were used: annual average daily temperature of 68°F, relative humidity of 67 percent, airfield elevation of 541 feet above mean sea level, and magnetic declination of 6.5° east.

Surface traffic data used in the modeling were developed in the traffic analysis presented in Section 4.2.3 and are presented in Table H-8.

DNL contours for the proposed flight operations are shown in Figures 4.4-7 through 4.4-10 in Section 4.4.4 for 1994, 1997, 2002, and 2012, respectively. The contours are primarily due to F-16 operations in 1994 and F-16 and air carrier operations in 1997, 2002, and 2012. The area covered by the contours is reduced for modeled years 2002 and 2012, reflecting the transition from Stage 2 to Stage 3 aircraft by the year 2000.

1.4 GENERAL AVIATION/AIR CARGO AIRPORT ALTERNATIVE

For the General Aviation/Air Cargo Airport Alternative, the airfield would be used for air cargo, general aviation, and military operations, but not for air carrier or air taxi operations. With this alternative, the existing airfield layout would remain the same and a new runway would not be constructed.

The fleet mix and annual aircraft operations for each of the modeled years would be the same as presented for the Proposed Action in Tables H-2a through H-2d, but the air carrier and air taxi operations would not be applicable. The aircraft types, day-night split, and stage lengths and source of profiles for air cargo, general aviation, and military operations would be the same as described for the Proposed Action in Section 1.3. Flight tracks for civilian and military operations for this alternative are shown in Figures 4.4-4 through 4.4-6 in Section 4.4. Average daily operations assigned to each flight track (by percent) and time period for this alternative are presented in Table H-9a through H-9d for civilian operations and Table H-10 for military operations.

Surface traffic data used in the modeling were developed from the traffic analysis presented in Section 4.2.3 and are presented in Table H-8.

The DNL contours for the proposed flight operations for the modeled years are shown in Figures 4.4-11 through 4.4-14 in Section 4.4.4. The contours are primarily due to F-16 operations in 1994, and F-16 and air cargo operations in 1997, 2002, and 2012. For modeled years 2002 and 2012, the area covered by the contours is slightly reduced, reflecting the transition from Stage 2 to Stage 3 aircraft by the year 2000.

Table H-8

Surface Traffic Data for the Proposed Action and Alternatives

Alternative	1997 AADT	1997 Speed (mph)	2002 AADT	2002 Speed (mph)	2012 AADT	2012 Speed (mph)	Road Width Assumed (No. of Lanes)
Proposed Action							
U.S. 183 South of State Highway 71	15,176	50	16,964	48	19,221	48	6
U.S. 183 North of State Highway 71	38,736	40	51,683	30	61,679	30	6
U.S. 183 North of Burleson Road	18,123	48	19,155	48	21,227	48	6
U.S. 183 South of Burleson Road	17,535	48	18,567	48	20,639	48	6
State Highway 71 East of U.S. 183	47,850	30	68,438	30	83,105	30	6
State Highway 71 East of U.S. 183	39,044	40	47,574	30	55,365	30	6
State Highway 71 East of Presidential Boulevard	23,769	48	26,114	44	29,419	44	6
State Highway 71 East of FM 973	19,295	48	20,674	48	23,091	44	6
Burleson Road West of New Access Road	2,820	50	2,900	50	3,061	50	2
Burleson Road East of New Access Road	1,513	50	1,593	50	1,754	50	2
Burleson Road West of U.S. 183	7,025	44	7,407	44	8,174	44	2
General Aviation/Air Cargo Airport Alternative							
U.S. 183 South of State Highway 71	14,795	50	16,490	50	18,365	48	6
U.S. 183 North of State Highway 71	34,167	44	46,002	30	51,413	30	6
State Highway 71 East of U.S. 183	40,235	40	58,969	30	65,995	30	6
State Highway 71 West of U.S. 183	36,379	40	44,259	30	49,376	30	6
State Highway 71 East of Presidential Boulevard	23,368	48	25,616	44	28,518	44	6
State Highway 71 East of FM 973	19,195	48	20,549	48	22,866	48	6
Mixed-Use Development Alternative							
U.S. 183 South of State Highway 71	14,611	50	16,274	50	18,604	48	6
U.S. 183 North of State Highway 71	31,964	44	43,076	40	54,280	30	6
State Highway 71 East of U.S. 183	36,563	40	54,092	30	70,773	30	6
State Highway 71 West of U.S. 183	35,094	44	42,552	40	51,048	30	6
State Highway 71 East of Presidential Boulevard	23,175	48	25,359	48	28,770	44	6
State Highway 71 East of FM 973	19,164	48	20,485	48	22,929	48	6
No-Action Alternative							
U.S. 183 South of State Highway 71	14,086	50	14,922	50	16,601	50	6
U.S. 183 North of State Highway 71	25,655	44	27,178	44	30,236	44	6
State Highway 71 East of U.S. 183	26,049	44	27,595	44	30,700	44	6
State Highway 71 West of U.S. 183	31,414	44	33,279	44	37,023	40	6
State Highway 71 East of Presidential Boulevard	22,622	48	23,964	48	26,661	44	6

1.5 MIXED-USE DEVELOPMENT ALTERNATIVE

This alternative includes only nonaviation land uses. The focus of this alternative is institutional, commercial, industrial, and agricultural uses. The airfield would be used for commercial, industrial, and agricultural uses. Other land uses for this alternative include residential and recreational uses. The total acreage used for each category is summarized in Chapter 2.0, Table 2.3-6. Surface traffic data used in the modeling were developed from the traffic analysis and are presented in Table H-8.

Table H-9a: Assignment of General Aviation/Air Cargo Airport Alternative Annual Average Daily Civilian Operations - 1994

	Track	CA1	CA3	CT1	CT2	CT3	CT4	CT5	CT6	CT13	CT14	CT15	CT16
	Runway	35L	17R	17R	17R	17R	17R	17R	17R	35L	35L	35L	35L
	Stage Length	Arr.	Arr.	1	1	1	1	1	1	1	1	1	1
	Daytime Operations												
Air Cargo	B-727-100/200	0.13	0.3	0.04	0.01	0.04	0.02	0.03	0.07	0.06	0	0.02	0.01
	B-737/DC-9-10/30	0.32	0.74	0.12	0.03	0.12	0.06	0.09	0.18	0.16	0.01	0.05	0.03
	DC-8-70	0.01	0.03	0.01	0	0.01	0	0.01	0.01	0.01	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	2.1	4.9	0.14	0.04	0.14	0.07	0.11	0.21	0.2	0.02	0.06	0.03
	B-757	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0
	Nightime Operations												
Air Cargo	B-727-100/200	0.02	0.04	0.01	0	0.01	0.01	0.01	0.02	0.02	0	0.01	0
	B-737/DC-9-10/30	0.04	0.08	0	0	0	0	0	0.01	0.01	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0.84	0.21	0.84	0.42	0.63	1.26	1.17	0.09	0.36	0.18
	B-757	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0

Table H-9a, Page 2 of 2

	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT13	CT14	CT15	CT16	CT1	CT2	CT3	CT4	CT5	CT6	CT13	CT14	CT15	CT16
	Runway	17R	17R	17R	17R	17R	17R	35L	35L	35L	35L	17R	17R	17R	17R	17R	17R	35L	35L	35L	35L
	Stage Length	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3
	Daytime Operations																				
Air Cargo	B-727-100/200	0.01	0	0.01	0	0	0.01	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0.04	0.01	0.04	0.02	0.03	0.06	0.05	0	0.02	0.01	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Nighttime Operations																				
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table H-9b: Assignment of General Aviation/Air Cargo Airport Alternative Annual Average Daily Civilian Operations-1997

	Track	CA1	CA3	CT1	CT2	CT3	CT4	CT5	CT6	CT13	CT14	CT15	CT16
	Runway	35L	17R	17R	17R	17R	17R	17R	17R	35L	35L	35L	35L
	Stage Length	Arr.	Arr.	1	1	1	1	1	1	1	1	1	1
	Daytime Operations												
Air Cargo	B-727-100/200	0.11	0.25	0.04	0.01	0.04	0.02	0.03	0.06	0.06	0	0.02	0.01
	B-737/DC-9-10/30	0.36	0.84	0.12	0.03	0.12	0.06	0.09	0.18	0.17	0.01	0.05	0.03
	DC-8-70	0.02	0.04	0.01	0	0.01	0	0.01	0.01	0.01	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0.6	1.4	0.28	0.07	0.28	0.14	0.21	0.42	0.39	0.03	0.12	0.06
	Single-engine turboprop (C208)	2.1	4.9	0.14	0.04	0.14	0.07	0.11	0.21	0.2	0.02	0.06	0.03
	B-757	0.07	0.17	0.03	0.01	0.03	0.02	0.03	0.05	0.05	0	0.01	0.01
	MD-80/DC-9-80	0.23	0.55	0.09	0.02	0.09	0.05	0.07	0.14	0.13	0.01	0.04	0.02
	B-767	0.04	0.08	0.02	0	0.02	0.01	0.01	0.03	0.02	0	0.01	0
General	Business jet (HS25, LR25, G3)	1.2	2.8	0.56	0.14	0.56	0.28	0.42	0.84	0.78	0.06	0.24	0.12
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	3.6	8.4	1.68	0.42	1.68	0.84	1.26	2.52	2.34	0.18	0.72	0.36
	Multi-engine turboprop (BE90, BE20, AC69, C425)	6.6	15.4	3.08	0.77	3.08	1.54	2.31	4.62	4.29	0.33	1.32	0.66
	Single-engine turboprop (C208)	0.3	0.7	0.14	0.04	0.14	0.07	0.11	0.21	0.2	0.02	0.06	0.03
	Multi-engine piston prop (BE58, PA31, C414)	6.9	16.1	3.22	0.81	3.22	1.61	2.42	4.83	4.49	0.35	1.38	0.69
	Single-engine piston prop (C150, C120, C172)	19.5	45.5	9.1	2.28	9.1	4.55	6.83	13.7	12.7	0.98	3.9	1.95
	Nighttime Operations												
Air Cargo	B-727-100/200	0.03	0.07	0.01	0	0.01	0	0.01	0.01	0.01	0	0	0
	B-737/DC-9-10/30	0.03	0.07	0.01	0	0.01	0	0.01	0.01	0.01	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0.84	0.21	0.84	0.42	0.63	1.26	1.17	0.09	0.36	0.18
	B-757	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	1.02	0.07	0.02	0	0.02	0.01	0.01	0.03	0.02	0	0.01	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0

Table H-9b, Page 2 of 2

	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT13	CT14	CT15	CT16	CT1	CT2	CT3	CT4	CT5	CT6	CT13	CT14	CT15	CT16
	Runway	17R	17R	17R	17R	17R	17R	35L	35L	35L	35L	17R	17R	17R	17R	17R	17R	35L	35L	35L	35L
	Stage Length	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3
	Daytime Operations																				
Air Cargo	B-727-100/200	0.01	0	0.01	0	0.01	0.01	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0.04	0.01	0.04	0.02	0.03	0.06	0.06	0	0.02	0.01	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0.01	0	0.01	0.01	0.01	0.02	0.02	0	0.01	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Nighttime Operations																				
Air Cargo	B-727-100/200	0	0	0	0	0	0.01	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0.01	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table H-9c: Assignment of General Aviation/Air Cargo Airport Alternative Average Annual Daily Civilian Operations - 2002

	Track	CA1	CA3	CT1	CT2	CT3	CT4	CT5	CT6	CT13	CT14	CT15	CT16
	Runway	35L	17R	17R	17R	17R	17R	17R	17R	35L	35L	35L	35L
	Stage Length	Arr.	Arr.	1	1	1	1	1	1	1	1	1	1
	Daytime Operations												
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0.9	2.1	0.28	0.07	0.28	0.14	0.21	0.42	0.39	0.03	0.12	0.06
	Single-engine turboprop (C208)	2.1	4.9	0.14	0.04	0.14	0.07	0.11	0.21	0.2	0.02	0.06	0.03
	B-757	0.21	0.49	0.1	0.02	0.1	0.05	0.07	0.14	0.13	0.01	0.04	0.02
	MD-80/DC-9-80	0.7	1.64	0.29	0.07	0.29	0.14	0.22	0.43	0.4	0.03	0.12	0.06
	B-767	0.07	0.16	0.03	0.01	0.03	0.02	0.02	0.05	0.04	0	0.01	0.01
General	Business jet (HS25, LR25, G3)	0.9	2.1	0.42	0.11	0.42	0.21	0.32	0.63	0.59	0.05	0.18	0.09
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	4.5	10.5	2.1	0.53	2.1	1.05	1.58	3.15	2.93	0.23	0.9	0.45
	Multi-engine turboprop (BE90, BE20, AC69, C425)	6.9	16.1	3.22	0.81	3.22	1.61	2.42	4.83	4.49	0.35	1.38	0.69
	Single-engine turboprop (C208)	0.3	0.7	0.14	0.04	0.14	0.07	0.11	0.21	0.2	0.02	0.06	0.03
	Multi-engine piston prop (BE58, PA31, C414)	6.6	15.4	3.08	0.77	3.08	1.54	2.31	4.62	4.29	0.33	1.32	0.66
	Single-engine piston prop (C150, C120, C172)	18	42	8.4	2.1	8.4	4.2	6.3	12.6	11.7	0.9	3.6	1.8
	Nightime Operations												
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0.9	2.1	0.14	0.04	0.14	0.07	0.11	0.21	0.2	0.02	0.06	0.03
	Single-engine turboprop (C208)	2.1	4.9	0.84	0.21	0.84	0.42	0.63	1.26	1.17	0.09	0.36	0.18
	B-757	0.21	0.49	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0.7	1.64	0.05	0.01	0.05	0.02	0.03	0.07	0.06	0	0.02	0.01
	B-767	0.07	0.16	0	0	0	0	0	0	0	0	0	0
General	Business jet (HS25, LR25, G3)	0.9	2.1	0	0	0	0	0	0	0	0	0	0
Aviation	Business jet (N265, LR35, MU3, DA02, C550)	4.5	10.5	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	6.9	16.1	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0.3	0.7	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	6.6	15.4	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	18	42	0	0	0	0	0	0	0	0	0	0

Table H-9c, Page 2 of 2

	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT13	CT14	CT15	CT16	CT1	CT2	CT3	CT4	CT5	CT6	CT13	CT14	CT15	CT16
	Runway	17R	17R	17R	17R	17R	17R	35L	35L	35L	35L	17R	17R	17R	17R	17R	17R	35L	35L	35L	35L
	Stage Length	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3
	Daytime Operations																				
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0.04	0.01	0.04	0.02	0.03	0.06	0.05	0	0.02	0.01	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General Aviation	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Nightime Operations																				
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General Aviation	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table H-9d: Assignment of General Aviation/Air Cargo Airport Alternative Average Annual Daily Civilian Operations - 2012

	Track	CA1	CA3	CT1	CT2	CT3	CT4	CT5	CT6	CT13	CT14	CT15	CT16
	Runway	35L	17R	17R	17R	17R	17R	17R	17R	35L	35L	35L	35L
	Stage Length	Arr.	Arr.	1	1	1	1	1	1	1	1	1	1
	Daytime Operations												
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	1.80	4.20	0.7	0.175	0.7	0.35	0.525	1.05	0.975	0.075	0.3	0.15
	Single-engine turboprop (C208)	2.10	4.90	0.14	0.035	0.14	0.07	0.105	0.21	0.195	0.015	0.06	0.03
	B-757	0.28	0.64	0.129	0.032	0.129	0.064	0.097	0.193	0.179	0.014	0.055	0.028
	MD-80/DC-9-80	0.93	2.17	0.386	0.097	0.386	0.193	0.29	0.58	0.538	0.041	0.166	0.083
	B-767	0.14	0.32	0.064	0.016	0.064	0.032	0.048	0.097	0.09	0.007	0.028	0.014
General Aviation	Business jet (HS25, LR25, G3)	0.3	0.7	0.14	0.035	0.14	0.07	0.105	0.21	0.195	0.015	0.06	0.03
	Business jet (N265, LR35, MU3, DA02, C550)	5.4	12.6	2.52	0.63	2.52	1.26	1.89	3.78	3.51	0.27	1.08	0.54
	Multi-engine turboprop (BE90, BE20, AC69, C425)	7.2	16.8	3.36	0.84	3.36	1.68	2.52	5.04	4.68	0.36	1.44	0.72
	Single-engine turboprop (C208)	0.3	0.7	0.14	0.035	0.14	0.07	0.105	0.21	0.195	0.015	0.06	0.03
	Multi-engine piston prop (BE58, PA31, C414)	6.6	15.4	3.08	0.77	3.08	1.54	2.31	4.62	4.29	0.33	1.32	0.66
	Single-engine piston prop (C150, C120, C172)	16.5	38.5	7.7	1.925	7.7	3.85	5.775	11.55	10.73	0.825	3.3	1.65
	Nighttime Operations												
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0.14	0.035	0.14	0.07	0.105	0.21	0.195	0.015	0.06	0.03
	Single-engine turboprop (C208)	0	0	0.84	0.21	0.84	0.42	0.63	1.26	1.17	0.09	0.36	0.18
	B-757	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0.126	0.294	0.055	0.014	0.055	0.027	0.041	0.082	0.076	0.006	0.023	0.012
	B-767	0	0	0	0	0	0	0	0	0	0	0	0
General Aviation	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0
	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0

Table H-9d, Page 2 of 2

	Track	CT1	CT2	CT3	CT4	CT5	CT6	CT13	CT14	CT15	CT16	CT1	CT2	CT3	CT4	CT5	CT6	CT13	CT14	CT15	CT16
	Runway	17R	17R	17R	17R	17R	17R	35L	35L	35L	35L	17R	17R	17R	17R	17R	17R	35L	35L	35L	35L
	Stage Length	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3
	Daytime Operations																				
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0.046	0.012	0.046	0.023	0.035	0.069	0.064	0.005	0.02	0.01	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General Aviation	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Nighttime Operations																				
Air Cargo	B-727-100/200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-737/DC-9-10/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DC-8-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE1900, SW4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MD-80/DC-9-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B-767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General Aviation	Business jet (HS25, LR25, G3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Business jet (N265, LR35, MU3, DA02, C550)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine turboprop (BE90, BE20, AC69, C425)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine turboprop (C208)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Multi-engine piston prop (BE58, PA31, C414)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Single-engine piston prop (C150, C120, C172)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table H-10: Assignment of General Aviation/Air Cargo Airport Alternative Annual Average Daily Military Operations

Track	MA1	MA2	MA3	MA4	MA5	MA6	MA7	MA8	MT1	MT2	MT3	MT4	MT5	MT6	MT7	MT8	MC1	MC2	MC3	MC4	MC5	MC6	MC7	MC8	MC9	MC10	MC11	MC12	MC13
Track Type	Arr	Arr	Arr	Arr	Arr	Arr	Arr	Arr	Dep	Dep	Dep	Dep	Dep	Dep	Dep	Dep	CP	CP	CP	CP	CP	CP	CP	CP	CP	CP	CP	CP	CP
Runway	17R	17R	17R	35L	35L	35L	35L	17R	17R	17R	35L	17R	35L	35L	35L	17R	17R	17R	35L	35L	35L	17R	17R	35L	17R	17R	17R	35L	35L
Year: 1994																													
Percent of Operations (%)																													
924th FG F-16			10		7		23	60	35	30	14	5		1	15		52	8	15	5	8	5	5	2					
Texas ANG C-12																													
Texas ANG T-34																													
Transient (ATC T-37)			70		30								30			70										14	56	6	24
Transient (ATC T-38)			70		30								30			70	14	56	6	24									
Transient (Other Air Force)			70		30								30			70													
Number of Operations																													
924th FG F-16	0	0	1.154	0	0.808	0	2.654	6.923	4.038	3.461	1.615	0.577	0	0.115	1.731	0	6	0.923	1.731	0.577	0.923	0.577	0.577	0.231	0	0	0	0	0
Texas ANG C-12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Texas ANG T-34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transient (ATC T-37)	0	0	0.9	0	0.39	0	0	0	0	0	0	0	0.39	0	0	0.9	0	0	0	0	0	0	0	0	0	0.18	0.72	0.08	0.39
Transient (ATC T-38)	0	0	1.4	0	0.6	0	0	0	0	0	0	0	0.6	0	0	1.4	0.56	2.24	0.24	0.96	0	0	0	0	0	0	0	0	0
Transient (Other Air Force)	0	0	0.242	0	0.104	0	0	0	0	0	0	0	0.104	0	0	0.242	0	0	0	0	0	0	0	0	0	0	0	0	0
Year: 1997, 2002, and 2012																													
Percent of Operations (%)																													
924th FG F-16			10		7		23	60	35	30	14	5		1	15		52	8	15	5	8	5	5	2					
Texas ANG C-12																													
Texas ANG T-34			70		30								30			70													
Transient (ATC T-37)			70		30								30			70										14	56	6	24
Transient (ATC T-38)			70		30								30			70	14	56	6	24									
Transient (Other Air Force)			70		30								30			70													
Number of Operations																													
924th FG F-16	0	0	1.154	0	0.808	0	2.654	6.923	4.038	3.461	1.615	0.577	0	0.115	1.731	0	6	0.923	1.731	0.577	0.923	0.577	0.577	0.231	0	0	0	0	0
Texas ANG C-12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Texas ANG T-34	0	0	2.1	0	0.9	0	0	0	0	0	0	0	0.9	0	0	2.1	0	0	0	0	0	0	0	0	0	0	0	0	0
Transient (ATC T-37)	0	0	0.9	0	0.39	0	0	0	0	0	0	0	0.39	0	0	0.9	0	0	0	0	0	0	0	0	0	0.18	0.72	0.08	0.39
Transient (ATC T-38)	0	0	1.4	0	0.6	0	0	0	0	0	0	0	0.6	0	0	1.4	0.56	2.24	0.24	0.96	0	0	0	0	0	0	0	0	0
Transient (Other Air Force)	0	0	0.242	0	0.104	0	0	0	0	0	0	0	0.104	0	0	0.242	0	0	0	0	0	0	0	0	0	0	0	0	0

1.6 NO-ACTION ALTERNATIVE

With the No-Action Alternative, the property would not be put to further use. The Air Force and the City of Austin would ensure base security and maintenance of the grounds and physical assets, including the existing utilities and structures. There would be no military activities/missions performed on the property identified for disposal. Surface traffic data used in the modeling were developed from the project traffic study and are presented in Table H-8.

2.0 NOISE METRICS

Noise, as used in this context, refers to sound pressure variations audible to the ear. The audibility of a sound depends on the amplitude and frequency of the sound and the individual's capability to hear the sound. Whether the sound is judged as noise depends largely on the listener's current activity and attitude toward the sound source, as well as the amplitude and frequency of the sound. The range in sound pressures which the human ear can comfortably detect encompasses a wide range of amplitudes, typically a factor larger than a million. To obtain convenient measurements and sensitivities at extremely low and high sound pressures, sound is measured in units of the decibel (dB). The dB is a dimensionless unit related to the logarithm of the ratio of the measured level to a reference level.

Because of the logarithmic nature of the decibel unit, sound levels cannot be added or subtracted directly. However, the following shortcut method can be used to combine sound levels:

Difference between two dB values	Add the following to the higher level
0 to 1	3
2 to 3	2
4 to 9	1
10 or more	0

The ear is not equally sensitive at all frequencies of sound. At low frequencies, characterized as a rumble or roar, the ear is not very sensitive, while at higher frequencies, characterized as a screech or a whine, the ear is most sensitive. The A-weighted level was developed to measure and report sound levels in a way which would more closely approach how people perceive the sound. All sound levels reported herein are in terms of A-weighted sound levels.

Environmental sound levels typically vary with time. This is especially true for areas near airports where noise levels will increase substantially as the aircraft passes overhead and afterwards diminish to typical community levels. Both the Department of Defense and the FAA have specified the following three noise metrics to describe aviation noise.

Day-Night Average Sound Level (DNL) is the 24-hour energy average A-weighted sound level with a 10 dB weighting added to those levels occurring between 10:00 p.m. and 7:00 a.m. The 10-dB weighting is a penalty representing the added intrusiveness of noise during normal sleeping hours. DNL is used to determine land use compatibility with noise from aircraft and surface traffic. The expression L_{dn} is often used in equations to designate day-night average sound level.

Maximum Sound Level is the highest instantaneous sound level observed during a single noise event no matter how long the sound may persist (Figure H-1).

Sound Exposure Level (SEL) value represents the A-weighted sound level integrated over the entire duration of the event and referenced to a duration of 1 second. Hence, it normalizes the event to a 1-second event. Typically, most events (aircraft flyover) last longer than 1 second, and the SEL value will be higher than the maximum sound level of the event. Figure H-1 illustrates the relationship between the maximum sound level and SEL.

3.0 NOISE MODELS

3.1 AIR TRAFFIC

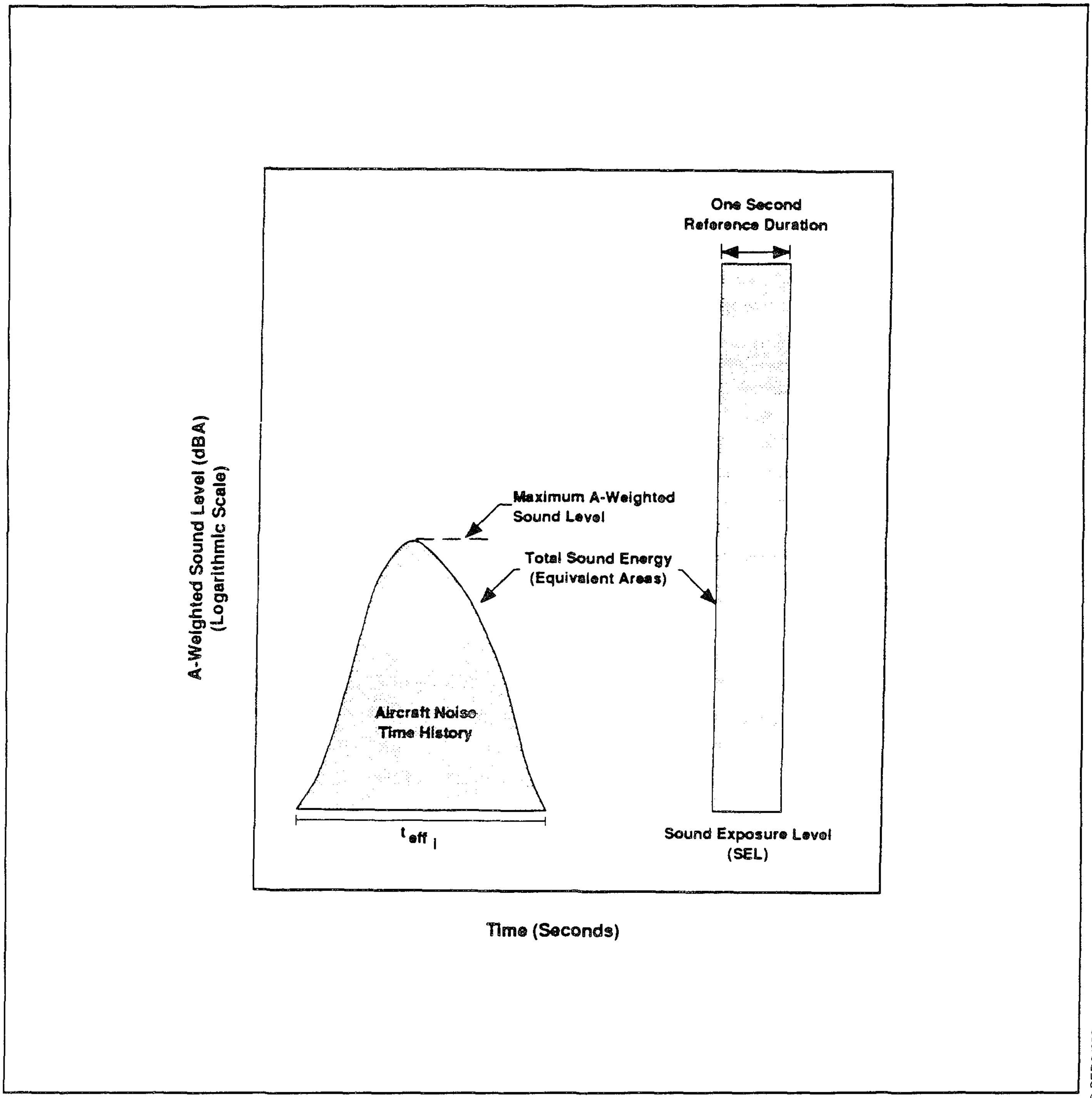
The DOD- and FAA-approved Noise Exposure Model (NOISEMAP), version 6.0 (Moulton 1990), was used to predict aircraft noise levels. Since the early 1970s, the Department of Defense has been actively developing and refining the NOISEMAP program and its associated data base. The NOISEMAP computer program is a comprehensive set of computer routines for calculating noise contours from aircraft flight and ground runup operations, using aircraft-unique noise data for both fixed- and rotary-wing aircraft. The program requires specific input data, consisting of runway layout, aircraft types, number of operations, flight tracks, and noise performance data, to compute a grid of DNL values at uniform intervals. The grid is then processed by a contouring program which draws the contours at selected intervals.

3.2 SURFACE TRAFFIC

The FHWA Highway Traffic Noise Prediction Model was used to predict surface traffic noise. The model uses traffic volumes, vehicular mix, traffic speed, traffic distribution, and roadway length to estimate traffic noise levels.

4.0 ASSESSMENT CRITERIA

Criteria for assessing the effects of noise include annoyance, speech interference, sleep disturbance, noise-induced hearing loss, possible nonauditory health effects, reaction by animals, and land use compatibility. These criteria are often developed using statistical methods. The validity of generalizing statistics devised from large populations is suspect when applied to small sample sizes as in the affected areas near Bergstrom AFB. Caution should be employed when interpreting the results of the impact analysis.



Sound Exposure Level (SEL)

Figure H-1

4.1 ANNOYANCE DUE TO SUBSONIC AIRCRAFT NOISE

Noise-induced annoyance is an attitude or mental process with both acoustic and nonacoustic determinants (Fidell et al. 1988). Noise-induced annoyance is perhaps most often defined as a generalized adverse attitude toward noise exposure. Noise annoyance is affected by many factors including sleep and speech interference and task interruption. The level of annoyance may also be affected by many nonacoustic factors.

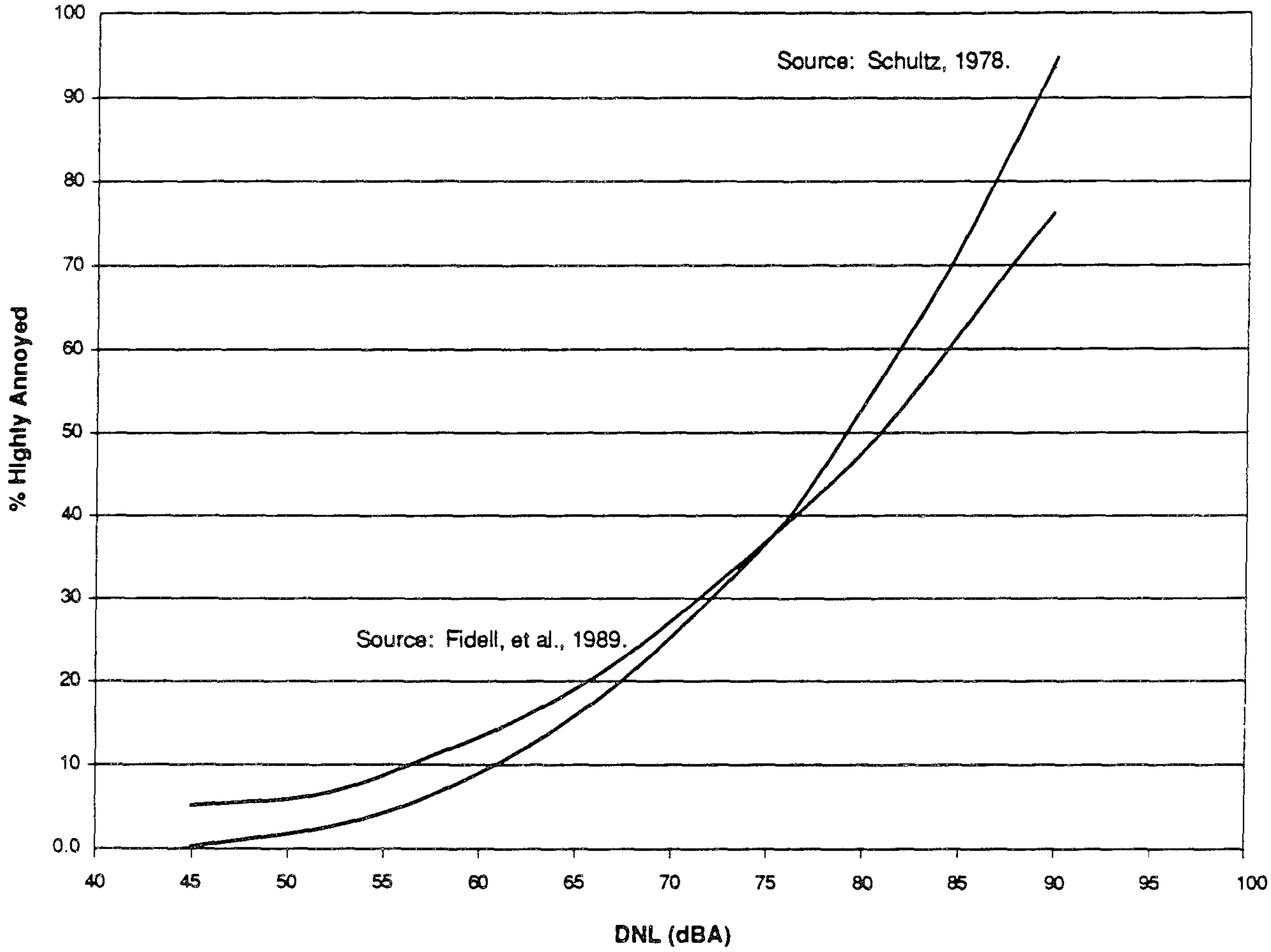
In communities where the prevalence of annoyance is affected primarily by noise, reductions in noise can be expected to lead to reductions in prevalence of annoyance. In communities where the prevalence of annoyance is controlled by nonacoustic factors, such as odor, traffic congestion, etc., there may be little or no reduction in annoyance associated with reductions in exposure. The intensity of community response to noise exposure may even, in some cases, be essentially independent of physical exposure. In the case of community response to actions, such as airport siting or scheduling of supersonic transport aircraft, vigorous reaction has been encountered at the mere threat of exposure, or minor increases in exposure.

The standard method for determining the prevalence of annoyance in noise-exposed communities is by attitudinal survey. Surveys generally solicit self-reports of annoyance through one or more questions in the form "How bothered or annoyed have you been by the noise of (noise source) over the last (time period)?" Respondents are typically constrained in structured interviews to select one of a number of response alternatives, often named categories such as "Not At All Annoyed," "Slightly Annoyed," "Moderately Annoyed," "Very Annoyed," or "Extremely Annoyed." Other means are sometimes used to infer the prevalence of annoyance from survey data (for example, by interpretation of responses to activity interference questions or by construction of elaborate composite indices), with varying degrees of face validity and success.

Predictions of the prevalence of annoyance in a community can be made by extrapolation from an empirical dosage-effect relationship. Based on the results of a number of sound surveys, Schultz (1978) developed a relationship between percent highly annoyed and DNL:

$$\%\ \textit{Highly Annoyed} = 0.8553\ DNL - 0.0401\ DNL^2 + 0.00047\ DNL^3$$

Note that this relationship should not be evaluated outside the range of DNL = 45 to 90 dB. Figure H-2 presents this equation graphically. Less than 15 to 20 percent of the population would be predicted to be annoyed by DNL values less than 65 dBA, whereas over 37 percent of the population would be predicted to be annoyed from DNL values greater than 75 dBA. The relationship developed by Schultz was presented in the *Guidelines for Preparing Environmental Impact Statements on Noise* (National Academy of Sciences 1977).



BR-BERG/023

Community Noise Annoyance Curves

Figure H-2

These results were recently reviewed (Fidell et al. 1989) and the original findings updated with results of more recent social surveys, bringing the number of data points used in defining the relationship to over 400. The findings of the new study differ only slightly from those of the original study.

4.2 SPEECH INTERFERENCE AND RELATED EFFECTS DUE TO AIRCRAFT FLYOVER NOISE

One of the ways that noise affects daily life is by preventing or impairing speech communication. In a noisy environment, understanding of speech is diminished by masking of speech signals by intruding noises. Speakers generally raise their voices or move closer to listeners to compensate for masking noise in face-to-face communications, thereby increasing the level of speech at the listener's ear. As intruding noise levels rise higher and higher, speakers may cease talking altogether until conversation can be resumed at comfortable levels of vocal effort after noise intrusions end.

If the speech source is a radio or television, the listener may increase the volume during a noise intrusion. If noise intrusions occur repeatedly, the listener may choose to set the volume at a high level so that the program material can be heard even during noise intrusions.

In addition to losing information contained in the masked speech material, the listener may lose concentration because of the interruptions and thus become annoyed. If the speech message is some type of warning, the consequences could be serious.

Current practice in quantification of the magnitude of speech interference and predicting speech intelligibility ranges from metrics based on A-weighted sound pressure levels of the intruding noise alone to more complex metrics requiring detailed spectral information about both speech and noise intrusions. There are other effects of the reduced intelligibility of speech caused by noise intrusions. For example, if the understanding of speech is interrupted, performance may be reduced, annoyance may increase, and learning may be impaired.

As the noise level of an environment increases, people automatically raise their voices. The effect does not take place, however, if the noise event were to rise to a high level very suddenly.

4.2.1 Speech Interference Effects From Time-Varying Noise

Most research on speech interference due to noise has included the study of steady-state noise. As a result, reviews and summaries of noise effects on speech communications concentrate on continuous or at least long-duration noises (Miller 1974). However, noise intrusions are not always continuous or of long duration, but are frequently transient in nature. Transportation noise generates many such noise intrusions, consisting primarily of individual vehicle pass-bys, such as aircraft flyovers. Noise emitted by other vehicles (motorboats, snowmobiles, and off-highway vehicles) is also transient in nature.

It has been shown, at least for aircraft flyover noise, that the accuracy of predictors of speech intelligibility is ranked in a similar fashion for both steady-state and time-varying or transient sounds (Williams et al. 1971; Kryter and Williams 1966). Of course, if one measures the noise of a flyover by the maximum A-level, then intelligibility associated with this level would be higher than for a steady noise of the same value, simply because the level is less than the maximum for much of the duration of the flyover.

4.2.2 Other Effects of Noise Which Relate to Speech Intelligibility

Aside from the direct effects of reduction in speech intelligibility, related effects may occur that tend to compound the loss of speech intelligibility itself.

Learning. One environment where speech intelligibility plays a critical role is in the classroom. In classrooms of schools exposed to aircraft flyover noise, speech becomes masked or the teacher stops talking altogether during an aircraft flyover (Crook and Langdon 1974). Pauses begin to occur when instantaneous flyover levels exceed 60 dB (A-weighted). Masking of the speech of teachers who do not pause starts at about the same level.

At levels of 75 dB, some masking occurs for 15 percent of the flyovers and increases to nearly 100 percent at 82 dB. Pauses occur for about 80 percent of the flyovers at this noise level. Because a marked increase in pauses and masking occurs when levels exceed 75 dB, this level is sometimes considered as one above which teaching is impaired due to disruption of speech communication. The effect that this may have on learning is unclear at this time. However, one study (Arnoult et al. 1986) could find no effect of noise on cognitive tasks from jet or helicopter noise over a range of 60 to 80 dB (A-level), even though intelligibility scores indicated a continuous decline starting at the 60 dB level. In a Japanese study (Ando et al. 1975), researchers failed to find differences in mental task performance among children from communities with different aircraft noise exposures.

Although there seems to be no proof that noise from aircraft flyovers affects learning, it is reported by Mills (1975) that children are not as able to understand speech in the presence of noise as are adults. It is hypothesized that part of the reason is due to the increased vocabulary which the adult can draw on as compared to the more limited vocabulary available to the young student. In addition, when one is learning a language, it is more critical that all words be heard, rather than only enough to attain 95-percent sentence intelligibility, which may be sufficient for general conversations. It was mentioned above that when the maximum A-level for aircraft flyovers heard in a classroom exceeds 75 dB, masking of speech increases rapidly. However, it was also noted that pausing during flyovers and masking of speech for those teachers who continue to lecture during a flyover start at levels around 60 dB (Pearsons and Bennett 1974).

Annoyance. Klatt et al. (1969) studied the annoyance of speech interference by asking people to judge the annoyance of aircraft noise in the presence and absence of speech material. The speech material was composed of passages from newspaper and magazine articles. In addition to rating aircraft noise on an acceptability scale (unacceptable, barely acceptable, acceptable, and of no concern), the subjects were required to answer questions about the speech material. The voice level was considered to represent a raised voice level (assumed to be 68 dB). In general, for the raised voice talker, the rating of barely acceptable was given to flyover noise levels of 73 to 76 dB. However, if the speech level was reduced, the rating of the aircraft tended more toward unacceptable. The results suggested that if the speech level were such that 95 percent or better sentence intelligibility was maintained, then a barely acceptable rating or better acceptability rating could be expected. This result is in general agreement with the finding in schools that teachers pause or have their speech masked at levels above 75 dB (Crook and Langdon 1974).

Hall et al. (1985) tried to relate various types of activity interference in the home, related to speech and sleeping, to annoyance. The study found that there is a 50-percent chance that speech would be interfered with at a level of 58 dB. This result is in agreement with the other results, considering that the speech levels in the school environment of the Cook study are higher than the levels typically used in the home. In addition, in a classroom situation, the teacher raises his or her voice as the flyover noise increases in intensity.

4.2.3 Predicting Speech Intelligibility and Related Effects Due to Aircraft Flyover Noise

It appears, from the above discussions, that when aircraft flyover noises exceed approximately 60 dB, speech communication may be interfered with either by masking or by pausing on the part of the speaker. Increasing the level of the flyover noise to 80 dB would reduce the intelligibility to zero even if a loud voice is used by those attempting to communicate.

The levels mentioned refer to noise levels measured indoors. The same noises measured outdoors would be 15 to 25 dB higher than these indoor levels during summer (windows open) and winter months (windows closed), respectively. These estimates are taken from Environmental Protection Agency (EPA) reviews of available data (1974).

Levels of aircraft noise measured inside dwellings and schools near the ends of runways at airports may exceed 60 dB inside (75 dB outside). During flyovers, speech intelligibility would be degraded. However, because the total duration is short, no more than a few seconds during each flyover, only a few syllables may be lost. People may be annoyed, but the annoyance may not be due to loss in speech communication, but rather due to startle or sleep disturbance as discussed below.

4.3 SLEEP DISTURBANCE DUE TO NOISE

The effects of noise on sleep have been a concern of parties interested in assuring suitable residential noise environments. Early studies noted background levels in bedrooms where sleep was apparently undisturbed by noise. Various levels between 25 to 50 dB (A-weighted) were observed to be associated with an absence of sleep disturbance. The bulk of research on noise effects, on which the current relationship is based, was conducted in the 1970s. The tests were conducted in a laboratory environment where awakening was measured either by a verbal response or by a button push, or by brain wave recordings (EEG) indicating stages of sleep (and awakening). Various types of noise were presented to the sleeping subjects throughout the night. These noises consisted primarily of transportation noises, including those produced by aircraft, trucks, cars, and trains. The aircraft noises included both flyover noises as well as sonic booms. Synthetic noises, including laboratory-generated sounds consisting of shaped noises and tones, were also studied.

Lukas (1975) and Goldstein and Lukas (1980) reviewed data available in the 1970s on sleep-stage changes and waking effects of different levels of noise. Because no known health effects were associated with either waking or sleep-stage changes, either measure was potentially useful as a metric of sleep disturbance. However, since waking, unlike sleep-stage changes, is simple to quantify, it is often selected as the metric for estimating the effects of noise on sleep. These two reviews showed great variability in the percentage of people awakened by exposure to noise. The variability is not merely random error, but reflects individual differences in adaptation or habituation, and also interpretation of the meaning of the sounds. Such factors cannot be estimated from the purely acoustic measures in noise exposure.

Another major review by Griefahn and Muzet (1978) provided similar information for effects of noise on waking. However, Griefahn and Muzet's results suggested less waking for a given level of noise than predicted by Lukas.

A recent review (Pearsons et al. 1989) of the literature related to sleep disturbance demonstrated that the relationship, based exclusively on laboratory studies, predicts greater sleep disturbance than that likely to occur in a real-life situation in which some adaptation has occurred. The prediction of relationships developed in this review should not be considered to yield precise estimates of sleep disturbance because of the great variability in the data sets from which they were developed. The relationships include only the duration and level components of "noise exposure." Increasing the precision of prediction would depend on quantification of some nonacoustic factors. Further, a recent review of field, as well as laboratory studies, suggests that habituation may reduce the effect of noise on sleep (Pearsons et al. 1989).

Noise must penetrate the home to disturb sleep. Interior noise levels are lower than exterior levels due to the attenuation of the sound energy by the structure. The amount of attenuation provided by the building is dependent on the type of construction and whether the windows are open or closed. The approximate national average attenuation factors are 15 dB for open windows and 25 dB for closed windows (Environmental Protection Agency 1974).

Incorporating these attenuation factors, the percent awakened relationships previously discussed under summer conditions are presented in Figure H-3. In conclusion, the scientific literature does not provide a consensus on sleep disturbance. There is no recognized criteria or standard which provides guidance to assess sleep disturbance due to noise.

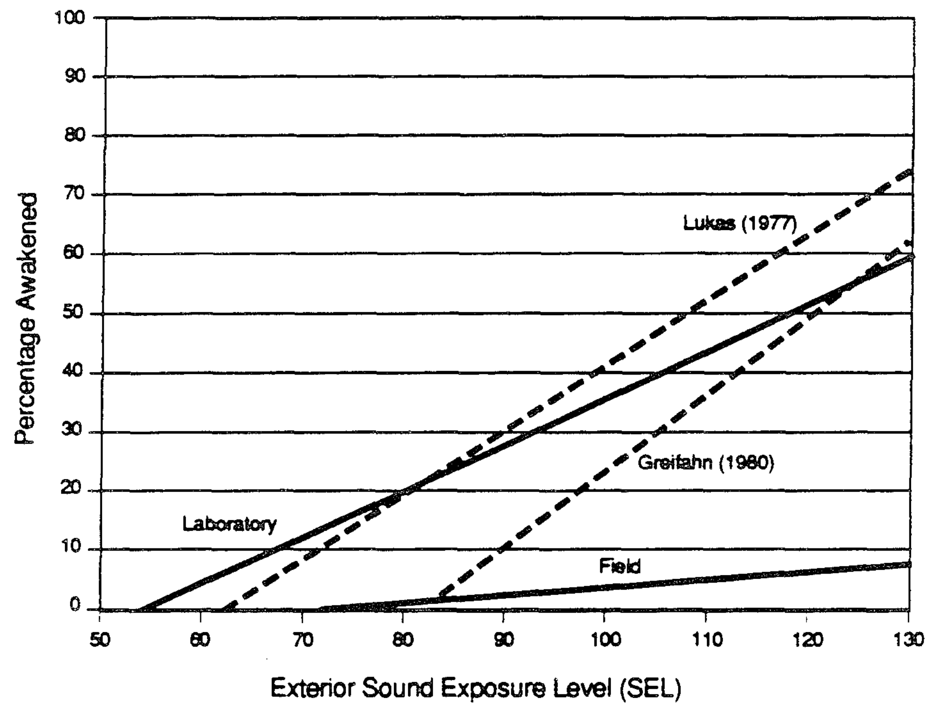
4.4 NOISE-INDUCED HEARING LOSS

Hearing loss is measured in decibels and refers to the permanent auditory threshold shift of an individual's hearing in an ear. Auditory threshold refers to the minimum acoustic signal that evokes an auditory sensation (i.e., the quietest sound a person can hear). When a threshold shift occurs, a person's hearing is not as sensitive as before and the minimum sound that a person can hear must be louder. The threshold shift which naturally occurs with age is called presbycusis. Exposure to high levels of sound can cause temporary and permanent threshold shifts usually referred to as noise-induced hearing loss. Permanent hearing loss is generally associated with destruction of the hair cells of the inner ear.

The EPA (1974) and the Committee on Hearing, Bioacoustics, and Biomechanics (National Academy of Sciences 1981) has addressed the risk of outdoor hearing loss. The Committee has concluded that hearing loss would not be expected for people living outside the noise contour of DNL 75 dB. Several studies of populations near existing airports in the United States and the United Kingdom have shown that the possibility for permanent hearing loss in communities near intense commercial take-off and landing patterns is remote. An FAA-funded study compared the hearing of the population near the Los Angeles International Airport to that of the population in a quiet area away from aircraft noise (Parnel et al. 1972). A similar study was performed in the vicinity of London Heathrow Airport (Ward et al. 1972). Both studies concluded that there was no significant difference between the hearing loss of the two populations, and no correlation between the hearing level with the length of time people lived in the airport neighborhood.

4.5 NONAUDITORY HEALTH EFFECTS OF RESIDENTIAL AIRCRAFT NOISE

Based on summaries of previous research in the field (Thompson 1981; Thompson and Fidell 1989), predictions of nonauditory health effects of aircraft noise cannot be made. A valid predictive procedure requires: (1) evidence for causality between aircraft noise exposure and adverse nonauditory health consequences, and (2) knowledge of a quantitative relationship between amounts of noise exposure (dose) and specific health effects. Because results of studies of aircraft noise on health are equivocal, there is no sound scientific basis for making adequate risk assessments.



Source: Pearsons (1985)

BR-ENG/025

Sleep Disruption (Awakening)

Figure H-3

Alleged nonauditory health consequences of aircraft noise exposure that have been studied include birth defects, low birth weight, psychological illness, cancer, stroke, hypertension, sudden cardiac death, myocardial infarction, and cardiac arrhythmias. Of these, hypertension is the most biologically plausible effect of noise exposure. Noise appears to cause many of the same biochemical and physiological reactions, including temporary elevation of blood pressure, as do many other environmental stressors. These temporary increases in blood pressure are believed to lead to a gradual resetting of the body's blood pressure control system. Over a period of years, permanent hypertension may develop (Peterson et al. 1984).

Studies of residential aircraft noise have produced contradictory results. Early investigations indicated that hypertension was two to four times higher in areas near airports than in areas located away from airports (Karagodina et al. 1969). Although Meecham and Shaw (1988) continue to report excessive cardiovascular mortality among individuals 75 years or older living near the Los Angeles International Airport, their findings cannot be replicated (Frerichs et al. 1980). In fact, noise exposure increased over the years, while there was a decline in all cause, age-adjusted death rates and inconsistent changes in age-adjusted cardiovascular, hypertension, and cerebrovascular disease rates.

Studies which have controlled for multiple factors have shown no, or a very weak, association between noise exposure and nonauditory health effects. This observation holds for studies of occupational and traffic noise as well as for aircraft noise exposure. In contrast to the early reports of two- to six-fold increases in hypertension due to high industrial noise (Thompson and Fidell 1989), the more rigorously controlled studies of Talbott et al. (1985) and van Dijk et al. (1987) show no association between hypertension and prolonged exposure to high levels of occupational noise.

In the aggregate, studies indicate no association exists between street traffic noise and blood pressure or other cardiovascular changes. Two large prospective collaborative studies of heart disease are of particular interest. To date, cross-sectional data from these cohorts offer contradictory results. Data from one cohort show a slight increase in mean systolic blood pressure (2.4 mm Hg) in the noisiest compared to the quietest area; while data from the second cohort show the lowest mean systolic blood pressure and highest high-density lipoprotein cholesterol (lipoprotein protective of heart disease) for men in the noisiest area (Babisch and Gallacher 1990). These effects of traffic noise on blood pressure and blood lipids were more pronounced in men who were also exposed to high levels of noise at work.

It is clear from the foregoing that the current state of technical knowledge cannot support inference of a causal or consistent relationship, nor a quantitative dose-response, between residential aircraft noise exposure and health consequences. Thus, no technical means are available for predicting extra-auditory health effects of noise exposure. This conclusion cannot be construed as evidence of no effect from residential aircraft noise exposure to nonauditory health. Current findings, taken in sum, indicate only that further rigorous studies are needed.

4.6 DOMESTIC ANIMALS AND WILDLIFE

A recent study was published on the effects of aircraft noise on domestic animals which provided a review of the literature and a review of 209 claims pertinent to aircraft noise over a period spanning 32 years (Bowles et al. 1990). Studies since the late 1950s were motivated both by public concerns about what was then a relatively novel technology, supersonic flight, and by claims leveled against the U.S. Air Force for damage done to farm animals by very low-level subsonic overflights. Since that time, over 40 studies of aircraft noise and sonic booms, both in the United States and overseas, have addressed acute effects, including effects of startle responses (sheep, horses, cattle, fowl), and effects on reproduction and growth (sheep, cattle, fowl, swine), parental behaviors (fowl, mink), milk letdown (dairy cattle, dairy goats, swine), and egg production.

The amount of literature on the effects of noise on domestic animals is not large, and most of the studies have focused on the relation between dosages of continuous noise and effects. Chronic noises are not a good model for aircraft noise, which lasts only a few seconds, but is often very startling. The review of claims suggest that a major source of loss was panic induced in naive animals.

Aircraft noise may have effects because it might trigger a startle response, a sequence of physiological and behavioral events that once helped animals avoid predators. There are good dose-response relations describing the tendency to startle to various levels of noise, and the effect of habituation on the startle response.

The link between startles and serious effects (i.e., effects on productivity), is less certain. Here, an effect is defined as any change in a domestic animal that alters its economic value, including changes in body weight or weight gain, numbers of young produced, weight of young produced, fertility, milk production, general health, longevity, or tractability. At this point, changes in productivity are usually considered an adequate indirect measure of changes in well being, at least until objective legal guidelines are provided.

Recent focus on the effects on production runs counter to a trend in the literature toward measuring the relation between noise and physiological effects, such as changes in corticosteroid levels and in measures of immune system function. As a result, it is difficult to determine the relation between dosages of noise and serious effects using only physiological measures. The experimental literature is inadequate to document long-term or subtle effects resulting from exposure to aircraft noise.

4.7 LAND USE COMPATIBILITY GUIDELINES

Widespread concern over the impacts of aircraft noise began in the 1950s when high-powered jet aircraft were introduced to military service. The concern about noise impacts to the communities around and in the air bases led the Air Force to conduct major investigations into the noise properties of jets, methods of noise control for test operations, and the effects of noise from aircraft operations in communities surrounding air bases. These studies established an operational framework of investigation and identified the basic parameters affecting community response to noise. These studies also resulted in the first detailed procedures for estimating community response to aircraft noise (Stevens and Pietrasanta 1957).

Although most attention was given to establishing methods of estimating residential community response to noise (and establishing the conditions of noise "acceptability" for residential use), community development involves a variety of land uses with varying sensitivity to noise. Thus, land planning with respect to noise requires the establishment of noise criteria for different land uses. This need was met with the initial development of aircraft noise compatibility guidelines for varied land uses in the mid-1960s (Bishop 1964).

In residential areas, noise intrusions generate feelings of annoyance in individuals. High degrees of annoyance lead to the increasing potential for complaints and community actions (most typically, threats of legal actions, drafting of noise ordinances). Annoyance is based largely on noise interference with speech communication, listening to radio and television, and sleep. Annoyance in the home may also be based on dislike of "outside" intrusions of noise even though no specific task is interrupted.

Residential land use guidelines have been developed from consideration of two related factors:

(a) Accumulated case history experience of noise complaints and community actions near civil and military airports; and

(b) Relationships between environmental noise levels and degrees of annoyance (largely derived from social surveys in a number of communities).

In the establishment of land use guidelines for other land uses, the prime consideration is task interference. For many land uses, this translates into the degree of speech interference, taking into consideration the importance of speech communication and the presence of nonaircraft noise sources directly related to the specific land use considered. For some noise-sensitive land uses where any detectable noise signals which rise above the ambient noise level are unwanted (such as music halls), detectability may be the criterion rather than speech interference.

A final factor to be considered in all land uses involving indoor activities is the degree of noise insulation provided by the building structures. The land use guideline limits for unrestricted development within a specific land use assume noise insulation properties provided by typical commercial building construction. The detailed land use guidelines may also define a range of higher noise exposure where construction or development can be undertaken, provided a specified amount of noise insulation is included in the buildings. Special noise studies, undertaken by architectural or engineering specialists, may be needed to define the special noise insulation requirements for construction in these guideline ranges.

Estimates of total noise exposure resulting from aircraft operations, as expressed in DNL values, can be interpreted in terms of the probable effect on land uses. Suggested compatibility guidelines for evaluating land uses in aircraft noise exposure areas were originally developed by the FAA as presented in Section 3.4.4, Noise. Part 150 of the FAA regulations prescribes the procedures, standards, and methodology governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs. It prescribes the use of yearly DNL in the evaluation of airport noise environments. It also identifies those land use types which are normally compatible with various levels of noise exposure. Compatible or incompatible land use is determined by comparing the predicted or measured DNL level at a site with the values given in the table. The guidelines reflect the statistical variability of the responses of large groups of people to noise. Therefore, any particular level might not accurately assess an individual's perception of an actual noise environment.

While the FAA guidelines specifically apply to aircraft noise, it should be noted that DNL is also used to describe the noise environment due to other community noise sources, including motor vehicles and railroads. The use of DNL is endorsed by the scientific community to assess land use compatibility as it pertains to noise (American National Standards Institute 1990). Hence, the land use guidelines presented by the FAA can also be used to assess the noise impact from community noise sources other than aircraft.

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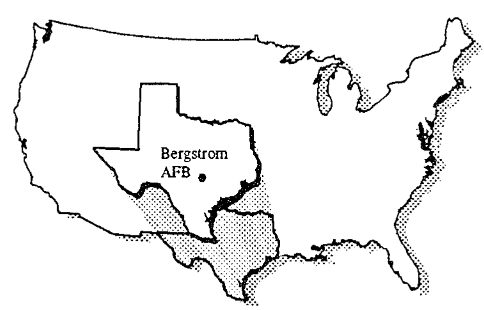


APPENDIX I

APPENDIX I

AIR EMISSIONS INVENTORY

The information that was used to calculate the annual and worst-case hourly air pollutant emissions associated with the Proposed Action and alternatives for Bergstrom Air Force Base (AFB) reuse scenarios is presented in Tables I-1, I-2, I-3, I-4, and I-5. Emissions are calculated for the years 1994, 1997, and 2002. These emission calculations were then used in the air quality model to predict the worst-case 1-hour ground-level ambient concentrations associated with aircraft operations.

The following procedures were used in estimating the emission inventories for the Proposed Action and alternatives:

- For the source category Aircraft Flying Operations, emissions were predicted by the Emissions Dispersion and Modeling System (EDMS) model based on projected types of aircraft and estimated frequency of flight operations for each aircraft.

- For the source categories Aircraft Ground Equipment, Waste Burning, Solvent Use, and Petroleum Storage and Transfer, emission estimates were developed using procedures and emission factors described in the *Manual Calculation Methods for Air Pollution Inventories* (U.S. Air Force Occupational and Environmental Health Laboratory 1988) and *Compilation of Air Pollutant Emission Factors, AP-42* (Environmental Protection Agency 1985a,b).

- For the Fuel Combustion source category, emission estimates were calculated using natural gas consumption and emission factors in *AP-42* (Environmental Protection Agency 1985a,b).

- For the source categories Industrial Processes and Miscellaneous Processes (including farming operations, construction and demolition, entrained road dust, fires, and other natural sources), emission factors for potential processes were obtained from *AP-42* (Environmental Protection Agency 1985a,b).

- For the source category Motor Vehicles, emission factors for volatile organic compounds (VOCs), carbon monoxide (CO), and nitrogen oxides (NO_x) were obtained from Mobile 4 factors in *AP-42* (Environmental Protection Agency 1985a,b), while for sulfur oxides (SO_x) and particulates, emission factors were obtained from EMFAC7PC (California Air Resources Board 1990).

Table I-1

Bergstrom AFB Emissions Inventory for Oxides of Nitrogen (tons per day)

Source	Proposed Action			General Aviation/Air Cargo Airport Alternative			Mixed-Use Development Alternative		
	1994	1997	2002	1994	1997	2002	1994	1997	2002
Aircraft Flying Operations	0.25	1.89	2.28	0.25	0.49	0.92	--	--	--
Aircraft Ground Equipment	0.04	0.28	0.34	0.04	0.08	0.14	--	--	--
Fuel Combustion	0.03	0.05	0.07	0.01	0.03	0.05	0.01	0.02	0.04
Waste Burning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solvent Use	--	--	--	--	--	--	--	--	--
Petroleum Storage and Transfer	--	--	--	--	--	--	--	--	--
Industrial Processes	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01
Miscellaneous Processes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Motor Vehicles	0.17	1.52	2.42	0.25	0.92	1.79	0.15	0.68	1.51
Total:	**0.49**	**3.74**	**5.12**	**0.55**	**1.52**	**2.91**	**0.16**	**0.70**	**1.56**

Table I-2

Bergstrom AFB Emissions Inventory for Volatile Organic Compounds (VOCs)
(tons per day)

	Proposed Action			General Aviation/Air Cargo Airport Alternative			Mixed-Use Development Alternative		
Source	**1994**	**1997**	**2002**	**1994**	**1997**	**2002**	**1994**	**1997**	**2002**
Aircraft Flying Operations	0.28	1.76	1.24	0.28	0.44	0.59	--	--	--
Aircraft Ground Equipment	0.02	0.12	0.09	0.02	0.03	0.04	--	--	--
Fuel Combustion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste Burning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solvent Use	0.12	0.17	0.23	0.12	0.14	0.19	0.01	0.02	0.06
Petroleum Storage and Transfer	0.06	0.09	0.12	0.06	0.07	0.09	0.00	0.00	0.01
Industrial Processes	0.02	0.04	0.06	0.01	0.02	0.04	0.01	0.02	0.05
Miscellaneous Processes	0.00	0.01	0.02	0.00	0.01	0.01	0.00	0.01	0.02
Motor Vehicles	0.12	1.08	1.67	0.18	0.66	1.24	0.11	0.49	1.05
Total:	**0.62**	**3.27**	**3.43**	**0.67**	**1.37**	**2.20**	**0.13**	**0.54**	**1.19**

Table I-3

Bergstrom AFB Emissions Inventory for Particulates (PM_{10})
(tons per day)

	Proposed Action			General Aviation/Air Cargo Airport Alternative			Mixed-Use Development Alternative		
Source	**1994**	**1997**	**2002**	**1994**	**1997**	**2002**	**1994**	**1997**	**2002**
Aircraft Flying Operations	0.02	0.10	0.09	0.02	0.03	0.03	--	--	--
Aircraft Ground Equipment	0.00	0.02	0.02	0.00	0.00	0.00	--	--	--
Fuel Combustion	--	--	--	--	--	--	--	--	--
Waste Burning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solvent Use	--	--	--	--	--	--	--	--	--
Petroleum Storage and Transfer	--	--	--	--	--	--	--	--	--
Industrial Processes	0.07	0.42	0.79	0.03	0.29	0.55	0.05	0.35	0.66
Miscellaneous Processes	0.13	0.90	1.32	0.07	0.83	1.11	0.09	0.85	1.14
Motor Vehicles	0.02	0.18	0.29	0.03	0.11	0.21	0.02	0.08	0.18
Total:	**0.24**	**1.62**	**2.51**	**0.15**	**1.26**	**1.90**	**0.16**	**1.28**	**1.98**

Table I-4

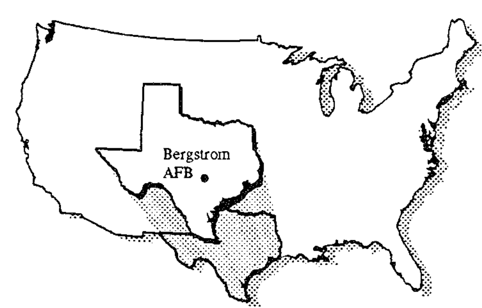
Bergstrom AFB Emissions Inventory of Oxides of Sulfur
(tons per day)

Source	*Proposed Action*			General Aviation/Air Cargo Airport *Alternative*			Mixed-Use Development Alternative		
	1994	1997	2002	1994	1997	2002	1994	1997	2002
Aircraft Flying Operations	0.04	0.17	0.18	0.04	0.07	0.09	--	--	--
Aircraft Ground Equipment	0.00	0.02	0.02	0.00	0.00	0.00	--	--	--
Fuel Combustion	0.00	0.01	0.02	0.00	0.01	0.01	0.00	0.01	0.01
Waste Burning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solvent Use	--	--	--	--	--	--	--	--	--
Petroleum Storage and Transfer	--	--	--	--	--	--	--	--	--
Industrial Processes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miscellaneous Processes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Motor Vehicles	0.02	0.21	0.35	0.03	0.13	0.26	0.02	0.09	0.22
Total:	**0.06**	**0.41**	**0.57**	**0.07**	**0.21**	**0.36**	**0.02**	**0.10**	**0.23**

Table I-5

Bergstrom AFB Emissions Inventory for Carbon Monoxide
(tons per day)

	Proposed Action			General Aviation/Air Cargo Airport Alternative			Mixed-Use Development Alternative		
Source	**1994**	**1997**	**2002**	**1994**	**1997**	**2002**	**1994**	**1997**	**2002**
Aircraft Flying Operations	0.93	6.09	6.32	0.93	2.62	3.82	--	--	--
Aircraft Ground Equipment	0.14	0.91	0.95	0.14	0.39	0.59	--	--	--
Fuel Combustion	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.01
Waste Burning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solvent Use	--	--	--	--	--	--	--	--	--
Petroleum Storage and Transfer	--	--	--	--	--	--	--	--	--
Industrial Processes	0.03	0.95	1.64	0.01	0.67	1.15	0.02	0.80	1.38
Miscellaneous Processes	0.00	0.01	0.03	0.00	0.01	0.02	0.00	0.00	0.03
Motor Vehicles	1.10	9.74	14.66	1.68	5.92	10.85	1.01	4.39	9.16
Total:	**2.20**	**17.71**	**23.61**	**2.76**	**9.62**	**16.44**	**1.03**	**5.19**	**10.58**



APPENDIX J

APPENDIX J

ENVIRONMENTAL IMPACTS OF BERGSTROM AIR FORCE BASE REUSE BY LAND USE CATEGORY

The purpose of this appendix is to quantify the environmental impacts of each land use category identified for the three alternatives, including the Proposed Action, evaluated in this Environmental Impact Statement (EIS). The data in Tables J-1 through J-18 present the impacts of individual land use activities, such as industrial, commercial, or institutional, on their respective Regions of Influence, as well as compare the impacts of the Proposed Action and alternatives for three benchmark years, 1997, 2002, and 2012, where applicable.

Tables J-1 through J-5 present data on the influencing factors (factors that drive environmental impacts); Tables J-6 through J-18 list the impacts on individual environmental resources evaluated in the EIS. These resources include transportation, utilities, hazardous materials and hazardous waste management, soils and geology, water resources, air quality, noise, biological resources, and cultural and paleontological resources. Included in this appendix is at least one table for each resource area, except water resources. Data on water demand are presented as part of the utilities analysis; the effects on surface and groundwater resources in and around the base have not been quantified in the EIS and have not been disaggregated in this appendix.

No quantification is provided in Table J-12 because the quantities of hazardous materials used and hazardous waste generated will depend on the type and intensity of industrial and commercial activities developed on the site. Table J-12 presents a generalized description of the hazardous materials used under individual land use categories. Table J-13 summarizes the number of Installation Restoration Program (IRP) sites identified on the base as of 1992, but does not give the likely status of these sites in 1997, 2002, and 2012. It is expected that most of the sites will be remediated by the first benchmark year (1997).

A number of factors and assumptions were used in disaggregating the total impacts of an alternative to individual land use categories. These are presented as footnotes on the relevant tables.

Table J-1

Total Direct Employment[1] by Land Use Category

Land Use Category	1997			2002			2012		
	P.A.[2]	Alt. 1	Alt. 2	P.A.	Alt. 1	Alt. 2	P.A.	Alt. 1	Alt. 2
Airfield	0	0	N/A[3]	0	0	N/A	0	0	N/A
Aviation Support	2,520	930	N/A	2,585	930	N/A	2,653	930	N/A
Industrial	969	969	969	2,199	2,199	2,199	3,115	2,199	2,199
Institutional	1,960	1,960	2,004	5,968	5,968	6,011	6,098	6,098	10,019
Commercial	630	630	210	1,622	1,622	631	3,773	3,293	1,297
Residential	N/A	0	0	N/A	0	0	N/A	0	0
Public/Recreation	20	20	20	20	20	20	20	20	20
Agriculture	N/A	N/A	0	N/A	N/A	0	0	0	0
Government-Retained Land[4]	1,912	1,912	N/A	1,912	1,912	N/A	1,912	1,912	N/A
Construction Phase	603	131	126	0	0	0	0	0	0
Total:	**8,614**	**6,552**	**3,329**	**14,306**	**12,651**	**8,861**	**17,571**	**14,452**	**13,535**
Total Full-Time Jobs:	**6,897**	**4,835**	**3,329**	**12,589**	**10,934**	**8,861**	**15,854**	**12,734**	**13,535**

Notes: [1]Total direct employment includes all workers employed at the Bergstrom AFB site, whether they are newly hired or are transferred from other parts of Travis County.
[2]P.A. = Proposed Action.
Alt. 1 = General Aviation/Air Cargo Airport Alternative.
Alt. 2 = Mixed-Use Development Alternative.
[3]N/A = Not applicable.
[4]Includes part-time jobs.

Table J-2

Total Employment[1] by Land Use Category

Land Use Category	1997			2002			2012		
	P.A.[2]	Alt. 1	Alt. 2	P.A.	Alt. 1	Alt. 2	P.A.	Alt. 1	Alt. 2
Airfield	0	0	N/A[3]	0	0	N/A	0	0	N/A
Aviation Support	2,877	1,145	N/A	2,872	1,115	N/A	2,986	1,111	N/A
Industrial	1,878	1,664	1,091	3,545	3,554	2,358	4,969	3,524	2,354
Institutional	2,082	2,054	2,130	6,211	6,213	6,229	6,340	6,342	10,371
Commercial	1,275	1,058	385	2,709	2,572	933	6,205	5,028	1,860
Residential	N/A	0	0	N/A	0	0	N/A	0	0
Public/Recreation	45	39	45	36	36	34	36	36	34
Agriculture	N/A	N/A	0	N/A	N/A	0	N/A	N/A	0
Government-Retained Land[4]	2,552	2,401	N/A	2,330	2,333	N/A	2,318	2,323	N/A
Construction Phase	1,357	256	284	0	0	0	0	0	0
Total:	**12,066**	**8,617**	**3,935**	**17,703**	**15,823**	**9,554**	**22,854**	**18,364**	**14,619**

Notes: [1]Total employment includes direct and secondary employment.
[2]P.A. = Proposed Action.
Alt. 1 = General Aviation/Air Cargo Airport Alternative.
Alt. 2 = Mixed-Use Development Alternative.
[3]N/A = Not applicable.
[4]Includes part-time jobs.

Table J-3

New Direct Employment[1] by Land Use Category

Land Use Category	1997 P.A.[2]	1997 Alt. 1	1997 Alt. 2	2002 P.A.	2002 Alt. 1	2002 Alt. 2	2012 P.A.	2012 Alt. 1	2012 Alt. 2
Airfield	0	0	N/A[3]	0	0	N/A	0	0	N/A
Aviation Support[3]	286	225	N/A	351	225	N/A	419	225	N/A
Industrial	727	727	97	1,649	1,649	220	2,336	1,649	220
Institutional	98	98	100	298	298	301	305	305	501
Commercial	516	448	139	1,331	1,156	418	3,064	2,159	801
Residential	N/A	0	0	N/A	0	0	N/A	0	0
Public/Recreation	20	20	20	20	20	20	20	20	20
Agriculture	N/A	N/A	0	N/A	N/A	0	N/A	N/A	0
Government-Retained Land[4]	512	512	N/A	512	512	N/A	512	512	N/A
Construction Phase	603	131	126	0	0	0	0	0	0
Total:	**2,762**	**2,161**	**482**	**4,161**	**3,860**	**959**	**6,656**	**4,870**	**1,542**
Total Full-Time Jobs:	**2,545**	**1,944**	**482**	**3,944**	**3,644**	**959**	**6,439**	**4,653**	**1,542**

Notes: [1]New employment is the difference between total employment and jobs transferred from other parts of Travis County. Most environmental impacts are generated by new employment; impacts of local transfers are part of the baseline (Affected Environment) conditions.

[2]P.A. = Proposed Action.
Alt. 1 = General Aviation/Air Cargo Airport Alternative.
Alt. 2 = Mixed-Use Development Alternative.
[3]N/A = Not applicable.
[4]Includes part-time jobs.

Table J-4

Population Inmigration[1] by Land Use Category

Land Use Category	1997			2002			2012		
	P.A.[2]	Alt. 1	Alt. 2	P.A.	Alt. 1	Alt. 2	P.A.	Alt. 1	Alt. 2
Airfield	0	0	N/A[3]	0	0	N/A	0	0	N/A
Aviation Support	100	38	N/A	190	127	N/A	442	178	N/A
Industrial	254	124	38	892	933	37	2,464	1,301	35
Institutional	34	17	39	161	169	51	322	241	80
Commercial	180	76	55	720	654	71	3,232	1,704	128
Residential	N/A	0	0	N/A	0	0	N/A	0	0
Public/Recreation	0	0	0	0	0	0	0	0	0
Agriculture	N/A	N/A	0	N/A	N/A	0	N/A	N/A	0
Government-Retained Land	0	0	N/A	0	0	N/A	0	0	N/A
Construction Phase	0	0	0	0	0	0	0	0	0
Total:	**568**	**255**	**132**	**1,963**	**1,883**	**159**	**6,460**	**3,424**	**243**

Notes: [1]No population inmigration was assumed for residential, public/recreation, agriculture, and government-retained land categories, or for the construction phase.
[2]P.A. = Proposed Action.
Alt. 1 = General Aviation/Air Cargo Airport Alternative.
Alt. 2 = Mixed-Use Development Alternative.
[3]N/A = Not applicable.

Table J-5

Land Use Impacts[1] by Land Use Category

Land Use Category	1997			2002			2012		
	P.A.[2]	Alt. 1	Alt. 2	P.A.	Alt. 1	Alt. 2	P.A.	Alt. 1	Alt. 2
Airfield	1,626	1,303	N/A[3]	1,626	1,303	N/A	1,626	1,303	N/A
Aviation Support	512	519	N/A	512	519	N/A	512	519	N/A
Industrial	42	28	312	82	56	624	122	84	936
Institutional	58	50	90	116	100	180	173	154	266
Commercial	47	20	105	94	40	210	141	61	314
Residential	N/A	92	126	N/A	92	126	N/A	92	126
Public/Recreation	110	87	155	220	174	310	332	261	466
Agriculture	N/A	N/A	370	N/A	N/A	740	N/A	N/A	1,108
Government-Retained Land	310	742	N/A	310	742	N/A	310	742	N/A
Total:	**2,705**	**2,841**	**1,158**	**2,960**	**3,026**	**2,190**	**3,216**	**3,216**	**3,216**

Notes: [1]For airfield, aviation support, and government-retained land categories, land absorption rates were assumed to be 100 percent by 1997. For all other categories, absorption rates were assumed to be approximately one-third of the 2012 acreage in 1997 and two-thirds of the 2012 acreage in 2002.

[2]P.A. = Proposed Action.

Alt. 1 = General Aviation/Air Cargo Airport Alternative.

Alt. 2 = Mixed-Use Development Alternative.

[3]N/A = Not applicable.

Table J-6

Transportation Impacts by Land Use Category
(average daily one-way trips generated)

Land Use Category	1997 P.A.[1]	1997 Alt. 1	1997 Alt. 2	2002 P.A.	2002 Alt. 1	2002 Alt. 2	2012 P.A.	2012 Alt. 1	2012 Alt. 2
Airfield	0	0	N/A[2]	0	0	N/A	0	0	N/A
Aviation Support[3]	11,874	1,352	N/A	13,820	1,359	N/A	18,531	1,386	N/A
Industrial[4]	2,229	2,229	2,229	5,058	5,058	5,058	7,165	5,058	5,058
Institutional[5]	5,880	5,880	6,012	17,904	17,904	18,033	18,294	18,294	30,057
Commercial[6]	2,983	2,645	1,188	6,105	5,849	3,136	11,060	9,551	5,403
Residential[7]	N/A	1,116	1,524	N/A	1,116	1,524	N/A	1,116	1,524
Public/Recreation[8]	140	140	140	140	140	140	140	140	140
Agriculture	N/A	N/A	Negligible	N/A	N/A	Negligible	N/A	N/A	Negligible
Government-Retained Land	1,633	1,633	N/A	1,633	1,633	N/A	1,633	1,633	N/A
Construction Phase[9]	1,206	262	252	0	0	0	0	0	0
Total:	**25,945**	**15,257**	**11,345**	**44,660**	**33,059**	**27,891**	**56,823**	**37,178**	**42,182**

Notes: [1]P.A. = Proposed Action.
Alt. 1 = General Aviation/Air Cargo Airport Alternative.
Alt. 2 = Mixed-Use Development Alternative.
[2]N/A = Not applicable.
[3]Trips generated is sum of one trip per enplaned/deplaned passenger plus four trips per general aviation operation plus two trips per military operation plus six trips per air cargo operation plus four trips per aviation support employee plus four trips per Regional Corrosion Control Facility employee plus four trips per full-time Air Force Reserve personnel plus four trips per part-time Air Force Reserve personnel (only 36 days per year) plus four trips per full-time Texas Army National Guard (ANG) personnel plus four trips per part-time Texas ANG personnel (only 102 days per year).
[4]Trips generated is the sum of four trips per employee plus three trips per visitor (visitors = 20% of industrial employees).
[5]Trips generated is the sum of four trips per employee plus two trips per visitor (visitors = one per employee).
[6]Trips generated is the sum of four trips per employee plus two trips per shopper (shoppers = 20% of base employment).
[7]Trips generated is the sum of four trips per employee plus six trips per household on the base.
[8]Trips generated is the sum of four trips per employee plus two trips per visitor (visitors = five per employee).
[9]Trips generated is two trips per construction worker.

Table J-7

Water Demand[1] by Land Use Category
(gallons per day)

Land Use Category	1997			2002			2012		
	P.A.[2]	Alt. 1	Alt. 2	P.A.	Alt. 1	Alt. 2	P.A.	Alt. 1	Alt. 2
Airfield	0	0	N/A[3]	0	0	N/A	0	0	N/A
Aviation Support	21,894	14,519	N/A	32,205	23,413	N/A	58,768	28,443	N/A
Industrial	36,285	23,281	5,266	113,978	117,987	7,049	281,457	154,853	6,827
Institutional	4,891	3,138	5,429	20,598	21,322	9,644	36,748	28,642	15,547
Commercial	28,364	16,956	9,181	98,853	89,567	18,297	383,226	209,601	33,676
Residential	N/A	0	0	N/A	0	0	N/A	0	0
Public/Recreation	400	400	400	400	400	400	400	400	400
Agriculture	N/A	N/A	0	N/A	N/A	0	N/A	N/A	0
Government-Retained Land[4]	0	0	N/A	0	0	N/A	0	0	N/A
Total:	**91,834**	**58,294**	**20,276**	**266,034**	**252,689**	**35,390**	**760,599**	**421,939**	**56,450**

Notes: [1]Water demand is the sum of onbase new employee requirements plus inmigrant requirements associated with each land use category. No inmigrant population was assumed for residential and agriculture land use categories.
[2]P.A. = Proposed Action.
Alt. 1 = General Aviation/Air Cargo Airport Alternative.
Alt. 2 = Mixed-Use Development Alternative.
[3]N/A = Not applicable.
[4]Water requirements for *government-retained* land are included in the aviation *support* category.

Table J-8

Wastewater Generation[1] by Land Use Category (gallons per day)

Land Use Category	1997			2002			2012		
	P.A.[2]	Alt. 1	Alt. 2	P.A.	Alt. 1	Alt. 2	P.A.	Alt. 1	Alt. 2
Airfield	0	0	N/A[3]	0	0	N/A	0	0	N/A
Aviation Support	16,420	10,890	N/A	24,154	17,560	N/A	44,076	21,333	N/A
Industrial	26,305	16,552	3,828	83,422	86,429	5,012	208,173	114,079	4,845
Institutional	3,546	2,231	3,946	15,076	15,619	6,857	27,180	21,100	11,034
Commercial	20,411	11,940	6,576	71,905	65,159	12,792	282,418	153,931	23,521
Residential	N/A	0	0	N/A	0	0	N/A	0	0
Public/Recreation	300	300	300	300	300	300	300	300	300
Agriculture	N/A	N/A	0	N/A	N/A	0	N/A	N/A	0
Government-Retained Land[4]	0	0	N/A	0	0	N/A	0	0	N/A
Total:	**66,982**	**41,913**	**14,650**	**194,857**	**185,067**	**24,961**	**562,147**	**310,743**	**39,700**

Notes: [1]Wastewater generation is the sum of onbase new employee generation plus inmigrant population generation associated with each land use category. No inmigrant population was assumed for residential and agriculture land use categories.

[2]P.A. = Proposed Action.

Alt. 1 = General Aviation/Air Cargo Airport Alternative.

Alt. 2 = Mixed-Use Development Alternative.

[3]N/A = Not applicable.

[4]Wastewater generation for government-retained land is included in the aviation support category.

Table J-9

Solid Waste Generation[1] by Land Use Category
(pounds per day)

Land Use Category	1997			2002			2012		
	P.A.[2]	Alt. 1	Alt. 2	P.A.	Alt. 1	Alt. 2	P.A.	Alt. 1	Alt. 2
Airfield	0	0	N/A[3]	0	0	N/A	0	0	N/A
Aviation Support	2,286	1,795	N/A	2,931	2,240	N/A	4,395	2,491	N/A
Industrial	1,996	1,346	288	6,111	6,312	407	14,657	8,155	396
Institutional	563	475	596	1,998	2,035	1,460	2,829	2,423	2,406
Commercial	2,623	1,899	799	8,052	7,194	1,937	26,290	15,452	3,633
Residential	N/A	0	0	N/A	0	0	N/A	0	0
Public/Recreation	100	100	100	100	100	100	100	100	100
Agriculture	N/A	N/A	0	N/A	N/A	0	N/A	N/A	0
Government-Retained Land[4]	0	0	N/A	0	0	N/A	0	0	N/A
Total:	**7,568**	**5,615**	**1,783**	**19,192**	**17,881**	**3,904**	**48,271**	**28,621**	**6,535**

Notes: [1]Solid waste generation is the sum of onbase new employee generation plus inmigrant population generation associated with each land use category. *No inmigrant population was assumed for residential and agriculture land use categories.*
[2]P.A. = Proposed Action.
Alt. 1 = General Aviation/Air Cargo Airport Alternative.
Alt. 2 = Mixed-Use Development Alternative.
[3]N/A = Not applicable.
[4]Solid waste generation for government-retained land is included in the aviation support category.

Table J-10

Electricity Demand[1] by Land Use Category (kWh per day)

Land Use Category	1997 P.A.[2]	1997 Alt. 1	1997 Alt. 2	2002 P.A.	2002 Alt. 1	2002 Alt. 2	2012 P.A.	2012 Alt. 1	2012 Alt. 2
Airfield	0	0	N/A[3]	0	0	N/A	0	0	N/A
Aviation Support	15,920	13,676	N/A	18,417	14,616	N/A	22,817	15,159	N/A
Industrial	38,797	37,234	5,224	90,923	91,347	11,249	141,726	95,325	11,225
Institutional	2,827	2,616	2,934	9,125	9,201	8,011	11,026	10,153	13,279
Commercial	14,885	11,961	4,078	40,755	35,694	11,125	110,770	71,872	21,231
Residential	N/A	0	0	N/A	0	0	N/A	0	0
Public/Recreation	496	496	496	496	496	496	496	496	496
Agriculture	N/A	N/A	0	N/A	N/A	0	N/A	N/A	0
Government-Retained Land[4]	0	0	N/A	0	0	N/A	0	0	N/A
Total:	**72,925**	**65,983**	**12,732**	**159,716**	**151,354**	**30,881**	**286,835**	**193,005**	**46,231**

Notes: [1]Electricity demand is the sum of onbase new employee requirements plus inmigrant household requirements associated with each land use category. No inmigrant households were assumed for residential and agriculture land use categories.
[2]P.A. = Proposed Action.
Alt. 1 = General Aviation/Air Cargo Airport Alternative.
Alt. 2 = Mixed-Use Development Alternative.
[3]N/A = Not applicable.
[4]Electricity requirements for government-retained land are included in the aviation support category.

Table J-11

Natural Gas Demand[1] by Land Use Category
(cubic feet per day)

Land Use Category	1997 P.A.[2]	1997 Alt. 1	1997 Alt. 2	2002 P.A.	2002 Alt. 1	2002 Alt. 2	2012 P.A.	2012 Alt. 1	2012 Alt. 2
Airfield	0	0	N/A[3]	0	0	N/A	0	0	N/A
Aviation Support	54,912	46,056	N/A	64,909	51,014	N/A	84,793	53,875	N/A
Industrial	169,424	161,183	22,856	399,697	401,931	48,681	634,346	422,905	48,554
Institutional	10,129	9,018	10,594	33,585	33,988	27,568	43,269	38,666	45,596
Commercial	53,333	41,226	14,726	150,004	131,847	38,284	434,674	273,705	72,899
Residential	N/A	0	0	N/A	0	0	N/A	0	0
Public/Recreation	1,638	1,638	1,638	1,638	1,638	1,638	1,638	1,638	1,638
Agriculture	N/A	N/A	0	N/A	N/A	0	N/A	N/A	0
Government-Retained Land[4]	0	0	N/A	0	0	N/A	0	0	N/A
Total:	**289,436**	**259,121**	**49,814**	**649,833**	**620,418**	**116,171**	**1,198,720**	**790,789**	**168,687**

Notes: [1]Natural gas demand is the sum of onbase new employee requirements plus inmigrant household requirements associated with each land use category. No inmigrant households were assumed for residential and agriculture land use categories.
[2]P.A. = Proposed Action.
Alt. 1 = General Aviation/Air Cargo Airport Alternative.
Alt. 2 = Mixed-Use Development Alternative.
[3]N/A = Not applicable.
[4]Natural gas requirements for government-retained land are included in the aviation support category.

Table J-12

Hazardous Materials Usage[1] by Land Use Category

Land Use Category	Proposed Action	General Aviation/Air Cargo Airport Alternative	Mixed-Use Development Alternative
Airfield	Aviation fuels, propylene glycol, ethylene glycol, heating oils.	Same as Proposed Action.	Not applicable.
Aviation Support	Fuels, solvents, paints, POL, hydraulic fluids, degreasers, corrosives, heavy metals, reactives, thinners, paints, glycols, ignitables, heating oils, plating chemicals, cyanides, laboratory chemicals.	Same as Proposed Action.	Not applicable.
Industrial	Solvents, heavy metals, POL, corrosives, catalysts, aerosols, fuels, heating oils, ignitables, pesticides.	Same as Proposed Action.	Same as Proposed Action.
Institutional	Pharmaceuticals, medical/biohazardous materials, chemotherapeutic drugs, radiological sources, heavy metals, laboratory chemicals, corrosives, ignitables, solvents, heating oils, lubricants, cleaners, pesticides, paints, thinners.	Same as Proposed Action.	Same as Proposed Action.
Commercial	Fuels, solvents, corrosives, POL, ignitables, heating oils, pesticides, dry-cleaning chemicals.	Same as Proposed Action.	Same as Proposed Action.
Residential	Not applicable.	Pesticides, fertilizers, fuels, oils, chlorine, and household chemicals.	Same as General Aviation/Air Cargo Airport Alternative.
Public/Recreation	Pesticides, fertilizers, chlorine, heating oils, paints, thinners, cleaners, solvents, aerosols, and POL.	Same as Proposed Action.	Same as Proposed Action.
Agriculture	Not applicable.	Not applicable.	Pesticides, fuels, oils, solvents, paints, and thinners.
Government-Retained Land	See Note 2	Same as Proposed Action.	Not applicable.

Notes: [1]The quantities of hazardous materials used will depend on the specified industrial development and, therefore, are not reported here.
[2]The types of hazardous materials used will be similar to those listed for the airfield, aviation support, industrial, and commercial categories.

Table J-13

Number of Installation Restoration Program Sites[1] by Land Use Category

Land Use Category	P.A.[2]	Alt. 1	Alt. 2
Airfield	10	5	N/A[3]
Aviation Support	8	5	N/A
Industrial	0	1	10
Institutional	1	1	3
Commercial	2	2	4
Residential	N/A	0	0
Public/Recreation	9	5	11
Agriculture	N/A	N/A	5
Government-Retained Land	4	11	N/A

Notes: [1]A total of 27 Installation Restoration Program sites have been identified on Bergstrom AFB as of 1992. Some sites overlap with more than one land use category. The number of sites identified will change as remediation measures are implemented for individual sites.

[2]P.A. = Proposed Action.
Alt. 1 = General Aviation/Air Cargo Airport Alternative.
Alt. 2 = Mixed-Use Development Alternative.
[3]N/A = Not applicable.

Table J-14

Soils and Geology[1] Impacts by Land Use Category
(acres of soil disturbed)

Land Use Category	P.A.[2]	Alt. 1	Alt. 2
Airfield	710	0	N/A[3]
Aviation Support	790	210	N/A
Industrial	60	84	43
Institutional	120	154	230
Commercial	105	61	41
Residential	N/A	0	0
Public/Recreation	30	0	0
Agriculture	N/A	N/A	1,108
Government-Retained Land	0	0	N/A
Total:	**1,815**	**509**	**1,422**

Notes: [1]Disturbance of soils would depend on the construction schedules of various onbase facilities. Therefore, no breakdown is provided for the benchmark years 1997, 2002, and 2012.
[2]P.A. = Proposed Action.
Alt. 1 = General Aviation/Air Cargo Airport Alternative.
Alt. 2 = Mixed-Use Development Alternative.
[3]N/A = Not applicable.

Table J-15

Air Quality Impacts by Land Use Category
(total emissions in tons/day)

Land Use Category	1997			2002		
	P.A.[1]	Alt. 1	Alt. 2	P.A.	Alt. 1	Alt. 2
Airfield[2]	10.01	3.65	N/A[3]	10.11	5.45	N/A
Aviation Support	7.66	0.92	N/A	7.78	0.75	N/A
Industrial	1.44	1.51	1.53	2.85	2.81	2.82
Institutional	3.79	3.98	4.13	10.07	9.94	10.05
Commercial	1.92	1.79	0.82	3.43	3.25	1.74
Residential	N/A	0.76	1.06	N/A	0.62	0.85
Public/Recreation	0.10	0.09	0.10	0.08	0.08	0.08
Agriculture	N/A	N/A	0.00	N/A	N/A	0.00
Government-Retained Land	1.05	1.10	N/A	0.92	0.91	N/A
Construction Phase	0.78	0.18	0.17	0.00	0.00	0.00
Total:	**26.75**	**13.98**	**7.81**	**35.24**	**23.81**	**15.54**

Notes: [1]P.A. = Proposed Action.
Alt. 1 = General Aviation/Air Cargo Airport Alternative.
Alt. 2 = Mixed-Use Development Alternative.
[2]For the airfield land use category, emissions are based on aircraft flying operations; for all other categories, emissions are based on average daily traffic generated by each land use category.
[3]N/A = Not applicable.

Table J-16

Expected Noise Levels by Land Use Category
(typical DNL in dB)

Land Use Category	P.A.[1]	Alt. 1	Alt. 2
Airfield	70-75	70-75	N/A[2]
Aviation Support	65-70	65-70	N/A
Industrial	65-70	65-70	65-70
Institutional	55-60	55-60	55-60
Commercial	60-65	60-65	60-65
Residential	50-55	50-55	50-55
Public/Recreation	50-55	50-55	50-55
Agriculture	N/A	50-55	50-55

Notes: [1]P.A. = Proposed Action.
Alt. 1 = General Aviation/Air Cargo Airport Alternative.
Alt. 2 = Mixed-Use Development Alternative.
[2]N/A = Not applicable.

Table J-17

Biological Resource[1] Impacts by Land Use Category
(acres of habitat disturbed)

Land Use Category	P.A.[2]	Alt. 1	Alt. 2
Airfield[2]	230	0	N/A[3]
Aviation Support	160	160	N/A
Industrial	0	0	410
Institutional	0	0	0
Commercial	90	0	230
Residential	N/A	0	0
Public/Recreation	0	0	0
Agriculture	N/A	N/A	1,000
Government-Retained Land	70	0	N/A
Total:	**550**	**160**	**1,640**

Notes: [1]Disturbance is reported over the 1994-2012 period and includes native vegetation and wildlife habitat disturbance.
[2]P.A. = Proposed Action.
Alt. 1 = General Aviation/Air Cargo Airport Alternative.
Alt. 2 = Mixed-Use Development Alternative.
[3]N/A = Not applicable.

Table J-18

Cultural and Paleontological Resources Impacts by Land Use Category

Land Use Category	P.A.[1]	Alt. 1	Alt. 2
Airfield	NI[2]	NI	N/A[3]
Aviation Support	NI	NI	N/A
Industrial	NI	NI	NI
Institutional	One potentially NRHP-eligible historic property (Building 3920) could be affected. Avoidance is possible.	NI	NI
Commercial	NI	NI	NI
Residential	N/A	NI	NI
Public/Recreation	NI	One potentially NRHP-eligible historic property (Building 3920) could be affected. Avoidance is possible.	One potentially NRHP-eligible historic property (Building 3920) could be affected. Avoidance is possible.
Agriculture	N/A	N/A	NI
Government-Retained Land	NI	NI	N/A

Notes: [1]P.A. = Proposed Action.
Alt. 1 = General Aviation/Air Cargo Airport Alternative.
Alt. 2 = Mixed-Use Development Alternative.
[2]NI = No impact to NRHP-eligible sites.
[3]N/A = Not applicable.

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