4.0 AFFECTED ENVIRONMENT

This section provides a description of the environment potentially affected by the Proposed Action within study areas established for this Environmental Impact Statement (EIS) as of 2005. This was the last full year for which data was available at the time the Notice of Intent was published in 2006. Information is also provided on wildlife species of possible concern identified during the Scoping process of this EIS. Species of possible concern identified during the Scoping process for the EIS initiated and then terminated for a previous airport expansion proposal are also addressed in this EIS. The EIS study areas are summarized below. More detailed descriptions of resource-specific study areas are presented in subsections to this section, as appropriate.

An Airport Study Area (ASA) was established to define the area of potential direct impacts from the Proposed Action on the noise-sensitive land uses within the immediate vicinity of the airport. The ASA boundary was established based on the existing fenced airport boundary and the estimated extent of the future (2015) Community Noise Equivalent Level (CNEL) 65 dBA noise contour (see **Section 4.1**) and is shown on **Figure 4-1.** The Federal Aviation Administration (FAA) recognizes CNEL as an alternative metric for California environmental documents (Appendix A, Section 14, paragraph 14.1a of FAA Order 1050.1E) and CNEL is used in this EIS for the discussion of noise conditions at Mammoth Yosemite Airport (MMH). Although there is no property acquisition, ground disturbance, or new construction associated with the Proposed Action, the ASA is used to address the potential impact from additional aircraft operations in the immediate vicinity of the airport.

Another study area is the Surface Transportation Study Area (STSA). Surface transportation corridors of the Town of Mammoth Lakes, Mono County, Inyo County, and the City of Bishop within the STSA are depicted in **Figure 4-2**.

A Socioeconomic Study Area (SSA) that includes Inyo and Mono counties was established for the assessment of social and socioeconomic data because most economic data are available on a county-wide basis and the economic impacts of the Proposed Action could be expressed over a fairly broad area of both counties. This area is shown on **Figure 4-3.**

For environmental considerations in this EIS that deal with potential aircraft noise and Department of Transportation Act, Section 4(f) (see **Section 4.5**) impacts beyond the airport environs, a supplemental noise Area of Investigation (AI) was established as shown in **Figure 4-4**. The AI was established to allow quantification of potential constructive use impacts that may occur from direct or cumulative aircraft noise levels. The method for defining the AI is based on the Initial Area of Investigation (IAI) from the Noise Screening Assessment, is discussed in **Appendix C-2**.

4.1 NOISE

This section describes the existing aircraft noise environment in the vicinity of MMH and summarizes the methodology used to undertake the noise analysis. The section also briefly describes key noise terms used in this EIS. A more detailed description of aircraft noise prediction methodologies and terms is included in **Appendix C-1**.

Applicable Federal and state guidance and regulations for noise are summarized in **Appendix B**.

4.1.1 Introduction

4.1.1.1 Aircraft Noise Descriptors

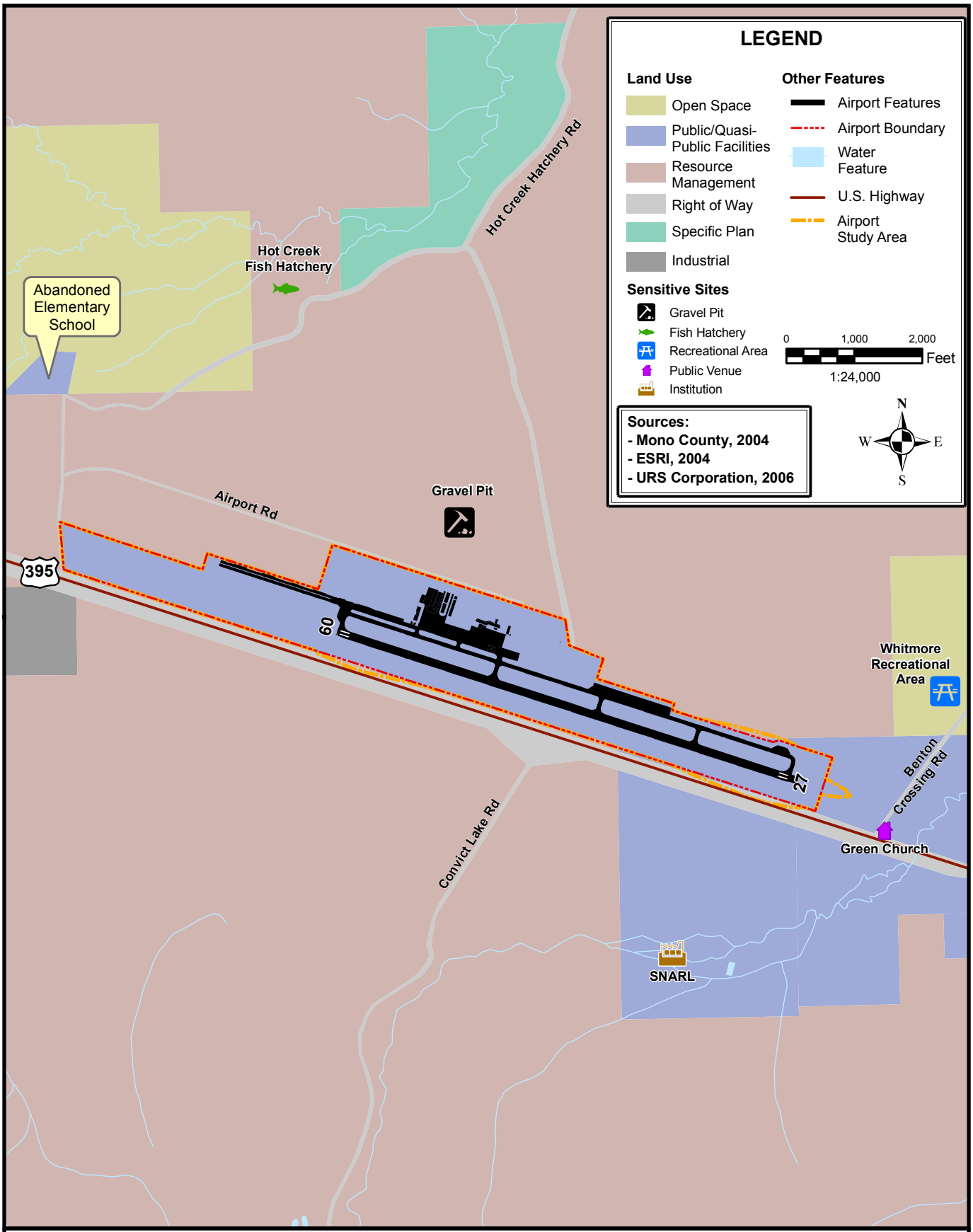
In this EIS, aircraft noise or sound levels are expressed in terms of A-weighted decibels (dBA). FAA Order 1050.1E Change 1, Appendix A, Paragraph 14.1a states: "For aviation noise analysis, the FAA has determined that the cumulative noise energy exposure of individuals to noise resulting from aviation activities must be established in terms of yearly day/night average sound level (DNL) as FAA's primary metric. The FAA recognizes CNEL (community noise equivalent level) as an alternative metric for California. CNEL is used in this EIS for the discussion of noise conditions at MMH.

CNEL is a 24-hour time-weighted average noise metric expressed in dBA which accounts for the noise levels of all individual aircraft events, the number of times those events occur, and the time of day which they occur. CNEL has three time periods: daytime (7:00 a.m. to 7:00 p.m.), evening (7:00 p.m. to 10:00 p.m.), and nighttime (10:00 p.m. to 7:00 a.m.). In order to represent the added intrusiveness of sounds occurring during evening and nighttime hours, CNEL adds weights to events occurring during the evening and nighttime periods of 4.77 dBA and 10 dBA, respectively (California Airport Land Use Planning Handbook, pages 6-20 and 6-22, January 2002).

4.1.1.2 Aircraft Noise Prediction

In accordance with guidance contained in FAA Order 1050.1E, Change 1, Appendix A, Section 14, Paragraph 14.2b, detailed noise analyses must be performed through noise modeling using an FAA approved model. The Integrated Noise Model (INM) has been FAA's standard tool since 1978 for determining the predicted noise levels in the vicinity of airports. The INM was used to produce noise contours and to analyze noise levels at sensitive sites. The data and methodologies used to develop the noise contours are provided in **Appendix C-1**, Noise.

The INM incorporates the number of annual average daily daytime, evening, and nighttime flight and run-up operations, flight paths, and flight profiles of the aircraft along with its extensive internal database of aircraft noise and performance information, to calculate the CNEL at many points on the ground around an airport. From a grid of points, the INM contouring program draws contours of equal CNEL that are superimposed onto land use maps. For this document, CNEL contours of 65, 70, and 75 dBA were developed. CNEL contours are a graphical representation of how the noise from the airport's annual average daily aircraft operations is distributed over the surrounding area. The INM can also calculate sound levels at any specified point so that noise exposure at representative locations around an airport can be obtained.



H:\projects\Mammoth_Lakes\12004269\Applications\mxd\Proposed Air Service\Figure 4-1, Airport Study Area.mxd {rpf, hde, 11/05/07}

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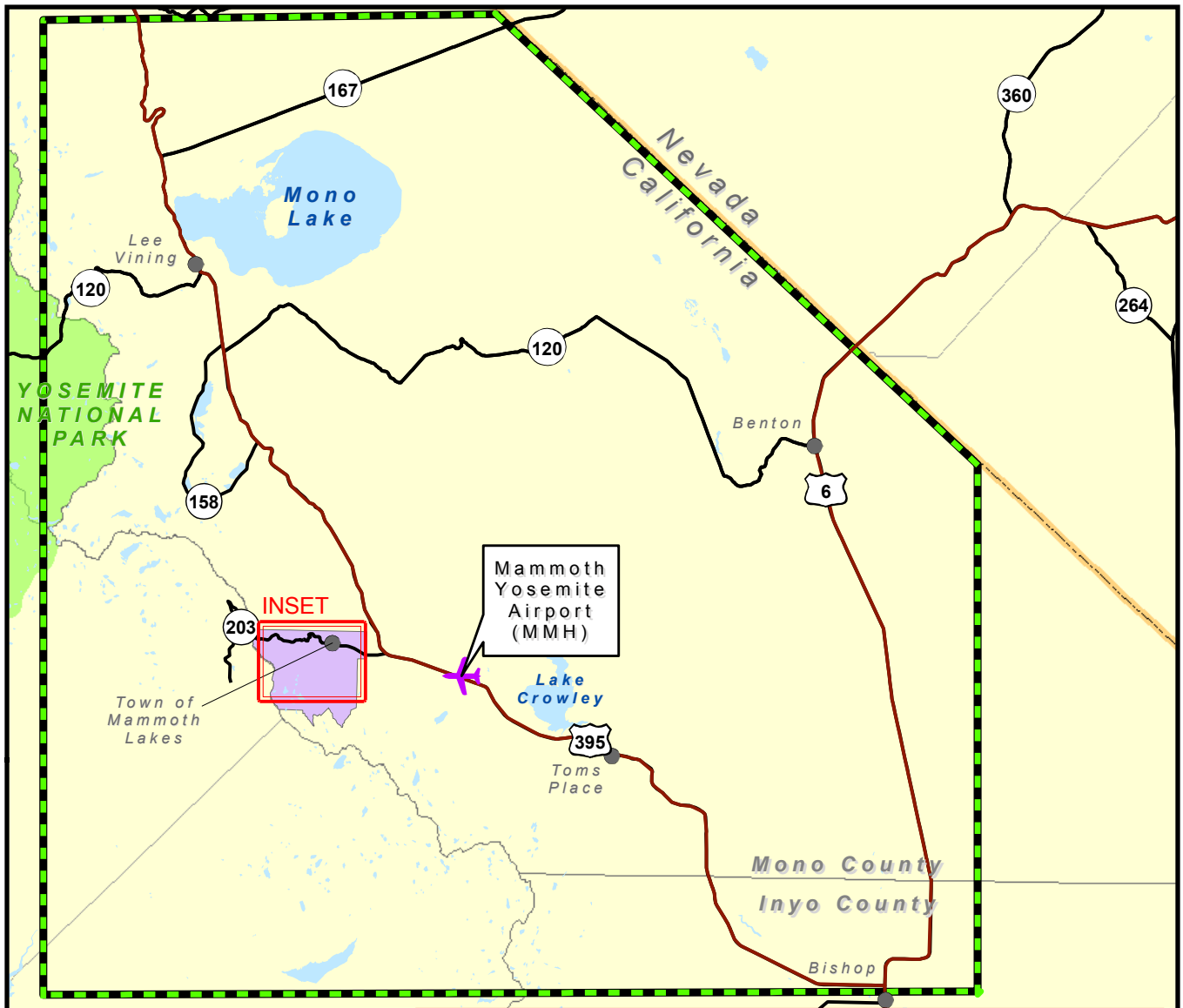
AIRPORT STUDY AREA

FIGURE 4-1



LEGEND

- Surface Transportation Study Area
- Mammoth Yosemite Airport
- Roads
- US Route
- Town of Mammoth Lakes
- National Park
- Water Features
- State Line

4 0 4 Miles

1:600,000

N W E S

Sources:
- USDA Forest Service, 2004
- ESRI, 2004
- URS Corporation, 2006

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SURFACE TRANSPORTATION STUDY AREA

FIGURE 4-2

H:\projects\Mammoth_Lakes\12004269\Applications\mxd\Proposed Air Service\Figure 4-2, Surface Transportation Study Area.mxd {rpf, hde, 09/26/07}

H:\projects\Mammoth_Lakes\12004269\Applications\mxd\Proposed Air Service\Figure 4-3, Socioeconomic Study Area.mxd {llp, ljb, rpf, hde, 09/24/07}

FIGURE 4-3

SOCIOECONOMIC STUDY AREA

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H:\projects\Mammoth_Lakes\12004269\Applications\mxd\Proposed Air Service\Figure 4-4, Area of Investigation (AI).mxd {rpf, hde, 01/28/08}

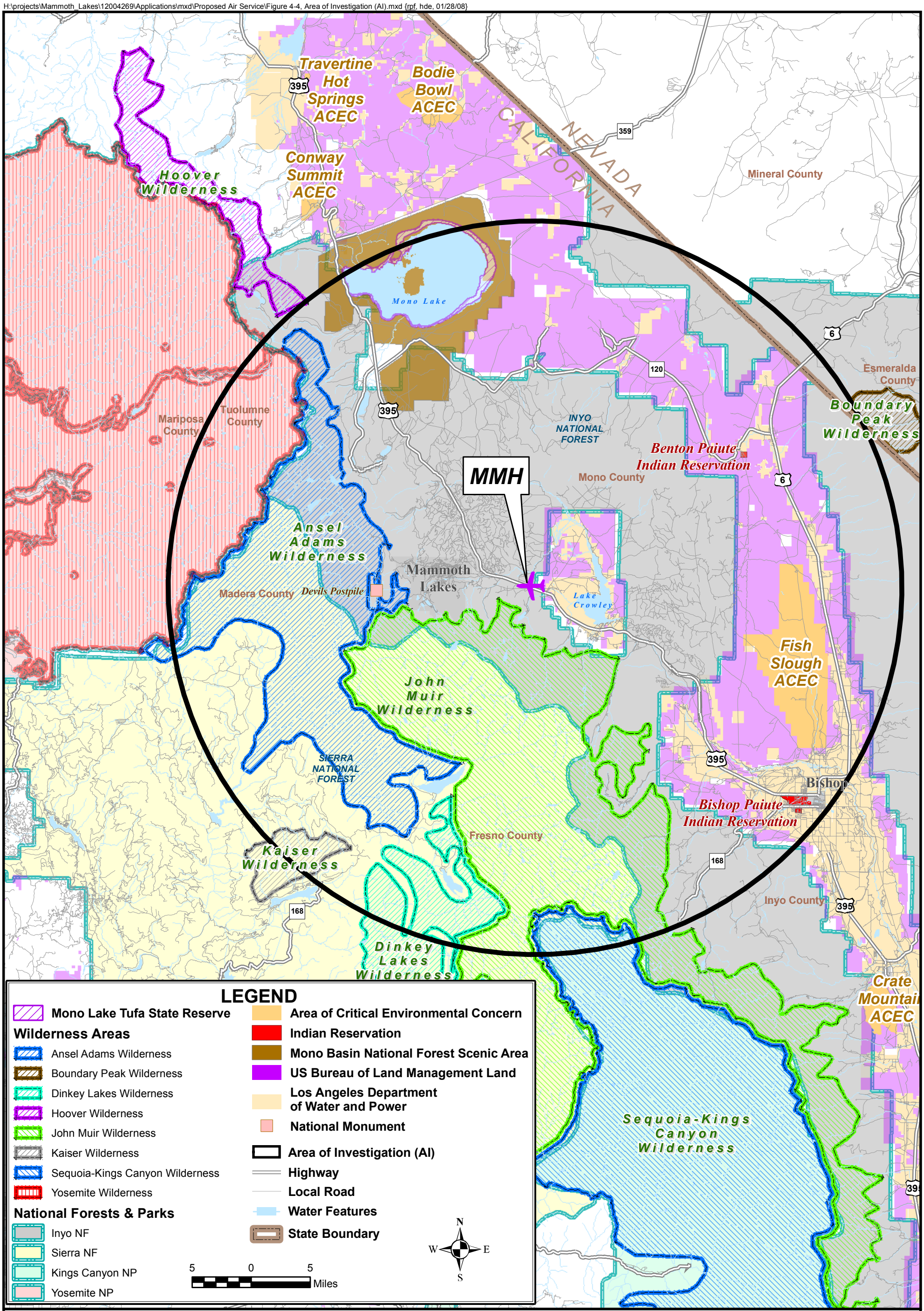

FIGURE 4-4

AREA OF INVESTIGATION (AI)

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The results of the INM analysis provide a relative measure of noise level around airports. When the calculations are made in a consistent manner, the INM is most accurate for comparing before and after noise effects resulting from forecast changes in aircraft operations. It allows noise levels to be predicted for a proposed action without the actual implementation and noise monitoring of those actions.

4.1.2 Existing Aircraft Noise Conditions

The existing aircraft noise conditions at MMH (2005) were developed using the INM with input data reflecting the existing airport layout, aircraft operations, and climate data. Details on these parameters can be found in **Appendix C-1**.

4.1.2.1 Data Sources

Data were collected from multiple sources, examined, and utilized to ensure that this aircraft noise analysis provides an accurate depiction of the existing MMH aircraft noise environment. The data sources utilized for this analysis included:

- Aircraft Arrival & Check In Sheets (January through December, 2005), provided by Hot Creek Aviation, which included time of day, aircraft type, and N-number (registration number) for all arriving aircraft;
- U.S. DOT, FAA Airport Master Record, Form 5010 (August 03, 2006); and
- Final Report, Environmental Assessment, Mammoth Yosemite Airport Expansion Project, Appendix C, "Aircraft Noise Analysis" (Town of Mammoth Lakes, 2000).
- Interviews with Airport personnel to verify data and assumptions.

4.1.2.2 Modeled Aircraft Operations

For the 2005 Existing Conditions, 12,800 operations, an average of approximately 35.1 operations per day, were modeled based on data provided by MMH. Jet operations accounted for approximately 11.4 percent of the total operations. Evening and nighttime operations accounted for 4.1 percent of the total operations.

Helicopters were also modeled for this EIS, but they only account for approximately 1.5 percent of the total aircraft operations at MMH.

Modeled runway utilization percentages were derived from current airport operations. Approximately 68 percent of the arrivals use Runway 27 and most of the departures (67 percent of jet aircraft and turboprop) use Runway 09 due to high terrain west of the airport. Because of terrain northwest of the airport that can affect the allowable takeoff weight of an aircraft, pilots of larger aircraft (jet and turboprop aircraft) tend to prefer departing on Runway 09.

Flight tracks are the aircraft's actual path through the air projected vertically onto the ground. East flow tracks represent aircraft using Runway 09. West flow tracks represent aircraft using Runway 27. During the development of flight tracks, topographic maps were reviewed to identify the location of mountains, published U.S. Terminal Procedures for MMH were reviewed, and airport personnel were interviewed to accurately establish the location of flight tracks. Based on discussions with MMH personnel, FAA determined that six arrival and six departure routes reasonably reflect the routes commonly used to and

from MMH (see **Figures 4.1-1 and Figure 4.1-2**). Because of the terrain surrounding the airport, it was assumed that helicopters would use the same flight tracks as fixed wing aircraft. The figures show the modeled flight track of aircraft on the route due to weather, pilot and controller techniques, etc.

Flight profiles model the vertical paths of aircraft during departure and arrival to determine the altitude, speed, and engine thrust or power of an aircraft at any point along a flight track. INM uses this information to calculate noise exposure on the ground. Profiles are unique to each aircraft type and vary with temperature, barometric pressure, headwind, and aircraft weight. Stage (or trip) length information determined the standard profile to be used for each departing aircraft.

Aircraft operational data for aircraft transitioning through the AI was identified from a sample of radar data obtained from the FAA Oakland ARTCC. The data included all aircraft operating within the AI, and in constant radar contact with the Oakland ARTCC. In addition to providing flight track information, this data also provided operational counts, fleet mix, aircraft altitudes, and aircraft speeds. **Table 4.1-1** summarizes the number of exisiting overflight operations for 2005. The overflight tracks are illustrated on **Figures 4.1-1** and **4.1-2**. Further details regarding overflight operations are found in **Appendix C-3**.

TABLE 4.1-1
SUMMARY OF EXISTING OVERFLIGHT AIRCRAFT OPERATIONS

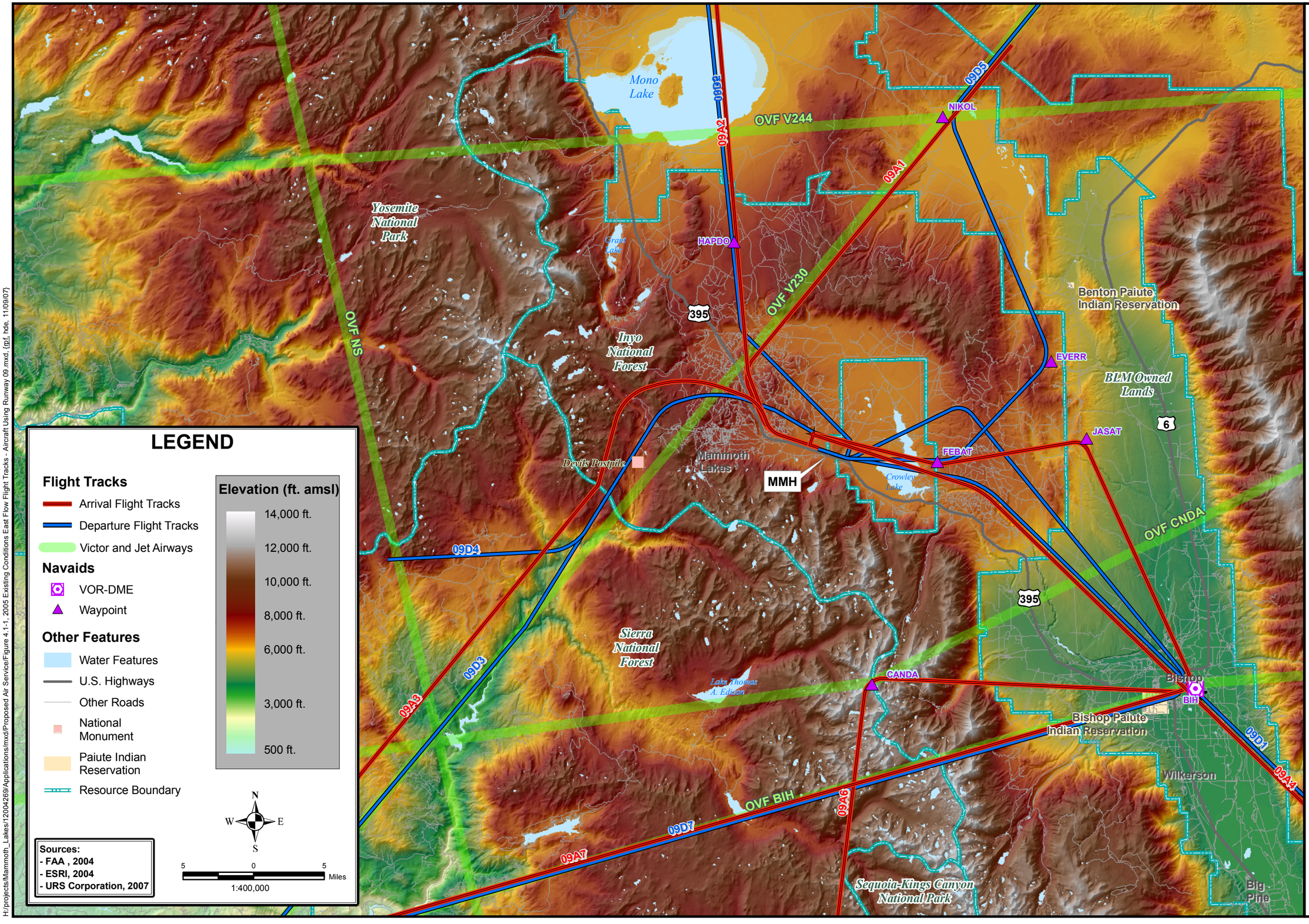
Track	Annual Operations	Average Daily Operations
OVF_CNDA	17,937	49.1
OVF_NS	39,420	108.0
OVF_BIH	16,269	44.6
OVF_V230	6,309	17.3
OVF_EW	16,034	43.9
OVF_V244	52,065	142.6
TOTAL	**148,034**	**405.5**

Source: URS, 2007.

4.1.3 2005 Aircraft Noise Exposure within the Airport Study Area

The ASA encompasses the area within the projected 2015 CNEL 65 dBA contour at the airport. **Figure 4-1** shows the ASA.

Noise exposure resulting from 2005 aircraft operations at MMH is depicted on **Figure 4.1-3** as CNEL 65, 70, and 75 dBA contours, superimposed over the local land use map of Mammoth Lakes. There are no residential land use or noise-sensitive sites within the existing CNEL 65 dB or greater noise contour.



H:/projects/Mammoth_Lakes/r12004269/Applications/mxd/Proposed Air Service/Figure 4.1-1, 2005 Existing Conditions East Flow Flight Tracks - Aircraft Using Runway 09 mxd, {mf, hde, 11/09/07}

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2005 EXISTING CONDITIONS EAST FLOW FLIGHT TRACKS - AIRCRAFT USING RUNWAY 09

FIGURE 4.1-1

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LEGEND

Flight Tracks
- Arrival Flight Tracks
- Departure Flight Tracks
- Victor and Jet Airways

Navaids
- VOR-DME
- Waypoint

Other Features
- Water Features
- U.S. Highways
- Other Roads
- National Monument
- Paiute Indian Reservation
- Resource Boundary

Elevation (ft. amsl)
- 14,000 ft.
- 12,000 ft.
- 10,000 ft.
- 8,000 ft.
- 6,000 ft.
- 3,000 ft.
- 500 ft.

N W E S

5 0 5 Miles

1:400,000

Sources:
- FAA , 2004
- ESRI, 2004
- URS Corporation, 2007

Mono Lake
Yosemite National Park
Grant Lake
Inyo National Forest
Devils Postpile
Mammoth Lakes
Crowley Lake
Sierra National Forest
Lake Thomas A. Edison
Benton Paiute Indian Reservation
BLM Owned Lands
Bishop Paiute Indian Reservation
Bishop
Big Pine
Sequoia-Kings Canyon National Park

NIKOL
HAPDO
EVERR
JASAT
FEBAT
MMH
CANDA
BIH

27D4
27A4
27A3
27D3
27D5
27D2
27A2
27A6
27A7
27D7
27A1
27D1

OVF V244
OVF V230
OVF NS
OVF CNDA
OVF BIH

395
6

2005 EXISTING CONDITIONS WEST FLOW FLIGHT TRACKS - AIRCRAFT USING RUNWAY 27

FIGURE 4.1-2

H:/projects/Mammoth_Lakes/12004269/Applications/mxd/Proposed Air Service/Figure 4.1-2, 2005 Existing Conditions West Flow Flight Tracks - Aircrafts Using Runway 27.mxd, {pf, hde, 11/09/07}

Airport Rd

09

27

75

70

65

Benton Crossing Rd

Green Church

SNARL

LEGEND

2005 Existing Condition Noise Contours

- CNEL 75
- CNEL 70
- CNEL 65

Other Features

- Airport Features
- Airport Boundary
- Water Feature
- U.S. Highway

Land Use

- Open Space
- Public/Quasi-Public Facilities
- Resource Management
- Right of Way
- Specific Plan
- Industrial

Sensitive Sites

- Institution
- Public Venue

Sources:
- Mono County, 2004
- ESRI, 2004
- URS Corporation, 2006

N
W E
S

1,000 0 Feet

1:12,000

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2005 EXISTING CONDITION NOISE CONTOURS

FIGURE 4.1-3

H:/projects/Mammoth_Lakes/12004269/Applications/mxd/Proposed Air Service/Figure 4.1-3, 2005 Existing Condition Noise Contours.mxd, {rpf, llp, hde, 09/24/07}

4.2 LAND USE

This section describes current land use characteristics in the vicinity of MMH. Current land uses are shown graphically on **Figure 4.2-1**.

Lands to the north, northwest, and south of MMH are Federally owned and within the Inyo National Forest. The lands northeast of MMH are owned by the Bureau of Land Management (BLM) and undeveloped. Eastern portions of MMH, including lands under a portion of the runway, are owned by the Los Angeles Department of Water and Power (LADWP). The Town of Mammoth Lakes currently leases this land.

The MMH environs include open spaces used for agriculture, resource management areas of the U.S. Department of Agriculture - Forest Service (USDA-FS), LADWP, and BLM, and recreation. Small parcels in close proximity to MMH are used for industrial and public agency uses. Hot Creek is located on the western side of MMH, with the abandoned Mammoth Lakes Elementary School and Sierra Quarry a bit further west. Approximately 1 mile north of MMH is Hot Creek Ranch, a privately owned fishing camp and the Hot Creek Fish Hatchery. Also located north of MMH, between the airport and Hot Creek Ranch, is a USDA-FS gravel/borrow pit. To the east of the Whitmore Recreational Area is a BLM gravel pit area that is adjacent to US 395. The Sierra Nevada Aquatic Research Laboratory (SNARL) is located about 1 mile southeast of MMH and south of US 395. This facility is part of the University of California Natural Reserve System that studies stream ecology. The building locally known as the "Green Church" (High Sierra Community Church) is located on the north side of US 395, but is no longer used as a place of worship. The Green Church building is now used for classes and is part of the SNARL campus (see **Section 4.4** for more details on this building). Approximately 2 miles due south of MMH is the Convict Lake Recreation Area, which includes an Inyo National Forest Campground and other facilities. There are no residential areas in the immediate vicinity of MMH.

4.3 SOCIAL, ECONOMIC, AND DEMOGRAPHIC CHARACTERISTICS OF THE AREA

This section of the MMH EIS presents the social and socioeconomic characteristics of the SSA (see **Figure 4-3**), which includes Mono and Inyo counties, the Town of Mammoth Lakes and the City of Bishop. This geographic area serves as the basis for the social and socioeconomic characterization for several reasons. First, counties are the smallest jurisdiction for which long-term economic data are available on a consistent basis. Second, this area encompasses the primary area that could be affected by changes in the resort economy that dominates the SSA. Economic indicators discussed in this section include the following: population and employment distribution, economic base characteristics, unemployment rates, and average wages.

Baseline demographic and housing data were taken from the California Department of Finance, Demographic Research Division, as this division offers the most current data by subarea, and from the 1990 and 2000 U.S. Census. Employment data was derived from several sources. Total employment by county was available through the Bureau of Economic Analysis of the U.S. Department of Commerce, Regional Economic Information Service. Subarea employment distribution was provided by the State of

California, Employment Development Department, Labor Market Information (LMI) Division. **Appendix E-1** includes the *Technical Memorandum: Economic Impact of Proposed Regional Air Service at Mammoth Yosemite Airport* which discusses the regional economy and development trends in more detail.

4.3.1 Social Characteristics

This section summarizes the social characteristics of the SSA, including population, race, income, age distribution, and housing.

4.3.1.1 Population

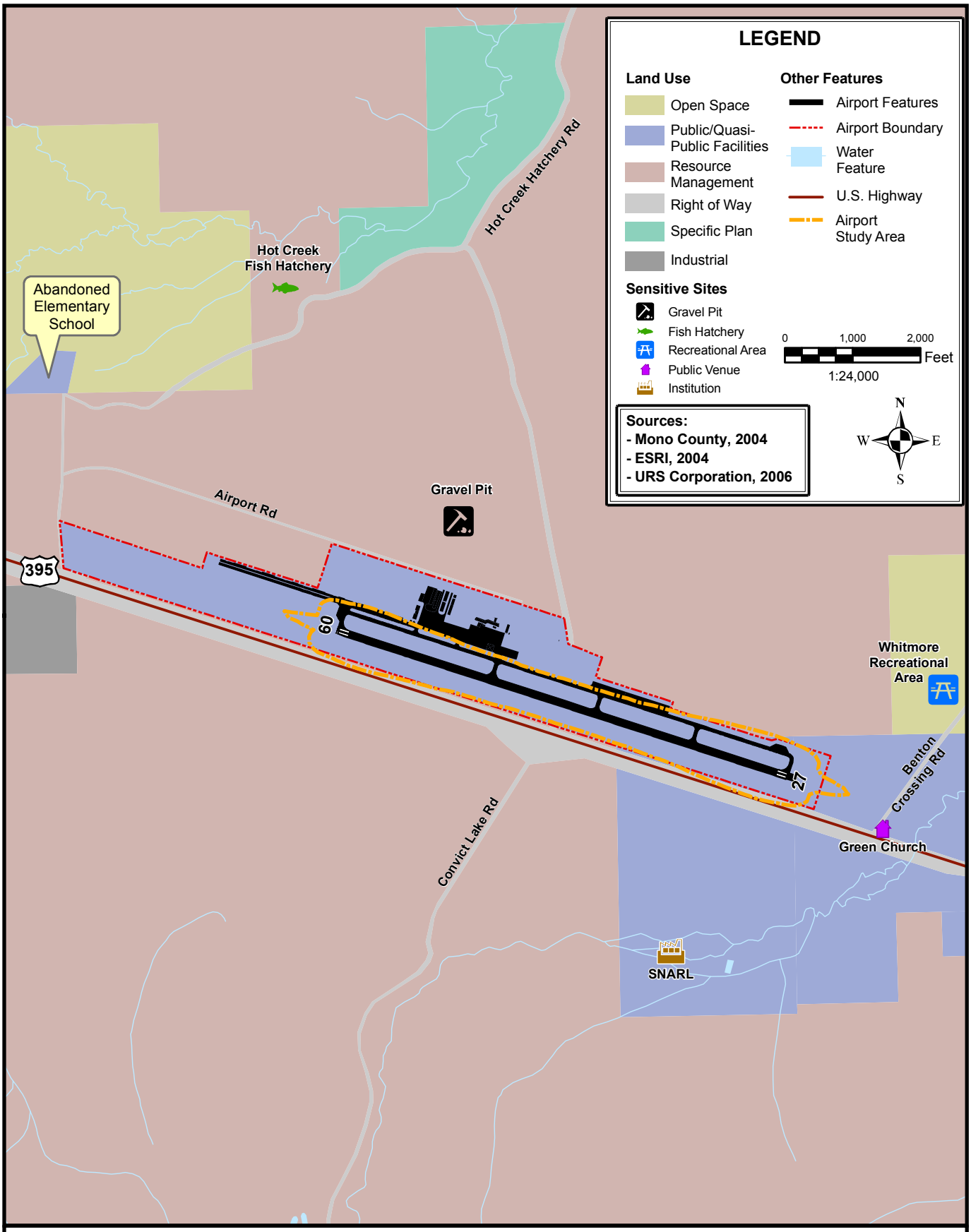
The SSA has experienced modest growth in resident population since 1990 (**Table 4.3-1**). The population increased from 28,237 in 1990 to just over 32,000 in 2005 - a net change of nearly 3,880 residents representing a 13.7 percent increase in population. The regional population growth is considerably less than the 23.4 percent increase experienced within the state during this same 16-year period.

Mono County, including the Town of Mammoth Lakes, accounted for 92 percent of the population growth in the SSA. The Town of Mammoth Lakes has attracted most of this regional growth since its incorporation in 1984. As of January 2005, the full-time town population was estimated to be 7,602, a growth rate of nearly 59 percent from 1990 to 2005 (See **Appendix E-1**). The population of unincorporated Mono County (excluding the Town of Mammoth Lakes) grew by almost 14.8 percent from 5,171 in 1990 to 5,935 in 2005 (**Table 4.3-1**).

TABLE 4.3-1
POPULATION GROWTH TRENDS OF THE SSA, 1980-2005

Area	1980	1990	2000	2005	Net Change 1990 - 2005	Percent Change 1990-2005
MONO COUNTY TOTAL	8,700	9,956	12,853	13,537	3,581	36.0%
Mammoth Lakes[1]	0	4,785	7,093	7,602	2,817	58.9%
Unincorporated Mono County	8,700	5,171	5,760	5,935	764	14.8%
INYO COUNTY TOTAL	17,895	18,281	17,945	18,580	299	1.6%
Bishop	3,333	3,475	3,575	3,641	166	4.8%
Unincorporated Inyo County	14,562	14,806	14,370	14,939	133	0.9%
SSA	26,595	28,237	30,798	32,117	3,880	13.7%

[1] - Mammoth Lakes incorporated in 1984.
Sources: U.S. Census Bureau, Census 2000 and 1990 Census. State of California, *E-4 Population Estimates for Cities, Counties, and the State 2001-2006 with 2000 Benchmark*, Sacramento, California, May 2006. Mono County MEA - 2001, page 52 and Inyo County General Plan, December 2001, page 2-6.



H:\projects\Mammoth_Lakes\12004269\Applications\mxd\Proposed Air Service\Figure 4.2-1, Existing Land Use.mxd {jlb, rpf, hde, 09/26/07}

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EXISTING LAND USE

FIGURE 4.2-1

On a seasonal basis, the Town of Mammoth Lakes experiences large fluctuations in the total non-resident population because of its tourism-dependent economy. The resident population, coupled with the tourism population, can exceed 35,000 people during the peak winter tourism and ski season (Town of Mammoth Lakes, 2007b). The Town accommodates a significantly larger population when seasonal tourist populations are present.

The population of Inyo County, including the City of Bishop, has remained stable over the past 16 years. As of January 2005, Bishop's population was estimated to be 3,641 persons representing a population increase of just 166 residents since 1990. The population estimate for the balance of Inyo County was 14,939, representing less than 1 percent population increase since 1990. The seasonal population variations in Bishop and Inyo County differ greatly from those experienced in the ski resorts of Mammoth Lakes and June Lake, with the height of the tourist season occurring between the months of May through September. Additional discussion of tourism patterns is provided in Appendices E-1 and E-3.

4.3.1.2 Racial and Ethnic Composition

According to the 2000 Census, 82 percent of the population within the SSA identified themselves as being White; nearly 7 percent identified themselves as being Native American; and 10 percent identified themselves as being either "Some Other Race" or "Two or More Races" (**Table 4.3-2**). Approximately 18 percent of the SSA population identified themselves as being Non-White, which is a much lower percentage than reported for California or the U.S.

Overall, the Hispanic/Latino population increased from 2,662 in 1990 to 4,531 in 2000 to 5,289 in 2004 - a net change of 2,627 residents during this 16-year period representing a 98.7 percent increase (U.S. Census and the California Department of Finance). By 2000, Hispanics and Latinos comprised 14.7 percent of the region's population, which is a higher percentage than the U.S. (12.5 percent), but a much lower percentage than the State of California (32.4 percent).

4.3.1.3 Native American Tribes

Native American Tribes are included in the study because they are an important ethnic group in the project area. The Native American Heritage Commission (NAHC) was contacted regarding areas of concern to the local Native American community that may be impacted by the proposed action at MMH. The NAHC provided the names and appropriate contacts for Native American Tribes within the study area. The distances of the seven Federally recognized tribal groups from MMH are listed below in **Table 4.3-3**. The locations are depicted in **Figure 4.3-1**.

TABLE 4.3-2
RACIAL AND ETHNIC CHARACTERISTICS OF THE SSA, 2000

Racial and Ethnic Characteristics	Mono County		Inyo County		Socioeconomic Study Area		Percentage Comparison	
	Mammoth Lakes	Unincorporated Balance	Bishop	Unincorporated Balance	Number	Percent	California	U.S.
Total Population	7,093	5,760	3,575	14,370	30,798	100.0%	100.0%	100.0%
One Race	6,941	5,623	3,383	13,818	29,765	96.6%	95.3%	97.6%
White	5,902	4,916	3,025	11,342	25,185	81.8%	59.5%	75.1%
Black or African American	29	32	7	22	90	0.3%	6.7%	12.3%
Native American and Alaska Native	35	274	73	1,729	2,111	6.9%	1.0%	0.9%
Asian	90	53	45	118	306	1.0%	10.9%	3.6%
Native Hawaiian and Other Pacific Islands	9	2	1	14	26	0.1%	0.3%	0.1%
Some Other Race	876	346	232	593	2,047	6.6%	16.8%	5.5%
Two or More Races	152	137	192	552	1,033	3.4%	4.7%	2.4%
Non-White Population	1,191	844	550	3,028	5,613	18.2%	40.4%	24.8%
Hispanic or Latino	1,575	699	621	1,636	4,531	14.7%	32.4%	12.5%

Sources: U.S. Census Bureau, Census 2000; California Department of Finance, Demographic Research Division.

TABLE 4.3-3
DISTANCE OF FEDERAL NATIVE AMERICAN TRIBES FROM MMH

Federal Native American Tribes	County	Distance from MMH
		Miles
Bridgeport Paiute Indian Colony	Mono	50
Utu Gwaite Tribe of Benton Paiute Reservation	Mono	20
Bishop Paiute Tribe Reservation	Inyo	30
Big Pine Paiute Tribe Owens Valley Reservation	Inyo	45
Fort Independence Reservation	Inyo	65
Lone Pine Paiute Shoshone Reservation	Inyo	85
Timbi-sha Shoshone Tribe Reservation	Inyo	135

Source: NAHC, 2007 and URS Corporation, 2007

H:\projects\Mammoth_Lakes\12004269\Applications\mxd\Proposed Air Service\Figure 4.3-1, Tribal Lands within the Socioeconomic Study Area.mxd {rpf ljb, hde, 09/26/07}

LEGEND

- Indian Reservations within the Socioeconomic Study Area
- Tribal Lands
- Two-County Study Area
- Interstate
- Road
- Major Railroad Lines
- Water Features
- City or Town
- County Boundary
- State Boundary

Sources:
-ESRI, 2005
-National Atlas, 2006

20 0 20 Miles

N W E S

Pyramid Lake Indian Reservation
Reno-Sparks Indian Reservation
Fallon Indian Reservation
Lyon County
Yerington Indian Reservation
Churchill County
Walker River Indian Reservation
Douglas County
Yomba Indian Reservation
Duckwater Indian Reservation
Walker Lake
Mineral County
Alpine County
Bridgeport Paiute Indian Colony
MMH
Tuolumne County
Mono Lake
Mono County
Utu Gwaitu Tribe of Benton Reservation
Mariposa County
Mammoth Lakes
Lake Crowley
Madera County
Esmeralda County
Nye County
Bishop
Bishop Paiute Tribe Reservation
CALIFORNIA
NEVADA
Big Pine Paiute Tribe Owens Valley Reservation
Lincoln County
Fort Independence Reservation
Fresno County
Sanger
Reedley
Dinuba
Lone Pine Paiute Shoshone Reservation
Timbi-sha Shoshone Reservation
Woodlake
Visalia
Exeter
Tulare County
Tulare
Lindsay
Inyo County
Clark County
Corcoran
Porterville
Tule River Indian Reservation
Isabella Lake
Ridgecrest
Bakersfield
San Bernardino County
Kern County
MOJAVE NATIONAL PRESERVATIO

50 95 50 395 95 95 6 95 99 395 5

FIGURE 4.3-1

TRIBAL LANDS WITHIN THE SOCIOECONOMIC STUDY AREA

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4.3.1.4 Income Distribution

The household income distribution for the SSA is shown in **Table 4.3-4**. Inyo County households earn less income than their counterparts in the state or the nation; whereas, Mono County households earn less than their counterparts in California but more than the typical household in the U.S. The median household income for Mammoth Lakes is $44,570; for Mono County, $44,992; for Bishop, $27,338; and for Inyo County, $35,006. These median income figures compare to $47,493 for California and $41,994 for the U.S.

Approximately 12 percent of the SSA population is classified as being below the poverty level, as defined by the U.S. Census Bureau and the U.S. Department of Health and Human Services (HHS). This level is below the national and State of California poverty levels of 12.4 and 14.2 percent, respectively.

4.3.1.5 Affordable Housing

Affordable workforce housing is a major issue facing the SSA (Eastern Sierra Council of Governments, December 2004). Housing values and contract rents have increased substantially over the past 15 years. Between 1990 and 2000, median housing values increased by nearly 40 percent in Inyo County, 48 percent in Mammoth Lakes and Mono County, and 69 percent in Bishop as compared to the 8.2 percent increase for the state's median housing value. Housing prices have risen even more dramatically since 2000. The price of Mono County houses and condominiums that were sold between January and September 2004 were from 48 to 75 percent higher than those sold in 2001 (Eastern Sierra Regional Housing Needs Assessment, Housing Characteristics and Perceptions - Mono County). The average selling price of a single-family home in Mammoth Lakes in 2003 was $711,140. Median rents in the SSA have also risen but not at same rate as housing values. Contract median rents increased from approximately 20.3 percent in Mammoth Lakes to 35.7 percent in the Greater Bishop area from 1990 to 2000. Incomes in the SSA have not kept pace with the increase in housing costs. For example, household income in Mammoth Lakes increased by 25.7 percent during the 1990s, while the median value of housing increased by 48 percent.

According to the U.S. Department of Housing and Urban Development, the Eastern Sierra Housing Needs Assessment, and the California Department of Housing and Community Development, affordable housing is "generally defined as a housing payment that does not exceed 30 percent of the gross monthly income and a home that is of sufficient size to meet the needs of the household." About 38 percent of the employee households in the SSA earn less than 80 percent of the area's median income. Moreover, 25 to 39 percent of employee households are "cost-burdened," meaning that they are paying more than 30 percent of their household income on housing (**Table 4.3-5**).

TABLE 4.3-4
HOUSEHOLD INCOME DISTRIBUTION CHARACTERISTICS OF THE SSA, 2000

Income Characteristics	Mono County		Inyo County		Socioeconomic Study Area		Percentage Comparison	
	Mammoth Lakes	Unincorporated Balance	Bishop	Unincorporated Balance	Number	Percent	California	U.S.
Less than $10,000	121	164	261	646	1,192	9.3%	8.4%	9.5%
$10,000 to $14,900	183	124	148	532	987	7.7%	5.6%	6.3%
$15,000 to $24,999	386	249	336	879	1,850	14.4%	11.5%	12.8%
$25,000 to $34,999	463	321	289	745	1,818	14.2%	11.4%	12.8%
$35,000 to $49,999	395	483	278	932	2,088	16.3%	15.2%	16.5%
$50,000 to $74,999	650	599	165	1,208	2,622	20.4%	19.1%	19.5%
$75,000 to $99,999	211	217	79	527	1,034	8.1%	11.5%	10.2%
$100,000 or more	418	179	93	555	1,245	9.7%	17.3%	12.4%
Total Households	2,827	2,336	1,649	6,024	12,836	100.0%	100.0%	100.0%
Median Household Income	$44,570	$44,992*	$27,338	$35,006*	---	---	$47,493	$41,994
Population Below Poverty	1,018	438	566	1,678	3,700	12.0%	14.2%	12.4%

* Median household income for Mono and Inyo counties.
Source: U.S. Census Bureau, Census 2000.

TABLE 4.3-5
AREA MEDIAN INCOME DISTRIBUTION FOR EMPLOYEE HOUSEHOLDS FOR THE SSA, 2000

Employee Households Area Median Income (AMI) Distribution	Mono County		Inyo County		Town of Mammoth Lakes		Bishop Region		Two-County Study Area	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Very Low and Low Income < 80% AMI	1,746	38.6%	2,144	39.2%	1,111	41.9%	1,057	33.6%	6,058	38%
Moderate Income 80-120% AMI	988	21.9%	1,053	19.3%	600	22.6%	672	21.4%	3,313	21%
Above Moderate Income 120-150% AMI	578	12.8%	534	9.8%	320	12.1%	315	10.0%	1,747	11%
Upper Moderate Income 150-200% AMI	634	14.0%	815	14.9%	279	10.5%	451	14.4%	2,179	14%
High Income Over 200% AMI	573	12.7%	918	16.8%	341	12.9%	647	20.6%	2,479	16%
Total Employee Households	4,519	100.0%	5,464	100.0%	2,651	100.0%	3,142	100.0%	15,776	100.0%
Cost Burdened	1,386	35.9%	1,471	25.3%	872	39.3%	931	28.0%	4,660	---
Owners	686	34.1%	616	19.2%	400	44.3%	377	20.5%	2,079	---
Renters	700	37.9%	855	32.8%	472	35.8%	554	37.3%	2,581	---

Source: Eastern Sierra Housing Needs Assessment and Census 2000.

4.3.2 Socioeconomics

4.3.2.1 Employment Characteristics

Employment Characteristics of the SSA - The economy in the SSA has been expanding since 1990, reflecting economic strengths characteristic of the region. As a result, the annual average of full- and part-time employment for the SSA has grown from 17,057 in 1990 to approximately 21,443 in 2005 (see **Appendix E-1**). The economy of Mammoth Lakes and Mono County is driven by a year-round resort and tourist industry, whereas the economy of Bishop and Inyo County is dominated by the government sector with tourism playing an important, secondary role. Approximately 21 percent of the employment in the SSA is in the accommodation and food service sectors (see **Appendix E-2, Table E-2.1**).

In 2005, salaries in the SSA averaged $32,315 (see **Appendix E-2, Table E-2.1**) ranging from $7,453 for education related services (i.e., private establishments that provide instruction or training) to $86,504 for persons employed in the utilities sector.

Mono County - In 2004, unemployment in Mono County was 5.4 percent. Unemployment decreased to 5.0 percent in 2005. The job growth and economic health of Mono County can be attributed to continued growth in tourist activity and a resulting growth in the accommodations and retail services sectors. In 2002, average annual wages in Mono County ranged from $10,940 in the arts, entertainment and recreation field to $64,500 in Federal, county, and local government (see **Appendix E-2, Table E-2.3**). These averages include both full- and part-time employment.

The Mono County economy is largely driven by tourism, with the leisure services and government sectors dominating Mono County's employment. The Mammoth Lakes Visitor's Bureau estimates an annual average of 2.8 million visitors per year. The winter season, from November through April, attracts approximately 1.3 million visitors; while the summer season, June through September, attracts approximately 1.5 million tourists. Hotel/motel occupancies in March are the highest at 56 percent (**Appendix E-2, Table E-2.4**). In the slowest months, May and October, occupancy rates are on the order of 21 to 26 percent. The major job centers in the county are concentrated in Mammoth Lakes (services, retail trade, and government), June Lake (seasonal services and retail trade), and Bridgeport (government). Between January 2001 and June 2004, the leisure and hospitality services sector represented nearly 42 percent of the total employment; other service sectors contributed nearly 28 percent, while the government sector accounted for an additional 22 percent of total employment (see **Appendix E-2, Table E-2.2**).

Inyo County - Employment in Inyo County is dependent on the government services sector with leisure and hospitality services and retail trade of secondary importance (**Appendix E-2, Table E-2.2**). Approximately 40 percent of the employees in the county are employed in the government services sector. The next largest categories are retail trade and leisure services at 19.2 and 18.5 percent, respectively. Tourism-related employment is the growth sector in Inyo County.

In 2005, the average annual unemployment rate in Inyo County was 4.8 percent. Unemployment rates for both Mono and Inyo counties have been lower than the state unemployment rate since 2001. The 2002 average annual wages in Inyo County, expressed in 2002 dollars, range from $8,030 in the arts, entertainment, and recreation field to $60,887 in Federal, county, and local government (see **Appendix E-2, Table E-2.3**). These averages include both full- and part-time employment.

The tourist season in Inyo County stretches from May through September when hotel/motel occupancy rates countywide can exceed 90 percent. Tourism is estimated to represent 25 percent of the local economy (Interview with the Bishop Area Chamber of Commerce and Visitors Bureau, May 21, 2004). The City of Bishop's economy has been steady over the past several years, relying primarily on the summer tourist recreation trade and the winter tourism spillover from Mammoth Lakes.

4.3.2.2 Surface Transportation

Surface transportation facilities/services within the STSA (see **Figure 4-2**) have been identified based on a review of available mapping, aerial photographs, data from the California Department of Transportation (CALTRANS), and a review of the General Plans from the Town of Mammoth Lakes, Mono County, Inyo County, and the City of Bishop. The following section provides a summary of surface transportation facilities/services within the STSA.

STSA Roadway Facilities - Regional travelers to and through the STSA use US 395, which is the major transportation corridor into the Town of Mammoth Lakes. US 395 runs adjacent and parallel to Runway 9/27 at MMH and provides access to the airport. Links to US 395 are from SR 167 north of Lee Vining; SR 120 through the Yosemite National Park Tioga Pass on the west and from Benton on the east; and US 6 when poor weather conditions affect the efficient movement of residents and visitors on US 395. With the exception of a roadway segment in the City of Bishop, there are no capacity-related issues affecting the volume or flow of vehicular traffic on US 395 within the STSA.

In the summertime, traffic concerns occur on SR 120 due to the east/west access into California's Central Valley through Yosemite National Park. Existing capacity problems are also experienced on SR 203 in the Town of Mammoth Lakes and on SR 158 in June Lake Village within the STSA. During the winter months, east/west travel is severely restricted due to heavy snows in the area. SR 120 at Tioga Pass, the northern portion of SR 158, the extreme western portion SR 203, and the western portion SR 120 to Benton are all closed, while the southern portion of SR 158 is typically closed during heavy snowfall events. Mammoth Scenic Loop Road provides a secondary access point to the Town of Mammoth Lakes from US 395, approximately 6 miles to the north of SR 203. Recreational vehicles account for about 3.9 percent of the traffic on US 395 in the summer and about 1.0 percent of the traffic in the winter (Mono RTP, 2001).

Existing traffic demand within the Town of Mammoth Lakes is a function of resident and visitor activity. Combining resident and weekend winter visitor activities produces the worst-case scenario for congestion within the Town during the winter months. During this period the highest traffic volumes within the Town are experienced on SR 203, between Old Mammoth Road and Minaret Road with 1,700 vehicles per hour on a typical winter Saturday. The second busiest road segment is Old Mammoth Road, between Chateau Road and SR 203, with 1,250 vehicles per hour on a typical winter Saturday; while the third busiest road within the Town is Minaret Road, north of SR 203 with 1,090 vehicles per hour on a typical winter Saturday. All other roads within the Town experience fewer than 1,000 vehicles per hour on a typical winter Saturday (Town of Mammoth Lakes, 2007a).

Inyo County roads are not as restricted during the winter months as are those in Mono County. Within the STSA, two routes allow westbound travel into Nevada, while eastbound travel ends at the base of the Sierra Nevada Mountains. Winter snow events do not typically cause travel restrictions on the roads within the county due to lower elevations

STSA Transit Services - Transit service in the STSA is provided by the Inyo-Mono Transit Agency and by private shuttle services. The Inyo-Mono Transit agency operates area-to-area bus service in the communities of Walker, Mammoth Lakes, Bishop, and Lone Pine, as well as operating the Eastern Sierra's only interregional routes between Reno and Ridgecrest called the Carson Ridgecrest Eastern Sierra Transit (CREST) service.

Summer transit service is offered by the Yosemite Area Regional Transit Service (YARTS). Additional summer transit service is offered within Mammoth Lakes by the Reds Meadow Shuttle that transports day visitors to the Devils Postpile National Monument and Reds Meadow areas. Winter transit service is offered within Mammoth Lakes by the Mammoth Area Shuttle System in cooperation with the Inyo National Forest (Mammoth Transit, 2006).

4.4 HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

The following sections address the areas of effect and resources in the study areas that have been established for the EIS. Applicable Federal and state regulations related to Historical, Architectural, Archaeological, and Cultural Resources are discussed in **Appendix B**.

4.4.1 Area of Potential Effect

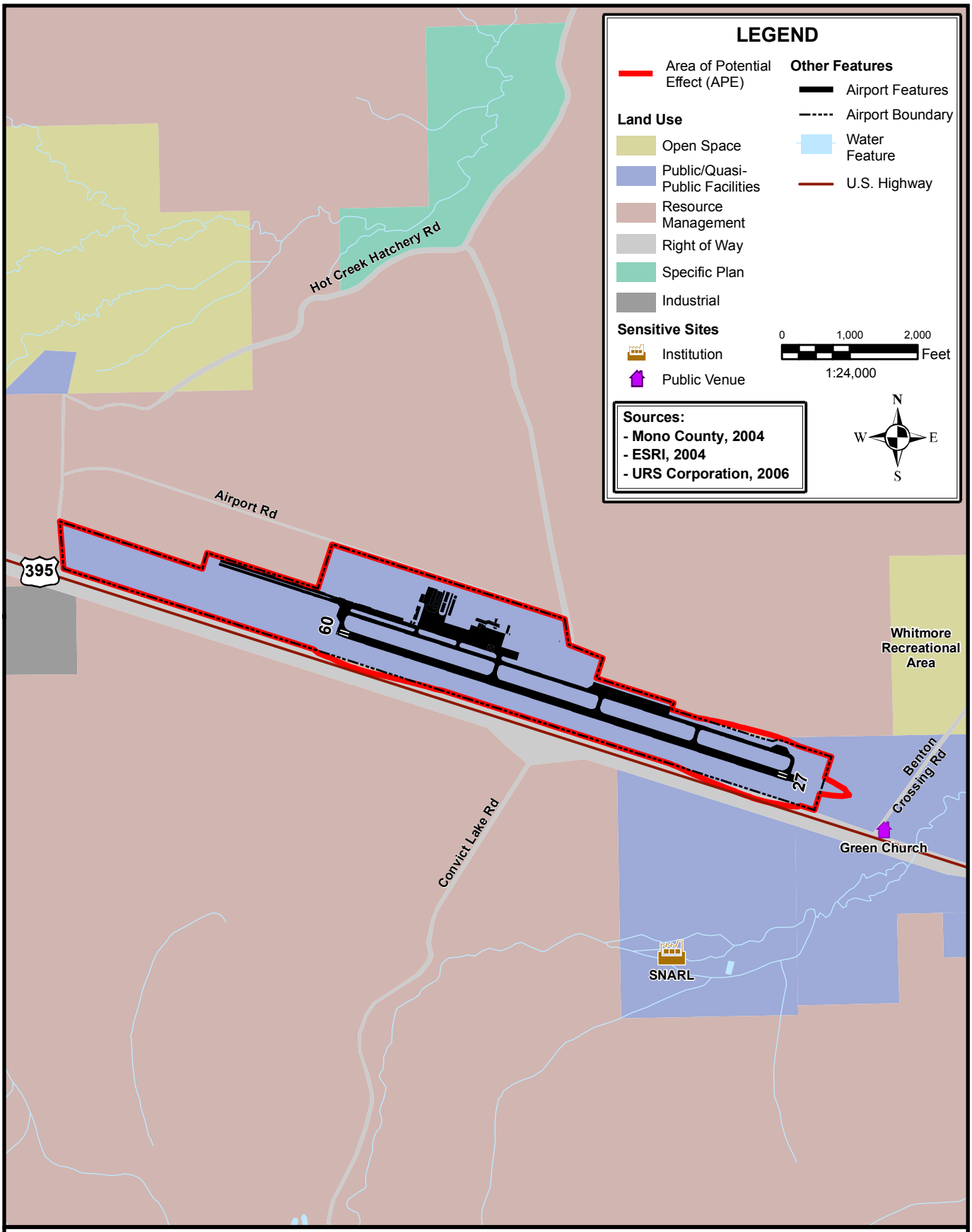
A proposed Area of Potential Effect (APE) for historic architectural resources was developed by the FAA and submitted to State Historic Preservation Officer (SHPO) for review and approval. The FAA has determined that the APE is made up of a combination of the larger of the year 2015 CNEL 65 dBA noise contour and the airport boundary. The SHPO concurred with the proposed APE in a letter dated March 12, 2007, which is included in **Appendix G**. The approved area is illustrated in **Figure 4.4-1**.

Since the Proposed Action does not include any ground disturbance activities, an archaeological survey was not required, and archaeological resources were not evaluated for this EIS.

4.4.2 Existing Conditions

On October 17, 2006, the FAA initiated consultation with the California Native American Heritage Commission (NAHC) and local Native American communities, and provided them with information about the Proposed Action at MMH. Copies of the consultation letters are provided in **Appendix G**. These consultations were conducted in a government-to-government manner pursuant to Executive Order 13175, Consultation and Coordination with Indian Tribal Governments. The tribes were offered an opportunity to provide information about cultural resources that may have traditional cultural values for their communities and to express their concerns about impacts on such places.

FAA contacted the seven Federally recognized tribal groups closest to MMH with another coordination letter on January 19, 2007, and again requested input on any known cultural resources that could be affected by the Proposed Action. The contact list for this coordination letter was developed from consultation with the NAHC and a review of the U.S. Department of Interior, Bureau of Indian Affairs, Tribal Leaders Directory for Winter 2004/2005. The Tribes contacted included:



H:\projects\Mammoth_Lakes\12004269\Applications\mxd\Proposed Air Service\Worksheets\Figure 4.4-1, Proposed Area of Potential Effect.mxd {rpf, ljb, hde 09/24/07}

Environmental Impact Statement
Mammoth Yosemite Airport
Horizon Air Operations Specifications
Amendment Service to/from MMH

AREA OF POTENTIAL EFFECT (APE)

FIGURE 4.4-1

Mono County

- Bridgeport Paiute Indian Colony - Charlotte Baker, Chairperson
- Utu Gwaitu Paiute Tribe of the Benton Paiute Reservation - Joseph Saulque, Chairperson

Inyo County

- Bishop Paiute Tribe - Michael Rogers, Chairperson
- Big Pine Paiute Tribe of the Owens Valley - Jessica Bacoch, Chairperson
- Fort Independence Reservation - Carl A. Dahlberg, Chairperson
- Lone Pine Paiute Shoshone Reservation - Rachel A. Joseph, Chairperson
- Timbi-sha Shoshone Tribe - Joseph Kennedy, Chairperson

Most of these tribal groups are located quite a distance from MMH, ranging from 20 to 135 miles as shown in **Figure 4.3-1** and listed in **Table 4.3-3** in **Section 4.3**. No potentially affected resources that had traditional cultural values were identified by any of the tribes contacted.

4.4.2.4 Identified Resources

Previous studies and field reconnaissance performed in the vicinity of MMH (Far Western Anthropological Research Group, Inc., 1995 and Jones & Stokes, 2000) did not record any prehistoric or historic resources in the MMH area.

In terms of historic architectural resources, there are no resources listed or eligible for listing on the National Register of Historic Places (NRHP) within the APE. A building locally known as the "Green Church" (High Sierra Community Church) is located approximately 1,000 feet from the airport boundary but is not within the APE (see **Figure 4.4-1**).

4.5 DEPARTMENT OF TRANSPORTATION ACT SECTION 4(f) AND LAND AND WATER CONSERVATION FUND SECTION 6(f) PROPERTIES

The following sections describe properties in the SNSA that are or that may be protected under either the provisions of U.S. Department of Transportation Act, Section 4(f) or the Land and Water Conservation Act, Section 6(f).

4.5.1 Department of Transportation Act Section 4(f) Resources

4.5.1.1 Section 4(f) Background

The Department of Transportation Act, Section 4(f), which is codified and renumbered as section 303(c) of 49 U.S.C., provides that the Secretary of Transportation will not approve any program or project that requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance or land from an historic site of national, state, or local significance as determined by the officials having jurisdiction thereof, unless there is no feasible and prudent alternative to the use of such land and such program, and the project includes all possible

planning to minimize harm resulting from the use. The policies section 4(f) engendered are widely referred to as "section 4(f)" matters (FAA, 2006a).

Where Federal lands are administered for multiple uses, the Federal official having jurisdiction over the lands shall determine whether the subject lands are in fact being used for park, recreation, wildlife, waterfowl, or historic purposes. National wilderness areas may serve similar purposes and shall be considered subject to section 4(f) unless the controlling agency specifically determines that for section 4(f) purposes the lands are not being used (FAA, 2006a). While an area of public land that falls under wilderness categorization and/or is located in a national forest or on BLM lands and is managed primarily for recreational or wildlife habitat preservation purposes may receive section 4(f) protection, entire wilderness areas, forests, and BLM lands may not.

Section 4(f) may also apply to archaeological resources; however, the Proposed Action which is the subject of this EIS does not include ground disturbance. Therefore, archaeological resources are not addressed in this section.

Use within the meaning of section 4(f) includes not only actual physical takings of such lands but also adverse indirect impacts (constructive use) as well. When there is no physical taking, but there is the possibility of constructive use, the FAA must determine if the impacts would substantially impair the use of the section 4(f) resource. If there would be no substantial impairment, the action would not constitute a constructive use and would not, therefore, invoke section 4(f) of the DOT Act (FAA, 2006a).

An example of “constructive use” could be a major increase in noise levels at a park due to aircraft overflights where the noise is loud enough to substantially impair the intended use of the park, even though the park property is not directly affected through acquisition or physical development. In this instance, the noise would have to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes (FAA, 2006a).

Neither the No-Action nor the Proposed Action alternatives would involve any property acquisition or construction that could result in a physical taking. Therefore, this discussion of the affected environment is limited to those potential section 4(f) resources that could be subject to constructive use. Likewise, the causal factor for any constructive use that might occur would be aircraft overflights resulting from the Proposed Action.

4.5.1.2 Section 4(f) Study Areas

The following sections describe the study areas for potential section 4(f) resources devoted to recreational activities, and those where a quiet setting is a generally recognized purpose and attribute.

Section 4(f) Resources in the Vicinity of MMH

For this EIS, the ASA, which was established based on the estimated extent of the future (2015) CNEL 65 dBA noise contour (see **Figure 4-1**), was used as the study area for the section 4(f) resources devoted to traditional recreational activities.

Section 4(f) Resources with Quiet Setting Attributes

To address potential noise impacts to park resources with quiet setting attributes, FAA has utilized its *Guidance on Procedures for Evaluating the Potential Noise Impacts of Airport Improvement Projects on National Parks and Other Sensitive Park Environments* (FAA Guidance Document) (FAA, 2007) to develop the AI (see **Appendix C-2**). The AI, shown in **Figure 4-4**, was used for the evaluation of potential constructive use impacts to section 4(f) resources with quiet setting attributes.

4.5.1.3 Inventory of Resources

The following sections describe the inventory of potential section 4(f) resources devoted to traditional recreational activities and those where a quiet setting is a generally recognized purpose and attribute.

Potential Section 4(f) Resources in the Vicinity of MMH

An examination of land uses within the ASA indicated that no section 4(f) resources exist within this area.

Potential Section 4(f) Resources with Quiet Setting Attributes

A number of national parks, wilderness areas, and other areas managed by the National Park Service (NPS), USDA-FS, and BLM exist within the AI as shown in **Figure 4-4**. The entirety of these areas are not necessarily protected under section 4(f). Resource managing agencies have identified representative locations within these protected resources where a quiet setting is a generally recognized purpose and attribute. Consultation letters with the resource managing agencies are provided in **Appendix G**.

The areas of potentially protected resources are listed in **Table 4.5.1-1** and described further in **Appendix F**. The AI contains broad geographic areas of recreational uses within the national parks, national forests, wilderness areas, and other public lands. The FAA has not identified specific 4(f) properties where a quiet setting is a generally recognized purpose and attributes pending assessment of those areas within the AI where potential changes in noise levels may occur as a result of the Proposed Action.

4.5.2 Land and Water Conservation Fund Section 6(f) Resources

Section 6(f) of the Land and Water Conservation Fund (LWCF) Act of 1965, as amended, and codified at 16 U.S.C 4601-8, allows the Secretary of the Interior, acting through the Director of the NPS, to establish a LWCF. The fund provides money to Federal agencies, states, or the state's designee for purchasing land and developing outdoor recreational resources and facilities for the American public. The Act requires that all lands acquired or developed with LWCF Act assistance be maintained in public outdoor recreation use, or suitably replaced.

No Section 6(f) resources are located within the ASA.

TABLE 4.5.1-1
SUMMARY OF AREAS CONTAINING POTENTIALLY PROTECTED SECTION 4(F) RESOURCES

Managing Agency	Letter Sent by FAA	Date of Response(s)	Location	Basis for Evaluating Section 4(f) Applicability			Representative Locations
				Primary Use(s)/ Purpose(s)	National, State, or Local Significance	Basis of Significance	
National Park Service	5/9/07	8/30/06 *(Scoping)* and 6/28/07	Yosemite National Park	Preservation of resources (including wilderness values) and to make the varied resources available to the public for enjoyment, education, and recreation.	National Significance	U.S. Statutes at Large, Vol. 26, Chap. 1263, pp. 651-52, passed by the 51st Congress, Session I, October 1, 1890	*See Yosemite Wilderness Area*
			Sequoia & Kings Canyon National Park	Protection of the Eastern Sierra ecosystem, provide opportunities for the public to experience and understand park resources and values, and protect and preserve significant cultural resources and wilderness.	National Significance	U.S. Statutes at Large, Vol. 26, Chap. 926, p. 478, passed by the 51st Congress, Session I, September 25, 1890	*See Sequoia-King's Canyon Wilderness Area*
			Devils Postpile National Monument	Protection and preservation of Devils Postpile formation, the 101-foot high Rainbow Falls, and pristine mountain scenery.	National Significance	Presidential Proclamation July 6, 1911	Devils Postpile Lookout
			Sequoia-Kings Canyon Wilderness Area	Primitive recreation, outstanding opportunities for solitude, preservation of flora, fauna and geological features, and preservation of wild lands and their wilderness values of natural ecological integrity and natural appearance.	National Significance	California Wilderness Act of 1984 (Public Law 98-425)	John Muir Trail (San Joaquin River, McClure Meadow)

TABLE 4.5.1-1 (CONTINUED)
SUMMARY OF AREAS CONTAINING POTENTIALLY PROTECTED SECTION 4(F) RESOURCES

Managing Agency	Letter Sent by FAA	Date of Response(s)	Location	Basis for Evaluating Section 4(f) Applicability			Representative Locations
				Primary Use(s)/ Purpose(s)	National, State, or Local Significance	Basis of Significance	
			Yosemite Wilderness Area	Primitive recreation, outstanding opportunities for solitude, preservation of flora, fauna and geological features, and preservation of wild lands and their wilderness values of natural ecological integrity and natural appearance.	National Significance	California Wilderness Act of 1984 (Public Law 98-425)	John Muir Trail (Donohue Pass[1], Lyell Canyon[1]), Washburn Lake, Tioga Pass[1], Chain Lakes
USDA-FS	5/9/07 and 7/24/07	11/9/06 *(Scoping)*	Inyo National Forest	Recreation areas, parklands, and wildlife refuges.	National Significance	Presidential Proclamation May 25,1907	Minaret Vista, Silver Lake
			Sierra National Forest	Recreation areas, parklands, and wildlife refuges.	National Significance	Presidential Proclamation February 14,1893	Granite Creek Campground, Mount Tom Lookout, Badger Flat Campground, Vermilion Campground
			Mono Basin National Forest Scenic Area	Recreational viewing of Tufa, bird watching, hiking, recreational boating, and preservation of unique ecological and cultural resources around Mono Lake.	National Significance	California Wilderness Act of 1984 (Public Law 98-425)	Mono Lake Lookout
			Ansel Adams Wilderness Area	Primitive recreation, outstanding opportunities for solitude, preservation of flora, fauna and geological features, and preservation of wild lands and their wilderness values of natural ecological integrity and natural appearance.	National Significance	Wilderness Act of 1964 (Public Law 88-577) and California Wilderness Act of 1984 (Public Law 98-425)	Cargyle Meadow, John Muir Trail (Garnet Lake, Donohue Pass[1]), Mono Hot Springs Campground[1], Jackass Meadow Campground[1]

TABLE 4.5.1-1 (CONTINUED)
SUMMARY OF AREAS CONTAINING POTENTIALLY PROTECTED SECTION 4(F) RESOURCES

Managing Agency	Letter Sent by FAA	Date of Response(s)	Location	Basis for Evaluating Section 4(f) Applicability			Representative Locations
				Primary Use(s)/ Purpose(s)	National, State, or Local Significance	Basis of Significance	
USDA-FS			Dinkey Lakes Wilderness Area	Primitive recreation, outstanding opportunities for solitude, preservation of flora, fauna, and geological features, and preservation of wild lands and their wilderness values of natural ecological integrity and natural appearance.	National Significance	California Wilderness Act of 1984 (Public Law 98-425)	California Riding/Hiking Trail
			John Muir Wilderness Area	Primitive recreation, outstanding opportunities for solitude, preservation of flora, fauna, and geological features, and preservation of wild lands and their wilderness values of natural ecological integrity and natural appearance.	National Significance	Wilderness Act of 1964 (Public Law 88-577) and California Wilderness Act of 1984 (Public Law 98-425)	Mosquito Flats Campground[1], North Lake Campground[1], John Muir Trail (Sallie Keyes Lakes, Quail Meadows, Lake Virginia), Rainbow Lake, Mount Abbot, Desolation Lake, Tamarack Lakes
			Kaiser Wilderness Area	Primitive recreation, outstanding opportunities for solitude, preservation of flora, fauna, and geological features, and preservation of wild lands and their wilderness values of natural ecological integrity and natural appearance.	National Significance	Public Law 94-557	Upper Twin Lake

TABLE 4.5.1-1 (CONTINUED)
SUMMARY OF AREAS CONTAINING POTENTIALLY PROTECTED SECTION 4(F) RESOURCES

Managing Agency	Letter Sent by FAA	Date of Response(s)	Location	Basis for Evaluating Section 4(f) Applicability			Representative Locations
				Primary Use(s)/ Purpose(s)	National, State, or Local Significance	Basis of Significance	
BLM	5/9/07	8/28/06 *(Scoping)* and 6/22/07	Crowley Lake Campground	Campground with 47 campsites, capacity for 376 people.	Local Significance	Proximity to premier bouldering and climbing areas	*Specific representative site within BLM lands*
			Horton Creek Campground	Campground with 53 campsites; capacity for 424 people, providing opportunities for exploring, hiking, and sightseeing.	Local Significance	Proximity to premier bouldering and climbing areas	*Specific representative site within BLM lands*
			Hot springs recreation sites	Hot springs recreational opportunities in areas of solitude.	Local Significance	Contributes to the diversity of outstanding semi-primitive recreation opportunities in the eastern Sierra region	Wild Willy's Hot Springs
			Volcanic Tablelands	Contains numerous prehistoric and historic sites of importance (including two listed on NRHP). Recreational opportunities including rock climbing, hiking, and camping.	Local (recreational) and National (cultural) Significance	Contains four designated Wilderness Study Areas	Chalk Bluff, Fish Sanctuary, Chidago Canyon, Red Rock Canyon

Sources:
Agency correspondence is contained in **Appendix G**.
See **Appendix C-2**.

4.6 FISH, WILDLIFE, AND PLANTS

4.6.1 Biotic Communities

This EIS addresses both Federally listed species and other species of concern identified by Federal and state resource agencies in the Scoping and consultation process.

MMH is located within the East Sierra Nevada Region of the Great Basin Floristic Province at approximately 7,080 to 7,130 feet above sea level (ASL). The airport environment includes the existing MMH facility and adjacent areas including portions of US 395 and Airport Road.

4.6.1.1 Vegetation

The vegetative community in the vicinity of MMH is dominated by big sagebrush and includes a non-jurisdictional dry meadow located between the east end of the airport runway and Benton Crossing Road, as shown on **Figure 4.6-1**. Much of this community has been previously disturbed by grazing, as well as by construction and maintenance of the airport facilities, roads, and highways in the area.

4.6.1.2 Wetlands

No jurisdictional waters of the U.S. (including wetlands) were identified on airport property.

4.6.1.3 Wildlife

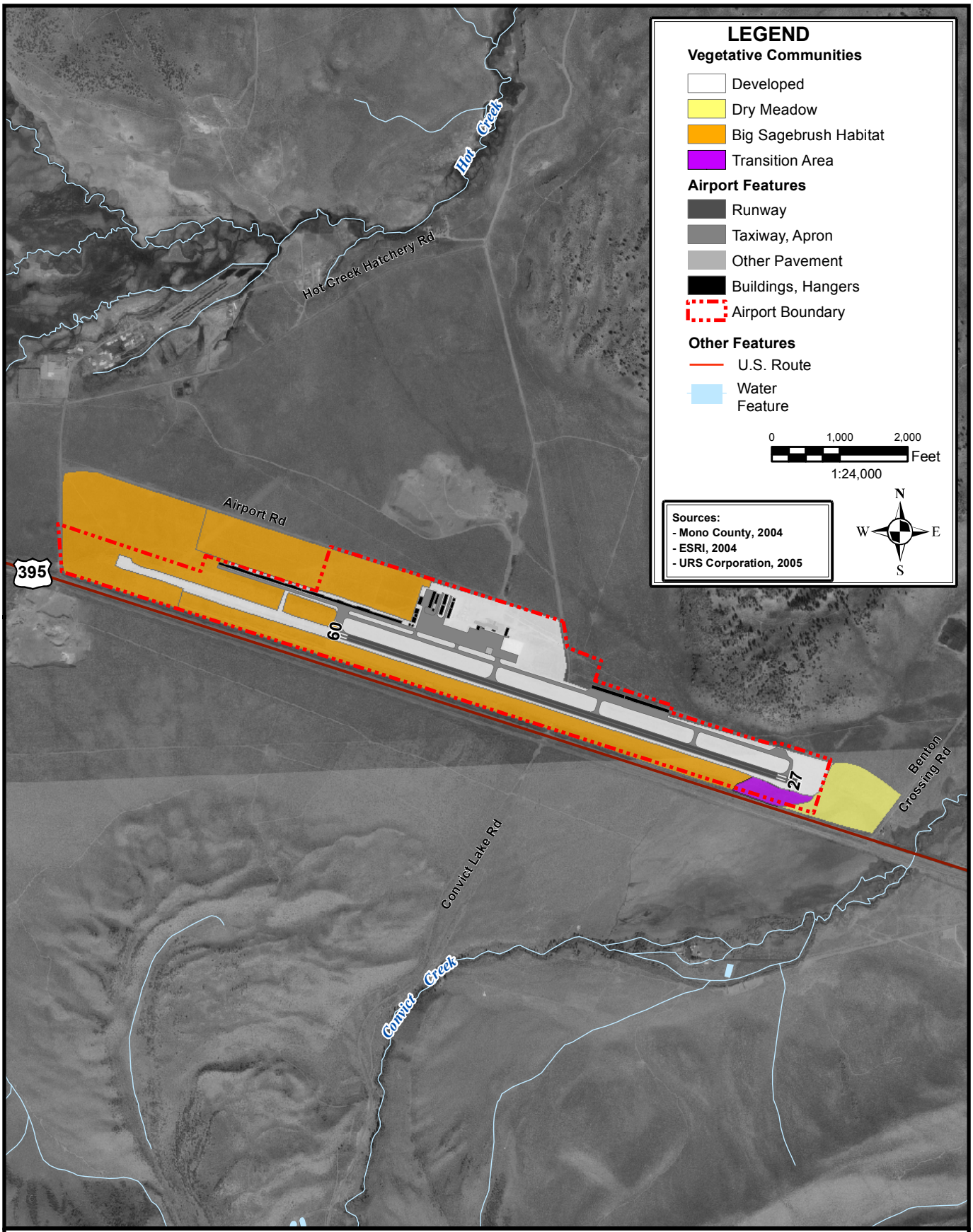
There are a number of species with the potential to occur on, or in the vicinity of MMH, which have been identified by Federal and state resource agencies as being of heightened concern and that were recommended for evaluation in this EIS. These include the Mule Deer, Sage Grouse, Pigmy Rabbit, Bald Eagle, and Owens Sucker. Additional information concerning these species is presented in **Appendix H-1**.

Mule Deer – The mule deer (*Odocoileus hemionus*) was identified by the California Department of Fish and Game (CFG) and the BLM as a species of concern during the Scoping process for this EIS.

Based on studies (Jones & Stokes Biological Study, 2001; Neff, 1968; Eberhardt and White, 1980), suitable vegetation for mule deer foraging is located in the eastern and western sections of the airport property. Based on pellet group study data, the deer utilize the western portion of the airport property much more frequently, likely due to the higher habitat quality in this area.

Sage Grouse - The greater sage-grouse (*Centrocercus urophasianus*) was identified by CFG and the U.S. Fish and Wildlife Service (USFWS) as a concern due to the proximity of sage grouse leks approximately two miles east and north of the airport, and possible impacts on the use of the leks resulting from the Proposed Action. A lek is a communal arena in which males perform courtship displays. The lek is considered to be the center of year-round activity for resident grouse populations.

An ongoing study conducted by the USGS (Personal Communication, 2004) has determined that the sage grouse utilize the Long Valley area surrounding MMH for foraging, nesting, and breeding, as shown on **Figure 4.6-2**. In 2005, the USFWS declined a petition to list the sage grouse as endangered.



H:\projects\Mammoth_Lakes\12004269\Applications\mxd\Proposed Air Service\Figure 4.6-1, Vegetative Communities.mxd {rpf, jlb, hde, 11/09/07}

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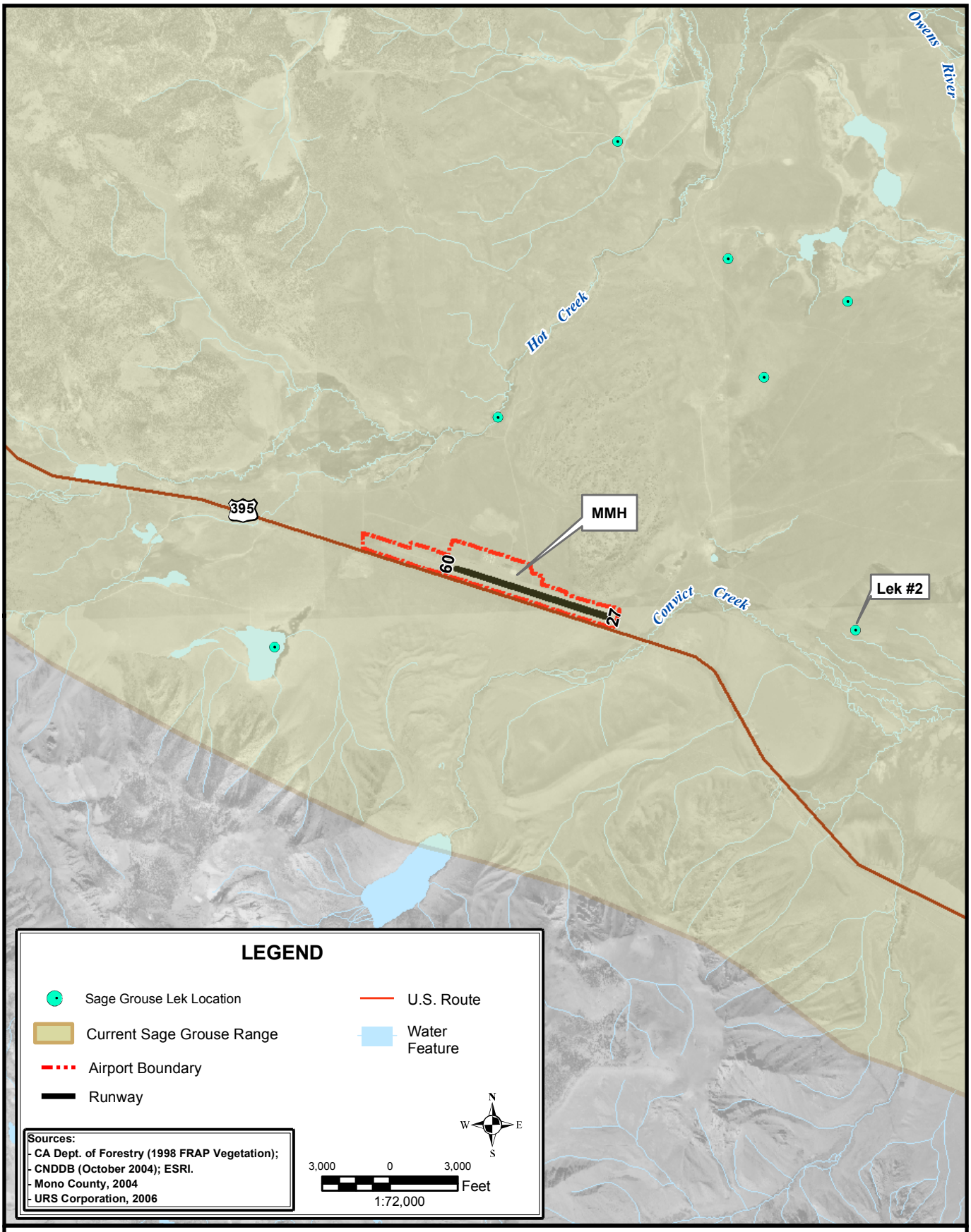
VEGETATIVE COMMUNITIES ON MAMMOTH YOSEMITE AIRPORT

FIGURE 4.6-1



H:\projects\Mammoth_Lakes\12004269\Applications\mxd\Proposed Air Service\Figure 4.6-2, Non-Listed Species of Elevated Concern.mxd {rpf jlb, hde, 02/08/08}

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NON-LISTED SPECIES OF ELEVATED CONCERN

FIGURE 4.6-2

Pygmy Rabbit – The pygmy rabbit (*Brachylagus idahoensis*) was identified by the USFWS as a potential concern. BLM biologists have reportedly observed pygmy rabbits in the Long Valley area. Habitat in the area surrounding the airport is assumed to be similar to that described for the Mono Basin within which this species has been observed (Mono Basin EIR, 1993).

Bald eagle - The bald eagle (*Haliaeetus leucocephalus)* is state listed as endangered. It was delisted at the Federal level in June of 2007. Bald eagles have been reported perching on utility poles at the Hot Creek Fish Hatchery, approximately 0.75 miles northwest of MMH (Jones & Stokes, 2001).

Owens sucker - The Owens sucker (*Catostomus fumeiventris)* is a state species of concern. The nearest known occurrence of the Owens sucker to MMH is located in Crowley Lake, approximately 3 miles southeast (USFWS, 1998) of the airport.

4.6.2 Threatened and Endangered Species

A listing of special status species considered as part of this EIS was developed from the following sources: 1) USFWS Federally listed, proposed, and candidate species for Inyo and Mono counties (USFWS, 2006), and 2) California Department of Fish and Game's Natural Diversity Database (CNDDB). Response letters issued by USFWS regarding the Proposed Action are contained in **Appendix G** and **Appendix H**.

The potential for occurrence of special status species in the ASA was evaluated based on three criteria: 1) existing information, 2) qualitative comparisons between the known habitat requirements and biotic and abiotic conditions present, and 3) field reconnaissance conducted by qualified biologists.

Eight special status species have been identified by the USFWS and the CNDDB as potentially occurring in the vicinity of MMH (see **Table 4.6-1**). Of these eight species, four do not occur, or are unlikely to occur, in the immediate vicinity of MMH because the area is: 1) clearly outside of the known geographic or elevation range of the species, or 2) does not contain habitat characteristics known to support the species (see **Appendix H-1**). A description of the remaining two species is provided below.

Owens tui chub - The Owens tui chub (*Gila bicolor snyderI)* is Federally and state listed as endangered. Critical habitat for the Owens tui chub includes two areas: 1) the Owens River from Long Valley Dam downstream for a distance of eight stream miles and 2) a portion of Hot Creek and its outflows and includes areas of land within 50 feet on all sides of these drainages (50 FR 31594). The nearest known occurrence of the Owens tui chub is located at Hot Creek headsprings, approximately 0.75 miles northwest and upstream of the airport (USFWS, 1998), shown in **Figure 4.6-3**.

Sierra Nevada bighorn sheep - The Sierra Nevada bighorn sheep (*Ovis Canadensis californiana)* is Federally and state listed as endangered. The Wheeler Crest population is approximately 12 miles southeast of the airport and the Lee Vining population is approximately 20 miles northwest of the airport.

TABLE 4.6-1
SPECIAL STATUS SPECIES IN THE VICINITY OF MMH

Common Name	Scientific Name	Federal Status	State Status
Amphibian			
Mountain yellow-legged frog	*Rana muscosa*	C	
Yosemite toad	*Bufo canorus*	C	
Bird			
Bald eagle	*Haliaeetus leucocephalus*	DL	E
Fish			
Owens tui chub	*Gila bicolor snyderi*	E/CH	E
Owens sucker	*Catostomus fumeiventris*		SC
Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*	T	
Mammal			
Sierra Nevada bighorn sheep	*Ovis canadensis californiana*	E	E
Pacific Fisher	*Martes pennanti*	C	

Status Definitions:

C Candidate for Listing.
E Listed Endangered: The Endangered Species Act (ESA) specifically prohibits the "take" of a species listed as endangered. Take is defined by the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct."
T Listed Threatened: The ESA specifically prohibits the "take" of a species listed as threatened. Take is defined by the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct."
SC Species of Concern: The terms "Species of Concern" or "Species at Risk" should be considered as terms-of-art that describe the entire realm of taxa whose conservation status may be of concern to the USFWS, but neither term has official status.
CH Critical Habitat.
DL Delisted.

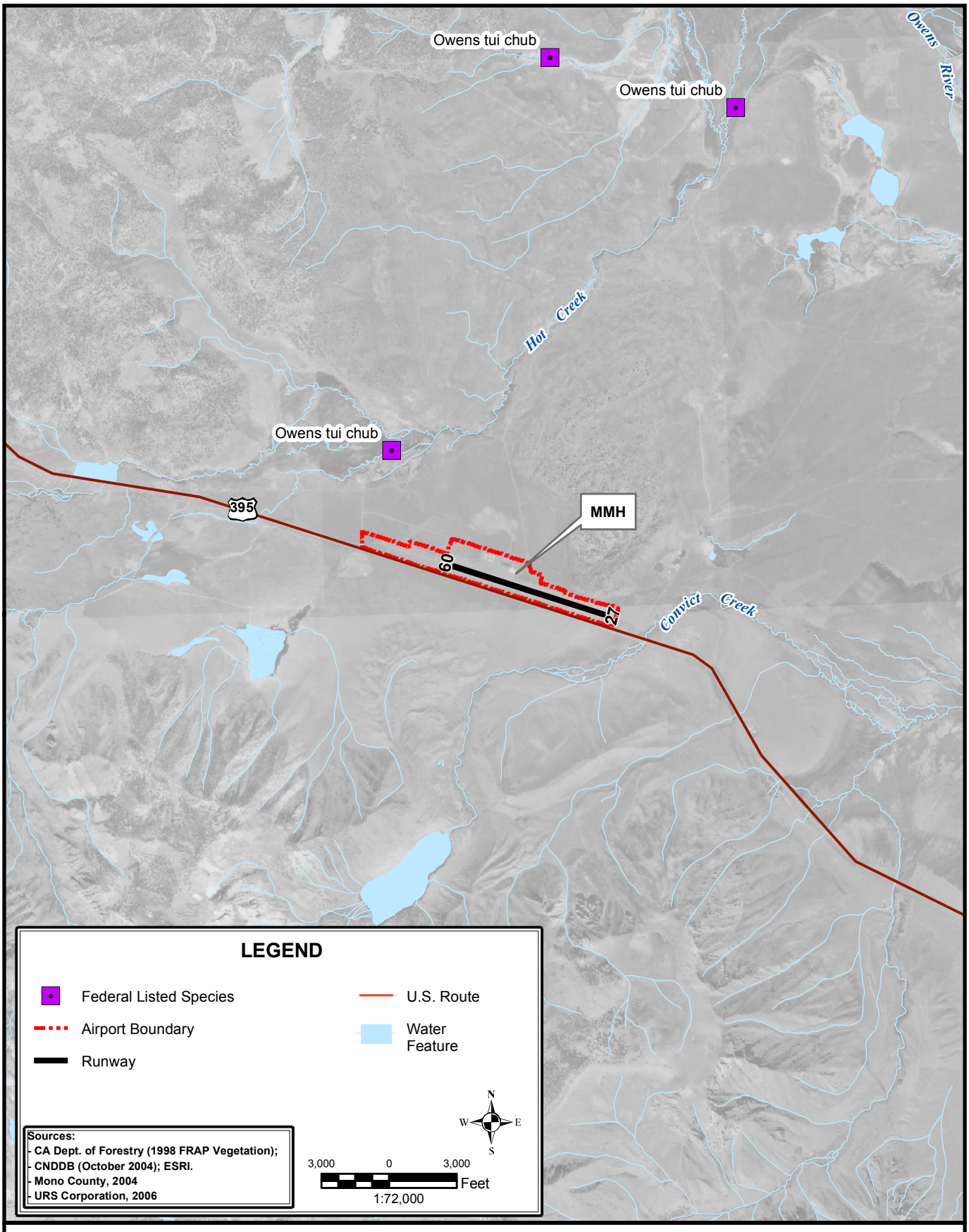
Source: USFWS October 2006.

4.7 AIR QUALITY

FAA prepared an air quality assessment using guidance from FAA Order 1050.1E Chg. 1 (FAA, 2006a), the FAA document *Air Quality Procedures for Civilian Airports and Air Force Bases* (FAA, 1997) and its 2004 addendum (FAA, 2004), and the 1990 Clean Air Act Amendments (CAAA) (42 U.S.C. 7401, et. seq.). Some of these regulations are discussed below.

The air quality analysis for the existing conditions at MMH includes the preparation of emissions inventories for the following air pollutants: carbon monoxide (CO), volatile organic compounds (VOCs) and nitrogen oxides (NO_x) as precursor pollutants to ozone (O_3) formation, particulate matter of 10 microns or less (PM_{10}), particulate matter of 2.5 microns or less ($PM_{2.5}$), and sulfur dioxide (SO_2). The EPA criteria air pollutant lead (Pb) was not included in the emissions inventory because: 1) the Mammoth Lakes area is in attainment for Pb, and 2) since the prohibition of Pb as an additive in liquid fuels, Pb has ceased to be a major transportation related pollutant.

Currently, there are no federal requirements for calculating or reporting Greenhouse Gas (GHG) emissions in the Clean Air Act. There are no widely accepted methodologies for calculating GHG emissions from transportation sources generally and airport-related sources in particular. There are also no significant impact levels for assessing impacts of GHG emissions. Information concerning state GHG legislation and local Town of Mammoth Lakes global warming and GHG strategies is located in **Appendix D**.



H:\projects\Mammoth_Lakes\12004269\Applications\mxd\Proposed Air Service\Figure 4.6-3, Federal Endangered - Threatened Species.mxd {rpf jlb, hde, 11/09/07}

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FEDERAL ENDANGERED - THREATENED SPECIES

FIGURE 4.6-3

4.7.1 Attainment/Nonattainment Status

The Great Basin Valley air shed (which includes Mono County and MMH) has been designated as being in attainment for all of the "criteria" air pollutants except for PM_{10}. The current attainment/nonattainment designations for Mono County, as identified in the U.S. EPA's Green Book database (U.S. EPA, 2007) are summarized in **Table 4.7-1**.

TABLE 4.7-1
ATTAINMENT/NONATTAINMENT DESIGNATIONS FOR MONO COUNTY

Pollutant	Federal Designation
Carbon Monoxide (CO)	Attainment
Lead (Pb)	Attainment
Nitrogen Oxides (NO_x)	Attainment
Ozone (O_3) (1-Hour)	N/A*
Ozone (O_3) (8-Hour)	Attainment
Particulate Matter (PM_{10})	Nonattainment (Moderate)
Particulate Matter ($PM_{2.5}$)	Attainment

* Federal standard revoked June 15, 2005.

Source: U.S. EPA, 2007.

4.7.2 Measured Air Quality Data

The Great Basin Unified Air Pollution Control District operates several ambient air monitoring stations in California as part of the state and local air monitoring programs. These stations are intended to sample and record outdoor levels of the U.S. EPA criteria air pollutants listed above. No air monitoring stations are located directly on, or adjacent to, MMH. The nearest monitoring station to MMH is located approximately 7.5 miles away at Highway 203 and Old Mammoth Road at the Do-It Center in Mammoth Lakes. This site monitors PM_{10} and $PM_{2.5}$ concentrations. **Table 4.7-2** contains the detailed site information (site location, distance, and direction from MMH) and the measured PM_{10} and $PM_{2.5}$ data from the Do-It Center Site for 2005.

TABLE 4.7-2
MONO COUNTY 2005 AIR QUALITY MONITORING DATA SUMMARY

Site ID	Monitoring Station	Distance from MMH	Pollutants Measured	Averaging Period	Highest Recorded Concentrations	Federal Standard	California Standard
6051001	Do-It Center, Highway 203 and Old Mammoth Road, Mammoth Lakes	7.6 Miles West	PM_{10}	24-Hour	85 $\mu g/m^3$	150 $\mu g/m^3$	50 $\mu g/m^3$
				Annual	24 $\mu g/m^3$	N/A	20 $\mu g/m^3$
			$PM_{2.5}$	24-Hour	27 $\mu g/m^3$	35 $\mu g/m^3$	35 $\mu g/m^3$
				Annual	7.6 $\mu g/m^3$	15 $\mu g/m^3$	12 $\mu g/m^3$

Source: U.S. EPA AirData, 2006, accessed August 9, 2006.

As shown in **Table 4.7-2,** all PM_{10} and $PM_{2.5}$ concentrations are well below the respective federal standards but PM_{10} levels exceed the California standards.

4.7.3 Operational Emissions for the 2005 Existing Conditions

The primary tool used to assess operational emissions was the FAA's *Emissions Dispersion & Modeling System* (EDMS) (FAA, 2006b), Version 4.5. EDMS is identified as the "required" model by FAA and includes EPA's AERMOD model for performing dispersion modeling. AERMOD is an approved model by the U.S. EPA for conducting airport air quality assessments. EDMS was used to estimate emissions for CO, VOCs, and NO_x as precursor pollutants to O_3 formation, PM_{10}, $PM_{2.5}$, and SO_2. Version 4.5 was the most recent version available at the time the analyses were conducted.

The operational air pollutant emissions inventory for MMH for the 2005 existing conditions is summarized in **Table 4.7-3**.

TABLE 4.7-3
AIR POLLUTANT EMISSIONS FOR THE 2005 EXISTING CONDITION

Source	Pollutant (tpy)				
	CO	VOC	NO_x	PM_{10} / $PM_{2.5}$	SO_2
Aircraft	57.01	1.45	1.38	0.58[2]	0.20
Ground Support Equipment	0.07	0.02	0.29	0.01	0.06
Motor Vehicles	2.16	0.10	0.38	0.01	0.00
Fuel Storage and Deicing	--[3]	2.80	--	--	--
Annual Total (tpy)	**59.24**	**4.25**	**2.05**	**0.60**	**0.26**

[1] Emissions based on 12,800 annual aircraft operations and an estimated taxi time of 5.8 minutes in 2005.

[2] Results include PM emissions from piston aircraft engines not available in EDMS, using the FAA's First Order approximation methodology.

[3] "--" means that this source does not emit this pollutant.

Sources: EDMS Version 4.5; URS Corporation, 2006.

4.8 HAZARDOUS MATERIALS AND SOLID WASTE

4.8.1 Hazardous Materials

The process of identifying sites and facilities of known, suspected, or with the potential to contain hazardous substances and/or environmental contamination was accomplished with: 1) visual field survey of MMH facilities; 2) review of available documents, and 3) an electronic database search of federal and state regulatory agency records (EDR, 2006).

In 2002, a subsurface environmental investigation was conducted that indicated the presence of petroleum hydrocarbon contamination in soil and groundwater beneath most of the area near the former hangar at MMH (TEAM, 2005, 2006a, and 2006b). Subsequent investigations at the site have been conducted to delineate the extent of the soil and groundwater contamination and to implement interim remedial measures to minimize the impact from the release.

Based on groundwater monitoring data collected since October 2003 (see monitoring well locations in **Figure 4.8-1**), the depth to groundwater at the site varies between approximately 28 and 46 feet below ground surface (ft bgs). The hydraulic gradient dips generally to the east-southeast at approximately 12 to 13 feet per mile, and there is a slightly downward vertical gradient between the shallow and deeper groundwater zones (TEAM, 2005, 2006a, and 2006b). The flow direction is consistent with the general west to east groundwater flow direction in the MMH area.

There are presently two 12,000-gallon above ground fuel tanks located at the airport for the storage of fuel products. These above ground storage tanks are situated on a concrete pad located east of the hangars. The tanks have double walls and are surrounded by a secondary containment system (MMH, 2002). The airport has prepared a Spill Prevention Control and Countermeasure Plan (SPCC Plan) to effectively respond to any leaks or other issues associated with these tanks or other hazardous materials issues (MMH, 2002). The SPCC plan establishes procedures, methods and equipment, and other requirements to prevent discharge of oil or other hazardous materials from the airport.

Chemicals used for equipment maintenance and other materials are stored in the maintenance/operations building that is completely enclosed. In addition, containment structures are installed at fueling areas.

4.8.2 Solid Waste

4.8.2.1 Mono County

Municipal solid waste (MSW) generated by the Town is collected by Mammoth Disposal, Inc. and is transferred to the Benton Crossing Landfill. The Benton Crossing Landfill is owned and operated by Mono County and is located approximately five miles east of MMH. The landfill receives an average of 108 tons per day (tpd) of nonhazardous and hazardous solid waste, with a maximum daily permitted throughput of 500 tpd. The Benton Crossing Landfill has a remaining capacity of 1.7 million cubic yards of compacted waste. The projected closure date of the landfill is December 2023.

In 2005, MMH had approximately 12,800 operations. Based on the average size of aircraft operating at MMH, a conservative assumption of 1.5 passengers per GA operation was used to calculate the number of passengers (e.g., pilots and passengers). The 12,800 operations in 2005 would equate to approximately 19,200 passengers per year. A recent study by the Natural Resources Defense Council (NRDC) estimates 0.64 pounds of commercial airline waste per passenger (NRDC, 2006). Since MMH is a GA airport and does not currently have commercial service, a conservative waste generation rate for MMH was used. A generation rate of 0.50 pound per passenger per operation was used to calculate the municipal waste generated by pilots, passengers, and on-airport personnel at MMH. Therefore, in 2005, approximately 9,600 pounds of waste (i.e., 4.8 tons in 2005 or 0.01 tpd) is estimated to have been generated by pilots, passengers, and other on-airport personnel at MMH.

4.9 WATER QUALITY

4.9.1 Surface Water

4.9.1.1 Surface Water Features in Vicinity of MMH

MMH is located within Long Valley in Mono County. The Long Valley watershed is approximately 380 square miles and includes the upper reaches of the Owens River above Crowley Lake (see **Figure 4.9-1**) (Lahontan RWQCB, 2005). The total watershed area above Crowley Lake is approximately 1,947 square miles (Lahontan RWQCB, 2002b). Within the Long Valley watershed streams generally flow eastward to the Owens River. Major creeks include Mammoth, Hot, and Convict creeks. An ancient volcano, known as the Long Valley Caldera, forms the topographical shape for the Long Valley into an elongated oval. The low point in the watershed is formed by Crowley Lake, which was constructed in 1941 (Lahontan RWQCB, 2002).

MMH is located on the watershed divide between the Convict Creek and Hot Creek subbasins (**Figure 4.9-2)**. The airport is located approximately 1.5 miles southeast of Hot Creek and approximately one mile west of Convict Creek. Approximately 30 percent of the airport property is in the Convict Lake subbasin and the remainder is in the Hot Creek subbasin. Both creeks ultimately discharge into Crowley Lake on the Owens River. There are no bodies of water on airport property.

Surface water runoff, if any, from the airport generally flows from south to north based on the topographic information. However, due to the highly permeable soils at the site which consist of medium to coarse sands and gravels, most runoff infiltrates to the subsurface or evaporates and very little runoff occurs. There is no stormwater runoff onto the airport from off-airport properties.

Stormwater runoff from the runway and taxiways drains as sheet flow from the pavement to the infield areas and then infiltrates into the ground. There generally is no ponding on the site. During snowstorms when the ground becomes frozen, snow accumulates in the infield areas. Snow from runways and taxiways is plowed and placed in the infield areas. Some temporary localized ponding (no more than approximately 6 inches deep and no more than two days) has been observed within the infield area between the runway and taxiway after significant snowmelt periods. No water has been observed flowing beyond the airport boundary during heavy rain storms or snowmelt (Personal Communication, 2005; Town of Mammoth Lakes, 2000; and Triad/Holmes, 2006).

Stormwater runoff from the aircraft parking apron and aircraft storage hangars is collected by a system of inlet structures and slot drains and conveyed via underground drainage pipes to an existing infiltration trench located north of the maintenance/operations building. Water that collects in the trench is allowed to infiltrate into the subsurface. There are several infiltration trenches on the site that vary in width, depth, and length. The largest in size is approximately 8 feet deep and 30 feet long. The water table is at approximately 32 to 46 feet bgs; therefore, the bottom of the infiltration trench is generally more than 20 feet above the water table. Based on observations by MMH operations personnel, it generally takes less than one day for the trench to empty, even after periods of significant snowmelt runoff (Personal Communication, 2005).

H:/projects/Mammoth_Lakes/12004269/Applications/mxd/Proposed Air Facility/Figure 4.8-1, Location of Former Underground Storage Tank on MMH.mxd, {gpf, llp, hde, 09/27/07}

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HOT CREEK HATCHERY RD

AIRPORT ROAD

AIRCRAFT HANGARS

FBO

TERMINAL BUILDING

INSET

7,000' x 100'

AIRCRAFT HANGARS

395

RENTION CROSSING ROAD

LEGEND

Airport Features

- Runway 9-27
- Taxiway
- Apron
- Roads
- Existing Building
- Water Storage Facility
- Airport Boundary
- Former Underground Storage Tank Location

1,000 0 1,000 Feet

Scale: 1" =1,000' (at 11"x17")

N W E S

Sources:
-Mono County, 2005
-Airport Layout Plan, 2006
-EDR, 2006

INSET

MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, MW-16a/b, MW-17a/b

1 ug/l

10 ug/l

100 ug/l

LNAPL

7069, 7068.5, 7068, 7067, 7067.5, 7066.5, 7069.5

Original Airport Supply Well

Hot Creek Aviation Supply Well

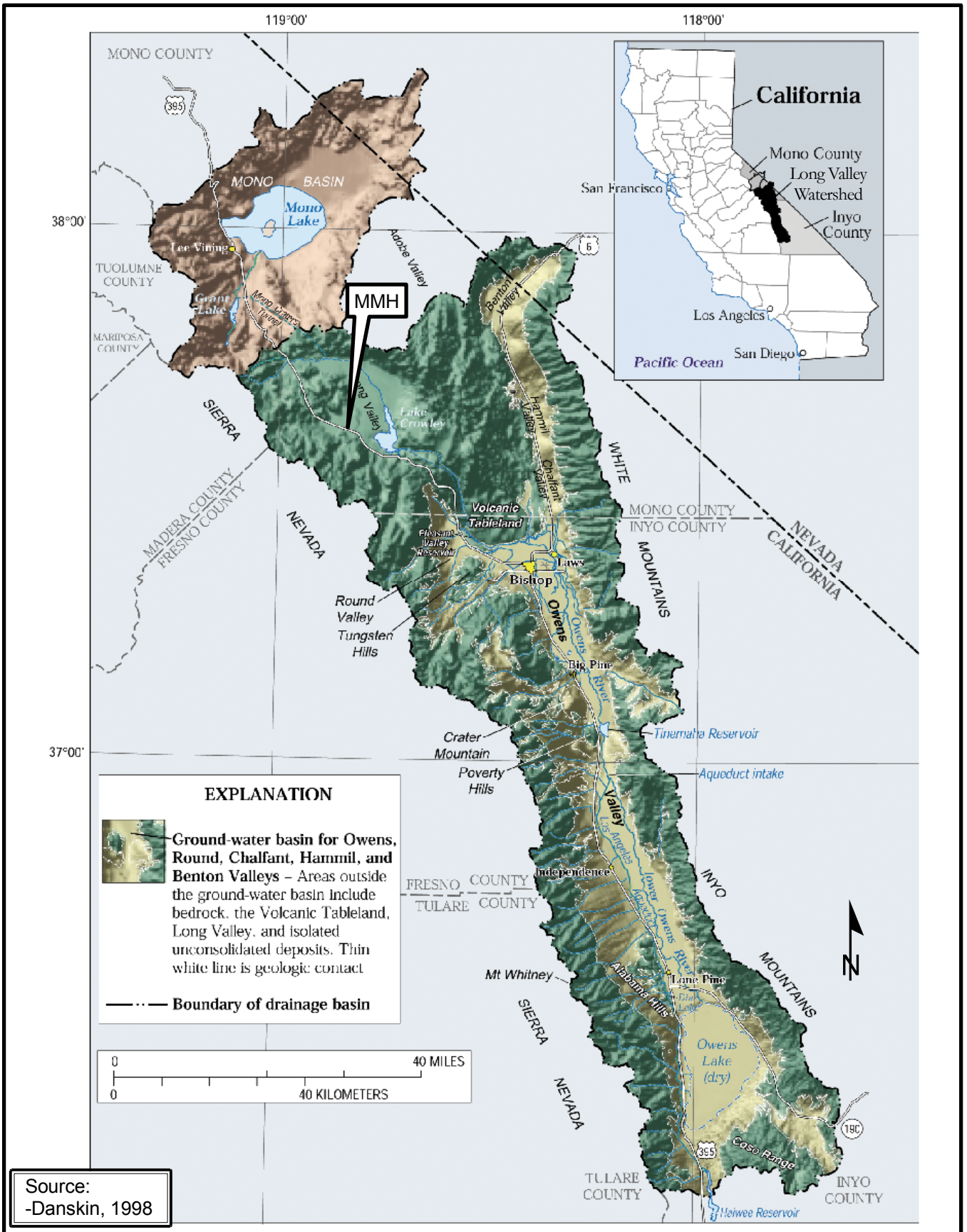
Legend

- Groundwater Monitoring Well
- Groundwater Monitoring/Treatment Well
- Groundwater Supply Well
- Nested, Double Completion Monitoring Well
- Approximate Groundwater Elevation Contours (feet)
- Approximate MTBE Concentration Contours (ug/l)

Scale: 1" =3,000' (at 11"x17")

LOCATION OF FORMER UNDERGROUND STORAGE TANK ON MMH

FIGURE 4.8-1



Source:
-Danskin, 1998

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LONG VALLEY WATERSHED

FIGURE 4.9-1

H:\projects\Mammoth_Lakes\12004269\Applications\mxd\Figure 4.9-1, Long Valley Watershed.mxd {rpf, llp, hde, 9/24/07}

HCF
HCA
Hot Creek
HBP
Hot Creek Fish Hatchery
FH23
FHCD
MCF
CS
Mammoth Creek
395
Mammoth Yosemite Airport
Convict Creek
Convict Creek
Convict Creek
Convict Creek
Convict Lake
Lake Crowley

LEGEND

- Gaging Station
- Spring
- Surface Water Divide
- Highlighted Hydrologic Features
- Airport Boundary

N
W
E
S

3,000 0 3,000
Feet

Scale: 1 inch equals 3,000 feet

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FEDERAL AVIATION ADMINISTRATION

HYDROLOGIC FEATURES IN VICINITY OF MMH

FIGURE 4.9-2

H:/projects/Mammoth_Lakes/12004269/Applications/mxd/Proposed Air Service/Figure 4.9-2, Hydrologic Features in Vicinity of MMH.mxd, {rpf, llp, hde, 09/26/07}

Stormwater discharges from the airport are regulated under the airport National Pollutant Discharge Elimination System (NPDES) General Industrial Stormwater permit (State Water Board, 1992). MMH has prepared a Storm Water Pollution Prevention Plan (SWPPP) (Triad/Holmes, 2006) that identifies and evaluates sources of pollutants present at the airport that may affect the quality of stormwater discharge, and identifies best management practices (BMPs) to reduce or prevent discharge of pollutants. Potential pollutants include: fuel for aircraft, trash, sediment, and chemicals used for equipment maintenance. Aircraft maintenance is not performed at MMH and there are no facilities for washing aircraft.

4.9.2 Groundwater

4.9.2.1 Regional Groundwater

4.9.2.2 Groundwater Features in Vicinity of MMH

MMH is located within the Long Valley Groundwater Basin. The Long Valley Groundwater basin encompasses 112 square miles and has a storage capacity of 160,000 acre-feet. The maximum well yield is 250 gpm, while the average well yield is 90 gpm. In the vicinity of the airport, the groundwater regime does not correspond to the boundaries of the surface drainage system. Aquifers are unconfined, semi-confined, and confined and have both hot and cold water components.

Over the past several years, several groundwater studies have been completed to gain a better understanding of the groundwater characteristics in the region; these include studies by the Department of Water Resources (1973), Howle and Farrar (1996), Schmidt (1996), Wildermuth (1996 and 2003), Triad/Holmes (1997a, b), Mammoth Community Water District (2004), Richard C. Slade and Associates (Slade, 2002), and TEAM Engineering (2004, 2005, and 2006). Groundwater gradients are a function of saturated basin cross section, hydraulic conductivity of the water bearing rock formations, and the groundwater flow rate through the basin. In general, groundwater flows from west to east, across the surface drainage divide from the Mammoth Creek/Hot Creek watershed to the Convict Creek watershed (Triad/Holmes, 1997a, b).

The depth to groundwater at MMH varies between approximately 28 and 46 feet bgs. Groundwater gradient maps indicate that the airport and its water supply wells are downgradient from the Hot Creek Fish Hatchery and the headsprings of Hot Creek.

4.9.3 Water Supply

There are three groundwater supply wells at MMH (see **Figure 4.9-3**). One well (referred to as MYA) was installed in 1989. This well is approximately 70 feet deep and is screened from 52 to 66 feet, which is approximately elevation 7,045 feet to 7,030 feet. This well has a capacity of approximately 50 gallons per minute (gpm) and supplies the airport management offices, the terminal building, and landscaping (TEAM, 2004 and personal communication with airport staff). Two wells (referred to as HCA-W and HCA-E) were installed in 1999. Each has a capacity of approximately 500 gpm. These two wells are 143 feet deep and are screened from 100 to 140 feet bgs or from approximately elevation 6,995 feet to 6,952 feet (TEAM, 2004). Groundwater from these wells is pumped to a storage tank for fire suppression use throughout the airport, including the hangars.

4.9.4 Wastewater

Wastewater at MMH is currently handled by a septic system consisting of a septic tank and leach trenches. The septic system is located east of the airport's maintenance/office building.

4.10 NATURAL RESOURCES AND ENERGY SUPPLY

Southern California Edison is the utility that supplies power to MMH. Coordination with the Town indicates that this utility is currently able to supply sufficient electricity to accommodate the needs of the region (Town of Mammoth Lakes, 2007a).

Mammoth Creek

Hot Creek

Hot Creek Fish Hatchery

Original Airport Supply Well (MYA)

Hot Creek Aviation Supply Wells
(HCA-W & HCA-E)

395

Convict Creek

LEGEND

Groundwater Supply Well

Surface Water Divide

Highlighted Hydrologic Features

Airport Features

- Runway 9-27
- Taxiway
- Apron
- Existing Building
- Water Storage Facility
- Airport Boundary

N W E S

1,000 0 1,000 Feet

Scale: 1 inch equals 1,000 feet

H:/projects/Mammoth_Lakes/12004269/Applications/mxd/Proposed Air Service/Figure 4.9-3, Groundwater Wells and Flow Direction in Vicinity of MMH.mxd, {rpf, llp, hde, 09/25/07}

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GROUNDWATER WELLS AND GROUND WATER BASINS IN VICINITY OF MMH

FIGURE 4.9-3